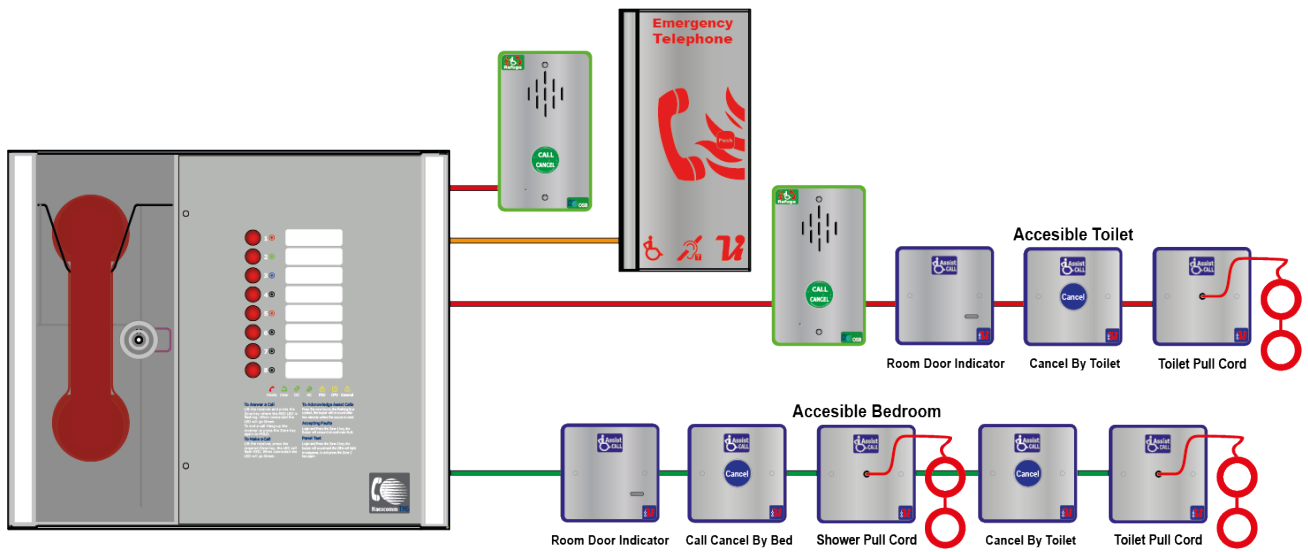# Haescomm HC-228 EVCS Master Station

Installation and Commissioning Manual

Version 6 September 2017

Table of Contents

1. Introduction

1.1 What is an Emergency Voice Communication System

An Emergency Voice Communication System, or EVCS, is a system that allows voice communication in either direction between a central control point and a number of other points throughout a building or building complex, particularly in a fire emergency situation. The control points, or outstations by which they are more commonly referred, generally comprise of a Type A outstation, a Type B outstation, or a Type C Combined Type outstation. "Assist Call" emergency assistance alarm systems can also be incorporated into the EVCS.

EVCS is generally required in the following situations:

- In any building or sports or similar venue where there are disabled people, or people who may have difficulty negotiating the evacuation route.
- In buildings with phased evacuation and/or firefighting lifts where it facilitates secure communications for building managers, fire wardens, and attending fire officers.
- At sports venues and similar complexes, where it will assist stewards in controlling the evacuation of the area in an emergency.

The Haescomm HC-228 Emergency Voice Communications System (EVCS) is designed to fully comply with BS5839 Part 9:2011 for use as a Fire Telephone system, Disabled Refuge Call system or as a combined system when both Fire Telephones and Disabled Refuge Points are required.

1.2 Suitability

Fire telephone systems are recommended for all public buildings and multi-story buildings over four floors by BS9999.

Disabled Refuge systems are required in buildings where the public or disabled staff gains access to any floor other than the ground floor using lifts. Refuge areas are provided at each storey exit from each protected stairway.

2. Product Overview

The Haescomm EVCS, or HC-228, comprises of a Master Station and one or more outstations. Additionally the "Assist Call" emergency assistance alarm system can either be connected to the same line as a Type B outstation, or connected to a dedicated line. Neither the outstations nor the "Assist Call" emergency alarm system require a separate power supply unit as each line is powered from the Master Station. This has the additional benefit of each line being fully monitored and battery backed up.

Each HC-228 Master Station can also perform as a HC-228 Repeater Station. A HC-228 Repeater Station mimics the HC-228 Master Station both in operation and indication. Any reference in this document to the HC-228 Master Station also applies to the HC-228 Repeater Station, unless specified otherwise.

The HC-228 Master Station has been designed for radial star topology. In most cases this will reduce the cable requirements for all ring-based systems. The topology consists of spurs formed of 1 off two core 1.5mm CSA cables (soft skin enhanced up to 500m per leg, MICC 200m per leg) to each outstation.

3. Important Safety Information

This Equipment must only be installed and maintained by a suitably skilled and competent person.

This Equipment is defined as Class 1 in EN60065 (Low Voltage Directive) and must be EARTHED.

Caution	Indoor Use Only
Warning	Shock Hazard- Isolate Before Opening
Warning	TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE
Warning	THIS UNIT MUST BE EARTHED
Warning	NO USER SERVICEABLE PARTS

Each HC-228 Master/Repeater Station requires a 3A spur, returning to a breaker clearly marked "**EVCS DO NOT TURN OFF"**.

If the HC-228 Master Station and the HC-228 Repeater Station are distributed around a site, it is essential that both HC-228 Stations are on the same mains phase, as they are classified TEN 230V. Powering from different phases can mean a 440V potential can be present in a HC-228 Station during a major fault incident.

Anti-static handling guidelines

Make sure that electrostatic handling precautions are taken immediately before handling PCBs and other static sensitive components.

Before handling any static-sensitive items, operators should get rid of any electrostatic charge by touching a sound safety earth. Always handle PCBs by their sides and avoid touching any components.

