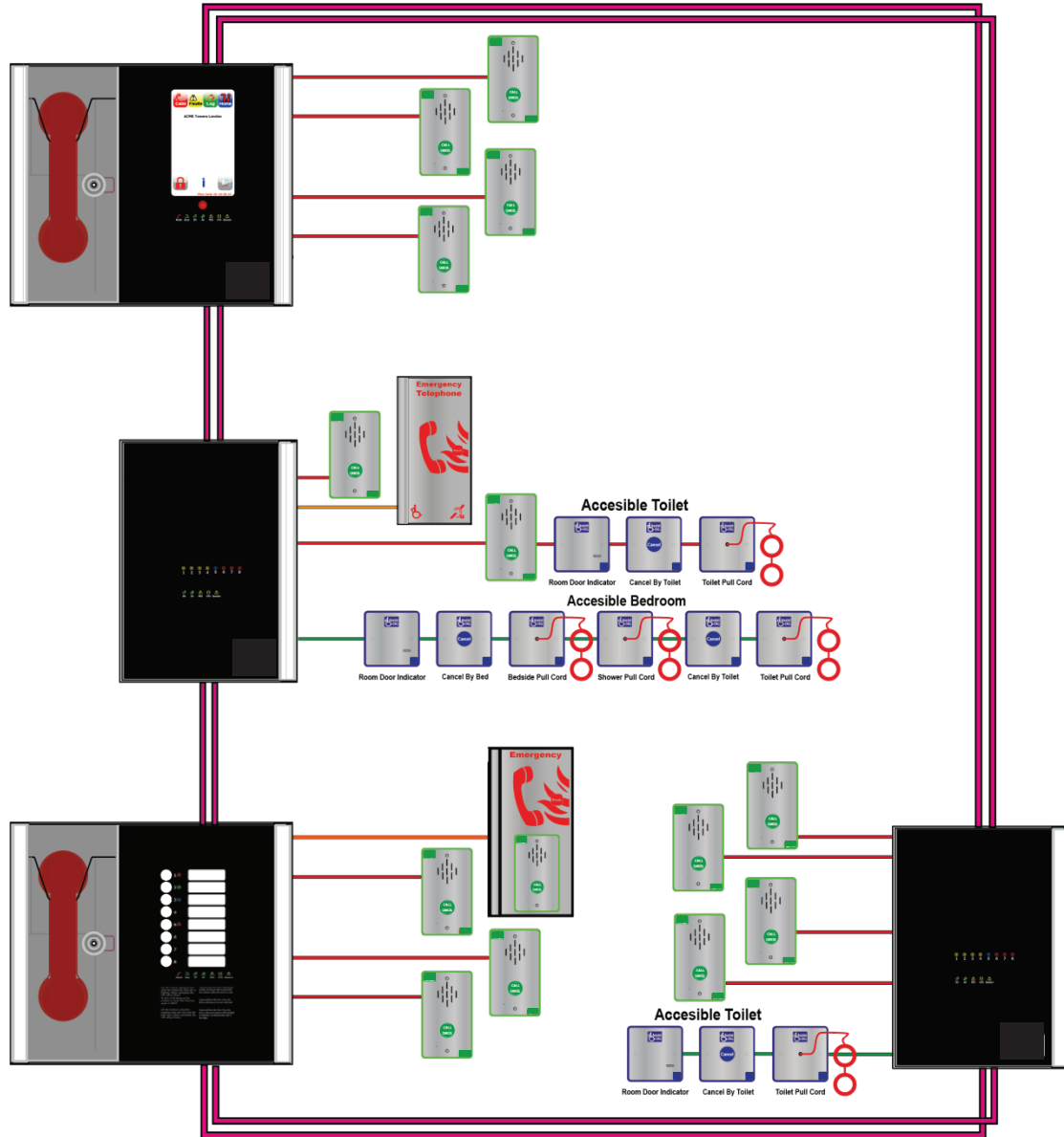




Beacon BMNET EVCS Master Station



**User Manual, Commissioning Certificates
and Log Book**

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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 an 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 Beacon BMNET Emergency Voice Communications System (EVCS) is designed to fully comply with BS5839 Part 9:2021 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 all buildings other than pure dwelling houses over one story. Refuge areas should be provided at each storey exit to every protected stairway as directed in Building Regulations Approved Document B1.

