

Ins-30088 OEM PROXIMITY Long range reader - EM4100 - Wiegand Output

Suitability

Security-sensitive doors



Compatible with hands free tokens



Wet environments



Compatible with non-hands free tokens



What is a long range reader?

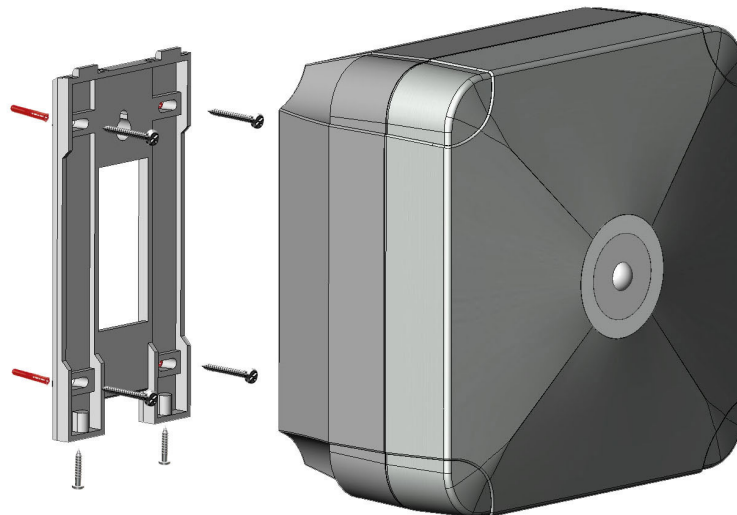
A long range reader can read EM4100 hands free tokens up to a maximum of 5 metres. The system comprises of a long range reader with an integral hands free interface and hands free tokens (keycard or keyfob). The system operates by using the field being transmitted by the reader to wake up the token which then communicates with the interface.

Standard EM4100 tokens/keyfobs can be used with this reader but at their normal read range.

Hands free tokens also include a standard proximity ID chip and can therefore be presented to any EM4100 proximity reader whether they are using the hands free interface or not.

Hands free tokens have features to extend battery life. These include a two second timeout following a valid read and a block on repeated reads at the same door whilst the keyfob remains in range.

Layout



LED indications

The unit has a single high intensity LED array that displays RED or GREEN indications.

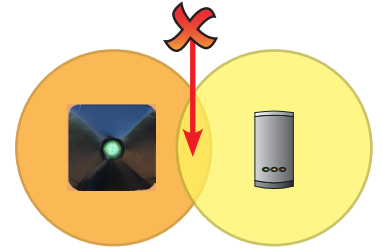
- Steady RED - Waiting for card (IDLE state)
- Flashing GREEN - Access Granted (or held unlocked)
- Flashing RED - User Access Denied

If an error condition exists (ACU powered off, Cable break, etc) the LED will show a steady RED indication.

Positioning readers

Readers should not be positioned so that their active fields overlap. (see table on back page for typical hands free read ranges)

For maximum read range the hands free reader field should not be overlapped by the field from other interference sources at or around 125 kHz. These include Loop readers, OEM readers, etc.

