



OPERATING MANUAL

AirQ 325 Control Board

v1.0

Wireless relay board with 4 relays and 4 opto-isolated inputs. AirQ 325 can be controlled by the Internet using an AirQ Networks control unit or interfaced by a sNET transceiver. AirQ 325 provides power consumption measurement of devices connected to its relays.

Specifications

Power supply	12VDC - Switching power supply is required												
Power plug	Barrel DC Jack; 2 pole terminal block												
Connectors	n°4 two pole input terminals n°4 three pole output terminal n°1 two pole power terminal n°1 DC Barrel Jack												
Inputs	n°4 digital inputs Accepted voltage range: 3-48VDC												
Outputs	n°4 SPDT Relays												
Power consumption measuring specifications	<table border="1"> <tbody> <tr> <td>Measuring range</td> <td>35 - 2300W @230VAC 20 - 1200W @120VAC</td> </tr> <tr> <td>Measuring precision</td> <td>10% / 35-100W @230VAC 10% / 20 - 50W @120AC</td> </tr> <tr> <td></td> <td>5% / 100 - 2300W @230VAC 5% / 50 - 1200W @120VAC</td> </tr> </tbody> </table>	Measuring range	35 - 2300W @230VAC 20 - 1200W @120VAC	Measuring precision	10% / 35-100W @230VAC 10% / 20 - 50W @120AC		5% / 100 - 2300W @230VAC 5% / 50 - 1200W @120VAC						
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DC Current measuring allowed	Yes												
Measuring type	RMS with zero crossing detection												
Relay Specifications	<table border="1"> <tbody> <tr> <td>Rated load (resistive / cosφ=1)</td> <td>10A @250 VAC (NO/NC) 10A @24 VDC (NO/NC)</td> </tr> <tr> <td>Rated carry current</td> <td>10A</td> </tr> <tr> <td>Max. switching voltage</td> <td>250 VAC 24 VDC</td> </tr> <tr> <td>Max. switching current</td> <td>10A</td> </tr> <tr> <td>Contact resistance</td> <td>100 mΩ max</td> </tr> <tr> <td>Life expectancy</td> <td>10M operations mechanical 100k at maximum load</td> </tr> </tbody> </table>	Rated load (resistive / cosφ=1)	10A @250 VAC (NO/NC) 10A @24 VDC (NO/NC)	Rated carry current	10A	Max. switching voltage	250 VAC 24 VDC	Max. switching current	10A	Contact resistance	100 mΩ max	Life expectancy	10M operations mechanical 100k at maximum load
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LED indicators	n°4 input n°4 output n°1 status												
Radio frequency	434 Mhz												
Operative distance	More than 500 meters in open space												
sNet Node Type	End Device - Router												
Dimensions	84mm x 86mm x 20mm												
Weight	140gr												
Operating temperature	-10 +55°C												
Last hardware release	AirQ 325 - r1.3												
Last firmware release	sNET protocol v. 5.0												
Certifications	RoHS Compliant; CE												

Technical information



⚠ DANGER

Risk of electrical shock! All operations on this device must be performed by qualified personnel. Even when the device is off, voltage may be present at its terminals. Any works introducing changes into the configuration of connections or the load must be always performed with disconnected voltage.



⚠ READ CAREFULLY

This device needs a 12VDC power adapter to work properly. You mustn't connect it to the main power!

When connecting a device to relays check if its load doesn't exceed the maximum allowable load for each relay (10A). If the maximum load is exceeded, relay can be damaged. Pay attention especially when driving inductive loads (eg. motors). Warranty doesn't cover this type of events.

General description

AirQ 325 is a wireless controller board that allows to control a wide array of devices. It also interacts with user as well as with other devices through isolated inputs. AirQ 325 provides 4 relays that can be used to turn on and off lights, to control motors, pumps, valves among and so forth. It also provides 4 opto-isolated inputs that allow to detect the state of external devices or to interact with user through switches. Since all AirQ Control Units can be accessed by the web, AirQ 325 is a really flexible solution to control devices through the internet.

AirQ 325 provides power consumption measuring of devices attached to its relays, allowing to keep track of energy costs. This feature is also useful to check if a devices is working or not. Like all AirQ Networks boards, AirQ 325 is fully integrated into AirQ Networks platform. So it can take advantage of the flexible rule system equipped with all AirQ Control Units in order to build complex applications in just few clicks. AirQ 325 boards are fully accessible by modern mobile devices (iPhone, iPad, Android, Windows Mobile).

AirQ 325 provides two independent relays that can be used to control external devices such as:

- Lights
- Motors
- Valves
- Electronic door locking
- Alarm siren
- Devices controlled by discrete signal

AirQ 325 is also equipped with 4 opto-isolated inputs that allow to interact with users and other devices, such as:

- Switches
- Alarm systems
- PLC systems that react to discrete signal
- Industrial control boards

For more example applications, visit <http://www.airqnetworks.com>

Device pairing

Before AirQ 325 Control Board can be used, it has to be paired to the control unit.

