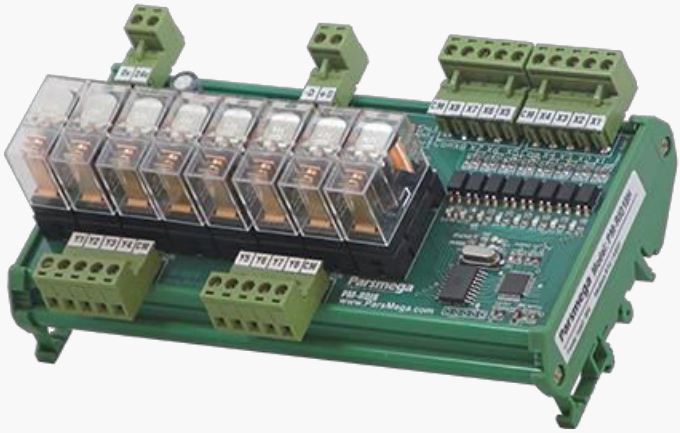
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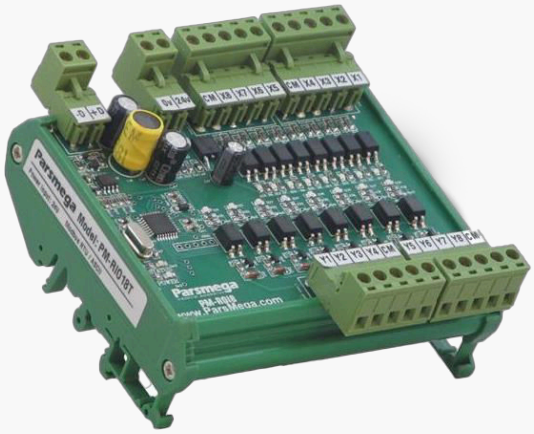
User Manual

Remote IO

PM-RIO18







Version: 1.1 Release Date: 01/29/2023

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1 Introduction

1.1 The purpose of the manual

This manual contains all the information needed to set up, install, wiring and communicate with the module:

PM-RIO18T: Remote IO module with digital input and digital output and

PM-RIO18L: IO remote module with digital input and relay output (5 amp relay) and

PM-RIO18H: IO remote module with digital input and relay output (replaceable 16 amp relay).

1.2 Technical knowledge required

In order to understand this booklet, a basic acquaintance with electrical topics is required.

1.3 Manual validation

This booklet is valid for this specification.

MODEL	Hardware	Software
PM-RIO18	V1.1	V1.1

1.4 Technical Support

To get technical support through the following contact:

- Email: **info@parsmega.com**
- Phone: **+98 21 91009955**
- WhatsApp: **+98 9981122566**

2 safety tips

- Starting the module by non-experts and ignoring the commands may cause serious damage to the module.
- This module does not directly pose a risk to human life.
- The use of this module is not approved for use in life-threatening devices.

3 Description

3.1 Basic description

PM-RIO18 is a remote IO module that provides access to a set of digital inputs and outputs in the RS485 network platform and Modbus protocol. This module has the ability to connect to a computer and control equipment such as (HMI and PLC).

3.2 Uses

This module is a very suitable option for applications that have many inputs and outputs or are distributed discretely. Such as:

- All industrial automation applications

3.3 Technical Specifications

- 8 outputs (in the models with suffixes L and H, the outputs are relays, and in the model with suffix T, the outputs are Optocouplers)
- 8 digital inputs (Optocoupler)
- RS485 serial communication with MODBUS (RTU, ASCII) protocol support
- Wide range of port 485 baud rate (from 2400 to 230400)
- Input digital isolation (5Kv)
- The relay output is 5 amps in the model with L extension and 16 amps in the model with H extension.
- The working temperature range is -30 ~ +50 degrees Celsius

4 Installation

4.1 Compliance withEMC matters

This product is designed and manufactured to work in industrial environments. However, for proper operation, you should check and eliminate the issues that cause the module to malfunction.

4.2 Cases that cause system malfunctions

- Electromagnetic field
- Telecommunication cables

4.3 Things to consider

4.3.1 Convenient ground connection

• When installing the module on the panel body, make sure that the panel body is connected to the ground.

