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201903



ISA-7X General AC Servo System

Intelligent Integration with
Innovation

ISA-7X General AC Servo System

ISA-7X Servo Drive

ISA-7X is the latest generation of servo drives of LITE-ON, featuring high speed, high precision, high performance for easy setup and adjustment, and is greatly optimized in response frequency and encoder resolution compared to ISA-7 series. In addition, following the advantages of the LITE-ON servo system, it provides plug-and-play, PC-side monitoring, adjustment functions, and reliable product reliability.

ISA-7X series supports external pulse control and is equipped with feedback control, high-speed computing capability and digital signal processor to control IGBT current, achieving interior speed setting, position and torque control of 3-phase permanent magnet motor. Through timely adjustment, automatic resonance suppression and other functions, it provides a system with high dynamic performance and stable operation. In addition, the pulse input supports up to 4MHz, which fully guarantees high-precision positioning.

- Voltage range: 1AC/3AC 200V~230V
- Power range: 100W~2kW

Servo Motor

The permanent-magnet synchronous servo motor in ISA 7X servo system provides stable operation without external cooling equipment through surface heat dissipation.

- Standard flange specifications: 40mm, 60mm, 80mm, 130mm
- Rated speed: 100W-750W 3,000rpm, 1-2kW 2,000rpm
- Rated torque: 0.318Nm~9.55Nm
- Encoder: single-turn absolute encoder, 20-bit resolution
- Multi-turn absolute encoder: 20-bit resolution + 16-bit multi-turn
- IP rating: IP65, natural cooling
- Standard key shaft
- Brake (optional)
- With key shaft



Easy to use

- Automatic gain adjustment for easy equipment adaptation
- Advanced filtering suppresses mechanical vibration
- ISA-Pro software for easy parameter setting and adjustment

High performance

- Up to 1 kHz speed frequency response
- Up to 4MHz differential pulse input and Modbus communication
- Up to 20 bits high resolution encoder
- Up to 6000 rpm maximum speed and 300% overload

Easy to maintain

- Wide voltage input range for environments with high voltage fluctuations
- Motor protection level IP65, optional shaft end oil seal available
- ISA-Pro status monitoring and acquisition functions for troubleshooting

Cost-saving

- Built-in MSC, no professional motion controller required
- Built-in braking resistors, no additional braking resistor required in most applications
- Built-in electronic cam, no need to implement it in the upper controller

Technical Specifications

ISA-7X		100W	200W	400W	750W	1kW	1.5kW*	2.0kW
		10	20	40	75	100	150	200
Output	Rated voltage Z	3 phase 170 VAC						
	Rated current [A]	0.9	1.7	2.8	5.8	6	10	11
Main circuit power supply input	Voltage/ Frequency	3 phase 200 ~ 230 VAC, 50 / 60Hz 1 phase 230 VAC, 50 / 60Hz						3 phase 200~230 VAC 50 / 60 Hz
	Rated current [A] (note 1)	0.7	1.5	2.6	3.8	5	8	10.5
	Permissible voltage fluctuation	3 phase: 170 ~ 255 VAC 1 phase: 200 ~ 255 VAC						3 phase 170 ~ 255 VAC
	Permissible frequency fluctuation	Max. $\pm 5\%$						
Control circuit power supply input	Voltage/ Frequency	1 phase 200 ~ 240 VAC, 50 / 60 Hz						
	Rated current [A]	0.2						
	Permissible voltage fluctuation	1 phase 170 ~ 255 VAC						
	Permissible frequency fluctuation	Max. $\pm 5\%$						
	Power consumption [W]	30						
Interface power supply		24 VDC $\pm 10\%$ (required current capacity 0.5 A)						
Main circuit control		Space-Vector PWM control / current control method						
Built-in regenerative resistor power [W]		--	--	40	40	40	100	100
Dynamic brake		Built-in						
Communications		RS232 / RS485						
Encoder output pulse		Compatible (A / B / Z-phase pulse)						
Analog monitoring		2 channels, monitor signal can be set by parameters (output voltage range: $\pm 8\text{ V}$)						
External control		Pulse and analog signals						

*Note1. 1.5kW single phase is under development. Coming soon.

Control Specifications

ISA-7X		100W	200W	400W	750W	1kW	1.5kW	2.0kW
		10	20	40	75	100	150	200
Position control mode	Max. input pulse frequency	500k / 4M pulses/s (differential receiving), 200k pulse/s (open controller)						
	Command pulse mode	Pulse+symbol; A-phase+B-pase; CCW pulse+CW pulse						
	Command source	External pulse control						
	Smooth strategy	Low-pass and P curve filter						
	Position feedback pulse	Encoder resolution: 20 bits						
	Command pulse rate	Electric gear A / B rate, A: 1 ~ 16777215, B: 1 ~ 16777215, 1/10 < A / B < 4000						
	In position width setting	0 ~ ±65535 pulses (commmand pulse unit)						
	Excessive error	±10 rotary						
	Torque limit	Set by parameters or external analog input (0±10 VDC / max. torque)						
	Feedforward compensation	Parameter setting						
Speed control mode	Speed control range	Analog speed control 1: 2000, internal speed control 1: 5000						
	Frequency	Max. 550 Hz						
	Control strategy	External analog command / Internal register control						
	Smooth strategy	Low-pass smooth filter; S curve smooth filter						
	Analog speed command input	0 ~ ±10 VDC / rated speed (10 V speed can be set by parameters) (input impedance: 10 kΩ ~ 12 kΩ)						
	Speed fluctuation rate	Max. ±0.01 % (load fluctuation: 0 ~ 100 %) , 0% (power fluctuation: ±10 %) Max.±0.2 % (ambient temperature: 25°C ±10°C) when using analog speed command						
	Torque limit	Set by parameters or external analog input (0 ~ ±10 VDC / max. torque)						
Torque control mode	Command source	External analog signal						
	Smooth strategy	Low-pass filter						
	Analog torque command input	0 ~ ±10 VDC / max. torque (input impedance: 10 kΩ ~ 12 kΩ)						
	Speed limit	Set by parameters or external analog input (0 ~ ±10 VDC / rated speed)						
Digital inputs/ outputs	Input	Servo on, reset, gain switching, pulse clear, zero speed clamp, command input reverse control, torque limit, speed/torque limit enabled, speed command selection, speed/position mode switching, selection switching, speed/torque command selection switching, torque/position mode command selection switching, emergency stop, forward/reverse inhibit limit, forward/reverse operation torque limit, forward/reverse JOG input, electronic gear ratio (numerator) selection and pulse inhibit input						
	Output	A / B / Z Line Driver Servo ready, servo on, at zero speed, at speed reached, at positioning completed, at torque limit, servo alarm (servo fault) activated, electromagnetic brake control, output overload warning, servo warning activated, software limit (reverse), software limit (forward) , servo program completed						
Protections		Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection, magnetic pole detection protection						
Certifications		IEC / EN 61800-5-1						

