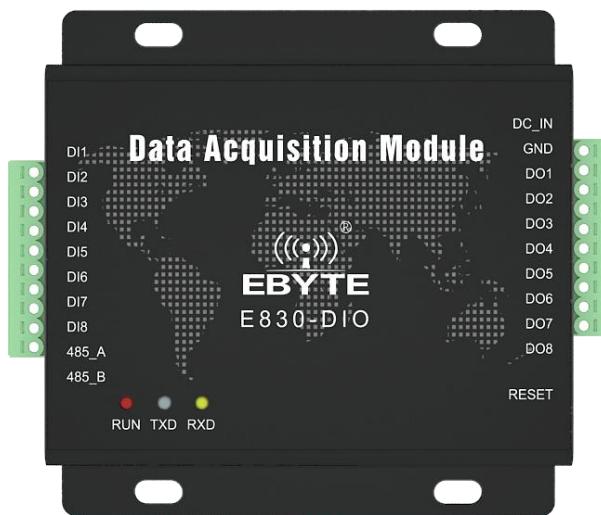


Data Acquisition Module

E830-DIO(485-8A)

User Manual

Version	Date	Description	Issued by
1.00	2018/01/22	Initial version	huaa



The E830-DIO (DO-485-8A) is a data acquisition module with 8 channel digitally isolated inputs and 8 channel digitally isolated outputs (NPN transistor open collector outputs), using RS485 level communication. The module has a touch of a button, long press 5s to easily restore the factory configuration parameters; the software has a watchdog security design, with 1s reset, not easy to crash. The module adopts standard ModBus RTU communication and can directly adapt to various PC configuration software, PLC, DCS and so on. The E830-DIO (DO-485-8A) internally uses optocouplers and other devices to fully isolate the communication from other circuits and has a 3000V DC protection capability.

Features

【A wide range of operating temperature】 : This product can work in -40°C ~ +65°C, adapting to various harsh working

【Power Design】 : Power polarity protection and over-connection protection increase its reliability (8-28V DC)

【ModBus Protocol】 : Using ModBus protocol, Q & A communication method, with simple, cheap hardware, easy to use

【Communication Design】 : RS485 level communication is adopted, and the communication is completely isolated from other circuits, which increases the reliability of communication.

【All Aluminum alloy shell】 : All aluminum alloy shell, EMC performance, compact size, easy installation, good heat dissipation

【Watchdog】 : Built-in watchdog and accurate time layout. Once an exception occurs, the module will automatically restart in 1s and continue to work according to the previous parameters.

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1. Electronic Parameter

Item	Parameter	Value	Description
1	Size	82 * 84 *25mm	Without screwing interface
2	Weight	132g±2g	Without screwing interface
3	Input channel	8-channel digital input	8 channel digital isolated input, maximum input level (compliant with supply voltage)
4	Output channel	8-channel digital output	8 channel digital isolated output (NPN transistor open collector output)
5	Connector	1 * 10 * 3.81 mm	Screwing
6	Power supply	8 ~ 28V DC	Note: Higher than 28V will cause permanent damage to the module
7	Operating current	16mA@24V	16mA when standby, 29mA when UART is communicating
8	Communication level	RS485	RS485
9	Device address	0-248	0-248 configurable, default:1
10	Baud rate	Factory default 9600	1200~115200 configurable
11	Operating temperature	-40°C ~ +65°C	Industrial grade
12	Protection	3000V DC	Lightning strike, surge protection

1. 1. E830 Series

Model No.	Size	Interface	Signal type	Input channel	Output channel	Protection level V DC
E830-DIO(485-8A)	82*84.25	RS485	Digital	8	8	3000

