Quick Start User Guide (Support +44 151 318 0792)

4G, 3G & GSM Cellular Intercom: SMS Programming

Need help? Press and hold the call button for 10s to be connected to support!*

Recommended Networks

2G and 3G networks offer dedicated voice and SMS services integrated into the protocol. The network operators all use the same standards on 2G and 3G and so basic voice and SMS services require no setup.

4G networks are purely data networks and do not offer separate voice and SMS services. On 4G the voice and SMS service is overlaid onto the data service using the IP Multimedia System (IMS). There is an international standard setup for the IMS system (and hence voice and SMS services on 4G) which is the default configuration for the iDG SFC intercom. This tells the intercom how to send and receive SMS and voice as data packets over the internet when only 4G is available.

Some networks, for example Vodafone UK, do not offer compatibility with the standard 3GPP configuration. These networks work normally on 2G and 3G but require additional configuration files to be loaded for voice and SMS on 4G. Therefore, for 4G operation, there is the additional step described below for enabling 4G voice (VoLTE) and 4G SMS.

If SMS sending is very slow or unreliable, it is because the web services are enabled but there is no data connection allowed with your SIM either because you have no allowance or the APN is incorrectly set.

By default the data connection to the iot-portal.com is enabled. If you have no data allowance on your SIM card and/or the APN is required by your network but is incorrectly set, SMS receiving will be delayed by up to 60s. However, we enable this because in some circumstances, there will be no other way to configure the SMS and calls where only 4G is available. If your network does not require additional set up you can disable the web services by SMS by sending:

Web disable

UK Networks

3UK

3 Networks	Best Deal Contract	Best Deal PAYG	Comments
3 (recommended)	£6	£10pm	Unlimited calls/SMS
SMARTY	£6	-	Unlimited calls/SMS
iD Mobile	£6	-	Unlimited calls/SMS
Superdrug Mobile	£10		Unlimited calls/SMS

3UKnetworks work on 3G and 4G without any change of settings – but ensure you are not running in Vodafone mode if the intercom has previously has a Vodafone SIM:

Vodafone 0 (unnecessary on a new unit)

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EE

EE Networks	Best Deal Contract	Best Deal PAYG	Comments
EE	£13pm	£10pm	500mins on PAYG
1p Mobile (recommended)	-	£10/quarter (£3.33pm)	1p per call
Plusnet (recommended)	£6pm	-	Unlimited calls/SMS
BT Mobile	£13	-	Unlimited calls/SMS
Now PAYG	£12.50	£10	Unlimited calls/SMS
Coop Mobile	£10pm	-	Unlimited calls/SMS

EE requires the APN to be set for the web services to be enabled. From a master phone send the following:

APN "everywhere","eesecure","secure"

If you have no data allowance, switch off web services by sending:

Web disable

Vodafone UK

Vodafone Networks	Best Deal Contract	Best Deal PAYG	Comments
Vodafone	£11pm	£10/6 months	£0.45p /call PAYG
ASDA Mobile	£4pm	£5/6months	8p /call PAYG
Lebara Mobile	£4.50 (1000 calls)	£5 (1000 calls)	Unlimited calls/SMS
Talk Mobile	£7	£5	Unlimited calls/SMS
VOXI	£10	-	Unlimited calls/SMS

For 4G operation, Vodafone networks require the APN to be set and the Vodafone specific Modem Binary Configuration file to be set. By default, the APN is set to Vodafone UK PAYG. You may need to change this to match your SIM card. As a minimum, for Vodafone, send:

Vodafone 1

Without the MBN file loaded (and no 2G or 3G network available) you may not be able to successfully send SMS messages on Vodafone. In this case, you should use the setup card to access the 'Live Screen' for your device and tick the 'Vodafone VoLTE' checkbox. You will need data credit on your SIM. We set the default APN to Vodafone so the connection to the portal is enabled.

