



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



The Gallagher T20 Reader

The Gallagher T20 Reader is a smart card proximity reader. The reader can be installed as either an entry reader or an exit reader.

The reader can be mounted on a rectangular 50 mm x 75 mm (2" x 3") flush box, BS 4662 British Standard square flush box, or any solid flat surface.

The Mifare reader reads: Mifare DESFire EV1, Mifare Plus and Mifare Classic cards. The Multi Tech reader reads: Mifare DESFire EV1, Mifare Plus, Mifare Classic and 125 KHz cards.

The reader sends information to the Gallagher Controller and acts upon information sent from the Gallagher Controller. The reader itself does not make any access decisions.

The reader uses the Cardax IV communications protocol to communicate with the Gallagher Controller. Refer to the "*Connections*" topic later in this note, for details regarding Cardax IV Reader connections.

IMPORTANT: Gallagher T20 Multi Tech readers only:

Using dual technology 125/Mifare cards with Gallagher T20 Multi Tech readers may cause both card technologies to be read, resulting in double card badges and unusual reader feedback. Gallagher strongly recommends against using dual technology 125/Mifare cards with Gallagher Multi Tech readers for sites running pre-Command Centre v7.00 software. From Command Centre v7.00, a site may specify which technology a Multi Tech reader should read off a dual technology card.

Before you begin

Shipment Contents

Check the shipment contains the following items:

- 1 x Gallagher T20 Reader facia assembly
- 1 x Gallagher T20 Reader base
- 2 x 6-32 UNC Phillips drive fixing screws
- 2 x M3.5 Phillips drive fixing screws
- 5 x 25 mm No.6 self tapping, pan head, Phillips drive fixing screws
- 5 x 40 mm No.6 self tapping, pan head, Phillips drive fixing screws
- 1 x M3 Torx Post (T10) Security screw

Power Supply

The Gallagher T20 Reader is designed to operate over a supply voltage range of 9 - 16 Vdc measured at the reader terminals. The operating current draw is dependent on the supply voltage at the reader. For the Mifare reader, at 12 Vdc the current draw is 90 mA (standby). During card read, beeper and LED activity, the current will momentarily reach 125 mA (peak). For the Multi Tech reader, at 12 Vdc the current draw is 90 mA (standby) and will momentarily reach 140 mA (peak).

The power source should be linear or a good quality switched-mode power supply. The performance of the reader may be affected by a low quality, noisy power supply.

Cabling

The Gallagher T20 Reader requires a minimum cable size of 4 core 24 AWG (0.2 mm²) stranded security cable. This cable allows the transmission of data (2 wires) and power (2 wires). When using a single cable to carry both power supply and data, both the power supply voltage drop and data requirements must be considered. Although the reader is specified to operate at 9 Vdc, for good engineering design it is recommended that the voltage at the reader should be approximately 12 Vdc.

Examples of approved cables for connecting a single Gallagher T20 Reader to a Controller and power supply, showing maximum cable lengths for each type of cable and the associated circuits are:

Cable type	Cable format*	Single reader connected using data only in a single cable	Single reader connected using power and data in a single cable
CAT 5e or better	4 twisted pair Each 2 x 0.2 mm ² (24 AWG)	200 m (650 ft)	100 m (330 ft)
BELDEN 9842 (shielded)	2 twisted pair Each 2 x 0.2 mm ² (24 AWG)	200 m (650 ft)	100 m (330 ft)
SEC472	4 x 0.2 mm ² Not twisted pairs (24 AWG)	200 m (650 ft)	100 m (330 ft)
SEC4142	4 x 0.4 mm ² Not twisted pairs (21 AWG)	200 m (650 ft)	150 m (500 ft)

* The matching of wire sizes to equivalent wire gauges are only approximate.

