User Manual

Remote Display

PM-RD03



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1 Introduction

1.1 Purpose of the manual

This manual contains all the information needed to set up, install, wiring and communicate with the PM-RD03 module.

1.2 Technical knowledge Required

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

1.3 manual validation

This manual is valid for this specification.

MODEL	Hardware	Software
PM-RD03	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-RD03 is a remote display that supports Modbus RTU/ASCII protocol and has the ability to connect to all types of HMI, PLC and computer, and also has the ability to connect to weight indicators (as a remote display).

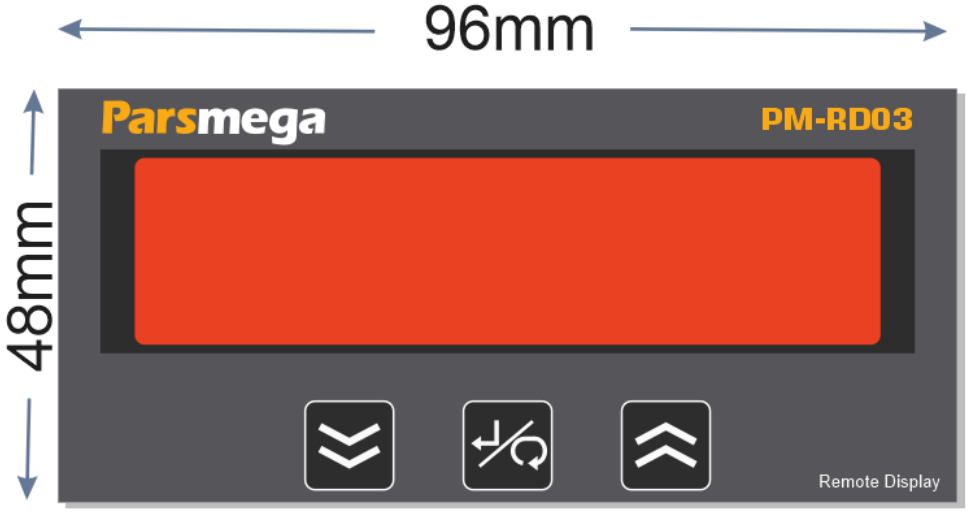
3.2 Technical Specifications

- The ability to support a variety of network settings
- Port: RS232 and RS485
- 7-segment display with 2 cm character height
- Supply voltage 24 volts (220 volts if ordered)
- The working temperature range is +30 ~ +75 degrees Celsius
- RS485 serial communication with MODBUS protocol support

3.3 Display Dimentions

It is 108 x 96 x 48 mm.

The cut dimensions of the display frame are 45 x 92 mm.



4 Installation

4.1 Observe EMC items

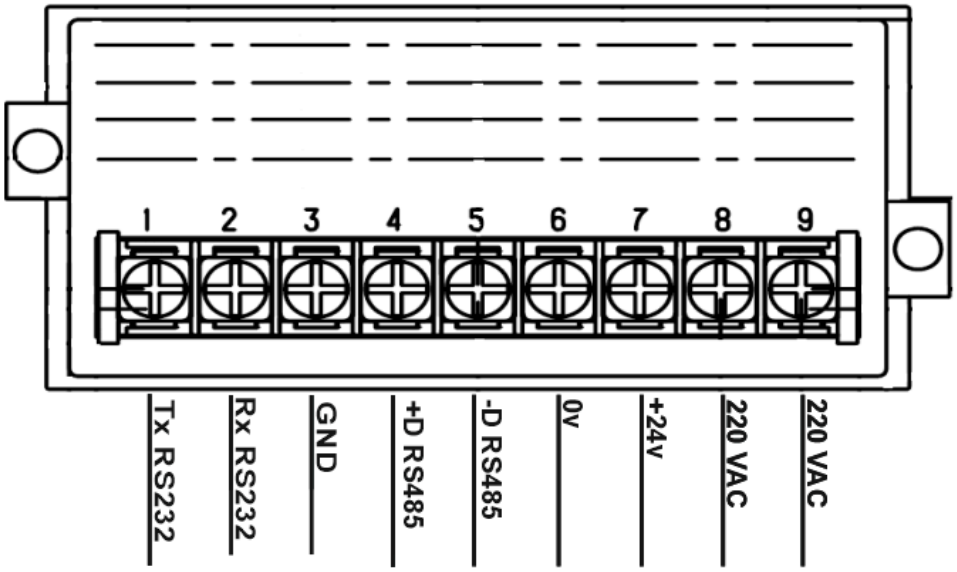
This product is designed and built to work in industrial environments, however, for proper performance, you must check and fix the things that cause disruption to the module's work.

4.2 Things to consider

- **After connecting, connect the power wires to the power display.**
- **Serial communication inputs:** When connecting the serial communication inputs to the display, be careful to avoid connecting the power wires to the display. Otherwise, the display will be damaged.

5 Display Panel And Connection

All secondary display connections are detachable sockets.



