BT redcare

Essential

Installation Guide

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Introduction

Product Description

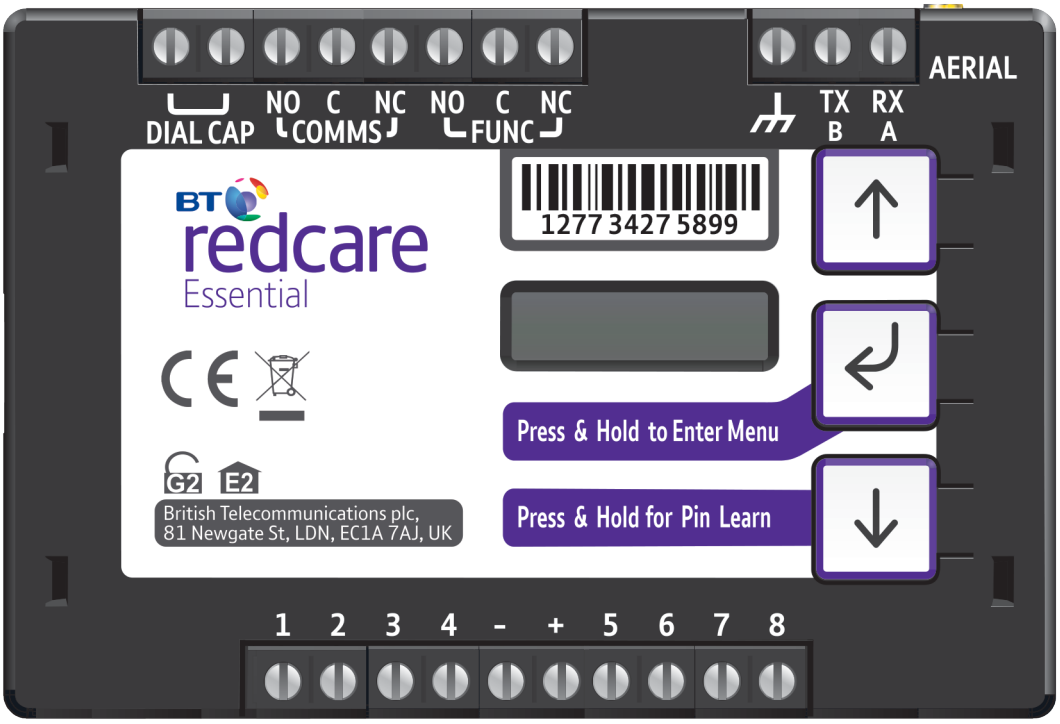


Figure 1 – Essential unit (not to scale)

The BT Redcare Essential unit is a wireless single path, roaming SIM, alarm signalling unit for transmitting alarm signals from a customer's alarm panel, via the BT Redcare network to an Alarm Receiving Centre (ARC). The Essential unit has a UK roaming SIM with 4G/2G mobile technology. The unit is designed for use in security systems only.

The unit communicates via the BT Redcare Network and a valid TA account must exist for the unit to communicate. The TA account will have been populated with the serial number of the unit.

The unit has 8 general purpose alarm inputs, and 2 outputs, making it suitable for connection to most common alarm panels.

The unit is supplied already fitted with a BT Redcare enabled SIM card.

Primary path fail reporting	60mins
Alarm transmission category EN standards / PD6669 (UK)	SP2
PD6669, ENSO131 (2017)	2
Grade option	2A, 2B
Environmental class	II

Specifications

Size: 95mm x 67mm x 17mm

Power: 9V – 30V

Current:

	Average Normal Operation	Average Max loading (inc relays and dial capture operated)
2G/4G unit @12V	70mA	165mA

Alarm inputs: 8 General purpose inputs 1-8. (-0.5V – 30V)

Alarm threshold: High >2V, and Low <1.3V

Outputs: 2 X Relay NO C NC (Comms, Func)

RS232 port: remote panel access (UDL) and signalling to some intruder panel types

RS485 port: remote panel access (UDL) and signalling to some intruder panel types

Configuration: Using on board configuration buttons, web portal or App

Processor: STM32

Wireless module: ELS61

Mounting and Wiring

Removal of Cover

The top cover can be removed by gently releasing each of the 4 clips on the base of the unit by pushing the clips outward with a screwdriver blade.

Regular access to the inside of the unit should not be required, although occasional access may be required to access the SIM card.

Mounting

The unit should be mounted inside the alarm panel, or inside a separate powered housing, using the sticky mounting pads supplied.

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

The supplied aerial should be mounted vertically outside of the housing by removing the adhesive backing.

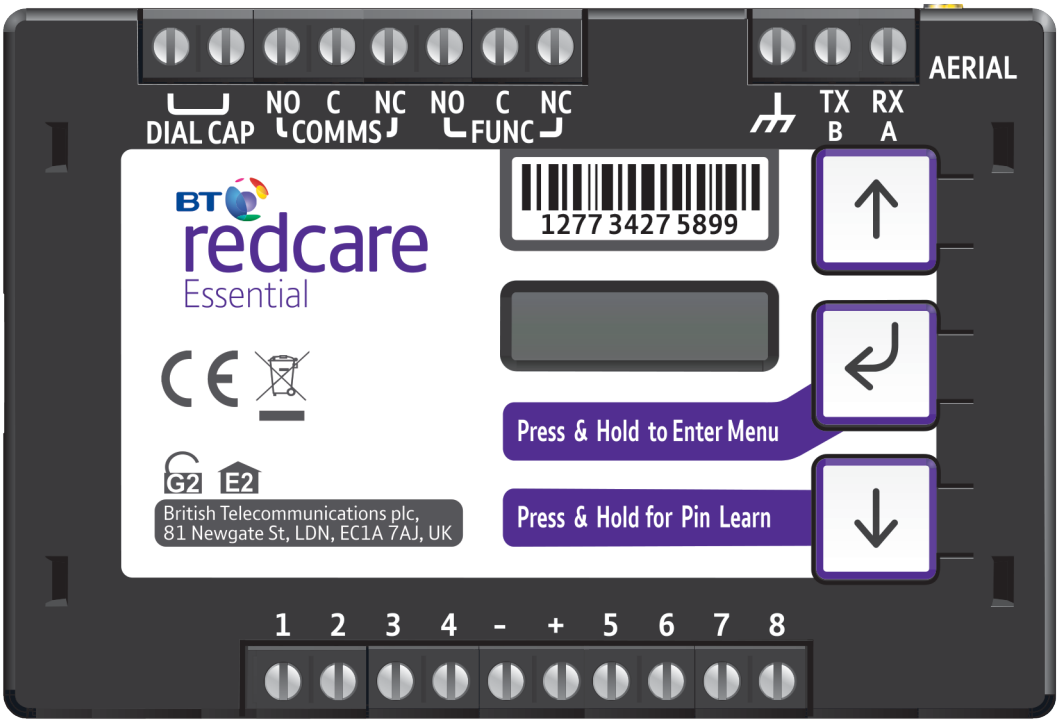


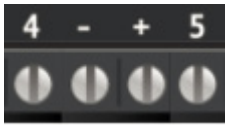
Figure 2 – Layout of terminals (not to scale)

Connection Terminals

The screw terminals for the alarm inputs are suitable for use with a standard 3mm blade terminal screwdriver.

