



User/Installation Guide

(Roaming version)



LPS 1277: Issue 3
Cert No. 1270a

5G GSM STU



Redcare 5G GSM STU User/Intallation Guide

This manual contains information on the Redcare 5G GSM STU. It contains more detailed information than that provided in the Quick start user guide provided with the GSM STU. The following products are covered:

Product name	BT item code
Redcare 5G GSM STU	049928
Redcare 5G GSM STU (Roaming)	076195
Redcare 5G GSM STU (Simless spare)	077022

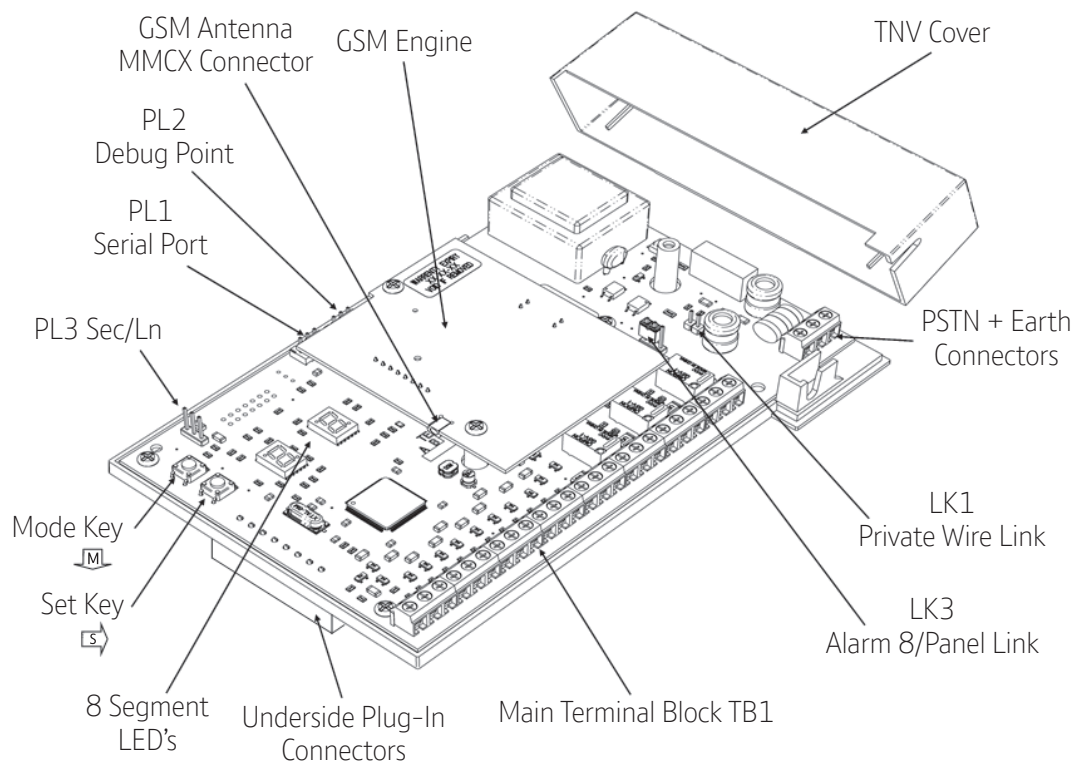


Fig 1. 5G GSM STU

> Description

The 5th Generation Subscribers Terminal Unit (5G STU) is a communicator for signalling alarm signals between a protected premises and an Alarm Receiving Centre (ARC). The 5G STU uses the extremely reliable BT Redcare network to convey the messages over a BT Redcare enabled BT analogue PSTN line. A secondary communications path is provided using SMS signalling over the GSM network. Even if an intruder cuts the line and jams the radio signals an alarm message will still rapidly be sent to the ARC.

The 5G GSM STU is fully compatible with BT's 21CN network upgrade program and connects to any BT Redcare enabled telephone line.

The 5G STU is fully ADSL compliant and does not require an additional ADSL microfilter.

> Pre-Installation Requirements

Before a 5G STU installation can commence, a BT Redcare Service Order must be submitted to BT Redcare by the Alarm Receiving Centre. This ensures that the appropriate exchange connections have been made and a BT Redcare block terminal 92A, where required, has been provided at the customer's premises.

It is strongly recommended that a site survey is carried out to check for suitable GSM signal strength at the proposed GSM STU location. The 5G GSM STU uses SMS messaging across the GSM mobile phone network, and for reliable operation a signal strength of 12 or greater (-90dB) should be available at the location of STU installation.

> Mounting and Safety Statement

The circuit board area, under the cover, is classed as a Telecommunication Network Voltage (TNV-3) circuit. All other interconnection points are classed as Safety Extra-Low Voltage (SELV) circuits. It is only necessary for this cover to be removed during installation of the PSTN wiring. A functional earth connection using CW1044 cable is required to the terminal block TB5.

The 5G STU is designed for host-independent fitment.

The host alarm panel or box into which the 5G GSM STU is installed must provide a RESTRICTED ACCESS LOCATION in accordance with the requirements of BS EN 60950. The unit should be mounted inside the alarm panel, or inside a separate powered housing, using the sticky mounting pads supplied. For fire alarm panels the enclosure must meet the requirements of EN 54-21 7.3. Suitable user protection to ensure compliance with BS EN 60950 should be present on the host or its fitted equipment. A hazardous voltage is one which exceeds 42.4V peak AC, or 60V DC. If you have any doubt, seek advice from a competent engineer before installing this or other adapters into the host equipment.

The enclosure must meet or exceed the protection requirements of the particular security grade for the whole installation as per EN 50131-1.

> Static Sensitive Devices

Static electricity is present in our everyday lives. A static charge is generated by friction, and whenever two dissimilar materials are separated. The imbalance of electrons causes a potential difference of many hundreds of volts. On discharge, a large current flows for a short time.

Many electronic components can be damaged by such static charges. Component failure may not be immediate or catastrophic. Electro-Static Discharge (ESD) can cause hidden damage to components, which will affect their reliability.

