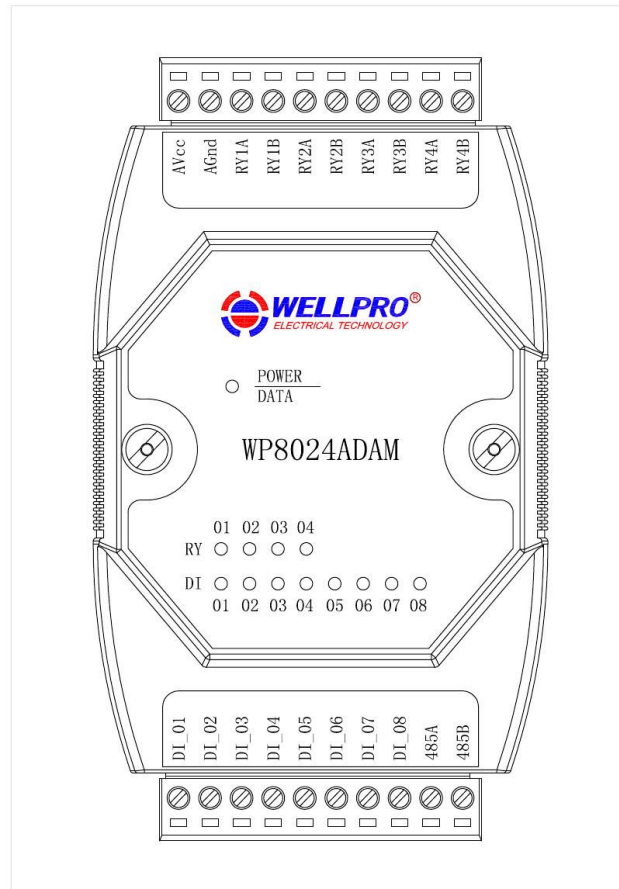


# WP8024ADAM

## User's Manual

### Version 1.42



1、Product description

- 8ch optoelectronic isolation digital input and 4ch relay output (SPST).
- Using RS485 MODBUS RTU communication standard. It can be netted with configuration software, PLC and industry touch pad
- Communication, input and output status LED
- Communication circuit designed for lightning protection and interference immunity
- Could be used for signal collection and control of Industrial field apparatus
- 3 Year's quality assurance for normal use

2、Specification

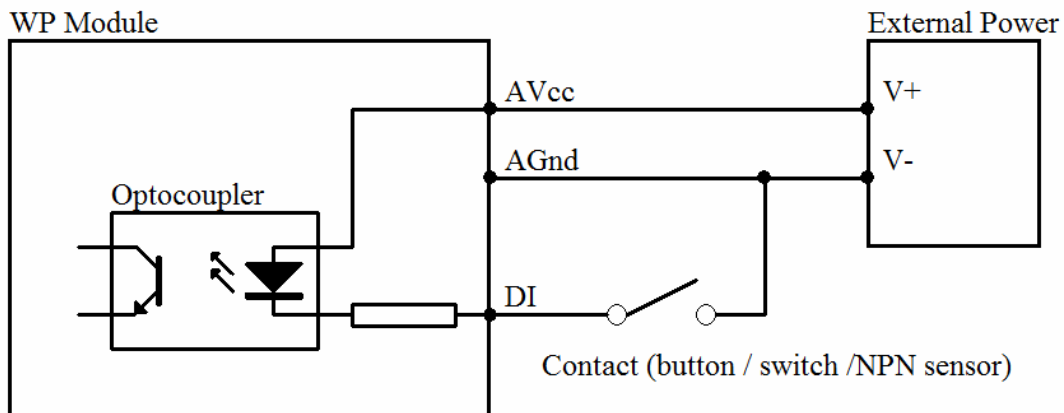
- Digital input 8ch (low level is valid)
- Relay output 4ch (SPST)
- Relay contact capacity 2A/250VAC 2A/30VDC
- Working Temperature -20~70℃
- External power supply DC 9V~30V/2W
- Isolation protect 1500VDC
- Installation method Standard DIN slide rail or screw
- Dimension 125×73×35mm

