BALDWIN BOXALL
LEADING THE WAY TO SAFETY

OmniCare EVC System

Installation & Commissioning Manual

Manual name: OmniCare

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This equipment has been designed and manufactured to conform to both CE & UKCA requirements

Failure to use the equipment in the manner described in the product literature will invalidate the conformity.

A “Declaration of Conformity” statement and a “Declaration of Performance” is available on request.

Technical Description

Overview of System Design Requirements

Hardware Installation

Testing & Commissioning

Tone Configuration Options

Fault Finding

Maintenance

Cables

Addendum

AMENDMENT RECORD

Change Note Number	Nature of Amendment	Date of Amendment
ECR2721	Add BVOCRIF Address look up table	Jan 2013
ECR3466	Cumulative update including various product upgrades	Dec 2020
ECR4507	Add UKCA and add "The Operator must check user status before clearing an "Occupied" Remote" warning	Dec 2021
ECR4652	Cumulative update including various product upgrades	Apr 2024

PROPRIETARY NOTICE

General Information

Personnel who install, maintain or repair this equipment must read the safety information below before starting work.

This Manual contains Warnings, Cautions and Notes.

Warnings describe potential threats to health or life, e.g.

WARNING

Before attempting to remove this component, ensure the Mains Power Supply and Battery Backup have been disconnected.

Cautions describe potential threats to the equipment, e.g.

CAUTION

Notice must be taken of all cautions.
If a Caution is ignored the equipment may be damaged.

Notes are statements that are useful to the user in the context of a particular section of the manual, e.g.

NOTE: This is an example of a note.

Environmental Conditions

This equipment must not be installed in an area that is subject to a corrosive atmosphere, excessive moisture or may allow water or other liquids to come into contact with the unit or its external connections. Unless otherwise stated, all items are IP30.

AC Supply Voltage	230V - 15% +10% RMS 50Hz AC
DC Supply Voltage	18V to 33V (Nominal 24V) DC
Temperature (Operating & Storage)	0°C up to +40°C
Humidity Range	0% - 90% Non-Condensing

In the close proximity of some radio frequency transmitting devices, the signal to noise ratio of this product may be reduced. If this occurs, re-location of the equipment or the signal cables is recommended.

SAFETY AND STATUTORY INFORMATION

CAUTION

These Safety Precautions apply to assembled systems, however they may not all be applicable to every item within that system.

Failure to follow these instructions and guidelines may cause personal injury and/or damage to the equipment.

WARNING

This equipment is intended for continuous operation and as such should be permanently connected to the mains supply.
This unit does not contain an external mains switch.
For servicing, an all-pole Switch / Circuit Breaker with a separation of 3 mm in each pole should be incorporated in the electrical supply spur feeding the unit, and this must be suitably marked to prevent inadvertent or accidental usage.

WARNING

Always ensure that this equipment is correctly earthed by connection to an AC mains supply with a protective earth connection.

WARNING

If Functional Testing, Maintenance, or Repair is to be completed with the Mains Power (and/or battery backup) connected then this should only be undertaken by personnel who are fully aware of the danger involved and who have taken adequate precautions and training.

Terminals marked with the "High Voltage" symbol are considered hazardous and the external wiring connected to these terminals requires installation by suitably trained personnel.

WARNING

The 24V DC batteries used within this system can deliver extremely high currents that can cause fire or burns.
Care should be taken to ensure tools or jewellery etc. are prevented from causing a Short Circuit.

WARNING

Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.

WARNING

If battery isolation / disconnection is required then the 0V cable to the chassis should be disconnected first.

WARNING

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.
Dispose of battery carefully to avoid environmental damage.
Do not dispose of battery in a fire.

CAUTION: ELECTRO-STATIC SENSITIVE DEVICES

Observe the relevant precautions for the protection of Electro-static Sensitive Devices when handling this equipment.

CAUTION

This product must only be disposed of in accordance with the WEEE directive.

COMMENTS

Comments regarding the content of this manual are welcome and should be addressed to hello@baldwinboxall.co.uk.

1 Technical Description

1.1 Description

The OmniCare EVC System is a fully addressable Emergency Voice Communication System that allows Disabled Refuge, Fire & Emergency Telephones, and Disabled Toilet Alarm Remote Units to be connected to just one system. It has been developed in accordance with BS5839-9:2021 and BS8300:2018 (for the Disabled Toilet Alarm).

The system has two main components - the Master Control Panel and the Remote Units. The Remote Units are supplied in five different styles to suit any installation.

1.2 TECHNICAL SPECIFICATIONS

1.2.1 Control Panels

Control Panels	
System self-monitoring	BS5839 compliant
Remote signalling of fault	Volt-free contact, closing/opening set on installation
Indicators	Occupied, call, fault, power, charger, speech level
Transmission capability	Half-duplex (DRS remotes) either voice switched or by PTT (controlled at the Control Panel). Full Duplex (Fire Telephones)
Power supply	110V / 230V AC autoswitching, battery backed with built in batteries & charger
Power consumption (VA)	10VA + 1VA per remote connected
Dimensions (W x H x D)	410mm x 290mm x 200mm (4-32 way) 410mm x 455mm x 200mm (16-64 way) 410mm x 777mm x 200mm (80-128 way)
Bezel dimensions (W x H x D)	461mm x 340mm x 25mm (4-32 way) 461mm x 506mm x 25mm (16-64 way) 461mm x 827mm x 25mm (80-128 way)
Bezel Cutout dimensions W x H	420mm x 300mm (4-32 way) 420mm x 465mm (16-64 way) 420mm x 787mm (80-128 way)
Knockouts	20mm diameter in top and top/rear
Security	Lockable glazed door
Weight, including batteries	21kg upto 32way, 26kg upto 64way, 37kg upto 128way
Temperature Range	-10 to +30°C (storage and operating)
Humidity Range	95% Non Condensing

Figure 1.1 — Typical OmniCare Control Panel

1.2.2 Disabled Refuge Remote Unit (BVOCECPG)

Disabled Refuge Remote	
Indicators	Status, System OK
Remote signalling of occupancy	Volt-free contact for above door lamps etc.
Front Panel Controls	Call Button, Reset Keyswitch
Internal Controls	Speaker Volume, Option Jumpers
Power supply	12 - 40V DC
Current consumption	30mA @ 30V typical
Dimensions (W x H x D)	134mm x 134mm x 64mm (Front panel & backbox) Bezel dimensions: 154mm x 154mm. 10mm radius Bezel cut out: 136mm x 136mm x 55mm. 10mm radius
Knockouts	20mm and 25mm diameter in sides of back box
Weight	1Kg
Temperature Range	-10 to + 40°C (storage and operating)

Figure 1.2 — Typical Disabled Refuge Remote

1.2.3 Advance Refuge Remote (BVOCA2G)

Advance Disabled Refuge Remote	
Indicators	Illuminated Button
Remote Signalling of Occupancy	Volt free contact for Above Door lamps etc
Front Panel Controls	Push Button
Power supply	12 - 40V DC
Current consumption	30mA @ 30V typical
Dimensions (W x H x D)	Surface Mount: 180mm x 440mm x 64mm Flush Mount: 178mm x 440mm x 3mm Flush Mount cut out: 133mm x 235mm x 65mm
Knockouts	20mm and 25mm diameter in sides of back box
Weight	1 Kg
Temperature Range	-10 to + 40°C (storage and operating)
Humidity Range	95% Non Condensing

Figure 1.3 — Typical Advance Disabled Refuge Remote

1.2.4 Fire Telephone Remote Unit (BVOCF)

Fire Telephone Remote	
Indicators	System OK
Power supply	12 - 40V DC
Current consumption	30mA @ 30V typical
Dimensions (W x H x D)	Surface Mount: 130mm x 350mm x 100mm Bezel: 170mm x 390mm x 20mm Bezel cut out: 138mm x 358mm
Knockouts	20mm and 25mm diameter in sides of back box
Weight	4 Kg
Temperature Range	-10 to + 40°C (storage and operating)
Humidity Range	95% Non Condensing

Figure 1.4 — Typical Fire Telephone Remote

1.2.5 Emergency Telephone Remote Unit (BVOCET)

The BVOCET Emergency Telephone has the same mechanical and technical specification as the Fire Telephone (BVOCF) but the outer case is finished in green instead of red.

1.2.6 Combined Disabled Refuge / Fire Telephone (BVOCC)

Combined Disabled Refuge / Fire Telephone Remote	
Indicators	Call Status, System OK
Remote Signalling of Occupancy	Volt free contact for Above Door lamps etc
Front Panel Controls	Call Push Button and reset keyswitch
Power supply	12 - 40V DC
Current consumption	35mA @ 30V typical
Dimensions (W x H x D)	Surface Mount: 130mm x 480mm x 100mm Bezel Dimensions: 170mm x 520mm Bezel cut out: 138mm x 488mm
Knockouts	20mm and 25mm diameter in sides of back box
Weight	4.5 Kg
Temperature Range	-10 to + 40°C (storage and operating)
Humidity Range	95% Non Condensing

Figure 1.5 — Typical Combined Disabled Refuge / Fire Telephone

1.2.7 Disabled Toilet Alarm (BVOCDTA)

BVOCDTA Disabled Toilet Alarm	
OmniCare System Interface	**BVFREPEM** Repeater Unit
Power Supply Output Fuse	220-240V AC 12V DC Internal Thermal
Alarm Type	90dB @ 30cm
Battery Backup	Alkaline - type A23 12 Volt
Dimensions Alarm Controller Over door Light / Sounder Reset point Ring Pull	W x H x D (Excluding Backbox) 145mm x 85mm x 13mm 85mm x 85mm x 58mm 85mm x 85mm x 13mm 30mm x 80mm diameter (fixing centres)
Cable Requirements	4 or 6 core security alarm cable 7/0.2 or similar
Back Box Requirements Alarm Controller Over door Light / Sounder Reset Point Ring Pull	*Back boxes are not supplied with the Disabled Toilet Alarm* 35mm deep double gang flush box or "round cornered" plastic surface box is required 25mm deep single gang flush box or "round cornered" plastic surface box is required 25mm deep single gang flush box or "round cornered" plastic surface box is required Supplied with its own surface mount enclosure

Figure 1.6 — BVOCDTA Disabled Toilet Alarm

NOTE: The BVOCDTA Disabled Toilet Alarm kit interfaces with a BVFREPEM Repeater unit. For further information refer to Section 3.2.5

1.2.8 Disabled Toilet Alarm Kit (DTAKIT)

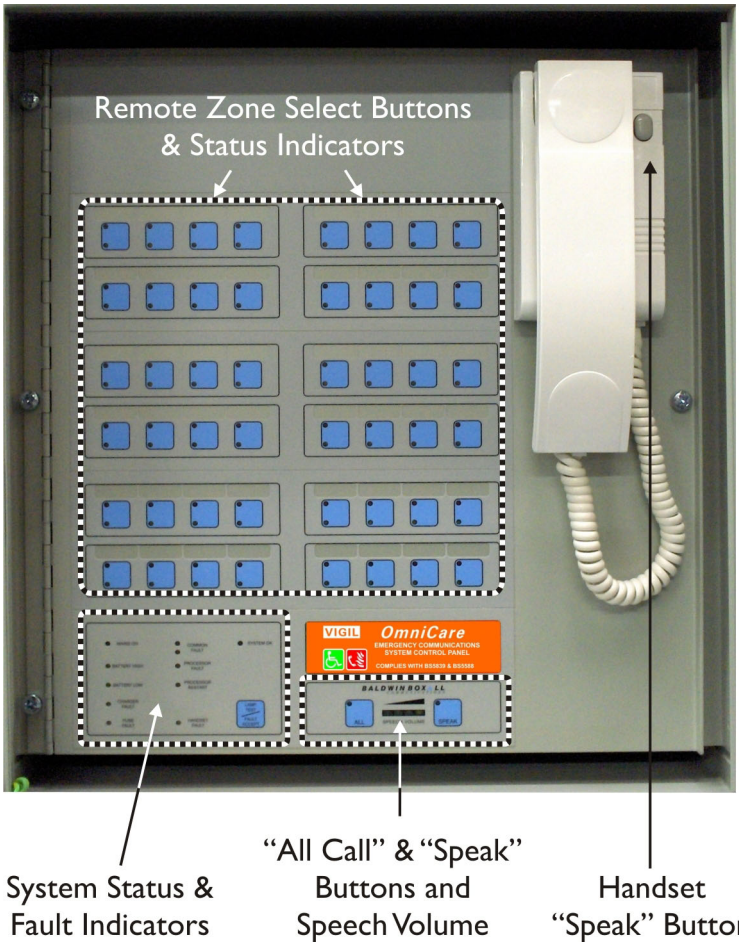
DTAKIT Disabled Toilet Alarm	
OmniCare System Interface	**BVOCRIF** Repeater Unit
Power Supply	Line Powered (External Supply Not Required)
Alarm Type	90dB @ 30cm
Battery Backup	N/A
Dimensions Over door Light / Sounder Reset point Ring Pull BVOCRIF	W x H x D (Excluding backbox) 85mm x 85mm x 58mm 85mm x 85mm x 13mm 30mm x 80mm diameter (fixing centres) 150mm x 120mm x 50mm
Cable Requirements	Security alarm cable 7/0.2 or similar
Back Box Requirements Over door Light / Sounder Reset Point Ring Pull	*Back boxes are not supplied with the Disabled Toilet Alarm* 25mm deep single gang flush box or "round cornered" plastic surface box is required 25mm deep single gang flush box or "round cornered" plastic surface box is required Supplied with its own surface mount enclosure

Figure 1.7 — DTAKIT Disabled Toilet Alarm

NOTE: The DTAKIT Disabled Toilet Alarm kit interfaces with a BVOCRIF Repeater unit. For further information refer to Section 3.2.6.

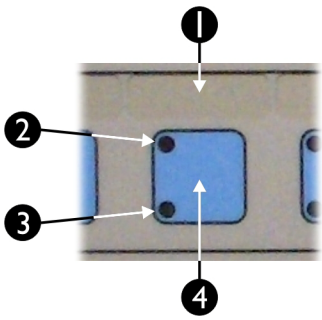
1.3 Control Panel LEDs & Switches

Figure 1.8 — Control Panel Main Regions



1.3.1 Zone Select Button & Status LEDs

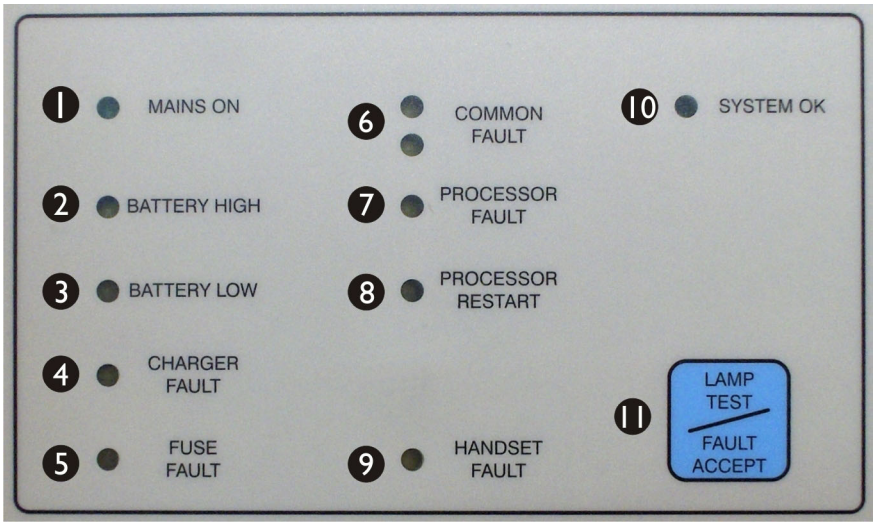
Figure 1.9 — Zone Select Button & Status LEDs



1	Space for Zone Ident Label
2	Refuge Area Occupied / Call Status LED (RED)
3	Fault detected on Remote Unit (YELLOW)
4	Press button to control relevant Zone

1.3.2 System Status & Fault LEDs

Figure 1.10 — System Status & Fault LEDs

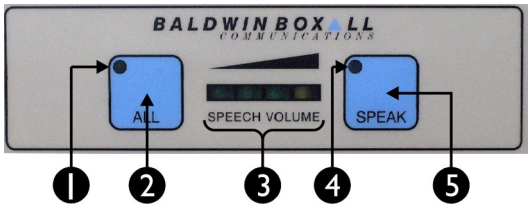


	Colour	Ident	Description
1	Green	Mains On	Mains supply Connected and Healthy
2	Yellow	Battery High	Battery Voltage too High (Overcharged) *
3	Yellow	Battery Low	Battery Voltage too Low (Faulty battery) *
4	Yellow	Charger Fault	Will illuminate if the batteries are unable to hold their charge or if they are not fully charged after 24 Hours charging. The "Reset" Switch (internal) has to be pressed to clear this fault.
5	Yellow	Fuse Fault	Will illuminate if any internal DC fuse fails.
6	Yellow	Common Fault	Will flash and a buzzer will sound when a Fault is detected until "Fault Accept" (12) is pressed. After a fault is accepted the buzzer is silenced and the LEDs remain illuminated until the fault is cleared.
7	Yellow	Processor Fault	Will illuminate if a critical Processor fault has occurred.
8	Yellow	Processor Restart	Will illuminate if the Processor has stopped and restarted, or after power is first applied. The "Reset" Switch (internal) has to be pressed to clear this fault.
9	Yellow	Handset Fault	Will illuminate if a fault is detected with the Control Unit handset.
10	Green	System OK	Illuminates when no faults are detected.
11	N/A	Lamp Test / Fault Accept Button	Lamp Test - Press to check all front panel LEDs and buzzer operation. Fault Accept - Press to accept a fault and silence the fault buzzer.

*NOTE: * If both the "Battery High" and "Battery Low" fault LEDs are lit then the batteries are not connected.*

1.3.3 "All Call" and "Speak" Buttons

Figure 1.11 — "All Call" and "Speak" Buttons



1	Will illuminate to show the "All" button (2) is being pressed
2	Press to speak to **All Occupied** Remote Units, all Fire Telephones and all Combined Refuge Remotes
3	Indicates speech level of the handset. For clearest speech avoid lighting the yellow LED.
4	Will illuminate to show either the "Speak" button on the panel (5) or the "Speak" button on the Handset has been pressed
5	Press to speak to the **Selected** Occupied Remote Unit. *Pressing this button stops the voice-switching function and makes the conversation PTT controlled from the control panel.*

NOTE: The Speech Level Indicator (3) is permanently "live", even when the Handset is not picked up or in use.
This is due to continuous monitoring of the microphone capsule.

1.3.4 Handset "Speak" Button

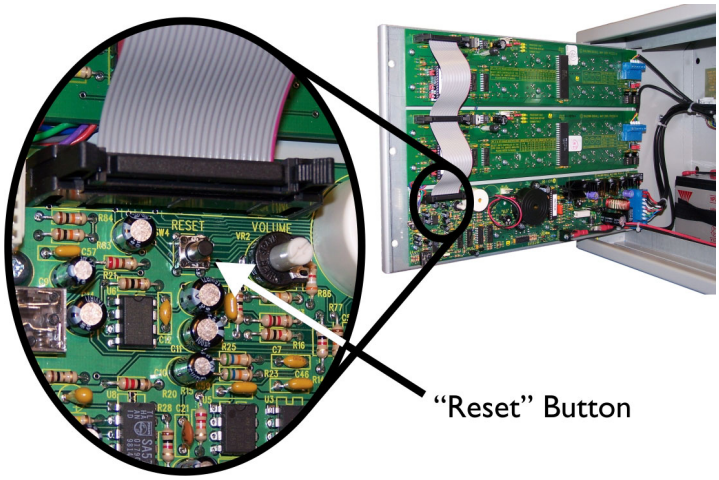
Figure 1.12 — Handset Speak Button

This is the same as the "Speak" button on the control panel.

Pressing this button stops the voice-switching function and makes the conversation PTT controlled. This can be useful if there is a high level of ambient noise near the control panel.

1.3.5 Internal "Reset" Button

Figure 1.13 — Location of the Internal "Reset" button

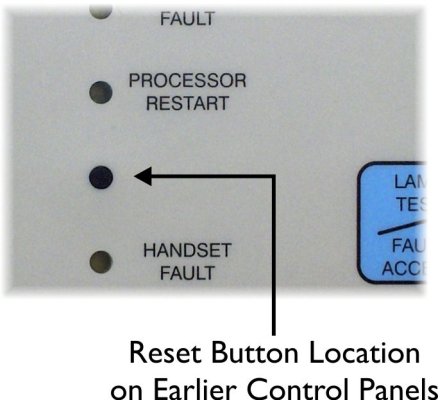


The Reset button is used for a variety of different operations, however most of these activities are normally only performed when Testing or Commissioning the system.

The button is mounted internally to prevent accidental or inadvertent use.

NOTE: On earlier Control Panels the Reset Button is located on the front panel, in between the "Processor Restart" and "Handset Fault" LEDs. The button does not have an ident but is identified by a black dot.

Figure 1.14 — Reset Button Location on Earlier Control Panels



2 Overview of System Design Requirements

This section assists the system designer to define the system layout, the type and conductor size of the cabling, and the interconnections between equipment.

2.1 System Layout & Cable lengths

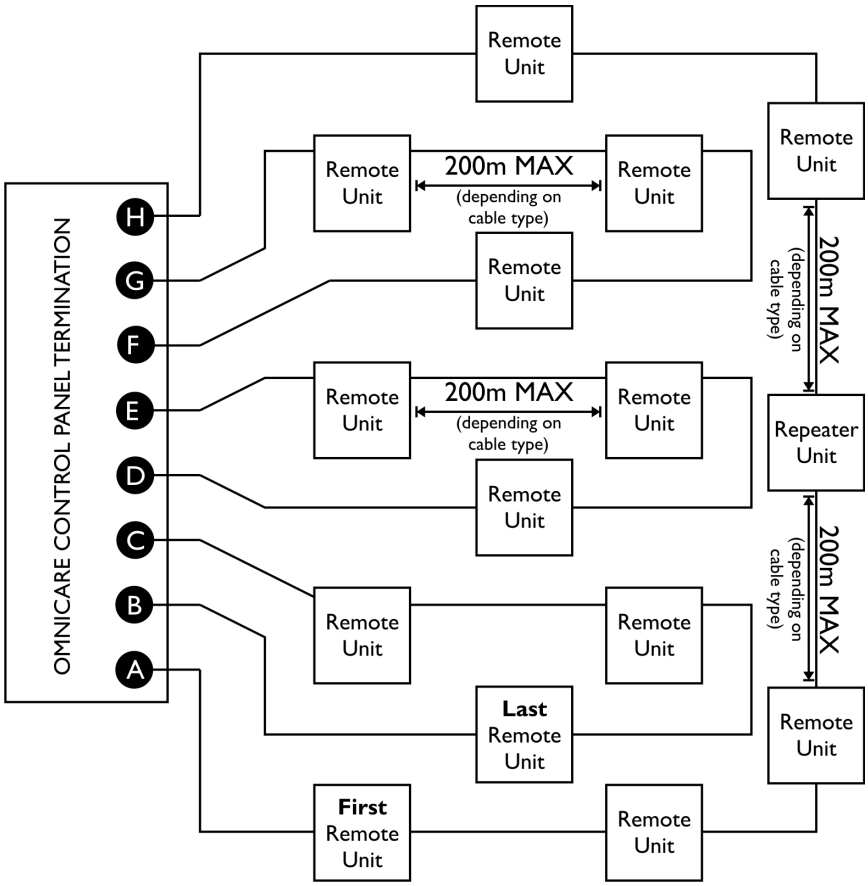
The OmniCare EVC System utilises a 4-wire plus screen ring circuit to allow continued operation in the event of a cable break.

Cables are sized according to the number of Remote Units and the distance between them. The maximum length of cable between Remote Units, and between the Control Panel and the first and last Remote Unit on each circuit, must be as follows:

MICC (lightweight) 4-core	Distance between units not to exceed 150m.
MICC (heavyweight) 4-core	Distance between units not to exceed 200m.
Enhanced Soft Skin 1.5mm 4-core (recommended)	Distance between units not to exceed 200m.

There are typically 20 -25 Remote Units on each ring.

Figure 2.1 — Schematic showing Maximum cable lengths



Where a greater cable length is required a repeater unit (BVOCRIF or BVFREPEM) can be installed to extend the cabling a further 200m. In addition to the 200m rule the number of Remote Units will affect the maximum length of a single ring. The following table shows the absolute maximum lengths:

# Remotes units per Ring	4	8	12	16	20	24	28	32
Max Ring Length (metres) using 1.5mm cable	1000	1800	2500	1750	1300	950	700	475

2.2 Using Slave Control Panels

If required, Slave Control Panels can be added to enable the system to be operated from multiple locations.

NOTE: Slave Control Panels can be configured to communicate with any Remote Units on the system (in groups of upto 16 per Zone Card), however there must be a Master Panel that includes buttons for every Remote Unit.

2.3 Cable Selection

The ring circuit must be cabled in a 4-core with screen ***enhanced*** *fire rated cable.* Soft skin type is recommended. MICC can be used, but identification of the individual conductors for correct phasing of conductor pairs (which is essential to prevent damage to the equipment) can be difficult with this type of cable.

The conductor cross-sectional area must be chosen depending on the length of cable runs and the number of Remote Units on each circuit. There are also requirements within BS5839 part 1 that determine cable types and diameters.

Please contact the Baldwin Boxall Technical Sales team on +44(0)1892 664422 for free advice and assistance with cabling design and choice of cable.

2.4 Cabling Instructions

The OmniCare EVC System auto-commissioning feature numbers all the Remote Units consecutively around the loop.

When designing the cabling for an OmniCare EVC System installation the following important points should be noted:

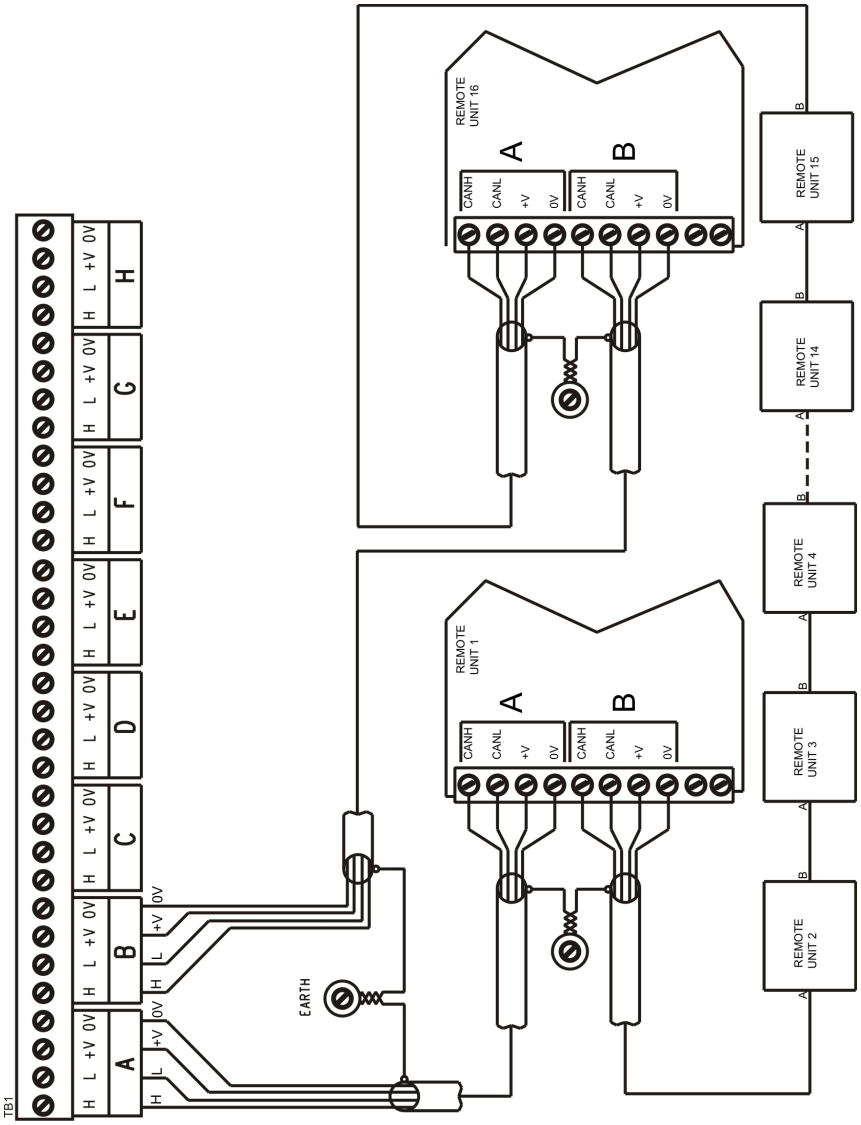
- The first Remote Unit connected to the "A" connection will automatically be numbered Zone 1.
  This Zone will normally use the Top Left button on the OmniCare EVC System Master Control Panel
- Remote Units are then consecutively numbered.
  The corresponding buttons on each Zone Card are allocated Left to Right, Top to Bottom on the Master Panel, with the 16th Zone being Bottom Right.
- Control Panels use Zone Cards which address up to 16 consecutive Remote Units. If present, the Zone Card must be connected in the loop, although not necessarily have Remote Units directly connected to it.
- After successfully commissioning the system the Remote Units can be re-addressed to suit the installation.

2.5 Installation Examples

2.5.1 Connection Details - up to 16 Remotes

The following illustration shows the recommended terminations for a system with up to 16 zones using a single Zone Card.

