Disabled Refuge EVC

System Manual

Issue Control

Issue	Date	Changes
1.00	08.01.2010	Draft version for comment, based on existing manuals.
1.01	06.08.2010	Updated to include compact systems.
1.02	25.08.2010	Updated to include RA part numbers.
1.03	03.09.2010	Updated pictures.

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1 INTRODUCTION

This document is the System Manual for Folknoll compact and standard range of Disabled Refuge EVC systems.

The Folknoll Disabled Refuge EVC series is a range of easy to install, easy to configure and easy to operate equipment, designed to enable you and your clients to install BS5839-9 compliant vandal resistant disabled refuge EVC systems.

1.1 WHAT IS A DISABLED REFUGE EVC SYSTEM

In the event of an emergency disabled people make their way to disabled refuge areas to wait for rescue. The Disabled Refuge EVC system is used to contact the evacuation organiser to request assistance. The evacuation organiser uses the Disabled Refuge EVC system to instruct, inform and reassure people waiting in the disabled refuge areas.

1.2 FOLKNOLL DISABLED REFUGE SYSTEMS

Folknoll Disabled Refuge EVC systems comprise a number of outstations located in disabled refuge areas, control equipment and a master station located in the control or operations area. A range of options are available to construct a system suit your requirements. All Folknoll Disabled Refuge EVC systems have a key enabled switch, integral fault monitoring, and can be powered from a battery backed power supply providing at least 24 hours standby and 30 minutes operation in the event of a power fail.

1.2.1 Cabling

At Folknoll all equipment is designed by experience engineers for ease of operation installation and operation. In particular all Disabled Refuge EVC systems have taken into account the BS requirement to use larger fire resistant cabling, providing cable termination within enclosures, allowing room for larger glands and avoiding the need for additional junction boxes.

1.2.2 Compact Systems

For smaller systems, with 10 refuge areas or less, Folknoll offer their cost effective compact system. Compact system installation costs are reduced without compromising functionality by building the system controller and a battery backed PSU into the compact system master station. Outstations are cabled directly to the compact system master station. The compact system master stations are the same size and have similar build quality to standard fire alarm panels.

1.2.3 Standard Systems

For larger systems, requiring more facilities and options Folknoll offer their more flexible standard system. Outstations are connected to daisy chained system controllers allowing more cabling options. Up to four system controllers can be connected into the system allowing a larger number of outstations. Standard system master stations are vandal resistant offering a more robust solution for more exposed control areas.

1.2.4 Outstations

Folknoll offer surface or flush mount vandal resistant and surface mount IP65 external outstations for used with compact or standard Disabled Refuge EVC systems.

1.2.5 Master Stations

Folknoll offer a range of 2-off fire panel sized compact system master stations with integral system controller and PSU for smaller systems, and 4-off vandal resistant standard system master stations for larger systems.

1.2.6 Keyed Enable Switch

All compact and standard Folknoll Disabled Refuge EVC system master stations have a keyed enable switch which can be used to prevent unauthorised access.

1.2.7 Remote Enable

All compact and standard Folknoll Disabled Refuge EVC systems have a remote enable input. This allows a remote device such as a management system or fire alarm system to enable the master station irrespective of the state of the keyed enable switch.

1.2.8 Single Monitored Battery Backed PSU

All Folknoll compact and standard Disabled Refuge EVC systems can be powered from a single battery backed PSU. In the event of a mains failure the backup unit is capable of providing at least 24 hours standby and 30 minutes operation. The mains supply is monitored and supply failures are reported by the master station.

1.2.9 Audio Path Fault Monitoring and Reporting

Compact and standard Folknoll Disabled Refuge EVC systems offer audio path monitoring and reporting. Audio tones are sent to outstation speakers, received by outstation microphones and compared. Any discrepancies caused for example by chewing gum covering the microphone hole are reported by the master station.

Compact and manual audio path testing can be triggered by external timers or management systems. Audio path test fail output(s) are available to activate external devices or warning management systems.

Compact systems can have a manual test switch and internal timer.

1.3 DESIGNED FOR LIFE

As with all Folknoll products, the Disabled Refuge EVCsystems have been designed for easy installation, simple configuration, straightforward operation, excellent testing facilities, low maintenance and high reliability.

1.4 COMPLETE SOLUTIONS

Folknoll are happy to assist in specifying equipment, configuring systems and providing connection diagrams.

