

Cardax Prox Plus Mifare Reader



CAUTION

This equipment contains components that can be damaged by electrostatic discharge. Ensure both you and the equipment are earthed before beginning any servicing.



Before you begin

Unpack the Prox Plus Mifare reader and check that you received the following items:

- 1 x Base plate
- 1 x Reader assembly
- 1 x Interconnect board
- 1 x Four-pin Molex 6471 crimp-terminal socket equipped with grommet and 400 mm flexible cord

- 4 x Self-tapping pan-head screws
- 4 x 10 mm plastics screw caps
- 1 x M4 x 12 tamper-resistant Torx-head machine screw

Power supply requirements

Each Prox Plus Mifare reader consumes 200 mA from a 13.6 V $\pm 15\%$ DC supply.

Use a linear-regulator power source.

Note:

Switch mode power supplies are not recommended as they may reduce the read range of the Prox Plus Mifare reader.

Firmware

The reader firmware has two variants. These are set out in the table.

Firmware identification	Capability
vR1.06 and earlier	Reads Philips Mifare 1K cards.
vR2.05 and later	▪ Reads Philips Mifare 1K cards ▪ Reads all sectors of Philips Mifare 4K cards

Depending on the type of firmware, there is a difference in the sequence displayed on the reader's screen after power has been applied.

vR1.nn

After power has been applied,
the reader:

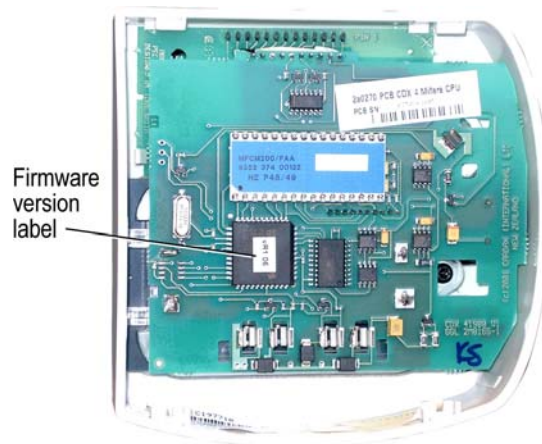
- Beeps
- Displays each of its icons in sequence
- Displays the secure icon .

vR2.nn

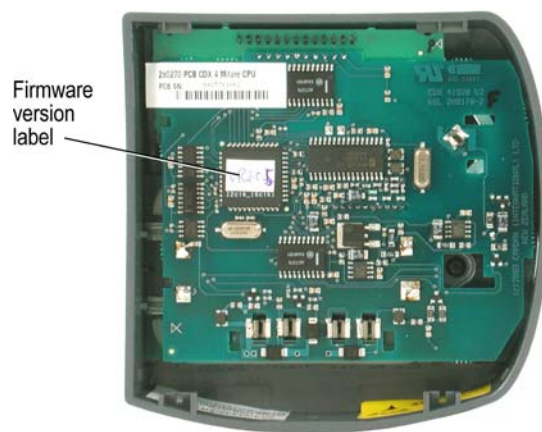
After power has been applied,
the reader:

- Beeps
- Displays each of its icons in sequence
- Displays each of its icons in sequence a second time
- Displays all icons simultaneously
- Displays a blank screen for about two seconds
- Displays the secure icon .

The version of firmware used by the reader is shown on a label attached to the central processor integrated circuit. The diagrams below show the location of the label for both variants of the reader.