Figure 2.2 — Typical Connections - Up to 16 Remotes

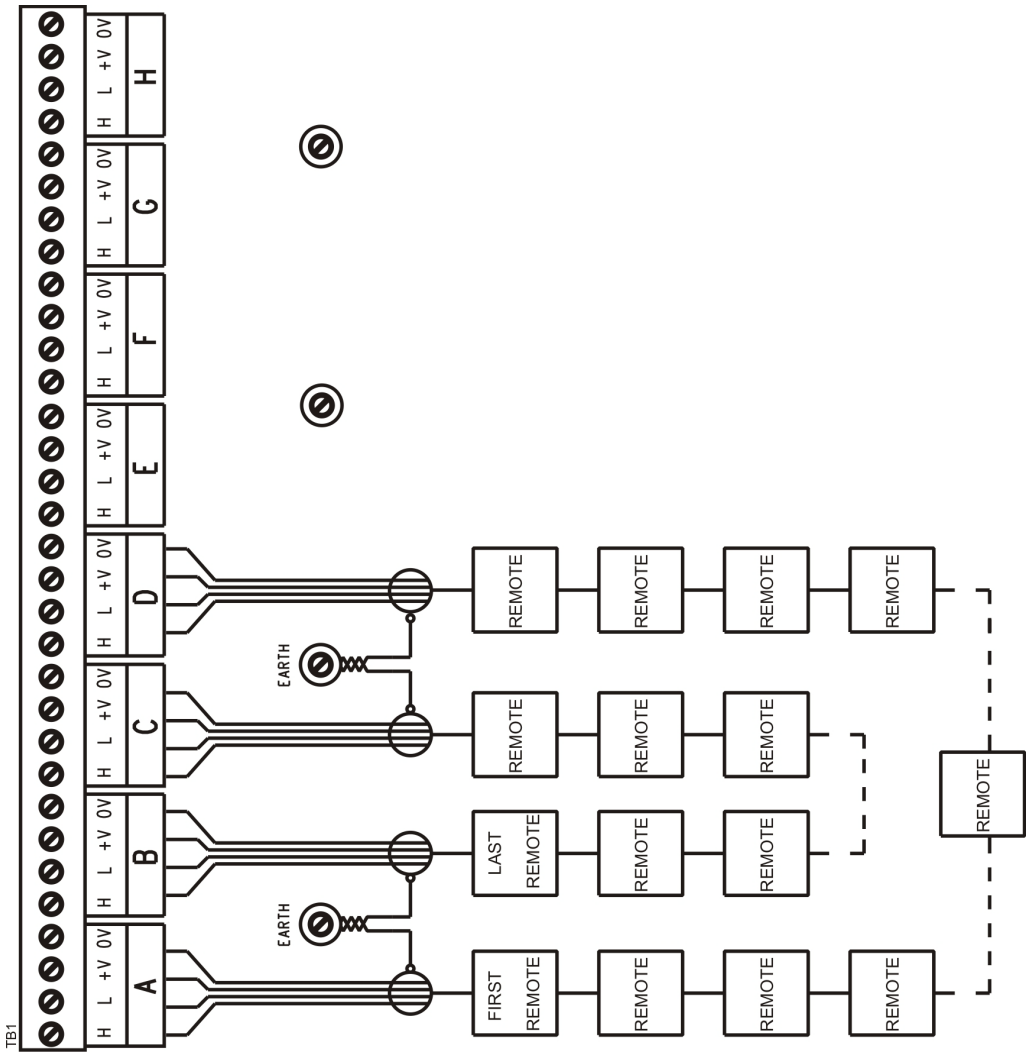


NOTE: It is recommended to connect each Remote Unit "IN" from the preceeding unit on "A", and "OUT" to the next unit on "B". Although this is not required for the system to operate correctly, applying this convention aids fault finding if wiring faults are encountered during commissioning.

2.5.2 Connection Details - up to 32 Remotes

The following example shows how to connect up to 32 Remote Units to two Zone Cards.

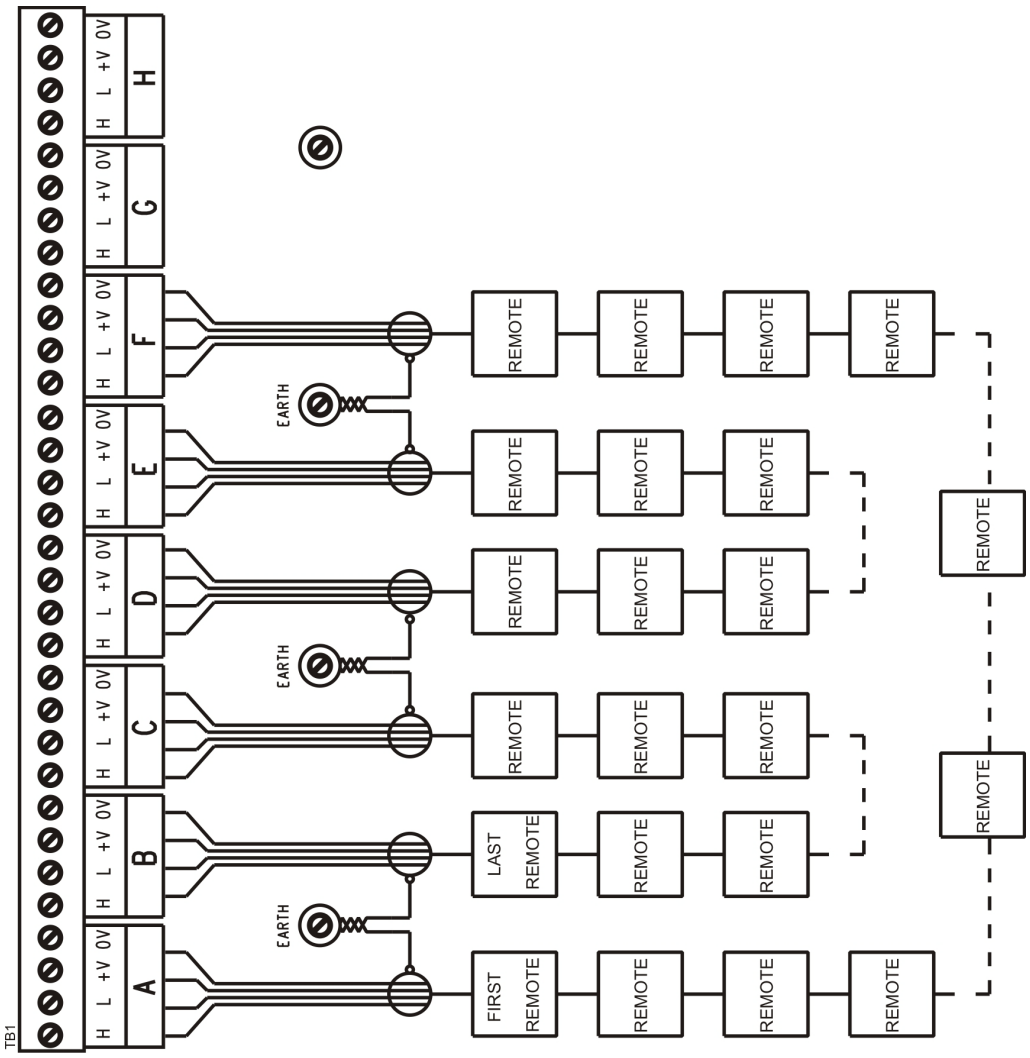
Figure 2.3 — Typical Connections - Up to 32 Remotes



NOTE: The Control Panel Termination details shown in Figure 2.2 and Figure 2.3 are correct for 64 and 128 zone panels.
32 zone control panels only have terminations "A" to "D".

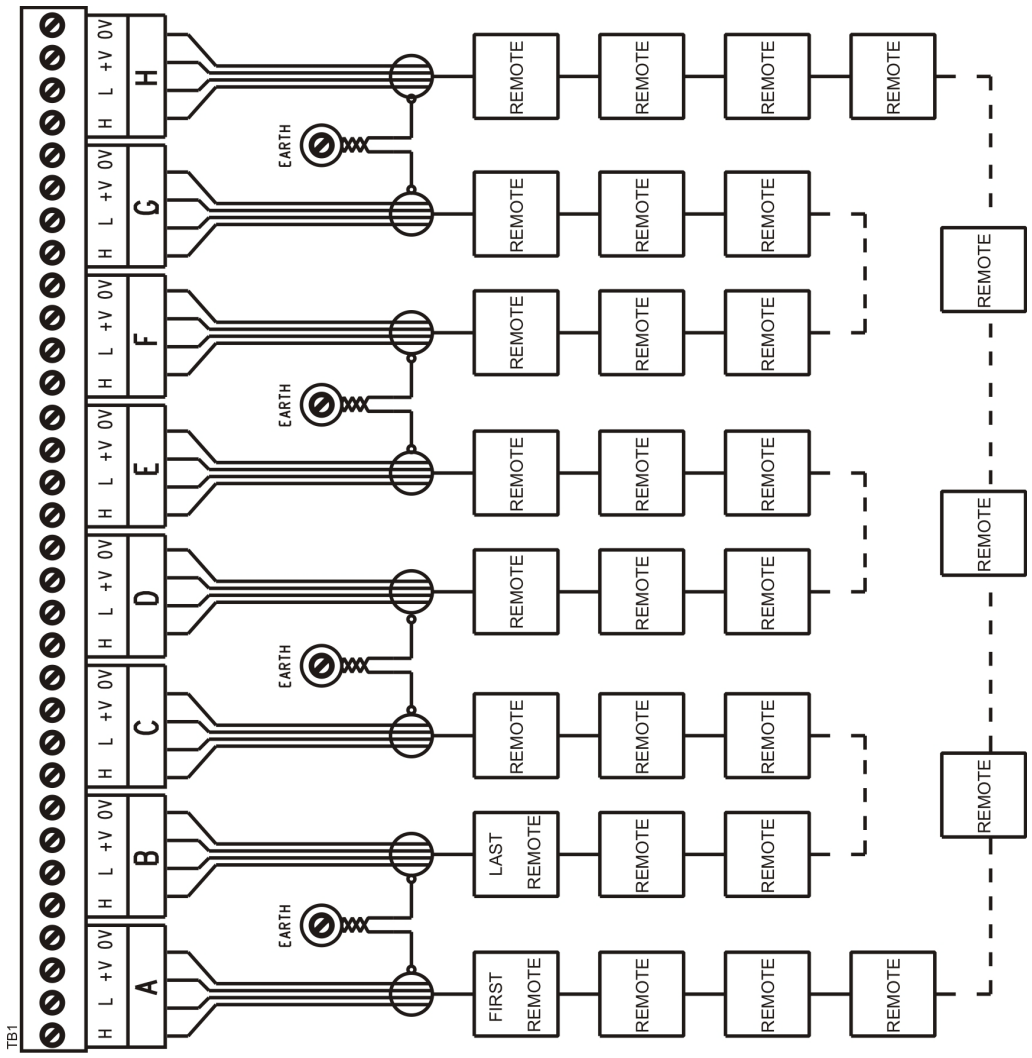
2.5.3 Connection Details - up to 48 Remotes

Figure 2.4 — Typical Connections - Up to 48 Remotes



2.5.4 Connection Details - up to 64 Remotes

Figure 2.5 — Typical Connections - Up to 64 Remotes

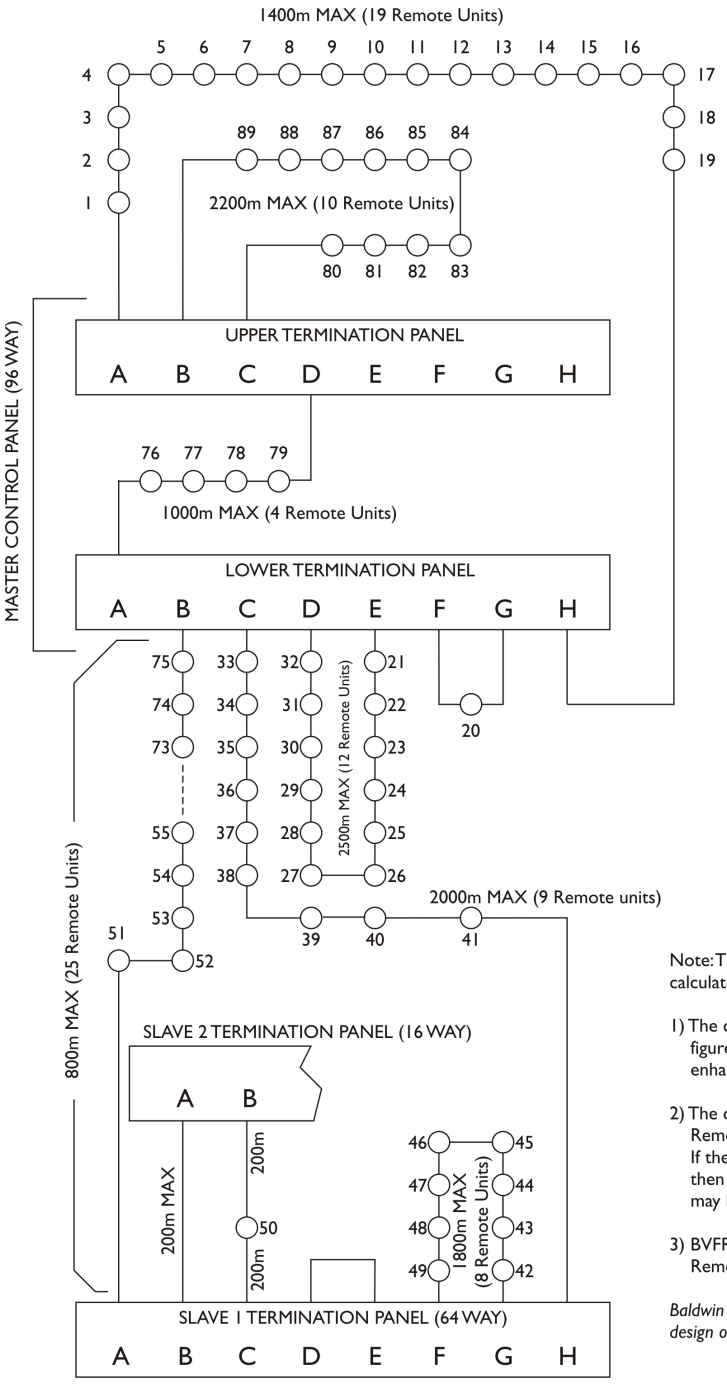


For Systems utilising more than 64 Remote Units the Master Control Panel will contain two Termination Panels.

The loop should originate from position “A” on the “Upper” Termination Panel.

2.5.5 Complex Configuration Example

Figure 2.6 — Example Schematic showing Maximum Cable Lengths



# Remotes per ring	Max Ring Length (metres) using 1.5mm cable
4	1000
8	1800
12	2500
16	1750
20	1300
24	950
28	700
32	475

Note: The Maximum Distances stated are calculated using the following assumptions:

1) The calculations are based on manufacturer's figures for 4 core 1.5mm with screen enhanced fire rated cable.

2) The calculations assume equidistant Remote Units.
If there are long cable runs early in the loop then the maximum number of Remote Units may have to be reduced.

3) BVFREPEM Repeater units are counted as Remote Units in these calculations.

Baldwin Boxall cannot be held responsible for the design or performance of installed site cabling.

NOTE: The distances shown in Figure 2.6 have been calculated for 1.5sqmm conductors and indicate the maximum overall span length taking into account power loss over long cable runs.
Please contact our Technical Sales team on +44 (0) 1892 664422 for free advice and assistance with your cabling design and choice of cable.

2.6 Battery Size Calculation

Battery capacity is normally calculated based on the initial outstation design/loading.

If additional outstations are added at a later date please contact Baldwin Boxall to perform battery calculations. This will ensure suitable batteries with sufficient capacity are used to maintain compliance with BS5839-9.

3 Hardware Installation

This chapter describes how to terminate the cabling and connect the Remote Units, and how to mount the OmniCare EVC System Master (& Slave) Panels.

It is assumed that the cable runs have already been installed according to the System Designer's specification.

3.1 Tools Required

To install the OmniCare EVC System equipment the following tools will be required:

- Tools for fixing the control panel on a vertical surface,
- Tools for fitting the Remote Units (either Surface or Flush mount),
- A small flat-bladed (terminal) screwdriver,
- A large Posi-drive screwdriver for internal screws,
- A pair of wire cutters/strippers appropriate for the type of cable used,
- Ferules and ferruling tool for dressing the ends of cables (if stranded conductors are used),
- Digital Multimeter for voltage and continuity tests.

3.2 Installing the Remote Units

Caution

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

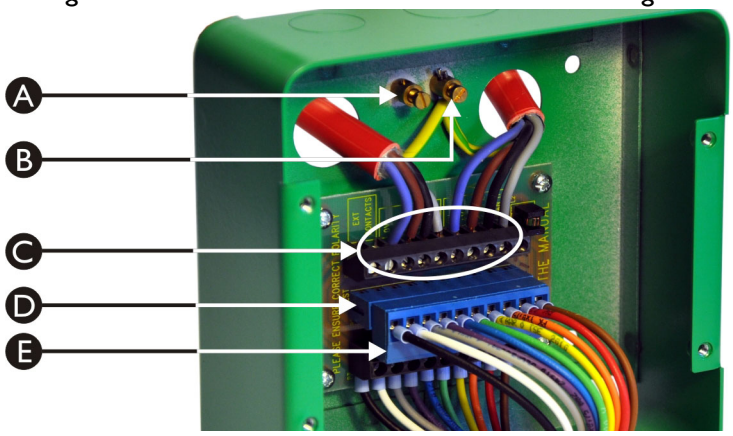
To prevent damage to the Remote Units ensure the Commissioning Procedures in this manual are completed before connecting the Control Panel(s) or applying power to the Circuit Cabling.

3.2.1 Disabled Refuge Remotes (BVOCECPG)

3.2.1.1 Connect Circuit Cabling to Termination Board

1. If not already fitted, mount the back box at each required location. Refer to Figure A.12 on page 121 for details.
2. Terminate all cables at the Termination Board according to the system designer's specifications and the legend marked on the PCB. It is important that each conductor is correctly identified before being terminated.

Figure 3.1 — BVOCECP Back box with Site Wiring



A	Earth Terminal for Front Panel Safety Earth
B	Earth Terminal for earth cables in "A" and "B" Site Wiring
C	Typical Site Wiring terminations
D	"Loopthrough" link connector for testing site wiring
E	Termination connector block for Remote Unit

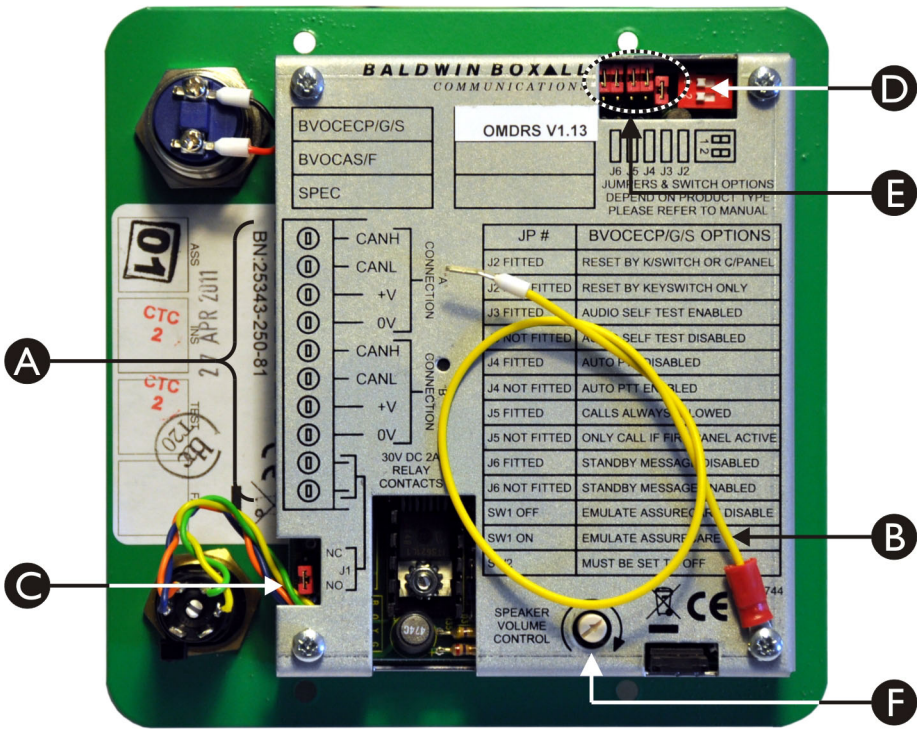
NOTE: Both "A" and "B" earth cables should be twisted together and connected to one of the earth terminals on the back box. The other earth terminal is for the Safety Earth from the Remote Unit front panel.

NOTE: It is important to ensure each connection to the termination board is made correctly and the screw terminals are tightened sufficiently. The majority of problems encountered during commissioning are due to loose, poor, or incorrect terminations on Remote Units that impair the integrity of the ring.

3. Connect the Termination Block (E) to the loopthrough connector (D) and perform initial site wiring checks as described in Section 4.2 on page 56.

3.2.1.2 Set Option Jumpers

Figure 3.2 — Rear View of BVOCECPG Remote Unit



A	Connection Lead from Termination board
B	Safety earth (must be connected to earth terminal in backbox)
C	J1 for controlling external equipment (NO or NC)
D	SW1.1 and 1.2 must be set to OFF
E	Option Jumpers - refer to Table 3.1 for details
F	Speaker volume control

Table 3.1 — BVOCECP Jumper & Switch Settings

JP #	Status	Option
J1		Select Normally Open / Closed Relay contacts
J2	Not Fitted	Unit can only be reset using the Keyswitch
J2	**Fitted**	Reset by either Keyswitch or Control Panel
J3	Fitted	Audio Self Test Enabled
J3	**Not Fitted**	Audio Self Test Disabled
J4	Fitted	Auto PTT Disabled
J4	**Not Fitted**	Auto PTT Enabled
J5	Fitted	Calls always allowed *
J5	**Not Fitted**	Calls only allowed when Fire Panel is active *
J6	Fitted	"System in Standby" message Disabled
J6	**Not Fitted**	"System in Standby" message Enabled
SW1	**Off**	**AssureCare Emulation Disabled**
SW2	**Off**	**Must be set to OFF**

WARNING

If J2 is fitted the Operator must check the user does not require assistance before clearing an "Occupied" Disable Refuge Remote

The bold options in Table 3.1 show the factory preset settings.

*NOTE: * Please refer to Section 3.3.4 on page 44 for further information regarding Fire Panel connections.*

NOTE: The unit only checks the state of J3 - J6 when it boots. To force the unit to reboot it is necessary to either remove power or hold the "Reset" button on the Master Control Panel for more than 30 seconds.

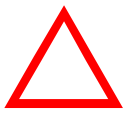
The unit can also be configured using Tone Generation software. The Default Tone Configuration settings are shown in Table 3.2.

Table 3.2 — Tone Configuration Default Settings

JP #	Option
J2	Reset by either Keyswitch or Control Panel
J3	Audio Self Test disabled
J4	Auto PTT enabled
J5	Calls only allowed when Fire Panel is Active
J6	"System in Standby" message enabled
SW 1	AssureCare emulation disabled

NOTE: Fitting a jumper overides the relevant Tone Configuration option.

3.2.1.3 Connect Remote Unit and fit to Back box



CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

Ensure the initial site wiring checks (as described in Section 4.2 on page 56) are completed before connecting the Remote Unit to the Termination Board.

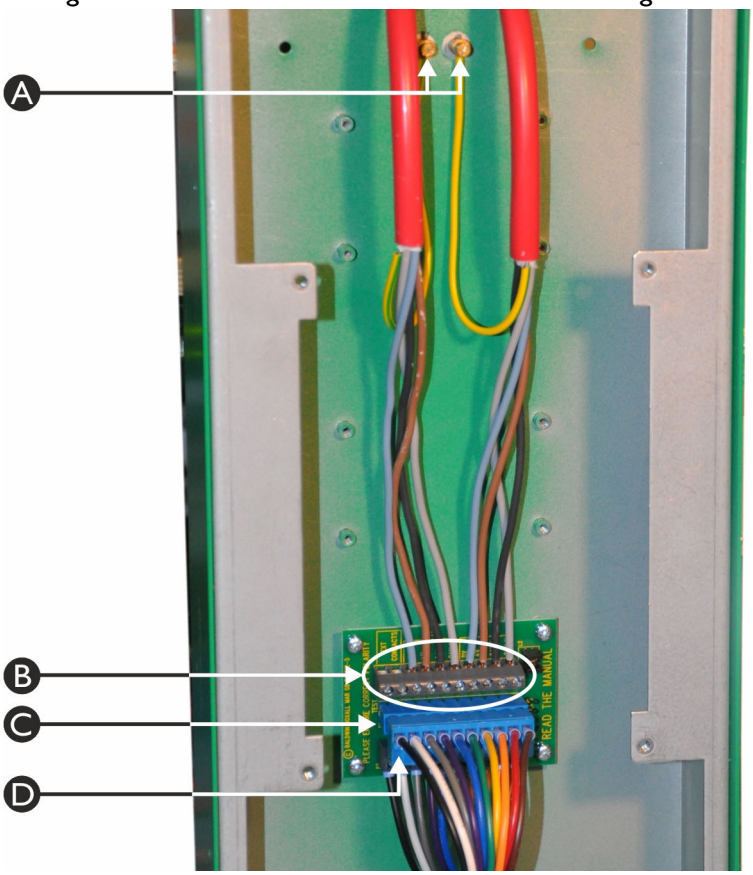
1. Connect the flying lead from the Termination Board to the Remote Unit.
2. Connect the green and yellow safety earth lead to the earth terminal in the back box.
3. Fit the Remote Unit to the back box using four screws.

3.2.2 Advance Refuge Remotes (BVOCA2G)

3.2.2.1 Connect Circuit Wiring to Termination Board

1. If not already fitted, mount the back box at each required location. Refer to Figure A.14 on page 122 for details.
2. Terminate all cables at the Termination Board according to the system designer's specifications and the legend marked on the PCB. It is important that each conductor is correctly identified before being terminated.

Figure 3.3 — BVOCA2G Backbox with Site Wiring



A	Earth Terminals for "A" and "B" Site Wiring earth cables
B	Typical Site Wiring terminations
C	"Loopthrough" link connector for testing site wiring
D	Termination connector block for Remote Unit

NOTE: It is important to ensure each connection to the termination board is made correctly and the screw terminals are tightened sufficiently. The majority of problems encountered during commissioning are due to loose, poor, or incorrect terminations on Remote Units that impair the integrity of the ring.

3. Connect the Termination Block (D) to the loopthrough connector (C) and perform initial site wiring checks as described in Section 4.2 on page 56.

3.2.2.2 Set Option Jumpers

If required, set the option jumpers to the required configuration. These jumpers are shown as item “D” in Figure 3.4.

The bold options in Table 3.3 show the factory preset settings.

Table 3.3 — BVOCA Jumper Settings

JP #	Status	Option
J1		Select Normally Open / Closed Relay contacts
J2	**Must Be Fitted**	Reset by either "Button Hold Down" or Control Panel
J3	Fitted	Audio Self Test Enabled
J3	**Not Fitted**	Audio Self Test Disabled
J4	Fitted	Auto PTT Disabled
J4	**Not Fitted**	Auto PTT Enabled
J5	Fitted	Calls always allowed *
J5	**Not Fitted**	Calls only allowed when Fire Panel is Active *
J6	Fitted	"System in Standby" message Disabled
J6	**Not Fitted**	"System in Standby" message Enabled

WARNING

J2 must be fitted so the Operator must check the user does not require assistance before clearing an "Occupied" Disable Refuge Remote.

*NOTE: * Please refer to Section 3.3.4 on page 44 for further information regarding Fire Panel connections.*

NOTE: The unit only checks the state of J3 - J6 when it boots. To force the unit to reboot it is necessary to either remove power or hold the "Reset" button on the Master Control Panel for more than 30 seconds.

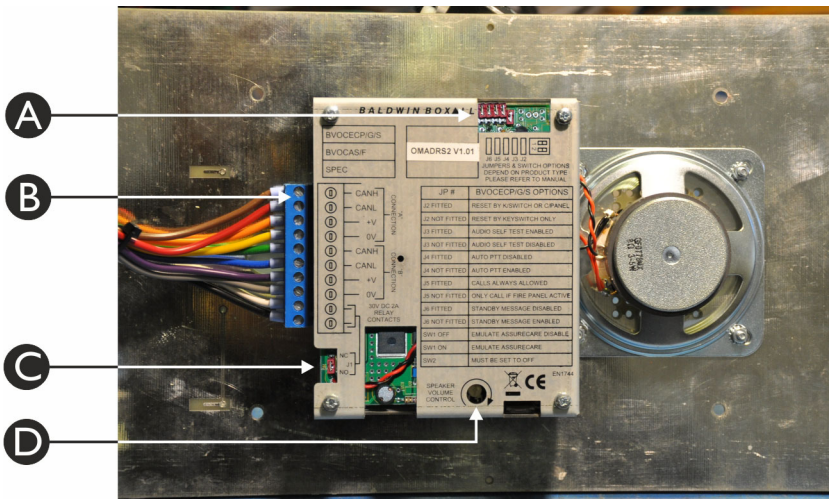
Table 3.4 — Tone Configuration Default Settings

JP #	Option
J2	Reset by either "Button Hold Down" or Control Panel
J3	Audio Self Test disabled
J4	Auto PTT enabled
J5	Calls only allowed when Fire Panel is Active
J6	"System in Standby" message Enabled

NOTE: *Fitting a jumper overides the relevant Tone Configuration option.*

3.2.2.3 Connect Remote Unit and Fit to Back box

Figure 3.4 — Rear View of BVOCA2G Remote Unit



A	Option Jumpers - refer to Table 3.3 for details
B	Cable Termination Block
C	J1 for controlling external equipment (NO or NC)
D	Speaker volume control

CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

Ensure the initial site wiring checks (as described in Section 4.2 on page 56) are completed before connecting the Remote Unit to the Termination Board.

1. Connect the 10 way Blue Connector from the Termination Board (item A in Figure 3.4).
2. Fit the Remote Unit to the back box using the four M4x16mm screws supplied.