3、Interface definition

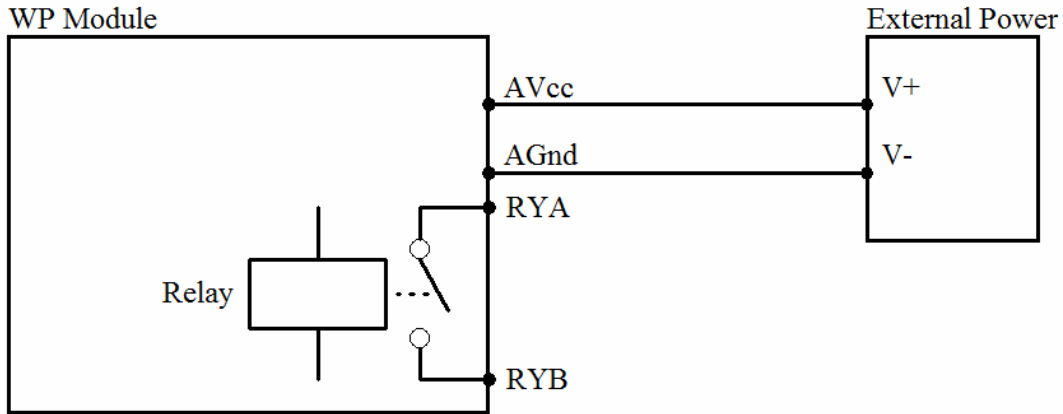
AVcc	External PSU positive terminal input
AGnd	External PSU negative terminal input
RY1A	Normally open contact A of the relay output in 1 <sup>st</sup> way
RY1B	Normally open contact B of the relay output in 1 <sup>st</sup> way
RY2A	Normally open contact A of the relay output in 2 <sup>nd</sup> way
RY2B	Normally open contact B of the relay output in 2 <sup>nd</sup> way
RY3A	Normally open contact A of the relay output in 3 <sup>rd</sup> way
RY3B	Normally open contact B of the relay output in 3 <sup>rd</sup> way
RY4A	Normally open contact A of the relay output in 4 <sup>th</sup> way
RY4B	Normally open contact B of the relay output in 4 <sup>th</sup> way
DI_01	1 <sup>st</sup> way digital input
DI_02	2 <sup>nd</sup> way digital input
DI_03	3 <sup>rd</sup> way digital input
DI_04	4 <sup>th</sup> way digital input
DI_05	5 <sup>th</sup> way digital input
DI_06	6 <sup>th</sup> way digital input
DI_07	7 <sup>th</sup> way digital input
DI_08	8 <sup>th</sup> way digital input
485A	RS485 signal A+
485B	RS485 signal B-

4、Digital application diagram

4.1、Digital input



4.2、Relay output



5、Communication Instruction

5.1、Communication parameter (default setting): 9600, N, 8, 1

Parameter	Description
9600	baud rate
N(no check)	check bit
8	data bit
1	stop bit

5.2、Command for digital input collection:

Send: 01 02 00 00 00 08 79 CC (example/hexadecimal)

data	byte	data description	remark
01	1	module address	Address range 01-FE
02	1	function code	02-read input bit
0000	2	input address(1x mode)	0000-initial address of input bit
0008	2	read length of input bit	0008-read 8 input bits
79CC	2	CRC check code	CRC check code for all data

Receive: 01 02 01 C2 20 19 (example/hexadecimal)

data	byte	data description	remark
01	1	module address	Address range 01-FE
02	1	function code	02-read input bit
01	1	byte numbers	01-read one byte length
C2	1	read data	C2-read input bit status
2019	2	CRC check code	CRC check code for all data

Converting reading data “C2” to 2 hexadecimal results “11000010”. From left to right, it represents the 8 digital input channel status DI\_08 ~ DI\_01. Here it means DI\_08、DI\_07、DI\_02 have input but others no.