Notes:

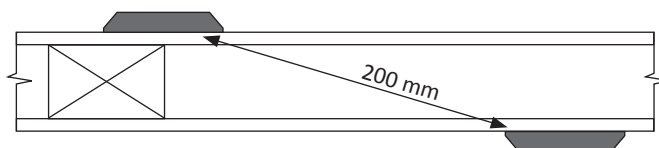
- Shielded cable may reduce the obtainable cable length. Shielded cable should be grounded at the Controller end only.
- If other cable types are used, operating distances and performance may be reduced depending on the cable quality.

Distance between Proximity Readers

The distance separating any two proximity readers must not be less than 200 mm (8 inches) 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 (8 inches) away.



Installation

The Gallagher T20 Reader can be mounted on:

- a vertical, rectangular 50 mm x 75 mm (2" x 3") flush box
- a BS 4662 British Standard square flush box
- any solid flat surface

The recommended mounting height for the reader is 1.1 m (3.6 ft) from the 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.

Notes:

- 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 surface.
 - When mounting on a flush box, the corner screws must be used as well as the flush box screws. Without corner screws the top of the product is vulnerable to separation from the wall.
 - The reader cannot be mounted on a mounting block.
1. Ensure the building cable has been run out through the flush box.

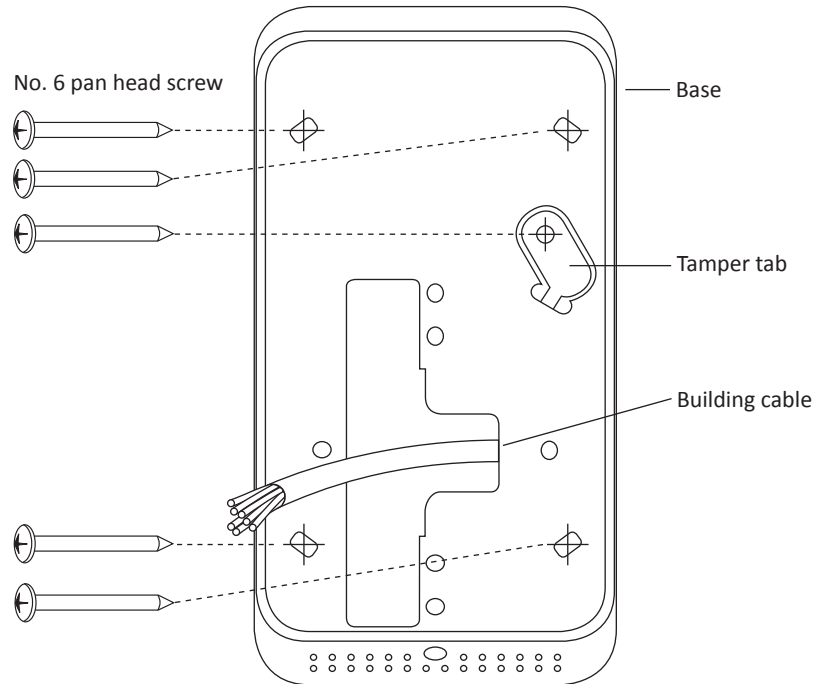
If you are not mounting to a flush box, use the reader base as a guide, to drill all five holes. Drill the 13 mm (1/2 inch) diameter centre hole (this is the centre hole for which the building cable will exit the mounting surface) and the four corner fixing holes. Ensure the centre hole allows the cable to run freely out through the mounting surface, so that the reader facia can clip into the base.

Note: There is no room for the building cable to be scrunched into the reader base. The building cable must remain within the flush box or wall cavity.
 2. Run the building cable through the reader base.

Note: If the reader has already been connected to the building cable, you can pass the facia through the base. Great care must be taken to avoid scratching the screen and keypad when passing the facia through the base.
 3. Secure the base to the flush box using the two screws provided. When securing the base to a vertical, rectangular flush box, use the 6-32 UNC screws provided. When securing the base to a BS 4662 British Standard square flush box, use the M3.5 screws provided.
 4. Drill pilot holes for the four corner fixing holes. Secure the base to the mounting surface using the four corner fixing screws provided. It is important the four corner fixing screws are used to ensure the reader is flush with and tight against the mounting surface.