Power connections

Power to the unit is via 2 screw terminals at the centre, with positive to the right nearest Pin 5.

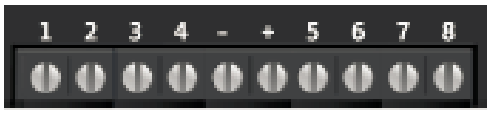


The supply voltage range is 9V to 30V. The unit is designed to be connected to the Auxiliary power output on an associated alarm panel, or separate powered enclosure. For use with intruder alarm panels the power supply must meet the requirements of EN 50131-6.

Ensure the power source is sufficient to power all devices connected. See the power requirements in the specification section. The account at the Alarm Receiving Centre (ARC) should be put “on test” before power up, as signals will be sent following initialisation.

Alarm inputs

The unit has 8 alarm inputs which are presented on screw terminals along the bottom of the unit. These are labelled as Pin 1-4 and 5 -8.



By default the 8 alarm inputs require a positive condition to be presented to send an alarm. (Default = Positive applied). This can be changed using the Pin Learn button or through the configuration menu. See later section on configuration.

Input (PIN)	Use
1	
2	Hold up alarm
3	Intruder alarm
4	Open / Close (Set / Unset)
5-8	General alarm

Figure 3 - Alarm input allocations. (Functions must be agreed with ARC)

Outputs

Two relay outputs are provided on screw terminals at the top of the unit.

Output 1 is Comms, output 2 is Func.

See the further sections on outputs for a full explanation.

Serial data connections

The serial data connection labelled TX, RX, B and A is configurable for RS485 or RS232 connection depending on the panel.

This is done in the configuration menu.

These ports allow serial alarm panel connection, see the Panel Upload Download section.

Dial capture

The dial capture (Dial Cap) terminals enable interfacing with an alarm panel's digital communicator. The alarm panel can then send SIA, CID or Fast Format messages through the unit to the Alarm Receiving Centre.

Dial capture can also be used for upload download UDL, allowing remote access with some types of alarm panel.

Aerial connection

Connect the supplied aerial to the MMCX connector on the top right of the unit. The aerial should be placed in a vertical position that receives the best wireless coverage. Carry out a survey to establish the best location.

If necessary, a selection of high gain and extension aerials can be purchased from the BT Redcare shop at **https://www.btinstallershop.com**


Programming

Unit Initialisation

The unit will immediately attempt to connect to the BT Redcare platform over the mobile path. The unit will typically complete path establishment in the following time from power up.

4G/2G	120s

Figure 4 – time to commission after unit power up

The unit sends a "System Reset" event (pin 984,1) over the first available path, followed by a "Unit restarted" restore (pin 984,3) within 2 seconds. The unit also sends the state of all 8 pins and low Battery alarm restore. Sending these alarm states at start up help to ensure that the ARC alarm handling software reflects the true state of all pin alarms after start up.

Status display

The unit clearly displays its status on the OLED.

In its normal working state, the unit will cycle its display.

Path: Mobile
Registered

Mobile Path and if registered with the platform.

Signal Strength
4G [▄■] [-103]

Signal strength – network type (4G or 2G) received wireless signal strength in dBm and signal strength indicator bars. 2 Bars or more is the recommended signal level required.

Service Grade – The EN Performance category SP2 will be shown.
The performance category can only be determined by the unit while in contact with the platform. The unit will not show the performance category until the mobile path is registered with the platform when it will retrieve the performance grade

Service Grade
Redcare SP2

Alarms GPI Alarm
3

Pin Status - any outstanding alarm pins will be shown. If no pins are in the alarm state, then pin status will not be shown.
Alarms Battery - Low battery will be displayed if the supply voltage is below the supply threshold.

Signal strength display:

That is:

- On 2G below -90dBm = X will be displayed
- On 2G between -90 & -85, 1 bars will be displayed
- On 2G between -85 & -80, 2 bars will be displayed
- On 2G between -80 & -75, 3 bars will be displayed
- On 2G above -75dBm, 4 bars will be displayed

That is:

- On 4G below -120dBm = X will be displayed
- On 4G between -120 & -110, 1 bars will be displayed
- On 4G between -110 & -100, 2 bars will be displayed
- On 4G between -100 & -90, 3 bars will be displayed
- On 4G above -90dBm, 4 bars will be displayed

X or 1 bar – try to improve the signal by moving the unit, aerial or using an extension or high gain aerial – available from **btinstallershop.com**

Guide to signal strength

Figure 5 – Signal strength chart

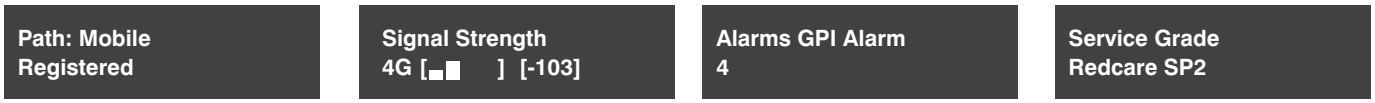


Figure 6 – typical display cycling on a fully commissioned unit with a good signal strength and pin 4 in the alarm or open state

The state of the communication path is indicated by the OLED display.

The mobile path status has the following possible status:

- Up No Reg – path is up but not registered with the platform
- Registered – has contacted the platform and successfully registered
- Alarm/Ack – Alarm is being transmitted and awaiting Ack
- Down – the path has lost connectivity to the platform and is trying to reconnect

Note: When fully commissioned the mobile path should be registered.

PIN inputs

Pin 4 can have an RPS output associated with it. (See output 2 RPS)

Pins 1 – 8 can be set up for end of line and dual end of line interconnection monitoring.

Outputs

Output 1 (Comms)

Output 1 acts as the communications fault output.

Output 2 (Func)

Output 2 has two configuration options.

User control output. This can be remotely operated via the web portal or app.

RPS output for Pin 4.

The output will operate when input pin 4 is triggered. It will return when an acknowledge signal is returned from the BT Redcare platform. The output has a minimum operation time of 1s. When the acknowledgement is received in less than 1 second after pin 4 is triggered then the output will remain operated for 1s.