4. Unpacking the Unit

Remove the HC-228 Master Station from its packing, and check the contents against the following list:
- HC-228 Master Station.
- Installation & maintenance manual (this document).
- User Guide & logbook.
- Accessory pack with the following contents:-
    - 1 number 2.5mm AF Hex Key.
    - 1 number door handle/key.
    - End of Line (EoL) Resistors, 2 per line card
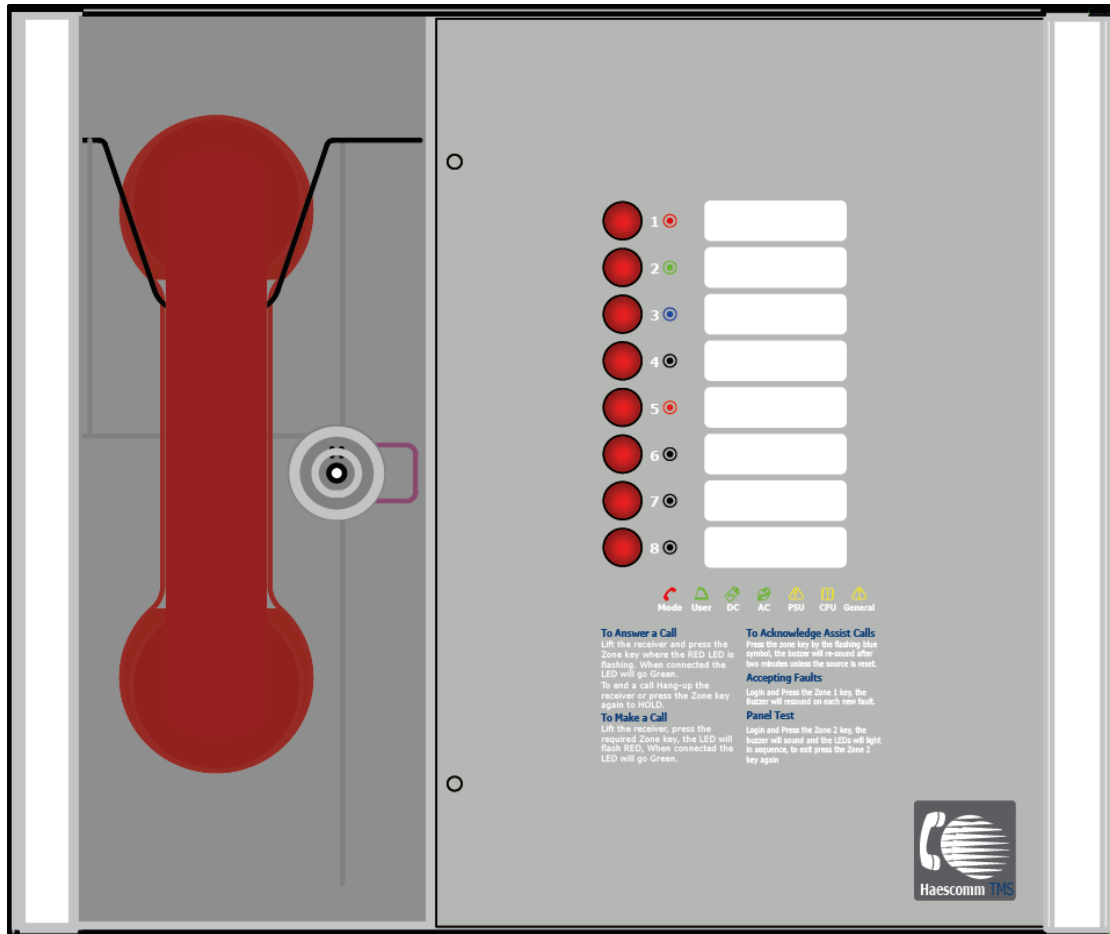
Use the 2.5mm AF Hex Key supplied to open the right hand front cover.
Verify the following items are present:
- Correct number of Line Card, depending on configuration. c/w 2 way line connectors.
- 1 number 3 way mains connector.
- 1 number 2 way Fault connector.
- 1 number 2 way In Use connector.
- 1 number 2 way Enable connector.
- 4 number 2 way Network connectors.
- 1 number Battery lead.

If there are any items missing, please contact your supplier or Vox Ignis Limited, quoting the unit serial number and the name on the packing list enclosed, so the situation can be rectified.

5. Installation
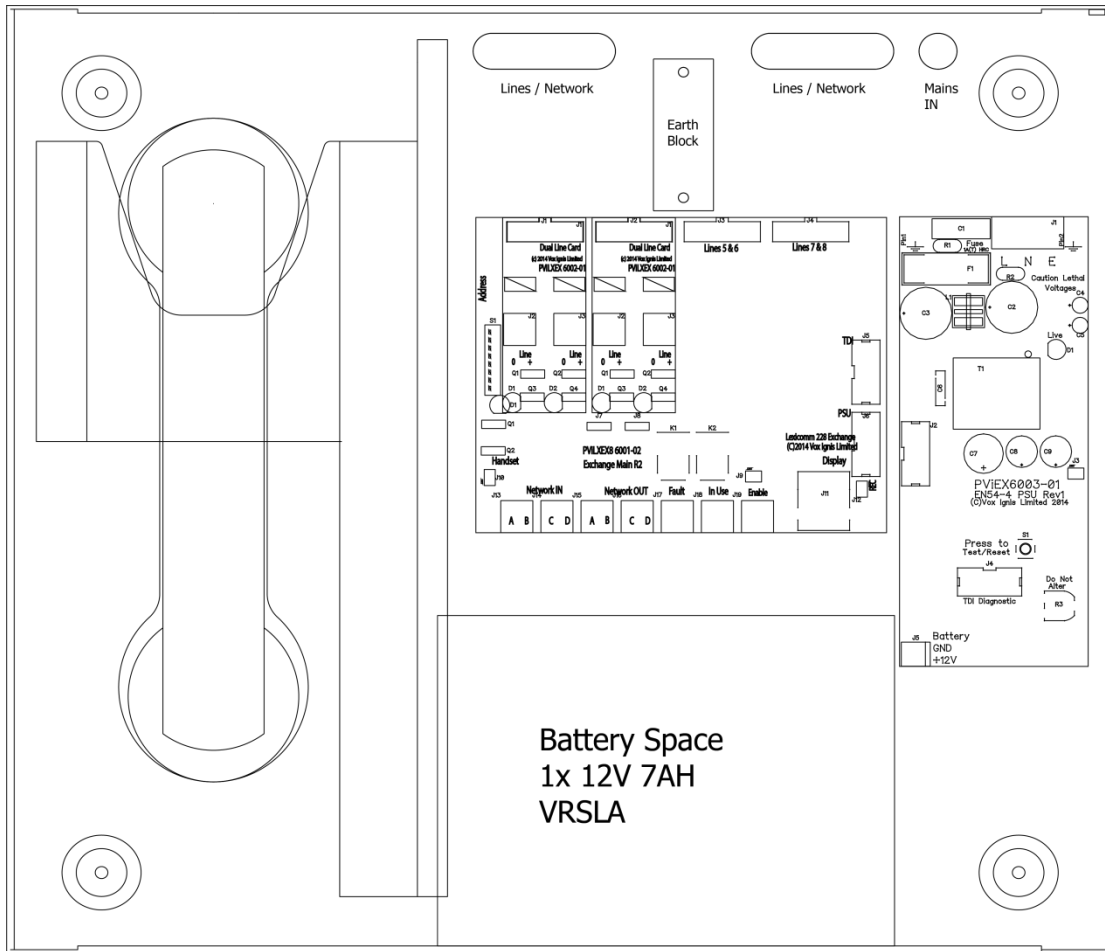
Prior to mounting the HC-228 Master Station, it should be decided if the field wiring is to be run on the surface or concealed. . There are 14 knockouts on the top and 2 slotted entries with a dedicated mains supply entry at the rear. If a knockout is removed by mistake, fill the hole with a good quality cable gland.
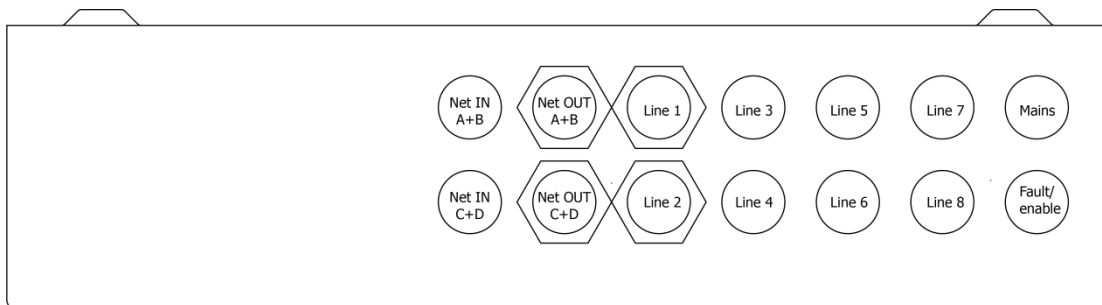
Unused knockouts must be left unopened to comply with the Low Voltage Directive. Accidentally knocked out holes should be blanked off.

The HC-228 Master Station weighs 6kg with batteries, so care should be taken to securely mount the Station on stud walling.

5.1 Connecting the HC-228 Master Station

To comply with EMC (Electro Magnetic Compatibility) regulations and to reduce the risk of electrical interference in the system wiring, the use of fire-resistant screened cables is recommended throughout the installation.

