INOVANCE

FORWARD, ALWAYS PROGRESSING

SV660F Series Servo Drive

Commissioning Guide

Industrial Automation

Intelligent Elevator

New Energy Vehicle

Industrial Robot

Rail Transit

Data code 19011668 A01

Preface

About this guide

The SV660F series high performance AC servo drive provides a power range from 0.05 kW to 7.5 kW. It supports Profinet communication protocol and carries Ethernet communication interfaces to work with the host controller for a networked operation of multiple servo drives.

The SV660N series servo drive supports stiffness level setting, inertia auto-tuning and vibration suppression to simplify the operation process. It allows a quiet and stable operation through cooperating with the MS1 series medium-to-small inertia high-response servo motors configured with a 23-bit multi-turn absolute encoder.

It is suitable for lithium battery PACK, printing and packaging, logistics, automobile manufacturing, tobacco and other industries to achieve fast and accurate collaborative control.

This manual presents drive commissioning, parameter descriptions, including the operating panel, commissioning software, commissioning procedure and a parameter list.

More documents

Name	Data Code	Description
SV660F Series Servo Drive Selection Guide	19011667	Provides instructions on product selection, including the list of supporting components, technical data on the drive and motor, and the selection guide of cables.
SV660F Series Servo Drive Hardware Guide	19011666	Presents electrical design guidance of the equipment, description of terminals, required certificates and standards and solutions to common EMC problems.
SV660F Series Servo Drive Commissioning Guide	19011668	Presents servo commissioning, parameter descriptions, including the operating panel, commissioning software, commissioning procedure and a parameter list.
SV660F Series Servo Drive Communication Guide	19011670	Presents functions and parameters of the servo drive, including Profinet communication configuration, parameter description, and communication application cases.
SV660F Series Servo Drive Function Guide	19011669	Presents functions and parameters, including function overview, basic servo functions, adjustment and parameter list.

Name	Data Code	Description
SV660F Series Servo Drive installation Guide	19012103	Presents installation of the servo drive, including installation steps, mechanical installation, and electrical installation.
SV660F Series Servo Drive Troubleshooting Guide	19012104	Introduces faults and fault levels, the troubleshooting process, warning codes and fault codes.
SV660F Series Servo Drive Maintenance Guide	19012105	Provides instructions on maintenance and repair of the equipment.
SV660F Series Servo Drive Safety Guide	19012110	Presents the safety function and related certifications and standards, wiring, commissioning process, troubleshooting, and functions.
SV660F Series Servo Drive Manual Package	PS00005951	Provides information on selection, installation, commissioning, function, troubleshooting and parameters of the equipment.

Revision History

Date of Revision	Version	Revision
2022-11	A01	• Added warranty information in the preface. • Changed the MS1-Z motor to MS1-R motor. • Adjusted of the structure of section Commissioning and Operation. • Optimized the description of H02.18, and groups H03, H07.07, H0A.27, H0A.90, H0A.91, H0A.92, H17 and H29.27.
2022-07	A00	First release.

Access to the guide

This guide is not delivered with the product. You can obtain the PDF version in either of the following ways:

- Do keyword search at *http://www.inovance.com*.
- Scan the QR code on the equipment to acquire more.

Warranty

Inovance provides warranty service within the warranty period (as specified in your order) for any fault or damage that is not caused by improper operation of the user. You will be charged for any repair work after the warranty period expires.

Within the warranty period, you will be charged if the product is damaged due to the following causes.

- Failure to operate this product as specified in this guide.

- Fire, flood, or abnormal voltage.
- Unintended use of the product.
- Operation beyond the product's ratings.
- Force majeure (natural disaster, earthquake, and lightning strike).

The maintenance fee is charged according to the latest Price List of Inovance. If otherwise agreed upon, the terms and conditions in the agreement shall prevail.

For details, see Product Warranty Card.

Table of Contents

General Safety Instructions

Safety Precautions

- This section explains the safety precautions that need to be observed to use this product correctly. Before using this product, please read the instruction manual and correctly understand the relevant information of safety precautions. Failure to comply with the safety precautions may result in death, serious injury, or equipment damage.
- "CAUTION", "WARNING", and "DANGER" items in the guide only indicate some of the precautions that need to be followed; they just supplement the safety precautions.
- Use this equipment according to the designated environment requirements. Damage caused by improper use is not covered by warranty.
- Inovance shall take no responsibility for any personal injuries or property damage caused by improper use.

Safety Levels and Definitions

DANGER	Indicates that failure to comply with the notice will result in death or severe personal injuries.
WARNING	Indicates that failure to comply with the notice may result in death or severe personal injuries.
CAUTION	Indicates that failure to comply with the notice may result in minor or moderate personal injuries or equipment damage.

General Safety Instructions

- Drawings in the selection guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions. Install the covers or protective guards as specified, and use the equipment in accordance with the instructions described in the user guide.
- The drawings in the guide are shown for illustration only and may be different from the product you purchased.

Unpacking
⚠ WARNING • Do not install the equipment if you find damage, rust, or signs of use on the equipment or accessories upon unpacking. • Do not install the equipment if you find water seepage or missing or damaged components upon unpacking. • Do not install the equipment if you find the packing list does not conform to the equipment you received.
⚠ CAUTION • Check whether the packing is intact and whether there is damage, water seepage, dampness, and deformation before unpacking. • Unpack the package by following the unpacking sequence. Do not strike the package violently. • Check whether there is damage, rust, or injuries on the surface of the equipment and equipment accessories before unpacking. • Check whether the package contents are consistent with the packing list before unpacking.
Storage and Transportation
⚠ WARNING • Large-scale or heavy equipment must be transported by qualified professionals using specialized hoisting equipment. Failure to comply may result in personal injuries or equipment damage. • Before hoisting the equipment, ensure the equipment components such as the front cover and terminal blocks are secured firmly with screws. Loosely-connected components may fall off and result in personal injuries or equipment damage. • Never stand or stay below the equipment when the equipment is being hoisted by the hoisting equipment. • When hoisting the equipment with a steel rope, ensure the equipment is hoisted at a constant speed without suffering from vibration or shock. Do not turn the equipment over or let the equipment stay hanging in the air. Failure to comply may result in personal injuries or equipment damage.

CAUTION

- Handle the equipment with care during transportation and mind your steps to prevent personal injuries or equipment damage.
- When carrying the equipment with bare hands, hold the equipment casing firmly with care to prevent parts from falling. Failure to comply may result in personal injuries.
- Store and transport the equipment based on the storage and transportation requirements. Failure to comply will result in equipment damage.
- Avoid storing or transporting the equipment in environments with water splash, rain, direct sunlight, strong electric field, strong magnetic field, and strong vibration.
- Avoid storing the equipment for more than three months. Long-term storage requires stricter protection and necessary inspections.
- Pack the equipment strictly before transportation. Use a sealed box for long-distance transportation.
- Never transport the equipment with other equipment or materials that may harm or have negative impacts on this equipment.

Installation

DANGER

- The equipment can be operated by well-trained and qualified professionals only. Non-professionals are not allowed.

WARNING

- Read through the guide and safety instructions before installation.
- Do not install this equipment in places with strong electric or magnetic fields.
- Before installation, check that the mechanical strength of the installation site can bear the weight of the equipment. Failure to comply will result in mechanical hazards.
- Do not wear loose clothes or accessories during installation. Failure to comply may result in an electric shock.
- When installing the equipment in a closed environment (such as a cabinet or casing), use a cooling device (such as a fan or air conditioner) to cool the environment down to the required temperature. Failure to comply may result in equipment over-temperature or a fire.
- Do not retrofit the equipment.
- Do not fiddle with the bolts used to fix equipment components or the bolts marked in red.
- When the equipment is installed in a cabinet or final assembly, a fireproof enclosure providing both electrical and mechanical protections must be provided. The IP rating must meet IEC standards and local laws and regulations.
- Before installing devices with strong electromagnetic interference, such as a transformer, install a shielding device for the equipment to prevent malfunction.
- Install the equipment onto an incombustible object such as a metal. Keep the equipment away from combustible objects. Failure to comply will result in a fire.

CAUTION

- Cover the top of the equipment with a piece of cloth or paper during installation. This is to prevent unwanted objects such as metal chippings, oil, and water from falling into the equipment and causing faults. After installation, remove the cloth or paper on the top of the equipment to prevent over-temperature caused by poor ventilation due to blocked ventilation holes.
- Resonance may occur when the equipment operating at a constant speed executes variable speed operations. In this case, install the vibration-proof rubber under the motor frame or use the vibration suppression function to reduce resonance.

Wiring

DANGER

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals.
- Before wiring, cut off power connections with all equipment. Residual voltage exists after power cut-off. Therefore, wait at least the time designated on the equipment warning label before further operations. Measure the DC voltage of the main circuit and make sure it is below the safe voltage, otherwise there will be the danger of electric shock.
- Do not perform wiring, remove the equipment cover, or touch the circuit board with power ON. Failure to comply will result in an electric shock.
- Check that the equipment is grounded properly. Failure to comply will result in an electric shock.

WARNING

- Do not connect the input power supply to the output end of the equipment. Failure to comply will result in equipment damage or even a fire.
- When connecting a drive to the motor, check that the phase sequences of the drive and motor terminals are consistent to prevent reverse motor rotation.
- Cables used for wiring must meet cross sectional area and shielding requirements. The shield of the cable must be reliably grounded at one end.
- Fix the terminal screws with the tightening torque specified in the user guide. Improper tightening torque may overheat or damage the connecting part, resulting in a fire.
- After wiring is done, check that all cables are connected properly and no screws, washers or exposed cables are left inside the equipment. Failure to comply may result in an electric shock or equipment damage.

CAUTION

- During wiring, follow the proper electrostatic discharge (ESD) procedure, and wear an antistatic wrist strap. Failure to comply will damage the equipment or the internal circuits of the equipment.
- Use shielded twisted pairs for the control circuit. Connect the shield to the grounding terminal of the equipment for grounding purpose. Failure to comply will result in equipment malfunction.

Power-on

DANGER

- Before power-on, check that the equipment is installed properly with reliable wiring and the motor can be restarted.
- Check that the power supply meets equipment requirements before power-on to prevent equipment damage or a fire.
- After power-on, do not open the cabinet door or protective cover of the equipment, touch any terminal, or disassemble any unit or component of the equipment. Failure to comply will result in an electric shock.

WARNING

- Perform a trial run after wiring and parameter setting to ensure the equipment operates safely. Failure to comply may result in personal injuries or equipment damage.
- Before power-on, make sure that the rated voltage of the equipment is consistent with that of the power supply. Failure to comply may resulting in a fire. Failure to comply may result in a fire.
- Before power-on, check that no one is near the equipment, motor, or machine. Failure to comply may result in death or personal injuries.

Operation

DANGER

- The equipment must be operated only by professionals. Failure to comply will result in death or personal injuries.
- Do not touch any connecting terminals or disassemble any unit or component of the equipment during operation. Failure to comply will result in an electric shock.

WARNING

- Do not touch the equipment casing, fan, or resistor with bare hands to feel the temperature. Failure to comply may result in personal injuries.
- Prevent metal or other objects from falling into the equipment during operation. Failure to comply may result in a fire or equipment damage.

Maintenance

DANGER

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals.
- Do not maintain the equipment with power ON. Failure to comply will result in an electric shock.
- Before maintenance, cut off all the power supplies of the equipment and wait for at least the time designated on the equipment warning label.
- In case of a permanent magnet motor, do not touch the motor terminals immediately after power-off because the motor terminals will generate induced voltage during rotation even after the equipment power supply is off. Failure to comply will result in an electric shock.

WARNING
• Perform routine and periodic inspection and maintenance on the equipment according to maintenance requirements and keep a maintenance record.
Repair
DANGER
• Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals. • Do not repair the equipment with power ON. Failure to comply will result in an electric shock. • Before inspection and repair, cut off all the power supplies of the equipment and wait for at least the time designated on the equipment warning label.
WARNING
• Submit the repair request according to the warranty agreement. • When the fuse is blown or the circuit breaker or earth leakage current breaker (ELCB) trips, wait for at least the time designated on the equipment warning label before power-on or further operations. Failure to comply may result in death, personal injuries or equipment damage. • When the equipment is faulty or damaged, the troubleshooting and repair work must be performed by professionals that follow the repair instructions, with repair records kept properly. • Replace quick-wear parts of the equipment according to the replacement instructions. • Do not use damaged equipment. Failure to comply may result in death, personal injuries, or severe equipment damage. • After the equipment is replaced, check the wiring and set parameters again.
Disposal
WARNING
• Dispose of retired equipment in accordance with local regulations and standards. Failure to comply may result in property damage, personal injuries, or even death. • Recycle retired equipment by observing industry waste disposal standards to avoid environmental pollution.

Additional Precautions

Cautions for the dynamic brake

- Dynamic braking can only be used for emergency stop in case of failure and sudden power failure. Do not trigger failure or power failure frequently.
- Ensure that the dynamic braking function has an operation interval of more than 5 minutes at high speed, otherwise the internal dynamic braking circuit may be damaged.

- Dynamic braking is common in rotating mechanical structures. For example, when a motor has stopped running, it keeps rotating due to the inertia of its load. In this case, this motor is in the regenerative state and short-circuit current passes through the dynamic brake. If this situation continues, the drive, and even the motor, may be burned.

Safety Label

For safe equipment operation and maintenance, comply with the safety labels on the equipment. Do not damage or remove the safety labels. See the following table for descriptions of the safety labels.

Safety Label	Description
	• Never fail to connect the protective earth (PE) terminal. Read through the guide and follow the safety instructions before use. • Never fail to connect Protective Earth (PE) terminal. Read the manual and follow the safety instructions before use. • Do not touch terminals within 15 minutes after disconnecting the power supply to prevent the risk of electric shock. • Do not touch terminals with 15 minutes after Disconnect the power. Risk of electrical shock. • Do not touch the heatsink with power ON to prevent the risk of burn. • Do not touch heatsink when power is ON. Risk of burn.

1 Commissioning Tool

1.1 Operating Panel

1.1.1 Components of Servo Drives and Servo Motors

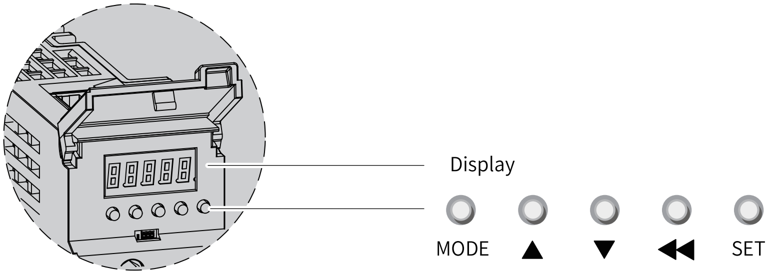


Figure 1-1 Magnified view of the keypad

The operation panel of the SV660F Series servo drive consists of an LED (5-digit, 8-segment) and five buttons. The keypad is used for value display, parameter setting, user password setting and general function execution. The following table takes parameter setting as an example to describe the general functions of the keys.

Table 1–1 Descriptions of keys

Name	Symbol	Description
MODE	MODE	Switches among different modes. Returns to the previous menu.
UP	▲	Increases the value of the blinking digit for the LED.
DOWN	▼	Decreases the value of the blinking digit for the LED.
SHIFT	◀◀	Shifts the blinking digit for the LED. You can view the high digits of the number consisting of more than 5 digits.
SET	SET	Switches to the lower-level menu. Executes commands such as storing parameter setting value.

1.1.2 Display Panel Indicators

The operating panel can display the running status, parameter, faults, and monitoring information during running of the servo drive.

- Status display: Displays current servo drive status, such as servo ready or servo running.
- Parameter display: Displays parameters and their setpoints
- Fault display: Displays faults and warnings that occurred on the servo drive.
- Monitored value display: Displays values of monitoring parameters.

Transition relation between the panel display and the operation object of the host controller

The mapping relation between the parameter displayed on the keypad (in decimal) and the object dictionary operated by the host controller (in hexadecimal, "Index" and "Sub-index") is as follows.

Object dictionary index = 0x2000 + Parameter group number

Object dictionary sub-index = Hexadecimal offset within the parameter group + 1 For example:

Display Panel Indicators	Object dictionary operated by the host controller
H02.15	2002.10h

Note

The following section only describes the display and parameter settings on the keypad side (in decimal), which are different from those displayed in the software tool (in hexadecimal). Make necessary value conversions during use.

Display mode switchover

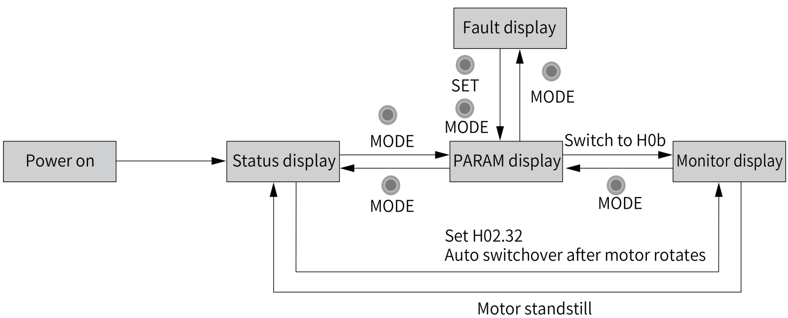
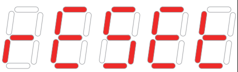
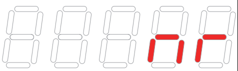
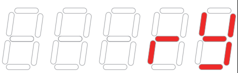
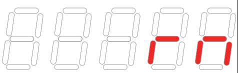
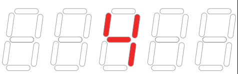
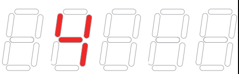


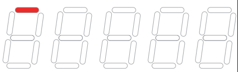
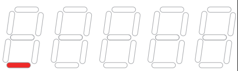
Figure 1-2 Switchover among different display modes

- The keypad enters status display immediately upon power-on.

- Press MODE to switch among different display modes based on the conditions shown in *"Figure 1–2 " on page 15* .
- In status display, set H02.32 to select the parameter to be monitored. When the motor rotates, the keypad automatically switches to monitored value display. After the motor stops, the keypad automatically returns to status display.
- In the parameter display mode, after you select the parameter to be monitored in group H0b, the keypad switches to monitored value display.
- Once a fault occurs, the keypad switches to fault display immediately, with all the five LEDs blinking. Press SET to stop the LEDs from blinking, and then press MODE to switch to parameter display.

Status display

Display	Name	Applicable Occasion	Meaning
	reset Servo drive initializing	Upon power-on	The servo drive is in the initialization or reset status. After initialization or reset is done, the servo drive automatically switches to other status.
	nr Servo not ready	Initialization done, but servo drive not ready.	The servo drive is not ready to run because the main circuit is not powered on. For details, see the Troubleshooting Guide.
	ry Servo ready	Servo drive ready	The servo drive is ready to run and waits for the enabling signal from the host controller.
	rn Servo running	Servo ON (S-ON) signal activated (S-ON signal switched on)	The servo drive is running.
	1–4: operation modes	-	Displays present operation mode of the servo drive in hexadecimal digits. 1: AC1 3: AC3 4: AC4
	1–4: communica tion statuses	-	Displays the status of the Profinet state machine of a slave in characters. 1: Initialization 2: Pre-operational 4: Running

Display	Name	Applicable Occasion	Meaning
	- CN4 connection indication	CN4 indicates Profinet output connection status.	OFF: no communication connection is detected in the physical layer. ON: communication connection is detected in the physical layer.
	- CN3 connection indication	CN3 indicates successful Profinet input connection.	

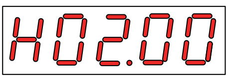
Parameter Display

Parameters are divided into 14 groups based on their functions. A parameter can be located quickly based on the parameter group it belongs to.

- Display of parameter groups

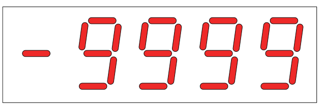
Display	Name	Description
HXX.YY	Parameter group	XX: Parameter group No. (Hexadecimal) YY: Offset within the parameter group (decimal)

For example, "H02.00" is displayed as follows.

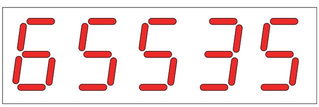
Display	Name	Description
	H02.00	02: Parameter group No. 00: Offset within the parameter group

- Display of negative numbers and numbers with different lengths
  - Signed number with 4 digits and below or unsigned number with 5 digits and below
    Such numbers are displayed in a single page (five digits). For signed numbers, the highest bit "-" represents the negative symbol.

    For example, "-9999" is displayed as follows:



For example, "65535" is displayed as follows:



- Signed number with more than 4 digits or unsigned number with more than 5 digits
  Such numbers are displayed from low to high bits in several pages (5 digits per page): current page + values on current page, as shown in the following figure. Hold down SHIFT for more than 2s to switch to the next page.

  For example, "-1073741824" is displayed as follows:

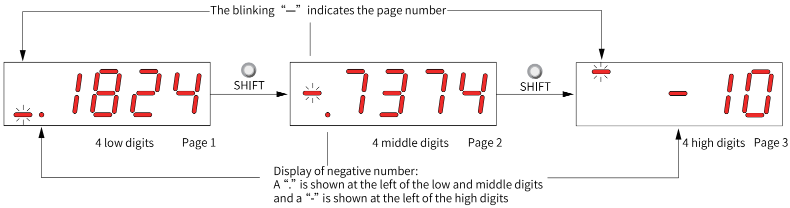


Figure 1-3 Display of "-1073741824"

Example: "1073741824" is displayed as follows:

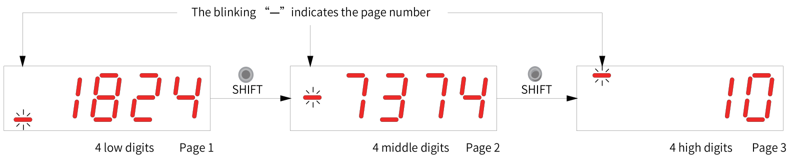
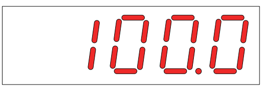
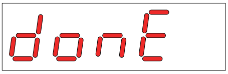
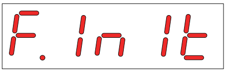
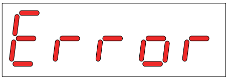
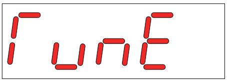
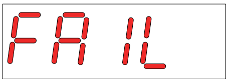


Figure 1-4 Display of "1073741824"

- Display of the decimal point
  The segment "." of the ones indicates the decimal point, which does not blink.

Display	Name	Description
	Decimal point	100.0

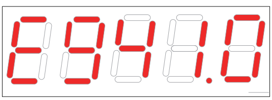
- Display of parameter setting status

Display	Name	Applicable Occasion	Meaning
	Done Parameter setting complet ed	The parameter is set successfully.	The parameter is set and saved to the servo drive (Done). The servo drive can execute other operations.
	F.InIt (Restored to default settings)	Parameter initialization is in progress (H02.31 = 1).	The servo drive is in the process of parameter initialization. After parameter initialization is done, switch on the control power supply again.
	Error (wrong password)	The user password (H02.30) is activated and the password entered is wrong.	A wrong password is entered. You need to enter the password again.
	TunE	Auto-tuning with one-key enabled	The function of auto-tuning with one-key is in progress.
	FAIL	Auto-tuning with one-key enabled	The function of auto-tuning with one-key fails.

Fault Display

- The panel displays the active or history faults and warning codes. For troubleshooting, see the Troubleshooting Guide.
- When a fault or warning occurs, the operating panel displays the corresponding fault or error code immediately. When multiple faults or errors occur, the keypad displays the fault or error code of the highest fault level.
- You can select the previous fault/warning to be viewed through H0b.33 and view the code of the selected fault/warning in H0b.34.
- You can clear the latest 10 faults or warnings saved in the servo drive by setting H02.31 to 2.

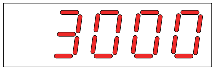
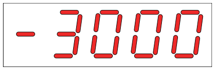
For example, "E941.0" is displayed as following:

Display	Name	Description
	E941.0 Warning code	E: A fault or warning occurs on the servo drive. 941.0: Warning code

Monitored value display

- Group H0b: Displays parameters used to monitor the operating state of the servo drive.
- Set H02.32 (Default keypad display) properly. After the motor operates normally, the keypad switches from status display to parameter display. The parameter group number is H0b and the offset within the group is the setpoint of H02.32.
- For example, if H02.32 is set to 00 and the motor speed is not 0 rpm, the keypad displays the value of H0b.00.

The following table describes the monitoring parameters in H0b.00.

Parameter	Name	Unit	Meaning	Example
H0b.00	Actual motor speed	RPM	Displays the actual value of the motor speed after round-off, which can be accurate to 1 rpm.	Display of 3000 rpm:  -3000 rpm: 

1.1.3 Parameter Settings

Example of parameter settings

You can set parameters through the keypad. For details on parameters, see Chapter "List of Parameters". The following figure shows how to switch from position control mode to speed control mode using the keypad after power-on.

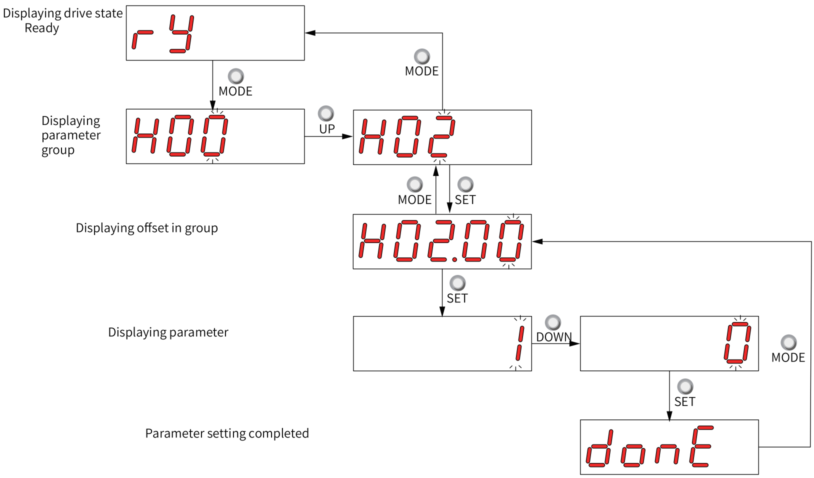


Figure 1-5 Example of parameter setting

- MODE: Used to switch the keypad display mode and return to the previous interface.
- UP/DOWN: Used to increase or decrease the value of the blinking digit.
- SHIFT: Used to shift the blinking digit.
- SET: Used to save the present setpoint or switch to the next interface.

After parameter setting is done, that is, "donE" is displayed on the keypad, press MODE to return to the parameter group interface (interface of "H02.00").

Forced DI/DO signals

There are five DI and DO signals on the CN1 terminal. Users can allocate the DI/DO function and terminal logic to parameters in group H03/H04 by using the keypad (or host controller communication), so that the host controller can control corresponding servo functions through the DI or use the DO signal output by the servo drive.

The servo drive also provides the forced DI feature. The forced DIs can be used to test the DI functions of the servo drive. Forced DO is not available for the PN bus.

- Forced DI signal input
  After this function is enabled, all DI signal levels are controlled by the forced DI setting (H0d.18), independent of external DI signal status.
  - Operating procedure:

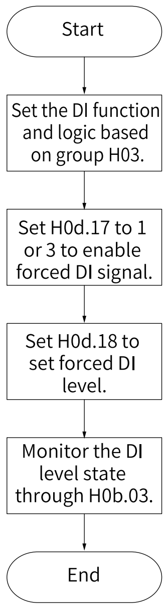


Figure 1-6 Procedure for setting forced DI function

Related parameters:

See *" H0d_en.17" on page 267* for details.

H0d.18 is used to set the forced DI level. The keypad displays the value in hexadecimal. After the hexadecimal value is converted to a binary value, the value "1" indicates high level and "0" indicates low level.

The DI logic is defined by parameters in group H03. H0b.03 is used to monitor the DI level status. The keypad displays the level, and the value of H0b.03 (Monitored DI signal) read in the software tool is hexadecimal.

- Example:
  To activate the DI function allocated to DI1 and deactivate DI functions allocated to DI2 to DI5 (all the DIs are active at low level), set as follows:

  As the value "1" indicates high level and the value "0" indicates low level, the corresponding binary value and hexadecimal value are "11110" and "1E" respectively. Therefore, set H0d.18 to "1E" through the keypad.

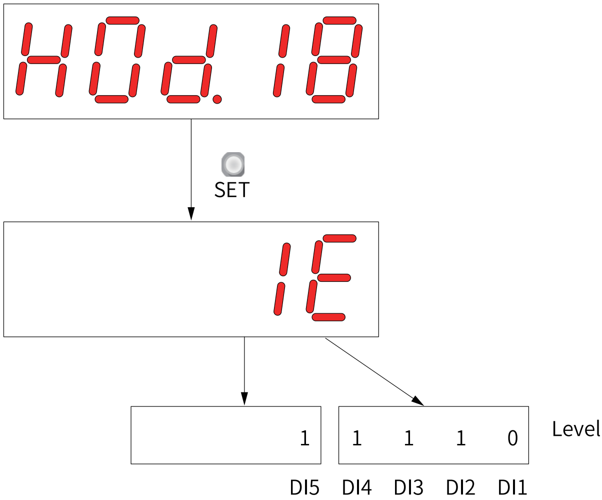


Figure 1-7 Meaning of the H0d.18 setpoint

Monitoring the DI level status through H0b.03:

If the DI function is normal, the display value of H0b.03 is always the same as that of H0d.18.

In this case, DI1 is displayed as low level and DI2 to DI5 are displayed as high level on the keypad, and the value of H0b.03 read by the software is 1E (hexadecimal).

Display on the operating panel:

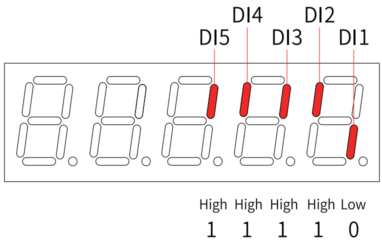


Figure 1-8 DI level status corresponding to H0b.03

- Exit
  The forced DI signal function is not retentive upon power-off. Normal DIs apply after restart, or you can set H0d.17 to 0 (No operation) to return to the normal DI mode.

User password

After the user password (H02.30) is activated, only authorized operators can set parameters.

Set bit5 of H0A. 71 to 1. After setting the user password, you can't view and change the parameters after H02 group through the panel and Inovance servo commissioning platform.

- Setting the user password
  The following figure shows how to set the user password to "00001".

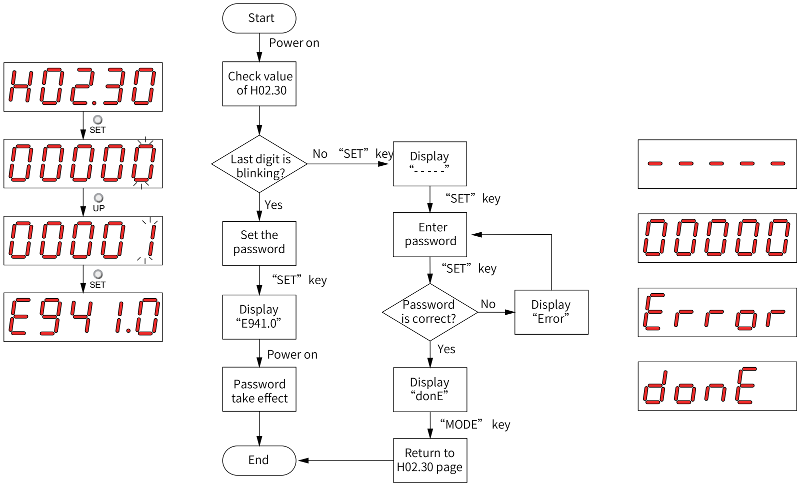


Figure 1-9 Procedure for setting the user password

To change the user password, input current password first to authorize the access to parameter setting. Next, enter H02.30 again to set a new password based on the procedure shown in the preceding figure.

Note

If the last bit does not blink, the access to parameters is password protected. If the last bit blinks, password is not needed or the password entered is correct.

- Canceling user password
  Enter the set user password, and set H02.30 to "00000" to cancel the user password.

1.2 Commissioning Software

1.2.1 Overview

The software tool InoDriverShop can be downloaded from http://www.inovance.com.

Use an S6-L-T00-3.0 communication cable for communication between the drive and the PC.

InoDriverShop supports 32-bit/64-bit Windows 7 and 64-bit Windows 10 operating systems. For details on how to use InoDriverShop, see the help document of InoDriverShop.

1.2.2 Installation

1. Software

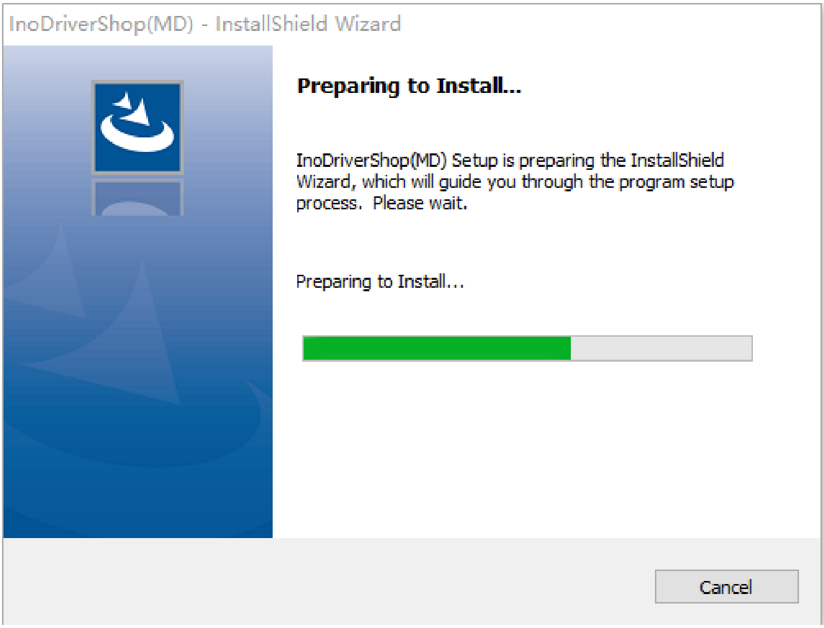
   a. Visit the official website of Inovance as shown below.
   http://www.inovance.com

   b. Choose Support → Download, and then type in the keyword InoDriverShop and click Search.

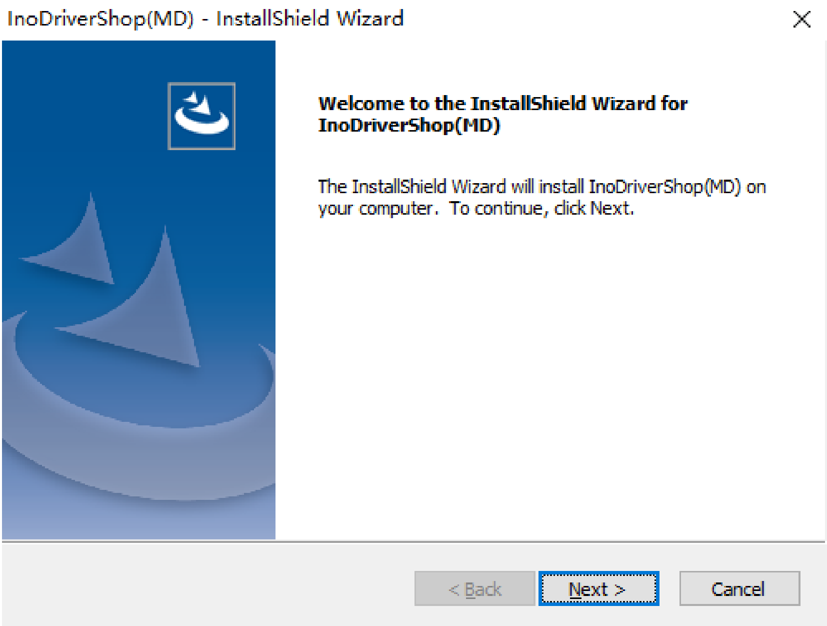
   c. Click Download.

2. Unzip the package downloaded.

3. Click IDS InoDriverShop.exe to start installing InoDriverShop.

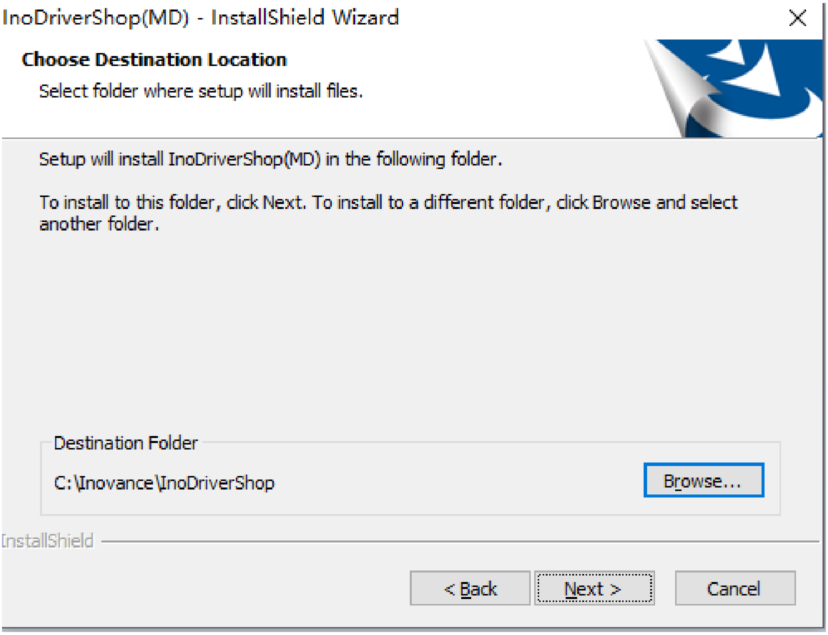


4. Click Next.

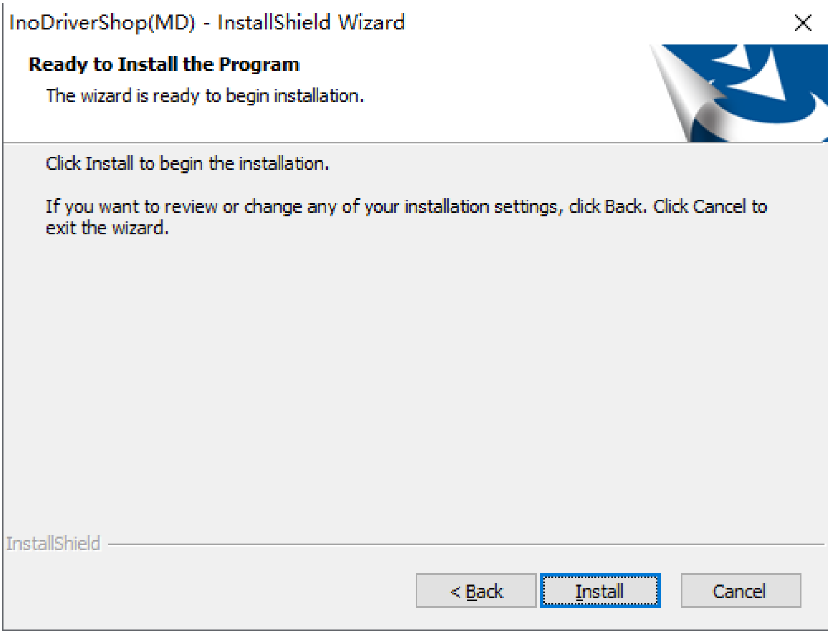


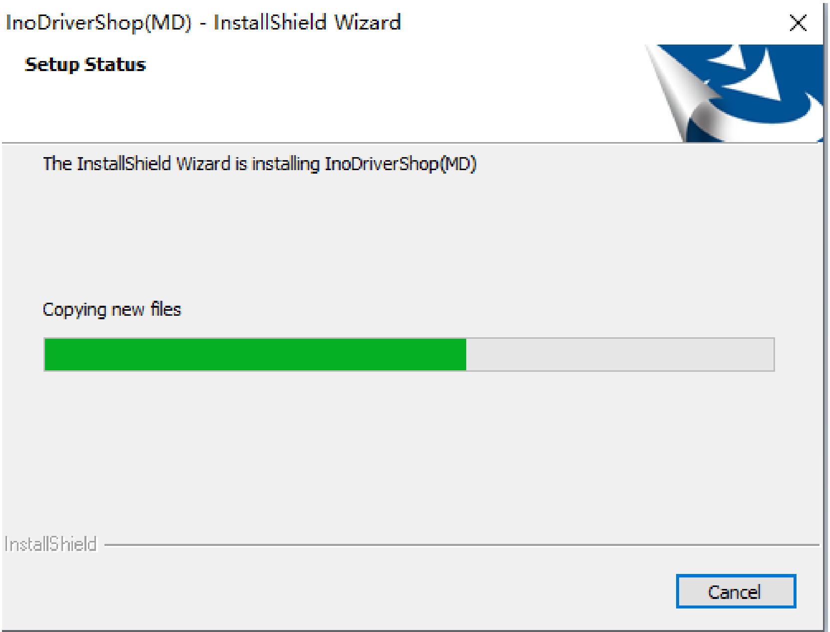
5. You can select the directory for installation as needed through the Browse button. The default directory for installation is "C:\Program Files\Inovance\InoDriverShop". In online upgrade, InoDriverShop will be upgraded directly in the original directory.

   After selecting the directory for installation, click Next.

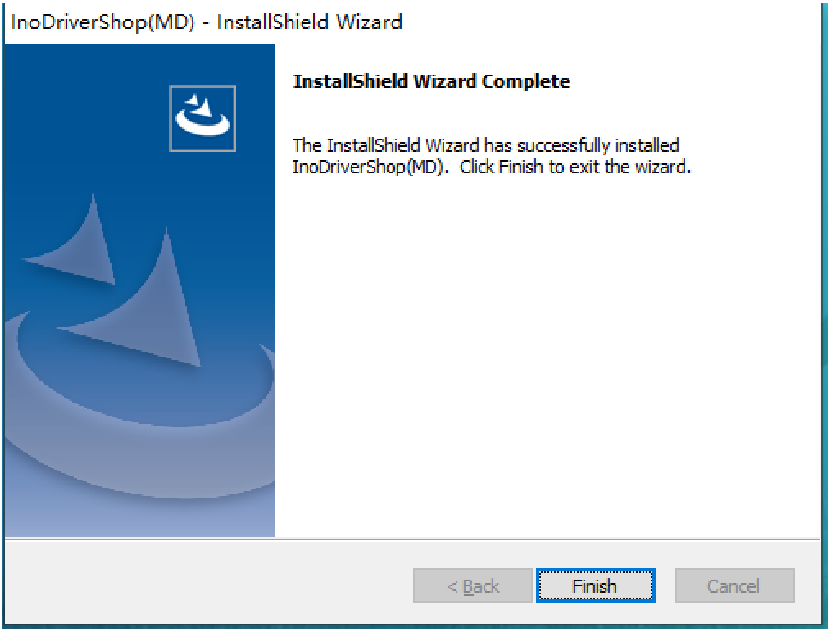


6. Click Install to start installation.





7. After installation is done, click Finish.



8. A shortcut icon for InoDriverShop will be generated automatically on the desktop.

1.2.3 Connection

1. Start InoDriverShop.

- Double-click  to start the InoDriverShop.
- If there is no shortcut for InoDriverShop on your desktop, click Start and search for InoDriverShop.

2. Create a project.

a. Click ① shown in the following figure to create a project.

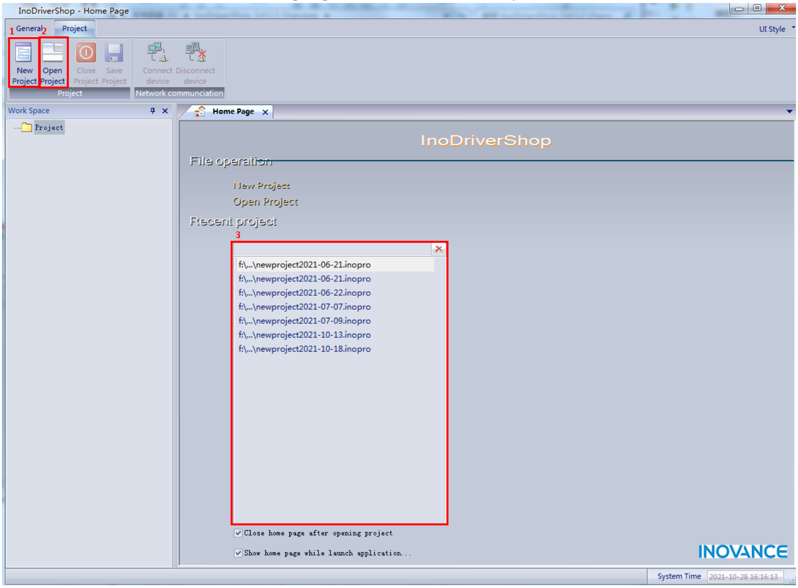


Figure 1-10 Start interface

Note

You can click 2 or 3 shown in the preceding figure to open the project saved before.

---

b. Open the Project Guide interface.

Click Online or Offline in area ①. Next, click the product series in area ②. Finally, load default communication parameters in area ③ based on the product series selected.

Figure 1-11 Project Guide interface

c. Click Next page to create a project.

- Creating a project for online device brings you to the following interface. The device is scanned automatically. Select the device to be commissioned and click Finish.

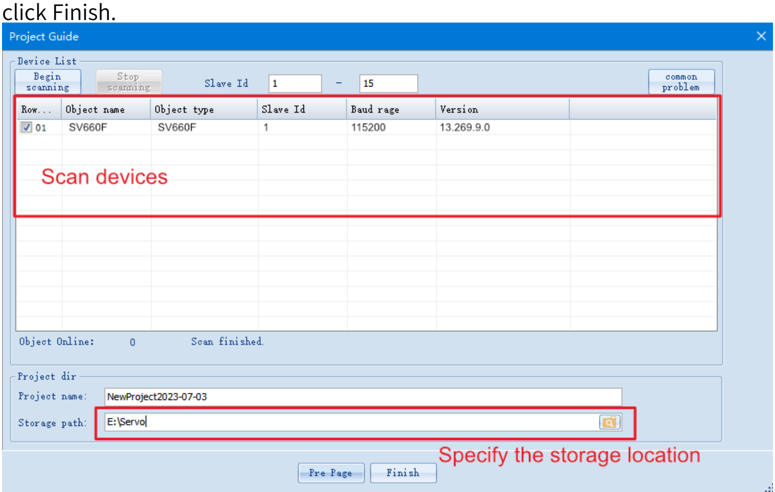


Figure 1-12 Scan interface

- Creating a project for offline device brings you to the following interface. You can select the Slave ID, Object Type, and Software Version as needed and add different standards or customized devices. You can also designate the directory for storage or create multiple offline devices.

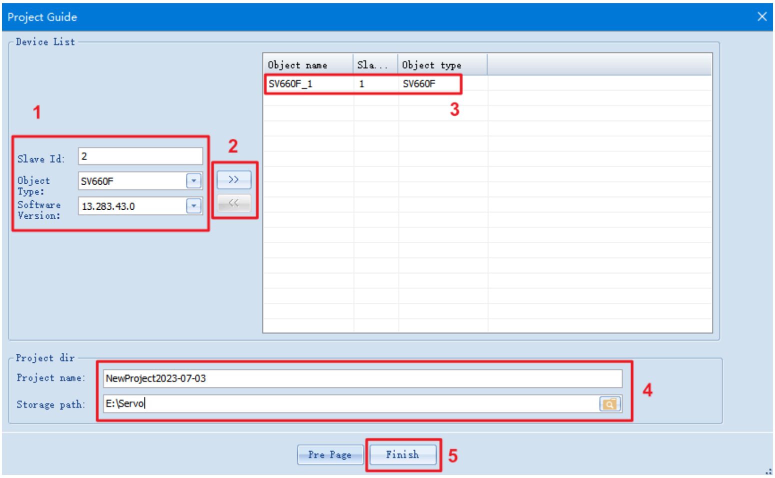


Figure 1-13 Project Guide interface for offline device

Note

① Station No., ④ Project name, and the storage directory can be changed as needed.

d. The project has been created.

3. The main interface is shown as follows.

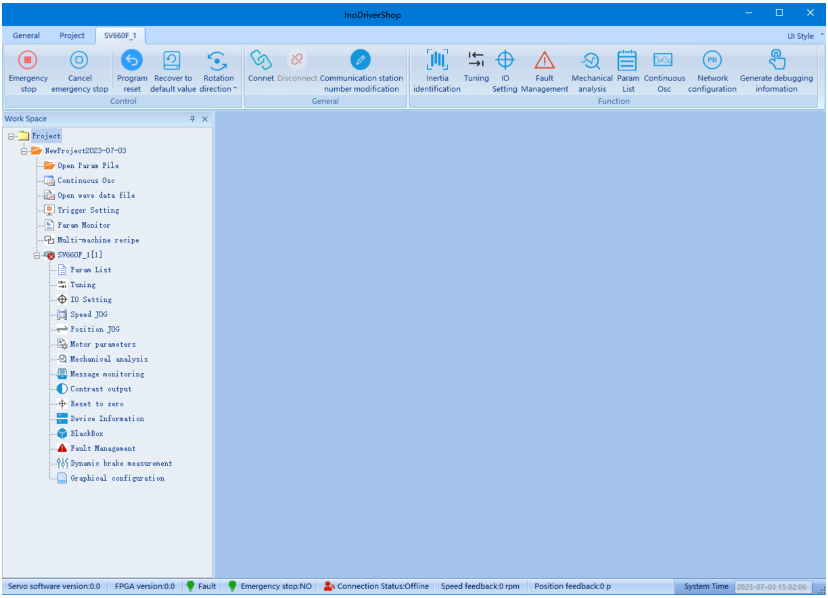
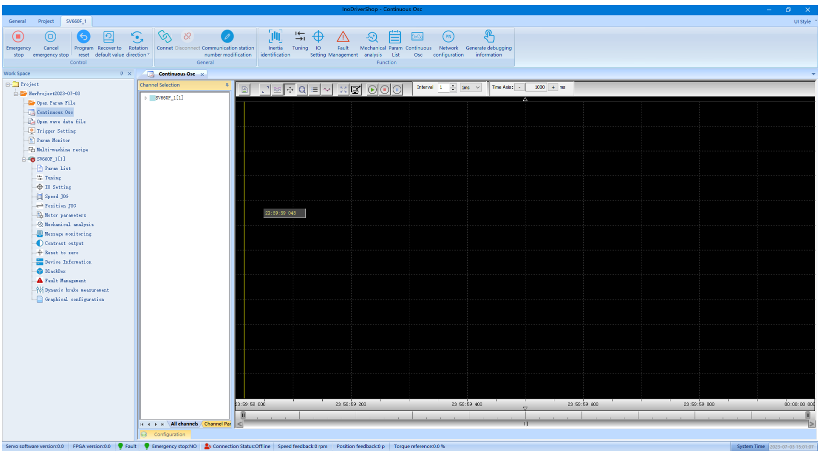


Figure 1-14 Main interface

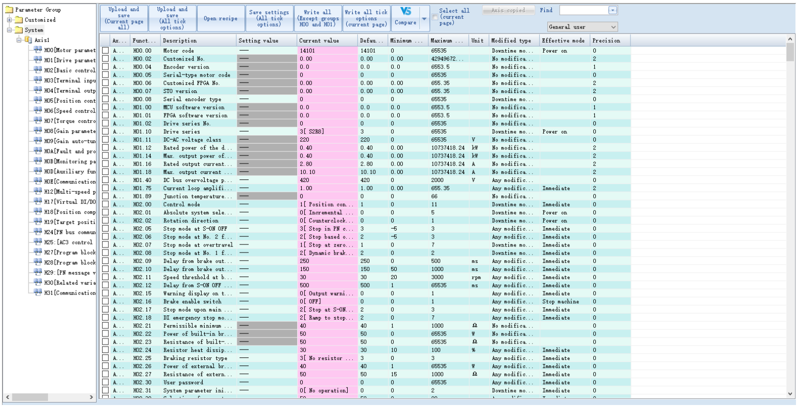
1.2.4 Introduction to the Software Tool

InoDriverShop features the following functions:

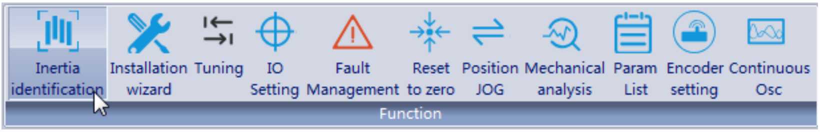
- Oscilloscope: Detects and saves the instantaneous data during operation.

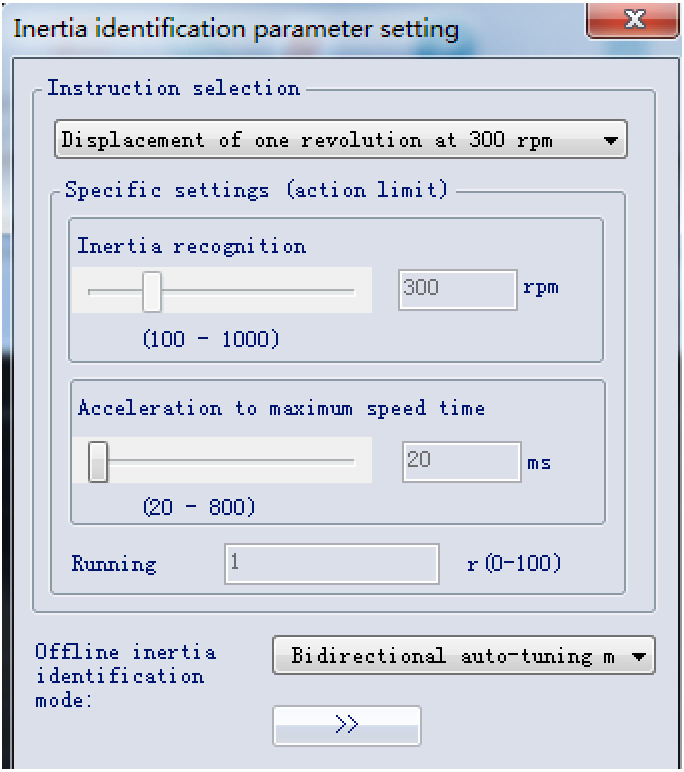


- Parameter management: Reads and downloads parameters in batches.

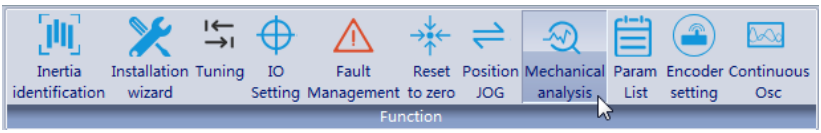


- Inertia auto-tuning: Generates the load inertia ratio automatically.

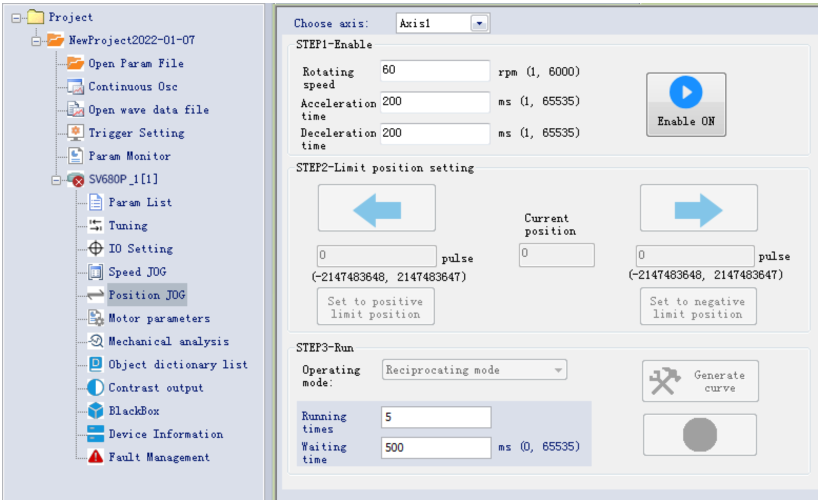




- Mechanical characteristic analysis: Analyzes the resonance frequency of the mechanical system.



- Motion JOG: Generates position references to make the motor reciprocate.

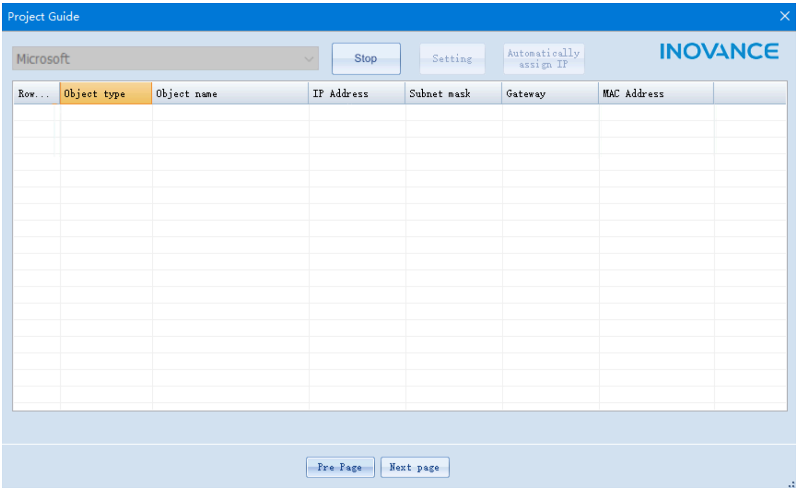


- Gain tuning: Adjusts the stiffness level and monitors the motion data.

1.2.5 Multi-drive Adjustment

1. Click the SV660F icon, select **TCP_DCP** on the right, and then click **Next**.

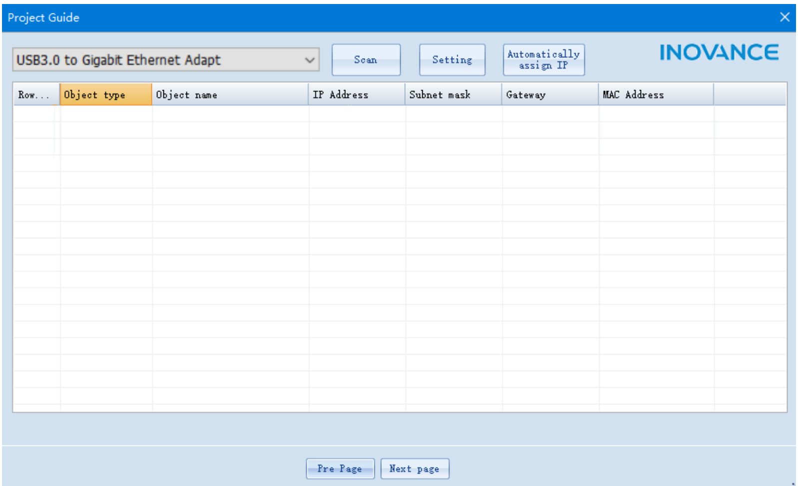
2. In the next page, devices are scanned with the default network card. If the network card connected to the device is not the currently selected network card, click **Stop Scan** and select the correct network card from the drop-down box on the left.

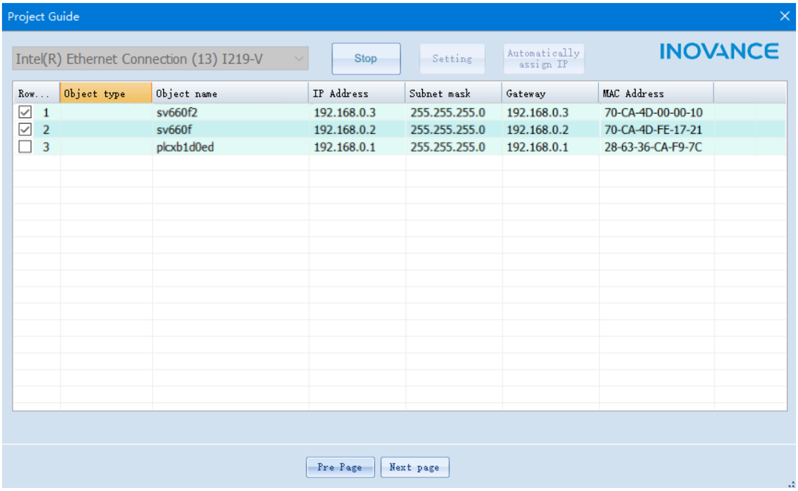


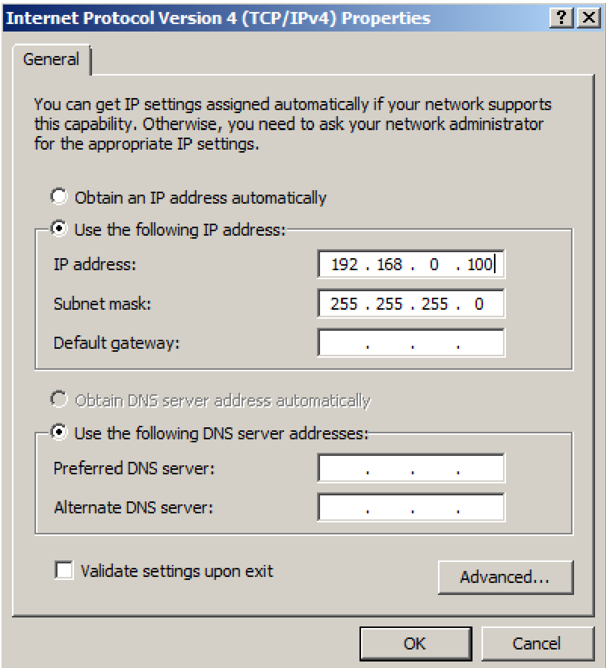
3. Click **Scan** and wait the connected device to be displayed. The network requires that the IP of the network card and that of the device are in the same network segment. You can modify the device name, IP, subnet mask, and default segment in this screen. Click the **Set** button to write the modifications to the device. Then click **Next**.

Note

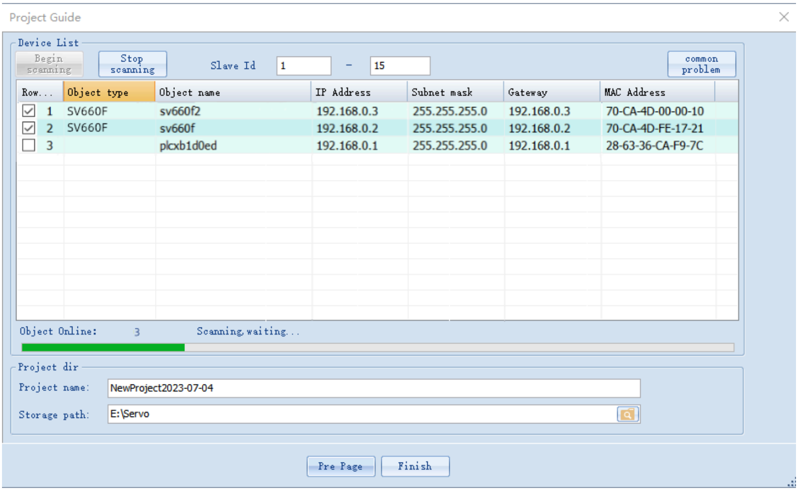
After modifying the IP of the device, if the IP of the network card is not on the same network segment as the device, you need to manually adjust the IP of the network card.

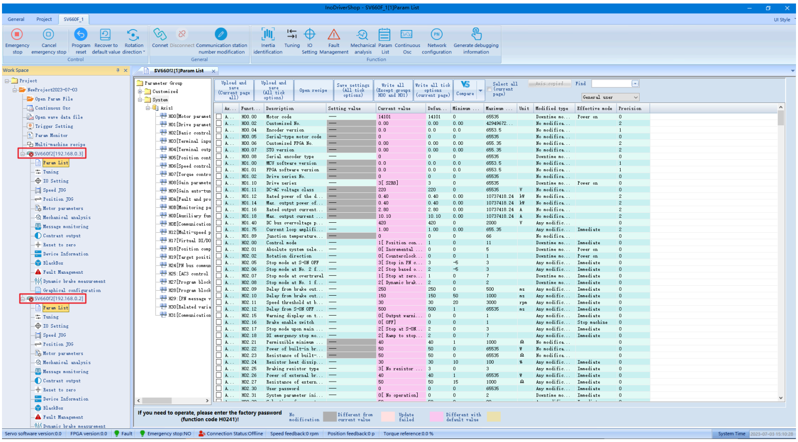






4. Enter the scan screen. The scan result is displayed in the screen. After the scan is correct, click the **Finish** button. You can create a multi-drive project.


Project Guide
Device List
Begin scanning
Stop scanning
Slave Id
1
15
common problem
Row...
Object type
Object name
IP Address
Subnet mask
Gateway
MAC Address
1 SV660F sv660f2 192.168.0.3 255.255.255.0 192.168.0.3 70-CA-4D-00-00-10
2 SV660F sv660f 192.168.0.2 255.255.255.0 192.168.0.2 70-CA-4D-FE-17-21
3 plcxb1d0ed 192.168.0.1 255.255.255.0 192.168.0.1 28-63-36-CA-F9-7C
Object Online: 3
Scanning, waiting...
Project dir
Project name: NewProject2023-07-04
Storage path: E:\Servo
Pre Page
Finish



2 Commissioning and Operation

2.1 Commissioning Flowchart

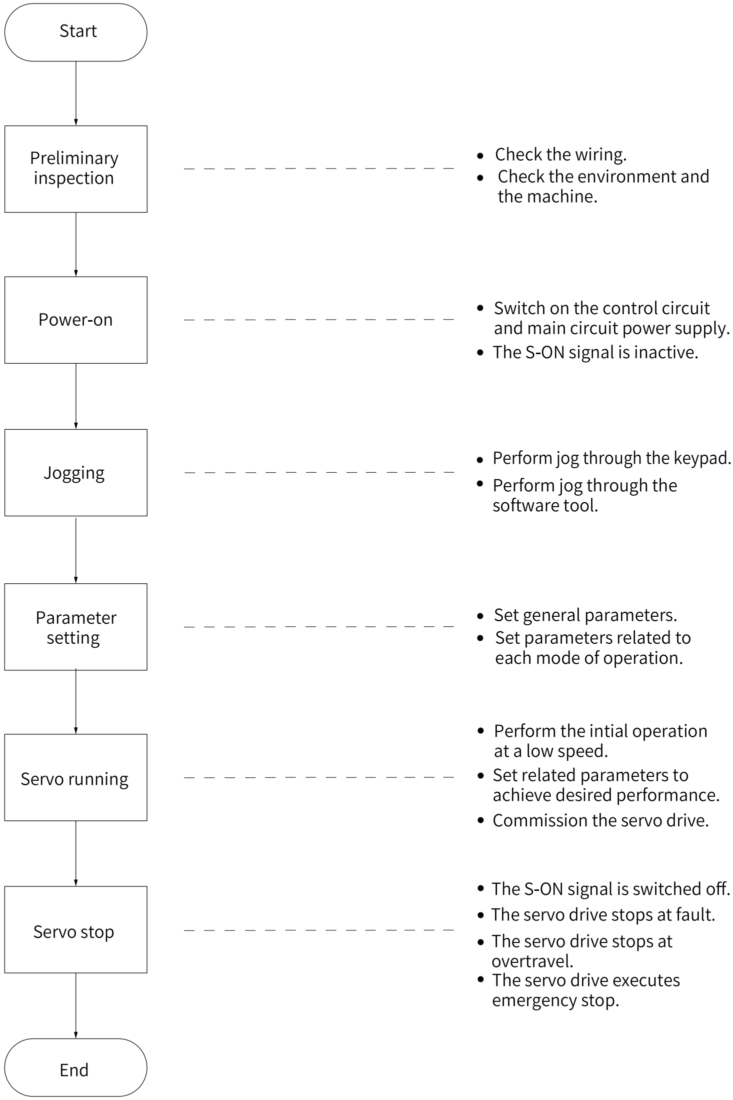


Figure 2-1 Commissioning flowchart of the drive

2.2 Preliminary Check

Check the following items before operating the servo drive and the servo motor.

