AIO-MT623F MiniBOX IO Module

User Manual

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MODBUS TCP 8 channels digital input and output module



Sichuan Odot Automation System Co., Ltd

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Version information

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1 Product Overview

1.1 Product Introduction

MiniBox series IO module: AIO-MT623F is an Ethernet based integrated IO module, with 8 input channels and 8 output channels. This product supports the use of RS485 interface (Modbus-RTU) and Ethernet interface (Modbus-TCP) for communication, and supports the simultaneous access of 5 Modbus TCP clients. It is simple and convenient to use with stable transmission, full metal shell and strong anti-interference ability. The internal PCB adopts anti-corrosion technique including anti-corrosion, anti-oxidation and anti-salt mist. Its double Ethernet port could support Daisy chain topology and convenient for wiring.

Common Parameter				
Specification	8 Channels DI, supports source link type, with tally function; 8 Channels DO, supports source type			
Communication Interface	Dual Ethernet port, with switch function, supports device cascading, 1*Modbus RTU RS485 port			
Protocol	Modbus TCP/Modbus RTU			
Linking Number	5 Modbus TCP clients			
Input Voltage	9-36V DC,Wide Range Input			
Working Temperature	-40~85°C			
Serial port baud rate	1200-115200bps			
IP level	IP20			
RS485 Node	Could be configured, Default: 1			

1.2 Technical Parameters

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Power	Max.65mA@24.0Vdc		
Isolation	I/O to internal bus: Optocoupler isolation (3KVrms)		
Field voltage	Nominal voltage: 24Vdc, Input range: 22~28Vdc		
Wiring	I/O Wiring: Max.1.5mm(AWG-16)		
Weight	330g		
Dimension	110*110*28mm(L*W*H)		

	Input Channels Parameter			
Channel numbers	8 Channels			
Indicator	8 pcs Green Channel Input Indicator			
Input Type	Source (0V)、Sink (24V) Input			
Input Isolation	Optocoupler isolation, Isolation voltage 2500Vrms			
Input Current	Max: ±15mA			
Cut-in	High input: Min.10Vdc to Max.28Vdc (Common terminal: 0Vdc)			
voltage	Low input: Min.0Vdc to Max.14Vdc (Common terminal: 24Vdc)			
Closing	High input: Max.5Vdc (Common terminal: 0Vdc)			
voltage	Low input: Min.19Vdc (Common terminal: 24Vdc)			
Cut-in current	Min.6mA/channel@14V /Max.15mA/channel@28V			
Input impedance	>1.8kΩ			
In mut deless	OFF to ON : Max.3ms			
input delay	ON to OFF : Max.2ms			
Filter time	Default: 10ms			
Sampling frequency	500Hz			
Count frequency	<200Hz			

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	Output channel parameter			
Channel				
numbers	8 channels			
Indicator	8pcs green channels output indicators			
Rated current	Typical value: 500MA			
Leakage				
current Max.: 10uA				
Output				
impedance	$<0.2\Omega$			
Output delay	OFF to ON : Max.200us			
Output delay	ON to OFF : Max.100us			
	Protection current: Typical value 1.4A			
Protection function	Temperature protection: Typical value 150°C			
	Short-circuit protection Support			

2 Hardware Description

2.1 Appearance



Symbol	Definition	Status		
PWR	Power indicator	ON: Power connected OFF: No power		
DF	Equipment fault indication	ON: Device parameter read failed OFF: Parameter reading properly		
RUN	Modbus communication working properly	Blinking: Data exchange		
ERR	Modbus communication error	Blinking: Data exchange is abnormal		
IRN	IO running indication	ON: IO initialization normal OFF: IO initialization error		
NC	Not used	Not used		

2.2 Indicator Description

2.3 System Power and Communication Interface

A、System Power and Communication Ports Definition

It supports standard Modbus-TCP and Modbus-RTU/ASCII protocol access. The Ethernet supports cascade function of dual Ethernet port switch, and the serial port supports RS485 bus connection mode.



No.	Terminal	Definition
1	B-	RS485-
2	A+	RS485+
3	SGND	Serial port RS485 Signal ground
4	PE	Ground terminal

5	V-	Power input negative	
6	V+	Power input positive	
RJ45	LAN1/LAN2	MODBUS TCP Communication port	

B、 Terminal wiring diagram and definition

Digital input and output module AIobox-MT623F has 8 digital input channels and 8 digital output channels. The module is simple for wiring and easy for operation. The specific wiring diagram is as follows.



