



## **Consultants Specification Guide**

### **Emergency Voice Communication Systems (EVCS)**

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## 1. PERFORMANCE OBJECTIVES

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To provide a secure and maintained two-way communication system within the building for the functions of Fire Telephone, Stewards communication system, Disabled Refuge Communication and Disabled Toilet Alarm Signalling.

All functions shall be combined in a single system, manageable from multiple locations where appropriate, to prevent miscommunication.

A single Master Handset shall take control during an emergency, and all communication between outstations, including conference calling shall be controlled from that Master Handset.

## 2. DESIGN PARAMETERS

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The EVC system installation will comply fully with the edition (including amendments) of each of the following, current at the time of tender:

- Building Regulations Approved Document B
- Building Regulations Approved Document M
- The Fire Precautions (Sub-surface Railway Stations) Regulations
- The Fire Safety and Safety of Places of Sport Act

BS 31	Specification. Steel conduit and fittings for electrical wiring
BS 9999	Fire precautions in the design, construction and use of buildings
BS 5839	Part 9 - Code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems
BS 7594	Code of Practice for audio-frequency induction- loop systems (AFILS)
BS 7671	Requirements for Electrical Installations: IEE Wiring Regulations.
BS 7807	Code of practice for design, installation and servicing of integrated systems incorporating fire detection and alarm systems and/or other security systems for buildings other than dwellings
BS 7827	Code of practice for design, installation and servicing of sound systems for sports stadia
BS 8300	Design of buildings and their approaches to meet the needs of disabled people. Code of practice
BS EN 54-4	Fire detection and fire alarm systems. Power supply equipment
BS EN 50086	Specification for conduit systems for cable management
BS EN 60118-4	Hearing aids. Magnetic field strength in audio-frequency induction loops for hearing aid purposes
BS EN 60702	Mineral insulated cables and their terminations with a rated voltage not exceeding 750V

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### 3. SYSTEM DESIGN

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An EVCS system enables communication between strategic points throughout the building or site and the central control point(s). EVCS systems are needed in the following situations:

- a) In any building or sports or similar venues where there are disabled people or people who may have difficulty negotiating the evacuation route.
- b) In buildings with phased evacuation and/or fire-fighting lifts where it facilitates secure communications for building managers, fire wardens and attending fire officers.
- c) At sports venues and in similar complexes, where it will assist stewards in controlling the evacuation of the area in an emergency.  
In some buildings, it might be necessary to take into consideration that the EVC system will address multiple uses and the outstation design will reflect its intended use.

#### 3.1 DESIGN GUIDANCE

The following should be consulted when determining the type and function of an EVC system:

- Approved Document B (Fire safety) – Volume 2: Buildings other than dwelling houses
- BS 9999
- Guide to Safety at Sports Grounds, Fifth edition, 2008
- Fire Safety Guide No 3, Phased Evacuation from Office Buildings. London District Surveyors Association
- Guidance documents that support fire safety legislation
- Any authority responsible for enforcing fire safety legislation that applies to the premises.

#### 3.2 OUTSTATION CHOICE

In general, the following rules can be applied to Outstation choices:

- Type A – For all uses by the fire service or fire wardens, and in all firefighting lift lobbies
- Type B – In locations primarily used by the Public, a refuge point shall be supplied in all designated refuge areas
- Emergency Assist Call Points – In disabled toilets or shower areas, where attention is sought, but conversation is not required.

#### 3.3 OUTSTATION POSITION

- For the position of Type A and B Outstations Building Regulations Document B should be consulted.
- For the location of Emergency Assist Alarms Building Regulations Document M should be consulted.

### 3.4 DOCUMENTATION

Issue Design certificate as required by BS5839 part 9:2011.

