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4G VoLTE Intercom: SMS Programming

Scan for Help Video

Quick Start Procedure

The intercom can be programmed entirely by sending SMS messages from a user's phone to the intercom SIM card phone number.

Firstly, the intercom needs to know which phone is in control. This is done by sending the master command as follows:

Master me   …puts this phone in control (i.e. this is an admin phone)

If the intercom has been used before or already contains a master number you must use the 5-digit PIN. This is the last 5 characters of the IMEI number/10-digit ID.

iot-portal.com
Live Screen
LPIN: 4051 82820
Firmware: 7.20R012

The 5-digit PIN for 4051**82820** above is '82820'

Master 07968774663,82820.   …makes 07968774663 a master phone for intercom 4051982820

Call me   …dials the number that sent the message when button pressed

Call 07968774663.   …dials 07968774663 when the button is pressed

Numbers are dialled in the order in which they are added!

Add 07968774663.   …adds 07968774663 as a Dial-To-Open number

Remove 07968774663.   …removes 07968774663 from the memory

Numbers should be entered with dot . at the end of the number (not mandatory)

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List	…displays the numbers in the memory (truncated to 8 digits)
Status	…displays model, firmware, and output status
Csq	…returns received signal strength
Open	…operates the # output relay
Close	…deactivates the # output relay
Code 1234.	…adds 1234 as a # output relay keypad code
Code *4321.	…adds *4321 as a * output relay keypad code

Default Settings

To reset all settings back to default values, whilst keeping all numbers in the memory, a master phone can send the following SMS:

Clear settings

The default settings (and its associated SMS command) are as follows:

Dial-to-Open Call Channel:	#	(channel [#/*/Alt]) *alt for Alternate between calls*
Toggle Mode:	Pulse	(rlymode [Pulse/Toggle])
Reject/Connect Calls	Reject	(reject call/connect call)
Text Message Reply	Enabled	(textres [En/Dis])
Voice Reply	Enabled	(voice [En/Dis])
Ring Mode	Enable	(ring [En/Dis])
Keypad Tones	Enable	(ktone [En/Dis])
Portal Access/Logging	Enable	(web [En/Dis])
Voicemail Divert	Enable	(divert [En/Dis]) *allows call to go to voicemail*
Forward	Disable	(forward [En/Temp/Dis])
Technology Scan Mode	0	(RAT (0/1/3) *recommend always '0' for auto*
Relay (DtO) Active Time *s*	1.5s	(rlytime[#/*] [s].) *supplied value -0.5s i.e. 2 = 1.5s*
Maximum Call Time *s*	50s	(ctime [s].)
Maximum Ringing Time *s*	25s	(rtime [s].)
Mic Volume	4	(mic [1-9])
Speaker Volume	3	(vol [1-5])
DTMF	1	(1 or 2 presses to release)

4G VoLTE Intercom: Programming via App

The intercom can be programmed by SMS or via the iot-portal.com app or a mixture of both.

New Users

New installers should scan the 'App Invite' QR code to get to the iot-portal.com app login page. New user phone numbers will not be known to the portal so it will not be possible for the portal to send login SMS messages to these numbers. The 'App Invite' QR code bypasses this restriction. We recommend logging in via phone number for intercoms.

Help Video Below

Regular Installers

For users known to the portal, it is preferable to scan the Enrol QR code which will automatically add the device to the app.

Installing the App: Android/PC
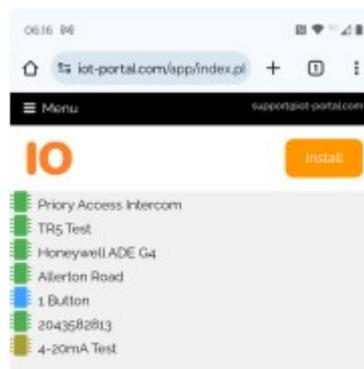
On Android and PC, installing the app can be achieved by clicking the Orange 'Install' button in the top right of the display.