It is recommended that precautions are taken against damage due to static electricity during the installation and maintenance of the 5G GSM STU. Suitable ESD protection measures include ensuring that you are earthed (via a wrist strap and a 1M resistor) whenever you handle the unit.

> 5G GSM STU Siting

When surveying the site please remember that the GSM STU operates in a similar way to an ordinary mobile telephone, therefore any restrictions on the use of mobile telephones in the area will also apply to the GSM STU.

Premises such as hospitals, petrol stations, airports, blasting areas etc. may operate a mobile telephone restriction in certain areas. Always ensure that the chosen site is free of any mobile telephone restrictions and advise the end user so that they are aware, should any restrictions come into force in the future.



It is recommended to perform a signal strength test during a pre-installation site visit.

Determine where the GSM STU enclosure will be eventually situated. Place a mobile phone or GSM STU at the location it is to be installed, switch it on and observe the signal strength. For reliable operation a signal strength of 12 or greater (-90dB) should be available at the location of STU installation.

If the signal strength is weak, try to find a better position for the 5G GSM STU unit. If required, a higher gain extension antenna with an extension cable is available at extra cost from BT Redcare. (Part No. 47536).

<https://www.btinstallershop.com/home.aspx>.

> Telephone Line Connections

Connect the 5G GSM STU to the BT Redcare block terminal using standard telephone cable CW1308. Only one 5G STU may be connected to any one telephone line.

WARNING: the block terminal contains telecommunication network voltages.

Please note that it is important to use the correct method of connecting the STU to the BT Block Terminal 92A. The Block Terminal provides an insulation displacement connection (IDC) block for the incoming phone line. No connections, other than those made by BT, should be made to this IDC block. The STU should be connected to the screw terminals as shown. The 5G GSM STU is not polarity conscious on its line terminals.

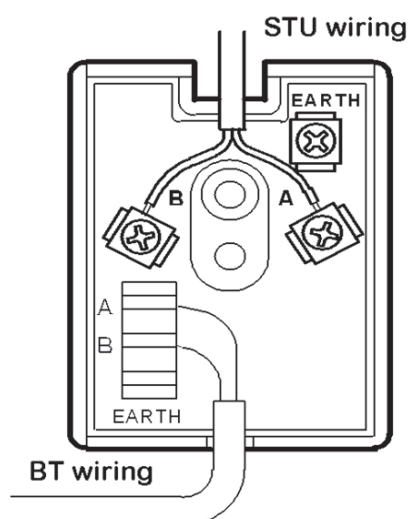


Fig 2. BT Redcare Block Terminal 92A

> Power Supply

The 5G GSM STU must be connected to a suitable power supply. The installer must ensure that the rating of the power supply is greater than the combined rating of the 5G STU and any other apparatus drawing power from the power supply. For use with intruder alarm panels the power supply must meet the requirements of EN 50131-6. The 5G GSM STU supply requirements are detailed on page 5.

Note: when the 5G GSM STU is plugged on to a suitable panel the power connections must still be made to the terminals marked +12V & 0V on TB1.

> REN

The Ringer Equivalence Number (REN) for the 5G STU is 1.0. As a guide to the number of apparatus that can be simultaneously connected to a line, the sum of REN values for each apparatus should not exceed 4.0. A BT provided telephone is assumed to have a REN value of 1.0 unless otherwise marked. If the 5G STU is used with an MCD, the combined REN will be 1.5.

> Training Courses

BT Redcare offer a free training course for installers of the BT Redcare service. For further information call General Enquiries **Tel: 0800 800 628**

> 5G GSM STU Inputs

The STU has 11 screw terminal inputs plus tamper (T) & AC fail (F) for connection to the monitored equipment such as an alarm panel. Note on GSM STU pin 8 is reserved for low signal strength, and pin 10 & 11 maybe reserved for path test alarms in BSIA mode (F7=3).

The alarm inputs are triggered by changing their voltage state. At default a positive voltage applied to the input will trigger an alarm condition. The polarity of the inputs can be configured using the PP (Pin Polarity) menu.

> 5G GSM STU Plug-in Option

For "Plug-in" installation, alarm pin connections are made automatically when the 5G GSM STU is plugged in to the host alarm panel. When fitting the STU, check that the signals presented by the alarm panel match those required by the STU, for the two sockets SK1 and SK2. The pins have been designated the following functions on the 5G GSM STU:

SK1	Function	SK2	Function
Pin 1	Alarm Input 1	Pin 9	Not Used
Pin 2	Alarm Input 2	Pin 10	Signal Ground
Pin 3	Alarm Input 3	Pin 11	ATS (Via STU LK3)
Pin 4	Alarm Input 4	Pin 12	Not Used
Pin 5	Alarm Input 5	Pin 13	Alarm Input 6
Pin 6	Control Output	Pin 14	Alarm Input 7
Pin 7	Comms Fail (output)	Pin 15	Line Fault (output)
Pin 8	Low battery (input)	Pin 16	Alarm Input 8 (Via STU LK3)

Fig 3. Plug-in footprint of 5G GSM STU

Note: The alarm panel cannot make use of Pin 16 (Alarm Input 8) as this is reserved for "GSM Failure" indication.

Note: when the 5G GSM STU is plugged on to a suitable panel the power connections must still be made to the terminals marked +12V & 0V on TB1.

For plug-in installations, be sure that no wires are ever connected to the terminals 1 to 8 on TB1 as this may result in damage to the alarm panel. Terminals 9, 10, 11, T & F can be connected if these channels are required in addition to those present on the plug-in connectors (SK1 & SK2).

> Output Relays

Three output relays are provided: Control, Return Path Signalling (RPS), and Line Fault. The use of any, or all, of these functions is optional. For a basic installation these outputs are not required.

Note: If an output is to be connected to a device which produces transient voltages, such as a bell, the device should be suppressed using a suitable protection diode.

> Control Output Relay (CTRL)

This relay can be switched on or off by the alarm receiving centre (ARC) operator by sending an output ON or output OFF command to the STU through the BT Redcare network.

The output can typically be used to remotely reset an alarm panel, or to operate other devices such as lights or door latches at the site.