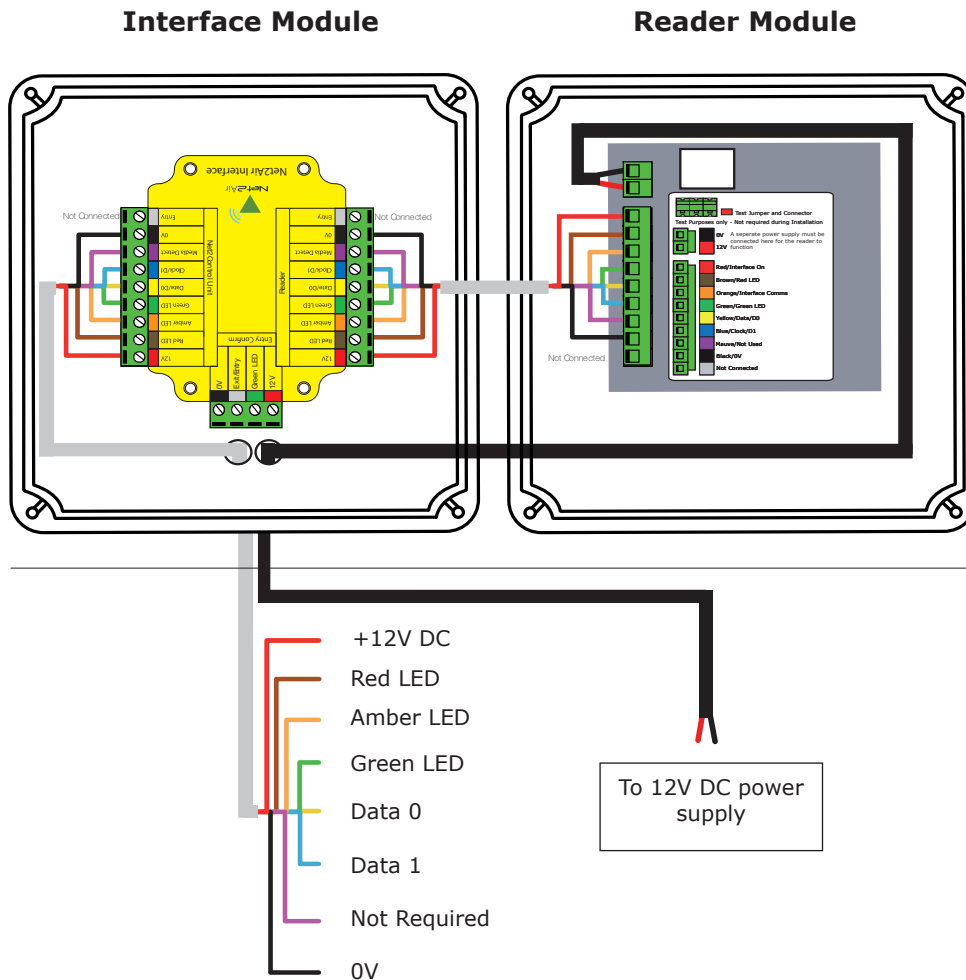


For optimum keyfob battery life please choose your reader location carefully to avoid placing it within hands free range of work stations, rest or smoking areas.

Read in, read out

When using in and out readers, users may be picked up by both readers as they move through the door which will reduce the reliability of any roll call or anti-passback application. Ensure that sufficient spacing is provided between these readers for optimum range and reliability.

Wiring



You will see that the interface is mounted upside down in the housing. This is to position the internal aerial away from other reader components and is intentional.

A data cable must be run from the control unit to the reader interface. The recommended cable for this is Belden 9540; a 10 core overall screened cable with a maximum length of 100 metres. Spare cores should be used to double up on the power wires (Red/Black) to the interface.

The reader requires a higher current (up to 1A) than can be supplied by the ACU reader port and so an independent 12V DC power feed must be provided. As per the wiring diagram, the spare outputs on the Paxton 2A boxed power supply can be used for this purpose.

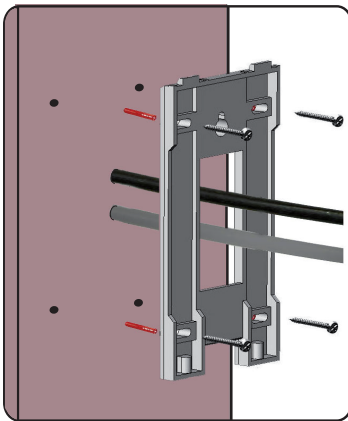
It is important to run an appropriate power cable to the reader that is capable of carrying a current of 1A.

A 5 metre length of 0.75 mm sq x 2 core cable is supplied with the reader. For longer runs it will be necessary to increase the size of the cable as any voltage drop will reduce the read range. We recommend a cable of 2.5 mm sq x 2 core cable for distances up to 100 m.