Defaults for Output 1 and 2.

Output 1 is set to single path fault.

Output 2 is set to User.

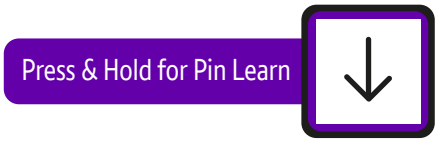
Configuration

Pin Learn

For speed of installation a single button press pin learn is available.

All pins to be used should be wired in and all the pins should be in the non alarm state. No tampers should be active (if wired in) and Pin 4 (open /close) should represent the system being set/closed.

When ready press and hold the down arrow for 3 secs.



This has completed the pin learn. There is also an option to learn the pins within the configuration menu.

Configuration Menu Programming

The unit is supplied pre-configured with factory default values. For most installations no changes to the configuration are required.

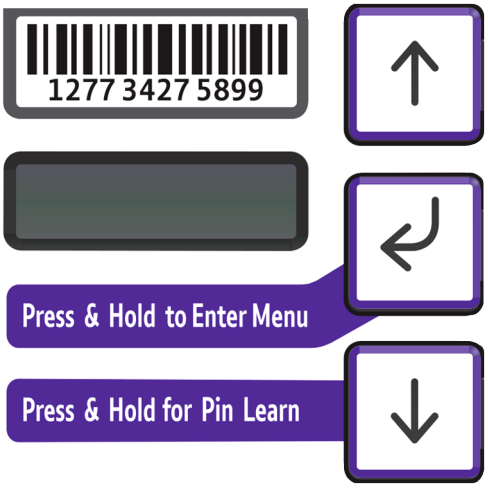
The unit can either be configured by using the on-board configuration menu driven by the buttons, or through the installer app or web portal. Some configurations are only available through the app or web portal.

A minority of sites may require minimal configuration changes at installation, and most of these will be achievable through the button configuration. i.e.

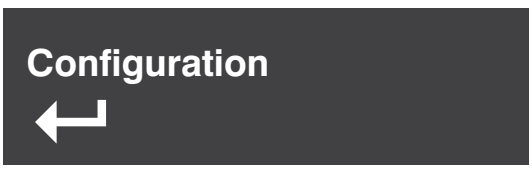
- Change the individual pin status
- Enable dual end of line for interconnection monitoring

Button configuration

The button configuration mode is entered by holding down the centre configuration button (Enter) for 3s.



The unit will then display Configuration:



Press the Enter button again and the display will show the first menu option.

When in the main menu, each press of ↓ will step to the next menu item down.

Use ↑ to step back up and eventually return to the top of the menu. The full main menu options are shown in Fig.7.

Pressing the Enter button on any menu item will enter the sub-menu and take you into edit mode. This will allow the function to be changed. The menu item will depend on the structure of the sub-menu.

Output Type 1 *
Single Path Fault

You know you are in edit mode and that changes can be made by a * next to the menu title.

Notice-
Saved!

Typically, many menu items simply have two options, use the down and up arrow to switch between the two. Press and hold the Enter button to save changes. Display will show Notice saved.

Some menu items have more options. e.g. Output 2 has 2 options to set the comms fault output type. On such menus, press the Enter button to enter the sub menu, then use the down and up arrows to increment through the options with each press. Holding the Enter button for 5s will save changes. Display will show Notice saved.

Some more complex menu items use the Enter button to also step through additional items in the sub menu. i.e. Network Web Passcode to be changed.

Edit mode can be exited at any time, without saving changes, by pressing ↓ for 5s. This will return you to the sub menu that you were making changes in.

The configuration menu can be exited at any time without saving any changes by pressing ↑ for 5 seconds. This will take you back to the scrolling status display.

Main menu display

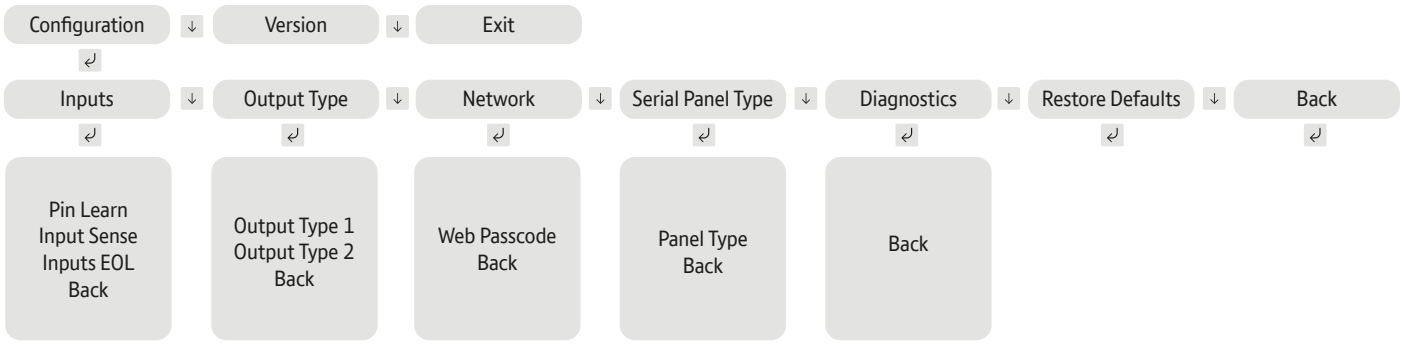


Figure 7 – button configuration main menu options

Inputs

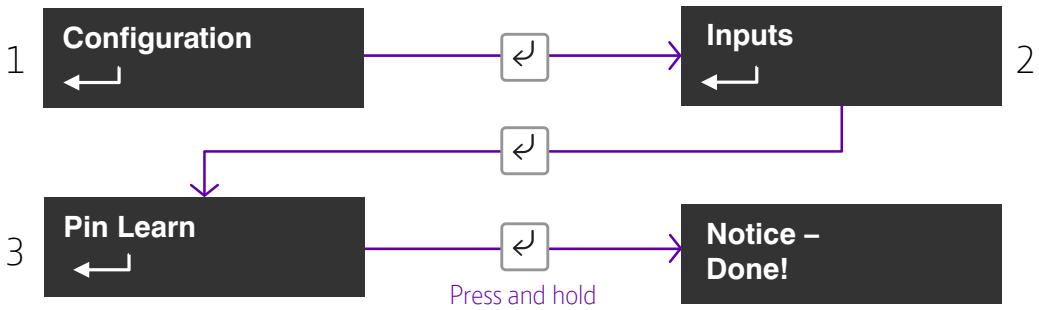
Pin Learn

The polarity of pins can be learnt by pressing and holding the down arrow for 5s.