Installing the App: iPhone

It is likely on iPhones that the 'Install' button does not appear unless using Chrome. To *install* the app, follow the below procedure.
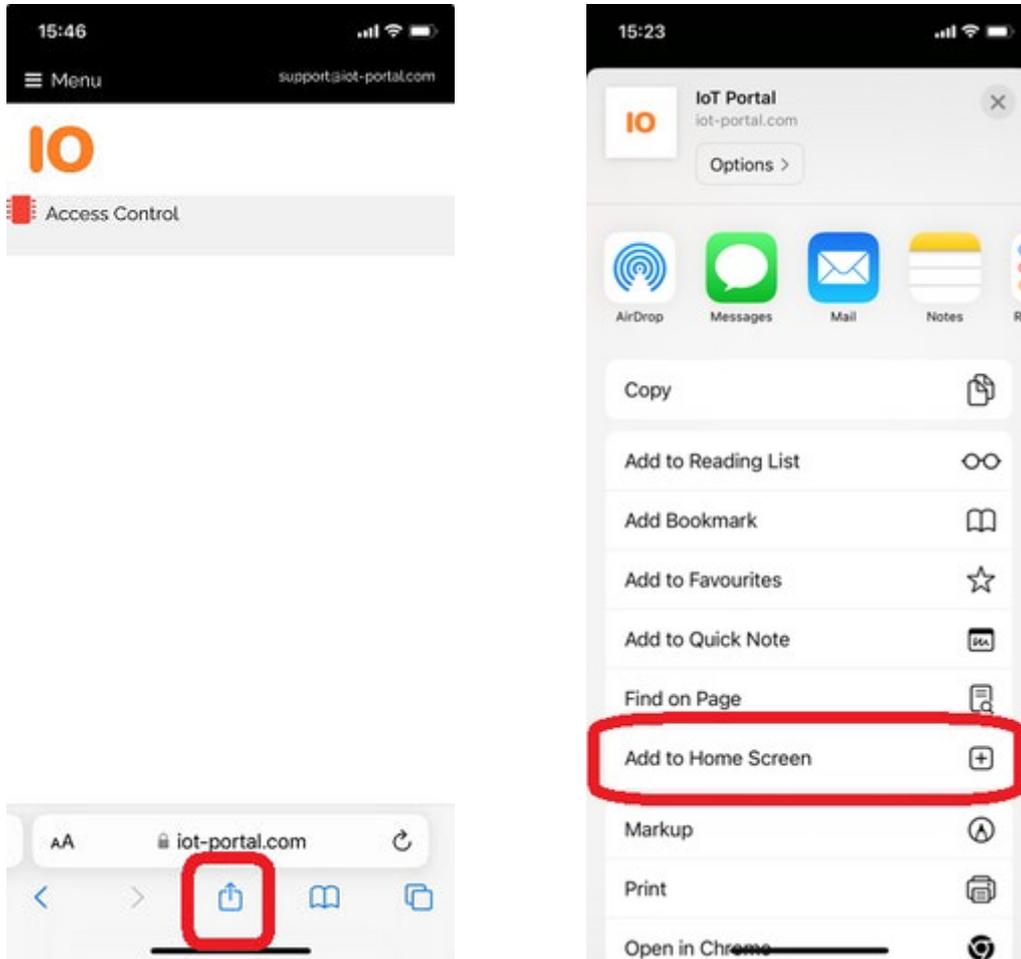
Click the 'Add to Home Screen' button to have app appear as an installed app on the home screen of your device.