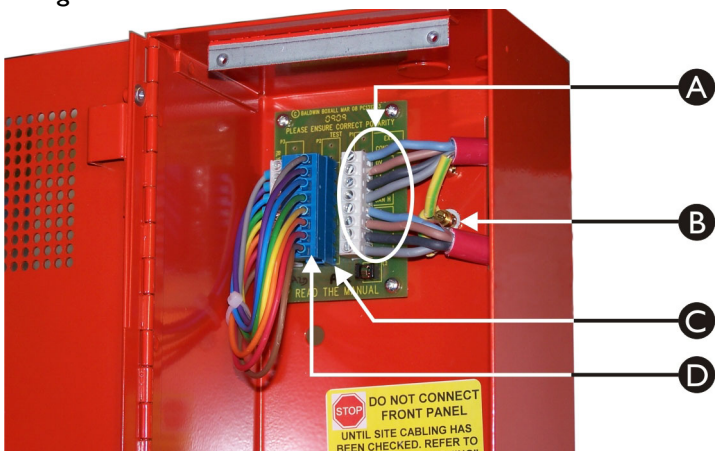
3.2.3 Fire & Emergency Telephone Remotes (BVOCF & BVOCET)

If a Flush Mounting Bezel is to be used then the 6 centre-punched holes should be drilled through to allow the Bezel to be fitted.

3.2.3.1 Connect Circuit Wiring to Termination Board

1. If required, remove the two screws securing the Remote Unit sub-assembly to the back box to gain access to the top two mounting holes and the Termination Board.
2. Mount the back box at each Remote Unit location. Refer to Figure A.16 on page 123 for details.
3. Terminate all cables at the Termination Board (shown in Figure 3.5) according to the system designer's specifications and the legend marked on the PCB. It is important that each conductor is correctly identified before being terminated.

Figure 3.5 — BVOCF / BVOCET Termination Board and Site Wiring



A	Typical Site Wiring terminations
B	Earth Terminal for "A" and "B" Site Wiring earth cables
C	"Loopthrough" link connector for testing site wiring
D	Termination connector block for Remote Unit

NOTE: It is important to ensure each connection to the termination board is made correctly and the screw terminals are tightened sufficiently. The majority of problems encountered during commissioning are due to loose, poor, or incorrect terminations on Remote Units that impair the integrity of the ring.

NOTE: Both "A" and "B" earth cables should be twisted together and connected to one of the earth terminals on the back box.

4. Connect the Termination Block (D) to the loopthrough connector (C) and perform initial site wiring checks as described in Section 4.2 on page 56.

3.2.3.2 Set Option Jumpers

If required, set the option jumpers to the required configuration. These are shown as item “B” in Figure 3.6.

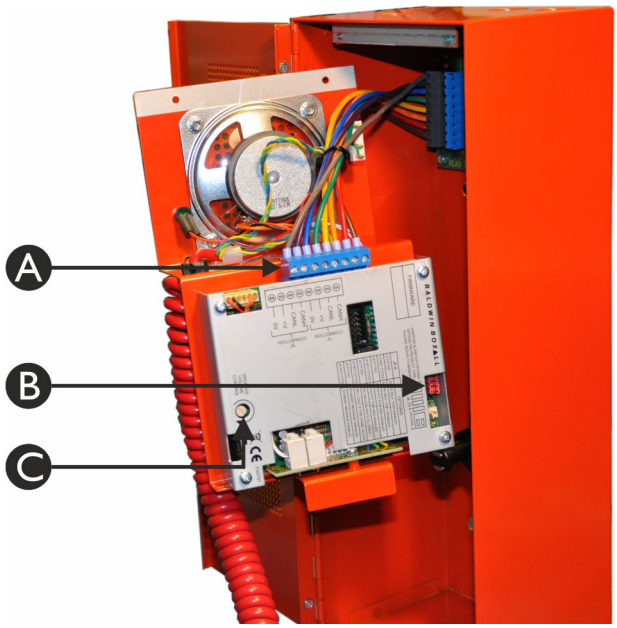
The bold options in Table 3.5 show the factory preset settings.

Table 3.5 — BVOCF / BVOCET Jumper Settings

JP #	Status	Option
J2	**Must NOT Be Fitted**	
J3	Fitted	Audio Self Test Enabled
J3	**Not Fitted**	Audio Self Test Disabled
		Default Tone Configuration - Self Test disabled
J4-J6	N/A	No effect on operation

3.2.3.3 Connect Remote Unit and Fit to Back box

Figure 3.6 — Rear View of BVOCF / BVOCET Remote Unit



A	Cable Termination Block
B	Option Jumpers J2 - J6 see Table 3.5 for details
C	Volume control

CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

Ensure the initial site wiring checks (as described in Section 4.2 on page 56) are completed before connecting the Remote Unit to the Termination Board.

1. Connect the 8 way Blue Connector from the Termination Board (item A in Figure 3.6).
2. Carefully rotate the electronics sub-assembly so that the front face panel is facing outwards, and then locate the bottom tongue in the slot in the rear of the back box.
3. Fit the two screws at the top of the front panel to hold the Remote Unit in the back box.

3.2.4 Combined Remotes (BVOCC)

If a Flush Mounting Bezel is to be used then the 6 centre-punched holes should be drilled through to allow the Bezel to be fitted.

3.2.4.1 Connect Circuit Wiring to Termination Board

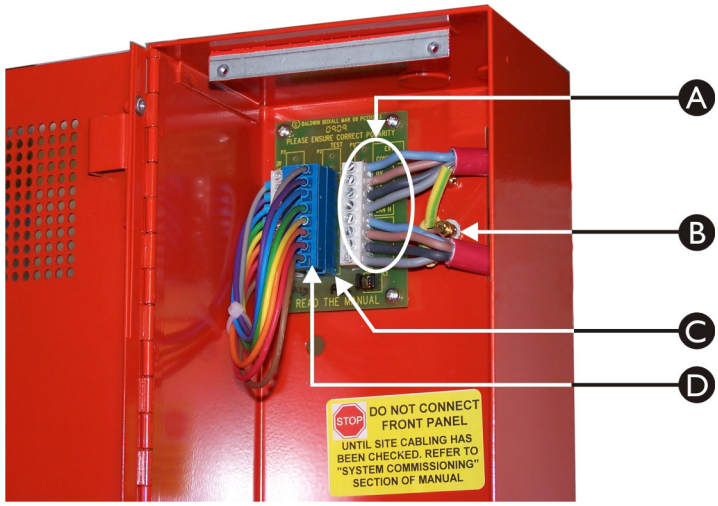
1. Open the door and remove the two screws securing the Cable Cover (as shown in Figure 3.7 on page 34).
2. Remove the two screws securing the Fire Telephone Remote Unit sub-assembly to the back box.
   Lift the sub-assembly clear of the back box and detach the ribbon cable to gain access to the top two mounting holes and the Termination Board.

   Remove the four screws securing the Disabled Refuge panel to the back box and remove the panel to gain access to the bottom two mounting holes.

Figure 3.7 — BVOCC Internal Components

3. Fit the enclosure to the wall using suitable fixings. Refer to Figure A.18 on page 124 for details.
4. Terminate all cables at the Termination Board (shown in Figure 3.8) according to the system designer's specifications and the legend marked on the PCB. It is important that each conductor is correctly identified before being terminated.

Figure 3.8 — BVOCC Termination Board and Typical Site Wiring



A	Typical Site Wiring terminations
B	Earth Terminal for "A" and "B" Site Wiring earth cables
C	"Loopthrough" link connector for testing site wiring
D	Termination connector block for Remote Unit

NOTE: It is important to ensure each connection to the termination board is made correctly and the screw terminals are tightened sufficiently. The majority of problems encountered during commissioning are due to loose, poor, or incorrect terminations on Remote Units that impair the integrity of the ring.

NOTE: Both "A" and "B" earth cables should be twisted together and connected to one of the earth terminals on the back box.

5. Connect the Termination Block (D) to the loopthrough connector (C) and perform initial site wiring checks as described in Section 4.2 on page 56.

3.2.4.2 Set Option Jumpers

If required, set the option jumpers to the required configuration. These are shown as items “A” and “C” in Figure 3.9.
The bold options in Table 3.6 show the factory preset settings.

Table 3.6 — BVOCC Jumper Settings

JP #	Status	Option
J1	"Upper" position	Unit can only be reset using the Keyswitch (see *note below)*
J1	**"Lower" position**	Reset by either Keyswitch or Control Panel (see *note below)*
J2	**Must NOT Be Fitted**	
J3	Fitted	Audio Self Test Enabled
J3	**Not Fitted**	Audio Self Test Disabled
J4	Fitted	Auto PTT for DRS Disabled
J4	**Not Fitted**	Auto PTT for DRS Enabled
J5	Fitted	DRS calls always allowed *
J5	**Not Fitted**	DRS Calls only allowed when Fire Panel is Active *
J6	Fitted	DRS "System in Standby" message Disabled
J6	**Not Fitted**	DRS "System in Standby" message Enabled

*NOTE: * Please refer to Section 3.3.5 on page 52 for further information regarding Fire Panel connections.*

NOTE: The unit only checks the state of J3 - J6 when it boots. To force the unit to reboot it is necessary to either remove power or hold the "Reset" button on the Master Control Panel for more than 30 seconds.

NOTE: If it is required that the Remote Unit is reset using the keyswitch only AND only allowed to make calls when the Fire Panel is Active then this must be set using Tone Configuration and not using J1 and J5.

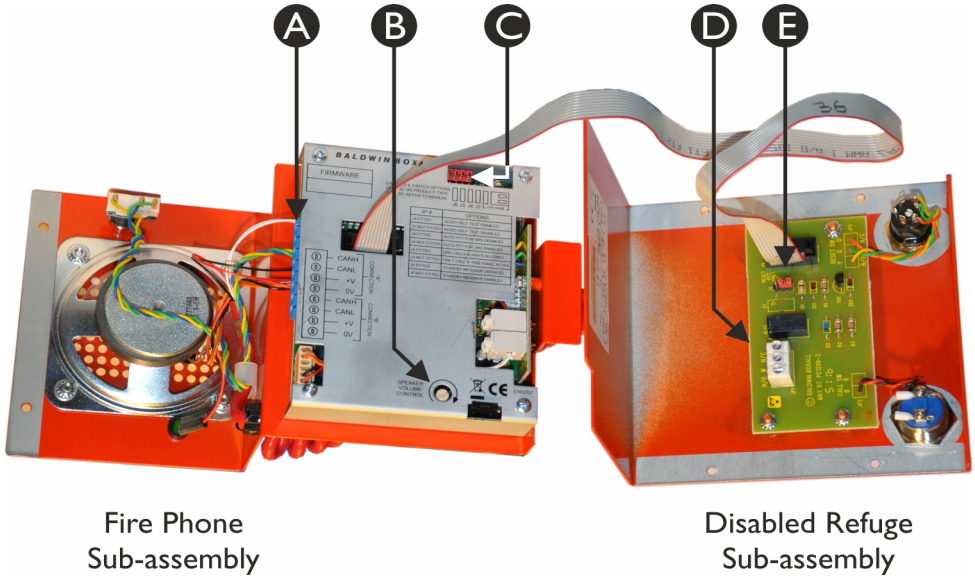
Table 3.7 — Tone Configuration Default Settings

JP #	Option
J1	Reset by either Keyswitch or Control Panel
J3	Audio Self Test disabled
J4	Auto PTT for DRS enabled
J5	DRS Calls only allowed when Fire Panel is Active
J6	DRS "System in Standby" message Enabled

NOTE: Fitting a jumper overides the relevant Tone Configuration option.

3.2.4.3 Connecting the Remote Unit

Figure 3.9 — Rear View of BVOCC Remote Unit



A	Cable Termination Block
B	Volume control
C	Option Jumpers J2 - J6 see section 3.2.4.2 for details
D	External Relay connections
E	Reset Option Jumper J1 see section 3.2.4.2 for details

CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

Ensure the initial site wiring checks (as described in Section 4.2 on page 56) are completed before connecting the Remote Unit to the Termination Board.

1. Fit the Disabled Refuge sub-assembly to the back box, taking care not to trap the ribbon cable.
2. Secure the Disabled Refuge sub-assembly using the four screws.
3. Carefully position the Fire Phone sub-assembly so that the front face panel is facing outwards.

   Connect the ribbon cable from the Disabled Refuge sub-assembly.

Connect the 8 way Blue Connector from the Termination Board to the Fire Telephone (item A in Figure 3.9).

Locate the bottom of the tongue in the slot in the rear of the back box.

4. Fit the two screws at the top of the front panel to hold the Fire Phone sub-assembly in place.
5. Fit the Cable Cover as shown in Figure 3.7.

3.2.5 Disabled Toilet Alarm (BVOCDTA) and Repeater (BVFREPEM)

The BVOCDTA Disabled Toilet Alarm uses a BVFREPEM Repeater to interface with the OmniCare EVC System.

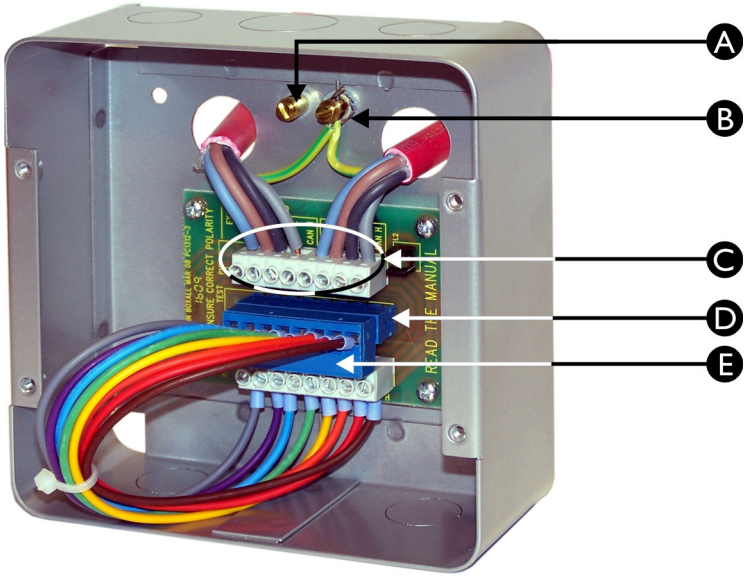
Refer to Figure A.12 on page 121 for details of the mounting holes for the back box of the BVFREPEM.

Comprehensive wiring instructions are included within the Disabled Toilet Alarm kit.

3.2.5.1 Connect Circuit Cabling to Termination Board

1. If not already fitted, mount the backbox at each required location.
2. Terminate all cables at the Termination Board according to the system designer's specifications and the legend marked on the PCB. It is important that each conductor is correctly identified before being terminated.

Figure 3.10 — BVVREPEM Backbox with Site Wiring



A	Earth Terminal for Front Panel Safety Earth
B	Earth Terminal for earth cables in "A" and "B" Site Wiring
C	Typical Site Wiring terminations
D	"Loopthrough" link connector for testing site wiring
E	Termination connector block for Remote Unit

NOTE: Both "A" and "B" earth cables should be twisted together and connected to one of the earth terminals on the back box. The other earth terminal is for the Safety Earth from the Remote Unit front panel.

NOTE: It is important to ensure each connection to the termination board is made correctly and the screw terminals are tightened sufficiently. The majority of problems encountered during commissioning are due to loose, poor, or incorrect terminations on Remote Units that impair the integrity of the ring.

3. Connect the Termination Block (E) to the loopthrough connector (D) and perform initial site wiring checks as described in Section 4.2 on page 56.

3.2.5.2 Set Option Jumpers & Switches

The BVFREPEM is a Repeater and a Power Monitor as well as an interface for the BVOCDTA. Table 3.8 shows the Repeater / Power Monitor options and Table 3.9 the BVOCDTA options.

The jumpers and switches are shown in Figure 3.11.

Table 3.8 — BVFREPEM Repeater / Power Monitor Settings

	Status	**Option**
LK1&2	Fitted	Reduces CANbus termination resistors to 75Ω *
LK3	Fitted	Increases the output level of the CANbus drivers *
SW1	"ON"	Enables power monitoring
SW2	"ON"	Modifies voltage threshold for power monitoring (only if SW1 set to "ON")
* Refer to Section 4.4.4 on page 61 for further details.		

Table 3.9 — BVFREPEM BVOCDTA Options

SW3	**SW4**	**Option**
"OFF"	"OFF"	Toilet Alarm interface is Disabled
"ON"	"OFF"	Toilet Alarm interface for FireCare
"OFF"	"ON"	Toilet Alarm interface for AssureCare
"ON"	"ON"	Toilet Alarm interface for OmniCare

The default settings are LK1-3 in “PARK” (i.e. not linked) and SW1-4 set to OFF.

3.2.5.3 Connect Remote Unit and fit to Back box

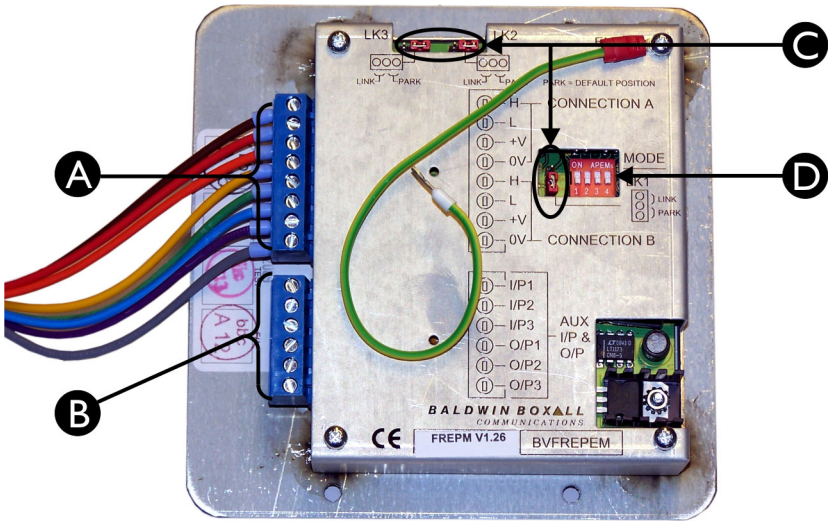
CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

Ensure the initial site wiring checks (as described in Section 4.2 on page 56) are completed before connecting the Remote Unit to the Termination Board.

Figure 3.11 — Rear View of BVFREPEM Remote Unit



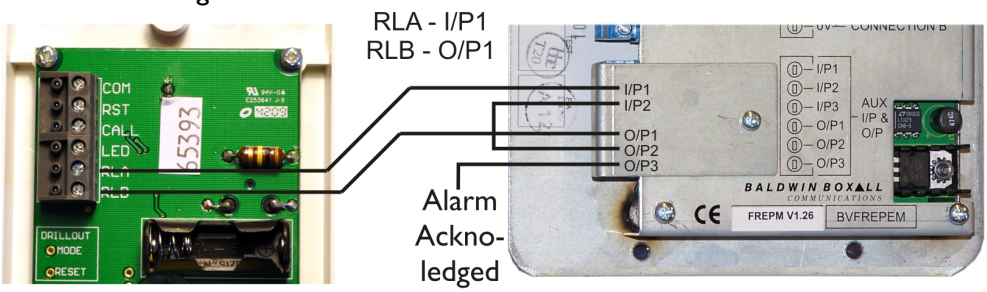
A	Cable Termination Block from Termination Board
B	Option Connector Block
C	LK1, LK2 & LK3 - refer to Section 3.2.5.2 for details
D	MODE switch - refer to Section 3.2.5.2 for details

1. Connect the flying lead from the Termination Board to the Remote Unit.
2. Connect the green and yellow safety earth lead to the earth terminal in the back box.
3. Fit the Remote Unit to the back box using four screws.

3.2.5.4 Connecting the BVOCDTA to the BVFREPEM

1. Connect the BVOCDTA Controller to the BVFREPEM as shown in Figure 3.12.

Figure 3.12 — Connections between BVOCDTA and BVFREPEM



BVOCDTA Controller BVFREPEM

NOTE: The BVFREPEM includes a NC Fault Input between I/P2 and O/P2. These must be linked to prevent a fault being announced.

2. If required an "Alarm Acknowledged" indicator can be connected to O/P3 (Open Collector output, 50mA max).
3. Refit the retaining brackets over the blue termination blocks and replace the screws.
4. Connect the green and yellow safety earth lead to the earth terminal in the back box.
5. Fit the Remote Unit to the back box using four screws.

3.2.5.5 Notes on Configuring BVOCDTA & BVFREPEM

The normal configuration for the BVFREPEM when used as an interface for an OmniCare EVC System is SW3 and SW4 "ON" as shown in Table 3.9.

This configuration will automatically place all Toilet Alarms together on the Control Panel at the end of the detected Remote Units. They will be in the order they are wired around the loop.

If this grouping is not required it is possible to set the units to appear on the Control Panel in the position that they are cabled around the loop. To use this alternative set SW3 to "ON" and SW4 to "OFF" (as for FireCare).

It is possible to re-address BVFREPEM Remote Units to appear at alternative locations. For further information on re-addressing please refer to Section 5.8 on page 82.

3.2.6 Disabled Toilet Alarm (DTAKIT) and Repeater (BVOCRIF)

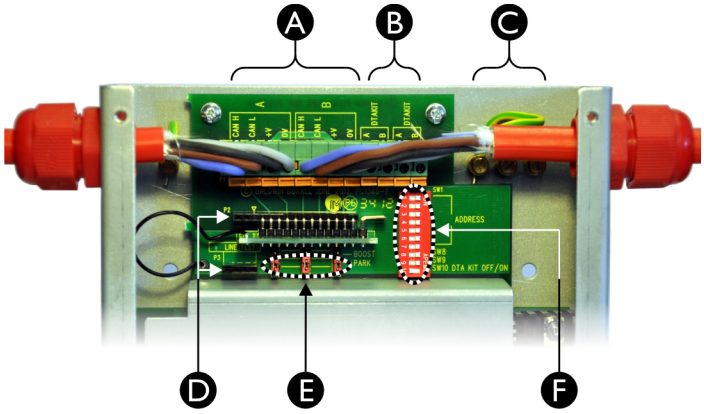
The DTAKIT Disabled Toilet Alarm uses a BVOCRIF Repeater to interface with the OmniCare EVC System.

Comprehensive wiring instructions are included within the Disabled Toilet Alarm kit.

3.2.6.1 Connect Circuit Cabling to PCB

1. If not already fitted, mount the BVOCRIF at the required location.
2. Terminate all cables at the Termination Board according to the system designer's specifications and the legend marked on the PCB. It is important that each conductor is correctly identified before being terminated.

Figure 3.13 — BVOCRIF with Typical Site Wiring

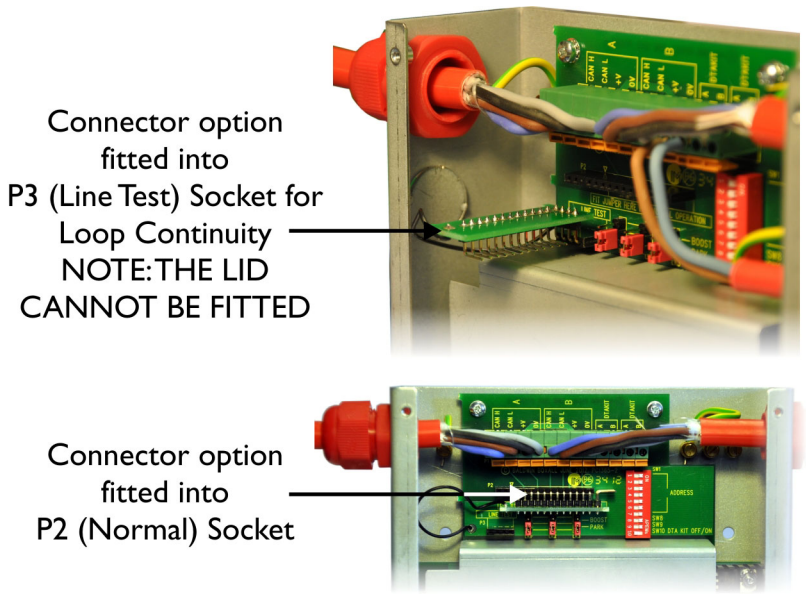


A	Typical Site Wiring terminations
B	DTAKIT Site Wiring terminations x2
C	Earth Terminals for DTAKIT & "B" Site Wiring
D	"Loopthrough" link connectors (P2 & P3) and tethered Option PCB for testing site wiring
E	CANBus "Boost" LK1, LK2 & LK3 (refer to Section 3.2.6.3)
F	SW1 Address setting and options (refer to Section 3.2.6.3)

NOTE: Cable Clamp connectors are used on the BVOCRIF to ensure each connection to the PCB is made correctly.
The majority of problems encountered during commissioning are due to loose, poor, or incorrect terminations on Remote Units that impair the integrity of the ring.

3. Connect the tethered Option PCB to P3 “Line Test” (as shown in Figure 3.14) and perform initial site wiring checks as described in Section 4.2 on page 56.

Figure 3.14 — Option PCB fitted to P3 to enable Line Testing



CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

Ensure the initial site wiring checks (as described in Section 4.2 on page 56) are completed while the Option PCB is connected to P3 "Line Test".

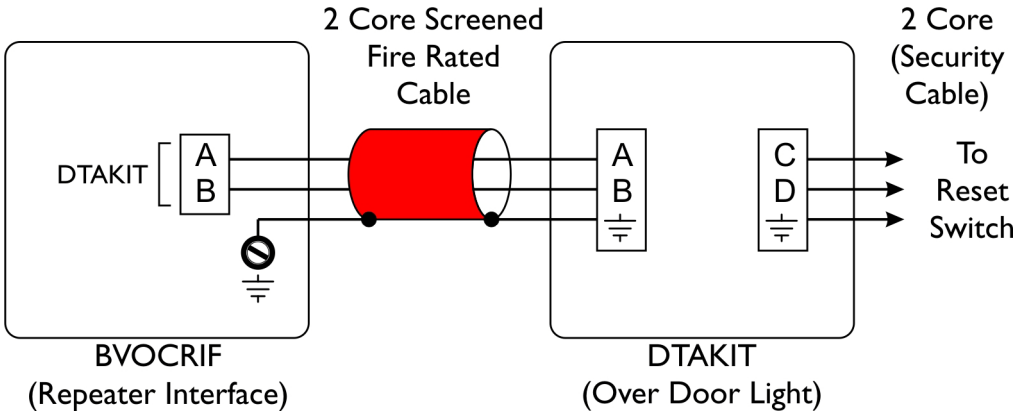
4. After completing the site wiring checks return the Option PCB to P2 (Normal Operation).

NOTE: The BVOCRIF unit will not operate unless the option PCB is connected to P2.

3.2.6.2 Connecting the DTAKIT to the BVOCRIF

The connections between the BVOCRIF Repeater & DTAKIT Over Door Light are A - A, B - B, and screen to ground terminals as shown in Figure 3.15.

Figure 3.15 — Connection Details For DTAKIT



3.2.6.3 Set Option Jumpers & Address Switches

Table 3.10 — BVOCRIF Link1, 2 & 3 Options

	Status	Option
LK1&2	If Fitted	Reduces CANbus termination resistors to 75Ω *
LK3	If Fitted	Increases the output level of the CANBus drivers *
* Refer to Section 4.4.4 on page 61 for further details.		

Table 3.11 — BVOCRIF SW1 Options

SW	Default	Option
SW1.1- SW1.7	"ON"	Sets the unit address. All "ON" = Automatic Default Address Allocation: To set address switch "OFF" is bit set, SW1 is LSB.
SW1.8	"ON"	"ON" - Appear grouped at end "OFF" - Appear "as wired"
SW1.9	"ON"	"ON" - Single DTAKIT, "OFF" - 2 x DTAKIT
SW1.10	"ON"	"ON" - Enable DTAKIT Interface for OmniCare

NOTE: If SW1.10 is set "OFF" i.e. set to be a repeater with the DTAKIT disabled, then the unit will ignore SW1.1 - SW1.9 settings as a repeater does not require an address.

3.2.6.4 Readdressing the BVOCRIF for DTAKIT

The default configuration (SW1.1 - SW1.7 all set to “ON”) will automatically place all Toilet Alarms together on the Control Panel at the end of the Remote Units. They will be in the order they are wired around the loop.

To manually readdress the unit use SW1.1 - SW1.7 and set the switches according to the settings shown in Table 3.12.