Table 2–1 Checklist before operation

Record	No.	Description
Wiring		
☐	1	The power input terminals (L1C, L2C, L1, L2, L3, R, S, T) of the servo drive are connected properly.
☐	2	The main circuit cables (U, V, W) of the motor are connected to the U/V/W terminals of the drive correctly.
☐	3	No short circuit exists in the power input terminals (L1, L2, L3, R, S, T) or main circuit output terminals (U, V, W) of the servo drive.
☐	4	The control signal cables, such as the brake signal cable and overtravel protection signal cable, are connected properly.
☐	5	The servo drive and servo motor are grounded properly.
☐	6	The stress suffered by the cable is within the specified range.
☐	7	All the wiring terminals are insulated properly.
Environment and Mechanical Conditions		
☐	1	No unwanted objects (such as cable terminals and metal chippings) that may cause short circuit are present inside or outside the servo drive.
☐	2	The servo drive and the external regenerative resistor are placed on incombustible objects.
☐	3	The servo motor is installed properly. The motor shaft is connected to the machine securely.
☐	4	The servo motor and the machine it is connected to are in good condition and ready to run.

2.3 Power-on

Switching on the input power supply

The power input terminals are L1C/L2C (control circuit power input terminals) and L1/L2/L3 or R/S/T (main circuit power input terminals).

After the power supply is switched on, if the bus voltage indicator is in the normal state and the keypad displays "reset” → “nr” → "ry" in sequence, the servo drive is ready to run and waits for the S-ON signal.

Note

- To connect the main circuit to a single-phase 220 VAC power supply, use any two of terminals L1, L2, L3.
- If the operation panel keeps displaying "nr" or a fault code, rectify the fault according to the Troubleshooting Guide.

2.4 Jog

Caution

To use the jog function, deactivate the S-ON signal first.

The jog function can be used in trial run to check whether the motor rotates properly, without abnormal vibration or noise generated during rotation. You can activate the jogging function through the keypad, or the software tool.

Jogging through the keypad

- Commissioning Steps

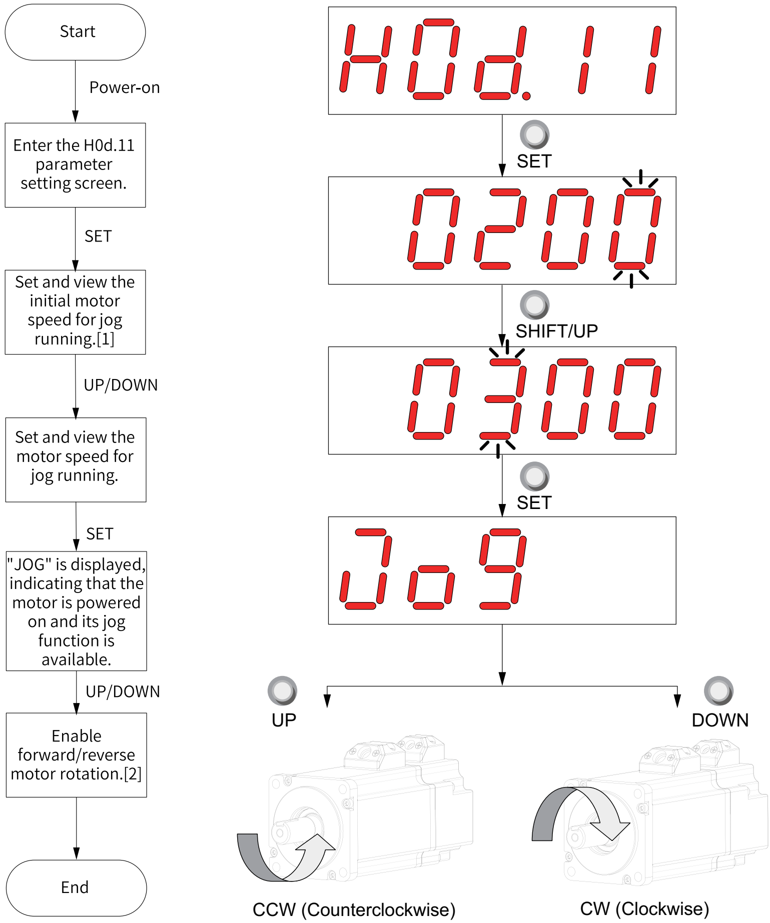


Figure 2-2 Procedure for setting the jog function

Note

- [1] Press the UP or DOWN key to increase or decrease the jog speed. After exiting from the jog mode, the initial speed applies.
- [2] Press the UP or DOWN key to make the motor rotate forwardly or reversely. After you release the key, the motor stops immediately.

- Procedure:

1. Enter the jog mode by setting H0d.11 through the keypad.

   The keypad displays the default jog speed at this moment.

2. Adjust the jog speed through the UP/DOWN key and press the SET key to enter the jog state.

   The keypad displays "JOG".
3. Press the UP/DOWN key to make the motor run forwardly or reversely.
4. Press the MODE key to exit the jog mode and return to the upper-level menu.

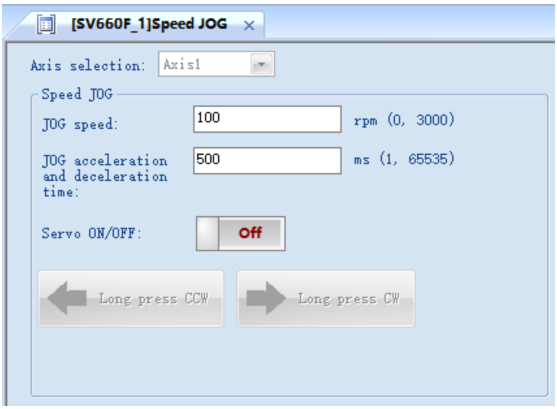
   The jogging speed returns to the default value.

- Exiting the jog running
  Press the MODE key to exit from jog and return to the previous menu.

Jogging through the software tool

Enter the jog interface of the software tool first, and then set the jog speed. After clicking the S-ON button, you can perform forward or reverse jog through the forward/reverse button.

When you close the jog interface to exit from the jog mode, the jogging speed returns to the default value, with previous setpoint abandoned.



2.5 Setting Parameters

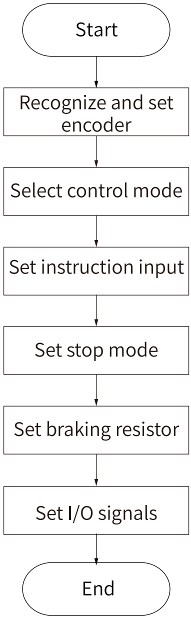


Figure 2-3 General Parameter Setting Flowchart

Identify and set the encoder.

Check whether parameter H00.00 (motor code) agrees with the motor.

Set H02.02 to change the direction of rotation directly.

☆ Related parameters:

See *" H00_en.00" on page 132* for details.

See *" H02_en.02" on page 139* for details.

The change of H02.02 does not affect the pulse output form or the sign (+/-) of monitoring parameter values.

The direction of "forward drive" in overtravel prevention is the same as that defined by H02.02.

Stop mode

The stop modes include Brake setting, Servo stop mode at S-ON OFF, Stop mode at No.2 fault, Stop mode at overtravel, and Stop mode at No.1 fault.

1. Select the stop mode for stop at S-ON OFF.

   ☆ Related parameters:

   See *" H02_en.05" on page 141* for details.

2. Select the stop mode at No.2 fault.

☆ Related parameters:

See " H02_en.06" on page 142 for details.

3. Select the stop mode at overtravel.

☆ Related parameters:

See " H02_en.07" on page 142 for details.

4. Select the stop mode at No.1 fault.

☆ Related parameters:

See " H02_en.08" on page 143 for details.

Brake setting

The brake is used to prevent the motor shaft from moving and lock the position of the motor and the motion part when the drive is in the non-operational status.

Caution

- Use the built-in brake for position-lock purpose only. Do not use this brake for any other purposes (such as braking) other than position lock in the stop state.
- The brake coil has no polarity.
- After the motor stops, switch off the S-ON signal.
- When the motor with brake runs, the brake may generate a click sound, which does not affect its function.
- If instruments such as a magnetic sensor is operating near the motor, flux leakage may occur on the motor shaft end when brake coils are energized (brake released).

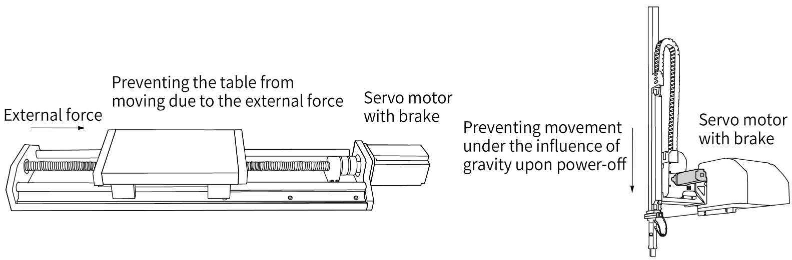


Figure 2-4 Application of the brake

Table 2–2 Brake specifications

Motor Model	Holding Torque (N·m)	Supply Voltage (VDC) ±10%	Rated power (W)	Coil Resistance (Ω)±7%	Exciting Current (A)	Release Time (ms)	Apply Time (ms)	Backlash (°)
MS1H1-05B/10B MS1H4-10B	0.32	24	6.1	94.4	0.25	⩽ 20	⩽ 40	⩽ 1.5
MS1H1-20B/40B MS1H4-20B/40B	1.5		7.6	75.79	0.32	⩽ 20	⩽ 60	⩽ 1.5
MS1H1-75B/10C MS1H4-75B/10C	3.2		10	57.6	0.42	⩽ 40	⩽ 60	⩽ 1
MS1H2-10C/ 15C/20C/25C	8		17.6	32.73	0.73	⩽ 40	⩽ 100	⩽ 1
MS1H2-30C/ 40C/50C	16		24	24	1	⩽ 60	⩽ 120	⩽ 1
MS1H3-85B/ 13C/18C	16		24	24	1	⩽ 60	⩽ 120	⩽ 1
MS1H3-29C/ 44C/55C/75C	50		31	18.58	1.29	⩽ 100	⩽ 200	⩽ 1

Note

- Do not use a holding brake for braking.
- The release time and operation time of the brake depend on the discharge circuit. Be sure to confirm the operation delay of your equipment before use.
- You need to prepare the 24 VDC power supply yourself.

- Brake sequence in normal state

  The brake sequence in the normal state is further divided into the following two types:

  - Standstill: The actual motor speed is lower than 20 RPM.
  - Rotating: The motor speed is equal to or higher than 20 RPM.

- Brake sequence for motor at standstill

  If the servo enabling (S-ON) signal changes from ON to OFF, and the present motor speed is lower than 20 RPM, the servo drive acts according to the brake time sequence in the static state of the motor.

Caution

- After the brake output signal changes from "OFF" to "ON", do not input a position/speed/torque reference within the time defined by H00.61. Otherwise, reference loss or an operation error may occur. (The system defaults to output position/speed reference after the time set in H00.61. When H01.91 bit = 1, the position/speed reference is output after the time set in H02.09.)
- When the motor is used to drive a vertical axis, the motion part may move slightly under the influence of gravity or external force. If the S-ON signal is switched off, the brake output is set to "OFF" immediately when the motor is at standstill. However, within the time defined by H02.10, the motor is still energized, preventing the load from moving under the influence of gravity or external force.

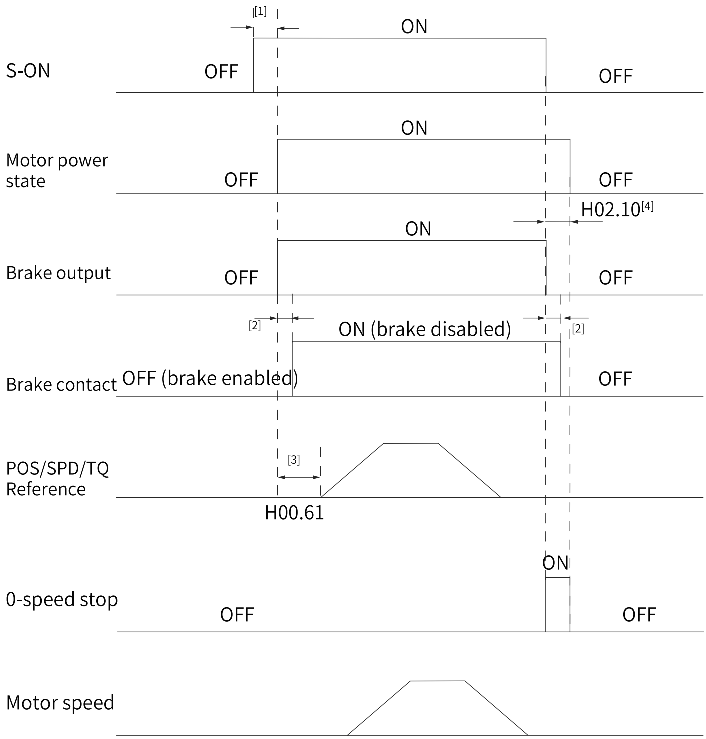


Figure 2-5 Brake sequence for motor at standstill

Note

- [1]: When the S-ON signal is switched on, the brake output is set to "ON" at a delay of about 80ms, with motor being energized at the same time.
- [2]: For delay of brake contactor actions, see *"Table 2–2 " on page 46*.
- [3]: The interval time, starting from the moment when brake output is set to "ON" to the moment when a command is input, must be higher than the setpoint of H00.61. (The system defaults to output position/speed reference after the time set in H00.61. When H01.91 bit = 1, the position/speed reference is output after the time set in H02.09.)
- [4]: When the S-ON signal is switched off with motor at standstill (motor speed lower than 20 rpm), the brake output is set to "OFF". You can set in H02.10 the delay of the motor in entering the de-energized state after the brake output is set to "OFF".

☆ Related parameters:

See *" H02_en.09" on page 143* for details.

See *" H02_en.10" on page 143* for details.

- Brake sequence for motor in the rotation state

  If the S-ON signal changes from ON to OFF, and the present motor speed is equal to or higher than 20 RPM, the servo drive acts according to the brake time sequence in motor rotating state.

Caution

- When the S-ON signal is switched on, do not input a position/speed/torque reference within the time defined by H00.61. Otherwise, reference loss or an operation error may occur. (The system defaults to output position/speed reference after the time set in H00.61. When H01.91 bit = 1, the position/speed reference is output after the time set in H02.09.)
- If the S-ON signal is switched off when the motor is still rotating, the motor enters the "Stop at zero speed" state, but the brake output can be set to "OFF" only when one of the following conditions is met:
  - The motor has decelerated to the value defined by H02.11, but the time defined by H02.12 is not reached.
  - The time defined by H02.12 has been reached, but the motor speed is still higher than the value defined by H02.11.
- The motor is still energized within 50 ms after the brake output changes from "ON" to "OFF". This is to prevent the motion parts from moving under the influence of gravity or external force.

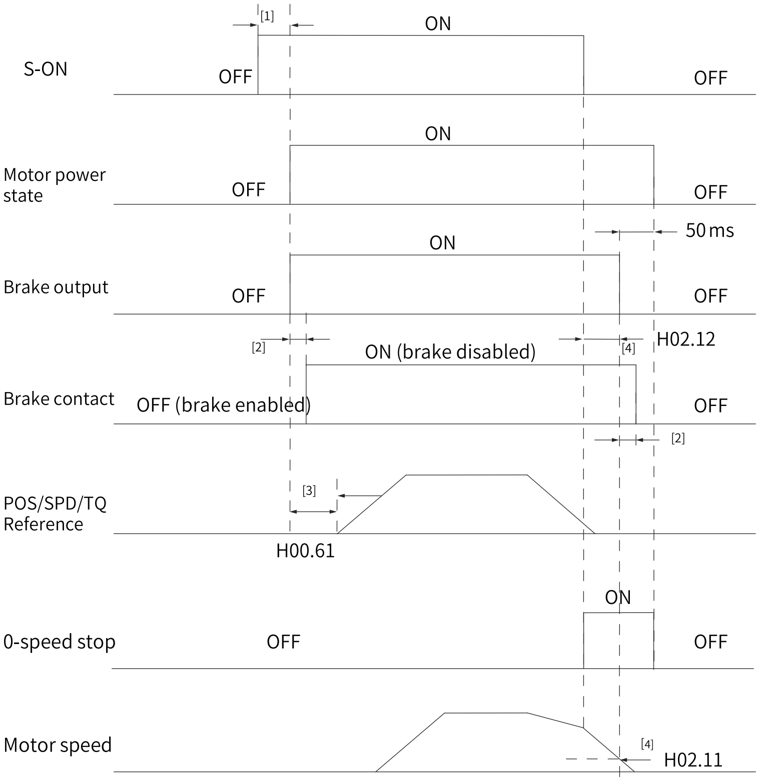


Figure 2-6 Brake sequence for a rotating motor

Note

- [1]: When the S-ON signal is switched on, the brake output is set to "ON" at a delay of about 80ms, with motor being energized at the same time.
- [2]: For delay of brake contactor actions, see *"Table 2–2 " on page 46*.
- [3]: The interval time, starting from the moment when brake output is set to "ON" to the moment when a command is input, must be higher than the setpoint of H00.61. (The system defaults to output position/speed reference after the time set in H00.61. When H01.91 bit = 1, the position/speed reference is output after the time set in H02.09.)
- [4]: When the motor is rotating and S-ON is OFF, the motor enters a non-energized state when the brake outputs OFF after the delay set in H02.12 or the speed feedback is less than H02.11.

☆ Related parameters:

See *" H02_en.11" on page 144* for details.

See " H02_en.12" on page 144 for details.

- Brake sequence in the fault state
  Based on stop mode, servo faults are classified into class 1 (No.1) faults and class 2 (No.2) faults. For details, see the Troubleshooting Guide. The brake sequences in the fault state are further divided into the following two types:
  - In case of No. 1 faults:
    The condition for brake output is the same as the brake sequence for the motor in the rotation state. Which is to say: The brake output can be set to "OFF" only when any one of the following conditions is met:
    - The motor has decelerated to the value defined by H02.11, but the time defined by H02.12 is not reached.
    - The time defined by H02.12 has been reached, but the motor speed is still higher than the value defined by H02.11.
  - In case of No. 2 faults:
    When a No. 2 fault occurs and the brake is enabled, the stop mode is forced to "Stop at zero speed, keeping dynamic braking status".

    In this case, the servo motor stops at zero speed first. When the actual motor speed is lower than 20 RPM, the brake output signal immediately becomes OFF, but the motor is still in the energized state within the time defined by H02.10.

Regenerative resistor setting

When the motor torque direction is opposite to the direction of rotation, the energy is fed back to the servo drive from the motor side, leading to bus voltage rise. Once the bus voltage rises to the braking threshold, the excessive energy must be consumed by a regenerative resistor. Otherwise, the servo drive will be damaged. The regenerative resistor can be a built-in or an external one. The internal and built-in regenerative resistors must not be used together. Specifications of the regenerative resistor are as follows.

Table 2–3 Specifications of the regenerative resistor

Servo Drive Model	Specifications of Built-in Regenerative Resistor			External regenerative resistor Min. Allowable Resistance (Ω) (H02.21)
	Resistance (Ω)	Power (Pr) (W)	Processing Power (Pa) (W)	
SV660FS1R6I	-	-	-	50
SV660FS2R8I	-	-	-	45
SV660FS5R5I	50	50	25	40

Servo Drive Model	Specifications of Built-in Regenerative Resistor			External regenerative resistor Min. Allowable Resistance (Ω) (H02.21)
	Resistance (Ω)	Power (Pr) (W)	Processing Power (Pa) (W)	
SV660FS7R6I	25	80	40	20
SV660FS012I				15
SV660FT3R5I	100	80	40	80
SV660FT5R4I	100	80	40	60
SV660FT8R4I	50	80	40	45
SV660FT012I				40
SV660FT017I	35	100	50	35
SV660FT021I				25
SV660FT026I				

Note

- The built-in braking resistor is not available in standard S1R6 or S2R8 models. You can install an external regenerative resistor as needed or contact Inovance to order customized S1R6 and S2R8 models that carry the built-in regenerative resistor.
- The processing power (P_a) of the built-in regenerative resistor is affected by the ambient temperature and actual load rate of the drive.

- Without external load torque

  The kinetic energy generated upon braking of a reciprocating motor is converted into electric energy that fed back to the bus capacitor. When the bus voltage rises above the braking voltage threshold, the regenerative resistor starts consuming the excessive energy fed back by the motor. The following figure shows the motor speed curve in no-load operation from 3000 rpm to a standstill.

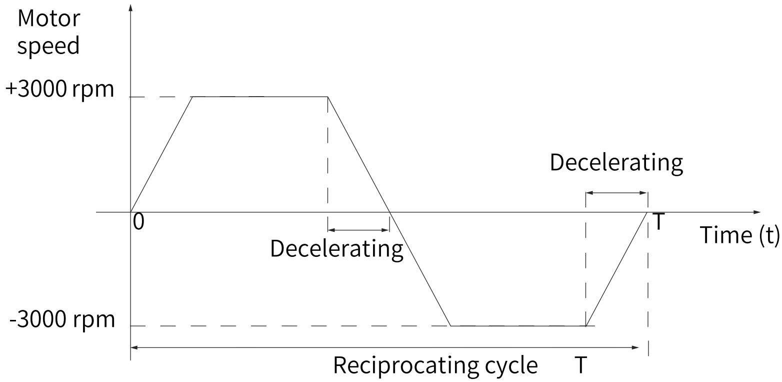


Figure 2-7 Example of motor speed curve (without external load torque)

- Energy calculation

  The built-in braking resistor is not available in SV660FS1R6I and SV660FS2R8I models. The energy that can be absorbed by a capacitor is described in section "Design of Peripherals" in SV660F Series Servo Drive Hardware Guide. An external regenerative resistor is needed when the rotational energy of the motor and the load exceeds the values listed in the following table.

Drive Model	Regenerative Energy That Can Be Absorbed (W)	Remarks
SV660FS1R6I	13.15	The input voltage of the main circuit power supply is 220 VAC.
SV660FS2R8I	26.29	

  - The following table shows the energy generated by a 220 V motor in decelerating from the rated speed to a standstill during no-load operation.

Capacity (kW)	Servo Motor Model MS1H*-*******-*****	Rotor Inertia J (10^{-4} kgm ^{2})	EO Generated During Decelerating from Rated Speed to a Standstill (J)	Max. Braking Energy Absorbed by Capacitor E C (J)
0.05	MS1H1-05B30CB-A330Z MS1H1-05B30CB-A332Z	0.026 (0.028)	0.13 (0.14)	7.86
0.1	MS1H1-10B30CB-A330Z MS1H1-10B30CB-A332Z	0.041 (0.043)	0.20 (0.21)	
0.2	MS1H1-20B30CB-A331R MS1H1-20B30CB-A334R	0.0938 (0.106)	0.46 (0.52)	
0.4	MS1H1-40B30CB-A331R MS1H1-40B30CB-A334R	0.145 (0.157)	0.72 (0.78)	15.72
0.55	MS1H1-55B30CB-A331R	0.55	2.72	22.39
0.75	MS1H1-75B30CB-A331R MS1H1-75B30CB-A334R	0.68 (0.71)	3.36 (3.51)	22.39

Capacity (kW)	Servo Motor Model MS1H*-*******-*****	Rotor Inertia J (10^{-4} kgm ^{2})	EO Generated During Decelerating from Rated Speed to a Standstill (J)	Max. Braking Energy Absorbed by Capacitor E C (J)
1	MS1H1-10C30CB-A331R MS1H1-10C30CB-A334R	0.82 (0.87)	4.05 (4.30)	32.39
1	MS1H2-10C30CB-A331R MS1H2-10C30CB-A334R	1.78 (2.6)	8.80 (12.86)	32.39
1.5	MS1H2-15C30CB-A331R MS1H2-15C30CB-A334R	2.35 (3.17)	11.6 (15.68)	32.39
2.0	MS1H2-20C30CB-A331R MS1H2-20C30CB-A334R	2.92 (3.74)	14.44 (18.49)	32.39
0.85	MS1H3-85B15CB-A331R MS1H3-85B15CB-A334R	13.56 (15.8)	16.45 (17.3)	32.39
1.3	MS1H3-13C15CB-A331R MS1H3-13C15CB-A334R	19.25 (21.5)	22 (22.86)	32.39
0.1	MS1H4-10B30CB-A330Z MS1H4-10B30CB-A332Z	0.102 (0.104)	0.50 (0.51)	7.86
0.2	MS1H4-20B30CB-A331R MS1H4-20B30CB-A334R	0.22 (0.23)	1.09 (1.14)	7.86
0.4	MS1H4-40B30CB-A331R MS1H4-40B30CB-A334R	0.43 (0.44)	2.13 (2.18)	15.72
0.55	MS1H4-55B30CB-A331R	1.12	5.54	22.39
0.75	MS1H4-75B30CB-A331R MS1H4-75B30CB-A334R	1.46 (1.51)	7.22 (7.47)	22.39
1.0	MS1H4-10C30CBA331R MS1H4-10C30CBA334R	1.87 (1.97)	9.25 (9.74)	32.39

- The following table shows the energy generated by a 380V motor in decelerating from the rated speed to a standstill during no-load operation.

– Capacity (kW)	Servo Motor Model MS1H*-*******-*****	Rotor Inertia J (10^{-4} kgm ^{2})	Braking Energy E O Generated During Decelerating from Rated Speed to a Standstill (J)	Max. Braking Energy Absorbed by Capacitor E C (J)
1.0	MS1H2-10C30CD-A331R MS1H2-10C30CD-A334R	1.78 (2.6)	8.8 (12.86)	28.18
1.5	MS1H2-15C30CD-A331R MS1H2-15C30CD-A334R	2.35 (3.17)	11.62 (15.68)	34.22
2.0	MS1H2-20C30CD-A331R MS1H2-20C30CD-A334R	2.92 (3.74)	14.44 (18.49)	50.32
2.5	MS1H2-25C30CD-A331R MS1H2-25C30CD-A334R	3.49 (4.3)	17.26 (21.26)	50.32
3.0	MS1H2-30C30CD-A331R MS1H2-30C30CD-A334R	6.4 (9.38)	31.65 (46.38)	50.32
4.0	MS1H2-40C30CD-A331R MS1H2-40C30CD-A334R	9 (11.98)	44.51 (59.24)	82.53

– Capacity (kW)	Servo Motor Model MS1H*-*******-*****	Rotor Inertia J (10^{-4} kgm ^{2})	Braking Energy E O Generated During Decelerating from Rated Speed to a Standstill (J)	Max. Braking Energy Absorbed by Capacitor E C (J)
5.0	MS1H2-50C30CD-A331R MS1H2-50C30CD-A334R	11.6 (14.58)	57.36 (72.10)	100.64
0.85	MS1H3-85B15CD-A331R MS1H3-85B15CD-A334R	13.56 (15.8)	16.76 (19.53)	28.18
1.3	MS1H3-13C15CD-A331R MS1H3-13C15CD-A334R	19.25 (21.5)	23.8 (26.58)	34.22
1.8	MS1H3-18C15CD-A331R MS1H3-18C15CD-A334R	24.9 (27.2)	30.78 (33.63)	50.32
2.9	MS1H3-29C15CD-A331R MS1H3-29C15CD-A334R	44.7 (52.35)	55.26 (64.72)	50.32
4.4	MS1H3-44C15CD-A331R MS1H3-44C15CD-A334R	64.9 (72.55)	80.23 (89.69)	82.53
5.5	MS1H3-55C15CD-A331R MS1H3-55C15CD-A334R	86.9 (94.55)	107.43 (116.89)	100.64
7.5	MS1H3-75C15CD-A331R MS1H3-75C15CD-A334R	127.5 (135.15)	157.62 (167.08)	100.64

Note

Values inside the parentheses "()" are for the motor with a brake.

- Regenerative resistor selection

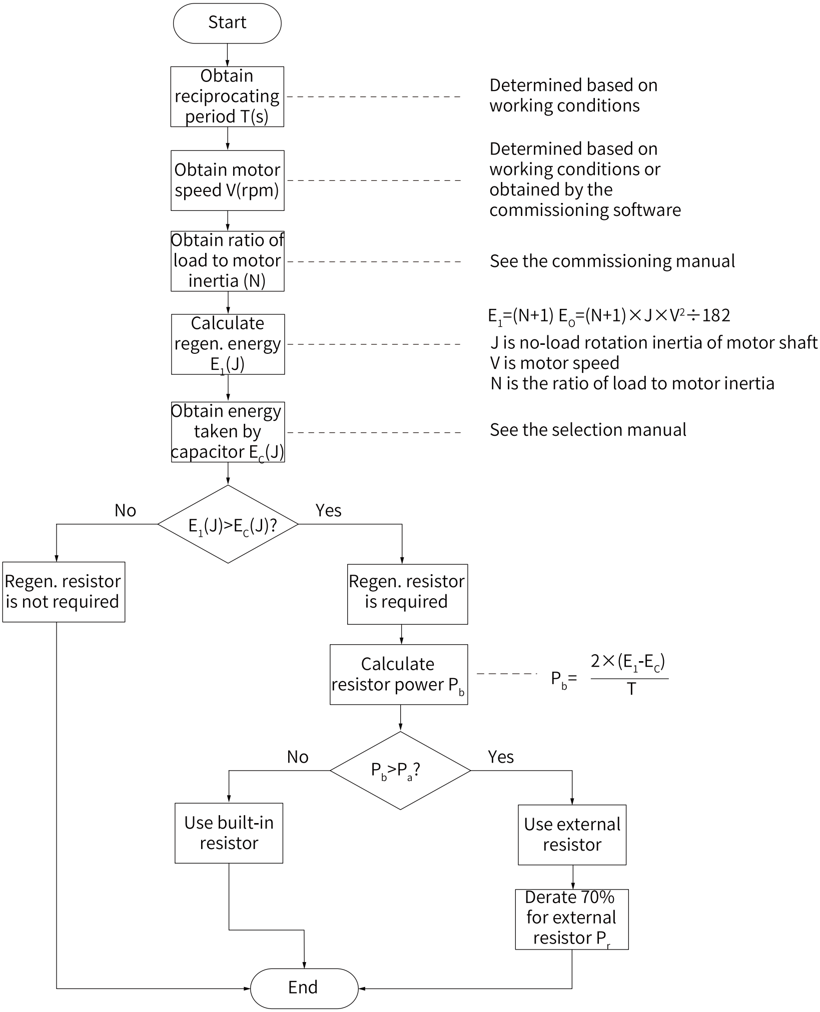


Figure 2-8 Flowchart for selecting the regenerative resistor

Note

- Take the process in which the motor decelerates from 3000 RPM to 0 RPM as an example. Assume that the load inertia is (N x Motor inertia), then the braking energy is (N + 1) x E_O when the motor decelerates from 3000 RPM to 0 RPM. The energy consumed by the braking resistor is (N + 1) x E_O - E_C (E_C represents the energy absorbed by the capacitor). Suppose the reciprocating cycle is T, then the power of the regenerative resistor needed is 2 x [(N + 1) x E_O - E_C]/T. For values of E_O and E_C, see Calculated Energy Data in the Commissioning Guide.
- Determine whether to use the regenerative resistor according to the preceding figure and select a built-in or an external regenerative resistor as needed. Then, set H02.25 accordingly.
- The resistor with aluminum case is recommended.

Take the H1 series 750 W model as an example. Assume that the reciprocating cycle (T) is 2s, the maximum speed is 3000 RPM, and the load inertia is (4 x Motor inertia), then the required power of the braking resistor is as follows:

$$P_b = \frac{2\times[(N+1)\times E_O - E_C]}{T} = \frac{2\times[(4+1)\times 6.824-32.422]}{2} = 1.698W$$

The calculated result is smaller than the processing capacity (P_a is 40 W) of the built-in braking resistor, so a built-in braking resistor is enough.

If the inertia ratio in the preceding example is changed to 10 x motor inertia, and other conditions remain the same, the power of the regenerative resistor required will be as follows:

$$P_b = \frac{2\times[(N+1)\times E_O - E_C]}{T} = \frac{2\times[(10+1)\times 6.824-32.422]}{2} = 42.642W$$

The calculation result is larger than the processing capacity (P_a is 40 W) of the built-in braking resistor, so an external braking resistor is required. The recommended power of the external braking resistor is P_b ÷ (1 - 70%) = 142.14W.

☆ Related parameters:

See *" H02_en.21" on page 145* for details.

See *" H02_en.24" on page 147* for details.

See *" H02_en.25" on page 148* for details.

See *" H02_en.26" on page 148* for details.

See *" H02_en.27" on page 148* for details.

- Using an external regenerative resistor

When P_b is greater than P_a, use an external braking resistor. Set H02.25 to 1 or 2 based on the cooling mode of the braking resistor.

Use the external braking resistor with 70% derated, that is, P_r equals to P_b/(1 - 70%), and ensure the resistance of the braking resistor is higher than the minimum allowed resistance allowed by the servo drive. Remove the jumper bar between terminals P⊕ and D, and connect the external regenerative resistor between terminals P⊕ and C.

See section "Wiring of the Regenerative Resistor" in SV660F Series Servo Drive Hardware Guide for the wiring diagram of the external regenerative resistor and the specifications of the jumper bar. Set H02.25 to 1 or 2 based on the cooling mode of the braking resistor.

☆ Related parameters:

See *" H02_en.21" on page 145* for details.

See *" H02_en.26" on page 148* for details.

See *" H02_en.27" on page 148* for details.

Caution

- Set the power (H02.26) and resistance (H02.27) of the external regenerative resistor.
- Ensure the resistance of the external regenerative resistor is higher than or equal to the permissible minimum resistance.
- When the regenerative resistor is used at its rated power rather than the processing power (average value) in environments within the specified temperature range, the temperature of the resistor will rise to above 120°C under continuous braking. To ensure safety, cool the resistor down through forced air cooling, or use the resistor with thermal switch. For the load characteristics of the regenerative resistor, consult with the manufacturer.

Set the heat dissipation coefficient based on the heat dissipation condition of the external regenerative resistor.

☆ Related parameters:

See *" H02_en.24" on page 147* for details.

Note

Higher resistor heat dissipation coefficient indicates higher braking efficiency.

- Using the built-in braking resistor
  When P_b is smaller than P_a and E_1 is greater than E_C, use the built-in braking resistor. In this case, set H02.25 to 0.

  When using the built-in regenerative resistor, connect terminals P⊕ and D with a jumper bar.

- Regenerative resistor not needed
  When E_1 is smaller than E_C, no braking resistor is required because the braking energy can be absorbed by the bus capacitor. In this case, set H02.25 to 3.

- External load torque applied, motor in generating state
  When the motor direction of rotation is the same with the shaft direction of rotation, the motor outputs energy to the outside. In some applications where the motor direction of rotation is opposite to the shaft direction of rotation, the motor is in the generating state and feeds the electric energy back to the servo drive.

  When the load is in the generating state continuously, it is recommended to adopt the common DC bus mode.

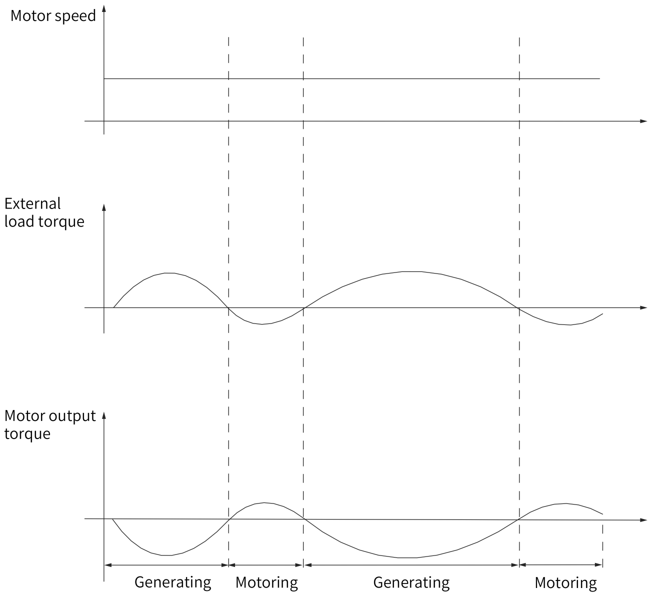


Figure 2-9 Example of the curve with external load torque

Take H1 series 750 W models (rated torque: 2.39 N·m) as an example. When the external load torque is 60% of the rated torque and the motor speed reaches 1500 RPM, the power fed back to the drive is (60% x 2.39) x (1500 x 2π/60) = 225 W. As the braking resistor needs to be derated by 70%, the power of the external braking resistor is 225/(1 - 70%) = 750 W, with resistance being 50 Ω.

Input/Output signal setting

The input/output signal setting is the same as "DI/DO setting mode selection".

See *"6.2 DIDO Function Assignment" on page 488* for details.

2.6 Drive Operation

Switch on the S-ON signal.

When the servo drive is ready to run, the keypad displays "run". If there is no reference input at this moment, the motor does not rotate and stays locked. After a reference is input, the motor starts rotating.

Table 2–4 Checklist before operating the drive

Log	No.	Description
☐	1	During initial operation, set a proper command to make the motor run at low speed and check whether the motor rotates properly.
☐	2	Observe whether the motor rotating direction is correct. If the direction of rotation is opposite to the expected direction, check the reference signal input and the reference direction setting signal.
☐	3	If the motor rotates in the correct direction, you can view the actual speed in H0b.00 and the average load rate in H0b.12 through the keypad or the software tool.
☐	4	After checking preceding conditions, adjust related parameters to make the motor operate as desired.
☐	5	Commission the drive according to Chapter "Adjustment".

Power-on sequence diagram

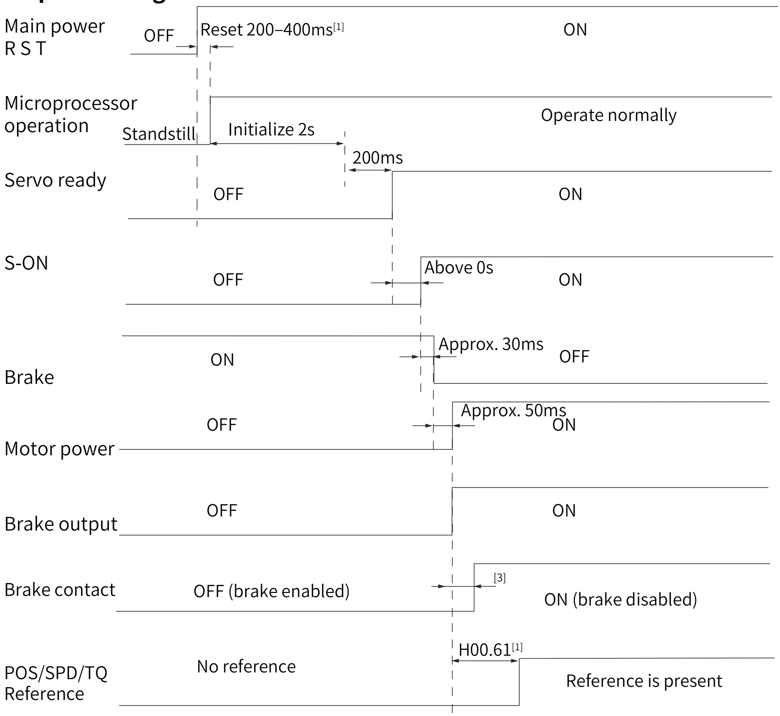


Figure 2-10 Power-on sequence diagram

Note

- [1] The reset time is determined by the setup time of the +5V power supply of the microprocessor.
- [2] The dynamic brake is included in the standard configuration.
- [3] For delay of brake contactor actions, see *"Table 2–2 " on page 46*.
- [4] If the brake is not used, H00.61 is invalid. (The system defaults to output position/speed reference after the time set in H00.61. When H01.91 bit = 1, the position/speed reference is output after the time set in H02.09.)

Sequence diagram for stop at warning or fault

- No. 1 fault: Coast to stop, keeping de-energized status

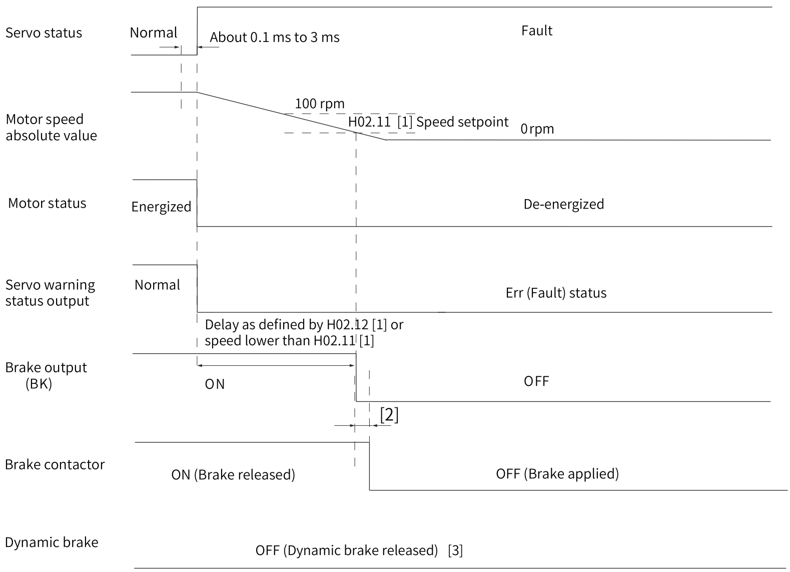


Figure 2-11 Sequence of "Coast to stop, keeping de-energized state" at No. 1 fault

Note

- [1] If the brake is not used, H02.11 and H02.12 are ineffective.
- [2] For delay of brake contactor actions, see *"Table 2–2 " on page 46*.
- [3] The dynamic brake is included in the standard configuration.

- No. 1 fault: Dynamic braking stop, keeping de-energized state

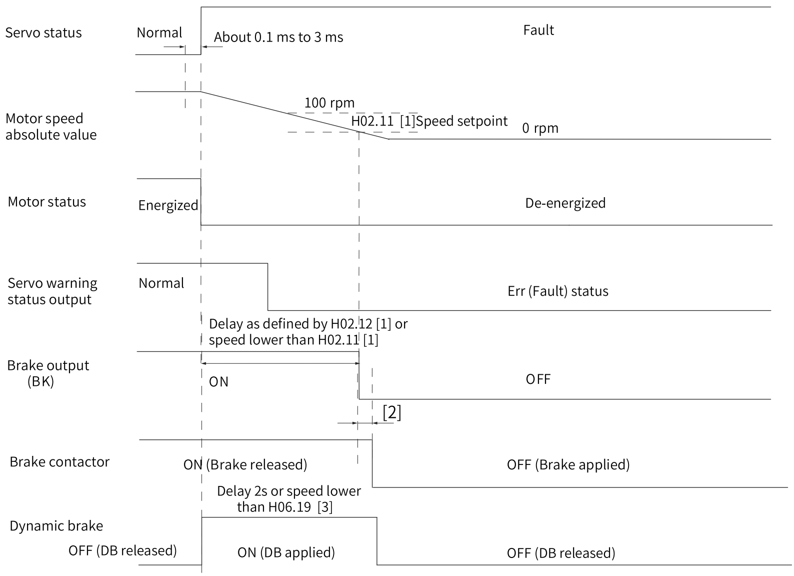


Figure 2-12 Sequence of "Dynamic braking stop, keeping de-energized state" at No. 1 fault

Note

- [1] If the brake is not used, H02.11 and H02.12 are ineffective.
- [2] For delay of brake contactor actions, see *"Table 2–2 " on page 46*.
- [3] The dynamic brake is included in the standard configuration.

- No. 1 fault: Dynamic braking stop, keeping dynamic braking state

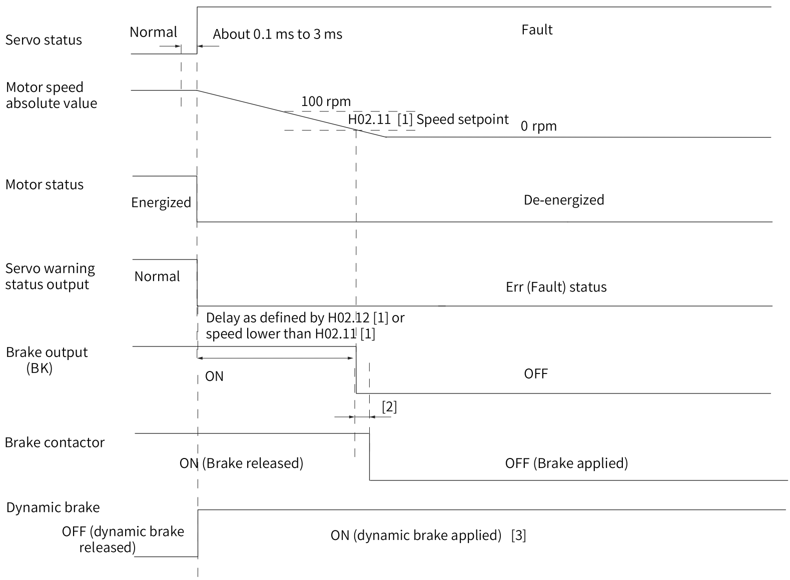


Figure 2-13 Sequence of "Dynamic braking stop, keeping dynamic braking state" at No. 1 fault

Note

- [1] If the brake is not used, H02.11 and H02.12 are ineffective.
- [2] For delay of brake contactor actions, see *"Table 2–2 " on page 46*.
- [3] The dynamic brake is included in the standard configuration.

- No. 2 fault (without brake): Coast to stop, keeping de-energized state

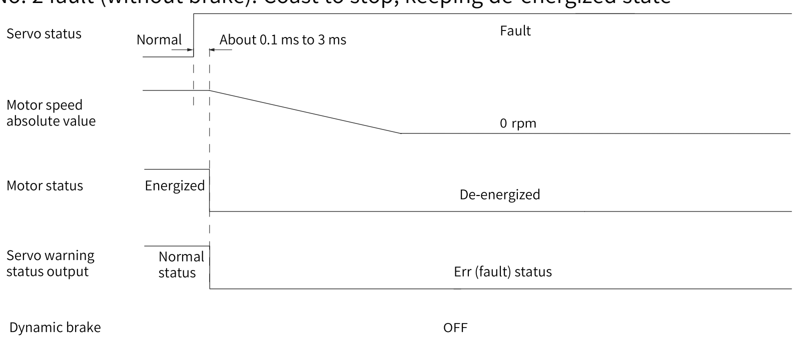


Figure 2-14 Sequence of "Coast to stop, keeping de-energized state" at No. 2 fault

- No. 2 fault (without brake): Stop at zero speed, keeping de-energized status

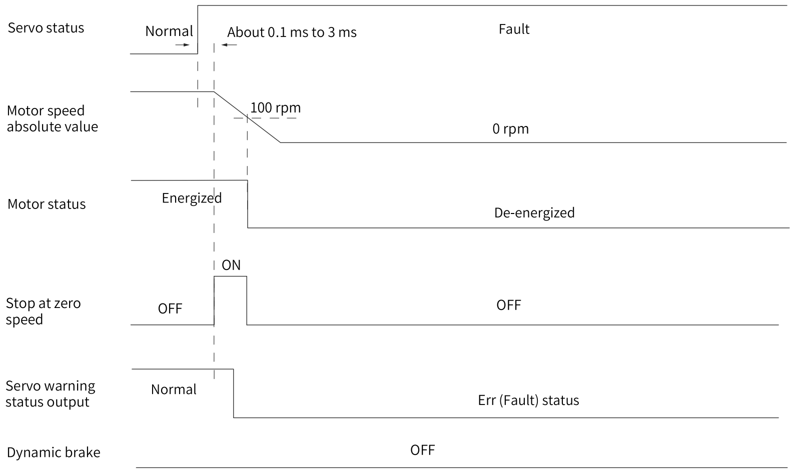


Figure 2-15 Sequence of "Stop at zero speed, keeping de-energized state" at No. 2 fault (without brake)

- No. 2 fault (without brake): Stop at zero speed, keeping dynamic braking state

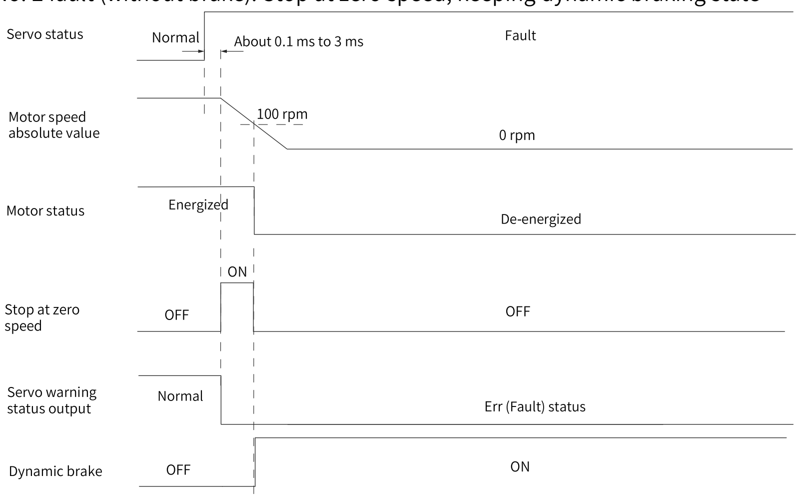


Figure 2-16 Sequence of "Stop at zero speed, keeping dynamic braking state" at No. 2 fault (without brake)

- No. 2 fault (without brake): Dynamic braking stop, keeping dynamic braking state

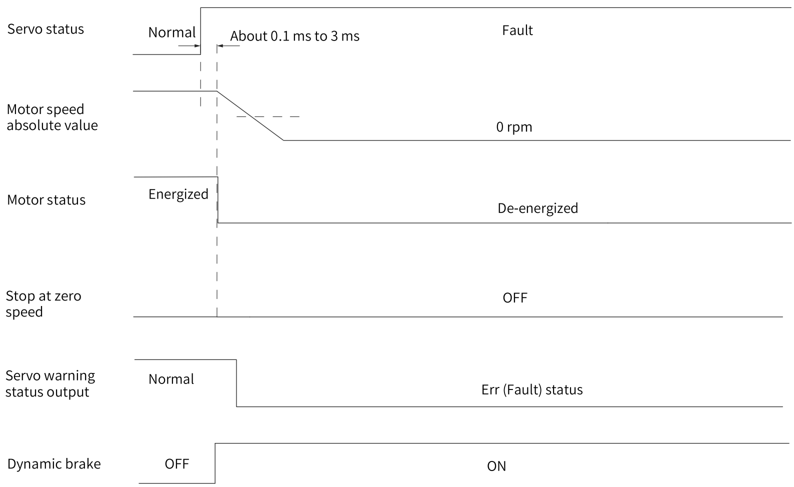


Figure 2-17 Sequence of "Dynamic braking stop, keeping dynamic braking state" at No. 2 fault (without brake)

- No. 2 fault (without brake): Dynamic braking stop, keeping de-energized state

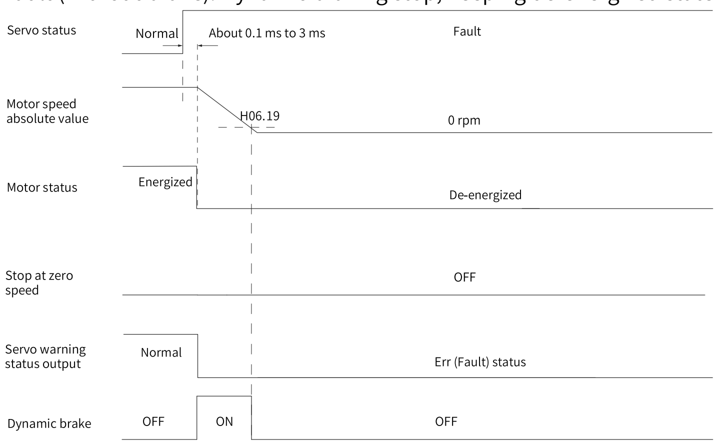


Figure 2-18 Sequence of "Dynamic braking stop, keeping de-energized state" at No. 2 fault (without brake)

- No. 2 fault (with brake): Stop at zero speed, keeping dynamic braking status

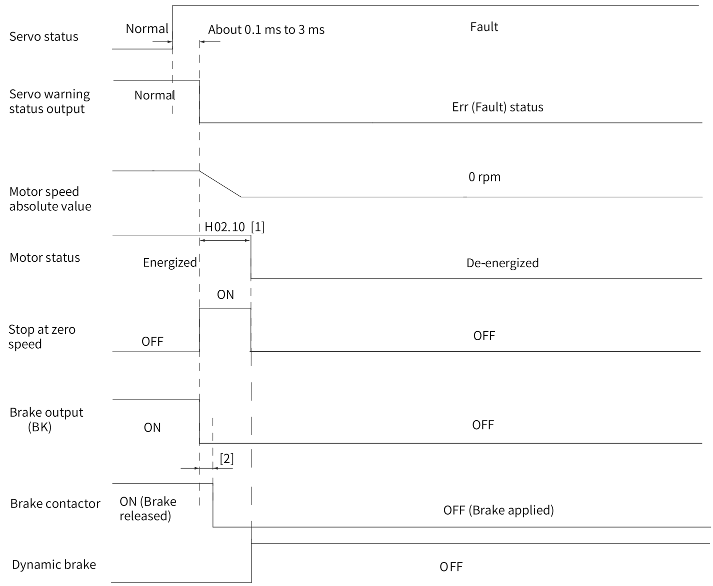


Figure 2-19 Sequence of "Stop at zero speed, keeping dynamic braking state" at No. 2 fault (with brake)

Note

- [1]: If the brake is not used, H02.10 is invalid.
- [2] For delay of brake contactor actions, see *"Table 2–2 " on page 46*.

- When a No. 3 warning occurs on the servo drive, such as E900.0 (DI emergency braking), E950.0 (Positive limit switch warning), and E952.0 (Negative limit switch warning), the servo drive stops according to *"Figure 2–20 Sequence for warnings that cause stop" on page 67*.
- Warnings that cause stop: Stop at zero speed, keeping position lock status

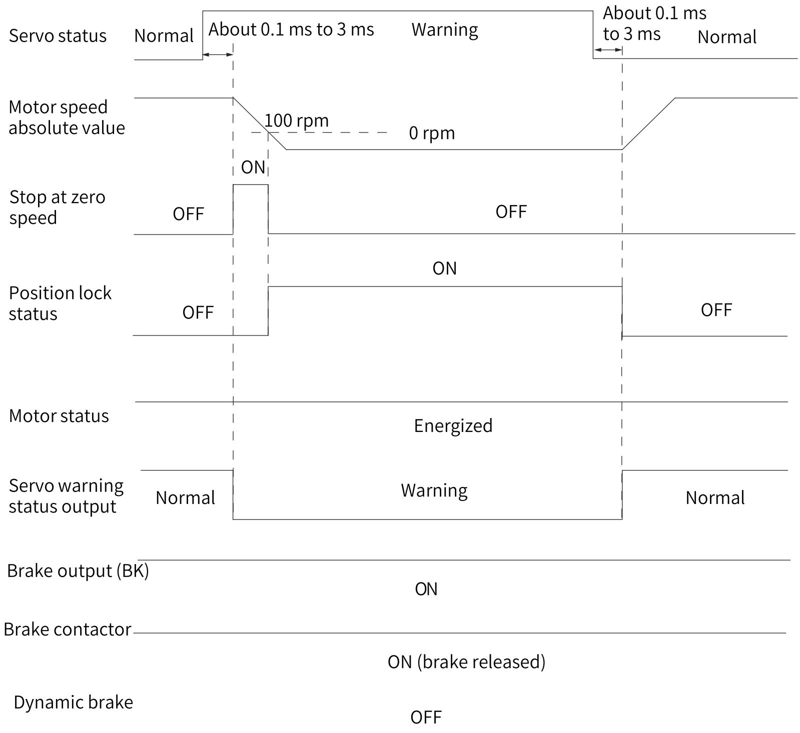


Figure 2-20 Sequence for warnings that cause stop

The other warnings do not affect the operation state of the drive. The sequence diagram for these warnings is shown in *"Figure 2–21 Sequence for warnings that do not cause stop" on page 68*.

- Warnings that do not cause stop

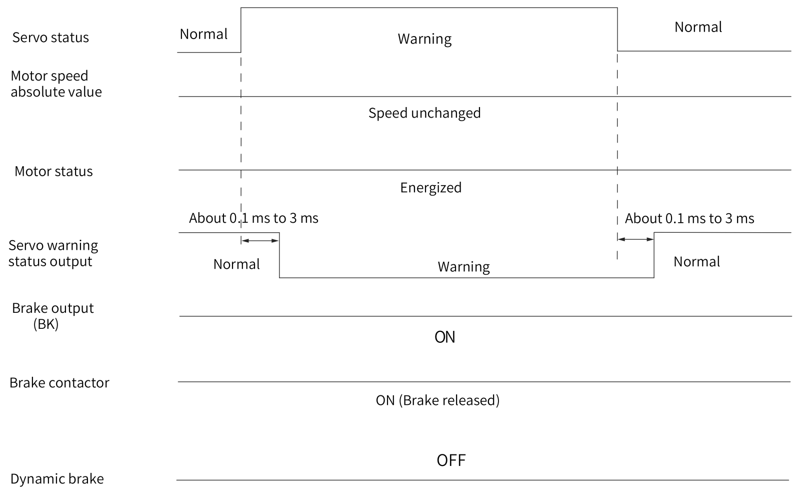


Figure 2-21 Sequence for warnings that do not cause stop

- Fault reset

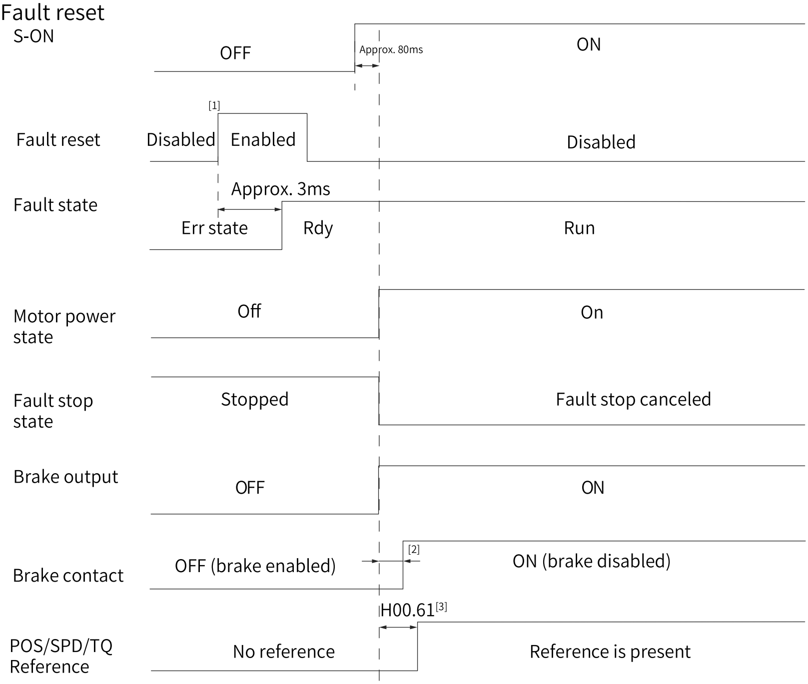


Figure 2-22 Sequence for fault reset

Note

- [1] The DI signal used for fault reset (FunIN.2: ALM-RST) is edge triggered.
- [2] For delay of brake contactor actions, see *"Table 2–2 " on page 46*.
- [3] If the brake is not used, H00.61 is invalid. (The system defaults to output position/speed reference after the time set in H00.61. When H01.91 bit = 1, the position/speed reference is output after the time set in H02.09.)

2.7 Servo OFF

Five type of stop modes are available for the servo drive: coast to stop, stop at zero speed, ramp to stop, stop at emergency-stop torque, and dynamic braking stop, along with three kinds of stop status: de-energized, position lock, and dynamic braking. See the following table for details.

Table 2–5 Comparison of the stop modes

Stop Mode	Description	Feature
Coast to stop	The motor is de-energized and coasts to 0 RPM. The deceleration time is affected by the mechanical inertia and mechanical friction.	This mode features smooth and slow deceleration with small mechanical shock.
Stop at zero speed	The motor decelerates to 0 rpm immediately and stops.	Features quick deceleration with obvious mechanical shock.
Ramp to stop	The motor decelerates to 0 rpm smoothly upon position/speed/torque reference input.	Features smooth and controllable deceleration with small mechanical shock.
Stop at emergency-stop torque	The servo drive outputs reverse braking torque to stop the motor.	Features quick deceleration with obvious mechanical shock.
Dynamic braking	The servo motor is in the dynamic braking status.	Features quick deceleration with obvious mechanical shock.

Table 2–6 Comparison of the stop status

Stop Status	Description
De-energized	The motor is de-energized and the motor shaft can be rotated freely after the motor stops rotating.
Position Lock	The motor shaft is locked and cannot be rotated freely after the motor stops rotating.
Dynamic Braking	The motor is de-energized and the motor shaft can be rotated freely after the motor stops rotating.

The stop events can be divided into the following types: stop at S-ON OFF, stop at fault, stop at overtravel, emergency stop, quick stop, and halt. See the following descriptions for details.

Stop at S-ON OFF

Deactivate the S-ON signal through communication to make the drive stop according to the stop mode at S-ON OFF.

☆ Related parameters:

See the description of H02.05.

Fault reaction

The stop mode varies according to the fault type. For fault classification, see SV660F Series Servo Drive Troubleshooting Guide.

☆ Related parameters:

See *" H02_en.06" on page 142* for details.

See *" H02_en.08" on page 143* for details.

Stop at overtravel

★ Definition of terms:

- "Overtravel": The mechanical motion exceeds the designed range of safe movement.
- Stop at overtravel: When a motion part moves beyond the range of safe movement, the limit switch outputs a level change signal, and the servo drive forcibly stops the motor.

☆ Related parameters:

See *" H02_en.07" on page 142* for details.

When overtravel occurs on a motor used to drive a vertical axis, the workpiece may fall. To prevent the risk of falling, set H02.07 (Stop mode at overtravel) to 1. When the workpiece moves linearly, install the limit switch to prevent mechanical damage. When overtravel occurs, input a reverse running command to make the motor (workpiece) run in the opposite direction.

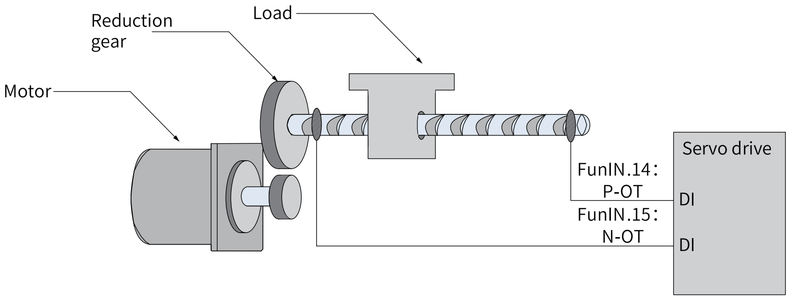


Figure 2-23 Installation of limit switches

To use the limit switches, assign FunIN.14 (P-OT, positive limit switch) and FunIN.15 (N-OT, negative limit switch) to two DIs of the servo drive and set the active logic of these DIs. This is to enable the servo drive to receive the level signals input from the limit switches. The servo drive determines whether to enable the limit switch function based on the state of the DI terminal level.

☆ Related parameters:

Code	Name	Function Name	Description
FunIN.14	P-OT	Positive limit switch	When the machine moves beyond the specified range, overtravel prevention applies. Inactive: Forward drive permitted Active: Forward drive inhibited
FunIN.15	N-OT	Negative limit switch	When the machine moves beyond the specified range, overtravel prevention applies. Inactive: Reverse drive permitted Active: Reverse drive inhibited

Emergency stop

The servo drive supports two emergency stop modes:

- Using DI function 34: FunIN.34 (EmergencyStop)
- Using the auxiliary function: emergency stop (H0d.05)

When emergency stop is enabled, the motor stops according to the mode specified by the parameter H02.18.

☆ Related parameters:

Code	Name	Function Name	Description
FunIN.34	Emergency Stop	Braking	Inactive: Current operating state unaffected Active: Stop quickly as defined by H02.18, keeping position lock status, with E900.0 (DI emergency braking) reported.

☆ Related parameters:

See *" H02_en.05" on page 141* for details.

See *" H02_en.15" on page 144* for details.

See *" H02_en.18" on page 145* for details.

3 Adjustment

3.1 Overview

The servo drive must drive the motor as quick and accurate as possible to follow the commands from the host controller or internal setting. Gain adjustment needs to be performed to meet such requirement.

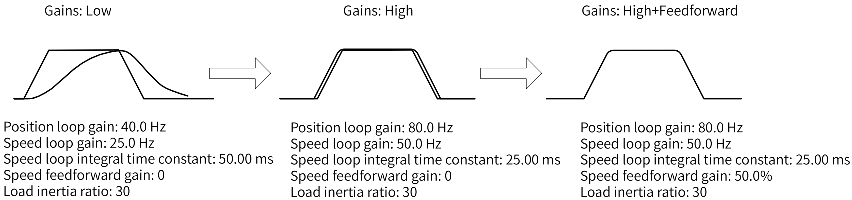


Figure 3-1 Example of gain tuning

The gain is defined by a combination of multiple parameters that affect each other. Such parameters include the position loop gain, speed loop gain, filter and load moment of inertia ratio. The values of these parameters must be balanced against each other during gain tuning.

Note

Before gain tuning, perform a trial run through jogging to ensure the motor operates properly.

The following figure shows the general flowchart for gain tuning.

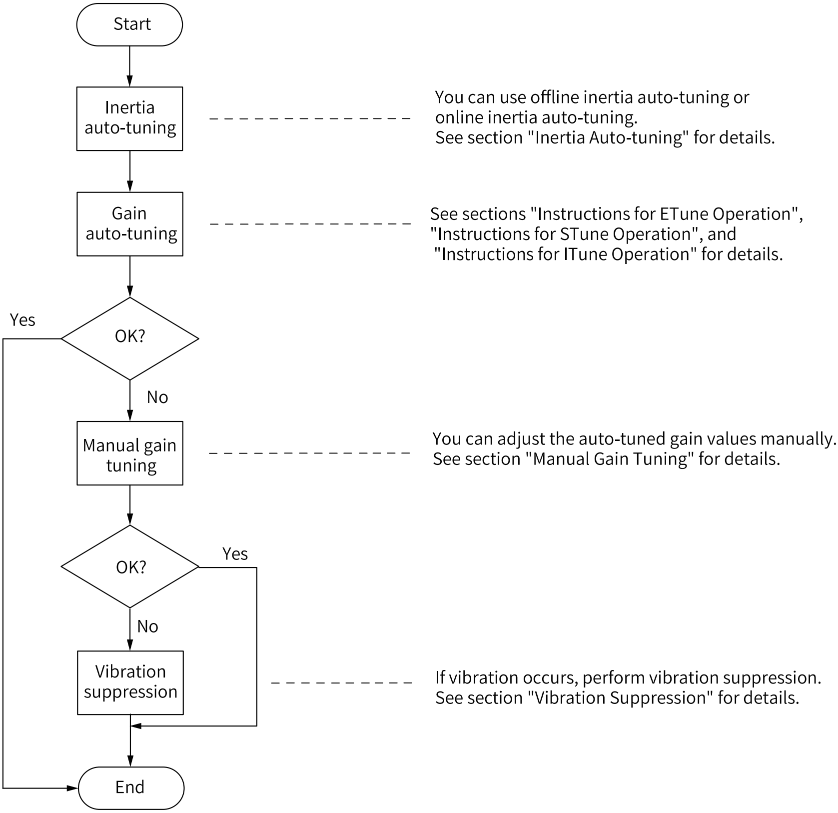


Figure 3-2 Steps

Table 3–1 Description of gain tuning

Steps			Description	Reference
1	Inertia Identification	Offline	The servo drive calculates the load inertia ratio automatically through inertia auto-tuning.	*"3.2.1 Offline Inertia Auto-tuning" on page 78*
		Online	The host controller sends a command to make the motor rotate, and the servo drive calculates the load inertia ratio in real time.	*"3.2.2 Online Inertia Auto-tuning" on page 79*
2	Gain auto-tuning		The servo drive generates a group of gain parameters based on the correct inertia ratio.	*"3.3.1 ETune" on page 81*, *"3.3.2 STune" on page 88* and *"3.3.3 ITune" on page 96*
3	Manual gain adjustment	Basic gains	If the auto-tuned gain values fail to deliver desired performance, fine-tune the gains manually to improve the performance.	*"3.4.1 Basic Parameters" on page 97*
		Reference filter	Smoothens the position, speed, and torque references.	*"3.4.3 Position Reference Filter" on page 106*
		Feedforward gain	Improves the follow-up behavior.	*"3.4.4 Feedforward gain" on page 106*
		Pseudo differential regulator	Adjusts the speed loop control mode to improve the anti-interference capability at low frequency range.	*"3.4.5 PDFF Control" on page 109*
		Torque disturbance observer	Improves the resistance against torque disturbance.	*"3.4.6 Torque disturbance observer" on page 111*

Steps			Description	Reference
4	Vibration suppression	Mechanical resonance	Suppresses mechanical resonance through the notch.	*"3.7.2 Mechanical Resonance Suppression" on page 124*
		Low-frequency resonance	Activate the filter used to suppress low-frequency resonance.	*"3.7.1 Low-Frequency Resonance Suppression at the Mechanical End" on page 122*

3.2 Inertia Identification

The load inertia ratio (H08.15) is calculated through the following formula:

$$\text{Load inertia ratio} = \frac{\text{Total mechnical load moment of inertia}}{\text{Motor moment of inertia}}$$

The load inertia ratio is a critical parameter of the servo system. A correct load inertia ratio facilitates commissioning.

