

EX9041-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: \$00P0 is set Ex9041-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: \$AAP1 is set to MODBUS mode after Repower On.**
- 5. Under Normal mode that Command: \$AAP can check which mode it is after Repower On.**

Response:

!AA10=Normal

!AA11=MODBUS

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.

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 Value

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x01
02~03	Starting channel	2 Bytes	0x0020~0x002D for DI value 0x0040~0x004D for DI Latch high value 0x0060~0x006D for DI Latch Low value
04~05	Input channel numbers	2 Bytes	0x0001~0x000E

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x01
02	Byte count	1 Byte	Byte count of response ($B = (\text{bit count} + 7) / 8$)
03~04	Input channel readback value	1~2 Byte	Bit values (least significant is first coil!) 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	0x81
02	Exception code	1 Byte	Refer to the Modbus standard for more details.

02(0x02) Read Digital Input Value

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x02
02~03	Starting channel	2 Bytes	0x0000~0x000D
04~05	Input channel numbers	2 Bytes	0x0001~0x000E

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x02
02	Byte count	1 Byte	Byte count of response ($B=(\text{bit count} + 7)/8$)
03~04	Input channel readback value	1~2 Byte	Bit values (least significant is first coil!) 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	0x0000~0x000D
04~05	Input channel numbers	2 Bytes	0x0001~0x000E

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x03
02	Byte count	1 Byte	Input channel numbers * 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	0x0000~0x000D
04~05	Input channel numbers	2 Bytes	0x0001~0x000E

Response

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x04
02	Byte count	1 Byte	Input channel numbers * 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) Clear Latch & Clear the Digital Input count Value (Single channel)

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x05
02~03	Input channel number	2 Bytes	0x0100 for clear latch 0x2000~0x200D for clear I/P channel count value
04~05	Input value	2 Bytes	0xFF00

Response

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

15(0x0F) Clear the Digital Input count Value (Multi channels)

Request

00	Address	1 Byte	1-247
01	Function code	1 Byte	0x0F
02~03	Starting channel	2 Bytes	0x0100 for clear latch 0x0101~0x010E or 0x2000~0x200D for clear I/P channel count value
04~05	Input channel numbers	2 Bytes	0x0001~0x000E
06	Byte count	1 Byte	2
07~08	Input value	2 Bytes	0x0000~0xFFFF A bit corresponds to a channel. When the bit is 1 it denotes that the value of the channel that was set is Clear Counter. if the bit is 0 it denotes that the value of the channel that was set is doesn't Clear Counter.

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	Input 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