

EX9050-M Quick Start

- 1. The default setting is MODBUS mode after Power On.**
- 2. Using INIT pin to contact with GND pin then Power On will enter Normal mode.**
- 3. Command: \$00R0 is set EX9050-M to Normal mode after Repower On. On normal mode, user can set other setting like address, Baudrate, (Please check the EX9000 user manual).**
- 4. Command: \$AAR1 is set to MODBUS mode after Repower On.**

The Modbus protocol was originally developed for Modicon controllers by Modicon Inc. Detailed information can be found at <http://www.modicon.com/techpubs/toc7.html>. Visit <http://www.modbus.org> to find more valuable information.

EX-9000M series modules support the Modbus RTU protocol. The communication Baud Rates range from 1200bps to 115200bps. The parity, data bits and stop bits are fixed as no parity, 8 data bits and 1stop bit. The following Modbus functions are supported.

01(0x01) Read Digital Input/Output Value

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x01
02~03	Starting channel	2 Bytes	0x0010~0x0017 for DO readback value 0x0000~0x0006 for DI readback value
04~05	Output channel numbers	2 Bytes	0x0001~0x0008 for DO channel numbers 0x0001~0x0007 for DI channel numbers

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x01
02	Byte count	1 Byte	1
03	Input/Output channel readback value	1 Byte	0x00~0x0F A bit corresponds to a channel. When the bit is 1 it denotes that the value of the channel that was set is ON. if the bit is 0 it denotes that the value of the channel that was set is OFF.

Error Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x81
02	Exception code	1 Byte	Refer to the Modbus standard for more details.

02(0x02) Read Digital Input/Output Value

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x02
02~03	Starting channel	2 Bytes	0x0010~0x0017 for DO readback value 0x0000~0x0006 for DI readback value
04~05	Input channel numbers	2 Bytes	0x0001~0x0008 for DO channel numbers 0x0001~0x0007 for DI channel numbers

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x02
02	Byte count	1 Byte	1
03	Input channel readback value	1 Byte	0x00~0x0F A bit corresponds to a channel. When the bit is 1 it denotes that the value of the channel that was Input response. if the bit is 0 it denotes that the value of the channel that was no Input response .

Error Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x82
02	Exception code	1 Byte	Refer to the Modbus standard for more details.

03(0x03) Read Digital Input Count Value

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x03
02~03	Starting channel	2 Bytes	0x0000~0x0006
04~05	Input channel numbers	2 Bytes	0x0001~0x0007

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x03
02	Byte count	1 Byte	N* x 2
03~	Input channel count value	N* x 2 Byte	Each channel can record a maximum count value up to 65535(0xFFFF).

N*=Number of input channels

Error Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x83
02	Exception code	1 Byte	Refer to the Modbus standard for more details.

04(0x04) Read Digital Input Count Value

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x04
02~03	Starting channel	2 Bytes	0x0000~0x0006
04~05	Input channel numbers	2 Bytes	0x0001~0x0007

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x04
02	Byte count	1 Byte	N* x 2
03~	Input channel count value	N* x 2 Byte	Each channel can record a maximum count value up to 65535(0xFFFF).

N*=Number of input channels

Error Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x84
02	Exception code	1 Byte	Refer to the Modbus standard for more details.

05(0x05) Write Digital Output (Single channel)

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x05
02~03	Output channel number	2 Bytes	0x0010~0x0017 for DO output
04~05	Output value	2 Bytes	A value of 0xFF00 sets the output to ON. A value of 0x0000 set it to OFF. All other values are illegal and won't affect the coil.

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x05
02~03	Output channel numbers	2 Bytes	The value is the same as byte 02 and 03 of the Request
04~05	Output value	2 Bytes	The value is the same as byte 04 and 05 of the Request

Error Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x85
02	Exception code	1 Byte	Refer to the Modbus standard for more details.

06(0x06) Clear Digital Input Count Value

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x06
02~03	Input channel number	2 Bytes	0x0000~0x0006
04~05	Clear channel count	2 Bytes	0x0000 for clear

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x06
02~05	Byte count	1 Byte	The value is the same as byte 02 ~05 of the Request

Error Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x86
02	Exception code	1 Byte	Refer to the Modbus standard for more details.

15(0x0F) Write Digital Output/Clear DI count Value (Multi channel)

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x0F
02~03	Starting channel	2 Bytes	0x0010~0x0017 for DO output
04~05	Output channel numbers	2 Bytes	0x0001~0x0008
06	Byte count	1 Byte	1
07	Output value	1 Byte	0x00~0xFF A bit corresponds to a channel. When the bit is 1 it denotes that the value of the channel that was set is ON. if the bit is 0 it denotes that the value of the channel that was set is OFF.

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x0F
02~03	Starting channel	2 Bytes	The value is the same as byte 02 and 03 of the Request
04~05	Output channel numbers	2 Bytes	The value is the same as byte 04 and 05 of the Request

Error Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x8F
02	Exception code	1 Byte	Refer to the Modbus standard for more details.

Address Mapping

9000-M DIO function			
Address	Channel	Content	Attribute
00001~00032	0~31	Digital Output	Read/Write
00033~00048	0~31	Digital Input	Read
30001~30032	0~31	Digital Input counter	Read
08193~08224	0~31	Clear Digital Input counter value (0xFF00)-clear	Write