Emergency Assist Alarm Systems as recommended by BS8300 and Building Regulations Approved Document M, including the remote accept facility required.

2 Product Overview

The Beacon EVCS has been designed around a total network concept so all of the Beacon panels.

The system comprises 3 types of panel; Beacon touch screen master station (hereafter referred to as BMNET), the Beacon 2 to 8 line master station (hereafter referred to as BM2/4/8) and a Beacon BMNETEX system expander panel (hereafter referred to as BMNETEX). For Beacon systems in excess of 8 lines, a BMNET must be used as the master station, the system can then be expanded by the use of an BMNETEX or BM2/4/8 in blocks of 8 lines up to a maximum system capacity of 512 lines. Additional BMNET panels can be used wherever indication and control is required I.E Fire Control rooms and building reception.

The wiring is a ring and spur topology with outstations being wired on radial spurs from any master station or system expander panel. The BMNETEX and any BMNET or BM2/4/8 are wired in a ring network up to a max. of 64. The BMNETEX would typically be sited in convenient locations close to the outstations I.E risers or stairwells resulting in short vertical wiring runs. The BM2/4/8 can be used to provide local control of up to 8 lines within a building this can then reprot back to a BMNET which can provide overall control of an entire site.

In this way a very large system can be completed with a minimum of cabling coming back to the mster station VIA the network ring.

Additionally the "Assist Call" emergency assistance alarm system can either be connected to the same line with an outstation, or connected to a dedicated line. As each line is powered from the BMNET or BMNETEX, the outstations and the "Assist Call" emergency assistance alarm system do not require a superate power supply unit. This has teh additional beenfir of each line being fully monitored and battery backed up.

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

Warning

Warning

Warning

Warning



Indoor Use Only

Shock Hazard-

Isolate Before Opening

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE

THIS UNIT MUST BE EARTHED

NO USER SERVICEABLE PARTS



Each TMS and EX8 requires a 3A spur, returning to a breaker clearly marked "**EVCS DO NOT TURN OFF**".

If the BMNET, BM2/4/8 and the BMNETEX are distributed around a site, it is essential that all panels are on the same mains phase, as they are classified as TEN 230V. Powering from different phases can mean a 440V potential can be present in a panel during a major fault.



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 Log screen

When an event occurs, that event is added to the log file. Each day has a different log file. Each log file can contain up to 65,535 events. All log files are stored on the attached Micro SD card. The log files are stored in CSV format, so they can be imported from the Micro SD card into a spreadsheet for analysis.

There are 3 different categories of events:

- Calls: all outstation events, master handset events, and alarm events.
- Faults: all fault occurred and fault cleared events.
- Events: all operating system events.

The different categories are colour coded for easy identification.

4.1.1 Log header

The log header contains details for the current log file shown.



| | |
|----------------|-------------------------|
| Date | Date of log shown |
| Entry | Range for entries shown |
| No. of entries | Total number of entries |

4.1.2 Log entries

This section shows details for up to 8 events. Each entry has:

- Icon detailing type of event.
- Time event occurred.
- If fault event, shows if fault occurred or cleared.
- Event text.

4.1.3 Log navigation

If there are more than 8 entries in the log, then not all entries will be shown. The log can be navigated using the following options:

Scroll the screen by:

- Touching the text of any entry, then move finger up or down
- Pressing one of the navigation buttons shown on screen
- Pressing the left or right navigation buttons on the panel below the screen

The navigation buttons shown on screen are:

| | |
|--|------------------------|
| | Move to first page. |
| | Move to next page. |
| | Move to previous page. |
| | Move to last page. |
| | Show calendar screen |

4.1.4 Log filters












There are 3 different categories of entries: **Calls**, **Faults**, and **Events**. By pressing the relevant button, the entries for that category can be shown or hidden.