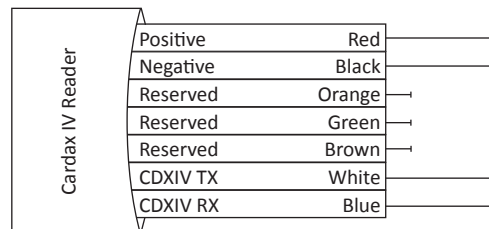
Note: It is strongly recommended that you use the screws provided. If an alternative screw is used, the head must be no larger nor deeper than that of the screw provided.

- Secure the tamper tab (located in the base) to the mounting surface using remaining fixing screw provided.



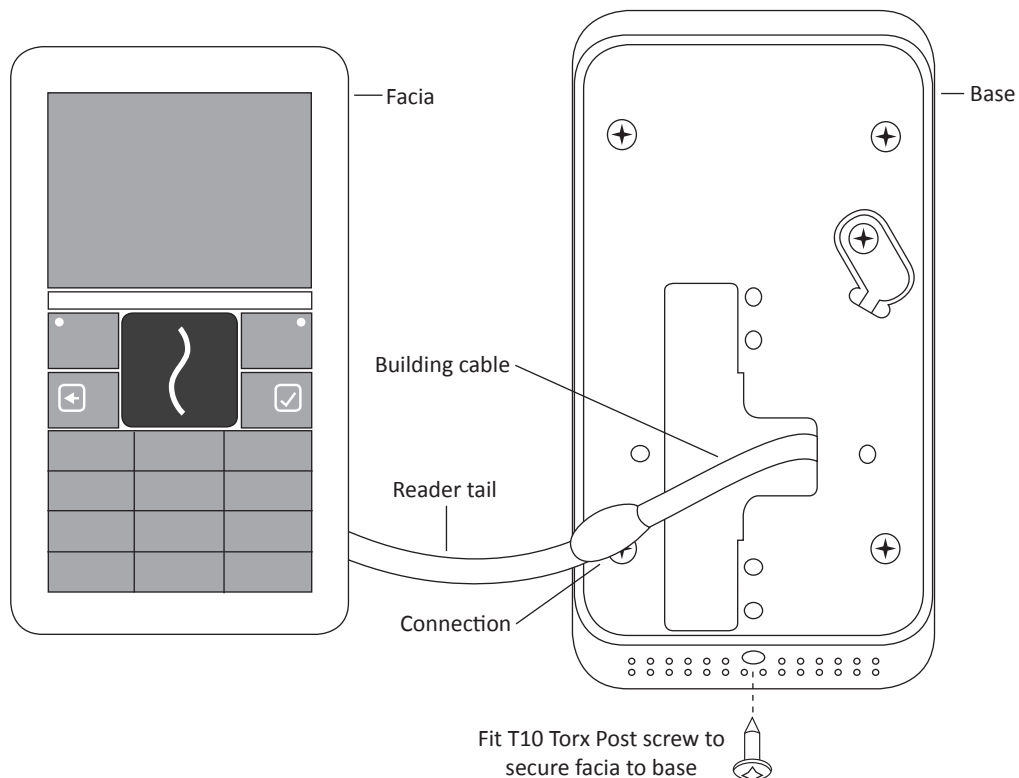
- Connect the reader tail extending from the facia assembly to the building cable. Connect the wires, as shown in the following diagram.

Note: Do not cut the "Reserved" wires, as they may be used for future functions.



- Fit the facia assembly into the base by clipping the small lip, into the top of the base and holding the top, press the bottom of the facia assembly down into the base.
- Insert the M3 Torx Post Security screw (using a T10 Torx Post Security screwdriver) through the hole at the bottom of the base to secure the facia assembly.

