

# InteliLite 4 RD (SW)

## Remote display software for InteliLite 4 controllers

### SW version 1.2.1

Table of contents .....	2
1 Document information .....	3
2 General description .....	4
3 IL4-RD Firmware installation .....	5
4 Wiring .....	6
5 Interconnection variants .....	7
6 Connection process .....	10
7 Connection troubleshooting .....	11
8 Function description .....	12
9 Firmware compatibility .....	13

# Table of contents

<b>1 Document information</b>	<b>3</b>
1.1 Clarification of Notation .....	3
1.2 About this Global Guide .....	3
1.3 Document history .....	3
<b>2 General description</b>	<b>4</b>
<b>3 IL4-RD Firmware installation</b>	<b>5</b>
<b>4 Wiring</b>	<b>6</b>
<b>5 Interconnection variants</b>	<b>7</b>
5.1 RS232 .....	7
5.2 RS485 .....	7
5.3 Onboard RS485 .....	8
5.4 RS232 + RS485 .....	8
5.4.1 Master Controller with Two Remote Displays .....	8
5.4.2 Master Controller with Three Remote Displays .....	9
<b>6 Connection process</b>	<b>10</b>
<b>7 Connection troubleshooting</b>	<b>11</b>
<b>8 Function description</b>	<b>12</b>
<b>9 Firmware compatibility</b>	<b>13</b>
9.1 Remote Display .....	13
9.2 Master controllers .....	13
🔍 back to Table of contents	

# 1 Document information

## 1.1 Clarification of Notation

**Note:** This type of paragraph calls the reader's attention to a notice or related theme.

**IMPORTANT:** This type of paragraph highlights a procedure, adjustment etc., which can cause a damage or improper function of the equipment if not performed correctly and may not be clear at first sight.

**WARNING:** This type of paragraph highlights a procedure, adjustment etc., which can cause a damage or improper function of the equipment if not performed correctly and may not be clear at first sight.

**Example:** This type of paragraph contains information that is used to illustrate how a specific function works.

## 1.2 About this Global Guide

This manual contains important instructions for Remote Display software that shall be followed during installation and maintenance of the software.

## 1.3 Document history

Revision number	Related sw. version	Date	Author
3	1.2.1	8.3.2023	Michal Slavata
2	1.1.0	7.12.2021	Michal Slavata
1	1.0.0	15.10.2020	Pavel Nepil

## 2 General description

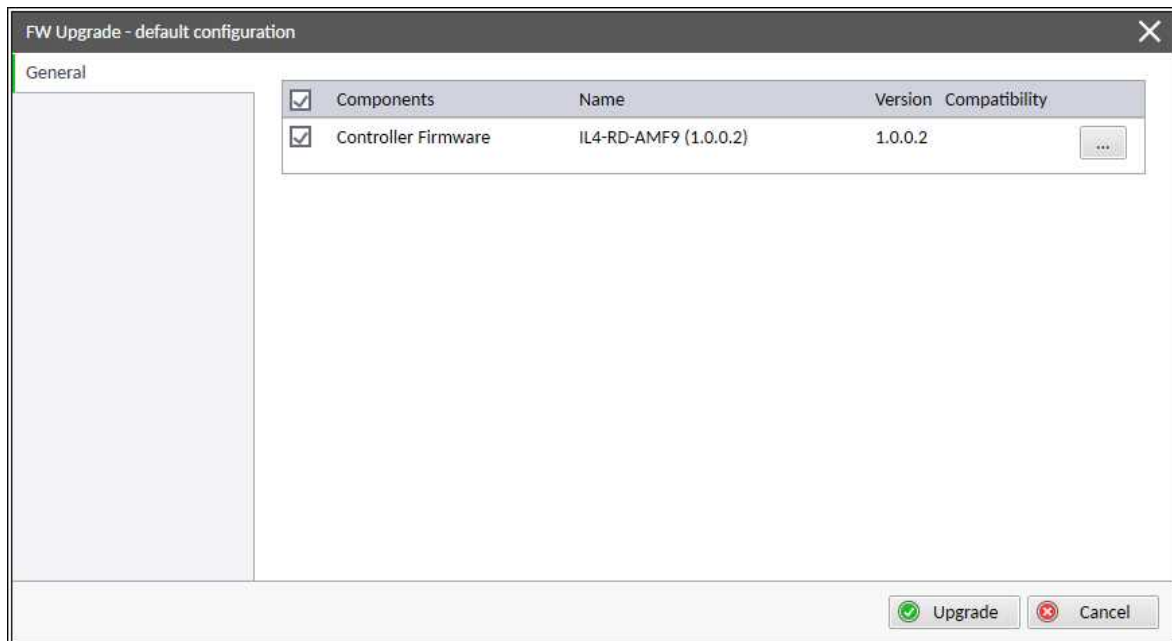
Remote display software works as "remote display and control" for the Master controller. Gen-set can be controlled using the Remote display and the Master controller simultaneously and independently. All Remote display screens (Measurement screens, Setpoint screens and History Log) display the same data as the Master controller. The front panel buttons on both controllers work the same way. All remote display LEDs show the same state as corresponding LEDs on Master controller.