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Terminal No.	Definition	Description	Sequence No.	Definition	Description
1	DI0	Input Signal	11	DO0	Output Signal
2	DI1	Input Signal	12	DO1	Output Signal
3	DI2	Input Signal	13	DO2	Output Signal
4	DI3	Input Signal	14	DO3	Output Signal
5	DI4	Input Signal	15	DO4	Output Signal
6	DI5	Input Signal	16	DO5	Output Signal
7	DI6	Input Signal	17	DO6	Output Signal
8	DI7	Input Signal	18	DO7	Output Signal
9	COMA	+24V/0V	19	V+	+24V
10	NC	Not used	20	V-	0v

	Low limit	High limit	Reset	Read/	
Register address	value	value	Value	write	Description
10001-10008	0	1	0	read	DI0-DI7 Digital input
30001-30016	0	4294967295	0	read	DI0-DI7 count value
					DO0-DO7 Digital
00001-00008	0	1	0	write	output
00009-00016	0	1	0	write	DI0-DI7 zero clearing

2.4 Modbus MAC Address

2.5 Configuration Data Definition

	Modbus TCP parameter							
No.	Description							
Byte 0	MAC Address[0]							
Byte 1	MAC Address[1]							
Byte 2	MAC Address[2]							
Byte 3	MAC Address[3]							
Byte 4	MAC Address[4]							
Byte 5	MAC Address[5]							
Byte 6	IP Address[0]							
Byte 7	IP Address[1]							
Byte 8	IP Address[2]							
Byte 9	IP Address[3]							
Byte 10	Net Mask[0]							
Byte 11	Net Mask[1]							
Byte 12	Net Mask[2]							
Byte 13	Net Mask[3]							
Byte 14	Net Gateway[0]							
Byte 15	Net Gateway[1]							
Byte 16	Net Gateway[2]							
Byte 17	Net Gateway[3]							
Byte 18	Modbus Port							
Byte 19	Miodous Foit							
Byte 20	Watchdog Enable							
Byte 21	Watchdog Time							
Byte 22								

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	Modbus RTU parameter							
Byte 23	Slave ID							
Byte 24								
Byte 25	David Data							
Byte 26	Baud Kate							
Byte 27								
Byte 28	Data Bits							
Byte 29	Parity Bits							
Byte 30	Stop Bits							
Byte 31	Serial Mode							
Byte 32	Char Pitch							
Byte 33	Respond Delay							

Dada description:

MAC Address [0-5]: Device MAC address (read only)

IPAddress[0-3]: Device IP address (Default: 192.168.1.100)

Net Mask[0-3]: Device subnet mask (Default: 255.255.255.0)

Net Gateway[0-3]: Device subnet gateway (Default: 192.168.1.1)

Modbus Port: Modbus Port no. (Default: 502)

Effective range: 0-65535

Watchdog Enable: Modbus Watchdog enable (Default: 1)

- 0: Watchdog disabled
- 1: Watchdog enabled

Watchdog Time(s): Watchdog time (Default: 10)

Effective range: 1-65535

Slave ID: Modbus 从站 ID 号 (Default: 1)

Effective range: 1-247

Baud rate: serial port baud rate (Default: 9600bps)

Effective range: 2400-115200

Data Bits: data bits (Default: 8)

7: 7 data bits

8: 8 data bits

Parity Bits: Parity bit (Default: 0) http://www.odotautomation.com 0: No parity 1: Odd 2: Even **Stop Bits**: stop bit (Default: 1) 1: 1 stop bit 2: 2 stop bit **Serial Mode:** serial mode (Default: 0) 0: RTU mode 1: ASCII mode Char Pitch: inter-frame space (Default: 2) 0: 1.5t 1: 3.5t 2: 5t 3: 10t 4: 20t 5: 50t 6: 100t 7: 200t

Respond Delay: Slave station replying delay time (Default: 0)

Effective range: 0-65535

	Module channel configuration parameters											
Bit No	Bit 7Bit 6Bit 5Bit 4Bit 3Bit 2Bit 1Bit 0											
Byte 34												
Byte 35				при гпе	ing inne	5						
Byte 36		Counter Value Data Format										
Byte 37				Innut hal	din a tima							
Byte 38				input noi	ung une							
Byte 39		Storge enable										
Byte 40	Count M	ode Ch#3	Count M	ode Ch#2	Count Mo	ode Ch#1	Count I	Mode Ch#0				
Byte 41	Count M	ode Ch#7	Count M	ode Ch#6	Count Mo	ode Ch#5	Count I	Mode Ch#4				

Byte 42	Count Ch	Mode #11	Count Mode Ch#10		Count Mode Ch#9		Count Mode Ch#8	
Puto 12	Count	Mode	Count	Mode	Count	Mode	Count	Mode
Dyte 45	Ch	#15	Ch	#14	Ch	#13	Ch	#12
	Count	Count	Count	Count	Count	Count	Count	Count
Byte 11	Directio	Directio	Directio	Directio	Directio	Directio	Directio	Directio
Dyte 44	n	n	n	n	n	n	n	n
	Ch#7	Ch#6	Ch#5	Ch#4	Ch#3	Ch#2	Ch#1	Ch#0
	Count	Count	Count	Count	Count	Count	Count	Count
Buto 15	Directio	Directio	Directio	Directio	Directio	Directio	Directio	Directio
Dyte 45	n	n	n	n	n	n	n	n
	Ch#15	Ch#14	Ch#13	Ch#12	Ch#11	Ch#10	Ch#9	Ch#8

Data description:

Input Filtering Time(ms): channel input filtering time, unit ms (Default: 10)

Counter Value Data Format: The byte transfer sequence of a channel count value (Default: 0)

- 0: A-B-C-D
- 1: B-A-D-C
- 2: C-D-A-B
- 3: D-C-B-A

Input Holding Time(ms): input holding time, unit ms(Default: disable)

Storage Enable: storage enabled (Default: disable)

Count Mode Ch#(0-15): input channel count mode (Default: 0)

- 0: Rising edge count
- 1: Falling edge count
- 2: Double edge count

Count Direction Ch#(0-15): input channel count direction (Default: 0)

- 0: Counting up
- 1: Counting down

Note: The input channel count Max. frequency is up to 200Hz. When the input signal exceeds this frequency, and the count result may be inconsistent with the actual value.