• All ineffective metal parts are (firmly) grounded.

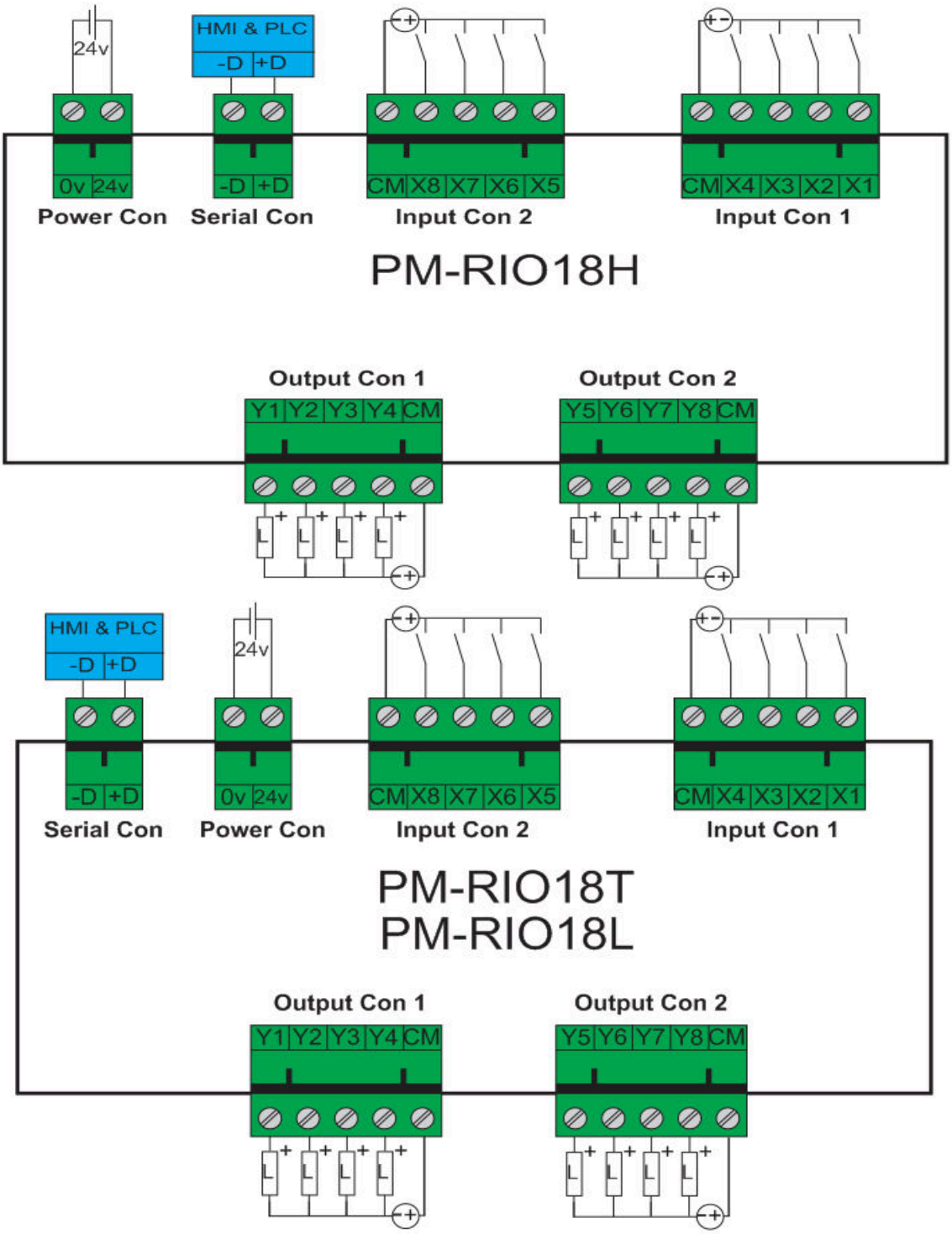
4.3.2 Appropriate wiring method

• Divide your system cables into different groups (high voltage, power supply, and signal, analog).

• Always transfer the power cable from another duct.

5 connections

All the connections of this module are screws



5.1 Grouping of connections

The connections of this module include 4 main groups

- 24V module power supply
- Digital inputs
- Relay outputs
- RS485 serial

5.2 Power supply connection

The proper power supply for this module is 24 v dc (reverse power supply protected).

