



## M91 RS485 Port Settings

Certain OPLCs can be ordered with an RS485 port. Within the controller, the jumper settings determine the COM port function according to RS232 or RS485; RS485 termination settings are also determined via jumper. To check if your controller was supplied with an installed RS485 port, check the device's model number. For example:

Model Number	M 9 1 - 1 9 - U N 2	M 9 1 - 1 9 - <u>4</u> U N 2
	Supplied <b>without</b> an RS485 port.	Supplied <b>with</b>  an RS485 port

All M91 controllers offering a 2-line text display are supplied with an installed RS485 port.



Model Number	M 9 1 - <u>2</u> - x x x x
	Supplied <b>with</b>  an RS485 port


- Before using this product, it is the responsibility of the user to read and understand this document and any accompanying documentation.
- All examples and diagrams shown herein are intended to aid understanding, and do not guarantee operation. Unitronics accepts no responsibility for actual use of this product based on these examples.
- Please dispose of this product in accordance with local and national standards and regulations.
- Only qualified service personnel should open this device or carry out repairs.


### User safety and equipment protection guidelines

This document is intended to aid trained and competent personnel in the installation of this equipment as defined by the European directives for machinery, low voltage, and EMC. Only a technician or engineer trained in the local and national electrical standards should perform tasks associated with the device's electrical wiring.

Symbols are used to highlight information relating to the user's personal safety and equipment protection throughout this document. When these symbols appear, the associated information must be read carefully and understood fully.

Symbol	Meaning	Description
	Danger	The identified danger causes physical and property damage.
	Warning	The identified danger can cause physical and property damage.
<i>Caution</i>	Caution	Use caution.

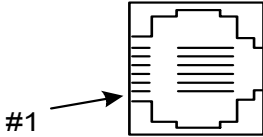
- |   |  |
|---|--|
|  | <ul style="list-style-type: none"> <li>■ Failure to comply with appropriate safety guidelines can result in severe personal injury or property damage. Always exercise proper caution when working with electrical equipment.</li> </ul> |
|---|--|

- |   |  |
|---|--|
|  | <ul style="list-style-type: none"> <li>■ Check the user program before running it.</li> <li>■ Do not attempt to use this device with parameters that exceed permissible levels.</li> </ul> |
|---|--|

**RS485**

Use RS485 to create a multi-drop network containing up to 32 devices.

**RS485 Pinout**

Diagram	Pin Number	Function
	1	A signal (+)
	2	(RS232 signal)
	3	(RS232 signal)
	4	(RS232 signal)
	5	(RS232 signal)
	6	B signal (-)

Note that when a port is set to RS485, both RS232 and RS485 can be used simultaneously **if** flow control signals DTR and DSR are not used.



- Note that the ports are not isolated. If the controller is used with a non-isolated external device, avoid potential voltage that exceeds  $\pm 10V$ .
- To avoid damaging the system, all non-isolated device ports should relate to the same ground signal

*Caution*

- Use shielded, twisted pair cables.
- Minimize the stub (drop) length leading from each device to the bus.
- Ideally, the main cable should be run in and out of the network device.
- Do not cross positive (A) and negative (B) signals. Positive terminals must be wired to positive, and negative terminals to negative.

**Settings**

The jumper settings shown below determine whether the controller functions according to RS232 or RS485, and whether it will serve as an end device in a RS485 network. Note that the factory default setting is **ON**. If the OPLC is **not** a network end device, set both jumpers to **OFF**.

**RS232/RS485 Jumper Settings**

The tables below show how to set a specific jumper to change the functionality of the controller.

To open the controller and access the jumpers, refer to the instructions on the next page.