1.5 CUSTOM UNITS

Folknoll is a customer focused company. If you require special software features, custom made units or larger systems, then please contact Folknoll to discuss your requirements.

1.6 CONTACT US

For further information about Folknoll Disabled Refuge EVC systems or any other Folknoll products please contact us on +44 (0) 1763 234567, email us at sales@folknoll.co.uk, or visit our website at www.folknoll.co.uk.

2 COMPACT DISABLED REFUGE EVC SYSTEMS

For smaller sites with 10 or less refuge areas, Folknoll offer their cost effective compact Disabled Refuge EVC system, where vandal resistant master stations are not required.

Compact system installation costs are reduced without compromising functionality by building the system controller and a battery backed PSU into the compact system master station. Terminals are provided within all equipment for cable terminations and space is allowed for glanding of larger fire resistant cable types to comply with BS requirements. The equipment count is reduced and cabling simplified.

Compact system master stations are designed to match stand fire alarm size and quality and are suitable for mounting in similar secure areas.

For a typical compact system please refer to the figure below:

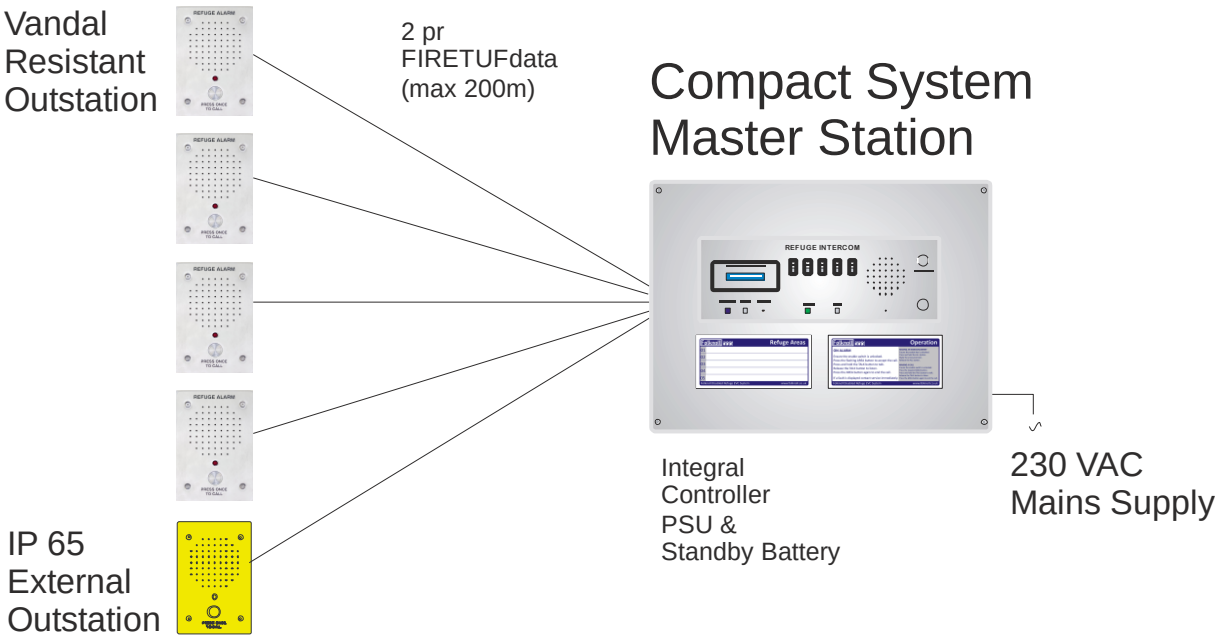


Fig 2:1 Typical Compact Disabled Refuge EVC System

2.1 COMPACT SYSTEM FEATURES

- Cost effective solution with reduced equipment count and simplified cabling
- Compatible with all Folknoll Disabled Refuge EVC outstations
- Adjustable microphone and speaker volumes
- Master stations and outstations have maximum audio out of 85dB (for noisy environments)
- Range of mild steel master stations with built in controller and PSU
- All compact system master stations match standard fire panel size and quality.
- Fault monitoring and reporting with output for BMS etc.
- Battery backed PSU, 24 hours standby and 30 minutes operation
- Connection termination within equipment, provision for larger cable types

2.2 COMPACT SYSTEM OUTSTATION

Fig 2:2 Outstations

Outstations are located in refuge areas and used by uses to communicate with evacuation organisers.