Drive Interface

Charge LED

Alit LED indicates that either power is connected to the servo drive or a residual charge is present in the drive's P_BUS

Main circuit terminal

R, S, T connect 200~230V
50/60Hz AC power supply

Control circuit terminal

L1c, L2c input 100~230V
50/60Hz 1 phase AC power supply

Internal & external regenerative resistor

1. Connect external regenerative resistor P, C to resistors, P, D open.
2. Internal regenerative resistor open, P, D short circuit.

Servo motor output

Connect to servo motor power U, V, W. Do not connect o main power.

LED display

5 digits, 7 segment LED displays servo status or abnormal alarm

Operation panel

Status, parameters and monitor settings

M: mode selection

SHIFT: shift left

SET: confirm setting

^: More content

v: Less content

Communication port

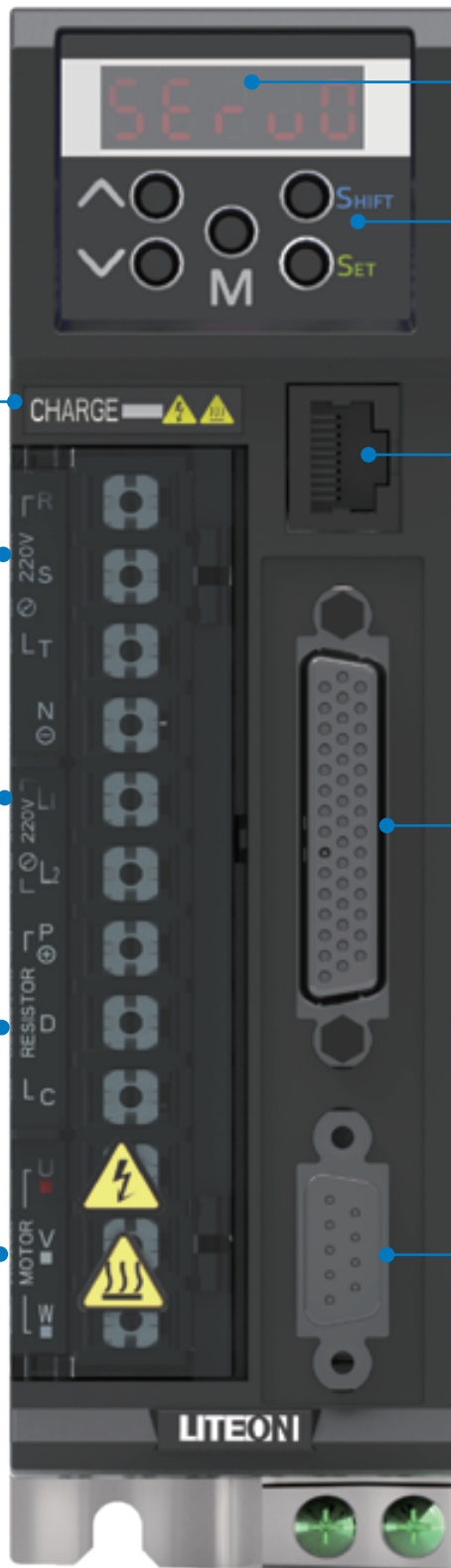
Connect PC or controller
Support RS-232 and RS-485 interface