The display will show notice done.

Pin learn can also be carried out through the configuration menu.

Example – to learn the pin polarity in the configuration menu:-



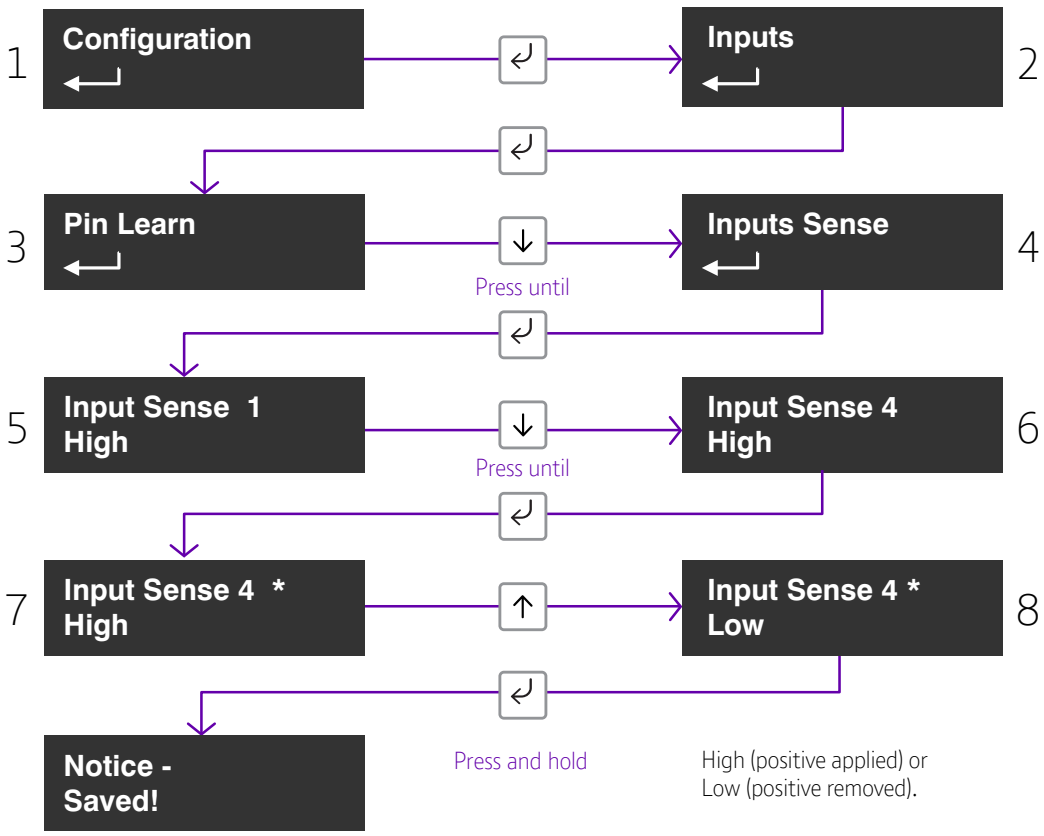
- Access the button configuration menu by holding Enter button. Configuration is displayed
- Press the Enter button again
- The display now shows Pin learn
- Press and hold the Enter button – the display shows notice done

The configuration menu can be exited at any time without saving any changes by pressing ↑ for 5 seconds. This will take you back to the scrolling status display.

Input Sense

The polarity of the pins can manually be configured by the installer. This is additional to the pin learn function described earlier.

Example – to configure pin 4 to be positive removed:-



Access the configuration menu by holding Enter button for 3 seconds, press the Enter button again, the display will show pin learn. Press the down arrow. The display will show Input Sense. Press the Enter button again to enter Input Sense. Pin 1 and status will be shown.

Use the down arrow to step through the pins. Once the desired Pin is reached press the Enter button . * will be displayed. Use down or up arrow to change to High or Low.

High (positive applied) or Low (positive removed).

Once selected hold the Enter button down till notice saved is displayed.

Then it will return to the postion in the menu for you to select another pin or use the down arrow to step through all pins to get to the Back button.

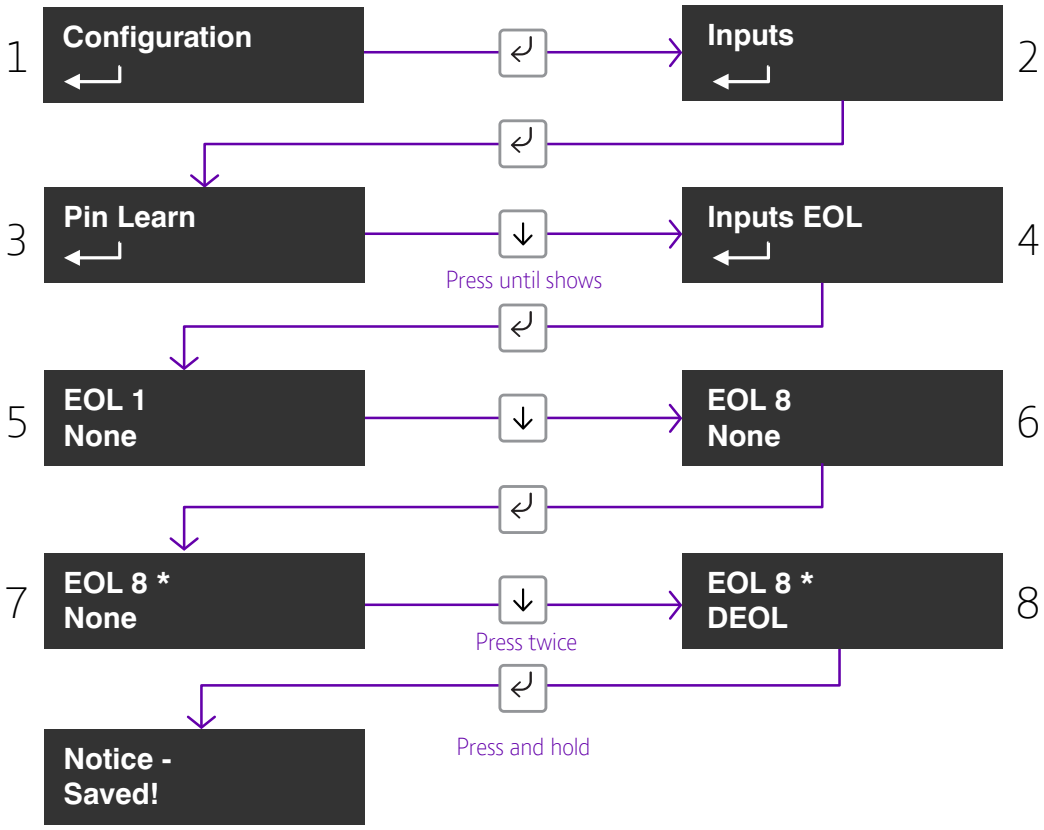
Edit mode for that part of the menu can be exited at any time, without saving changes, by pressing ↓ for 5s. This will return you to the sub menu that you were making changes in.