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Adding/Amending Users

From the app Home Screen, click the intercom name (this will be a 10-digit ID unless amended). This will bring up the Live Screen for this intercom. Clicking the 10-digit ID (or name) will bring up the Change Name modal in order to name the intercom.
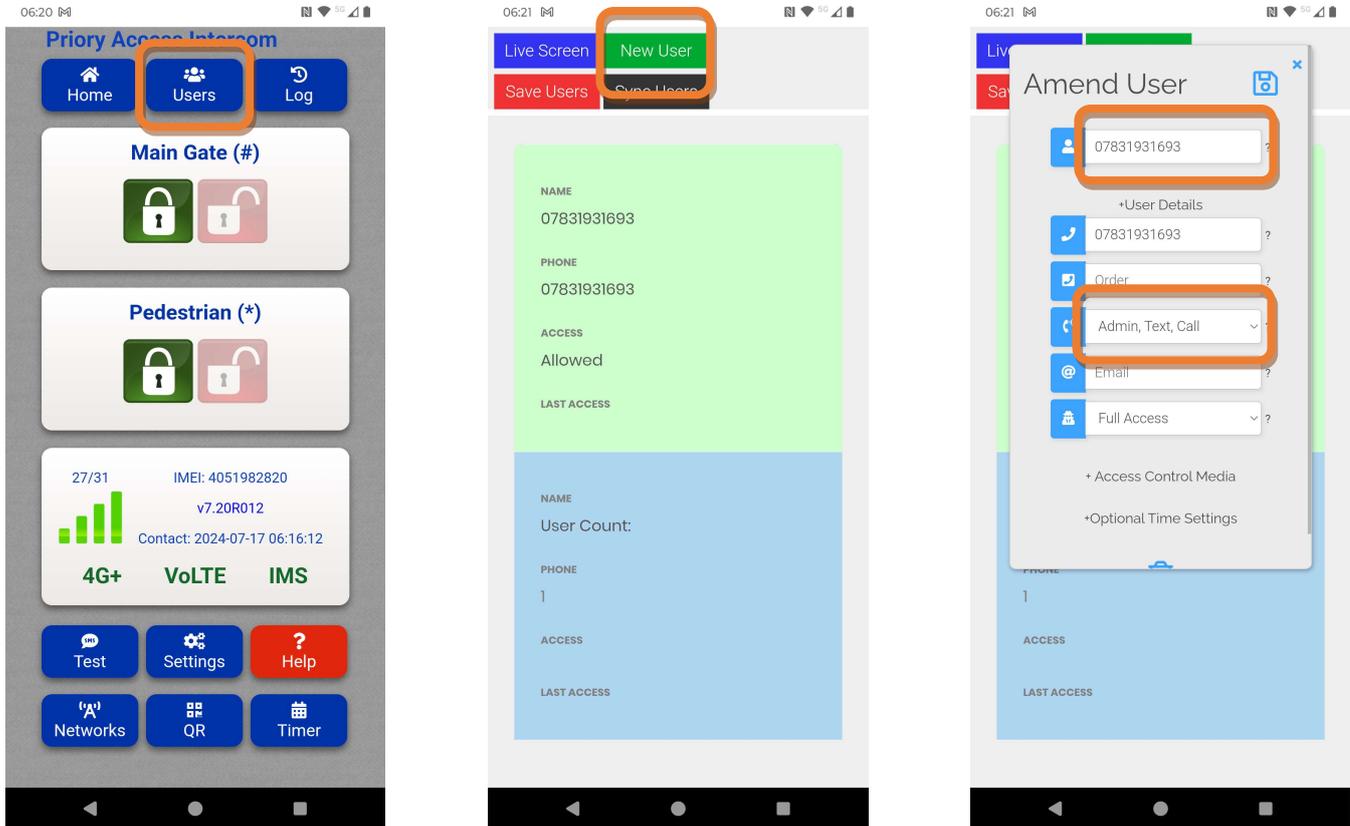
To add and/or amend users, click the Users button at the top of the Live Screen. Click on either an existing user or click the '**New User**' button at the top (green button).

The username will be the phone number unless amended on this screen (see orange box above).

If any numbers have been added by SMS the '**Sync Users**' button (black button) should be clicked before adding/amending numbers. This contacts the intercom to read any numbers out of its memory. The intercom must be on and it must have a SIM fitted with data.

Name	Enter the user's name
Phone	Enter the user's phone number
Order	Enter a digit (1,2,3 etc...) to specify the order of dialling
Type	Admin, Call and Dial-To-Open are the relevant options for intercoms*
Email	Enter an email address to login to the app via email (backup method)
Permission (email)	Enter Full Access on any user with access via email

Hover or click the question mark '?' at the end of each input box for more information.