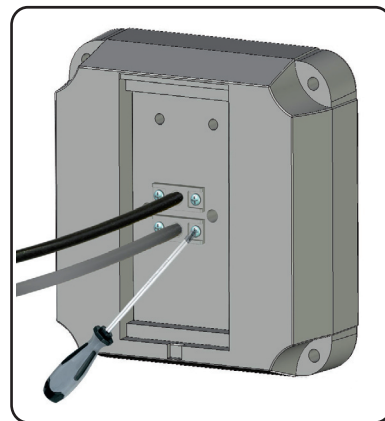
Fitting

The long range reader consists of a reader module mounted inside the front half of the housing and a hands free interface mounted inside the rear half. An interconnect cable is supplied that connects the two sections together.

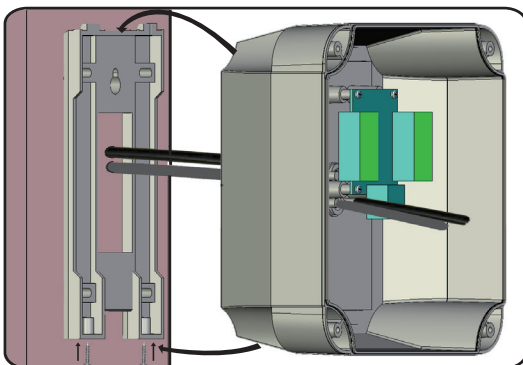
Two 5 metre cables for data and power are provided. These enter the module at the rear through two compression glands. If longer cables are required, refer to the previous section for further details.



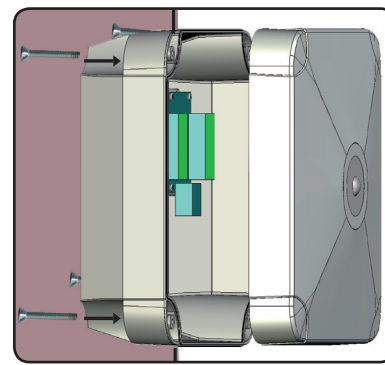
1



2



3



4

Determine the position of the reader and mark and drill holes for the fixing screws and cable access.

Fix the mounting plate to the post with the locating hooks at the top. (Fig 1)

Feed the cables for power and data through the mounting plate and into the rear section of the reader leaving enough slack to allow easy connection to the circuit boards later in the installation.

Tighten the weatherproof cable glands at the rear of the reader. (Fig 2)

Hang the rear reader section on the mounting plate and secure with two screws. (Fig 3)

Complete the wiring of the reader as shown in this instruction.

Join the front section to the rear section with the Allen screws provided. (Fig 4)

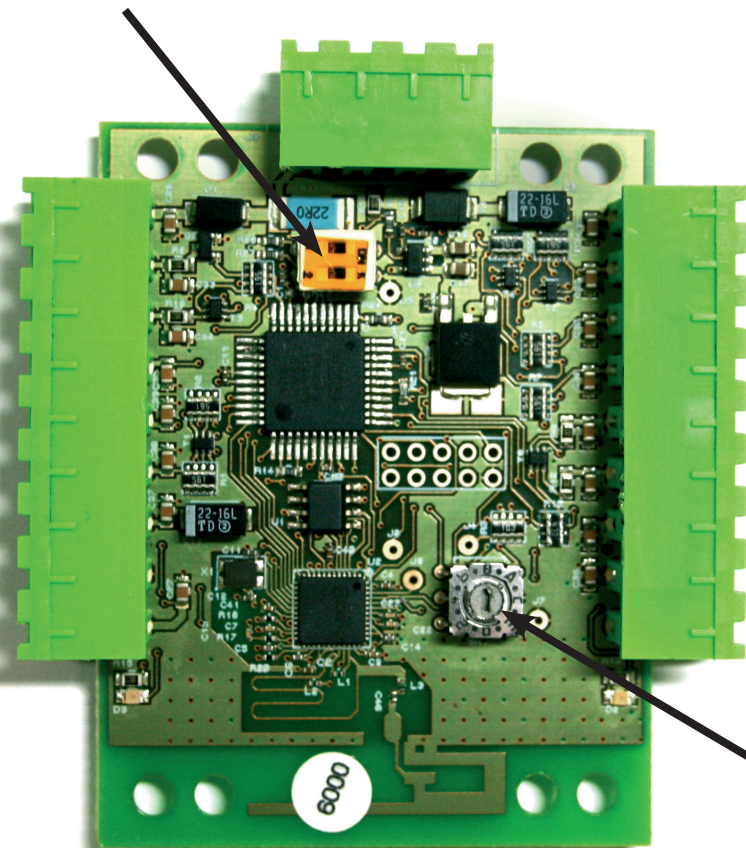
It may be necessary to briefly remove the reader from its mounting plate if access to the Allen screws is limited by the post or wall.