Signal Strength: 12/31

v7.08R029

☐ Vodafone VoLTE

10-digit PIN: 2043588976

Billing: 01-Jan-1970 £12

Last Scan: 2022-05-11 09:02:33

Ensure the Vodafone VoLTE checkbox is ticked when using Vodafone 4G

iDG

Most O2 UK networks do no currently provide 4G voice calls but will work on 2G (until 2026) and 3G (until 2023). This is due to missing configuration files on reseller SIM cards. You may need to replace the SIM card when 2G and 3G networks are shut down or switch network to Vodafone, EE or 3.

O2 Networks	Best Deal Contract	Best Deal PAYG	Comments
O2	£15pm	£10pm	Unlimited calls/SMS
Giff Gaff	**£10pm**	**£6**	**Unlimited calls/SMS**
Lyca Mobile	£12	-	Unlimited calls/SMS
Sky Mobile	£7	-	Unlimited calls/SMS
Tesco Mobile	£7.50	£7.50	Unlimited calls/SMS
Virgin Mobile	£6	-	Unlimited calls/SMS

Summary: Why is it so complicated?

2G and 3G networks where very simple by today's standards. On 4G though, layering voice and SMS over the data service has resulted in the extra complication of setting up the IP Multimedia System differently for several networks. It is not just intercoms that face these issues, many mobile phones will not operate on 4G only. Come 2026 when the analogue phone networks are shut down many people will find their phones unable to make or receive calls unless they have VoLTE available. Indeed this is happening in countries where 2G and 3G has already been switched off.

3 UK is the most straight forward network as they do not require the APN to be set and their IMS settings comply with the 3GPP worldwide defaults.
EE similarly use the default IMS settings, however they require the APN to be set.
Vodafone requires a customised MBN file to be loaded throughout Europe and often require the APN to be set for PAYG.
Telefonica/O2 SIM cards often do not have the required IMS settings on the SIM card so we cannot provide VoLTE calls with these SIM cards. These will need to be changed before the 2G/3G shutdown.

We hope in future firmware releases the intercom will be able to auto-configure the APN and IMS settings. We don't currently offer this as there is no way to input information onto the intercom without either SMS or data. A mobile phone has a keyboard and a screen. Should something be misconfigured, you can change a setting using the keyboard and screen. This is not possible with the intercom so we retain an element of manual control over important settings to avoid the situation where there is no way to configure it.

By keeping the connection to the iot-portal.com enabled (web enable and maintaining a data allowance) your intercom can be updated remotely over-the-air. This will ensure continued compatibility with network into the future.

Programming

There is storage space in the memory of the intercom for 1000 numbers. These can comprise of any of the 4 number types.
Numbers programmed as 'Master' numbers allow users to change settings and add other numbers. They are not called when the button is pressed but they will operate the output relays when they dial the SIM card telephone number.
'Call' numbers are the numbers dialed when the button on the intercom is pressed. When a 'Call' number dials the SIM card telephone number the default relay will operate.
'User' numbers are purely for 'dial-to-open' access control. They can operate the output relays when they dial the SIM card number.
'Text' numbers are sent SMS messages on events such as dial-in notifications.

Registering the Master Phone

The user in charge of setting up the unit (known as the 'Master' user) must first send the following SMS text message to the SIM card number.

If the intercom is brand new and has never been used it will accept the 'Master me' command

Master me   (if OK, the intercom will say 'Number Added')

If this command does not work you must use the supplied 5-digit pin:

MASTER <master's number>**,**<PIN>.   There must be one space after MASTER before the number
                                                         There must be a stop (.) at the end of the message
                                                         The 5-digit PIN is written on the sticker above

e.g.   *Ensure there is no space before or after the comma ','*

master 07000000000**,**12345.   Sets the master phone number as 07000000000 for PIN 12345

Only the first Master has to use the pin – further master numbers can be added by other masters as follows:

Master 07000000001.

Adding and Removing Numbers to be Called

The order in which numbers are dialled is the order in which they are added to the system. To add a call number to the system use the following command:

CALL <user number>. e.g.

call 07574777888.   First number dialled
Call 07570301799.   Second number dialled

For multiple button units, also specify the button as follows.

callA 07123456789.   Dials 07123456798 from button A
callB 07987654321.   Dials 07987654321 from button B

Not specifying the button means the number will be dialled from both buttons.