You can set the load inertia ratio manually or get the inertia ratio through inertia auto-tuning.

The following two inertia auto-tuning modes are available:

- Offline Inertia Auto-tuning
  To enable offline inertia auto-tuning, use H0d.02 (Offline inertia auto-tuning) and make the motor rotate and execute inertia auto-tuning through the keypad. Offline inertia auto-tuning does not involve the host controller

- Online Inertia Auto-tuning
  Send a command to the servo drive through the host controller to make motor act accordingly to finish inertia auto-tuning. Online inertia auto-tuning involves the host controller.

Note

The following conditions must be fulfilled for an accurate calculation of the load inertia ratio during inertia auto-tuning:

- The actual maximum speed of the motor is higher than 150 rpm.
- The acceleration rate during acceleration/deceleration of the motor is higher than 3000 rpm/s.
- The load torque is stable without dramatic changes.
- The actual inertia ratio does not exceed 120.
- Inertia auto-tuning may fail in case of a large backlash of the transmission mechanism.

3.2.1 Offline Inertia Auto-tuning

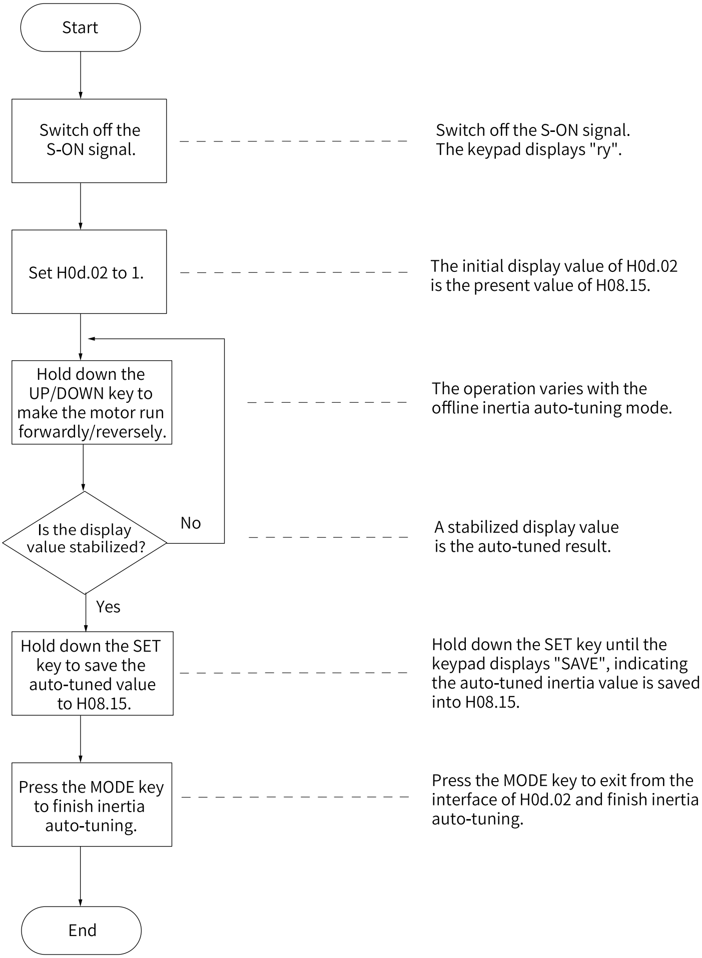


Figure 3-3 Offline inertia auto-tuning flowchart

Check the following before performing offline inertia auto-tuning:

The motor must meet the following requirements:

- A travel distance of more than one revolutions in the forward/reverse direction is available between the mechanical limit switches.
  Ensure limit switches are installed to the machine and a travel distance as described above is reserved to prevent overtravel during inertia auto-tuning.
- The required number of revolutions (H09.09) is fulfilled.

View the values of H09.06 (Maximum speed of inertia auto-tuning), H09.07 (Time constant for accelerating to the maximum speed during inertia auto-tuning), and H09.09 (Number of revolutions per inertia auto-tuning) to ensure the travel distance that starts from the stop position is larger than the value of H09.09. Otherwise, decrease the value of H09.06 or H09.07 until this requirement is met.

Operating procedure:

1. Switch off the S-ON signal.
2. In parameter display mode, switch to H0d.02 and press SET to enable offline inertia auto-tuning.
3. Press the UP/DOWN key to perform offline inertia auto-tuning.
4. To stop the drive, release the UP/DOWN key. To restart auto-tuning, press the UP/DOWN key again.
   The operating direction at start is determined by the UP/DOWN key. For applications requiring unidirectional movement, set H09.05 to 1.
5. Wait until the value displayed on the keypad is stabilized.
6. Hold the SET key down until the keypad displays "SAVE".
7. Press the MODE key to exit.

For applications requiring large load inertia, set H08.15 (Load moment of inertia) to the approximate value. preventing intense system vibration caused by a low initial inertia.

The following figure shows general flowchart for offline inertia auto-tuning.

☆ Related parameters:

See *" H0d_en.02" on page 265* for details.

See *" H09_en.05" on page 219* for details.

See *" H09_en.06" on page 219* for details.

See *" H09_en.07" on page 219* for details.

See *" H09_en.08" on page 220* for details.

See *" H09_en.09" on page 220* for details.

3.2.2 Online Inertia Auto-tuning

The servo drive supports online inertia auto-tuning. The online inertia auto-tuning flowchart is shown as follows.

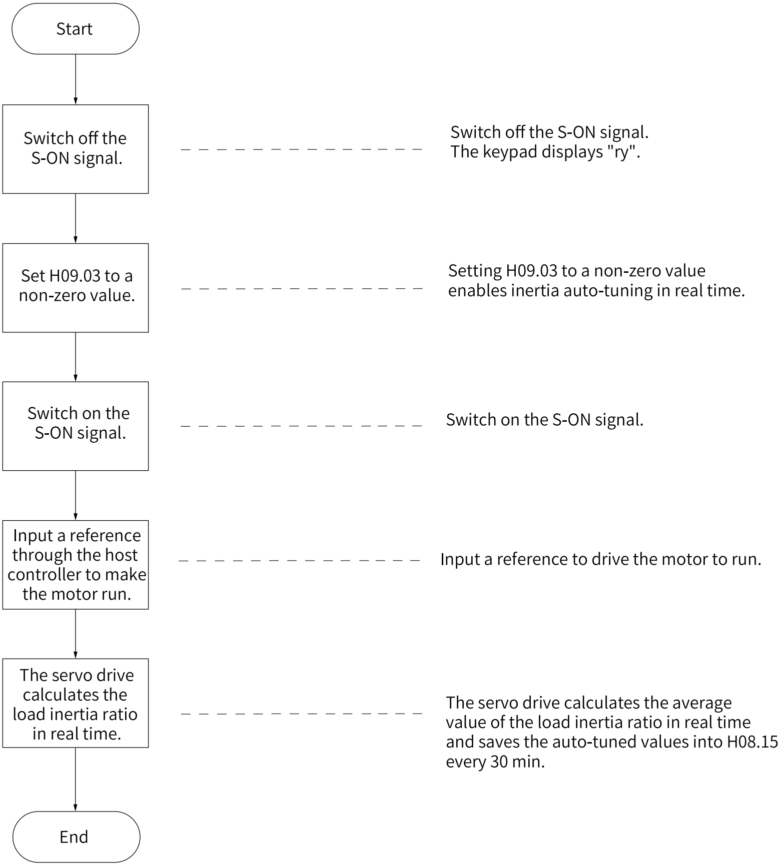


Figure 3-4 Online inertia auto-tuning flowchart

Note

H09.03 defines the real-time updating speed of the load inertia ratio (H08.15).

- H09.03 = 1: Applicable to cases where the actual load inertia ratio rarely changes, such as the machine tool and wood carving machine.
- H09.03 = 2: Applicable to cases where the load inertia ratio changes slowly.
- H09.03 = 3: Applicable to cases where the actual inertia ratio changes rapidly, such as handling manipulators.

☆Related parameter

See *" H09_en.03" on page 218* for details.

3.3 Auto Gain Tuning

3.3.1 ETune

Overview

ETune is a wizard-type auto-adjustment function used to guide users to set corresponding curve trajectories and response parameters. After the curve trajectories and response parameters are set, the servo drive performs auto-tuning automatically to generate the optimal gain parameters. The auto-tuned parameters can be saved and exported as a recipe for use in other devices of the same model.

The ETune function is intended to be used in applications featuring slight load inertia change.

Description of ITune operation

- **Operation flowchart**

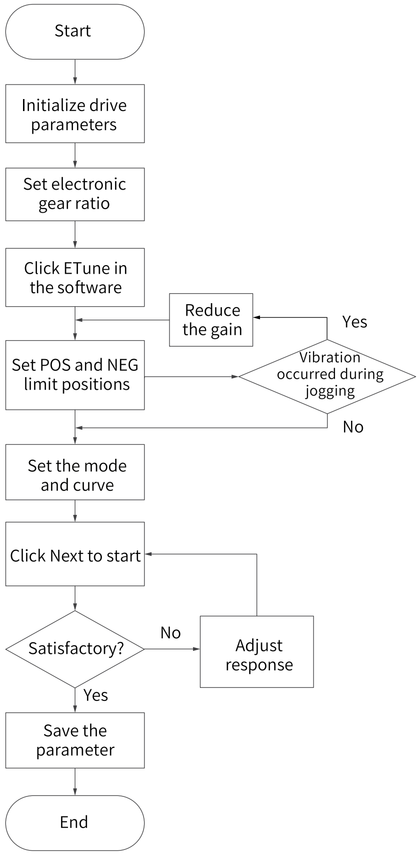
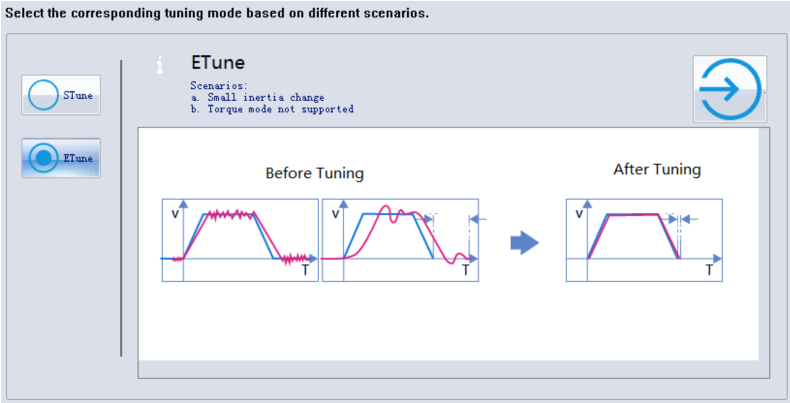


Figure 3-5 Operation flowchart

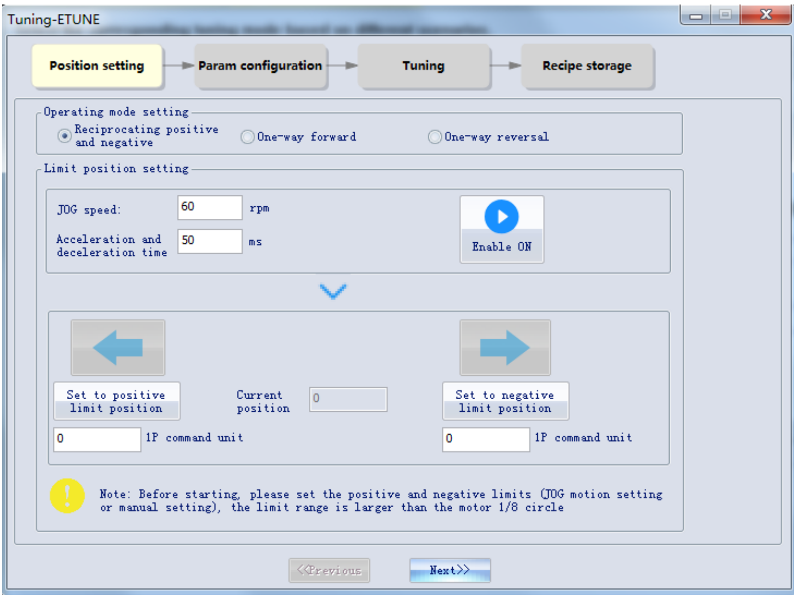
- **Detailed Description**

1. Click Usability adjustment in the software tool, and then click ETune.



2. Select any of the following three operation modes based on the operating direction allowed by the machine.

- In the Reciprocating po... mode, the motor keeps reciprocating within the positive and negative position limits.
- In the One-way forward mode, the motor takes the difference between the positive and negative position limits as the maximum distance per action and keeps running in the forward direction.
- In the One-way forward mode, the motor takes the difference between the positive and negative position limits as the maximum distance per action and keeps running in the reverse direction.



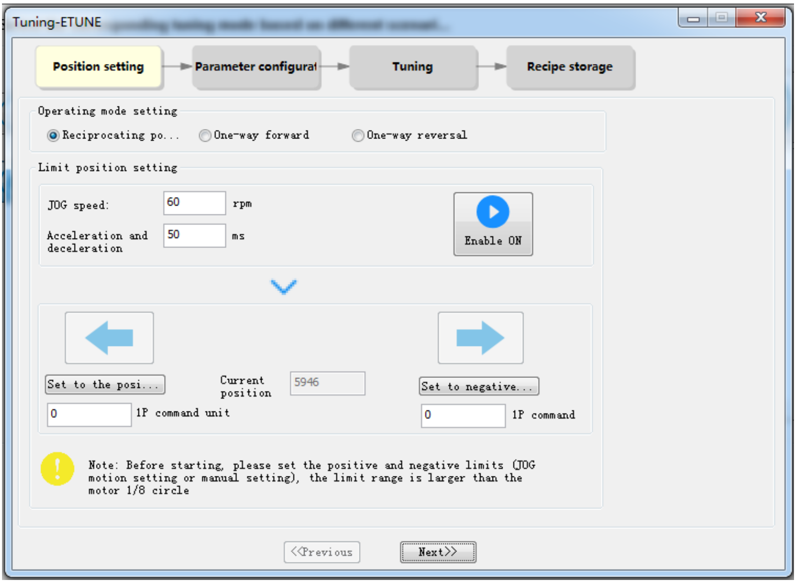
3. Designate the positive and negative limit positions allowed by the motor. The difference between the positive and negative limits defines the position reference pulses for the motor, which is also the value before multiplication/division by the electronic gear ratio.

   You can set the positive and negative position limits through the following two methods.

   - Method 1: Click "Enable ON", and then click ⬅ to make the motor move to the positive position limit. Next, click "Set to positive limit position". Follow the same procedure for setting the negative position limit, and click "Enable OFF" (the "Enable ON" button turns to "Enable OFF" after a click).
   - Method 2: Enter the positive and negative limits directly.

Note

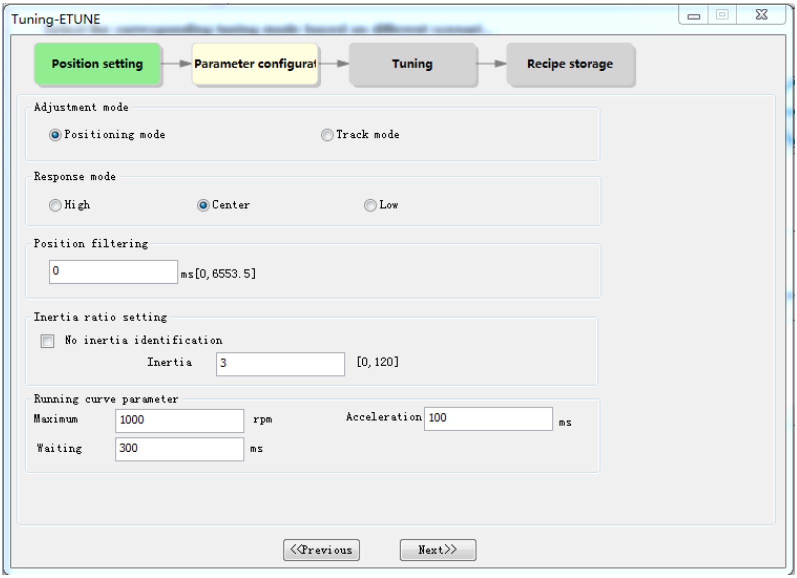
The difference between the positive and negative position limits must be larger than 1/8 of one revolution. The larger the value of the limit position, the better the adaptability of the auto-tuned parameters, but the longer will ETune adjustment take.



4. Click Next to switch to the mode parameter setting interface.

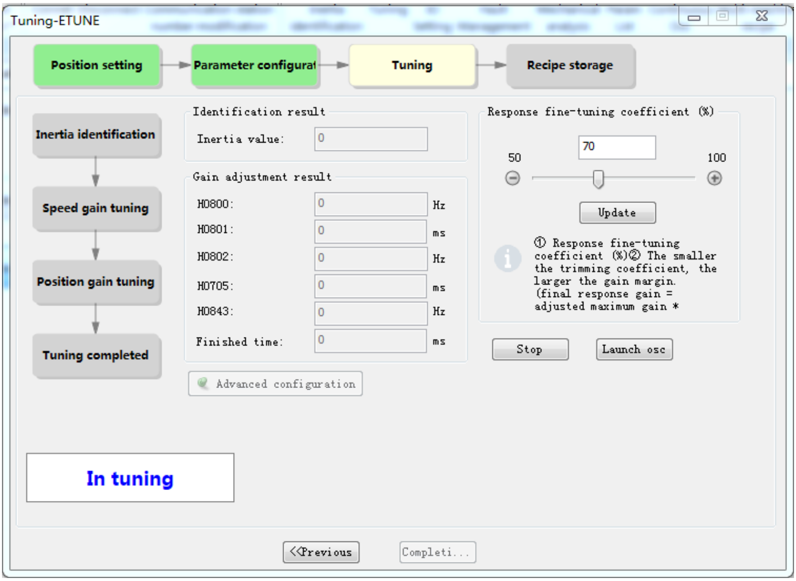
   The adjustment mode is divided into Positioning mode and Track mode.

   Auto-tuning of the inertia ratio is optional. If you choose not to perform inertia auto-tuning, set the correct inertia ratio (the inertia ratio can be modified directly). You can adjust the response level and position filter time constant based on the responsiveness needed and the position reference noise generated during operation. Then configure the motion profile by setting the maximum speed, acceleration/deceleration time and interval time for auto-tuning.

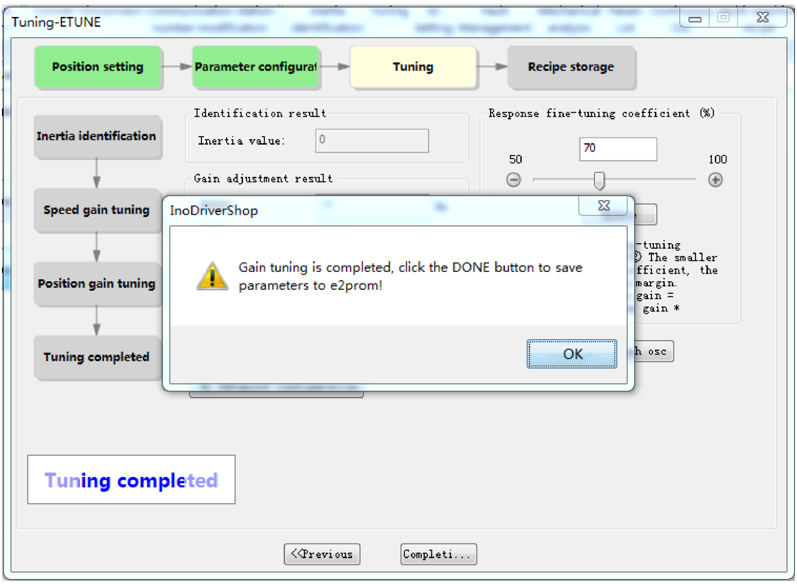


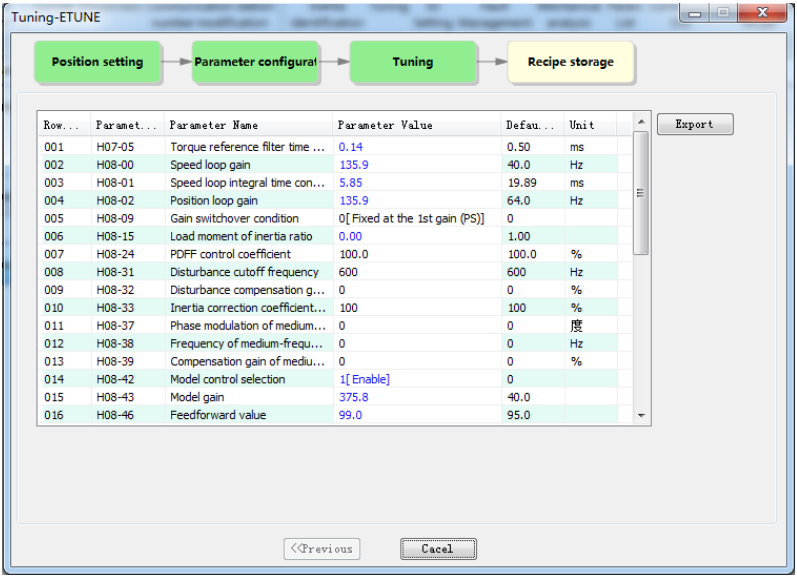
5. Click **"Next"** to start auto-tuning.

- If you choose to perform inertia auto-tuning, the drive starts inertia auto-tuning based on the set motion profile. After inertia auto-tuning is done, the drive starts gain auto-tuning.
- If you choose not to perform inertia auto-tuning on the start page, the drive starts gain auto-tuning directly after start.



6. During gain auto-tuning, if you modify the Response fine-tuning coefficient and click **"Update"**, gain auto-tuning will be continued based on the fine-tuning coefficient entered. After gain auto-tuning is done, you can click **"Done"** to save parameters to EEPROM and export parameters as a recipe file.





Row...	Paramet...	Parameter Name	Parameter Value	Defau...	Unit
001	H07-05	Torque reference filter time ...	0.14	0.50	ms
002	H08-00	Speed loop gain	135.9	40.0	Hz
003	H08-01	Speed loop integral time con...	5.85	19.89	ms
004	H08-02	Position loop gain	135.9	64.0	Hz
005	H08-09	Gain switchover condition	0[Fixed at the 1st gain (PS)]	0	
006	H08-15	Load moment of inertia ratio	0.00	1.00	
007	H08-24	PDFF control coefficient	100.0	100.0	%
008	H08-31	Disturbance cutoff frequency	600	600	Hz
009	H08-32	Disturbance compensation g...	0	0	%
010	H08-33	Inertia correction coefficient...	100	100	%
011	H08-37	Phase modulation of medium...	0	0	度
012	H08-38	Frequency of medium-frequ...	0	0	Hz
013	H08-39	Compensation gain of mediu...	0	0	%
014	H08-42	Model control selection	1[Enable]	0	
015	H08-43	Model gain	375.8	40.0	
016	H08-46	Feedforward value	99.0	95.0	

Precautions

- You can adjust the maximum speed and acceleration/deceleration time of the motion profile based on actual conditions. The acceleration/deceleration time can be increased properly because positioning will be quickened after auto-tuning.
- If the acceleration/deceleration time is too short, overload may occur. In this case, increase the acceleration/deceleration time properly.
- For vertical axes, take anti-drop measures beforehand and set the stop mode upon fault to "Stop at zero speed".
- For lead screw transmission, shorten the travel distance if the tuning duration is too long.

Solutions to Common Faults

<table>
<tr><th>Fault Symptom</th><th>Cause</th><th>Solution</th></tr>
<tr><td rowspan="5">E662.0: ETune error</td><td rowspan="5">During ETune operation, the gain drops to the lower limit:
Position loop gain < 5.
Speed loop gain < 5.
Model loop gain < 10.</td><td>Set the notch manually when vibration cannot be suppressed automatically.</td></tr>
<tr><td>Modify the electronic gear ratio to improve the command resolution, increase the command filter time constant or in the parameter configuration interface.</td></tr>
<tr><td>Increase the value of H09.11 as appropriate.</td></tr>
<tr><td>Check whether the current of the machine fluctuates periodically.</td></tr>
<tr><td>Check whether the positioning threshold is too low. Increase the reference acceleration/deceleration time.</td></tr>
<tr><td rowspan="5">E600.0: Inertia auto-tuning failure</td><td>Vibration cannot be suppressed.</td><td>Enable vibration suppression manually and perform the ETune operation.</td></tr>
<tr><td>The auto-tuned values fluctuate dramatically.</td><td>Increase the maximum operating speed and decrease the acceleration/ deceleration time. For the lead screws, shorten the travel distance.</td></tr>
<tr><td>Mechanical couplings of the load are loose or eccentric.</td><td>Rectify the mechanical faults.</td></tr>
<tr><td>A warning occurs during auto-tuning and causes interruption.</td><td>Clear the fault and perform ETune again.</td></tr>
<tr><td>The position reference filter time is set to an excessively high value.</td><td>Decrease the values of H05.04...H05.06 and perform ETune again.</td></tr>
</table>

3.3.2 STune

Overview

STune performs gain auto-tuning based on the set stiffness level to fulfill the needs for rapidity and stability.

STune (mode 4) is turned on by default and will be turned off automatically after the drive operates as commanded for 5 min.

STune is intended to be used in applications featuring slight load inertia change. For applications featuring dramatic inertia change or where inertia auto-tuning is unavailable (due to low operating speed or low acceleration rate), turn off STune after initial power-on.

Note

In STune modes 3, 4 and 6, you need to perform load inertia auto-tuning through online inertia auto-tuning and ensure the following conditions are met:

- The load inertia changes quickly.
- The load torque changes quickly.
- The motor is running at a speed lower than 120 r/min.
- Acceleration/Deceleration is slow (lower than 1000 r/min per second).
- The acceleration/deceleration torque is lower than the unbalanced load/viscous friction torque.

If the conditions for online inertia auto-tuning cannot be fulfilled, set the correct inertia ratio manually.

Description of ITune operation

- **Operation flowchart**

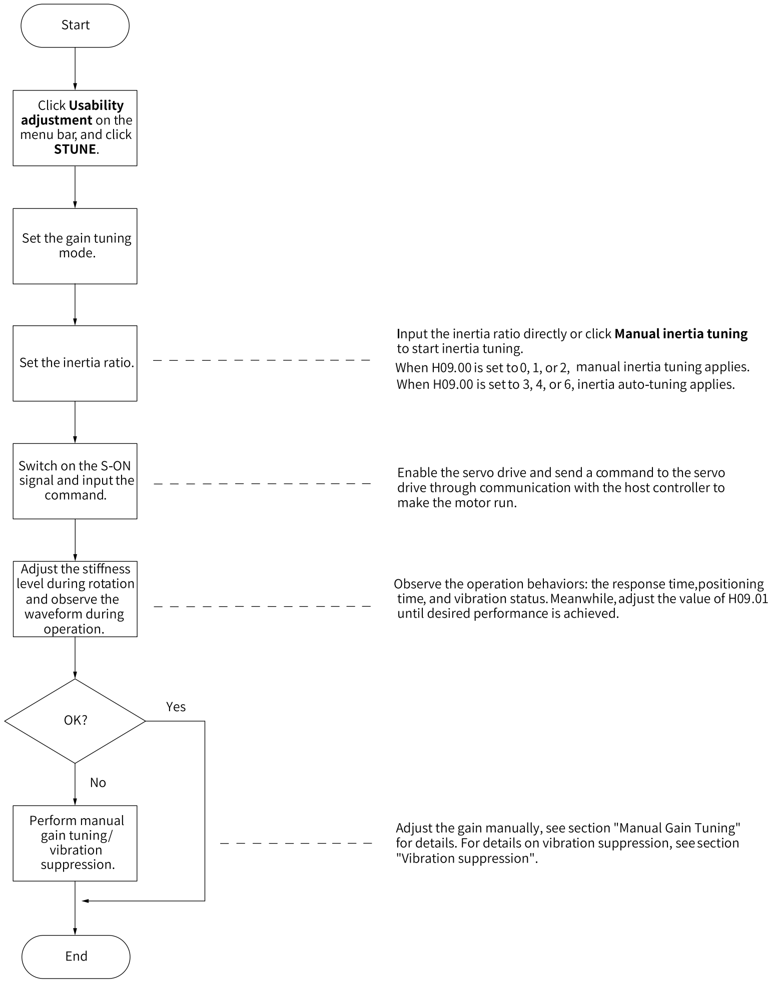


Figure 3-6 Operation flowchart

- **Detailed Description**

  You can set the gain auto-tuning mode through the keypad or the software tool.

  1. Select the gain auto-tuning mode.

     - In modes 0, 1 and 2 shown in the following table, you need to set the inertia ratio before stiffness tuning. If the inertia is unknown, adjust the inertia manually. If vibration occurs on the machine, decrease the stiffness level before adjusting the inertia manually.

- In modes 3, 4, and 6 shown in the following table, you can perform adjustment through the wizard-type interface directly, without the need for setting an inertia ratio.

Mode	Name	Description
0	Inactive	The gains need to be adjusted manually.
1	Standard stiffness level mode	Gains are set automatically based on the set stiffness level.
2	Positioning mode	Gains are set automatically based on the set stiffness level. This mode is applicable to occasions requiring quick positioning.
3	Interpolation mode + Inertia auto-tuning	Gains are set automatically based on the set stiffness level. In this mode, inertia is auto-tuned and vibration is suppressed automatically. This mode is applicable to multi-axis interpolation.
4	Normal mode + Inertia auto-tuning	Gains are set automatically based on the set stiffness level. The inertia is auto-tuned and vibration is suppressed automatically.
6	Quick positioning mode + Inertia auto-tuning	Gains are set automatically based on the set stiffness level. Inertia is auto-tuned and vibration is suppressed automatically. This mode is applicable to occasions requiring quick positioning.

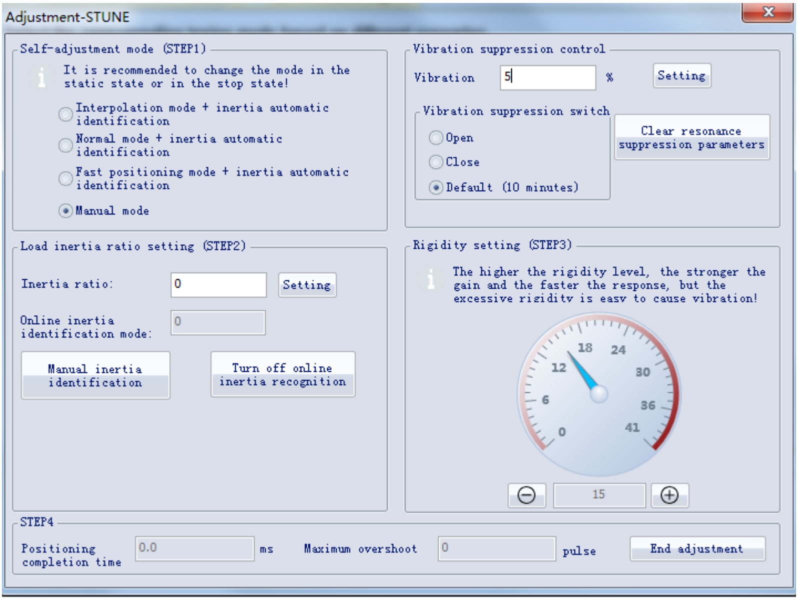
2. Adjust the stiffness level gradually during operation of the load. The present stiffness level value will be written to the drive automatically. Keep monitoring the operating waveform after increasing the stiffness level (increase by one level at a time) until desired performance is achieved.
3. In STune modes 3, 4, and 6, when the speed keeps higher than 100 r/min for more than 5 min, H09.00 returns to 0 automatically. In this case, the drive will exit from the STune mode.

   After tuning, you can set H09.00 to 0 to exit the STune mode.

   To modify the STune time, set H09.37.
4. In STune modes 3, 4, and 6, resonance will be suppressed automatically. If the performance of automatic resonance suppression is inadequate, set H09.58 to 1 to clear resonance suppression parameters, reduce the stiffness level, and perform STune again.
5. For multi-axis trajectories, perform single-axis commissioning first to determine the highest response of each axis and modify the response of each axis manually to ensure position responses of different axes are consistent.

   In STune modes 3 and 4, determine the minimum value of H08.-02 (Position loop gain). Then set H09.00 of each axis to 0 and set H08.02 of each axis to the same value.

In STune mode 6, determine the minimum value of H08.43 (Model gain). Then set H09.00 of each axis to 0, and set H08.43 of each axis to the same value.



Note

To ensure a stable operation of STune modes 3 and 4, gain parameters will be adjusted along with the inertia ratio when the inertia ratio is higher than 13. In multi-axis trajectories, responses may be inconsistent under the same stiffness level.

Precautions

Load inertia ratio range

- In scenarios requiring high response, the inertia ratio must be lower than 500% and should not exceed 1000%.
  - For belt pulley or gear rack requiring not high rigidity and accuracy, the inertia ratio should not exceed 1000%.
  - For lead screw or cardan shaft requiring high rigidity and accuracy, the inertia ratio should not exceed 500%.
  - In scenarios where high positioning accuracy or response is required, the inertia ratio should not exceed 200%.
- In scenarios requiring a certain accuracy and dynamic response, the inertia ratio should not exceed 3000%.

- When the inertia ratio exceeds 3000%, it is hard to adjust and the trajectory control cannot be performed. It is only applicable to mechanisms for point-to-point control and rotary motion but the acceleration/deceleration time should be large.

Rigidity meter setting

The setting range of H09.01 (Stiffness level selection) is 0–41. The level 0 indicates the weakest stiffness and lowest gain and level 41 indicates the strongest stiffness and highest gain.

The following table lists the stiffness levels for different load types for your reference.

Table 3–2 Reference of stiffness levels

Recommended Stiffness Level	Load Mechanisms
Level 8 to level 12	Large-scale machineries
Level 12 to level 18	Applications with low stiffness such as the conveyors
Above level 18	Applications with high stiffness such as the ball screws and direct-connected motors

The following five gain auto-tuning modes are available.

- Standard rigidity meter mode (H09.00 set to 1)
  The 1st gain parameters (H08.00 to H08.02 and H07.05) are automatically updated and saved based on the rigidity level set in H09.01.

Table 3–3 Parameters updated automatically in the standard mode

Parameter	Name
H08.00	Speed loop gain
H08.01	Speed loop integral time constant
H08.02	Position loop gain
H07.05	Filter time constant of torque reference

- Positioning mode (H09.00 = 2)
  Based on *"Table 3–3 " on page 93*, the 2nd gain parameters (H08.03 to H08.05 and H07.06) are also automatically updated and saved based on the rigidity level set in H09.01. In addition, the position loop gain in the 2nd gain parameters has a higher rigidity level than that in the 1st gain parameters.

Table 3–4 Parameters updated automatically in the positioning mode

Parameter	Name	Description
H08.03	2nd speed loop gain	-
H08.04	2nd speed loop integral time constant	If H08.04 is set to remain at 512.00 ms, the 2nd speed loop integral action is invalid and only proportional control is used in the speed loop.
H08.05	2nd position loop gain	-
H07.06	2nd torque reference filter time constant	-

Values of speed feedforward parameters are fixed.

Table 3–5 Parameters with fixed values in the positioning mode

Parameter	Name
H08.19	Speed feedforward gain
H08.18	Speed feedforward filter time constant

Values of gain switchover parameters are fixed.

Gain switchover is activated automatically in the positioning mode.

Parameter	Name	Value	Description
H08.08	2nd gain mode	1	Switchover between the 1st gain set (H08.00...H08.02, H07.05) and 2nd gain set (H08.03...H08.05, H07.06) is active in the positioning mode. In other modes, the original setting is used.
H08.09	Gain switchover condition	10	In positioning mode, the gain switchover condition is that H08.09 is set to 10. In other modes, the original setting is used.
H08.10	Gain switchover delay	5.0ms	In positioning mode, the gain switchover delay is 5.0 ms. In other modes, the original setting is used.
H08.11	Gain switchover level	50	In the positioning mode, the gain switchover level is 50. In other modes, the original setting is used.
H08.12	Gain switchover hysteresis	30	In the positioning mode, the gain switchover dead time is 30. In other modes, the original setting is used.

Note

In the gain auto-tuning mode, parameters updated along with H09.01 and those with fixed setpoints cannot be modified manually. To modify these parameters, set H09.00 (Gain auto-tuning mode) to 0 first.

- In STune mode 3, 4, or 6,
  resonance suppression will be performed automatically. When the load changes or the mechanical structure is re-installed, the system resonance frequency changes accordingly. Set H09.58 to 1 (Enable) and enable the STune mode again after clearing resonance suppression parameters.

  See *" H08_en.37" on page 210* for details.

  See *" H08_en.38" on page 210* for details.

  See *" H08_en.39" on page 211* for details.

  See *" H09_en.18" on page 223* for details.

  See *" H09_en.19" on page 223* for details.

  See *" H09_en.20" on page 223* for details.

  See *" H09_en.21" on page 223* for details.

  See *" H09_en.22" on page 224* for details.

  See *" H09_en.23" on page 224* for details.

  See *" H09_en.58" on page 230* for details.

Note

- If H09.00 is set to 3, 4, or 6, the drive will suppress vibration and perform inertia auto-tuning automatically within 10 min (or other time defined by H09.37) after power-on or stiffness level setting, and then the drive exits from auto-tuning. If inertia auto-tuning is deactivated automatically, switching to modes 3, 4, or 6 will not activate inertia auto-tuning.
- Do not set H09.00 to 3, 4, or 6 in applications with slow acceleration/deceleration, strong vibration, and unstable mechanical couplings.
- In applications where the inertia does not change, set H09.03 (Online inertia auto-tuning mode) to 1 (Enabled, changing slowly). In applications where the inertia changes quickly, set H09.03 to 3 (Enabled, changing quickly).

Solutions to Common Faults

E661.0: STune error

When the torque fluctuation detected by the drive exceeds the setpoint of H09.11 and cannot be suppressed, the rigidity level will be reduced automatically until reaching level 10 where E661 is reported.

- Vibration cannot be suppressed. Enable vibration suppression manually.
- The current fluctuates. Check whether the current of the machine fluctuates periodically.

See " H08_en.37" on page 210 for details.

See " H08_en.38" on page 210 for details.

See " H08_en.39" on page 211 for details.

See " H09_en.58" on page 230 for details.

3.3.3 ITune

Overview

ITune serves to stabilize responsiveness through auto-tuning based on the device and load types.

ITune is intended to be used in applications featuring slight load inertia change or where inertia auto-tuning is unavailable.

Description of ITune operation

Step	Para.	Name	Description
1	H09.27	ITune mode	Function: Setting H09.27 to 1 enables the ITune function. Note: ITune mode 2 is manufacturer commissioning mode, which should be used with caution.
2	H09.28 H09.29	Minimum inertia ratio of ITune Maximum inertia ratio of ITune	Function: Used to adjust the inertia ratio range controlled by ITune. Adjustment method: The minimum and maximum inertia ratios of ITune are 0.0 and 30.0 by default. If the actual maximum load inertia ratio is higher than 30.0, increase the value of H09.29 to prevent positioning jitter. If the actual load inertia change range is small, set H09.28 and H09.29 based on actual conditions to achieve optimal control effect.

Step	Para.	Name	Description
3	H09.26	ITune response	Function: Used to adjust the response capacity of ITune. Note: If the response capacity of ITune cannot deliver desired effect, increase H08.20 properly. If resonance cannot be suppressed, decrease H08.26 properly.

See " *H09_en.18" on page 223* for details.

See " *H09_en.19" on page 223* for details.

See " *H09_en.20" on page 223* for details.

See " *H09_en.21" on page 223* for details.

See " *H09_en.22" on page 224* for details.

See " *H09_en.23" on page 224* for details.

See " *H09_en.24" on page 224* for details.

See " *H09_en.27" on page 225* for details.

See " *H09_en.28" on page 225* for details.

See " *H09_en.29" on page 225* for details.

Precautions

After ITune is enabled, inertia auto-tuning and gain switchover will be inhibited.

Solutions to Common Faults

Fault Symptom	Cause	Solution
E663.0: ITune error	Check whether resonance that occurred during ITune operation cannot be suppressed.	Set the notch manually when vibration cannot be suppressed automatically.
		Modify the electronic gear ratio to improve the command resolution, increase the command filter time constant or in the parameter configuration interface.
		Increase the value of H09.11 as appropriate.
		Check whether the current of the machine fluctuates periodically.

3.4 Manual Gain Tuning

3.4.1 Basic Parameters

When gain auto-tuning cannot fulfill the application needs, perform manual gain tuning. to achieve better result.

The servo system consists of three control loops, which are position loop, speed loop, and current loop from external to internal. The basic control diagram is shown in the following figure.

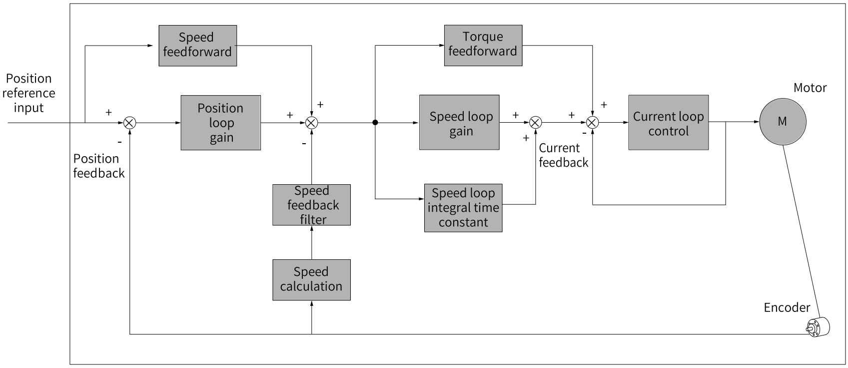


Figure 3-7 Basic control for manual gain tuning

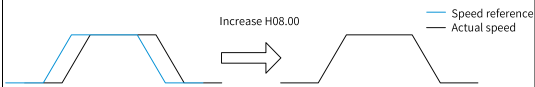
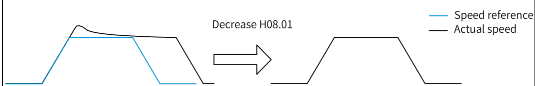
Note

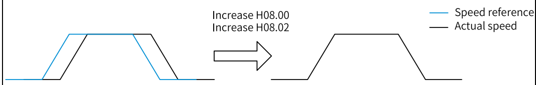
The response level of the inner loop must be higher than that of the outer loop. If it is not observed, the system may be unstable.

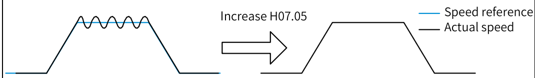
The current loop gain has been set with the highest level of responsiveness by default, avoiding the need for adjustment. you only need to adjust the position loop gain, speed loop gain and other auxiliary gains. For gain tuning in the position control mode, the position loop gain must be increased together with the speed loop gain, and the responsiveness of the former must be lower than the latter.

The following table describes how to adjust the basic gain parameters.

Table 3–6 Adjustment of gain parameters

Step	Parameter	Name	Description
1	H08.00	Speed loop gain	Function: Determines the maximum frequency of a variable speed reference that can be followed by the speed loop. When H08.15 (Load inertia ratio) is set correctly, the maximum frequency that can be followed by the speed loop is the setpoint of H08.00.  Note: • Increasing the setpoint without incurring extra noise or vibration shortens the positioning time, stabilizes the speed, and improves the follow-up behavior. • If noise occurs, decrease the setpoint. • If mechanical vibration occurs, enable mechanical resonance suppression. For details, see *" Vibration suppression" on page 121*.
2	H08.01	Speed loop integral time constant	Function: Eliminates the speed loop deviation.  Note: Set H08.01 according to the following formula: $500 \leqslant$ H08.00 x H08.01 $\leqslant 1000$ For example, if H08.00 is set to 40.0 Hz, the setpoint of H08.01 must meet the following requirement: 12.50 ms $\leqslant$ H08.01 $\leqslant$ 25.00 ms Decreasing the setpoint strengthens the integral action and shortens the positioning time, but an excessively low setpoint may easily lead to mechanical vibration. An excessively high setpoint prevents the speed loop deviation from being cleared. When H08.01 is set to 512.00 ms, the integral is invalid.

Step	Parameter	Name	Description
3	H08.02	Position loop gain	Function: It sets the position reference maximum frequency followed by the position loop. The maximum follow-up frequency of the position loop equals the value of H08.02.  Note: To ensure system stability, the maximum follow-up frequency of the speed loop must be 3 to 5 times higher than that of the position loop. $$3 \leqslant \frac{2 \times \pi \times H08.00}{H08.02} \leqslant 5$$ For example, when H08.00 is set to 40.0 Hz, H08.02 must meet the following requirement: 50.2 Hz $\leqslant$ H08.02 $\leqslant$ 83.7 Hz Adjust the setting based on the positioning time. Increasing the setpoint shortens the positioning time and improves the anti-interference capacity of a motor at standstill. An excessively high setpoint may easily lead to system instability and oscillation.

Step	Parameter	Name	Description
4	H07.05	Torque reference filter time constant	Function: Eliminates the high-frequency noise and suppresses mechanical resonance.  Note: Ensure the cutoff frequency of the torque reference low-pass filter is 4 times higher than the maximum follow-up frequency of the speed loop, as shown in the following formula: $\frac{1000}{2 \times \pi \times H07.05} \geqslant (H08.00) \times 4$ For example, when H08.00 is set to 40.0 Hz, the setpoint of H07.05 must be lower than or equal to 1.00 ms. If vibration occurs after H08.00 is increased, adjust H07.05 to suppress the vibration. For details, see *" Vibration suppression" on page 121*. An excessively high setpoint weakens the responsiveness of the current loop. To suppress vibration upon stop, increase the setpoint of H08.00 and decrease the setpoint of H07.05. If strong vibration occurs upon stop, decrease the setpoint of H07.05.

☆ Related parameters:

See *" H07_en.05" on page 194* for details.

See *" H08_en.00" on page 200* for details.

See *" H08_en.01" on page 200* for details.

See *" H08_en.02" on page 201* for details.

3.4.2 Gain Switchover

Gain switchover, which is active in the position control and speed control modes only, It is only effective in position and speed control modes. achieve the following purposes:

- Switching to the lower gain when the motor is at a standstill (servo ON) to suppress vibration
- Switching to the higher gain when the motor is at a standstill to shorten the positioning time
- Switching to the higher gain during operation of the motor to achieve better reference tracking performance

- Switching between different gain settings through an external signal to fit different conditions of the load devices

H08.08 = 0

When H08.08 is set to 0, the 1st gain (H08.00 to H08.02 and H07.05) is used, but you can switch between proportional control and proportional integral control through FunIN.3 (GAIN_SEL, gain switchover) for the speed loop.

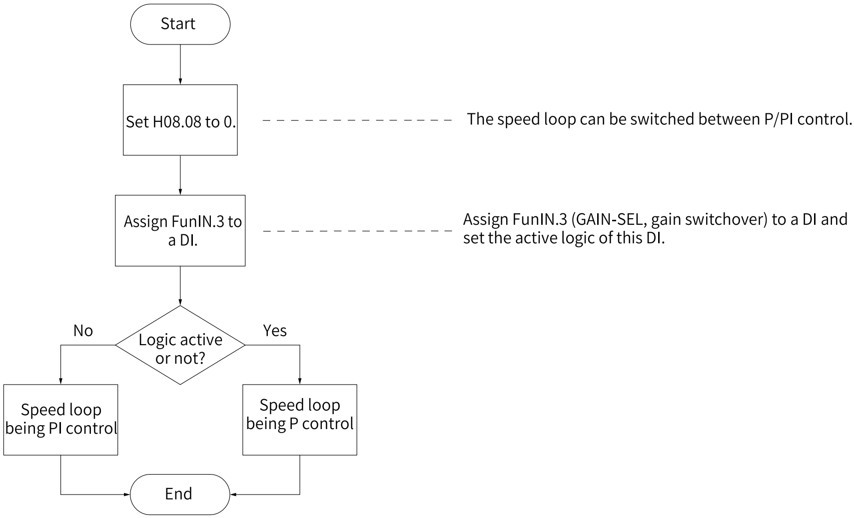


Figure 3-8 Gain switchover flowchart when H08.08 is set to 0

H08.08 = 1

You can switch between the 1st gain set (H08.00...H08.02, H07.05) and 2nd gain set (H08.03...H08.05, H07.06) based on the condition defined by H08.09.

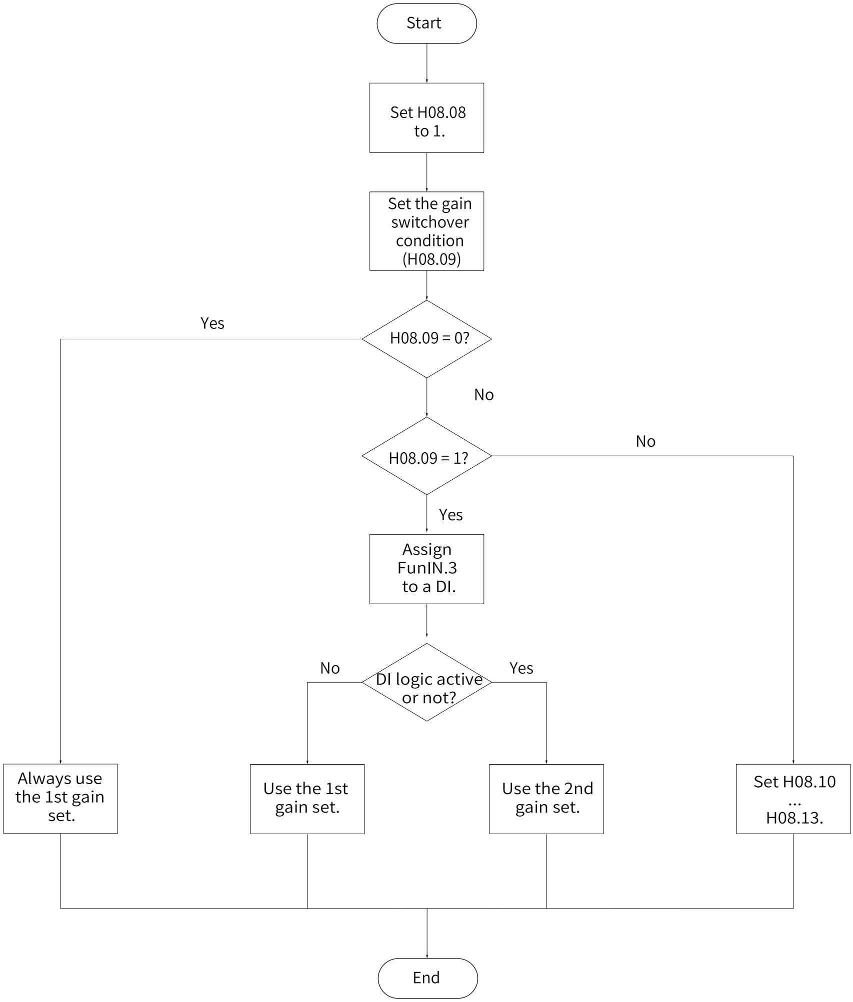
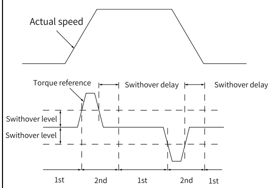
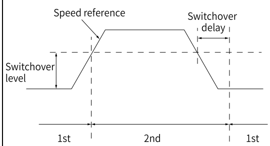
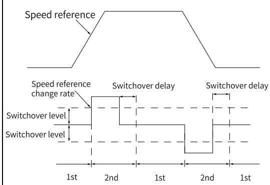
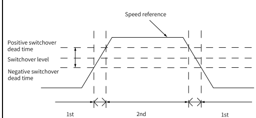
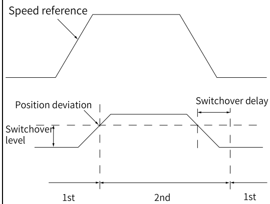
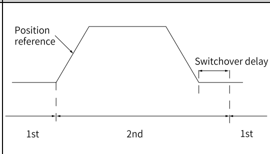
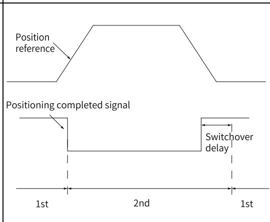
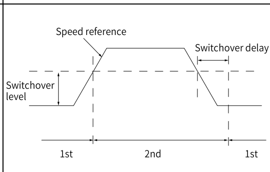


Figure 3-9 Gain switchover flowchart when H08.08 is set to 1

Table 3-8 shows diagrams and parameters for 11 kinds of gain switchover conditions. The following table describes the diagrams and related parameters of different conditions.

Table 3–7 Conditions for gain switchover

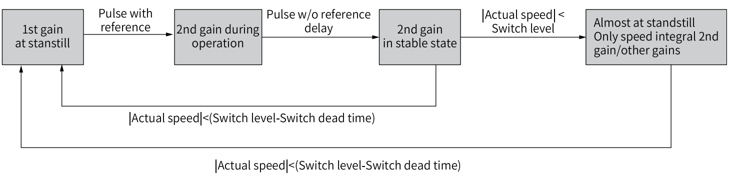
Gain Switchover Condition			Related Parameters		
H08.09 Setpoint	Condition	Diagram	Delay Time (H08.10)	Gain switchover level (H08.11)	Switchover Dead Time (H08.12)
0	Fixed to the 1st gain set	-	Inactive	Inactive	Inactive
1	External DI signal	-	Inactive	Inactive	Inactive
2	Torque reference		Active	Active (%)	Active (%)
3	Speed reference		Active	Active	Active
4	Speed reference change rate		Active	Active (10 rpm/s)	Active (10 rpm/s)
5	Speed reference high/ low-speed threshold		Inactive	Active (rpm)	Active (rpm)
6	Position deviation		Active	Active (encoder unit)	Active (encoder unit)

Gain Switchover Condition			Related Parameters		
H08.09 Setpoint	Condition	Diagram	Delay Time (H08.10)	Gain switchover level (H08.11)	Switchover Dead Time (H08.12)
7	Position reference		Active	Inactive	Inactive
8	Positioning uncompleted		Active	Inactive	Inactive
9	Actual speed		Active	Active (rpm)	Active (rpm)
10	Position reference + Actual speed	See the following note for details.	Active	Active (rpm)	Active (rpm)

Caution

H08.10 (Gain switchover delay) is valid only during switching to the 1st gain set.

Note



☆ Related parameters:

See " H08_en.08" on page 202 for details.

See " H08_en.09" on page 202 for details.

See " H08_en.10" on page 204 for details.

See " H08_en.11" on page 205 for details.

See " H08_en.12" on page 205 for details.

See " H08_en.13" on page 205 for details.

3.4.3 Position Reference Filter

Name	Description	Applicable Occasion	Impact of Excessive Filtering
Position reference filter	Filters the position references (encoder unit) divided or multiplied by the electronic gear ratio to smoothen the operation process of the motor and reduce shock to the machine.	The acceleration/ deceleration process is not performed on the position references sent from the host controller. The electronic gear ratio is larger than 10.	The response delay is prolonged.

3.4.4 Feedforward gain

Speed feedforward

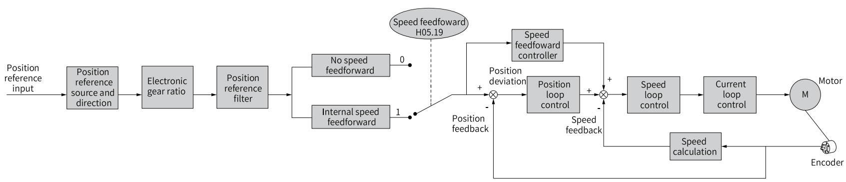


Figure 3-10 Operating procedure for speed feedforward control

Speed feedforward can be applied to the position control mode. The speed feedforward function can be used to improve the speed reference responsiveness and reduce the position deviation at fixed speed.

Operating procedure for speed feedforward:

1. Set the speed feedforward signal source.
   Set H05.19 (Speed feedforward control) to a non-zero value to enable the speed feedforward function. The corresponding signal source will be selected as well.

Parameter	Name	Setpoint	Remarks
H05.19	Speed feedforward control	0: No speed feedforward	-
		1: Internal speed feedforward	Defines the speed corresponding to the position reference (encoder unit) as the speed feedforward signal source.
		2: 60B1h used as speed offset	-
		3: Zero phase control	-

2. Set speed feedforward parameters.

Set the speed feedforward gain (H08.19) and speed feedforward filter time constant (H08.18).

See " H08_en.18" on page 206 for details.

See " H08_en.19" on page 207 for details.

Zero phase control

Zero phase control is used to compensate for the position deviation generated upon start delay of the position reference, reducing the position deviation upon start/stop in the position control mode.

The loop calculation model is shown in the following figure.

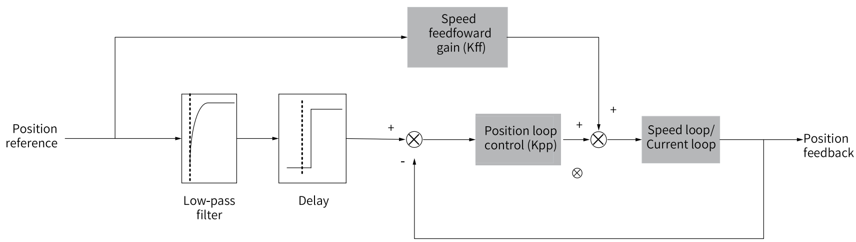


Figure 3-11 Zero phase control

See " H05_en.04" on page 170 for details.

See " H05_en.19" on page 173 for details.

See " H08_en.17" on page 206 for details.

Torque feedforward

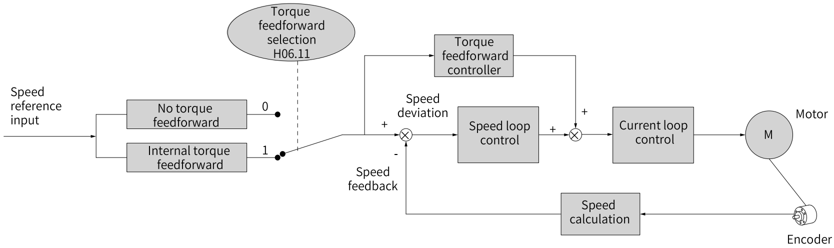


Figure 3-12 Operation diagram of torque feedforward control

In the position control mode, torque feedforward can be used to improve torque reference responsiveness and reduce the position deviation during operation at constant acceleration/deceleration rate.
In the speed control mode, torque feedforward can be used to improve speed reference responsiveness and reduce the speed deviation during operation at constant speed.

The procedure for setting torque feedforward is as follows:

1. Set the torque feedforward signal source.
   Set H06.11 (Torque feedforward control) to 1 to enable the torque feedforward function. The corresponding signal source will be selected as well.

Parameter	Name	Setpoint	Remarks
H06.11	Torque feedforward control	0: No torque feedforward	-
		1: Internal torque feedforward	Use the speed reference as the source of the torque feedforward signal. In the position control mode, the speed reference is outputted from the position controller.

2. Set torque feedforward parameters.

Parameter	Name	Description
H08.20	Torque feedforward filter time constant	Function: • Increasing the value of H08.21 improves the response but may cause overshoot during acceleration/deceleration. • Decreasing the value of H08.20 suppresses overshoot during acceleration/deceleration. Increasing the value of H08.20 suppresses the noise. Note: • Keep H08.20 to the default value, and then gradually increase the value of H08.21 from 0 to a certain value at which torque feedforward achieves the desired effect. • Adjust H08.20 and H08.21 repeatedly until a balanced performance is achieved.
H08.21	Torque feedforward gain	See this section for details.

3.4.5 PDFF Control

The pseudo derivative feedback and feedforward (PDFF) control can be used to adjust speed loop control in the non-torque control modes.

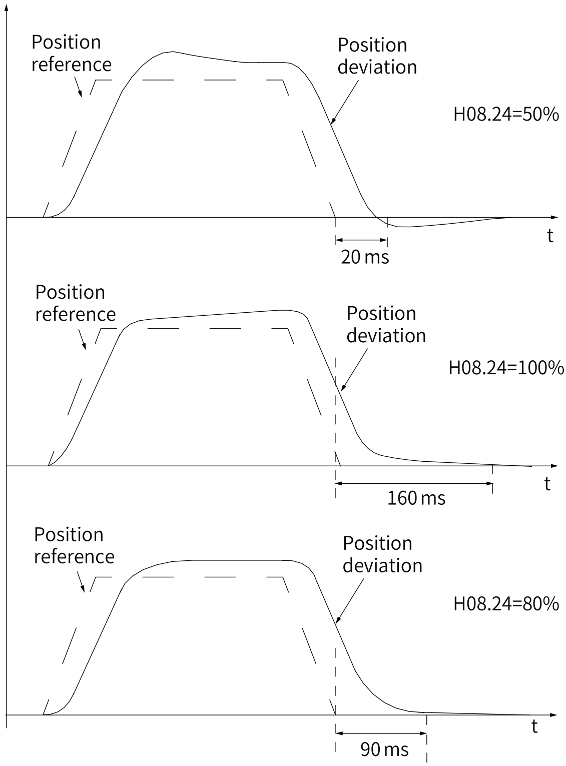


Figure 3-13 Example of PDFF control

Through adjusting the speed loop control method, PDFF control enhances the anti-disturbance capacity of the speed loop and improves the performance in following the speed references.

Param. No.	Name	Description
H08.24	PDFF control coefficient	Function: • Defines the control method of the speed loop in the non-torque control modes. Note: • Setting H08.24 to an excessively low value slows down the responsiveness of the speed loop. • When the speed feedback overshoots, gradually decrease the setpoint of H08.24 from 100.0 to a certain value at which the PDFF control achieves the desired effect. • When H08.24 is set to 100.0, the speed loop control method does not change and the default proportional integral control is used.

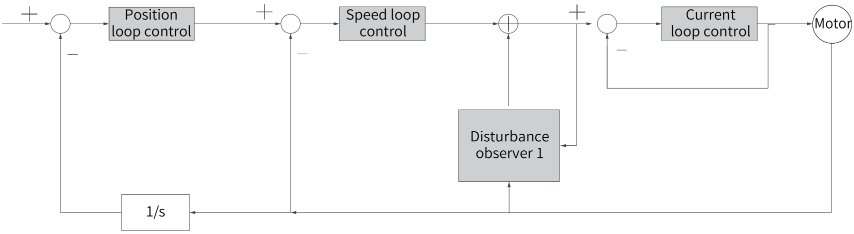
3.4.6 Torque disturbance observer

This function is intended to be used in the non-torque control modes.

Disturbance observer

The disturbance observer is used to observe external disturbance. You can set different cutoff frequencies and compensation values to observe and suppress the disturbance within the frequency range.

The following figure depicts the control block diagram for disturbance observer 1.



Note

1/s: Integral element

Parameter	Name	Description
H08.31	Disturbance cutoff frequency	The higher the cutoff frequency, the more easily will vibration occur.
H08.32	Disturbance compensation gain	Defines the compensation percentage for the observer.
H08.33	Disturbance observer inertia correction coefficient	H08.33 needs to be changed only when the inertia ratio does not reflect the actual condition. The acting inertia is the product of the set inertia and H08.33. It is recommended to use the default value of H08.33.

☆Related parameters

See *" H08_en.31" on page 209* for details.

See *" H08_en.32" on page 210* for details.

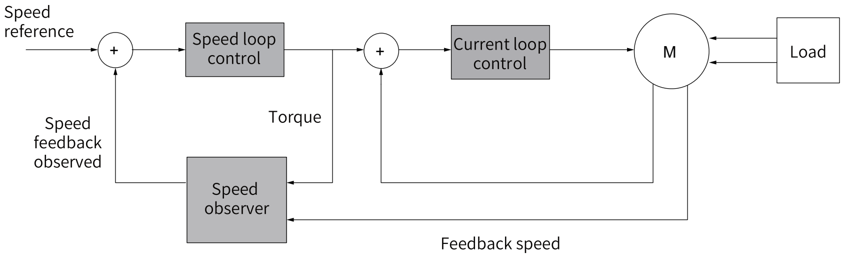
See *" H08_en.33" on page 210* for details.

3.4.7 Speed Observer

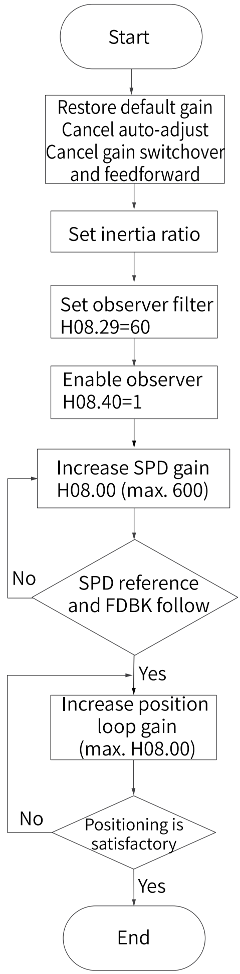
The speed observer, which facilitates quick positioning, applies in applications with slight load characteristic change and constant inertia.

It improves the responsiveness and filters high frequencies automatically, improving the gains and shortening the positioning time without incurring high-frequency vibration.

The block diagram for the speed observer is as follows.



Commissioning Steps



Related parameters

See " H08_en.00" on page 200 for details.

See " H08_en.27" on page 208 for details.

See " H08_en.28" on page 209 for details.

See " H08_en.29" on page 209 for details.

See " H08_en.40" on page 211 for details.

Note

- Before using the speed observer, set H08.15 (Load inertia ratio) to a proper value or perform inertia auto-tuning. A wrong inertia ratio can cause vibration.
- Setting H08.27, H08.28, or H08.29 to excessively low or high values can result in motor vibration.

3.4.8 Model Tracking

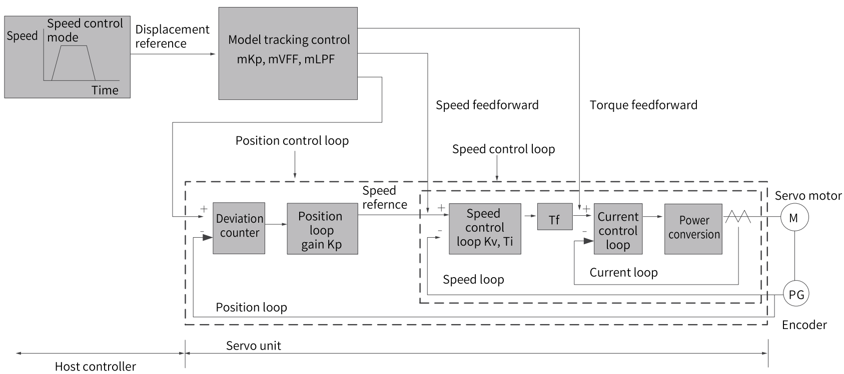
The model tracking control, which is only available in the position control mode, can be used to improve responsiveness and shorten the positioning time. It is only available in the position control mode.

Parameters used by model tracking are normally set automatically through ITune or ETune along with the gain parameters.