The configuration menu can be exited at any time without saving any changes by pressing ↑ for 5 seconds. This will take you back to the scrolling status display.

Inputs EOL

The alarm inputs (PINS) can be set to the following modes:
- None - (Alarm & Restore)
- EOL (Single end of line mode) - (Alarm, Restore & Cut)
- DEOL (Dual End of line mode) - (Alarm, Restore, Cut & Short)

Example – configure Pin 8 for DEOL



This allows the unit to monitor the wiring to the alarm panel contacts.

Access the configuration menu by holding Enter button for 3 seconds, press the Enter button again, the display will show pin learn. Press the down arrow twice. The display will show Inputs EOL. Press the Enter button again to enter Input EOL. EOL 1 = None will be shown.

Use the down arrow to step through the pins. Once the desired Pin is reached press the Enter button . * will be displayed. Use the down or up arrow to change to None, EOL or DEOL.

Once selected hold the Enter button down till notice saved is displayed.

Then it will return to the same position in the menu for you to select another pin or use the down arrow to step through all pins to get to the Back option.

Edit mode for that part of the menu can be exited at any time, without saving changes, by pressing ↓ for 5s. This will return you to the sub menu that you were making changes in.

The configuration menu can be exited at any time without saving any changes by pressing ↑ for 5 seconds. This will take you back to the scrolling status display.

Outputs

The two relay outputs can be configured as follows:

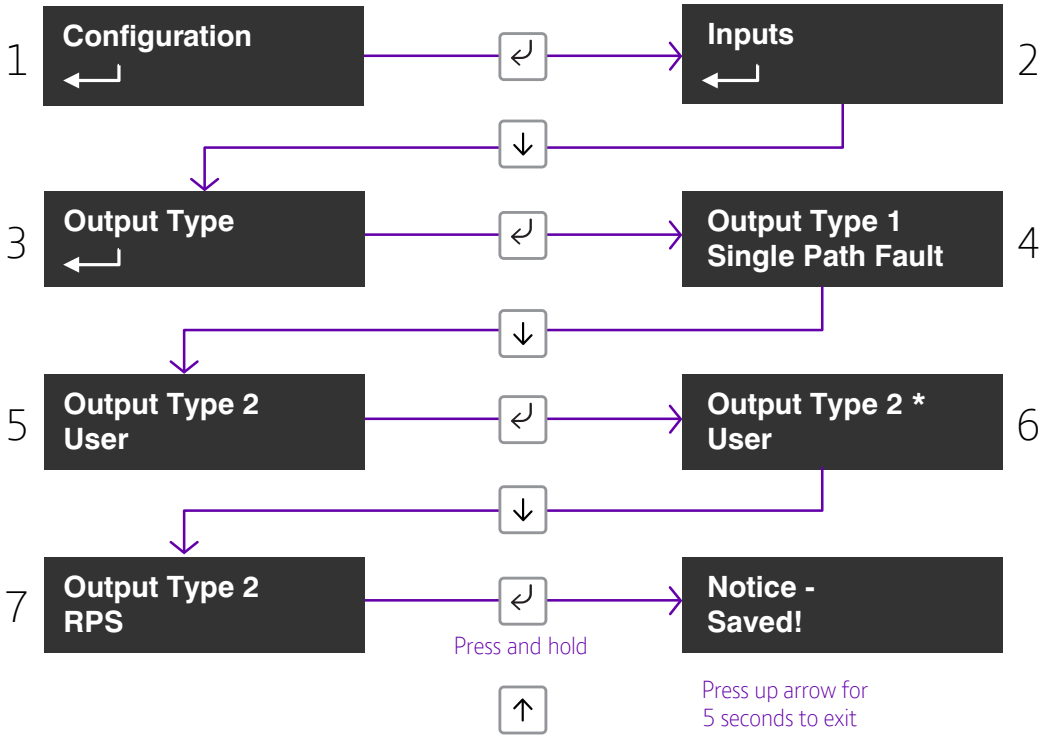
1. Output type 1 (Comms)

- Single path fault – operates when the Mobile path is in fault

2. Output type 2 (Func)

- User – allows the relay to be operated remotely via the app (default)
- RPS – return path signal operates in conjunction with pin 4

Example – configure Output 2 (Func) for RPS



Access the configuration menu by holding the Enter button for 3 seconds, press the Enter button again, the display will show pin learn. Press the down arrow until Output Types is displayed. Press the Enter button again. The display will show the default setting for Output type 1. Use the down arrow to step through to Output type 2. Press the Enter button . * will be displayed. Use the down arrow to change to RPS.

Once selected hold the Enter button down till notice saved is displayed.

It will return to the same position in the menu for you to select another output or use the down arrow to step through all options to get to the Back option.

Edit mode for that part of the menu can be exited at any time, without saving changes, by pressing ↓ for 5s. This will return you to the sub menu that you were making changes in.

The configuration menu can be exited at any time without saving any changes by pressing ↑ for 5 seconds. This will take you back to the scrolling status display.