Add dial-to-open numbers

To add dial-to-open numbers simple send the command **add** followed by the number and a full stop '.' As follows:

Add 07123456789   Adds 07123456789 as a dial-to-open number

To remove a number the **REMOVE** command is used. Numbers are removed in the reverse order to which they are added:

remove 07574777888.

If a number is both a master number and a call number the last one added will be removed first. If the call number was added after the master number (which is most likely), the call number will be removed by the first REMOVE command sent. If another REMOVE command is sent the master will also be removed by the second command

Useful Commands

VOLUME 5   sets the volume to maximum (**default: 3, range: 0-5**)

MIC 7   sets the microphone sensitivity to maximum (**default: 6, range: 1-9**)
RTIME 30   sets the maximum dialling time to 30 seconds (max 250s)
CTIME 60   sets the maximum call length to 60 seconds (max 250s)

Output and Call Handling

During a call the output is activated by pressing the ∗ or # key on the telephone keypad. This will activate the corresponding relay output (as per **RLYTIME** and **RLYMODE**) and instantly disconnect the call.

By default, any user number, call number or master number can activate the output relay by dialling the intercom SIM card telephone number. The default setting is for the intercom to reject the call as soon as the number is read. To switch back to this default mode the following command is sent to the intercom:

REJECT CALL

If desired the intercom can be set to answer incoming calls if the number is recognised and a conversation can made between the intercom and the calling telephone. In this mode, to activate the relay the ∗ or # key is pressed. To enter this mode the following message is sent to the intercom:

ANSWER CALL

If the output must be controlled for a measured period of time the RING mode is selected. In this mode the relay is activated when a recognised number calls the intercom for as long as the caller continues to dial the number. The call is never answered. This is also useful when it is not desirable to reject the call. To enter this mode the **RLYMODE** command is used as follows:

RLYMODE RING

Signal Strength

To view the received radio signal strength the '**CSQ**' command is used. The intercom will naturally use 4G if possible which can result in low signal strength readings. The 3G and 2G bands frequently offer a high signal strength and will be used when 4G is unavailable. A good RSSI value is over 15 with 31 being the maximum.

Controlling the Output Relays

The output relays can be switched on and off via SMS or via the Live Screen. Master numbers always have access to the output relays. To allow call recipients and dial-to-open numbers access, the security level must be reduced as shown below

Security 77   Maximum security level (SMS functions and dial-to-open require a master phone)
Security 73   Output relay SMS control for all users (i.e. call numbers and dial-to-open numbers)
Security 33   User numbers accepted for dial-to-open and SMS relay control
Security 37 (default)   Dial-to-open access for all users with SMS access only for master users

Output Relay Commands

To switch an output relay on and off simply send the SMS messages on and off along with the target relay as follows:

On#   Switches on the # relay
Off#   Switches off the # relay
On*   Switches on the * relay
Off*   Switches off the # relay

Similarly, the **Open** and **Close** command operate the # relay as **On#** and **Off#** respectively.

It is also possible to control the output relay for a set time up to 9 hours as follows:

On# 3.	Switches the # relay on for 3 seconds
On# 3m.	Switches the # relay on for approximately 3 minutes
On# 499m.	Switches the relay on for 499 minutes (maximum)

Viewing the Number List

The list of numbers in the memory can be read by sending the '**LIST**' command. MXXXXXXXX numbers are master numbers, CMXXXXXXXX numbers are the number to be called when the button is pressed. UXXXXXXXX numbers are the number with just dial-to-open access control.

Output Relay Status

The relay status and gate open/closed state can be viewed by sending the '**STATUS**' command. This will return both the gate and relay activation status. Additionally the current firmware version can be found using this command.