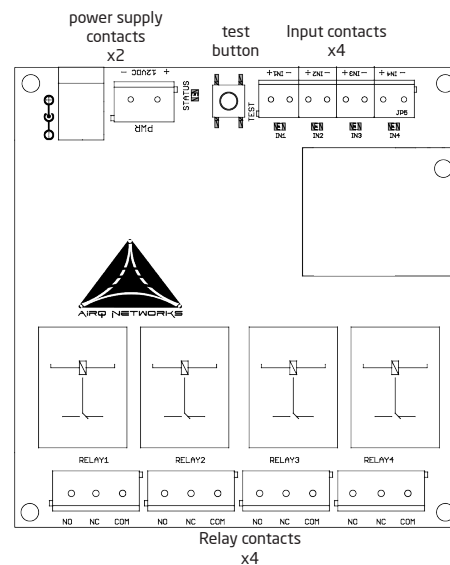
First time you turn on the AirQ 325 control board, status LED will blink repeatedly. It indicates that device is not paired.

To pair the device:

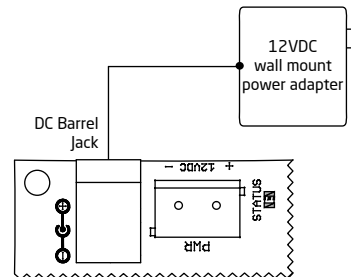
1. access with browser to control unit web interface;
2. from the interface, log in and access to **Setup -> Device pairing**;
3. click on **Start device pairing** to go in pairing page;
4. In the page you can see a box and **Start device pairing** button; click on it to put control unit in learning mode;
5. During the pairing a list of paired device will appear in the box; when control board description and id appear in the box and the status LED stops blinking, the device is paired.

Assembling the board

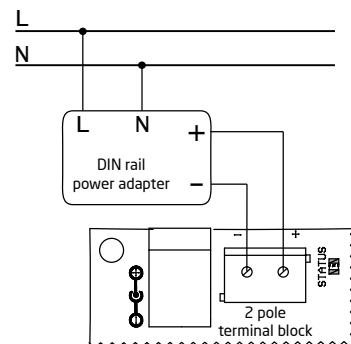
Control board overview



Powering the board using DC Barrel Jack



Powering the board using 2 pole terminal block



⚠ READ CAREFULLY

A > 1Ah switching power adapter is strongly recommended to power up the board.

Board installation guidelines



⚠ READ CAREFULLY

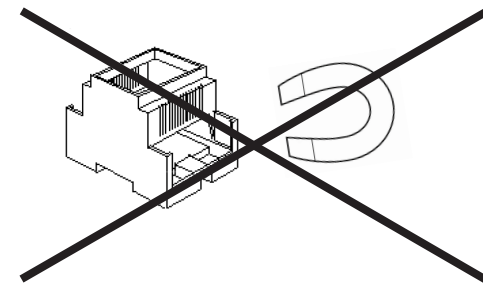
This paragraph contains important information about how to install the board correctly. A wrong installation could cause poor power consumption measuring.

AirQ 325 keeps track of power consumption using sensors that respond to magnetic field generated by the current flowing inside wires. This means that these sensors are sensible to magnetic coupling. Improper installation of the control board could lead to wrong power consumption measurement.

To achieve the best precision, please follow these installation guidelines.

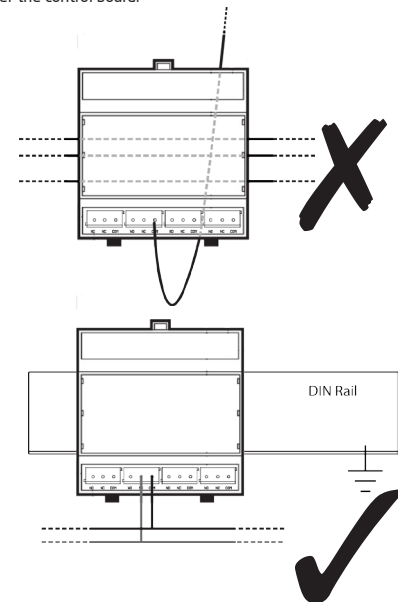
AVOID TO PLACE THE BOARD NEAR SOURCES OF MAGNETIC FIELDS

When installing the board, ensure that it isn't placed near sources of magnetic fields like magnets and other ferromagnetic materials. Please, keep track that some building materials could be composed of magnetic materials.



DO NOT PLACE ELECTRICAL WIRES ABOVE/UNDER THE BOARD

When placing the board inside electrical box, do not place electrical wires above or under the control board.



CONNECT METALLIC PARTS TO EARTH

Ensure that all metallic parts inside electrical box (DIN rails, guides, etc.) are connected to the earth correctly.

Linking Inputs to Outputs

It's possible to link inputs to corresponding relays, allowing to turn on/off a relay each time the corresponding input changes its state. For example, if IN1 changes its state (that is, goes ON or OFF), the RELAY1 inverts its state (that is, if is ON goes OFF and vice versa). This feature is called I/O linking.