4.1.5 Log entries

Each log entry is specified by an icon, a description of the entry, the time of the entry, and if the entry refers to a fault, additional information on whether the fault has occurred or cleared.



4.1.6 Log entry icons for Call events













The following is a list of icons associated with call events:

| | |
|---|--|
|  | Incoming Type A outstation call. |
|  | Incoming Type B outstation call. |
|  | Conversation with Type A outstation. |
|  | Conversation with Type B outstation. |
|  | Type A outstation on hold. |
|  | Type B outstation on hold. |
|  | Master handset off hook. |
|  | Master handset, Type A outstation, or Type B outstation on hook. |
|  | Assist call alarm activated. |
|  | Assist call alarm acknowledged. |
|  | Assist call alarm cancelled. |

4.1.7 Log entry icons for Fault events



The following is a list of icons associated with fault events:

| | |
|---|---------------------|
|  | Line open circuit. |
|  | Line short circuit. |
|  | Line earth fault. |

| | |
|---|--|
|  | Line card missing associated with this line. |
|  | Master handset open circuit. |
|  | Master handset short circuit. |
|  | Network audio open circuit. |
|  | Network audio short circuit. |
|  | Network data fault. |
|  | Mains failure. |
|  | Battery open circuit. |
|  | Battery short circuit. |
|  | Battery impedance fault. |
|  | CPU fault. |
|  | Faults accepted. |

4.1.8 Log entry icons for System events

The following is a list of icons associated with system events:

| | |
|---|---------------------------------|
|  | New log file created. |
|  | System powered and initialised. |

| | |
|---|---|
|  | Watchdog reset |
|  | Time and date changed. |
|  | Configuration loaded from SD card |
|  | Configuration saved to SD card |
|  | Site name changed |
|  | Panel name changed |
|  | Panel type and network monitoring changed |
|  | Line monitoring, day enable, night enable, and fault enable changed |
|  | Outstation name changed |
|  | Assist Call alarm name changed |
|  | Fault text for line changed |
|  | Access level 2 log in |
|  | Access level 2 log out |
|  | Access level 3 log in |
|  | Access level 3 log out |

4.1.9 Calendar to select previous log file

The log for each day is stored as a Comma Separated Variable (CSV) file on the attached Micro SD card. The log for a specific day can be recalled by pressing the calendar button on the log screen, and selecting the desired day on the calendar.

The calendar shows all days for the month displayed. The month can be changed by using the < and > buttons. If there is a log for a specific day, that day will be highlighted. If the day is not highlighted, then there will have been no log entries generated on that day, thus no file will have been created for that day.

Press a highlighted day to show the log for that day.

Note: by leaving the log screen to view either the Home, Faults, Calls, or Alarms, when the log screen is shown again, the log for the current day will be shown, and not the historic log.

To return to the log screen without choosing a day, press the Back button.

4.2 Call screen

The call screen is used to control the calls and conversations from outstations.









The outstations can be Fire Telephones (Type A) or a Disabled Refuge Points (Type B).

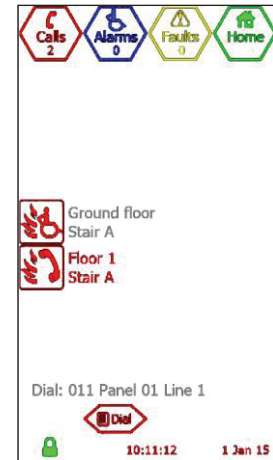
Type A outstation can be combined with a Type B to form a Type C outstation.

However, the indication of the call depends whether it was the Type A or the Type B that is in use.

When an outstation is in use, an icon appears that shows the state of that outstation.