2.6 Installation Dimension

The 16-channel digital output module AIobox-MT623F supports the installation of Din-rail, which is simple and convenient to install and easy to operate. Its working temperature is $-40 \sim 85^{\circ}$ C and the humidity are within the range of 5 ~ 95% RH, and the module would be greatly affected if this scope is beyond.



3 Configuration Software Usage

1. Powering on the module and connecting the module to the computer with the network cable then double-click my computer. And it needs to open the network and sharing center under the control panel, and sets the computer IP and the gateway IP in the same network segment. For example, if the gateway default IP is 192.168.1.100 and the computer IP should be 192.168.1. (1~ 99, 101-254).

文件(F) 编辑(E) 查看(V) 工具(T) 高级(N) 帮助(H)		
组织 ▼ 禁用此网络设备 ;	📱 本地连接 状态	中本地连接 属性 XX	Internet 协议版本 4 (TCP/IPv4) 雇性
本地连接 未识别的网络 Broadcom NetLink (TM 1	常規	网络 共享 注接时使用:	常规 如果网络支持此功能,则可以获取自动指派的 IP 设置。否则, 您需要从网络系统管理员处获得适当的 IP 设置。 ● 自动获得 IP 地址 (0) ● 使用下面的 IP 地址 (2): IF 地址 (1): <u>192 .188 . 1 .101</u> 5 子网摘码 (0): <u>255 .255 . 0</u>
	活动 字节: 2 【愛属性(?)】	□ □ □ □ □ □ □	默认网关 (D): 自劫获得 DMS 服务器地址 (D) ●使用下面的 DMS 服务器地址 (D): 首选 DMS 服务器 (D): 者用 DMS 服务器 (A): 週出时验证设置 (L) 高級 (P)
		确定 取消	b

2. After installing AIO-Box config software, opening the configuration software, clicking File → Project → New Project in the menu bar, or right clicking Project
 → New Project in the project directory bar, and entering the project name manually.

Info 2020-06-05 13:50 Main Message Info 2020-06-05 13:50 Main AldBox ConfigStartedI current version:1.0.8.7		ption	Help						
Logs Date Time Source Image: Info 2020-06-05 13:50 Main Load:GSD/GSDML-V2.33-ODOT-AIOBOX-20190514.od	Project b		New Project	Formation	Bracass Data Conf	a Darame	Address Man		
Save All(Ctrl+S) Project Save as Logs	Filt		Open Project	lame	Local value	ig Params	Onli	ne value	
Save All(LCtri+S) Project Save as Project Save as Logs * DATE TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AlOBOX-20190514.od Info 2020-06-05 13:50 Main AlOBox ConfigsStarted! current version:1.0.8.7	EXIT			-					
Project Save as Logs		s	Save All(Ctrl+	5)					
Logs Y DATE TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7		P	Project Save a	s					
Logs TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7									
Logs TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7									
Logs TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7									
Logs TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7									
Logs TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7									
Logs TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7									
Logs TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7									
Logs TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStarted! current version:1.0.8.7									
DATE TIME SOURCE MESSAGE Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStartedI current version:1.0.8.7									
Info 2020-06-05 13:50 Main Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514.od Info 2020-06-05 13:50 Main AIOBox ConfigsStartedI current version:1.0.8.7				Logs					
Info 2020-06-05 13:50 Main AIOBox ConfigsStartedI current version:1.0.8.7				Logs	DATE	TIME	SOURCE	MESSAGE	
				Logs	DATE 2020-06-05	TIME 13:50	SOURCE Main	MESSAGE Load:GSD/GSDML-V2.33-ODOT-AIOBOX-20190514	4.od4
				Logs * • Info • Info	DATE 2020-06-05 2020-06-05	TIME 13:50 13:50	SOURCE Main Main	MESSAGE Load:GSD/GSDML-V2.33-ODOT-AIOBOX-20190514 AIOBox ConfigsStartedl current version:1.0.8.7	4.od
				Logs • • Info • Info	DATE 2020-06-05 2020-06-05	TIME 13:50 13:50	SOURCE Main Main	MESSAGE Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514 AIOBox ConfigsStarted! current version:1.0.8.7	4.od
				Logs Info Info	DATE 2020-06-05 2020-06-05	TIME 13:50 13:50	SOURCE Main Main	MESSAGE Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514 AIOBox ConfigsStarted! current version:1.0.8.7	4.odd
				Logs X	DATE 2020-06-05 2020-06-05	TIME 13:50 13:50	SOURCE Main Main	MESSAGE Load:GSD\GSDML-V2.33-ODOT-AIOBOX-20190514 AIOBox ConfigsStarted! current version:1.0.8.7	4.odd

New Project	>	×
Project Name	NewProject	
ок	Cancel	

3. In the project directory bar, right-clicking the Project Name \rightarrow Upload IO module, and selecting scan module in the pop-up dialog box, selecting local network card, and clicking Search Device to scan AIO-MT623F module.