Adding Keypad User Codes (Keypad model only)

To add codes to open the gate/door you simply send the following command:

Code 1234.	Adds the code 1234 to the memory **(please note the . at the end of the message)**
Code 7654321.	Adds the code 7654321 to the memory

By default the # output relay is activated when a simple numeric code is entered. To operate the * relay when a code is entered, the '*' character should be the first character in the code. For example:

Code *1234.	This code will operate the * relay when used

Removing Codes

To remove a code, simply send the word 'remove' followed by the code from a master phone. For example:

Remove 1234.	This removes the code 1234 from the memory

Viewing the Code List

To view the numbers in the memory simply send the word '**list**' from a master phone to the keypad. Keypad codes are enclosed in '< >' parentheses. For example:

<1234>

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Online Programming

The intercom has access to the IoT Portal (http://iot-portal.com). This allows settings and numbers to be viewed online. This requires your SIM card to have a data allowance and sometimes requires the APN to be set. Native SIM cards (i.e. the network's own SIM like O2 and not reseller SIMs like GiffGaff) often do not need the APN to be set. To set the APN the APN command is used as follows:

apn "giffgaff.com","giffgaff","" (where giffgaff.com is the APN, giffgaff is the username and in this case there is no password "")

The default APN is Vodafone UK:

apn "pp.vodafone.co.uk","wap","wap"

EE SIM cards require the APN to be set:

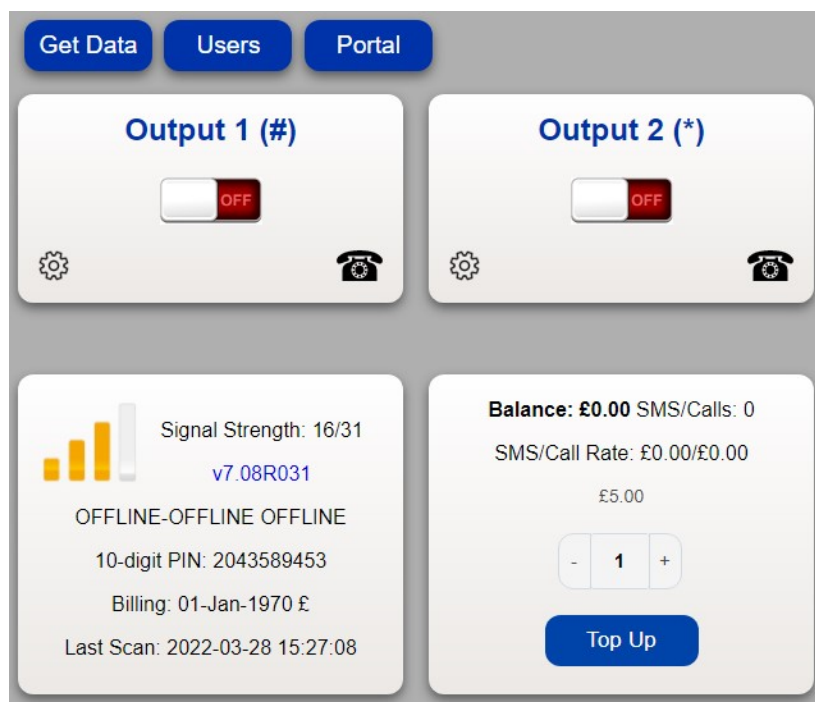**Apn "everywhere","eesecure","secure"**

The portal data connection can be enabled and disabled by sending:

Web enable   (default)
Web disable

To access the portal, send the following to the intercom SIM card number

Get link

Click the temporary link sent in the SMS reply to access the intercom. The link contains a key that will change every time it is requested.

From the Live Screen you can operate your gate/door by clicking on the buttons for output 1 or 2.

The signal strength can also be viewed.

If your intercom uses the iot-portal VoIP server then you will also see the connectivity status (shown here as 'OFFLINE') and the current balance of your VoIP account. This does not apply if you use your own SIM card.

To amend users, click the 'Users' button. See the next page for details.

16:49

Each section has a help pop-up box.