Clicking the Save (disk) icon will save the details to the iot-portal.com cloud database, however, it is mandatory to then click '**Save Users**' (red button) to send the phone numbers to the intercom.

*Admin and Call numbers already have Dial-To-Open access control by default (see security SMS command below)

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Online Programming: Further Information

Any online programming, including using the app, will require a SIM card with data credit and a working data connection. If the buttons are ghosted on your Live Screen, then it is likely the data is not working on your SIM. You may be able to remedy this but, if not, just use SMS programming.

QR Code

A QR code supplied with the product will grant immediate access to the Live Screen. These codes can be destroyed and created on the Live Screen. Scanning the 'Live Screen' QR Code will take you to the Live Screen for that unit. From here you can add your email address and/or phone number on the 'Users' page. You require data on your SIM for this to work!

If you add your phone number as an 'Admin' phone you will then be able to get back to the 'Live Screen' by sending:

Get link

…from your phone to the intercom SIM card number. The intercom will reply with a link which will return you to the Live Screen. The link will be valid until a new one is generated.

Live Screen - **grants access to the Live Screen for programming and operation**
View Screen - **grants access to the View Screen which allows monitoring only**
Enrol Screen - **for enrolling devices onto the portal (for installers)**
Box Label - **description of package contents**
Invite QR - **links to the app login page and bypasses the restriction on unknown numbers**

IoT-Portal App

The app is a simplified version of the portal. It allows you to quickly get to the Live Screen for any device that has your email address stored in it as a 'Full Access' email address or any device that has your phone number in it stored as an 'Admin' or 'Master' phone.
Your credentials are stored in a cookie which allows you to remain logged in for up to 390 days. The app can be used as a website or can be installed as a Progressive Web App (PWA).

https://iot-portal.com/app
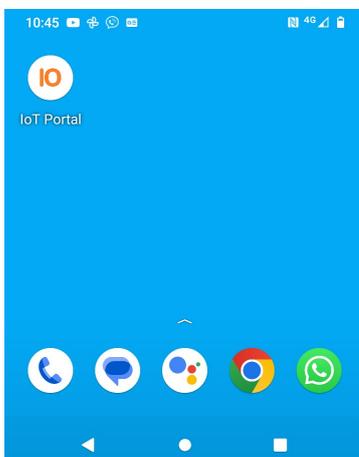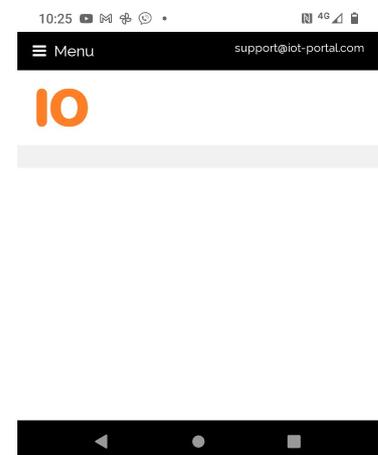
4G+ VoLTE Intercom: Mechanical Installation
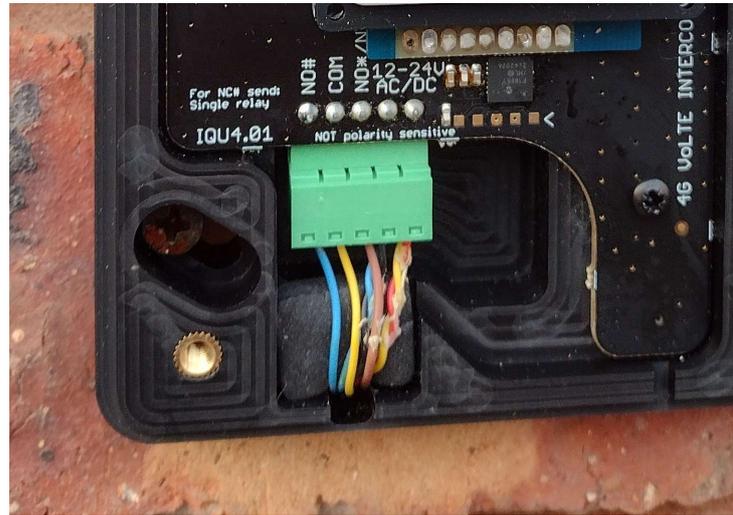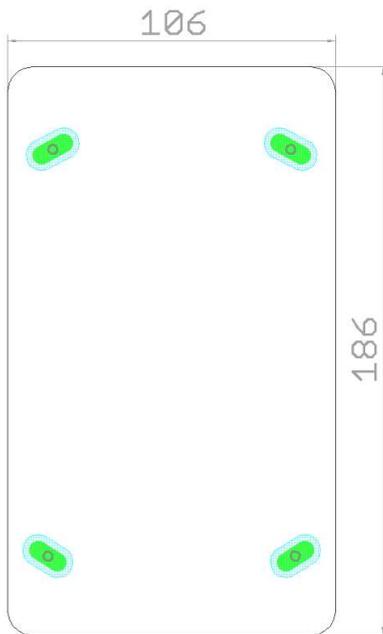
Using the supplied stencil, drill the four mounting holes and the cable entry hole onto a flat surface. Screw diameter should be 4mm or less with up to a 10mm screwhead.

