

IRIS-RS485



IRIS-RS485 – Getting started

IRIS RS-485 is part of the IRIS product series and is developed for relaying data via radio from RS-485 systems to other RS-485 systems or systems connected to other IRIS products. The IRIS series contains several models that provide solutions to all kinds of applications. All IRIS models can communicate with each other via radio - in pairs or in more complex radio networks.

IRIS-RS485 – Product description

IRIS-RS485 can be used with both RS-422 and RS-485 systems depending on the configuration. The most common use of IRIS-RS485 is a pair of IRIS-RS485 that relays data between two RS-485 systems. This is however not the only application where an IRIS-RS485 can be used. The data can be directed to a PC via an IRIS-RS232 or an IRIS-USB, to a database on the Internet via an IRIS-CUW or it can be used to control the outputs on an IRIS-IO. With functions like timers, counters and text matching the IRIS-RS485 can be setup to fit many different applications.



Getting started

Connect the serial interface (half duplex or full duplex, see picture below).

Connect the power supply. The polarity of the power does not matter.

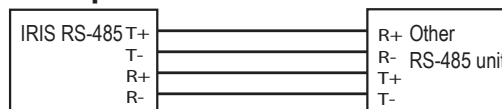
Connect the signal ground pin.

If needed connect the termination jumper. (See IRIS-RS485-Manual for more information)

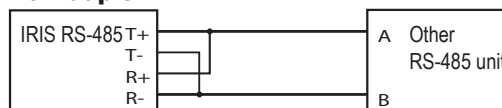
Place the IRIS-RS485 so that the antenna is not shielded.

Avoid metal plating close to and between the antennas.

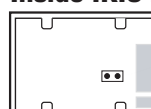
Full duplex



Half duplex



Inside IRIS RS-485



Receiver termination
(120 ohm)

IRIS-RS485

About the configuration

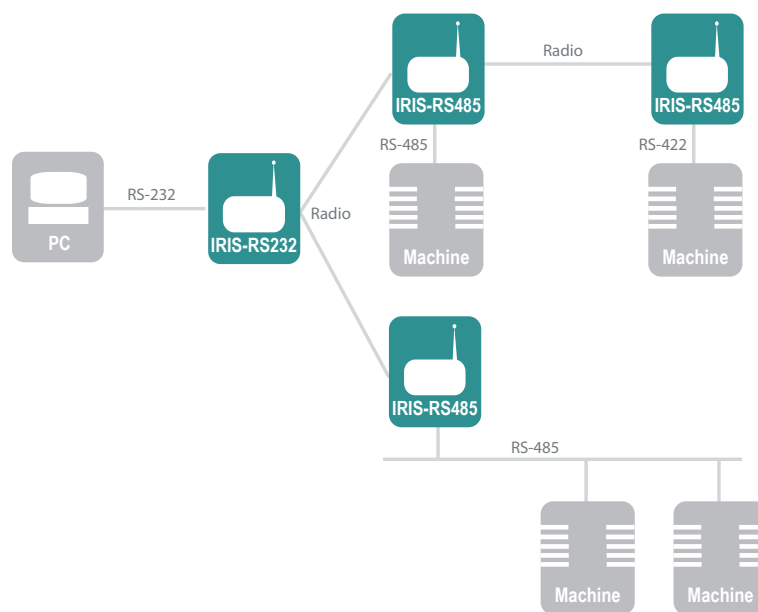
The setup is on delivery a standard setup made for a quick start and a basic system setup.

The serial interface is set to 9600 baud, 8 data bits, 1 stop bit, no parity, half duplex and end of data is detected with a timeout set to 50 ms.

The radio channel is set to channel 1 (433.075 MHz) and the IRIS-RS485 is set to send and receive broadcast messages. All data sent to the serial interface on IRIS-RS485 will with this setup be sent as broadcast messages over the radio. A broadcast message can be received of all IRIS-modules on the same channel, regardless of model, that are set up to receive broadcast messages.

All data received via the radio is sent to the serial interface for other system to collect.

No other functions are implemented in this setup but all settings can be changed using the IRIS-Configuration tool (see the CD for installation files).



Using IRIS-RS485 for other applications

The IRIS products are made for monitoring and controlling external system. The standard setup is of course not suitable for all applications so feel free to change the settings according to the current application. The original configuration file is available on the CD.