Amend User
Click 'Help' for further information

User name should be entered here

User (Help)
Andrew

Access Control Media

For door readers with a keypad, optionally enter a keypad code here

Keypad Code (Help)
12345

☐ Send code to user in SMS

If you would like the code sent to the user, check this checkbox and fill in the phone number below.

The tag ID is entered here
If you clicked on the tag ID on the Live Screen it will be pre-filled.
There are multiple ways of obtaining a tag ID:

- Priory Tag label
- Using NFC Tools
- Obtain from door reader
- Obtain from USB reader

Tag Code (Help)
A18CD846

☐ Void Tag

☐ Mail My Tag

Save

To disable the user's access but retain their tag ID (recommended), click void tag

Mail My Tag – clicking this box pre-fills the Tag ID box. Once the save button is pressed the administrator is directed to an address form for the mailing address of the user.

Phone Settings

Phone (Help)	Order (Optional)

Type (Help)
Admin

The phone number can be added for a general user so they can receive their keypad code via SMS (Type should be 'User').
Admin users should add their number for important information from the controller such as void tag attempts or the controller needs attention.

Email addresses should be added for Admin users so they can be sent a link to the door controller or log in to the group view via the www.priory-access.com main page.

Admin users should have 'Full Access' selected from the permission drop down box.

If invalid/void tag events require email notification, select 'Full' from the email notifications drop down

Email Details

Email (Help)

Email Notifications (Help)

Permission (Help)
Full Access

Optional Time Settings

Start Time (Help)

Each user can have time restrictions placed on their access for each door.
Daily start and end times can be specified in this section along with the ability to restrict access to specified days.
An expiry date may be added to ensure access is automatically removed for this user on the specified date.

End Time (Help)

Weekdays (Help)
☑S ☑M ☑T ☑W ☑T ☑F ☑S

When either 'Save' button is pressed, the cloud database is instantly updated. An attempt is made to contact the controller if it is available. If the controller is offline an attempt will be made at a later date until the data is confirmed.

Expiry Date (Help)

☐None

Save	Cancel
New Key	Delete

Removes user from database

The 'New Key' button generates a new secure link for an Admin user if the original has been unintentionally shared

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Disabling Support and Voice Assistance

*To disable/enable the support call feature, send the following from a master phone:

Support off
Support on

The voice assistant is able to say in English the most common setup problems when they occur. It's very useful to have the voice assistant enabled during set up and beyond. To turn on and off the voice assistant, send the following from a master phone:

Voice enable
Voice disable

The voice assistant will tell you if the following errors have occurred and below indicates how to rectify the problem.

Dial-to-Open Off	Send access list or access any to enable dial-to-open
SIM Fault	There is either no SIM, the SIM has been inserted incorrectly or the SIM has a PIN code on it
Network Fault	The modem has received a service error from the network. This is normally due to no call/SMS credit
No Signal	The intercom has not been able to register on the network. This is normally just due to poor signal
Registration Denied	The SIM card has not been allowed access to it's home network. You should use another SIM
Number Added	The number has successfully been added to the memory
Command OK	The command executed successfully
Dialling	The intercom is dialling a number
Number Removed	The number has been successfully removed from the memory
Bad PIN	The 5-digit PIN is either wrong or there is a syntax error. There is likely to be a space around the ','
Bad Command	The command was not recognised or there is a syntactic error. Check numbers have no spaces.
No Access/Not Master	To use this command you must be using a master phone
No numbers to call	There are no 'call numbers' in the memory. Use the 'CALL' command to add one e.g. Call me
Number not recognised	The intercom has received a call from an unknown number
Security Settings	The security level for this phone number type is insufficient to execute its function – see above
Gate Opening	A valid number has rung the SIM card telephone number and the relay has been activated

What is VoLTE?

At the end of 2025 the analogue phone networks will be shut down in Europe including the UK. 2G may still be around for data but the voice and SMS capability will certainly be gone. You will need a VoLTE compatible SIM from then onwards.

The replacement on 4G is the IP Multimedia System (IMS) with Voice over LTE (VoLTE). Not all networks have fully implemented this yet.