Table 3.12 — BVOCRIF Address Settings

Address	SW1-7	Address	SW1-7	Address	SW1-7	Address	SW1-7
AUTO	1111111	32	1111101	64	1111110	96	1111100
1	0111111	33	0111101	65	0111110	97	0111100
2	1011111	34	1011101	66	1011110	98	1011100
3	0011111	35	0011101	67	0011110	99	0011100
4	1101111	36	1101101	68	1101110	100	1101100
5	0101111	37	0101101	69	0101110	101	0101100
6	1001111	38	1001101	70	1001110	102	1001100
7	0001111	39	0001101	71	0001110	103	0001100
8	1110111	40	1110101	72	1110110	104	1110100
9	0110111	41	0110101	73	0110110	105	0110100
10	1010111	42	1010101	74	1010110	106	1010100
11	0010111	43	0010101	75	0010110	107	0010100
12	1100111	44	1100101	76	1100110	108	1100100
13	0100111	45	0100101	77	0100110	109	0100100
14	1000111	46	1000101	78	1000110	110	1000100
15	0000111	47	0000101	79	0000110	111	0000100
16	1111011	48	1111001	80	1111010	112	1111000
17	0111011	49	0111001	81	0111010	113	0111000
18	1011011	50	1011001	82	1011010	114	1011000
19	0011011	51	0011001	83	0011010	115	0011000
20	1101011	52	1101001	84	1101010	116	1101000
21	0101011	53	0101001	85	0101010	117	0101000
22	1001011	54	1001001	86	1001010	118	1001000
23	0001011	55	0001001	87	0001010	119	0001000
24	1110011	56	1110001	88	1110010	120	1110000
25	0110011	57	0110001	89	0110010	121	0110000
26	1010011	58	1010001	90	1010010	122	1010000
27	0010011	59	0010001	91	0010010	123	0010000
28	1100011	60	1100001	92	1100010	124	1100000
29	0100011	61	0100001	93	0100010	125	0100000
30	1000011	62	1000001	94	1000010	126	1000000
31	0000011	63	0000001	95	0000010	127	0000000

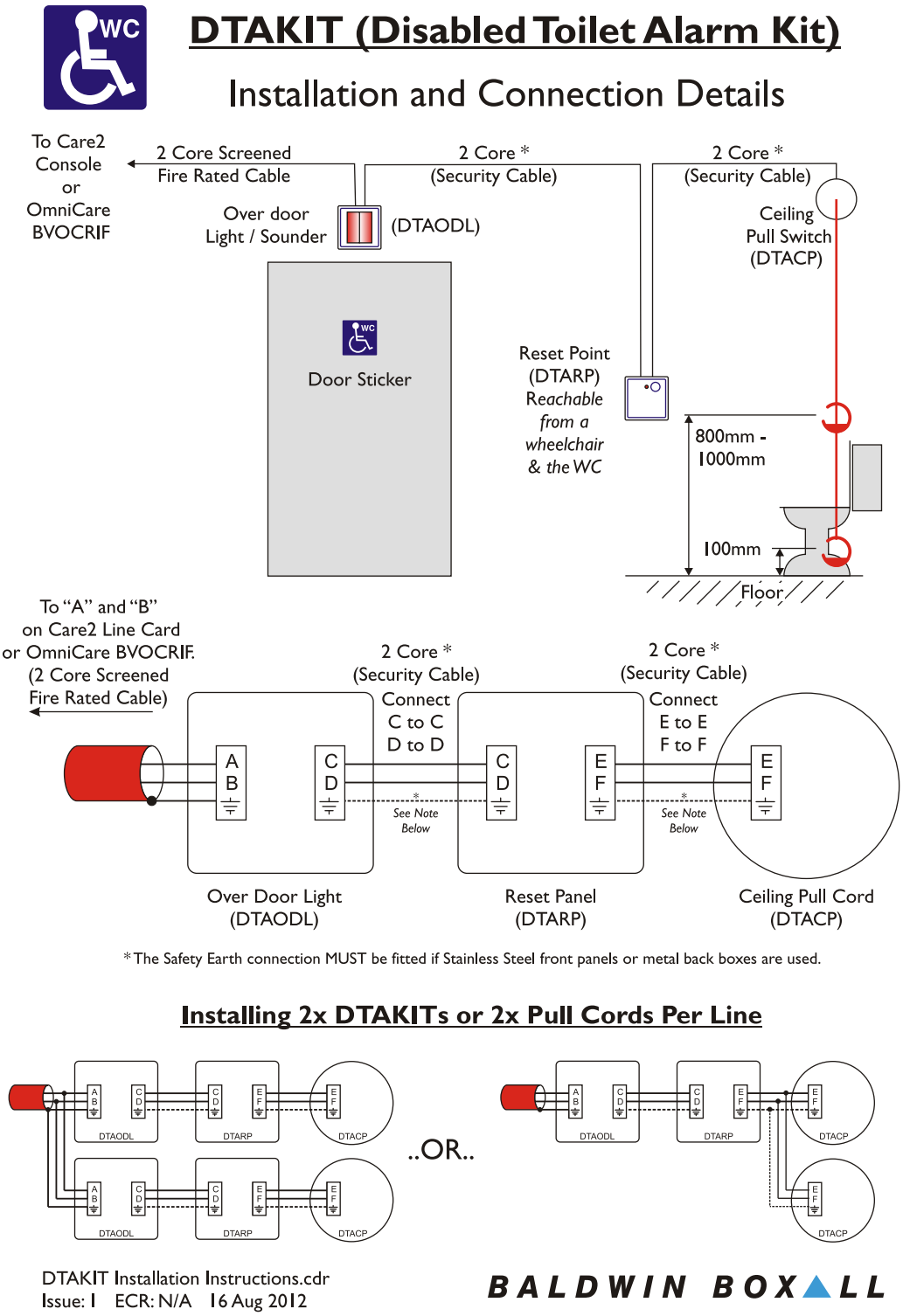
NOTE: For SW1-7 Address switches shown above SW1.1 is left. "1" indicates "ON" and "0" indicates "OFF".

NOTE: The unit only checks the state of SW1 when it boots. To force the unit to reboot it is necessary to either remove power or hold the "Reset" button on the Master Control Panel for more than 30 seconds.

3.2.6.5 Installing the DTAKIT

Full installation instructions are supplied with the DTAKIT.

Figure 3.16 — DTAKIT Installation Instructions



3.3 Installing the Control Panel(s)

The OmniCare EVC System uses three different size Control Panels depending on the number of Remote Units in use.

3.3.1 MiniCare Control Panels (4 - 32 zone)

Console dimensions, hole positions and knockout locations are shown in Figure A.2 on page 116.

NOTE: The weight of a Control Unit with batteries is upto 20KG. Ensure the wall or mounting point is of sufficient strength to support the weight of the unit.

1. Fit the OmniCare EVC System Control Panel to the wall using suitable fixings.
   The panel is designed for either surface mounting (using the 4 off 7mm holes shown in Figure A.2), or it can be flush mounted using an optional bezel.
2. Fit suitable glands and prepare the Circuit Cables for termination (i.e. ensure sufficient length is available and label each conductor) but do not connect the Circuit Cables to the Control Panel at this time.

CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

For these reasons it is recommended to leave the Circuit Cables disconnected from the Control Panel(s) until the System is to be Commissioned.

3.3.2 48 and 64 Zone Control Panels

Console dimensions, hole positions and knockout locations are shown in Figure A.4 on page 117.

NOTE: The weight of a Control Unit with batteries is upto 26KG. Ensure the wall or mounting point is of sufficient strength to support the weight of the unit.

1. Open the glazed door and remove the M6 screws from the right-hand side of the control panel.
2. Fit the Control Panel to the wall using suitable fixings. The panel is designed for either surface mounting (using the 4 off 7mm holes shown in Figure A.4), or it can be flush mounted using an optional bezel.
3. Fit suitable glands and prepare the Circuit Cables for termination (i.e. ensure sufficient length is available and label each conductor) but do not connect the Circuit Cables to the Control Panel at this time.

CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

For these reasons it is recommended to leave the Circuit Cables disconnected from the Control Panel(s) until the System is to be Commissioned.

3.3.3 80 - 128 Zone Control Panels

Console dimensions, hole positions and knockout locations are shown in Figure A.6 on page 118.

NOTE: The weight of a Control Unit with batteries is upto 35KG. Ensure the wall or mounting point is of sufficient strength to support the weight of the unit.

1. Open the glazed door and remove the M6 screws from the right-hand side of the control panel.
2. Fit the Control Panel to the wall using suitable fixings. The panel is designed for either surface mounting (using the 4 off 7mm holes shown in Figure A.6), or it can be flush mounted using an optional bezel.
3. Fit suitable glands and prepare the Circuit Cables for termination (i.e. ensure sufficient length is available and label each conductor) but do not connect the Circuit Cables to the Control Panel at this time.

CAUTION

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

For these reasons it is recommended to leave the Circuit Cables disconnected from the Control Panel(s) until the System is to be Commissioned.

3.3.4 External Battery Cases (BVOBATT & BVOBATT2)

If required, an additional External Battery Case will be supplied.

There are two sizes of External Battery Case depending on the complexity of the installation and the battery size required.

NOTE: If an External Battery Case is supplied then batteries are not fitted in the base of the Control Panel.

Mounting points and knockout locations for the battery cases are shown in Section A.1.4 and Section A.1.5.

CAUTION

Battery cables are supplied with the Battery Cases, and these are suitable if the Battery Case is mounted close to the relevant Control Panel.

If the Battery Case is mounted remotely from the Control Panel then the battery cabling must be in fire rated cable and suitably protected, and the battery case must have a safety earth fitted.

WARNING

In all cases the fused link between the batteries must be fitted.

3.3.5 Connecting the Fire Panel Interface

The OmniCare EVC System normally requires an input from a Fire Panel before the Control Panel allows Remote Units to make calls.

The connections to the Fire Panel should be made either as shown in Figure 3.17, Figure 3.18 or depending on the configuration in use.

Figure 3.17 — Dedicated Sounder Circuit for Control Panel

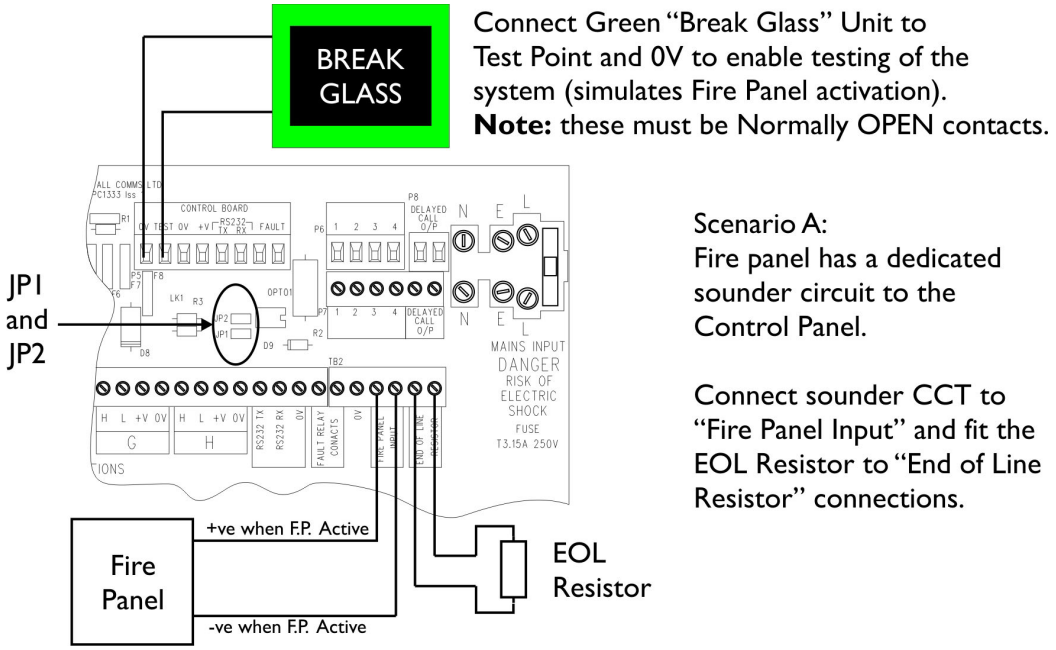
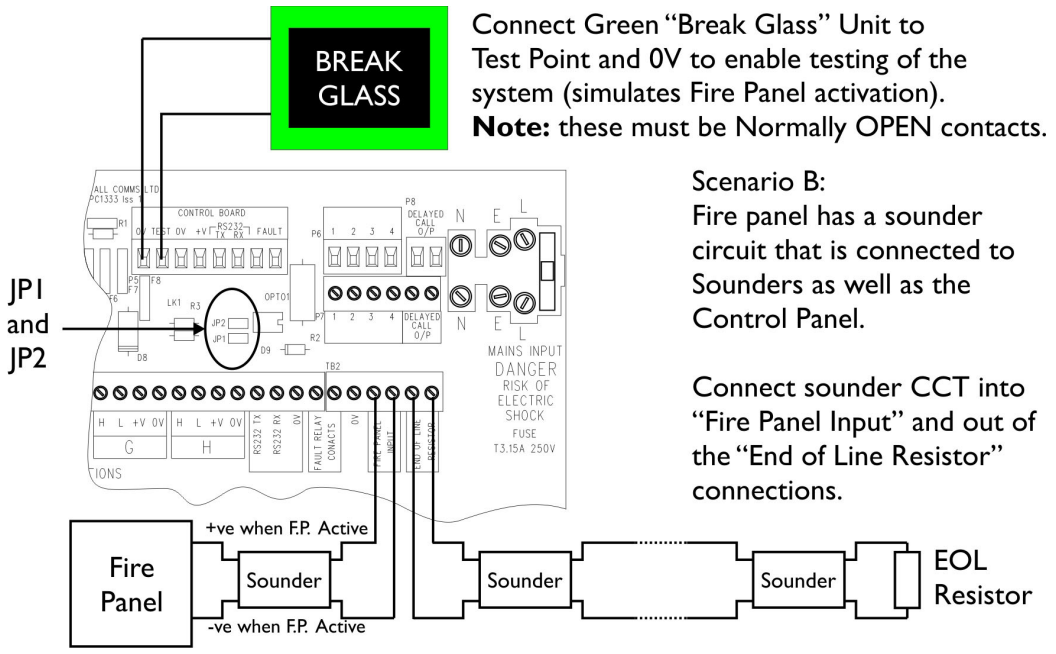
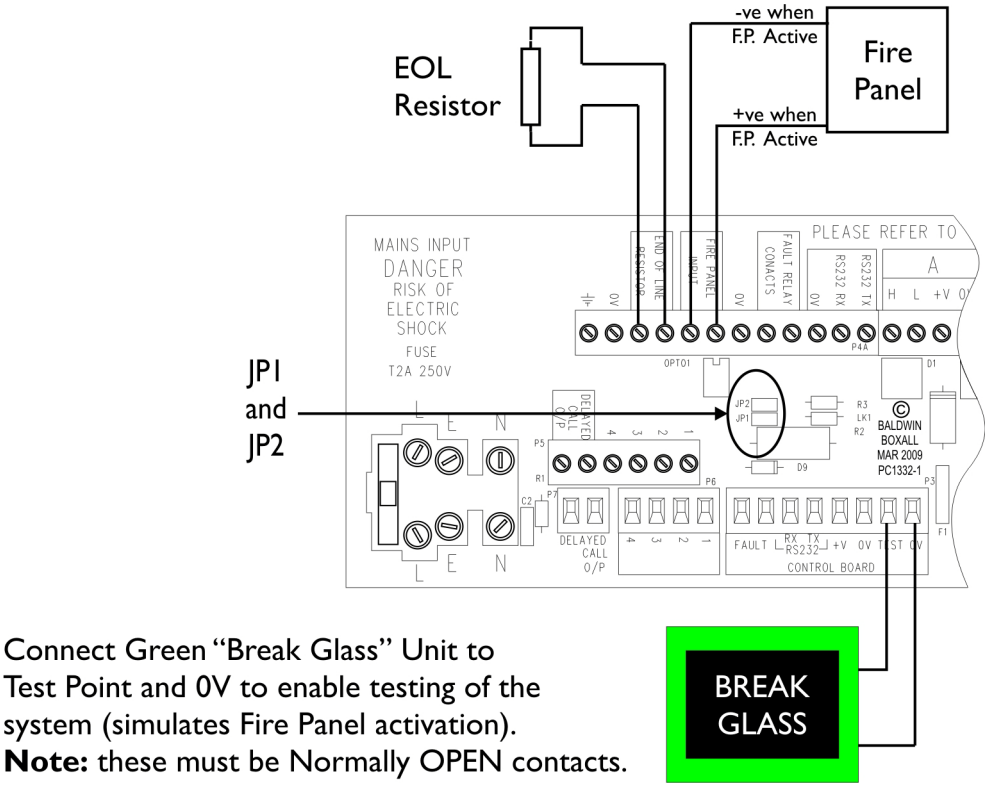


Figure 3.18 — Sounder Circuit includes Control Panel and Sounders



The Termination Board fitted to the "Mini" Control Panel differs from the other panels and the Fire Panel should be connected as shown in Figure 3.19.

Figure 3.19 — Dedicated Sounder Circuit on a "Mini" Control Panel



Connect Green "Break Glass" Unit to Test Point and 0V to enable testing of the system (simulates Fire Panel activation).
Note: these must be Normally OPEN contacts.

To ensure correct operation of the Fire Panel interface both JP1 and JP2 must be fitted.

3.3.6 Enabling a System Without A Fire Panel

If the fire panel connections (or the Test connections to the Break Glass Unit) are not in place the System will Commission correctly but the Control Panel will not allow communication with Remote Units.

To allow the Control Panel to communicate with Remote Units without the Fire Panel connection, link the "Test" and "0V" connections instead of fitting the Break Glass unit.

3.3.7 BVOCCA Call Alert Module

Figure 3.20 — BVOCCA Call Alert Module

The BVOCCA Call Alert Module is an optional unit that alerts personnel if a call is received but not answered within a preset time.

This module is connected via the “Delayed Call” output connections. Refer to Section 4.4.9 on page 63 for details.

4 Testing & Commissioning

The Commissioning Procedure must be followed:

- At first installation to enable the OmniCare EVC System to "learn" about the system configuration,
- If a Remote Unit has been added, removed or replaced in an existing system.

NOTE: If Baldwin Boxall are contracted to perform the Commission on a new installation please contact Technical Sales to confirm the required configuration (i.e Remotes connected, panels connected etc).

4.1 Overview of the Commissioning Procedure

A brief description of the Commissioning Procedure is as follows:

- Check basic Loop Integrity using a multimeter,
- Configure jumpers on each Master & Slave panel,
- Run the Commissioning Process on the Master Panel to check the wiring of each Loop and identify Remote Units,
- Connect Batteries & Mains Power,
- Configure and check operation of each Remote Unit.

4.2 Initial Site Wiring Continuity Check

All Remote Units incorporate a Loop-through connector to enable the continuity of the site wiring to be checked.

1. Ensure all Termination Boards have the flying leads connected to the Loop-through connectors so there are no Remote Units connected to the circuit(s) to be tested.
2. Ensure all Slave control panels are linked out and the relevant conductors joined together.
3. Check that each conductor has continuity around the circuit, and that there are no shorts between conductors or to earth.

4.3 0V Cable Continuity Check

Before connecting any circuit cables to the Control Panel(s) the following procedure should be performed.

1. Ensure all Remote Units are connected to the circuit(s).
2. **Ensure the 0V cable has continuity between the two ends of each circuit.** When the Remote Units are connected the 0V cable is the only conductor that should have continuity around the circuit.

Caution

The 0V Continuity Check is important to prevent damage to the Remote Units due to incorrect wiring.

DO NOT connect any cables to the Control Panel until the 0V Continuity Check has been successfully completed

3. Ensure there is a reading of 150Ω between the CAN H and CAN L cables on each end of the loop. This check ensures the CAN bus cables are connected to the nearest Remote Unit but does not determine if the cables are swapped.

NOTE: For further information on diagnosing faults refer to "Fault Finding" on page 85.

4.4 Control Panel Settings

4.4.1 Overview

The Master Control Panel must have one button for each Remote Unit on the system, whereas Slave Panels only need buttons for the Remote Units they will be able to communicate with.

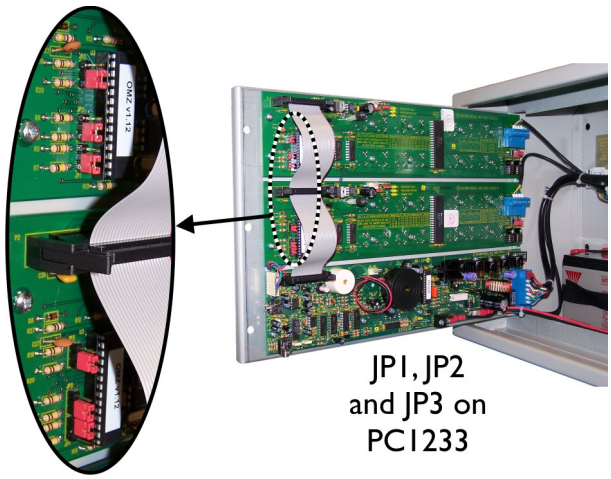
Control Panels are fitted with up to 8 "Switch Panels". Each of these switch panels has 16 buttons and controls up to 16 Remote Units, making a potential maximum of 128 Remote Units per Control Panel.

Each of the "Switch Panels" needs to be set up for the correct Base Address of the Remote Units that it will operate. This is set using jumpers on the board and is explained in Section 4.4.2.

Slave Control Panels only have buttons for Remote Units that they will control, so the Switch Panels have to be configured for those remotes. In addition to setting the Base Address, each switch panel can be set to have an "Offset" (how many above the Base Address to start) and a "Range" (how many buttons to use). Refer to Section 4.4.3 for more details.

4.4.2 Zone Address Settings (JP1, JP2, JP3 PC1233)

Figure 4.1 — Expanded View of Jumper Locations



These jumpers set the Base Address of the first Zone Switch of each Switch Panel.

JP1, JP2 and JP3 settings determine if the first switch on the relevant panel is Zone 1, Zone 17, Zone 33, Zone 49 etc.

Table 4.1 — JP1, JP2 & JP3 Zone Address Settings

Remote Units	JP1	JP2	JP3
1-16	2-3	2-3	2-3
17-32	1-2	2-3	2-3
33-48	2-3	1-2	2-3
49-64	1-2	1-2	2-3
65-80	2-3	2-3	1-2
81-96	1-2	2-3	1-2
97-112	2-3	1-2	1-2
113-128	1-2	1-2	1-2

4.4.3 Setting the Offset and Range & defining the "Master" Switch Panel

The "Offset" is the number of positions above the Base Address that the relevant Switch Panel will use as zone 1.

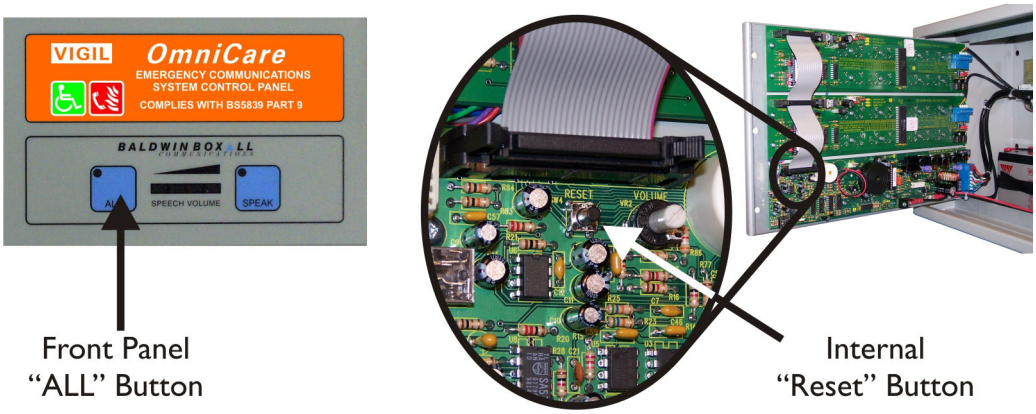
The Range is the number of zones that the relevant Switch Panel will enable for use.

Every Control Panel has to have a "Master" Switch Panel defined, this is normally set to the panel that has the lowest Base Address. The "Master" Switch Panel is defined as part of the process to set the Offset and Range on each panel.

NOTE: To obtain an Offset larger than 8 on an 8 zone panel the handset must be lifted before pressing the "ALL" and "RESET" buttons. Entering the setup mode with the handset off the hook adds a value of 8 to the relevant button (e.g. for an Offset of 10 press the 3rd button).

1. To enter the panel set-up mode, press and hold the "ALL" button then press and release "Reset" as shown in Figure 4.2.

Figure 4.2 — "ALL" and Internal "Reset" Buttons



2. When the LEDs on the Switch Panels start to flash release the All button. If the Fault buzzer sounds press and release the Fault Accept button.
3. The flashing Red LEDs indicate the current Offset value, and the Yellow LEDs indicate the current Range setting.

NOTE: The Switch Panel that is currently set to be the "Master" will flash the LEDs twice as fast as the other panels.

4. The first button push (Red LEDs) will set the Offset (from 0-15).
5. The second button push (Yellow LEDs) will set the Range (from 1-16).
6. The third button push will toggle between "Master" and normal. The sequence then repeats (Offset - Range - Master - etc).
7. When all the Switch Panels have been set as required reset the Control Panel by and pressing and releasing the "Reset" button.

4.4.3.1 Example 1 - Settings for a Master Control Panel

Regardless of size, the Master Control Panel must have a zone switch for each Remote Unit.

1. Using JP1, 2 and 3, set the Top Switch Panel to have a Base Address of "1", the next switch panel down should be set for a Base Address of "17" etc.
2. Set the Offset of each Switch Panel to "0" (top left Red LED).

3. Set the Range of each Switch Panel to “16” (bottom right Yellow LED), except for the last panel which should be set to the number of zones in use.
4. Set the Top Switch Panel to be the Master Panel (LEDs flashing twice as fast as the other panels).

4.4.3.2 Example 2 - Slave Control Panel operating Remote Units 8 to 18 & 41 to 54

Slave Control Panels only require zone switches for the number of remotes they will be operating. In the following example the Top Switch Panel will be controlling Remote Units 8 to 18 and the Lower Panel will be controlling Remote Units 41 to 54.

1. Using JP1, 2 and 3, set the Top Switch Panel to have a Base Address of “1” and the Lower Switch Panel to a Base Address of “33”.
2. Set the Offset of the Top Switch Panel to “7” (Base Address of 1 + Offset of 7 = Zone 8).
   This is the top right Red LED on the first row.
3. Set the Range of the Top Switch Panel to “11”(the number of remotes the top panel will be controlling).
   This is the third from left on the second row Yellow LED.
4. Set the Top Switch Panel to be Master (ensure the LEDs are flashing faster than the lower panel).
5. Set the Offset of the Bottom Switch Panel to “8” (Base Address of 33 + Offset of 8 = Zone 41).
   This is the Bottom Left Red LED on the second row.
6. Set the Range of the Bottom Switch Panel to “14”. This is the third from right on the second row Yellow LED.
7. Ensure the Bottom Switch Panel is not set to be the Master Panel (LEDs flashing slower than the Top panel).

4.4.4 "Boost" Mode (JP4, JP5, JP6 PC1233)

Figure 4.3 — Location of JP4, JP5 and JP6

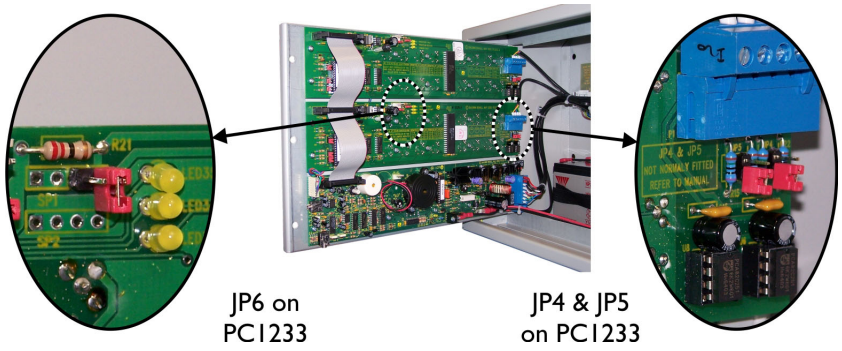


Table 4.2 — Zone Card "Boost" Options

	Status	Option
JP4&5	Fitted	Reduces CANBus termination resistors to 75Ω
JP6	Fitted	Increases the output level of the CANBus drivers

NOTE: These jumpers should not be fitted unless required, since they increase the overall current consumption of the system.

Where there is a long cable run connected to the zone card (such as the run between two buildings) it may be found that a BVOCRIF or BVFREPEM Repeater is used to keep each span below 200 metres. In marginal cases the boost links might also be fitted to the Repeater (refer to Section 3.2.5.2 on page 40).

When the links are fitted on the Repeater, JP4, 5, and 6 on the Zone Card should also be fitted to match the data bus characteristics at each end of the cable.

4.4.5 Fault Relay Operation (JP2 PC1321)

The Fault Relay can be set for contact closure on fault (NO) or contact opening on fault (NC). The location of JP2 is shown in Figure 4.4.

4.4.6 Handset Volume (VR2 PC1321)

Adjust VR2 (as shown in Figure 4.4) to obtain the required volume from the handset to suit user requirements but ensure that the incoming conversation is not "clipped".

4.4.7 External Battery link (JP3 PC1321)

This link should only be fitted if external batteries are employed.

Fitting this link increases the charger output from 750mA to a nominal value of 4A. This link is only required when external batteries (larger than 24Ah) are used.
The location of JP3 is shown in Figure 4.4.

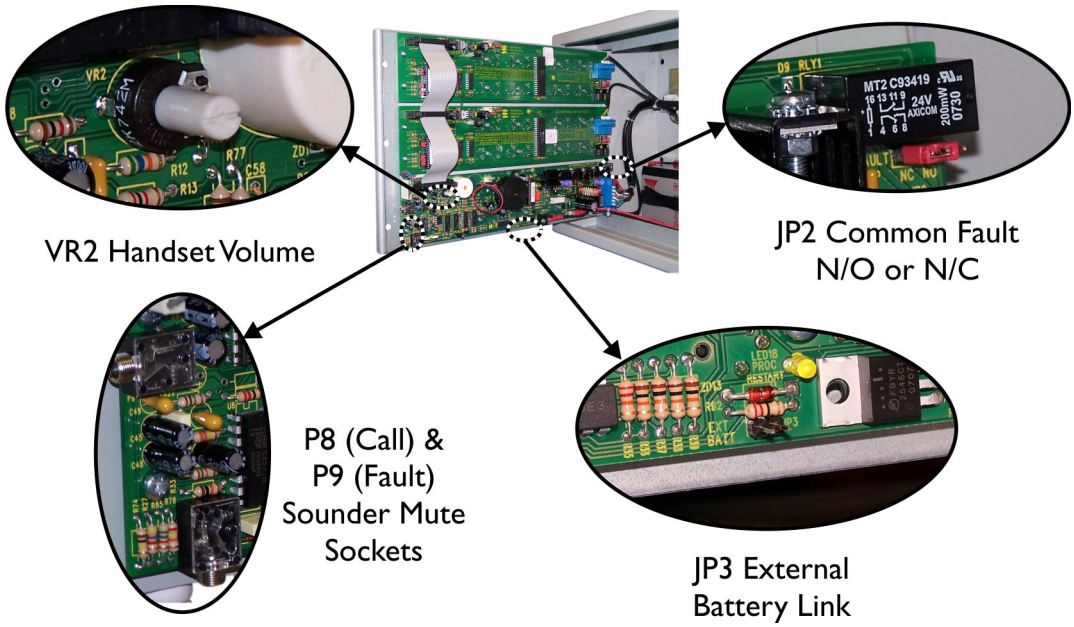
NOTE: When JP3 is fitted fuse F2 MUST be increased from 1A to 5A.