> Line Fault Output (LF)

The Line Fault Output is used to indicate, at the protected premises, that either or both the GSM and landline (PSTN or Private Wire) communication paths have failed. The LF relay will also activate if a pin alarm is not acknowledged by the ARC within 30s, or the watchdog timer on the STU activates. The polarity of the LF relay can be set by configuring the F2 menu. The default state for the LF relay on the GSM STU is relay activated when path failed (F2=1). This should be changed to (F2=0) to make the relay activated when no faults exist. This ensures the LF relay will also change state on STU power failure.

The 'Line Fault' relay contacts (Normally Open, Common, Normally Closed) are available for connection on TB1. The maximum current rating of the relay contacts is 1 Amp.

For plug-in installations, Line Fault connections are made automatically when it is fitted in the host alarm panel. The host panel must be programmed to accept this function.

At default the 5G GSM STU Line Fault output is set to comply with BSIA form 175 mode of working. Other options are available as later described.

> Return Path Signalling (RPS)

The RPS output is used to indicate, at the protected premises, that the opening/closing signal has been sent to, and acknowledged by, the Alarm Receiving Centre. To use the RPS function, at least one of the alarm inputs must be designated as an opening/closing channel (usually channel 4). The RPS output will activate when an opening or closing signal is detected. It will de-activate when the opening or closing signal has been acknowledged by the Alarm Receiving Centre. It is allowable to have more than one input designated as an opening/closing channel, but each must be acknowledged to de-activate the RPS output. The RPS relay contacts (Normally Open, Common, Normally Closed) are available for connection on terminal block TB1. To use this option, a warning device such as a piezo bleeper or external strobe light should be connected through these contacts. The maximum current rating of the relay contacts is 1 Amp.

> STU Specifications

Pin alarm inputs:

Logic High = +2.5V to +30V

Logic Low = -0.5V to +0.8V

Logic level outputs:

Logic High = 3.0V @ 560µA max

Logic Low = 0.4V @ 280µA max

With respect to the 0V terminal on TB1.

Power Rating:

5G GSM 12Vdc +/- 2V 80mA mean 350mA peak Low Battery alarm 11.0V +/- 0.5V

Environmental:

Operating ambient temperature +5°C to +40°C

Relay contacts:

30V 1A Max

Physical:

Size = 168 x 115 x 36mm

> GSM Aerial Installation

The aerial supplied with the 5G GSM STU is designed for mounting on the top of an alarm panel. Drill a suitable hole, (typically 11mm diameter) in the top of the box in which the GSM STU is fitted. Prevent swarf from entering the enclosure as it could cause internal short circuits.

Remove any burrs from the hole, pass the RF cable through it and place the antenna in position. It is advisable not to bond the antenna onto the box at this stage. Wait until the system has been tested, as it is difficult to remove once attached. Try to route the RF cable away from any other wiring within the box to reduce the likelihood of interference. Carefully connect the RF cable to the GSM module on the 5G GSM STU. The connector is a micro-miniature co-axial (MMCX) connector, and may be easily damaged unless care is taken.

> Telephone Line Selection (LK1)

The 5G STU is supplied ready to connect to the Public Switched Telephone Network (LK1 is not fitted). If the 5G STU is to be connected to a Private Wire (RedDIRECT) a suitable link must be fitted in the position marked LK1 under the TNV cover. For RedDIRECT PW working the 5G STU must be configured with F3 set to 1. Note the LK1 link provides 600 ohm line matching for PW working and is only generally used on legacy RedDIRECT circuits or for test purposes. For normal PSTN connection LK1 is NOT required.

If you have any doubts about the type of telephone line to which the STU is being connected, contact BT Redcare for advice.

> 5G STU Displays

The current status of the STU is displayed on the 2 X 8 segment displays.

The STU will cycle through the messages in 1 second steps.

AL = This is followed by the ALarm pins that are active (in the Alarm state). 00 if no alarms are active, or the numbers of the pins outstanding, i.e. 4 = pin 4 outstanding.

SS = the GSM Signal Strength is as follows. 0-31 or 99 = undetermined.

NC = Not Commissioned. The STU has yet to receive an UP STU command from the ARC.

> 5G STU Configuration

The 5G STU is factory supplied with the most common settings for most installations, so generally the unit can be installed without the need to carry out configuration. However, if changes to the default setting are required they can be carried out as follows.

Note: The 5G STU must be in the fully de-commissioned state to enter the configuration menu.

To enter the configuration menu press and hold the MODE button for 5 seconds.

PP will be displayed on the display.

The MODE button can be used to step cycle through the main menu as follows:

PP = Pin Polarity

OC= Message Select (Open Close)

iD = Set Hard ID number

PE= Pin Enable

F1 = Function digit 1 (Control Relay)

F2 = Function digit 2 (Line Fault Polarity)

F3 = Function digit 3 (Connection Type)

F4 = Function digit 4 (Line Monitoring Enable)

F5 = Function digit 5 (Serial Parallel)

F6 = Function digit 6 (GSM Enable)

F7 = Function digit 7 (Line Fault Relay Operation – BSIA)

LD = Load Default (Reset all variables to manufacturers default)

?? = Commit to microprocessor memory.

The SET button is used to enter the sub menu for each function.

Tip: Continually pressing the MODE button will always eventually return to the main menu and to the ?? exit point.

Tip: The main menu can only be exited at the LD or ?? prompts. (see these sections for exiting configuration mode).

Tip: If the state of configuration is unknown then it can be reset to the factory default settings from the LD load default menu option.

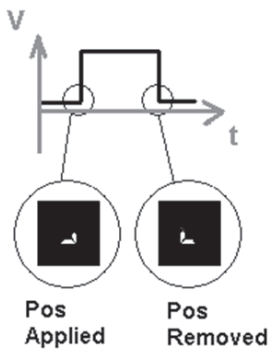
> PP Pin Polarity

Pressing SET at the PP menu option enters the pin polarity sub menu.

At factory default all inputs are set to positive applied triggering.