To check out if your SIM and network are VoLTE capable send the 'Network Status' command:

LTE Status
RAT: 4G
Signal: 21/31
VoLTE SIM: Y
VoLTE Ready: Y
IMS Ready: Y

RAT – Radio Access Technology
VoLTE – Voice over LTE (4G)
IMS – IP Multimedia System (required for SMS on 4G networks)

Controlling the Radio Access Technology (RAT)

If your SIM card does not support VoLTE, you may not be able to receive calls on 4G. In this case you can request that the intercom connects via 2G or 3G. 3G is due to be phased out shortly so we recommend using 2G where possible. Changing the scan sequence is the safer way to change the RAT.

RAT	Code
2G	01
3G	02
3G	03
4G	04
Auto	00

The auto scan sequence is effectively 04030201

Example;

Scanseq 04030201   …this select 4G first, then 3G (WCDMA), then 3G (TD-CDMA), 2G
Scanseq 0104   …this selects 2G first followed by 4G (recommended for 2G operation)

Scanseq 00   …returns scanning to default

Forcing a RAT

The intercom can also be selected to use only 1 RAT by sending the RAT command:

| RAT	Code
2G	1
3G	2
4G	3
Any	0

RAT 1.   …forces the intercom to use 2G only
RAT 3.   …forces the intercom to use 4G only
RAT 0.   …allows the intercom to use any RAT

Should the service become unavailable on your selected RAT, remove the SIM card and allow the intercom to reboot without a SIM present. This will set the intercom to use any RAT.

Other Commands

Pedestrian   …operates the output relay
Access any   …allows any incoming number to operate the barrier
Access none   …turns off dial-to-open
Access list   …only numbers from the number list can operate the barrier

iDG

4G, 3G & GSM Cellular Intercom: Mechanical Installation

Mounting Screw

Mounting Screw

Mounting Screw
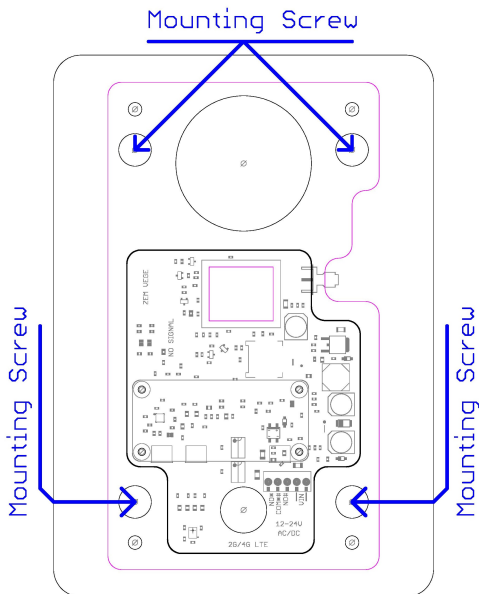
Using the supplied stencil, drill the four mounting holes and the cable entry hole onto a flat surface. The maximum size for each hole is marked on the stencil.

The surface must be flat in order to not warp the intercom enclosure. This may result in the waterproof seal becoming ineffective. Do not overtighten the mounting screws.

Pass the cables through the sleeved rubber grommet and use the supplied cable tie to ensure a tight seal around the cable.

Where necessary the supplied aerial can be removed and an external aerial can be screwed onto the intercom. Please ensure the rubber sealing washer remains in place between the connector and the intercom.

The aerial connection is a SMA type connector.

The intercom features two output relays. The maximum permissible switching voltage is 48V at a current of 0.75A. The relays are protected by a 0.75A thermal fuse.

The relays share a common COM terminal labelled COM*#

Typically, the # relay is used to control the main vehicle gate and the * terminal is used to control a pedestrian entry.

Pressing the * or # key during a call operates the corresponding relay for the time set by the RLYTIME command:

Rlytime# 10. (sets the # relay active time to 10 seconds)
Rlytime* 1m. (sets the * relay active time to 1 minute)

On* …holds the * relay active until the…
Off* …command is sent to the intercom

Similarly, on# and off# controls the # relay.