5.1 Connection Group

The connections of this module include 2 main groups:

- Power
- RS485/RS232 serial

5.2 Power Connection

The suitable power supply for this module is 24VDC. Observe safety precautions when connecting and using the module.

If ordered, the power supply of the display can be changed to 220 volts.

Label	Function
0v	Negative input of 24V power supply
24v	Posetive input of 24V power supply

Label	Function
Ph	220V input
N	220V input

In the 24V power mode, the power input is connected to the 24V socket (terminal 0V terminal 24V).

In the 220V power mode, the power input is connected to the 220V socket (Ph terminal and N terminal).

Notice

When using 220V power supply, follow the safety precautions and before connecting the power supply make sure the wires connected to the indicator power terminals.

5.3 Serial Connection

This module is equipped with an RS485/RS232 (asynchronous) serial port on which the MODBUS (RTU, ASCII) protocol is implemented.

Note: According to the type of serial communication (RS485 or RS232), the sliding key of serial communication must be in the right position. The serial sliding key is located on the side of the display.



- **Note**: If the PM-RD03 display is used as a remote display to connect to the Pars Mega weight indicator, the serial communication key must be set to RS485 communication mode. RS232 serial communication should be used to connect to YAOHUA, KELI and LAUMAS weight indicators.

Serial socket specifications: RS485 and RS232 connection

Label	Function
+ D RS485	RS485 positive data
- D RS485	RS485 negative data
RX RS232	RS232 data received
TX RS232	RS232 data transmission
GND	RS232 Ground

5.4 Display Panel

This display module has three push buttons. The keys have different and adjustable functions in different situations.

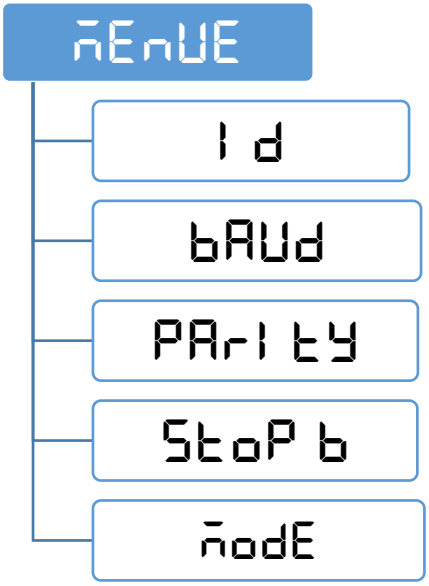
Keys	When setting parameters		Inside the settings menu		Out of the settings menu	
	to keep	push	to keep	push	to keep	push
Enter	Confirm parameter changes	Cancel parameter change	Enter the selection menu	Back to the previous menu	Enter the settings menu	---
▲ Up	Constantly increasing the parameter	Increase the parameter	----	Go to the top menu	---	----
▼ Down	Constant decrease of the parameter	Reduce the parameter	---	Go to the lower menu	---	----

The duration of holding the key to confirm the function is 3 seconds.

6 Display parameters and menus

- All parameters are set with default values at the time of purchase.
- The length of all variables is word
- Some parameters require a reboot to take effect.

6.1 General menu structure table



6.2 How to work with menus

1- To enter the settings, you must hold the EntEr key for 3 seconds. After entering the settings, the term Id is displayed on the top line, which indicates the value of the device's Modbus connection ID parameter. (If you have already entered the settings menu, that menu will be displayed).
2- Now you can select other settings with the ▲/▼ key.
3- After selecting the desired settings menu, you can edit the settings by holding the EntEr key.
4- Now you can select other parameters with the ▲/▼ key.
5- After selecting the parameter, you can edit the value of that parameter by holding the EntEr key.
6- If you select and enter to edit the parameter Id, the value of the parameter will start flashing.

7- Now you can change the value of the parameter with the ▲/▼ key.
8- After setting the appropriate value, you can save the parameter by holding the EntEr key. The word "Saved" is also displayed to confirm the operation.

Notes:

- In each step, by pressing the EntEr key, you can go back to the previous step, exit the settings menu, or cancel saving the parameter value.
- The parameter values have predefined limits, for example the Id parameter value can be selected between 1 and 247.

6.3 Communication settings menu and parameter

The display has the ability to connect to all kinds of **hmi** and **plcs** (if it supports the Modbus protocol) and also has the ability to connect to YAOHUA, KELI and Pars Mega LAUMAS weight indicators.

Device settings menus include the following:

- Id (Device ID): In Modbus communication, every device connected to the bus has a unique ID.
- bAUd (Baud Rate): In this menu, the speed of serial data transfer can be adjusted.
- PArItY (Parity Bit): In this menu, the parity bit of serial communication can be set.
- StoPb (Stop Bit): In this menu, the number of serial communication stop bits can be set.
- nodE: In this menu, RTU or ASCII type of Modbus communication and connection to the weight display is selected.

6.3.1 Display serial communication settings:

The remote display has the ability to communicate serially through RS485 and through RS232 (asynchronously). If using mods that require RS232 port, RX, GND, and TX pins are used, and if mods that require RS485 port are used, D- and D+ pins are used.