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## 4. SYSTEM COMPONENTS ANALOGUE

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The system shall comprise of three Functional Elements:

- a) Master Handsets (Master Controllers)
- b) Exchange Units (Slave Controllers)
- c) Outstations (Type A, Type B or Emergency Assist Call Points)

### 4.1 MASTER HANDSETS ANALOGUE

Compact 5 Master Handset WallMount Part  
No. EVCS-CMPT



Master Handsets shall be positioned at the main point(s) of attendance within the building or complex, and shall be used to control all functions of the EVCS

### 4.2 MASTER CONTROLS AND INDICATION

As a minimum the following LED Indications shall be provided on all systems:

- Supply present (energised) - A green LED denoting presence of power
- Supply Fault – A yellow LED denoting a fault in either the Mains or Battery Supply
- General Fault – A yellow LED denoting any fault on the system
- System(CPU)Fault – A yellow LED denoting a code checksum fail or watchdog event

For systems of five outstations or less, control shall be by use of a single button per line with RED LED call and Yellow LED Fault indication per line

### 4.3 TYPE A OUTSTATIONS

Flush Outstation Push Door, Type A

Part No. EVCS-HFP



Surface Station Push Door, Type A

Part No. EVCS-HSP



Flush Outstation Type A, Push Door,  
Stainless Steel

Part No. EVCS-HFPSS



Surface Outstation Type A, Push Door,  
Stainless Steel

Part No. EVCS-HSPSS



These outstations shall comprise a solid metal enclosure with a push door, and provided in either RAL3000 with a white screen print or in a brushed stainless steel finish with a red screen print.

The enclosure shall contain a robust red handset on an extendable coiled cable.  
The answering of a call or the initiation of a call shall be by the lifting of the handset alone, no other actions shall be required

The enclosure should contain a red confidence LED which should light solidly when the handset is on hook, and flash when the outstation is being called.

A sounder shall be present in the enclosure and ring when the outstation is being called.

#### 4.4 TYPE B, OUTSTATIONS

Surface Outstation Type B, Red Part  
No. EVCS-HSB



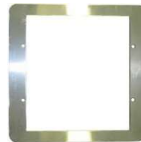
Surface Outstation Type B, Green Part  
No. EVCS-HSBG



Surface Outstation Type B,  
Stainless Steel  
Part No. EVCS-HSFSS



Flush Mounting Bezel Type B,  
Stainless Steel  
Part No. EVCS-VCFHB



These outstations shall comprise a solid metal enclosure and provided with a green screen print with a white detail, or in a brushed stainless steel finish with a red etched print.

The outstation shall be hands free in operation.

The answering of a call, or the initiation of a call shall be by pressing the call button, no other actions shall be required

The unit shall contain a red confidence LEDs which flash every three seconds to locate the call point in low light conditions, and light solidly when a call is connected.

A sounder shall be present in the enclosure and ring when the outstation is being called.

Tactile Braille shall be applied to the unit to identify the operation and raised edges shall be applied to the label to identify operational buttons.

## 4.5 EMERGENCY CALLOUTSTATIONS

Emergency Assist Alarm Stand Alone Kit-  
Supplied with PSU  
Part No. EVCS-TAP



Emergency Assist Alarm Network Version- PSU  
not included

Part No. EVCS-TA



The emergency Call outstation comprises three components, the pull cord, the over door indicator and the cancel point.

The disabled call system shall receive all power from the EVCS system and not require a local supply unit.

The interconnection for this unit shall be monitored by the EVCS by use of a 10K resistor in the pull cord unit

The cancel point shall be white with a blue label showing the word "CANCEL" in white text and Braille, it shall have a blue halo which lights when the pull cord is operated.

The over door indicator shall comprise a blue indicator on a white plate and a high-level sounder, which illuminate/sound when the pull cord is activated

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## 5. SYSTEM COMPONENTS DIGITAL

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The system shall be wired in a loop configuration utilising 4 cores, 2 for power 2 for data. And accept up to 16 outstations per panel or slave panel to a maximum of 32 panels and a maximum of 512 outstations. Communication between the master and the outstations shall be via a digital bus

The system shall comprise of three Functional Elements:

- a) Master Handsets (Master Controllers)
- b) Exchange Units (Slave Controllers)
- c) Outstations (Type A, Type B or Emergency Assist Call Points)

### 5.1 MASTER HANDSETS



Network 16 Master Panel Part  
No. EVCS-MPX-16

Master Handsets shall be positioned at the main point(s) of attendance within the building or complex and shall be used to control all functions of the EVCS.

Access to the handset shall be restricted by use of a lockable door.