**Note:** Some settings are not shared between display and control unit (setpoint **Backlight Timeout** (page 1) **Backlight Timeout**, Controller language and Controller user mode).

### 3 IL4-RD Firmware installation

The IL4-RD Remote display firmware is installed in the same way as any other IntelliLite 4 firmware using the IntelliConfig PC tool. Reverting the Remote display controller back to regular Gen-set controller is carried out the same way.

**Note:** IntelliConfig shows the most compatible and the most recent firmware as default option. Thus, it is necessary use "More options" (...) button to pick IL4-RD firmware for uploading to controller. (See details on picture below.)



**Note:** IL4-RD consists of firmware only, there is no archive included.

**Note:** When IL4-RD firmware is uploaded to controller there is only possible connect IntelliConfig using USB connection. IntelliConfig serves only for firmware update when connected to Remote display. There is no Master controller SCADA displayed, no possibility to adjust setpoints, display Values etc.

**Note:** Please refer to [IntelliConfig Global Guide](#) for details about firmware uploading to controller.

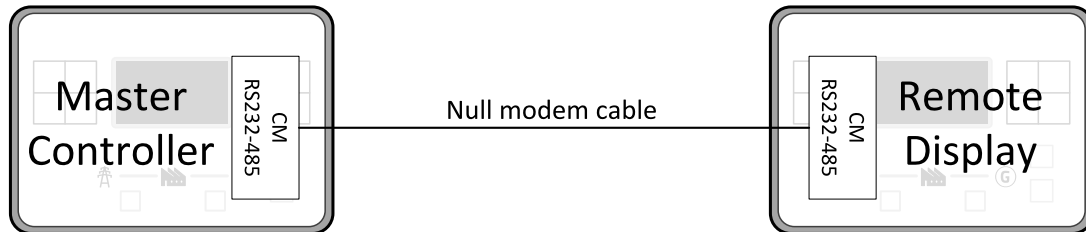
# 4 Wiring

IL4-RD can be connected to master controller via an onboard RS485 communication port or via the external RS232/RS485 communication ports on CM-RS232-485 communication module . It is possible to connect up to two three Remote displays to one Master controller, but each one needs to be using different communication interface. Connecting two or more remote displays to one communication line (e.g. RS485) is not possible. Using one Remote display it is possible to monitor only one Master controller at the time.