The input pin polarity can be changed by using the MODE button to step through pins 1 to 11 t & F, and using the SET button to toggle the input polarity for that pin.

The following display symbols are used to denote positive applied or positive removed triggering.



Once all pins have been configured, the MODE button returns to the main menu

> OC Open Close Message Select

Pressing set at the OC menu option enters the Open / Close sub menu.

At factory default all inputs are set to send ALARM / RESET messages, except pin 4 that is set to send OPEN / CLOSE messages. The message type for each pin can be changed by using the MODE button to step through pins 1 to 11, and using the SET button to toggle the message type for that pin.

The following display symbols are used to denote the pin message type.

O = Open / Close

A = Alarm reset

Once all pins have been configured, the MODE button returns to the main menu.

Remember to save changes at the ?? menu if required.

> iD Hard ID Number

Pressing SET at the iD menu option enters the hard ID sub menu.

At factory default the unit has the last 4 digits of the serial number as its Hard ID.

Tip: The 4 digit Hard ID forms part of the secure encryption key for signalling and there is generally no need to change this number.

The 4 digit number is Hexadecimal and can be in the range 0001 to FEFF

Should a change be required the following procedure can be used.

When the Hard ID sub menu is entered, the first 2 digits of the current Hard ID are displayed.

A lit dot above the digit denotes the digit that will be changed with each press of the SET button.

The MODE button cycles to the next digit.

After setting the first 2 digits, the last 2 digits are displayed again with a lit dot to denote the digit that will change with the SET button.

Once all 4 digits have been configured, the MODE button returns to the main menu.

Remember to save changes at the ?? menu if required.

> 5G STU Displays

Pressing SET at the PE menu option enters the Pin Enable sub menu.

At factory default the all inputs are enabled.

Tip: There is generally no requirement to disable inputs, unused inputs can simply be left disconnected.

Should a change be required the following procedure can be used.

The input pins can be changed by using the MODE button to step through pins 1 to 11 t & F, and using the SET button to toggle the input to Enabled or Disabled for that pin.

The following display symbols are used to denote pin enabled or disabled:

= is enabled

_ is disabled

Once all pins have been configured, the MODE button returns to the main menu.

Remember to save changes at the ?? menu if required.

> F1 Function 1 - Control Output Relay

Pressing set at the F1 menu option allows the Function 1 value to be configured.

At factory default the F1 digit is set to 0.

The function 1 (F1) value has the following functionality:

0 = Control output relay NOT energised at power up

1 = Control output relay energised at power up

Once the F1 value has been configured, the MODE button returns to the main menu.

Remember to save changes at the ?? menu if required.

> F2 Function 2 - Line Fault Relay

Pressing set at the F2 menu option allows the Function 2 value to be configured.

At factory default the F2 digit is set to 1.

The function 2 (F2) value has the following functionality:

0 Line Fault relay de-energised when both landline and GSM paths have failed.

1 Line Fault relay energised when both landline and GSM paths have failed.

2 As 0, but Line Fault output (SK2 pin 15) inverted.

3 As 1, but Line Fault output (SK2 pin 15) inverted.

4 As 0, but Comms Fail output (SK1 pin 7) inverted.

5 As 1, but Comms Fail output (SK1 pin 7) inverted.

6 As 0, but Line Fault output (SK2 pin 15) and Comms Fail output (SK1 pin 7) inverted.

7 As 1, but Line Fault output (SK2 pin 15) and Comms Fail output (SK1 pin 7) inverted.

Once the F2 value has been configured, the MODE button returns to the main menu.

Remember to save changes at the ?? menu if required.

> F3 Function 3 - Telephone line connection type & low tone levels

Pressing set at the F3 menu option allows the Function 3 value to be configured.
At factory default the F3 digit is set to 0.

The function 3 (F3) specifies the type of telephone line to which the STU is connected: either Public Switched Telephone Network (PSTN) or Private Wire (PW) and the attenuation to be applied to low-tone.

The type of telephone line specified affects the method used by the STU to detect line faults, and the attenuation level affects the amplitude of low-tone output when the line is detected as being on or off-hook.

Connection Type	On-hook	Off-hook
0 PSTN	0 dB	-3 dB
1 PW	0 dB	0 dB
2 PSTN	0 dB	0 dB
3 PSTN	0 dB	-6 dB
4 PSTN	0 dB	-9 dB
5 PSTN	-3 dB	-3 dB
6 PSTN	-3 dB	-6 dB
7 PSTN	-3 dB	-9 dB

Connection Type	On-hook	Off-hook
8 PSTN	-6 dB	-6 dB
9 PSTN	-6 dB	-9 dB
A PSTN	-9 dB	-9 dB
B PSTN	-9 dB	-9 dB
C PSTN	-9 dB	-9 dB
D PW	-3 dB	-3 dB
E PW	-6 dB	-6 dB
F PW	-9 dB	-9 dB

Tip: Connection type 0 will satisfy most PSTN installations, but types 2, 3 & 4 can be useful to address some polling over speech (POS) faults caused by some phone type compatibility issues. The BT Redcare helpdesk should be consulted for further advice.

Note: PW = Private Wire (private Circuit) connection. This connection type is only available for specialised applications.

Once the F2 value has been configured, the MODE button returns to the main menu.
Remember to save changes at the ?? menu if required.

› F4 Function 4 - Line monitoring enable

Pressing set at the F4 menu option allows the Function 4 value to be configured.
At factory default the F4 digit is set to 1.

0 = Disable line monitoring

1 = Enable line monitoring (PSTN voltage and 20 minute forced poll on hook)

2 = Enable line monitoring (PSTN earth calling mode, 2 minute 20 sec forced poll on hook)

3 = Enable line monitoring (PSTN voltage only)

Tip: Type 0 should not be used with 5G GSM STU as the unit needs to monitor the line to know when to route messages over GSM. A pin 12 alarm (tamper) will be sent to warn of invalid configuration.

Type 1 will suit the majority of installations (default).

Type 2 is for Earth calling PSTN lines that may be associated with large older type PABXs.