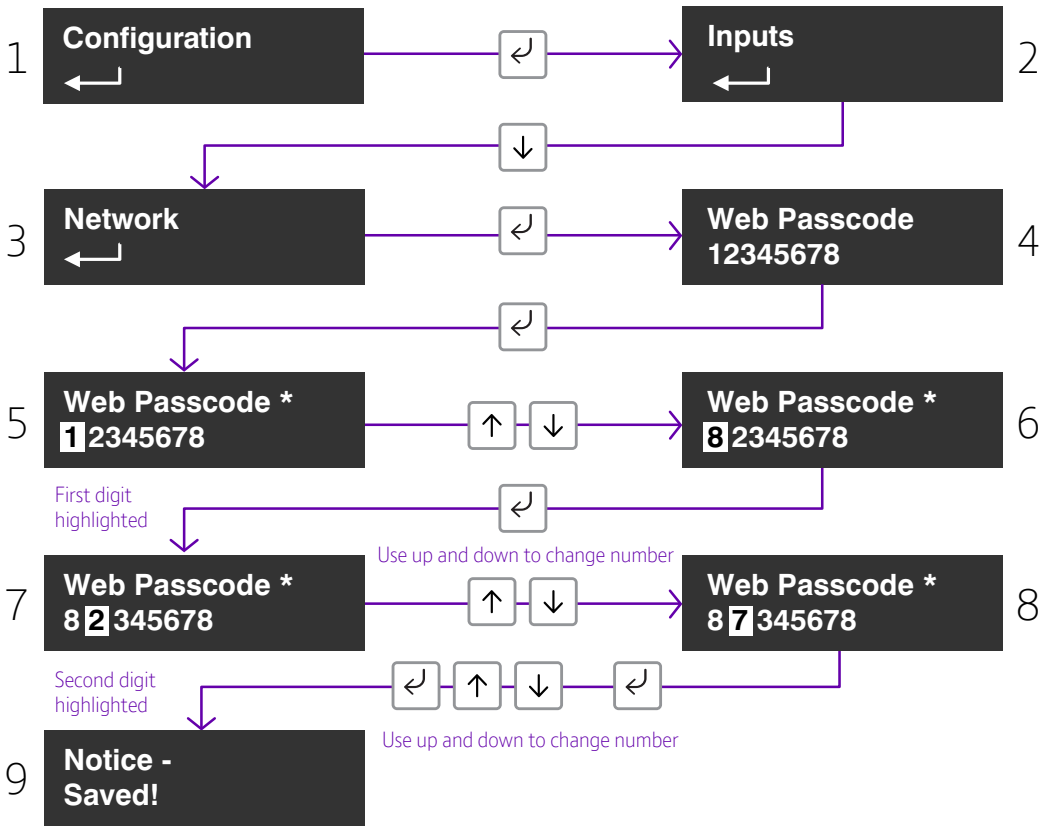
Network

The programing option under the network sub menu is:

Web Passcode

This code is used to set up both the installer and customer app.

It can be changed from its default:



Edit mode for that part of the menu can be exited at any time, without saving changes, by pressing ↓ for 5s. This will return you to the sub menu that you were making changes in.

The configuration menu can be exited at any time without saving any changes by pressing ↑ for 5 seconds. This will take you back to the scrolling status display.

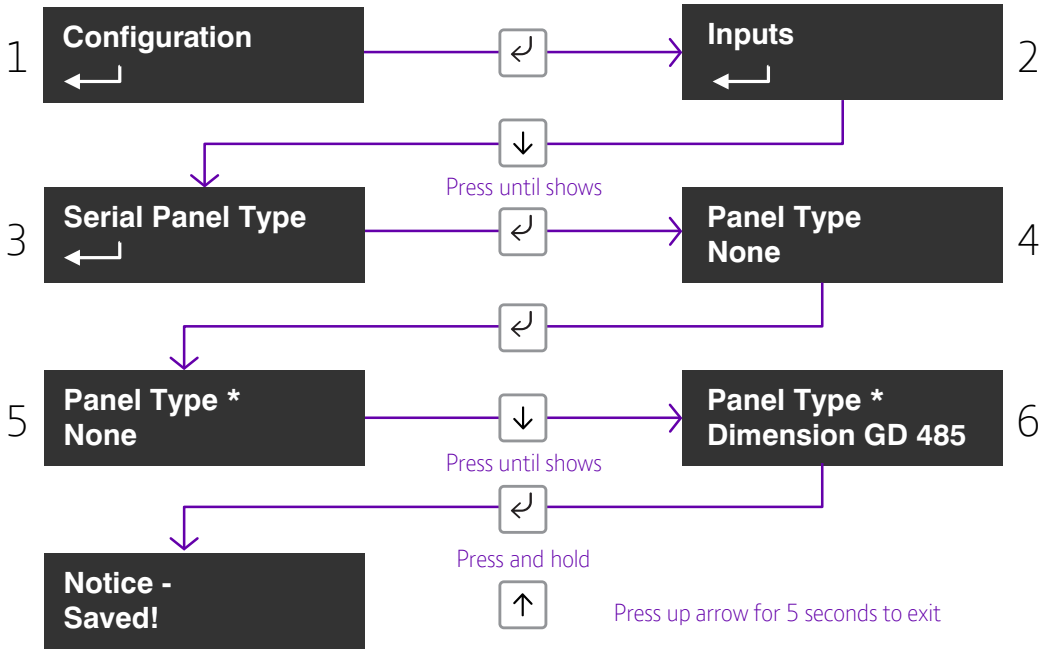
Serial connection panel type

This menu selects the panel connection type for serial connected panels (RS232 or RS485).

Settings:

- None
- Dimension GD 232 (Galaxy Dimension 48/96/264/520 (RS232 9600 8n1))
- Dimension GD 485 (Galaxy Dimension 48/96/264/520 (RS485))
- Galaxy G3 232 (G3 48/144/520 (RS232 9600 8n1))
- Galaxy G3 485 (G3 48/144/520 (RS485))
- Galaxy G2 485 (G212/20/44 (RS485))
- Galaxy Classic 485 L (Classic 8/18/60/128 (RS485))
- Galaxy Classic 485 H (Classic 500/504/512 (RS485))
- Texecom 816 (Texecom 412/816/832 (RS232 19200 8n2 inv))
- Texecom 48 88 (Texecom 48/88/168 Com - IP(RS232 19200 8n2 inv))
- Texecom Premier(Texecom Premier Elite 48 Com-IP (RS232 19200 8n2 inv))
- Bespoke Panel
- TBA
- Contact IP (RS232 9600/2400/1200 8n1)

Example – changing the unit to connect to a Galaxy dimension panel via RS485.



Access the configuration menu by holding Enter button for 3 seconds, press the Enter button again, the display will show pin learn. Press the down arrow until serial panel type is shown. Press the Enter button again to enter the serial panel type. Default status = None will be shown.

Use the down arrow to step through the available panel. Once the desired Panel is reached press and hold the Enter button down till notice saved is displayed.

Then it will return to the same position in the menu for you to select a different panel or use the down arrow to step through all pins to get to the Back option.

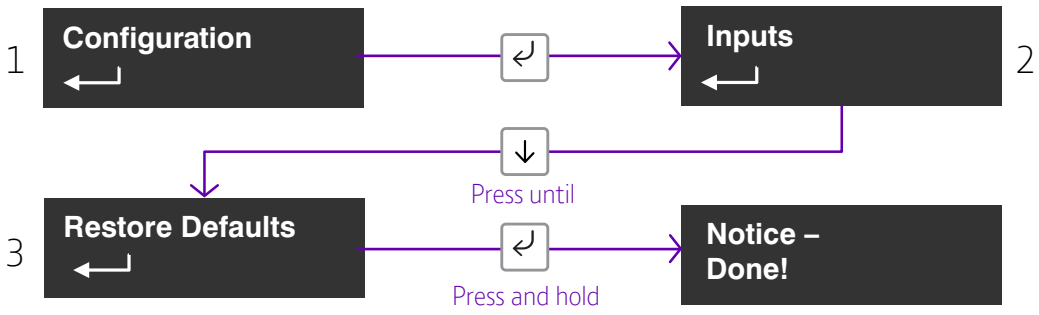
Edit mode for that part of the menu can be exited at any time, without saving changes, by pressing ↓ for 5s. This will return you to the sub menu that you were making changes in.