I/O ports

Connect upper controller, PLC, PC-Based and NC controllers

Motor encoder interface

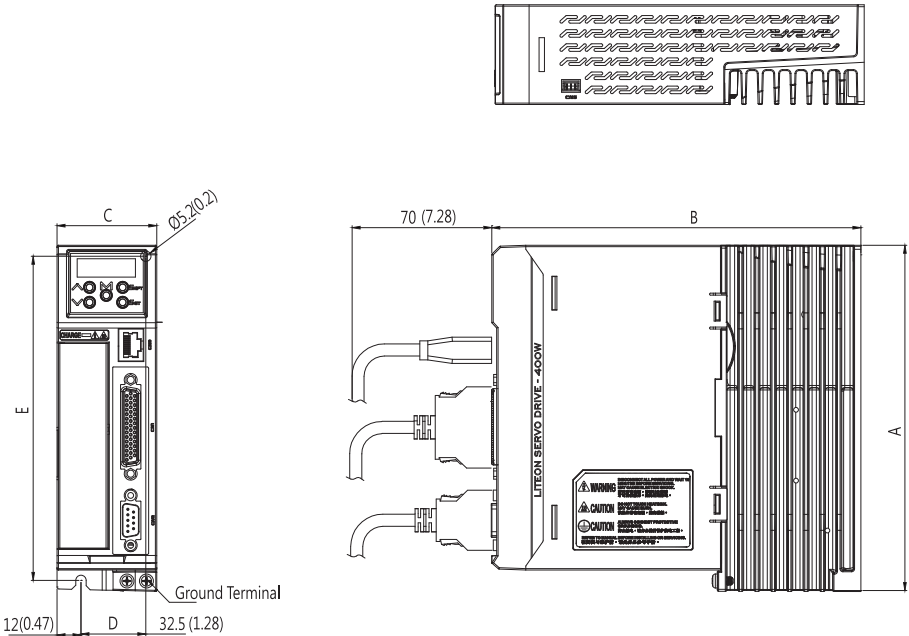
Connect servo motor remote encoder



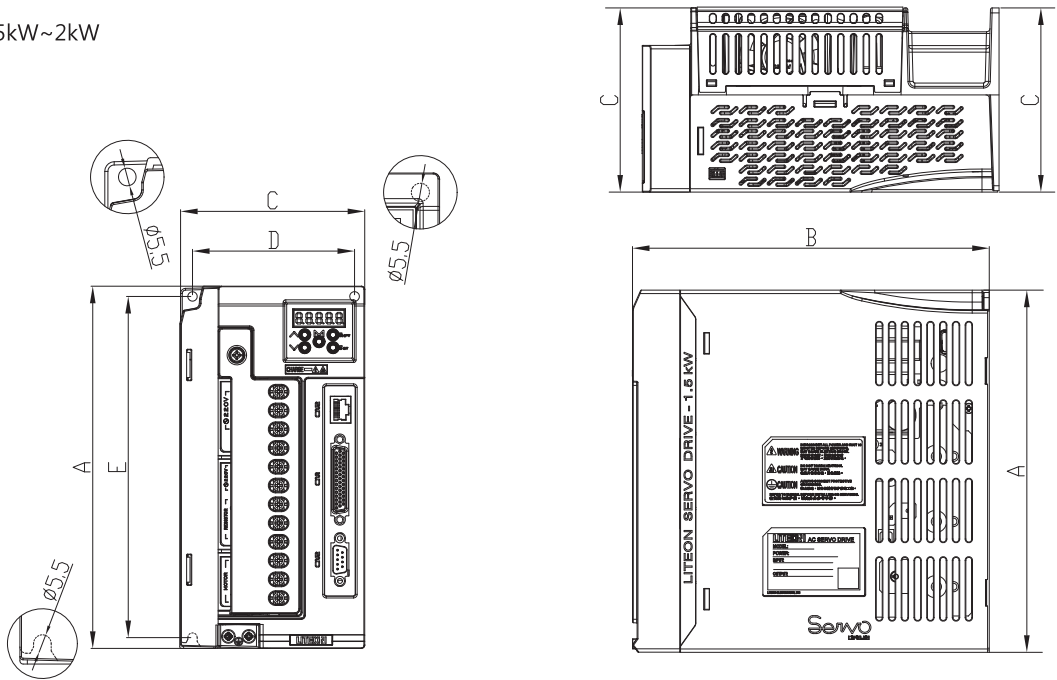
*Refer to supplied quick start guide . Contact local dealer or LITE-ON if any question.

Dimensions

- 100W~400W
- 750W~1000W



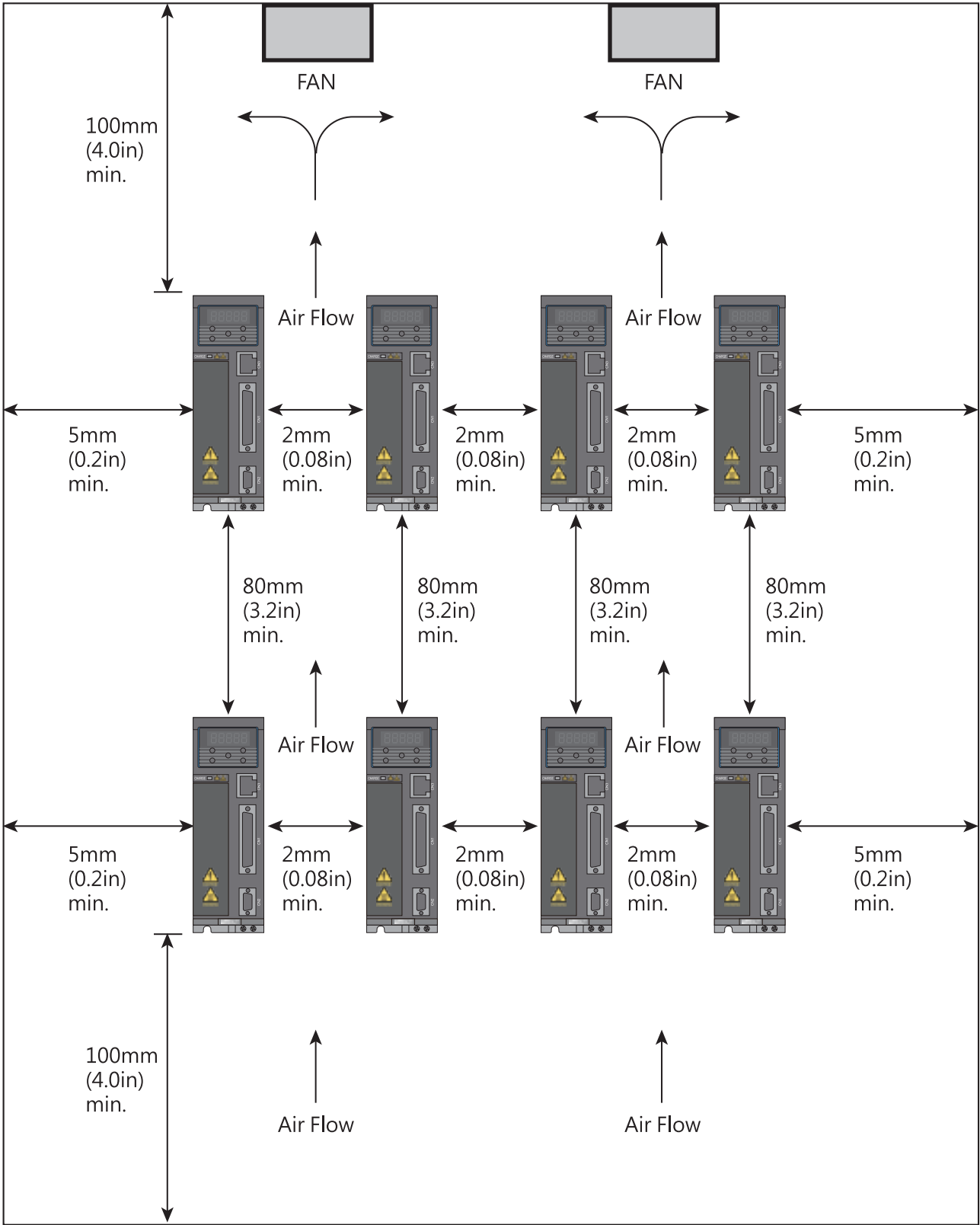
- 1.5kW~2kW



Unit : mm(inch) / kg(lb)

