



Ins-30095-US Wireless reader modules

Technical Support



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Technical help is available: Monday - Friday from 5am - 5pm PST / 8am - 8pm EST

Documentation on all Paxton Access products can be found on our web site - <http://www.paxton-access.com/>

Operation

The Net2Air wireless reader modules consist of two parts. The ACU module and the Remote module. The ACU module is plugged into the reader port of the control unit. The Remote module is located at the distant location and contains a reader port and a lock relay that replicates the switching of the ACU's own relay.

A 12V DC power supply is required for the remote module. This may also be used for lock power.

The typical range in an office environment is 5 yards. Where there is clear 'line of sight' across an open space, (warehouse roof void, car park, etc) a range of 30 yards is possible. (See Wireless limitations)

ACU module

This module plugs directly into the reader port on the ACU. If the relay position is also to be repeated by the remote module a VOLT FREE loop connection should be made between the relay condition input and the COM and NO contacts on the controller relay. (See Wiring section)

NOTE: The module provides the power for this detection circuit. No voltage or diode should be connected at the ACU control relay or either PCB may be damaged.

LED indications

| | |
|-------|--|
| Blue | Net2Air network activity (Transmit or Receive) |
| Amber | Mode - The system is unlocked to allow a remote module to be registered. |
| Green | A token has been presented at the remote module. |

Remote Module

This module repeats the basic input and output functions of the ACU.

The unit has a reader port (8 way plug and RJ45), power input and relay connection. Mount the unit and then wire in the remote equipment (reader, lock, etc). A suitable 12V DC power supply is also required.

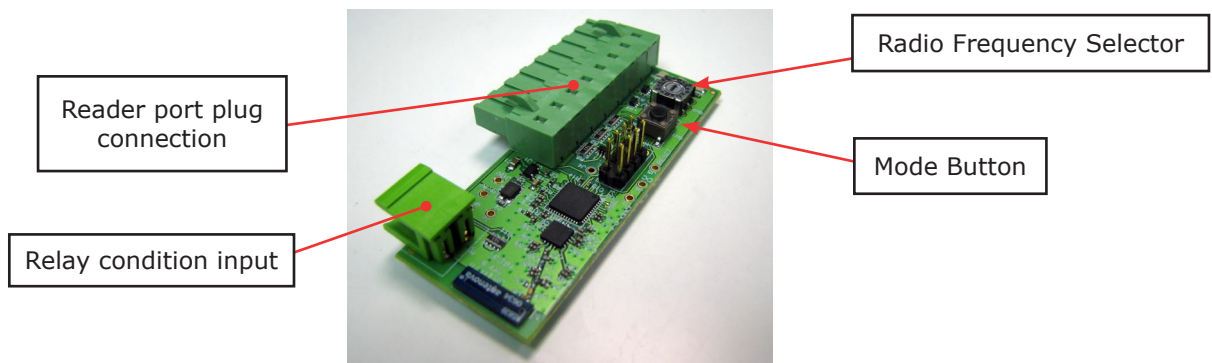
Cable extensions

Readers can be extended using Belden CR9540 10-core overall screened cable. The maximum length is 100 yards.

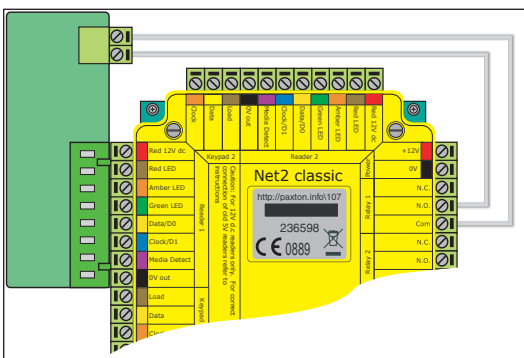
LED indications

| | |
|-------|--|
| Red | Red reader LED |
| Amber | Amber reader LED |
| Green | Green reader LED |
| Amber | Relay activated (COM / NO contacts closed) |
| Blue | Net2Air network activity (Transmit or Receive) |
| Green | PCB Power |