Note: The Torx Post Security screw needs only to be lightly tightened. The recommended torque for the security screw is 0.7 Nm (0.5 lb/ft). It is important not to exceed the maximum torque of 1.5 Nm (1.1 lb/ft).



9. Removal of the facia assembly is a simple reversal of these steps.

Note: If it is difficult to remove the facia from the base, a tab can be fashioned using a piece of gaffer tape. Stick the tab to the facia (over the Gallagher logo) and use it to pull the facia out of the base, then remove the tape without leaving a mark.

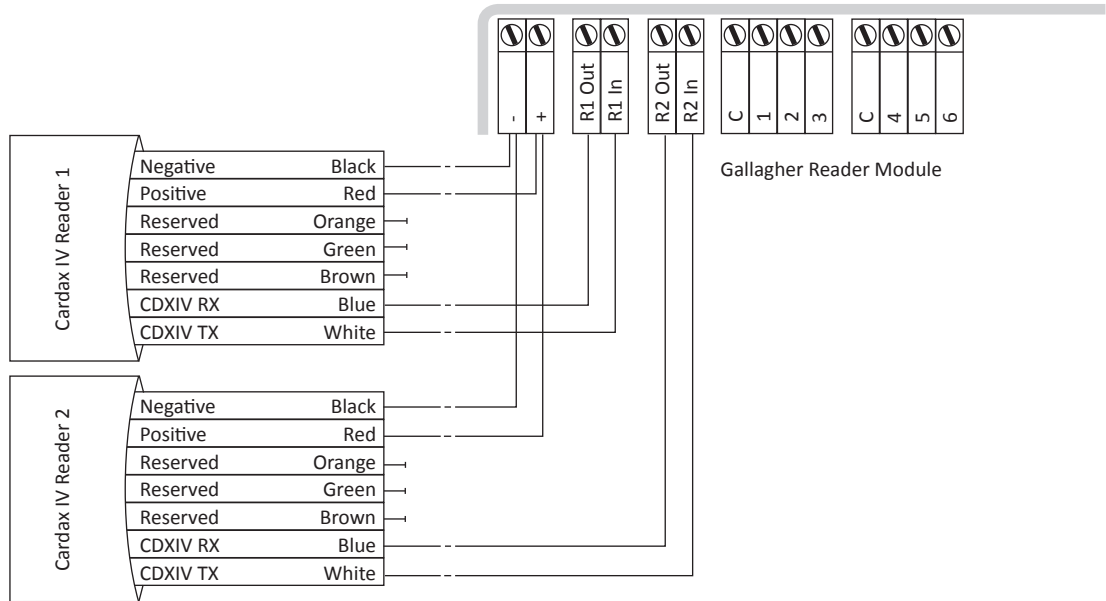
Connections

The Gallagher T20 Reader can be connected as a Cardax IV Reader to one of the following devices:

- Gallagher Reader Module 8R or 4R (attached to the Controller 6000)
- Gallagher GBUS Universal Reader Interface (Gallagher GBUS URI)
- Gallagher Controller 3000-8R or 3000-4R
- Gallagher Local Bus Universal Reader Interface (Gallagher URI)
- Gallagher Local Bus Reader I/O Interface