All wiring should come into the enclosure via the knockouts provided, and be fixed tidily to the relevant terminals.

Note that correct cable glanding is essential. Due regard should be paid to any system specifications which demand a certain cable type, providing it meets the appropriate national wiring regulations.

5.2 Planning the Wiring

All system wiring should be installed to meet the appropriate parts of BS5839 Part9:2011 and BS 7671 (Wiring Regulations). Other national standards of installation should be adhered to where applicable.

> ⚠️ **Do not test wiring using an insulation tester (Megger) with any equipment connected, as the 500 Volt test voltage will destroy these devices.**

You must observe local wiring regulations. Do not run SELV and LV cables in the same enclosure without adequate insulation between them.

5.3 Cable and Wiring Guidance

5.3.1 Fire Telephone system

Any system using Type A outstations must use enhanced grade cabling throughout for all wiring, including the mains supply to the HC-228 Master Station.

5.3.2 Disabled Refuge EVC System

For buildings less than 30m in height, or any building with sprinklers fitted, standard grade fire resistant cable may be used to wire Type B outstation and the mains supply to the Master Controller; as long as the planned evacuation will be completed in 30 minutes.
If the building is over 30m in height without sprinklers, or where the evacuation will take place over multiple stages exceeding 30 minutes, then enhanced grade cables must be used.

5.3.3 Combined Systems

For systems containing Type A, Type B or Type C outstations, shared cable such as network cables must be enhanced grade.
Cabling to Type A or Type C outstations must be in enhanced grade fire resistant cabling.
Individual spurs to Type B outstations can be wired in standard grade fire resistant cabling in accordance with the wiring guidelines already set out for disabled refuge systems.

5.3.4 "Assist Call" Emergency Assistance Alarm Systems

All installations must conform to Building Regulations Approved Document M. The "Assist Call" is wired using 2 core cable, and the "Assist Call" plates can be wired in any order.

5.4 Cabling methods

There are 3 cabling methods available:
- Connection to a Type A or Type C outstation: use 2 core enhanced grade fire resistant cable when extending a firefighting telephone system.
- Connection to a Type B outstation: use 2 core standard grade fire resistant cable when extending a disabled refuge system.
- Connection to an "Assist Call" system on a dedicated line: requires 2 core 1mm CSA or above PVC sheathed.

5.4.1 HC-228 Master Station Wiring

The wiring for a HC-228 Master Station is shown in the schematic below.

Cable Key

1 off 2 Core 1.5mm CSA Standard Rated Fire Cable	
1 off 2 Core 1.5mm CSA Enhanced Rated Fire Cable	
1 off 2 Core 1mm CSA Standard LSF or PVC Minimum	
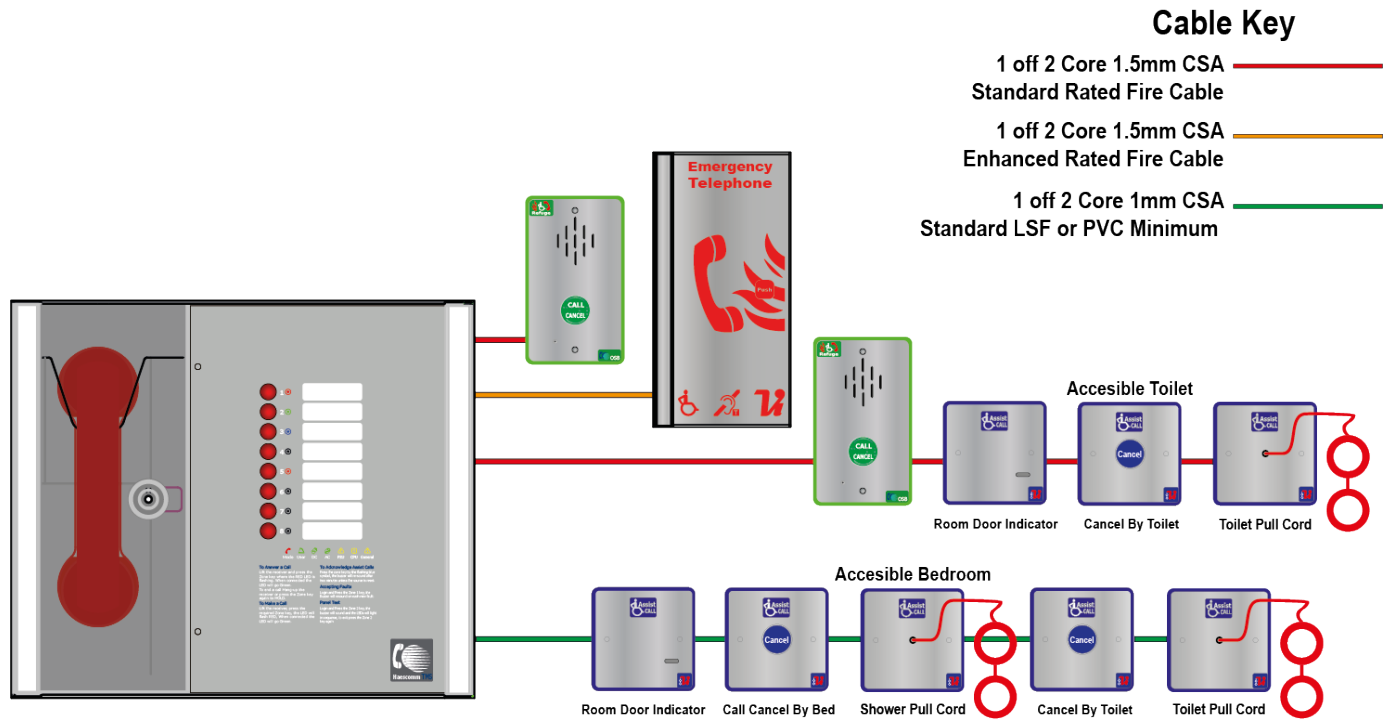
5.4.2 HC-228 Master/Repeater Stations wiring in ring

If two HC-228 Stations are wired in Master/Repeater format, with the outstations shared between both the Master Station and the Repeater Station, the HC-228 system has to be wired as a ring, with each outstation connected via a radial circuit to either the Master Station or Repeater Station, as shown in the schematic below. This ensures that the any single cable fault will not affect the operation of more than one outstation. For further information see 6.4.