Power	A	B	C	D	E	Weight	Screw hole
100W~400W	173(6.81)	185(7.28)	50(1.97)	32.5(1.28)	162.5(6.40)	1.05(2.31)	M5
750W~1000W	173(6.81)	195(7.68)	70(2.76)	52.5(2.07)	163(6.42)	1.64(3.61)	M5
1.5kW~2kW	212.4(8.36)	209.2(8.24)	108(4.25)	95(3.74)	200(7.87)	3.4(7.5)	M5

Mounting Guide

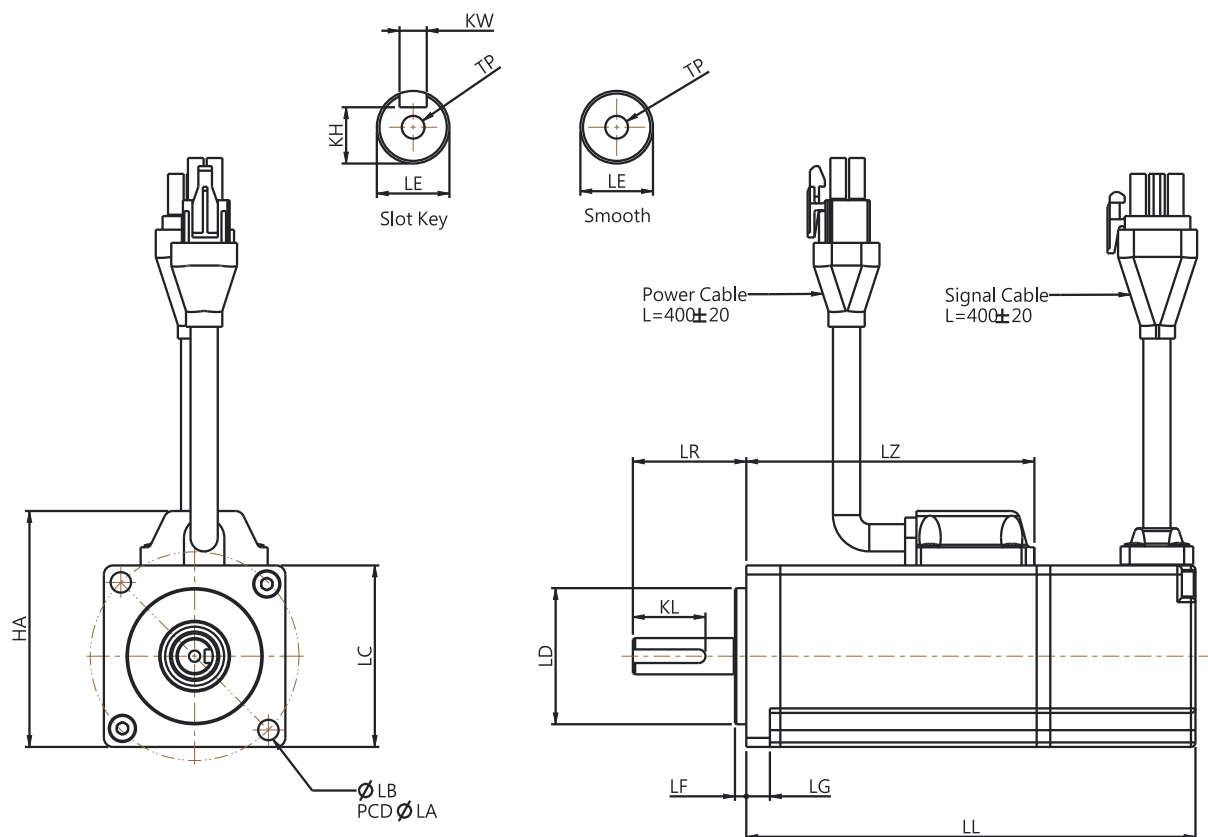


IOSM Middle Inertia Servo Motor Specifications

Items		Specs						
Voltage	VAC	200						
Models	IOSMPH	A04010	A06020	A06040	A08075	B1301D0	B1301D5	B1302D0
Flange size	mm	□40	□60		□80	□130		
Rated power	kW	0.1	0.2	0.4	0.75	1	1.5	2
Rated torque	Nm	0.32	0.64	1.27	2.39	4.77	7.16	9.55
Max. torque	Nm	0.96	1.9	3.8	7.2	14.3	20.05	26.74
Rated current	Arms	0.9	1.7	2.8	5	5.8	8.6	11.7
Max. current	Arms	2.7	5.1	8.4	15	18.6	24.1	32.8
Rated speed	r/min	3000				2000		
Max. speed	r/min	6000				3000		
Torque constant	Nm/Arms	0.37	0.38	0.454	0.48	0.856	0.86	0.829
Max. power per sec	kW/s	13.5 (12.4)	15.1 (14.1)	33.1 (31.7)	33.2 (32.8)	18.2 (15.7)	27.7 (25)	37.7 (34.8)
Rotor inertia	10 ⁻⁴ kgm ²	0.75 (0.82)	0.27 (0.29)	0.49 (0.51)	1.72 (1.74)	12.5 (14.5)	18.5 (20.5)	24.2 (26.2)
Weight	kg	0.55 (0.75)	1.1 (1.5)	1.6 (2.1)	2.7 (3.3)	6.1 (8.1)	7.6 (9.7)	9.3 (11.4)
Encoder		Single-turn absolute encoder 20 bits Multi-turn absolute encoder 20 bits + 16 bits multi-turn						
Brake rated voltage	V	DC24V±10%						
Brake rated current	A	0.25	0.3		0.33	0.82		
Brake torque	Nm	0.32	1.27		2.39	9.55		
Engaging time	ms	40	50		60	120		
Release time	ms	20	20		20	80		
Heat-resistance class		F						
Operating temperature		0~40℃ (non-condensing)						
Relative humidity		20%~85%RH (non-condensing)						
Vibration		Vibration: 49m/s ² (5G) or below; static 24.5m/s ² (2.5G) or below Shock: 98m/s ² (10G) or below						
Altitude		1000m or below						
Protection		IP65						