The **OPEN** and **CLOSE** command operates the # like ON# and OFF# respectively.

Gate Controller

OPEN(Pedestrian)
COMMON
OPEN
AC/+VE
AC/GND

The absolute maximum supply voltage is 24V AC or DC. The VIN terminals are not polarity sensitive and can be connected either way around. Current consumption varies from 25mA at idle to 200mA when active.
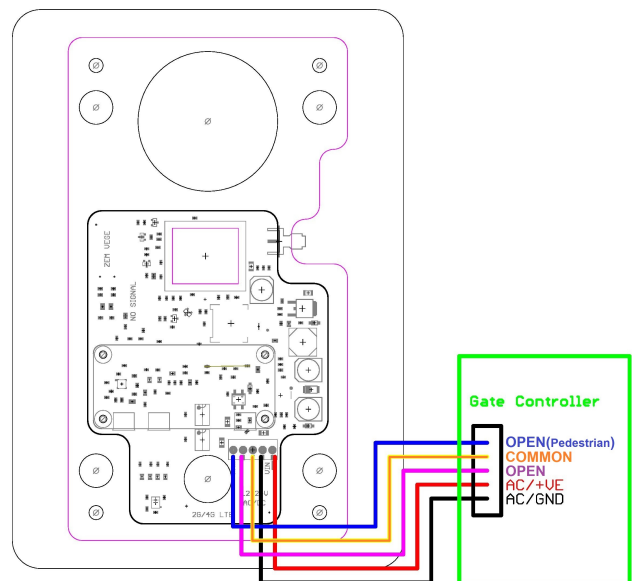
By default, the dial-to-open access control will operate the # relay for the time set by RLYTIME#.

To enable any incoming number to operate the relays send:

Access any

To revert to the number list send

Access list

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With the intercom wired and powered up, basic programming should be performed to add a master number. Ensure the fault LED are not illuminated. The **SIG**nal LED may flash at a rate of 1/second. This would indicate a low-medium signal strength. If permanently illuminated this would indicate the intercom will not operate correctly due to a poor signal.

The **NET**work LED illuminates when there is a network fault. Typically, this indicates zero credit on a PAYG SIM card.

The **SIM** LED will illuminate when the SIM card is not detected or there is a PIN number on the SIM. If there is a PIN number, the SIM should be inserted into a mobile phone for it to be removed or set to 0000.

Once the intercom is running correctly the front panel should be screwed into place. Connect the switch wiring ensuring that the wiring does not get caught between the terminal block and the front cover which will stop the front cover making a good seal with the base.

NB: 12-24V AC/DC Absolute Maximum – Please measure AC voltage with a volt-meter.
Do not wire the intercom to mains voltages.

Declaration of Conformity

Document Number: DOC_INTSFC

Issuer's Name: Priory Electronics Ltd

Issuer's Address: 23 Goodlass Road, Liverpool, L24 9HJ

Object of the declaration: INTSFC1.02

The object of the declaration described above is in the conformity with the relevant Union harmonisation legislation:

2014/108/EC The Electromagnetic Compatibility

Directive 2011/65/EU The Restriction of Hazardous Substances
Directive 2014/53/EU RED Art3.1(b) Radio Equipment Directive Conformity is shown by compliance with the applicable requirements of the following documents:

Safety: EN 60950-1:2006+A2:2013

EMC: EN 301 489-1 V1.9.2 (2011-09) EN 301 489-7 V1.3.1 (2005-11) EN 301 489-17 V2.2.1 (2012-09) EN 301 489-24 V1.5.1 (2010-10)

Radio: EN 301 511 V12.0.0 (2015-02) EN 300 328 V1.9.1 (2015-02) EN 301908-1 V7.0.1 (2014-11) EN 301908-2 V6.2.1 (2013-10)

Technical Construction File required by this directive is maintained at 23 Goodlass Road, L24 9HJ UK

Signed for and on behalf of Priory Electronics Ltd

Name: Michael Beaver
Position: Director
Date: 16/12/2020

Made in UK