Folknoll offer 2-off outstations, the bright yellow RA7700.60 IP65 external outstation and the vandal resistant stainless steel RA7700.30 and RA7700.35 internal outstation.

Each outstation has an integral microphone and speaker, a large **CALL** button and a call progress LED.

Microphone and speaker volume can be adjusted with a maximum output of 85dB for use in noisy environments.

Please refer to section 9 Disabled Refuge EVC Components.

2.3 COMPACT SYSTEM MASTER STATIONS

Fig 2:3 Compact Master Stations

Master stations are located in the control or operations area and used by the evacuation organizer to communicate with all system users.

Compact system master stations comprise an operator control panel, a system controller and battery backed PSU.

Microphone and speaker volume can be adjusted with a maximum output of 85dB for use in noisy environments.

All compact system master stations are designed to match standard fire panel size and quality.

Folknoll offer the choice 5 and 10 refuge area mild steel compact system master stations with system control, PSU, standby batteries and cable termination.

- RA7805.01 for compact systems with up to 5-off outstations
- RA7810.01 for compact systems with up to 10-off outstations

To aid operators the front of the compact master station is fitted with operating instructions and a card for installers to add refuge area descriptions.

A compact system 5-way master station is shown below:

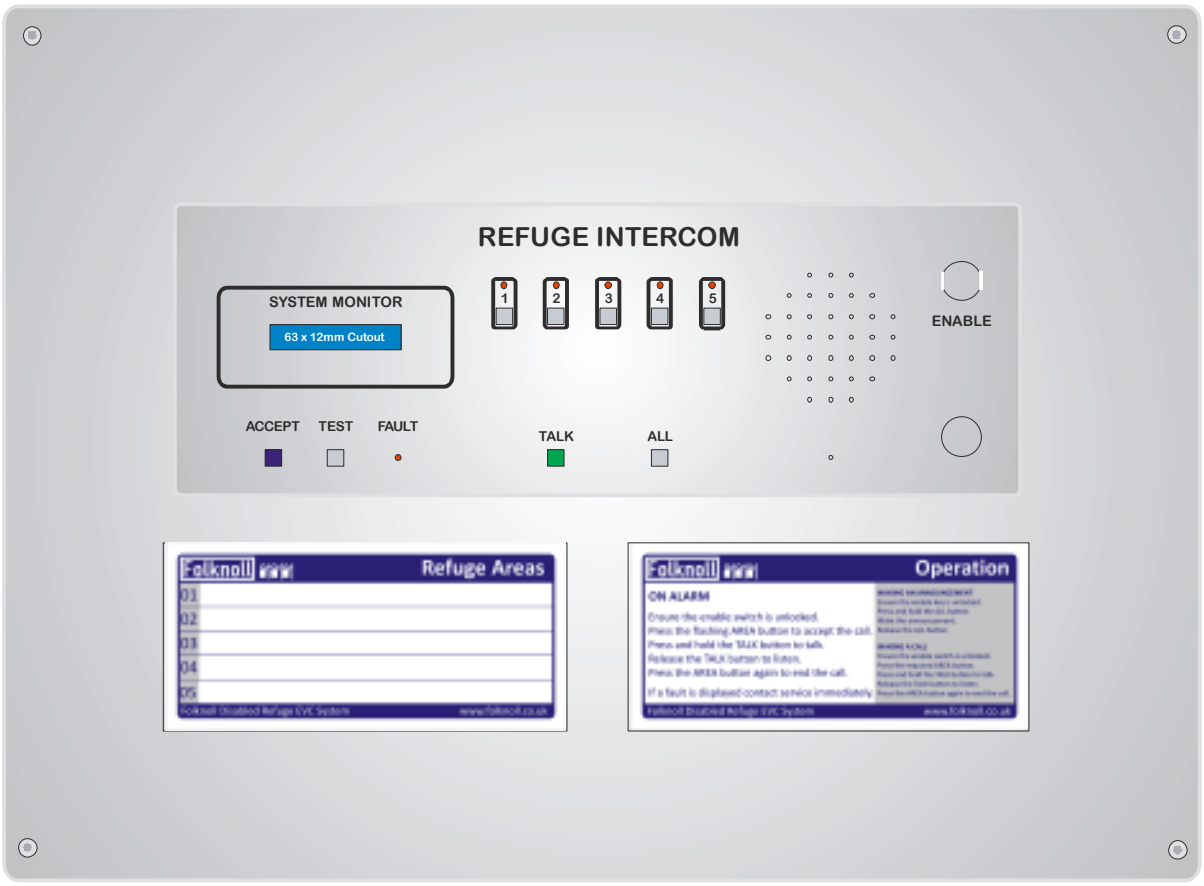


Fig 2:4 Compact System 5 Way Master Station

2.4 COMPACT SYSTEM FAULT MONITORING

Compact system power fail, audio path and other faults are monitored and reported by the compact system master station, please refer to section 7 System Faults.

2.4.1 Compact System Audio Path Monitoring and Reporting

Compact Folknoll Disabled Refuge EVC systems have automatic audio path monitoring and reporting. Audio tones are sent to outstation speakers, received by outstation microphones and

compared. Any discrepancies are reported by the compact master station, please refer to section 7 System Faults.

Compact system master stations have a manual **TEST** button and internal timer which may be configured to trigger audio path testing.