Note: See value of the motor with brake in parentheses.

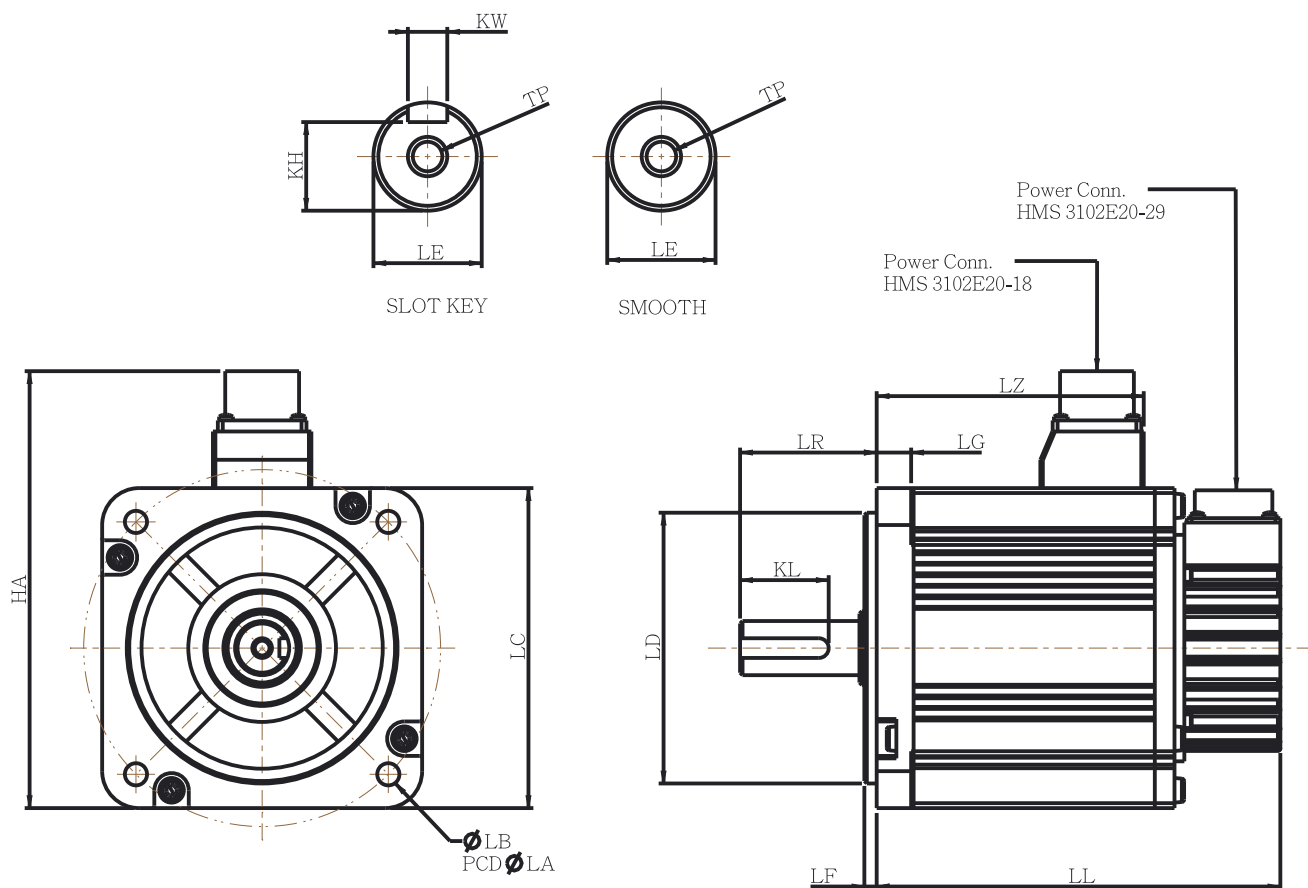
IOSM Middle Inertia Servo Motor (100W~750W) Dimensions



Power	100W	200W	400W	750W
LL	99 (127.5)	99 (133)	122 (156)	124 (157)
LZ	63.5	62	86	84
LA	$\phi 46$	$\phi 70$	$\phi 70$	$\phi 90$
LB	2 x $\phi 4.5$	4 x $\phi 5.5$	4 x $\phi 5.5$	4 x $\phi 7$
LC	40	60	60	80
LD	$\phi 30$ h7	$\phi 50$ h7	$\phi 50$ h7	$\phi 70$ h7
LE	$\phi 8$ h6	$\phi 14$ h6	$\phi 14$ h6	$\phi 19$ h6
LF	2.5	3	3	3
LG	5.2	7.7	7.7	8.8
LR	25	30	30	35
KL	16	20	20	25
KW	3N9	5 N9	5 N9	6 N9
KH	6.2	11	11	15.5
TP	M3 x 8	M4 x 15	M4 x 15	M6 x 15
HA	52	72	72	92

Note: See value of the motor with brake in parentheses.