**Note:** *IL4 AMF8 and AMF9 do not have an onboard RS485 comm port.*

# 5 Interconnection variants

## 5.1 RS232

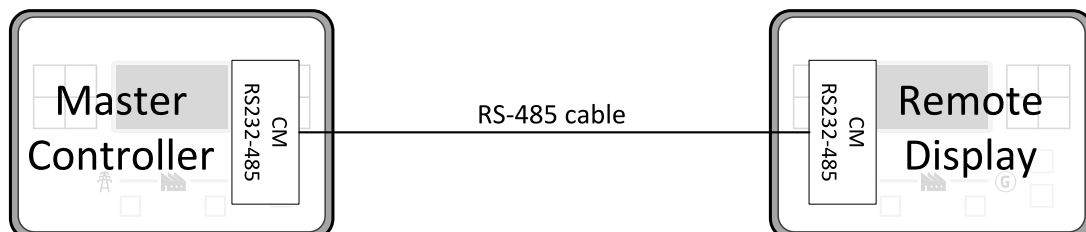


It is necessary to use CM-RS232-485 communication module on both the Master controller and the Remote display. COM 1 communication channel is used with these settings:

- COM 1 Mode: Direct
- COM 1 Communication Speed: 57600 or 115200 bps
- Controller Address: 1 – 32

The maximal distance between Master controller and Remote display is 10 m for RS-232 connection. It is recommended to use standard Null modem cable (crossover cable), although three wire (TxD, RxD, GND) RS-232 connection is sufficient for communication.

## 5.2 RS485



Any combination of internal RS485 port or external one on CM-RS232-485 communication module can be used for the Master and Remote Displays.

COM 2 communication channel is used with these settings:

- COM 2 Mode: Direct
- COM 2 Communication Speed: 57600 or 115200 bps
- Controller Address: 1 – 32

The maximal distance between Master controller and Remote display is 1200 m for RS485 connection. It is recommended to use shielded twisted-pair cables that comply with the EIA RS-485 standard to reduce interference and to achieve maximal distance.

## 5.3 Onboard RS485

The remote display can be connected by onboard RS485 communication port on both the Master controller and CM-RS232-485 Remote Display or a combination of these.

- RS485 Mode: Direct
- RS485 Communication speed: 57600 or 115200 bps
- Controller address: 1-32

The maximal distance between Master controller and Remote display is 1200 m for RS485 connection. It is recommended to use shielded twisted-pair cables that comply with the EIA RS-485 standard to reduce interference and to achieve maximal distance.