The text associated with outstation is shown next to the icon. The outstation status icons are:

| | |
|---|--------------------------------------|
|  | Incoming Type A outstation call. |
|  | Incoming Type B outstation call. |
|  | Conversation with Type A outstation. |
|  | Conversation with Type B outstation. |
|  | Type A outstation on hold. |
|  | Type B outstation on hold. |
|  | Type A connected to remote panel. |
|  | Type B connected to remote panel. |



The extension number, panel address and line number of the central highlighted call is displayed below the call list.

4.2.1 Call screen operation

An entry can be selected by pressing the icon next to the name. Pressing the middle navigation button selects the central highlighted entry.

Scroll through the directory by either scrolling the screen or using the page navigation buttons until the desired outstation is displayed on screen (or is the central entry if using the middle navigation button).

Scrolling is accomplished by touching the outstation text, and moving the finger up or down as appropriate.

The left and right navigation buttons beneath the screen can also be used to scroll the directory.



4.2.2 Accepting incoming call

An incoming Type A outstation call has the  icon. An incoming Type B outstation has the  character.

To accept the incoming call:

1. Lift the master handset off its cradle.



2. Scroll through the list until the desired call is on screen (or is the central call, in white, if using the middle navigation button to control the call).
3. Press the icon for the selected call, or press the middle navigation button below the screen to select the central call.

The icon will change to  for a Type A outstation, or  for a Type B outstation. This indicates that a conversation is now possible with the selected outstation.

4.2.3 Place call on hold

If a conversation is to be put on hold:

1. Scroll through the list until the desired call is on screen (or is the central call, in white, if using the middle navigation button to control the call).
2. Press the icon for the selected call, or press the middle navigation button below the screen to select the central call.

The icon will change to  for a Type A outstation, or  for a Type B outstation. This indicates that this conversation has now been placed on hold. If there was also another ongoing conversation as part of a conference call, this other conversation will still be active.



4.2.4 Disconnect all calls

Placing the master handset back onto its cradle will disconnect all calls. All conversations will end, and the affected outstations will revert to incoming call. Any outstations on hold will be taken off hold, and will revert to incoming call.

To stop the incoming call, the outstation must be cancelled at source, i.e. the person at the outstation must cancel the call, either by placing the Type A outstation back onto its cradle, or by pressing the call/cancel button on the Type B outstation.

4.2.5 Call screen buttons

The buttons associated with the call screen are:

| | |
|---|---|
|  | Shows directory screen which allows user to choose from the list of allowed extensions. |
|  | Shows dial screen which allows user to dial a line by entering extension number. |

4.3 Directory screen

To place a call to an outstation, the master handset has to be off hook. Thus, if the master handset is on the cradle, a screen appears informing the user to pick up the master handset.

The directory screen shows the list of all outstations available to this TMS, with 7 outstations displayed on screen at any one time. The icon next to each outstation shows the state of that outstation.

Master handsets for remote panels are also shown on this screen. The master handset name displayed is the name for this panel. The remote master handset is considered the same as an outstation in regards to operating it.

The text below the directory list shows the extension number for the selected outstation, along with the panel and line index.

The outstations are shown in alphabetical order.




4.3.1 Directory screen operation


An entry can be selected by pressing the icon next to the name. Pressing the middle navigation button selects the central highlighted entry.

Scroll through the directory by either scrolling the screen or using the page navigation buttons until the desired outstation is displayed on screen (or is the central entry if using the middle navigation button).

Scrolling is accomplished by touching the outstation text, and moving the finger up or down as appropriate.

The left and right navigation buttons beneath the screen can also be used to scroll the list.

The  button moves to first directory entry.

The  button moves the directory up one page.


The  button moves the directory down one page.

The  button moves to the last directory entry.

4.3.2 Placing an outgoing call to an outstation



To place an outgoing call to an outstation:

1. Lift the master handset off the cradle.
2. Press the icon on screen for the desired outstation, or press the middle navigation button below the screen to select the central entry.

