

Prox Mifare Series (Teardrop)



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 Mifare Series (Teardrop) reader and check the shipment contains the following items:

- 1 x Prox Mifare Series (Teardrop) reader base
 - 1 x Prox Mifare Series (Teardrop) reader facia
 - 1 x printed circuit board (PCB) assembly
 - 1 x cable assembly
 - 1 x M3 Torx Post Security screw
 - 4 x self tapper pozi counter sunk fixing screws (two different lengths)
- WARNING:** You must use the screws provided, as using other types of screws could interfere with the electronics. (See the “Mounting” section later for further explanation.)



Firmware

Version vMT3.07 (or later) of the Prox Mifare Series (Teardrop) reader firmware code supports the Mifare Enhanced Security feature. This feature provides a method of ensuring that readers reading Mifare cards are able to prevent access through the use of replicated cards, and is optional for customers, (i.e. customers can choose whether to use this enhanced security and which doors to apply it to).

The Mifare Enhanced Security feature is only supported when the reader is connected to a Cardax FT Controller 3000 or a Cardax FT GBUS Universal Reader Interface.

Power Supply Requirements

Power for the Prox Mifare Series (Teardrop) reader is usually taken from the incoming supply of the device to which it is connected. That is, from the:

- Cardax FT Controller 3000-4R
- Cardax FT Controller 3000
- Cardax FT GBUS Universal Reader Interface (Cardax FT GBUS URI)

The supply at the reader should be 13.6 Vdc \pm 15% (between 11.5 and 15.6 volts) It is recommended that the voltage should be between 12 and 15 volts to allow for local installation and environmental conditions, to ensure reliable operation.

The power source for Prox Mifare Series (Teardrop) readers should only be linear or good quality switched mode power supplies. The performance of the reader may be affected by a low quality, noisy power supply.

Cabling

The Prox Mifare Series (Teardrop) reader uses the Cardax IV communications system. The reader cable entry grommet is designed to accept 4 core, 0.2mm² (24 AWG) cable. This cable has an outside diameter of 5mm (1/5 inch). A short tail of this cable is supplied with connector fitted, with each reader. When using a single cable to carry both power supply and data from the source to the reader, both the power supply voltage drop and data requirements must be considered. The cable uses two wires for data and two wires for power supply.

Power: The conductor size should be sufficient to ensure that the voltage at the reader terminals is not less than 12 Vdc.

Data: The capacitance between any conductors or any conductors and the shield should not exceed a total of 24nF for the entire cable. A twisted pair is recommended for the data circuit.

It is recommended that the distance between the control unit and the reader should not exceed 200m (600ft).

Choosing a cable

The cable chart below lists cable sizes and the maximum length for connecting a single Prox Mifare Series (Teardrop) reader to a Controller and power supply.

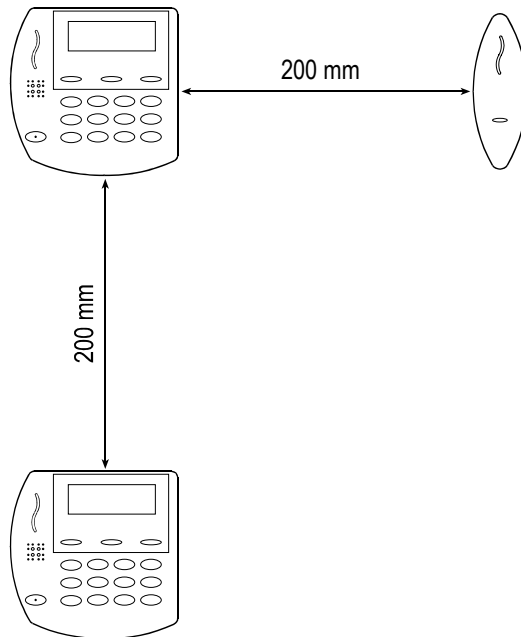
Cable type	Maximum distance *
CAT 5 **	40m (130 ft)
4 x 0.2mm ² (4 x 24 AWG)	40m (130 ft)
4 x 0.5mm ² (4 x 20 AWG)	100m (330 ft)
4 x 1mm ² (4 x 18 AWG)	200m (660 ft)

* These distances apply to unshielded cable. If shielded cable is used, the distances will be reduced due to the increased capacitance caused by the shielding.