HC228 Network Schematic
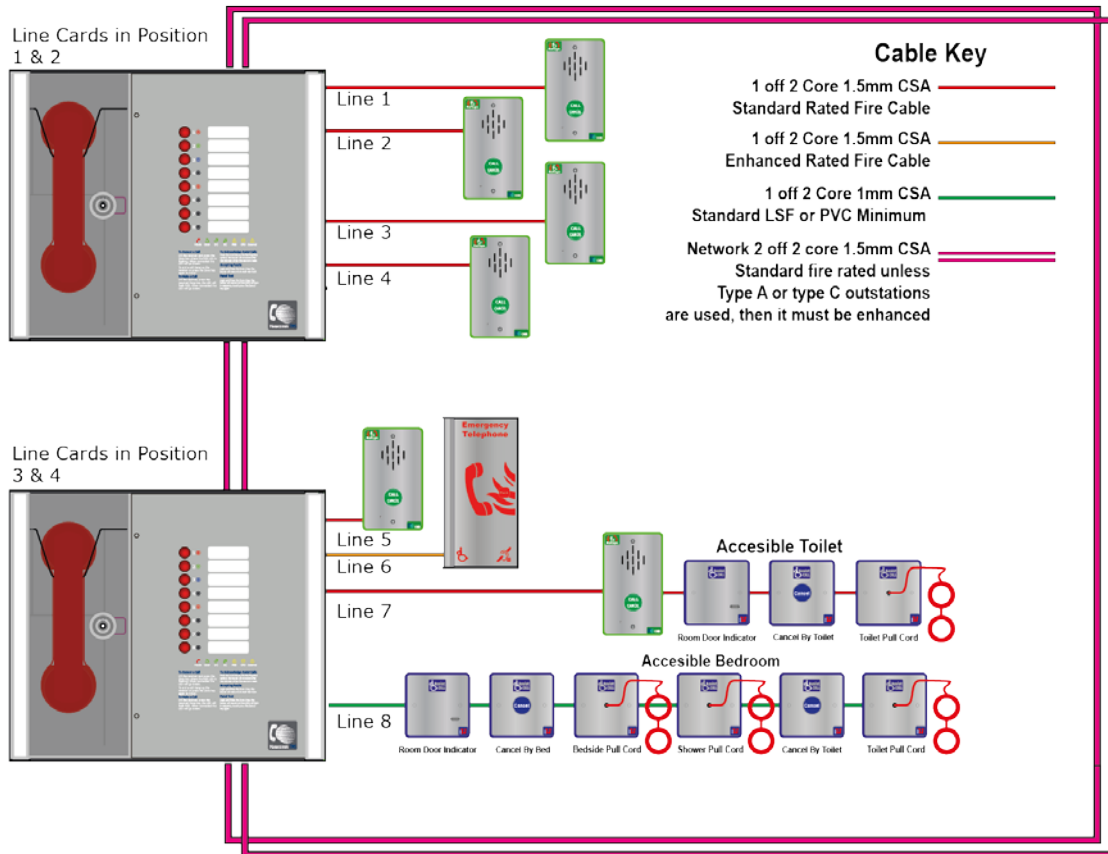
5.4.2.1 Network Wiring
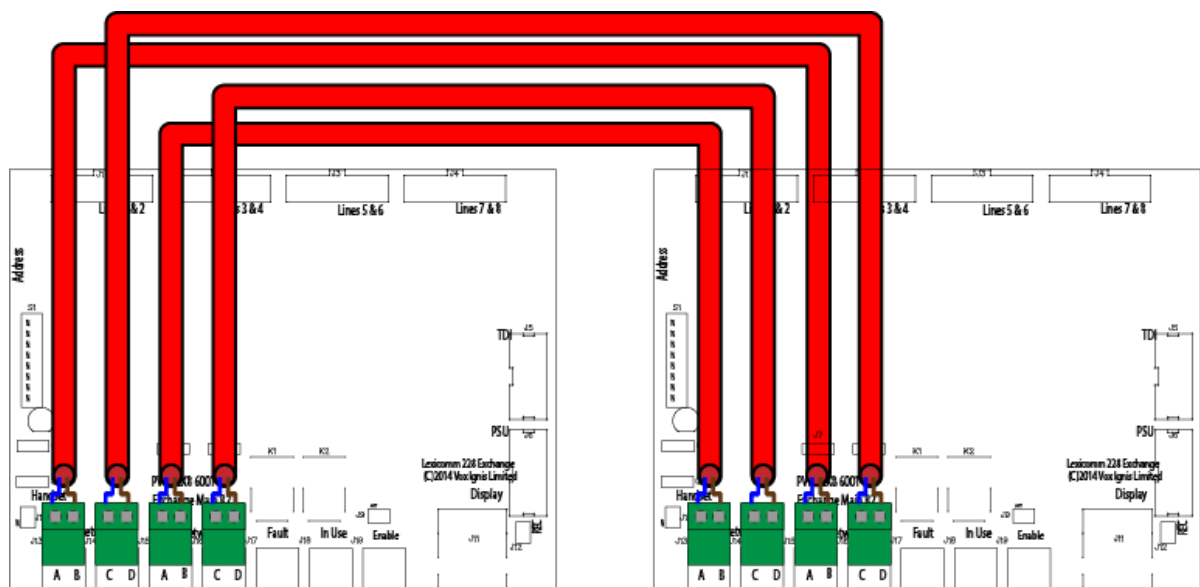
⚠ **Note:** Only connect the earth screens on the Net in cables, cut back and insulate Net OUT earth screens

5.5 Mains Connection
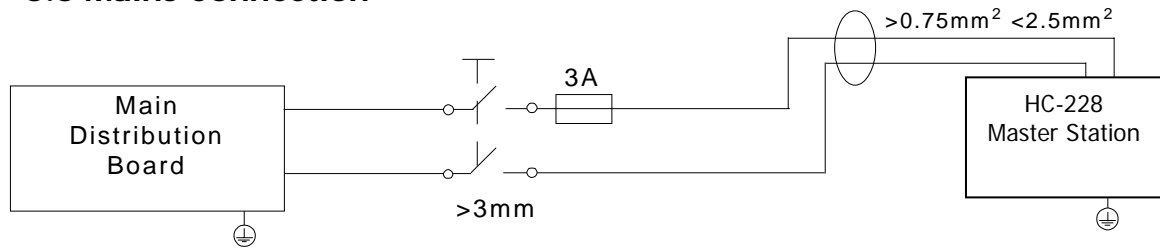
Each HC-228 Master/Repeater Station requires a 3A spur, returning to a breaker clearly marked "**EVCS DO NOT TURN OFF**".

If the HC-228 Master Station and the HC-228 Repeater Station are distributed around a site, it is essential that both HC-228 Stations are on the same mains phase, as they are classified TEN 230V. Powering from different phases can mean a 440V potential can be present in a HC-228 Station during a major fault incident.

5.6 Battery Information

In the event of mains failure BS5839 Part 9:2011 requires battery backup for 24 hours standby and 3 hours operation thereafter.

A HC-228 Master/Repeater Station requires **one number** 12V 7AH vent regulated sealed lead acid battery. The battery is not supplied with the HC-228 Master/Repeater Station.

|	
⚠	**Safety Information:** Sealed Lead Acid batteries contain sulphuric acid which can cause burns if exposed to the skin. The low internal resistance of these batteries mean large currents will flow if they are accidentally short circuited causing burns and a risk of fire. *Exercise caution when handling batteries.* **Power Up Procedure:** Always apply mains power before connecting batteries. When connecting batteries, always connect the Positive (Red +) terminal first. **Power Down Procedure** Disconnect the batteries before removing the mains power. When disconnecting batteries, always remove the Negative (Black –) terminal first.

5.7 Outstation Connections

The HC-228 Master Station is equipped with at least one number Dual line card. One outstation per line output can be connected. If no outstation is connected to the line output then an end of line 10kΩ resistor should be fitted. The dipswitch located on the rear of the door mounted Display PCB is used for configuration see 6.1

The following devices are available on the system:
- Type A (fixed phone)
- Type B (hands-free refuge point)
- Type C "Combi" (combined Type A and Type B)
- Jack point
- "Assist Call" emergency assistance alarm system

For Type A, Type B, and Type C outstations, the end-of-line 10kΩ resistor should be removed from the accessory pack and connected to the end-of-line terminal in the outstation.

For Jack points and the "Assist Call" system, the end-of-line 10kΩ resistor should also be removed from the accessory pack and connected to the last plate on the system.

5.7.1 Type A outstation
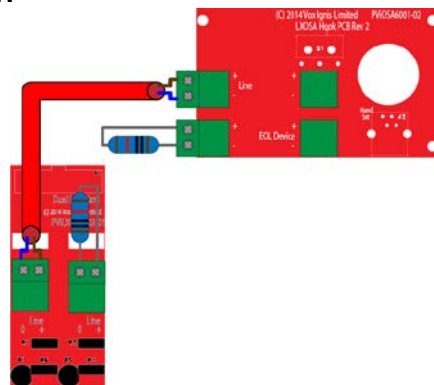
⚠️ **Note:** The Earth screen should be sleeved and connected to the terminal block in the controller, and the earth stud in the Type A outstation.

