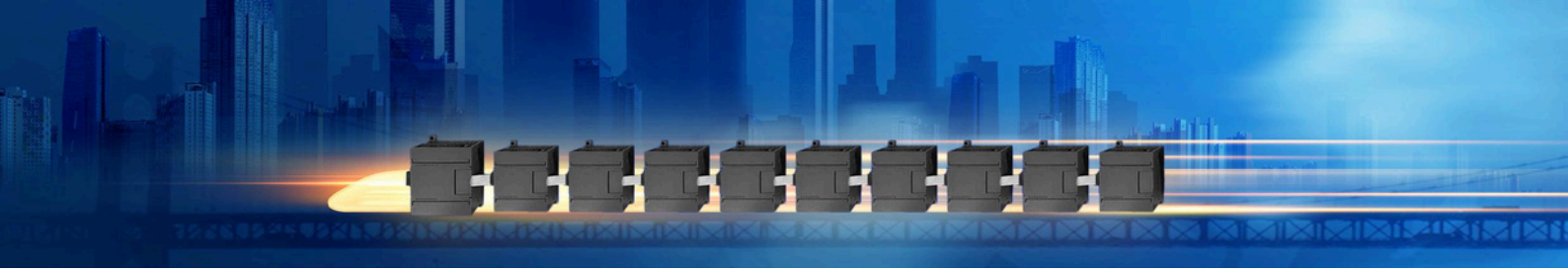


ET1020 User Manual

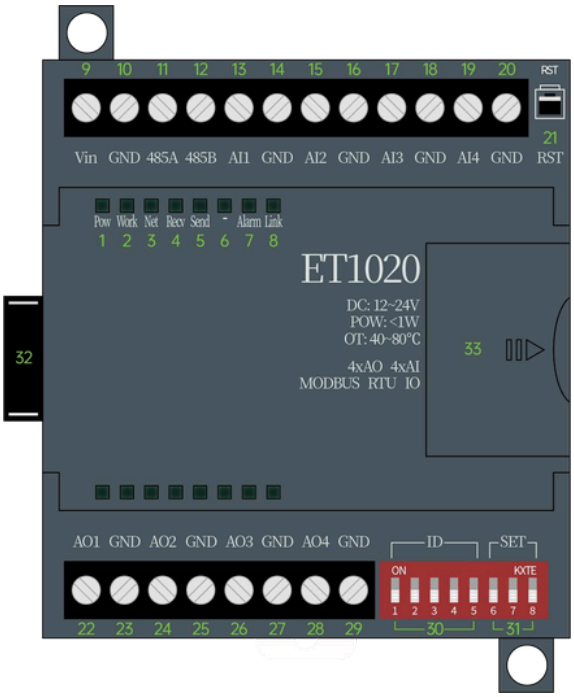
Features

※Support MODBUS RTU protocol
※Support cascading, non-inductive expansion of I/O ports
※No configuration required, Plug and play
※Adaptive master-slave, adaptive register address
※Communication delay in milliseconds
※High-speed communication without packet loss and abnormality
※The hardware indicator light presents the communication status in real time

Specifications

RS485	Number of ports	1way
	Operating mode	Slave
	Support baud rate	115200/9600/4800/2400
AO	Number of ports	4way
	Output type	4-20mAoutput
	Sampling accuracy	12bit
AI	Number of ports	4way
	Input type	4-20mAenter
	Sampling Accuracy	12bit
Electrical parameters	Rated voltage	DC12V, working range DC12~24V
	Rated power	<1W
	Power protection	Anti-static, anti-surge, anti-reverse connection
Environmental parameters	Operating temperature	-40~80℃
	Storage temperature	-40~85℃
	Environment humidity	10-90% RH (non-condensing)
Mechanical parameters	Size	80*71*63mm
	Weight	150g
	Material	ABS