(MFCM 200)



(MFRC500)

Cabling

The Prox Plus Mifare reader uses the Cardax IV communications system. It can be connected to the following equipment:

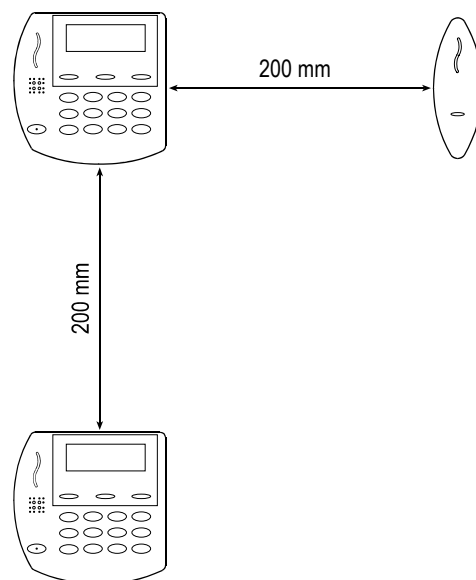
- Cardax FT Controller 3000
- Cardax FT Reader I/O Interface
- Cardax FT URI

Use 4 core, 0.2 mm² (AWG 24) cabling with a maximum nominal capacitance of 120 pF/m.

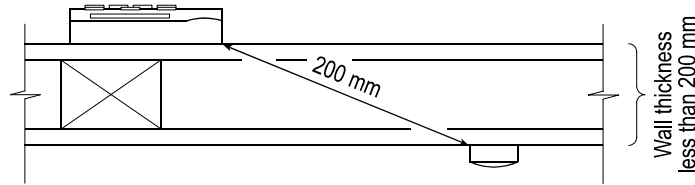
With this type of cable, the maximum distance between the Prox Plus Mifare reader and the device to which it connects is 200 m (650 ft).

Distance between proximity readers

The distance separating any two proximity readers must not be less than 200 mm in all directions.



When mounting a proximity reader on an internal wall, check that any reader fixed to the other side of the wall is not less than 200 mm away.



Attaching the base plate

Note:

The Prox Plus Mifare reader has been designed to metric specifications. Any imperial measurements shown in this document are approximate.

The Prox Plus Mifare reader is designed to be mounted on any solid flat surface including metal surfaces.

The recommended mounting height for the Prox Plus Mifare reader is 1100 mm from floor level to the centre of the reader device. However this may vary in some countries and you should check local regulations for variations to this height.



Drill a 20 mm (3/4 inch) diameter hole for the base extrusion through or into the mounting surface to a minimum depth of 40 mm (1½ inches).

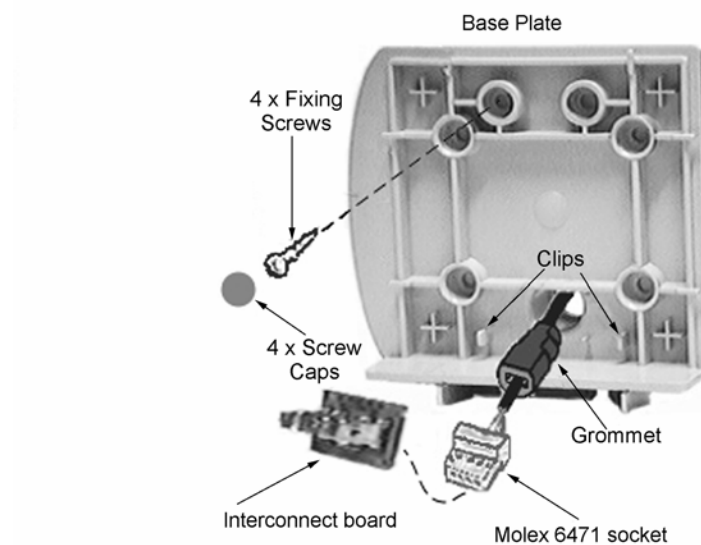
Run the building cabling through the base.

Press the base extrusion into the 20 mm (3/4 inch) hole and secure the base to the mounting surface using the four fixing screws.

Fit the screw caps over each fixing screw. The screw caps prevent water from entering the reader via the fixing holes. The caps must be installed for the Prox Plus Mifare reader to comply with the environmental specification.