4.4.8 Temporary Sounder Mute (P8 & P9 PC1321)

It is possible to temporarily silence the sounders in the Control Panel by inserting unwired 3.5mm jack plugs into P8 or P9.
P8 mutes the "CALL" sounder and P9 the "FAULT" sounder.
P8 and P9 are shown in Figure 4.4.

NOTE: The sockets have been intentionally positioned to stop the inner door from closing if a mute socket is in use.
These sockets can be used while Commissioning or Fault Finding to reduce potential annoyance to other occupants at the Control Panel location.

Figure 4.4 — Common Settings on PC1321

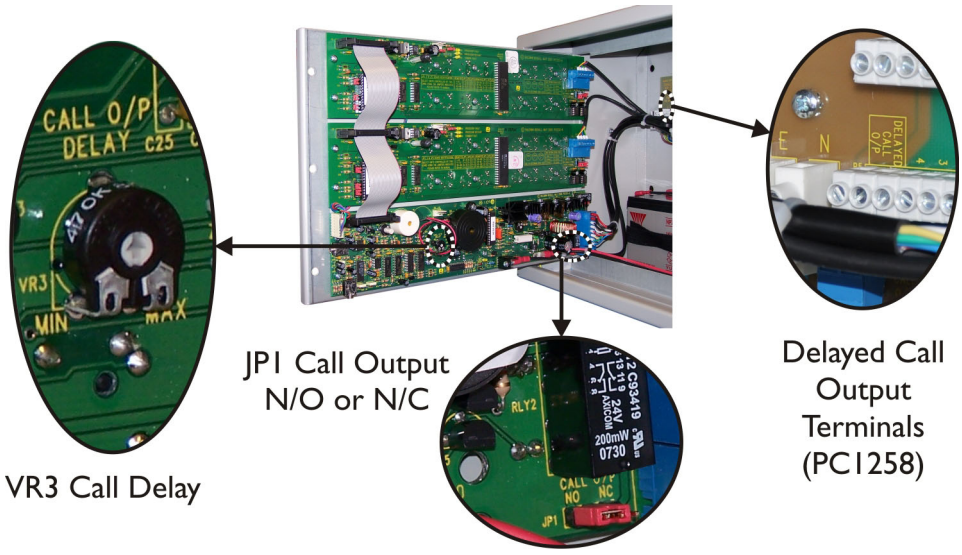


4.4.9 Delayed Call Output (JP1 & VR3 PC1321)

The Delayed Call Output is an Option that causes a pair of volt free contacts to operate if a call comes in but the handset is not picked up within a preset time.

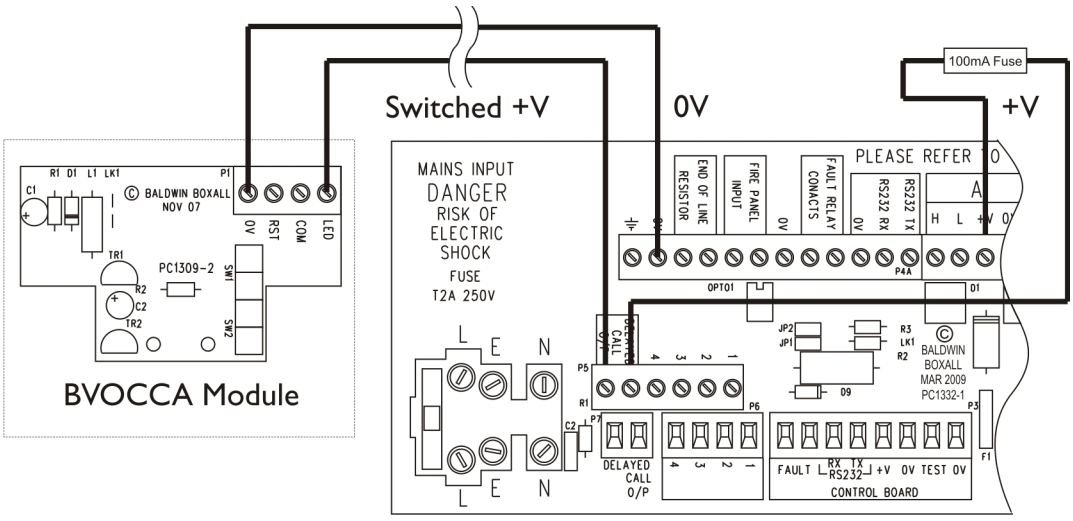
The delay can be set from immediate to approximately 90 seconds.

Figure 4.5 — Delayed Call Output controls



4.4.10 BVOCCA Call Alert Module Connections

Figure 4.6 — BVOCCA Connection details



NOTE: It is strongly recommended to fit a 100mA fuse (not supplied) in line with the BVOCCA unit.

4.5 Commissioning Procedure

4.5.1 Termination Boards

The Termination boards fitted to the "Mini" Consoles (upto 32 zones) are slightly different to the boards fitted to the larger consoles.

The main differences are as follows:

- There are only positions for two zone cards and two loops,
- The terminal block is positioned to allow cable entry from the top.

Figure 4.7 — Typical Mini Console Termination Board

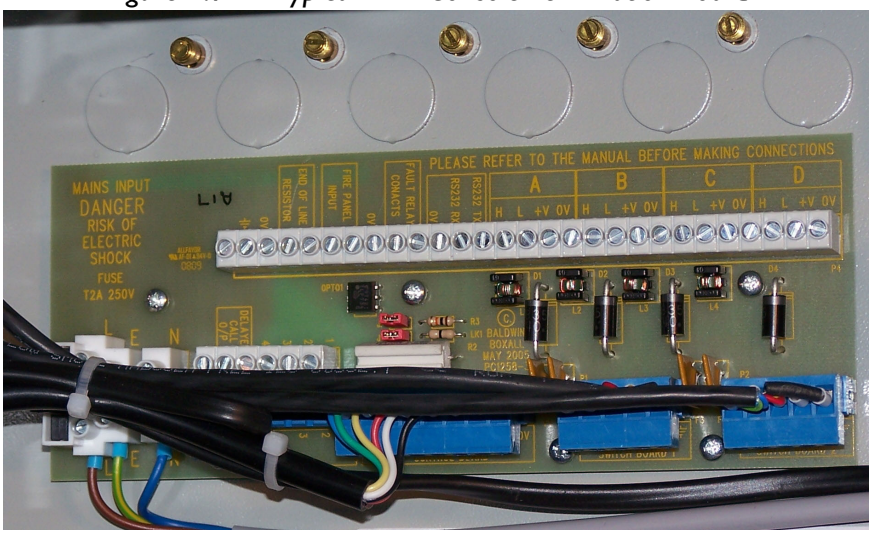
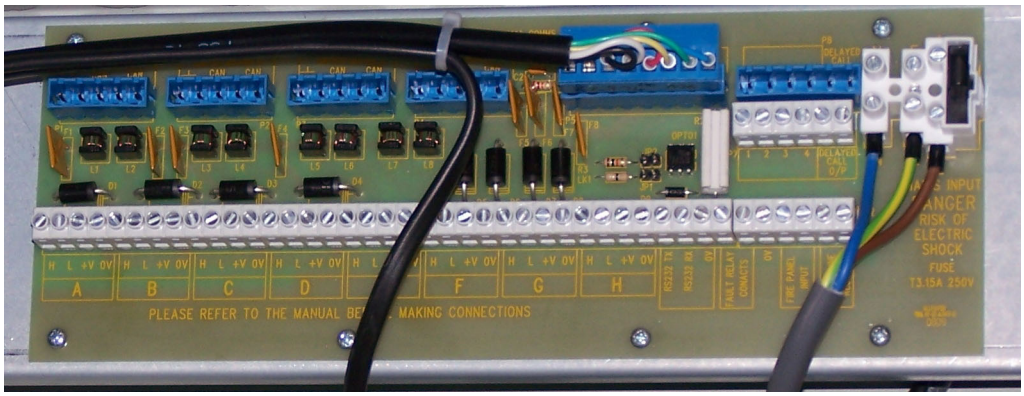


Figure 4.8 — Typical Standard Console Termination Board



4.5.2 Testing Loop Integrity (Power Cables)

CAUTION

Before applying power to a loop ensure the "0V Continuity Check" described in Section 4.2 has been successfully completed.

Ensure Mains Power and batteries are disconnected before connecting or disconnecting Loop Cables.

It is recommended to test each ring of the system individually, so initially ensure all circuits are disconnected from the Panel.

1. At the Master Panel, connect the end of the first loop circuit to the “A” terminations (refer to Figure 2.2 on page 16). Ensure the unconnected cables at the other end of the loop are suitably positioned to prevent short circuits.

NOTE: If the "B" connections are also made during commissioning the panel will automatically route data and power around the ring. This makes diagnosis of any cable faults much more difficult.

2. Connect the Mains Power, but ***do not*** connect the batteries.
3. Press the “FAULT ACCEPT” button to accept the faults and silence the buzzer.
4. Using a voltmeter, check the voltage across the “+V” and “0V” terminals on the “A” circuit is between 29V and 35V DC.
   Wait for 10 seconds and then check the return voltage on the “+V” and “0V” cables is no more than 8V lower than the reading on the “A” terminals.

NOTE: The actual return voltage depends on the number of Remote Units and the cable length of the loop.

CAUTION

If the reading on the return cables is more than 8V different then power is not being fed along the loop.
Investigate the +V loop wiring before proceeding.

5. If the two readings are within 8V the loop integrity of the power conductors is confirmed.

4.5.3 Testing Loop Integrity (Data Cables)

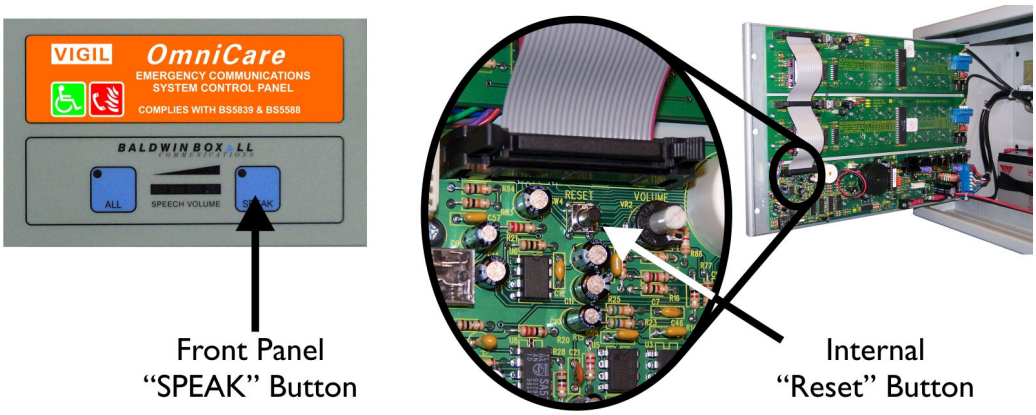
1. Ensure Power Loop Integrity (section 4.5.2) has been checked before attempting the Commissioning Procedure.

NOTE: If the ring circuit has greater then 16 Remote Units connected to it then it is necessary to connect together the "CAN H" and "CAN L" connections on Terminals B and C within the Control Panel. This will allow connection of up to 32 Remote Units.

2. Ensure one end of the Loop is connected to the "A" Terminals.
3. Connect the Mains Power, but ***do not*** connect the batteries.
4. At the Control Panel, press and hold the "SPEAK" button, then press and release the internal "RESET" button (located as shown in Figure 4.9).

   Continue to push the "SPEAK" Button until the yellow indicator by button 1 begins to flash.

Figure 4.9 — "Speak" and "Reset" Buttons to start Commissioning



Releasing the "RESET" button while the "SPEAK" button is still pressed initiates the Commissioning Process. The Master Panel sends a special "Commissioning" code along the ring to communicate with the Remote Units.
The Panel indicates it has started Commissioning by flashing the yellow LED in button 1.

Press and release the "FAULT ACCEPT" button to silence the buzzer.

5. The Panel will flash the yellow indicator for approximately 40 seconds. When the Commissioning code is sent the yellow LED stops flashing and stays illuminated.
6. The Red LED in each Zone Switch will then illuminate to show the progress of the Commissioning Code along the Loop to each Remote Unit.

Figure 4.10 — Commissioning Process LEDs

7. If the total number of illuminated Red LEDs is the same as the number of Remote Units on the ring then there are no wiring faults (except possibly between the last Unit and the Control panel). If this is the case then proceed to step 10.
8. If fewer LEDs light than the number of Units on the ring, then wait for the panel to repeat the Commissioning process. After 15 seconds the Control Panel will attempt to Re-Commission as the special code has not been received on the "B" terminals. The Yellow LED will flash for approximately 1 second to show when the code is being re-transmitted.
9. If the point at which the red LEDs stop is the same, go to the last 'red' Unit or walk the ring from the 'A' connection looking at each Remote Unit "SYSTEM OK" LED.
   The Remote Unit System OK LED will display the current status of the unit.

   The SYSTEM OK LED is identified on all Remote Unit front panels except for the BVOCA2G Remote Unit. This is shown in Figure 4.11.

Figure 4.11 — BVOCA2G System OK LED

SYSTEM OK LED is an Illuminated Ring around the switch

SYSTEM OK LED is **ON**	Commissioning Code **has** been received
SYSTEM OK LED is **FLASHING**	The unit has power but **has not** received Commissioning Code
SYSTEM OK LED is **NOT LIT**	There is no power

The first unit that failed to return a Red indication should display one of the above conditions which will indicate which cable(s) are at fault.

NOTE: For further information on diagnosing faults refer to "Fault Finding" on page 85.

10. When the total number of illuminated LEDs is the same as the number of Remote Units on the ring, disconnect the Mains Power and connect the other end of the ring to the "B" connection (or to the "D" connection if "B" and "C" have been linked) on the Control Panel.

CAUTION

Ensure Mains Power and batteries are disconnected before connecting or disconnecting Ring Circuits.

11. Reconnect the Mains Power and initiate the commissioning process again (press SPEAK and RESET buttons).

12. As the loop is now continuous, when all the red LEDs are lit (by connected Remote Units) the Master Panel should receive the special code on the “B” terminals and the Yellow LED on button 1 should extinguish.
    If the LED does not extinguish then there is wiring fault between the last remote and the control panel.
13. The wiring checks for the ring are complete when the yellow LED on button 1 extinguishes.

NOTE: It is possible that a red LED will not illuminate (as though a Remote Unit is not responding) however the Yellow LED extinguishes because the Control Panel has received the Code on the "B" terminals. If this occurs perform a functional test on the relevant Remote unit.

14. The final step in the Commissioning Process is to lift the handset on the Control Panel and replace it.
    The yellow LEDs in positions 4, 5, 12, and 13 will then flash for approximately 10 seconds while the system performs a Reset and finalises the configuration process. See Section 6.5.7 on page 100 for further details of this process.
15. If applicable repeat the Commissioning Process for remaining loops, noting that each loop should be connected to the “A” terminals first, and returning on the “B” terminals.
16. When all loops have been individually tested then all loops can be connected as per the final configuration.
17. Repeat the Commissioning Process again and ensure all Remote Units register on the control panel.

NOTE: After the final Commissioning Proces hass been completed it is recommended to lift the Handset and press the "All Call" button. This will remove any extraneous data from the Remote Units.

4.5.4 Connecting Batteries (Internal)

Connecting the batteries to the Control Panel should only be performed after the wiring checks in Section 4.5.2 and Section 4.5.3 have been completed successfully.

NOTE: If this procedure is not followed the Control Panel may display a "Charger Fault".

1. **Disconnect the Mains Power** from the Control Panel. Wait for 10 seconds.
2. **Connect the Batteries** to the Control Panel.

NOTE: THE BATTERIES MUST BE CONNECTED BEFORE THE MAINS POWER.

3. **Re-connect the Mains Power** to the Control Panel,
4. Press the internal "RESET" button to remove the "PROCESSOR RESTART" fault LED.
5. The Green "System OK" LED should now illuminate.

NOTE: The Control Panel will not operate on Batteries until the Mains Power has been applied.

4.5.5 Connecting Batteries (Using External Battery Box)

Ensure link JP3 (Ext Batt) is fitted and fuse F2 on PC1321 is changed to 5A then follow the procedure shown in Section 4.5.4.

4.5.6 Preventing Battery Failure due to Deep Discharge

CAUTION

If mains power is to be removed from the system for an extended period the batteries should be disconnected.

The batteries will be damaged if they are left in a discharged state for an extended period.

4.6 Functional Testing Remote Units

4.6.1 Introduction

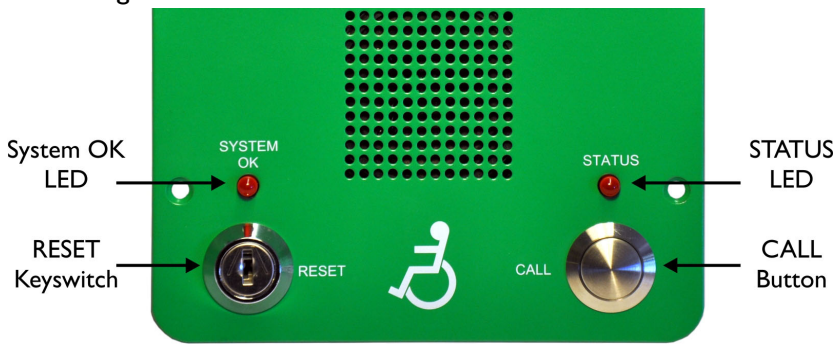
Remote Units can only be functionally tested after the Control Panel has successfully completed the Commissioning Process.

If Remote Units are to be re-addressed please refer to Section 5.1 on page 77 for further details on re-addressing.

NOTE: To perform functional testing on Remote Units it will be necessary to activate the Fire Panel input on the Control Panel. Refer to Section 3.3.5 and Section 3.3.6 for details.

4.6.2 Disabled Refuge Remote (BVOCECPG)

Figure 4.12 — BVOCECP Remote Unit Front Panel Controls



1. Ensure the “SYSTEM OK” LED is flashing, and press the “CALL” button.
   Ensure the “Status” LED illuminates.
2. Both the Remote Unit and the Control Panel(s) will 'ring'. The associated red LED on the Control Panel(s) will flash to indicate activity at that Remote Unit location.

   Check that when the Control Panel handset is lifted and the zone is selected communication can be established.

   Ensure that while the conversation is in progress the “System OK” LED stops flashing and stays illuminated.

NOTE: If only one Remote Unit is calling the Control Panel then that call is automatically answered by lifting the handset.

3. Set the Volume on the Remote Unit.
   The volume control (as shown in Figure 3.2 on page 25) sets the level of Control Panel speech (and the level of the ring tone) reproduced at the Remote Unit and should be adjusted to allow speech to be clearly understood.
4. De-occupy the unit by turning the Keyswitch clockwise 45° and then returning it to vertical. Ensure both the "STATUS" LED on the front panel and the relevant Zone LED on the Control Panel extinguish.

4.6.2.1 BVOCECPG "Call and Listen" Feature

NOTE: This feature is only enabled for 24 hours after performing the Commissioning Process or removing &applying power to the Remote Unit.

The "Call and Listen" feature enables the BVOCECPG basic functionality to be checked from the Control Panel. This is a useful check as it can be performed by one person without the need to press the "Call" button or turn the key on the BVOCECPG.

1. Ensure the Commissioning Process has completed successfully (or the power has been restored to the relevant BVOCECPG Remote Unit).
2. Lift the Control Panel handset and press the relevant Zone Button on the Control Panel to "Call" the BVOCECPG.
3. The BVOCECPG will answer the call and briefly enable the microphone. The Remote Unit will then announce "System In Standby" through the local Loudspeaker.
   This message should be heard (together with any background noise) via the Local Microphone and the Control Panel handset.

NOTE: This feature is not a replacement for the Commissioning Procedure described in Section 4.6.2, however it does allow a single engineer to check the basic operation of Remote Units.

4.6.3 Advance Refuge Remote (BVOCA2G)

1. Ensure the System LED in the Call Switch is flashing to indicate the system is active and ready to make a call.

1. Press the centre “CALL” button.
   Ensure LED stops flashing.

NOTE: If the BVOCA2G responds with "System In Standby" then the Fire Panel input is not active and the Remote Unit will not be able to make a call.
Refer to Section 3.3.5 and Section 3.3.6 for details.

2. Both the Remote Unit and the Control Panel(s) will 'ring'. The associated red LED on the Control Panel(s) will flash to indicate activity at that Remote Unit location.

   Check that when the handset is lifted and the zone is selected communication can be established.

   Ensure that while the conversation is in progress the System LED on the BVOCA2G stays illuminated.

NOTE: If only one Remote Unit is calling the Control Panel then that call is automatically answered by lifting the handset.

3. Set the Volume on the Remote Unit.
   The volume control (as shown in Figure 3.4 on page 30) sets the level of Control Panel speech (and the level of the ring tone) reproduced at the Remote Unit and should be adjusted to allow speech to be clearly understood.

4. De-occupy the unit by pressing and holding the “CALL” button until a tone is heard.

   After releasing the button ensure the System LED flashes to indicate another call can be made and the relevant Red LED is extinguished on the Control Panel(s).

4.6.4 Fire Telephones (BVOCF / BVOCET)

1. Check the “SYSTEM OK” LED is flashing.
2. Open the door & lift the Handset at the Remote Unit.
   Both the Remote Unit and the Control Panel will 'ring'. The associated red LED on the Control Panel(s) will flash to indicate activity at that Remote Unit location.
3. Check that when the Handset at the Control Panel is lifted and the zone is selected communication can be established.

NOTE: If only one Remote Unit is calling the Control Panel then that call is automatically answered by lifting the handset.

4. Set the Volume on the Remote Unit.
   The volume control (as shown in Figure 3.6 on page 32) sets the level of Control Panel speech (and the level of the ring tone) reproduced at the Remote Unit and should be adjusted to allow speech to be clearly understood.
5. Replace the Handset on the Remote Unit & close the door. Ensure the relevant red LED on the Control Panel extinguishes.
6. Lift the handset on the Control Panel and press the relevant Zone Button.
   Ensure the Remote Unit starts to ring.

NOTE: If a Beacon is fitted to the Remote Unit then it should flash while the unit is being called from the Control Panel.

7. Press the PTT button on the Control Panel. Ensure the operator can be heard from the loudspeaker in the Remote Unit.
8. Release the PTT on the Control Panel. Ensure the operator can hear the microphone on the Remote Unit.
9. Replace the Handset at the Control Panel and ensure the relevant Red LED extinguishes.

4.6.5 Combined Remotes (BVOCC)

NOTE: The Fire Telephone Remote Units are permanently enabled so it is not necessary to activate the Fire Panel Input on the Control Panel to perform a functional check.
The Disabled Refuge section does require the Fire Panel input to be activated. Refer to Section 3.3.5 and Section 3.3.6 for details.

4.6.5.1 Disabled Refuge section of BVOCC

Refer to Section 4.6.2 for functional testing of the Disabled Refuge sub-assembly.

NOTE: The volume control is shared by the Disabled Refuge and the Fire Telephone and is adjusted while testing the Fire Telephone.

4.6.5.2 Fire Telephone section of BVOCC

Refer to Section 4.6.4 for functional testing of the Fire Telephone sub-assembly.

4.6.6 Disabled Toilet Alarm (BVOCDTA)

1. Ensure the "SYSTEM OK" LED is flashing on the BVFREPEM.
2. Pull the Ceiling Pull Cord to activate the Toilet Alarm.
3. Ensure the Local Alarm is activated, and (if fitted) the Over Door Beacon flashes.
4. Ensure the relevant Red LED on the Control Panel flashes to indicate the Alarm.
5. Lift the Handset on the Control Panel and ensure an Alarm Tone can be heard.
   Ensure the Red LED on the Control Panel stops flashing, and (if used) the "Help Acknowledge" indicator is illuminated at the Toilet Alarm.
6. Press the "RESET" button on the Toilet Alarm controller to cancel the alarm.
   Ensure the Red LED on the Control Panel extinguishes.

4.6.7 Disabled Toilet Alarm (DTAKIT)

1. Ensure the "SYSTEM OK" LED is flashing on the BVOCRIF.
2. Pull the Ceiling Pull Cord to activate the Toilet Alarm.
3. Ensure the Local Alarm is activated, and the Over Door Light & the DTA Active indicator on the BVOCRIF illuminate.
4. Ensure the relevant Red LED on the Control Panel flashes to indicate the Alarm.
5. Lift the Handset on the Control Panel and ensure an Alarm Tone can be heard.
   Ensure the Red LED on the Control Panel stops flashing, and the Local Alarm & Over Door Light now flash intermittently to indicate "Help Acknowledge".
6. Press the "RESET" button on the Toilet Alarm to cancel the alarm and extinguish the Over Door Light.
   Ensure the Red LED on the Control Panel extinguishes.

4.7 Zone Insert Labels

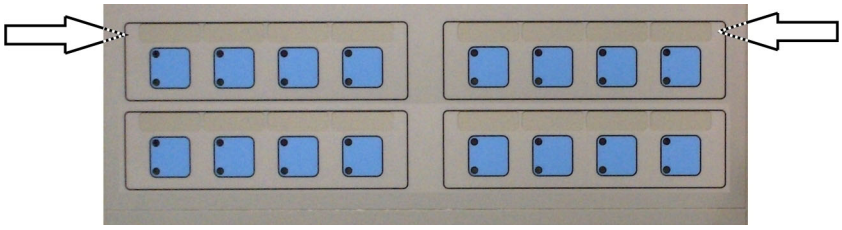
A Template is provided for labelling the Control Panel buttons. The template gives a choice of pre-printed numbers or blank spaces for installation-specific labelling.

The Zone Insert Template is also available to download as a Word® file from www.baldwinboxall.co.uk.

The template should be cut into strips for insertion behind the Control Panel button overlay.

Slide the strips cut from the Zone Insert template under the membrane at the positions shown in the picture. They can be inserted from either side.

Figure 4.13 — Zone Label Insert positions



5 Tone Configuration Options

5.1 Introduction

The OmniCare Remote Units have a range of features and options that can be enabled or disabled by playing them a unique sequence of tones.

This has the advantage that Remote Units can be configured or re-addressed without the need for any tools or removing the Remote Units from their enclosures.

Most of the features that are set using the Tone Generation Software can also be set using jumpers on the Remote Units.

NOTE: If jumpers are set on the Remote Units then these will override the Tone Configuration settings.

Re-addressing Remote Units is only possible using the Tone Generation Software.

Re-addressing BVFREPEM Toilet Alarms is achieved using the DIL switches and pull cord - refer to Section 5.8 on page 82.

Re-addressing BVOCRIF (DTAKIT) Toilet Alarms is achieved using DIL switches - refer to Section 3.2.6.4 on page 45.

5.2 Tone Generation Software Options

NOTE: "Tone Configured" changes are only allowed for the first 20 hours after booting up.
If changes are required after 20 hours have elapsed then Press and Hold the "Reset" on the master control panel for 30 seconds to force the Remote Units to re-boot.
The 20 hour limit also applies if Re-addressing BVOCDTA Toilet Alarms.

5.2.1 Description of Available Options

The different types of Remote Unit have different options available. The Tone Generation Software will only display the relevant options for the selected Remote Unit.

The options are explained as follows:

- Always Allow Calls - allow the Remote Unit to make calls regardless of the state of the Fire Alarm Input.
- Local Reset Only - inhibit the Control Panel from resetting (or de-occupying) the Remote Unit.
- AssureCare - enable the Remote Unit to emulate the AssureCare product.
- Inhibit Automatic PTT - disables the voice switching function of the Remote Unit.
- Audio Self Test Enable - enables the self test function.
- Inhibit “System In Stand-by” Message - prevent the Remote Unit from playing a message if the system is inactive.

5.2.2 Addressing Options

If re-addressing a Remote Unit, the required address can be selected and when programmed the Remote Unit will appear on the Control Panel at that address.

To return the Remote Unit to the original “as wired” address select either “Use real Address” or address “0”.

5.3 Overview of Tone Generation Software (PC Version)

Figure 5.1 — Tone Generation Software (PC Version)

To select the type of Remote Unit click on the relevant image.

As confirmation the type of Remote Unit selected is shown in the title bar.

The available options for the type of Remote Unit will be displayed.

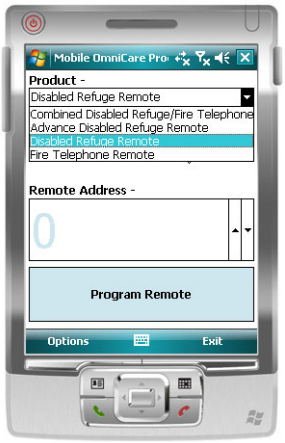
To allow for differences in computer hardware a Volume level and Speed control have been included.

It may be necessary to adjust the Volume Level and / or the speed control to allow the Remote Unit to accept the Tone Configuration.

NOTE: "Tone Configured" changes are only allowed for the first 20 hours after booting up.
If changes are required after 20 hours have elapsed then Press and Hold the "Reset" on the master control panel for 30 seconds to force the Remote Units to re-boot.

5.4 Overview of Tone Generation Software (PDA Version)

Figure 5.2 — Tone Generation Software (PDA Version)

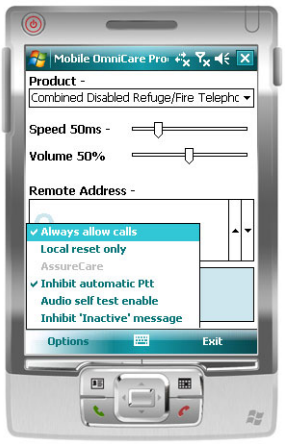


The PDA version has the same facilities as the PC version.

To select the type of Remote Unit select it from the drop down menu.

To change the options for the selected Remote Unit select Options and the available options will be displayed as shown in Figure 5.3.