Examples on what can be done:

- The serial settings can be changed to fit the settings of the external system.
- The radio channel can be changed if there is interference from other equipment. All IRIS units must be set to the same channel to be able to communicate with each other.
- The destination of a message can be changed. A message can be broadcasted or sent with an address. If a message is broadcasted all IRIS units on the same channel that are set to receive broadcast messages will receive it and will be able to take proper actions. Only the intended IRIS unit will receive an addressed message and a receipt will be sent to the transmitter to verify that the message was delivered.
- The IRIS can detect predefined texts in messages, via both the serial interface and the radio, and take different actions depending on the text.
- Timers, counters and flags can be used to make a more flexible setup.
- Radio networks can contain several nodes where the IRIS units communicate with each other via other IRIS modules that are in between.

For more information about the configuration possibilities and how to setup the IRIS-RS485 see the IRIS-Configuration manual.

Troubleshooting

The two LED are used to indicate radio communication, power and malfunction.

No LED indicates radio communication on the transmitting IRIS. The IRIS either does not recognize the data on the serial port or that it does not how to handle it.

- Check the serial port connection. There are different ways to interpret the RS-485 standard so it could be necessary to switch + and -.
- Check that the serial communication settings are the same on both the transmitting system and the IRIS unit.
- Check that configuration handles message events via the serial interface.

The LED of the transmitting IRIS unit indicates radio communication but the LED on the receiving IRIS unit does not. The radio connection is not working properly.

- Check the radio link by moving the two IRIS units closer together and make sure that there is a free line of sight between them.
- Check the radio settings so that they are set to the same radio channel, that message events for radio communication are correct and that there are a link between the units either direct or via repeaters.

Both the transmitting IRIS and the receiving IRIS indicates radio communication but there is no data signal coming out on the serial bus. The IRIS is either not connected correct or it does not know what to do with the data.

- Check the serial port connection. There are different ways to interpret the RS-485 standard so it could be necessary to switch + and -.
- Check that the serial communication settings are the same on both the receiving system and the IRIS unit.
- Check that configuration handles message events via the serial interface.

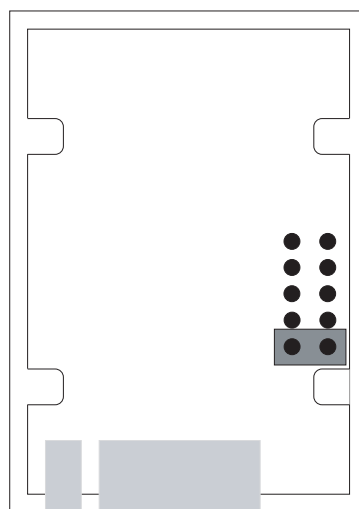
It is always possible to change the configuration back to the original configuration using the IRIS configuration tool. The original configuration file is found on the CD. The IRIS will only accept configuration files with the own ID or ID set to 0000000000.

If there's problem with re-configuration of the IRIS unit it can be reset.

- Disconnect the power supply.
- Open the box
- Set a jumper between the two pins closest to the LED in the 10 pins box header to the right.
- Connect the power supply.
- Disconnect the power and remove the jumper.
- Close the box and connect the power supply.
- The serial port is now set to 9600, 8 bits, 1 stop bit and no parity.
- Send the configuration file to the IRIS using the IRIS configuration program.

Change configuration via radio using another IRIS:

- The IRIS used to relay the configuration must have CRLF as End of data.
- Add the target IRIS as a lower unit to the IRIS used to relay the configuration.
- Make sure that relaying IRIS is set to the same radio channel as the target IRIS.
- Connect the serial cable and power supply to the relaying IRIS and the power supply to the target IRIS.
- Send the configuration file to the relaying IRIS and it will be sent to the target IRIS.



Inside the IRIS



Technical data

Radio communication:

Frequency:	433.050 - 434.775 MHz; 439.700 - 439.975 MHz
Channel pattern:	25 kHz channel spacing 70 channels from 433.050 to 434.775 MHz (12 channels from 439.700 to 439.975 MHz for the Swedish market)
Sensitivity:	-112 dBm @ 50 ohm
Modulation type:	FSK
Bit rate:	4800 bit/s
Range:	> 1 km (in line of sight)

Serial interface:

Level:	EIA 422/EIA485, RS-422/RS-485
Speed:	300-115200 Baud
Data bits:	7 or 8
Stop bits:	1 or 2
Parity:	Odd, even or none

Power supply:

Voltage:	12-24 VDC
Current consumption:	< 100 mA

Miscellaneous:

Size (without antenna):	70x95x30 mm
Temperature range:	0 – +55 °C

Factory settings

Radio communication:

Channel:	1
Message type:	Broadcast

Serial interface:

Speed:	9600 Baud
Data bits:	8
Stop bits:	1
Parity:	None
Mode:	Half duplex

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This radio equipment/product satisfies the significant requirements and other relevant stipulations of the "Guideline 1999/5/EG"



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