The configuration menu can be exited at any time without saving any changes by pressing ↑ for 5 seconds. This will take you back to the scrolling status display.

Restore Defaults

The Restore Defaults option on the menu can be used to set the unit back to factory default. That is all settings will be reset to their standard values.

Example – setting the unit back to factory default.

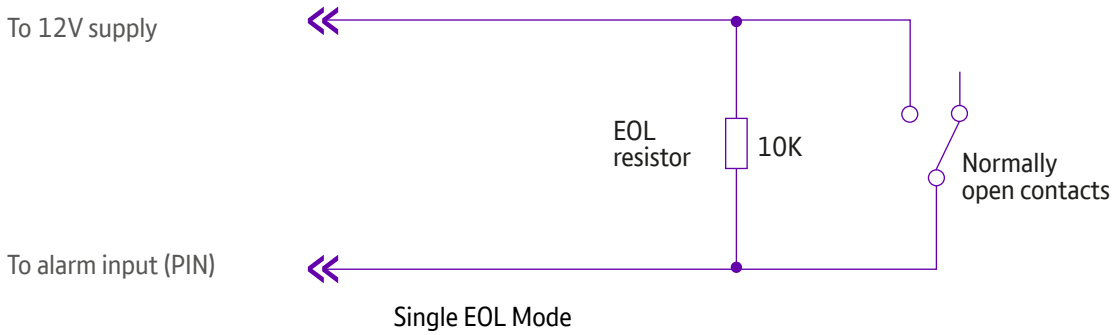


The configuration menu can be exited at any time without saving any changes by pressing ↑ for 5 seconds. This will take you back to the scrolling status display.

Interconnection Monitoring

If the signalling unit is remote from the alarm panel, it is possible to wire the PIN inputs to be able to to detect open or short circuits on the interconnection wiring between the panel and the unit.

To enable the interconnection monitoring you will need to program the unit via the configuration menu, app or web portal



Wiring for Interconnection Monitoring

Each of the pins required will need to be wired as per Figure 8.

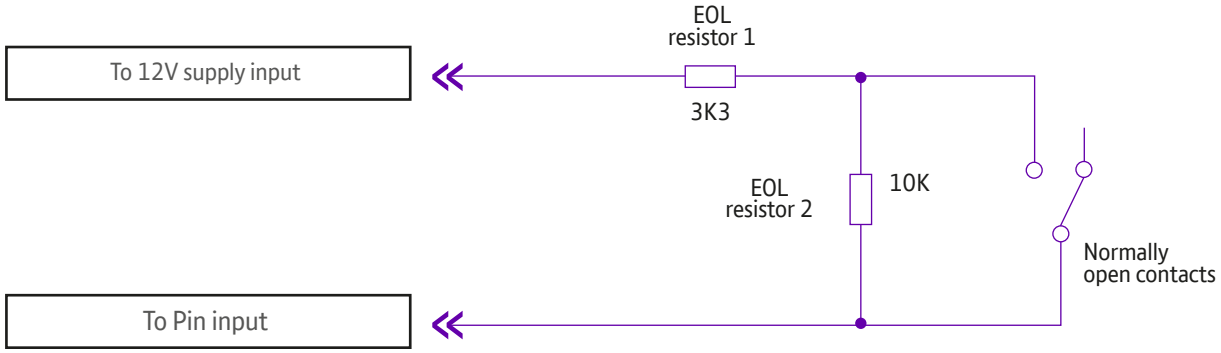


Fig 8

You will need 1 x 3K3 and 1 x 10K resistors for each PIN with interconnection monitoring.
Resistors are available from the redcare installer shop. **www.btinstallershop.com**

3.3KΩ 1%

orange, orange, black, brown, brown

10KΩ 1%

brown, black, black, red, brown

Fig 9

Resistor	Item Code Label	Colour Code
3K3	089446	Red Dot in packet
10K	089447	Blue Dot in packet

What happens when pins are configured and wired in this way?

The dual resistor EOL mode is able to detect four states:

- Alarm event
- Restore
- Wire cut
- Wire shorted

The OLED display will show Pin cut 1 through 8 to indicate the wire cut condition for any of PINs 1-8, which are presently in the wire cut state.

Alarms GPI Cut 6

Example Cut on Pin 6.

The OLED display will show Short 1 through 8 to indicate the wire shorted condition for any of PINs 1-8, which are presently in the wire shorted state.

Alarms GPI Short 8

Example Short on Pin 8.

Alarms will also be sent through to the Alarm Receiving Centre for each of these conditions.

Panel Upload Download and Enhanced format signalling (SIA/CID)

Remote access to the alarm panel can be achieved using the BT Redcare UDL facility.

Additional panel set up information is also available for enhanced format signalling.

Contact your BT Redcare representative for further details.

Dial Capture

The dial capture pins present a 'phone line' to the panels on board digital communicator Connect the alarm panel's digital communicator line connections to the terminals marked Dial Cap on the unit.

The terminals are not polarity conscious.

Configure the alarm panel digital communicator to dial 29 and use the last 4 digits of the TAID as the account number.

The dial capture board will auto detect the panel protocol as events are sent from the alarm panel. SIA, CID or FF.
Please check current panel compatibility listing.

If there are any issues you can easily spot them and put them right by connecting a test phone, or listening device to the Dial Capture inputs.
The dial capture pins with a test phone connected and line seized (as if making a phone call) will provide a continuous tone (dialling tone).
The dial capture pins will also have a voltage on there of 45V.

Serial Panel Connections

Select the required panel via the serial panel type menu option via the buttons, app or web portal.

Please contact your BT Redcare representative for the latest information on panel compatibility for Upload Download and enhanced format signalling via serial connections.

Then wire in the panel using the GND, TX/B and RX/A terminals.