Type 3 can be used where false disconnection of BT Redcare MCD is to be avoided after long duration (>20min) telephone calls.

Line Type F3	Line Monitoring F4	Line Voltage Low <4V	Line Voltage Medium Off Hook	Line Voltage High On Hook >37V	Voltage Check (LF if <4V)
PSTN	0	–	–	–	
PSTN	1	–	–	Slow	Yes
PSTN	2	Fast	–	–	
PSTN	3	–	–	–	Yes
PW	0	–	–	–	
PW	1	Fast	Fast	Fast	
PW	2	Fast	Fast	Fast	
PW	3	Fast	Fast	Fast	

Fast = 2 minute 20s communication check

Slow = 20 minute communications check

Once the F2 value has been configured, the MODE button returns to the main menu.

Remember to save changes at the ?? menu if required.

› F5 Function 5 - Pin / serial data enable

Pressing set at the F5 menu option allows the Function 5 value to be configured.

At factory default the F5 digit is set to 0.

Tip: The Serial alarm input is for future use and not to be used on 5G STU at this time.

All 5G STU's should use the 0 setting only.

Options Digit	Debug Commands	Serial Echo	Parallel Alarm Inputs	Serial Alarm Inputs	Data Packets
0	✓	✓	✓		
1				✓	✓
E	✓	✓	✓	✓	✓

> F6 Function 6 – GSM enable. (5G GSM STU only)

Pressing set at the F6 menu option allows the Function 6 value to be configured.
At factory default the F6 digit is set to 1.

0	GSM path disabled
1	GSM path enabled
2-F	Reserved

> F7 Function 7 – Line Fault output for GSM (5G GSM STU only)

Pressing set at the F7 menu option allows the Function 7 value to be configured.
At factory default the F7 digit is set to 3.

0	LF relay on both PSTN AND GSM paths failed
1	LF relay on either PSTN OR GSM paths failed
2	LF relay on PSTN path fail only
3	BSIA (Form 175) LF relay on either path fail with ATS “SINGLE / ALL” identification. And ATS test 10/11
4	Reserved
5	Reserved
6	LF relay on PSTN fail, RPS relay on GSM fail
7	Reserved
8	Reserved
9	Reserved
A	LF relay on PSTN fail, CTRL relay on GSM fail
B	Reserved
C	Reserved
D	Reserved
E	Reserved

Note when F7=3 then pins 10 & 11 are used as path test alarms and cannot be used as alarm inputs.
Remember to save changes at the ?? menu if required.

> F8 Function 8 – AC fail delay

Pressing set at the F8 menu option allows the Function 8 value to be configured.
At factory default the F8 digit is set to 1.

0	No delay on AC fail input (F)
1	15 minute +/- 5 minute delay on AC Fail input (F)

Remember to save changes at the ?? menu if required.

> F9 Function 9 – Advanced roaming options

Pressing set at the F9 menu option allows the Function 9 values to be configured.
The F9 menu contains the advanced roaming settings.
Networks 1-4 can be disabled by setting to 0 (Off) - (Default =1, On).
The RT roam threshold can be changed from 1-31 - (Default = 19).

Remember to save changes at the ?? menu if required.

> LD Load STU Defaults

The Load Defaults LD menu can be used to return the STU back to its original configuration.

> ?? Save Changes

The ?? menu must be used to save any changes that have been made during this configuration session.

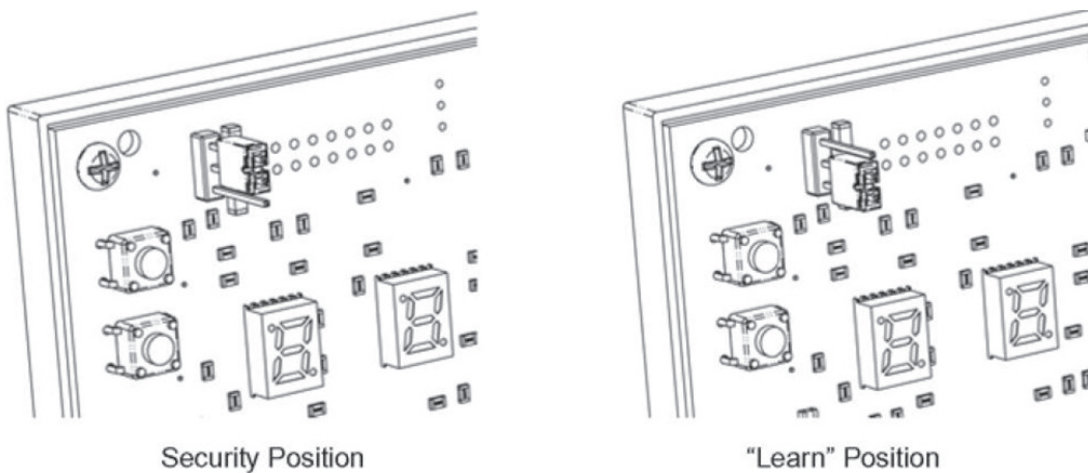
Press 'S' at the ?? menu. The question marks will flash to prompt "are you sure".
Press 'S' again to save the changes. Pr will briefly be displayed as the changes are written to flash memory.
The STU will restart.

If the user wishes to exit the menu without saving the changes this can be done by holding the 'S' button for 5 seconds at the '??' or 'LD' menu option. The STU will exit the menu and return to its decommissioned state.

> Input Pin Learn Mode

While the 5G STU is in the fully de-commissioned state the polarity of the inputs can be learnt as follows:

- Ensure the display is showing NC (Not Commissioned).
- Arrange the inputs so that they are all in their Non Alarm state as required.
- Note if the GSM STU is plugged on to a panel then care should be taken not to connect additional voltage states to the inputs as panel damage may result.
- Once all inputs are set to the normal state, Short out the the Sec pins for 2 seconds, and then short out the Lrn pins until Pr is briefly displayed (<6 secs).
- The inputs are now learnt with the required polarity.



Alternatively menu PP can be accessed to invert any inputs as required.

> GSM STU Pin 8

Pin 8 on the GSM STU is reserved for signalling low signal strength alarms.