5.3、Command for digital output (several controls):

Send: 01 0F 00 00 00 04 01 03 7E 97 (example/hexadecimal)

data	byte	data description	remark
01	1	module address	address range:01-FE
0F	1	function code	0F-write multiple coil
0000	2	coil address(0x mode)	0000-initial address of coil
0004	2	write coil length	0004-write 4 coils
01	1	write data byte	01-write one byte data
03	1	write data	03-write 4 coil's output status
7E97	2	CRC check code	CRC check code for all data

Receive: 01 0F 00 00 00 04 54 08 (example/hexadecimal)

Converting reading data “03” to 2 hexadecimal results “00000011”,last 4 numbers are active. From left to right, it represents the 4 relay output channel status RY4-RY1. Here it means RY2、RY1 have output but others no. When module receives correct command, it will make corresponding actions and send response back to the master. This is successful communication.

5.4、Command for digital output (single control):

Send: 01 05 00 00 FF 00 8C 3A (example/hexadecimal)

data	byte	data description	remark
01	1	module address	Address range 01-FE
05	1	function code	05-write single coil
0000	2	coil address(0x mode)	0000-relay(RY1)coil address 0001-relay(RY2)coil address 0002-relay(RY3)coil address 0003-relay(RY4)coil address
FF00	2	data writing	FF00-coil open, 0000-coil close
8C3A	2	CRC check code	CRC check code for all data

Receive: 01 05 00 00 FF 00 8C 3A (example/hexadecimal)

When module receives correct command, it will make corresponding actions and send response back to the master. This is successful communication.

5.5、Command for state collection of digital output:

Send: 01 01 00 00 00 04 3D C9 (example/hexadecimal)

data	byte	data description	remark
01	1	module address	address range:01-FE
01	1	function code	01-read coil state
0000	2	coil address(0x mode)	0000-initial address of coil
0004	2	read coil length	0004-read 4 coil status
3DC9	2	CRC check code	CRC check code for all data

Receive: 01 01 01 03 11 89 (example/hexadecimal)

data	byte	data description	remark
01	1	module address	address range:01-FE
01	1	function code	01-read coil state
01	1	byte numbers	01-read one byte data
03	1	read data	03-read coil status
1189	2	CRC check code	CRC check code for all data

Converting reading data “03” to 2 hexadecimal results “00000011”,last 4 numbers are active. From left to right, it represents the 4 relay output channel status RY4-RY1. Here it means RY2、RY1 have output but others no.

5.6、command for module address setting:

Send: 00 06 00 64 00 01 08 04 (example/hexadecimal)

date	byte	data description	remark
00	1	module address	00-group sending
06	1	function code	06-write single register
0064	2	register address (4x mode)	0064-modify module address
0001	2	data writing	set new address for module, range 0001-00FE
0804	2	CRC check code	CRC check code for all data

Receive: 00 06 00 64 00 01 08 04 (example/hexadecimal)

This command means to send a code to a module, set the module address as 01, this setting could be saved when power off; default address of module is 01,each module address could be assigned separately when using multiple modules for network.Attentions is required that only one module could be used in 485 network when using multiple address sending, otherwise all the modules will share the same address in 485 network. When module receives correct command, it will make corresponding actions and send response back to the master. This is successful communication.

5.7、Command for communication parameter setting:

Send: 01 06 00 65 00 02 18 14 (example/hexadecimal)

data	byte	data description	remark
01	1	module address	address range:01-FE
06	1	function code	06-write single register
0065	2	register address (4x mode)	0065-modify communication parameter
0002	2	data writing	0001-set communication parameter 4800,N(no check),8,1 0002-set communication parameter 9600,N(no

			check) ,8,1 0003-set communication parameter 19200,N(no check) ,8,1 0004-set communication parameter 38400,N(no check) ,8,1 0005-set communication parameter 4800,E(even check) ,8,1 0006-set communication parameter 9600,E(even check) ,8,1 0007-set communication parameter 19200,E(even check) ,8,1 0008-set communication parameter 38400,E(even check) ,8,1
1814	2	CRC check code	CRC check code for all data

Receive: 01 06 00 65 00 02 18 14 (example/hexadecimal)

This command means to send a code to the module and set the communication parameter as “9600, N (No check), 8, 1”. This setting could be saved when power off. The default communication parameter is “9600, N (no check), 8, 1”. Attention is required, when electing the correct communication parameter in communication setting and restarting the communication terminal, setting will be done. Normally, the lower of baud rate, the lower of the transaction speed but the higher of transaction stability. The opposite is also true. When module receives correct command, corresponding action will be taken and response will be sent back to the master. This is successful communication.