Access to the control functions shall be by means of a password controlled multi-function keypad  
The system shall be capable of flush / semi flush mounting

### 5.2 MASTER CONTROLS AND INDICATION

As a minimum the following LED Indications shall be provided on all systems:

- Supply present (energised) - A green LED denoting presence of power
- Call indication (energised) - A green LED denoting presence of a call
- Outstation fault (energised) - A Yellow LED denoting a n outstation fault
- Network Fault (energised) - A Yellow LED denoting a network fault
- System Healthy (energised) A green LED denoting System functioning correctly
- Supply Fault – A yellow LED denoting a fault in either the Mains or Battery Supply
- General Fault – A yellow LED denoting any fault on the system
- System(CPU) Fault – A yellow LED denoting a code checksum fail or watchdog event

For all other systems control and indication shall be by a large high contrast white backlit 100 x 40mm LCD, giving clear indication of:

- Current Calls
- Faults and logs
- System Status
- Outstation Directory
- System Menus

Control of the LCD shall be by a four-button navigation system with the following functions:

- Left (Back) – return to the previous menu
- Centre Right (Down) - Scroll down a menu or decrement a value
- Centre Left (Up) - Scroll up a menu or increment a value
- Right (Accept)-Accept currently highlighted value

### 5.3 NETWORK EXCHANGE

16 Outstation Network Exchange Unit



Part No. EVCS-NSX-16

(Can be used only with the EVCS-MPX-16)







Network exchange units interface an additional 16 outstations to the EVCS controller, these will be distributed enclosures enabling local wiring loops networked back to the master panel. The system shall be wired in a loop configuration utilising 4 cores, 2 for power 2 for data. And accept up to 16 outstations per panel a total of 32 panels in a mix of master and network exchange panels can be networked.

The Network exchange shall be housed in a metal enclosure with sufficient 20mm gland knockouts for all required cables and suitable for mounting in a riser cupboard.

The network exchange shall house a power supply for its own operation and the supply of current to master handsets as required including:

- A battery and charger to meet the requirements of EN54-4.
- Ensuring the battery support has sufficient capacity to maintain the system operation for up to 24 hours in a quiescent mode and 3-hour operation.
- Ensure the battery charger is capable of re-charging discharged batteries to 100% of their rated capacity within a 24-hour period and more than 80% within 12 hours.
- Ensure the power supply in the battery charger has a constant voltage output with compensation for variation in battery temperature. Check batteries are protected from discharge by a solid state switch which disconnects the negative terminal.
- Design the power supply and supervisory board to maintain the batteries, on float charge and in good condition, for five years at an ambient temperature of 25 degrees C. Ensure the charger compensates for ambient temperature changes in order to maximise the battery life and minimise the recharge time

## 5.4 DIGITAL TYPE A & TYPE B OUTSTATIONS

<p>Type A Outstation Push Door, Red Part No. EVCS-HSA-RS-D</p>	 A red rectangular push door with a white telephone handset icon and a small circular button to its right.
<p>Type A Outstation Flush Bezel Red Part No. TA16-BEZ</p>	 A red rectangular flush bezel with a white telephone handset icon and a small circular button to its right.
<p>Type B Outstation Surface Green Part No. EVCS-CSB-GS-D</p>	 A green rectangular surface with a white wheelchair accessibility icon and three small circular buttons below it.
<p>Type B Outstation Flush Part No. EVCS-CSB-GF-D</p>	 A green rectangular flush surface with a white wheelchair accessibility icon and three small circular buttons below it.
<p>Type B Outstation Surface Red Part No. EVCS-CSB-RS-D</p>	 A red rectangular surface with a white wheelchair accessibility icon and three small circular buttons below it.
<p>Type B Outstation Flush Red Part No. EVCS-CSB-RF-D</p>	 A red rectangular flush surface with a white wheelchair accessibility icon and three small circular buttons below it.

These outstations shall comprise a solid metal enclosure with a push door, and provided in RAL3000 with a white screen print.

The enclosure shall contain a robust red handset on an extendable coiled cable.

The answering of a call or the initiation of a call shall be by the lifting of the handset alone, no other actions shall be required

The enclosure should contain a red confidence LED which should light solidly when the handset is on hook, and flash when the outstation is being called.

A sounder shall be present in the enclosure and ring when the outstation is being called.

These outstations shall comprise a solid metal enclosure and provided with a green screen print with a white detail, or with a red screen print with a white detail.

The outstation shall be hands free in operation.

The answering of a call, or the initiation of a call shall be by pressing the call button, no other actions shall be required

The unit shall contain a red confidence LEDs which flash every three seconds to locate the call point in low light conditions, and light solidly when a call is connected.