1. 2. FAQ

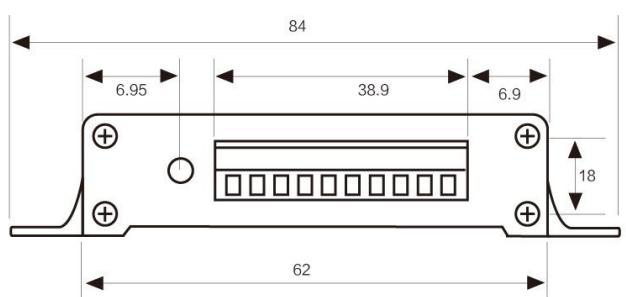
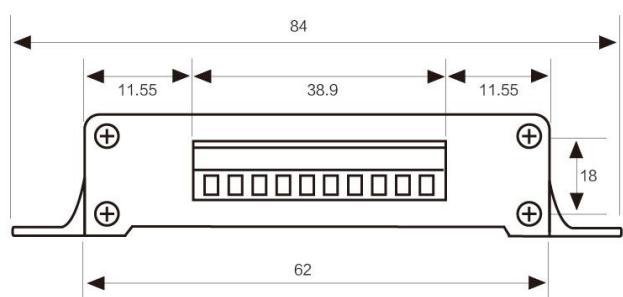
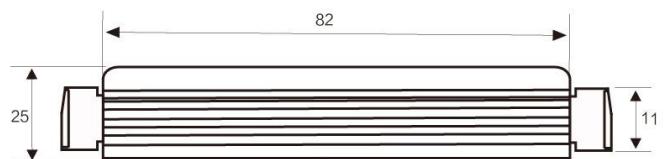
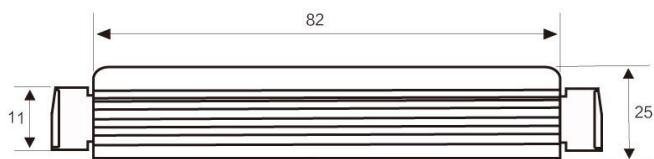
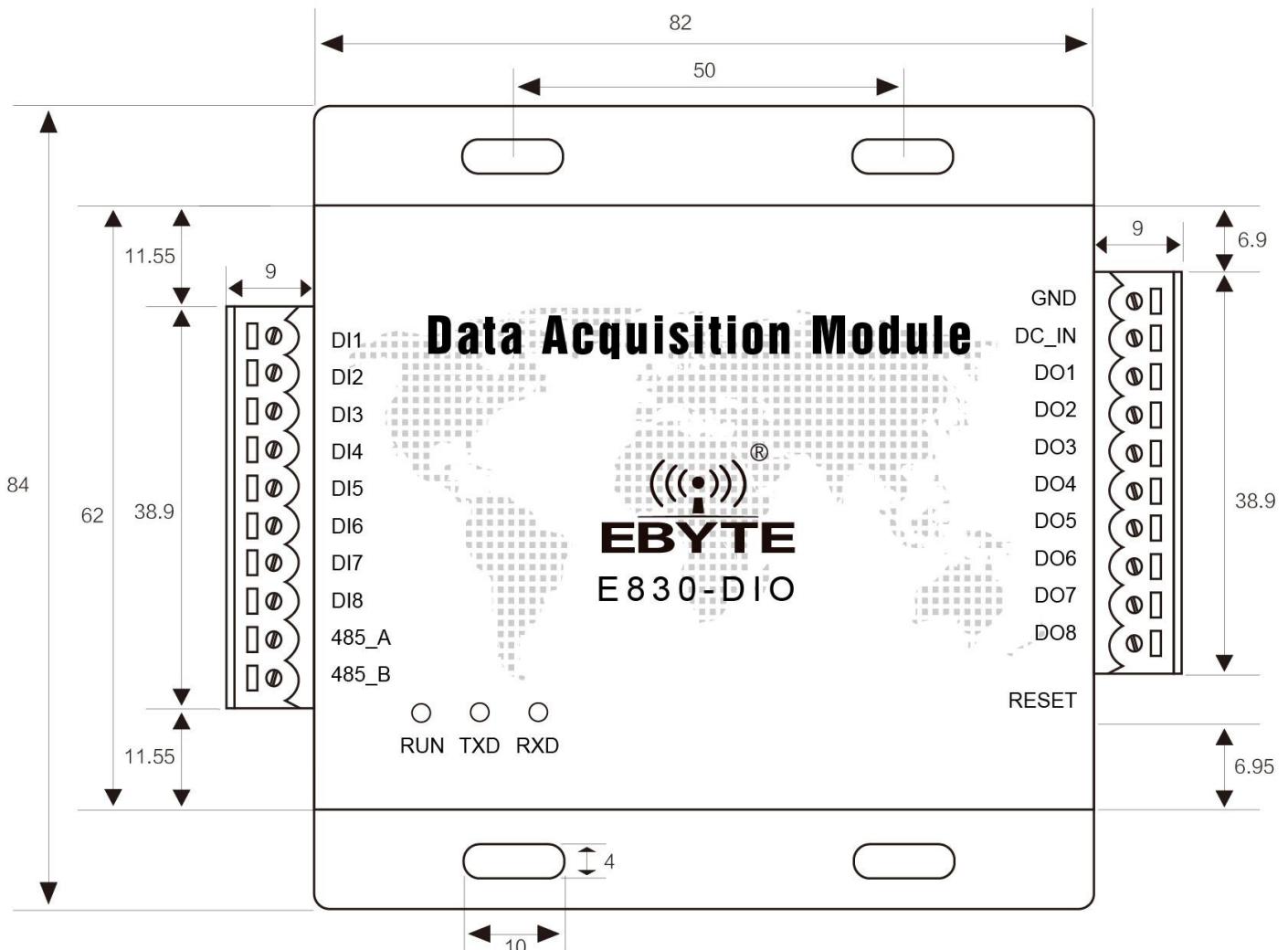
NO.	Question	Description
1	Change device address	The computer cannot change the device address. Please change the command via the serial port.
2	Forget parameter	Long press the key for 5s to restore factory settings.