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

The wiring should pass over the sponge which acts as a water strainer to remove water flowing down the cable.

By default, the dial-to-open access control will operate the # relay for the time set by RLYTIME#.

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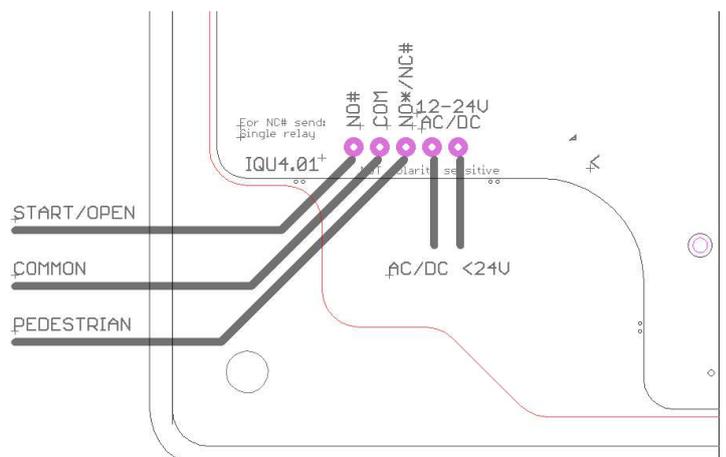
Rlytime# 10. (sets the # relay active time to 10 seconds)
Rlytime* 1m. (sets the * relay active time to 1 minute)

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.

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.

To enable any incoming number to operate the relays send:

Access any

Access list   …to revert to the number list

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.

We recommend using a Meanwell RS-15-15 power supply.

We do not recommend using a gate controller transformer secondary winding; especially in the UK where the open circuit voltage exceeds 24VAC.

SMS Programming: Further Information

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 dialled 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.

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

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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. MXXXXXXX numbers are master numbers, CMXXXXXXX numbers are the number to be called when the button is pressed. UXXXXXXX numbers are the number with just dial-to-open access control.

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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>

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?

Unlike 2G and 3G, 4G does not feature a dedicated digital calling channel that interfaces with the analogue phone network and only supports audio data packets travelling over the internet. This is similar to VoIP telephones using a broadband or WiFi connection.

The standard mobile phone data connection used for normal internet is not fast enough or stable enough on a mobile phone to support good quality uninterrupted calls. Therefore, mobile networks have a 'special' data channel (or PDP context) which has very low latency (it's fast) and is dedicated just for calls. Mobile phones and the intercom use this data channel for audio calls. This system is the Voice over LTE (VoLTE) system.