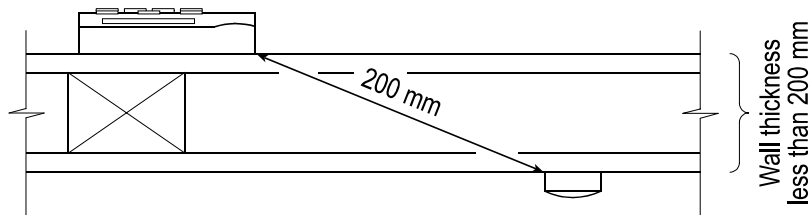
** CAT 5 is not recommended for security systems as this cable has solid copper conductors and is designed for use with RJ45 insulation displacement connectors.

Distance between Proximity Readers

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



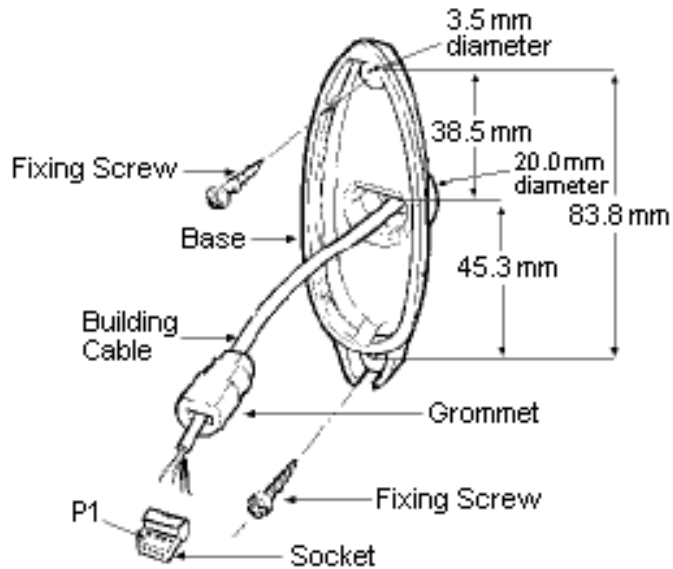
When mounting a proximity reader on an internal wall, check that any reader fixed to the other side of the wall is not less than 200mm away.



Mounting

Note: The Prox Mifare Series (Teardrop) reader has been designed to metric specifications. Therefore any imperial measurements provided are approximate only.

The Prox Mifare Series (Teardrop) reader is designed to be mounted on any solid flat surface. However installation on metal surfaces, particularly those with a large surface area will reduce read range. The extent to which the range is reduced will depend upon the type of metal used. To minimise this effect, plastic spacers which may be mounted between the reader and the metal surface are available (Part number C190980). Please contact your local Cardax dealer for more information.



Note: The grommet through which the cables feed into the base of the Prox Mifare Series (Teardrop) reader helps to keep the unit waterproof.

Using the mounting dimensions on the back of this Installation Note as a guide, drill a 20 mm ($\frac{3}{4}$ inch) diameter hole for the base extrusion through or into the mounting surface to a minimum depth of 40 mm ($1\frac{1}{2}$ in).