The BMNET will switch to the call screen, and the outstation text will appear with the icon  to indicate the master is calling the outstation. When the outstation answers, the conversation will commence immediately.

4.3.3 Directory screen buttons

The buttons associated with the directory screen are:


| | |
|--|--|
|  | Shows the call screen. |
|  | Shows dial screen which allows user to dial a line by entering extension number. |



4.4 Dial screen

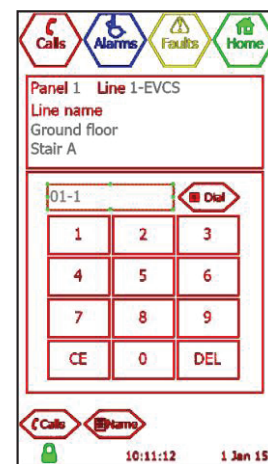
To place a call to an outstation, the master handset has to be off hook. Thus, if the master handset is on the cradle, a screen appears informing the user to pick up the master handset.

The dial screen is used to call any outstation by entering the extension number for that outstation. The extension number is a 3 digit number. The first 2 digits are the panel network address, and the third digit is the line number for that outstation (always between 1 and 8)

When the extension number is entered, the name for that line is displayed. If the line is valid, the dial button appears. If the line is not defined, a warning message is displayed.

To call that outstation, press the  button.

| | |
|---|---|
|  | Shows the call screen. |
|  | Shows directory screen which allows user to choose from the list of allowed extensions. |





4.5 Alarms screen

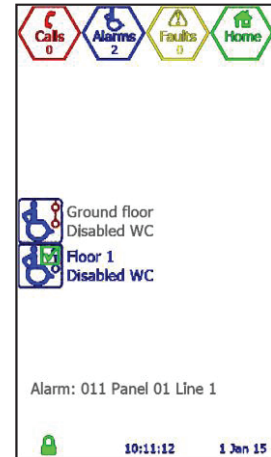
Any active or acknowledged Assist Call alarm is shown on the Alarms screen.

If there is one alarm, it is shown in the centre of the screen, with the alarm text in white, and the icon showing the status of the alarm. This alarm is the selected alarm.

If there is more than one alarm, the other alarms are shown either above or below the selected alarm, with the alarm text in blue.

The Assist Call alarm states are:

| | |
|---|--------------------------------|
|  | Active Assist Call alarm |
|  | Acknowledged Assist Call alarm |



The panel address and line number for the central highlighted alarm is displayed below the alarm list.

4.5.1 Alarm screen operation

An alarm can be selected by pressing the icon next to the name. Pressing the middle navigation button selects the central highlighted alarm.

Scroll through the directory by either scrolling the screen or using the page navigation buttons until the desired alarm is displayed on screen (or is the central alarm if using the middle navigation button).

Scrolling is accomplished by touching the alarm text, and moving the finger up or down as appropriate.

The left and right navigation buttons beneath the screen can also be used to scroll the list.

4.5.2 Acknowledge Assist Call alarm

To acknowledge an alarm:

1. Scroll through the alarms until the desired alarm is on screen (or is the central alarm if using the middle navigation button).
2. Press the alarm icon on screen, or press the middle navigation button below the screen.


This will acknowledge that alarm, and the icon will change to represent this.

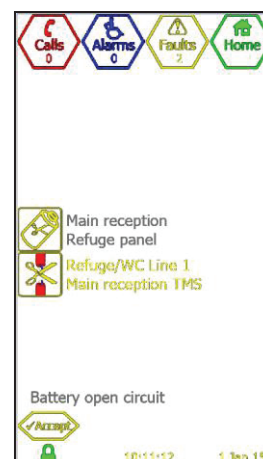
4.6 Fault screen

The fault screen shows all faults that are current on every panel on the network.

If there is one current fault, is shown in the centre of the screen, with the fault text in white, and the icon showing the type of fault. The fault text is either the panel name, if it is a panel fault, or the customisable fault text for the appropriate line if it is a line fault. The icon depicts the type of fault, and the fault status line at the bottom of the screen describes the type of fault for the central highlighted fault only.