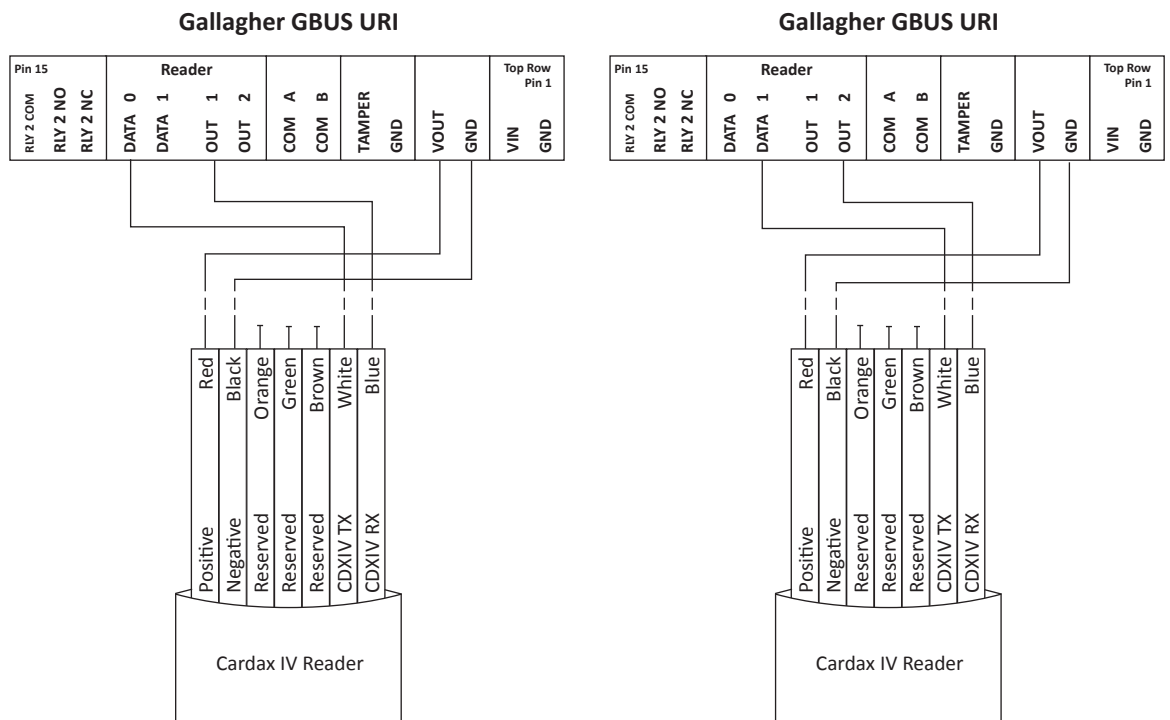
Gallagher Reader Module 8R or 4R (attached to the Controller 6000)

Connect the wires to the sockets as shown:



Gallagher GBUS Universal Reader Interface (Gallagher GBUS URI)

Connect the wires to the sockets as shown in either of the following diagrams:

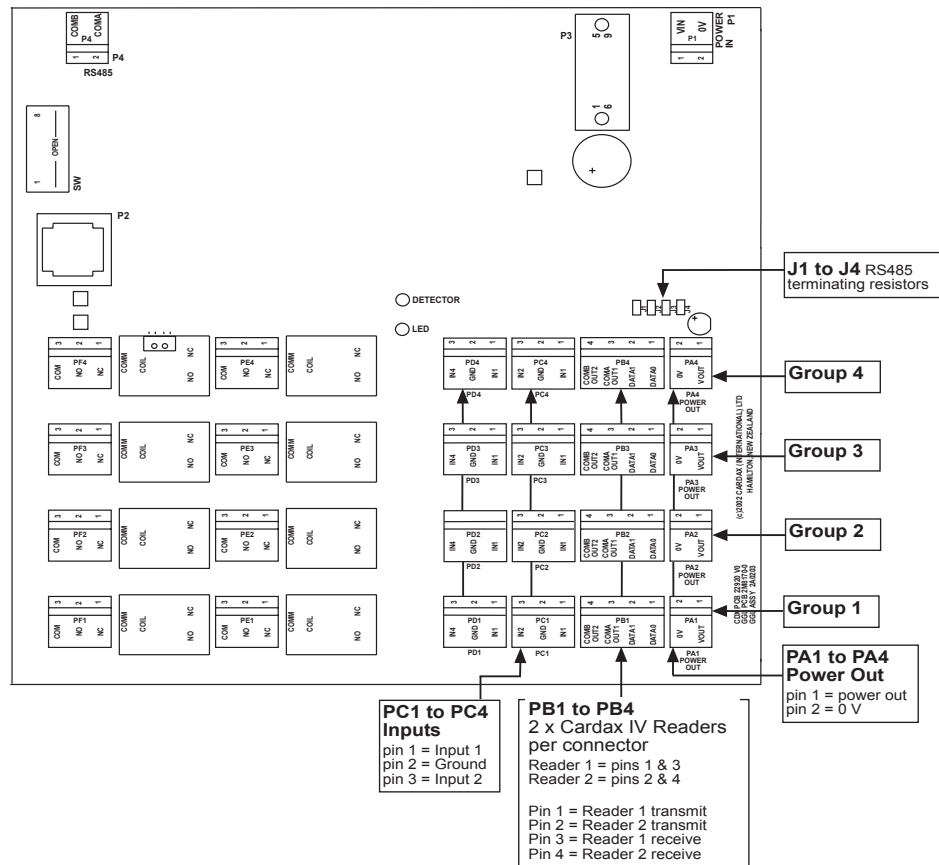


Gallagher Controller 3000-8R or 3000-4R

The ports to which the Gallagher T20 Reader can connect are set up as groups:

- Four groups (numbered 1 to 4) on the Controller 3000-8R, and
- Two groups (numbered 1 and 2) on the Controller 3000-4R

Each group provides connection for two readers. Refer to the following diagram for the location of the ports on the Controller 3000-8R.

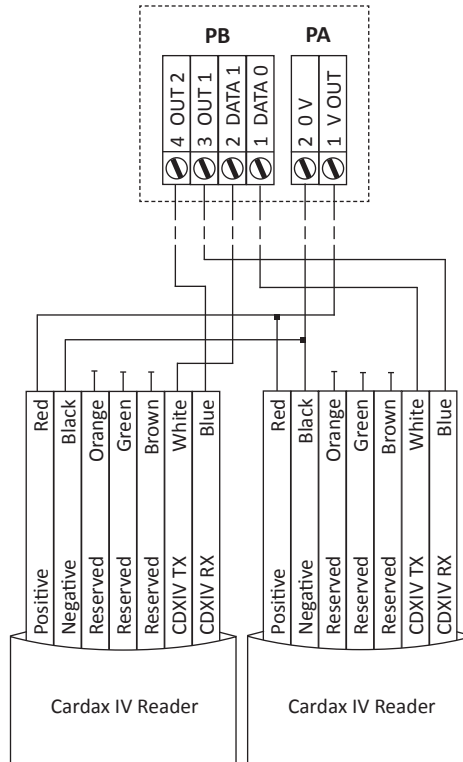


Make the connections from the reader to either the Controller 3000-8R or 3000-4R as shown:

Gallagher Controller 3000-8R or 3000-4R

Group

**PB1 and PA1... to... PB4 and PA4 (3000-8R)
PB2 and PA2 (3000-4R)**



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 Cardax IV Reader to Port 1 of Group 1, Port 2 of Group 1 can only connect to another Cardax IV Reader.

HBUS LED Diagnostic Indications

LED	Diagnostic Indication
3 Flash (Amber)	No communications with the Controller.
On (Green or Red)	Fully configured and functioning normally Green = Access mode is Free Red = Access mode is Secure

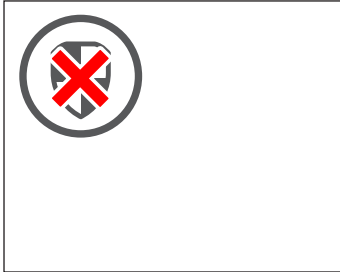
Technical Specifications

Routine maintenance:	Not applicable for this reader.
Cleaning:	This reader should only be cleaned with a clean, lint free, damp cloth.
Voltage:	9 Vdc - 16 Vdc
Current (at 12Vdc):	82 mA (standby) Mifare reader 115 mA (peak) Mifare reader 90 mA (standby) Multi Tech reader 140 mA (peak) Multi Tech reader
Temperature range:	-35 °C to +70 °C Note: Direct sunlight may increase the internal reader temperature above the ambient temperature level.
Humidity:	85% non-condensing
Environmental protection:	IP55
Impact rating:	IK04
Maximum number of readers on one HBUS cable:	20