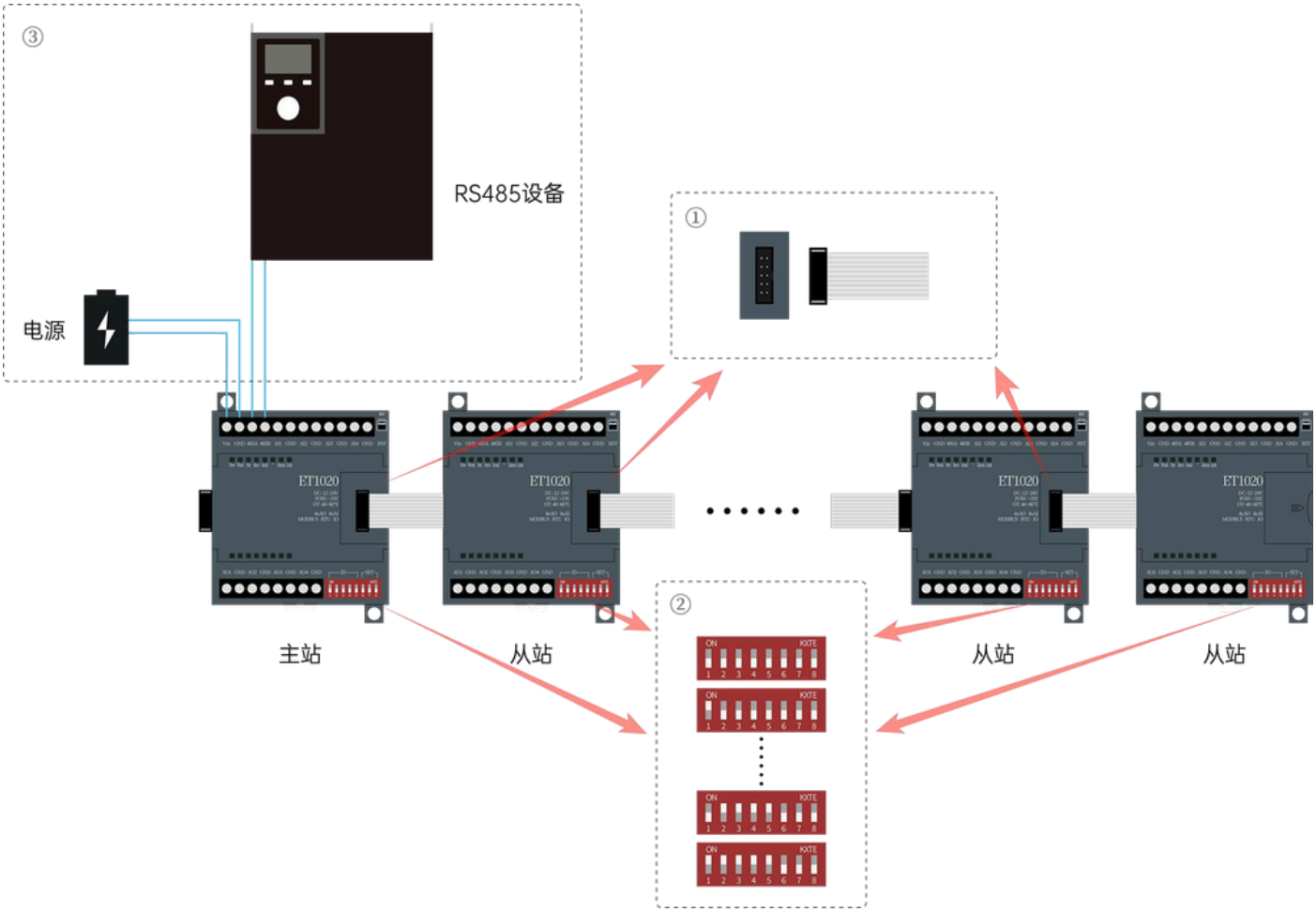
Interface Description



Serial number	Name	Meaning	Serial number	Name	Meaning
1	Pow	Power indicator light, always on	18	GND	AI signal input ground
2	work	Working indicator light, 1 second strobe	19	AI4	AI4signal input
3	Net	reserve	20	GND	AI signal input ground
4	Recv	reserve	21	RST	reset button
5	send	reserve	22	AO1	AO1signal output
6	--	reserve	23	GND	AO Signal output
7	alarm	Alarm indicator light, always on after cascaded device communication abnormal	24	AO2	AO2 signal output
8	link	Connection indicator, always on after cascaded device plugged in	25	GND	AOSignaloutput
9	Vin	Power input positive stage	26	AO3	AO3signaloutput
10	GND	Power input negative	27	GND	AOSignaloutput
11	485A	RS485-A	28	AO4	AO4signaloutput
12	485B	RS485-B	29	GND	AOSignaloutput
13	AI1	AI1 signal input	30	Dial code	1-5 means the MODBUS communication address, restart to take effect
14	GND	AI signal input ground	31	Dialcode	6-8Setthebaudrate,restarttotakeeffect
15	AI2	AI2 signal input	32	M	Mport,forupwardcascading
16	GND	AI signal input ground	33	S	Sport,forcascadingdown
17	AI3	AI3 signal input			

Easy to Use

① ET1020s are connected end to end (the M port is connected to the S port), and the first ET1020 is the master station.
② Dial the communication address (dial code 1-5) of each ET product to a different position to avoid communication conflicts.
③ Connect the power supply of the master station and the RS485 communication line, and then communicate with the master station through MODBUS protocol.