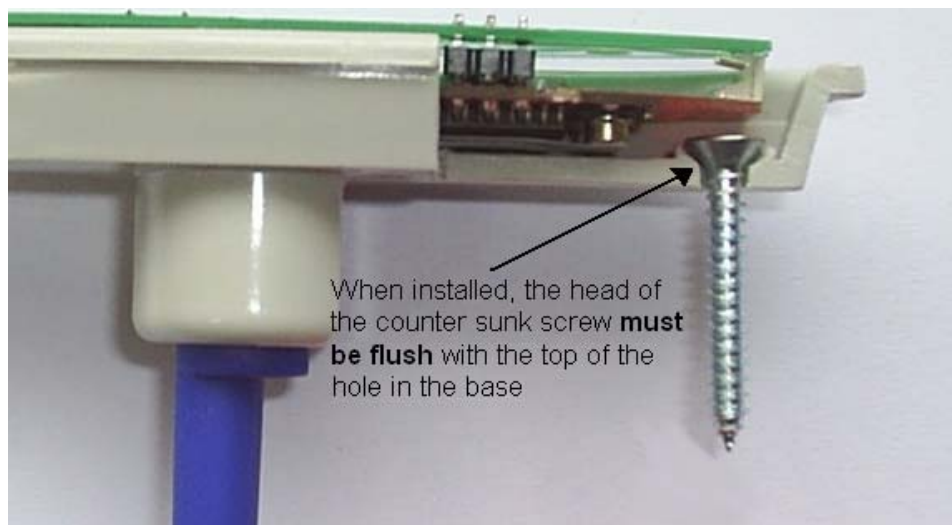
Drill two pilot holes for the fixing screws.

Run the building cabling through the base and grommet.

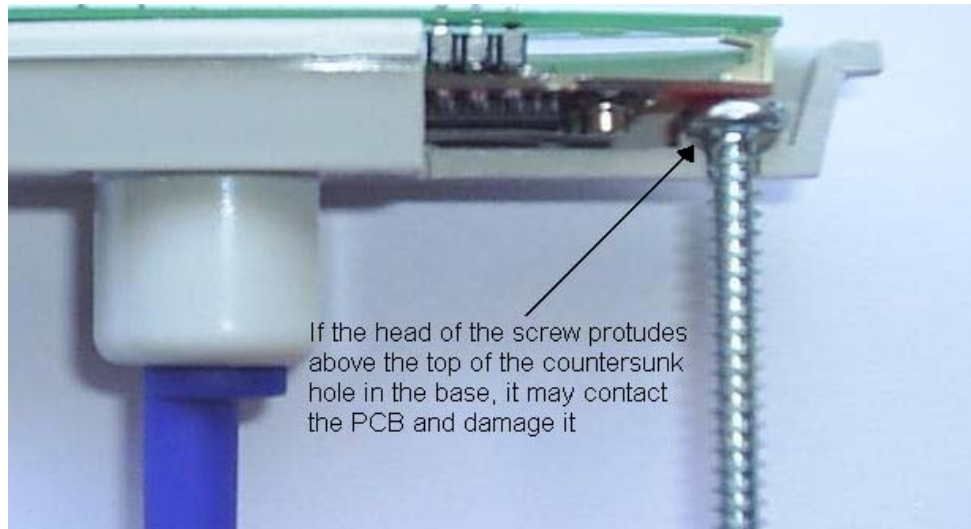
Fit the base to the 20 mm ($\frac{3}{4}$ inch) hole and secure it to the mounting surface using two of the fixing screws provided.

Note: The surface the reader is being attached to will determine which length screws are most appropriate from those provided.

WARNING: You must use the screws provided, taking care not to over-tighten them. Make sure that the heads of the counter sunk screws are flush with the top of the holes in the base, and ensure there is clearance for the screw that closes the base and fascia together.



Failure to do this, and/or using other types of screws could interfere with the electronics.