A signal strength which drops below 5 for a duration of 50secs will trigger a 3 mins timeout before a pin 8 alarm is activated (and LF relay operates)

If the signal strength is 5 or more for greater than 50secs during the final 3 mins timeout then the timeout will be reset and pin 8 will not be activated.

After pin 8 is activated, a signal strength of 5 or more for greater than 50 secs will restore pin 8 condition and LF relay.

Occasionally the display may show SS 99 =. This indicates that the GSM module can't determine the real value for signal strength e.g. because it's transmitting or busy.

If this indication persists for longer than 50 secs it will be treated as a signal strength less than 5.

> Upping the STU

Once the STU is connected to the telephone line and powered up, the STU must be upped from the ARC.

Note: on the GSM STU, wait till the STU is registered with the wireless network before upping. i.e. wait till the display shows SS > 00. This generally takes about 45 seconds following power up.

Failure to wait for the STU to register with the GSM network will result in the wireless path not commissioning.

> Checking that the STU is Commissioned

When the 5G STU is correctly commissioned on the PSTN path the dot on the left hand display will flash every 5 seconds. This denotes that commissioning over the PSTN path has been successful.

When the 5G GSM STU is correctly commissioned over the GSM path the dot on the right hand display will flash every 5 seconds. This denotes that commissioning over the GSM path has been successful.

Additionally the dots will flutter each time a data poll is received over that path.

> Downing the STU

The Down STU command can be issued from the ARC. For all 5G STUs, this disables the port on the BT Redcare Scanner at the telephone exchange. If the 5G GSM STU is contactable by the wireless path, the STU will be fully de-commissioned and caused to reset and reboot. The 5G GSM STU's display will revert to NC (Not Commissioned).

> Precautions to be Taken when Commissioning BT Redcare STUs

When the ARC receives a request to "UP a STU" it is recommended that they verify the person requesting this is a bone fide installer who can confirm that the installation is intact. This ensures that the STU is not being compromised or substituted. Once a STU is installed and commissioned there are normally no reasons to re-issue an "UP STU" command unless the power to the STU is interrupted, or a STU is being replaced for maintenance purposes. If it is required to re-UP a STU without STU substitution, the ARC should check that the Hard ID has remained the same (See also VVT Technical note 5G_017).

> AC Fail (F)

The input marked F on the STU is intended for AC fail. This can be connected to the AC fail output on the alarm panel if required.

By default the STU has a 15 minute +/- 5 minute delay on sending the pin 13 alarm when F is triggered. Similarly there is a 15 min +/- 5 min delay on the pin 13 restore.

The 15 min +/-5min delay can be removed by reconfiguring F8 menu to = 0 (No delay). This is useful where the alarm panel already has its own built in AC fail delay.

Note: When the 15 minute timer is implemented, triggering the F input will display AL-F on the display immediately, but the pin 13 alarm is only sent after the delay timeout.

Once the pin 13 alarm has been sent, then restoring the pin F input will remain as showing AL-F on the display until the 15min timeout has expired and the pin 13 restore has been sent and acknowledged (re-triggering F during the 15 min restore timer will simply result in the 15 min timer being cancelled, and restarted on the next F restore).

> Tamper (T)

The input marked T on the STU is intended for tamper. This can be connected to a tamper output on the alarm panel if required.

The tamper alarm is signalled as pin 12.

If agreed with the ARC, the T input can be used as another general 12th alarm pin.

> MCD Compatibility

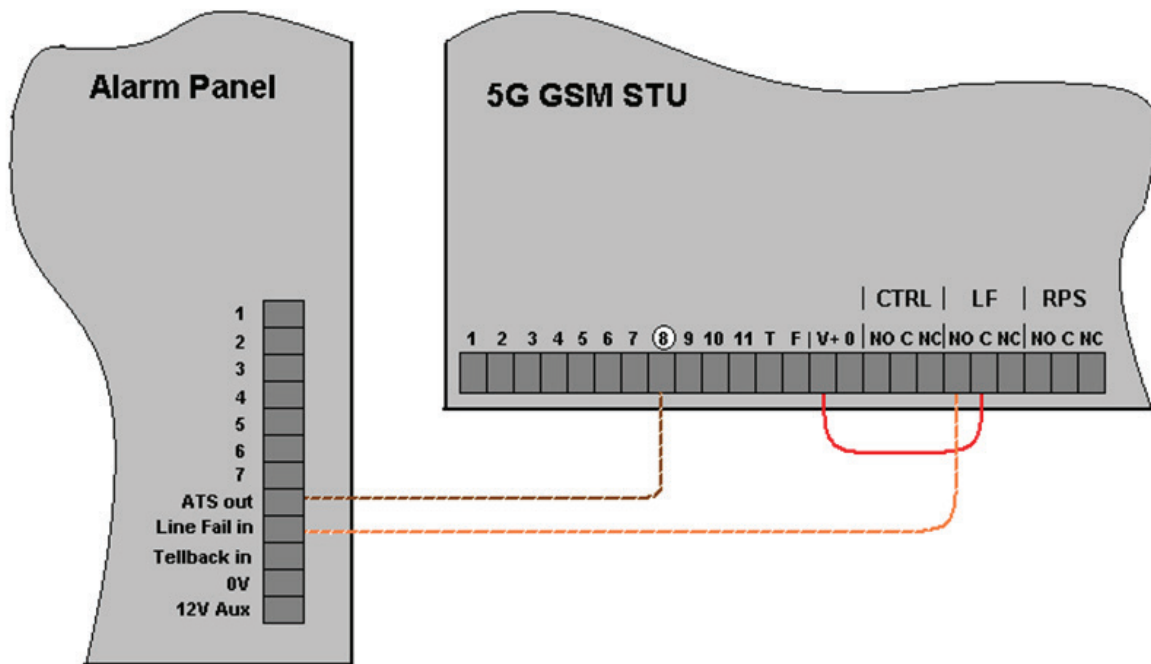
When the STU is installed on a telephone line that shares other analogue data products, e.g. Fax machine, analogue modem or EPOS machine, then it is recommended that a BT Redcare Modem Compatibility device (MCD) is used. The MCD is a line powered plug-in device that connects in line with the modem or fax machine. The MCD ensures that the BT Redcare signalling does not interfere with the modem, and the modem signals do not interfere with the BT Redcare signalling.