5.7.2 Type B outstation
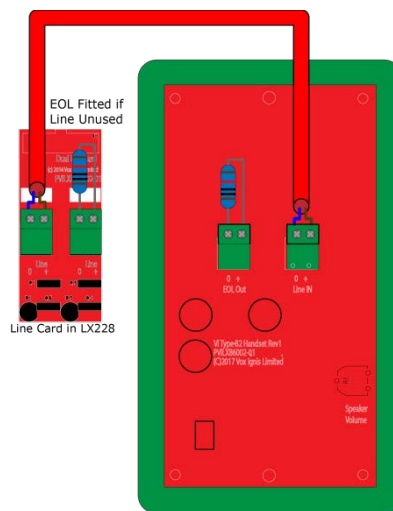
⚠️ **Note:** The Earth screen should be sleeved and connected to the terminal block in the controller, and the earth connection in the metal back box (if a plastic back-box is used cut the earth back and insulate at the outstation)

5.7.3 ACA Accessible Toilet Kit
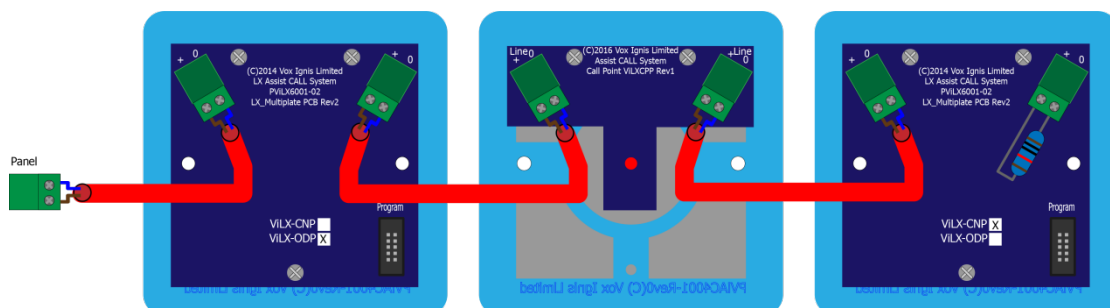
The ACA kit comprises an Over door Indicator, a pull cord and a cancel plate and they can be wired in any order, the above is typically as installed, and runs Overdoor Plate, ceiling Pull and then the Cancel plate, the EOL resistor goes in the free terminals of the last plate.

5.8 Auxiliary Connections

The HC-228 Master Station has three auxiliary connections:

Fault is a normally closed volt free relay (30V DC 1A) which OPENS on any fault, including loss of power.

In Use is a normally open volt free relay (30V DC 1A) connection which closes when any outstation is operated, see Remote Signal Display section 7.6 switch settings for further information.

Enable is a normally CLOSED input, and is required to operate the system. If Jumper J1 is in place, then no connection is required at the terminals. This function only disables Type B outstations, with Type A outstations and "Assist Call" emergency assistance alarm systems continuing to operate. It is advised that this feature is not used as the system should be available at all times, not just during an evacuation. If the feature is used then the mode LED illuminates yellow after 30 seconds to show that the system is disabled.
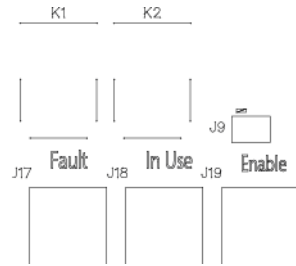
5.9 Powering up procedure

To power up the HC-228 Master Station, carefully check all internal wiring before applying mains power to the HC-228 Master Station. Once the HC-228 Master Station is powered, the battery can be attached using the battery leads supplied. When attaching the battery, always attach the Positive (Red+) terminal first.

5.10 Powering down procedure

To power down the HC-228 Master Station, first disconnect the battery. Always disconnect the Negative (Black -) terminal first. Once the battery leads have been disconnected, then remove mains power.

6. Set up procedure

The HC-228 Master Station has various site configurations which are configured using the dipswitch located on the rear of the Display PCB.
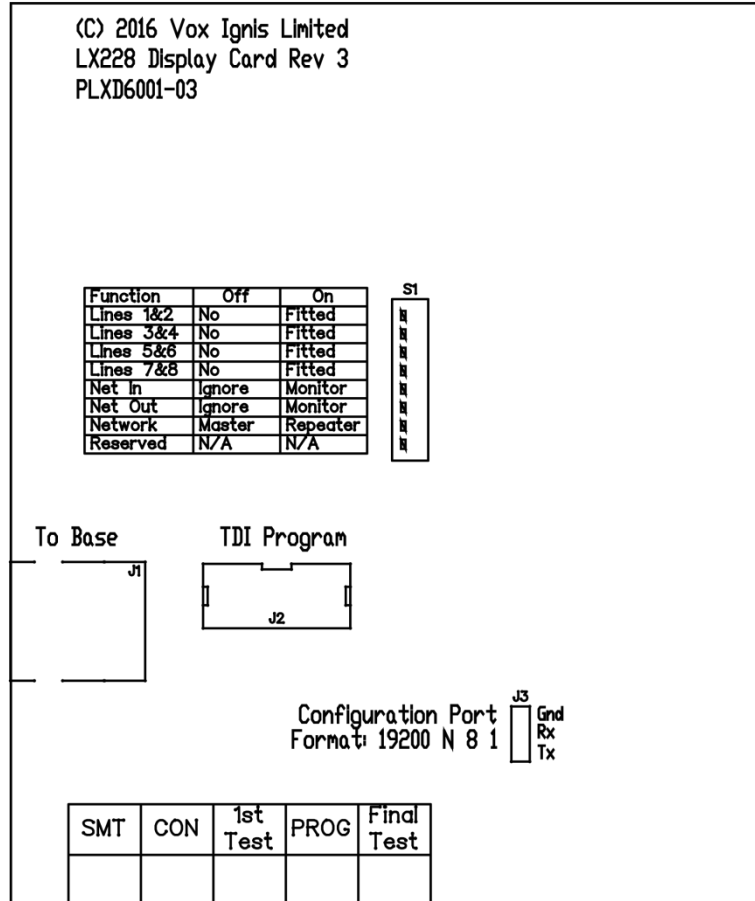
6.1 HC-228 Master Station Display PCB Dipswitch Settings

1	2	3	4	5	6	7	8	
Line 1&2	Line 3&4	Line 5&6	Line 7&8	Net In	Net Out	Network	Reserved	Remarks
✓								Line card 1 fitted
✓	✓							Line card 1, 2 fitted
✓	✓	✓						Line card 1, 2, 3 fitted
✓	✓	✓	✓					Line card 1, 2, 3, 4 fitted
				x	x	x		Default single Master
				✓	✓	x		Ring connected Master
				✓	✓	✓		Ring connected Repeater

✓ = Dipswitch in ON position
x = Dipswitch in OFF position

Exchange PCB Diagram-
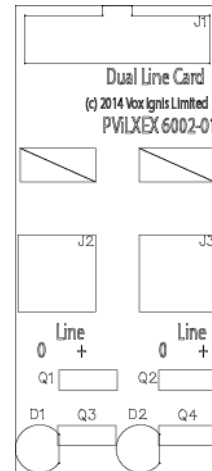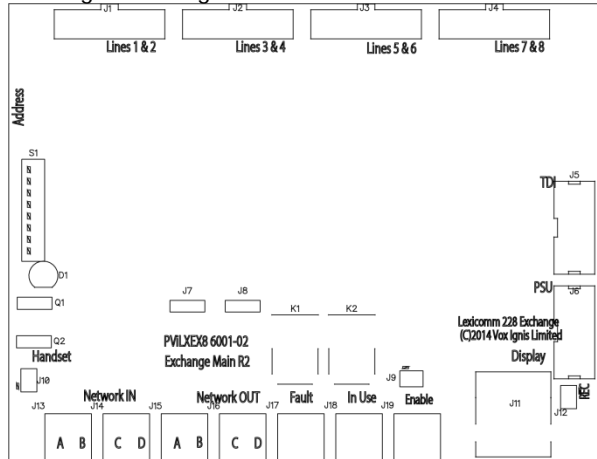
6.2 Adding a Line Card

The HC-228 Master Station is supplied with at least **one number** Line Card. There are 2 lines per Line Card.