AlOBox Configs									\times
File Tool Option Hel	lp								
Project	- a	Information Pro	cess Data Confi	g Params	Address N	lap			Ŧ
A NewProject		Name Local	value			Online value			
	New Box	k-IO							
	Delete P	roject							
	Update	IO Modules							
	Rename								
			-						
		Loos							v 0
		*	DATE	TIME	SOURCE	MESSAGE			
		🔵 Info	2020-06-05	13:50	Main	Load:GSD\GSDML-V2.33-ODOT	-AIOBOX-201	90514.00	dotld
		🔵 Info	2020-06-05	13:50	Main	AIOBox ConfigsStarted! current	version:1.0.8.	.7	
		•							

📕 AlOBox Configs		_	
File Tool Option	Help		
Project	Read Module	×]	Ŧ
NewProject	Select interface: SerialPort COM: Device IP: 192.168. 1.100 Scan Device IP Bead Info		
Search Device		-	_ ×
Network Card: 以太	网 2:Intel(R) 82579LM Gigabit Network Connection #2 192.168.1.16 🔹		
Name	MAC IP address Subnet mask Gateway address Indicator	light control	Parameter
AIOBOX-MT623F Mod	bus-TCP Server AC:1D:DF:80:80:DA 192.168. 1 .100 255.255.255.0 192.168. 1 . 1	ıg twinkle	Downle

4. When there are multiple modules in the network structure, the Multiple Devices could be popped up on the scanning interface. And IP address could be directly modified on this interface, and then the actual modules in the site could be located by clicking the Lighting twinkle.

	Search Device							- C	
N	etwork Card:	以太网 2:Intel(R) 825	79LM Gigabit Network Conr	nection #2 192.168.1.	16 🔻				
	N	ame	MAC	IP address	Subnet mask	Gateway address	Indicator light control	Parameter setting	_
AIO	BOX-MT623F	Modbus-TCP Server	AC : 1D : DF : 80 : 80 : DA	192.168. 1 .100	255.255.255.0	192.168.1.1	Lighting twinkle	Download	
				1			1	2	
						Clicking site	it to locate actua	al IO module in	the
Stat	e: Search com	pleted, a total of 1 de	vices were searched			Search	h Device OK	Cancel	

Clicking ok after it is finished, and AIOBOX-MT623F would appear in the

project bar.

AlOBox Configs									
File Tool Option Help									
Project 🔹 🕈	Inforn	nation Pro	cess Data Config	Params	Address I	Мар			Ŧ
▲ 🗥 NewProject	IO Inp	IO Input:							
B AIOBOX-MT623E Modbus-TCP Server(192.168.1.100)	NAN	1E		TYPE		ONLINE VALU	JE		- 1
	\odot	Digital In	put Data(CH 0-7)	Unsig	ined8	0x00			_
		Input Co	unter Value(CH 0)	Unsig	ined32	0x00000000			
		Input Co	unter Value(CH 1)	Unsig	ned32	0x00000000			
		Input Co	unter Value(CH 2)	Unsig	ned32	0x00000000			
		Input Co	unter Value(CH 3)	Unsig	ned32	0x00000000			
		Input Co	unter Value(CH 4)	Unsig	ined32	0x00000000			
		Input Co	unter Value(CH 5)	Unsig	ned32	0x00000000			
		Input Co	unter Value(CH 6)	Unsig	ned32	0x00000000			
									▶
	Logs								- т
	*		DATE	TIME	SOURCE	E M	ESSAGE		
	•	nfo	2020-06-05	13:50	Main	Lo	ad:GSD\G	SDML-V	2.33-01
		nfo	2020-06-05	13:50	Main	AI	OBox Con	figsStarte	ed! cur
		nfo	2020-06-05	16:28	NewPro	ject Co	ommboard	I AIOBOX	(-MT62
									►

5. Clicking the configuration to modify the parameters, and right clicking

AIOBOX-MT623F to download IO parameters

AlOBox Configs					-	×
File Tool Option Help						
Project 🝷 🖡	Information Pro	ocess Data	Config Params Ad	ddress Map		Ŧ
▲ 😤 NewProject	Module Configu	iration Parar	neters			
	Name		Param value			_
Module Manager	Source of Conf	guration Da	ta Configuration	Software 🔻		_
Online	Fault Action for	Input	Hold Last Inpu	t Value 🔻		
Upload Commboard Params	Modbus-TCP Pa	irameters				
Download Commboard Params	Name	Param	value			
Delete	MAC Address	AC:1D	: DF : 80 : 80 : DA	4		
Rename	IP Address	192.168	3. 1 .100			
Properties	Net Mask	255.255	.255.0			
	Net Gateway	192.168	3.1.1			
	Modbus Port	502				
	Watchdog Ena	ole Enable	•			_
	Watchdog Tim	e(s) 30				_
	Modbus-RTU P	arameters				
	Name	Paran	n value			_
	Slave ID	1				
	BaudRate	9600 b	ps 🔻			
	Data Bits	8 Bits	•			
	Parity Bits	None F	Parity 🔻			
	Stop Bits	1 Bits	•			
	Serial Mode	RTU	•			
	Char Pitch	10 t	•			
	 Lass	-				
	*	DATE	TIME S	OURCE	MESSAGE	 · • 4
	1				1 100010	 • • •