Wiring

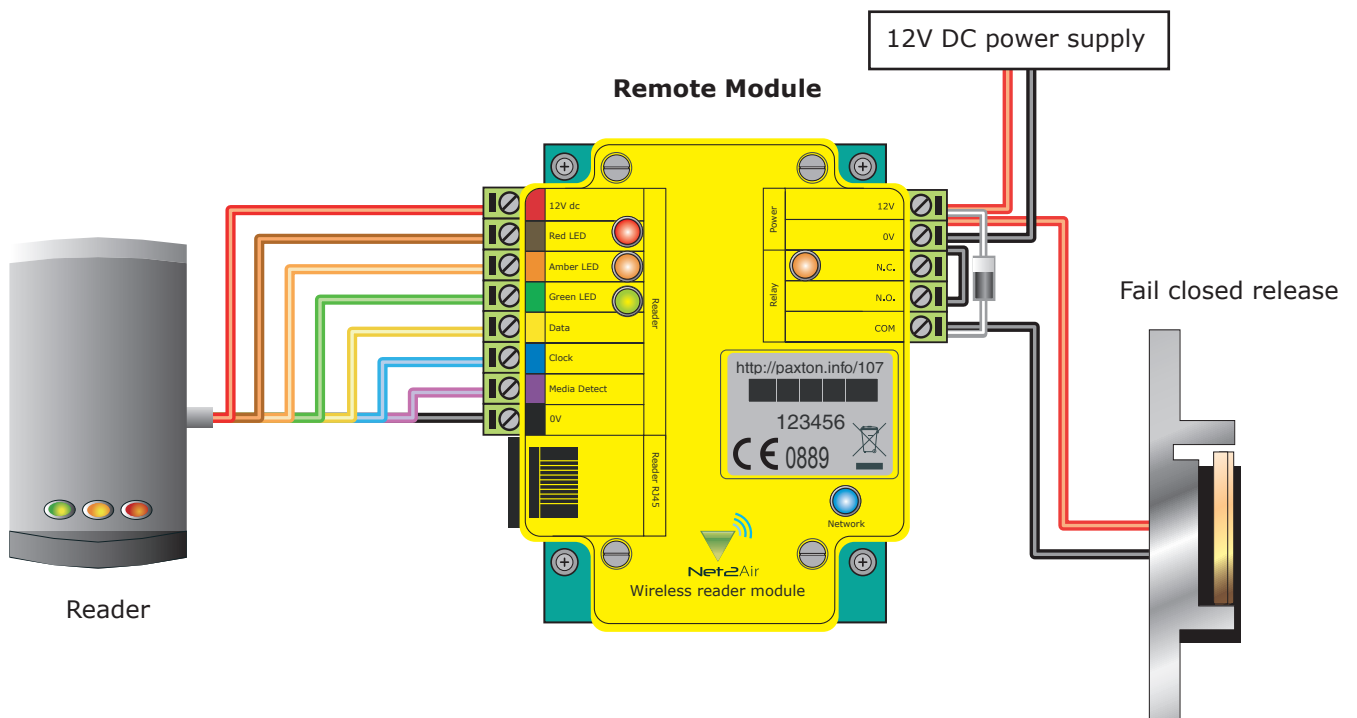


ACU Module



Wire the relay condition input across the COM / NO of the relay to be monitored. This will vary with ACU style.

NANO - Do NOT use the powered Lock connection on this ACU. The module monitors volt free relay connections.



The lock is wired across 12V and COM. A 0V link is then required to complete the circuit. This will be wired from 0v to NO or NC depending on lock type (Fail Open / Fail Closed)

A diode is supplied which should be fitted across 12V and COM (Silver end to 12V) to protect the relay contacts.

Installation

Power up the remote unit and the 3 LED's on the reader (repeated next to the reader port on the module) will cycle showing that no ACU module is currently paired with this unit. The Blue network LED will flash indicating that the module is looking for an ACU module to pair with.

Plug in the ACU module and power up the controller. the Blue LED will start to flash, indicating that it is searching for remote modules.

Press the button on the ACU module to turn on the Mode LED (Amber). This unlocks the system to register any remote module that is not already paired. When this is successful, the remote module reader LED's will stop cycling and display a steady indication.

To secure the system, the button on the ACU module should be pressed once again to turn off the Mode LED. This will also happen automatically after 10 minutes.

Multiple unit installation

One ACU module is able to register up to 7 remote modules. Each module should be powered up in turn and will be registered automatically by the ACU module, providing that you have set the Mode LED to be on.