Before adding a Line Card, ensure that the HC-228 Master Station is not powered. If the HC-228 Master Station is powered, then power down the HC-228 Master Station (see 5.10).

To fit the Line Card:
1. Place Line Card in the next available space on the Exchange PCB and secure using the supplied screw.
2. Remove the line terminal and connect the field wiring.
3. Push the terminal into the correct position on the Line Card.
4. Set the dipswitch on the Display PCB (see 6.1) to enable Line Card monitoring.

Once the Line Card is securely fitted, power up the HC-228 Master Station (see 5.9).

6.3 Removing a Line card

Before removing a Line Card, ensure that the HC-228 Master Station is not powered. If the HC-228 Master Station is powered, then power down the HC-228 Master Station (see 5.10).

To remove the Line Card:
1. Remove all line terminals from the Line Card that is to be removed.
2. Remove the securing screw.
3. Remove the Line Card from Exchange PCB.
4. Set the dipswitch on the Display PCB (see 6.1) to disable Line Card monitoring.

Once the Line Card has been removed, the HC-228 Master Station may be powered (see 5.9).

6.4 Adding a HC-228 Repeater Station

The HC-228 Master Station has in-built networking which means a single additional HC-228 Master Station can be added. This additional HC-228 Master Station is designated as the HC-228 Repeater Station. The HC-228 Repeater Station must be wired as a ring to comply with BS5839pt9:2011

The 4 Line Cards can be distributed between the HC-228 Master Station and the HC-228 Repeater Station in any combination, as long as the Line Cards do not occupy the same position on the Exchange PCB in both the HC-228 Master Station and the HC-228 Repeater Station, i.e. if a Line Card is in position 1 (Lines 1&2) on the HC-228 Master Station, then **no** Line Card can be placed into position 1 (Lines 1&2) on the HC-228 Repeater Station.

Network connections used are Network Out and Network In, with Network In on one Station wired to Network Out on the other Station (A to A, B to B, C to C, and D to D).

The default network address setting for the HC-228 Master Station is 1. When adding a HC-228 Repeater Station, it must share the same address as the HC-228 Master Station.

HC-228 Master Station Exchange PCB Dipswitch Settings

The HC-228 Master Station can be integrated with a HC-TMS Master Station to form part of a Haescomm site wide network where the HC-228 Master Station provides a local control and wiring position reporting back to the HC-TMS.

Each HC-228 Master Station on the Haescomm network has a unique network address. This address is set by the dipswitches on the Exchange PCB. The address is a binary number given by the positions of dip switches 1 to 6, with valid addresses lying between 1 and 64 inclusive.

Addr	1	2	3	4	5	6	Addr	1	2	3	4	5	6
1	1	0	0	0	0	0	33	1	0	0	0	0	1
2	0	1	0	0	0	0	34	0	1	0	0	0	1
3	1	1	0	0	0	0	35	1	1	0	0	0	1
4	0	0	1	0	0	0	36	0	0	1	0	0	1
5	1	0	1	0	0	0	37	1	0	1	0	0	1
6	0	1	1	0	0	0	38	0	1	1	0	0	1
7	1	1	1	0	0	0	39	1	1	1	0	0	1
8	0	0	0	1	0	0	40	0	0	0	1	0	1
9	1	0	0	1	0	0	41	1	0	0	1	0	1
10	0	1	0	1	0	0	42	0	1	0	1	0	1
11	1	1	0	1	0	0	43	1	1	0	1	0	1
12	0	0	1	1	0	0	44	0	0	1	1	0	1
13	1	0	1	1	0	0	45	1	0	1	1	0	1
14	0	1	1	1	0	0	46	0	1	1	1	0	1
15	1	1	1	1	0	0	47	1	1	1	1	0	1
16	0	0	0	0	1	0	48	0	0	0	0	1	1
17	1	0	0	0	1	0	49	1	0	0	0	1	1
18	0	1	0	0	1	0	50	0	1	0	0	1	1
19	1	1	0	0	1	0	51	1	1	0	0	1	1
20	0	0	1	0	1	0	52	0	0	1	0	1	1
21	1	0	1	0	1	0	53	1	0	1	0	1	1
22	0	1	1	0	1	0	54	0	1	1	0	1	1
23	1	1	1	0	1	0	55	1	1	1	0	1	1
24	0	0	0	1	1	0	56	0	0	0	1	1	1
25	1	0	0	1	1	0	57	1	0	0	1	1	1
26	0	1	0	1	1	0	58	0	1	0	1	1	1
27	1	1	0	1	1	0	59	1	1	0	1	1	1
28	0	0	1	1	1	0	60	0	0	1	1	1	1
29	1	0	1	1	1	0	61	1	0	1	1	1	1
30	0	1	1	1	1	0	62	0	1	1	1	1	1
31	1	1	1	1	1	0	63	1	1	1	1	1	1
32	0	0	0	0	0	1	64	0	0	0	0	0	0

Network address dipswitch setting

Note: Dipswitch 7 + 8 are not used.

7. System Menus

7.1 Fault Accept

Before accepting faults, the fault must be noted in the log book, along with the time the fault was reported.

To accept the fault, enter either the access level 2 (code: 1664) or access level 3 (code: 1812) menu, then press zone button 1. The buzzer will silence and the general fault LED will now go steady.

Press zone button 8 to exit this menu and to return to the menu options.

The buzzer will resound on each new fault.

7.2 Panel Indicator Test

To test the panel indicators, enter either the access level 2 (code: 1664) or access level 3 (code: 1812) menu, then press zone button 2.

All LEDs will illuminate in a predefined sequence, and the buzzer will sound.

Press zone button 8 to stop the panel indicator test and to return to the menu options.

7.3 Extended Fault Menu

Enter the access level 2 code (1664) or access level 3 (code: 1812) then press zone button 3.

Zone	Indicator Status	Description
1-4	Blank	Line card configured as not fitted
	Yellow Solid	Line card configured as fitted but not present
	Green Solid	Line card configured as fitted and present
5	Blank	Net In not configured
	Green Solid	Net In healthy
	Yellow Flashing	Net In fault
6	Blank	Net Out not configured
	Green Solid	Net Out healthy
	Yellow Flashing	Net Out fault
7	Green Solid	Display Processor Healthy
	Yellow Solid	Display Processor Fault
8	Green Solid	Exchange Processor Healthy
	Yellow Solid	Exchange Processor Fault

7.4 Line Identify

Line identify is a helpful feature to prove that the line numbers are correct i.e. that line 1 is connected to line 1 terminals. It does this by activating the ringer tone on the outstation with the number of rings corresponding to the line number, i.e. line 2 will activate the outstation with 2 rings in this mode.