6. It could right click the adapter module AIO-MT623F to monitor the data of IO module online.

AlOBox Configs					—	×
File Tool Option Help						
Project 👻 🎗	Information Proces	s Data Cor	nfig Params A	ddress Map		-
▲	Module Configurati	on Parame	ters			
B AIOBOX-MT623F Modbus-TCP Server(192.168.1.100)	Name		Param value	•		
Module Manager	Source of Configur	ation Data	Configuration	Software 🔻		
Online	Fault Action for Inp	ut	Hold Last Inpu	it Value 🔻		
Upload Commboard Params	Modbus-TCP Param	neters				
Download Commboard Params	Name	Param va	alue			
Delete	MAC Address	AC:1D:D)F:80:80:D/	Д		
Rename	IP Address	192.168.	1.100			
Properties	Net Mask	255.255.2	255.0			-1
Flopenues	Net Gateway	192.168.	1.1			_
	Modbus Port	502				
	Watchdog Enable	Enable	•			
	Watchdog Time(s)	30				
	Modbus-RTU Paran	neters				
	Name	Param v	/alue			
	Slave ID	1				
	BaudRate	9600 bps	•			
	Data Bits	8 Bits	•			
	Parity Bits	None Par	ity 🔻			
	·					

DI example: 0V is wired to IO module (DI0-DI7) terminal COM, and 24VDC is wired at DI0. Now it was a sink module (i.e., DI0-DI7 channel is effective at 24VDC), which could monitor IO module data on the process data interface. As it is shown in the figure, DI0 is given 24VDC signals for 9 times.

The current value of count clearing channel CH0 is setting to 1 and right-clicking in the blank to download the process parameters.

	IO Input:					
rver(192.168.1.1				TYPE	ONLINE VA	LUE
	🕑 Dig	ital Input	t Data(CH 0-7)	Unsigned8	0x01	
		igital In	put Data(CH 0)	Bit	1	
		igital In	put Data(CH 1)	Bit	0	
	[igital In	put Data(CH 2)	Bit	0	
	[Digital In	put Data(CH 3)	Bit	0	
	[igital In	put Data(CH 4)	Bit	0	
	0	Digital In	put Data(CH 5)	Bit	0	
	[Digital Inj	put Data(CH 6)	Bit	0	
	[Digital In	put Data(CH 7)	Bit	0	
	Inp	ut Count	er Value(CH 0)	Unsigned32	0x0000000	9
	Inp	ut Count	er Value(CH 1)	Unsigned32	0x0000000	0
	Inp	ut Count	er Value(CH 2)	Unsigned32	0x0000000	0
	Inp	ut Count	er Value(CH 3)	Unsigned32	0x0000000	D
	Inp	ut Count	er Value(CH 4)	Unsigned32	0x0000000	0
	Inp	ut Count	er Value(CH 5)	Unsigned32	0x0000000	0
	Inp	ut Count	er Value(CH 6)	Unsigned32	0x0000000	0
	Inp	ut Count	er Value(CH 7)	Unsigned32	0x0000000	0
	•					
	Logs :					
		TIME	SOURCE	MESSAGE		
	06-05	16:47	AIOBOX-MT623F	N PacketlenEr	r	
	06-05	16:47	AIOBOX-MT623F	N watching st	oped!	

▼ ₽ Information Process Data Config Params Address Map IO Input NAME TYPE ONLINE VALUE dbus-TCP Server(192.168.1.1 Digital Input Data(CH 0-7) Unsigned8 0x01 0x0000000 Unsigned32 4 Input Counter Value(CH 0) Input Counter Value(CH 1) Unsigned32 0x0000000 Input Counter Value(CH 2) Unsigned32 0x00000000 Input Counter Value(CH 3) Unsigned32 0x00000000 Input Counter Value(CH 4) Unsigned32 0x00000000 Input Counter Value(CH 5) Unsigned32 0x00000000 Input Counter Value(CH 6) Unsigned32 0x00000000 Input Counter Value(CH 7) Unsigned32 0x00000000 NAME TYPE ONLINE VALUE LOCAL VALUE Digital Output Data(CH 0-Unsigned8 0x00 0x00 Unsigned8 Ounter Reset(CH 0-7) 0x01 0x01 Hex display 2 Counter Reset(CH 0) Bit 3 1 1 1 Download process data 0 Counter Reset(CH 1) Bit Counter Reset(CH 2) Bit 0 0 Counter Reset(CH 3) Bit 0 0 Counter Reset(CH 4) Bit 0 0 0 Counter Reset(CH 5) Bit 0 Logs

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DO, for example: selecting the online mode, and wiring 24V at IO module terminal of V+, wiring 0V at V–. And setting the current value of the digital output value (CH 0) to 1 below the process data menu bar, then it needs to right-click the Download Process Parameters, so it could monitor the online value of IO module data in the process data interface. As it is shown below figure, the online value of DO0 is 1.