The MCD will cause the modem to be disconnected from the line if the STU has an alarm message to send. Where an MCD is being used, then the STU should be configured to MCD compatibility mode F4 = 3. This ensures that the STU's regular communication checks do not cause false triggering of the MCD.

> BSIA (Form 175) Mode (5G GSM STU)

This mode allows the alarm panel to determine whether a single or dual path failure has occurred on the GSM STU. This is the default mode of the STU, F7=3.

Where an EN compliant panel supports this function, connect the panels ATS output to the STU's ATS input (pin 8), and connect the STU's LF relay to the line fault input on the panel.



BSIA Form 175 wiring ensures panel detects Single / Dual path failure

To test the BSIA functionality:

- Disconnect the PSTN from the STU.
- The alarm panel display should show "Comms Fail SINGLE" within 1 minute.
- Then disconnect the GSM aerial.
- The alarm panel display should show "Comms Fail ALL" within 2 minutes.
- Reconnect the PSTN and Aerial to the STU and the comms fail message should clear from the panels display within 3 minutes.

When in BSIA mode F7=3 then triggering the ATS input to the STU (pin 8), while both paths are registered as working OK, will result in a pin 10 path test alarm being transmitted over GSM and a pin 11 path test alarm transmitted over PSTN.

Similarly pin 10 & 11 restores will be signalled when the STU's ATS input (pin 8) is restored.

> Roaming Options

For 5G GSM STU's fitted with a BT Redcare Global SIM:

The 'mode' button can be pressed to force the unit to examine all enabled networks and to register to the one with the best signal strength.

SS will be displayed followed by scrolling figure of eight LED segments. Once it is registered with the strongest signal the signal strength and network will be shown.

The 'set' button can be pressed to force the unit to step through the enabled networks in order.

SS will be displayed on pressing the button followed by 0/99 to indicate registering to the next network.

The M button can subsequently be used to return to the strongest network if required.

Each button can also be pressed after commissioning if required.

Twenty four hours after commissioning a full roam is automatically carried out to find the best signal strength as long as the PSTN path is good.

If the GSM Roaming STU is de-registered for more than 30 seconds or the signal strength is less than 5 for more than 50 seconds it will switch to the next best network.

> Common Problems

STU constantly shows AL –F on the display

The STU must have at least 15 mins +/- 5 mins of uninterrupted restore condition on input F to clear the pin 13 AC Fail alarm.

STU does not show AL-00

The STU will only display AL-00 when all inputs are in the restored state and all outstanding alarms have been acknowledged. On many panels it is normal to have at least pin 4 in the alarm state during day service, so the display will cycle AL-4 and not show AL-00.

5G GSM STU fails to UP on GSM path

If the GSM STU fails to up on the GSM path it should be totally powered down and then re-powered. Wait for 45s until a valid signal strength is showing (SS = 12-31) and then request for the STU to be upped. If the STU still fails to up on the GSM path then contact the BT Redcare helpdesk to check that the SIM card is correctly enabled, and the BT Redcare account is built correctly.

5G STU fails to up on PSTN path

Check that BT Redcare chirps are present at the STU line terminals when the UP command is sent. Check that 50V line voltage is present at the STU line terminals.

If the STU still fails to UP then contact the BT Redcare helpdesk for further checks.

Polling over speech

If the customer reports abnormal amounts of BT Redcare chirps on the telephone line during calls then in some instances reconfiguring the STU to F3=3 may help. Alternatively contact the BT Redcare helpdesk for further advice.

Panel permanently shows comms fail when a 5G GSM STU is used in plug-on mode

A small number of alarm panels may have the Comms Fail (7) or Line Fault (15) connections inverted on the plug on Molex pins. Where this is the case use the alternative settings on the STU's F2 menu to correct this.

Support

BT Redcare Helpdesk **0800 800 628***

* Calls are free to this number from BT landlines and BT payphones. However, they are not free to call from mobile phones
- the costs will vary between service providers.

> Approvals

BT Redcare, BT Plc, 81 Newgate Street,
LONDON EC1A 7AJ
2014
Compliance to LPS 1277 3.0 for Redcare GSM Roaming
0832-CPR-X0005



Technical Data: see <http://www.redcare.bt.com/downloads>

The 5G GSM STU meets the following performance parameters as per EN 50136-1-1

LPCB Enhanced Performance Rating	Transmission Time Classification	Transmission Time Max. Values	Reporting Time Classification	Substitution Security	Information Security	Network Availability
ATS 5	D4	M3	T4	S2	I3	A4

Ensure the unit is installed as per the requirements of LPS1277 ANNEX C detailed below.

The following guidance on installation practices will help enhance general Alarm Transmission System (ATS) security/ resilience, avoid undue (false) path failure reports and reduce customer inconvenience.

Important Notes

- 1) A claim to have installed LPCB approved SPT will be invalid if this guidance has not been followed.
- 2) Within this guidance the word 'shall' indicates a mandatory requirement. Use of the word 'should' indicates a requirement unless practical constraints prevent compliance.

Installation (alarm company) Information

Location and alarm protection of the Supervised Premises Transceiver (SPT)

- i) The SPT part of the Alarm Transmission Equipment (ATE), shall be located within the I&HAS Control and Indicating Equipment (CIE), or within an enclosure that shares the same mains power supply, and has the same level of battery back up and tamper protection, as is required for the associated CIE.
- ii) The location of the CIE, or other enclosure, containing the SPT; shall, when installed as part of a new I&HAS; be in an area provided with 'direct alarm protection'^a and be located where it is not visible to, or readily accessible by, members of the public. should, when retro-fitted to a pre-existing I&HAS; be in an area provided with 'direct alarm protection'^a and be located where it is not visible to, or readily accessible by, members of the public.