Enter the access level 3 engineer code (1812) then press zone button 4. The lines for the fitted Line Cards will have their corresponding zone lights illuminated flashing magenta, e.g. if there are 2 line cards fitted, then zones 1-4 will be flashing.

Visit each outstation in turn and listen to the number of rings to confirm they have the correct configuration. Press the call button on each outstation to acknowledge.

For example:
- Visit outstation for line 1. This should be ringing once. Press the call button to acknowledge. Listen for the cadence tone, then press the cancel button.
- Visit outstation for line 2. This should be ringing twice, again press the call button to acknowledge. Listen for the cadence tone, then press the cancel button.

When you return to the Master Station, the outstation lines that have been acknowledged will be illuminated solid magenta.

Press zone button 8 to stop the line identify test and to return to the menu options.

Note: This feature does not work with "Assist Call" as there is no ringer present.

7.5 Engineer Walk Test

The engineer walk test mode enables all connected outstations, including "Assist Call", to be tested for correct operation by a single engineer without needing to return to the Master Station to reset the calls, until complete.

Enter the access level 3 engineer code (1812) then press zone button 5. The Master Station will illuminate the zone indicators with solid magenta to show which lines are connected, i.e. if it illuminates zones 1-4, and zones 5-8 are not illuminated, then there are 4 lines connected.

For example,

- Visit Type B outstation on line 1. Press the call button. Listen for the cadence tone. Press cancel.
- Visit line 2 which has an "Assist Call" system connected. Operate the pull cord. Cancel "Assist Call" alarm.
- Visit line 3 which has a Type B outstation and an "Assist call" system connected. Press call button on Type B outstation. Listen for the cadence tone. Press cancel. Go to the "Assist Call" and operate the pull cord. Cancel the "Assist Call" alarm.
- Return to the Master Station. The zone indicators will be flashing as follows:-
  - Line 1: Red/Magenta to indicate a type B outstation is fitted and tested.
  - Line 2: Blue/Magenta to indicate an "Assist Call" system is fitted and tested.
  - Line 3: Red/Blue to indicate a type B outstation and an "Assist Call" system are fitted and tested.
  - Line 4: Solid Magenta to indicate that no outstation has been tested.

Press zone button 8 to stop the engineer walk test and to return to the menu options.

7.6 Remote Signal Delay Timer

The in use relay, function can be altered to provide a remote signal via an autodialler, BMS or similar. The delay is adjustable between 30 seconds and 3 minutes such that if a call from an outstation is not answered within the chosen time delay then the relay operates. This could be used to send a signal off site during periods when the master station is not attended.

If the call is answered during the delay period the relay will not operate and the timer will cease.

The above function works identically with the Assist Call emergency assistance system.

Enter the access level 3 code (1812), then press button 6 to enter this mode. The magenta zone indicators from 1 to 8 will be illuminated depending on selection, pressing button 2 will give a 30 second delay, button 3 a one minute delay and so on to button 7 which gives a three minute delay. When the required delay is selected the adjacent indicator will illuminate to confirm the delay period. Press button 8 to exit this mode.

Button	Delay Timer Options
1	No Delay
2	30 Secs
3	1 Min
4	1 min 30 secs
5	2 min
6	2 min 30 secs
7	3 min
8	Exit

7.7 In Use Relay Options

The in use relay has programmable functions which can work in tandem with the delay timer described in 7.6. These functions can provide a relay output as described in the table below:

These relay functions can be useful for providing an output of specific system operation of EVC, Assist Call or both. This relay can also be used to connect to the HC-RAP Remote Alarm panel or a remote sounder or beacon which can be configured to cancel operation when the master handset is picked up such that the sounder will not interfere with the conversation.

Enter the access level 3 code (1812), then press button 7 to enter this mode. The magenta zone indicators from 1 to 8 will be illuminated depending on selection. When the required selection has been made press button 8 to exit this mode.

Button	Relay Option
1	Not Used
2	EVCS & Assist Call
3	EVCS only
4	Assist Call Only
5	EVCS, connected conversation
6	Relay activates on any call, Relay de-energises on master handset pickup
7	Relay operates when call not answered /acknowledged (EVCS and Assist Call)
8	Exit

8. Operation

All conversations are under the command of the HC-228 Master Station.

8.1 Receiving a call

One of the eight zone LEDs and the mode LED will flash red to indicate an incoming call. The flash rate will identify the outstation type, with a Type A outstation having a faster flash rate than a Type B outstation.

Lift the Master handset receiver. The User LED will illuminate Red.

Press the corresponding zone button (indicated by the red flashing LED). This LED and the User LED will change to flashing green to show that this line is now connected, and a conversation can take place.

8.2 Making a call

To make a call, lift the Master handset receiver and the User LED will illuminate red.

Press the zone button for the required outstation. The corresponding zone LED will flash red. This flash rate will be slower than the flash rate for either an incoming Type A or Type B call.

When the outstation answers the call, the zone LED flashes green, the mode LED illuminates red and the user flashes green to indicate this line is now connected and a conversation can take place.

8.3 Ending a call

To end the call from the outstation, either replace the Type A receiver back on its hook, or press the call/cancel button for a Type B outstation.

To end a conversation from the HC-228 Master Station, replace the Master handset receiver back on its hook.

 Note: This will not end the call, only the conversation. The outstation will revert back to requesting a call, and the zone LED will flash red to indicate this. The call MUST be ended at the outstation.

8.4 Putting a call on hold

To put a call on hold, press the zone button for the required outstation that is already connected. The zone LED will change from flashing green to flashing green/red. The hold tone will be heard in the handset.

To reconnect the call, press the zone button for the required outstation again. The zone LED will change from flashing green/red to flashing green to indicate the call is now connected again.

8.5 Conference Call

Depending upon the number of Line Cards fitted in the HC-228 Master Station, up to five lines can be connected to the conference call at any one time. To receive a call, see 8.1. To make a call to an individual outstation, see 8.2. The HC-228 Master Station controls which lines are involved in the conference, and only one conference group is allowed.

8.6 Acknowledging "Assist Call" alarms

When an "Assist Call" goes into alarm, the appropriate zone LED will flash blue, and a two-tone buzzer sounds to indicate that an "Assist Call" alarm has been operated.

To acknowledge the alarm, press the corresponding zone button, and the blue LED will illuminate continuously with an intermittent buzzer tone every 15 seconds. If after 2 minutes the "Assist Call" alarm has not been cancelled, the buzzer will resound and the LED will flash blue.

Within the WC cubicle the pull cord indicator will change from continuous indication to no indication. The cancel plate will alter from flashing to continuous and the buzzer will change from continuous to intermittent. Outside the cubicle the Over door plate indication will alter from flashing to continuous and the buzzer will change from continuous to intermittent. This change in indication and buzzers during the acknowledge phase indicates to the WC user that help is on the way.

8.7 Accepting Faults

Before accepting faults, the fault must be noted in the log book, along with the time the fault was reported.

To accept the fault, enter either the access level 2 (code: 1664) or access level 3 (code: 1812) menu, then press zone button 1.   The buzzer will silence and the general fault LED will now go steady.

Press zone button 8 to exit this menu and to return to the menu options.

The buzzer will resound on each new fault.

8.8 Panel Indicator Test

To test the panel indicators, enter either the access level 2 (code: 1664) or access level 3 (code: 1812) menu, then press zone button 2.

All LEDs will illuminate in a predefined sequence, and the buzzer will sound.

Press zone button 8 to stop the panel indicator test and to return to the menu options.