However, manual tuning is needed in the following situations:

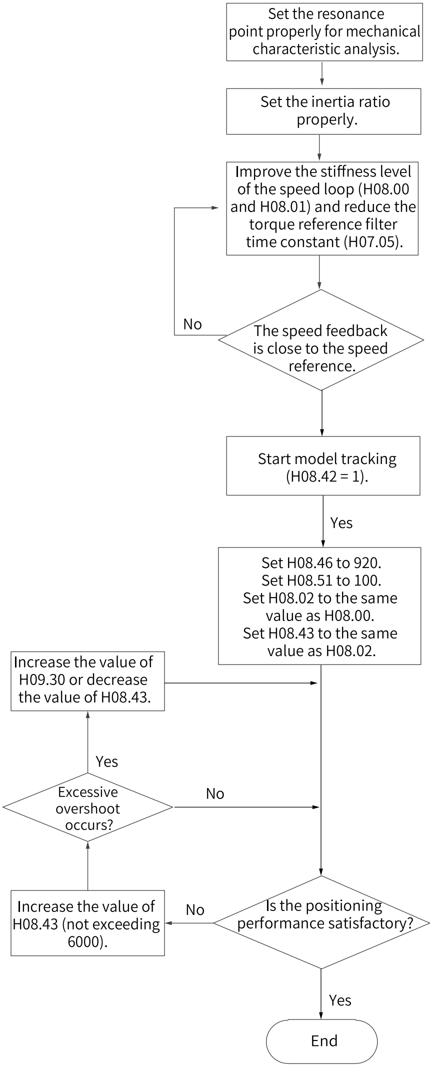
- The auto-tuned values cannot deliver desired performance.
- Improving the responsiveness takes priority over the auto-tuned or customized values.
- User-defined gain parameters or model tracking control parameters are needed.

The block diagram for model tracking control is as follows.



Kp: position loop gain (H08.02)
Kv: speed loop gain (H08.00)
Ti: speed loop integral time constant (H08.01)
Tf: torque reference filter time constant (H07.05)
mKp: model gain (H08.43)
mVFF: model feedforward (H08.46)
mLPF: model filtering time (H08.51)

Commissioning Steps



Related parameters

See " H07_en.05" on page 194 for details.

See " H08_en.00" on page 200 for details.

See " H08_en.01" on page 200 for details.

See " H08_en.02" on page 201 for details.

See " H08_en.42" on page 211 for details.

See " H08_en.43" on page 211 for details.
See " H08_en.46" on page 212 for details.

Note

Ensure the set inertia is accurate. Otherwise, motor vibration may occur.

3.4.9 Friction Compensation

Friction compensation is used to reduce the impact of the friction on the operating effect during mechanical transmission. Use different positive/negative compensation values according to the direction of operation.

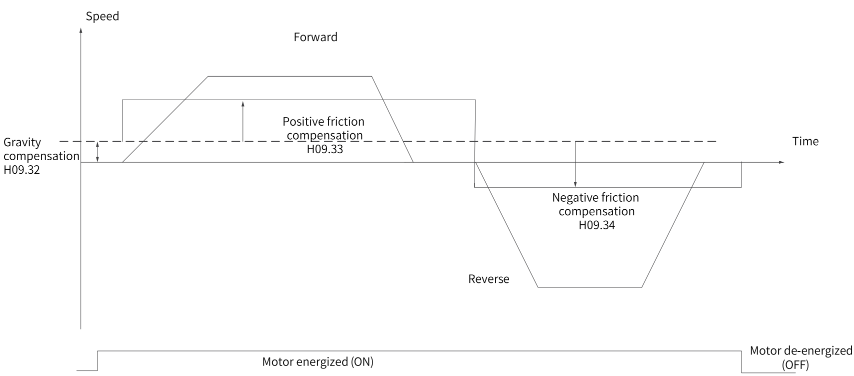
Note

Friction compensation is effective only in the position mode.

☆Related parameters

See " H09_en.32" on page 226 for details.
See " H09_en.33" on page 226 for details.
See " H09_en.34" on page 226 for details.
See " H09_en.35" on page 226 for details.
See " H09_en.36" on page 227 for details.

The diagram for friction compensation is as follows.



Note

Note: When the speed is less than the speed threshold, static friction applies. When the speed exceeds the speed threshold, dynamic friction applies. The compensation direction is determined by the direction of the actual position reference. Forward direction requires positive compensation value. Reverse direction requires negative compensation value.

3.5 DSC Mode Adjustment

The DSC feature (dynamic servo control) moves the position loop calculation and interpolation to the servo drive through telegram 105, and uses the servo fast speed control clock to improve positioning quality and performance. SV660F H01.00 = 802.8 and above support the DSC feature. You can select the DSC function by modifying the value of H24.32.

Table 3–8 DSC function selection

Parameter	Data	Description
H24.32	1	PLC position loop gain
	3	DSC manual adjustment

Note

When H24.32≠ 0 (that is, in DSC mode), direct adjustment of parameter H09.00 is prohibited, otherwise there is a risk of injury or damage to the product!

- **PLC adjustment (H24.32 = 1)**
  Dynamically adjusts the servo gain parameters by adjusting the pre-control and gain parameters of the PLC. When the servo is in non-STune mode, H09.00 must not be modified!

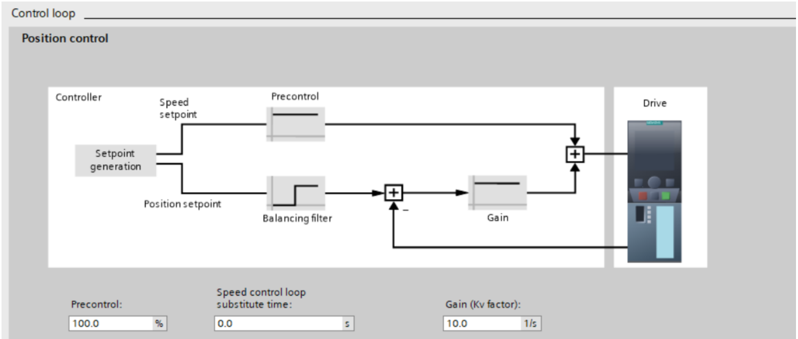


Figure 3-14 PLC side gain adjustment

- **Manual adjustment (H24.32 = 3)**
  The servo gain parameter can be manually adjusted.

3.6 Parameter Adjustment in Different Control Modes

Perform parameter adjustment in the sequence of "Inertia auto-tuning" => "Gain auto-tuning => "Manual gain tuning" in all the control modes.

3.6.1 Parameter Adjustment in the Position Control Mode

Obtain the value of H08.15 (Load inertia ratio) through inertia auto-tuning.

Gain parameters in the position control mode are listed in the following tables.

- 1st gain set:

Parameter	Name	Function	Default
H07.05	Torque reference filter time constant 1	Defines the torque reference filter time constant.	0.50 ms
H08.00	Speed loop gain	Defines the speed loop proportional gain.	40.0 Hz
H08.01	Speed loop integral time constant	Defines the integral time constant of the speed loop.	19.89 ms
H08.02	Position loop gain	Defines the position loop proportional gain.	64.0 Hz

- 2nd gain set:

Parameter	Name	Function	Default
H07.06	Torque reference filter time constant 2	Defines the torque reference filter time constant.	0.27 ms
H08.03	2nd speed loop gain	Defines the speed loop proportional gain.	75.0 Hz
H08.04	2nd speed loop integral time constant	Defines the integral time constant of the speed loop.	10.61 ms
H08.05	2nd position loop gain	Defines the position loop proportional gain.	120.0 ms
H08.08	2nd gain mode setting	Defines the mode of the 2nd gain set.	1
H08.09	Gain switchover condition	Defines the gain switchover condition.	0
H08.10	Gain switchover delay	Defines the gain switchover delay.	5.0 ms
H08.11	Gain switchover level	Defines the gain switchover level.	50
H08.12	Gain switchover dead time	Defines the dead time of gain switchover.	30
H08.13	Position gain switchover time	Defines the position loop gain switchover time.	3.0 ms

- Common gain set

Parameter	Name	Function	Default
H08.18	Speed feedforward filter time constant	Defines the filter time constant of the speed feedforward signal.	0.50 ms
H08.19	Speed feedforward gain	Defines the speed feedforward gain.	0.0%
H08.20	Torque feedforward filter time constant	Defines the filter time constant of the torque feedforward signal.	0.50 ms
H08.21	Torque feedforward gain	Defines the torque feedforward gain.	0.0%
H08.22	Speed feedback filtering option	Defines the speed feedback filtering function.	0
H08.23	Cutoff frequency of speed feedback low-pass filter	Defines the cutoff frequency of the first-order low-pass filter for speed feedback.	8000 Hz
H08.24	PDFF control coefficient	Defines the coefficient of the PDFF controller.	100.0%

Parameter	Name	Function	Default
H09.30	Torque disturbance compensation gain	Defines the torque disturbance compensation gain.	0.0%
H09.31	Filter time constant of torque disturbance observer	Defines the filter time constant of the disturbance observer.	0.5 ms
H09.04	Low-frequency resonance suppression mode	Defines the low-frequency resonance suppression mode.	0
H09.38	Frequency of low-frequency resonance suppression 1 at the mechanical end	Defines the frequency of the low-frequency resonance suppression filter.	100.0 Hz
H09.39	Low-frequency resonance suppression 1 at the mechanical end	Defines the setting of low-frequency resonance suppression filter.	2

Perform gain auto-tuning to get the initial values of the 1st gain set (or 2nd gain set) and the common gain set.

Fine-tune the following gains manually.

Parameter	Name	Function	Default
H07.05	Torque reference filter time constant 1	Defines the torque reference filter time constant.	0.50 ms
H08.00	Speed loop gain	Defines the speed loop proportional gain.	40.0 Hz
H08.01	Speed loop integral time constant	Defines the integral time constant of the speed loop.	19.89 ms
H08.02	Position loop gain	Defines the position loop proportional gain.	64.0 Hz
H08.19	Speed feedforward gain	Defines the speed feedforward gain.	0.0%

3.6.2 Parameter Adjustment in the Speed Control Mode

Parameter adjustment in the speed control mode is the same as that in the position control mode, except for the position loop gain (H08.02 and H08.05). For details, see *"3.6.1 Parameter Adjustment in the Position Control Mode" on page 118*.

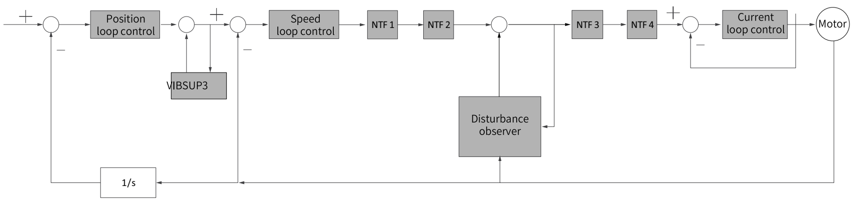
3.6.3 Parameter Adjustment in the Torque Control Mode

Parameter adjustment in the torque control mode are differentiated based on the following conditions:

- If the actual speed reaches the speed limit, the adjustment method is the same as that described in *"3.6.2 Parameter Adjustment in the Speed Control Mode" on page 120*.
- If the actual speed does not reach the speed limit, the adjustment method is the same as that described in *"3.6.2 Parameter Adjustment in the Speed Control Mode" on page 120*, except the position/speed loop gain and speed loop integral time constant.

3.7 Vibration suppression

The block diagram for vibration suppression is as follows.



Where:

- NTF1–4: 1st notch to 4th notch
- VIBSUP3: Suppression of medium- and low-frequency vibration reduction applied at a carrier frequency lower than 8 k under 300 Hz
- 1/s: Integral element

☆ Related parameters:

See *" H08_en.53" on page 212* for details.

See *" H08_en.54" on page 212* for details.

See *" H08_en.56" on page 213* for details.

Note

- jitter suppression phase modulation coefficient: synchronous phase adjustment of the compensation value and vibration. It is recommended to use the default value. Adjustment is needed when the compensation value phase differs greatly from the vibration phase.
- Jitter suppression frequency: Defines the jitter frequency that needs to be suppressed.
- Jitter suppression compensation coefficient: Defines the compensation coefficient for jitter suppression.

3.7.1 Low-Frequency Resonance Suppression at the Mechanical End

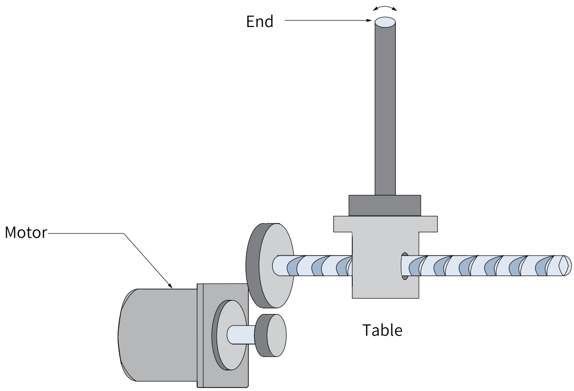


Figure 3-15 Low-frequency vibration at the mechanical end

If the mechanical load end is long and heavy, vibration may easily occur in this part during emergency stop, affecting the positioning effect. Such vibration is called low-frequency resonance as its frequency is generally within 100 Hz, which is lower than the mechanical resonance frequency mentioned in *"3.7.2 Mechanical Resonance Suppression" on page 124*. Use the low-frequency resonance suppression function to reduce such vibration.

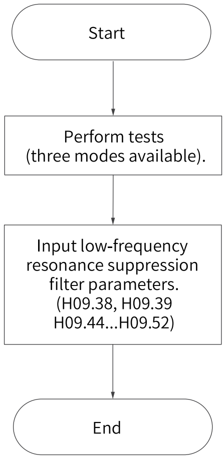


Figure 3-16 Procedure for setting low-frequency resonance suppression filter

First, use the oscilloscope function in the software tool to collect the position deviation waveform of the motor in the positioning state. Then calculate the position deviation fluctuation frequency, which is the low-frequency resonance frequency. Finally, input the value of H09.38 manually and use the default value of H09.39. Observe the resonance suppression effect after using the low-frequency resonance suppression filter.

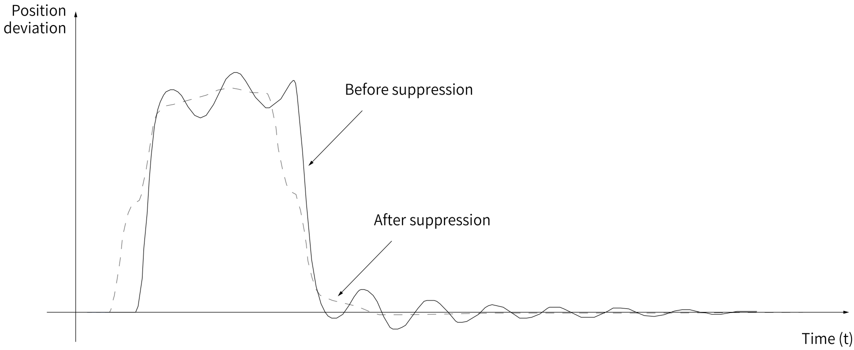


Figure 3-17 Low-frequency resonance suppression effect

☆ Related parameters:

See *" H09_en.38" on page 227* for details.

See *" H09_en.39" on page 228* for details.

See *" H09_en.44" on page 228* for details.

See *" H09_en.45" on page 228* for details.

See " H09_en.47" on page 229 for details.

See " H09_en.49" on page 229 for details.

See " H09_en.50" on page 229 for details.

See " H09_en.52" on page 229 for details.

3.7.2 Mechanical Resonance Suppression

Resonance frequency is present in the mechanical system. When the gain of the drive increases, resonance may occur near the resonance frequency, disabling further increase of the gain.

Mechanical resonance can be suppressed in the following two methods:

Torque reference filter (H07.05, H07.06)

To suppress the mechanical resonance, set the filter time constant to enable the torque reference to be attenuated in the frequency range above the cutoff frequency.

Filter cutoff frequency fc (Hz) = 1/[2π x H07.05 (ms) x 0.001]

Notch

The notch reduces the gain at certain frequencies to suppress mechanical resonance. After the vibration is suppressed by the notch, you can continue to increase the gain. The operating principle of the notch is shown in the following figure.

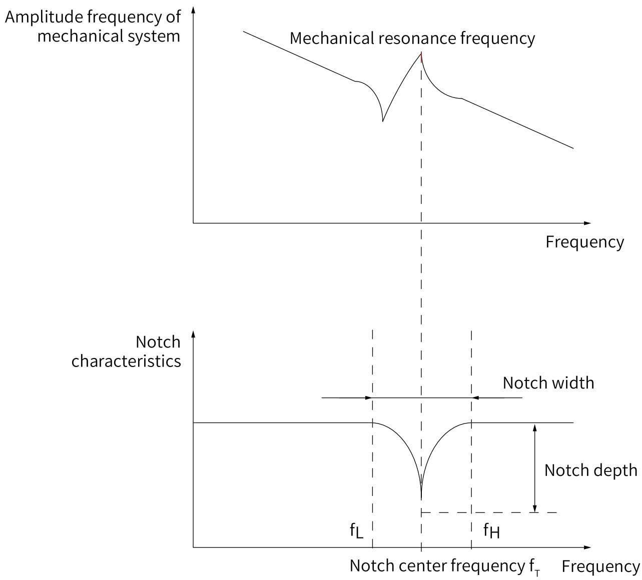


Figure 3-18 Operating principle of the notch

A total of four notches can be used, and each notch is defined by three parameters: frequency, width level, and depth level. The 1st and 2nd notches are manual notches whose parameters needs to be set by the user. Parameters of the 3rd and 4th notches can be either set by the user or set automatically after being configured as an adaptive notch (H09.02 =1 or 2).

Table 3–9 Description of notch parameters

Item	Manual Notch		Manual/Adaptive Notch	
	1st Notch	2nd Notch	3rd Notch	4th Notch
Frequency	H09.12	H09.15	H09.18	H09.21
Width level	H09.13	H09.16	H09.19	H09.22
Depth level	H09.14	H09.17	H09.20	H09.23

Note

- When the frequency is 8000 Hz (default), the notch is inactive.
- The adaptive notch is preferred for resonance suppression. The manual notch can be used in cases where the adaptive notch cannot deliver desired performance.

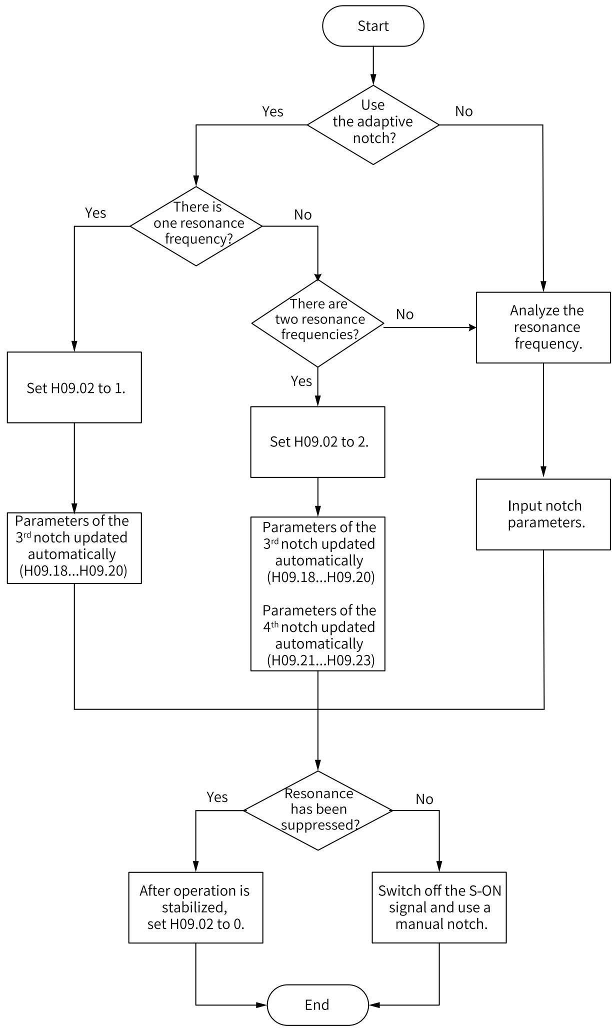


Figure 3-19 Using the notch

- Procedure for setting the adaptive notch:

1. Set H09.02 (Adaptive notch mode selection) to 1 or 2 based on the number of resonance frequencies.
2. When resonance occurs, set H09.02 to 1 first to enable one adaptive notch. If new resonance occurs after gain adjustment, set H09.02 to 2 to enable two adaptive notches.

3. Parameters of the 3rd or 4th notches are updated automatically during operation, and parameter values are saved automatically to the corresponding parameters in group H09 every 30 min.
4. If resonance is suppressed, the adaptive notch works. After the servo drive runs stably for a period of time, set H09.02 to 0 and the parameters of the adaptive notch are fixed to the last updated values.

   This is to prevent notch parameters from being updated to wrong values due to misoperation. Wrong values will intensity resonance.
5. If resonance persists after the notch is working for a period of time, switch off the S-ON signal.
6. If there are more than two resonance frequencies, the problem cannot be solved by only using the adaptive notches. In this case, add a manual notch, Additionally use the manual notch, or use all the four notches as manual ones (H09.02 = 0).

Note

- When adaptive notch is applied, if the S-OFF signal is activated within 30 min, the notch parameters will not be saved to the corresponding parameter
- When the resonance frequency is below 300 Hz, the suppression effect of the adaptive notch may be degraded.

- Procedure for setting the manual notch:

1. Analyze the resonance frequency.
2. When using the manual notch, set the notch frequency to same value as the actual resonance frequency obtained in the following ways: The resonance frequency can be obtained by using the following methods:
   - Use the "Mechanical characteristic analysis" function in Inovance software tool.
   - Calculate the resonance frequency based on the motor phase current displayed on the oscilloscope interface of the software tool.
   - Set H09.02 (Adaptive notch mode) to 3. The drive detects the resonance frequency and saves the detected value to H09.24 automatically during operation.
3. Input the resonance frequency obtained in step 1 to the parameter of the selected notch, and input the width level and depth level of this notch.
4. If resonance has been suppressed, it indicates the notch functions well and you can continue adjusting the gain. If resonance occurs again, repeat steps 1 and 2.
5. If resonance persists after the notch is working for a period of time, switch off the S-ON signal.

- Notch width level
  The width level indicates the ratio of the notch width to the center frequency of the notch.

$$\text{Notch width level} = \frac{f_H - f_L}{f_T}$$

  Where:

  f_T: center frequency of the notch, which is also the mechanical resonance frequency

  $f_H - f_L$ is the notch width, that is, the frequency bandwidth with an amplitude attenuation rate of –3 dB relative to the notch central frequency.

  The following figure shows the correspondence. Use the default value 2 in normal cases.

- Depth level of the notch
  The notch depth level indicates the ratio of the input to the output at the center frequency.

  When the depth level is 0, the input is completely suppressed at the center frequency. When the depth level is 100, the input can be fully passed at the center frequency. Therefore, the lower the depth level is, the higher the notch depth is, and the stronger the suppression effect will be. Note that an excessively low depth level may lead to system oscillation.

Note

If the amplitude frequency characteristic curve obtained through the mechanical analysis function does not have obvious peak, it indicates that vibration occurs actually. Such vibration may not be mechanical resonance, and cannot be suppressed by the notch. It occurs because the gain reaches the limit, and can be suppressed only by reducing the gain or the filter time of torque reference.

The following figure shows the frequency characteristics of the notch.

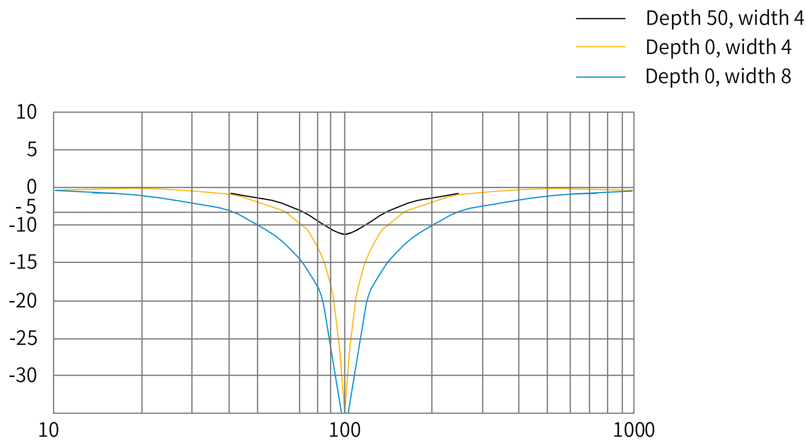


Figure 3-20 Notch frequency characteristics

☆ Related parameters:

See " H09_en.02" on page 218 for details.

See " H09_en.12" on page 221 for details.

See " H09_en.13" on page 221 for details.

See " H09_en.14" on page 221 for details.

See " H09_en.15" on page 222 for details.

See " H09_en.16" on page 222 for details.

See " H09_en.17" on page 222 for details.

See " H09_en.18" on page 223 for details.

See " H09_en.19" on page 223 for details.

See " H09_en.20" on page 223 for details.

See " H09_en.21" on page 223 for details.

See " H09_en.22" on page 224 for details.

See " H09_en.23" on page 224 for details.

See " H09_en.24" on page 224 for details.

3.8 Mechanical Characteristic Analysis

Overview

Mechanical characteristic analysis is used to determine the mechanical resonance point and system bandwidth. Up to 8 kHz response characteristic analysis is available and three modes including mechanical characteristics, speed open loop, and speed closed loop are supported.

Operating Procedure

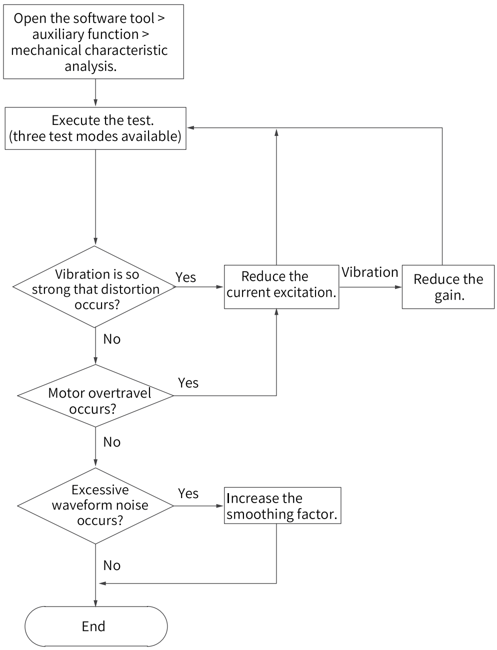


Figure 3-21 Operating procedure for mechanical characteristic analysis

Note

- To avoid large vibration during the test, set the current excitation to 10% during initial execution.
- The analysis waveform may be distorted if the current excitation is too low.
- If the vibration generated during test cannot be suppressed after reducing the current excitation, the possible causes and solutions may be: 1) The gain is too high, reduce the speed gain or set the notch based on the auto-tuned resonance point. 2) The set inertia is too high, set the correct inertia.
- After setting the notch, the waveform under mechanical characteristic test mode is the same with that before the setting, but the speed closed loop and speed open loop modes will be attenuated.

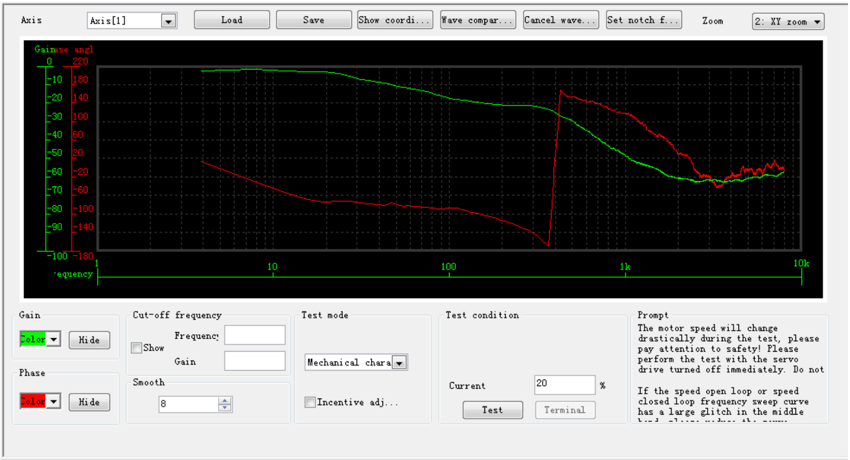


Figure 3-22 Example of the waveform obtained

An example of the waveform obtained with the mechanical characteristic analysis is shown in *"Figure 3–22 Example of the waveform obtained" on page 131*.

4 Description of Parameters

4.1 H00 Servo Motor Parameters

H00.00 Motor SN

Address:	0x0000	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	14101	Change:	At stop

Value Range:

0 to 65535

Description

Defines the code of the servo motor. Fixed to 14XXX. Setting the motor code to a wrong value will result in E120.0 (Unknown motor model).

H00.02 Customized No.

Address:	0x0002	Effective mode:	-
Min.:	0.00	Unit:	-
Max.:	4294967295.00	Data Type:	UInt32
Default:	0.00	Change:	Unchangeable

Value Range:

0.00 to 4294967295.00

Description

Displays customized software code in hexadecimal.

The display format is: XXX.YY.

XXX: Fixed No. for customized software

YY: Upgrade record No. for customized software

H00.04 Encoder version

Address:	0x0004	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0 to 6553.5

Description

Displays the software version number of the encoder.

The display format is 2XXX.Y.

H00.05 Serial-type motor code

Address:	0x0005	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

Displays the code of the serial-type motor, which is determined by the motor model and changeable.

H00.06 FPGA customized SN

Address:	0x0006	Effective mode:	-
Min.:	0.00	Unit:	-
Max.:	655.35	Data Type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

0.00 to 655.35

Description

-

H00.07 STO version

Address:	0x0007	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	6553.5	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0 to 6553.5

Description

-

H00.08 Bus encoder type

Address:	0x0008	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 65535

Description

-

4.2 H01 Servo Drive Parameters

H01.00 MCU software version

Address:	0x0100	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0 to 6553.5

Description

Displays the MCU software version.

The display format is XXXX.Y, with one decimal place.

H01.01 FPGA software version

Address:	0x0101	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0 to 6553.5

Description

It displays the FPGA firmware version.

The display format is XXXX.Y, with one decimal place.

H01.02 Servo drive series No.

Address:	0x0102	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H01.08 **Model parameter version 1**

Address:	0x0108	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	6553.5	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0 to 6553.5

Description

-

H01.09 **Model parameter version 2**

Address:	0x0109	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H01.10 **Drive series No.**

Address:	0x010A	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	3	Change:	At stop

Value Range:

2: S1R6
3: S2R8
5: S5R5
60005: S6R6
6: S7R6
7: S012
8: S018
9: S022
10: S027
10001: T3R5
10002: T5R4
10003: T8R4
10004: T012
10005: T017
10006: T021
10007: T026

Description

Defines the servo drive model.

Drive models are listed in the following table. If the voltage input to the main circuit of the servo drive does not comply with the preceding specifications, E420.0 (Main circuit phase loss) occurs.

The main circuit of the servo drive supports single-phase 220 V power supplies without derating.

H01.11 DC-AC voltage class

Address:	0x010B	Effective mode:	-
Min.:	0	Unit:	V
Max.:	65535	Data Type:	UInt16
Default:	220	Change:	Unchangeable

Value Range:

0V to 65535V

Description

-

H01.12 Drive rated power

Address:	0x010C	Effective mode:	-
Min.:	0.00	Unit:	kW
Max.:	10737418.24	Data type:	UInt32
Default:	0.40	Change:	Unchangeable

Value Range:

0.00 kW–10737418.24 kW

Description

-

H01.14 Max. output power of the drive

Address:	0x010E	Effective mode:	-
Min.:	0.00	Unit:	kW
Max.:	10737418.24	Data type:	UInt32
Default:	0.40	Change:	Unchangeable

Value Range:

0.00 kW–10737418.24 kW

Description

-

H01.16 Rated output current of the drive

Address:	0x0110	Effective mode:	-
Min.:	0.00	Unit:	A
Max.:	10737418.24	Data Type:	UInt32
Default:	2.80	Change:	Unchangeable

Value Range:

0.00A to 10737418.24A

Description

-

H01.18 Max. output current of the drive

Address:	0x0112	Effective mode:	-
Min.:	0.00	Unit:	A
Max.:	10737418.24	Data Type:	UInt32
Default:	10.10	Change:	Unchangeable

Value Range:

0.00A to 10737418.24A

Description

-

H01.40 DC bus overvoltage protection threshold

Address:	0x0128	Effective mode:	-
Min.:	0	Unit:	V

Max.:	2000	Data Type:	UInt16
Default:	420	Change:	Immediately

Value Range:

0V to 2000V

Description

-

H01.75 Current loop amplification factor

Address:	0x014B	Effective mode:	Real time
Min.:	0.00	Unit:	-
Max.:	655.35	Data Type:	UInt16
Default:	1.00	Change:	Immediately

Value Range:

0.00 to 655.35

Description

-

H01.88 Junction temperature parameter version 1

Address:	0x0158	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	6553.5	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0 to 6553.5

Description

-

H01.89 Junction temperature parameter version 2

Address:	0x0159	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

4.3 H02 Basic Control Parameters

H02.00 Control mode

Address:	0x0200	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	11	Data Type:	UInt16
Default:	11	Change:	At stop

Value Range:

0: Speed control mode

1: Position control mode

2: Torque control mode

3: Torque<->Speed control mode

4: Speed<->Position control mode

5: Torque<->Position control mode

6: Torque<->Speed<->Position compound mode

11: PN communication mode

Description

Defines the control mode of the servo drive.

H02.01 Absolute system selection

Address:	0x0201	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	5	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Incremental mode

1: Absolute position linear mode

2: Absolute position rotation mode

3: Absolute position linear mode (without encoder overflow warning)

4: Absolute position single-turn mode

5: Absolute position rotational mode, modal axis single modal revolution absolute command

Description

Defines the mode of the absolute system.

H02.02 Rotation direction selection

Address:	0x0202	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16

Default: 0 | Change: At stop

Value Range:

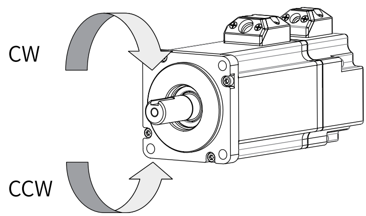
0: Counterclockwise (CCW) as forward direction

1: Clockwise (CW) as forward direction

Description

Defines the forward direction of the motor when viewed from the motor shaft side.

Setpoint	Rotating direction	Remarks
0	Counterclockwise (CCW) as forward direction	Defines the CCW direction as the forward direction when a forward run command is received, indicating the motor rotates in the CCW direction when viewed from the motor shaft side.
1	Counterclockwise (CW) as forward direction	When a forward command is input, the motor rotates in CW direction viewed from the motor shaft side, that is, the motor rotates clockwise.



H02.03 Output pulse phase

Address: 0x0203 | Effective mode: Upon the next power-on

Min.: 0 | Unit: -

Max.: 1 | Data Type: UInt16

Default: 0 | Change: At stop

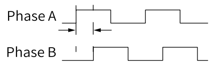
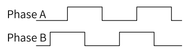
Value Range:

0: Phase A leads phase B

1: Phase A lags behind phase B

Description

Defines the relationship between phase A and phase B on the condition that the motor direction of rotation remains unchanged when pulse output is enabled.

Setpoint	Output pulse phase	Remarks
0	Phase A leads phase B.	Phase A leads phase B by 90° in encoder frequency-division output pulses. 
1	Phase A lags phase B.	Phase A lags phase B by 90° in encoder frequency-division output pulses. 

H02.05 **Stop mode at S-ON OFF**

Address:	0x0205	Effective mode:	At stop
Min.:	-5	Unit:	-
Max.:	3	Data Type:	Int16
Default:	3	Change:	Real-time

Value Range:

-5: Stop in PN communication state (ramp-to-stop/quick stop/coast-to-stop), keeping dynamic braking state

-4: Stop based on ramp 2, keeping dynamic braking state

-3: Stop at zero speed, keeping dynamic braking state

-2: Stop based on ramp 1, keeping dynamic braking state

-1: Dynamic braking stop, keeping dynamic braking state

0: Coast to stop, keeping de-energized state

1: Stop based on ramp 1, keeping de-energized state

2: Dynamic braking stop, keeping de-energized state

3: Stop in PN communication state (ramp-to-stop/quick stop/coast-to-stop), keeping de-energized state

Description

Defines the deceleration mode of the motor for stopping rotating upon S-ON OFF and the motor status after stop.

Set a proper stop mode according to the mechanical status and operation requirements.

H02.06 Stop mode at No.2 fault

Address:	0x0206	Effective mode:	At stop
Min.:	-5	Unit:	-
Max.:	3	Data Type:	Int16
Default:	2	Change:	Real-time

Value Range:

-5: Stop at zero speed, keeping dynamic braking state
-4: Stop at emergency stop torque, keeping dynamic braking state
-3: Stop based on ramp 2, keeping dynamic braking state
-2: Stop based on ramp 1, keeping dynamic braking state
-1: Dynamic braking stop, keeping dynamic braking state
0: Coast to stop, keeping de-energized state
1: Stop based on ramp 1, keeping de-energized state
2: Stop based on ramp 2, keeping de-energized state
3: Stop at emergency stop torque, keeping de-energized state
4: Dynamic braking stop, keeping de-energized state

Description

Defines the deceleration mode of the motor for stopping rotating upon occurrence of a No. 2 fault and the motor status after stop.
After the brake (BK) output function is enabled, the stop mode at No. 2 fault is forcibly set to "Ramp to stop as defined by 6085h, keeping dynamic braking status".

H02.07 Stop mode at overtravel

Address:	0x0207	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	8	Change:	Real-time

Value Range:

0: Coast to stop, keeping de-energized state
1: Stop at zero speed, keeping position lock state
2: Stop at zero speed, keeping de-energized state
3: Stop based on ramp 2, keeping de-energized state
4: Stop based on ramp 2, keeping position lock state
5: Dynamic braking stop, keeping de-energized state
6: Dynamic braking stop, keeping dynamic braking state
7: Not responding to overtravel

Description

Defines the deceleration mode of the motor for stopping rotating upon overtravel and the motor status after stop.

When the servo motor drives vertical axis, your setting must make the motor axis in position locking state after the limit switch signal is active to ensure safety.

H02.08 Stop mode at No.1 fault

Address:	0x0208	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	2	Change:	Real-time

Value Range:

0: Coast to stop, keeping de-energized state

1: Dynamic braking stop, keeping de-energized state

2: Dynamic braking stop, keeping dynamic braking state

Description

Defines the deceleration mode of the motor for stopping rotating when a No. 1 fault occurs and the motor status after stop.

For details on No. 1 faults, see the Troubleshooting Guide.

H02.09 Delay from brake output ON to command received

Address:	0x0209	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	500	Data Type:	UInt16
Default:	250	Change:	Real-time

Value Range:

0 ms to 500 ms

Description

Defines the delay from the moment the brake (BK) output signal is ON to the moment the servo drive starts to receive commands after power-on.

H02.10 Delay from brake output OFF to motor de-energized

Address:	0x020A	Effective mode:	Real time
Min.:	50	Unit:	ms
Max.:	1000	Data Type:	UInt16
Default:	150	Change:	Real-time

Value Range:

50 ms to 1000 ms

Description

Defines the delay from the moment brake (BK) output is OFF to the moment when the motor at standstill enters the de-energized status.

H02.11 Motor speed threshold at brake output OFF in rotation state

Address:	0x020B	Effective mode:	Real time
Min.:	20	Unit:	RPM
Max.:	3000	Data Type:	UInt16
Default:	30	Change:	Real-time

Value Range:

20 rpm to 3000 rpm

Description

Defines the motor speed threshold when brake (BK) output is OFF in the rotation state.

H02.12 Delay from S-ON OFF to brake output OFF in rotation state

Address:	0x020C	Effective mode:	Real time
Min.:	1	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	500	Change:	Real-time

Value Range:

1 ms to 65535 ms

Description

Defines the delay from the moment the S-ON signal is OFF to the moment the brake (BK) output is OFF in the rotation state.

H02.15 LED warning display

Address:	0x020F	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Output warning information immediately

1: Not output warning information

Description

Defines whether to switch the keypad to the fault display mode when a No. 3 fault occurs.

For details on No. 3 Warnings, see the Troubleshooting Guide.

H02.17 Stop mode upon main circuit power failure

Address:	0x0211	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	2	Change:	Real-time

Value Range:

0: Keep current action

1: Stop upon fault as defined by H0206

2: Stop at S-ON OFF as defined by H0205

3: Stop quickly as defined by H0218

Description

-

H02.18 DI emergency stop mode selection

Address:	0x0212	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	2	Change:	Real-time

Value Range:

0: Coast to stop, keeping de-energized state

1: Ramp 1 stop, keeping de-energized state

2: Ramp 2 stop, keeping de-energized stat

3: Stop at emergency stop torque, keeping de-energized state

Description

-

H02.21 Permissible minimum resistance of regenerative resistor

Address:	0x0215	Effective mode:	-
Min.:	1	Unit:	Ω
Max.:	1000	Data Type:	UInt16
Default:	40	Change:	Unchangeable

Value Range:

1Ω to 1000 Ω

Description

The permissible minimum resistance of the regenerative resistor is only related to the servo drive model.

H02.22 Power of built-in regenerative resistor

Address:	0x0216	Effective mode:	-
Min.:	0	Unit:	W
Max.:	65535	Data Type:	UInt16
Default:	50	Change:	Unchangeable

Value Range:

0 W–65535 W

Description

The power of the built-in regenerative resistor is only related to the servo drive model, which is unmodifiable.

H02.23 Resistance of built-in regenerative resistor

Address:	0x0217	Effective mode:	-
Min.:	0	Unit:	Ω
Max.:	65535	Data Type:	UInt16
Default:	50	Change:	Unchangeable

Value Range:

0Ω to 65535Ω

Description

The resistance of the built-in braking resistor is only related to the servo drive model, which is unmodifiable.

The built-in braking resistor comes into rescue when the maximum braking energy calculated exceeds the absorption capacity of the capacitor.

When using the built-in braking resistor, connect a jumper bar between terminals P and D. When H01-02 (servo drive No.) = 2 or 3, there is no built-in braking resistor.

Table 4–1 Specifications of the regenerative resistor

<table>
<tr><th rowspan="2">Servo Drive Model</th><th colspan="2">Specifications of Built-in Regenerative Resistor</th><th rowspan="2">External regenerative resistor
Min. Allowable Resistance (Ω) (H02.21)</th></tr>
<tr><th>Resistance (Ω)</th><th>Power (Pr) (W)</th></tr>
<tr><td>SV660FS1R6I</td><td>-</td><td>-</td><td>50</td></tr>
<tr><td>SV660FS2R8I</td><td>-</td><td>-</td><td>45</td></tr>
<tr><td>SV660FS5R5I</td><td>50</td><td>50</td><td>40</td></tr>
<tr><td>SV660FS7R6I</td><td rowspan="2">25</td><td rowspan="2">80</td><td>20</td></tr>
<tr><td>SV660FS012I</td><td>15</td></tr>
<tr><td>SV660FT3R5I</td><td>100</td><td>80</td><td>80</td></tr>
<tr><td>SV660FT5R4I</td><td>100</td><td>80</td><td>60</td></tr>
<tr><td>SV660FT8R4I</td><td rowspan="2">50</td><td rowspan="2">80</td><td>45</td></tr>
<tr><td>SV660FT012I</td><td>40</td></tr>
<tr><td>SV660FT017I</td><td rowspan="3">35</td><td rowspan="3">100</td><td>35</td></tr>
<tr><td>SV660FT021I</td><td rowspan="2">25</td></tr>
<tr><td>SV660FT026I</td></tr>
</table>

H02.24 Resistor heat dissipation coefficient

Address:	0x0218	Effective mode:	Real time
Min.:	10	Unit:	%
Max.:	100	Data Type:	UInt16
Default:	30	Change:	Real-time

Value Range:

10%–100%

Description

Defines the heat dissipation coefficient of the regenerative resistor, which is applicable to both external and built-in regenerative resistors.

Set this parameter properly according to actual heat dissipation conditions of the resistor (heat dissipation coefficient).

Recommendations:

- Generally, the coefficient cannot exceed 30% for natural cooling.
- It cannot exceed 50% for forced air cooling.

H02.25 Regenerative resistor type

Address:	0x0219	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	3	Change:	Real-time

Value Range:

0: Built-in

1: External, natural cooling

2: External, forced air cooling

3: No resistor needed

Description

Defines the regenerative resistor type and the mode of absorbing and releasing the braking energy.

H02.26 Power of external regenerative resistor

Address:	0x021A	Effective mode:	Real time
Min.:	1	Unit:	W
Max.:	65535	Data Type:	UInt16
Default:	40	Change:	Real-time

Value Range:

1 W–65535 W

Description

Defines the power of the external braking resistor.

Note: The value of this parameter cannot be lower than the calculated braking power.

H02.27 Resistance of external regenerative resistor

Address:	0x021B	Effective mode:	Real time
Min.:	15	Unit:	Ω
Max.:	1000	Data Type:	UInt16
Default:	50	Change:	Real-time

Value Range:

15 Ω to 1000 Ω

Description

Defines the power of the external braking resistor.

Note: The value of this parameter cannot be lower than the calculated braking power.

H02.30 User password

Address:	0x021E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H02.31 System parameter initialization

Address:	0x021F	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No operation

1: Restore default settings

2: Clear fault records

Description

Used to restore default values or clear fault records.

If necessary, use Inovance software tool to back up parameters except those in groups 2000h and 2001h.

H02.32 Selection of parameters in group H0b

Address:	0x0220	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	99	Data Type:	UInt16
Default:	50	Change:	Immediately

Value Range:

0 to 99

Description

-

H02.33 200P software version

Address:	0x0221	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	65535.0	Data Type:	UInt16

Default:	0.0	Change:	Unchangeable

Value Range:

0.0 to 65535.0

Description

-

H02.35 Keypad data update frequency

Address:	0x0223	Effective mode:	Real time
Min.:	0	Unit:	Hz
Max.:	20	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 Hz to 20 Hz

Description

-

H02.41 Manufacturer password

Address:	0x0229	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

4.4 H03 Terminal Input Parameters

H03.00 DI function allocation 1 (activated upon power-on)

Address:	0x0300	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Corresponding to null
1: Corresponding to FunIN.1
2: Corresponding to FunIN.2
4: Corresponding to FunIN.3
8: Corresponding to FunIN.4
16: Corresponding to FunIN.5
32: Corresponding to FunIN.6
64: Corresponding to FunIN.7
128: Corresponding to FunIN.8
256: Corresponding to FunIN.9
512: Corresponding to FunIN.10
1024: Corresponding to FunIN.11
2048: Corresponding to FunIN.12
4096: Corresponding to FunIN.13
8192: Corresponding to FunIN.14
16384: Corresponding to FunIN.15
32768: Corresponding to FunIN.16

Description

-

H03.01 **DI function allocation 2 (activated upon power-on)**

Address:	0x0301	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Corresponding to null
1: Corresponding to FunIN.17
2: Corresponding to FunIN.18
4: Corresponding to FunIN.19
8: Corresponding to FunIN.20
16: Corresponding to FunIN.21
32: Corresponding to FunIN.22
64: Corresponding to FunIN.23
128: Corresponding to FunIN.24
256: Corresponding to FunIN.25
512: Corresponding to FunIN.26
1024: Corresponding to FunIN.27
2048: Corresponding to FunIN.28
4096: Corresponding to FunIN.29
16384: Corresponding to FunIN.31
32768: Corresponding to FunIN.32

Description

-

H03.02 DI1 function

Address:	0x0302	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	14	Change:	Real-time

Value Range:

0: Undefined
1: S-ON
3: Gain switchover
14: Forward overtravel switch
15: Reverse overtravel switch
16: Positive external torque limit
17: Negative external torque limit
18: Forward jog
19: Reverse jog
31: Home switch
32: Homing enabled
34: Emergency stop
36: Internal speed limit source
38: Probe 1
39: Probe 2
41: Current position as home
56: EPOS program block external toggle switch

Description

Defines the function of DI1.

H03.03 DI1 logic selection

Address:	0x0303	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Active low
1: Active high

Description

Used to set the level logic of DI1 when the function assigned to DI1 is active.
DI1 to DI4 are normal DIs, requiring the input signal width to be larger than 1 ms. Set active level logic correctly according to the host controller and peripheral circuits. The width of the input signal is shown in the following table for your reference.

H03.04 DI2 function selection

Address:	0x0304	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	15	Change:	Immediately

Value Range:

Same as H03.02.

Description

-

H03.05 DI2 logic selection

Address:	0x0305	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Active low

1: Active high

Description

-

H03.06 DI3 function

Address:	0x0306	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	31	Change:	Immediately

Value Range:

Same as H03.02.

Description

-

H03.07 DI3 logic selection

Address:	0x0307	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Active low

1: Active high

Description

-

H03.08 **DI4 function**

Address:	0x0308	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	34	Change:	Immediately

Value Range:

Same as H03.02.

Description

-

H03.09 **DI4 logic selection**

Address:	0x0309	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Active low

1: Active high

Description

-

H03.10 **DI5 function**

Address:	0x030A	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	38	Change:	Immediately

Value Range:

Same as H03.02.

Description

-

H03.11 **DI5 logic selection**

Address:	0x030B	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Active low
1: Active high

Description

-

H03.12 DI6 function

Address:	0x030C	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	45	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H03.02

Description

-

H03.13 DI6 logic selection

Address:	0x030D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Active low
1: Active high

Description

-

H03.14 DI7 function

Address:	0x030E	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	45	Data Type:	UInt16
Default:	45	Change:	Immediately

Value Range:

Same as H03.02

Description

-

H03.15 DI7 logic selection

Address:	0x030F	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Active low

1: Active high

Description

-

H03.16 DI8 function

Address:	0x0310	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	45	Data Type:	UInt16
Default:	31	Change:	Immediately

Value Range:

Same as H03.02

Description

-

H03.17 DI8 logic selection

Address:	0x0311	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Active low

1: Active high

Description

-

H03.34 DI function allocation 3 (activated upon power-on)

Address:	0x0322	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Corresponding to null
1: Corresponding to FunIN.33
2: Corresponding to FunIN.34
4: Corresponding to FunIN.35
8: Corresponding to FunIN.36
16: Corresponding to FunIN.37
32: Corresponding to FunIN.38
64: Corresponding to FunIN.39
128: Corresponding to FunIN.40
256: Corresponding to FunIN.41
512: Corresponding to FunIN.42
1024: Corresponding to FunIN.43
2048: Corresponding to FunIN.44
4096: Corresponding to FunIN.45
8192: Corresponding to FunIN.46
16384: Corresponding to FunIN.47
32768: Corresponding to FunIN.48

Description

-

H03.35 **DI function allocation 4 (activated upon power-on)**

Address:	0x0323	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Corresponding to null
1: Corresponding to FunIN.49
2: Corresponding to FunIN.50
4: Corresponding to FunIN.51
8: Corresponding to FunIN.52
16: Corresponding to FunIN.53
32: Corresponding to FunIN.54
64: Corresponding to FunIN.55
128: Corresponding to FunIN.56
256: Corresponding to FunIN.57
512: Corresponding to FunIN.58
1024: Corresponding to FunIN.59
2048: Corresponding to FunIN.60
4096: Corresponding to FunIN.61
8192: Corresponding to FunIN.62
16384: Corresponding to FunIN.63

Description

-

H03.51 Current-type AI1 input filter time constant

Address:	0x0333	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	655.35	Data Type:	UInt16
Default:	2.00	Change:	Immediately

Value Range:

0.00ms to 655.35ms

Description

-

H03.55 Voltage-type AI2 offset

Address:	0x0337	Effective mode:	Real time
Min.:	-5000	Unit:	mV
Max.:	5000	Data Type:	Int16
Default:	0	Change:	Immediately

Value Range:

-5000mV to 5000mV

Description

-

H03.56 Voltage-type AI2 input filter time constant

Address:	0x0338	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	655.35	Data Type:	UInt16
Default:	2.00	Change:	Immediately

Value Range:

0.00ms to 655.35ms

Description

-

H03.58 Voltage-type AI2 dead zone

Address:	0x033A	Effective mode:	Real time
Min.:	0.0	Unit:	mV
Max.:	1000.0	Data Type:	UInt16
Default:	10.0	Change:	Immediately

Value Range:

0.0mV to 1000.0mV

Description

-

H03.59 Voltage-type AI2 zero drift

Address:	0x033B	Effective mode:	Real time
Min.:	-500	Unit:	mV
Max.:	500.0	Data Type:	Int16
Default:	0.0	Change:	Immediately

Value Range:

-500mV to 500.0mV

Description

-

H03.60 DI1 filter time

Address:	0x033C	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	500.00	Data Type:	UInt16
Default:	3.00	Change:	Immediately

Value Range:

0.00ms to 500.00ms

Description

-

H03.61 **DI2 fitter time**

Address:	0x033D	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	500.00	Data type:	UInt16
Default:	3.00	Change:	Immediately

Value Range:

0.00ms to 500.00ms

Description

-

H03.62 **DI3 fitter time**

Address:	0x033E	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	500.00	Data type:	UInt16
Default:	3.00	Change:	Immediately

Value Range:

0.00ms to 500.00ms

Description

-

H03.63 **DI4 fitter time**

Address:	0x033F	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	500.00	Data type:	UInt16
Default:	3.00	Change:	Immediately

Value Range:

0.00ms to 500.00ms

Description

-

H03.64 **DI5 fitter time**

Address:	0x0340	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	500.00	Data type:	UInt16
Default:	3.00	Change:	Immediately

Value Range:

0.00ms to 500.00ms

Description

-

H03.65 DI6 fitter time

Address:	0x0341	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	500.00	Data type:	UInt16
Default:	0.50	Change:	Immediately

Value Range:

0.00ms to 500.00ms

Description

-

H03.66 DI7 fitter time

Address:	0x0342	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	500.00	Data type:	UInt16
Default:	0.50	Change:	Immediately

Value Range:

0.00ms to 500.00ms

Description

-

H03.67 DI8 fitter time

Address:	0x0343	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	500.00	Data type:	UInt16
Default:	0.50	Change:	Immediately

Value Range:

0.00ms to 500.00ms

Description

-

H03.80 Speed corresponding to analog 10 V

Address:	0x0350	Effective mode:	Real time
Min.:	0	Unit:	1 RPM

Max.:	6000	Data type:	UInt16
Default:	3000	Change:	At stop

Value Range:

01 RPM–60001 RPM

Description

-

H03.81 Torque corresponding to analog 10 V

Address:	0x0351	Effective mode:	Real time
Min.:	1.00	Unit:	Multiplier
Max.:	8.00	Data type:	UInt16
Default:	1.00	Change:	At stop

Value Range:

1.00 to 8.00

Description

-

4.5 H04 Terminal Output Parameters

H04.00 DO1 function

Address:	0x0400	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	1	Change:	Real-time

Value Range:

0: No function
1: Servo ready
2: Motor rotation signal
3: Zero speed signal
4: Speed matching signal
5: Positioning completed
6: Positioning near
7: Torque limited signal
8: Speed limited signal
9: Braking
10: Warning
11: Fault
16: Homing completed
18: Torque reached signal
19: Speed reached signal
21: Enable completed
25: Comparison output
30: Warning or fault output
32: EDM output

Description

Defines the function of DO1.
Different VDOs can be assigned with the same function.
Descriptions for the setpoints are shown in the following table.

H04.01 DO1 logic selection

Address:	0x0401	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Normally open
1: Closed

Description

Defines the level logic of DO1 when the function assigned to DO1 is active.
DO1 to DO3 are normal DOs, requiring the minimum output signal width to be 1 ms.
The host controller must be able to receive valid DO logic changes.
Before receiving DO logic changes, check the setting of forced DI/DO selection to see whether the DO level is determined by the actual operating status of the drive or by forced DO.

H04.02 DO2 function

Address:	0x0402	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	11	Change:	Immediately

Value Range:

See H04.00.

Description

-

H04.03 DO2 logic selection

Address:	0x0403	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Normally open

1: Closed

Description

-

H04.04 DO3 function

Address:	0x0404	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	9	Change:	Immediately

Value Range:

See H04.00.

Description

-

H04.05 DO3 logic selection

Address:	0x0405	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Normally open
1: Closed
Description
-

H04.06 **DO4 function**

Address:	0x0406	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	11	Change:	Immediately

Value Range:
Same as H04.00
Description
-

H04.07 **DO4 logic selection**

Address:	0x0407	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:
0: Normally open
1: Closed
Description
-

H04.08 **DO5 function**

Address:	0x0408	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	16	Change:	Immediately

Value Range:
Same as H04.00
Description
-

H04.09 **DO5 logic selection**

Address:	0x0409	Effective mode:	Real time

Min.: 0
Max.: 1
Default: 0

Unit: -
Data Type: UInt16
Change: Immediately

Value Range:

0: Normally open

1: Closed

Description

-

H04.22 DO source selection

Address: 0x0416
Min.: 0
Max.: 31
Default: 0

Effective mode: Real time
Unit: -
Data Type: UInt16
Change: Real-time

Value Range:

bit	Name	Description
0	DO1	0: DO1 function output
		1: Bit 0 of H31.04 set through communication
1	DO2	0: DO2 function output
		1: Bit 1 of H31.04 set through communication
2	DO3	0: DO3 function output
		1: Bit 2 of H31.04 set through communication
3	DO4	0: DO4 function output
		1: Bit 3 of H31.04 set through communication
4	DO5	0: DO5 function output
		1: Bit 4 of H31.04 set through communication

Description

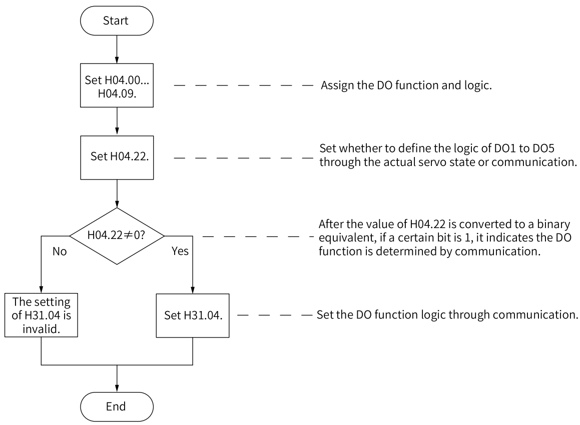
Defines whether the logic of a physical DO terminal is defined by the actual state of the drive or by communication.

The value of H04.22 is displayed in decimal on the keypad. When the value is converted to a binary equivalent: If bit(n) is 0, it indicates the logic of DO(n+1) is defined by the actual state of the drive. If bit(n) is 1, it indicates the logic of DO(n +1) is defined by communication (H31.04).

Setpoint (decimal)	Setpoint (binary)					DO logic	
	bit4	bit3	bit2	bit1	bit0	Defined by the Drive State	Defined by Communication (H31.04)
	DO5	DO4	DO3	DO2	DO1		
0	0	0	0	0	0	DO1–DO5	N/A
1	0	0	0	0	1	DO2–DO5	DO1
...	...	...	...	...	...	...	...
31	1	1	1	1	1	N/A	DO1–DO5

Set H04.22 to a value listed in the preceding table.

H31.04 is not displayed on the keypad and can only be modified through communication. For H31.04, "bit(n) = 1" indicates the logic of DO(n+1) is active. "bit(n) = 0" indicates the logic of DO(n+1) is inactive.



H04.50 **AO1 signal selection**

Address:	0x0432	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	10	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Motor speed (1 V/1000 rpm)
1: Speed reference (1 V/1000 rpm)
2: Torque reference (1 V/100 x rated torque)
3: Position deviation (0.5 mV/1 reference unit)
4: Position deviation (0.5 mV/1 encoder unit)
5: Position reference speed (1 V/1000 rpm)
6: Positioning completed
9: AI2 voltage
10: Defined by H31.05

Description

-

H04.51 **AO1 offset voltage**

Address:	0x0433	Effective mode:	Real time
Min.:	-10000	Unit:	mV
Max.:	10000	Data Type:	Int16
Default:	5000	Change:	Immediately

Value Range:

-10000mV to 10000mV

Description

-

H04.52 **AO1 ratio**

Address:	0x0434	Effective mode:	Real time
Min.:	-99.99	Unit:	-
Max.:	99.99	Data Type:	Int16
Default:	1.00	Change:	Immediately

Value Range:

-99.99 to 99.99

Description

-

4.6 H05 Position Control Parameters

H05.00 **Primary position reference source**

Address:	0x0500	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16

Default:	0	Change:	Immediately

Value Range:

0: Pulse reference

1: Step reference

2: Multi-position reference

Description

-

H05.01 Position pulse reference input terminal

Address:	0x0501	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Low speed

1: High speed

Description

-

H05.02 Pulses per revolution

Address:	0x0502	Effective mode:	Upon the next power-on
Min.:	0	Unit:	PPR
Max.:	4294967295	Data Type:	UInt32
Default:	0	Change:	At stop

Value Range:

0P/Rev–4294967295P/Rev

Description

-

H05.04 First-order low-pass filter time constant

Address:	0x0504	Effective mode:	Real time
Min.:	0.0	Unit:	ms
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:

0.0 ms to 6553.5 ms

Description

-

H05.05 Step amount

Address:	0x0505	Effective mode:	Real time
Min.:	-9999	Unit:	Reference unit
Max.:	9999	Data Type:	Int16
Default:	50	Change:	At stop

Value Range:

-9999 to +9999

Description

-

H05.06 Moving average filter time constant 1

Address:	0x0506	Effective mode:	Real time
Min.:	0.0	Unit:	ms
Max.:	128.0	Data Type:	UInt16
Default:	0.0	Change:	At stop

Value Range:

0.0 ms to 128.0ms

Description

-

H05.07 Electronic gear ratio 1 (numerator)

Address:	0x0507	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	1073741824	Data type:	UInt32
Default:	8388608	Change:	Immediately

Value Range:

1 to 1073741824

Description

-

H05.09 Electronic gear ratio 1 (denominator)

Address:	0x0509	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	1073741824	Data type:	UInt32
Default:	10000	Change:	Immediately

Value Range:

1 to 1073741824

Description

-

H05.11 Electronic gear ratio 2 (numerator)

Address:	0x050B	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	1073741824	Data type:	UInt32
Default:	8388608	Change:	Immediately

Value Range:

1 to 1073741824

Description

-

H05.13 Electronic gear ratio 2 (denominator)

Address:	0x050D	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	1073741824	Data type:	UInt32
Default:	10000	Change:	Immediately

Value Range:

1 to 1073741824

Description

-

H05.15 Pulse reference form

Address:	0x050F	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Direction + Pulse, positive logic

1: Direction + Pulse, negative logic

2: Phase A + phase B quadrature pulse, quadrupled frequency

3: CW + CCW

Description

-

H05.16 Clear action

Address:	0x0510	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Position deviation cleared upon S-OFF or non-operational state

1: Position deviation cleared upon S-OFF or fault

2: Position deviation cleared upon S-OFF or active DI function 35

Description

-

H05.17 Number of encoder frequency-division pulses

Address:	0x0511	Effective mode:	Upon the next power-on
Min.:	35	Unit:	PPR
Max.:	4194303	Data type:	UInt32
Default:	2500	Change:	At stop

Value Range:

35P/Rev–4194303P/Rev

Description

-

H05.19 Speed feedforward control

Address:	0x0513	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: No speed feedforward

1: Internal speed feedforward

2: PLC speed feedforward

Description

Defines the source of the speed loop feedforward signal.

In the position control mode, speed feedforward can be used to improve the position reference response speed.

Speed feedforward control parameters include speed feedforward filter time constant and speed feedforward gain. See section "Feedforward Gain" for details.

H05.20 Condition for positioning completed signal output

Address:	0x0514	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	10	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Absolute position deviation lower than the setpoint of H05.21

1: Absolute position deviation lower than the setpoint of H05.21 and the filtered position reference is 0

2: Absolute position deviation lower than the setpoint of H05.21 and the unfiltered position reference is 0

3: Absolute position deviation kept lower than the setpoint of H05.21 within the time defined by H05.60 and the unfiltered position reference is 0

4: Absolute value of position deviation lower than threshold, window time being active and filtered position reference being 0

5: Absolute value of position deviation lower than threshold, with zero speed signal being active and filtered position reference being 0

6: Absolute value of position deviation lower than threshold, with zero speed signal being active and filtered position reference being 0

7: COIN signal judged after the change (available→unavailable) of the position reference kept active for the defined window time, with filtered position reference being 0 and position deviation lower than threshold

8: COIN signal judged after the change (available→unavailable) of the filtered position reference kept active for the defined window time, with filtered position reference being 0 and position deviation lower than the threshold

9: COIN signal judged after the change (available→unavailable) of the position reference kept active for the defined window time, with filtered position reference being 0 and position deviation lower than the threshold

10: COIN signal judged after the change (available→unavailable) of the filtered position reference kept active for the defined window time, with filtered position reference being 0 and position deviation lower than threshold

Description

-

H05.21 Threshold of positioning completed

Address:	0x0515	Effective mode:	Real time
Min.:	1	Unit:	Encoder unit
Max.:	65535	Data Type:	UInt16
Default:	7	Change:	Immediately

Value Range:

1 to 65535

Description

-

H05.22 Proximity threshold

Address:	0x0516	Effective mode:	Real time
Min.:	1	Unit:	Encoder unit
Max.:	65535	Data type:	UInt16
Default:	65535	Change:	Immediately

Value Range:

1 to 65535

Description

-

H05.24 Interrupt positioning displacement

Address:	0x0518	Effective mode:	Real time
Min.:	0	Unit:	Reference unit
Max.:	1073741824	Data type:	UInt32
Default:	10000	Change:	Immediately

Value Range:

0 to 1073741824

Description

-

H05.26 Constant operating speed in interrupt positioning

Address:	0x051A	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	6000	Data Type:	UInt16
Default:	200	Change:	Immediately

Value Range:

0rpm–6000rpm

Description

-

H05.27 Acc./Dec. time of interrupt positioning

Address:	0x051B	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	10	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H05.29 Interruption fixed length unlock

Address:	0x051D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

0: Disabled

1: Enabled

Description

-

H05.32 Speed of high-speed search for home switch signal

Address:	0x0520	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	3000	Data type:	UInt16
Default:	100	Change:	Immediately

Value Range:

0 RPM–3000 RPM

Description

-

H05.33 Speed of low-speed search for home switch signal

Address:	0x0521	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	1000	Data type:	UInt16
Default:	10	Change:	Immediately

Value Range:

0rpm–1000rpm

Description

-

H05.34 Acceleration/Deceleration time during homing

Address:	0x0522	Effective mode:	Real time
Min.:	0	Unit:	ms

Max.:	1000	Data Type:	UInt16
Default:	1000	Change:	Immediately

Value Range:

0ms to 1000ms

Description

-

H05.35 Home search time limit

Address:	0x0523	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	10000	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H05.36 Mechanical home offset

Address:	0x0524	Effective mode:	Real time
Min.:	-2147483648	Unit:	Reference unit
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Real-time

Value Range:

-2147483648 to 2147483647

Description

-

H05.38 Frequency-division output source

Address:	0x0526	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Encoder frequency-division output

1: Pulse reference synchronous output

2: Frequency-division output inhibited

3: Second encoder frequency-division output

Description

-

H05.39 Electronic gear ratio switchover condition

Address:	0x0527	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Switchover after position reference is kept 0 for 2.5 ms

1: Switched in real time

Description

-

H05.40 Mechanical home offset and action upon overtravel

Address:	0x0528	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: H05.36 as the coordinate after homing, reverse homing applied after homing triggered again on overtravel

1: H05.36 as the relative offset after homing, reverse homing applied after homing triggered again on overtravel

2: H05.36 as the coordinate after homing, reverse homing auto-applied on overtravel

3: H05.36 as the relative offset after homing, reverse homing auto-applied on overtravel

Description

-

H05.41 Z pulse output polarity

Address:	0x0529	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	1	Change:	At stop

Value Range:

bit0: Frequency-division Z output polarity
0: Positive (high level upon active Z pulse)
1: Negative (low level upon active Z pulse)
bit1: OCZ output polarity
0: Positive (high level upon active Z pulse)
1: Negative (low level upon active Z pulse)
bit2: Inner loop probe Z signal source
0: Motor Z signal
1: Frequency-division output Z signal

Description

-

H05.43 Position pulse edge

Address:	0x052B	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Rising edge-triggered
1: Falling edge-triggered

Description

-

H05.44 Numerator of frequency-division output reduction ratio

Address:	0x052C	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	16383	Data Type:	UInt16
Default:	1	Change:	At stop

Value Range:

1 to 16383

Description

-

H05.45 Denominator of frequency-division output reduction ratio

Address:	0x052D	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	8191	Data Type:	UInt16
Default:	1	Change:	At stop

Value Range:

1 to 8191

Description

-

H05.46 DI selection of multi-turn frequency-division Z starting point

Address:	0x052E	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: No selection

1: DI1

2: DI2

3: DI3

4: DI4

5: DI5

6: DI6

7: DI7

8: DI8

Description

-

H05.47 Frequency-division Z pulse width

Address:	0x052F	Effective mode:	Real time
Min.:	0	Unit:	us
Max.:	400	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0us–400us

Description

-

H05.50 Mechanical gear ratio in absolute position rotation mode (numerator)

Address:	0x0532	Effective mode:	Upon the next power-on
Min.:	1	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

1 to 65535

Description

-

H05.51 Mechanical gear ratio in absolute position rotation mode (denominator)

Address:	0x0533	Effective mode:	Upon the next power-on
Min.:	1	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

1 to 65535

Description

-

H05.52 Pulses per revolution of the load in absolute position rotation mode (low 32 bits)

Address:	0x0534	Effective mode:	Upon the next power-on
Min.:	0	Unit:	Encoder unit
Max.:	2147483647	Data Type:	UInt32
Default:	0	Change:	At stop

Value Range:

0 to 2147483647

Description

-

H05.54 Pulses per revolution of the load in absolute position rotation mode (high 32 bits)

Address:	0x0536	Effective mode:	Upon the next power-on
Min.:	0	Unit:	Encoder unit
Max.:	2147483647	Data Type:	UInt32
Default:	0	Change:	At stop

Value Range:

0 to 2147483647

Description

-

H05.56 Speed threshold in homing upon hit-and-stop

Address:	0x0538	Effective mode:	Real time

Min.:	0	Unit:	RPM
Max.:	1000	Data Type:	UInt16
Default:	2	Change:	Immediately

Value Range:

0rpm–1000rpm

Description

-

H05.58 Torque threshold in homing upon hit-and-stop

Address:	0x053A	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	100.0	Change:	Immediately

Value Range:

0.0% to 300.0%

Description

-

H05.59 Positioning window time

Address:	0x053B	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	30000	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0ms to 30000ms

Description

-

H05.60 Hold time of positioning completed

Address:	0x053C	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	30000	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0ms to 30000ms

Description

-

H05.66 Homing time unit

Address:	0x0542	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	2	Change:	At stop

Value Range:

0: 1 ms

1: 10 ms

2: 100 ms

Description

-

H05.67 Offset between zero point and single-turn absolute position

Address:	0x0543	Effective mode:	Real time
Min.:	-2147483648	Unit:	1 encoder unit
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	At stop

Value Range:

-2147483648 to 2147483647

Description

-

H05.69 Auxiliary homing function

Address:	0x0545	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Inhibited

1: Record offset position

2: Clear offset position

Description

-

H05.70 Moving average filter time constant 2

Address:	0x0546	Effective mode:	Real time
Min.:	0.0	Unit:	ms
Max.:	1000.0	Data Type:	UInt16

Default:	0.0	Change:	At stop

Value Range:

0.0 ms to 1000.0ms

Description

-

H05.71 Motor Z signal width

Address:	0x0547	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	100	Data Type:	UInt16
Default:	4	Change:	Immediately

Value Range:

0ms to 100ms

Description

-

H05.72 Positioning completed window in fully closed-loop mode

Address:	0x0548	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Use inner loop unit

1: Inner loop uses inner loop unit, and outer loop uses outer loop unit

Description

-

H05.80 Reference operation mode in rotation mode

Address:	0x0550	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 4

Description

-

4.7 H06 Speed Control Parameters

H06.00 Source of main speed reference A

Address:	0x0600	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Digital setting (H06.03)

Description

-

H06.01 Source of auxiliary speed reference B

Address:	0x0601	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	5	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Digital setting (H06.03)

5: Multi-speed reference

Description

-

H06.02 Speed reference source

Address:	0x0602	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Source of main speed reference A

1: Source of auxiliary speed reference B

2: A+B

3: Switched between A and B

4: Communication

Description

-

H06.03 Speed reference value set through keypad

Address:	0x0603	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	200	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H06.04 DI speed reference

Address:	0x0604	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	10000	Data Type:	Int16
Default:	150	Change:	Immediately

Value Range:

0rpm–10000rpm

Description

-

H06.05 Acc. ramp time of speed reference

Address:	0x0605	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0ms to 65535ms

Description

Acc. ramp time of speed reference in the local speed mode.