**Note:** Onboard RS485 is available only for AMF20, AMF25 and MRS16 applications.

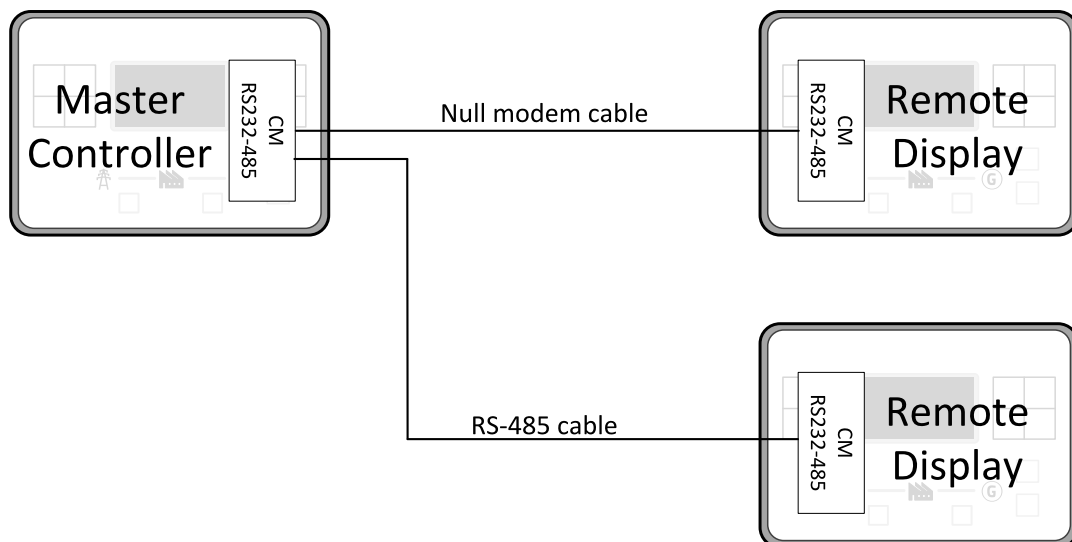
## 5.4 RS232 + RS485

### 5.4.1 Master Controller with Two Remote Displays

It is possible to combine two of the previous methods of interconnection and connect two Remote display to one Master controller concurrently. All parameters and settings are the same as mentioned above.

**Note:** Onboard RS485 and CM-232-485 communication module can be used to achieve both remote displays being connected via RS485 for IL4 MRS16 and IL4 AMF25.

**Note:** IL4 AMF8, IL4 AMF9 and IL4 AMF20 as master controller can only have up to two remote displays at the same time and will need to use RS232 combined with RS485.

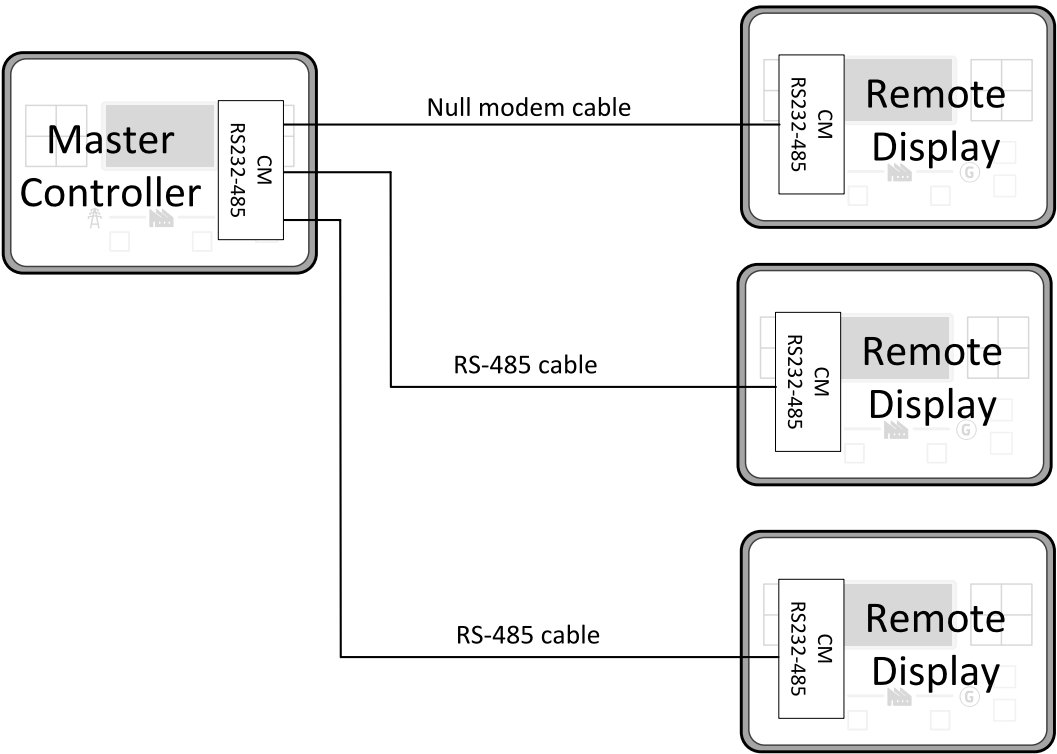




# 5.4.2 Master Controller with Three Remote Displays

It is possible to combine all of the previous methods of interconnection and connect three Remote display to one Master controller concurrently. All parameters and settings are the same as mentioned above.