9. Indications and Controls
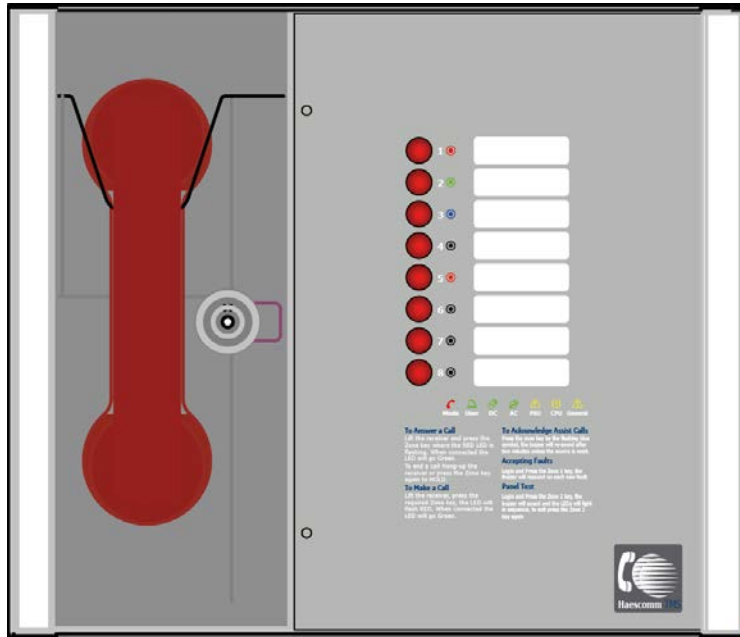
9.1 Mode Indicator Summary

Mode	Description
Green solid	Normal state
Red solid	Outstation off hook
Blue solid	Assist call active
Yellow Solid	Panel Disabled

9.2 Power supply and CPU indicator Summary

AC	DC	PSU	General	CPU	Description
✓					Mains OK
x		Flash	Flash		Mains failure
	✓				Battery OK
	x	Flash	Flash		Battery open circuit
	x	✓	Flash		Battery short circuit
	Flash	✓	Flash		Battery high impedance
		✓	Flash	✓	PSU processor fail
			Flash	✓	Display or Exchange Processor Fault or Display-Exchange comms flt
			Flash		Display or Exchange Processor Fault or Display-Exchange comms flt on remote panel (if applicable)
	Flash		Flash		Remote Battery fault
Flash			Flash		Remote Mains fault

✓ = LED illuminated
x = LED off
Flash= LED Flashing
Note: When faults are accepted the general LED illuminates solid.

9.3 User Indicator Summary

Red	Master handset off hook
Flashing Yellow	Master handset open circuit
Cyan	User logged in
Magenta	Engineer logged in
Flashing green	Call connected
Flashing Red/Green	Call on hold
Solid Yellow	Master handset short circuit
Solid White	Call connected on remote master station

9.4 Zone indicator summary

Zone Indicator Status	User Indicator Status	Buzzer Status	Description
Slow flash red		Off	Outgoing call
Fast flash red		Ringing	Incoming call from type A outstation
Normal flash red		Ringing	Incoming call from type B outstation
Normal flash green	Normal flash green	Off	Call connected to local master handset
Normal flash green/red	Normal flash green/red	Off	Call on hold
Normal flash green/white	Solid White	Off	Call connected via a remote master handset
Solid yellow		On	Line Short circuited
Slow flash yellow		On	Line card missing
Normal flash yellow		On	Line Open circuit or EOL missing
Fast flash yellow		On	Line Earth fault
Solid cyan	Solid cyan	Off	Access level 2
Solid magenta	Solid magenta	Off	Access level 3
Normal flash blue		2 Tone Alarm	Incoming Assist Call alarm
Solid blue		Intermittent double Beep	Assist call acknowledged

10. Commissioning procedure

The commissioning should be carried out by a competent person who has a basic knowledge and understanding of the design and installation sections of BS5839 part 9:2011, and has access to the specification of the project.

The 500v insulation tests should have been carried out by the installer and the results made available to the commissioning engineer.

All cables should be correctly labelled.

Test field wiring and check for end-of-line 10KΩ resistor. Check cables are clear from any short or open circuits.

Connect cables into Line Cards.

Configure relevant dipswitches for the number of Line Cards fitted, and for any network settings that may be required as per the set up section in this manual.

Power up the HC-228 Master Station using mains only, fed from a 3A fuse fitted in an unswitched fused spur. The AC power indicator will be illuminated, and the DC power indicator is extinguished. The PSU fault and General fault indicators will be illuminated. There should be no line fault indicators illuminated.

If there are no line faults present, the battery may be connected. The DC power indicator will be illuminated, and the PSU fault and General fault indicators are extinguished when battery is connected. If there are any line fault indicators illuminated, then the field wiring should be checked prior to the battery being connected.

Lift the master handset receiver and listen for a cadence tone.

The line identities can be confirmed to prove the line identity. A "Line identify" feature has been included. Select line identify mode and visit each outstation and listen for the corresponding number of rings. This should correspond with the line number, i.e. 2 rings would be line 2.

The outstations may be tested now. For this use, the one man walk test feature has been included which allows a single engineer to visit each outstation and test that each outstation is connected to the Master Station. An intelligibility test will need to be performed when the system is complete and the building has normal background noise levels. The intelligibility test requires two personnel.

11. Maintenance

It is a requirement of BS 5839-9:2011 that a maintenance agreement be in place for the EVCS. The maintenance schedule should be as follows:

Frequency	Test
Weekly	Test a different outstation on the system each week and make a call to the control. Repeat each week until all outstations and master stations are tested. Record these results in the site log. *if more than one master station is present alternate weekly.
Biannually	Engineer call to check system operation, intelligibility, field strength of attached AFILS equipment and check battery health. Record results and any variations into the site Log Book
Yearly	Engineer call to check system operation perform 100% outstation and master station operation, field strength of attached AFILS equipment and check battery health. Record results and any variations into the site Log Book
5 Yearly	In addition to Yearly tests replace all batteries and record in Log Book.

12. Outstation zone template

There is space to the right of each outstation zone indicator to name the location of the outstation. At the rear of the display door there is a slot located in the centre above the display PCB; the outstation zone template can be inserted here.

The template is in "Word" format and can be down loaded at www.vox-ignis.com. This can be completed, printed out and cut to size as shown below.

✂

TAB
Refuge 1 Name Toilet 1 Name
Refuge 2 Name Toilet 2 Name
Refuge 3 Name Toilet 3 Name
Refuge 4 Name Toilet 4 Name
Refuge 5 Name Toilet 5 Name
Spare 1
Spare 2
Spare 3

Notes

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13. Technical Specification

Product Code   HC-228

Power Supply and Charger

AC Input	230Vac+- 10% 50/60Hz
Internal power supply	12Vdc nominal
Supply and battery	Monitored open, Short, Fuses
Protection	Deep discharge, Short, Thermals
Temperature compensation	Yes
Battery information	Space for Up to 1x 12V 7AH VRSLA
Mains fuse	1A HRC(T)
Battery fuse	Self Resetting PTC
Max charge current	500mA

Inputs

Number of lines	Between 2 and 8
Remote enable	Short to use
End of line monitoring	10KΩ 0.6watt resistor

Relay outputs

Number and type	2: Fault and In use, volt free 30Vdc 1A

Controls

Number and type	8 push button zone keys

Indication

Number and type	8x RGB Line indicators
	3x PSU Status Indicators
	1 x CPU Fault Indicators
	1x General Fault Indicator
	1x RGB Mode Indicator
	1x User Status Indicator

Enclosure Details

Back box finish	RAL 7035 Grey
Dimensions	350 x 300 x 95
Entries	14 knockouts top, 2x rear slots
Flush Cutout	352 x 302 x 85 deep

WEEE
Compliant
Product

CE