H06.06 Dec. ramp time of speed reference

Address:	0x0606	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0ms to 65535ms

Description

Dec. ramp time of speed reference in the local speed mode.

H06.07 Max. speed limit

Address:	0x0607	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	10000	Data Type:	UInt16
Default:	7000	Change:	Immediately

Value Range:

0rpm–10000rpm

Description

-

H06.08 Forward speed limit

Address:	0x0608	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	10000	Data Type:	UInt16
Default:	7000	Change:	Immediately

Value Range:

0rpm–10000rpm

Description

-

H06.09 Reverse speed limit

Address:	0x0609	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	10000	Data Type:	UInt16
Default:	7000	Change:	Immediately

Value Range:

0rpm–10000rpm

Description

-

H06.10 Deceleration unit in emergency stop

Address:	0x060A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16

Default:	0	Change:	At stop

Value Range:

0: Multiplied by 1

1: Multiplied by 10

2: Multiplied by 100

Description

The default value is 0. When ramp stop is set to the maximum value but the ramp time still exceeds the expected value, you can use this parameter to reduce the stop time.

H06.11 Torque feedforward control

Address:	0x060B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	1	Change:	Real-time

Value Range:

0: No torque feedforward

1: Internal torque feedforward

Description

Defines whether to enable internal torque feedforward in the control modes other than torque control.

Torque feedforward can be used to improve the torque reference response speed and reduce the position deviation during acceleration/deceleration at constant speed.

Parameters of the torque feedforward function include torque feedforward filter time constant and torque feedforward gain. For details, see section Feedforward Gain.

In non-torque control, the control block diagram of torque feedforward is shown in the following figure.

H06.12 Acceleration ramp time of jog speed

Address:	0x060C	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	10	Change:	Real-time

Value Range:

0 ms to 65535 ms

Description

Defines the acceleration/deceleration time of jog speed references in the jog mode set through H0d.11 or the software tool.

H06.13 Speed feedforward smoothing filter

Address:	0x060D	Effective mode:	Real time
Min.:	0	Unit:	us
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0us–65535us

Description

Defines the speed feedforward filter time constant.

H06.15 Zero clamp speed threshold

Address:	0x060F	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	10000	Data Type:	UInt16
Default:	10	Change:	Immediately

Value Range:

0rpm–10000rpm

Description

-

H06.16 Threshold of TGON (motor rotation) signal

Address:	0x0610	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	1000	Data Type:	UInt16
Default:	20	Change:	Immediately

Value Range:

0rpm–1000rpm

Description

-

H06.17 Threshold of V-Cmp (speed matching) signal

Address:	0x0611	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	100	Data Type:	UInt16
Default:	10	Change:	Immediately

Value Range:

0 RPM –100 RPM

Description

-

H06.18 Threshold of speed reach signal

Address:	0x0612	Effective mode:	Real time
Min.:	20	Unit:	RPM
Max.:	10000	Data Type:	UInt16
Default:	1000	Change:	Immediately

Value Range:

20rpm–10000rpm

Description

-

H06.19 Threshold of zero speed output signal

Address:	0x0613	Effective mode:	Real time
Min.:	1	Unit:	RPM
Max.:	10000	Data Type:	UInt16
Default:	10	Change:	Immediately

Value Range:

1rpm–10000rpm

Description

-

H06.36 Deceleration time of ramp 1/PN ramp stop

Address:	0x0624	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	32	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0ms to 32ms

Description

-

H06.40 Deceleration time of ramp 1/PN ramp stop

Address:	0x0628	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16

Default:	0	Change:	At stop

Value Range:

0ms to 65535ms

Description

-

H06.41 Dec. time of ramp 2/PN quick stop

Address:	0x0629	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0ms to 65535ms

Description

-

H06.50 Speed S-curve enable switch

Address:	0x0632	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 1

Description

-

H06.51 Increasing acceleration of speed S-curve acceleration segment

Address:	0x0633	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	50.0	Change:	At stop

Value Range:

0.0% to 100.0%

Description

-

H06.52 Decreasing acceleration of speed S-curve acceleration segment

Address:	0x0634	Effective mode:	Real time

Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	50.0	Change:	At stop

Value Range:

0.0% to 100.0%

Description

-

H06.53 Increasing acceleration of speed S-curve deceleration segment

Address:	0x0635	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	50.0	Change:	At stop

Value Range:

0.0% to 100.0%

Description

-

H06.54 Decreasing acceleration of speed S-curve deceleration segment

Address:	0x0636	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	50.0	Change:	At stop

Value Range:

0.0% to 100.0%

Description

-

4.8 H07 Torque Control Parameters

H07.00 Source of main torque reference A

Address:	0x0700	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Keypad (H7.03)

Description

-

H07.01 Source of auxiliary torque reference B

Address:	0x0701	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Keypad (H7.03)

Description

-

H07.02 Torque reference source

Address:	0x0702	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Source of main torque reference A

1: Source of auxiliary torque reference B

2: Source of A+B

3: Switched between A and B

4: Communication

Description

-

H07.03 Torque reference set through keypad

Address:	0x0703	Effective mode:	Real time
Min.:	-400	Unit:	%
Max.:	400.0	Data type:	Int16
Default:	0.0	Change:	Immediately

Value Range:

-400.0% to 400.0%

Description

-

H07.05 Torque reference filter time constant 1

Address:	0x0705	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	30.00	Data Type:	UInt16
Default:	0.50	Change:	Immediately

Value Range:

0.00ms to 30.00ms

Description

-

H07.06 Torque reference filter time constant 2

Address:	0x0706	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	30.00	Data Type:	UInt16
Default:	0.27	Change:	Real-time

Value Range:

0.00 ms to 30.00 ms

Description

Defines the torque reference filter time constant.

Low-pass filtering of torque references helps smoothen torque references and reduce vibration.

Pay attention to the responsiveness during setting as an excessively high setpoint lowers down the responsiveness.

H07.07 Torque limit source

Address:	0x0707	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	5	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Positive/Negative internal torque limit

5: PN torque limit

Description

-

H07.09 Positive internal torque limit

Address:	0x0709	Effective mode:	Real time

Min.:	0.0	Unit:	%
Max.:	400.0	Data Type:	UInt16
Default:	350.0	Change:	Immediately

Value Range:

0.0% to 400.0%

Description

-

H07.10 Negative internal torque limit

Address:	0x070A	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	400.0	Data Type:	UInt16
Default:	350.0	Change:	Immediately

Value Range:

0.0% to 400.0%

Description

-

H07.11 Positive external torque limit

Address:	0x070B	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	400.0	Data Type:	UInt16
Default:	350.0	Change:	Immediately

Value Range:

0.0% to 400.0%

Description

-

H07.12 Negative external torque limit

Address:	0x070C	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	400.0	Data Type:	UInt16
Default:	350.0	Change:	Immediately

Value Range:

0.0% to 400.0%

Description

-

H07.15 Emergency-stop torque

Address:	0x070F	Effective mode:	At stop
Min.:	0.0	Unit:	%
Max.:	400.0	Data Type:	UInt16
Default:	100.0	Change:	Immediately

Value Range:

0.0% to 400.0%

Description

-

H07.17 Speed limit source

Address:	0x0711	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Internal speed limit

2: H07.19 or H07.20 as defined by DI

Description

-

H07.19 Positive speed limit/Speed limit 1 in torque control

Address:	0x0713	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	10000	Data type:	UInt16
Default:	3000	Change:	Immediately

Value Range:

0 RPM–10000 RPM

Description

-

H07.20 Negative speed limit/Speed limit 2 in torque control

Address:	0x0714	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	10000	Data type:	UInt16
Default:	3000	Change:	Immediately

Value Range:

0 RPM–10000 RPM

Description

-

H07.21 Torque reach base value

Address:	0x0715	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	300.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0% to 300.0%

Description

-

H07.22 Torque reach valid value

Address:	0x0716	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	400.0	Data Type:	UInt16
Default:	20.0	Change:	Immediately

Value Range:

0.0% to 400.0%

Description

-

H07.23 Torque reach invalid value

Address:	0x0717	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	400.0	Data Type:	UInt16
Default:	10.0	Change:	Immediately

Value Range:

0.0% to 400.0%

Description

-

H07.24 Field weakening depth

Address:	0x0718	Effective mode:	Real time
Min.:	60	Unit:	%
Max.:	115	Data Type:	UInt16

Default:	115	Change:	Real-time

Value Range:

60%–115%

Description

Use the default value in general cases. Reducing the flux weakening depth improves the dynamic performance of flux-weakening area and reduces current ripple, but also leads to load rate rise.

H07.25 Max. permissible demagnetizing current

Address:	0x0719	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	200	Data Type:	UInt16
Default:	100	Change:	Real-time

Value Range:

0%–200%

Description

Use the default value in general cases. Increasing the demagnetizing current extends the motor speed range, but also poses a greater challenge on the bearing capacity of the motor. If you need to increase the setpoint of 2007-1Ah, contact Inovance first.

H07.26 Field weakening selection

Address:	0x071A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

0: Disabled; 1: Enabled

H07.27 Flux weakening gain

Address:	0x071B	Effective mode:	Real time
Min.:	0.001	Unit:	Hz
Max.:	1.000	Data Type:	UInt16
Default:	0.030	Change:	Immediately

Value Range:

0.001 Hz to 1.000 Hz

Description

-

H07.28 Speed of flux weakening point

Address:	0x071C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H07.36 Time constant of low-pass filter 2

Address:	0x0724	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	10.00	Data Type:	UInt16
Default:	0.00	Change:	Immediately

Value Range:

0.00ms to 10.00ms

Description

-

H07.37 Torque reference filter selection

Address:	0x0725	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: First-order filter

1: Biquad filter

Description

0: First-order filter

1: Biquad filter

H07.38 Biquad filter attenuation ratio

Address:	0x0726	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	50	Data Type:	UInt16
Default:	16	Change:	At stop

Value Range:

0 to 50

Description

-

H07.40 Speed limit window in torque control mode

Address:	0x0728	Effective mode:	Real time
Min.:	0.0	Unit:	ms
Max.:	30.0	Data type:	UInt16
Default:	1.0	Change:	Immediately

Value Range:

0.0 ms to 30.0ms

Description

-

4.9 H08 Gain Parameters

H08.00 Speed loop gain

Address:	0x0800	Effective mode:	Real time
Min.:	0.1	Unit:	Hz
Max.:	2000.0	Data Type:	UInt16
Default:	40.0	Change:	Real-time

Value Range:

0.1Hz to 2000.0Hz

Description

Defines the proportional gain of the speed loop.

2008-01h determines the responsiveness of the speed loop. The higher the setpoint, the higher the responsiveness. Note that an excessively high setpoint may cause vibration. In the position control mode, the position loop gain must be increased together with the speed loop gain.

H08.01 Speed loop integral time constant

Address:	0x0801	Effective mode:	Real time
Min.:	0.15	Unit:	ms
Max.:	512.00	Data Type:	UInt16

Default:	19.89	Change:	Real-time

Value Range:

0.15 ms to 512.00 ms

Description

Defines the integral time constant of the speed loop.

The lower the setpoint, the better the integral action, and the quicker will the deviation value be close to 0.

Note: There is no integral action when H08.01 is set to 512.00.

H08.02 Position loop gain

Address:	0x0802	Effective mode:	Real time
Min.:	0.1	Unit:	Hz
Max.:	2000.0	Data Type:	UInt16
Default:	64.0	Change:	Real-time

Value Range:

0.1Hz to 2000.0Hz

Description

Defines the proportional gain of the position loop.

Defines the responsiveness of the position loop. A high setpoint shortens the positioning time.

Note that an excessively high setpoint may cause vibration. The torque reference filter time constant is called the 1st gain.

H08.03 2nd speed loop gain

Address:	0x0803	Effective mode:	Real time
Min.:	0.1	Unit:	Hz
Max.:	2000.0	Data Type:	UInt16
Default:	75.0	Change:	Immediately

Value Range:

0.1 Hz to 2000.0 Hz

Description

-

H08.04 2nd speed loop integral time constant

Address:	0x0804	Effective mode:	Real time
Min.:	0.15	Unit:	ms
Max.:	512.00	Data type:	UInt16
Default:	10.61	Change:	Immediately

Value Range:

0.15ms to 512.00ms

Description

-

H08.05 2nd position loop gain

Address:	0x0805	Effective mode:	Real time
Min.:	0.1	Unit:	Hz
Max.:	2000.0	Data Type:	UInt16
Default:	120.0	Change:	Real-time

Value Range:

0.1Hz to 2000.0Hz

Description

Defines the second gain set of the position loop and speed loop.

The 2nd torque reference filter time constant is called 2nd gain.

For details on gain switchover, see section "Gain Switchover".

H08.08 2nd gain mode setting

Address:	0x0808	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	1	Change:	Real-time

Value Range:

0: Fixed to the 1st group of gains, P/PI switched through external

DI1:Switched between the 1st and 2nd group of gains as defined by H08.09

Description

Defines the mode for switching to the 2nd gain set.

H08.09 Gain switchover condition

Address:	0x0809	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	10	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Fixed to the 1st gain set (PS)
1: Switched as defined by Func3 of 60FEh
2: Torque reference too large (PS)
3: Speed reference too large (PS)
4: Speed reference change rate too large (PS)
5: Speed reference low/high speed threshold (PS)
6: Position deviation too large (P)
7: Position reference available (P)
8: Positioning unfinished (P)
9: Actual speed (P)
10: Position reference + Actual speed (P)

Description

See the following table for gain switchover conditions.

Set point	Gain switchover condition	Remarks
0	Fixed to the 1st gain set	The 1st gain set applies.
1	DI (Func3) switchover	-
2	Torque reference too large	If the torque reference absolute value exceeds (Level + Dead time) [%] in the last 1st gain set, the drive switches to the 2nd gain set. If the absolute value of the torque reference is lower than (level – Dead time) [%] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set.
3	Speed reference too large	If the speed reference absolute value exceeds (Level + Dead time) [rpm] in the last 1st gain set, the drive switches to the 2nd gain set. If the absolute value of the speed reference is lower than (level - Dead time) [rpm] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set.
4	Speed reference too large	Active in the control modes other than speed control If the absolute value of the change rate of the speed reference exceeds (Level + Dead time) [10 rpm/s] in the last 1st gain set, the drive switches to the 2nd gain set. If the absolute value of the speed reference change rate is lower than (level – hysteresis) [10 rpm/s] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set. In the speed control mode, the 1st gain set always applies.
5	Speed reference high/low-speed threshold	If the speed reference absolute value exceeds (Level - Dead time) [rpm] in the last 1st gain set, the drive starts to switch to the 2nd gain set, with gains changed gradually. When the speed reference absolute value reaches (Level + Dead time) [rpm], the 2nd gain set applies. If the speed reference absolute value is lower than (Level + Dead time) [rpm] in the last 2nd gain set, the drive starts to return to the 1st gain set, with gains changed gradually. When the speed reference absolute value reaches (Level - Dead time) [rpm], the 1st gain set applies.

Set point	Gain switchover condition	Remarks
6	Position deviation too large	Active only in position control and full closed-loop control. If the position deviation absolute value exceeds (Level + Dead time) [encoder unit] in the last 1st gain set, the drive switches to the 2nd gain set. When the absolute value of the position deviation is lower than (Level - Dead time) [encoder unit] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set. If the drive is not in position control or full closed-loop control, the 1st gain set always applies.
7	Position reference available	Active only in position control and full closed-loop control. If the position reference is not 0 in the last 1st gain set, the drive switches to the 2nd gain set. When the position reference is 0 and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set. If the drive is not in position control or full closed-loop control, the 1st gain set always applies.
8	Positioning uncompleted	Active only in position control and full closed-loop control. If positioning has not been completed in the last 1st gain set, the drive switches to the 2nd gain set. If positioning is not completed and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain set, the servo drive returns to the 1st gain set. If the drive is not in position control or full closed-loop control, the 1st gain set always applies.
9	Actual speed	Active only in position control and full closed-loop control. If the absolute value of actual speed exceeds (Level + Dead time) [rpm] in the last 1st gain set, the drive switches to the 2nd gain set. If the absolute value of actual speed is lower than (Level - Dead time) [rpm] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain set, the drive returns to the 1st gain set. If the drive is not in position control or full closed-loop control, the 1st gain set always applies.
10	Position reference + Actual speed	Active only in position control and full closed-loop control. If the position reference is not 0 in the last 1st gain set, the drive switches to the 2nd gain set. If the position reference is 0 and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain set, the 2nd gain set applies. When the position reference is 0 and the delay defined by (H08.10) is reached, if the absolute value of actual speed is lower than (Level) [rpm], the speed loop integral time constant is fixed to the setpoint of H08.04 (2nd speed loop integral time constant), and others return to the 1st gain set; if the absolute value of actual speed does not reach (Level - Dead time) [rpm], the speed integral also returns to the setpoint of H08.01 (Speed loop integral time constant). If the drive is not in position control or full closed-loop control, the 1st gain set always applies.

H08.10 Gain switchover delay

Address:	0x080A	Effective mode:	Real time
Min.:	0.0	Unit:	ms
Max.:	1000.0	Data Type:	UInt16
Default:	5.0	Change:	Real-time

Value Range:

0.0 ms to 1000.0 ms

Description

Defines the delay when the drive switches from the 2nd gain set to the 1st gain set.

H08.11 Gain switchover level

Address:	0x080B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	20000	Data Type:	UInt16
Default:	50	Change:	Real-time

Value Range:

0 to 20000

Description

Defines the gain switchover level.

Defines the gain switchover level.

The unit of gain switchover level varies with the switchover condition.

H08.12 Gain switchover hysteresis

Address:	0x080C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	20000	Data Type:	UInt16
Default:	30	Change:	Real-time

Value Range:

0 to 20000

Description

Defines the dead time for gain switchover.

Gain switchover is affected by both the level and the dead time.

The unit of gain switchover hysteresis varies with the switchover condition.

H08.13 Position gain switchover time

Address:	0x080D	Effective mode:	Real time
Min.:	0.0	Unit:	ms
Max.:	1000.0	Data Type:	UInt16
Default:	3.0	Change:	Real-time

Value Range:

0.0 ms to 1000.0 ms

Description

In position control, if 2nd position loop gain is much higher than position loop gain, set the time for switching from the latter to the former.
This parameter can be used to reduce the impact caused by an increase in the position loop gain.

H08.15 Load moment of inertia ratio

Address:	0x080F	Effective mode:	Real time
Min.:	0.00	Unit:	-
Max.:	120.00	Data Type:	UInt16
Default:	1.00	Change:	Real-time

Value Range:

0.00 to 120.00

Description

Defines the mechanical load inertia ratio relative to the motor moment of inertia.
In online inertia auto-tuning, the servo drive sets the parameter automatically and manual setting is not allowed. Manual setting is allowed after online inertia auto-tuning is off.

H08.17 Zero phase delay

Address:	0x0811	Effective mode:	Real time
Min.:	0.0	Unit:	ms
Max.:	4.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0 ms to 4.0ms

Description

-

H08.18 Time constant of speed feedforward filter

Address:	0x0812	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	64.00	Data Type:	UInt16
Default:	0.50	Change:	Immediately

Value Range:

0.00ms to 64.00ms

Description

Defines the filter time constant of speed feedforward.

H08.19 Speed feedforward gain

Address:	0x0813	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0% to 100.0%

Description

Increasing the setpoint improves the responsiveness to position references and reduces the position deviation during operation at a constant speed.

H08.20 Torque feedforward filter time constant

Address:	0x0814	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	64.00	Data type:	UInt16
Default:	0.50	Change:	Immediately

Value Range:

0.00ms to 64.00ms

Description

Defines the filter time constant of torque feedforward.

H08.21 Torque feedforward gain

Address:	0x0815	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	300.0	Data Type:	UInt16
Default:	0.0	Change:	Real-time

Value Range:

0.0%–300.0%

Description

Increasing the setpoint improves the responsiveness to variable speed references. Increasing the setpoint improves the responsiveness to position references and reduces the position deviation during operation at a constant speed.

H08.22 Speed feedback filtering option

Address:	0x0816	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16

Default: 0 | Change: At stop

Value Range:

0: Inhibited
1: 2 times
2: 4 times
3: 8 times
4: 16 times

Description

Defines the moving average filtering times for speed feedback.
The higher the setpoint, the weaker the speed feedback fluctuation, but the longer the feedback delay will be.

H08.23 Cutoff frequency of speed feedback low-pass filter

Address:	0x0817	Effective mode:	Real time
Min.:	100	Unit:	Hz
Max.:	8000	Data Type:	UInt16
Default:	8000	Change:	Real-time

Value Range:

100Hz to 8000Hz

Description

Defines the cutoff frequency for first-order low-pass filtering on the speed feedback.

H08.24 PDFF control coefficient

Address:	0x0818	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	200.0	Data Type:	UInt16
Default:	100.0	Change:	Real-time

Value Range:

0.0%–200.0%

Description

Defines the control mode of the speed loop.
When the parameter is set to 200.0, PI control (default control mode of the speed loop) is applied to the speed loop, which features fast dynamic response. When this parameter is set to 0.0, speed loop integral action is enhanced, which filters out low-frequency interference but also slows down the dynamic response.

H08.27 Speed observer cutoff frequency

Address:	0x081B	Effective mode:	Real time

Min.:	50	Unit:	Hz
Max.:	600	Data Type:	UInt16
Default:	170	Change:	Immediately

Value Range:

50 Hz to 600 Hz

Description

-

H08.28 Speed observer inertia correction coefficient

Address:	0x081C	Effective mode:	Real time
Min.:	1	Unit:	%
Max.:	1600	Data Type:	UInt16
Default:	100	Change:	Immediately

Value Range:

1% to 1600%

Description

-

H08.29 Speed observer filter time

Address:	0x081D	Effective mode:	Real time
Min.:	0.00	Unit:	ms
Max.:	10.00	Data Type:	UInt16
Default:	0.80	Change:	Immediately

Value Range:

0.00ms to 10.00ms

Description

-

H08.31 Disturbance cutoff frequency

Address:	0x081F	Effective mode:	Real time
Min.:	10	Unit:	Hz
Max.:	4000	Data Type:	UInt16
Default:	600	Change:	Immediately

Value Range:

10 Hz to 4000 Hz

Description

-

H08.32 Disturbance compensation gain

Address:	0x0820	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	100	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0% to 100%

Description

-

H08.33 Disturbance observer inertia correction coefficient

Address:	0x0821	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	1600	Data Type:	UInt16
Default:	100	Change:	Immediately

Value Range:

0% to 1600%

Description

-

H08.37 Phase modulation for medium-frequency jitter suppression 2

Address:	0x0825	Effective mode:	Real time
Min.:	-90	Unit:	°
Max.:	90	Data Type:	Int16
Default:	0	Change:	Immediately

Value Range:

-90° to 90°

Description

-

H08.38 Medium-frequency suppression 2 frequency

Address:	0x0826	Effective mode:	Real time
Min.:	0	Unit:	Hz
Max.:	1000	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 Hz to 1000 Hz

Description

-

H08.39 Compensation gain of medium-frequency jitter suppression 2

Address:	0x0827	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	300	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0% to 300%

Description

-

H08.40 Speed observer selection

Address:	0x0828	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Disabled

1: Enabled

Description

-

H08.42 Model control selection

Address:	0x082A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Disable

1: Enable

2: Dual-inertia model

Description

-

H08.43 Model gain

Address:	0x082B	Effective mode:	Real time

Min.:	0.1	Unit:	-
Max.:	2000.0	Data Type:	UInt16
Default:	40.0	Change:	Immediately

Value Range:

0.1 to 2000.0

Description

-

H08.46 Feedforward value

Address:	0x082E	Effective mode:	Real time
Min.:	0.0	Unit:	-
Max.:	102.4	Data Type:	UInt16
Default:	95.0	Change:	Immediately

Value Range:

0.0 to 102.4

Description

-

H08.53 Medium- and low-frequency jitter suppression frequency 3

Address:	0x0835	Effective mode:	Real time
Min.:	0.0	Unit:	Hz
Max.:	300.0	Data type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0 Hz to 300.0 Hz

Description

-

H08.54 Medium- and low-frequency jitter suppression compensation 3

Address:	0x0836	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	200	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0% to 200%

Description

-

H08.56 Medium- and low-frequency jitter suppression phase modulation 3

Address:	0x0838	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	600	Data Type:	UInt16
Default:	100	Change:	Immediately

Value Range:

0% to 600%

Description

-

H08.59 Medium- and low-frequency jitter suppression frequency 4

Address:	0x083B	Effective mode:	Real time
Min.:	0.0	Unit:	Hz
Max.:	300.0	Data type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0 Hz to 300.0 Hz

Description

-

H08.60 Medium- and low-frequency jitter suppression compensation 4

Address:	0x083C	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	200	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0% to 200%

Description

-

H08.61 Medium- and low-frequency jitter suppression phase modulation 4

Address:	0x083D	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	600	Data Type:	UInt16
Default:	100	Change:	Immediately

Value Range:

0% to 600%

Description

-

H08.62 Position loop integral time constant

Address:	0x083E	Effective mode:	Real time
Min.:	0.15	Unit:	-
Max.:	512.00	Data type:	UInt16
Default:	512.00	Change:	Immediately

Value Range:

0.15 to 512.00

Description

-

H08.63 2nd position loop integral time constant

Address:	0x083F	Effective mode:	Real time
Min.:	0.15	Unit:	-
Max.:	512.00	Data type:	UInt16
Default:	512.00	Change:	Immediately

Value Range:

0.15 to 512.00

Description

-

H08.64 Speed observer feedback source

Address:	0x0840	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Disabled

1: Enabled

Description

-

H08.65 Zero deviation control selection

Address:	0x0841	Effective mode:	Real time
Min.:	0	Unit:	-

Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Disabled

1: Enabled

Description

-

H08.66 Zero deviation control position average filter

Address:	0x0842	Effective mode:	Real time
Min.:	0.0	Unit:	ms
Max.:	320.0	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0 ms to 320.0ms

Description

-

H08.68 Speed feedforward of zero deviation control

Address:	0x0844	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0% to 100.0%

Description

-

H08.69 Torque feedforward of zero deviation control

Address:	0x0845	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0% to 100.0%

Description

-

H08.81 Anti-resonance frequency of dual-inertia model

Address:	0x0851	Effective mode:	Real time
Min.:	0.0	Unit:	Hz
Max.:	300.0	Data type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0 Hz to 300.0 Hz

Description

-

H08.82 Resonance frequency of dual-inertia model

Address:	0x0852	Effective mode:	Real time
Min.:	0.0	Unit:	Hz
Max.:	300.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0 Hz to 300.0 Hz

Description

-

H08.83 Dual-inertia model gain

Address:	0x0853	Effective mode:	Real time
Min.:	0.1	Unit:	Hz
Max.:	2000.0	Data Type:	UInt16
Default:	40.0	Change:	Immediately

Value Range:

0.1 Hz to 2000.0 Hz

Description

-

H08.84 Inertia ratio of dual-inertia model

Address:	0x0854	Effective mode:	Real time
Min.:	0.00	Unit:	-
Max.:	120.00	Data Type:	UInt16
Default:	1.00	Change:	Immediately

Value Range:

0.00 to 120.00

Description

-

H08.88 Speed feedforward value of dual-inertia model

Address:	0x0858	Effective mode:	Real time
Min.:	0.0	Unit:	-
Max.:	100.0	Data Type:	UInt16
Default:	100.0	Change:	Immediately

Value Range:

0.0 to 100.0

Description

-

H08.89 Torque feedforward value of dual-inertia model

Address:	0x0859	Effective mode:	Real time
Min.:	0.0	Unit:	-
Max.:	100.0	Data Type:	UInt16
Default:	100.0	Change:	Immediately

Value Range:

0.0 to 100.0

Description

-

4.10 H09 Auto-tuning Parameters

H09.00 Auto-adjustment mode

Address:	0x0900	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	6	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Disabled, manual gain tuning required

1: Enabled, gain parameters generated automatically based on the stiffness level

2: Positioning mode, gain parameters generated automatically based on the stiffness level

4: Normal mode+Inertia auto-tuning

6: Quick positioning mode+Inertia auto-tuning

Description

2009-01h is set to 4 by default.

H09.01 Stiffness level selection

Address:	0x0901	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	41	Data Type:	UInt16
Default:	15	Change:	Real-time

Value Range:

0 to 41

Description

Defines the stiffness level of the servo system. The higher the stiffness level, the stronger the gains and the quicker the response will be. But an excessively high stiffness level will cause vibration.

The setpoint 0 indicates the weakest stiffness and 41 indicates the strongest stiffness.

H09.02 Adaptive notch mode

Address:	0x0902	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	3	Change:	Real-time

Value Range:

0: Adaptive notch no longer updated;

1: One adaptive notch activated (3rd notch)

2: Two adaptive notches activated (3rd and 4th notches)

3: Resonance point tested only (displayed in H09.24)

4: Adaptive notch cleared, values of 3rd and 4th notches restored to default

Description

Defines the operation mode of the adaptive notch.

H09.03 Online inertia auto-tuning mode

Address:	0x0903	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	2	Change:	Real-time

Value Range:

0: Disabled

1: Enabled, changing slowly

2: Enabled, changing normally

3: Enabled, changing quickly

Description

Sets the offline inertia auto-tuning mode. For details on offline inertia auto-tuning, see section Offline Inertia Auto-tuning.

H09.05 Offline inertia auto-tuning mode

Address:	0x0905	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: Bi-directional

1: Unidirectional

Description

Sets the offline inertia auto-tuning mode. For details on offline inertia auto-tuning, see section Offline Inertia Auto-tuning.

H09.06 Max. speed of inertia auto-tuning

Address:	0x0906	Effective mode:	Real time
Min.:	100	Unit:	RPM
Max.:	1000	Data Type:	UInt16
Default:	500	Change:	At stop

Value Range:

100rpm–1000rpm

Description

Defines the maximum permissible speed reference in offline inertia auto-tuning mode.

During inertia auto-tuning, the higher the speed, the more accurate the auto-tuned values. Use the default setpoint in general cases.

H09.07 Time constant for accelerating to max. speed during inertia auto-tuning

Address:	0x0907	Effective mode:	Real time
Min.:	20	Unit:	ms
Max.:	800	Data Type:	UInt16
Default:	125	Change:	At stop

Value Range:

20 ms to 800 ms

Description

Defines the time for the motor to accelerate from 0 rpm to the maximum speed of inertia auto-tuning during offline inertia auto-tuning.

H09.08 Interval time after an individual inertia auto-tuning

Address:	0x0908	Effective mode:	Real time
Min.:	50	Unit:	ms
Max.:	10000	Data Type:	UInt16
Default:	800	Change:	At stop

Value Range:

50 ms to 10000 ms

Description

Defines the time interval between two consecutive speed references when bi-directional offline inertia auto-tuning mode is used.

H09.09 Number of motor revolutions per inertia auto-tuning

Address:	0x0909	Effective mode:	Real time
Min.:	0.00	Unit:	-
Max.:	100.00	Data Type:	UInt16
Default:	1.00	Change:	Real-time

Value Range:

0.00 to 100.00

Description

Displays the number of motor revolutions needed when bi-directional offline inertia auto-tuning mode is used.

H09.11 Vibration threshold

Address:	0x090B	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0% to 100.0%

Description

Defines the threshold of vibration detected by the notch. When the current feedback exceeds the threshold, the notch starts working.

H09.12 Frequency of the 1st notch

Address:	0x090C	Effective mode:	Real time
Min.:	50	Unit:	Hz
Max.:	8000	Data Type:	UInt16
Default:	8000	Change:	Real-time

Value Range:

50Hz to 8000Hz

Description

Defines the center frequency of the notch, which is the mechanical resonance frequency.

In the torque control mode, setting the notch frequency to 8000Hz deactivates the notch function.

H09.13 Width level of the 1st notch

Address:	0x090D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	20	Data Type:	UInt16
Default:	2	Change:	Real-time

Value Range:

0 to 20

Description

Defines the width level of the notch. Use the default setpoint in general cases.

Width level is the ratio of the notch width to the notch center frequency.

H09.14 Depth level of the 1st notch

Address:	0x090E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	99	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0 to 99

Description

Defines the depth level of the notch.

The depth level of the notch is the ratio between the input to the output at the notch center frequency.

The higher the setpoint, the lower the notch depth and the weaker the mechanical resonance suppression will be. Note that an excessively high setpoint may cause system instability.

For use of notches, see section "Vibration Suppression" in SV660P Series Servo Drive Function Guide.

H09.15 Frequency of the 2nd notch

Address:	0x090F	Effective mode:	Real time
Min.:	50	Unit:	Hz
Max.:	8000	Data Type:	UInt16
Default:	8000	Change:	Immediately

Value Range:

50 Hz to 8000 Hz

Description

-

H09.16 Width level of the 2nd notch

Address:	0x0910	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	20	Data Type:	UInt16
Default:	2	Change:	Immediately

Value Range:

0 to 20

Description

-

H09.17 Depth level of the 2nd notch

Address:	0x0911	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	99	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 99

Description

Descriptions for parameters of the 2nd notch are the same as that of the 1st notch.

H09.18 Frequency of the 3rd notch

Address:	0x0912	Effective mode:	Real time
Min.:	50	Unit:	Hz
Max.:	8000	Data Type:	UInt16
Default:	8000	Change:	Immediately

Value Range:

50 Hz to 8000 Hz

Description

-

H09.19 Width level of the 3rd notch

Address:	0x0913	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	20	Data Type:	UInt16
Default:	2	Change:	Immediately

Value Range:

0 to 20

Description

-

H09.20 Depth level of the 3rd notch

Address:	0x0914	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	99	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 99

Description

Descriptions for parameters of the 3rd notch are the same as that of the 1st notch.

H09.21 Frequency of the 4th notch

Address:	0x0915	Effective mode:	Real time
Min.:	50	Unit:	Hz

Max.:	8000	Data Type:	UInt16
Default:	8000	Change:	Immediately

Value Range:

50 Hz to 8000 Hz

Description

-

H09.22 Width level of the 4th notch

Address:	0x0916	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	20	Data Type:	UInt16
Default:	2	Change:	Immediately

Value Range:

0 to 20

Description

-

H09.23 Depth level of the 4th notch

Address:	0x0917	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	99	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 99

Description

Descriptions for parameters of the 4th notch are the same as that of the 1st notch.

H09.24 Auto-tuned resonance frequency

Address:	0x0918	Effective mode:	-
Min.:	0	Unit:	Hz
Max.:	5000	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 Hz to 5000 Hz

Description

When adaptive notch mode is set to 3, the current mechanical resonance frequency is displayed.

H09.26 **ITune response**

Address:	0x091A	Effective mode:	Real time
Min.:	50.0	Unit:	%
Max.:	500.0	Data Type:	UInt16
Default:	100.0	Change:	Immediately

Value Range:

50.0% to 500.0%

Description

-

H09.27 **ITune mode**

Address:	0x091B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Disabled

1: ITune mode 1

2: ITune mode 2

Description

-

H09.28 **Minimum inertia ratio of ITune**

Address:	0x091C	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	80.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0% to 80.0%

Description

-

H09.29 **Maximum inertia ratio of ITune**

Address:	0x091D	Effective mode:	Real time
Min.:	1.0	Unit:	%
Max.:	120.0	Data Type:	UInt16
Default:	30.0	Change:	Immediately

Value Range:

1.0% to 120.0%

Description

-

H09.32 Gravity compensation value

Address:	0x0920	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0% to 100.0%

Description

-

H09.33 Positive friction compensation value

Address:	0x0921	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	100.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0% to 100.0%

Description

-

H09.34 Negative friction compensation value

Address:	0x0922	Effective mode:	Real time
Min.:	-100	Unit:	%
Max.:	0.0	Data Type:	Int16
Default:	0.0	Change:	Immediately

Value Range:

-100.0% to 0.0%

Description

-

H09.35 Friction compensation speed

Address:	0x0923	Effective mode:	Real time
Min.:	0.0	Unit:	-

Max.:	20.0	Data Type:	UInt16
Default:	2.0	Change:	Immediately

Value Range:

0.0 to 20.0

Description

-

H09.36 Friction compensation speed

Address:	0x0924	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	19	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: 0x00 Slow mode+Speed reference
0: 0x01 Slow mode+Model speed
0: 0x02 Slow mode+Speed feedback
0: 0x03 Slow mode+Observe speed
0: 0x10 Quick mode +Speed reference
0: 0x11 Quick mode +Model speed
0: 0x12 Quick mode +Speed feedback
0: 0x13 Quick mode+Observe speed

Description

Selects the setpoint.

H09.37 Vibration monitoring time

Address:	0x0925	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	600	Change:	Immediately

Value Range:

0 to 65535

Description

-

H09.38 Frequency of low-frequency resonance suppression 1 at the mechanical end

Address:	0x0926	Effective mode:	Real time
Min.:	1.0	Unit:	Hz
Max.:	100.0	Data type:	UInt16

Default:	100.0	Change:	Immediately

Value Range:

1.0 Hz to 100.0 Hz

Description

-

H09.39 Low-frequency resonance suppression 1 at the mechanical end

Address:	0x0927	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	2	Change:	At stop

Value Range:

0 to 3

Description

-

H09.44 Frequency of low-frequency resonance suppression 2 at mechanical load end

Address:	0x092C	Effective mode:	Real time
Min.:	0.0	Unit:	-
Max.:	100.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0 to 100.0

Description

-

H09.45 Responsiveness of low-frequency resonance suppression 2 at mechanical load end

Address:	0x092D	Effective mode:	Real time
Min.:	0.01	Unit:	-
Max.:	5.00	Data Type:	UInt16
Default:	1.00	Change:	Immediately

Value Range:

0.01 to 5.00

Description

-

H09.47 Width of low-frequency resonance suppression 2 at mechanical load end

Address:	0x092F	Effective mode:	Real time
Min.:	0.00	Unit:	-
Max.:	2.00	Data Type:	UInt16
Default:	1.00	Change:	Immediately

Value Range:

0.00 to 2.00

Description

-

H09.49 Frequency of low-frequency resonance suppression 3 at mechanical load end

Address:	0x0931	Effective mode:	Real time
Min.:	0.0	Unit:	-
Max.:	100.0	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0 to 100.0

Description

-

H09.50 Responsiveness of low-frequency resonance suppression 3 at mechanical load end

Address:	0x0932	Effective mode:	Real time
Min.:	0.01	Unit:	-
Max.:	5.00	Data Type:	UInt16
Default:	1.00	Change:	Immediately

Value Range:

0.01 to 5.00

Description

-

H09.52 Width of low-frequency resonance suppression 3 at mechanical load end

Address:	0x0934	Effective mode:	Real time
Min.:	0.00	Unit:	-
Max.:	2.00	Data Type:	UInt16
Default:	1.00	Change:	Immediately

Value Range:

0.00 to 2.00

Description

-

H09.54 Vibration threshold

Address:	0x0936	Effective mode:	Real time
Min.:	0.0	Unit:	%
Max.:	300.0	Data Type:	UInt16
Default:	50.0	Change:	Real-time

Value Range:

0.0%–300.0%

Description

Defines the threshold of vibration detected by the notch. When the current feedback exceeds the threshold, the notch starts working.

H09.56 Max. overshoot allowed by ETune

Address:	0x0938	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	2936	Change:	Immediately

Value Range:

0 to 65535

Description

-

H09.57 STune resonance suppression switchover frequency

Address:	0x0939	Effective mode:	Real time
Min.:	0	Unit:	Hz
Max.:	4000	Data type:	UInt16
Default:	900	Change:	Immediately

Value Range:

0 Hz to 4000 Hz

Description

-

H09.58 STune resonance suppression reset selection

Address:	0x093A	Effective mode:	Real time
Min.:	0	Unit:	-

Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Disabled

1: Enabled

Description

-

4.11 H0A Fault and Protection Parameters

H0A.00 Power input phase loss protection

Address:	0x0A00	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Enable

1: Disable

Description

Servo drives supporting single-phase/three-phase 220 V and three-phase 380 V power supplies Objects available. When voltage fluctuation or phase loss occurs on the power supply, the drive triggers power input phase loss protection according to the setting.

H0A.01 Absolute position limit

Address:	0x0A01	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Disabled

1: Enabled

2: Enabled after homing

Description

Defines whether the absolute position limit is active and the condition for activation.

- After the absolute position limit is enabled, when the target position reference exceeds the position limit in the position control mode, the servo drive takes the position limit as the target and stops after reaching the limit.
- When the absolute position feedback reaches the position limit in other control modes, the servo drive reports an overtravel warning and stops in the mode defined by the set stop mode at overtravel.

H0A.04 Motor overload protection gain

Address:	0x0A04	Effective mode:	Real time
Min.:	50	Unit:	-
Max.:	300	Data Type:	UInt16
Default:	100	Change:	Real-time

Value Range:

50 to 300

Description

Defines the motor overload duration before E620.0 (Motor overload fault) is reported.

You can change the setpoint to advance or delay the time when overload protection is triggered based on the motor temperature. The setpoint 50% indicates the time is cut by half; 150% indicates the time is increased by 50%. Set this parameter based on the actual temperature of the motor.

H0A.08 Overspeed threshold

Address:	0x0A08	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	20000	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0rpm–20000rpm

Description

Defines the overspeed threshold of the motor.

Setpoint	Threshold	Condition for Reporting E500.0
0	Maximum motor speed x 1.2	If the speed feedback exceeds the overspeed threshold several times, the drive reports E500.0 (Motor overspeed).
1 to 20000	If H0A-08 ⩾ (Maximum motor speed x 1.2): Overspeed threshold = Maximum motor speed x 1.2	
	If H0A-08 < (Maximum motor speed x 1.2): Overspeed threshold = H0A.08	

H0A.09 Max. pulse input frequency in position control

Address:	0x0A09	Effective mode:	Real time
Min.:	100	Unit:	kHz
Max.:	8000	Data type:	UInt16
Default:	8000	Change:	At stop

Value Range:

100 kHz to 8000 kHz

Description

-

H0A.10 Threshold of excessive local position deviation

Address:	0x0A0A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4294967295	Data Type:	UInt32
Default:	25185824	Change:	Real-time

Value Range:

0 to 4294967295

Description

Defines the threshold for reporting EB00.0 (Position deviation too large). The function of 200A-0Bh is the same as 6065h (Following error window), both of which are active.

H0A.12 Runaway protection enable

Address:	0x0A0C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16

Default: 1 | Change: Immediately

Value Range:

0: Disable

1: Enable

Description

Used to enable runaway protection.

H0A.17 Reference unit

Address:	0x0A11	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Pulse unit

1: Reference unit

Description

-

H0A.18 IGBT over-temperature threshold

Address:	0x0A12	Effective mode:	Real time
Min.:	120	Unit:	°C
Max.:	175	Data Type:	UInt16
Default:	140	Change:	Immediately

Value Range:

120°C to 175°C

Description

Defines the over-temperature protection threshold of the power module.

H0A.19 Filter time constant of touch probe 1

Address:	0x0A13	Effective mode:	Real time
Min.:	0.00	Unit:	us
Max.:	6.30	Data type:	UInt16
Default:	2.00	Change:	Immediately

Value Range:

0.00us–6.30us

Description

-

H0A.20 Filter time constant of touch probe 2

Address:	0x0A14	Effective mode:	Real time
Min.:	0.00	Unit:	us
Max.:	6.30	Data Type:	UInt16
Default:	2.00	Change:	Real-time

Value Range:

0.00us–6.30us

Description

Probe 1 and Probe 2 are high speed DI terminals. When there is peak interference in the external input signal, note that the oscilloscope in the software tool displays the unfiltered signals of touch probe 1 and touch probe 2. Signals with width lower than 0.25 ms will not be displayed.

H0A.23 TZ signal filter time

Address:	0x0A17	Effective mode:	Upon the next power-on
Min.:	0	Unit:	25ns
Max.:	31	Data Type:	UInt16
Default:	15	Change:	At stop

Value Range:

0ns to 31ns

Description

-

H0A.24 Filter time constant of low-speed pulse input terminal

Address:	0x0A18	Effective mode:	Upon the next power-on
Min.:	0	Unit:	25ns
Max.:	255	Data type:	UInt16
Default:	30	Change:	At stop

Value Range:

025ns to 25525ns

Description

-

H0A.26 Motor overload detection

Address:	0x0A1A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:
0: Show motor overload warning (E909.0) and fault (E620.0)
1: Hide motor overload warning (E909.0) and fault (E620.0)
Description
Defines whether to enable motor overload detection.

H0A.27 Motor rotation DO speed filter time

Address:	0x0A1B	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	100	Data Type:	UInt16
Default:	50	Change:	At stop

Value Range:
0 ms to 100 ms
Description
Defines the low-pass filter time constant of speed feedback signals.
This parameter is effective only when the speed feedback signals are used to judge the speed-related DO signals.

H0A.29 Fully closed-loop encoder (ABZ) filter time

Address:	0x0A1D	Effective mode:	Upon the next power-on
Min.:	0	Unit:	25ns
Max.:	255	Data type:	UInt16
Default:	15	Change:	At stop

Value Range:
025ns to 25525ns
Description
-

H0A.30 Filter time constant of high-speed pulse input terminal

Address:	0x0A1E	Effective mode:	Upon the next power-on
Min.:	0	Unit:	ns
Max.:	255	Data type:	UInt16
Default:	3	Change:	At stop

Value Range:
0ns to 255ns
Description
-

H0A.32 Time threshold for locked motor overheat protection

Address:	0x0A20	Effective mode:	Real time
Min.:	10	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	200	Change:	Real-time

Value Range:

10 ms to 65535 ms

Description

Defines the overtemperature duration before E630.0 (Motor stall) is detected by the servo drive.

H0A.33 Locked motor overheat protection

Address:	0x0A21	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	Immediately

Value Range:

0: Disabled

1: Enabled

Description

Defines whether to enable the detection for E630.0 (Motor stall overtemperature protection).

H0A.36 Encoder multi-turn overflow fault selection

Address:	0x0A24	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Not hide

1: Hide

Description

Defines whether to hide E735.0 (Encoder multi-turn counting overflow) in the absolute position linear mode.

H0A.39 Current sampling clock signal tolerance count

Address:	0x0A27	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-

Max.:	3	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 3

Description

-

H0A.40 Compensation function selection

Address:	0x0A28	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	15	Data Type:	UInt16
Default:	6	Change:	At stop

Value Range:

bit	Name	Description
0	Overtravel compensation	0: Enabled
		1: Disabled
1	Probe rising edge compensation	0: Disabled
		1: Enabled
2	Probe falling edge compensation	0: Disabled
		1: Enabled
3	Probe solution	0: New solution
		1: Old solution (same as SV660N)

Description

-

H0A.41 Forward position of software position limit

Address:	0x0A29	Effective mode:	Real time
Min.:	-2147483648	Unit:	Encoder unit
Max.:	2147483647	Data Type:	Int32

Default:	2147483647	Change:	At stop

Value Range:

-2147483648 to 2147483647

Description

-

H0A.43 Reverse position of software position limit

Address:	0x0A2B	Effective mode:	Real time
Min.:	-2147483648	Unit:	Encoder unit
Max.:	2147483647	Data Type:	Int32
Default:	-2147483648	Change:	At stop

Value Range:

-2147483648 to 2147483647

Description

-

H0A.49 Regenerative resistor overtemperature threshold

Address:	0x0A31	Effective mode:	Real time
Min.:	100	Unit:	°C
Max.:	175	Data Type:	UInt16
Default:	115	Change:	Immediately

Value Range:

100°C to 175°C

Description

-

H0A.50 Encoder communication fault tolerance threshold

Address:	0x0A32	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	31	Data Type:	UInt16
Default:	3	Change:	Immediately

Value Range:

0 to 31

Description

-

H0A.51 Phase loss detection filter times

Address:	0x0A33	Effective mode:	Real time

Min.:	3	Unit:	55ms
Max.:	36	Data Type:	UInt16
Default:	20	Change:	Immediately

Value Range:

3ms to 36ms

Description

-

H0A.52 Encoder temperature protection threshold

Address:	0x0A34	Effective mode:	Real time
Min.:	0	Unit:	°C
Max.:	175	Data Type:	UInt16
Default:	105	Change:	Immediately

Value Range:

0°C to 175°C

Description

0: Disable

H0A.53 Probe DI ON compensation time

Address:	0x0A35	Effective mode:	Real time
Min.:	-3000	Unit:	25ns
Max.:	3000	Data Type:	Int16
Default:	128	Change:	Immediately

Value Range:

-3000ns to 3000ns

Description

-

H0A.54 Probe DI OFF compensation time

Address:	0x0A36	Effective mode:	Real time
Min.:	-3000	Unit:	25ns
Max.:	3000	Data Type:	Int16
Default:	1512	Change:	Immediately

Value Range:

-3000ns to 3000ns

Description

-

H0A.55 Runaway current threshold

Address:	0x0A37	Effective mode:	Real time
Min.:	100.0	Unit:	%
Max.:	400.0	Data type:	UInt16
Default:	200.0	Change:	Immediately

Value Range:

100.0% to 400.0%

Description

-

H0A.56 Fault reset delay

Address:	0x0A38	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	60000	Data Type:	UInt16
Default:	10000	Change:	Real-time

Value Range:

0 ms to 60000 ms

Description

Faults E620.0, E630.0, E640.0, E640.1, and E650.0 can be reset only after the set delay.

H0A.57 Runaway speed threshold

Address:	0x0A39	Effective mode:	Real time
Min.:	1	Unit:	RPM
Max.:	1000	Data Type:	UInt16
Default:	50	Change:	Immediately

Value Range:

1rpm–1000rpm

Description

-

H0A.58 Runaway speed filter time

Address:	0x0A3A	Effective mode:	Upon the next power-on
Min.:	0.1	Unit:	ms
Max.:	100.0	Data Type:	UInt16
Default:	2.0	Change:	Immediately

Value Range:

0.1ms to 100.0ms

Description

-

H0A.59 Runaway protection detection time

Address:	0x0A3B	Effective mode:	Real time
Min.:	10	Unit:	ms
Max.:	1000	Data Type:	UInt16
Default:	30	Change:	Immediately

Value Range:

10ms to 1000ms

Description

-

H0A.60 Black box function mode

Address:	0x0A3C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	1	Change:	Immediately

Value Range:

0: Disable

1: Any fault

2: Designated fault

3: Triggered based on designated condition

Description

-

H0A.61 Designated fault code

Address:	0x0A3D	Effective mode:	Real time
Min.:	0.0	Unit:	-
Max.:	6553.5	Data Type:	UInt16
Default:	0.0	Change:	Immediately

Value Range:

0.0 to 6553.5

Description

-

H0A.62 Trigger source

Address:	0x0A3E	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	25	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 25

Description

-

H0A.63 Trigger level

Address:	0x0A3F	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H0A.65 Trigger level

Address:	0x0A41	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Rising edge

1: Equal

2: Falling edge

3: Edge-triggered

Description

-

H0A.66 Trigger position

Address:	0x0A42	Effective mode:	Real time
Min.:	0	Unit:	%
Max.:	100	Data Type:	UInt16
Default:	75	Change:	Immediately

Value Range:

0% to 100%

Description

-

H0A.67 Sampling frequency

Address:	0x0A43	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Current loop

1: Position loop

2: Main cycle

Description

-

H0A.70 Overspeed threshold 2

Address:	0x0A46	Effective mode:	Real time
Min.:	0	Unit:	RPM
Max.:	20000	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0rpm–20000rpm

Description

-

H0A.71 MS1 motor overload curve switchover

Address:	0x0A47	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	2	Change:	Immediately

Value Range:

0 to 3

Description

-

H0A.72 Maximum stop time in ramp-to-stop

Address:	0x0A48	Effective mode:	Real time

Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	10000	Change:	At stop

Value Range:

0 ms to 65535 ms

Description

Defines the maximum time taken by the motor in decelerating from 6000 RPM to 0 RPM under ramp stop.

H0A.73 STO 24 V disconnection filter time

Address:	0x0A49	Effective mode:	Real time
Min.:	1	Unit:	ms
Max.:	5	Data Type:	UInt16
Default:	5	Change:	Immediately

Value Range:

1ms to 5ms

Description

-

H0A.74 Filter time for two inconsistent STO channels

Address:	0x0A4A	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	1000	Data Type:	UInt16
Default:	100	Change:	Immediately

Value Range:

0ms to 1000ms

Description

-

H0A.75 Servo OFF delay after STO triggered

Address:	0x0A4B	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	25	Data Type:	UInt16
Default:	10	Change:	Immediately

Value Range:

0ms to 25ms

Description

-

H0A.90 Average filter time constant for speed display

Address:	0x0A5A	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	100	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0ms to 100ms

Description

-

H0A.91 Average filter time constant for torque display

Address:	0x0A5B	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	100	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0ms to 100ms

Description

-

H0A.92 Average filter time constant for position display

Address:	0x0A5C	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	100	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0ms to 100ms

Description

-

H0A.93 Low-pass filter time constant for voltage display

Address:	0x0A5D	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	250	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0ms to 250ms

Description

-

H0A.94 Low-pass filter time constant for thermal display

Address:	0x0A5E	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	250	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0ms to 250ms

Description

-

4.12 H0b Monitoring Parameters

H0b.00 Motor speed actual value

Address:	0x0B00	Effective mode:	-
Min.:	-32767	Unit:	RPM
Max.:	32767	Data Type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

-32767rpm to 32767rpm

Description

It displays the actual speed of the servo motor after round-off, in unit of 1 RPM. You can set the filter time constant for H0B-00 in filter time constant of speed feedback display.

H0b.01 Speed reference

Address:	0x0B01	Effective mode:	-
Min.:	-32767	Unit:	RPM
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

-32767 RPM to 32767 RPM

Description

Local speed mode, speed reference

H0b.02 Internal torque reference

Address:	0x0B02	Effective mode:	-
Min.:	-500	Unit:	%
Max.:	500.0	Data Type:	Int16
Default:	0.0	Change:	Unchangeable

Value Range:

-500.0% to 500.0%

Description

Displays present torque reference (accurate to 0.1%). The value 100.0% corresponds to the rated torque of the motor.

H0b.03 Input (DI) signal monitoring

Address:	0x0B03	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

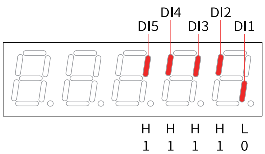
Description

Indicates the level status of DI1 to DI5 without filtering.

Upper LED segments ON: high level (indicated by "1") Lower LED segments ON: low level (indicated by "0")

For example, if DI1 is low level and DI2 to DI5 are high level, and the binary value is 11110, then the decimal value read from Inovance servo commissioning software is 30.

The panel display is as follows:



H0b.05 Output (DO) signal monitoring

Address:	0x0B05	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

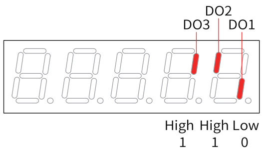
Description

It displays the level states of the 3 DO terminals without filtering.

Upper LED segments ON: high level (indicated by "1") Lower LED segments ON: low level (indicated by "0")

For example, if DO1 is low level and DO2 to DO3 are high level, and the binary value is 110, then the decimal value of H0B-05 read from Inovance servo commissioning software is 6, and the keypad displays the following figure:

The panel display is as follows:



H0b.07 Absolute position counter

Address:	0x0B07	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

It displays the current motor absolute position (reference unit) in the position control mode.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

H0b.09 Mechanical angle

Address:	0x0B09	Effective mode:	-
Min.:	0.0	Unit:	°
Max.:	360.0	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0° to 360.0°

Description

Displays present mechanical angle (encoder unit) of the motor. The setpoint 0 indicates the mechanical angle is 0°.

H0b.10 Electrical angle

Address:	0x0B0A	Effective mode:	-
Min.:	0.0	Unit:	°
Max.:	360.0	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0° to 360.0°

Description

Indicates the present electrical angle of the motor, which is accurate to 0.1°.

The electrical angle varies from -360° to +360.0° when the motor is rotating.

Similarly, if the motor has 4 pairs of poles, each revolution generates 4 rounds of angle changes from 0° to 359.9°.

Also, if the motor has 5 pairs of poles, each revolution generates 5 rounds of angle changes from 0° to 359.9°.

H0b.12 Average load ratio

Address:	0x0B0C	Effective mode:	-
Min.:	0.0	Unit:	%
Max.:	800.0	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0%–800.0%

Description

Displays the percentage of the average load torque to the rated torque of the motor, which is accurate to 0.1%. The value 100.0% corresponds to the rated torque of the motor.

H0b.13 Input reference counter

Address:	0x0B0D	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

-

H0b.15 Position following error (encoder unit)

Address:	0x0B0F	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

Used to count the position pulses fed back by the encoder in any control mode.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

H0b.17 Feedback pulse counter

Address:	0x0B11	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

-

H0b.19 Total power-on time

Address:	0x0B13	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	429496729.5	Data Type:	UInt32
Default:	0.0	Change:	Unchangeable

Value Range:

0.0s–429496729.5s

Description

Used to record the total operating time of the servo drive.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

H0b.24 Phase current RMS value

Address:	0x0B18	Effective mode:	-
Min.:	0.0	Unit:	A
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
0.0 A to 6553.5 A
Description
Displays the RMS value of the phase current of the motor, accurate to 0.1 A.

H0b.25 Angle obtained upon voltage injection auto-tuning

Address:	0x0B19	Effective mode:	-
Min.:	0.0	Unit:	°
Max.:	360.0	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
0.0° to 360.0°
Description
-

H0b.26 Bus voltage

Address:	0x0B1A	Effective mode:	-
Min.:	0.0	Unit:	V
Max.:	6553.5	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
0.0V to 6553.5V
Description
Displays the DC bus voltage of the main circuit input voltage after rectification, which is accurate to 0.1V.

H0b.27 Module temperature

Address:	0x0B1B	Effective mode:	-
Min.:	-20	Unit:	°C
Max.:	200	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:
-20°C to 200°C
Description
Indicates the temperature of the module inside the servo drive, which can be used as a reference for estimating the actual temperature of the drive.

H0b.28 Absolute encoder fault information given by FPGA

Address:	0x0B1C	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.29 Axis status information given by FPGA

Address:	0x0B1D	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.30 Axis fault information given by FPGA

Address:	0x0B1E	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.31 Encoder fault information

Address:	0x0B1F	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H0b.33 Fault log

Address:	0x0B21	Effective mode:	-
Min.:	0	Unit:	-
Max.:	20	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: Present fault
1: Last fault
2: 2nd to last fault
3: 3rd to last fault
4: 4th to last fault
5: 5th to last fault 6: 6th to last fault
7: 7th to last fault
8: 8th to last fault
9: 9th to last fault
10: 10th to last fault
11: 11th to last fault
12: 12th to last fault
13: 13th to last fault
14: 14th to last fault
15: 15th to last fault
16: 16th to last fault
17: 17th to last fault
18: 18th to last fault
19: 19th to last fault

Description

Used to view any one of the latest 10 faults that occurred on the servo drive.

H0b.34 Fault code set by H0B-33

Address:	0x0B22	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.35 Timestamp of the selected fault

Address:	0x0B23	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	429496729.5	Data type:	UInt32
Default:	0.0	Change:	Unchangeable

Value Range:

0.0s–429496729.5s

Description

-

H0b.37 Motor speed upon occurrence of the selected fault

Address:	0x0B25	Effective mode:	-
Min.:	-32767	Unit:	RPM
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

-32767rpm to 32767rpm

Description

-

H0b.38 Motor phase U current upon occurrence of the selected fault

Address:	0x0B26	Effective mode:	-
Min.:	-3276.7	Unit:	A
Max.:	3276.7	Data Type:	Int16
Default:	0.0	Change:	Unchangeable

Value Range:

-3276.7A to 3276.7A

Description

-

H0b.39 Motor phase V current upon occurrence of the selected fault

Address:	0x0B27	Effective mode:	-
Min.:	-3276.7	Unit:	A
Max.:	3276.7	Data Type:	Int16
Default:	0.0	Change:	Unchangeable

Value Range:

-3276.7A to 3276.7A

Description

-

H0b.40 Bus voltage upon occurrence of the selected fault

Address:	0x0B28	Effective mode:	-
Min.:	0.0	Unit:	V
Max.:	6553.5	Data Type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0V to 6553.5V

Description

-

H0b.41 Input terminal status upon occurrence of the selected fault

Address:	0x0B29	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.43 Output terminal status upon occurrence of the selected fault

Address:	0x0B2B	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

Displays the related data when a fault occurred.

H0b.45 Internal fault code

Address:	0x0B2D	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16

Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
-

H0b.46 Absolute encoder fault information given by FPGA upon occurrence of the selected fault

Address:	0x0B2E	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
-

H0b.47 System status information given by FPGA upon occurrence of the selected fault

Address:	0x0B2F	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
-

H0b.48 System fault information given by FPGA upon occurrence of the selected fault

Address:	0x0B30	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
-

H0b.49 Encoder fault information upon occurrence of the selected fault

Address:	0x0B31	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.51 Internal fault code upon occurrence of the selected fault

Address:	0x0B33	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.52 FPGA timeout fault standard bit upon occurrence of the selected fault

Address:	0x0B34	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.53 Position following error (reference unit)

Address:	0x0B35	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

-

H0b.55 Motor speed actual value

Address:	0x0B37	Effective mode:	-
Min.:	-2147483648	Unit:	RPM
Max.:	2147483647.0	Data Type:	Int32
Default:	0.0	Change:	Unchangeable

Value Range:

-2147483648.0rpm to 2147483647.0rpm

Description

It displays the actual speed of the servo motor after round-off, in unit of 1 RPM. You can set the filter time constant for H0B-00 in filter time constant of speed feedback display.

H0b.57 Bus voltage of the control circuit

Address:	0x0B39	Effective mode:	-
Min.:	0.0	Unit:	V
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0V to 6553.5V

Description

It displays the DC bus voltage of the input control power after rectification.

H0b.58 Mechanical absolute position (low 32 bits)

Address:	0x0B3A	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

Displays the low 32-bit value (encoder unit) of the mechanical position feedback when the absolute encoder is used.

H0b.60 Mechanical absolute position (high 32 bits)

Address:	0x0B3C	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

-

H0b.63 NotRdy state

Address:	0x0B3F	Effective mode:	-
Min.:	0	Unit:	-
Max.:	5	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

1: Control power error

2: Main circuit power input error

3: Undervoltage

4: Soft start failed

5: Encoder initialization not completed

6: Short circuit to ground failed

7: Others

Description

-

H0b.64 Real-time input position reference counter

Address:	0x0B40	Effective mode:	-
Min.:	-2147483648	Unit:	Reference unit
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648 to 2147483647

Description

-

H0b.66 Encoder temperature

Address:	0x0B42	Effective mode:	-

Min.:	-32768	Unit:	°C
Max.:	32767	Data Type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

-32768°C to 32767°C

Description

Indicates the encoder temperature value.

H0b.67 Load rate of regenerative resistor

Address:	0x0B43	Effective mode:	-
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0% to 200.0%

Description

Indicates the brake load rate. When the load rate exceeds 100%, the servo drive stops braking.

H0b.70 Number of absolute encoder revolutions

Address:	0x0B46	Effective mode:	-
Min.:	0	Unit:	Rev
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0Rev–65535Rev

Description

Indicates the number of revolutions of the absolute encoder.

H0b.71 Single-turn position fed back by the absolute encoder

Address:	0x0B47	Effective mode:	-
Min.:	2147483648	Unit:	p
Max.:	2147483647	Data Type:	UInt32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648 p to +2147483647 p

Description

It displays the single-turn position feedback of the absolute encoder.

H0b.74 System fault information given by FPGA

Address:	0x0B4A	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.77 Encoder position (low 32 bits)

Address:	0x0B4D	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

-

H0b.79 Encoder position (high 32 bits)

Address:	0x0B4F	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

-

H0b.81 Single-turn position of the rotary load (low 32 bits)

Address:	0x0B51	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

Indicates the low 32-bit value (encoder unit) of the position feedback of the load when the absolute encoder system works in the rotation mode.

H0b.83 Single-turn position of the rotary load (high 32 bits)

Address:	0x0B53	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

-

H0b.85 Single-turn position of the rotary load (reference unit)

Address:	0x0B55	Effective mode:	-
Min.:	-2147483648	Unit:	p
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648p to 2147483647p

Description

-

H0b.87 IGBT junction temperature

Address:	0x0B57	Effective mode:	-
Min.:	0	Unit:	-
Max.:	200	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 200

Description

-

H0b.90 Group No. of the abnormal parameter

Address:	0x0B5A	Effective mode:	-
Min.:	0	Unit:	-

Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.91 Offset within the group of the abnormal parameter

Address:	0x0B5B	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H0b.94 Individual power-on time

Address:	0x0B5E	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	429496729.5	Data Type:	UInt32
Default:	0.0	Change:	Unchangeable

Value Range:

0.0s–429496729.5s

Description

-

H0b.96 Individual power-on time upon occurrence of the selected fault

Address:	0x0B60	Effective mode:	-
Min.:	0.0	Unit:	-
Max.:	429496729.5	Data type:	UInt32
Default:	0.0	Change:	Unchangeable

Value Range:

0.0s–429496729.5s

Description

-

4.13 H0d Auxiliary Parameters

H0d.00 Software reset

Address:	0x0D00	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No operation

1: Enable

Description

Defines whether to enable software reset.