If there is more than one current fault, these faults are shown above and below the selected fault, with the fault text in yellow.

The accept button  is shown if there are unaccepted faults.





4.6.1 Fault screen operation


If there is more than one fault, the faults can be scrolled by touching the screen where the fault text is, and moving the finger up or down as appropriate.


The left and right navigation buttons located beneath the screen can also be used to scroll the fault list.


4.6.2 Accepting faults

If the current faults are unaccepted, the accept button  is shown. Additionally, the fault buzzer will be sounding, and the general fault status LED below the screen will be flashing.

To accept the faults, press the  button.

When faults are accepted, the  button will disappear, the fault buzzer will cease, and the general fault status LED will stop flashing, and be illuminated.

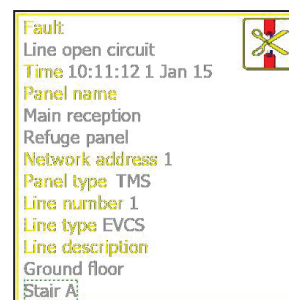
If a new fault occurs, the panel will revert back to the unaccepted state, the fault buzzer will resound, and the general fault status LED will start flashing. The  button will be shown again.

If a fault has been accepted, but not cleared within 8 hours of accepting the fault, the panel will revert back to the unaccepted fault state again. This will re-sound the fault buzzer, flash the general fault status LED, and the  button will be shown.

4.6.1 Fault information

Press the fault icon to view additional information about the fault. The information provided is:

| Fault | Type of fault |
|------------------|---|
| Time | Time and date when fault occurred |
| Panel name | Name of panel where fault occurred |
| Network address | Network address of panel where fault occurred |
| Panel type | Type of panel where fault occurred – TMS, or None |
| Line number | Index of line in fault. This is only shown if the fault is a line fault or a master handset fault |
| Line type | Type of line in fault. This is only shown if the fault is a line fault or a master handset fault |
| Line description | Fault description of line in fault. This is only shown if the fault is a line fault |














4.6.2 Fault types

The faults can be split into 2 general categories: panel faults and line faults.





4.6.3 Panel faults

Panel faults are faults that occur on the panel itself. These are:

| | |
|---|---|
|  | Mains power fault |
|  | Battery missing or open circuit |
|  | Battery short circuit |
|  | Battery impedance fault |
|  | Master handset missing or open circuit |
|  | Master handset short circuit |
|  | CPU failed or watchdogged |
|  | Network audio open circuit on indicated port |
|  | Network audio short circuit on indicated port |
|  | Network data fault |
|  | Panel missing |

4.6.4 Line faults

Line faults are faults that occur on a line attached to the panel. These are:

| | |
|---|--|
|  | Line open circuit or end-of-line missing |
|  | Line short circuit |
|  | Line earth fault |
|  | Line card missing |

5 Indications and Controls



5.1 Mode Indicator Summary

| Mode | Description |
|-------------------|---|
| Green solid | Normal state |
| Red solid | Outstation off hook |
| Blue solid | Assist call active |
| Yellow Solid | Refuge (type B) points disabled |
| Flashing Red/Blue | Incoming call/ Assist Call alarm at same time |

5.2 Power supply and CPU indicator Summary

| AC | DC | PSU | CPU | Description |
|----|-------|-------|-----|---|
| ✓ | | | | Mains OK |
| x | | ✓ | | Mains failure |
| ✓ | ✓ | | | Battery OK |
| ✓ | x | Flash | | Battery open circuit |
| ✓ | x | ✓ | | Battery short circuit |
| ✓ | Flash | ✓ | | Battery high impedance |
| ✓ | | ✓ | ✓ | PSU processor fail |
| ✓ | | | ✓ | Display or Exchange Processor Fault or Display-Exchange comms fit |