Figure 5.3 — Changing options for selected Remote Unit.



NOTE: "Tone Configured" changes are only allowed for the first 20 hours after booting up.
If changes are required after 20 hours have elapsed then Press and Hold the "Reset" on the master control panel for 30 seconds to force the Remote Units to re-boot.

5.5 Configuring Remote Units

To configure a Remote Unit using the Tone Generation software use the following procedure:

1. Select the type of Remote Unit,
2. Select the option(s) required,
3. Enable the “Configuration Mode” of the Remote Unit:
   - BVOCECP - press and hold the “Call” button until a tone is heard,
   - BVOCA2G - double tap the “Call” button and a tone should be heard,
   - BVOCF & BVOCET- double tap the “door closed” switch and hold it in, and a tone should be heard,
   - BVOCC - double tap the “door closed” switch and hold it in, and a tone should be heard.
4. Immediately after the tone finishes press any button on the keyboard (PC version) or press the “Program Remote” button (PDA version).
   The configuration software will then play the correct sequence of tones.
5. If the configuration is successful the Remote Unit will play back a confirmation tone.

5.6 Re-addressing Remote Units

Remote Units can be re-addressed so they appear at different locations on the Control Panel(s).

To re-address a Remote Unit select the address from the drop down list and then follow the procedure described in section 5.5.

NOTE: Care must be taken when re-addressing Remote Units to ensure that there are no duplicated addresses. If there are two units with the same address they will not reliably call the Control Panel.
Refer to Section 5.9 for a special "Commissioning Mode" that allows multiple Remote Units to be re-addressed and tested.

5.7 Re-addressing DTAKIT (BVOCRIF) Toilet Alarms

Set SW1.1 - SW1.7 to the desired address (SW1.1 is LSB).

Refer to Section 3.2.6.4 on page 45 for full details.

5.8 Re-addressing BVOCDTA (BVFREPEM) Toilet Alarms

The BVFREPEM DIL switch and BVOCDTA Alarm pull are used.

NOTE: It is necessary to manually enter the required address of the unit in two parts using the values shown in Table 5.1.

In the following example the unit is to be re-addressed as unit 20.

The values in Table 5.1 show address 20 as “0010 - 1000".

- Note the positions of DIL SW1.1 to 1.4.
- Pull the Alarm cord and *within 0.5 seconds* press the local reset button. The “System OK” LED on the BVFREPEM will stop flashing and remain ON continuously to acknowledge the unit is now ready for re-addressing.
- *Within 60 seconds* set the DIL switches to the first 4 bits of the required address. In this example, that is 0010 (i.e. SW1.3 set to ON and all others OFF).
- Pull the Alarm cord and *within 0.5 seconds* press the local reset button again. The “System OK” LED will turn OFF to indicate the unit is ready for the second part of the address.
- *Within 60 seconds* set the DIL switches to the second 4 bits of the required address. In this example, that is 1000 (i.e. SW1.1 set to ON and all others OFF).
- Pull the Alarm cord and *within 0.5 seconds* press the local reset button again. The “System OK” LED will now remain ON continuously to indicate the unit has stored the new address.
- *Within 60 seconds* set SW1.1 - 1.4 to their original positions.

- Pull the Alarm cord and *within 0.5 seconds* press the local reset button again. The "System OK" LED will flash fast for a short time and then flash at the normal rate.
- Perform a functional test of the unit to ensure the new address is correct.

NOTE: Re-addressing BVFREPEM Toilet Alarms can only be achieved for the first 20 hours after booting up.

Table 5.1 — Lookup Table for BVFREPEM Re-addressing

Addr.	LSB - MSB	Addr.	LSB - MSB	Addr.	LSB - MSB	Addr.	LSB - MSB
Auto	0000 - 0000	32	0000 - 0100	64	0000 - 0010	96	0000 - 0110
1	1000 - 0000	33	1000 - 0100	65	1000 - 0010	97	1000 - 0110
2	0100 - 0000	34	0100 - 0100	66	0100 - 0010	98	0100 - 0110
3	1100 - 0000	35	1100 - 0100	67	1100 - 0010	99	1100 - 0110
4	0010 - 0000	36	0010 - 0100	68	0010 - 0010	100	0010 - 0110
5	1010 - 0000	37	1010 - 0100	69	1010 - 0010	101	1010 - 0110
6	0110 - 0000	38	0110 - 0100	70	0110 - 0010	102	0110 - 0110
7	1110 - 0000	39	1110 - 0100	71	1110 - 0010	103	1110 - 0110
8	0001 - 0000	40	0001 - 0100	72	0001 - 0010	104	0001 - 0110
9	1001 - 0000	41	1001 - 0100	73	1001 - 0010	105	1001 - 0110
10	0101 - 0000	42	0101 - 0100	74	0101 - 0010	106	0101 - 0110
11	1101 - 0000	43	1101 - 0100	75	1101 - 0010	107	1101 - 0110
12	0011 - 0000	44	0011 - 0100	76	0011 - 0010	108	0011 - 0110
13	1011 - 0000	45	1011 - 0100	77	1011 - 0010	109	1011 - 0110
14	0111 - 0000	46	0111 - 0100	78	0111 - 0010	110	0111 - 0110
15	1111 - 0000	47	1111 - 0100	79	1111 - 0010	111	1111 - 0110
16	0000 - 1000	48	0000 - 1100	80	0000 - 1010	112	0000 - 1110
17	1000 - 1000	49	1000 - 1100	81	1000 - 1010	113	1000 - 1110
18	0100 - 1000	50	0100 - 1100	82	0100 - 1010	114	0100 - 1110
19	1100 - 1000	51	1100 - 1100	83	1100 - 1010	115	1100 - 1110
20	0010 - 1000	52	0010 - 1100	84	0010 - 1010	116	0010 - 1110
21	1010 - 1000	53	1010 - 1100	85	1010 - 1010	117	1010 - 1110
22	0110 - 1000	54	0110 - 1100	86	0110 - 1010	118	0110 - 1110
23	1110 - 1000	55	1110 - 1100	87	1110 - 1010	119	1110 - 1110
24	0001 - 1000	56	0001 - 1100	88	0001 - 1010	120	0001 - 1110
25	1001 - 1000	57	1001 - 1100	89	1001 - 1010	121	1001 - 1110
26	0101 - 1000	58	0101 - 1100	90	0101 - 1010	122	0101 - 1110
27	1101 - 1000	59	1101 - 1100	91	1101 - 1010	123	1101 - 1110
28	0011 - 1000	60	0011 - 1100	92	0011 - 1010	124	0011 - 1110
29	1011 - 1000	61	1011 - 1100	93	1011 - 1010	125	1011 - 1110
30	0111 - 1000	62	0111 - 1100	94	0111 - 1010	126	0111 - 1110
31	1111 - 1000	63	1111 - 1100	95	1111 - 1010	127	1111 - 1110

5.9 Re-addressing Multiple Remote Units

When re-addressing Remote Units it is important to ensure there are no duplicated addresses. If two Remote Units have the same address they may not call the Control Panel correctly and may suffer from corrupted data.

This situation causes a problem during commissioning as it is difficult to test a re-addressed unit as there will most likely be a duplicate address on the system.

To overcome this problem there is a special “Commissioning Mode” which identifies Remote Units but does not allow them to communicate with the Control Panel until they have been configured using tones (or used in the case of Toilet Alarms).

NOTE: "Tone Configured" changes are only allowed for the first 20 hours after booting up.
If changes are required after 20 hours have elapsed then Press and Hold the "Reset" on the master control panel for 30 seconds to force the Remote Units to re-boot.

To enter this special commissioning mode press the “Speak” and “Reset” buttons as normal and allow the Commissioning Process to locate all the Remote Units on the system (ensure the correct number of Red LEDs are illuminated).

Instead of lifting the Handset to finalise Commissioning press the “ALL CALL” button.

In this mode Remote Units will only communicate with the Control Panel after being re-addressed, which allows functional testing of re-addressed Remote Units to be performed.

When all re-addressing has been completed (and the relevant Remote Units tested) lift the handset and press the “ALL” button.

All Remote Units will then be live and will be able to call the Control Panel.

NOTE: During the Commissioning Process re-addressed Remote Units will display their "as wired" position on the Control Panel.

6 Fault Finding

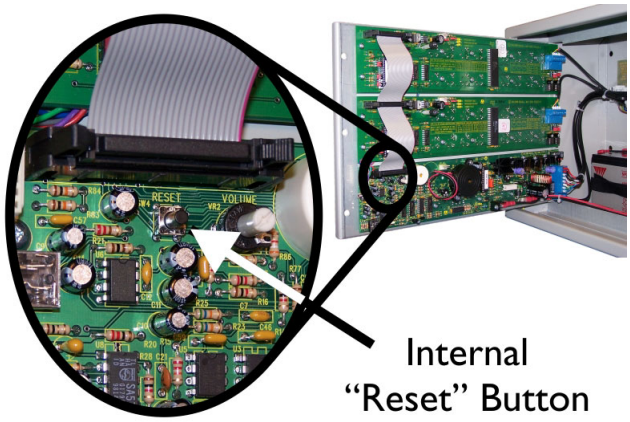
6.1 "Processor Restart" Fault

This fault is announced when the internal monitoring system determines the processor has restarted.

This fault will occur after the unit is powered up for the first time, and after a complete power cycle if both mains & batteries are disconnected.

To clear the Processor Restart fault it is necessary to open the Control Panel door and press the internal "Reset" button located as shown in Figure 6.1.

Figure 6.1 — Internal "Reset" button



6.2 Fault Finding - Battery Charger

NOTE: To ensure correct operation of the OmniCare EVC System System, ***the BATTERIES must always be connected first, BEFORE the MAINS is applied****.*
The Charger may display fault LEDs and not charge the batteries correctly if these power connections are made in the wrong order.

The battery charger used in the OmniCare EVC System system is a "Cyclic Constant Current" charger that not only charges the batteries, but also constantly monitors the condition of the batteries.

6.2.1 Battery Charger Normal Operation

The Battery Charger initialises when Mains Power is applied or after the "RESET" button is pressed, and operates as follows:

1. The charger will check to see if batteries are connected. If batteries are not found (or the battery voltage is less than 20V DC), both the "Battery HIGH" and "Battery LOW" Fault LEDs will be illuminated and the Charger will be turned off.
2. If batteries are detected, the charger will attempt to charge them and LED20 on PC1321 illuminates to indicate the charger is operating.
3. When the charger detects the batteries are at 27V the charge current is reduced to approximately one quarter of the rated output. This ensures the batteries are fully charged.
4. The charger will stop when the battery voltage reaches a nominal 27.9VDC.
5. The battery voltage is then monitored to assess the condition of the batteries.
6. The charging process repeats after 6 hours.

If the charging voltage needs to be checked, pressing the "RESET" button will force the charger to start charging again.

NOTE: If the batteries are in a fully charged state the Charger will only operate for a few seconds after pressing the "RESET" button.

6.2.2 Battery Condition Monitoring

The Battery Charger in the OmniCare EVC System system not only charges the batteries, but also monitors the condition of them to detect battery degradation.

- If the charger runs at full power continuously for more than 24 hours (i.e. batteries have not reached 27V DC within 24 hours), then the "Charger Fault" LED will be illuminated.

NOTE: Serviceable batteries should reach 27V DC within 24 hours.

- If the battery voltage falls to 24.0V DC within 6 minutes of the charger finishing (i.e. battery voltage drops from 27.9V DC to 24.0V DC) then the "Charger Fault" LED will be illuminated.

NOTE: Serviceable batteries should hold charge for longer than 6 minutes.

- The Battery High LED illuminates at 28VDC.
- The Battery Low LED illuminates at 20VDC.
- If the Battery HIGH and Battery LOW LEDs are both illuminated then the Batteries are disconnected.

NOTE: If Batteries are reconnected while Mains is still connected and their voltage is less than 20V DC the charger will not restart.

Battery disconnect occurs at 20VDC, (if running on batteries).

6.2.3 Preventing Battery Failure due to Deep Discharge

CAUTION

If mains power is to be removed from the system for an extended period the batteries should be disconnected.

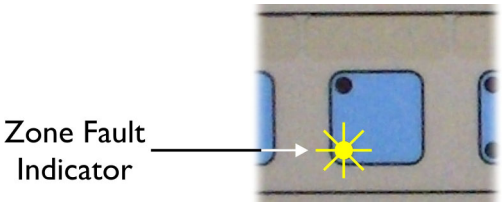
The batteries will be damaged if they are left in a discharged state for an extended period.

6.3 Basic Fault Finding

The OmniCare EVC System front panel provides LEDs to show the current status of the unit. The following sections provide basic Fault Finding information should these LEDs show a fault condition.

6.3.1 Remote Unit Fault Indication

Figure 6.2 — Zone Fault LED



If the yellow LED by a Zone switch on the Control Panel button is flashing then there is a fault with that Remote Unit or the cabling to it.

With a cabling fault, is it is normal for two adjacent Remote Units to indicate a fault as they are each connected to one end of the same cable.

The following procedure can be used to help diagnose the fault:

- Ensure the Master Control Panel handset is on the hook,
- Press and hold the “SPEAK” Button.
  If the fault indicator goes out then the Remote Unit has a data fault. This is most likely caused by a cable fault.
- Press and hold the “ALL” button.
  If the fault indicator goes out then the Remote Unit has a power fault. This is also likely to be a cable fault.
- Press and hold the “SPEAK” and “ALL” buttons.
  If the fault indicator goes out then the Remote Unit has failed its Audio Self Test. This could either be a microphone, speaker or other component failure. On Fire Telephones this could also be a Handset Fault.

6.3.2 System Fault LEDs

Refer to "System Status & Fault LEDs" on page 10 for further information if a System Fault LED is lit.

6.3.3 "SYSTEM OK" Indicators on Remote Units

6.3.3.1 During Normal Operation

The "SYSTEM OK" Indicator shows the status of Remote Unit.

During Normal Operation two "monitoring messages" are regularly sent around the loop from the Control Panel.

The first message originates from the "A" connection of the panel, and causes the Remote Units to turn their indicators ON. The second message is sent from the "B" connection of the panel and causes the units to turn their indicator OFF.
This means that on a system with no cable faults the indicators should flash briefly once every 1.5 seconds.

6.3.3.2 Fault Diagnosis using the "SYSTEM OK" Indicator

- If the Data cable is damaged, Remote Units up to the break (starting from the "A" connection) will have the indicators ON and those after the break will have their indicators OFF, since they will only receive on or off messages.
- If the Remote Unit is not receiving any data it will flash the indicator fast (approximately once a second) with equal on and off times.

Data faults can be located by watching the indicator: if it stays ON occasionally then there is an intermittent fault on the "B" side of the loop, but if it does not light occasionally then the "A" side of the loop has an intermittent fault.

6.4 Fault Finding Remote Units during Commissioning - Overview

The most common problems experienced while Commissioning an OmniCare EVC System are Remote Unit(s) that do not respond correctly to the Commissioning Process.

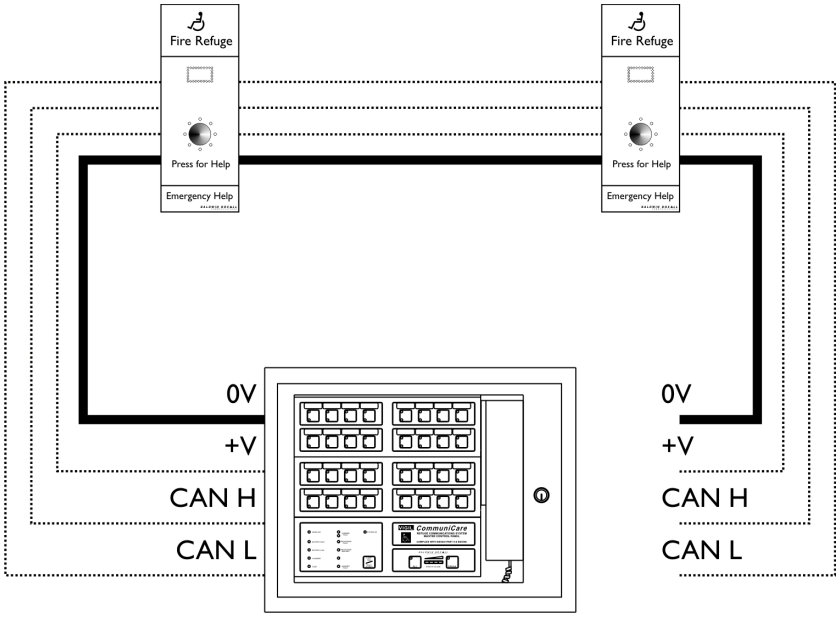
Fault Finding should be completed in the order shown below to reduce the time taken to diagnose and repair faults, and minimise the chance of damaging the Remote Units due to cable errors.

1. Perform a 0V Continuity Check,
2. Check Remote Unit Terminations,
3. Test the Loop Integrity (Power Cables),
4. Test the Loop Integrity (Data Cables) &
5. Diagnose fault location(s)
6. If required, the approximate cable lengths between Remote Units can be checked using the procedure on page 111.

The following sub-sections contain a brief description of each of the steps to explain why the check is made and the benefits of fault finding in the order shown.

6.4.1 Description of 0V Continuity Check

Figure 6.3 — Illustration of 0V Continuity Check



This should be the first check that is made:

- No Power is required so there is no risk of damaging Remote Units,
- It ensures a continuous copper link along the length of the loop,
- After successfully completing the 0V check, Power can be safely applied to the loop:
  Checking the 0V cable ensures that power cables are not transposed (0V to +V and vice versa), and also that the 0V cable is not connected to CAN H or CAN L.
- Successfully completing this test reduces the scope of further wiring faults from 4 wires to 3 wires.

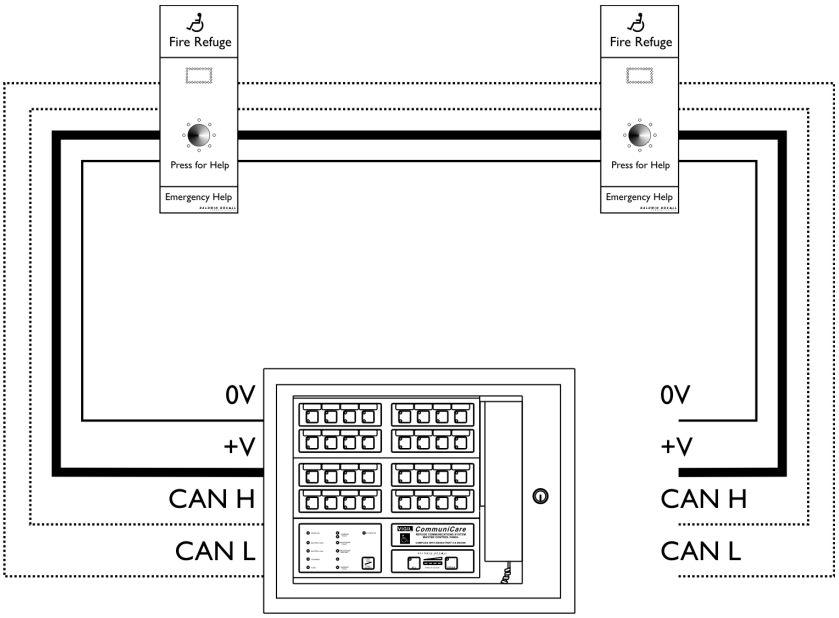
Refer to Section 6.5.1 for details.

6.4.2 Check Terminations on Remote Units

The majority of faults are due to loose, poor or incorrect terminations on Remote Units.

6.4.3 Description of Loop Integrity Check (Power Cables)

Figure 6.4 — Illustration of Testing the Power Cable Integrity



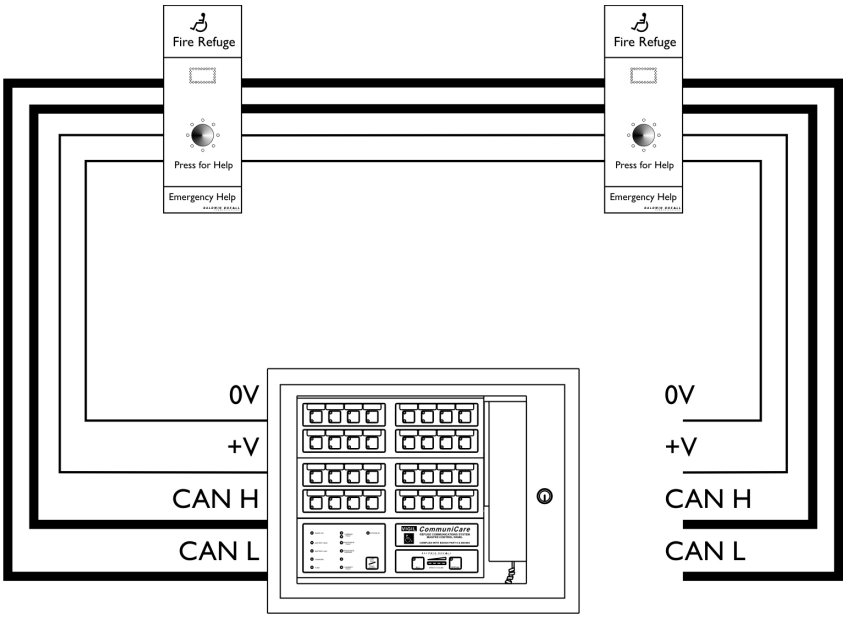
Performing this test next has the following benefits:

- Since the 0V check has proved the integrity of the loop, power can be safely applied without the risk of damaging Remote Units.
- This check ensures the continuity of the +V cabling using the Remote Unit's power switching feature:
  Remote Units test the next +V cable for short circuits before switching the power to the next Remote.
- Either the Front Panel LEDs on the Remote Units or the Commissioning Process can be used to diagnose the location of any faults.
- Successfully completing this test reduces the scope of further wiring faults from 3 wires to 2 wires, with the remaining cables being data only.

Refer to Section 6.5.3 for details.

6.4.4 Testing Loop Integrity (Data Cables) & Diagnosing Fault Location

Figure 6.5 — Illustration of Testing Loop Integrity (Data Cables)



Performing this check after the 0V and Power checks has the following benefits:

- The previous checks have made sure the Remote Units have Power and that the Loop is intact,
- The Commissioning Process and the "SYSTEM OK" LED can be used to locate faulty connections or wiring,
- Only the CAN H and CAN L terminations need to be checked, since the other connections have been checked previously.

Refer to Section 6.5.4 for details on fault finding using the Commissioning process, and Section 6.3.3.2 for fault finding using the "SYSTEM OK" LED.

6.5 Fault Finding Procedures for Remote Units

If during Commissioning an "Open Ended" loop (i.e. only connected at the "A" termination on the Control Panel) the Remote Units are not all detected then the following procedures can help to identify and locate the fault(s).

Caution

The OmniCare EVC System Remote Units can be damaged if either of the following situations occur:

- If Power is connected across the Data pair,
- If Power is reversed i.e. 0V and +V swapped.

6.5.1 Perform a 0V Continuity Check

With the mains and one end of the Loop disconnected at the Control Panel ensure the 0V cable has continuity around the loop between the "A" and "B" ends of the circuit.

Note: The 0V cable is the only cable that should have continuity around the loop.

If the 0V cable does not have continuity around the loop then this must be investigated and resolved before attempting to Commission the system again.

It may be necessary to check the continuity of the loop "point to point" to locate the fault. It is possible to determine the location of a break in the 0V cable by linking one end of the 0V cable to Earth, and then checking the resistance between 0V and Earth at each Remote unit in turn along the loop. When 0V is no longer connected to Earth the location of the break is identified.

6.5.2 Check Terminations on Remote Units

The majority of problems encountered during commissioning are due to poor, loose or incorrect terminations on Remote Units.

6.5.3 Test the Loop Integrity (Power Cables)

CAUTION

Ensure Mains Power is disconnected before connecting or disconnecting Ring Circuits.

1. At the Master Panel, connect one end of the first ring circuit to the "A" terminations (refer to Figure 2.2 on page 16). Ensure the unconnected cables on the other end of the ring are suitably positioned to prevent short circuits.

NOTE: If the "B" connections are also made during commissioning the panel will automatically route data and power around the ring. This makes diagnosis of any cable faults much more difficult.

2. Connect the Mains Power, but ***do not*** connect the batteries.
3. Press the "FAULT ACCEPT" button to accept the faults and silence the buzzer.
4. Using a voltmeter, check the voltage across the "+V" and "0V" terminals on the "A" circuit is approximately 30V DC. Wait for 10 seconds and then check the return voltage on the "+V" and "0V" cables ("B" circuit) is higher than 22V DC.

NOTE: The actual return voltage depends on the number of Remote Units and the cable length of the loop.

CAUTION

If the reading on the return cables is less than 22V DC then power is not being fed along the loop.
Investigate the circuit wiring before proceeding.

5. To locate a power fault, walk around the loop from the "A" connection and check the "SYSTEM OK" LEDs on the Remote Units.
   The first unit that does not have a FLASHING "SYSTEM OK" LED has not received power.
6. Check the terminations on that Remote Unit to ensure the "+V" connection is made correctly and is secure.
7. Measure the voltage on the "+V" OUTPUT of the PREVIOUS Remote Unit on the loop:

- If the output voltage is less than 22V DC, then check that length of +V cable for short circuits, shorts to earth etc.
- If the output voltage is greater than 22V DC then there is an open circuit fault in the +V cable between the two Remote Units.

6.5.4 Diagnosing the Location of Fault(s) using Commissioning Process

If the 0V and Power Continuity checks are both OK then the next step is to reverse the loop and connect the "B" cables to the "A" termination point. This will indicate how far down the loop the fault(s) are located.

1. Run the Commissioning Process to locate the failure point nearest to the "A" end of the cable.

CAUTION

Ensure Mains Power is disconnected before connecting or disconnecting Loop Circuits.

2. Disconnect the "A" end of the cable from the control panel.
3. Connect the "B" end of the cable to the "A" termination on the control panel.
4. Run the Commissioning Process again to locate the failure point nearest to the "B" end of the cable.

The following Examples shown in Figure 6.6 - Figure 6.9 illustrate the progress of the Commissioning Code along the loop.

In the First examples (Figure 6.6 & Figure 6.7) a single Remote Unit has failed, so limiting the progress of the code to that location.

In the Second set of examples (Figure 6.8 & Figure 6.9) there are two separate faults that prevent a series of Remote Units from operating.

In both examples, by reversing the loop and connecting the "B" cable to the "A" termination the location of the fault(s) can be more easily determined.

6.5.4.1 Illustration of a Single Remote Unit not Responding

Figure 6.6 — Commissioning Open Ended loop on "A" cable

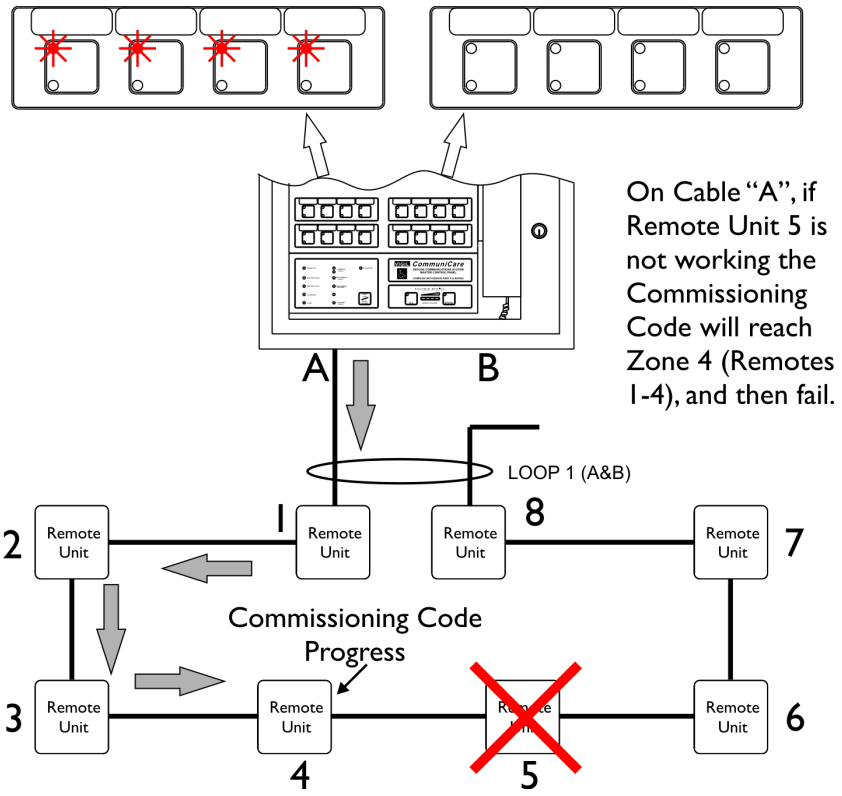
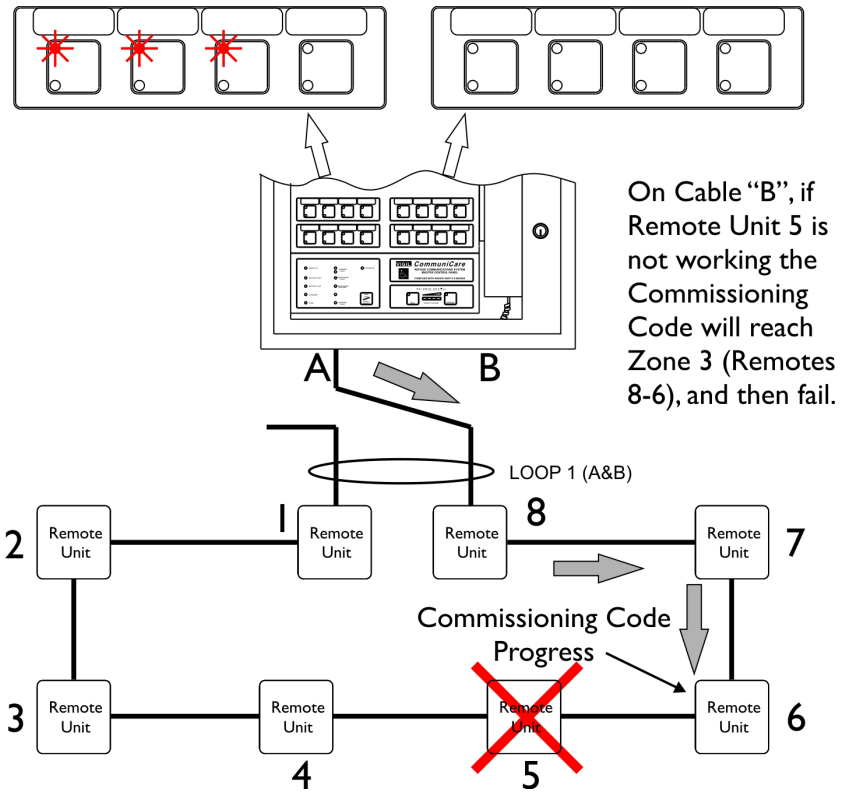


Figure 6.7 — Commissioning Open Ended loop on "B" cable



Examining the SYSTEM OK indicator on the Remote Unit in question will provide guidance to the nature of the fault.