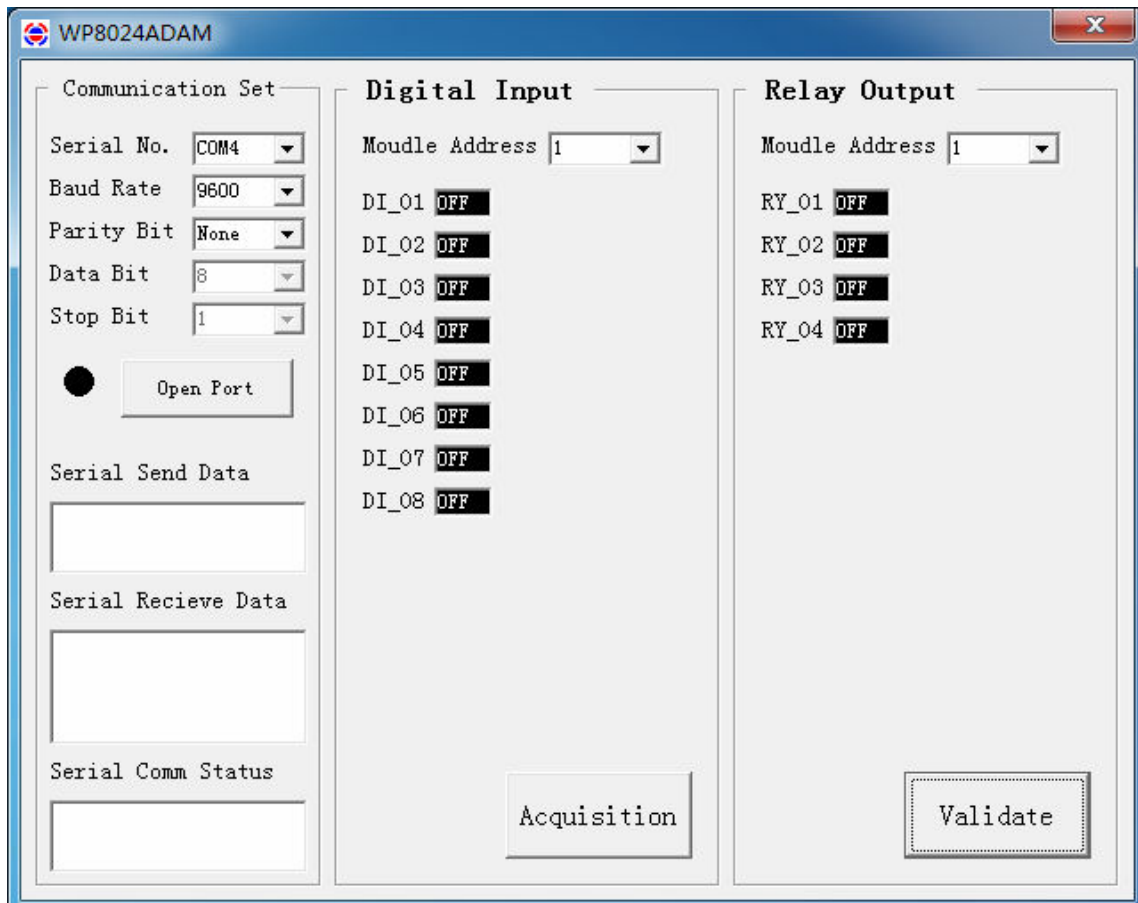
6、Indicator LED description

- When module powered on, Led is green.
- When module is under communication, LED is twinkling.
- when module receive correct command, LED is green.
- when module receive incorrect command or command for other modules, LED is red.

7、PC debugging instruction

This module provides software for parameter setting and function test. Please follow the steps below:

- Connect the module and computer using RS485 converter.
- Connect 12V or 24V power with module and power on. **To avoid any unnecessary damage, please make sure the power positive & negative terminals are correctly connected before power on.**
- Open the software, select the correct module number, you will see the window of function test or parameter setting.
- Set correct parameter, open communication interface.
- Select corresponding setting, collection and control items.



8、RS485 network diagram