Alarm protection of Site Network Equipment

- i) 'Site Network Equipment' b) that can be switched off or which has a locally or remotely accessible and changeable function, (e.g. a telephone switchboard or IP router), together with Alarm Transmission Path (ATP) aerials[†] and network access termination points, shall be located in an area provided with 'direct alarm protection'^a.
- ii) Other 'Site Network Equipment' b), for example intermediate junction boxes, should be provided with 'direct alarm protection'^a.

Note

[†] Where an ATP aerial cannot be located in an area readily provided with 'direct alarm protection'^a and still achieve the recommended minimum signal strength for adequate performance, it may be installed elsewhere (preferably indoors but otherwise outdoors), subject to positioning it where

Connections between the SPT and Site Network Equipment b)

- i) Any radio based ATP shall have a cable connection between the SPT and the required aerial, with all cable termination points, including those at any intermediate connections, using termination components (or housings) that protect against cable removal without the use of a tool.
- ii) Any landline based ATP shall have a cable connection between the SPT and the first suitable alarm transmission network termination point within the premises. This shall be made in one continuous run and use termination components (or housings) that protect against cable removal without the use of a tool.

The connection to the alarm transmission network shall be made in such a manner that where non-alarm related apparatus/services are also connected to that network, they do not prevent, or interfere with, the correct operation of the ATS.

Notes

- a) The phrase 'direct alarm protection' shall mean that sufficient detection devices are installed to ensure that, when the I&HAS is set, access to the protected equipment results in a full (e.g. a 'confirmed') alarm condition. Where an I&HAS uses a time delayed entry/exit route as part of the facility for unsetting, detection devices programmed to act as entry/exit route detection shall not be regarded as providing 'direct protection'.
- b) The phrase 'Site Network Equipment' shall be regarded as all equipment installed within the alarmed premises through which signals from the SPT to the alarm transmission network beyond the perimeter of the premises are transmitted. For example, non-alarm dedicated (shared use) IP routers, telephone switchboards/Private Automatic Branch Exchanges (PABX), network access termination points, ATP aerials and communication network junction boxes/switches.

ARC/ATS message holding

Where the Alarm Receiving Centre (ARC) and/or ATS provider offers, or requests use of, a facility to block the receipt of, or hold information relating to, ATS fault notification signals or messages pending receipt of further alarm information (e.g. pending the designation of a confirmed alarm as per BS 8243), agreement to such an action shall be confirmed in writing by the customer (end user); with the relevant notification stating that this action is compatible with the risk assessment and/or the requirements of any interested party, for example an insurer.

In such cases the installer shall make suitable arrangements, which shall be confirmed in writing, for the customer to be alerted to any such ATS fault notification signals/messages when their alarm system is next unset, or after a period of 96 hours, whichever is the sooner.

Installers shall advise the customer:

- i) of any potential for normal ATS functions, including normal or 'stepped up' checking of ATS availability (e.g. by sending test signals), which could interfere with, or prevent use of, any non-alarm related apparatus/services connected to a telephone line shared with the ATS. In such cases customers should be recommended to consider use of an ex-directory 'In Coming Calls Barred' (ICCB) telephone line dedicated to ATS use.
- ii) of the adverse effect on reliable operation of their intruder alarm system that may result where 'Site Network Equipment' b) used by the ATS:

could have its correct operation/settings locally or remotely accessed and changed/disabled, for example a non-alarm dedicated (shared use) IP router. In such cases customers should be recommended to consider protection against unauthorised access by the use of an access password (not the factory default) and, if their equipment has wireless connectivity having the wireless network Access Point Name (APN) hidden.

would cease to work in the event of loss of mains power; for example a Private Automatic Branch Exchange (PABX) or non-alarm dedicated (shared use) IP Router. In such cases customers should be recommended to consider protecting the power supply against disconnection by use of an unswitched fused spur connection or by having such equipment or its power supply connections located in an area/room to which unauthorised access is restricted.

of the adverse effect on reliable operation of their intruder alarm system that may result from cessation of any communication service(s) necessary for correct operation of the ATS; for example telephony services such as 'three way calling' (Star Services) or access to internet services (via an ISP). In such cases customers should be recommended to take steps to ensure that availability of these services is maintained at all times when their alarm system is likely to be in use.

that, where the performance of the SPT is capable of being changed after installation, such changes shall be confirmed in writing by the customer; with the relevant notification stating that any such change is compatible with the risk assessment and/or the requirements of any interested party, for example an insurer.

Glossary of Terms

21CN	21st Century Network (BT's upgrade of telephone exchange technology)
3G STU	3rd Generation Subscribers Terminal Unit.
5G STU	5th Generation Subscribers Terminal Unit.
AC	Alternating Current.
ADSL	Asymmetric Digital Subscribers Line
ARC	Alarm Receiving Centre.
BSIA	British Security Industry Association (UK Trade Association)
BT	British Telecommunication PLC
BT92A	Block Terminal 92A (BT Redcare specific connection point)
EPOS	Electronic Point of Sale machine. (Credit card reader etc)
ESD	Electro Static Discharge.
Form 175	BSIA document specifying dual path alarm signalling criteria.
GSM	Global System for Mobile communications (Groupe Spécial Mobile).
LED	Light Emitting Diode.
MCD	Modem Compatibility Device. (BT Redcare specific).
MMCX	Micro Miniature Coaxial Connector.
NO C NC	Normally Open, Common, Normally Closed. Relay contact designations
Polling	Message interchange.
PSTN	Public Switched Telephone Network.
PW	Private Wire (also Private Circuit) a point to point communications line.
REN	Ringer Equivalence Number
RF	Radio Frequency
SELV	Safety Extra Low Voltage
STU	Subscribers Terminal Unit. A BT Redcare Alarm communicator.
TNV	Telephone Network Voltage.
UP STU	The process of bringing a STU into service. (Commissioning).

To find out more about Redcare:

call us free on **0800 800 628***

or email redcare@bt.com

* Calls are free to this number from BT landlines and BT payphones.
However, they are not free to call from mobile phones
the costs will vary between service providers.