Software reset is available in the following cases:

The servo is in the S-OFF state.

No. 1 non-resettable faults do not occur.

No EEPROM operation is performed. The software reset function is ineffective.

H0d.01 Fault reset

Address:	0x0D01	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No operation

1: Enable

Description

Defines whether to enable fault reset.

For fault classification, see the Troubleshooting Guide.

The fault reset function, once enabled, stops the keypad from displaying the fault only. It does not activate modifications made on parameters.

This function is not applicable to non-resettable faults. Use this function with caution in cases where the fault causes are not rectified.

H0d.02 Inertia auto-tuning enable

Address:	0x0D02	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65

Description

-

H0d.04 Read/write in encoder ROM

Address:	0x0D04	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No operation

1: Write ROM

2: Read ROM

3: ROM failure

Description

-

H0d.05 Emergency stop

Address:	0x0D05	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: No operation

1: Emergency stop

Description

Defines whether to enable emergency stop. When this function is enabled, the servo drive immediately stops according to the Stop mode at S-ON OFF regardless of its state.

H0d.12 Phase U/V current balance correction

Address:	0x0D0C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

-

H0d.17 Forced DI/DO enable switch

Address:	0x0D11	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

bit0: Forced DI enable switch
0: Disabled
1: Enabled
bit1: Forced DO enable switch
0: Disabled
1: Enabled

Description

-

H0d.18 Forced DI value

Address:	0x0D12	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	255	Data Type:	UInt16
Default:	255	Change:	Real-time

Value Range:

0 to 255

Description

Defines the level logic of the DI functions set by the parameter when forced DI is activated.

The value of H0d.18 is displayed as a hexadecimal on the keypad. When it is converted to a binary value, "bit(n) = 1" indicates the level logic of DI function is high level; "bit(n) = 0" indicates the level logic of the DI function is low level.

H0d.19 Forced DO value

Address:	0x0D13	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	31	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0 to 31

Description

Defines whether the DO functions assigned by the parameter are active when forced DO is active.

The value of H0d.19 is displayed as a hexadecimal on the keypad. When it is converted to a binary value, "bit(n) = 1" indicates the DO function is active; "bit(n) = 0" indicates the DO function is inactive.

H0d.20 Absolute encoder reset

Address:	0x0D14	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No operation

1: Reset

2: Reset the fault and multi-turn data

Description

You can reset the encoder error or the multi-turn data fed back by the encoder by setting H0d.20.

H0d.23 Torque fluctuation auto-tuning

Address:	0x0D17	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 1

Description

-

H0d.26 Brake and dynamic brake started forcibly

Address:	0x0D1A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No forcible operations

1: Dynamic brake deactivated forcibly

2: Brake released forcibly

3: Dynamic brake deactivated and brake released forcibly

Description

-

4.14 H0E Communication Function Parameters

H0E.00 Node address

Address:	0x0E00	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	127	Data Type:	UInt16
Default:	1	Change:	At stop

Value Range:

1 to 127

Description

Defines the servo drive axis address during RS232 communication.

- 0: Broadcast address. The host controller performs the write operation on all the servo drives through the broadcast address. The servo drives acts accordingly after receiving the broadcast address frames without responding.
- 1 to 127: Each of the servo drive networked must have a unique address. Otherwise, communication error or failure will occur.

H0E.01 Save objects written through communication to EEPROM

Address:	0x0E01	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	1	Change:	Real-time

Value Range:

0: Not save

1: Save parameters written through communication to EEPROM

2: Save object dictionaries written through communication to EEPROM

3: Save parameters and object dictionaries written through communication to EEPROM

4: Save object dictionaries written before communication (OP) to EEPROM

Description

Sets whether parameters written by 232 communication and PN communication are saved in e2prom.

H0E.07 Object dictionary unit selection

Address:	0x0E07	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Reference unit system (p/s, p/s2)

1: User unit system (0.01 RPM, ms)

Description

-

H0E.10 CAN selection

Address:	0x0E0A	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Pulse/Axis control command

1: Enhanced axis control command

2: CANopen

Description

-

H0E.11 CAN baud rate

Address:	0x0E0B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	7	Data Type:	UInt16
Default:	5	Change:	At stop

Value Range:

0: 20kbps

1: 50kbps

2: 100kbps

3: 125kbps

4: 250kbps

5: 500kbps

7: 1Mbps

Description

-

H0E.12 Excessive IP position command increment count

Address:	0x0E0C	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	30	Data Type:	UInt16
Default:	20	Change:	Immediately

Value Range:

1 to 30

Description

-

H0E.13 CANopen sync period error limit

Address:	0x0E0D	Effective mode:	-
Min.:	0	Unit:	-
Max.:	5	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: 1/4

1: 1/2

2: 3/4

3: 1

4: 2

5: Disabled

Description

-

H0E.14 CANopen communication state

Address:	0x0E0E	Effective mode:	-
Min.:	0	Unit:	-
Max.:	9	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 9

Description

-

H0E.17 Get the count of received NMT frames with incorrect length

Address:	0x0E11	Effective mode:	Real time
Min.:	0	Unit:	-

Max.: 65535 | Data type: UInt16
Default: 0 | Change: Unchangeable

Value Range:

0 to 65535

Description

-

H0E.18 Get the count of received NMT frames with incorrect command

Address: 0x0E12 | Effective mode: Real time
Min.: 0 | Unit: -
Max.: 65535 | Data type: UInt16
Default: 0 | Change: Unchangeable

Value Range:

0 to 65535

Description

-

H0E.19 Get received heartbeat frames of wrong length

Address: 0x0E13 | Effective mode: Real time
Min.: 0 | Unit: -
Max.: 65535 | Data Type: UInt16
Default: 0 | Change: Unchangeable

Value Range:

0 to 65535

Description

-

H0E.80 Modbus baud rate

Address: 0x0E50 | Effective mode: Real time
Min.: 0 | Unit: -
Max.: 10 | Data Type: UInt16
Default: 9 | Change: Real-time

Value Range:

4: 4800 bps

5: 9600 bps

6: 19200 bps

7: 38400 bps

8: 57600 bps

9: 115200 bps

Description

-

H0E.81 Modbus data format

Address:	0x0E51	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	3	Change:	Immediately

Value Range:

3: No parity, 1 stop bit (N-1)

Description

-

H0E.82 Modbus response delay

Address:	0x0E52	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	20	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0ms to 20ms

Description

-

H0E.83 Modbus communication timeout

Address:	0x0E53	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	600	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0ms to 600ms

Description

-

H0E.84 Sequence of Modbus communication data bits

Address:	0x0E54	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16

Default: 1 | Change: Immediately

Value Range:

0: High bits before low bits

1: Low bits before high bits

Description

-

H0E.90 Modbus version

Address:	0x0E5A	Effective mode:	-
Min.:	0.00	Unit:	-
Max.:	655.35	Data Type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

0.00 to 655.35

Description

-

H0E.91 CANopen version number

Address:	0x0E5B	Effective mode:	-
Min.:	0.00	Unit:	-
Max.:	655.35	Data Type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

0.00 to 655.35

Description

-

H0E.92 CANlink version

Address:	0x0E5C	Effective mode:	-
Min.:	0.00	Unit:	-
Max.:	655.35	Data Type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

0.00 to 655.35

Description

-

H0E.97 Communication monitoring parameter 1

Address:	0x0E61	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H0E.98 Communication monitoring parameter 2

Address:	0x0E62	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

4.15 H12 Multi-Speed

H12.00 Multi-speed operation mode

Address:	0x1200	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: Individual operation (number of speeds selected in H12.01)

1: Cyclic operation (number of speeds selected in H12.01)

2: DI-based operation

Description

-

H12.01 Number of speed references in multi-speed mode

Address:	0x1201	Effective mode:	Real time

Min.:	1	Unit:	-
Max.:	16	Data Type:	UInt16
Default:	16	Change:	At stop

Value Range:

1 to 16

Description

-

H12.02 Operating time unit

Address:	0x1202	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: s

1: min

Description

-

H12.03 Acceleration time 1

Address:	0x1203	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	10	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H12.04 Deceleration time 1

Address:	0x1204	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	10	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H12.05 Acceleration time 2

Address:	0x1205	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	50	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H12.06 Deceleration time 2

Address:	0x1206	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	50	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H12.07 Acceleration time 3

Address:	0x1207	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	100	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H12.08 Deceleration time 3

Address:	0x1208	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	100	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H12.09 Acceleration time 4

Address:	0x1209	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	150	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H12.10 Deceleration time 4

Address:	0x120A	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data Type:	UInt16
Default:	150	Change:	Immediately

Value Range:

0ms to 65535ms

Description

-

H12.20 Speed reference 1

Address:	0x1214	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	0	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.21 Operating time of speed 1

Address:	0x1215	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data type:	UInt16

Default: 5.0 Change: Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.22 Acc./dec. time of speed 1

Address:	0x1216	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

Description

-

H12.23 Reference 2

Address:	0x1217	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	100	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.24 Operating time of speed 2

Address:	0x1218	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.25 Acc./dec. time of speed 2

Address:	0x1219	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.26 Reference 3

Address:	0x121A	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	300	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.27 Operating time of speed 3

Address:	0x121B	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.28 Acc./dec. time of speed 3

Address:	0x121C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16

Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.29 Reference 4

Address:	0x121D	Effective mode:	Real time
Min.:	-6000	Unit:	rpm
Max.:	6000	Data Type:	Int16
Default:	500	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.30 Operating time of speed 4

Address:	0x121E	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.31 Acc./dec. time of speed 4

Address:	0x121F	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.32 Reference 5

Address:	0x1220	Effective mode:	Real time

Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	700	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.33 Operating time of speed 5

Address:	0x1221	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.34 Acc./dec. time of speed 5

Address:	0x1222	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.35 Reference 6

Address:	0x1223	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	900	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.36 Operating time of speed 6

Address:	0x1224	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.37 Acc./dec. time of speed 6

Address:	0x1225	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.38 Reference 7

Address:	0x1226	Effective mode:	Real time
Min.:	-10000	Unit:	rpm
Max.:	10000	Data Type:	Int16
Default:	600	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.39 Operating time of speed 7

Address:	0x1227	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.40 Acc./dec. time of speed 7

Address:	0x1228	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.41 Reference 8

Address:	0x1229	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	300	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.42 Operating time of speed 8

Address:	0x122A	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.43 Acc./dec. time of speed 8

Address:	0x122B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16

Default: 0 | Change: Immediately

Value Range:

Same as H12.22.

Description

-

H12.44 Reference 9

Address:	0x122C	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	100	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.45 Operating time of speed 9

Address:	0x122D	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.46 Acc./dec. time of speed 9

Address:	0x122E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.47 Reference 10

Address:	0x122F	Effective mode:	Real time

Min.:	-10000	Unit:	rpm
Max.:	10000	Data Type:	Int16
Default:	-100	Change:	Immediately

Value Range:

–10000 rpm to +10000 rpm

Description

-

H12.48 Operating time of speed 10

Address:	0x1230	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.49 Acc./dec. time of speed 10

Address:	0x1231	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.50 Reference 11

Address:	0x1232	Effective mode:	Real time
Min.:	-10000	Unit:	rpm
Max.:	10000	Data Type:	Int16
Default:	-300	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.51 Operating time of speed 11

Address:	0x1233	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.52 Acc./dec. time of speed 11

Address:	0x1234	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.53 Reference 12

Address:	0x1235	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	-500	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.54 Operating time of speed 12

Address:	0x1236	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.55 Acc./dec. time of speed 12

Address:	0x1237	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.56 Reference 13

Address:	0x1238	Effective mode:	Real time
Min.:	-10000	Unit:	rpm
Max.:	10000	Data Type:	Int16
Default:	-700	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.57 Operating time of speed 13

Address:	0x1239	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.58 Acc./dec. time of speed 13

Address:	0x123A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16

Default: 0 | Change: Immediately

Value Range:

Same as H12.22.

Description

-

H12.59 Reference 14

Address: 0x123B | Effective mode: Real time

Min.: -10000 | Unit: rpm

Max.: 10000 | Data Type: Int16

Default: -900 | Change: Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.60 Operating time of speed 14

Address: 0x123C | Effective mode: Real time

Min.: 0.0 | Unit: s (m)

Max.: 6553.5 | Data type: UInt16

Default: 5.0 | Change: Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.61 Acc./dec. time of speed 14

Address: 0x123D | Effective mode: Real time

Min.: 0 | Unit: -

Max.: 4 | Data Type: UInt16

Default: 0 | Change: Immediately

Value Range:

Same as H12.22.

Description

-

H12.62 Reference 15

Address: 0x123E | Effective mode: Real time

Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	-600	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.63 Operating time of speed 15

Address:	0x123F	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data Type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.64 Acc./dec. time of speed 15

Address:	0x1240	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

H12.65 Reference 16

Address:	0x1241	Effective mode:	Real time
Min.:	-10000	Unit:	RPM
Max.:	10000	Data type:	Int16
Default:	-300	Change:	Immediately

Value Range:

–10000 RPM to +10000 RPM

Description

-

H12.66 Operating time of speed 16

Address:	0x1242	Effective mode:	Real time
Min.:	0.0	Unit:	s (m)
Max.:	6553.5	Data type:	UInt16
Default:	5.0	Change:	Immediately

Value Range:

0.0s(m) to 6553.5s(m)

Description

-

H12.67 Acc./dec. time of speed 16

Address:	0x1243	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H12.22.

Description

-

4.16 H17 Virtual DI/DO

H17.90 Communication VDI enable

Address:	0x175A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

-

H17.91 VDI default value upon power-on

Address:	0x175B	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16

Default:	0	Change:	Immediately

Value Range:

0: No default
1: VDI1 default value
2: VDI2 default value
4: VDI3 default value
8: VDI4 default value
16: VDI5 default value
32: VDI6 default value
64: VDI7 default value
128: VDI8 default value
256: VDI9 default value
512: VDI10 default value
1024: VDI11 default value
2048: VDI12 default value
4096: VDI13 default value
8092: VDI14 default value
16384: VDI15 default value
32768: VDI16 default value

Description

-

H17.00 **VDI1 function**

Address:	0x1700	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: No assignment
1: Servo ON
3: Gain switchover
14: Positive limit switch
15: Negative limit switch
16: Positive external torque limit
17: Negative external torque limit
18: Forward jog
19: Reverse jog
31: Home switch
34: Emergency stop
36: Internal speed limit source
41: Current position as home
56: External switchover switch of EPOS program segment

Description

-

H17.01 VDI1 logic level selection

Address:	0x1701	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1
1: Active when the written value changes from 0 to 1

Description

-

H17.02 VDI2 function

Address:	0x1702	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.03 VDI2 logic level selection

Address:	0x1703	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.04 VDI3 function

Address:	0x1704	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.05 VDI3 logic level selection

Address:	0x1705	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.06 VDI4 function

Address:	0x1706	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.07 VDI4 logic level selection

Address:	0x1707	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.08 VDI5 function

Address:	0x1708	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.09 VDI5 logic level selection

Address:	0x1709	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.10 VDI6 function

Address:	0x170A	Effective mode:	At stop

Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.11 VDI6 logic level selection

Address:	0x170B	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.12 VDI7 function

Address:	0x170C	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.13 VDI7 logic level selection

Address:	0x170D	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.14 VDI8 function

Address:	0x170E	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.15 VDI8 logic level selection

Address:	0x170F	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.16 VDI9 function

Address:	0x1710	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.17 VDI9 logic level selection

Address:	0x1711	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.18 VDI10 function

Address:	0x1712	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.19 VDI10 logic level selection

Address:	0x1713	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.20 VDI11 function

Address:	0x1714	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.21 VDI11 logic level selection

Address:	0x1715	Effective mode:	At stop

Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.22 VDI12 function

Address:	0x1716	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.23 VDI12 logic level selection

Address:	0x1717	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.24 VDI13 function

Address:	0x1718	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.25 VDI13 logic level selection

Address:	0x1719	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.26 VDI14 function

Address:	0x171A	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.27 VDI14 logic level selection

Address:	0x171B	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.28 VDI15 function

Address:	0x171C	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.29 VDI15 logic level selection

Address:	0x171D	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.30 VDI16 function

Address:	0x171E	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	56	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.00.

Description

-

H17.31 VDI16 logic level selection

Address:	0x171F	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

Description

-

H17.92 Communication VDO enable

Address:	0x175C	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

-

H17.93 VDO default value after power-on

Address:	0x175D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No default

1: VDI1 default value

2: VDI2 default value

4: VDI3 default value

8: VDI4 default value

16: VDI5 default value

32: VDI6 default value

64: VDI7 default value

128: VDI8 default value

256: VDI9 default value

512: VDI10 default value

1024: VDI11 default value

2048: VDI12 default value

4096: VDI13 default value

8192: VDI14 default value

16384: VDI15 default value

32768: VDI16 default value

Description

-

H17.32 VDO virtual level

Address:	0x1720	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H17.33 VDO1 function selection

Address:	0x1721	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: No assignment
1: Servo ready
2: Motor rotating
3: Zero speed
4: Speed matching
5: Positioning completed
6: Proximity
7: Torque limited
8: Speed limited
9: Brake
10: Warning
11: Fault
16: Homing completed
18: Torque reach
19: Speed reach
25: Comparison output
30: Warning or fault output
32: EDM output

Description

-

H17.34 VDO1 logic level selection

Address:	0x1722	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic
1: Output 0 upon active logic

Description

-

H17.35 VDO2 function

Address:	0x1723	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.36 VDO2 logic level selection

Address:	0x1724	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.37 VDO3 function

Address:	0x1725	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.38 VDO3 logic level selection

Address:	0x1726	Effective mode:	Real time
Min.:	0	Unit:	-

Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.39 VDO4 function

Address:	0x1727	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.40 VDO4 logic level selection

Address:	0x1728	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.41 VDO5 function

Address:	0x1729	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.42 VDO5 logic level selection

Address:	0x172A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.43 VDO6 function

Address:	0x172B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.44 VDO6 logic level selection

Address:	0x172C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.45 VDO7 function

Address:	0x172D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.46 VDO7 logic level selection

Address:	0x172E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.47 VDO8 function

Address:	0x172F	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.48 VDO8 logic level selection

Address:	0x1730	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.49 VDO9 function

Address:	0x1731	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.50 VDO9 logic level selection

Address:	0x1732	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.51 VDO10 function

Address:	0x1733	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.52 VDO10 logic level selection

Address:	0x1734	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.53 VDO11 function

Address:	0x1735	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.54 VDO11 logic level selection

Address:	0x1736	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.55 VDO12 function

Address:	0x1737	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.56 VDO12 logic level selection

Address:	0x1738	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic
1: Output 0 upon active logic

Description

-

H17.57 VDO13 function

Address:	0x1739	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.58 VDO13 logic level selection

Address:	0x173A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic
1: Output 0 upon active logic

Description

-

H17.59 VDO14 function

Address:	0x173B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.60 VDO14 logic level selection

Address:	0x173C	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.61 VDO15 function

Address:	0x173D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.62 VDO15 logic level selection

Address:	0x173E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

H17.63 VDO16 function

Address:	0x173F	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	33	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H17.33.

Description

-

H17.64 VDO16 logic level selection

Address:	0x1740	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

Description

-

4.17 H18 Position Comparison Output

H18.00 Position comparison output selection

Address:	0x1800	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Disable

1: Enable (rising edge-triggered)

Description

-

H18.01 Position comparison output feedback source

Address:	0x1801	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Motor encoder feedback

1: Fully closed-loop position feedback

Description

-

H18.02 Position comparison resolution

Address:	0x1802	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	7	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

0: 24-bit

1: 23-bit

2: 22-bit

3: 21-bit

4: 20-bit

5: 19-bit

6: 18-bit

7: 17-bit

Description

-

H18.03 Position comparison mode

Address:	0x1803	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Individual comparison mode

1: Cyclic comparison mode

2: Fixed cyclic comparison mode

Description

-

H18.04 Current position as zero

Address:	0x1804	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: Disable

1: Enable (rising edge-triggered)

Description

-

H18.05 Position comparison output width

Address:	0x1805	Effective mode:	Real time
Min.:	0.1	Unit:	ms
Max.:	204.7	Data Type:	UInt16
Default:	0.1	Change:	Immediately

Value Range:

0.1ms to 204.7ms

Description

-

H18.06 Position comparison output ABZ port polarity

Address:	0x1806	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

bit	Name	Description
0	OCZ output logic	0: Positive, output high level upon active logic
		1: Negative, output low level upon active logic
1	Z output logic	0: Positive, output high level upon active logic
		1: Negative, output low level upon active logic
2	A/B output logic	0: Positive, output high level upon active logic
		1: Negative, output low level upon active logic

Description

-

H18.07 Position comparison start point

Address:	0x1807	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	40	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 40

Description

-

H18.08 Position comparison end point

Address:	0x1808	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	40	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 40

Description

-

H18.09 Current state of position comparison

Address:	0x1809	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1024	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 1024

Description

-

H18.10 Real-time position of position comparison

Address:	0x180A	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648 to 2147483647

Description

-

H18.12 Zero offset of position comparison

Address:	0x180C	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H18.14 Position comparison output delay compensation

Address:	0x180E	Effective mode:	Upon the next power-on
Min.:	-30	Unit:	us
Max.:	30.00	Data type:	Int16
Default:	0.00	Change:	Immediately

Value Range:

-30.00us to 30.00us

Description

-

H18.15 Fixed cyclic comparison

Address:	0x180F	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

1 to 65535

Description

-

H18.16 ABZ output function setting

Address:	0x1810	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

bit	Name	Description
0	OCZ output function	0: Frequency-division output
		1: Position comparison
1	Z port output function	0: Frequency-division output
		1: Position comparison
2	A/B port output function	0: Frequency-division output
		1: Position comparison

Description

-

H18.17 Number of fixed mode cycles

Address:	0x1811	Effective mode:	-
Min.:	1	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	1	Change:	Unchangeable

Value Range:

1 to 65535

Description

-

4.18 H19 Target Position Parameters

H19.00 Target value of position comparison 1

Address:	0x1900	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.02 Attribute value of position comparison 1

Address:	0x1902	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Real-time

Value Range:

bit	Description
0	Output DO active signal if current position changes from "less than" to "more than" the comparison point
1	Output DO active signal if current position changes from "more than" to "less than" the comparison point
2 to 5	Reserved
6	Output maintaining
7	DO1 output
8	DO2 output
9	DO3 output
10	DO4 output
12	Frequency-division A output
13	Frequency-division B output
14	Frequency-division Z output
15	Frequency-division OCZ output

Description

-

H19.03 Target value of position comparison 2

Address:	0x1903	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.05 Attribute value of position comparison 2

Address:	0x1905	Effective mode:	Real time
Min.:	0	Unit:	-

Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.06 Target value of position comparison 3

Address:	0x1906	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.08 Attribute value of position comparison 3

Address:	0x1908	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.09 Target value of position comparison 4

Address:	0x1909	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.11 Attribute value of position comparison 4

Address:	0x190B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.12 Target value of position comparison 5

Address:	0x190C	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.14 Attribute value of position comparison 5

Address:	0x190E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.15 Target value of position comparison 6

Address:	0x190F	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.17 Attribute value of position comparison 6

Address:	0x1911	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.18 Target value of position comparison 7

Address:	0x1912	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.20 Attribute value of position comparison 7

Address:	0x1914	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.21 Target value of position comparison 8

Address:	0x1915	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32

Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.23 Attribute value of position comparison 8

Address:	0x1917	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.24 Target value of position comparison 9

Address:	0x1918	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.26 Attribute value of position comparison 9

Address:	0x191A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.27 Target value of position comparison 10

Address:	0x191B	Effective mode:	Real time

Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.29 Attribute value of position comparison 10

Address:	0x191D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.30 Target value of position comparison 11

Address:	0x191E	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.32 Attribute value of position comparison 11

Address:	0x1920	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.33 Target value of position comparison 12

Address:	0x1921	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.35 Attribute value of position comparison 12

Address:	0x1923	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.36 Target value of position comparison 13

Address:	0x1924	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.38 Attribute value of position comparison 13

Address:	0x1926	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.39 Target value of position comparison 14

Address:	0x1927	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.41 Attribute value of position comparison 14

Address:	0x1929	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.42 Target value of position comparison 15

Address:	0x192A	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.44 Attribute value of position comparison 15

Address:	0x192C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16

Default: 0 | Change: Immediately

Value Range:

Same as H19.02.

Description

-

H19.45 Target value of position comparison 16

Address:	0x192D	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.47 Attribute value of position comparison 16

Address:	0x192F	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.48 Target value of position comparison 17

Address:	0x1930	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.50 Attribute value of position comparison 17

Address:	0x1932	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.51 Target value of position comparison 18

Address:	0x1933	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.53 Attribute value of position comparison 18

Address:	0x1935	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.54 Target value of position comparison 19

Address:	0x1936	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.56 Attribute value of position comparison 19

Address:	0x1938	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.57 Target value of position comparison 20

Address:	0x1939	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.59 Attribute value of position comparison 20

Address:	0x193B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.60 Target value of position comparison 21

Address:	0x193C	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.62 Attribute value of position comparison 21

Address:	0x193E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.63 Target value of position comparison 22

Address:	0x193F	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.65 Attribute value of position comparison 22

Address:	0x1941	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.66 Target value of position comparison 23

Address:	0x1942	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32

Default: 0 | Change: Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.68 Attribute value of position comparison 23

Address:	0x1944	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.69 Target value of position comparison 24

Address:	0x1945	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.71 Attribute value of position comparison 24

Address:	0x1947	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.72 Target value of position comparison 25

Address:	0x1948	Effective mode:	Real time

Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.74 Attribute value of position comparison 25

Address:	0x194A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.75 Target value of position comparison 26

Address:	0x194B	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.77 Attribute value of position comparison 26

Address:	0x194D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.78 Target value of position comparison 27

Address:	0x194E	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.80 Attribute value of position comparison 27

Address:	0x1950	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.81 Target value of position comparison 28

Address:	0x1951	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.83 Attribute value of position comparison 28

Address:	0x1953	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.84 Target value of position comparison 29

Address:	0x1954	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.86 Attribute value of position comparison 29

Address:	0x1956	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.87 Target value of position comparison 30

Address:	0x1957	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.89 Attribute value of position comparison 30

Address:	0x1959	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16

Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.90 Target value of position comparison 31

Address:	0x195A	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.92 Attribute value of position comparison 31

Address:	0x195C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.93 Target value of position comparison 32

Address:	0x195D	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.95 Attribute value of position comparison 32

Address:	0x195F	Effective mode:	Real time

Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.96 Target value of position comparison 33

Address:	0x1960	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.98 Attribute value of position comparison 33

Address:	0x1962	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.99 Target value of position comparison 34

Address:	0x1963	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.101 Attribute value of position comparison 34

Address:	0x1965	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.102 Target value of position comparison 35

Address:	0x1966	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.104 Attribute value of position comparison 35

Address:	0x1968	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.105 Target value of position comparison 36

Address:	0x1969	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.107 Attribute value of position comparison 36

Address:	0x196B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.108 Target value of position comparison 37

Address:	0x196C	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.110 Attribute value of position comparison 37

Address:	0x196E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.111 Target value of position comparison 38

Address:	0x196F	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32

Default: 0 | Change: Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.113 Attribute value of position comparison 38

Address:	0x1971	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.114 Target value of position comparison 39

Address:	0x1972	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.116 Attribute value of position comparison 39

Address:	0x1974	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

H19.117 Target value of position comparison 40

Address:	0x1975	Effective mode:	Real time

Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648 to 2147483647

Description

-

H19.119 Attribute value of position comparison 40

Address:	0x1977	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

Same as H19.02.

Description

-

4.19 H24 PN Bus Communication Parameters

H24.00 Message number selection [PN922]

Address:	0x2400	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	3	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H24.01 Heartbeat warning threshold [PN925]

Address:	0x2401	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	5	Change:	At stop

Value Range:

0 to 65535

Description

-

H24.02 Fault message counter [PN944]

Address:	0x2402	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H24.03 Fault code [PN947]

Address:	0x2403	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H24.04 Fault No.

Address:	0x2404	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	63	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 63

Description

-

H24.05 Fault condition counter [PN952]

Address:	0x2405	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:
0 to 65535
Description
-

H24.06 Sensor header [PN979[0]]

Address:	0x2406	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4294967295	Data type:	UInt32
Default:	20754	Change:	At stop

Value Range:
0 to 4294967295
Description
-

H24.08 Sensor type [PN979[1]]

Address:	0x2408	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4294967295	Data type:	UInt32
Default:	2147483650	Change:	At stop

Value Range:
0 to 4294967295
Description
-

H24.10 Sensor resolution [PN979[2]]

Address:	0x240A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4294967295	Data Type:	UInt32
Default:	256	Change:	At stop

Value Range:
0 to 4294967295
Description
-

H24.12 Sensor G1_X1ST1 displacement factor [PN979[3]]

Address:	0x240C	Effective mode:	Upon the next power-on

Min.:	0	Unit:	-
Max.:	24	Data type:	UInt32
Default:	15	Change:	At stop

Value Range:

0 to 24

Description

-

H24.14 Sensor G1_X1ST2 displacement factor [PN979[4]]

Address:	0x240E	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	24	Data type:	UInt32
Default:	15	Change:	At stop

Value Range:

0 to 24

Description

-

H24.16 Sensor multi-turn number [PN979[5]]

Address:	0x2410	Effective mode:	Upon the next power-on
Min.:	0	Unit:	-
Max.:	4294967295	Data type:	UInt32
Default:	512	Change:	At stop

Value Range:

0 to 4294967295

Description

-

H24.19 Synchronization cycle

Address:	0x2413	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	999	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H24.20 Network parameter write flag

Address:	0x2414	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 3

Description

-

H24.22 IP Address

Address:	0x2416	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	0	Data Type:	UInt32
Default:	0	Change:	Immediately

Value Range:

0 to 0

Description

-

H24.24 Subnet mask

Address:	0x2418	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	0	Data Type:	UInt32
Default:	0	Change:	Immediately

Value Range:

0 to 0

Description

-

H24.26 Default gateway

Address:	0x241A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	0	Data Type:	UInt32
Default:	0	Change:	Immediately

Value Range:

0 to 0

Description

-

H24.28 AC1 speed feedback selection

Address:	0x241C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Normal

1: High precision

Description

-

H24.32 DSC position loop gain selection

Address:	0x2420	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Local position loop gain

1: PLC position loop gain

3: DSC manual tuning

Description

-

H24.35 Customized telegram 850 transmission

Address:	0x2423	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: No assignment

1: VDO

2: External DI state

Description

-

H24.36 User-defined 850 reception

Address:	0x2424	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: No assignment

1: VDI

2: External DO state

Description

-

H24.37 Extra telegram

Address:	0x2425	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 65535

Description

-

H24.38 Customized receive word

Address:	0x2426	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0: No function

1: Additive torque

2: Forced DO

Description

-

H24.39 Customized transmission word

Address:	0x2427	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	3	Data Type:	UInt16

Default:	0	Change:	Immediately

Value Range:

0: No function

1: Actual torque

2: Actual current

3: DI state

Description

-

H24.41 Device name loss warning selection

Address:	0x2429	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 1

Description

-

H24.42 Number of consecutive loss detections

Address:	0x242A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	8	Change:	Immediately

Value Range:

0 to 65535

Description

-

H24.43 Communication timeout time

Address:	0x242B	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	1000	Change:	Immediately

Value Range:

1 to 65535

Description

-

H24.44 FPGA synchronous detection deviation threshold

Address:	0x242C	Effective mode:	Real time
Min.:	0	Unit:	ns
Max.:	65535	Data type:	UInt16
Default:	3000	Change:	At stop

Value Range:

0ns to 65535ns

Description

-

H24.45 MAC address

Address:	0x242D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H24.46 MAC address

Address:	0x242E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H24.47 MAC address

Address:	0x242F	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H24.33 Number of Sync with advanced DSC position feedback

Address:	0x2421	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	16	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

0 to 16

Description

-

H24.34 Loop gain selection switch

Address:	0x2422	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Stiffness level adapted based on DSC gain

1: Stiffness level adapted based on H09.01

Description

-

H24.48 DSC position loop gain coefficient

Address:	0x2430	Effective mode:	Real time
Min.:	1	Unit:	-
Max.:	31	Data Type:	UInt16
Default:	4	Change:	At stop

Value Range:

1 to 31

Description

-

H24_48 DSC position loop gain coefficient

Address:	0x2430	Effective mode:	Real time
Min.:	1	Unit:	-

Max.:	31	Data Type:	UInt16
Default:	10	Change:	At stop

Value Range:

1 to 31

Description

-

4.20 H25 AC3 Control Parameters

H25.00 EPOS max. speed

Address:	0x2500	Effective mode:	Real time
Min.:	1	Unit:	1000 LU/min
Max.:	40000000	Data type:	UInt32
Default:	30000	Change:	Immediately

Value Range:

1 Lu/min–40000000 LU/min

Description

-

H25.02 EPOS max. acceleration

Address:	0x2502	Effective mode:	Real time
Min.:	1	Unit:	1000 LU/s/s
Max.:	2000000	Data type:	UInt32
Default:	100	Change:	Immediately

Value Range:

1 LU/s/s–2000000 LU/s/s

Description

-

H25.04 EPOS max. deceleration

Address:	0x2504	Effective mode:	Real time
Min.:	1	Unit:	1000 LU/s/s
Max.:	2000000	Data type:	UInt32
Default:	100	Change:	Immediately

Value Range:

1 LU/s/s–2000000 LU/s/s

Description

-

H25.06 EPOS ramp deceleration

Address:	0x2506	Effective mode:	Real time
Min.:	1	Unit:	1000 LU/s/s
Max.:	2000000	Data type:	UInt32
Default:	100	Change:	Immediately

Value Range:

1 LU/s/s–2000000 LU/s/s

Description

-

H25.10 EPOS positioning reach threshold

Address:	0x250A	Effective mode:	Real time
Min.:	0	Unit:	1LU
Max.:	2147483647	Data type:	UInt32
Default:	7	Change:	Immediately

Value Range:

0LU–2147483647LU

Description

-

H25.12 EPOS positioning reached window time

Address:	0x250C	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	2147483647	Data type:	UInt32
Default:	0	Change:	Immediately

Value Range:

0ms to 2147483647ms

Description

-

H25.14 Jog1

Address:	0x250E	Effective mode:	Real time
Min.:	-40000000	Unit:	1000 LU/min
Max.:	40000000	Data Type:	Int32
Default:	-300	Change:	Real-time

Value Range:

-40000000 Lu/min to 40000000 LU/min

Description

-

H25.16 Jog2

Address:	0x2510	Effective mode:	Real time
Min.:	-40000000	Unit:	1000 LU/min
Max.:	40000000	Data Type:	Int32
Default:	300	Change:	Real-time

Value Range:

-40000000 Lu/min to 40000000 LU/min

Description

-

H25.18 EPOS-JOG1 position increment

Address:	0x2512	Effective mode:	Real time
Min.:	0	Unit:	LU
Max.:	2147483648	Data type:	UInt32
Default:	1000	Change:	Immediately

Value Range:

0LU–2147483648LU

Description

-

H25.20 EPOS-JOG2 position increment

Address:	0x2514	Effective mode:	Real time
Min.:	0	Unit:	LU
Max.:	2147483648	Data Type:	UInt32
Default:	1000	Change:	Immediately

Value Range:

0LU–2147483648LU

Description

-

H25.22 Homing type

Address:	0x2516	Effective mode:	Real time
Min.:	-2	Unit:	-
Max.:	35	Data Type:	Int16

Default:	0	Change:	Immediately

Value Range:

-2 to 35

Description

-

H25.23 Homing high speed

Address:	0x2517	Effective mode:	Real time
Min.:	0	Unit:	1000 LU/min
Max.:	40000000	Data type:	UInt32
Default:	5000	Change:	Immediately

Value Range:

0 LU/min–40000000 LU/min

Description

-

H25.25 Homing low speed

Address:	0x2519	Effective mode:	Real time
Min.:	0	Unit:	1000 LU/min
Max.:	40000000	Data type:	UInt32
Default:	300	Change:	Immediately

Value Range:

0 LU/min–40000000 LU/min

Description

-

H25.27 Homing acc./dec. override

Address:	0x251B	Effective mode:	Real time
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

0.00% to 100.00%

Description

-

4.21 H27 Program Block Parameters

H27.00 **Current block**

Address:	0x2700	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	15	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 15

Description

-

H27.01 **Block 0 task**

Address:	0x2701	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data type:	UInt16
Default:	1	Change:	Immediately

Value Range:

1: Positioning

2: Fixed stopper

3: Forward cycle

4: Reverse cycle

5: Waiting

6: Switching

7: Setting I/O

8: Resetting I/O

Description

-

H27.02 **Block 1 task**

Address:	0x2702	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.03 Block 2 task

Address:	0x2703	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.04 Block 3 task

Address:	0x2704	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.05 Block 4 task

Address:	0x2705	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.06 Block 5 task

Address:	0x2706	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.07 Block 6 task

Address:	0x2707	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.08 Segment 7 task

Address:	0x2708	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.09 Block 8 task

Address:	0x2709	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.10 Block 9 task

Address:	0x270A	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.11 Block 10 task

Address:	0x270B	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.12 Block 11 task

Address:	0x270C	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.13 Block 12 task

Address:	0x270D	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.14 Block 13 task

Address:	0x270E	Effective mode:	At stop
Min.:	1	Unit:	-

Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.15 Block 14 task

Address:	0x270F	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.16 Block 15 task

Address:	0x2710	Effective mode:	At stop
Min.:	1	Unit:	-
Max.:	8	Data Type:	UInt16
Default:	1	Change:	Immediately

Value Range:

Same as H27.01.

Description

-

H27.17 Position of block 0

Address:	0x2711	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648LU to 2147483647LU

Description

-

H27.19 Position of block 1

Address:	0x2713	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648LU to 2147483647LU

Description

-

H27.21 Position of block 2

Address:	0x2715	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648LU to 2147483647LU

Description

-

H27.23 Position of block 3

Address:	0x2717	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648LU to 2147483647LU

Description

-

H27.25 Position of block 4

Address:	0x2719	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648LU to 2147483647LU

Description

-

H27.27 Position of block 5

Address:	0x271B	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648LU to 2147483647LU

Description

-

H27.29 Position of block 6

Address:	0x271D	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648LU to 2147483647LU

Description

-

H27.31 Position of block 7

Address:	0x271F	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:

-2147483648LU to 2147483647LU

Description

-

H27.33 Position of block 8

Address:	0x2721	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:
-2147483648LU to 2147483647LU
Description
-

H27.35 Position of block 9

Address:	0x2723	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:
-2147483648LU to 2147483647LU
Description
-

H27.37 Position of block 10

Address:	0x2725	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:
-2147483648LU to 2147483647LU
Description
-

H27.39 Position of block 11

Address:	0x2727	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:
-2147483648LU to 2147483647LU
Description
-

H27.41 Position of block 12

Address:	0x2729	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU

Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:
-2147483648LU to 2147483647LU
Description
-

H27.43 Position of block 13

Address:	0x272B	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:
-2147483648LU to 2147483647LU
Description
-

H27.45 Position of block 14

Address:	0x272D	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:
-2147483648LU to 2147483647LU
Description
-

H27.47 Position of block 15

Address:	0x272F	Effective mode:	At stop
Min.:	-2147483648	Unit:	1LU
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Immediately

Value Range:
-2147483648LU to 2147483647LU
Description
-

H27.49 Block 0 speed

Address:	0x2731	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 Lu/min–4294967295 LU/min

Description

-

H27.51 Block 1 speed

Address:	0x2733	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 Lu/min–4294967295 LU/min

Description

-

H27.53 Block 2 speed

Address:	0x2735	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 Lu/min–4294967295 LU/min

Description

-

H27.55 Block 3 speed

Address:	0x2737	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 Lu/min–4294967295 LU/min

Description

-

H27.57 Block 4 speed

Address:	0x2739	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 Lu/min–4294967295 LU/min

Description

-

H27.59 Block 5 speed

Address:	0x273B	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 Lu/min–4294967295 LU/min

Description

-

H27.61 Block 6 speed

Address:	0x273D	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 Lu/min–4294967295 LU/min

Description

-

H27.63 Block 7 speed

Address:	0x273F	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32

Default:	600	Change:	Immediately

Value Range:

0 Lu/min–4294967295 LU/min

Description

-

H27.65 Block 8 speed

Address:	0x2741	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 LU/min–4294967295 LU/min

Description

-

H27.67 Block 9 speed

Address:	0x2743	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 LU/min–4294967295 LU/min

Description

-

H27.69 Block 10 speed

Address:	0x2745	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 LU/min–4294967295 LU/min

Description

-

H27.71 Block 11 speed

Address:	0x2747	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 LU/min–4294967295 LU/min

Description

-

H27.73 Block 12 speed

Address:	0x2749	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 LU/min–4294967295 LU/min

Description

-

H27.75 Block 13 speed

Address:	0x274B	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 LU/min–4294967295 LU/min

Description

-

H27.77 Block 14 speed

Address:	0x274D	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 LU/min–4294967295 LU/min

Description

-

H27.79 Block 15 speed

Address:	0x274F	Effective mode:	At stop
Min.:	0	Unit:	1000 LU/min
Max.:	4294967295	Data type:	UInt32
Default:	600	Change:	Immediately

Value Range:

0 LU/min–4294967295 LU/min

Description

-

H27.81 Block 0 acc. override

Address:	0x2751	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.82 Block 1 acc. override

Address:	0x2752	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.83 Block 2 acc. override

Address:	0x2753	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.84 Block 3 acc. override

Address:	0x2754	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.85 Block 4 acc. override

Address:	0x2755	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.86 Block 5 acc. override

Address:	0x2756	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.87 Block 6 acc. override

Address:	0x2757	Effective mode:	At stop
Min.:	1.00	Unit:	%

Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.88 Block 7 acc. override

Address:	0x2758	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.89 Block 8 acc. override

Address:	0x2759	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.90 Block 9 acc. override

Address:	0x275A	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.91 **Block 10 acc. override**

Address:	0x275B	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.92 **Block 11 acc. override**

Address:	0x275C	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.93 **Block 12 acc. override**

Address:	0x275D	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.94 **Block 13 acc. override**

Address:	0x275E	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.95 Block 14 acc. override

Address:	0x275F	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H27.96 Block 15 acc. override

Address:	0x2760	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

4.22 H28 Program Block Parameters

H28.00 Block 0 dec. override

Address:	0x2800	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.01 Block 1 dec. override

Address:	0x2801	Effective mode:	At stop

Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.02 Block 2 dec. override

Address:	0x2802	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.03 Block 3 dec. override

Address:	0x2803	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.04 Block 4 dec. override

Address:	0x2804	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.05 Block 5 dec. override

Address:	0x2805	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.06 Block 6 dec. override

Address:	0x2806	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.07 Block 7 dec. override

Address:	0x2807	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.08 Block 8 dec. override

Address:	0x2808	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.09 Block 9 dec. override

Address:	0x2809	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.10 Block 10 dec. override

Address:	0x280A	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.11 Block 11 dec. override

Address:	0x280B	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.12 Block 12 dec. override

Address:	0x280C	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.13 Block 13 dec. override

Address:	0x280D	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.14 Block 14 dec. override

Address:	0x280E	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.15 Block 15 dec. override

Address:	0x280F	Effective mode:	At stop
Min.:	1.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	100.00	Change:	Immediately

Value Range:

1.00% to 100.00%

Description

-

H28.16 Task mode of block 0

Address:	0x2810	Effective mode:	At stop
Min.:	0	Unit:	-

Max.: 65535 | Data Type: UInt16
Default: 0 | Change: Immediately

Value Range:

0 to 65535

Description

-

H28.17 Task mode of block 1

Address:	0x2811	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.18 Task mode of block 2

Address:	0x2812	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.19 Task mode of block 3

Address:	0x2813	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.20 Task mode of block 4

Address:	0x2814	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.21 Task mode of block 5

Address:	0x2815	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.22 Task mode of block 6

Address:	0x2816	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.23 Task mode of block 7

Address:	0x2817	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.24 Task mode of block 8

Address:	0x2818	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.25 Task mode of block 9

Address:	0x2819	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.26 Task mode of block 10

Address:	0x281A	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.27 Task mode of block 11

Address:	0x281B	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.28 Task mode of block 12

Address:	0x281C	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.29 Task mode of block 13

Address:	0x281D	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.30 Task mode of block 14

Address:	0x281E	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.31 Task mode of block 15

Address:	0x281F	Effective mode:	At stop
Min.:	0	Unit:	-

Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H28.32 Block 0 task parameter

Address:	0x2820	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.34 Block 1 task parameter

Address:	0x2822	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.36 Block 2 task parameter

Address:	0x2824	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.38 Block 3 task parameter

Address:	0x2826	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.40 Block 4 task parameter

Address:	0x2828	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.42 Block 5 task parameter

Address:	0x282A	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.44 Block 6 task parameter

Address:	0x282C	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.46 Block 7 task parameter

Address:	0x282E	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.48 Block 8 task parameter

Address:	0x2830	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.50 Block 9 task parameter

Address:	0x2832	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.52 Block 10 task parameter

Address:	0x2834	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32

Default:	0	Change:	Immediately

Value Range:
0 to 2147483647
Description
-

H28.54 Block 11 task parameter

Address:	0x2836	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:
0 to 2147483647
Description
-

H28.56 Block 12 task parameter

Address:	0x2838	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:
0 to 2147483647
Description
-

H28.58 Task parameter of block 13

Address:	0x283A	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:
0 to 2147483647
Description
-

H28.60 Block 14 task parameter

Address:	0x283C	Effective mode:	At stop

Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.62 Block 15 task parameter

Address:	0x283E	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Immediately

Value Range:

0 to 2147483647

Description

-

H28.64 Fixed stopper monitoring window

Address:	0x2840	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	4294967295	Data Type:	UInt32
Default:	0	Change:	Immediately

Value Range:

0 to 4294967295

Description

-

H28.66 Max. following error of fixed stopper

Address:	0x2842	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	4294967295	Data type:	UInt32
Default:	0	Change:	Immediately

Value Range:

0 to 4294967295

Description

-

H28.68 External trigger source

Address:	0x2844	Effective mode:	At stop
Min.:	0	Unit:	-
Max.:	1	Data Type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Triggered by STW1.bit13

1: Triggered by DI

Description

-

4.23 H29 PN Message Value

H29.00 Control word 1 (STW1)

Address:	0x2900	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

Bit0: 1 = Pulse enable allowed; 0 = OFF1, ramp to stop, pulse cleared, ready to switch on
bit1: 1 = No OFF2 (pulse enable allowed); 0 = OFF2, coast to stop, pulse cleared immediately, switch-on inhibited
bit2: 1 = No OFF3 (pulse enable allowed); 0 = OFF3 quick stop, P1135 brake, pulse cleared, switch-on inhibited
bit3: 1 = Enable allowed; 0 = Operation inhibited (pulse cleared)
bit4: 1 = Ramp function generator available; 0 = Ramp function generator inhibited
bit5:1 = Ramp function generator continued; 0 = Ramp function generator output frozen
bit6:1 = Setpoint enabled; 0 = Setpoint inhibited (ramp function generator input being zero)
bit7: Rising edge-triggered, response fault
bit8: JOG1
bit9: JOG2
bit10: 1 = PLC controlled
bit11: Reserved
bit12: Reserved
bit13: Reserved
bit14: Reserved
bit15: Reserved

Description

-

H29.01 Control word 2 (STW2)

Address:	0x2901	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.02 Speed setpoint A (VEL_NSOLL_A)

Address:	0x2902	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
-

H29.04 Speed setpoint B (VEL_NSOLL_B)

Address:	0x2904	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:
-2147483648 to 2147483647
Description
-

H29.06 Encoder control word (G1_STW)

Address:	0x2906	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

Bit0: bit7 = 0, searching for reference point 1; bit7 = 1, measure pointer 1
bit1: bit7 = 0, searching for reference point 2; bit7 = 1, measure pointer 2
bit2: bit7 = 0, searching for reference point 3; bit7 = 1, measure pointer 3
bit3: bit7 = 0, searching for reference point 4; bit7 = 1, measure pointer 4
bit4: bit4–bit6 000b = Not activated; 001b = Selected functions activated; 010b = Read value; 011b = Cancel operation
bit5: bit4–bit6 000b = Not activated; 001b = Selected functions activated; 010b = Read value; 011b = Cancel operation
bit6: bit4–bit6 000b = Not activated; 001b = Selected functions activated; 010b = Read value; 011b = Cancel operation
bit7: Mode selection 1 = Real-time measurement 0 = Searching for the reference point
bit8: Reserved
bit9: Reserved
bit10: Reserved
bit11: Zero setting mode 0 = Absolute position 1 = Relative position
bit12: Rising edge-triggered Request for setting the zero bit
bit13: Rising edge-triggered Request for cyclic transmission of absolute position in G1_XIST2
bit14: Parking encoder
bit15: Rising-edge triggered Response encoder gripper fault

Description

-

H29.07 Position deviation (XERR)

Address:	0x2907	Effective mode:	-
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648 to 2147483647

Description

-

H29.09 Position loop gain (KPC)

Address:	0x2909	Effective mode:	-
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648 to 2147483647

Description

-

H29.11 Position control word 1 (POS_STW1)

Address:	0x290B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

bit0: bit0–bit5 block selection IS620F supports up to 16 blocks
bit1: bit0–bit5 block selection IS620F supports up to 16 blocks
bit2: bit0–bit5 block selection IS620F supports up to 16 blocks
bit3: bit0–bit5 block selection IS620F supports up to 16 blocks
bit4: bit0–bit5 block selection IS620F supports up to 16 blocks
bit5: bit0–bit5 block selection IS620F supports up to 16 blocks
bit6: Reserved
bit7: Reserved
bit8: 1 = Absolute positioning 0 = Relative positioning
bit9: 1 = Forward
bit10: 1 = Reverse
bit11: Reserved
bit12: 1 = Continuous transmission 0 = MDI block modification activated by running the rising edge of the program segment (STW1.6)
bit13: Reserved
bit14: 1 = Setting signal selected 0 = Positioning signal selected
bit15: 1= MDI sub-mode 0 = Program segment sub-mode

Description

-

H29.12 MDI position setting (EPOS)

Address:	0x290C	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648 to 2147483647

Description

-

H29.14 MDI speed setting (EPOS)

Address:	0x290E	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	4294967295	Data type:	UInt32
Default:	0	Change:	Unchangeable

Value Range:

0 to 4294967295

Description

-

H29.16 MDI acceleration override (EPOS)

Address:	0x2910	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.17 MDI deceleration override (EPOS)

Address:	0x2911	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.18 MDI mode (EPOS)

Address:	0x2912	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

bit0: 1 = Absolute positioning 0 = Relative positioning
bit1: 1 = Forward
bit2: 1 = Reverse
bit3: Reserved
bit4: Reserved
bit5: Reserved
bit6: Reserved
bit7: Reserved
bit8: Reserved
bit9: Reserved
bit10: Reserved
bit11: Reserved
bit12: Reserved
bit13: Reserved
bit14: Reserved
bit15: Reserved

Description

-

H29.19 Position control word 2 (POS_STW2)

Address:	0x2913	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

bit0: 1 = Tracking mode activated
bit1: 1 = Set reference point
bit2: 1 = Reference point stopper activated
bit3: Reserved
bit4: Reserved
bit5: 1 = JOG incremental positioning activated 0 = Speed activated
bit6: Reserved
bit7: Reserved
bit8: Reserved
bit9: 1 = Searching for the reference point in the reverse direction 0 = Start searching for the reference point in the forward direction
bit10: Reserved
bit11: Reserved
bit12: Reserved
bit13: Reserved
bit14: 1 = Software limit switch activated
bit15: 1 = Stopper activated

Description

-

H29.20 Position speed override (EPOS)

Address:	0x2914	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.21 Customized receive word for telegram 111

Address:	0x2915	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.22 Torque reduction (MOMRED)

Address:	0x2916	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	16363	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 16363

Description

-

H29.23 Torque reference (AdditiveTorque)

Address:	0x2917	Effective mode:	Real time
Min.:	-32768	Unit:	-
Max.:	32767	Data Type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

-32768 to 32767

Description

-

H29.24 Torque upper limit

Address:	0x2918	Effective mode:	Real time
Min.:	-32768	Unit:	-
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

-32768 to 32767

Description

-

H29.25 Torque lower limit

Address:	0x2919	Effective mode:	Real time
Min.:	-32768	Unit:	-
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

-32768 to 32767

Description

-

H29.26 Customized receive word for 850 additive telegram

Address:	0x291A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	-1	Data Type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

0 to -1

Description

-

H29.27 Message word (EPOS_MELDW)

Address:	0x291B	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	-1	Data Type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

0 to -1

Description

-

H29.50 Status word 1 (ZSW1)

Address:	0x2932	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

bit0: 1 = Ready to switch on, control circuit switched on, initialization done
bit1: 1 = Ready to run, main circuit switched on
bit2: 1 = Run enable
bit3: 1 = Fault
bit4: 1 = Coast to stop deactivated (OFF2 deactivated) 0 = Cost to stop activated (OFF2 activated)
bit5: 1 = Quick stop deactivated (OFF2 deactivated) 0 = Quick stop activated (OFF2 activated)
bit6: 1 = Switch-on inhibited
bit7: 1 = Warning existed
bit8: Reserved
bit9: 1 = PLC control request
bit10: Reserved
bit11: Reserved
bit12: Reserved
bit13: Reserved
bit14: Reserved
bit15: Reserved

Description

-

H29.51 **Status word 2 (ZSW2)**

Address:	0x2933	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

bit0: Reserved
bit1: Reserved
bit2: Reserved
bit3: Reserved
bit4: Reserved
bit5: Reserved
bit6: Reserved
bit7: Reserved
bit8: Reserved
bit9: Reserved
bit10: Reserved
bit11: Reserved
bit12: bit12–bit15 drive heartbeat count value, uploaded to PLC
bit13: bit12–bit15 drive heartbeat count value, uploaded to PLC
bit14: bit12–bit15 drive heartbeat count value, uploaded to PLC
bit15: bit12–bit15 drive heartbeat count value, uploaded to PLC

Description

-

H29.52 Speed actual value A (VEL_NIST_A)

Address:	0x2934	Effective mode:	Real time
Min.:	-32768	Unit:	-
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

-32768 to 32767

Description

-

H29.53 Speed actual B (VEL_NSOLL_B)

Address:	0x2935	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data Type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648 to 2147483647

Description

-

H29.55 Encoder status word (G1_ZSW)

Address:	0x2937	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

bit0: 1 = Function 1 activated
bit1: 1 = Function 2 activated
bit2: 1 = Function 3 activated
bit3: 1 = Function 4 activated
bit4: 1 = Actual value 1 readable
bit5: 1 = Actual value 2 readable
bit6: 1 = Actual value 3 readable
bit7: 1 = Actual value 4 readable
bit8: Touch probe 1
bit9:Touch probe 2
bit10: Reserved
bit11: Response encoder fault
bit12: Set zero response
bit13: Cyclic transmission of the absolute position in G1_XIST2
bit14: Parking encoder activated
bit15: The encoder is faulty.

Description

-

H29.56 Encoder 1 position actual value 1 (G1_XIST1)

Address:	0x2938	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt32
Default:	0	Change:	Unchangeable

Value Range:

0 to 0

Description

-

H29.58 Encoder 1 position actual value 2 (G1_XIST2)

Address:	0x293A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt32

Default: 0 Change: Unchangeable

Value Range:

0 to 0

Description

-

H29.60 Position status word 1 (POS_ZSW1)

Address:	0x293C	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

bit0: bit0–bit5 effective traversing block IS620F supports up to 16 blocks
bit1: bit0–bit5 effective traversing block IS620F supports up to 16 blocks
bit2:bit0–bit5 effective traversing block IS620F supports up to 16 blocks
bit3:bit0–bit5 effective traversing block IS620F supports up to 16 blocks
bit4:bit0–bit5 effective traversing block IS620F supports up to 16 blocks
bit5:bit0–bit5 effective traversing block IS620F supports up to 16 blocks
bit6: Reserved
bit7: Reserved
bit8: 1 = Reverse stopper activated
bit9: 1 = Forward stopper activated
bit10: 1 = JOG activatedbit11: 1 = Proactive reference point approach activatedbit12: Reservedbit13: 1 = Running block activatedbit14: 1 = Setting activatedbit15: 1 = MDI activated 0 = MDI deactivated

Description

-

H29.61 Position status word 2 (POS_ZSW2)

Address:	0x293D	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

bit0: 1 = Tracking mode activated
bit1: 1 = Speed limit activated
bit2: 1 = Setpoint available
bit3: Reserved
bit4: 1 = Axis moving forwardly
bit5: 1 = Axis moving reversely
bit6: 1 = Negative limit switch reached
bit7: 1 = Positive limit switch reached
bit8: 1 = Position actual value < = Limit switch position 1
bit9: 1 = Position actual value < = limit switch position 2
bit10: 1 = Direct output 1 through running block setting
bit11: 1 = Direct output 2 through running block setting
bit12: 1 = Fixed stop point reached
bit13: 1 = Fixed stop point fastening torque reached
bit14: 1 = Running to the fixed stop point activated
bit15: 1 = Running command effective

Description

-

H29.63 Customized send word for telegram 111

Address:	0x293F	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.65 Fault code

Address:	0x2941	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.66 Warning code

Address:	0x2942	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.67 Actual torque

Address:	0x2943	Effective mode:	Real time
Min.:	32768	Unit:	-
Max.:	32767	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

32768 to 32767

Description

-

H29.68 User-defined send word for 850 additive telegram

Address:	0x2944	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H29.69 XIST_A position feedback

Address:	0x2945	Effective mode:	Real time
Min.:	-2147483648	Unit:	-
Max.:	2147483647	Data type:	Int32
Default:	0	Change:	Unchangeable

Value Range:

-2147483648 to 2147483647

Description

-

H29.90 Modulo axis modulus

Address:	0x295A	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	2147483647	Data Type:	UInt32
Default:	0	Change:	Unchangeable

Value Range:

0 to 2147483647

Description

-

4.24 H30 Related Variables Read through Communication

H30.00 Servo state read by communication

Address:	0x3000	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H30.01 DO function state 1 read through communication

Address:	0x3001	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

H30.02 DO function state 2 read through communication

Address:	0x3002	Effective mode:	-

Min.:	0	Unit:	-
Max.:	65535+H941	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0–65535+H941

Description

-

H30.03 Input pulse reference sampling read via communication

Address:	0x3003	Effective mode:	-
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

-

4.25 H31 Communication Setting

H31.00 VDI virtual level set through communication

Address:	0x3100	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H31.04 DO state set through communication

Address:	0x3104	Effective mode:	Real time
Min.:	0	Unit:	-
Max.:	65535	Data Type:	UInt16
Default:	0	Change:	Immediately

Value Range:

0 to 65535

Description

-

H31.05 AO set through communication

Address:	0x3105	Effective mode:	Real time
Min.:	-10000	Unit:	mV
Max.:	10000	Data type:	Int16
Default:	0	Change:	Immediately

Value Range:

-10000mV to 10000mV

Description

-

H31.09 Speed reference set via communication

Address:	0x3109	Effective mode:	Real time
Min.:	-6000	Unit:	RPM
Max.:	6000.000	Data type:	Int32
Default:	0.000	Change:	Immediately

Value Range:

-6000.000 RPM to 6000.000 RPM

Description

-

H31.11 Torque reference set via communication

Address:	0x310B	Effective mode:	Real time
Min.:	-100	Unit:	%
Max.:	100.000	Data Type:	Int32
Default:	0.000	Change:	Immediately

Value Range:

-100.000% to 100.000%

Description

-

5 Parameter List

5.1 Parameter Group H00

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H00.00	2000-01h	Motor SN	0 to 65535	14101	-	At stop	" H00_en.00" on page 132
H00.02	2000-03h	Customized No.	0.00 to 4294967295.00	0.00	-	Unchangeable	" H00_en.02" on page 132
H00.04	2000-05h	Encoder version	0.0 to 6553.5	0.0	-	Unchangeable	" H00_en.04" on page 132
H00.05	2000-06h	Serial-type motor code	0 to 65535	0	-	Unchangeable	" H00_en.05" on page 133
H00.06	2000-07h	FPGA customized No.	0.00 to 655.35	0.00	-	Unchangeable	" H00_en.06" on page 133
H00.07	2000-08h	STO version	0.0 to 6553.5	0.0	-	Unchangeable	" H00_en.07" on page 133
H00.08	2000-09h	Serial encoder type	0 to 65535	0	-	At stop	" H00_en.08" on page 133

5.2 Parameter Group H01

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H01.00	2001-01h	MCU software version	0.0 to 6553.5	0.0	-	Unchangeable	" H01_en.00" on page 134
H01.01	2001-02h	FPGA software version	0.0 to 6553.5	0.0	-	Unchangeable	" H01_en.01" on page 134
H01.02	2001-03h	Servo drive series No.	0 to 65535	0	-	Unchangeable	" H01_en.02" on page 134
H01.08	2001-09h	Model parameter version 1	0.0 to 6553.5	0.0	-	Unchangeable	" H01_en.08" on page 135
H01.09	2001-0Ah	Model parameter version 2	0 to 65535	0	-	Unchangeable	" H01_en.09" on page 135

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H01.10	2001-0Bh	Drive series No.	2: S1R6 3: S2R8 5: S5R5 60005: S6R6 6: S7R6 7: S012 8: S018 9: S022 10: S027 10001: T3R5 10002: T5R4 10003: T8R4 10004: T012 10005: T017 10006: T021 10007: T026	3	-	At stop	" H01_en.10" on page 135
H01.11	2001-0Ch	DC-AC voltage class	0V to 65535V	220	V	Unchangeable	" H01_en.11" on page 136
H01.12	2001-0Dh	Drive rated power	0.00 kW–10737418.24 kW	0.40	kW	Unchangeable	" H01_en.12" on page 136
H01.14	2001-0Fh	Max. output power of the drive	0.00 kW–10737418.24 kW	0.40	kW	Unchangeable	" H01_en.14" on page 137
H01.16	2001-11h	Rated output current of the drive	0.00A to 10737418.24A	2.80	A	Unchangeable	" H01_en.16" on page 137
H01.18	2001-13h	Max. output current of the drive	0.00A to 10737418.24A	10.10	A	Unchangeable	" H01_en.18" on page 137
H01.40	2001-29h	DC bus overvoltage protection threshold	0V to 2000V	420	V	Real-time	" H01_en.40" on page 137
H01.75	2001-4Ch	Current loop amplification factor	0.00 to 655.35	1.00	-	Real-time	" H01_en.75" on page 138
H01.88	2001-59h	Junction temperature parameter version 1	0.0 to 6553.5	0.0	-	Unchangeable	" H01_en.88" on page 138
H01.89	2001-5Ah	Junction temperature parameter version 2	0 to 65535	0	-	Unchangeable	" H01_en.89" on page 138

5.3 Parameter Group H02

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H02.00	2002–01h	Control mode	0: Speed control mode 1: Position control mode 2: Torque control mode 3: Torque<->Speed control mode 4: Speed<->Position control mode 5: Torque<->Position control mode 6: Torque<->Speed<->Position compound mode 11: PN communication mode	11	-	At stop	*" H02_en.00" on page 139*
H02.01	2002-02h	Absolute system selection	0: Incremental mode 1: Absolute position linear mode 2: Absolute position rotation mode 3: Absolute position linear mode (without encoder overflow warning) 4: Absolute position single-turn mode 5: Absolute position rotational mode, modal axis single modal revolution absolute command	0	-	At stop	*" H02_en.01" on page 139*
H02.02	2002-03h	Rotation direction selection	0: Counterclockwise (CCW) as forward direction 1: Clockwise (CW) as forward direction	0	-	At stop	*" H02_en.02" on page 139*

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H02.05	2002-06h	Stop mode at S-ON OFF	-5: Stop in PN communication state (ramp-to-stop/quick stop/coast-to-stop), keeping dynamic braking state -4: Stop based on ramp 2, keeping dynamic braking state -3: Stop at zero speed, keeping dynamic braking state -2: Stop based on ramp 1, keeping dynamic braking state -1: Dynamic braking stop, keeping dynamic braking state 0: Coast to stop, keeping de-energized state 1: Stop based on ramp 1, keeping de-energized state 2: Dynamic braking stop, keeping de-energized state 3: Stop in PN communication state (ramp-to-stop/quick stop/coast-to-stop), keeping de-energized state	3	-	Immediately	" H02_en.05" on page 141
H02.06	2002-07h	Stop mode at No.2 fault	-5: Stop at zero speed, keeping dynamic braking state -4: Stop at emergency stop torque, keeping dynamic braking state -3: Stop based on ramp 2, keeping dynamic braking state -2: Stop based on ramp 1, keeping dynamic braking state -1: Dynamic braking stop, keeping dynamic braking state 0: Coast to stop, keeping de-energized state 1: Stop based on ramp 1, keeping de-energized state 2: Stop based on ramp 2, keeping de-energized state 3: Stop at emergency stop torque, keeping de-energized state 4: Dynamic braking stop, keeping de-energized state	2	-	Immediately	" H02_en.06" on page 142

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H02.07	2002-08h	Stop mode at overtravel	0: Coast to stop, keeping de-energized state 1: Stop at zero speed, keeping position lock state 2: Stop at zero speed, keeping de-energized state 3: Stop based on ramp 2, keeping de-energized state 4: Stop based on ramp 2, keeping position lock state 5: Dynamic braking stop, keeping de-energized state 6: Dynamic braking stop, keeping dynamic braking state 7: Not responding to overtravel	8	-	Immediately	" H02_en.07" on page 142
H02.08	2002-09h	Stop mode at No.1 fault	0: Coast to stop, keeping de-energized state 1: Dynamic braking stop, keeping de-energized state 2: Dynamic braking stop, keeping dynamic braking state	2	-	Immediately	" H02_en.08" on page 143
H02.09	2002-0Ah	Delay from brake output ON to command received	0 ms to 500 ms	250	ms	Real-time	" H02_en.09" on page 143
H02.10	2002-0Bh	Delay from brake output OFF to motor de-energized	50 ms to 1000 ms	150	ms	Real-time	" H02_en.10" on page 143
H02.11	2002-0Ch	Motor speed threshold at brake output OFF in rotation state	20 rpm to 3000 rpm	30	RPM	Real-time	" H02_en.11" on page 144
H02.12	2002-0Dh	Delay from S-ON OFF to brake output OFF in rotation state	1 ms to 65535 ms	500	ms	Real-time	" H02_en.12" on page 144
H02.15	2002-10h	LED warning display	0: Output warning information immediately 1: Not output warning information	0	-	Real-time	" H02_en.15" on page 144

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H02.17	2002-12h	Stop mode upon main circuit power failure	0: Keep current action 1: Stop upon fault as defined by H0206 2: Stop at S-ON OFF as defined by H0205 3: Stop quickly as defined by H0218	2	-	Real-time	" H02_en.17" on page 145
H02.18	2002-13h	DI emergency stop mode selection	0: Coast to stop, keeping de-energized state 1: Ramp 1 stop, keeping de-energized state 2: Ramp 2 stop, keeping de-energized stat 3: Stop at emergency stop torque, keeping de-energized state	2	-	Real-time	" H02_en.18" on page 145
H02.21	2002-16h	Permissible minimum resistance of regenerative resistor	1Ω to 1000 Ω	40	Ω	Unchangeable	" H02_en.21" on page 145
H02.22	2002-17h	Power of built-in regenerative resistor	0W to 65535W	50	W	Unchangeable	" H02_en.22" on page 146
H02.23	2002-18h	Resistance of built-in regenerative resistor	0Ω to 65535Ω	50	Ω	Unchangeable	" H02_en.23" on page 146
H02.24	2002-19h	Resistor heat dissipation coefficient	10%–100%	30	%	Real-time	" H02_en.24" on page 147
H02.25	2002-1Ah	Regenerative resistor type	0: Built-in 1: External, natural cooling 2: External, forced air cooling 3: No resistor needed	3	-	Real-time	" H02_en.25" on page 148
H02.26	2002-1Bh	Power of external regenerative resistor	1W to 65535W	40	W	Real-time	" H02_en.26" on page 148
H02.27	2002-1Ch	Resistance of external regenerative resistor	15 Ω to 1000 Ω	50	Ω	Real-time	" H02_en.27" on page 148
H02.30	2002-1Fh	User password	0 to 65535	0	-	Real-time	" H02_en.30" on page 149
H02.31	2002-20h	System parameter initialization	0: No operation 1: Restore default settings 2: Clear fault records	0	-	At stop	" H02_en.31" on page 149