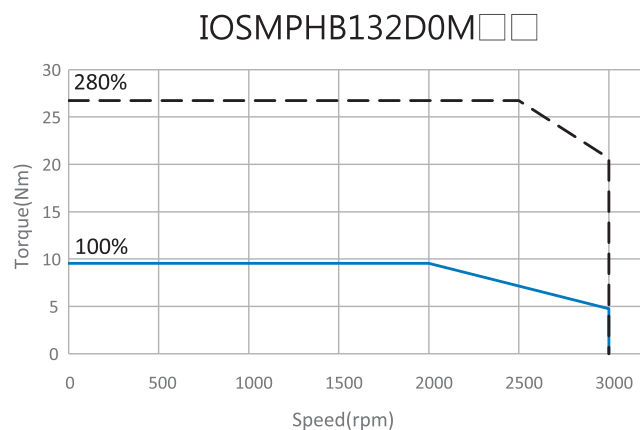
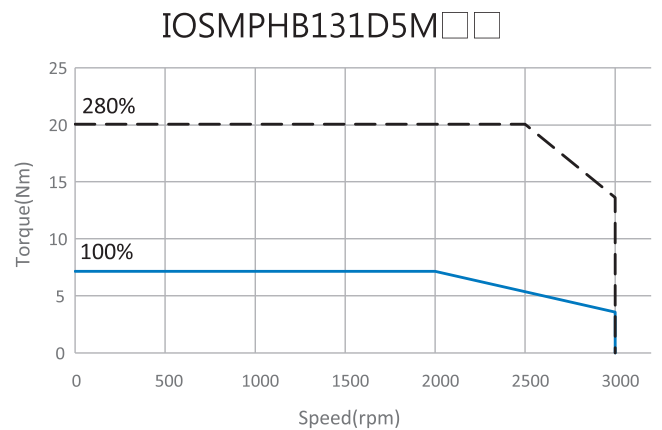
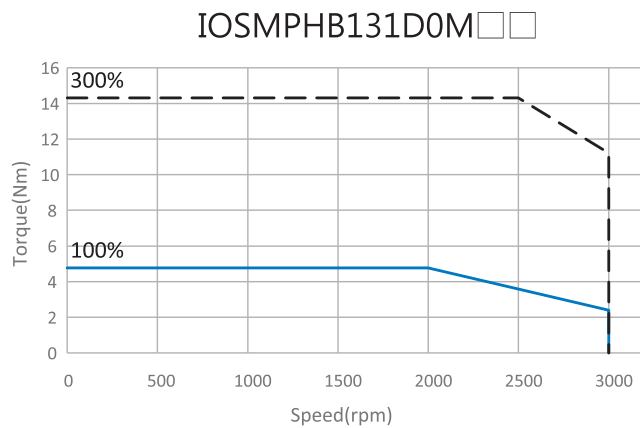
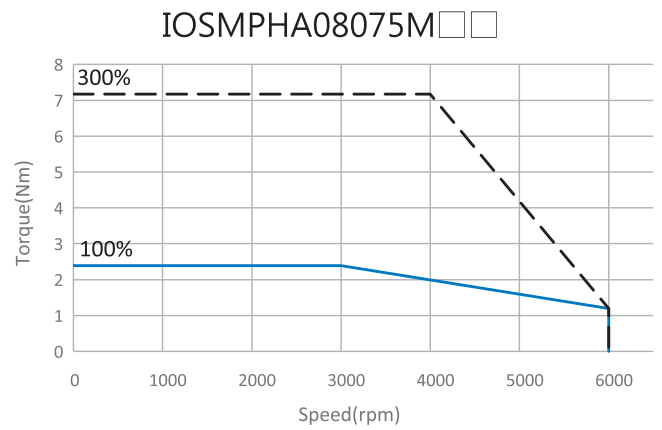
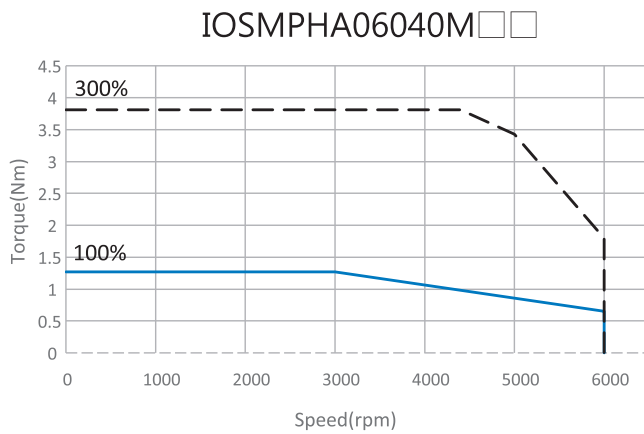
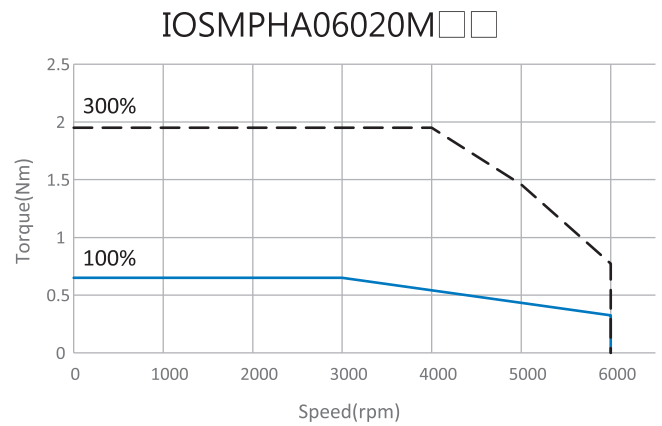
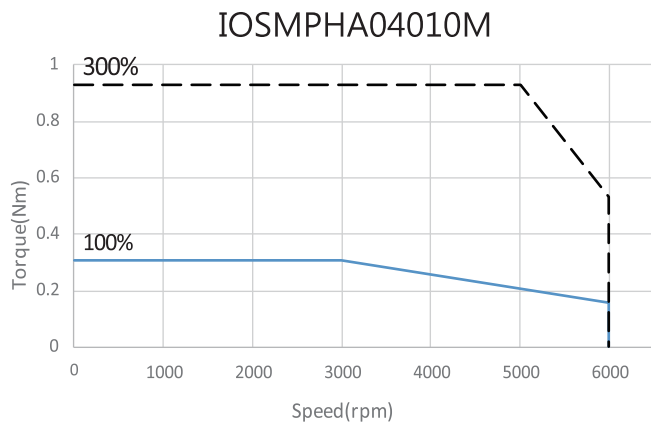
IOSM Middle Inertia Servo Motor (1kW~2kW) Dimensions