Note: RS232 serial communication must be used to connect to YAOHUA, KELI, and LAUMAS weight indicators, and RS485 serial communication must be used to connect to Pars Mega indicators. According to the type of the main indicator, the serial communication jumper should be placed in the appropriate state. Also, in the modbus communication mode, information can be used both through the RS485 and RS232 ports.

6.3.2 Pars Mega display:

To connect the Pars Mega indicator to the remote display, the serial communication settings of the Pars Mega indicator must be set as follows

Baud Rate: 9600

Parity: none

Stop Bit: 1

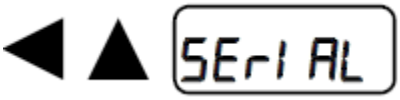
Serial Mode: 3 In this mode, the display continuously sends the amount of net weight.

6.3.3 Laumas W series display settings: To connect the Laumas W series indicators to the remote display, the RS232 serial communication settings of the Laumas indicator must be set as follows HdrI P.

To do this, we first enter the main menu with the combination keys,



and then enter the serial menu,



and then enter the submenu r5232. And then set the RS232 sub-menu to the HdrI P option. By setting the menu r5232

as above, the Laumas indicator automatically adjusts the network parameters and no other changes are needed.

6.3.4 KELI X3118 indicator settings: To set the KELI indicator to communicate with the remote display, first enter the main menu with the Fn function key, then go to the Baud Rate menu and set this value of this menu to br9600, and then set the Co sending format menu to Co 4.

6.3.5 Yaohua T7E indicator settings: To set the T7E indicator to communicate with the remote display, first enter the main menu by pressing the function 

and clear 

keys at the same time. First, we enter the password (by default it is 111), then we enter the main menu by pressing the hold key 

. And by pressing this key again, move between the options of this menu and select [bt *] option. By using the zero key 

, set the value of this menu to the bt 4 option and exit the menu with the hold key. By doing this, the baud rate value of the indicator is set to 9600. And the T7E indicator can be connected to the remote display.

6.3.6 Yaohua A12E indicator settings: To set the A12E indicator to communicate with the remote display, first we hold down the function key 

for about 5 seconds, with this we enter the main menu, then we move between the options using the accumulate key 

. And then we set the P3 menu to the number 1, this parameter can be changed by pressing the Tare button 

, with this the Baud Rate is set to 9600, then we go to the P4 option again using the accumulate key. If the value of this option is set to 1, the net weight value will be sent to the remote display through the serial port, if it is set to 2, the total gross weight value will be sent to the remote display.

Note: To apply the above parameters, reset the system once.

Note: After making changes in the parameters, wait 3 seconds and then reset the system.

Communication parameters menu table

Menu Title	Menu Parameter	Default
Id	1-247	1
bAUd	2400 4800 9600 14400 19200 28800 38400 57600 76800 115200 230400	9600
PArIty	none = nonE odd = odd even = EuEn	even
StoP b	1stop bit = 1bIt 2 stop bit = 2bIt	1 bit
ñodE	RTU = rtU ASCII 8 = ASCI 8 ASCII 7 = ASCI 7 Connecting to PM-LD = Pñ Ld Connecting to keli T1 = HLI t 1 Connecting to Yaohua A12E = A 12E Connecting to Yaohua T7E = t 7E Connecting to LAUMAS W(net weight) = Lñb Yn Connecting to LAUMAS W(gross weight)= Lñb YG	RTU

Address table of communication parameters

Title	Variable type	Length	Reading Writing	Address	Description	Default
ID	Unsigned int	1	RW	40001 0 d 0 h	1~247	1
Baud Rate	Unsigned int	1	RW	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	RW	40003 2 d 2 h	0=none 1=odd 2=even	2
Stop bit	Unsigned int	1	RW	40004 3 d 3 h	0=1 bit 1=2 bit	0
Mode	Unsigned int	1	RW	40005 4 d 4 h	0=RTU 1=ASCII (8bit) 2=ASCII (7bit) 3=PM-LD (Pars Mega) 4=Keli T1 5= Yaohua A12E 6= Yaohua T7E 7=LAUMAS W (net weight) 8= LAUMAS W (gross weight)	0

6.4 Parameters related to information display

The information that is sent to the display through serial communication is placed in the "Data" register. The information written in this register is not stored in the device and is deleted when the device is turned off.

The number of decimals displayed is placed in the "Decimal" register. The information written in this register is stored in the device and is not deleted when the device is turned off.

Note: These items are valid only when the display is in Modbus communication mode, and in other cases, the displayed information is received as "polling".

Note: After applying the changes in the parameters, 3 seconds are needed to apply the changes and save the time.

Address table of digital input parameters

Title	Variable type	Length	Reading Writing	Address	Description	Default
Data	signed Long	2	RW	40016 15 d F h	The register related to the information that is displayed.	0
decimals	Unsigned int	1	RW	40018 17 d 11 h	Number of decimals 0~5	1