1. 3. Notes

No.	Notes	Description
1	Communication connection	When connect transceiver with other RS485 devices, pay attention to the match between Line A and B, add 120R resistor when necessary.
2	Input voltage	DC, not AC, DC voltage is between 8~28V: Under 8V, device won't work, beyond 28V, device will be damaged.
3	Input channel	8 channel digital isolated input, maximum input level (compliant with supply voltage)
4	Waterproof	It is not water proof, keep it away from water or permanent damage will be caused.

2. Functional description

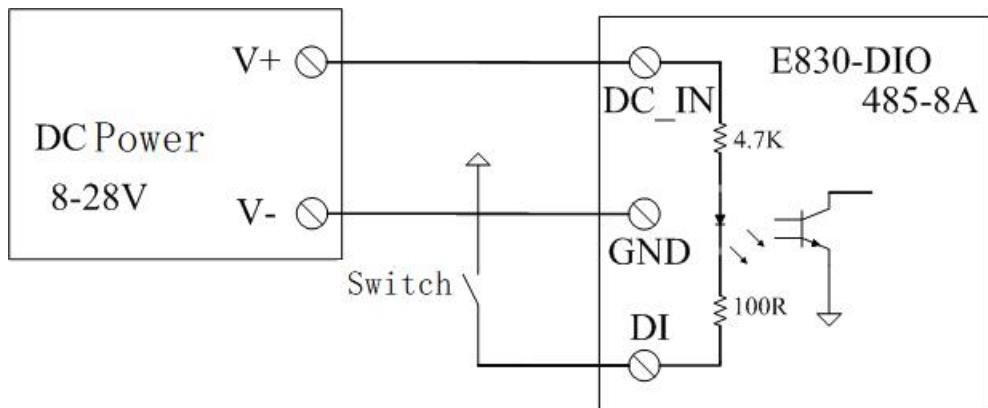
2.1. Pin definition



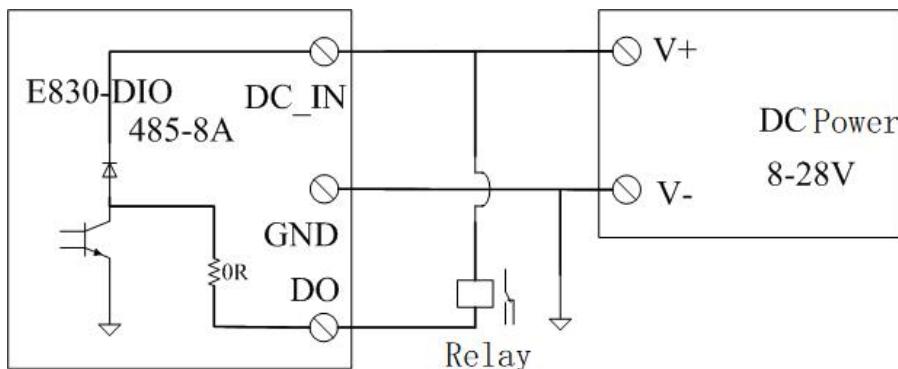
Pin	Function	Description
DC8-28V	screwing power input anode	Power supply: DC8-28V, recommend 12V, 24V
GND	screwing power input cathode	Ground
DO1	digital output channel 1	NPN transistor open collector output
DO2	digital output channel 2	NPN transistor open collector output
DO3	digital output channel 3	NPN transistor open collector output
DO4	digital output channel 4	NPN transistor open collector output
DO5	digital output channel 5	NPN transistor open collector output
DO6	digital output channel 6	NPN transistor open collector output
DO7	digital output channel 7	NPN transistor open collector output
DO8	digital output channel 8	NPN transistor open collector output
485_B	RS-485 interface B	Connect RS-485 interface B with interface B of device B
485_A	RS-485 interface A	Connect RS-485 interface A with interface A of device A
DI8	digital input channel 8	Digital(data) acquisition, Photo Coupler isolation