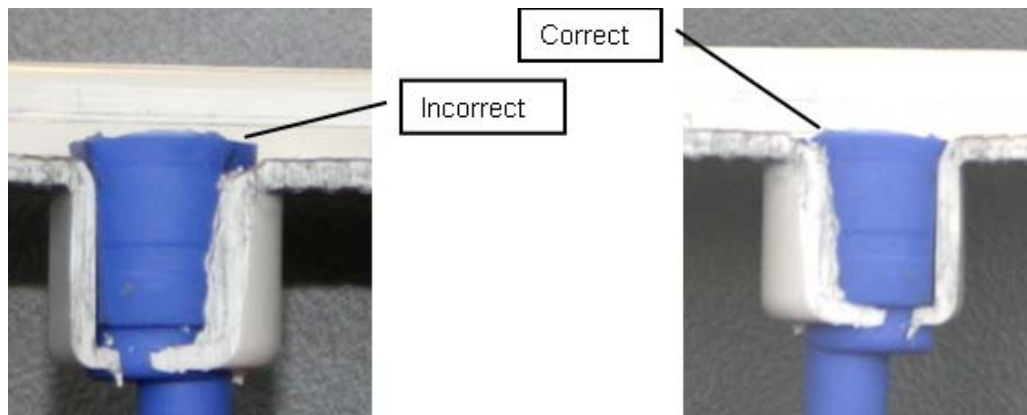


Please note that the manufacturers warranty is voided if the electronics are damaged as a result of the incorrect screws being used or installed incorrectly to secure the base.

Push the socket back into the grommet.

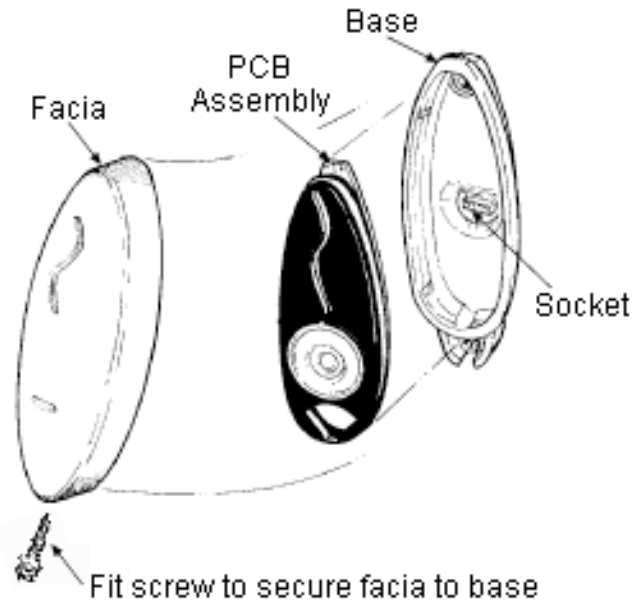
Push the grommet and socket firmly back into the Prox Mifare Series (Teardrop) reader base so that the top of the grommet is slightly below the inside surface of the reader base.

Install the PCB assembly into the base.



Fit the fascia onto the base by clipping the small lip, inside the fascia, over the top edge of the base and holding the top, press the bottom of the fascia down over the base. If the cover does not fit easily, recheck the position of the grommet and/or the reader. Then insert the M3 x 16 Torx Security Screw (using an M3 Torx Post Security screwdriver) through the hole at the bottom of the fascia and into the threaded metal insert in the base to secure the fascia.

Removal of the fascia is a simple reversal of these steps.



Connections

The Prox Mifare Series (Teardrop) reader connects to one of the following:

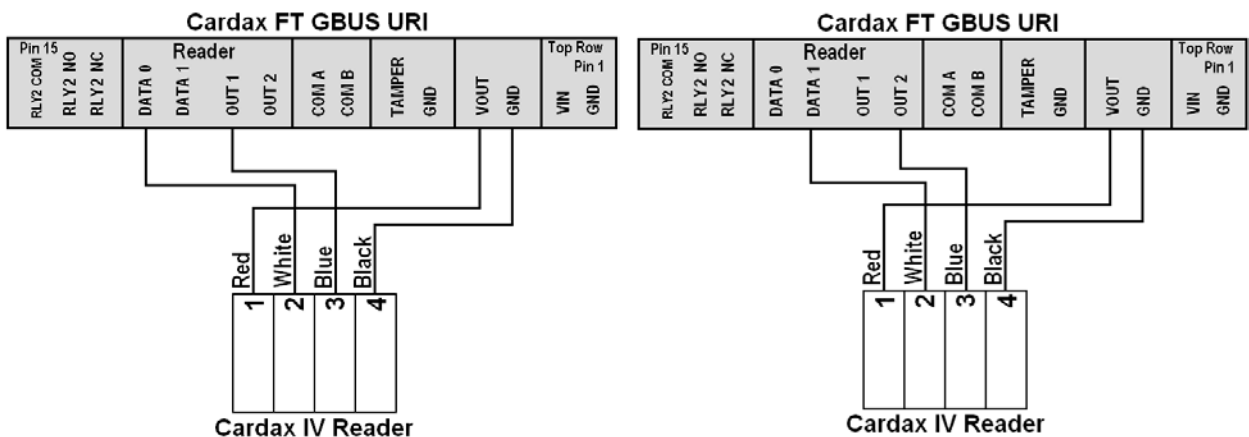
- Cardax FT GBUS URI
- Cardax FT Controller 3000-4R
- Cardax FT Controller 3000