AIUB ox Configs									
File Tool Option Help									
Project 🗸 🗸 🗸	Information Process Data Config Par	ams Address M	ар						
NewProject	input counter route(erri)	onnightabe							
	IO Output:								
Topline] Alugux-M1623F Moabus-TCP Server(192.168.1.1	NAME	TYPE	ONLINE VALUE	LOCAL VALUE					
	 Digital Output Data(CH 0-7) 	Unsigned8	0x01	0x01					
	Digital Output Data(CH 0)		1 3	1 1	Line Product				
	Digital Output Data(CH 1)	Bit	0	0	Hex display				
	Digital Output Data(CH 2)	Bit	0	0	2 Download process data				
	Digital Output Data(CH 3)	Bit	0	0					
	Digital Output Data(CH 4)	Bit	0	0					
	Digital Output Data(CH 5)	Bit	0	0					
	Digital Output Data(CH 6)	Bit	0	0					
	Digital Output Data(CH 7)	Bit	0	0					
	Counter Reset(CH 0-7)	Unsigned8	0x01	0x01					
	Counter Reset(CH 0)	Bit	1	1					
	Counter Reset(CH 1)	Bit	0	0					
	Counter Reset(CH 2)	Bit	0	0					
	Counter Reset(CH 3)	Bit	0	0					
	Counter Reset(CH 4)	Bit	0	0					
	Counter Reset(CH 5)	Bit	0	0					
	Counter Reset(CH 6)	Bit	0	0					
	Counter Reset(CH 7)	Bit	0	0					

4 MODBUS POLL Software Test

4.1 Test the digital input with the gateway Ethernet

port

1.Opening the MODBUS POLL software \rightarrow selecting the menu

Connection/Connect \rightarrow selecting the MODBUS TCP/IP \rightarrow inputting gateway IP address 192.168.1.100 \rightarrow setting Server Port to 502, and clicking OK.

Connection		OK
Modbus TCP/IP	~	Cancel
Serial Settings		Cancer
COM7	\sim	Mode
9600 Baud \sim		RTU ASCI
8 Data bits \sim		Response Timeout
None Parity \sim		- Delau Between Poll
1 Stop Bit \sim	<u>A</u> dvanced	20 [ms]
Remote Modbus Server		
IP Address or Node Name		
192.168.1.100		~
Server Port	Connect Timeout	● IPv4
502	3000 [ms]	

2. Selecting Setup \rightarrow Read/Write Definition \rightarrow selecting function code 02, and clicking OK.

Read/Wri	te Definition		×				
Slave ID:	1		ОК				
Function:	02 Read Discrete In	puts (1x) 🛛 🗸	Cancel				
Address:	0 Protoco	ol address. E.g. 1	0011 -> 10				
Quantity:	40						
Scan Rate:	10 [ms]		Apply				
Disable Read	/Write <u>D</u> isabled le on error		<u>R</u> ead/Write Once				
View Rows 10 0 20 0 50 0 100 0 Fit to Quantity							
Hide /	Alias Columns ess in Cell	PLC Addres	isses (Base 1) iel Mode				





3. Selecting Setup \rightarrow Read/Write Definition \rightarrow selecting function code 04 \rightarrow clicking OK and the counter is 32.

	Alias	00000	Read/Write Definition
	表示DI0给过9次信号	9	Slave ID: 0K
lt	shows the DIO has be	en	Emotion Of Pool Input Projectors (2n)
gi	iven 9 times of sig <mark>nal</mark>	0	Cancer
			Address: 0 Protocol address. E.g. 30011 -> 10
		0	Quantity: 16
			Scan Rate: 100 [ms] Apply
		0	Disable
			Read/Write Disabled Disable on error Read/Write Once
		0	
			Rows

4. Selecting Setup \rightarrow Read/Write Definition \rightarrow selecting function code 15 and clicking OK. Then writing 1 into channel 0 and it clears the counter.

Ľ	🖻 🖶 🎒 🗙 🗂 🖳 .	à 05 0	6 15	16 17 22	23 TC 8	5 I 🧟 📢	
×	= 4146: Err = 1: ID = 1: F =	15: SR = 10n	ns	Read/Write	Definition		×
_				Slave ID:	1		ОК
	Alias	000	000		(,	
0	置1表示将通道0的计数清零		1	Function:	15 Write Mi	ultiple Coils 🔹 🔻	Cancel
1			0	Address:	0	Protocol address. E.g. 1	10011 -> 10
2	Setting 1 means it co	uld clears	0	Quantity:	40		
3	the counter of Chan	nel 0	0	Scan Rate:	10	[ms]	Apply
4			0	Disable			
5			0	Read/	Write Disable e on error	ed	Read/Write Once
6			0	View			
7			0	Rows			
8			0	10	◎ 20 ◎) 50 🔘 100 🔘 Fit to (Quantity

4.2 Test the DO with the gateway Ethernet port

1. Opening MODBUS POLL software \rightarrow selecting Connection/connect \rightarrow selecting Modbus TCP/IP \rightarrow inputting gateway IP address 192.168.1.22 \rightarrow Setting

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📭 Modb	Edit Connection Setup	Functions Display	View Window Help	- 8
	Connection Setup		×	×
L	Connection Modbus TCP/IP	~	OK Cancel	
0	COM5	~	Mode RTU O ASCII	
2 3	8 Data bits		Response Timeout 1000 [ms]	
4 5	None Parity ~ 1 Stop Bit ~	Advanced	Delay Between Polls 20 [ms]	
7 8	Remote Modbus Server IP Address or Node Name			
9	192.168.1.22 Server Port 502	Connect Timeout 3000 [ms]	 ✓ ● IPv4 ○ IPv6 	
L				

Server Port to 502 \rightarrow Clicking OK.

