

IRIS-IO – Getting started

IRIS-IO is part of the IRIS product series and is developed for relaying data via radio to and from systems with electrical inputs and outputs to systems connected to IRIS-IO modules or 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-IO – Product description

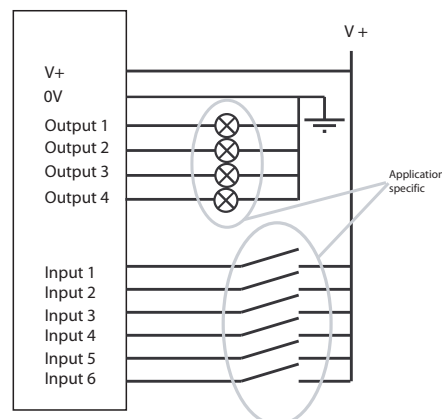
IRIS-IO can be used with different kind of electrical equipment for example relays, switches, sensors, LED and machines with digital and analogue outputs and digital inputs. The most common use of IRIS-IO is a pair of IRIS-IO that relays digital signals between two systems. This is however not the only application where an IRIS-IO 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 other IRIS-IO. With functions like timers, counters and text matching the IRIS-IO can be setup to fit many different applications.



Getting started

Connect inputs and outputs.
Connect antenna.
Connect the power supply.

Place the IRIS-IO so that the antenna is not shielded.
Avoid metal plating close to and between the antennas.



IRIS-IO

About the configuration

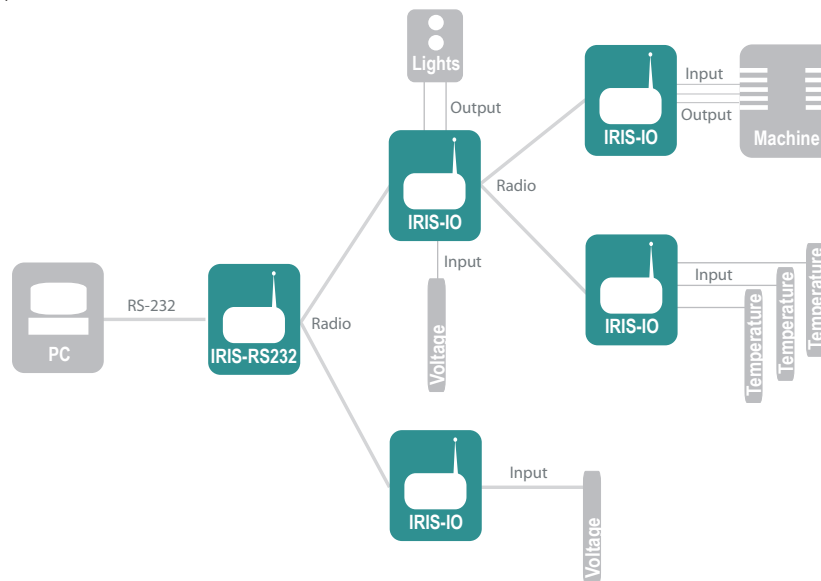
The setup is on delivery a standard setup made for a quick start and a basic system setup.

The inputs are set to work as digital inputs.

The radio channel is set to channel 1 (433.075 MHz) and the IRIS-IO is set to send and receive broadcast messages.

Every change on an input will generate a broadcast message that will change the corresponding output on the IRIS-IO that are listening. For an IRIS-IO to react it must be set to the same radio channel and set to receive broadcast messages.

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-IO 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 inputs can individually be set to work as either digital or analogue inputs.
- High and low for digital inputs can be set to match the input signals.
- Analogue inputs have two different limits that can be detected and the value of the signal can be read. The value can be scaled so that the value corresponds with for example a temperature from a sensor.
- 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-RS232 see the IRIS-Configuration manual.

Troubleshooting

The LED are used to indicate I/O status, power and radio communication.

No LED indicates radio communication on the transmitting IRIS. The IRIS does either not react on the event that is used to generate the radio package or the action is not connected to the event properly.

- Check that the event works and that it is connected to the right action. The easiest way to check that the event works is to trigger another action. For example set an output high and check the LED on the side of the IRIS-IO.

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 reaction on the expected event.

- Check that the event works and that it is connected to the right action. The easiest way to check that the event works is to trigger another action. For example set an output high and check the LED on the side of the IRIS-IO.

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.

To change the configuration file you will need either an IRIS with a serial interface or an IRIS-Evaluation board found in the IRIS-Starter kit.

Change configuration using an IRIS-Evaluation board:

- Open the IRIS-IO and move the IRIS-Base to the IRIS-Evaluation board
- Connect the serial cable and power supply
- Send the configuration file
- Move the IRIS-Base back to IRIS-IO

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.



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)

I/O:

Digital / analogue inputs	6
- Resolution	10 bits
- Range	0-30 VDC
- Input leakage	max 5 μ A
Digital outputs	4 (V_{max} = 30 VDC)
- Max output current	100 mA per output (resistive)

Power supply:

Voltage:	8 – 35 VDC / 10 – 28 VAC
Power consumption (no active input or output pins)	60 mA @ 12 VDC (transmitting)
Maximal power consumption	500 mA @ 12 VDC

Miscellaneous:

Size (without antenna):	23x82x91 mm
Temperature range:	0 – +55 °C

Factory settings

Radio communication:

Channel:	1
Message type:	Broadcast

I/O:

Inputs:	All digital
- Low	< 1 V
- High	> 2 V

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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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