Changing frequency channel

If you are experiencing problems with the range or reliability this may be due to poor reader positioning, adjacent interfering 125 kHz or 2.4 GHz equipment, e.g. an adjacent wireless PC network. Please refer to the 'Before you install' information regarding unit locations. If you are still unable to improve the system performance then you may try an alternative 2.4 GHz channel using Switch 1. Power cycle the unit after any changes.

The system has 16 channels available. (Unless a keycard fixed channel is selected) The unit is set to channel 4 as this frequency is normally clear of other device transmissions. This can be changed using a small flat blade screwdriver. Take care not to contact the circuit board with the screwdriver blade as this may damage components.

SW2 - Keycard button 1 and 2 fixed channels - If either switch 1 (Channel 26) or switch 2 (Channel 11) is set, the rotary frequency switch is disabled. If both switches are selected, the interface will not operate.



Interface PCB

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
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
F	2.48	26

SW1. Rotate the switch to select an alternate channel.

The switch will initially be set to default position '4'

The hands free tokens will automatically configure themselves to use the new channel.

Enrolling hand free keyfobs and keycards

Hands free keyfobs

These tokens should be assigned to users as per standard keyfobs. They will then operate with normal P series readers or via the hand free interface when in range.

Hands free keycards

These should first be assigned as per the hands free keyfob.

To enable the buttons, the keycard must first be presented to the P series reader and then used in hands free mode. The keycard stores the details of this interface and can then activate the door using a button.

It can also be used in normal hands free mode and also in local passive mode with other standard readers.

Switch SW2 is used to select the fixed channels used by the two keycard buttons. Select either switch 1 or 2 to set which keycard button the interface will respond to.

The unit must be power cycled if the switch position is changed, to activate the new setting.

Using an entry confirmation button

Where two door readers may pick up the same hands free token, a push to make button can be used to confirm an entry request for the specific door. Where fitted, the button LED will flash for 5 seconds after the hands free token has been recognised and must be pressed to unlock the door.

To enable the use of an entry confirmation button do the following steps:

1. Power down the interface board
2. Power up the interface board
3. Press and hold the entry confirmation button for a minimum of 3 seconds within 60 seconds of power up.

To disable the use of the button, repeat the above process.

Specifications

Electrical	Min	Max	
Voltage - Reader module	11V DC	14V DC	
Current - Reader module		1 A	
Voltage - Interface module	11V DC	14V DC	
Current - Interface module		80 mA	
Additional power supply required			Yes
Carrier frequency	119 kHz	140 kHz	
	2.405 GHz	2.480 GHz	
Wiegand format			26 bits
Cable type for extensions			Belden 9540
Cable length between ACU and reader		100 m	
12V Power cable core diameter - up to 5 m run	0.75 mm sq		
12V Power cable core diameter - up to 100 m run	2.5 mm sq		
Button confirmation input			Yes
Read range with hands free token	Min	Max	
Long range reader		5000 mm	
P200E metal mount		2000 mm	
P200		2500 mm	
P50		1100 mm	
Environment	Min	Max	
Operating temperature	- 20 °C	+ 55 °C	
Waterproof		IPX67	Outdoor Use
Dimensions	Width	Height	Depth
	220 mm	220 mm	120 mm