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H02.32	2002-21h	Selection of parameters in group H0b	0 to 99	50	-	Real-time	" H02_en.32" on page 149
H02.33	2002-22h	200P software version	0.0 to 65535.0	0.0	-	Unchangeable	" H02_en.33" on page 149
H02.35	2002-24h	Keypad data update frequency	0Hz–20Hz	0	Hz	Real-time	" H02_en.35" on page 150
H02.41	2002-2Ah	Manufacturer password	0 to 65535	0	-	Real-time	" H02_en.41" on page 150

5.4 Parameter Group H03

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H03.00	2003-01h	DI function allocation 1 (activated upon power-on)	0: Corresponding to null 1: Corresponding to FunIN.1 2: Corresponding to FunIN.2 4: Corresponding to FunIN.3 8: Corresponding to FunIN.4 16: Corresponding to FunIN.5 32: Corresponding to FunIN.6 64: Corresponding to FunIN.7 128: Corresponding to FunIN.8 256: Corresponding to FunIN.9 512: Corresponding to FunIN.10 1024: Corresponding to FunIN.11 2048: Corresponding to FunIN.12 4096: Corresponding to FunIN.13 8192: Corresponding to FunIN.14 16384: Corresponding to FunIN.15 32768: Corresponding to FunIN.16	0	-	Real-time	*" H03_en.00" on page 150*

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H03.01	2003-02h	DI function allocation 2 (activated upon power-on)	0: Corresponding to null 1: Corresponding to FunIN.17 2: Corresponding to FunIN.18 4: Corresponding to FunIN.19 8: Corresponding to FunIN.20 16: Corresponding to FunIN.21 32: Corresponding to FunIN.22 64: Corresponding to FunIN.23 128: Corresponding to FunIN.24 256: Corresponding to FunIN.25 512: Corresponding to FunIN.26 1024: Corresponding to FunIN.27 2048: Corresponding to FunIN.28 4096: Corresponding to FunIN.29 16384: Corresponding to FunIN.31 32768: Corresponding to FunIN.32	0	-	Real-time	" H03_en.01" on page 151
H03.02	2003-03h	DI1 function selection	0: Undefined 1: S-ON 3: Gain switchover 14: Forward overtravel switch 15: Reverse overtravel switch 16: Positive external torque limit 17: Negative external torque limit 18: Forward jog 19: Reverse jog 31: Home switch 32: Homing enabled 34: Emergency stop 36: Internal speed limit source 38: Probe 1 39: Probe 2 41: Current position as home 56: EPOS program block external toggle switch	14	-	Real-time	" H03_en.02" on page 152
H03.03	2003-04h	DI1 logic selection	0: Active low 1: Active high	0	-	Real-time	" H03_en.03" on page 153
H03.04	2003-05h	DI2 function selection	Same as H03.02.	15	-	Real-time	" H03_en.04" on page 153

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H03.05	2003-06h	DI2 logic selection	0: Active low 1: Active high	0	-	Real-time	" H03_en.05" on page 154
H03.06	2003-07h	DI3 function selection	Same as H03.02.	31	-	Real-time	" H03_en.06" on page 154
H03.07	2003-08h	DI3 logic selection	0: Active low 1: Active high	0	-	Real-time	" H03_en.07" on page 154
H03.08	2003-09h	DI4 function selection	Same as H03.02.	34	-	Real-time	" H03_en.08" on page 155
H03.09	2003-0Ah	DI4 logic selection	0: Active low 1: Active high	0	-	Real-time	" H03_en.09" on page 155
H03.10	2003-0Bh	DI5 function selection	Same as H03.02.	38	-	Real-time	" H03_en.10" on page 155
H03.11	2003-0Ch	DI5 logic selection	0: Active low 1: Active high	0	-	Real-time	" H03_en.11" on page 155
H03.34	2003-23h	DI function allocation 3 (activated upon power-on)	0: Corresponding to null 1: Corresponding to FunIN.33 2: Corresponding to FunIN.34 4: Corresponding to FunIN.35 8: Corresponding to FunIN.36 16: Corresponding to FunIN.37 32: Corresponding to FunIN.38 64: Corresponding to FunIN.39 128: Corresponding to FunIN.40 256: Corresponding to FunIN.41 512: Corresponding to FunIN.42 1024: Corresponding to FunIN.43 2048: Corresponding to FunIN.44 4096: Corresponding to FunIN.45 8192: Corresponding to FunIN.46 16384: Corresponding to FunIN.47 32768: Corresponding to FunIN.48	0	-	Real-time	" H03_en.34" on page 157

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H03.35	2003-24h	DI function allocation 4 (activated upon power-on)	0: Corresponding to null 1: Corresponding to FunIN.49 2: Corresponding to FunIN.50 4: Corresponding to FunIN.51 8: Corresponding to FunIN.52 16: Corresponding to FunIN.53 32: Corresponding to FunIN.54 64: Corresponding to FunIN.55 128: Corresponding to FunIN.56 256: Corresponding to FunIN.57 512: Corresponding to FunIN.58 1024: Corresponding to FunIN.59 2048: Corresponding to FunIN.60 4096: Corresponding to FunIN.61 8192: Corresponding to FunIN.62 16384: Corresponding to FunIN.63	0	-	Real-time	" H03_en.35" on page 158
H03.60	2003-3Dh	DI1 filter time	0.00 ms to 500.00 ms	3.00	ms	Real-time	" H03_en.60" on page 160
H03.61	2003-3Eh	DI2 filter time	0.00 ms to 500.00 ms	3.00	ms	Real-time	" H03_en.61" on page 161
H03.62	2003-3Fh	DI3 filter time	0.00 ms to 500.00 ms	3.00	ms	Real-time	" H03_en.62" on page 161
H03.63	2003-40h	DI4 filter time	0.00 ms to 500.00 ms	3.00	ms	Real-time	" H03_en.63" on page 161
H03.64	2003-41h	DI5 filter time	0.00 ms to 500.00 ms	3.00	ms	Real-time	" H03_en.64" on page 161

5.5 Parameter Group H04

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H04.00	2004-01h	DO1 function selection	0: No function 1: Servo ready 2: Motor rotation signal 3: Zero speed signal 4: Speed matching signal 5: Positioning completed 6: Positioning near 7: Torque limited signal 8: Speed limited signal 9: Braking 10: Warning 11: Fault 16: Homing completed 18: Torque reached signal 19: Speed reached signal 21: Enable completed 25: Comparison output 30: Warning or fault output 32: EDM output	1	-	Real-time	" H04_en.00" on page 163
H04.01	2004-02h	DO1 logic selection	0: Normally open 1: Closed	0	-	Real-time	" H04_en.01" on page 164
H04.02	2004-03h	DO2 function selection	See H04.00.	11	-	Real-time	" H04_en.02" on page 165
H04.03	2004-04h	DO2 logic selection	0: Normally open 1: Closed	0	-	Real-time	" H04_en.03" on page 165
H04.04	2004-05h	DO3 function selection	See H04.00.	9	-	Real-time	" H04_en.04" on page 165
H04.05	2004-06h	DO3 logic selection	0: Normally open 1: Closed	0	-	Real-time	" H04_en.05" on page 165
H04.22	2004-17h	DO source selection	bit0: DO1 0: DO1 function output 1: H04.bit0 bit1: DO2 0: DO2 function output 1: H04.bit1 bit2: DO3 0: DO3 function output 1: H04.bit2	0	-	Real-time	" H04_en.22" on page 167

5.6 Parameter Group H05

Param	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H05.02	2005-03h	Pulses per revolution	0 PPR to 4294967295 PPR	0	PPR	At stop	" H05_ en.02" on page 170
H05.04	2005-05h	First-order low-pass filter time constant	0.0 ms to 6553.5 ms	0.0	ms	At stop	" H05_ en.04" on page 170
H05.06	2005-07h	Moving average filter time constant 1	0.0 ms to 128.0 ms	0.0	ms	At stop	" H05_ en.06" on page 171
H05.07	2005-08h	Electronic gear ratio 1 (numerator)	1 to 1073741824	8388608	-	Real-time	" H05_ en.07" on page 171
H05.09	2005-0Ah	Electronic gear ratio 1 (denominator)	1 to 1073741824	10000	-	Real-time	" H05_ en.09" on page 171
H05.11	2005-0Ch	Electronic gear ratio 2 (numerator)	1 to 1073741824	8388608	-	Real-time	" H05_ en.11" on page 172
H05.13	2005-0Eh	Electronic gear ratio 2 (denominator)	1 to 1073741824	10000	-	Real-time	" H05_ en.13" on page 172
H05.16	2005-11h	Clear action	0: Position deviation cleared upon S-OFF or non-operational state 1: Position deviation cleared upon S-OFF or fault 2: Position deviation cleared upon S-OFF or active DI function 35	0	-	At stop	" H05_ en.16" on page 172
H05.19	2005-14h	Speed feedforward control	0: No speed feedforward 1: Internal speed feedforward 2: PLC speed feedforward	1	-	At stop	" H05_ en.19" on page 173

Param	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H05.20	2005-15h	Condition for positioning completed signal output	0: Abs. position deviation below H05.21 1: Abs. position deviation below H05.21; filtered position ref. is 0 2: Abs. position deviation below H05.21; unfiltered position ref. is 0 3: Abs. position deviation kept below H05.21 within the time set by H05.60; unfiltered position ref. is 0 4: Abs. position deviation below threshold, window time being active and filtered position ref. being 0 5: Abs. position deviation below threshold, with zero speed signal being active and filtered position ref. being 0 6: Abs. position deviation below threshold, with zero speed signal being active and filtered position ref. being 0 7: COIN signal judged after the change (avail.→unavail.) of position ref. kept active for the defined window time, with filtered position ref. being 0 and position deviation below threshold 8: COIN signal judged after the change (avail.→unavail.) of filtered position ref. kept active for the defined window time, with filtered position ref. being 0 and position deviation below threshold 9: COIN signal judged after the change (avail.→unavail.) of position ref. kept active for the defined window time, with filtered position ref. being 0 and position deviation below threshold 10: COIN signal judged after the change (avail.→unavail.) of filtered position ref. kept active for the defined window time, with filtered position ref. being 0 and position deviation below threshold	0	-	Real-time	" H05_ en.20" on page 173
H05.21	2005-16h	Threshold of positioning completed	1 to 65535	7	Encod er unit	Real-time	" H05_ en.21" on page 174

Param	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H05.22	2005-17h	Proximity threshold	1 to 65535	65535	Encoder unit	Real-time	" H05_ en.22" on page 175
H05.32	2005-21h	Speed of high-speed search for home switch signal	0 RPM to 3000 RPM	100	RPM	Real-time	" H05_ en.32" on page 176
H05.33	2005-22h	Speed of low-speed search for home switch signal	0 RPM to 1000 RPM	10	RPM	Real-time	" H05_ en.33" on page 176
H05.34	2005-23h	Acceleration/ Deceleration time during homing	0 ms to 1000 ms	1000	ms	Real-time	" H05_ en.34" on page 176
H05.35	2005-24h	Home search time limit	0 ms to 65535 ms	10000	ms	Real-time	" H05_ en.35" on page 177
H05.36	2005-25h	Mechanical home offset	-2147483648 to 2147483647	0	Reference unit	Real-time	" H05_ en.36" on page 177
H05.39	2005-28h	Electronic gear ratio switchover condition	0: Switchover after position reference is kept 0 for 2.5 ms 1: Switched in real time	0	-	At stop	" H05_ en.39" on page 178
H05.40	2005-29h	Mechanical home offset and action upon overtravel	0: H05.36 as the coordinate after homing, reverse homing applied after homing triggered again on overtravel 1: H05.36 as the relative offset after homing, reverse homing applied after homing triggered again on overtravel 2: H05.36 as the coordinate after homing, reverse homing auto-applied on overtravel 3: H05.36 as the relative offset after homing, reverse homing auto-applied on overtravel	0	-	At stop	" H05_ en.40" on page 178
H05.50	2005-33h	Mechanical gear ratio in absolute position rotation mode (numerator)	1 to 65535	1	-	At stop	" H05_ en.50" on page 180

Param	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H05.51	2005-34h	Mechanical gear ratio in absolute position rotation mode (denominator)	1 to 65535	1	-	At stop	" H05_ en.51" on page 181
H05.52	2005-35h	Pulses per revolution of the load in absolute position rotation mode (low 32 bits)	0 to 2147483647	0	Encod er unit	At stop	" H05_ en.52" on page 181
H05.54	2005-37h	Pulses per revolution of the load in absolute position rotation mode (high 32 bits)	0 to 2147483647	0	Encod er unit	At stop	" H05_ en.54" on page 181
H05.56	2005-39h	Speed threshold in homing upon hit-and-stop	0 rpm to 1000 rpm	2	RPM	Real-time	" H05_ en.56" on page 181
H05.58	2005-3Bh	Torque threshold in homing upon hit-and-stop	0.0%–300.0%	100.0	%	Real-time	" H05_ en.58" on page 182
H05.59	2005-3Ch	Positioning window time	0 ms to 30000 ms	0	ms	Real-time	" H05_ en.59" on page 182
H05.60	2005-3Dh	Hold time of positioning completed	0 ms to 30000 ms	0	ms	Real-time	" H05_ en.60" on page 182
H05.66	2005-43h	Homing time unit	0: 1 ms 1: 10 ms 2: 100 ms	2	-	At stop	" H05_ en.66" on page 183
H05.67	2005-44h	Offset between zero point and single-turn absolute position	-2147483648 to 2147483647	0	1 encod er unit	At stop	" H05_ en.67" on page 183
H05.69	2005-46h	Auxiliary homing function	0: Inhibited 1: Record offset position 2: Clear offset position	0	-	At stop	" H05_ en.69" on page 183

Param	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H05.70	2005-47h	Moving average filter time constant 2	0.0 ms to 1000.0 ms	0.0	ms	At stop	" H05_en.70" on page 183
H05.71	2005-48h	Motor Z signal width	0 ms to 100 ms	4	ms	Real-time	" H05_en.71" on page 184
H05.80	2005-51h	Reference operation mode in rotation mode	0 to 4	0	-	At stop	" H05_en.80" on page 184

5.7 Parameter Group H06

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H06.00	2006-01h	Source of main speed reference A	0: Digital setting (H06.03)	0	-	At stop	" H06_en.00" on page 185
H06.01	2006-02h	Source of auxiliary speed reference B	0: Digital setting (H06.03) 5: Multi-speed reference	0	-	At stop	" H06_en.01" on page 185
H06.02	2006-03h	Speed reference source	0: Source of main speed reference A 1: Source of auxiliary speed reference B 2: A+B 3: Switched between A and B 4: Communication	0	-	At stop	" H06_en.02" on page 185
H06.03	2006-04h	Speed reference set through keypad	-10000 RPM to +10000 RPM	200	RPM	Real-time	" H06_en.03" on page 186
H06.04	2006-05h	DI speed reference	0 rpm to 10000 rpm	150	RPM	Real-time	" H06_en.04" on page 186
H06.05	2006-06h	Acceleration ramp time of speed reference	0 ms to 65535 ms	0	ms	Real-time	" H06_en.05" on page 186
H06.06	2006-07h	Deceleration ramp time of speed reference	0 ms to 65535 ms	0	ms	Real-time	" H06_en.06" on page 186
H06.07	2006-08h	Max. speed limit	0 rpm to 10000 rpm	7000	RPM	Real-time	" H06_en.07" on page 187

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H06.08	2006-09h	Forward speed limit	0 rpm to 10000 rpm	7000	RPM	Real-time	" H06_en.08" on page 187
H06.09	2006-0Ah	Reverse speed limit	0 rpm to 10000 rpm	7000	RPM	Real-time	" H06_en.09" on page 187
H06.10	2006-0Bh	Deceleration unit in emergency stop	0: Multiplied by 1 1: Multiplied by 10 2: Multiplied by 100	0	-	At stop	" H06_en.10" on page 187
H06.11	2006-0Ch	Torque feedforward control	0: No torque feedforward 1: Internal torque feedforward	1	-	Real-time	" H06_en.11" on page 188
H06.12	2006-0Dh	Acceleration ramp time of jog speed	0 ms to 65535 ms	10	ms	Real-time	" H06_en.12" on page 188
H06.13	2006-0Eh	Speed feedforward smoothing filter	0 us to 65535 us	0	us	Real-time	" H06_en.13" on page 189
H06.15	2006-10h	Zero clamp speed threshold	0 rpm to 10000 rpm	10	RPM	Real-time	" H06_en.15" on page 189
H06.16	2006-11h	Threshold of TGON (motor rotation) signal	0 rpm to 1000 rpm	20	RPM	Real-time	" H06_en.16" on page 189
H06.17	2006-12h	Threshold of V-Cmp (speed matching) signal	0 rpm to 100 rpm	10	RPM	Real-time	" H06_en.17" on page 189
H06.18	2006-13h	Threshold of speed reach signal	20 rpm to 10000 rpm	1000	RPM	Real-time	" H06_en.18" on page 190
H06.19	2006-14h	Threshold of zero speed output signal	1 rpm to 10000 rpm	10	RPM	Real-time	" H06_en.19" on page 190
H06.36	2006-25h	Moving average filter time constant of speed references	0 ms to 32 ms	0	ms	At stop	" H06_en.36" on page 190
H06.40	2006-29h	Deceleration time of ramp 1/ PN ramp stop	0 ms to 65535 ms	0	ms	At stop	" H06_en.40" on page 190
H06.41	2006-2Ah	Dec. time of ramp 2/PN quick stop	0 ms to 65535 ms	0	ms	At stop	" H06_en.41" on page 191
H06.50	2006-33h	Speed S-curve enable switch	0 to 1	0	-	At stop	" H06_en.50" on page 191

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H06.51	2006-34h	Increasing acceleration of speed S-curve acceleration segment	0.0%–100.0%	50.0	%	At stop	" H06_en.51" on page 191
H06.52	2006-35h	Decreasing acceleration of speed S-curve acceleration segment	0.0%–100.0%	50.0	%	At stop	" H06_en.52" on page 191
H06.53	2006-36h	Increasing acceleration of speed S-curve deceleration segment	0.0%–100.0%	50.0	%	At stop	" H06_en.53" on page 192
H06.54	2006-37h	Decreasing acceleration of speed S-curve deceleration segment	0.0%–100.0%	50.0	%	At stop	" H06_en.54" on page 192

5.8 Parameter Group H07

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H07.00	2007-01h	Source of main torque reference A	0: Keypad (H7.03)	0	-	At stop	" H07_en.00" on page 192
H07.01	2007-02h	Source of auxiliary torque reference B	0: Keypad (H7.03)	0	-	At stop	" H07_en.01" on page 193
H07.02	2007-03h	Torque reference source	0: Source of main torque reference A 1: Source of auxiliary torque reference B 2: Source of A+B 3: Switched between A and B 4: Communication	0	-	At stop	" H07_en.02" on page 193
H07.03	2007-04h	Torque reference set through keypad	-400.0%–400.0%	0.0	%	Real-time	" H07_en.03" on page 193
H07.05	2007-06h	Torque reference filter time constant 1	0.00 ms to 30.00 ms	0.50	ms	Real-time	" H07_en.05" on page 194

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H07.06	2007-07h	Torque reference filter time constant 2	0.00 ms to 30.00 ms	0.27	ms	Real-time	" H07_en.06" on page 194
H07.07	2007-08h	Torque Limit source	0: Positive/Negative internal torque limit 5: PN torque limit	0	-	Real-time	" H07_en.07" on page 194
H07.09	2007-0Ah	Positive internal torque limit	0.0%–400.0%	350.0	%	Real-time	" H07_en.09" on page 194
H07.10	2007-0Bh	Negative internal torque limit	0.0%–400.0%	350.0	%	Real-time	" H07_en.10" on page 195
H07.11	2007-0Ch	Positive external torque limit	0.0%–400.0%	350.0	%	Real-time	" H07_en.11" on page 195
H07.12	2007-0Dh	Negative external torque limit	0.0%–400.0%	350.0	%	Real-time	" H07_en.12" on page 195
H07.15	2007-10h	Emergency-stop torque	0.0%–400.0%	100.0	%	Real-time	" H07_en.15" on page 196
H07.17	2007-12h	Speed limit source	0: Internal speed limit 2: H07.19 or H07.20 as defined by DI	0	-	Real-time	" H07_en.17" on page 196
H07.19	2007-14h	Positive speed limit/Speed limit 1 in torque control	0 rpm to 10000 rpm	3000	RPM	Real-time	" H07_en.19" on page 196
H07.20	2007-15h	Negative speed limit/Speed limit 2 in torque control	0 rpm to 10000 rpm	3000	RPM	Real-time	" H07_en.20" on page 196
H07.21	2007-16h	Torque reach base value	0.0%–300.0%	0.0	%	Real-time	" H07_en.21" on page 197
H07.22	2007-17h	Torque reach valid value	0.0%–400.0%	20.0	%	Real-time	" H07_en.22" on page 197
H07.23	2007-18h	Torque reach invalid value	0.0%–400.0%	10.0	%	Real-time	" H07_en.23" on page 197
H07.24	2007-19h	Field weakening depth	60%–115%	115	%	Real-time	" H07_en.24" on page 197
H07.25	2007-1Ah	Max. permissible demagnetizing current	0%–200%	100	%	Real-time	" H07_en.25" on page 198

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H07.26	2007-1Bh	Field weakening selection	0: Disabled 1: Enabled	0	-	At stop	" H07_en.26" on page 198
H07.27	2007-1Ch	Flux weakening gain	0.001Hz–1.000Hz	0.030	Hz	Real-time	" H07_en.27" on page 198
H07.28	2007-1Dh	Speed of flux weakening point	0 to 65535	0	-	Unchangeable	" H07_en.28" on page 199
H07.36	2007-25h	Time constant of low-pass filter 2	0.00 ms to 10.00 ms	0.00	ms	Real-time	" H07_en.36" on page 199
H07.37	2007-26h	Torque reference filter selection	0: First-order filter 1: Biquad filter	0	-	Real-time	" H07_en.37" on page 199
H07.38	2007-27h	Biquad filter attenuation ratio	0 to 50	16	-	At stop	" H07_en.38" on page 199
H07.40	2007-29h	Speed limit threshold in torque control mode	0.0 ms to 30.0 ms	1.0	ms	Real-time	" H07_en.40" on page 200

5.9 Parameter Group H08

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H08.00	2008-01h	Speed loop gain	0.1Hz to 2000.0Hz	40.0	Hz	Real-time	" H08_en.00" on page 200
H08.01	2008-02h	Speed loop integral time constant	0.15 ms to 512.00 ms	19.89	ms	Real-time	" H08_en.01" on page 200
H08.02	2008-03h	Position loop gain	0.1Hz to 2000.0Hz	64.0	Hz	Real-time	" H08_en.02" on page 201
H08.03	2008-04h	2nd speed loop gain	0.1Hz to 2000.0Hz	75.0	Hz	Real-time	" H08_en.03" on page 201
H08.04	2008-05h	2nd speed loop integral time constant	0.15 ms to 512.00 ms	10.61	ms	Real-time	" H08_en.04" on page 201
H08.05	2008-06h	2nd position loop gain	0.1Hz to 2000.0Hz	120.0	Hz	Real-time	" H08_en.05" on page 202

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H08.08	2008-09h	2nd gain mode setting	0: Fixed to the 1st group of gains, P/PI switched through external DI1:Switched between the 1st and 2nd group of gains as defined by H08.09	1	-	Real-time	" H08_en.08" on page 202
H08.09	2008-0Ah	Gain switchover condition	0: Fixed to the 1st gain set (PS) 1: Switched as defined by Func3 of DI 2: Torque reference too large (PS) 3: Speed reference too large (PS) 4: Speed reference change rate too large (PS) 5: Speed reference low/high speed threshold (PS) 6: Position deviation too large (P) 7: Position reference available (P) 8: Positioning unfinished (P) 9: Actual speed (P) 10: Position reference + Actual speed (P)	0	-	Real-time	" H08_en.09" on page 202
H08.10	2008-0Bh	Gain switchover delay	0.0 ms to 1000.0 ms	5.0	ms	Real-time	" H08_en.10" on page 204
H08.11	2008-0Ch	Gain switchover level	0 to 20000	50	-	Real-time	" H08_en.11" on page 205
H08.12	2008-0Dh	Gain switchover hysteresis	0 to 20000	30	-	Real-time	" H08_en.12" on page 205
H08.13	2008-0Eh	Position gain switchover time	0.0 ms to 1000.0 ms	3.0	ms	Real-time	" H08_en.13" on page 205
H08.15	2008-10h	Load moment of inertia ratio	0.00 to 120.00	1.00	-	Real-time	" H08_en.15" on page 206
H08.17	2008-12h	Zero phase delay	0.0 ms to 4.0 ms	0.0	ms	Real-time	" H08_en.17" on page 206
H08.18	2008-13h	Time constant of speed feedforward filter	0.00 ms to 64.00 ms	0.50	ms	Real-time	" H08_en.18" on page 206
H08.19	2008-14h	Speed feedforward gain	0.0%–100.0%	0.0	%	Real-time	" H08_en.19" on page 207

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H08.20	2008-15h	Torque feedforward filter time constant	0.00 ms to 64.00 ms	0.50	ms	Real-time	" H08_en.20" on page 207
H08.21	2008-16h	Torque feedforward gain	0.0%–300.0%	0.0	%	Real-time	" H08_en.21" on page 207
H08.22	2008-17h	Speed feedback filtering option	0: Inhibited 1: 2 times 2: 4 times 3: 8 times 4: 16 times	0	-	At stop	" H08_en.22" on page 207
H08.23	2008-18h	Cutoff frequency of speed feedback low-pass filter	100Hz to 8000Hz	8000	Hz	Real-time	" H08_en.23" on page 208
H08.24	2008-19h	PDFF control coefficient	0.0%–200.0%	100.0	%	Real-time	" H08_en.24" on page 208
H08.27	2008-1Ch	Speed observer cutoff frequency	50Hz to 600Hz	170	Hz	Real-time	" H08_en.27" on page 208
H08.28	2008-1Dh	Speed observer inertia correction coefficient	1%–1600%	100	%	Real-time	" H08_en.28" on page 209
H08.29	2008-1Eh	Speed observer filter time	0.00 ms to 10.00 ms	0.80	ms	Real-time	" H08_en.29" on page 209
H08.31	2008-20h	Disturbance cutoff frequency	10Hz to 4000Hz	600	Hz	Real-time	" H08_en.31" on page 209
H08.32	2008-21h	Disturbance compensation gain	0%–100%	0	%	Real-time	" H08_en.32" on page 210
H08.33	2008-22h	Disturbance observer inertia correction coefficient	0%–1600%	100	%	Real-time	" H08_en.33" on page 210
H08.37	2008-26h	Phase modulation for medium-frequency jitter suppression 2	-90° to 90°	0	°	Real-time	" H08_en.37" on page 210
H08.38	2008-27h	Medium-frequency suppression 2 frequency	0Hz to 1000Hz	0	Hz	Real-time	" H08_en.38" on page 210

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H08.39	2008-28h	Compensation gain of medium-frequency jitter suppression 2	0%–300%	0	%	Real-time	" H08_en.39" on page 211
H08.40	2008-29h	Speed observer selection	0: Disabled 1: Enabled	0	-	Real-time	" H08_en.40" on page 211
H08.42	2008-2Bh	Model control selection	0: Disable 1: Enable 2: Dual-inertia model	0	-	Real-time	" H08_en.42" on page 211
H08.43	2008-2Ch	Model gain	0.1 to 2000.0	40.0	-	Real-time	" H08_en.43" on page 211
H08.46	2008-2Fh	Feedforward value	0.0 to 102.4	95.0	-	Real-time	" H08_en.46" on page 212
H08.53	2008-36h	Medium- and low-frequency jitter suppression frequency 3	0.0Hz to 300.0Hz	0.0	Hz	Real-time	" H08_en.53" on page 212
H08.54	2008-37h	Medium- and low-frequency jitter suppression compensation 3	0%–200%	0	%	Real-time	" H08_en.54" on page 212
H08.56	2008-39h	Medium- and low-frequency jitter suppression phase modulation 3	0%–600%	100	%	Real-time	" H08_en.56" on page 213
H08.59	2008-3Ch	Medium- and low-frequency jitter suppression frequency 4	0.0Hz to 300.0Hz	0.0	Hz	Real-time	" H08_en.59" on page 213
H08.60	2008-3Dh	Medium- and low-frequency jitter suppression compensation 4	0%–200%	0	%	Real-time	" H08_en.60" on page 213

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H08.61	2008-3Eh	Medium- and low-frequency jitter suppression phase modulation 4	0%–600%	100	%	Real-time	" H08_en.61" on page 213
H08.62	2008-3Fh	Position loop integral time constant	0.15 to 512.00	512.00	-	Real-time	" H08_en.62" on page 214
H08.63	2008-40h	2nd position loop integral time constant	0.15 to 512.00	512.00	-	Real-time	" H08_en.63" on page 214
H08.64	2008-41h	Speed observer feedback source	0: Disabled 1: Enabled	0	-	Real-time	" H08_en.64" on page 214
H08.65	2008-42h	Zero deviation control selection	0: Disabled 1: Enabled	0	-	Real-time	" H08_en.65" on page 214
H08.66	2008-43h	Zero deviation control position average filter	0.0 ms to 320.0 ms	5.0	ms	Real-time	" H08_en.66" on page 215
H08.68	2008-45h	Speed feedforward of zero deviation control	0.0%–100.0%	0.0	%	Real-time	" H08_en.68" on page 215
H08.69	2008-46h	Torque feedforward of zero deviation control	0.0%–100.0%	0.0	%	Real-time	" H08_en.69" on page 215
H08.81	2008-52h	Anti-resonance frequency of dual-inertia model	0.0Hz to 300.0Hz	0.0	Hz	Real-time	" H08_en.81" on page 216
H08.82	2008-53h	Resonance frequency of dual-inertia model	0.0Hz to 300.0Hz	0.0	Hz	Real-time	" H08_en.82" on page 216
H08.83	2008-54h	Dual-inertia model gain	0.1Hz to 2000.0Hz	40.0	Hz	Real-time	" H08_en.83" on page 216
H08.84	2008-55h	Inertia ratio of dual-inertia model	0.00 to 120.00	1.00	-	Real-time	" H08_en.84" on page 216

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H08.88	2008-59h	Speed feedforward value of dual-inertia model	0.0 to 100.0	100.0	-	Real-time	" H08_en.88" on page 217
H08.89	2008-5Ah	Torque feedforward value of dual-inertia model	0.0 to 100.0	100.0	-	Real-time	" H08_en.89" on page 217

5.10 Parameter Group H09

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H09.00	2009-01h	Auto-adjustment mode	0: Disabled, manual gain tuning required 1: Enabled, gain parameters generated automatically based on the stiffness level 2: Positioning mode, gain parameters generated automatically based on the stiffness level 4: Normal mode+Inertia auto-tuning 6: Quick positioning mode+Inertia auto-tuning	0	-	Real-time	" H09_en.00" on page 217
H09.01	2009-02h	Stiffness level selection	0 to 41	15	-	Real-time	" H09_en.01" on page 218
H09.02	2009-03h	Adaptive notch mode	0: Adaptive notch no longer updated; 1: One adaptive notch activated (3rd notch) 2: Two adaptive notches activated (3rd and 4th notches) 3: Resonance point tested only (displayed in H09.24) 4: Adaptive notch cleared, values of 3rd and 4th notches restored to default	3	-	Real-time	" H09_en.02" on page 218
H09.03	2009-04h	Online inertia auto-tuning mode	0: Disabled 1: Enabled, changing slowly 2: Enabled, changing normally 3: Enabled, changing quickly	2	-	Real-time	" H09_en.03" on page 218

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H09.05	2009-06h	Offline inertia auto-tuning mode	0: Bi-directional 1: Unidirectional	1	-	At stop	" H09_en.05" on page 219
H09.06	2009-07h	Max. speed of inertia auto-tuning	100 rpm to 1000 rpm	500	RPM	At stop	" H09_en.06" on page 219
H09.07	2009-08h	Time constant for accelerating to max. speed during inertia auto-tuning	20 ms to 800 ms	125	ms	At stop	" H09_en.07" on page 219
H09.08	2009-09h	Interval time after an individual inertia auto-tuning	50 ms to 10000 ms	800	ms	At stop	" H09_en.08" on page 220
H09.09	2009-0Ah	Number of motor revolutions per inertia auto-tuning	0.00 to 100.00	1.00	-	Real-time	" H09_en.09" on page 220
H09.11	2009-0Ch	Vibration threshold	0.0%–100.0%	5.0	%	Real-time	" H09_en.11" on page 220
H09.12	2009-0Dh	Frequency of the 1st notch	50Hz to 8000Hz	8000	Hz	Real-time	" H09_en.12" on page 221
H09.13	2009-0Eh	Width level of the 1st notch	0 to 20	2	-	Real-time	" H09_en.13" on page 221
H09.14	2009-0Fh	Depth level of the 1st notch	0 to 99	0	-	Real-time	" H09_en.14" on page 221
H09.15	2009-10h	Frequency of the 2nd notch	50Hz to 8000Hz	8000	Hz	Real-time	" H09_en.15" on page 222
H09.16	2009-11h	Width level of the 2nd notch	0 to 20	2	-	Real-time	" H09_en.16" on page 222
H09.17	2009-12h	Depth level of the 2nd notch	0 to 99	0	-	Real-time	" H09_en.17" on page 222
H09.18	2009-13h	Frequency of the 3rd notch	50Hz to 8000Hz	8000	Hz	Real-time	" H09_en.18" on page 223
H09.19	2009-14h	Width level of the 3rd notch	0 to 20	2	-	Real-time	" H09_en.19" on page 223
H09.20	2009-15h	Depth level of the 3rd notch	0 to 99	0	-	Real-time	" H09_en.20" on page 223
H09.21	2009-16h	Frequency of the 4th notch	50Hz to 8000Hz	8000	Hz	Real-time	" H09_en.21" on page 223
H09.22	2009-17h	Width level of the 4th notch	0 to 20	2	-	Real-time	" H09_en.22" on page 224

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H09.23	2009-18h	Depth level of the 4th notch	0 to 99	0	-	Real-time	" H09_en.23" on page 224
H09.24	2009-19h	Auto-tuned resonance frequency	0Hz to 5000Hz	0	Hz	Unchangeable	" H09_en.24" on page 224
H09.26	2009-1Bh	ITune response	50.0%–500.0%	100.0	%	Real-time	" H09_en.26" on page 225
H09.27	2009-1Ch	ITune mode	0: Disabled 1: ITune mode 1 2: ITune mode 2	0	-	Real-time	" H09_en.27" on page 225
H09.28	2009-1Dh	Minimum inertia ratio of ITune	0.0%–80.0%	0.0	%	Real-time	" H09_en.28" on page 225
H09.29	2009-1Eh	Maximum inertia ratio of ITune	1.0%–120.0%	30.0	%	Real-time	" H09_en.29" on page 225
H09.32	2009-21h	Gravity compensation value	0.0%–100.0%	0.0	%	Real-time	" H09_en.32" on page 226
H09.33	2009-22h	Positive friction compensation value	0.0%–100.0%	0.0	%	Real-time	" H09_en.33" on page 226
H09.34	2009-23h	Negative friction compensation value	-100.0%–0.0%	0.0	%	Real-time	" H09_en.34" on page 226
H09.35	2009-24h	Friction compensation speed	0.0 to 20.0	2.0	-	Real-time	" H09_en.35" on page 226
H09.36	2009-25h	Friction compensation speed	0: 0x00 Slow mode+Speed reference 0: 0x01 Slow mode+Model speed 0: 0x02 Slow mode+Speed feedback 0: 0x03 Slow mode+Observe speed 0: 0x10 Quick mode +Speed reference 0: 0x11 Quick mode +Model speed 0: 0x12 Quick mode +Speed feedback 0: 0x13 Quick mode+Observe speed	0	-	Real-time	" H09_en.36" on page 227

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H09.37	2009-26h	Vibration monitoring time	0 to 65535	600	-	Real-time	" H09_en.37" on page 227
H09.38	2009-27h	Frequency of low-frequency resonance suppression 1 at the mechanical end	1.0Hz to 100.0Hz	100.0	Hz	Real-time	" H09_en.38" on page 227
H09.39	2009-28h	Low-frequency resonance suppression 1 at the mechanical end	0 to 3	2	-	At stop	" H09_en.39" on page 228
H09.44	2009-2Dh	Frequency of low-frequency resonance suppression 2 at mechanical load end	0.0 to 100.0	0.0	-	Real-time	" H09_en.44" on page 228
H09.45	2009-2Eh	Responsiveness of low-frequency resonance suppression 2 at mechanical load end	0.01 to 5.00	1.00	-	Real-time	" H09_en.45" on page 228
H09.47	2009-30h	Width of low-frequency resonance suppression 2 at mechanical load end	0.00 to 2.00	1.00	-	Real-time	" H09_en.47" on page 229
H09.49	2009-32h	Frequency of low-frequency resonance suppression 3 at mechanical load end	0.0 to 100.0	0.0	-	Real-time	" H09_en.49" on page 229
H09.50	2009-33h	Responsiveness of low-frequency resonance suppression 3 at mechanical load end	0.01 to 5.00	1.00	-	Real-time	" H09_en.50" on page 229

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H09.52	2009-35h	Width of low-frequency resonance suppression 3 at mechanical load end	0.00 to 2.00	1.00	-	Real-time	" H09_en.52" on page 229
H09.54	2009-37h	Vibration threshold	0.0%–300.0%	50.0	%	Real-time	" H09_en.54" on page 230
H09.56	2009-39h	Max. overshoot allowed by ETune	0 to 65535	2936	-	Real-time	" H09_en.56" on page 230
H09.57	2009-3Ah	STune resonance suppression switchover frequency	0Hz to 4000Hz	900	Hz	Real-time	" H09_en.57" on page 230
H09.58	2009-3Bh	STune resonance suppression reset selection	0: Disabled 1: Enabled	0	-	Real-time	" H09_en.58" on page 230

5.11 Parameter Group H0A

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0A.00	200A-01h	Power input phase loss protection	0: Enable 1: Disable	0	-	Real-time	" H0A_en.00" on page 231
H0A.01	200A-02h	Absolute position limit	0: Disabled 1: Enabled 2: Enabled after homing	0	-	Real-time	" H0A_en.01" on page 231
H0A.04	200A-05h	Motor overload protection gain	50 to 300	100	-	Real-time	" H0A_en.04" on page 232
H0A.08	200A-09h	Overspeed threshold	0 rpm to 20000 rpm	0	RPM	Real-time	" H0A_en.08" on page 232
H0A.10	200A-0Bh	Threshold of excessive local position deviation	0 to 4294967295	25185824	-	Real-time	" H0A_en.10" on page 233
H0A.12	200A-0Dh	Runaway protection	0: Disabled 1: Enabled	1	-	Real-time	" H0A_en.12" on page 233
H0A.17	200A-12h	Reference unit	0: Pulse unit 1: Reference unit	0	-	At stop	" H0A_en.17" on page 234

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0A.18	200A-13h	IGBT over-temperature threshold	120°C to 175°C	140	°C	Real-time	" H0A_en.18" on page 234
H0A.19	200A-14h	Filter time constant of touch probe 1	0.00 us–6.30 us	2.00	us	Real-time	" H0A_en.19" on page 234
H0A.20	200A-15h	Filter time constant of touch probe 2	0.00 us–6.30 us	2.00	us	Real-time	" H0A_en.20" on page 235
H0A.23	200A-18h	TZ signal filter time	0 ns to 31 ns	15	25ns	At stop	" H0A_en.23" on page 235
H0A.26	200A-1Bh	Motor overload detection	0: Show motor overload warning (E909.0) and fault (E620.0) 1: Hide motor overload warning (E909.0) and fault (E620.0)	0	-	Real-time	" H0A_en.26" on page 235
H0A.27	200A-1Ch	Motor rotation DO speed filter time	0 ms to 100 ms	50	ms	At stop	" H0A_en.27" on page 236
H0A.32	200A-21h	Time threshold for locked motor overheat protection	10 ms to 65535 ms	200	ms	Real-time	" H0A_en.32" on page 237
H0A.33	200A-22h	Locked rotor over-temperature protection	0: Disabled 1: Enabled	1	-	Real-time	" H0A_en.33" on page 237
H0A.36	200A-25h	Encoder multi-turn overflow fault selection	0: Not hide 1: Hide	0	-	Real-time	" H0A_en.36" on page 237
H0A.39	200A-28h	Current sampling clock signal tolerance count	0 to 3	0	-	At stop	" H0A_en.39" on page 237

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0A.40	200A-29h	Compensation function selection	bit0: Overtravel compensation 0: Enabled 1: Disabled bit1: Touch probe rising edge compensation 0: Disabled 1: Enabled bit2: Touch probe falling edge compensation 0: Disabled 1: Enabled bit3: Touch probe edge solution 0: New solution 1: Old solution (same as SV660N)	6	-	At stop	*" H0A_en.40" on page 238*
H0A.41	200A-2Ah	Forward position of software position limit	-2147483648 to 2147483647	2147483647	Encoder unit	At stop	*" H0A_en.41" on page 238*
H0A.43	200A-2Ch	Reverse position of software position limit	-2147483648 to 2147483647	-2147483648	Encoder unit	At stop	*" H0A_en.43" on page 239*
H0A.49	200A-32h	Regenerative resistor overtemperature threshold	100°C to 175°C	115	°C	Real-time	*" H0A_en.49" on page 239*
H0A.50	200A-33h	Encoder communication fault tolerance threshold	0 to 31	3	-	Real-time	*" H0A_en.50" on page 239*
H0A.51	200A-34h	Phase loss detection filter times	3 ms to 36 ms	20	55ms	Real-time	*" H0A_en.51" on page 239*
H0A.52	200A-35h	Encoder temperature protection threshold	0°C to 175°C	105	°C	Real-time	*" H0A_en.52" on page 240*
H0A.53	200A-36h	Probe DI ON compensation time	-3000 ns to 3000 ns	128	25ns	Real-time	*" H0A_en.53" on page 240*
H0A.54	200A-37h	Probe DI OFF compensation time	-3000 ns to 3000 ns	1512	25ns	Real-time	*" H0A_en.54" on page 240*
H0A.55	200A-38h	Runaway current threshold	100.0%–400.0%	200.0	%	Real-time	*" H0A_en.55" on page 241*

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0A.56	200A-39h	Fault reset delay	0 ms to 60000 ms	10000	ms	Real-time	" H0A_en.56" on page 241
H0A.57	200A-3Ah	Runaway speed threshold	1 rpm to 1000 rpm	50	RPM	Real-time	" H0A_en.57" on page 241
H0A.58	200A-3Bh	Runaway speed filter time	0.1 ms to 100.0 ms	2.0	ms	Real-time	" H0A_en.58" on page 241
H0A.59	200A-3Ch	Runaway protection detection time	10 ms to 1000 ms	30	ms	Real-time	" H0A_en.59" on page 242
H0A.60	200A-3Dh	Black box function mode	0: Disable 1: Any fault 2: Designated fault 3: Triggered based on designated condition	1	-	Real-time	" H0A_en.60" on page 242
H0A.61	200A-3Eh	Designated fault code	0.0 to 6553.5	0.0	-	Real-time	" H0A_en.61" on page 242
H0A.62	200A-3Fh	Trigger source	0 to 25	0	-	Real-time	" H0A_en.62" on page 242
H0A.63	200A-40h	Trigger level	-2147483648 to 2147483647	0	-	Real-time	" H0A_en.63" on page 243
H0A.65	200A-42h	Trigger level	0: Rising edge 1: Equal 2: Falling edge 3: Edge-triggered	0	-	Real-time	" H0A_en.65" on page 243
H0A.66	200A-43h	Trigger position	0%–100%	75	%	Real-time	" H0A_en.66" on page 243
H0A.67	200A-44h	Sampling frequency	0: Current loop 1: Position loop 2: Main cycle	0	-	Real-time	" H0A_en.67" on page 244
H0A.70	200A-47h	Overspeed threshold 2	0 rpm to 20000 rpm	0	RPM	Real-time	" H0A_en.70" on page 244
H0A.71	200A-48h	MS1 motor overload curve switchover	0 to 3	2	-	Real-time	" H0A_en.71" on page 244
H0A.72	200A-49h	Maximum stop time in ramp-to-stop	0 ms to 65535 ms	10000	ms	At stop	" H0A_en.72" on page 244
H0A.73	200A-4Ah	STO 24 V disconnection filter time	1 ms to 5 ms	5	ms	Real-time	" H0A_en.73" on page 245
H0A.74	200A-4Bh	Filter time for two inconsistent STO channels	0 ms to 1000 ms	100	ms	Real-time	" H0A_en.74" on page 245

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0A.75	200A-4Ch	Servo OFF delay after STO triggered	0 ms to 25 ms	10	ms	Real-time	" H0A_en.75" on page 245
H0A.90	200A-5Bh	Average filter time constant for speed display	0 ms to 100 ms	0	ms	At stop	" H0A_en.90" on page 246
H0A.91	200A-5Ch	Average filter time constant for torque display	0 ms to 100 ms	0	ms	At stop	" H0A_en.91" on page 246
H0A.92	200A-5Dh	Average filter time constant for position display	0 ms to 100 ms	0	ms	At stop	" H0A_en.92" on page 246
H0A.93	200A-5Eh	Low-pass filter time constant for voltage display	0 ms to 250 ms	0	ms	Real-time	" H0A_en.93" on page 246
H0A.94	200A-5Fh	Low-pass filter time constant for thermal display	0 ms to 250 ms	0	ms	Real-time	" H0A_en.94" on page 247

5.12 Parameter Group H0b

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0b.00	200b-01h	Motor speed actual value	-32767 RPM to +32767 RPM	0	RPM	Unchangeable	" H0b_en.00" on page 247
H0b.01	200b-02h	Speed reference	-32767 RPM to +32767 RPM	0	RPM	Unchangeable	" H0b_en.01" on page 247
H0b.02	200b-03h	Internal torque reference	-500.0%–500.0%	0.0	%	Unchangeable	" H0b_en.02" on page 248
H0b.03	200b-04h	Input (DI) signal monitoring	0 to 65535	0	-	Unchangeable	" H0b_en.03" on page 248
H0b.05	200b-06h	Output (DO) signal monitoring	0 to 65535	0	-	Unchangeable	" H0b_en.05" on page 248

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0b.07	200b-08h	Absolute position counter	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.07" on page 249
H0b.09	200b-0Ah	Mechanical angle	0.0° to 360.0°	0.0	°	Unchangeable	" H0b_en.09" on page 249
H0b.10	200b-0Bh	Electrical angle	0.0° to 360.0°	0.0	°	Unchangeable	" H0b_en.10" on page 250
H0b.12	200b-0Dh	Average load ratio	0.0%–800.0%	0.0	%	Unchangeable	" H0b_en.12" on page 250
H0b.13	200b-0Eh	Input reference counter	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.13" on page 250
H0b.15	200b-10h	Position following error (encoder unit)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.15" on page 251
H0b.17	200b-12h	Feedback pulse counter	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.17" on page 251
H0b.19	200b-14h	Total power-on time	0.0s–429496729.5s	0.0	s	Unchangeable	" H0b_en.19" on page 251
H0b.24	200b-19h	Phase current RMS value	0.0 A to 6553.5 A	0.0	A	Unchangeable	" H0b_en.24" on page 251
H0b.25	200b-1Ah	Angle obtained upon voltage injection auto-tuning	0.0° to 360.0°	0.0	°	Unchangeable	" H0b_en.25" on page 252
H0b.26	200b-1Bh	Bus voltage	0.0V to 6553.5V	0.0	V	Unchangeable	" H0b_en.26" on page 252
H0b.27	200b-1Ch	Module temperature	-20°C to 200°C	0	°C	Unchangeable	" H0b_en.27" on page 252
H0b.28	200b-1Dh	Absolute encoder fault information given by FPGA	0 to 65535	0	-	Unchangeable	" H0b_en.28" on page 253
H0b.29	200b-1Eh	Axis status information given by FPGA	0 to 65535	0	-	Unchangeable	" H0b_en.29" on page 253
H0b.30	200b-1Fh	Axis fault information given by FPGA	0 to 65535	0	-	Unchangeable	" H0b_en.30" on page 253

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0b.31	200b-20h	Encoder fault information	0 to 65535	0	-	Real-time	" H0b_en.31" on page 253
H0b.33	200b-22h	Fault log	0: Present fault 1: Last fault 2: 2nd to last fault 3: 3rd to last fault 4: 4th to last fault 5: 5th to last fault 6: 6th to last fault 7: 7th to last fault 8: 8th to last fault 9: 9th to last fault 10: 10th to last fault 11: 11th to last fault 12: 12th to last fault 13: 13th to last fault 14: 14th to last fault 15: 15th to last fault 16: 16th to last fault 17: 17th to last fault 18: 18th to last fault 19: 19th to last fault	0	-	Real-time	" H0b_en.33" on page 254
H0b.34	200b-23h	Code of selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.34" on page 254
H0b.35	200b-24h	Timestamp of selected fault	0.0s–429496729.5s	0.0	s	Unchangeable	" H0b_en.35" on page 255
H0b.37	200b-26h	Motor speed on selected fault	-32767 RPM to +32767 RPM	0	RPM	Unchangeable	" H0b_en.37" on page 255
H0b.38	200b-27h	Motor phase U current upon occurrence of the selected fault	-3276.7A to 3276.7A	0.0	A	Unchangeable	" H0b_en.38" on page 255
H0b.39	200b-28h	Motor phase V current upon occurrence of the selected fault	-3276.7A to 3276.7A	0.0	A	Unchangeable	" H0b_en.39" on page 255
H0b.40	200b-29h	Bus voltage on selected fault	0.0 to 6553.5 V	0.0	V	Unchangeable	" H0b_en.40" on page 256
H0b.41	200b-2Ah	Input terminal state on selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.41" on page 256

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0b.43	200b-2Ch	Output terminal state on selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.43" on page 256
H0b.45	200b-2Eh	Internal fault code	0 to 65535	0	-	Unchangeable	" H0b_en.45" on page 256
H0b.46	200b-2Fh	Absolute encoder fault information given by FPGA upon occurrence of the selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.46" on page 257
H0b.47	200b-30h	System status information given by FPGA upon occurrence of the selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.47" on page 257
H0b.48	200b-31h	System fault information given by FPGA upon occurrence of the selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.48" on page 257
H0b.49	200b-32h	Encoder fault information upon occurrence of the selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.49" on page 258
H0b.51	200b-34h	Internal fault code upon occurrence of the selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.51" on page 258
H0b.52	200b-35h	FPGA timeout fault standard bit upon occurrence of the selected fault	0 to 65535	0	-	Unchangeable	" H0b_en.52" on page 258

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0b.53	200b-36h	Position following error (reference unit)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.53" on page 258
H0b.55	200b-38h	Motor speed actual value	-2147483648.0rpm to 2147483647.0rpm	0.0	RPM	Unchangeable	" H0b_en.55" on page 259
H0b.57	200b-3Ah	Control circuit bus voltage	0.0 to 6553.5 V	0.0	V	Unchangeable	" H0b_en.57" on page 259
H0b.58	200b-3Bh	Mechanical absolute position (low 32 bits)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.58" on page 259
H0b.60	200b-3Dh	Mechanical absolute position (high 32 bits)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.60" on page 260
H0b.63	200b-40h	NotRdy state	1: Control power error 2: Main circuit power input error 3: Undervoltage 4: Soft start failed 5: Encoder initialization not completed 6: Short circuit to ground failed 7: Others	0	-	Unchangeable	" H0b_en.63" on page 260
H0b.64	200b-41h	Real-time input position reference counter	-2147483648 to 2147483647	0	Reference unit	Unchangeable	" H0b_en.64" on page 260
H0b.66	200b-43h	Encoder temperature	-32768°C to 32767°C	0	°C	Unchangeable	" H0b_en.66" on page 260
H0b.67	200b-44h	Load rate of regenerative resistor	0.0%–200.0%	0.0	%	Unchangeable	" H0b_en.67" on page 261
H0b.70	200b-47h	Number of absolute encoder revolutions	0 Rev to 65535 Rev	0	Rev	Unchangeable	" H0b_en.70" on page 261
H0b.71	200b-48h	Single-turn position fed back by the absolute encoder	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.71" on page 261

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0b.74	200b-4Bh	System fault information given by FPGA	0 to 65535	0	-	Unchangeable	" H0b_en.74" on page 262
H0b.77	200b-4Eh	Encoder position (low 32 bits)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.77" on page 262
H0b.79	200b-50h	Encoder position (high 32 bits)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.79" on page 262
H0b.81	200b-52h	Single-turn position of the rotary load (low 32 bits)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.81" on page 262
H0b.83	200b-54h	Single-turn position of the rotary load (high 32 bits)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.83" on page 263
H0b.85	200b-56h	Single-turn position of the rotary load (reference unit)	-2147483648 p to +2147483647 p	0	p	Unchangeable	" H0b_en.85" on page 263
H0b.87	200b-58h	IGBT junction temperature	0 to 200	0	-	Unchangeable	" H0b_en.87" on page 263
H0b.90	200b-5Bh	Group No. of the abnormal parameter	0 to 65535	0	-	Unchangeable	" H0b_en.90" on page 263
H0b.91	200b-5Ch	Offset within the group of the abnormal parameter	0 to 65535	0	-	Unchangeable	" H0b_en.91" on page 264
H0b.94	200b-5Fh	Individual power-on time	0.0s–429496729.5s	0.0	s	Unchangeable	" H0b_en.94" on page 264
H0b.96	200b-61h	Individual power-on time upon occurrence of the selected fault	0.0s–429496729.5s	0.0	s	Unchangeable	" H0b_en.96" on page 264

5.13 Parameter Group H0d

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0d.00	200d-01h	Software reset	0: No operation 1: Enable	0	-	At stop	" H0d_en.00" on page 265
H0d.01	200d-02h	Fault reset	0: No operation 1: Enable	0	-	At stop	" H0d_en.01" on page 265
H0d.02	200d-03h	Inertia auto-tuning selection	0 to 65	0	-	Real-time	" H0d_en.02" on page 265
H0d.04	200d-05h	Read/write in encoder ROM	0: No operation 1: Write ROM 2: Read ROM 3: ROM failure	0	-	At stop	" H0d_en.04" on page 266
H0d.05	200d-06h	Emergency stop	0: No operation 1: Emergency stop	0	-	Real-time	" H0d_en.05" on page 266
H0d.12	200d-0Dh	Phase U/V current balance correction	0: Disabled 1: Enabled	0	-	At stop	" H0d_en.12" on page 266
H0d.17	200d-12h	Forced DI/DO enable switch	bit0: Forced DI enable switch 0: Disabled 1: Enabled bit1: Forced DO enable switch 0: Disabled 1: Enabled	0	-	Real-time	" H0d_en.17" on page 267
H0d.18	200d-13h	Forced DI value	0 to 255	255	-	Real-time	" H0d_en.18" on page 267
H0d.19	200d-14h	Forced DO value	0 to 31	0	-	Real-time	" H0d_en.19" on page 267
H0d.20	200d-15h	Absolute encoder reset	0: No operation 1: Reset 2: Reset the fault and multi-turn data	0	-	At stop	" H0d_en.20" on page 268
H0d.23	200d-18h	Torque fluctuation auto-tuning	0 to 1	0	-	At stop	" H0d_en.23" on page 268
H0d.26	200d-1Bh	Brake and dynamic brake started forcibly	0: No forcible operations 1: Dynamic brake deactivated forcibly 2: Brake released forcibly 3: Dynamic brake deactivated and brake released forcibly	0	-	At stop	" H0d_en.26" on page 268

5.14 Parameter Group H0E

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H0E.00	200E-01h	Node address	1 to 127	1	-	At stop	" H0E_en.00" on page 269
H0E.01	200E-02h	Save objects written through communication to EEPROM	0: Not save 1: Save parameters written through communication to EEPROM 2: Save object dictionaries written through communication to EEPROM 3: Save parameters and object dictionaries written through communication to EEPROM 4: Save object dictionaries written before communication (OP) to EEPROM	1	-	Real-time	" H0E_en.01" on page 269
H0E.07	200E-08h	Object dictionary unit selection	0: Reference unit system (p/s, p/s2) 1: User unit system (0.01 rpm, ms)	0	-	At stop	" H0E_en.07" on page 270
H0E.80	200E-51h	Modbus baud rate	4: 4800 bps 5: 9600 bps 6: 19200 bps 7: 38400 bps 8: 57600 bps 9: 115200 bps	9	-	Real-time	" H0E_en.80" on page 272
H0E.81	200E-52h	Modbus data format	3: No parity, 1 stop bit (N-1)	3	-	Real-time	" H0E_en.81" on page 273
H0E.82	200E-53h	Modbus response delay	0 ms to 20 ms	0	ms	Real-time	" H0E_en.82" on page 273
H0E.83	200E-54h	Modbus communication timeout	0 ms to 600 ms	0	ms	Real-time	" H0E_en.83" on page 273
H0E.84	200E-55h	Sequence of Modbus communication data bits	0: High bits before low bits 1: Low bits before high bits	1	-	Real-time	" H0E_en.84" on page 273
H0E.90	200E-5Bh	Modbus version	0.00 to 655.35	0.00	-	Unchangeable	" H0E_en.90" on page 274

5.15 Parameter Group H12

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H12.00	2012-01h	Multi-speed operation mode	0: Individual operation (number of speeds selected in H12.01) 1: Cyclic operation (number of speeds selected in H12.01) 2: DI-based operation	1	-	At stop	" H12_en.00" on page 275
H12.01	2012-02h	Number of speed references in multi-speed mode	1 to 16	16	-	At stop	" H12_en.01" on page 275
H12.02	2012-03h	Operating time unit	0: s 1: min	0	-	At stop	" H12_en.02" on page 276
H12.03	2012-04h	Acceleration time 1	0 ms to 65535 ms	10	ms	Real-time	" H12_en.03" on page 276
H12.04	2012-05h	Deceleration time 1	0 ms to 65535 ms	10	ms	Real-time	" H12_en.04" on page 276
H12.05	2012-06h	Acceleration time 2	0 ms to 65535 ms	50	ms	Real-time	" H12_en.05" on page 277
H12.06	2012-07h	Deceleration time 2	0 ms to 65535 ms	50	ms	Real-time	" H12_en.06" on page 277
H12.07	2012-08h	Acceleration time 3	0 ms to 65535 ms	100	ms	Real-time	" H12_en.07" on page 277
H12.08	2012-09h	Deceleration time 3	0 ms to 65535 ms	100	ms	Real-time	" H12_en.08" on page 277
H12.09	2012-0Ah	Acceleration time 4	0 ms to 65535 ms	150	ms	Real-time	" H12_en.09" on page 278
H12.10	2012-0Bh	Deceleration time 4	0 ms to 65535 ms	150	ms	Real-time	" H12_en.10" on page 278
H12.20	2012-15h	Speed reference 1	-10000 RPM to +10000 RPM	0	RPM	Real-time	" H12_en.20" on page 278
H12.21	2012-16h	Operating time of speed 1	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.21" on page 278
H12.22	2012-17h	Acc./dec. time of speed 1	0: Zero acceleration/ deceleration time 1: Acceleration/Deceleration time 1 2: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration time 4	0	-	Real-time	" H12_en.22" on page 279

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H12.23	2012-18h	Reference 2	-10000 RPM to +10000 RPM	100	RPM	Real-time	" H12_en.23" on page 279
H12.24	2012-19h	Operating time of speed reference 2	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.24" on page 279
H12.25	2012-1Ah	Acc./dec. time of speed 2	Same as H12.22.	0	-	Real-time	" H12_en.25" on page 280
H12.26	2012-1Bh	Reference 3	-10000 RPM to +10000 RPM	300	RPM	Real-time	" H12_en.26" on page 280
H12.27	2012-1Ch	Operating time of speed reference 3	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.27" on page 280
H12.28	2012-1Dh	Acc./dec. time of speed 3	Same as H12.22.	0	-	Real-time	" H12_en.28" on page 280
H12.29	2012-1Eh	Reference 4	-10000 RPM to +10000 RPM	500	RPM	Real-time	" H12_en.29" on page 281
H12.30	2012-1Fh	Operating time of speed reference 4	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.30" on page 281
H12.31	2012-20h	Acc./dec. time of speed 4	Same as H12.22.	0	-	Real-time	" H12_en.31" on page 281
H12.32	2012-21h	Reference 5	-10000 RPM to +10000 RPM	700	RPM	Real-time	" H12_en.32" on page 281
H12.33	2012-22h	Operating time of speed reference 5	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.33" on page 282
H12.34	2012-23h	Acc./dec. time of speed 5	Same as H12.22.	0	-	Real-time	" H12_en.34" on page 282
H12.35	2012-24h	Reference 6	-10000 RPM to +10000 RPM	900	RPM	Real-time	" H12_en.35" on page 282
H12.36	2012-25h	Operating time of speed reference 6	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.36" on page 283
H12.37	2012-26h	Acc./dec. time of speed 6	Same as H12.22.	0	-	Real-time	" H12_en.37" on page 283
H12.38	2012-27h	Reference 7	-10000 RPM to +10000 RPM	600	RPM	Real-time	" H12_en.38" on page 283
H12.39	2012-28h	Operating time of speed reference 7	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.39" on page 283
H12.40	2012-29h	Acc./dec. time of speed 7	Same as H12.22.	0	-	Real-time	" H12_en.40" on page 284
H12.41	2012-2Ah	Reference 8	-10000 RPM to +10000 RPM	300	RPM	Real-time	" H12_en.41" on page 284

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H12.42	2012-2Bh	Operating time of speed reference 8	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.42" on page 284
H12.43	2012-2Ch	Acc./dec. time of speed 8	Same as H12.22.	0	-	Real-time	" H12_en.43" on page 284
H12.44	2012-2Dh	Reference 9	-10000 RPM to +10000 RPM	100	RPM	Real-time	" H12_en.44" on page 285
H12.45	2012-2Eh	Operating time of speed reference 9	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.45" on page 285
H12.46	2012-2Fh	Acc./dec. time of speed 9	Same as H12.22.	0	-	Real-time	" H12_en.46" on page 285
H12.47	2012-30h	Reference 10	-10000 RPM to +10000 RPM	-100	RPM	Real-time	" H12_en.47" on page 285
H12.48	2012-31h	Operating time of speed reference 10	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.48" on page 286
H12.49	2012-32h	Acc./dec. time of speed 10	Same as H12.22.	0	-	Real-time	" H12_en.49" on page 286
H12.50	2012-33h	Reference 11	-10000 RPM to +10000 RPM	-300	RPM	Real-time	" H12_en.50" on page 286
H12.51	2012-34h	Operating time of speed reference 11	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.51" on page 287
H12.52	2012-35h	Acc./dec. time of speed 11	Same as H12.22.	0	-	Real-time	" H12_en.52" on page 287
H12.53	2012-36h	Reference 12	-10000 RPM to +10000 RPM	-500	RPM	Real-time	" H12_en.53" on page 287
H12.54	2012-37h	Operating time of speed reference 12	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.54" on page 287
H12.55	2012-38h	Acc./dec. time of speed 12	Same as H12.22.	0	-	Real-time	" H12_en.55" on page 288
H12.56	2012-39h	Reference 13	-10000 RPM to +10000 RPM	-700	RPM	Real-time	" H12_en.56" on page 288
H12.57	2012-3Ah	Operating time of speed reference 13	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.57" on page 288
H12.58	2012-3Bh	Acc./dec. time of speed 13	Same as H12.22.	0	-	Real-time	" H12_en.58" on page 288
H12.59	2012-3Ch	Reference 14	-10000 RPM to +10000 RPM	-900	RPM	Real-time	" H12_en.59" on page 289
H12.60	2012-3Dh	Operating time of speed reference 14	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.60" on page 289

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H12.61	2012-3Eh	Acc./dec. time of speed 14	Same as H12.22.	0	-	Real-time	" H12_en.61" on page 289
H12.62	2012-3Fh	Reference 15	-10000 RPM to +10000 RPM	-600	RPM	Real-time	" H12_en.62" on page 289
H12.63	2012-40h	Operating time of speed reference 15	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.63" on page 290
H12.64	2012-41h	Acc./dec. time of speed 15	Same as H12.22.	0	-	Real-time	" H12_en.64" on page 290
H12.65	2012-42h	Reference 16	-10000 RPM to +10000 RPM	-300	RPM	Real-time	" H12_en.65" on page 290
H12.66	2012-43h	Operating time of speed reference 16	0.0s(m) to 6553.5s(m)	5.0	s (m)	Real-time	" H12_en.66" on page 291
H12.67	2012-44h	Acc./dec. time of speed 16	Same as H12.22.	0	-	Real-time	" H12_en.67" on page 291

5.16 Parameter Group H17

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H17.90	2017-5Bh	Communication VDI enable	0: Disabled 1: Enabled	0	-	At stop	" H17_en.90" on page 291
H17.91	2017-5Ch	VDI default value upon power-on	0: No default 1: VDI1 default value 2: VDI2 default value 4: VDI3 default value 8: VDI4 default value 16: VDI5 default value 32: VDI6 default value 64: VDI7 default value 128: VDI8 default value 256: VDI9 default value 512: VDI10 default value 1024: VDI11 default value 2048: VDI12 default value 4096: VDI13 default value 8092: VDI14 default value 16384: VDI15 default value 32768: VDI16 default value	0	-	Real-time	" H17_en.91" on page 291

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H17.00	2017-01h	VDI1 function selection	0: No assignment 1: Servo ON 3: Gain switchover 14: Positive limit switch 15: Negative limit switch 16: Positive external torque limit 17: Negative external torque limit 18: Forward jog 19: Reverse jog 31: Home switch 34: Emergency stop 41: Current position as home 56: External switchover switch of EPOS program segment	0	-	Real-time	*" H17_en.00" on page 292*
H17.01	2017-02h	VDI1 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	*" H17_en.01" on page 293*
H17.02	2017-03h	VDI2 function selection	Same as H17.00.	0	-	Real-time	*" H17_en.02" on page 293*
H17.03	2017-04h	VDI2 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	*" H17_en.03" on page 294*
H17.04	2017-05h	VDI3 function selection	Same as H17.00.	0	-	Real-time	*" H17_en.04" on page 294*
H17.05	2017-06h	VDI3 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	*" H17_en.05" on page 294*
H17.06	2017-07h	VDI4 function selection	Same as H17.00.	0	-	Real-time	*" H17_en.06" on page 294*
H17.07	2017-08h	VDI4 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	*" H17_en.07" on page 295*
H17.08	2017-09h	VDI5 function selection	Same as H17.00.	0	-	Real-time	*" H17_en.08" on page 295*
H17.09	2017-0Ah	VDI5 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	*" H17_en.09" on page 295*
H17.10	2017-0Bh	VDI6 function selection	Same as H17.00.	0	-	Real-time	*" H17_en.10" on page 295*

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H17.11	2017-0Ch	VDI6 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.11" on page 296
H17.12	2017-0Dh	VDI7 function selection	Same as H17.00.	0	-	Real-time	" H17_en.12" on page 296
H17.13	2017-0Eh	VDI7 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.13" on page 296
H17.14	2017-0Fh	VDI8 function selection	Same as H17.00.	0	-	Real-time	" H17_en.14" on page 297
H17.15	2017-10h	VDI8 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.15" on page 297
H17.16	2017-11h	VDI9 function selection	Same as H17.00.	0	-	Real-time	" H17_en.16" on page 297
H17.17	2017-12h	VDI9 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.17" on page 297
H17.18	2017-13h	VDI10 function selection	Same as H17.00.	0	-	Real-time	" H17_en.18" on page 298
H17.19	2017-14h	VDI10 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.19" on page 298
H17.20	2017-15h	VDI11 function selection	Same as H17.00.	0	-	Real-time	" H17_en.20" on page 298
H17.21	2017-16h	VDI11 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.21" on page 298
H17.22	2017-17h	VDI12 function selection	Same as H17.00.	0	-	Real-time	" H17_en.22" on page 299
H17.23	2017-18h	VDI12 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.23" on page 299
H17.24	2017-19h	VDI13 function selection	Same as H17.00.	0	-	Real-time	" H17_en.24" on page 299