6.5.4.2 Illustration of Multiple Remote Units not Responding

Figure 6.8 — Commissioning progress using Cable "A"

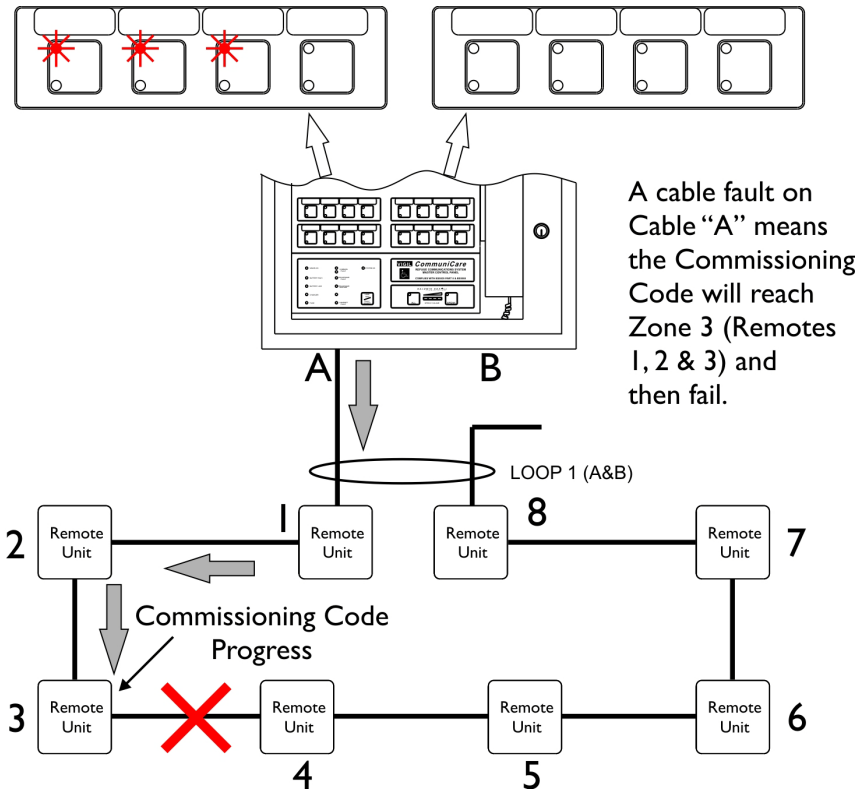
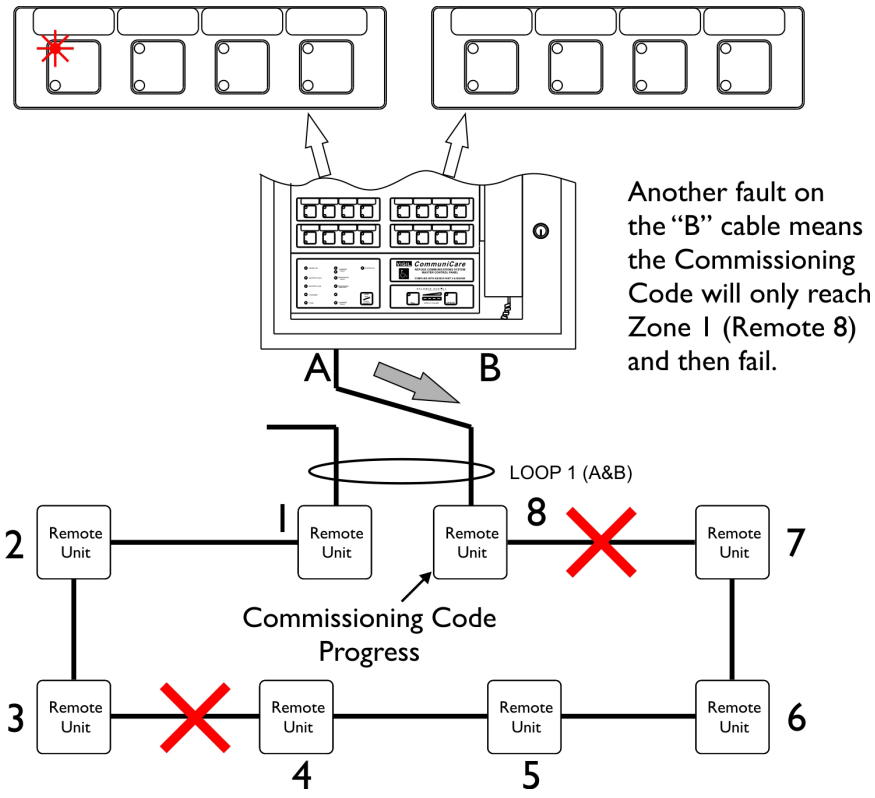


Figure 6.9 — Commissioning progress using Cable "B"



The faults in this example could be due to one (or a combination) of the following issues:

- Poor Terminations on Remote Units 4 and 7:

  If the terminations on Remote Units 4 and 7 are loose or poorly made the integrity of the loop will suffer.

- CAN H and CAN L cables reversed:

  If the CAN H and CAN L cables have been swapped (in this example between Remote Units 3 and 4), and then swapped back further around the loop (between Remote Units 7 and 8) this would result in losing Remote Units 4, 5, 6 and 7. If this is the case, the "SYSTEM OK" indicators on Remote Units 4, 5, 6, and 7 would be flashing whereas the indicators on Remote Units 1, 2, 3 or 8 would be ON.

- There could be two separate cable faults:

  These faults could be open circuit connections, shorts to earth etc. The cabling between (in this example) Remote Units 3 & 4 and between 7 & 8 should be checked.

6.5.5 Diagnosing the Location of Fault(s) using the "System OK" LEDs

An alternative method of diagnosing the location of faults is to walk around the loop and check the status of the "System OK" LEDs on the front panel of each Remote Unit.

NOTE: This method can only be used if the Loop Integrity of the Power Cables has been checked successfully (see Section 6.5.3).

1. Ensure both ends of the loop are terminated correctly at the control panel.

CAUTION

Ensure Mains Power is disconnected before connecting or disconnecting Loop Circuits.

2. Press "Reset" on the front panel of the control panel.
3. Walk around the loop starting from the "A" terminal and note the status of the "System OK" LED on each Remote Unit.
4. The LED status is described in Section 6.3.3.2.

6.5.6 Remote Units not found when Cabling appears Correct

If the LEDs on the panel light erratically, or the Commissioning Process repeatedly fails when all cabling appears to be correct, then perform the following procedure:

- Press and release the “RESET” button on the panel.
- Lift the Handset and press the “ALL” button for one second,
- Replace the Handset and then initiate the Commissioning Process again (press and hold “SPEAK” and then press “RESET” button) but press and hold the “RESET” button for 10 seconds before releasing it.

This procedure removes power from the Remote Units and deletes any false data that may be stored in them.

6.5.7 System Reset and System Configuration

6.5.7.1 System Reset

A System Reset is performed at the end of the commissioning process, but is also required after a complete loss of power, or following the detection or removal of certain types of fault.

The System Reset button is located as shown in Figure 4.9.
To perform a System Reset press the button once.

6.5.7.2 System Configuration

System Configuration is an automatic function that occurs both after a System Reset and also if the system detects a change such as a break in the loop or the loss of a Remote Unit.

During System Configuration the yellow LEDs in positions 4, 5, 12, and 13 will flash. While these LEDs are flashing the system is determining how the control panel(s) communicate with the Remote Units. This process can take up to 10 seconds to complete. The system cannot be used during this time.

Once the LEDs have finished flashing the system is ready for use.

6.6 THE "VIRTUAL BREAK"

6.6.1 The "Virtual Break" - Overview

In an OmniCare EVC System the Remote Units are wired in a continuous Loop, however the system creates a "Virtual Break" in the loop to prevent echoes if adjacent Remote Units are involved in a conference call.

The default location of this Virtual Break is determined during the Commissioning Process, and is calculated by halving the total number of Remote Units found during commissioning.

The following table shows some default Virtual Break locations:

# of Remotes	Calculated Value	Virtual Break location
2	1	Between units 1 & 2
..	..	..
5	2.5	Between units 2 & 3
6	3	Between units 3 & 4
7	3.5	Between units 3 & 4
8	4	Between units 4 & 5
..	..	..
15	7.5	Between units 7 & 8
24	12	Between units 12 & 13
43	21.5	Between units 21 & 22

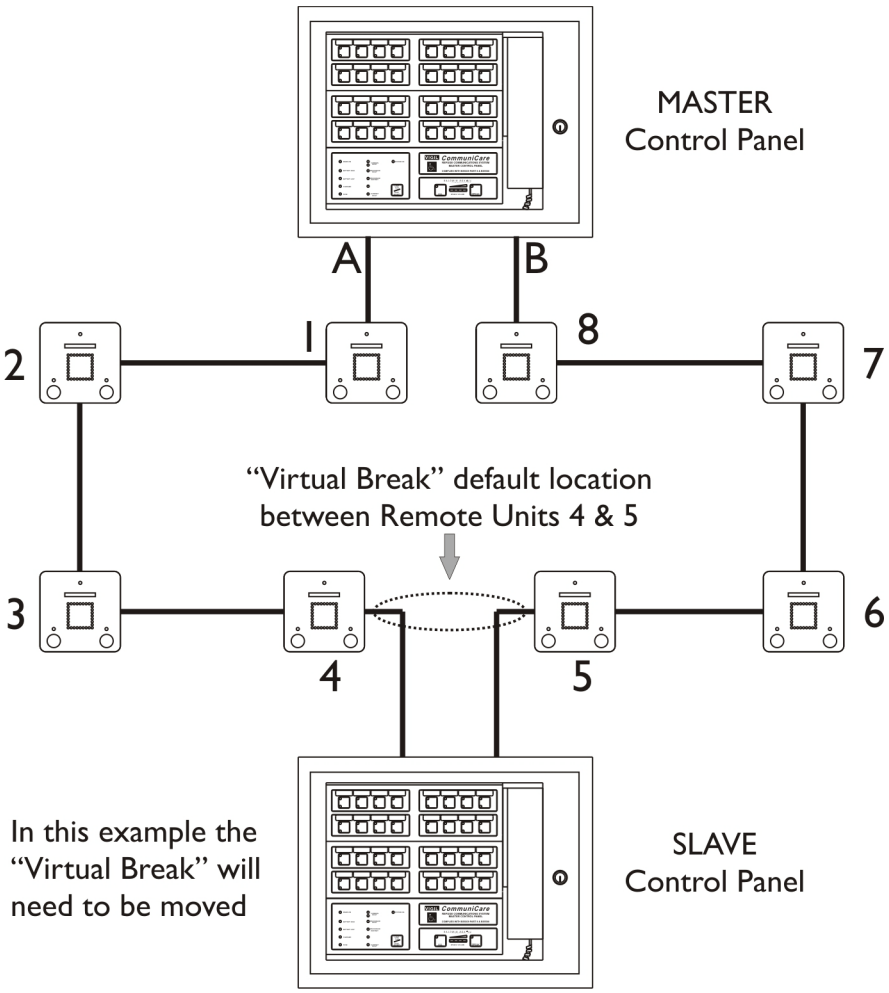
For most installations the default location of the Virtual Break does not cause any issues.

There are two known situations where either the Virtual Break has to be manually altered after Commissioning, or the site wiring has to be changed to move a Control Panel.

6.6.2 The Virtual Break and Slave Control Panels

If a Slave Control Panel is installed where the system has placed the Virtual Break (refer to Figure 6.10), the situation may arise where the Slave Control Panel does not work (no audio through handset) but there are no faults showing.

Figure 6.10 — Illustration showing Slave Panel at Virtual Break

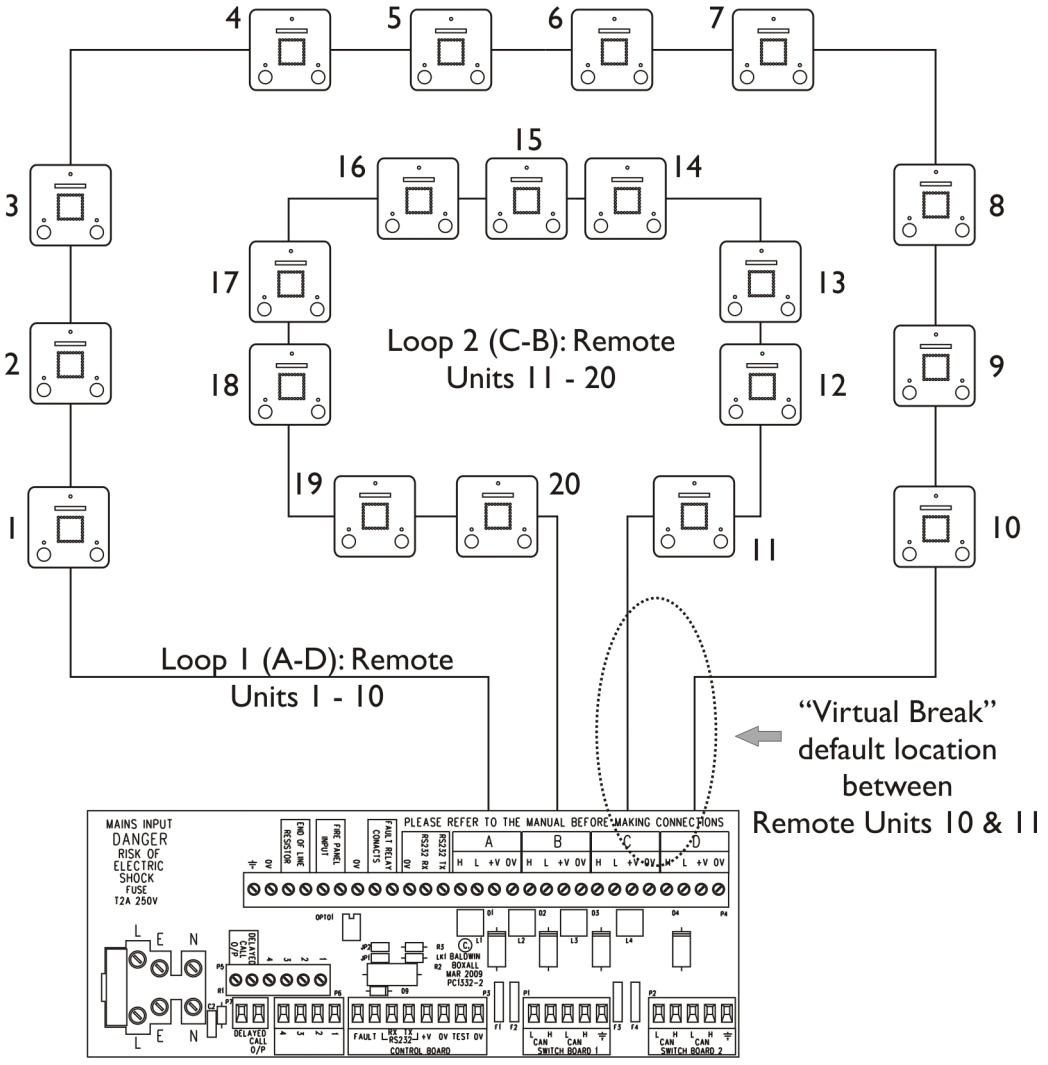


In this instance the position of the Virtual Break must either be changed manually, or the wiring of the loop altered to change the position of the Slave Control Panel in the loop.

6.6.3 The Virtual Break and Zone Cards

If a Zone Card is installed where the system has placed the Virtual Break (refer to Figure 6.11), the second zone card may not clear occupied Remote Units.

Figure 6.11 — Illustration showing Zone Card at Virtual Break



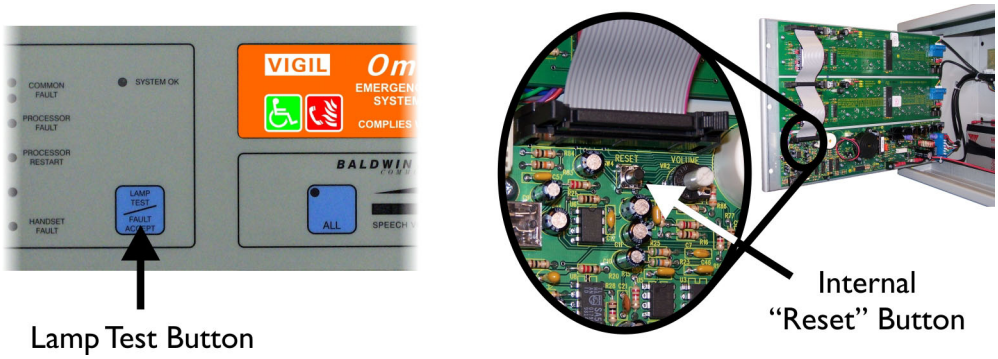
This issue only affects Disabled Refuge (BVOCECP) and Advance Refuge (BVOCA) Remote Units.

In this instance the position of the Virtual Break must either be changed manually, or the wiring of the loop altered to change the position of the Zone Card in the loop.

6.6.4 How to Change the Virtual Break Location

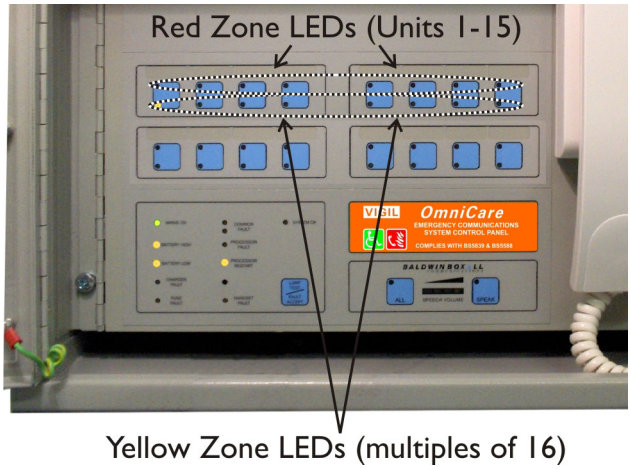
1. Press and hold the Lamp Test Button, press and release the internal Reset button and then release the Lamp Test button.

Figure 6.12 — Lamp Test & Internal Reset buttons



2. The control panel will display the current setting for the Virtual Break using Zones 1 -16 Red and Yellow LEDs.

Figure 6.13 — Virtual Break location LEDs



The Red LEDs are used to show units (0-15) and the Yellow LEDs show the multiples of 16.

NOTE: Both Zone 1 LEDs flashing indicate the Virtual Break is set for the Default Location in the centre of the loop.

3. To set the Virtual Break to a different location press the required zone buttons.
   The first press will set the units (0-15) and the second press sets the multiples of 16.

   E.g. To set the Virtual Break between 36 and 37 press the following zone buttons:

Zone #5 - Red LED indicates 4 units
Zone #3 - Yellow LED indicates 2 x 16 = 32 units
Total = 36, so Virtual Break will be between 36 and 37.

NOTE: Button presses are alternate so if a mistake is made simply continue until the correct Zone LEDs flash.

4. When the correct position is selected press the "RESET" button once to return the panel to normal operating mode.
5. Test the Slave Control panel and ensure the unit is now operating correctly.

NOTE: The system remembers the modified Virtual Break location if power is removed, however, running the Commissioning Process automatically resets the Virtual Break to the Default Location and any manual changes are lost.

7 Maintenance

The OmniCare EVC System System has been designed to meet the requirements of BS5839-9:2021, however the standard also provides recommendations for Maintenance and routine testing of the system that should be performed by the user.

The following sections of this Manual briefly describe the relevant requirements of BS5839-9:2021.

7.1 Appointment of a "Responsible Person"

A single, named person should be appointed to be responsible for all matters relating the OmniCare EVC System System.

This person is responsible for the following activities:

- Ensuring the Testing and Servicing is performed according to the requirements described in Section 7.2.
- Ensuring that the required records of Testing & Servicing are retained,
- Ensuring all relevant staff are trained to use the system,
- Ensuring that records are updated to reflect any changes made to the system.

7.2 Routine Testing

7.2.1 Daily Check - Fault Indicators

If the OmniCare EVC System Control Panel is located in a position where the audible fault warning could be unnoticed for more than 24 hours, a special check should be performed each day to confirm that either the "System OK" LED is illuminated, or any faults that are indicated are receiving necessary attention.

NOTE: This Check only needs to be performed if the Warning Buzzer may go unheard for 24 hours.
This inspection does not need to be recorded.

7.2.2 Weekly Functional Test

Each week, a functional test of a Remote Unit should be performed to ensure it can make and receive clear and intelligible calls to the relevant Control Panel(s).

A different Remote Unit should be used each week, so that all units will get tested in rotation.

NOTE: The result of this weekly test and the identity of the Remote Unit used should be recorded.

7.2.3 Six Monthly Inspection by a "Competent Person"

The Standard recommends that every six months the System should be thoroughly inspected to ensure continued reliability.

The "Competent Person" must have suitable knowledge and equipment to be able to check the system.

Baldwin Boxall can perform these Inspections under a Service Agreement.

NOTE: The result of this inspection and any outstanding defects will be reported to the "Responsible Person". These should be recorded.

8 Cables

8.1 Maximum Cable Lengths and Resistance values

The maximum length cable length between the Control Panel and the First Remote Unit, or between each Remote Unit must not exceed the following distances unless a Repeater Unit is used.

MICC (lightweight) 4-core	Distance between units not to exceed 150m.
MICC (heavyweight) 4-core	Distance between units not to exceed 200m.
FP200 4-core	Distance between units not to exceed 200m.
FP Plus 4-core	Distance between units not to exceed 200m.

The following table states nominal resistance values for the different types of cable normally encountered.

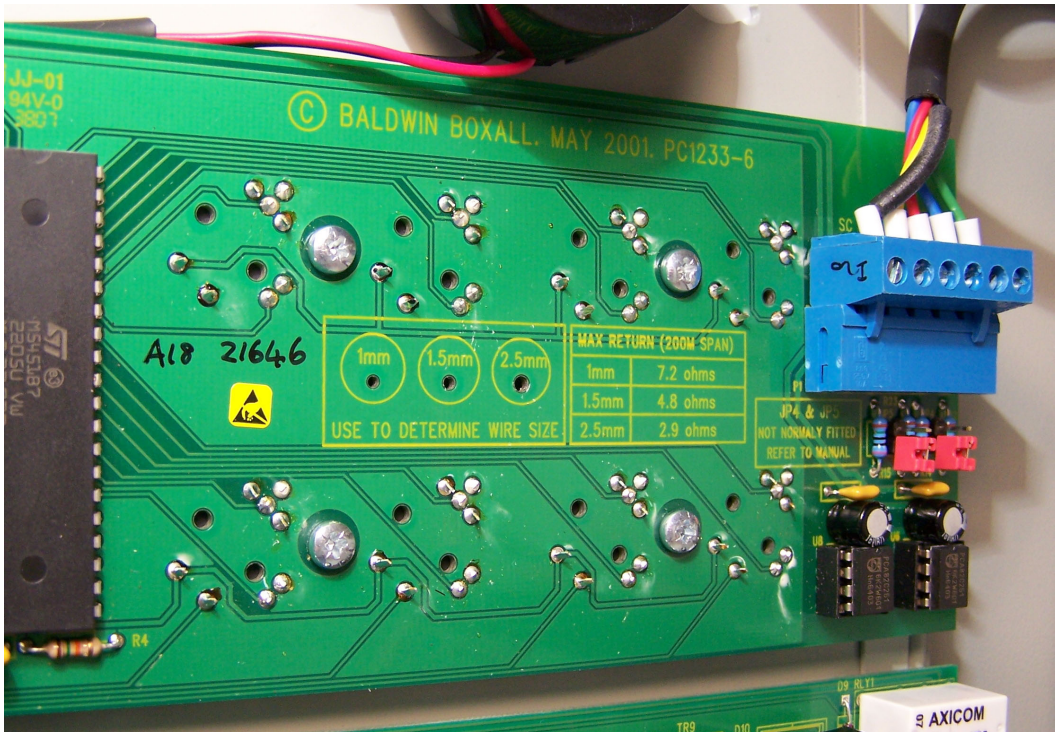
Table 8.1 — Resistance Values for Different Cable Types

Cable Type	**DC ohm per KM**	**Max DC ohm per single link**	
FP200 1.0mm	18.1Ω	3.62Ω	
FP200 1.5mm	12.1Ω	2.42Ω	
FP200 2.5mm	7.4Ω	1.48Ω	
MICC 1.0mm	17.2Ω	(LW) 2.58Ω	(HW) 3.44Ω
MICC 1.5mm	11.4Ω	(LW) 1.71Ω	(HW) 2.28Ω
MICC 2.5mm	6.8Ω	(LW) 1.02Ω	(HW) 1.36Ω

8.2 Determining Cable Size

To assist with determining the size of cable the Zone Card in the control panel includes 3 holes which can be used as a guide.

Figure 8.1 — Cable size guide



The holes are very slightly larger than the stated size to allow for burrs on the end of the sample of cable.

NOTE: *The sizes shown are the cross-sectional area of the conductor without insulation.*

The "Max Return 200M Span" values are given to assist with fault finding. These are the maximum resistance values for a return span (i.e. there and back with the conductors joined at the far end) for the relevant sizes of FP200 cable.

For a detailed explanation of the procedure for calculating cable length refer to Section 8.4 on page 113.

8.3 Approximate Cable Length Calculations

To assist with on site fault finding the standard CANBUS termination resistors have been replaced with 0.1% high stability resistors from batch 21210 onwards.

This enables approximate cable length to be estimated without disconnecting the Remote Units from the site cabling.

NOTE: The following values assume typical characteristics of the termination resistors, CANBUS driver integrated circuits and cables. The most accurate method of determining cable length is to use the procedure described in Section 8.4.

CAUTION

Ensure the power is turned off when performing any of the following measurements.

8.3.1 Distance Between Two Remote Units

Connect an accurate Digital Multimeter between the CANH and CANL conductors on one unit, and measure the resistance with both Remote Units connected to the site wiring.

The approximate distance can be estimated using the values shown in Table 8.2.

Table 8.2 — Resistance readings between two Remote Units

	50m	100m	150m	**200m**	250m	300m
1.0mm	75.0	75.5	75.9	**76.4**	76.8	77.2
1.5mm	74.9	75.2	75.5	**75.8**	76.1	76.4
2.5mm	74.8	75.0	75.15	**75.3**	75.5	75.7

8.3.2 Readings with Local Unit Disconnected

A more accurate reading can be obtained by disconnecting the local unit and then measuring the resistance between the CANH and CANL conductors.

Use the readings shown in Table 8.3 to calculate the distance when the Local Unit is disconnected.

Table 8.3 — Resistance reading with Local Remote Unit Disconnected

	50m	100m	150m	**200m**	250m	300m
1.0mm	151	152.8	154.6	**156.4**	158.2	160
1.5mm	150.4	151.6	152.8	**154.0**	155.2	156.5
2.5mm	150	150.7	151.4	**152.16**	152.9	153.6

8.3.3 Resistance Readings when using Repeaters

When Repeaters have their jumpers fitted to increase the range, the termination resistance is modified. The following tables should be used to determine the approximate cable length.

Table 8.4 — Resistance reading for 2 Repeaters with Jumpers Fitted

	50m	100m	150m	**200m**	250m	300m
1.0mm	37.8	38.23	38.66	**39.0**	39.5	39.9
1.5mm	37.65	38.0	38.23	**38.52**	38.8	39.1
2.5mm	37.53	37.7	37.9	**38.07**	38.25	38.42

Table 8.5 — Resistance reading from a Remote / Console or Repeater without Jumpers Fitted to a Repeater with Jumpers Fitted

	50m	100m	150m	**200m**	250m	300m
1.0mm	50.57	51.36	52.13	**52.9**	53.64	54.38
1.5mm	50.31	50.84	51.36	**51.88**	52.39	52.9
2.5mm	50.1	50.43	50.75	**51.07**	51.39	51.71

A more accurate reading can be obtained by disconnecting the local unit and measuring between CANH and CANL.

Table 8.6 — Readings for Distant Repeater with Jumpers Fitted

	50m	100m	150m	**200m**	250m	300m
1.0mm	76.51	78.32	80.13	**81.94**	83.7	85.56
1.5mm	75.91	77.12	78.33	**79.54**	80.75	81.96
2.5mm	75.44	76.18	76.92	**77.66**	78.4	79.14

8.4 How to Calculate Cable Length

To calculate the approximate length of a single cable run between two Remote Units use the following procedure:

1. Disconnect both ends of the relevant cable from the Remote Units.
2. Using an accurate DVM, select the Resistance range. Connect both probes together and note the resistance reading shown.
3. Temporarily link two of the conductors together at one end of the cable.