Note:

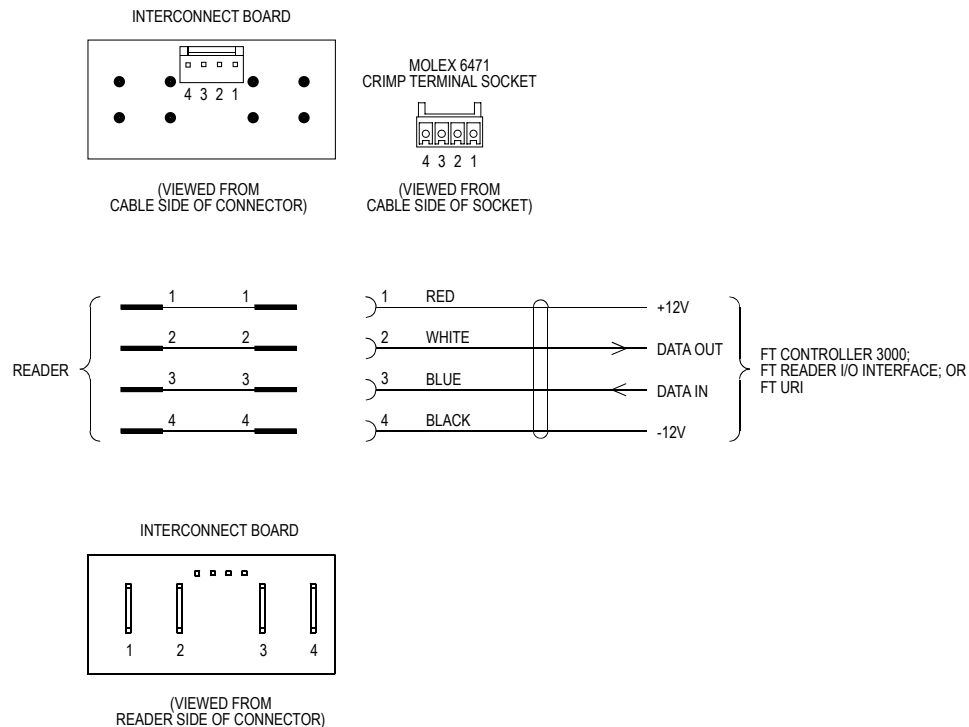
It is very important that the base of the reader is flush with and tight against the mounting surface. If you are mounting the Prox Plus Mifare reader on a rough surface you should make the surface as smooth as possible under the reader and up to 25 mm (1 inch) around the reader.



Note:

The grommet through which the cables feed into the base of the Prox Plus Mifare reader helps to keep the device waterproof.

Connections



You can connect the building cable to the reader in either of two ways:

- use the four-pin socket and cord supplied with the reader and join the cord to the building cabling; or
- provide your own Molex 6471 crimp terminal socket and terminate the building cable directly to it.

In either case, ensure that you use the socket grommet supplied with the reader.

If you supply your own socket, use the cable terminating tool. The tool has a head (Part No. C861145) and handle (Part No. C861115). Pin number 4 of the socket feeds into the cable terminating tool first.

The other end of the building cable connects to one of the following:

- Cardax FT Controller 3000
- Cardax FT Reader I/O Interface
- Cardax FT URI

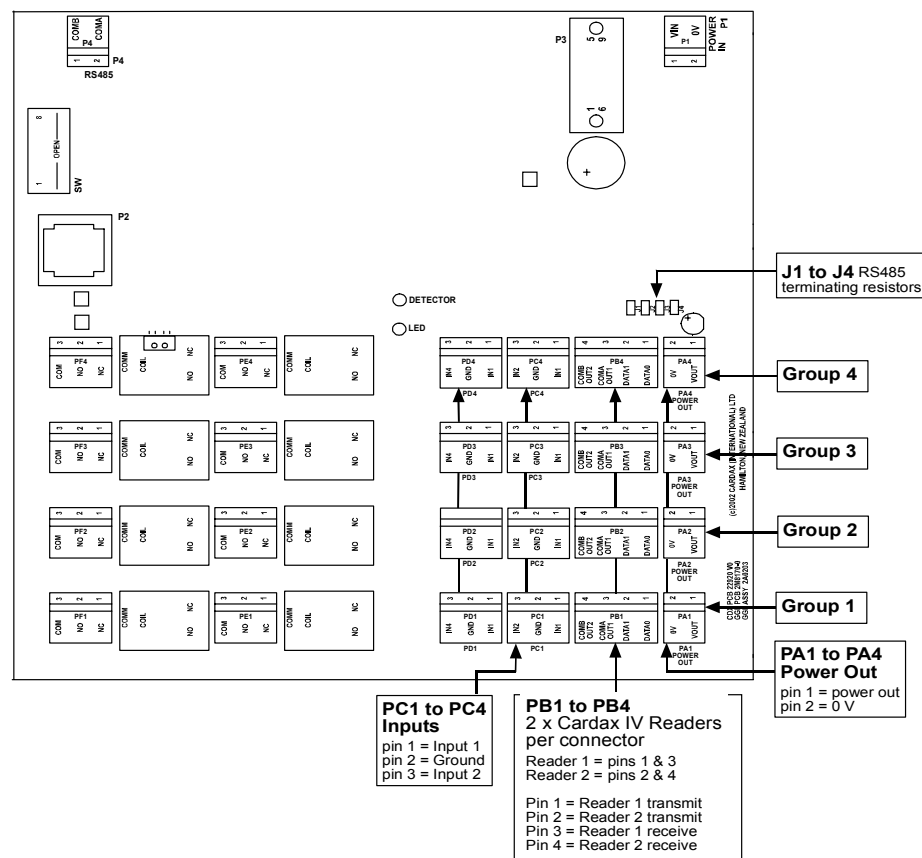
Connecting to the Cardax FT Controller 3000

The Cardax FT Controller 3000 interfaces the following types of reader into the Cardax FT Command Centre system:

- Cardax IV readers, including Prox Plus Mifare readers
- Wiegand readers

Each Cardax FT Controller 3000 can interface up to eight Prox Plus Mifare readers into the Cardax FT Command Centre system.

The ports to which the Prox Plus Mifare reader can connect are set up as four distinct groups (numbered 1 to 4). Each group provides connection for two Prox Plus Mifare readers or other Cardax IV readers. Refer to the following diagram for the location of the ports on the Cardax FT Controller 3000.

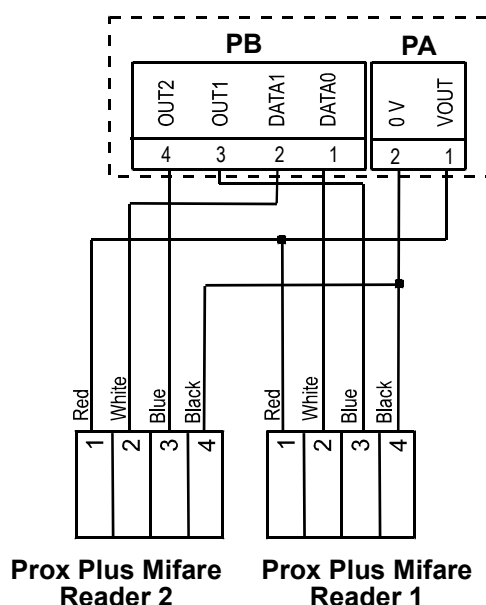


Make the connections from the Prox Plus Mifare reader to the Cardax FT Controller 3000 as shown:

Controller 3000

Group (x4)

PB1 and PA1... to... PB4 and PA4



Note:

Within each group, you cannot mix Cardax IV readers with Wiegand Readers. This is because connecting one Wiegand reader requires all four pins on plug PB. For example, if you connect a Prox Plus Mifare reader to Port 1 of Group 1, Port 2 of Group 1 can only connect to another Cardax IV reader.