Tips:
MODBUS communication address is the communication address of the master station.
The register addresses start from 0000H and are arranged in sequence according to the cascade sequence.

Register Address Table

Register type	Register address	Register properties	Support function code	Hint
AO Register	0000H~0003H	AO1-AO4	03(read) 06(write single) 10(write multiple)	The first ET1020 module
	0004H~0007H	AO5-AO8		Second ET1020 module
	0008H~000BH	AO9-AO12		The third ET1020 module
	000CH~000FH	AO13-AO16		Fourth ET1020 module
	…	…		…
AI Register	0000H~0003H	AI1-AI4	04(read)	The first ET1020 module
	0004H~0007H	AI5-AI8		Second ET1020 module
	0008H~000BH	AI9-AI12		The third ET1020 module
	000CH~000FH	AI13-AI16		Fourth ET1020 module
	…	…		…
Holding Register	1000H	version + address	03 (read)	
	1001H	DI quantity + DO quantity		
	1002H	AI quantity + AO quantity		reserve

Frequently Asked Questions

① Q: Why AI Data acquisition is normal, but the control AO will be wrong?

A: Please check the address code of the cascade module, it cannot be consistent. The address code does not affect data collection, but it will affect downlink control.

② Q: Why are 4 ET1020 modules connected and read 16 channels?AI will report an error?

A: Please read the 1000H-1002H register data first to determine how many slave IOs the master module has detected. If it does not match the actual situation, you can find the problematic module according to the Alarm light. The Alarm light is always on, indicating that the communication of the lower-level module is abnormal.

③ Q: I have 8 modules. If there is a communication problem with one module in the middle, will the subsequent modules be unable to communicate?

A: Yes, the cascading of the modules is similar to the high-speed rail carriages, which are disconnected in the middle, and the high-speed rail head will only pull the remaining carriages forward. The adaptive algorithm of the main module can ensure timely detection of abnormalities: when requesting IO of abnormal modules, an error will be replied, and the remaining modules will work stably.

④ Q: I have 4 modules that are already working normally, and want to add 2 more, how do I do it?

A: Direct cascading, only need to ensure that the address code is inconsistent, the main module can be self-adaptive.

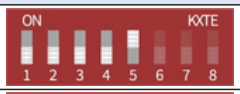
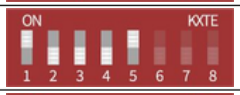
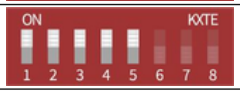
⑤ Q: How many modules can be cascaded at most?

A: The default firmware supports a maximum of 10, if you have special needs, feel free to harass customer service.

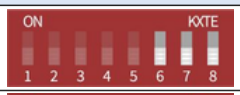
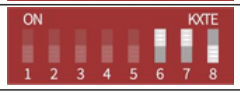
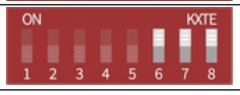
⑥ Q: Is it considered to introduce modules of other interface types, and the protocols are compatible with each other?

A:The answer is yes.

DIP Switch Description

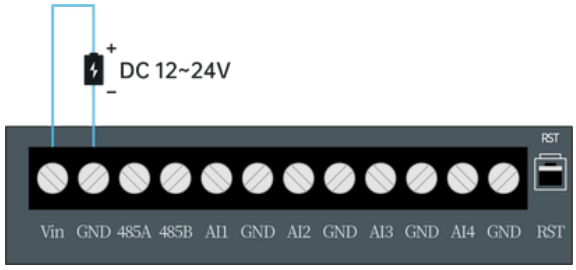
ID.	binary	hexadecimal	icon	ID	binary	hexadecimal	icon
0	00000	0x00		16	10000	0x10	
1	00001	0x01		17	10001	0x11	
2	00010	0x02		18	10010	0x12	
3	00011	0x03		19	10011	0x13	
4	00100	0x04		20	10100	0x14	
5	00101	0x05		twenty one	10101	0x15	
6	00110	0x06		twenty two	10110	0x16	
7	00111	0x07		twenty three	10111	0x17	
8	01000	0x08		twenty four	11000	0x18	
9	01001	0x09		25	11001	0x19	
10	01010	0x0A		26	11010	0x1A	
11	01011	0x0B		27	11011	0x1B	
12	01100	0x0C		28	11100	0x1C	
13	01101	0x0D		29	11101	0x1D	
14	01110	0x0E		30	1 111 0	0x1E	
15	01111	0x0F		31	1 1111	0x1F	