Power	1kW	1.5kW	2kW
LL	140 (191)	160 (209)	179 (229)
LZ	85.5	105.5	124.5
LA	$\Phi 145$	$\Phi 145$	$\Phi 145$
LB	4 x $\Phi 9$	4 x $\Phi 9$	4 x $\Phi 9$
LC	130	130	130
LD	$\Phi 110$ h7	$\Phi 110$ h7	$\Phi 110$ h7
LE	$\Phi 22$ h6	$\Phi 22$ h6	$\Phi 22$ h6
LF	5	5	5
LG	14	14	14
LR	55	55	55
KL	36	36	36
KW	6 N9	6 N9	6 N9
KH	19.5	19.5	19.5
TP	M6 x 15	M6 x 15	M6 x 15
HA	179	179	179

Note: See value of the motor with brake in parentheses.

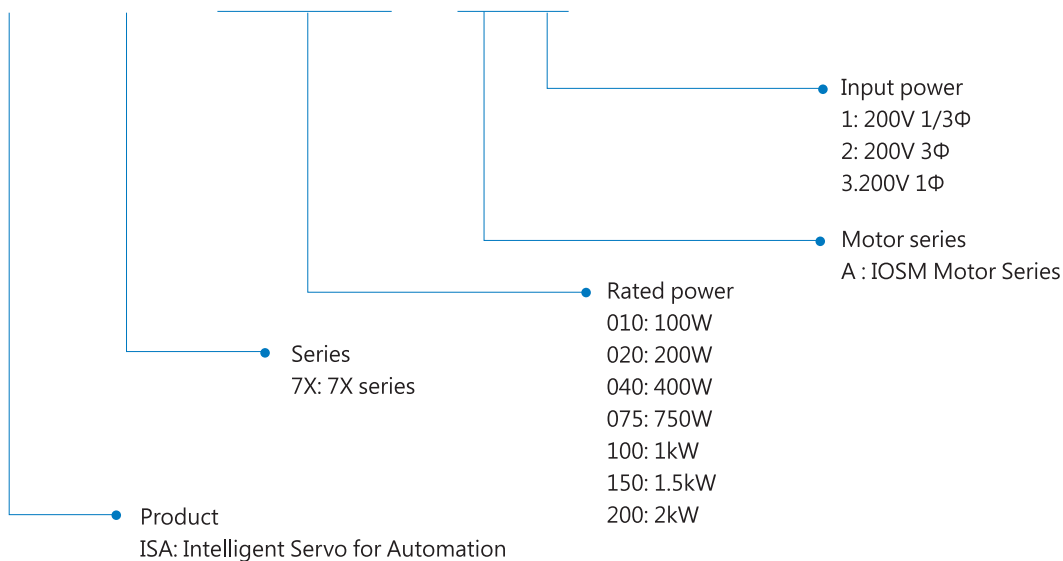
IOSM Middle Inertia Servo Motor Speed Torque Characteristic Curve