DI7	digital input channel 7	Digital(data) acquisition, Photo Coupler isolation
DI6	digital input channel 6	Digital(data) acquisition, Photo Coupler isolation
DI5	digital input channel 5	Digital(data) acquisition, Photo Coupler isolation
DI4	digital input channel 4	Digital(data) acquisition, Photo Coupler isolation
DI3	digital input channel 3	Digital(data) acquisition, Photo Coupler isolation
DI2	digital input channel 2	Digital(data) acquisition, Photo Coupler isolation
DI1	digital input channel 1	Digital(data) acquisition, Photo Coupler isolation

2. 2. Connection method

2. 2. 1. Connection method for input channel

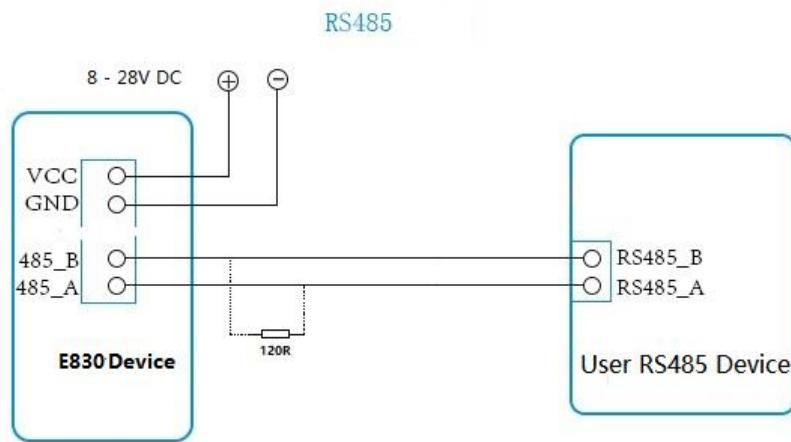


2. 2. 2. Connection method for output channel



2. 2. 3. RS485 connection method

In RS485 communication, please pay attention to match A and B, when communication disabled, please add 120R resistor between Line A and Line B.



3. Register configuration table

3. 1. ModBus address list

3. 1. 1. Coil output instruction

Address	Parameter	Length	Read/Write	Min.	Max.	Description
00001	DO1	1	Read/Write	0	1	status of digital output bit 1
00002	DO2	1	Read/Write	0	1	status of digital output bit 2
00003	DO3	1	Read/Write	0	1	status of digital output bit 3
00004	DO4	1	Read/Write	0	1	status of digital output bit 4
00005	DO5	1	Read/Write	0	1	status of digital output bit 5
00006	DO6	1	Read/Write	0	1	status of digital output bit 6
00007	DO7	1	Read/Write	0	1	status of digital output bit 7
00008	DO8	1	Read/Write	0	1	status of digital output bit 8