RS232/RS485 Jumper Settings	To use as:	JP1	JP2
	RS232*	A	A
	RS485	B	B

RS485 Termination Settings	Termination	JP3	JP4
	ON*	A	A
	OFF	B	B

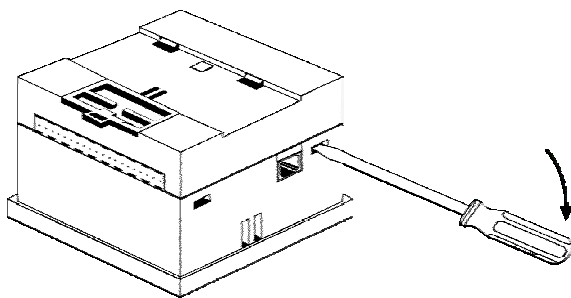
\*Default factory setting

## M91 RS485 Port Settings

### Opening the Controller

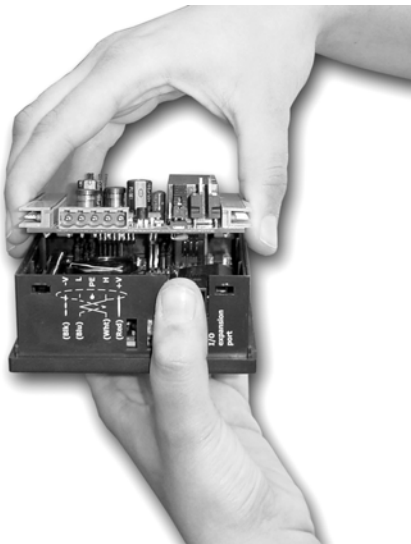


- Before opening the controller, touch a grounded object to discharge any electrostatic charge.
- Avoid touching the PCB board directly by holding the PCB board by its connectors.



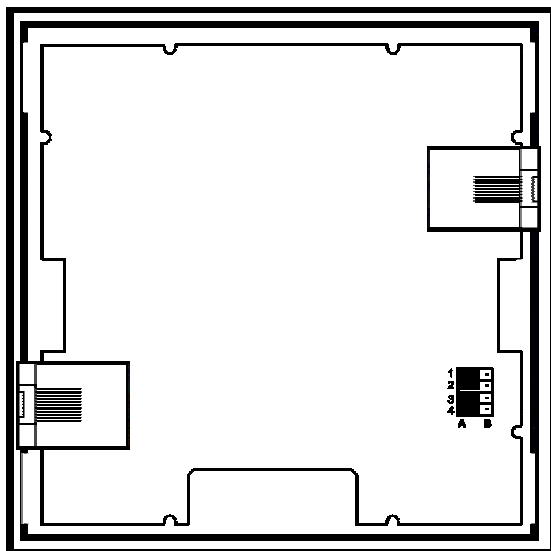
*Figure 1. Opening the Controller*

1. Turn power off before opening the controller.
2. Locate the 4 slots on the sides of the controller.
3. Using the blade of a flat-bladed screwdriver, gently pry off the back of the controller as shown in Figure 1.



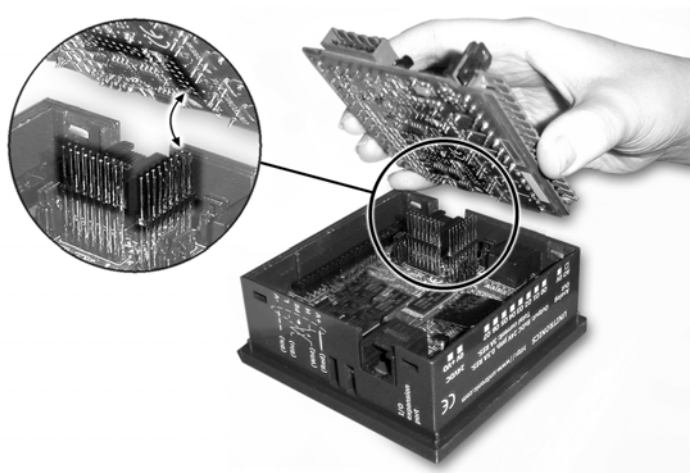
*Figure 2. Removing the Top PCB board*

4. Gently remove the top PCB board:
  - a. Use one hand to hold the top-most PCB board by its top and bottom connectors as shown in Figure 2.
  - b. With the other hand, grasp the controller, while keeping hold of the serial ports; this will keep the bottom board from being removed together with the top board.
  - c. Steadily pull the top board off.



*Figure 3. RS232/RS485 Jumpers, Factory Default Settings*

5. Locate the jumpers shown in Figure 3, then change the jumper settings as required.



*Figure 4. Replacing the Board*

6. Gently replace the PCB board as shown in Figure 4. Make certain that the pins fit correctly into their matching receptacle.
  - a. Do not force the board into place; doing so may damage the controller.
7. Close the controller by snapping the plastic cover back in its place. If the card is placed correctly, the cover will snap on easily.