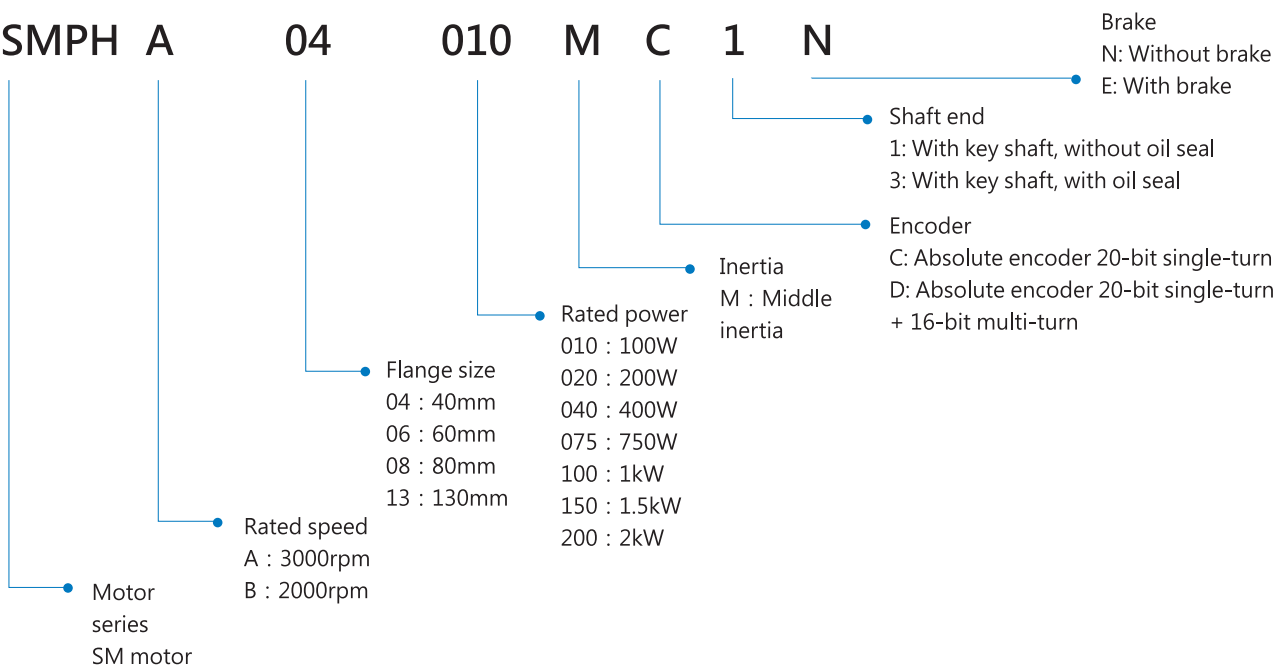
— Continuous torque
- - Peak operation

Servo Drive and Motor Order Information

ISA – 7X – 010 – A1



IOSMPH A 04 010 M C 1 N



IOSM middle inertia servo motor										ISA-7X servo drive	
Rated power (W)	Rated torque (Nm)	Rated speed (rpm)	Max. speed (rpm)	Flange (mm)	Models					Models	Frame
100	0.32	3000	6000	40	IOSMPH A04010 M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	ISA-7X-010-A1	F1
200	0.64	3000	6000	60	IOSMPH A06020 M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	ISA-7X-020-A1	
400	1.27	3000	6000		IOSMPH A06040 M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	ISA-7X-040-A1	
750	2.39	3000	6000	80	IOSMPH A08075 M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	ISA-7X-075-A1	F2
1000	4.78	2000	3000	130	IOSMPH B131D0 M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	ISA-7X-100-A1	
1500	7.16	2000	3000		IOSMPH B131D5 M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	ISA-7X-150-A2	F3
2000	9.55	2000	3000		IOSMPH B132D0 M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	ISA-7X-200-A2	
Encoder options		Absolute encoder 20-bit single-turn					C	<input type="checkbox"/>			
		Absolute encoder 20-bit single-turn + 16-bit multi-turn					D	<input type="checkbox"/>			
Shaft end options		With key shaft, without oil seal						1	<input type="checkbox"/>		
		With key shaft, with oil seal						3	<input type="checkbox"/>		
Brake options		Without brake							N	<input type="checkbox"/>	
		With brake							E	<input type="checkbox"/>	

Cable Order Information

IPRO cable			
No.	Descriptions	Standard cable #	Flexible cable #
1	ISA-7X power cable, 750W and below, 3m	OO70A631PS310	OO70A631PH310
2	ISA-7X power cable, 750W and below, 5m	OO70A631PS510	OO70A631PH510
3	ISA-7X power cable (brake cable included), 750W and below, 3m	OO70X631BS310	OO70X631BH310
4	ISA-7X power cable (brake cable included), 750W and below, 5m	OO70X631BS510	OO70X631BH510
5	ISA-7X power cable, 1kW, 3m	OO70X631PS330	OO70X631PH330
6	ISA-7X power cable, 1kW, 5m	OO70X631PS530	OO70X631PH530
7	ISA-7X power cable (brake cable included), 1kW, 3m	OO70X631BS330	OO70X631BH330
8	ISA-7X power cable (brake cable included), 1kW, 5m	OO70X631BS530	OO70X631BH530
9	ISA-7X power cable, 1.5kW and above, 3m	OO70X631PS320	OO70X631PH320
10	ISA-7X power cable, 1.5kW and above, 5m	OO70X631PS520	OO70X631PH520
11	ISA-7X power cable (brake cable included), 1.5kW and above, 3m	OO70X631BS320	OO70X631BH320
12	ISA-7X power cable (brake cable included), 1.5kW and above, 5m	OO70X631BS520	OO70X631BH520
13	ISA-7X encoder cable, single-turn absolute encoder 20 bits, 750W and below, 3m	OO70X641ES310	OO70X641EH310
14	ISA-7X encoder cable, single-turn absolute encoder 20 bits, 750W and below, 5m	OO70X641ES510	OO70X641EH510
15	ISA-7X encoder cable (battery box included), multi-turn absolute encoder 20 bits + 16 bits multi-turn, 750W and below, 3m	OO70X641AS310	OO70X641AH310
16	ISA-7X encoder cable (battery box included), multi-turn absolute encoder 20 bits + 16 bits multi-turn, 750W and below, 5m	OO70X641AS510	OO70X641AH510
17	ISA-7X encoder cable, single-turn absolute encoder 20 bits, 1kW and above, 3m	OO70X641ES320	OO70X641EH320
18	ISA-7X encoder cable, single-turn absolute encoder 20 bits, 1kW and above, 5m	OO70X641ES520	OO70X641EH520
19	ISA-7X encoder cable (battery box included), multi-turn absolute encoder 20 bits + 16 bits multi-turn, 1kW and above, 3m	OO70X641AS320	OO70X641AH320
20	ISA-7X encoder cable (battery box included), multi-turn absolute encoder 20 bits + 16 bits multi-turn, 1kW and above, 5m	OO70X641AS520	OO70X641AH520
21	I/O control cable, 44PIN cable, 1m	IPRO-STC-01-0	
22	I/O control cable, 44PIN adaptor board	IPRO-IOB-00-0	
IPRO connector			
No.	Descriptions	Connector pack #	
1	ISA-7X power cable connector, 750W and below	OO70X671PC010	
2	ISA-7X power cable (brake cable included) connector, 750W and below	OO70X671PC030	
3	ISA-7X power cable connector, 1kW	OO70X671PC050	
4	ISA-7X power cable (brake cable included) connector, 1kW	OO70X671PC060	
5	ISA-7X power cable connector, 1.5kW and above	OO70X671PC020	
6	ISA-7X power cable (brake cable included) connector, 1.5kW and above	OO70X671PC040	
7	ISA-7X encoder cable connector, 750W and below	OO70X671EC010	
8	ISA-7X encoder cable connector, 1kW and above	OO70X671EC020	
9	ISA-7X CN1 connector, 44PIN	OO70X671IS100	
10	Battery box	OO70X671AS010	

Notes:

1. You may purchase IPRO cables or IPRO connectors to make cables to complete the system configuration.
2. The above connectors are sold in packages. Each package has ten sets of cable connectors with which you can make ten cables.
3. Flexible cables and connector packs are under development. Estimated to launch on May 2019.

Memo

[illegible]

Memo