This feature is especially useful when user wants to control relays status both locally (e.g., from a switch) and remotely (from an AirQ Networks control unit).

To enable/disable I/O linking, the following procedure must be followed:

- Turn AirQ 325 control board ON.
- Ensure that it's connected to control unit (STATUS led ON and not blinking).
- Press TEST button and leave it pressed for 5 seconds.
- Leave TEST button

If STATUS led blinks for more than 2 seconds, I/O linking is ON. If STATUS led blinks for less than 1 second, I/O linking is OFF.

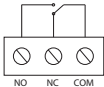
Example applications



READ CAREFULLY

The following schematics are just examples. The wiring depends on the specific device interfaced to the control board.

Relay connector detail scheme

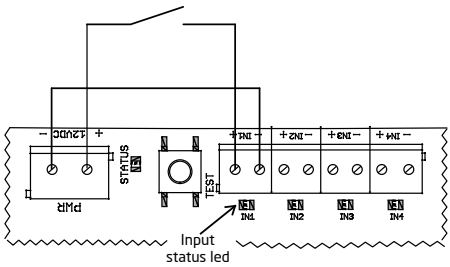


Interface a switch



WARNING

Always respect polarity (+/-) when connecting inputs. If polarity isn't respected, the device could be damaged!

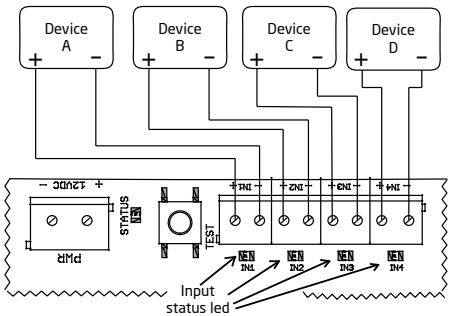


Interface a device with DC output

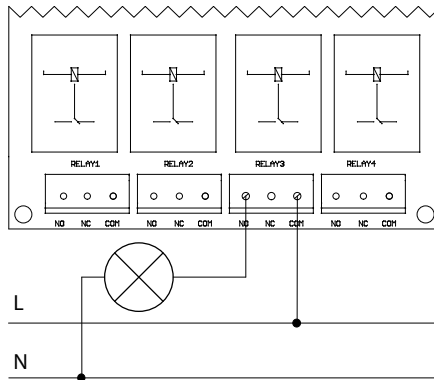


WARNING

Always respect polarity (+/-) when connecting inputs. Moreover, check if the device output voltage is compatible with allowable input voltage range (3-48VDC). If polarity isn't respected, the device could be damaged!



Control a light with a relay

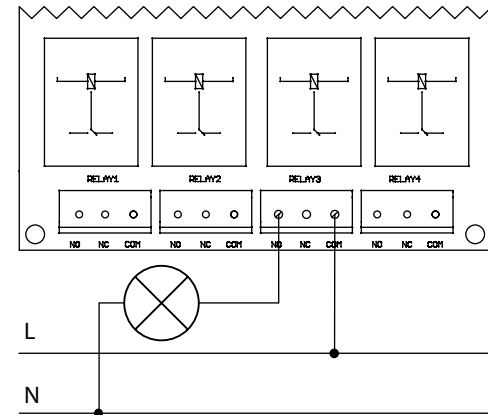
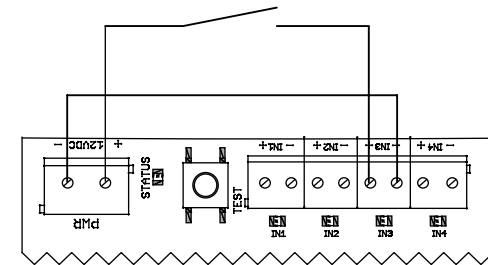


Control a light both from a switch and from the control unit

The following schema shows how to control a light both from a local switch and from an AirQ Networks control unit. This wiring schema assumes that I/O linking is enabled to work properly (see "Linking Inputs to Outputs" paragraph).

With this schema, every time the status of IN3 input is changed, the RELAY3 inverts its state (it goes from OFF to ON or vice versa). User can change the relay status from an AirQ Networks control unit at the same time.

This configuration is especially useful to drive room lights both from room switches and an AirQ Networks control board.



Control a light from multiple switches and from the control unit

The following schema shows how to control a light from multiple switches. In this case, a step relay is used to change IN3 status. The step relay is controlled from three different switches (but there isn't a fixed number of switches that can be used). This wiring schema assumes that I/O linking is enabled to work properly (see "Linking Inputs to Outputs" paragraph).

With this schema, every time the status of IN3 input is changed, the RELAY3 inverts its state (it goes from OFF to ON or vice versa). User can change the relay status from an AirQ Networks control unit at the same time.

This configuration is especially useful to drive room lights both from room switches and an AirQ Networks control board.