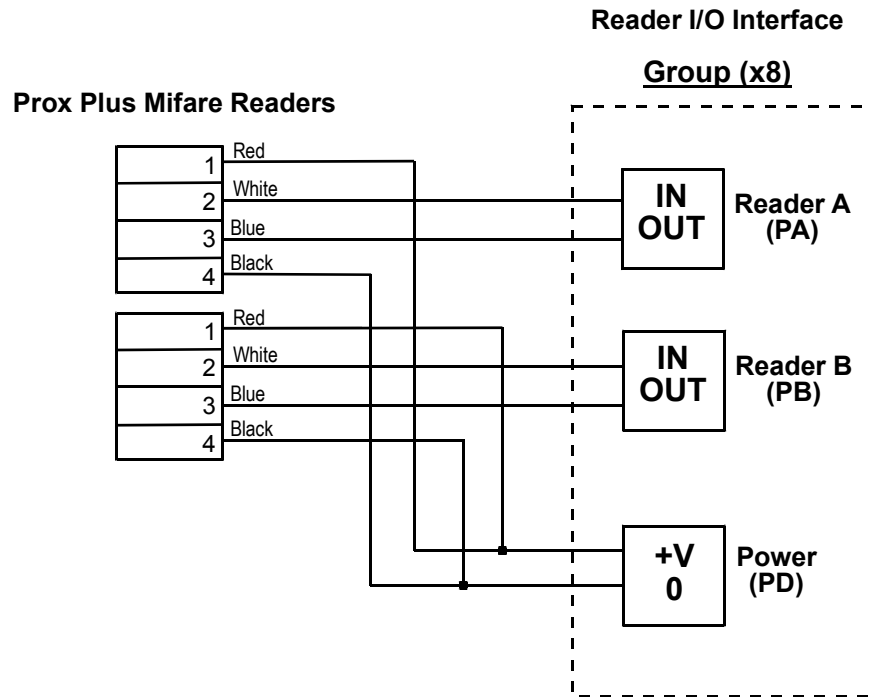
The terminating resistors (J1 for Group 1, J2 for Group 2, etc.) must NOT be fitted for those groups to which Prox Plus Mifare readers are connected.