2. Selecting Setup → Read/Write Definition → Selecting Function Code 15

 \rightarrow Clicking OK.

Read/Write	Definition			×				
Slave ID:	1]		ОК				
Function:	15 Write Mu	15 Write Multiple Coils 🔹 Cancel						
Address:	0	Protocol address, E.g. 10011 -> 10						
Quantity:	10							
Scan Rate:	1000	[ms]		Apply				
Disable Read, Disable	/Write Disable le on error	ed		Read/Write Once				
View Rows	◎ 20 ◎	50 🔘	100 🔘 Fitto (Quantity				
Hide A	Alias Columns ss in Cell		PLC Addre: Enron/Dan	sses (Base 1) iel Mode				

3. Setting the value of corresponding channel to 1 in Modbus poll, as it is shown

in the below diagram, it has already set the value to 1 in the channel 0 and channel 1.

Modbus Poll - [Mbpo	oll1]		_	
🕎 File Edit Connectio	on Setup Function	ns Display Vie	w Window	Help _ &
D 📽 🖬 🎒 🗙 🗂	<u>북</u> 🛓 🕹 1. 05	06 15 16 17 2	22 23 TC 🖉	ı] 🤋 💦
Tx = 165: Err = 0: ID =	1: F = 15: SR = 10)00ms		
Alias	00000	Alias	00010	Alias
0	1		0	2
1	1		0	
2	0		0	
3	0		0	
4	0		0	
5	0		0	
6	0		0	
7	0		0	
8	0		0	
9	0		0	
For Help, press F1.	[192.168	3.1.22]: 502		



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4. Opening AIO-Box configuration software, and selecting online, and then below the process data menu bar, it could be checked the by the corresponding channel online value to see its corresponding channel value is 1 too. So the test is completed, as it is shown in the below diagram:

AIOBox Configs					
File Tool Option Help					
Project • • •	Information Process Data Config Digital Input Data(CH 2	Params Address M Bit	ap 0		
NewProject	Digital Input Data(CH 3)	Bit	0		
1 [Unline] 40007-101023F 1000005-1CF Server(192.106.1.1	Digital Input Data(CH 4	Bit	0		
	Digital Input Data(CH 5	Bit	0		
	Digital Input Data(CH 6	Bit	0		
	Digital Input Data(CH 7	Bit	0		
	Input Counter Value(CH 0)	Unsigned32	0x0000009		
	Input Counter Value(CH 1)	Unsigned32	0x0000000		
	Input Counter Value(CH 2)	Unsigned32	0x0000000		
	Input Counter Value(CH 3)	Unsigned32	0x0000000		
	Input Counter Value(CH 4)	Unsigned32	0x0000000		
	Input Counter Value(CH 5)	Unsigned32	0x0000000		
	Input Counter Value(CH 6)	Unsigned32	0x0000000		
	Input Counter Value(CH 7)	Unsigned32	0x0000000		
	IO Output:				
	NAME	ТҮРЕ С	DNLINE VALUE	LOCAL VALUE	
	 Digital Output Data(CH 0- 	Unsigned8	0x00	0x00	
	Counter Reset(CH 0-7)	Unsigned8	0xFF	0xFF	
	Counter Reset(CH 0)	Bit	1	1	
	Counter Reset(CH 1)	Bit	1	1	

4.3 Test with the gateway serial port

1. It uses RS485 port A+ and B- to separately connect with A+ and B- of the serial port debugging tool. And it uses the USB cable to connect the serial port debugging tool with the PC.

2. Selecting Computer \rightarrow Right-clicking and selecting properties \rightarrow Opening device manager to check COM port(here it is COM3) of the serial port debugging tool.



Serial Port \rightarrow selecting the USB COM port in Serial settings \rightarrow selecting Modbus RTU parameters same with the gateway parameters.