To access this data channel, your SIM must contain the appropriate keys and your hardware must support it.

Some networks that introduced 4G calling long after 4G was released may require fairly modern hardware to use 4G calling. For example, Vodafone UK and Ireland require LTE specification rel. 12 or newer.

This intercom uses LTE release 13 specification chips and thus support all European networks that have implemented VoLTE.

If your intercom cannot make or receive calls after the 'Circuit Switched' networks are shutdown, check you have a VoLTE compatible SIM card. Most new SIM cards supplied by the network directly will have the required IMS keys for 4G calling. SIMs supplied for 'Internet of Things' networks are unlikely to have the required network keys and will not provide 4G calling although they may work on 2G/3G.

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)

Forcing a Radio Access Technology (RAT)

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

RAT	Code	
2G	1	
3G	2	*(there is no 3G on LTE Cat1bis intercoms)*
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

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Online Programming: Setup & Remediation

Network Setup

IMS settings are automatically set for UK and Ireland networks.
The APN is set up automatically for the following networks:

Talkmobile UK Contract (Vodafone)		Vodafone UK Contract	
Vodafone Ireland (hs.vodafone.ie)		Lebara UK	
3 Ireland	3 UK	SMARTY	iD Mobile
EE UK	1p Mobile	Plusnet	
O2 UK Contract	O2 Germany	Tesco IE	Tesco UK
Giff Gaff	Lyca	Sky	Virgin
1NCE	Eir/Meteor		

Please manually set up the APN for other networks if the portal connection doesn't work or request we add your chosen network to the current firmware release. Please email support@iot-portal.com for assistance.

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. The intercom will automatically set up the APN for most networks (including those shown below). To set the APN up use the APN command:

apn "giffgaff.com","gg","password" (where giffgaff.com is the APN, ggaff is the username and the password is password)

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

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.

Priory Access Intercom

Users | Timer | Log

Main Gate (#)

Pedestrian (*)

16/31 | IMEI: 4051982820
v7.20R012
Contact: 2023-11-02 13:13:10

4G+ | VoLTE | IMS

Test | Settings | Help

Networks | QR | Reboot

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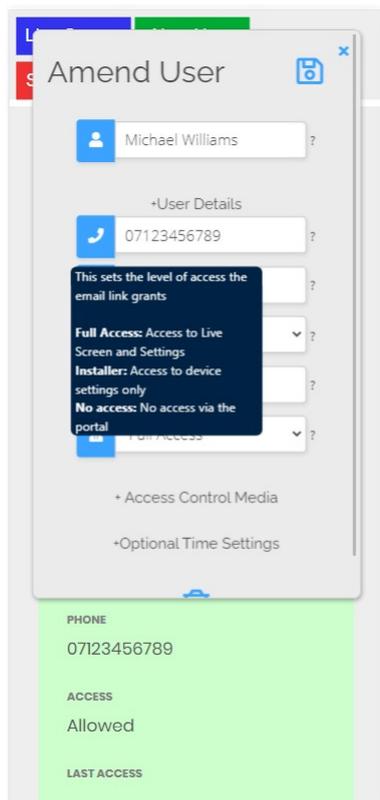
To add/edit users, click the 'Users' button on the Live Screen

Click on a user or click 'New User' to show the user details modal.

You can hover the mouse over the question marks on a PC or, on a phone, click the questions marks next to the text box for help.

If you have added numbers by SMS, first click 'Sync Users'. This will read numbers from the intercom.

Once all numbers are added, click 'Save Users'. This will send the numbers to the intercom.

For adding a keypad code, click 'Access Control Media'. This will reveal the textbox required to type in the keypad code.

Each user can have a keypad code or a keypad code can be a separate entity without an associated user.

Declaration of Conformity

Document Number: DOC_INTSFC

Issuer's Name: Priory Access Ltd

Issuer's Address: 95 Allerton Road, Liverpool, L18 2DD

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 Access Ltd

Name: Michael Beaver
Position: Director
Date: 16/08/2022

Made in UK