Example below shows connection via RS 485 to a Galaxy Dimension panel:

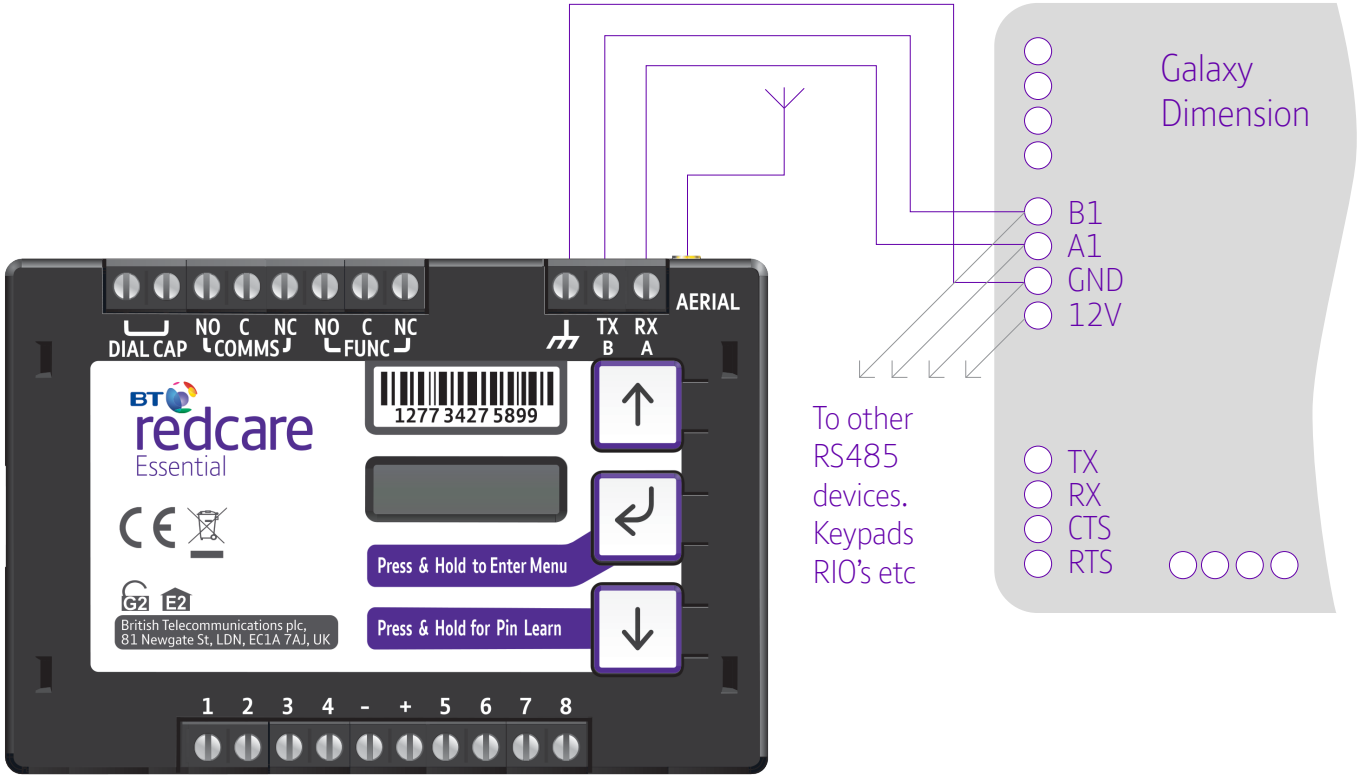


Figure 10 (not to scale)

Connection Advice

The unit should be connected to the Honeywell Galaxy panel as shown in figure X, RS485A to A1 and RS485B to B1. Do not use the secondary data line (if your panel has one- A2/ B2) as it will not work. Ensure that the GND of the unit is connected to the GND terminal on the panel.

It is recommended that good quality screened cable (Belden type, CAT5e or equivalent) is used in all wiring of this type to avoid interference on the panel's data bus. A 680Ω resistor should be used at the end of the 'daisy chain' line of devices in the normal way, taking care not to exceed the maximum number of devices allowed on that data line. If the unit is fitted less than 5m from the alarm panel then an additional termination resistor is generally not required.

The unit does not have a terminating resistor.

Alarm List

Description	Pin	CID (zone)
Inputs 1-8	1-8	323 (901-908)
Low Battery	985	302 (999)
Unit reboot	984	305 (995)
Panel dial fail	983	314 (999)
Software changed	979	304 (999)
Panel message error	958	311 (997)
Panel Connection	n/a	356 (997)
BSIA 175 Test	n/a	354 (998/999)
Inputs 1-8 cut alarm	n/a	325 (901-908)
Inputs 1-8 Short Alarm	n/a	324 (901-908)
Total Comms Fault	n/a	350 (999)

Figure 11 - alarm signals as delivered to ARC

IMPORTANT NOTE: If intending to use dial capture or serial for sending alarms, please confirm beforehand with your ARC that their automation software is capable of differentiating correctly between PIN alarms (Essential or Redcare Platform generated alarms) and alarm panel generated ZONE alarms.

Disposal

The symbol shown here and on the product, means that the product is classed as Electrical or Electronic Equipment and should not be disposed of with other household or commercial waste at the end of its working life.

The Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) has been put in place to recycle products using the best available recovery and recycling techniques to minimise the impact on the environment, treat any hazardous substances and avoid the increasing landfill.

Product disposal instructions for users:
Please dispose of the product as per your local authority's recycling processes. For more information please contact your local authority or retailer where the product was purchased.

The product may be returned to the freepost address below:

BT Supply Chain
Darlington Road,
Northallerton,
North Yorkshire
DL6 2PJ

Disclaimer

The manufacturer or his agents disclaim responsibility for any damage, financial loss or injury caused to any equipment, property or persons resulting from any use of this equipment. The manufacturer is not liable for any purely economic loss arising from any use of this equipment. All responsibility and liability in the use of BT Redcare products are assumed by the user.

This unit is designed to be used in customer premises. Use of this equipment in other locations may void warranty.
This unit is not intended for use in marine environments or water borne vessels.

BT Redcare may make changes to features and specifications at any time without prior notification in the interest of ongoing product development and improvement.

Glossary of terms

ARC	Alarm Receiving Centre
BSIA	British Security Industry Association
GMT	Greenwich Mean Time
IP	Internet Protocol
OLED	Organic Light Emitting Diode
MMCX	Micro Miniature Coaxial Connector
TTL	Transistor Transistor Logic
TX	Transmit
PIN	Parallel Input
RPS	Return Path Signalling (An output that confirms delivery of PIN 4 to the ARC)
RX	Receive
SID	Serial Identity number – 12 digit unique identity number of a unit
SIM	Subscriber identity module (sim card)
USB	Universal Serial Bus

Support

For assistance with your BT Redcare installation, please contact the BT Redcare Helpdesk on:
0800 800 628

Approvals

CE

EN50136, EN50131, PD6669, PD6662

Offices worldwide

The services described in this publication are subject to availability and may be modified from time to time. Services and equipment are provided subject to British Telecommunications plc's respective standard conditions of contract. Nothing in this publication forms any part of any contract.

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