Icons

The Gallagher T20 Reader displays the following icons:

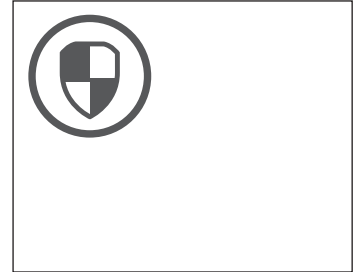
Arming Failed



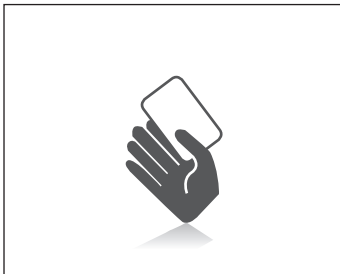
Arming Succeeded



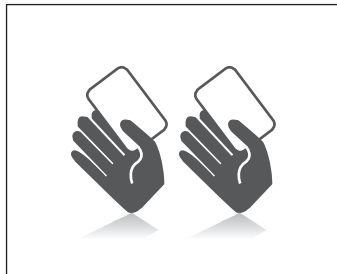
Armed



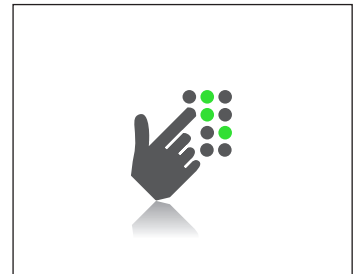
Present Card



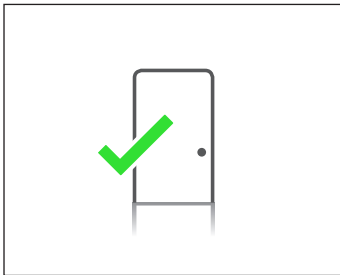
Present Second Card



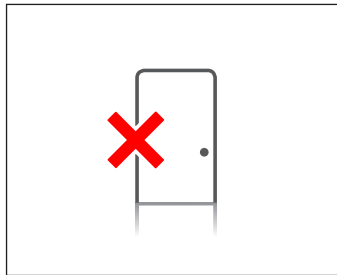
Enter PIN



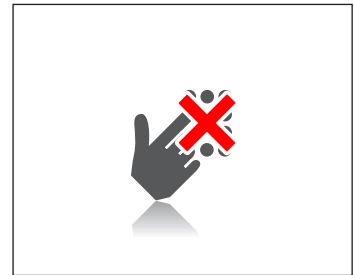
Access Granted



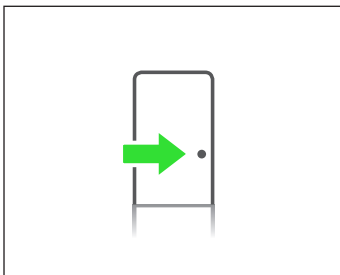
Access Denied



Wrong PIN



Free Access



Approvals and Standards

FCC

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.

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

Note: 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.

Industry Canada

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Industrie Canada

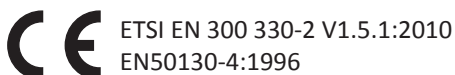
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RoHS COMPLIANT

This product complies with the environmental regulations for the Restriction of Hazardous Substances in electrical and electronic equipment (RoHS). The RoHS directive prohibits the use of electronic equipment containing certain hazardous substances in the European Union.



This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.