3. 1. 2. Discretemagnitude input instruction

Discretemagnitude input (function code: 0x02H)						
Address	Parameter	Length	Read/Write	Min.	Max.	Description
10001	DI1	1	Read only	0	1	status of digital input bit 1
10002	DI2	1	Read only	0	1	status of digital input bit 2
10003	DI3	1	Read only	0	1	status of digital input bit 3
10004	DI4	1	Read only	0	1	status of digital input bit 4
10005	DI5	1	Read only	0	1	status of digital input bit 5
10006	DI6	1	Read only	0	1	status of digital input bit 6
10007	DI7	1	Read only	0	1	status of digital input bit 7
10008	DI8	1	Read only	0	1	status of digital input bit 8

3. 1. 3. Holding register description

Holding register (function code: 0x03H、0x06H、0x10H)						
Address	Parameter	Length	Read/Write	Min.	Max.	Description
40001	D I (1~8)	2	Read/Write	0	0xff	Read 8 bit digital status
40002	DO (1~8)	2	Read/Write	0	0xff	Read/Write 8 bit digital status
40003	Device address	2	Read/Write	0	248	1(default)
40004	Baud rate	2	Read/Write	0	7	0 (1200) 1 (2400) 2 (4800) 3 (9600) 4 (19200) 5 (38400) 6 (57600) 7 (115200)
40005	Parity	2	Read/Write	0	3	0, (none) default value 1 (even parity) 2 (odd parity) 3 (none)
40006	Function selection	2	Read/Write	0	1	0 (output coil control, input discretemagnitude input) 1 (input,output register value) default value
40007	Status control	2	Read/Write	0	1	0 (output pulse signal remains for 5s) 1 (always holding output signal) default value
40008	Version info.	2	Read/Write	0	1	Year+Month

3. 2. Baud rate code table

Baud rate code table	
0	1200
1	2400
2	4800
3 (default)	9600
4	19200
5	38400
6	57600
7	115200

3. 3. Parity code table

Parity code table	
0 (default)	None
1	Even parity
2	Odd parity
3	None

4. Instruction format

4.1. “03” read a register instruction

“03” is for reading register value, for example read 40001 input port register as below:

01	03	00 00	00 01	84 0A
Device ModBus address	Read instruction	Begin to read register address	Read register length	CRC parity code

After sending the above instruction via serial port assistant to the module, module returns value below:

01	02	00 00	B8 44
Device ModBus address	Read return bytes quantity	DI value, see more in register	CRC parity code

4.2. “06” write a register instruction

“06” is for writing register value, for example write 40002 output port register:

01	06	00 01	00 01	58 75
Device ModBus address	Write instruction	Write register address	Write register value	CRC parity code

After sending the above instruction via serial port assistant to the module, module returns value below:

01	06	00 01	00 01	58 75
Device ModBus address	Write instruction	Write register address	Write register value	CRC parity code

4.3. “10” write multiple register instruction

“10” is for writing multiple register value, for example write 40002 output port value as 0x00ff and the device address of 40003 as 0x0001:

10	00 01	00 02	04	00 ff 00 01	C3 93
Write instruction	Beginning address of register	Write register quantity	Write register value quantity=quantity*2	Write value, DO end all open, device address is 0x0001	CRC parity code

When successfully modified, module returns 01 10 00 01 00 02 10 08, compliant with Modbus RTU protocol.

4.4. Factory default value

Device address	Baud rate	Parity	Holding register control	Level control mode	Do value	Version info.
01	9600	None	00 01	00 01	00 00	17 12

5. Important Statement

1. CDEBYTE reserves the right of final interpretation and modification of all the contents in this manual.
2. As the hardware and software products continuously improving, this manual may subject to change without notice, please refer to the latest version.
3. Users who use this product need to pay attention to the product dynamics on the official website so that users can get the latest information of this product in time.

6. About Us

CDEBYTE after-sales technical support: support@cdebyte.com

For file download and more product information, please visit: www.cdebyte.com/en/

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