പി			o II. co d	llas							~
ъġ	Mod	bus	Poll - [Mbp	oll1]				_			×
Doc.	File	Edi	t Connecti	ion Setup	Functions	Display	View	Window	Help	-	æ
		c	onnection Se	etup					×		×
Ľ	2									N?	
Tx =	= 183		Connection					OK			
No (conn	€∟	Serial Port			~				_	
			Serial Settings	-				Cano	el		
0	置1	ŧГ	USB Serial P	ort (COM3)		~	Moc	le			
1							۲	RTU 🔾 AS	SCII		
2		11	9600 Baud	~				.			
3		11	8 Data bits	\sim			Hes	ponse limec	ut		
4			None Derity						nsj		
5	-	H.	NUTHE Fallity	~			Dela	ay Between F	Polls		
6	_	ΗL	1 Stop Bit	\sim	Adv	anced	20	[r	ns]		
7		15	Remote Modb		_						
\vdash			IP Address or	Node Name							
8			127.0.0.1	noue nume							
9			Server Port		Connect Tim	eout		D (
			502		2000		01	Pv4			
			502		5000	[III9]	01	Pv6			

5 Device firmware upgrade

1. In the configuration software of AIO-Box, it could click Tools-Online upgrade

 \rightarrow selecting "Ethernet" in the pop-up dialog box \rightarrow clicking "Read Device

Information" to view the version information of the current adapter module.

AlOBox Configs	
File Tool Option Help	
Proje Device update	Information Process Data Config Params Address Map
▲	Input Counter Value(CH 0) Unsigned32 0xA8C0003
[Online] AlOBOX-MT623F Modbus-TCP Server(192.16	Input Counter Value(CH 1) Unsigned32 0x02C6100
	Input Counter Value(CH 2) Unsigned32 0x0000000

Update Module		– 🗆 X
Config To Update		
File to Update:	AIOBOX-MIT623F Miodbus-TCP Se	erver
Select interface: Ethernet 🔹		
COM: COM1 T		
Device IP: 192.168.1.100		
Read Info Start Stop		
	Device Info	
	Propreties	
	Hardware Num	LDBIO201902V1-X623F
	Hardware Version	V1.00
	IAP Version	V0.00
	Slot Num	0
	Software Version	V1.05
	Module ID	0x1000623F
	Name	AIOBOX-MT623F Modbus-TCP Server
	MAC	AC-1D-DF-80-80-DA
State: Read info completed!		
stater head into completed:		

2. Clicking the 🔲 on the right side of the upgrade menu, and selecting upgrade file of adapter module AIO-MT623F in the pop-up window.

Update Module × Config To Update > ひ 2 投索"新建文件夹" ← → ~ ↑ 📙 → 此电脑 → 桌面 → 新建文件夹 File to Update: C:\Users\My\Desktop\AIOBOX ... Select interface: Ethernet 组织 ▼ 新建文件夹 = • 🔳 🕐 COM: COM1 修改日期 类型 Device IP: 192.168.1.100 🗎 文相 AIOBOX-MT623F-V1.07.odotData 2020/4/15 17:03 ODOTDATA 文件 🖊 下載 Start Read Info Stop 🎝 音乐 💻 桌面 AIOBOX-MT623F-V1.07.odotData 5.8学习 Propreties 6. 2和客户發 Hardware Num LDBIO201902V1-X623 222F Hardware Version V1.00 623F IAP Version V0.00 NASA Slot Num 0 Software Version V1.07 国客户端子 0x1000623F 新建文件夹 Module ID Name AIOBOX-MT623F Modbus-TCP S 文件名(N): AIOBOX-MT623F-V1.97 odotData data(*.odotdata) Slot 打开(0) 取消 State: load:AIOBOX-MT623F-V1.07.odotData

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3. The upgrade version and other information could be viewed in the lower left side of the upgrade interface. As it is shown in the below diagram, the firmware version does not need to be updated. If the version information is inconsistent and you need to upgrade, so it needs to click the Start upgrading.

				X-MT623F Modbus-TCP	Server
le to Update:	C:\Users\	\My\Desktop\AlOBOX	11000		
elect interface:	Ethernet	•			
OM:	COM1	•			
evice IP:	192.168	. 1 .100			
Read Info	Star	t Stop			
BOX-MT623E-	V1.07 odc	tData		Device Info	
Presenting	Thornoac		<u>^</u>	Propreties	
Propreties			-		
	m	I DRIO201902V1-X623			
Hardware Nu			F	Hardware Num	LDBIO201902V1-X023F
Hardware Nu Hardware Ve	rsion	V1.00	F	Hardware Version	V1.00
Hardware Nu Hardware Ve IAP Version	rsion	V1.00 V0.00	F	Hardware Version	V1.00 V0.00
Hardware Nu Hardware Ve IAP Version Slot Num	rsion	V1.00 V0.00 0	F	Hardware Version IAP Version Slot Num	V1.00 V0.00 0
Hardware Nu Hardware Ve IAP Version Slot Num Software Ver	rsion sion	V1.00 V0.00 V1.07	F	Hardware Version IAP Version Slot Num Software Version	V1.00 V0.00 0 V1.05
Hardware Nu Hardware Ve IAP Version Slot Num Software Ver Module ID	rsion sion	V1.00 V0.00 0 V1.07 0x1000623F	r	Hardware Version IAP Version Slot Num Software Version Module ID	V1.00 V0.00 0 V1.05 0x1000623F
Hardware Nu Hardware Ve IAP Version Slot Num Software Ver Module ID Name	rsion	V1.00 V0.00 0 V1.07 0x1000623F AIOBOX-MT623F Mod	r bus-TCP S	Hardware Version IAP Version Slot Num Software Version Module ID Name	V1.00 V0.00 0 V1.05 0x1000623F AIOBOX-MT623F Modbus-TCP Set

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