Use the cable terminating tool to connect the cables to the socket as described in the following sections.

Pin number 4 of the Prox Mifare Series (Teardrop) reader connector feeds into the cable terminating tool first.

Connecting to the Cardax FT GBUS URI

Connect the cables to the socket as shown in either of the following diagrams.



Connecting to the Cardax FT Controller 3000-4R or 3000

The Cardax FT Controller 3000-4R and 3000 both interface the following types of reader into the Cardax FT Command Centre system:

- Cardax IV readers, including Prox Mifare Series (Teardrop) readers
- Wiegand readers

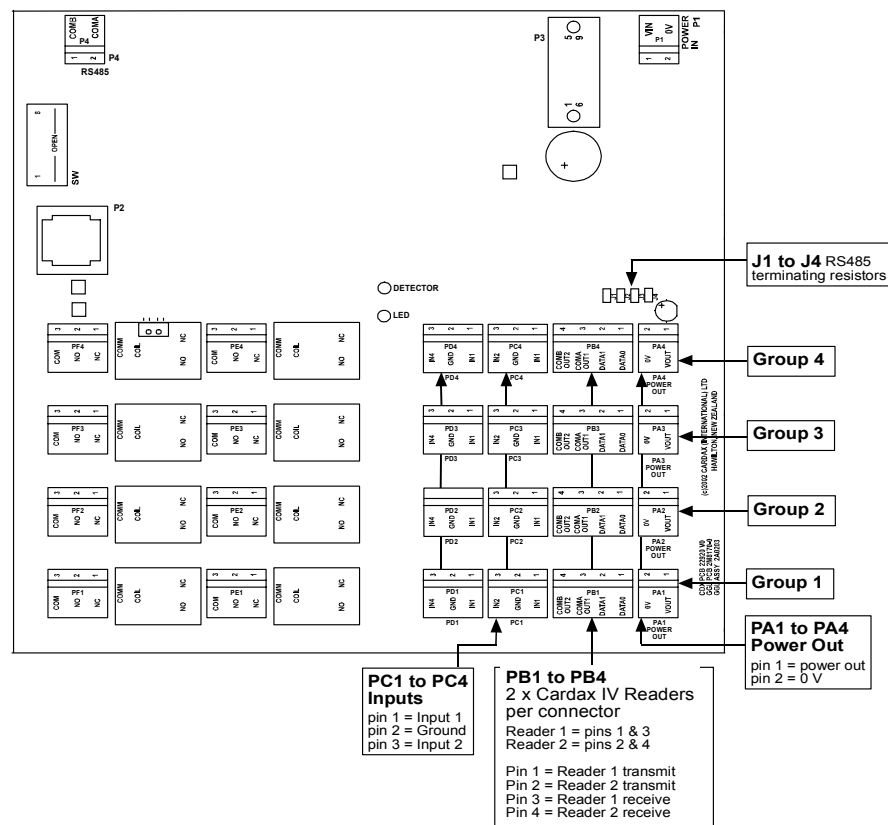
Each Cardax FT Controller 3000-4R can interface up to four Prox Mifare Series (Teardrop) readers into the Cardax FT Command Centre system, and the Cardax FT Controller 3000 can interface up to eight Prox Mifare Series (Teardrop) readers.

The ports to which the Prox Mifare Series (Teardrop) reader can connect are set up as groups, as follows:

- Two groups (numbered 1 and 2) on the Controller 3000-4R, and
- Four groups (numbered 1 to 4) on the Controller 3000.