Terminal1: 0V

Terminal2: +24V

5.3 Digital inputs

8 digital inputs (isolated) are provided to the user. These inputs are bipolar (that is, negative voltage or positive voltage can be connected to the common end of the inputs) and the voltage required to stimulate the inputs is 24 volts.

5.4 Digital outputs

8 relay outputs are placed on this module.
Note: In the PM-RIO18T model, where the outputs are of the optocoupler type, a positive voltage must be connected to the common terminal, and with the output activation command, a positive signal appears in the output.
Note: In the PM-RIO18L model, the maximum current that can be cut and connected with a relay is 5 amps.
Note: In the PM-RIO18H model, the maximum current that can be cut and connected with a relay is 16 amps.

5.5 RS485 connection

This module is equipped with an RS485 serial port on which the MODBUS (RTU, ASCII) protocol is implemented.

Label	Function
D+	Positive data
D-	Negative data

6 parameters

All parameters are set with default values at the time of purchase.

For ease of work, the parameters are divided into different groups.

- The length of all variables is word.
- Some parameters need to be restarted to apply changes.
- There are 3 types of addresses in the address field:

The first address is related to software whose addressing format is 40001.

Such as: fatek plc programming environment, opc server.....

The second address is related to programming environments where the address starts from 0 and is in decimal type.

The third address is related to the programming environment where the address starts from 0 and is in hex type.

6.1 communication parameter

Title	Variable type	The length	Address	explanation	Default
ID	Unsigned int	1	40001 0 d 0 h	1~247	1
Baud Rate	Unsigned int	1	40002 1 d 1 h	0~10 0=2400 1=4800 2=9600 3=14400 4=19200 5=28800 6=38400 7=57600 8=76800 9=115200 10=230400	2
parity	Unsigned int	1	40003 2 d 2 h	0=none 1=odd 2=even	2
Stop bit	Unsigned int	1	40004 3 d 3 h	0=1 1=2	0
Mode	Unsigned int	1	40005 4 d 4 h	0=RTU 1=ASCII(8 bit) 2=ASCII(7 bit)	

Note: Note that the system must be reset once to apply the above parameters.

6.2 Module information parameter

- All the following parameters are read only

Title	Variable type	the length	Address	Description	Default
Firmware ver	Float	2	40007 6 d 6 h		
Hardware ver	Float	2	40009 8 d 8 d		
Model	Unsigned int	1	40011 10 d AH		103
Serial number	Unsigned long	2	40012 11 d Bh		

6.3 Digital inputs parameter

Title	Variable type	the length	Ability to write	Address	Description	Default
Input1 code	Unsigned int	1	RW	40016 15 d 0f h	-	0

Bit zero of this address shows the status of the first input and bit seven shows the status of the eighth input.

The following table shows the addresses of the counters corresponding to each digital input. In these addresses, the number of activation times of each digital input can be seen. The user can reset the counter corresponding to each input by writing the number zero in each address.

Title	Variable type	the length	Ability to write	Address	Description	Default
Input 1 Counter	Unsigned Long	2	R/W	40027 26 d 1A h	-	-
Input 2 Counter	Unsigned Long	2	R/W	40029 28 d 1C h	-	-
Input 3 Counter	Unsigned Long	2	R/W	40031 30 d 1E h	-	-
Input 4 Counter	Unsigned Long	2	R/W	40033 32 d 20 h	-	-
Input 5 Counter	Unsigned Long	2	R/W	40035 34 d 22 h	-	-

Input 6 Counter	Unsigned Long	2	R/W	40037 36 d 24 h	-	-
Input 7 Counter	Unsigned Long	2	R/W	40039 38 d 26 h	-	-
Input 8 Counter	Unsigned Long	2	R/W	40041 40 d 28 h	-	-

6.4 Digital output parameters

Title	Variable type	the length	Ability to write	Address	Description	Default
Out1	Unsigned int	1	W	40019 18 d 12 h	-	-

In this address, bit number zero represents the status of the first output and bit number 7 represents the status of output number eight. To activate each output, the corresponding bit must be set to one, and to disable the outputs, the corresponding bit must be set to zero.