A sounder shall be present in the enclosure and ring when the outstation is being called.

Tactile Braille shall be applied to the unit to identify the operation and raised edges shall be applied to the label to identify operational buttons.

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## 6. INSTALLATION

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### 6.1 RESPONSIBILITIES

The EVCS installer shall coordinate with other installers to ensure correct inter-operability with other systems (including but not limited to BMS, electrical, ceiling contractor) and to achieve proper spatial control of equipment and components.

Install all equipment in the locations as indicated on the design drawings.  
Ensure that the environmental acoustic recommendations of relevant local standards are noted and complied with regarding the siting of EVCS equipment.

Ensure all equipment (except portable equipment) is firmly held in place. Check fastenings and supports are adequate to support their loads with a safety factor of at least three. If attachment to roof truss members is required to lift equipment into place, only attach by permanent lifting eyelets provided in the roof truss. Do not weld or drill the steel roof truss, use approved clamping arrangements employing neoprene or similar bearing pads for permanent attachment to trusses, protecting the truss finish.

Use multi-pin connectors or terminals to mechanically and electrically interconnect various items of equipment.

### 6.2 CABLING

Earth EVC cabling in accordance with BS 7671. All wiring for Type A and type B outstations and all network cables shall comply with local codes of practice and relevant standards.

Disabled call units shall be wired in two core LSF cables as a minimum.

Lay the cabling on the dedicated fire alarm system/ EVC cable tray throughout the complex. Where cables are installed on tray, fix the cables using fire rated clips.

### 6.3 DOCUMENTATION

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Issue an installation certificate as required by BS5839 part 9 :2011.

## 7. TESTING AND COMMISSIONING

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Following the installation of the system, it shall be fully tested, commissioned and demonstrated to the client in accordance with the manufacturer's recommendations and those of the Standards listed in section 2 of this specification. Liaise with manufacturers of the interfaced systems to ensure all tests and demonstrations are fully coordinated.

### 7.1 TESTS

- Fully test calling from all outstations to master handset or handsets
- Test calling from all master handsets to each Outstation
- Report any excessive noise on communication links
- Measure the background noise at each of the master handset locations and ensure this is below 45dBA
- Ensure no sounder or Voice Alarm speakers are in Refuge locations

### 7.2 PROCEDURE

Fully demonstrate the complete operation of the system to the satisfaction of the Engineer.

Prepare a fully detailed method statement for the test, commissioning and demonstration stating exactly how these are to be carried out including interface with the Fire Alarm system.

Submit the statement to the Engineer for comment one month in advance of the test. Fully test the EVCS to ensure the correct operation of all Master handsets and outstations.

Provide three hard copies of the results on A1 or A0 layout drawings and include in the O&M instruction manuals. Provide electronic copies of the drawings in AutoCAD/ PDF

### DOCUMENTATION

Issue a system test certificate detailing compliance with all the relevant British Standards and this specification.

Issue two hard copies of all documentation immediately to the Engineer for comment prior to inclusion in the handover documentation.

Following receipt of comments, amend all documentation (including „as fitted“ drawings, O&M manual documentation and system instruction drawings & manuals) and issue three hard copies and three electronic copies of all documentation. Provide electronic text documents in either Microsoft Word or Excel format, and all drawings in AutoCAD format.

### 7.3 SYSTEM INSTRUCTION

Instruct the Employer's Representatives on the operation of the system.

Include a practical demonstration of the installation and equipment. Arrange the required demonstration and agree the times and dates with regards to the overall contract programme works.

Ensure that the "as fitted" manuals and drawings are made available for the Employer's demonstration and instruction.

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## 8. SCHEDULE OF INSTALLER'S SUBMISSIONS

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Operating and maintenance instructions for all items of equipment including:

- Master Handsets
- Exchange Units
- Outstations as appropriate
- As wired Drawings
- BS5839pt9:2011 Design certificate
- BS5839pt9:2011 Installation certificate
- BS5839pt9:2011 Commissioning certificate
- Details of all system testing

Prepare all installations and record drawings, supply proper operating and maintenance instructions and provide adequate demonstration to and training of the client's representatives, for the system in accordance with the standards listed in [section 2](#) and the relevant sections of this specification.

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**For more information**

Please contact your local Sales Manager

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