Each group provides connection for two Prox Mifare Series (Teardrop) readers or other Cardax IV readers. Refer to the following diagram for the location of the ports on the Cardax FT Controller 3000.

Note: Even though there are only two groups of ports on the Cardax FT Controller 3000-4R, they are located in the same position.

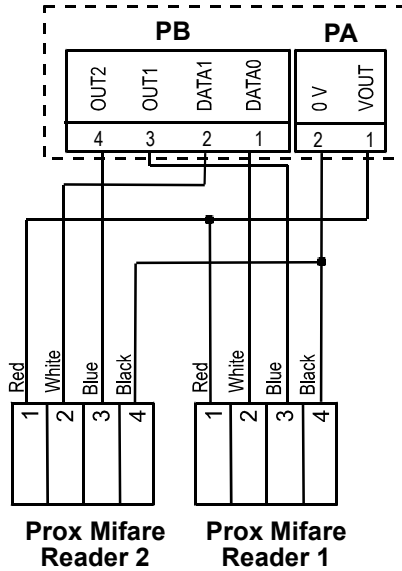


Make the connections from the Prox Mifare Series (Teardrop) reader to either the Cardax FT Controller 3000-4R or 3000 as shown:

Cardax FT Controller 3000-4R or 3000

Group

PB1 and PA1... to... PB2 and PA2 (3000-4R)
PB4 and PA4 (3000)



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 Mifare Series (Teardrop) 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 Mifare Series (Teardrop) readers are connected.

Configuration

The Prox Mifare Series (Teardrop) reader is configured as a “Cardax IV Reader” in Cardax FT Command Centre.

No specific initialisation or hardware configuration is required.

Initialisation

Initialising with the Cardax FT GBUS URI

Refer to the *Cardax FT GBUS Universal Reader Interface Installation Note* (Gallagher Part number 3E0690) for initialisation instructions.

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

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

Initialising with the Cardax FT Controller 3000-4R or 3000

Refer to the appropriate Installation Note for initialization instructions:

- *Cardax FT Controller 3000-4R Installation Note* (Part number 3E0510), or
- *Cardax FT Controller 3000 Installation Note* (Part number 3E1089)

Initialisation of the Cardax FT Controller 3000-4R or 3000 does not require prior connection to the Prox Mifare Series (Teardrop) reader. The Prox Mifare Series (Teardrop) reader will be operational as soon as it is:

- connected to a Cardax FT Controller 3000-4R or 3000, and
- configured as a Cardax IV reader within the Cardax FT Command Centre system.

Approvals and Standards

FCC

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 Group Limited could void the user's authority to operate the equipment.

For UL Installations:

Refer to the section in the Cardax FT Command Centre Installation Note, "*Configuration Instructions to meet Underwriters Laboratory Inc Approved Installations*" for details covering specific requirements necessary to meet the specified UL Licences. The following Release Note version(s) contain these details:

vEL5.21.xxx May 2009

vEL6.01.xxx October 2009

Installers must ensure these instructions are followed to ensure the installed system is UL compliant.

UL temperature range tested and certified from -35°C - $+66^{\circ}\text{C}$.

The voltage current values used and measured during testing are shown in the table "Voltage / Current measurements" included in the Cardax FT Command Centre Installation Note, "*Configuration Instructions to meet Underwriters Laboratory Inc Approved Installations*".



14RM



EN50130-4
EN55022



ACN:002132943

Technical specification

Routine maintenance and serviceable parts:

Not applicable for a Cardax Prox Mifare Series (Teardrop) reader

Cleaning:

The Cardax Prox Mifare Series (Teardrop) reader should only be cleaned with clean, lint free, damp cloth

Power required:

Voltage	13.6 ± 15% V DC
Current	125mA

Reading range:

Up to 30mm (depending on card type and installation conditions)

Temperature range:

Operating temperature	0°C to +55°C
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Environmental protection:

IP54

Dimensions:

105mm x 35mm x 17mm ((4¹/₈" x 1³/₈" x 5/8" approx.)

Mounting:

Surface

Transmission frequency:

13.5MHz

Mounting Dimensions