Connecting to the Cardax FT Reader I/O Interface

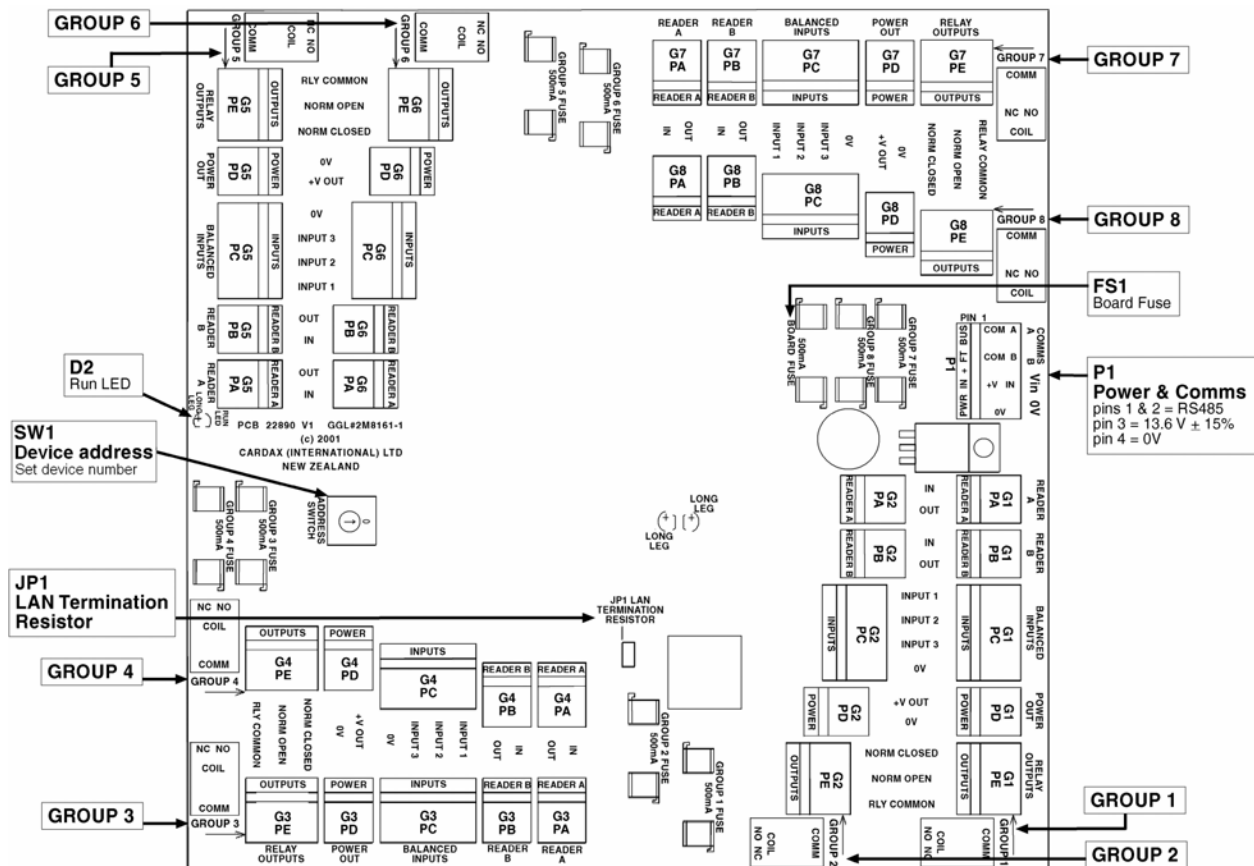
The Cardax FT Reader I/O Interface has connections for up to sixteen Prox Plus Mifare readers or other Cardax IV readers.

The Prox Plus Mifare reader connects to either plug PA or PB in Groups 1 to 8.

Make the connections from the Prox Plus Mifare reader to the Reader I/O interface as shown:

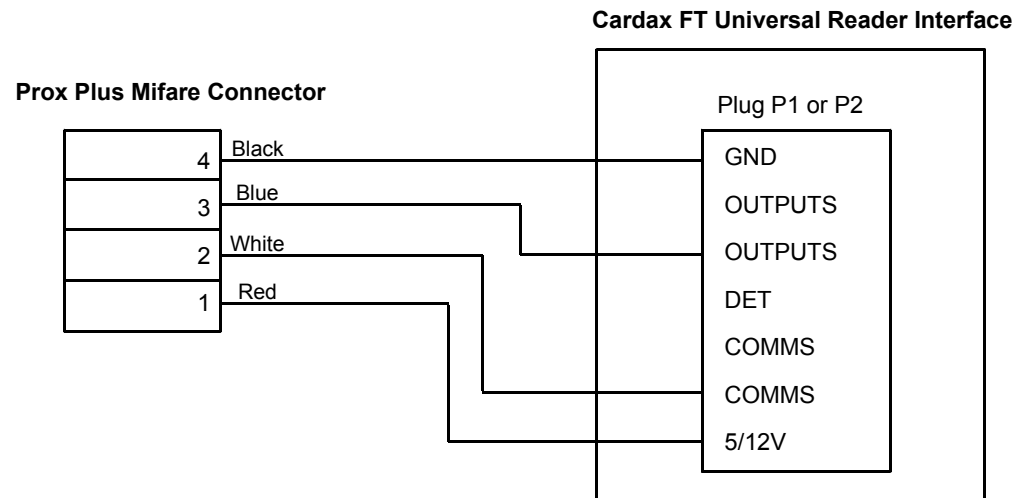


For the location of the plugs on the Reader I/O Interface, refer to the component layout diagram:

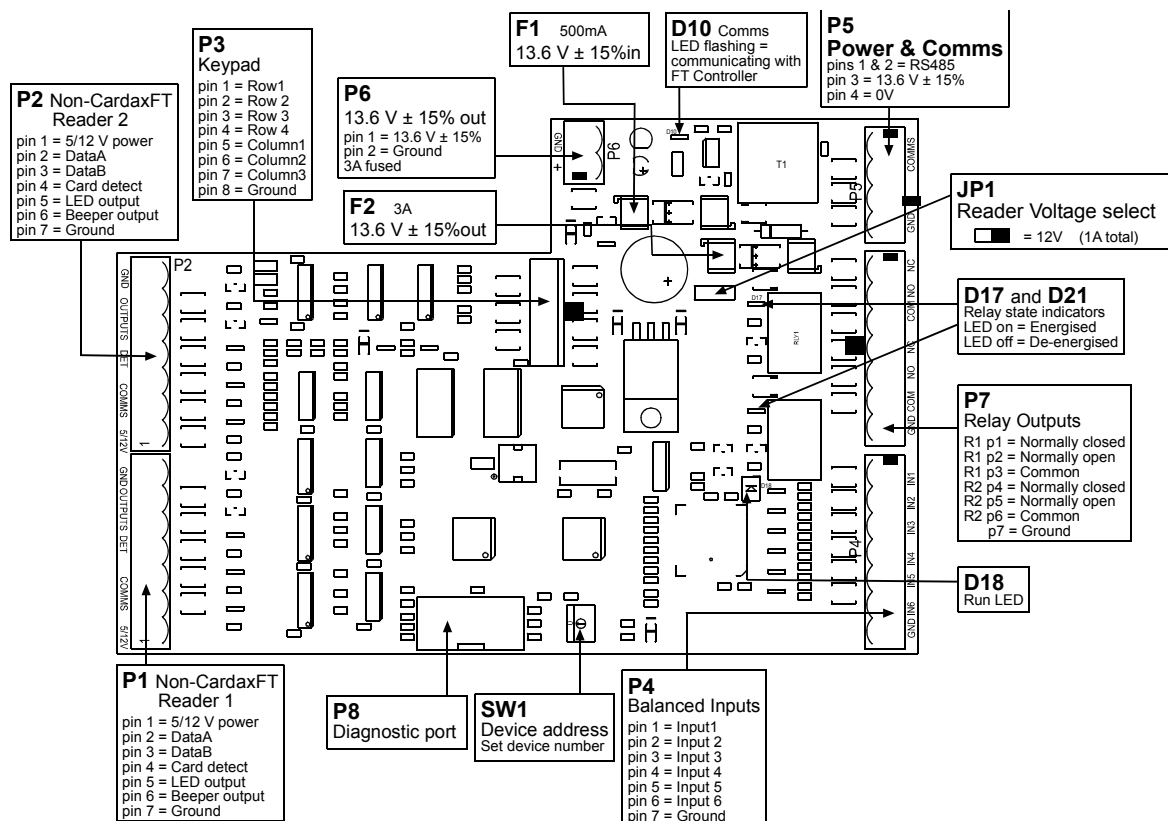


Connecting to the Cardax FT URI

Connect the cables to the socket as shown.