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H17.25	2017-1Ah	VDI13 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.25" on page 300
H17.26	2017-1Bh	VDI14 function selection	Same as H17.00.	0	-	Real-time	" H17_en.26" on page 300
H17.27	2017-1Ch	VDI14 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.27" on page 300
H17.28	2017-1Dh	VDI15 function selection	Same as H17.00.	0	-	Real-time	" H17_en.28" on page 300
H17.29	2017-1Eh	VDI15 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.29" on page 301
H17.30	2017-1Fh	VDI16 function selection	Same as H17.00.	0	-	Real-time	" H17_en.30" on page 301
H17.31	2017-20h	VDI16 logic level selection	0: Active when the written value is 1 1: Active when the written value changes from 0 to 1	0	-	At stop	" H17_en.31" on page 301
H17.92	2017-5Dh	Communication VDO enable	0: Disabled 1: Enabled	0	-	At stop	" H17_en.92" on page 301
H17.93	2017-5Eh	VDO default value after power-on	0: No default 1: VDI1 default value 2: VDI2 default value 4: VDI3 default value 8: VDI4 default value 16: VDI5 default value 32: VDI6 default value 64: VDI7 default value 128: VDI8 default value 256: VDI9 default value 512: VDI10 default value 1024: VDI11 default value 2048: VDI12 default value 4096: VDI13 default value 8192: VDI14 default value 16384: VDI15 default value 32768: VDI16 default value	0	-	At stop	" H17_en.93" on page 302
H17.32	2017-21h	VDO virtual level	0 to 65535	0	-	Unchangeable	" H17_en.32" on page 302

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H17.33	2017-22h	VDO1 function selection	0: No assignment 1: Servo ready 2: Motor rotating 3: Zero speed 4: Speed matching 5: Positioning completed 6: Proximity 7: Torque limited 8: Speed limited 9: Brake 10: Warning 11: Fault 16: Homing completed 18: Torque reach 19: Speed reach 25: Comparison output 30: Warning or fault output 32: EDM output	0	-	Real-time	" H17_en.33" on page 303
H17.34	2017-23h	VDO1 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.34" on page 303
H17.35	2017-24h	VDO2 function selection	Same as H17.33.	0	-	Real-time	" H17_en.35" on page 304
H17.36	2017-25h	VDO2 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.36" on page 304
H17.37	2017-26h	VDO3 function selection	Same as H17.33.	0	-	Real-time	" H17_en.37" on page 304
H17.38	2017-27h	VDO3 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.38" on page 304
H17.39	2017-28h	VDO4 function selection	Same as H17.33.	0	-	Real-time	" H17_en.39" on page 305
H17.40	2017-29h	VDO4 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.40" on page 305
H17.41	2017-2Ah	VDO5 function selection	Same as H17.33.	0	-	Real-time	" H17_en.41" on page 305
H17.42	2017-2Bh	VDO5 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.42" on page 306
H17.43	2017-2Ch	VDO6 function selection	Same as H17.33.	0	-	Real-time	" H17_en.43" on page 306
H17.44	2017-2Dh	VDO6 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.44" on page 306
H17.45	2017-2Eh	VDO7 function selection	Same as H17.33.	0	-	Real-time	" H17_en.45" on page 306
H17.46	2017-2Fh	VDO7 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.46" on page 307

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H17.47	2017-30h	VDO8 function selection	Same as H17.33.	0	-	Real-time	" H17_en.47" on page 307
H17.48	2017-31h	VDO8 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.48" on page 307
H17.49	2017-32h	VDO9 function selection	Same as H17.33.	0	-	Real-time	" H17_en.49" on page 307
H17.50	2017-33h	VDO9 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.50" on page 308
H17.51	2017-34h	VDO10 function selection	Same as H17.33.	0	-	Real-time	" H17_en.51" on page 308
H17.52	2017-35h	VDO10 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.52" on page 308
H17.53	2017-36h	VDO11 function selection	Same as H17.33.	0	-	Real-time	" H17_en.53" on page 309
H17.54	2017-37h	VDO11 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.54" on page 309
H17.55	2017-38h	VDO12 function selection	Same as H17.33.	0	-	Real-time	" H17_en.55" on page 309
H17.56	2017-39h	VDO12 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.56" on page 309
H17.57	2017-3Ah	VDO13 function selection	Same as H17.33.	0	-	Real-time	" H17_en.57" on page 310
H17.58	2017-3Bh	VDO13 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.58" on page 310
H17.59	2017-3Ch	VDO14 function selection	Same as H17.33.	0	-	Real-time	" H17_en.59" on page 310
H17.60	2017-3Dh	VDO14 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.60" on page 310
H17.61	2017-3Eh	VDO15 function selection	Same as H17.33.	0	-	Real-time	" H17_en.61" on page 311
H17.62	2017-3Fh	VDO15 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.62" on page 311
H17.63	2017-40h	VDO16 function selection	Same as H17.33.	0	-	Real-time	" H17_en.63" on page 311
H17.64	2017-41h	VDO16 logic level selection	0: Output 1 upon active logic 1: Output 0 upon active logic	0	-	Real-time	" H17_en.64" on page 312

5.17 Parameter Group H18

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H18.00	2018-01h	Position comparison output selection	0: Disable 1: Enable (rising edge-triggered)	0	-	Real-time	" H18_en.00" on page 312
H18.01	2018-02h	Position comparison output feedback source	0: Motor encoder feedback 1: Fully closed-loop position feedback	0	-	Real-time	" H18_en.01" on page 312
H18.02	2018-03h	Position comparison resolution	0: 24-bit 1: 23-bit 2: 22-bit 3: 21-bit 4: 20-bit 5: 19-bit 6: 18-bit 7: 17-bit	0	-	Real-time	" H18_en.02" on page 312
H18.03	2018-04h	Position comparison mode	0: Individual comparison mode 1: Cyclic comparison mode 2: Fixed cyclic comparison mode	0	-	Real-time	" H18_en.03" on page 313
H18.04	2018-05h	Current position as zero	0: Disable 1: Enable (rising edge-triggered)	0	-	Real-time	" H18_en.04" on page 313
H18.05	2018-06h	Position comparison output width	0.1 ms to 204.7 ms	0.1	ms	Real-time	" H18_en.05" on page 314
H18.06	2018-07h	Position comparison output ABZ port polarity	bit0: OCZ output logic 0: Positive, output high level upon active logic 1: Negative, output low level upon active logic bit1: Z port output logic 0: Positive, output high level upon active logic 1: Negative, output low level upon active logic bit2: A/B output logic 0: Positive, output high level upon active logic 1: Negative, output low level upon active logic	0	-	Real-time	" H18_en.06" on page 314

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H18.07	2018-08h	Position comparison start point	0 to 40	0	-	Real-time	" H18_en.07" on page 314
H18.08	2018-09h	Position comparison end point	0 to 40	0	-	Real-time	" H18_en.08" on page 315
H18.09	2018-0Ah	Current state of position comparison	0 to 1024	0	-	Unchangeable	" H18_en.09" on page 315
H18.10	2018-0Bh	Real-time position of position comparison	-2147483648 to 2147483647	0	-	Unchangeable	" H18_en.10" on page 315
H18.12	2018-0Dh	Zero offset of position comparison	-2147483648 to 2147483647	0	-	Real-time	" H18_en.12" on page 315
H18.14	2018-0Fh	Position comparison output delay compensation	-30.00us to 30.00us	0.00	us	Real-time	" H18_en.14" on page 316
H18.15	2018-10h	Fixed cyclic comparison	1 to 65535	1	-	Real-time	" H18_en.15" on page 316
H18.16	2018-11h	ABZ output function setting	bit0: OCZ port function 0: Frequency-division output 1: Position comparison bit1: Z port function 0: Frequency-division output 1: Position comparison bit2: A/B port function 0: Frequency-division output 1: Position comparison	0	-	Real-time	" H18_en.16" on page 316
H18.17	2018-12h	Number of fixed mode cycles	1 to 65535	1	-	Unchangeable	" H18_en.17" on page 317

5.18 Parameter Group H19

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H19.00	2019-01h	Target value of position comparison 1	-2147483648 to 2147483647	0	-	Real-time	" H19_en.00" on page 317
H19.02	2019-03h	Attribute value of position comparison 1	bit0: Current position changes from "less than" to "more than" the comparison point bit1: Current position changes from "more than" to "less than" the comparison point bit2: Reserved bit3: Reserved bit4: Reserved bit5: Reserved bit6: Status unchanged bit7: DO1 output bit8: DO2 output bit9: DO3 output bit10: DO4 output bit12: Frequency-division A output bit13: Frequency-division B output bit14: Frequency-division Z output bit15: Frequency-division OCZ output	0	-	Real-time	" H19_en.02" on page 318
H19.03	2019-04h	Target value of position comparison 2	-2147483648 to 2147483647	0	-	Real-time	" H19_en.03" on page 318
H19.05	2019-06h	Attribute value of position comparison 2	Same as H19.02.	0	-	Real-time	" H19_en.05" on page 318
H19.06	2019-07h	Target value of position comparison 3	-2147483648 to 2147483647	0	-	Real-time	" H19_en.06" on page 319
H19.08	2019-09h	Attribute value of position comparison 3	Same as H19.02.	0	-	Real-time	" H19_en.08" on page 319
H19.09	2019-0Ah	Target value of position comparison 4	-2147483648 to 2147483647	0	-	Real-time	" H19_en.09" on page 319
H19.11	2019-0Ch	Attribute value of position comparison 4	Same as H19.02.	0	-	Real-time	" H19_en.11" on page 320

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H19.12	2019-0Dh	Target value of position comparison 5	-2147483648 to 2147483647	0	-	Real-time	" H19_en.12" on page 320
H19.14	2019-0Fh	Attribute value of position comparison 5	Same as H19.02.	0	-	Real-time	" H19_en.14" on page 320
H19.15	2019-10h	Target value of position comparison 6	-2147483648 to 2147483647	0	-	Real-time	" H19_en.15" on page 320
H19.17	2019-12h	Attribute value of position comparison 6	Same as H19.02.	0	-	Real-time	" H19_en.17" on page 321
H19.18	2019-13h	Target value of position comparison 7	-2147483648 to 2147483647	0	-	Real-time	" H19_en.18" on page 321
H19.20	2019-15h	Attribute value of position comparison 7	Same as H19.02.	0	-	Real-time	" H19_en.20" on page 321
H19.21	2019-16h	Target value of position comparison 8	-2147483648 to 2147483647	0	-	Real-time	" H19_en.21" on page 321
H19.23	2019-18h	Attribute value of position comparison 8	Same as H19.02.	0	-	Real-time	" H19_en.23" on page 322
H19.24	2019-19h	Target value of position comparison 9	-2147483648 to 2147483647	0	-	Real-time	" H19_en.24" on page 322
H19.26	2019-1Bh	Attribute value of position comparison 9	Same as H19.02.	0	-	Real-time	" H19_en.26" on page 322
H19.27	2019-1Ch	Target value of position comparison 10	-2147483648 to 2147483647	0	-	Real-time	" H19_en.27" on page 322
H19.29	2019-1Eh	Attribute value of position comparison 10	Same as H19.02.	0	-	Real-time	" H19_en.29" on page 323
H19.30	2019-1Fh	Target value of position comparison 11	-2147483648 to 2147483647	0	-	Real-time	" H19_en.30" on page 323
H19.32	2019-21h	Attribute value of position comparison 11	Same as H19.02.	0	-	Real-time	" H19_en.32" on page 323
H19.33	2019-22h	Target value of position comparison 12	-2147483648 to 2147483647	0	-	Real-time	" H19_en.33" on page 324

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H19.35	2019-24h	Attribute value of position comparison 12	Same as H19.02.	0	-	Real-time	" H19_en.35" on page 324
H19.36	2019-25h	Target value of position comparison 13	-2147483648 to 2147483647	0	-	Real-time	" H19_en.36" on page 324
H19.38	2019-27h	Attribute value of position comparison 13	Same as H19.02.	0	-	Real-time	" H19_en.38" on page 324
H19.39	2019-28h	Target value of position comparison 14	-2147483648 to 2147483647	0	-	Real-time	" H19_en.39" on page 325
H19.41	2019-2Ah	Attribute value of position comparison 14	Same as H19.02.	0	-	Real-time	" H19_en.41" on page 325
H19.42	2019-2Bh	Target value of position comparison 15	-2147483648 to 2147483647	0	-	Real-time	" H19_en.42" on page 325
H19.44	2019-2Dh	Attribute value of position comparison 15	Same as H19.02.	0	-	Real-time	" H19_en.44" on page 325
H19.45	2019-2Eh	Target value of position comparison 16	-2147483648 to 2147483647	0	-	Real-time	" H19_en.45" on page 326
H19.47	2019-30h	Attribute value of position comparison 16	Same as H19.02.	0	-	Real-time	" H19_en.47" on page 326
H19.48	2019-31h	Target value of position comparison 17	-2147483648 to 2147483647	0	-	Real-time	" H19_en.48" on page 326
H19.50	2019-33h	Attribute value of position comparison 17	Same as H19.02.	0	-	Real-time	" H19_en.50" on page 326
H19.51	2019-34h	Target value of position comparison 18	-2147483648 to 2147483647	0	-	Real-time	" H19_en.51" on page 327
H19.53	2019-36h	Attribute value of position comparison 18	Same as H19.02.	0	-	Real-time	" H19_en.53" on page 327
H19.54	2019-37h	Target value of position comparison 19	-2147483648 to 2147483647	0	-	Real-time	" H19_en.54" on page 327
H19.56	2019-39h	Attribute value of position comparison 19	Same as H19.02.	0	-	Real-time	" H19_en.56" on page 328

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H19.57	2019-3Ah	Target value of position comparison 20	-2147483648 to 2147483647	0	-	Real-time	" H19_en.57" on page 328
H19.59	2019-3Ch	Attribute value of position comparison 20	Same as H19.02.	0	-	Real-time	" H19_en.59" on page 328
H19.60	2019-3Dh	Target value of position comparison 21	-2147483648 to 2147483647	0	-	Real-time	" H19_en.60" on page 328
H19.62	2019-3Fh	Attribute value of position comparison 21	Same as H19.02.	0	-	Real-time	" H19_en.62" on page 329
H19.63	2019-40h	Target value of position comparison 22	-2147483648 to 2147483647	0	-	Real-time	" H19_en.63" on page 329
H19.65	2019-42h	Attribute value of position comparison 22	Same as H19.02.	0	-	Real-time	" H19_en.65" on page 329
H19.66	2019-43h	Target value of position comparison 23	-2147483648 to 2147483647	0	-	Real-time	" H19_en.66" on page 329
H19.68	2019-45h	Attribute value of position comparison 23	Same as H19.02.	0	-	Real-time	" H19_en.68" on page 330
H19.69	2019-46h	Target value of position comparison 24	-2147483648 to 2147483647	0	-	Real-time	" H19_en.69" on page 330
H19.71	2019-48h	Attribute value of position comparison 24	Same as H19.02.	0	-	Real-time	" H19_en.71" on page 330
H19.72	2019-49h	Target value of position comparison 25	-2147483648 to 2147483647	0	-	Real-time	" H19_en.72" on page 330
H19.74	2019-4Bh	Attribute value of position comparison 25	Same as H19.02.	0	-	Real-time	" H19_en.74" on page 331
H19.75	2019-4Ch	Target value of position comparison 26	-2147483648 to 2147483647	0	-	Real-time	" H19_en.75" on page 331
H19.77	2019-4Eh	Attribute value of position comparison 26	Same as H19.02.	0	-	Real-time	" H19_en.77" on page 331
H19.78	2019-4Fh	Target value of position comparison 27	-2147483648 to 2147483647	0	-	Real-time	" H19_en.78" on page 332

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H19.80	2019-51h	Attribute value of position comparison 27	Same as H19.02.	0	-	Real-time	" H19_en.80" on page 332
H19.81	2019-52h	Target value of position comparison 28	-2147483648 to 2147483647	0	-	Real-time	" H19_en.81" on page 332
H19.83	2019-54h	Attribute value of position comparison 28	Same as H19.02.	0	-	Real-time	" H19_en.83" on page 332
H19.84	2019-55h	Target value of position comparison 29	-2147483648 to 2147483647	0	-	Real-time	" H19_en.84" on page 333
H19.86	2019-57h	Attribute value of position comparison 29	Same as H19.02.	0	-	Real-time	" H19_en.86" on page 333
H19.87	2019-58h	Target value of position comparison 30	-2147483648 to 2147483647	0	-	Real-time	" H19_en.87" on page 333
H19.89	2019-5Ah	Attribute value of position comparison 30	Same as H19.02.	0	-	Real-time	" H19_en.89" on page 333
H19.90	2019-5Bh	Target value of position comparison 31	-2147483648 to 2147483647	0	-	Real-time	" H19_en.90" on page 334
H19.92	2019-5Dh	Attribute value of position comparison 31	Same as H19.02.	0	-	Real-time	" H19_en.92" on page 334
H19.93	2019-5Eh	Target value of position comparison 32	-2147483648 to 2147483647	0	-	Real-time	" H19_en.93" on page 334
H19.95	2019-60h	Attribute value of position comparison 32	Same as H19.02.	0	-	Real-time	" H19_en.95" on page 334
H19.96	2019-61h	Target value of position comparison 33	-2147483648 to 2147483647	0	-	Real-time	" H19_en.96" on page 335
H19.98	2019-63h	Attribute value of position comparison 33	Same as H19.02.	0	-	Real-time	" H19_en.98" on page 335
H19.99	2019-64h	Target value of position comparison 34	-2147483648 to 2147483647	0	-	Real-time	" H19_en.99" on page 335
H19.101	2019-66h	Attribute value of position comparison 34	Same as H19.02.	0	-	Real-time	" H19_en.101" on page 336

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H19.102	2019-67h	Target value of position comparison 35	-2147483648 to 2147483647	0	-	Real-time	" H19_en.102" on page 336
H19.104	2019-69h	Attribute value of position comparison 35	Same as H19.02.	0	-	Real-time	" H19_en.104" on page 336
H19.105	2019-6Ah	Target value of position comparison 36	-2147483648 to 2147483647	0	-	Real-time	" H19_en.105" on page 336
H19.107	2019-6Ch	Attribute value of position comparison 36	Same as H19.02.	0	-	Real-time	" H19_en.107" on page 337
H19.108	2019-6Dh	Target value of position comparison 37	-2147483648 to 2147483647	0	-	Real-time	" H19_en.108" on page 337
H19.110	2019-6Fh	Attribute value of position comparison 37	Same as H19.02.	0	-	Real-time	" H19_en.110" on page 337
H19.111	2019-70h	Target value of position comparison 38	-2147483648 to 2147483647	0	-	Real-time	" H19_en.111" on page 337
H19.113	2019-72h	Attribute value of position comparison 38	Same as H19.02.	0	-	Real-time	" H19_en.113" on page 338
H19.114	2019-73h	Target value of position comparison 39	-2147483648 to 2147483647	0	-	Real-time	" H19_en.114" on page 338
H19.116	2019-75h	Attribute value of position comparison 39	Same as H19.02.	0	-	Real-time	" H19_en.116" on page 338
H19.117	2019-76h	Target value of position comparison 40	-2147483648 to 2147483647	0	-	Real-time	" H19_en.117" on page 338
H19.119	2019-78h	Attribute value of position comparison 40	Same as H19.02.	0	-	Real-time	" H19_en.119" on page 339

5.19 Parameter Group H24

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H24.00	2024-01h	Message number selection [PN922]	0 to 65535	3	-	Unchangeable	" H24_en.00" on page 339
H24.01	2024-02h	Heartbeat warning threshold [PN925]	0 to 65535	5	-	At stop	" H24_en.01" on page 339
H24.02	2024-03h	Fault message counter [PN944]	0 to 65535	0	-	Unchangeable	" H24_en.02" on page 340
H24.03	2024-04h	Fault code [PN947]	0 to 65535	0	-	Unchangeable	" H24_en.03" on page 340
H24.04	2024-05h	Fault No.	0 to 63	0	-	At stop	" H24_en.04" on page 340
H24.05	2024-06h	Fault condition counter [PN952]	0 to 65535	0	-	At stop	" H24_en.05" on page 340
H24.06	2024-07h	Sensor header [PN979[0]]	0 to 4294967295	20754	-	At stop	" H24_en.06" on page 341
H24.08	2024-09h	Sensor type [PN979[1]]	0 to 4294967295	2147483650	-	At stop	" H24_en.08" on page 341
H24.10	2024-0Bh	Sensor resolution [PN979[2]]	0 to 4294967295	256	-	At stop	" H24_en.10" on page 341
H24.12	2024-0Dh	Sensor G1_X1ST1 displacement factor [PN979[3]]	0 to 24	15	-	At stop	" H24_en.12" on page 341
H24.14	2024-0Fh	Sensor G1_X1ST2 displacement factor [PN979[4]]	0 to 24	15	-	At stop	" H24_en.14" on page 342
H24.16	2024-11h	Sensor multi-turn number [PN979[5]]	0 to 4294967295	512	-	At stop	" H24_en.16" on page 342
H24.19	2024-14h	Synchronization cycle	0 to 65535	999	-	Unchangeable	" H24_en.19" on page 342

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H24.20	2024-15h	Network parameter write flag	0 to 3	0	-	At stop	" H24_en.20" on page 343
H24.22	2024-17h	IP Address	0 to 0	0	-	Real-time	" H24_en.22" on page 343
H24.24	2024-19h	Subnet mask	0 to 0	0	-	Real-time	" H24_en.24" on page 343
H24.26	2024-1Bh	Default gateway	0 to 0	0	-	Real-time	" H24_en.26" on page 343
H24.28	2024-1Dh	AC1 speed feedback selection	0: Normal 1: High precision	0	-	At stop	" H24_en.28" on page 344
H24.32	2024-21h	DSC position loop gain selection	0: Local position loop gain 1: PLC position loop gain 3: DSC manual tuning	0	-	At stop	" H24_en.32" on page 344
H24.33	2024-22h	Number of Sync with advanced DSC position feedback	0 to 16	1	-	Real-time	" H24_en.33" on page 348
H24.34	2024-23h	Loop gain selection switch	0: Stiffness level adapted based on DSC gain 1: Stiffness level adapted based on H09.01	0	-	At stop	" H24_en.34" on page 348
H24.35	2024-24h	Customized telegram 850 transmission	0: No assignment 1: VDO 2: External DI state	0	-	Real-time	" H24_en.35" on page 344
H24.36	2024-25h	User-defined 850 reception	0: No assignment 1: VDI 2: External DO state	0	-	Real-time	" H24_en.36" on page 345
H24.37	2024-26h	Extra telegram	0 to 65535	0	-	At stop	" H24_en.37" on page 345
H24.38	2024-27h	Customized receive word	0: No function 1: Additive torque 2: Forced DO	0	-	Real-time	" H24_en.38" on page 345
H24.39	2024-28h	Customized transmission word	0: No function 1: Actual torque 2: Actual current 3: DI state	0	-	Real-time	" H24_en.39" on page 345
H24.41	2024-2Ah	Device name loss warning selection	0 to 1	0	-	Real-time	" H24_en.41" on page 346
H24.42	2024-2Bh	Number of consecutive loss detections	0 to 65535	8	-	Real-time	" H24_en.42" on page 346

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H24.43	2024-2Ch	Communication timeout time	1 to 65535	1000	-	Real-time	" H24_en.43" on page 346
H24.44	2024-2Dh	FPGA synchronous detection deviation threshold	0 ns to 65535 ns	3000	ns	At stop	" H24_en.44" on page 347
H24.45	2024-2Eh	MAC address	0 to 65535	0	-	Real-time	" H24_en.45" on page 347
H24.46	2024-2Fh	MAC address	0 to 65535	0	-	Real-time	" H24_en.46" on page 347
H24.47	2024-30h	MAC address	0 to 65535	0	-	Real-time	" H24_en.47" on page 347
H24.48	2024-31h	DSC position loop gain coefficient	1 to 31	10	-	At stop	" H24_48" on page 348

5.20 Parameter Group H25

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H25.00	2025–01h	EPOS max. speed	1 LU/min–40000000 LU/min	30000	1000 LU/min	Real-time	" H25_en.00" on page 349
H25.02	2025-03h	EPOS max. acceleration	1 LU/s/s–2000000 LU/s/s	100	1000 LU/s/s	Real-time	" H25_en.02" on page 349
H25.04	2025-05h	EPOS max. deceleration	1 LU/s/s–2000000 LU/s/s	100	1000 LU/s/s	Real-time	" H25_en.04" on page 349
H25.06	2025-07h	EPOS ramp deceleration	1 LU/s/s–2000000 LU/s/s	100	1000 LU/s/s	Real-time	" H25_en.06" on page 350
H25.10	2025-0Bh	EPOS positioning reached threshold	0LU–2147483647LU	7	1LU	Real-time	" H25_en.10" on page 350
H25.12	2025-0Dh	EPOS positioning reached window time	0 ms to 2147483647 ms	0	ms	Real-time	" H25_en.12" on page 350
H25.14	2025-0Fh	Jog1	-40000000 LU/min–40000000 LU/min	-300	1000 LU/min	Real-time	" H25_en.14" on page 350
H25.16	2025-11h	Jog2	-40000000 LU/min–40000000 LU/min	300	1000 LU/min	Real-time	" H25_en.16" on page 351

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H25.18	2025-13h	EPOS-JOG1 position increment	0 LU–2147483648 LU	1000	LU	Real-time	" H25_en.18" on page 351
H25.20	2025-15h	EPOS-JOG2 position increment	0 LU–2147483648 LU	1000	LU	Real-time	" H25_en.20" on page 351
H25.22	2025-17h	Homing type	-2 to 35	0	-	Real-time	" H25_en.22" on page 351
H25.23	2025-18h	Homing high speed	0 LU/min.–40000000 LU/min.	5000	1000 LU/min	Real-time	" H25_en.23" on page 352
H25.25	2025-1Ah	Homing low speed	0 LU/min.–40000000 LU/min.	300	1000 LU/min	Real-time	" H25_en.25" on page 352
H25.27	2025-1Ch	Homing acceleration/ deceleration override	0.00%–100.00%	100.00	%	Real-time	" H25_en.27" on page 352

5.21 Parameter Group H27

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H27.00	2027-01h	Current block	0 to 15	0	-	Unchangeable	" H27_en.00" on page 353
H27.01	2027-02h	Block 0 task	1: Positioning 2: Fixed stopper 3: Forward cycle 4: Reverse cycle 5: Waiting 6: Switching 7: Setting I/O 8: Resetting I/O	1	-	Real-time	" H27_en.01" on page 353
H27.02	2027-03h	Block 1 task	Same as H27.01.	1	-	Real-time	" H27_en.02" on page 353
H27.03	2027-04h	Block 2 task	Same as H27.01.	1	-	Real-time	" H27_en.03" on page 354
H27.04	2027-05h	Block 3 task	Same as H27.01.	1	-	Real-time	" H27_en.04" on page 354
H27.05	2027-06h	Block 4 task	Same as H27.01.	1	-	Real-time	" H27_en.05" on page 354
H27.06	2027-07h	Block 5 task	Same as H27.01.	1	-	Real-time	" H27_en.06" on page 354
H27.07	2027-08h	Block 6 task	Same as H27.01.	1	-	Real-time	" H27_en.07" on page 355

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H27.08	2027-09h	Block 7 task	Same as H27.01.	1	-	Real-time	" H27_en.08" on page 355
H27.09	2027-0Ah	Block 8 task	Same as H27.01.	1	-	Real-time	" H27_en.09" on page 355
H27.10	2027-0Bh	Block 9 task	Same as H27.01.	1	-	Real-time	" H27_en.10" on page 355
H27.11	2027-0Ch	Block 10 task	Same as H27.01.	1	-	Real-time	" H27_en.11" on page 356
H27.12	2027-0Dh	Block 11 task	Same as H27.01.	1	-	Real-time	" H27_en.12" on page 356
H27.13	2027-0Eh	Block 12 task	Same as H27.01.	1	-	Real-time	" H27_en.13" on page 356
H27.14	2027-0Fh	Block 13 task	Same as H27.01.	1	-	Real-time	" H27_en.14" on page 356
H27.15	2027-10h	Block 14 task	Same as H27.01.	1	-	Real-time	" H27_en.15" on page 357
H27.16	2027-11h	Block 15 task	Same as H27.01.	1	-	Real-time	" H27_en.16" on page 357
H27.17	2027-12h	Block 0 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.17" on page 357
H27.19	2027-14h	Block 1 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.19" on page 358
H27.21	2027-16h	Block 2 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.21" on page 358
H27.23	2027-18h	Block 3 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.23" on page 358
H27.25	2027-1Ah	Block 4 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.25" on page 358
H27.27	2027-1Ch	Block 5 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.27" on page 359
H27.29	2027-1Eh	Block 6 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.29" on page 359
H27.31	2027-20h	Block 7 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.31" on page 359
H27.33	2027-22h	Block 8 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.33" on page 359
H27.35	2027-24h	Block 9 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.35" on page 360
H27.37	2027-26h	Block 10 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.37" on page 360
H27.39	2027-28h	Block 11 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.39" on page 360
H27.41	2027-2Ah	Block 12 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.41" on page 360

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H27.43	2027-2Ch	Block 13 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.43" on page 361
H27.45	2027-2Eh	Block 14 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.45" on page 361
H27.47	2027-30h	Block 15 position	-2147483648LU to 2147483647LU	0	1LU	Real-time	" H27_en.47" on page 361
H27.49	2027-32h	Block 0 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.49" on page 362
H27.51	2027-34h	Block 1 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.51" on page 362
H27.53	2027-36h	Block 2 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.53" on page 362
H27.55	2027-38h	Block 3 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.55" on page 362
H27.57	2027-3Ah	Block 4 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.57" on page 363
H27.59	2027-3Ch	Block 5 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.59" on page 363
H27.61	2027-3Eh	Block 6 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.61" on page 363
H27.63	2027-40h	Block 7 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.63" on page 363
H27.65	2027-42h	Block 8 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.65" on page 364
H27.67	2027-44h	Block 9 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.67" on page 364
H27.69	2027-46h	Block 10 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.69" on page 364
H27.71	2027-48h	Block 11 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.71" on page 365
H27.73	2027-4Ah	Block 12 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.73" on page 365
H27.75	2027-4Ch	Block 13 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.75" on page 365
H27.77	2027-4Eh	Block 14 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.77" on page 365
H27.79	2027-50h	Block 15 speed	0 LU/min–4294967295 LU/min.	600	1000 LU/min	Real-time	" H27_en.79" on page 366
H27.81	2027-52h	Block 0 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.81" on page 366
H27.82	2027-53h	Block 1 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.82" on page 366
H27.83	2027-54h	Block 2 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.83" on page 366

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H27.84	2027-55h	Block 3 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.84" on page 367
H27.85	2027-56h	Block 4 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.85" on page 367
H27.86	2027-57h	Block 5 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.86" on page 367
H27.87	2027-58h	Block 6 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.87" on page 367
H27.88	2027-59h	Block 7 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.88" on page 368
H27.89	2027-5Ah	Block 8 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.89" on page 368
H27.90	2027-5Bh	Block 9 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.90" on page 368
H27.91	2027-5Ch	Block 10 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.91" on page 369
H27.92	2027-5Dh	Block 11 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.92" on page 369
H27.93	2027-5Eh	Block 12 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.93" on page 369
H27.94	2027-5Fh	Block 13 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.94" on page 369
H27.95	2027-60h	Block 14 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.95" on page 370
H27.96	2027-61h	Block 15 acc. override	1.00%–100.00%	100.00	%	Real-time	" H27_en.96" on page 370

5.22 Parameter Group H28

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H28.00	2028-01h	Block 0 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.00" on page 370
H28.01	2028-02h	Block 1 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.01" on page 370
H28.02	2028-03h	Block 2 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.02" on page 371
H28.03	2028-04h	Block 3 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.03" on page 371
H28.04	2028-05h	Block 4 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.04" on page 371

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H28.05	2028-06h	Block 5 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.05" on page 372
H28.06	2028-07h	Block 6 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.06" on page 372
H28.07	2028-08h	Block 7 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.07" on page 372
H28.08	2028-09h	Block 8 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.08" on page 372
H28.09	2028-0Ah	Block 9 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.09" on page 373
H28.10	2028-0Bh	Block 10 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.10" on page 373
H28.11	2028-0Ch	Block 11 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.11" on page 373
H28.12	2028-0Dh	Block 12 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.12" on page 373
H28.13	2028-0Eh	Block 13 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.13" on page 374
H28.14	2028-0Fh	Block 14 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.14" on page 374
H28.15	2028-10h	Block 15 dec. override	1.00%–100.00%	100.00	%	Real-time	" H28_en.15" on page 374
H28.16	2028-11h	Block 0 task mode	0 to 65535	0	-	Real-time	" H28_en.16" on page 374
H28.17	2028-12h	Block 1 task mode	0 to 65535	0	-	Real-time	" H28_en.17" on page 375
H28.18	2028-13h	Block 2 task mode	0 to 65535	0	-	Real-time	" H28_en.18" on page 375
H28.19	2028-14h	Block 3 task mode	0 to 65535	0	-	Real-time	" H28_en.19" on page 375
H28.20	2028-15h	Block 4 task mode	0 to 65535	0	-	Real-time	" H28_en.20" on page 376
H28.21	2028-16h	Block 5 task mode	0 to 65535	0	-	Real-time	" H28_en.21" on page 376
H28.22	2028-17h	Block 6 task mode	0 to 65535	0	-	Real-time	" H28_en.22" on page 376
H28.23	2028-18h	Block 7 task mode	0 to 65535	0	-	Real-time	" H28_en.23" on page 376
H28.24	2028-19h	Block 8 task mode	0 to 65535	0	-	Real-time	" H28_en.24" on page 377
H28.25	2028-1Ah	Block 9 task mode	0 to 65535	0	-	Real-time	" H28_en.25" on page 377
H28.26	2028-1Bh	Block 10 task mode	0 to 65535	0	-	Real-time	" H28_en.26" on page 377

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H28.27	2028-1Ch	Block 11 task mode	0 to 65535	0	-	Real-time	" H28_en.27" on page 377
H28.28	2028-1Dh	Block 12 task mode	0 to 65535	0	-	Real-time	" H28_en.28" on page 378
H28.29	2028-1Eh	Block 13 task mode	0 to 65535	0	-	Real-time	" H28_en.29" on page 378
H28.30	2028-1Fh	Block 14 task mode	0 to 65535	0	-	Real-time	" H28_en.30" on page 378
H28.31	2028-20h	Block 15 task mode	0 to 65535	0	-	Real-time	" H28_en.31" on page 378
H28.32	2028-21h	Block 0 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.32" on page 379
H28.34	2028-23h	Block 1 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.34" on page 379
H28.36	2028-25h	Block 2 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.36" on page 379
H28.38	2028-27h	Block 3 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.38" on page 380
H28.40	2028-29h	Block 4 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.40" on page 380
H28.42	2028-2Bh	Block 5 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.42" on page 380
H28.44	2028-2Dh	Block 6 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.44" on page 380
H28.46	2028-2Fh	Block 7 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.46" on page 381
H28.48	2028-31h	Block 8 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.48" on page 381
H28.50	2028-33h	Block 9 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.50" on page 381
H28.52	2028-35h	Block 10 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.52" on page 381
H28.54	2028-37h	Block 11 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.54" on page 382
H28.56	2028-39h	Block 12 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.56" on page 382
H28.58	2028-3Bh	Block 13 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.58" on page 382
H28.60	2028-3Dh	Block 14 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.60" on page 382
H28.62	2028-3Fh	Block 15 task parameter	0 to 2147483647	0	-	Real-time	" H28_en.62" on page 383

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H28.64	2028-41h	Fixed stopper monitoring window	0 to 4294967295	0	-	Real-time	" H28_en.64" on page 383
H28.66	2028-43h	Max. following error of fixed stopper	0 to 4294967295	0	-	Real-time	" H28_en.66" on page 383
H28.68	2028-45h	External trigger source	0: Triggered by STW1.bit13 1: Triggered by DI	0	-	At stop	" H28_en.68" on page 384

5.23 Parameter Group H29

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.00	2029-01h	Control word 1 (STW1)	Bit0: 1 = Pulse enable allowed; 0 = OFF1, ramp to stop, pulse cleared, ready to switch on bit1: 1 = No OFF2 (pulse enable allowed); 0 = OFF2, coast to stop, pulse cleared immediately, switch-on inhibited bit2: 1 = No OFF3 (pulse enable allowed); 0 = OFF3 quick stop, P1135 brake, pulse cleared, switch-on inhibited bit3: 1 = Enable allowed; 0 = Operation inhibited (pulse cleared) bit4: 1 = Ramp function generator available; 0 = Ramp function generator inhibited bit5:1 = Ramp function generator continued; 0 = Ramp function generator output frozen bit6:1 = Setpoint enabled; 0 = Setpoint inhibited (ramp function generator input being zero) bit7: Rising edge-triggered, response fault bit8: JOG1 bit9: JOG2 bit10: 1 = PLC controlled bit11: Reserved bit12: Reserved bit13: Reserved bit14: Reserved bit15: Reserved	0	-	Unchangeable	" H29_en.00" on page 384
H29.01	2029-02h	Control word 2 (STW2)	0 to 65535	0	-	Unchangeable	" H29_en.01" on page 385
H29.02	2029-03h	Speed setpoint A (VEL_NSOLL_A)	0 to 65535	0	-	Unchangeable	" H29_en.02" on page 385
H29.04	2029-05h	Speed setpoint B (VEL_NSOLL_B)	-2147483648 to 2147483647	0	-	Unchangeable	" H29_en.04" on page 386

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.06	2029-07h	Encoder control word (G1_STW)	bit0: bit7 = 0, searching for reference point 1; bit7 = 1, measure the pointer 1 bit1: bit7 = 0, searching for reference point 2; bit7 = 1, measure the pointer 2 bit2: bit7 = 0, searching for reference point 3; bit7 = 1, measure the pointer 3 bit3: bit7 = 0, searching for reference point 4; bit7 = 1, measuring pointer 4 bit4: bit4–bit6 000b = Not activated; 001b = Selected functions activated; 010b = Read value; 011b = Cancel bit5: bit4–bit6 000b = Not activated; 001b = Selected functions activated; 010b = Read value; 011b = Cancel bit6: bit4–bit6 000b = Not activated; 001b = Selected functions activated; 010b = Read value; 011b = Cancel bit7: Mode selection; 1 = Real-time measurement; 0 = Searching for the reference point bit8: Reserved bit9: Reserved bit10: Reserved bit11: Zero setting mode; 0 = Absolute position; 1 = Relative position bit12: Rising edge-triggered; request for setting the zero bit bit13: Rising edge-triggered; request for cyclic transmission of absolute position in G1_XIST2 bit14: Parking encoder bit15: Rising-edge triggered Response encoder fault	0	-	Unchangeable	*" H29_en.06" on page 386*
H29.07	2029-08h	Position deviation (XERR)	-2147483648 to 2147483647	0	-	Unchangeable	*" H29_en.07" on page 387*

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.09	2029-0Ah	Position loop gain (KPC)	-2147483648 to 2147483647	0	-	Unchangeable	" H29_en.09" on page 387
H29.11	2029-0Ch	Position control word 1 (POS_STW1)	bit0: bit0–bit5 block selection IS620F supports up to 16 blocks bit1: bit0–bit5 block selection IS620F supports up to 16 blocks bit2: bit0–bit5 block selection IS620F supports up to 16 blocks bit3: bit0–bit5 block selection IS620F supports up to 16 blocks bit4: bit0–bit5 block selection IS620F supports up to 16 blocks bit5: bit0–bit5 block selection IS620F supports up to 16 blocks bit6: Reserved bit7: Reserved bit8: 1 = Absolute positioning 0 = Relative positioning bit9: 1 = Forward bit10: 1 = Reverse bit11: Reserved bit12: 1 = Continuous transmission 0 = MDI block modification activated by running the rising edge of the program segment (STW1.6) bit13: Reserved bit14: 1 = Setting signal selected 0 = Positioning signal selected bit15: 1= MDI sub-mode 0 = Program segment sub-mode	0	-	Unchangeable	" H29_en.11" on page 388
H29.12	2029-0Dh	MDI position setting (EPOS)	-2147483648 to 2147483647	0	-	Unchangeable	" H29_en.12" on page 388
H29.14	2029-0Fh	MDI speed setting (EPOS)	0 to 4294967295	0	-	Unchangeable	" H29_en.14" on page 389
H29.16	2029-11h	MDI acceleration override (EPOS)	0 to 65535	0	-	Unchangeable	" H29_en.16" on page 389

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.17	2029-12h	MDI deceleration override (EPOS)	0 to 65535	0	-	Unchangeable	" H29_en.17" on page 389
H29.18	2029-13h	MDI mode (EPOS)	bit0: 1 = Absolute positioning 0 = Relative positioning bit1: 1 = Forward bit2: 1 = Reverse bit3: Reserved bit4: Reserved bit5: Reserved bit6: Reserved bit7: Reserved bit8: Reserved bit9: Reserved bit10: Reserved bit11: Reserved bit12: Reserved bit13: Reserved bit14: Reserved bit15: Reserved	0	-	Unchangeable	" H29_en.18" on page 389
H29.19	2029-14h	Position control word 2 (POS_ STW2)	bit0: 1 = Tracking mode activated bit1: 1 = Set reference point bit2: 1 = Reference point stopper activated bit3: Reserved bit4: Reserved bit5: 1 = JOG incremental positioning activated 0 = Speed activated bit6: Reserved bit7: Reserved bit8: Reserved bit9: 1 = Searching for the reference point in the reverse direction 0 = Start searching for the reference point in the forward direction bit10: Reserved bit11: Reserved bit12: Reserved bit13: Reserved bit14: 1 = Software limit switch activated bit15: 1 = Stopper activated	0	-	Unchangeable	" H29_en.19" on page 390
H29.20	2029-15h	Position speed override (EPOS)	0 to 65535	0	-	Unchangeable	" H29_en.20" on page 391

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.21	2029-16h	Customized receive word for telegram 111	0 to 65535	0	-	Unchangeable	" H29_en.21" on page 391
H29.22	2029-17h	Torque reduction (MOMRED)	0 to 16363	0	-	Unchangeable	" H29_en.22" on page 392
H29.23	2029-18h	Torque reference (AdditiveTorque)	-32768 to 32767	0	-	Unchangeable	" H29_en.23" on page 392
H29.24	2029-19h	Torque upper limit (UpperLimit)	-32768 to 32767	0	-	Unchangeable	" H29_en.24" on page 392
H29.25	2029-1Ah	Torque lower limit	-32768 to 32767	0	-	Unchangeable	" H29_en.25" on page 392
H29.26	2029-1Bh	Customized receive word for 850 additive telegram	0 to -1	0	-	Unchangeable	" H29_en.26" on page 393
H29.27	2029-1Ch	Message word (EPOS_MELDW)	0 to -1	0	-	Unchangeable	" H29_en.27" on page 393

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.50	2029-33h	Status word 1 (ZSW1)	bit0: 1 = Ready to switch on, control circuit switched on, initialization done bit1: 1 = Ready to run, main circuit switched on bit2: 1 = Run enable bit3: 1 = Fault bit4: 1 = Coast to stop deactivated (OFF2 deactivated) 0 = Cost to stop activated (OFF2 activated) bit5: 1 = Quick stop deactivated (OFF2 deactivated) 0 = Quick stop activated (OFF2 activated) bit6: 1 = Switch-on inhibited bit7: 1 = Warning existed bit8: Reserved bit9: 1 = PLC control request bit10: Reserved bit11: Reserved bit12: Reserved bit13: Reserved bit14: Reserved bit15: Reserved	0	-	Unchangeable	*" H29_en.50" on page 393*
H29.51	2029-34h	Status word 2 (ZSW2)	bit0: Reserved bit1: Reserved bit2: Reserved bit3: Reserved bit4: Reserved bit5: Reserved bit6: Reserved bit7: Reserved bit8: Reserved bit9: Reserved bit10: Reserved bit11: Reserved bit12: bit12–bit15 drive heartbeat count value, uploaded to PLC bit13: bit12–bit15 drive heartbeat count value, uploaded to PLC bit14: bit12–bit15 drive heartbeat count value, uploaded to PLC bit15: bit12–bit15 drive heartbeat count value, uploaded to PLC	0	-	Unchangeable	*" H29_en.51" on page 394*

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.52	2029-35h	Speed actual value A (VEL_NIST_A)	-32768 to 32767	0	-	Unchangeable	" H29_en.52" on page 395
H29.53	2029-36h	Speed actual B (VEL_NSOLL_B)	-2147483648 to 2147483647	0	-	Unchangeable	" H29_en.53" on page 395
H29.55	2029-38h	Encoder status word (G1_ZSW)	bit0: 1 = Function 1 activated bit1: 1 = Function 2 activated bit2: 1 = Function 3 activated bit3: 1 = Function 4 activated bit4: 1 = Actual value 1 readable bit5: 1 = Actual value 2 readable bit6: 1 = Actual value 3 readable bit7: 1 = Actual value 4 readable bit8: Touch probe 1 bit9:Touch probe 2 bit10: Reserved bit11: Response encoder fault bit12: Set zero response bit13: Cyclic transmission of the absolute position in G1_XIST2 bit14: Parking encoder activated bit15: The encoder is faulty.	0	-	Unchangeable	" H29_en.55" on page 396
H29.56	2029-39h	Encoder 1 position actual value 1 (G1_XIST1)	0 to 0	0	-	Unchangeable	" H29_en.56" on page 396
H29.58	2029-3Bh	Encoder 1 position actual value 2 (G1_XIST2)	0 to 0	0	-	Unchangeable	" H29_en.58" on page 396

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.60	2029-3Dh	Position status word 1 (POS_ ZSW1)	bit0: bit0–bit5 effective traversing block IS620F supports up to 16 blocks bit1: bit0–bit5 effective traversing block IS620F supports up to 16 blocks bit2:bit0–bit5 effective traversing block IS620F supports up to 16 blocks bit3:bit0–bit5 effective traversing block IS620F supports up to 16 blocks bit4:bit0–bit5 effective traversing block IS620F supports up to 16 blocks bit5:bit0–bit5 effective traversing block IS620F supports up to 16 blocks bit6: Reserved bit7: Reserved bit8: 1 = Reverse stopper activated bit9: 1 = Forward stopper activated bit10: 1 = JOG activated bit11: 1 = Proactive reference point approach activated bit12: Reserved bit13: 1 = Running block activated bit14: 1 = Setting activated bit15: 1 = MDI activated 0 = MDI deactivated	0	-	Un changeable	" H29_en.60" on page 397

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.61	2029-3Eh	Position status word 2 (POS_ ZSW2)	bit0:1 = Tracking mode activated bit1:1 = Speed limit activated bit2:1 = Setpoint available bit3: Reserved bit4:1= Axis moving forwardly bit5:1 = Axis moving reversely bit6:1 = Negative software limit switch reached bit7:1 = Positive software limit switch reached bit8: 1 = Position actual value < = Limit switch position 1 bit9:1 = Position actual value < = Limit switch position 2 bit10:1 = Direct output 1 through running block setting bit11:1 = Direct output 2 through running block setting bit12:1 = Fixed stop point reached bit13: 1 = Fixed stop point fastening torque reached bit14: 1 = Running to the fixed stop point activated bit15: 1 = RUN command activated	0	-	Unchangeable	" H29_en.61" on page 397
H29.63	2029-40h	Customized send word for telegram 111	0 to 65535	0	-	Unchangeable	" H29_en.63" on page 398
H29.65	2029-42h	Fault code	0 to 65535	0	-	Unchangeable	" H29_en.65" on page 398
H29.66	2029-43h	Warning code	0 to 65535	0	-	Unchangeable	" H29_en.66" on page 399
H29.67	2029-44h	Actual torque	32768 to 32767	0	-	Unchangeable	" H29_en.67" on page 399
H29.68	2029-45h	User-defined send word for 850 additive telegram	0 to 65535	0	-	Unchangeable	" H29_en.68" on page 399

Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H29.69	2029-46h	XIST_A position feedback	-2147483648 to 2147483647	0	-	Unchangeable	" H29_en.69" on page 399
H29.90	2029-5Bh	Modulo axis modulus	0 to 2147483647	0	-	Unchangeable	" H29_en.90" on page 400

5.24 Parameter Group H30

Parameter	Hex	Name	Setpoint	Default	Unit	Change mode:	Page
H30.01	2030-02h	DO function state 1 read through communication	0 to 65535	0	-	Unchangeable	" H30_en.01" on page 400
H30.02	2030-03h	DO function state 2 read through communication	0–65535+H941	0	-	Unchangeable	" H30_en.02" on page 400

5.25 Parameter Group H31

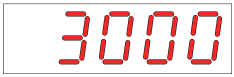
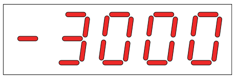
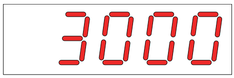
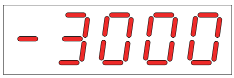
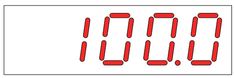
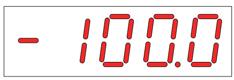
Parameter	Hex	Name	Setpoint	Default	Unit	Change Mode	Page
H31.00	2031-01h	VDI virtual level set through communication	0 to 65535	0	-	Real-time	" H31_en.00" on page 401
H31.04	2031-05h	DO state set through communication	0 to 65535	0	-	Real-time	" H31_en.04" on page 401
H31.09	2031-0Ah	Speed reference set via communication	-6000.000rpm to 6000.000rpm	0.000	RPM	Real-time	" H31_en.09" on page 402
H31.11	2031-0Ch	Torque reference set via communication	-100.000%–100.000%	0.000	%	Real-time	" H31_en.11" on page 402

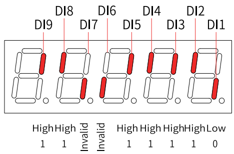
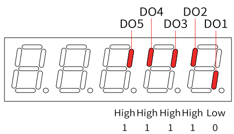
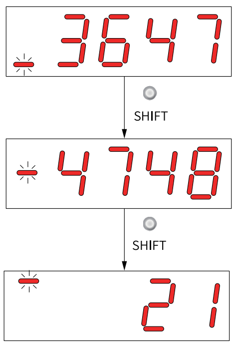
6 Appendix

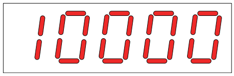
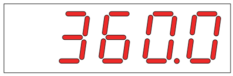
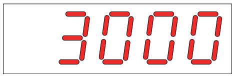
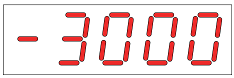
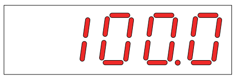
6.1 Display of Monitoring Parameters

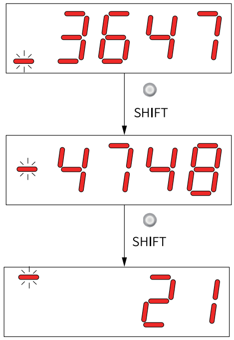
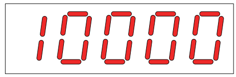
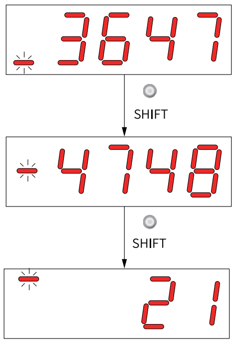
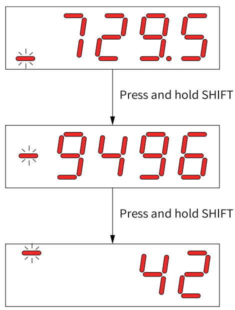
- Group H0b: Displays parameters used to monitor the operating state of the servo drive.
- Set H02.32 (Default keypad display) properly. After the motor operates normally, the keypad switches from status display to parameter display. The parameter group number is H0b and the offset within the group is the setpoint of H02.32.
- For example, if H02.32 is set to 00 and the motor speed is not 0 rpm, the keypad displays the value of H0b.00.

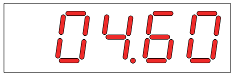
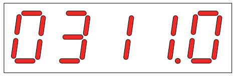
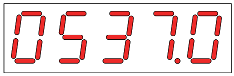
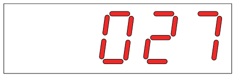
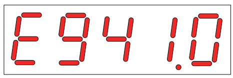
The following table describes the monitoring parameters in group H0b.

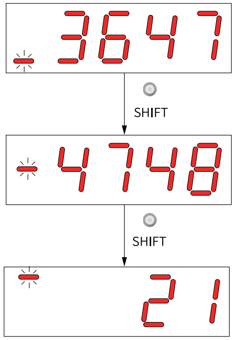
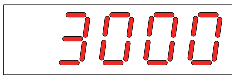
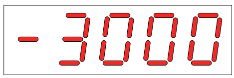
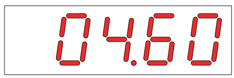
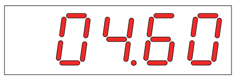
Parameter	Name	Unit	Meaning	Example of Display
H0b.00	Motor speed actual value	rpm	Displays the actual value of the motor speed after round-off, which can be accurate to 1 rpm.	Display of 3000 rpm:  -3000 rpm: 
H0b.01	Speed reference	rpm	Displays the present speed reference of the servo drive.	Display of 3000 rpm:  -3000 rpm: 
H0b.02	Internal torque reference	0.10%	Displays the ratio of actual torque output of the motor to the rated torque of the motor.	Display of 100.0%:  Display of -100.0%: 

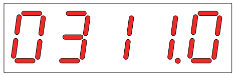
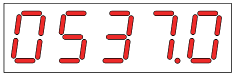
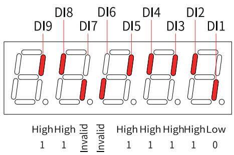
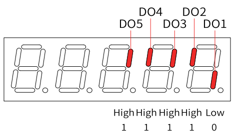
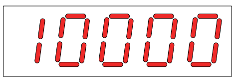
Parameter	Name	Unit	Meaning	Example of Display
H0b.03	Monitored DI status	-	Displays the optocoupler status of DI1 to DI9: Upper LED segments turned on: The optocoupler is switched off (indicated by "1"). Lower LED segments turned on: The optocoupler is switched on (indicated by "0"). The value of H0b.03 read in the software tool is a decimal.	For example, if DI1 is low level and DI2 to DI9 are high level, The corresponding binary value is "110011110", and the value of H0b.03 read in the software tool is 414. The keypad displays as follows: 
H0b.05	Monitored DO status	-	Displays the optocoupler status of DO1 to DO5: Upper LED segments turned on: The optocoupler is switched off (indicated by "1"). Lower LED segments turned on: The optocoupler is switched on (indicated by "0"). The value of H0b.05 read in the software tool is a decimal.	For example, if DO1 is low level and DO2 to DO5 are high level: then, the binary value is "11110". and the value of H0b.05 read in the software tool is 30. The keypad displays as follows: 
H0b.07	Absolute position counter (32-bit decimal)	Reference unit	Displays current absolute position of the motor (reference unit).	Display of 1073741824 in reference unit: 

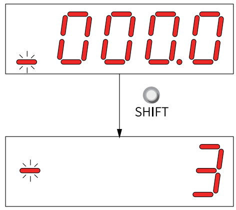
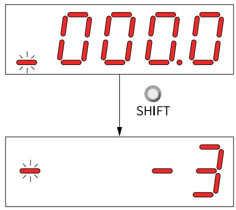
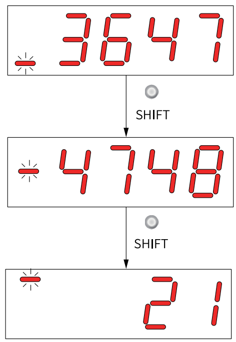
Parameter	Name	Unit	Meaning	Example of Display
H0b.09	Mechanical angle (pulses starting from the home)	p	Indicates the current mechanical angle (p) of the motor. The value 0 indicates that the mechanical angle is 0°. Maximum value of H0b.09 for an incremental encoder: Number of encoder pulses per revolution x 4 - 1. For example, the maximum value of H0b.09 for a 2500-PPR incremental encoder is 9999. Maximum value of H0b.09 for an absolute encoder is 65535. The actual mechanical angle is calculated using the following formula: $\text{Actual mechanical angle} = \frac{\text{H0B-09}}{\text{Max. H0B-09+1}} \times 360.0°$	Display of 10000 p: 
H0b.10	Rotation angle (electrical angle)	0.1°	Displays current electrical angle of the motor.	Display of 360.0°: 
H0b.11	Speed corresponding to the input position reference	rpm	Displays the speed corresponding to the position reference per control cycle of the servo drive.	Display of 3000 rpm:  -3000 rpm: 
H0b.12	Average load rate	0.10%	Displays the ratio of the average load torque to the rated torque of the motor.	Display of 100.0%: 

Parameter	Name	Unit	Meaning	Example of Display
H0b.13	Input position reference counter (32-bit decimal)	Reference unit	Counts and displays the number of input position references.	Display of 1073741824 in reference unit: 
H0b.15	Encoder position deviation counter (32-bit decimal)	Encoder unit	Encoder position deviation = Sum of input position references (encoder unit) – Sum of pulses fed back by the encoder (encoder unit)	Display of 10000 in encoder unit: 
H0b.17	Feedback pulse counter (32-bit decimal)	Encoder unit	Counts and displays the number of pulses fed back by the encoder (encoder unit).	Display of 1073741824 in encoder unit: 
H0b.19	Total power-on time (32-bit decimal)	0.1s	Counts and displays the total power-on time of the servo drive.	Display of 429496729.5s: 

Parameter	Name	Unit	Meaning	Example of Display
H0b.24	RMS value of phase current	0.01 A	Displays the RMS value of the phase current of the servo motor.	Display of 4.60 A: 
H0b.26	Bus voltage	0.1 V	Displays the DC bus voltage of the main circuit.	Display of 311.0 V rectified from 220 VAC:  Display of 537.0 V rectified from 380 VAC: 
H0b.27	Module temperature	°C	Displays the temperature of the power module inside the servo drive.	Display of 27°C: 
H0b.33	Fault log	-	Used to select the previous fault to be viewed. 0: Present fault 1: Last fault 2: 2nd to last fault ... 9: 9th to last fault	0: Display of present fault: 
H0b.34	Fault code of the selected fault	-	Displays the code of the fault selected in H0b.33. When no fault occurs, the displayed value of H0b.34 is E000.0.	If H0b.33 is 0, and H0b.34 is E941.0, the current fault code is 941. Corresponding display: 

Parameter	Name	Unit	Meaning	Example of Display
H0b.35	Time stamp upon occurrence of the selected fault	s	Displays the total operating time of the servo drive when the fault displayed in H0b.34 occurred. When no fault occurs, the value of H0b.35 is 0.	If H0b.34 is E941.0 and H0b.35 is 107374182.4, the current fault code is 941 and the total operating time of the servo drive is 107374182.4s when the fault occurs. 
H0b.37	Motor speed upon occurrence of the selected fault	rpm	Displays the servo motor speed when the fault displayed in H0b.34 occurred. When no fault occurs, the value of H0b.37 is 0.	Display of 3000 rpm:  -3000 rpm: 
H0b.38	Motor phase U current upon occurrence of the selected fault	0.01 A	Displays the RMS value of motor phase U winding current when the fault displayed in H0b.34 occurred. When no fault occurs, the value of H0b.38 is 0.	Display of 4.60 A: 
H0b.39	Motor phase V current upon occurrence of the selected fault	0.01 A	Displays the RMS value of motor phase V winding current when the fault displayed in H0b.34 occurred. When no fault occurs, the value of H0b.39 is 0.	Display of 4.60 A: 

Parameter	Name	Unit	Meaning	Example of Display
H0b.40	Bus voltage upon occurrence of the selected fault	V	Displays the DC bus voltage of the main circuit when the fault displayed in H0b.34 occurred. When no fault occurs, the value of H0b.40 is 0.	Display of 311.0 V rectified from 220 VAC:  Display of 537.0 V rectified from 380 VAC: 
H0b.41	DI status upon occurrence of the selected fault	-	Displays the high/low level status of DI1 to DI9 when the fault displayed in H0b.34 occurs. The method for determining the DI level status is the same as that of H0b.03. When no fault occurs, all DIs are displayed as low level in H0b.41 (indicated by the decimal value 0).	Display of H0b.41 = 414: 
H0b.42	DO status upon occurrence of the selected fault	-	Displays the high/low level status of DO1 to DO5 when the fault displayed in H0b.34 occurred. The method for determining the DO level status is the same as that of H0b.05. When no fault occurs, all DOs are displayed as low level in H0b.42 (indicated by the decimal value 0).	Display of H0b.42 = 15: 
H0b.53	Position deviation counter (32-bit decimal)	Reference unit	Position deviation = Sum of input position references (reference unit) - Sum of pulses fed back by the encoder (reference unit)	Display of 10000 in reference unit: 

Parameter	Name	Unit	Meaning	Example of Display
H0b.55	Motor speed actual value	0.1 rpm	Displays the actual value of the motor speed, which can be accurate to 0.1 RPM.	Display of 3000.0rpm:  Display of –3000.0 RPM: 
H0b.64	Real-time input position reference counter	Reference unit	Displays the value of the position reference counter before being divided or multiplied by the electronic gear ratio. This value is independent of the servo drive status and the control mode.	Display of 1073741824 in reference unit: 

6.2 DIDO Function Assignment

Code	Name	Function Name	Description	Remarks
Description of DI Signals				
FunIN.1	S-ON	Servo ON	Disabled: Servo motor disabled Enabled: Servo motor enabled	The corresponding terminal logic must be level-triggered. The change of the corresponding DI/VDI or terminal logic is activated at next power-on.

Code	Name	Function Name	Description	Remarks
FunIN.3	GAIN-SEL	Gain Switchover	• H08.09 = 1: • Inactive: Speed control loop being PI control • Active: Speed control loop being P control • H08.09 = 2: • Inactive: Fixed to the 1st group of gains • Active: Fixed to the 2nd group of gains	The corresponding terminal logic is recommended to be level-triggered.
FunIN.14	P-OT	Positive limit switch	Enabled: Forward drive inhibited Disabled: Forward drive permitted	Overtravel prevention applies when the machine moves beyond the limit. It is recommended that the corresponding terminal logic is level-triggered.
FunIN.15	N-OT	Negative limit switch	Overtravel prevention applies when the load moves beyond the limit. Active: Reverse drive inhibited Inactive: Reverse drive allowed	The corresponding terminal logic is recommended to be level-triggered.
FunIN.16	P-CL	Positive external torque limit	The torque limit source is switched based on H07.07 (Torque limit source). H07.07 = 1: Active: Positive external torque limit activated Inactive: Positive internal torque limit activated	The corresponding terminal logic is recommended to be level-triggered.
FunIN.17	N-CL	Negative external torque limit	The torque limit source is switched based on H07.07 (Torque limit source). H07.07 = 1: Active: Negative external torque limit activated Inactive: Negative internal torque limit activated	The corresponding terminal logic is recommended to be level-triggered.
FunIN.18	JOGCMD+	Forward jog	Active: Input based on command Inactive: Command input stopped	The corresponding terminal logic is recommended to be level-triggered.
FunIN.19	JOGCMD–	Reverse jog	Active: Input in reverse to the command Inactive: Command input stopped	The corresponding terminal logic is recommended to be level-triggered.

Code	Name	Function Name	Description	Remarks
FunIN.31	HomeSwitch	Home switch	Inactive: The switch is not triggered Enabled: The switch is triggered.	The corresponding terminal logic must be level-triggered. It is recommended to assign this function to a high-speed DI terminal. If the logic is set to 2 (rising edge active), the servo drive forcibly changes it to 1 (active high). If the logic is set to 3 (falling edge active), the servo drive forcibly changes it to 0 (active low). If the logic is set to 4 (both rising edge and falling edge active), the servo drive forcibly changes it to 0 (low level active).
FunIN.32	HomingStart	Homing enable	Inactive: Disabled Active: Enabled	-
FunIN.34	Emergence Stop	Emergency stop	Enabled: Position lock is applied after stop at zero speed. Disabled: Current operating state is unaffected.	The corresponding terminal logic is recommended to be level-triggered.
FunIN.36	V_LmtSel	Internal speed limit source	Inactive: H07.19 used as positive/negative internal speed limit Active: H07.20 used as positive/ negative internal speed limit	The corresponding terminal logic is recommended to be level-triggered.
FunIN.38	TouchProbe1	Touch probe 1	Disabled - Touch probe is not triggered. Enabled - Touch probe is triggerable.	The touch probe logic is only related to the touch probe function (60B8h).
FunIN.39	TouchProbe2	Touch probe 2	Disabled - Touch probe is not triggered. Enabled - Touch probe is triggerable.	The touch probe logic is only related to the touch probe function (60B8h).
FunIN.41	HomeRecord	Present position as the home	Inactive: The switch is not triggered Active: Triggered	The corresponding terminal logic is recommended to be level-triggered.
FunIN.56	MExTriger	External switch of EPOS program block	Active: If H28.68 = 1, the program block function triggers the enabling operation. Inactive: No external DI program block trigger signal.	-
Description of DO signals				
FunOUT.1	S-RDY	Ready to switch on	The servo drive is ready to receive the S-ON signal. Enabled: The servo drive is ready. Disabled: The servo drive not ready.	-

Code	Name	Function Name	Description	Remarks
FunOUT.2	TGON	Motor rotation signal	Inactive. Absolute value of filtered motor speed is lower than the setpoint of H06.16. Active. Absolute value of filtered motor speed reaches the setpoint of H06.16.	-
FunOUT.3	ZERO	Zero speed signal	Inactive: Difference between motor speed feedback and reference value larger than H06.19 (Threshold of zero speed output signal) Active: The difference between the motor speed feedback and the reference value is within the threshold defined by H06.19.	-
FunOUT.4	V-CMP	Speed matching	Active when the absolute value of the difference between the motor speed and the speed reference lower than H06.17 (Threshold of V-Cmp signal) in the speed control mode	-
FunOUT.5	COIN	Positioning completed	Active when position deviation pulses reaching H05.21 (Threshold of positioning completion) in the position control mode	-
FunOUT.6	NEAR	Proximity	Active when position deviation pulses reaching H05.22 (Threshold of proximity) in the position control mode	-
FunOUT.7	C-LT	Torque limit	Confirming torque limit: Active: Servo drive torque reference reaching the torque limit value and restricted to this value Inactive: Servo drive torque reference not reaching the torque limit value	-
FunOUT.8	V-LT	Speed limit	Confirming speed limit in torque control: Active: Motor speed limited Inactive: Motor speed unlimited	-
FunOUT.9	BK	Brake output	Brake signal output: Active: Brake released Active: The power is off, the brake is released, and the motor can rotate.	-

Code	Name	Function Name	Description	Remarks
FunOUT.10	WARN	Warning	Enabled: The servo drive issued a warning. Disabled: The servo drive issued no warning or the warning has been reset.	-
FunOUT.11	ALM	Fault	The servo drive is faulty. Inactive: No fault occurred on the servo drive or the fault has been reset.	-
FunOUT.16	HomeAttain	Homing is completed.	Homing state: Active: Homing completed in the position control mode Inactive: Homing not completed	-
FunOUT.18	ToqReach	Torque Reach Output	Active: Absolute value of torque reference reached setpoint Inactive: Absolute value of torque reference smaller than setpoint	-
FunOUT.19	V-Arr	Speed reaches output	Active: Speed feedback reaches setpoint Inactive: Speed feedback smaller than setpoint	-
FunOUT.21	DB	Dynamic braking output	Active: Dynamic brake relay opened Inactive: Dynamic braking relay closed	-
FunOUT.25	CMP	Position compare DO	Enabled: The servo drive passed the target position comparison point. Inactive: The servo drive did not pass the target position comparison point.	-
FunOUT.30	WARN OR ALM	Warning or fault output	Active: A warning or fault is present. Inactive: No warning or fault.	-
FunOUT.32	EDM	EDM output	Enabled - STO is triggered Disabled - STO is not triggered	The EDM outputs active signals only when both the 24 V input voltages for STO1 and STO2 are disconnected.

19011668A01

Shenzhen Inovance Technology Co., Ltd.

www.inovance.com

Add.: Inovance Headquarters Tower, High-tech Industrial Park, Guanlan Street, Longhua New District, Shenzhen

Tel: (0755) 2979 9595 Fax: (0755) 2961 9897

Suzhou Inovance Technology Co., Ltd.

www.inovance.com

Add.: No. 16 Youxiang Road, Yuexi Town, Wuzhong District, Suzhou 215104, P.R. China

Tel: (0512) 6637 6666 Fax: (0512) 6285 6720