**Note:** This is only possible if IL4 MRS16 or IL4 AMF25 is the master controller.



# 6 Connection process

After powering up, the Remote Display automatically tries to connect to the last known Master controller (if such configuration exists in Remote display). Otherwise the Remote display searches for any Master controller connected. It starts to search on internal RS485 line using Master controller address 1 – 32 and continues with COM 2 (RS485) and COM 1 (RS232). It starts to search on COM 2 (RS485) using Master controller address 1 – 32 and continues with COM 1 (RS232). The Remote Display tries two communication speeds 57600 bps and 115200 bps.

During this autodetection process the message "Trying to connect" is displayed on screen. This process takes approx. one minute.

When an incompatible configuration type is found in a detected controller, the message "Unknown cfg format COM x Addr yy" is displayed on screen for 5 seconds. Detecting continues with the next address in the range.

If detecting finishes with no compatible Master controller found, the message "No connection" is displayed on screen for 5 seconds. The detecting process starts from the beginning and continues until compatible a Master controller is found.

Unsupported types of controllers or controllers that are not properly communicating are skipped during the search.

# 7 Connection troubleshooting

There are a few reasons why the Remote display may not connect to the Master controller:

- An unsupported type of Master controller connected.
- Unsupported firmware in Master controller.
- Configuration table error in Master controller.
- Wrong settings of setpoint COM x Mode in master controller.
- Wrong settings of setpoint COM x Communication Speed in master controller.
- Wrong connection, wiring, or communication failure.

# 8 Function description

Remote display software works as "remote display and control" for the Master controller. Gen-set can be controlled using the Remote display and the Master controller simultaneously and independently. All Remote display screens (Information screens, Measurement screens, Setpoint screens and History Log) display the same data as the Master controller. The front panel buttons on both controllers work the same way. All remote display LEDs show the same state as corresponding LEDs on Master controller. User can switch screens, enter or set password, adjust setpoints, change language, change Configuration Level, change display contrast and view history records. Remote display also mirrors state of master's binary outputs. When binary output of master controller is active, also appropriate binary output of remote display is active. It is not possible to configure logical binary output functions on remote display's binary outputs.

**Note:** *It is recommended to use the same type and model of controller for Master and for Remote display. Only in such case is assured the proper function of all buttons, LED diodes and display.*

**Example:** When AMF controller HW type is used as a Master controller and MRS controller HW type is used for Remote display there is no possibility to control MCB in MAN mode as there is no MCB button on the MRS controller. Even though all these not recommended combinations may work, all of the limitations above must be considered.

Master device is always able to function without a connected Remote display. Disconnecting of the serial line between the Master controller and Remote display has no effect on the Master controller.

When the serial line between the Master controller and Remote display is disconnected, or communication cannot be established, Remote display shows its own Init screen with the message "Trying to connect" and all LEDs are off.

Once the Remote display finds compatible Master controller it shows message "Cfg processing" and downloads configuration table from master controller. After the configuration from Master controller is downloaded and the Remote display is reinitiated, jump to master controller's Main measurement screen and regular operation is started.

It is possible to switch to Remote display's own Init screen to check IL4-RD FW version and serial number of used controller and communication status by pressing and holding the Page button for more than 3 seconds.

# 9 Firmware compatibility

## 9.1 Remote Display

IL4-RD FW is able to be uploaded into the following controllers:

- > IntelLite 4 AMF25
- > IntelLite 4 AMF20
- > IntelLite 4 AMF9
- > IntelLite 4 AMF8
- > IntelLite 4 MRS16

**Note:** All controllers from IL4 family can act as Remote Display of master controller and will always be compatible with each other.

**Note:** If IL4 MRS16 is used as a Remote Display in AMF application, the user won't be able to see information about mains status and there will be no option to control MCB.

**Note:** It is not possible to use controllers from IntelGen4 200 and IntelATS 2 families as remote display.

## 9.2 Master controllers

Supported master controllers:

- > IntelLite4 family
- > IntelGen4 200 family
- > IntelATS 2 family