   Measure the resistance between the of the two conductors at the other of the run and note the reading.
   Remove the temporary link.
4. Subtract the resistance of the meter (noted in step 2) from the resistance of the conductors (noted in step 3).
5. Divide the result by 2 to give the resistance of a single conductor.
6. Identify the type of cable in use, and refer to Table 8.1 to find the maximum resistance for a single cable run of the stated cable type. Note the value given.
7. Compare the calculated resistance (gained in step 5) with the stated maximum.
   - If the calculated value is less than the stated maximum then the cable run is likely to be OK and less than the maximum distance allowed.
   - If the calculated value is close to, or higher than the stated maximum then it is likely that the cable run is too long and a Repeater Unit will be required.

NOTE: Cable manufacturers state a maximum value for resistance. In reality the actual resistance of a length of cable may be less. As a result, calculating cable length using resistance will give the ***SHORTEST*** *distance. If the calculated result is close to the maximum stated value then it is likely the cable run is longer than permitted.*

A Addendum

This Addendum contains all the mechanical and dimension information for the OmniCare EVC System Control Panels and Remote Units.

Refer to Section A.1 for Control Panel information and Section A.2 for Remote Unit information.

A.1 Control Panels

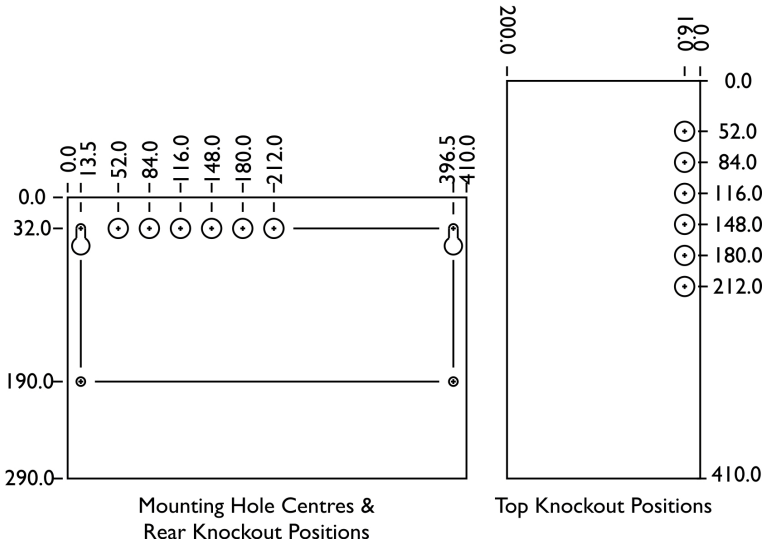
A.1.1 BVOC4M - 32M (4-32 Way) Control Panel

Figure A.1 — Typical Mini (4-32 way) Control Panel with optional Bezel

Dimensions (W x H x D)	410mm x 290mm x 200mm
Bezel Dimensions (W x H x D)	461mm x 340mm x 25mm
Bezel Cutout Dimensions (W x H)	420mm x 300mm
Weight (including batteries)	21Kg

NOTE: *The bezel can be fitted at any depth to suit the installation.*

Figure A.2 — Mounting Holes & Knockout Positions



CAUTION

The knockouts in the base are for additional battery cabling only.
Using these knockouts for Loop Cables will prevent the batteries from fitting.

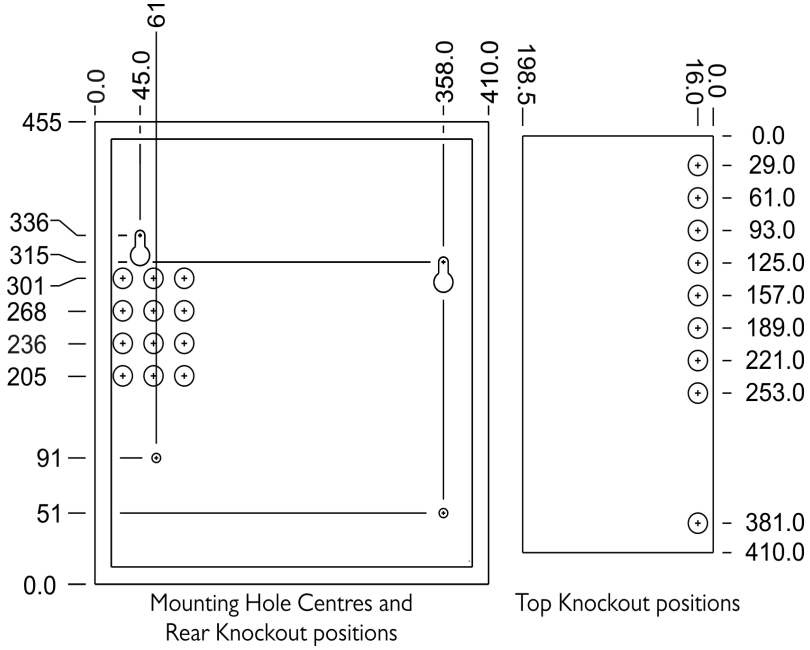
A.1.2 BVOC16 - 64 (16-64 Way) Control Panel

Figure A.3 — Typical Medium Size (16-64 Way) Control Panel

Dimensions (W x H x D)	410mm x 455mm x 200mm
Bezel Dimensions (W x H x D)	461mm x 506mm x 25mm
Bezel Cutout Dimensions (W x H)	420mm x 465mm
Weight (including batteries)	26Kg

NOTE: *The bezel can be fitted at any depth to suit the installation.*

Figure A.4 — Mounting Holes & Knockout Positions



CAUTION

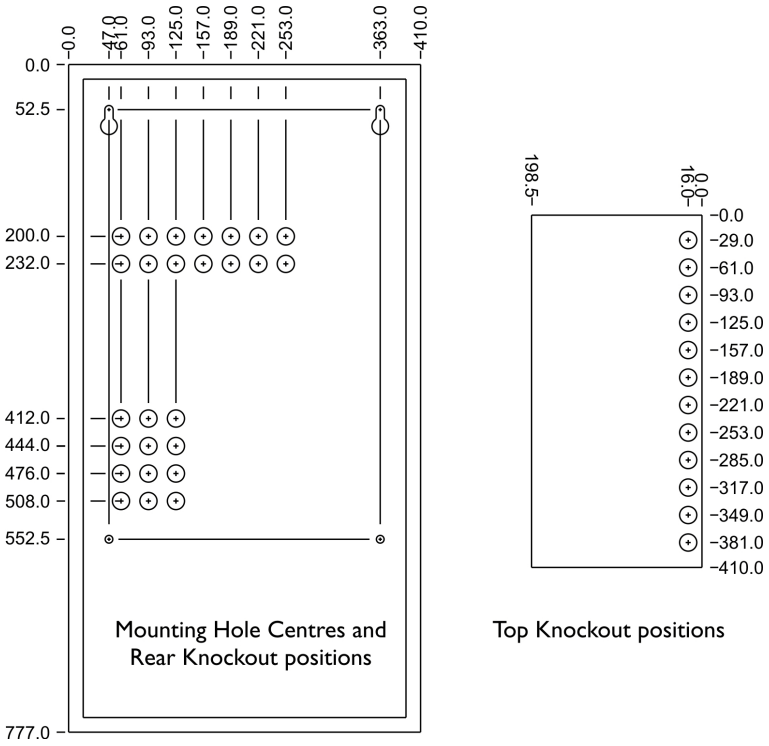
The knockouts in the base are for additional battery cabling only.
Using these knockouts for Loop Cables will prevent the batteries from fitting.

A.1.3 BVOC80 - 128 (80-128) Way Control Panel

Figure A.5 — Typical Large (80-128 Way) Control Panel

Dimensions (W x H x D)	410mm x 777mm x 200mm
Bezel Dimensions (W x H x D)	461mm x 827mm x 25mm
Bezel Cutout Dimensions (W x H)	420mm x 787mm
Weight (including batteries)	37Kg

Figure A.6 — Mounting Holes & Knockout Positions



CAUTION

The knockouts in the base are for additional battery cabling only.
Using these knockouts for Loop Cables will prevent the batteries from fitting.

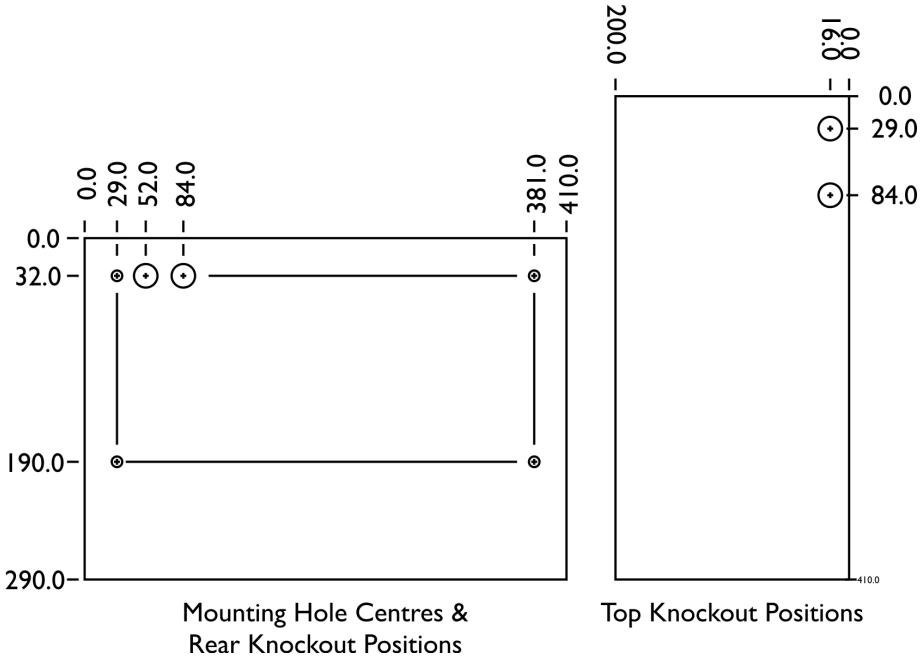
A.1.4 BVOBATT Battery Enclosure

Figure A.7 — Typical BVOBATT Battery Enclosure

Dimensions (W x H x D)	410mm x 290mm x 200mm
Bezel Dimensions (W x H x D)	461mm x 340mm x 25mm
Bezel Cutout Dimensions (W x H)	420mm x 300mm
Max Weight (including batteries)	34Kg

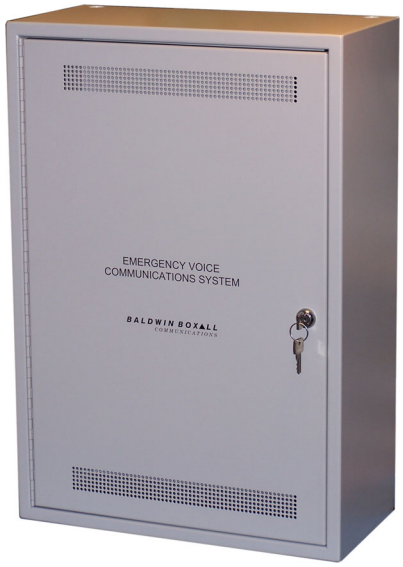
NOTE: *The bezel can be fitted at any depth to suit the installation.*

Figure A.8 — Mounting Holes & Knockout Positions



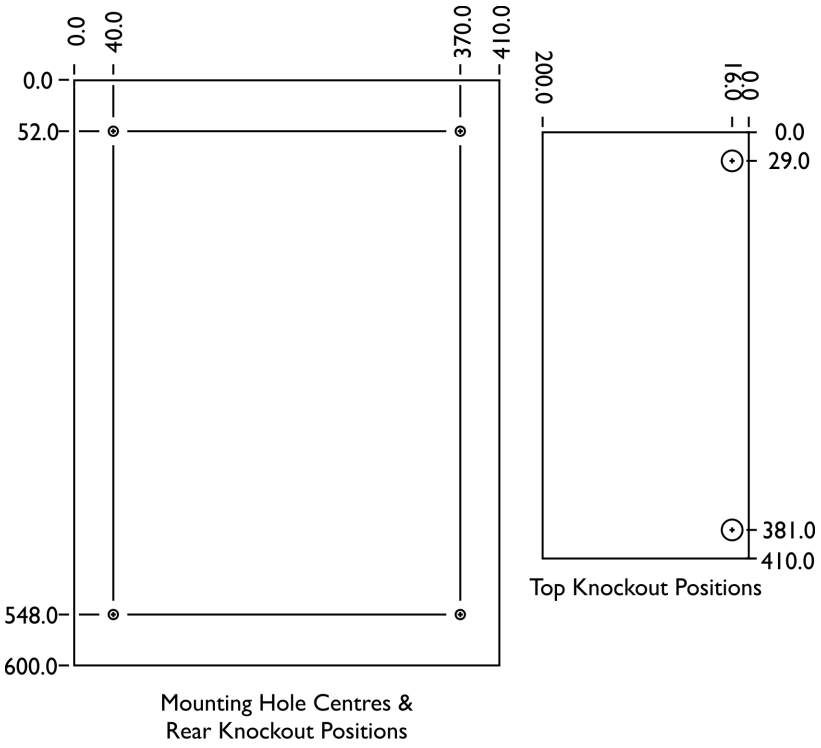
A.1.5 BVOBATT2 Battery Enclosure

Figure A.9 — Typical BVOBATT2 Battery Enclosure



Dimensions (W x H x D)	410mm x 600mm x 200mm
Max Weight (including batteries)	13Kg (Case) + upto 67Kg depending on batteries in use

Figure A.10 — Mounting Holes & Knockout Positions



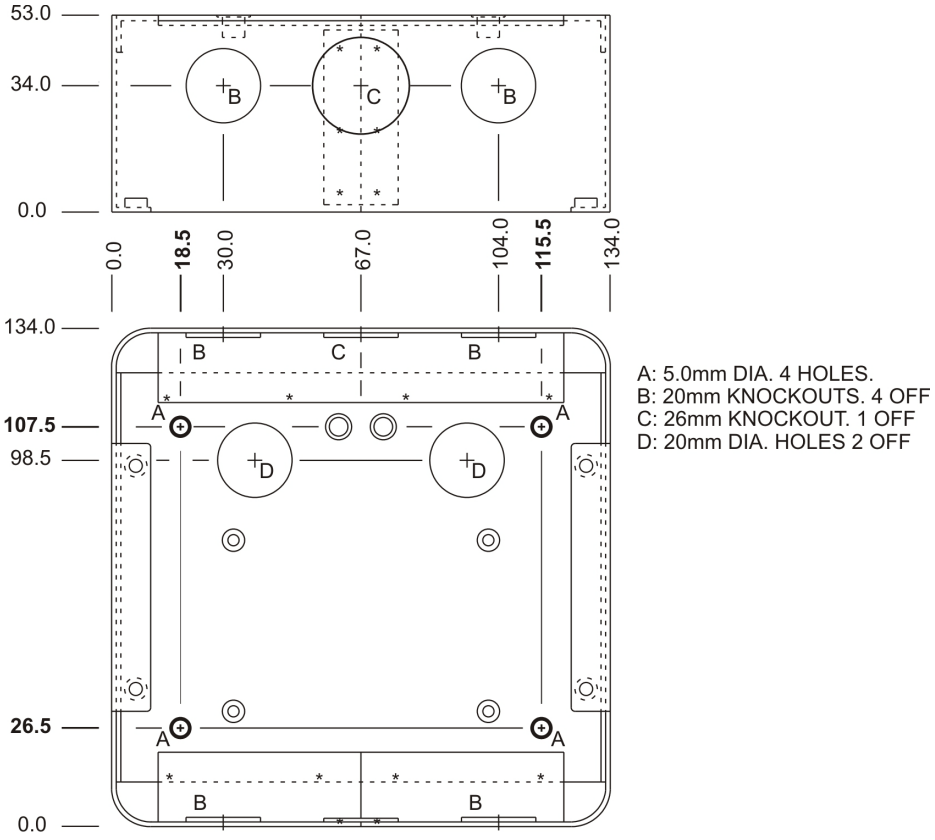
A.2 Remote Units

A.2.1 BVOCECPG Disabled Refuge Remote

Figure A.11 — Typical BVOCECPG Remote Unit

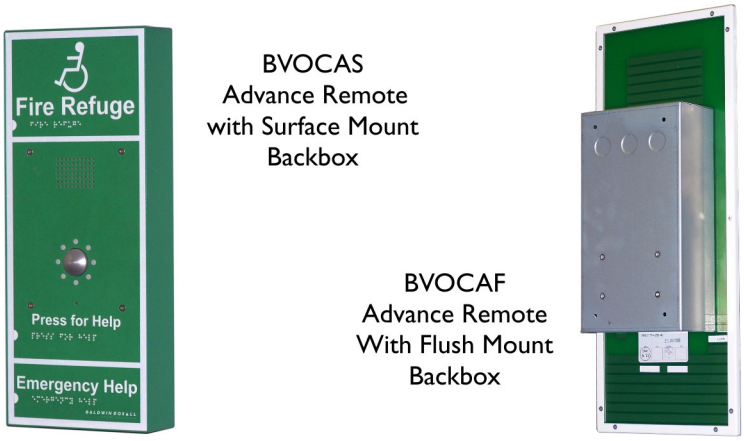
Dimensions (W x H x D)	134mm x 134mm x 64mm
Bezel Dimensions (W x H)	154mm x 154mm, 10mm Radius
Bezel Cutout Dimensions (W x H)	136mm x 136mm, 10mm Radius
Weight	1Kg

Figure A.12 — Mounting Holes & Knockout Positions



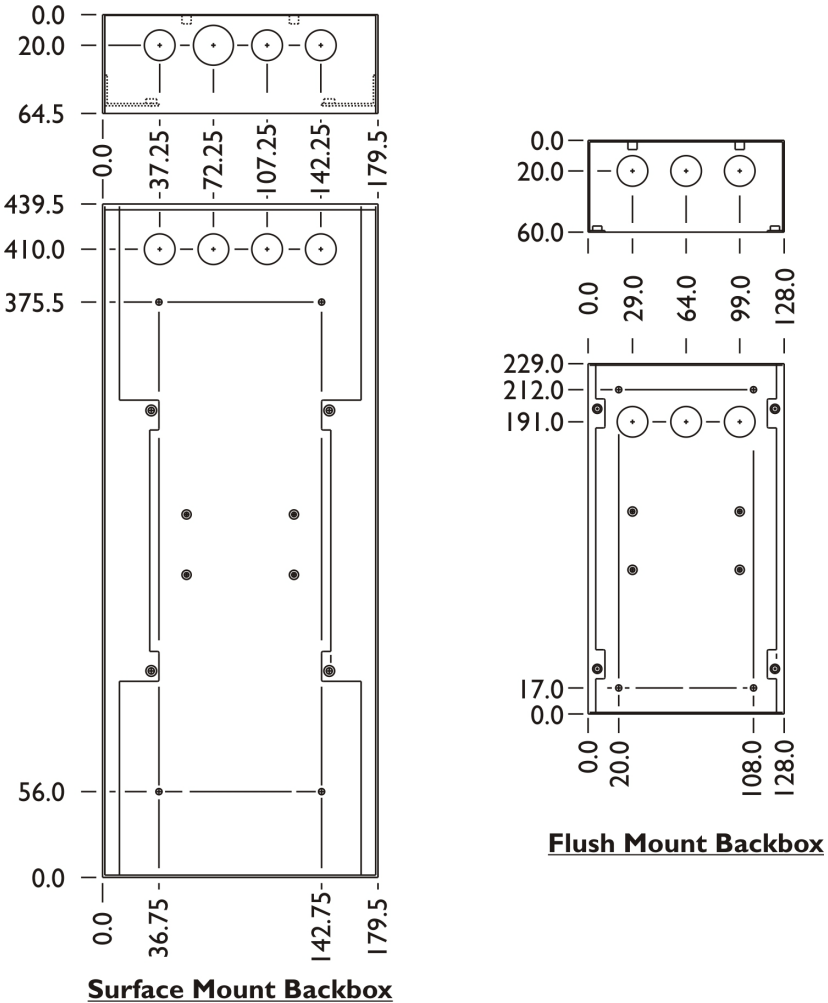
A.2.2 BVOCA Advance Disabled Refuge Remote

Figure A.13 — Examples of BVOCA Advanced Remote Units



Surface Mount Dimensions (W x H x D)	180mm x 440mm x 64mm
Flush Mount Dimensions (W x H x D)	178mm x 440mm x 3mm
Flush Mount Cutout Dimension (W x H x D)	133mm x 235mm x 65mm
Weight	1Kg

Figure A.14 — Mounting Holes & Knockout Positions

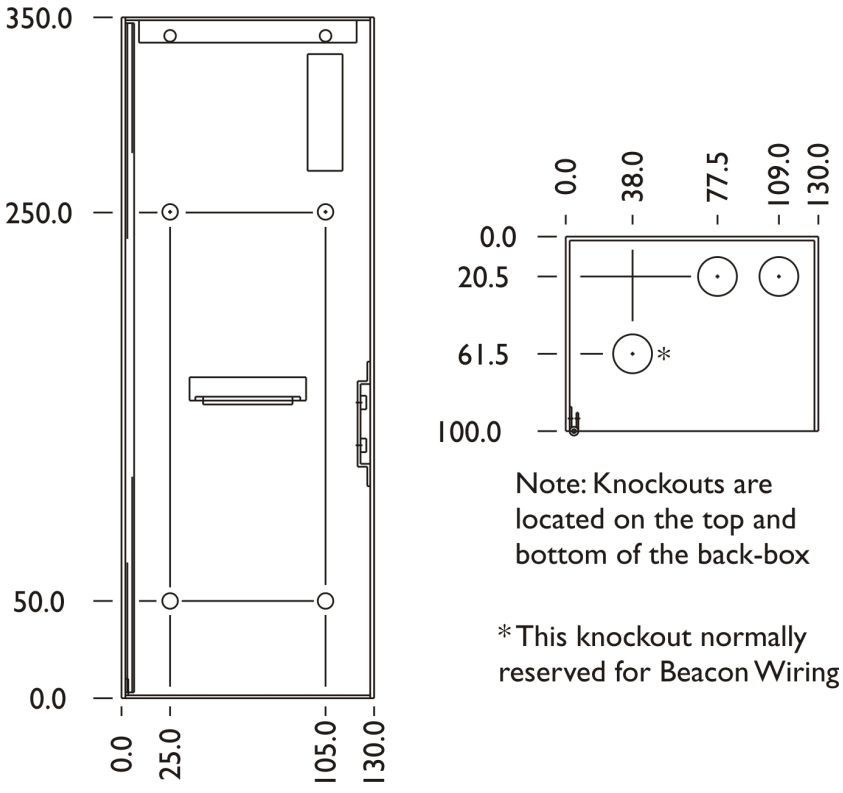


A.2.3 Fire & Emergency Telephone Remotes (BVOCF & BVOCET)

Figure A.15 — Examples of BVOCF Fire Telephones

Dimensions (W x H x D)	130mm x 350mm x 100mm
Bezel Dimensions (W x H x D)	170mm x 390mm x 20mm
Bezel Cutout Dimensions (W x H)	138mm x 358mm
Weight	4Kg

Figure A.16 — Mounting Holes & Knockout Positions



Note: Knockouts are located on the top and bottom of the back-box

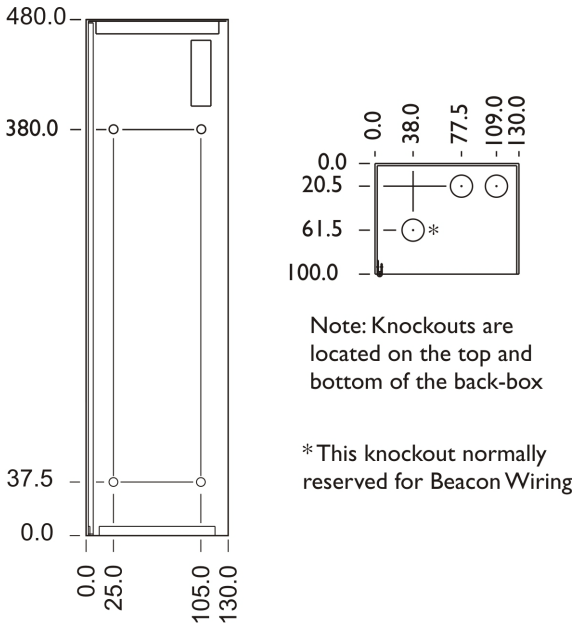
*This knockout normally reserved for Beacon Wiring

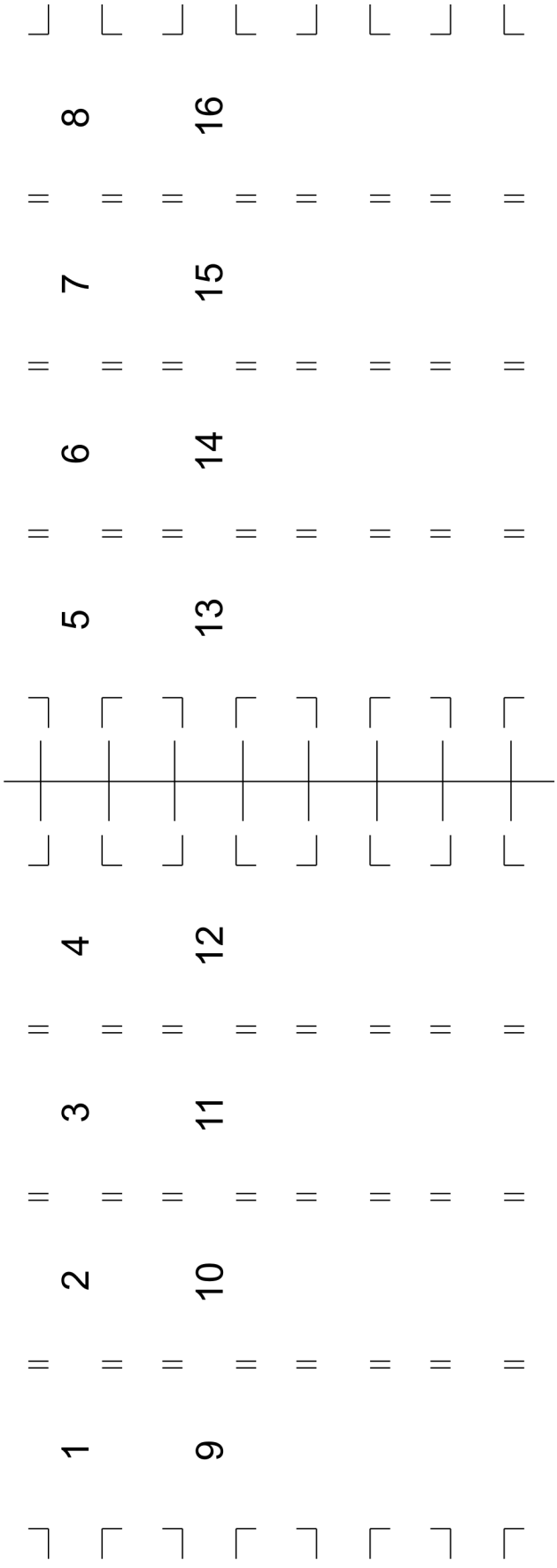
A.2.4 BVOCC Combined Disabled Refuge / Fire Telephone Remote

Figure A.17 — Typical BVOCC Combined Remote Unit

Dimensions (W x H x D)	130mm x 480mm x100mm
Bezel Dimensions (W x H x D)	170mm x 520mm x 20mm
Bezel Cutout Dimensions (W x H)	138mm x 488mm
Weight	4.5Kg

Figure A.18 — Mounting Holes and Knockout Positions

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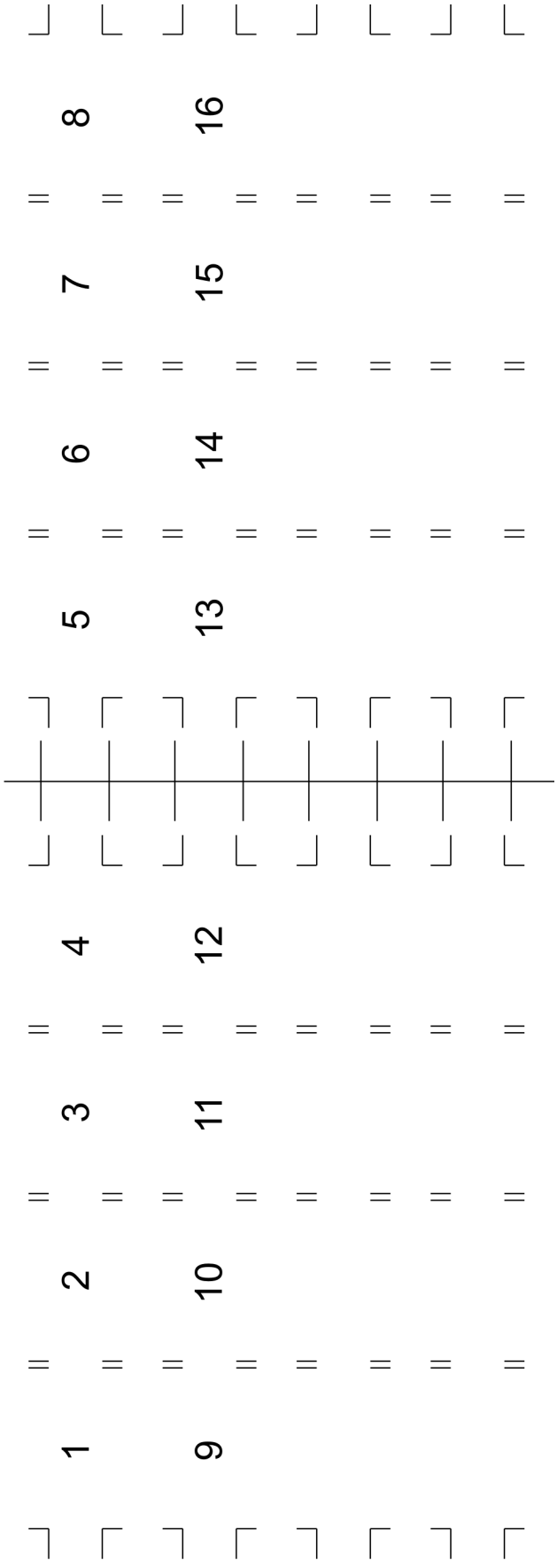
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