✓ = LED illuminated

x = LED off

Flash= LED Flashing

6 Maintenance

It is a requirement of BS 5839-9:2021 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 Copy all log files from the on-board Micro SD Card, and erase log directory before replacing card (to prevent out of memory errors) |
| 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. |

7 Certificate

Combined Certificate for Design Installation and Commissioning for an Emergency Voice Communication System (EVCS) to BS5839 part 9 (2021)

Site Name _____

Address _____

Customer _____

Address _____

Areas Covered _____

| |
|--|
| <input type="checkbox"/> System Design: In accordance with section 1 of BS 5839 : Part 9 : 2021 sub clause 6 the system design is has in accordance with the recommendations of this code except for the following: |
| <input type="checkbox"/> Installation: In accordance with section 3 of BS 5839 : Part 9 : 2021, the wiring has been inspected and tested and been found to be in accordance with the recommendations of this code except for the following: |
| <input type="checkbox"/> Commissioning: In accordance with Section 4 of BS 5839 : Part 9 : 2021: sub clause 21.2C 1. Intelligible conversation is heard at all locations. 2. All controls and indicators operate correctly |
| <input type="checkbox"/> Acceptance: The system is accepted in good working order and, in accordance with BS5839: Part 9, 2021, record drawings, operating instructions and a system log book have been supplied and received. Attention has been drawn to the recommendations concerning user's responsibilities, particularly those concerned with routine attention and test procedures in section 5, and an appointed responsible person should be nominated by the customer in accordance with the recommendations of Section 6 of BS5839 : Part 9 : 2021. |

Engineer _____

Date _____

Position _____

Signature: _____

8 Site Specific Information:

Responsible Person _____

Date _____

Position _____

Signature: _____

Equipment Locations

Location _____

| Cable ID | Line | Area Served |
|----------|------|-------------|
| | 1 | |
| | 2 | |
| | 3 | |
| | 4 | |
| | 5 | |
| | 6 | |
| | 7 | |
| | 8 | |

9 Technical Specification

| | | |
|---------------------------------|---|---|
| Product Code | BMNET | BMNETEX |
| Power Supply and Charger | | |
| AC Input | 230Vac+- 10% 50/60Hz | 230Vac+- 10% 50/60Hz |
| Internal power supply | 12Vdc nominal | 12Vdc nominal |
| Supply and battery Protection | Monitored open, Short, Fuses Deep discharge, Short, Thermals | Monitored open, Short, Fuses Deep discharge, Short, Thermals |
| Temperature compensation | Yes | Yes |
| Battery information | 1x 12V 7AH VRSLA | 1x 12V 7AH VRSLA |
| Mains fuse | 1A HRC(T) | 1A HRC(T) |
| Battery fuse | Self Resetting PTC | Self Resetting PTC |
| Max charge current | 500mA | 500mA |
| Inputs | | |
| Number of lines | Between 2 and 8 | Between 2 and 8 |
| Remote enable | Short to use | Short to use |
| End of line monitoring | 10K Ω 0.6watt resistor | 10K Ω 0.6watt resistor |
| Relay outputs | | |
| Number and type | 2: Fault and In use, volt free 30Vdc 1A | 2: Fault and In use, volt free 30Vdc 1A |
| Controls | | |
| Number and type | 3 push button navigation keys | None |
| Indication | | |
| Number and type | 3x PSU Status Indicators 1 x CPU Fault Indicators 1x General Fault Indicator 1x RGB Mode Indicator 1x 272x480xRGB touchscreen | 3x PSU Status Indicators 1 x CPU Fault Indicators 1x General Fault Indicator 1x RGB Mode Indicator 8x RGB Line indicators |
| Enclosure Details | | |
| Back box finish | RAL 7035 Grey | RAL 7035 Grey |
| Dimensions | 350 x 300 x 90 | 220 x 300 x 90 |
| Entries | 14 knockouts top, 2x rear slots | 14 knockouts top, 2x rear slots |
| Flush Cutout | 352 x 302 x 80 deep | N/A |



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