DO NOT alter the rotary switch setting unless there is radio interference. (See later notes). This switch is used to alter the radio frequency used by Net2Air and is NOT a unit selection switch.

Loss of signal

The system uses a 5 second heartbeat to confirm that the two modules are still paired successfully. If this check fails, the reader LEDS will cycle while it tries to re-establish the link. If this is a regular occurrence, the modules may need to be re-sited to rectify this situation.

Loss of power

If there is a power failure at either module, they will automatically re-establish communication once the power has been restored. The relay in the remote module will RELOCK while there is no communication taking place.

Compatible with hands free tokens

Where hands free operation is also required, the hands free interface must be installed between the P series reader and the wireless remote module. (for wiring, see instructions included with the hands free interface)

During installation, allow the hands free interface to upgrade the P series reader to hands free operation. Once this has been done, any further LED indications will be as per this document.

Wireless limitations

All wireless communication will be influenced by the 'Multi path' effect. In essence it is one radio signal being split into several signals each time it is reflected by an object. These signals arrive at slightly different times at the receiver which then has difficulty in determining the content of the original data.

Floors, ceilings, desks, shelving etc will all contribute to these reflections and so the following general rules should be adopted to reduce this effect to a minimum.

- In an office environment, you should mount the modules mid way between the desk height and the ceiling. This will minimise the reflections from either surface. With higher ceilings, mounting a module one arms length above head height is a good guide. This keeps the signal above human traffic and also avoids surface reflections.

- Avoid corner or 'dead end' locations as the signal will be reflected by the multiple surfaces.

- Where possible, mount module pairs on walls that are facing each other as this maximises the 'line of sight' that can be achieved.

Microwave ovens, bluetooth and wi-fi networks, halogen display lighting and other high energy devices can all interfere with wireless communication. Try to mount these modules away from such sources.

Fixed obstructions. These will be walls, racking, cabinets, etc. They are often made of metal or have a metal reinforcement that will block the data signal.

Moveable obstructions. These include storage bins, vehicles, people, etc. You need to be aware of this if traffic levels vary on a daily basis. Again we are trying to maintain a clear line of sight between the two radio modules.

Radio frequency

The radio frequency channel used for the Net2Air transmissions can be changed on the ACU module by means of a rotary switch. This does NOT need to be changed where multiple units are in use on the same site. It provides alternative channels where RF interference is suspected as causing difficulties in maintaining a reliable radio signal.

| Switch position | GHz | IEEE 802.15.4 channel |
|-----------------|-------|-----------------------|
| 0 | 2.405 | 11 |
| 1 | 2.41 | 12 |
| 2 | 2.415 | 13 |
| 3 | 2.42 | 14 |
| 4 | 2.425 | 15 |
| 5 | 2.43 | 16 |
| 6 | 2.435 | 17 |
| 7 | 2.44 | 18 |

| Switch position | GHz | IEEE 802.15.4 channel |
|-----------------|-------|-----------------------|
| 8 | 2.445 | 19 |
| 9 | 2.45 | 20 |
| A | 2.455 | 21 |
| B | 2.46 | 22 |
| C | 2.465 | 23 |
| D | 2.47 | 24 |
| E | 2.475 | 25 |
| | | |

Data Reset

Either unit can be cleared of its network settings should it be needed in another location. Hold down the PCB push button while powering up the unit.

Specifications

| Environment | Min | Max | |
|---------------------------|----------------|------------------|------------|
| Operating temperature | -20 °C (-4 °F) | +55 °C (+131 °F) | |
| Distance between modules | | 30 yards | |
| Waterproof | | | No |
| Electrical | Min | Max | |
| Voltage | 9V DC | 14V DC | |
| Current - Remote Module | | 600 mA | |
| Current - ACU Module | | 500 mA | |
| Carrier frequency | | | 2.4 GHz |
| Clock and data bit period | | | 600 µs |
| Dimensions | Width | Height | Depth |
| Remote Module in Housing | 4 3/4 inch | 4 3/4 inch | 1 1/2 inch |
| ACU Module | 2 3/4 inch | 1 1/2 inch | 1/2 inch |

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Further information on how to purchase Installer Tools is available at: <http://paxton.info/841>

This product is not suitable for retail sale. All warranties are invalid if this product is not installed by a competent person.