ETSI EN 300 330-2 V1.5.1:2010
EN50130-4:1996

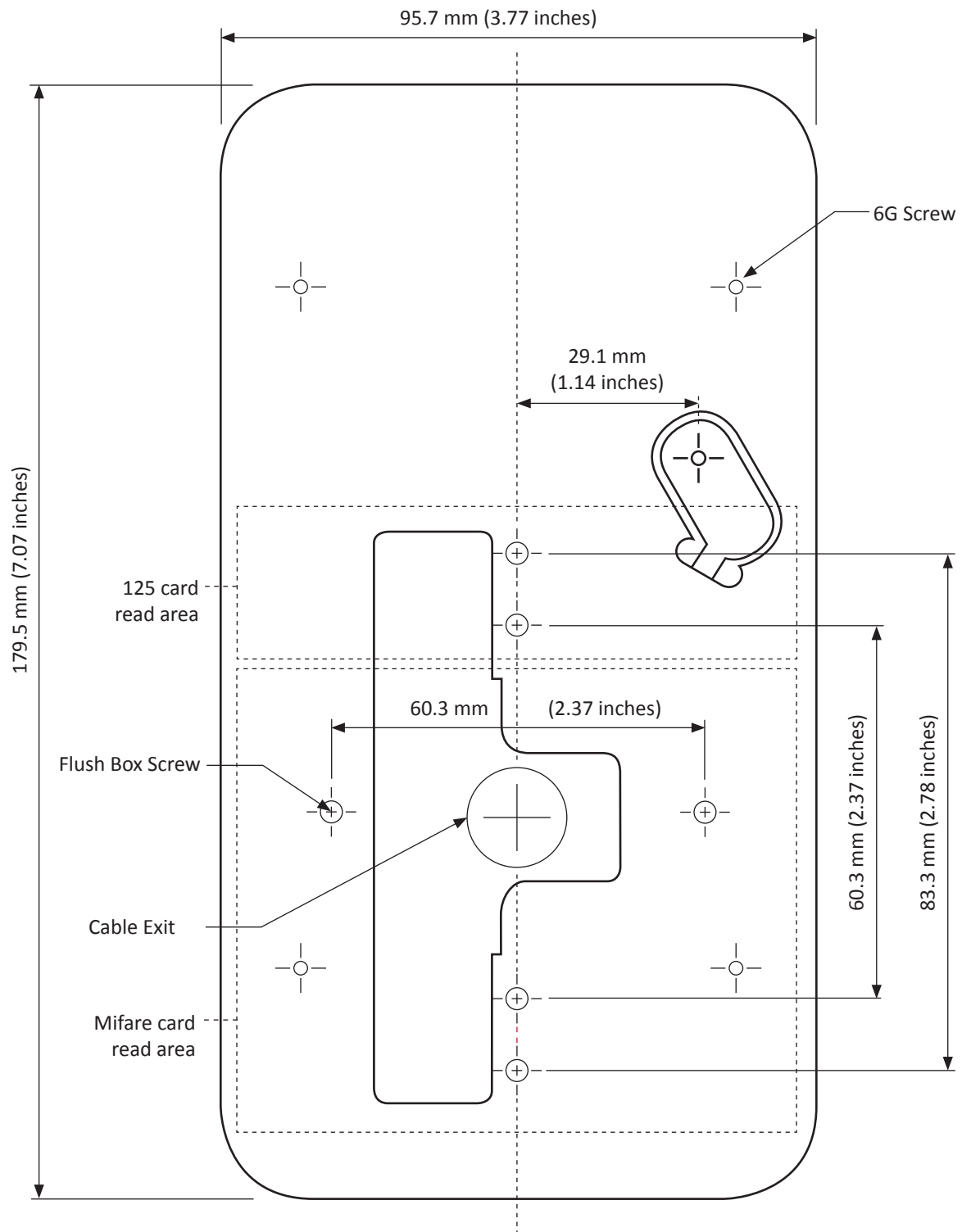


ACN 002 132 943



Lead Free

Mounting Dimensions



IMPORTANT

This picture is not to scale, therefore use the measurements provided.