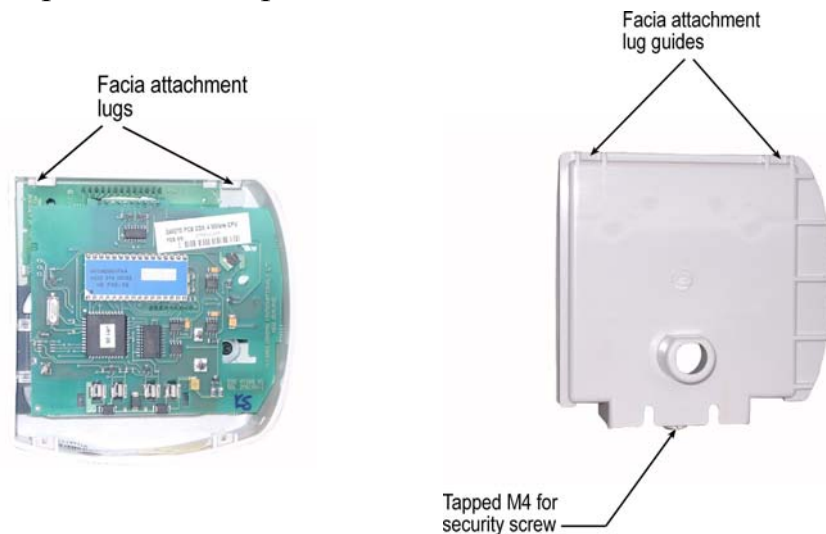


Connect the Prox Plus Mifare reader connector to either the P1 or P2 plug on the Cardax FT URI. Refer to the Cardax FT URI component layout diagram, next, for the location of the plugs.



Fitting the facia

1. Press the Molex 6471 socket onto the four pin plug on the interconnect board.
2. Push the interconnect board into the base plate so that the Molex 6471 socket beds into the grommet.
3. Push the interconnect board further until it is captured by the clips on the base plate.



4. Slide the facia attachment lugs into the guides at the rear of the base plate.
5. On the front of the facia, press down on the Cardax label until the security screw hole lines up with the M4 threaded hole underneath the base plate.
6. Pass the M4 security screw through the hole in the facia and use a tamper-resistant Torx-head tool to drive it into the threaded hole in the base plate.

Removing the facia

1. Using a tamper-resistant Torx-head tool, remove the M4 security screw from the underside of the facia.
2. Pull the base of the facia away from the base plate.
3. Slide the facia's attachment lugs out of the guides at the rear of the base plate.

Initialisation

Initialising with the Cardax FT Controller 3000

Refer to the *Cardax FT Controller 3000 Installation Note* (Part number 3E1089) for initialisation instructions.

Initialisation of the Cardax FT Controller 3000 does not require prior connection to the Prox Plus Mifare reader. The Prox Plus Mifare reader will be operational as soon as it is:

- connected to a Cardax FT Controller 3000, and
- configured as a Cardax IV reader within the Cardax FT Command Centre system.

Initialising with the Cardax FT Reader I/O Interface

Refer to the *Cardax FT Reader I/O Interface Installation Note* (Gallagher Part number 3E1016) for initialisation instructions.

Initialisation of the Cardax FT Reader I/O Interface does not require prior connection to the Prox Plus Mifare reader. The Prox Plus Mifare reader will be operational as soon as it is:

- connected to a Cardax FT Reader I/O Interface, and
- configured as a Cardax IV reader within the Cardax FT Command Centre system.

Initialising with the Cardax FT URI

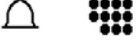
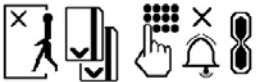
Refer to the *Cardax FT Universal Reader Interface Installation Note* (Gallagher Part number 3C4518) for initialisation instructions.

Initialisation of the Cardax FT URI does not require prior connection to the Prox Plus Mifare reader. The Prox Plus Mifare reader will be operational as soon as it is:

- connected to a Cardax FT URI, and
- configured as a Cardax IV reader within the Cardax FT Command Centre system.

Icons

The Prox Plus Mifare reader displays the following icons on the liquid crystal display (LCD) to indicate the access status of the zone controlled by the reader.

Condition	Steady	Flashing
Secure		
PIN Only		
Free Access Access Granted		
Access Denied		
Card Plus PIN		
Wrong PIN		
Dual Auth or Escort		
Set Allowed		
Set Unset		
Set Unset plus PIN		
Set Failed		
Waiting for Commander		
Un-initialised		

Approvals and Standards

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note: Changes or modifications not expressly approved by Gallagher Security Management Systems could void the user's authority to operate the equipment.



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