1-5 Set MODBUS communication address

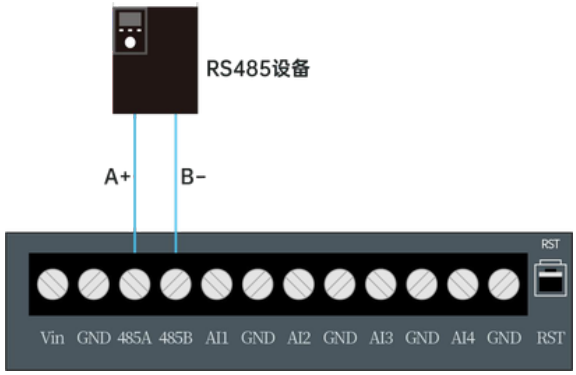
SET	binary	icon	baud rate	ID	binary	icon	baud rate
0	000		9600	4	100		reserve
1	001		115200	5	101		reserve
2	010		4800	6	110		reserve
3	011		2400	7	111		reserve

6-8set baud rate

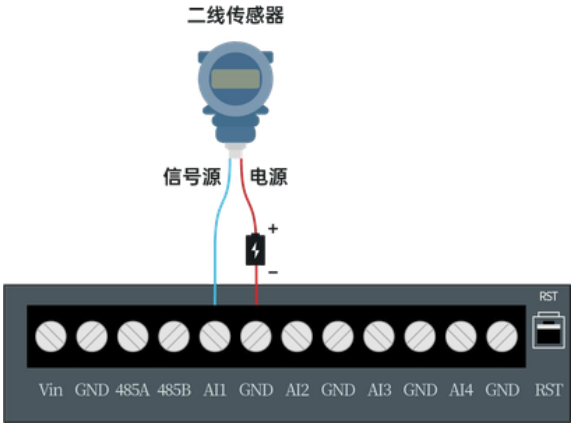
Wiring Instructions



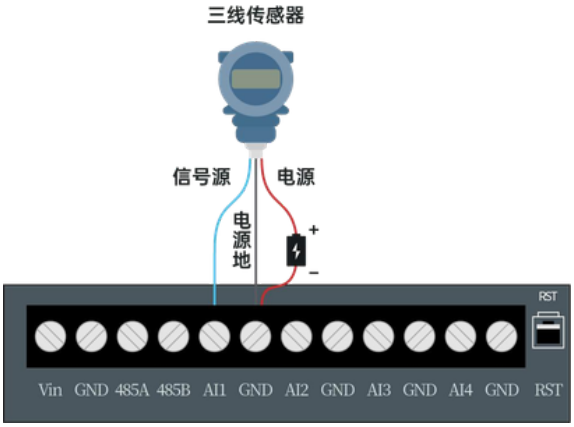
Power Wiring Diagram



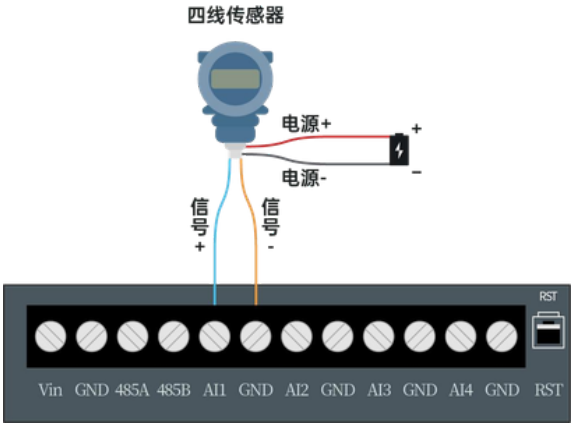
RS485 wiring diagram



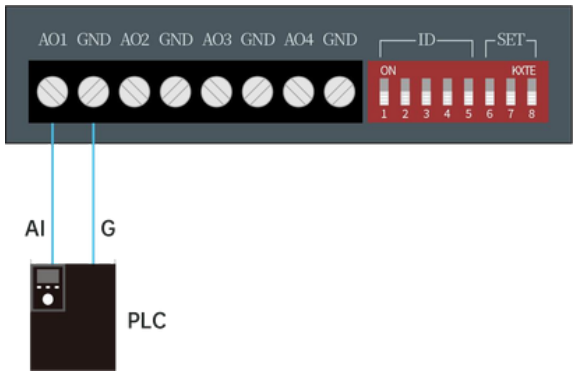
AI Wiring diagram (two-wire sensor)



AI Wiring diagram (three-wire sensor)



AI Wiring diagram (four-wire sensor)



AO Wiring Diagram

Update History
CreateDocumentation V1.0
2023/7/3