Audio path testing may also be triggered by external devices such as a timer or management system.

Compact system audio path testing can also be triggered by applying a short to connector TBC on the compact master station.

An audio path test fail output is available to activate an external indicator or to interface with an external monitoring system.

Please refer to section 9.3 Compact System 5 Way Master Station (P/N RA7805.01) or section 9.4 Compact System 10 Way Master Station (P/N RA7810.01).

NOTE: During testing outstations will emit audio tones. Testing should be timed to minimise inconvenience.

2.5 COMPACT SYSTEM BATTERY BACKED PSU

All Folknoll compact and standard Disabled Refuge EVC systems can be powered from a single battery backed PSU. In the event of a mains failure the backup unit is capable of providing at least 24 hours standby and 30 minutes operation. The mains supply is monitored and supply failures are reported by the master station.

The Compact system PSU is built into the compact system master station, please refer to section 9.3 Compact System 5 Way Master Station (P/N RA7805.01) and section 9.4 Compact System 10 Way Master Station (P/N RA7810.01).

2.6 COMPACT SYSTEM CABLING

Outstations are star wired to the compact system master station, enabling simple cost effective installation.

NOTE: all type cables should conform to the relevant British Standards, fire resistant cabling may be required e.g. FIRETUFdata, please refer to section 10 APPENDIX A FIRETUFdata.

2.6.1 Compact System Cabling layout

- Each outstation is connected by a shielded 2 pair cable to the master station.
- The master station is connected to mains supply.

2.6.2 Compact System Cabling Rules

- No termination resistors are required.
- Assuming FIRETUFdata cable is used the maximum length of cable between each outstation and the master station is 200m.

2.6.3 Compact System Cable Connections

All connection is via terminal block located within the equipment, 'knockouts' have been provided for cable entry. Folknoll's design has allowed sufficient room for glands for larger fire resistant cable types to comply with BS requirements.

Please refer to the drawing below:

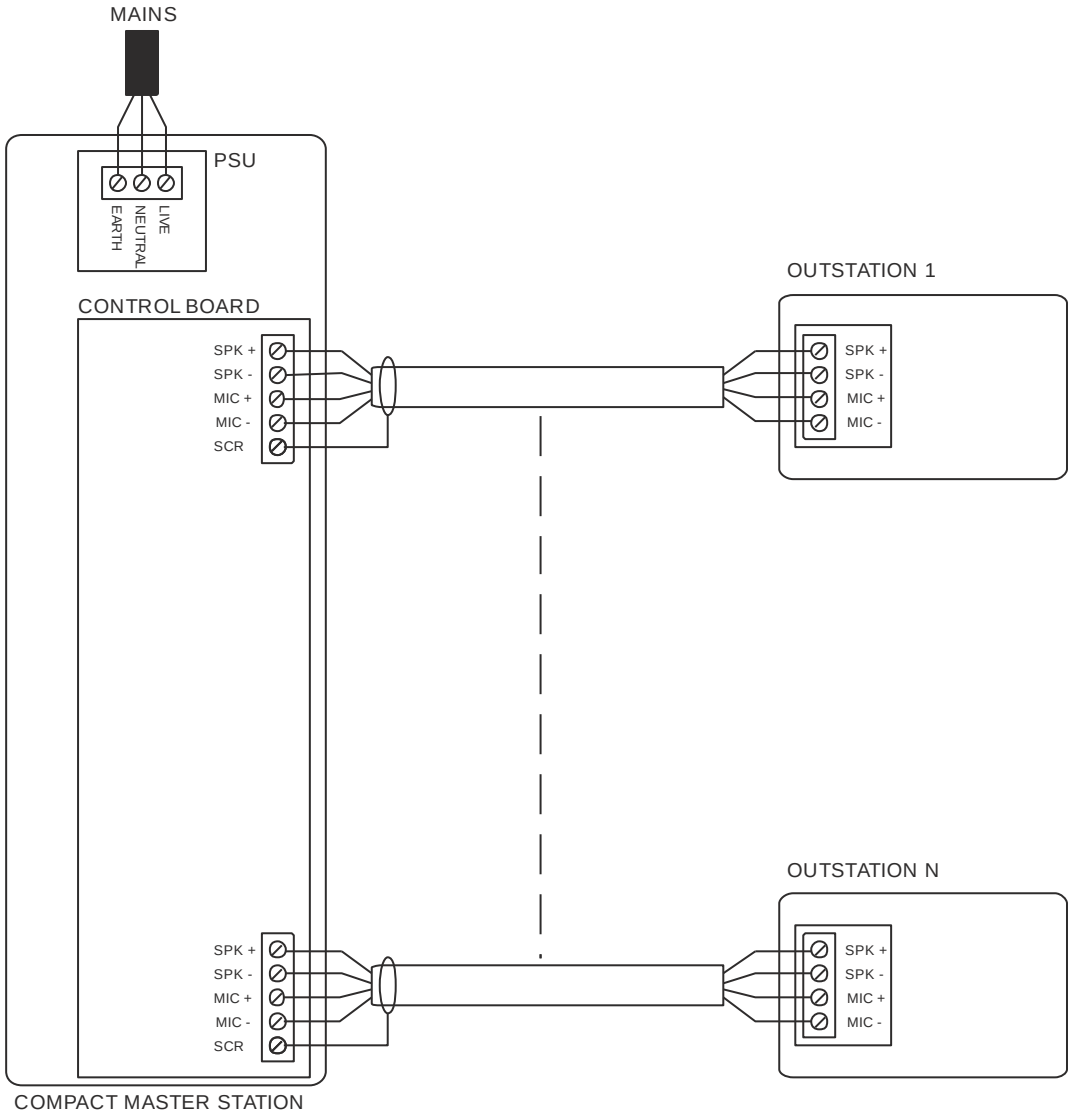


Fig 2:5 Typical Compact System Connections

3 STANDARD DISABLED REFUGE EVC SYSTEMS

The standard Disabled Refuge EVC system offers a more flexible solution with more outstations, additional cabling options and a range of more robust monitoring stations.

Standard systems are wired in zones with separate controllers, increasing the number of outstations and increasing the options for cable routing. Terminals are provided within all equipment for cable terminations and space is allowed for glanding of larger fire resistant cable types to comply with BS requirements.

Standard system master stations are designed to be vandal resistant and are suitable for mounting more exposed areas.

The figure below shows a typical standard system:

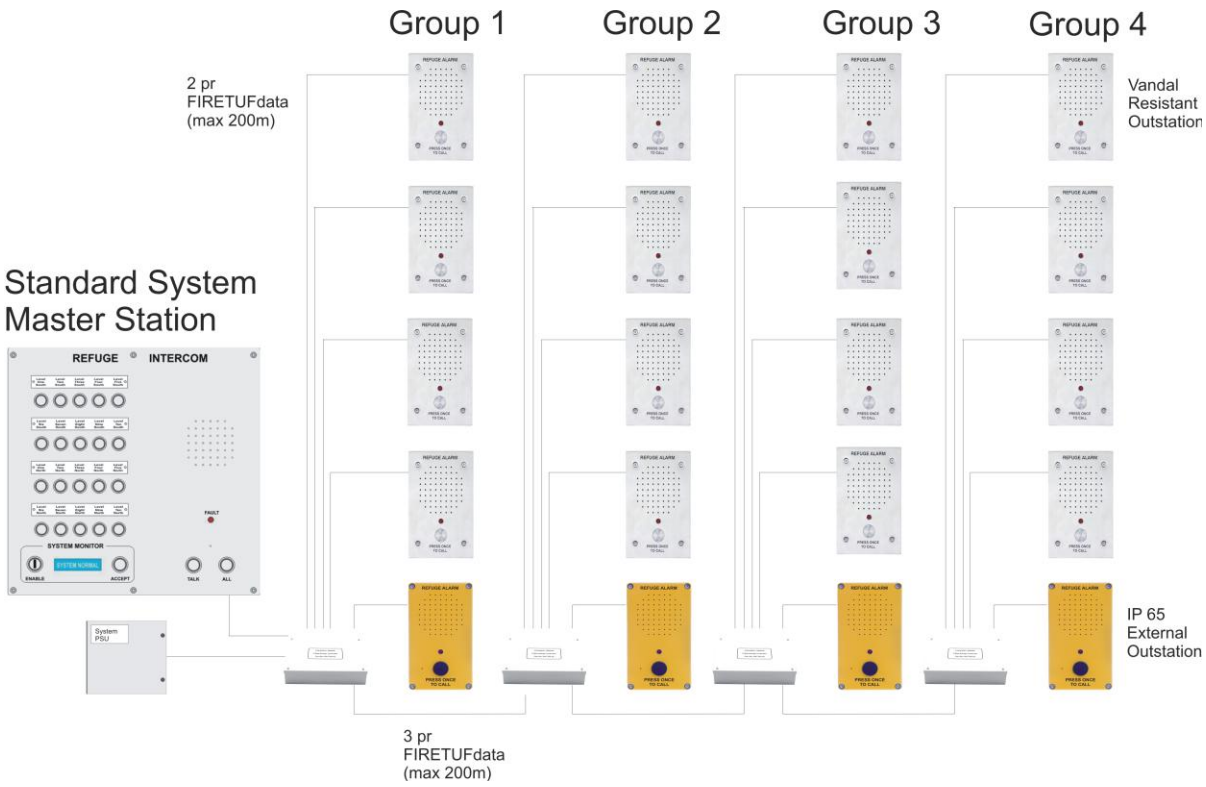


Fig 3:1 Typical Disabled Refuge EVC System

3.1 STANDARD SYSTEM FEATURES

- Compatible with all Folknoll Disabled Refuge EVC outstations
- Adjustable microphone and speaker volumes
- Master stations and outstations have maximum audio out of 85dB (for noisy environments)
- Range of stainless steel master stations
- Fault monitoring and reporting with outputs for BMS etc.

- Battery backed PSU, 24 hours standby and 30 minutes operation
- Connection termination within equipment, provision for larger cable types
- Separate system controllers and PSU; allows more outstations; allows more cabling options

3.2 STANDARD SYSTEM OUTSTATIONS

Fig 3:2 Outstations

Outstations are located in refuge areas and used by uses to communicate with evacuation organisers.

Folknoll offer 2-off outstations, the bright yellow RA7700.60 IP65 external outstation and the vandal resistant stainless steel RA7700.30 and RA7700.35 internal outstation.

Each outstation has an integral microphone and speaker, a large **CALL** button and a call progress LED.

Microphone and speaker volume can be adjusted with a maximum output of 85dB for use in noisy environments.

Please refer to section 9 Disabled Refuge EVC Components.

3.3 STANDARD SYSTEM MASTER STATIONS

Fig 3:3 Standard Master Stations

Folknoll offer a choice of 5, 10, 15, and 20 refuge area vandal resistant stainless standard system master stations.

- RA7705.01/05for standard systems of up to 5-off outstations
- RA7710.01/05 for standard systems of up to 10-off outstations
- RA7715.01/05 for standard systems of up to 15-off outstations
- RA7720.01/05 for standard systems of up to 20-off outstations

The standard master stations are designed for mounting in more exposed areas with stainless steel enclosures, vandal resistant switches and customisable engraved refuge area names.

Microphone and speaker volume can be adjusted with a maximum output of 85dB for use in noisy environments.

All standard system master stations have the same functionality with different fascia to depending on the number of outstation buttons. All standard system master stations can be flush or surface mounted to suite your application.

Folknoll can provide bespoke engraved outstation annotation for the master station to give meaningful identifications for your outstations. E.g. ‘Lower lift lobby’ instead of ‘SUB 1’. Please contact Folknoll for more details. A five way standard system master station is shown below:-

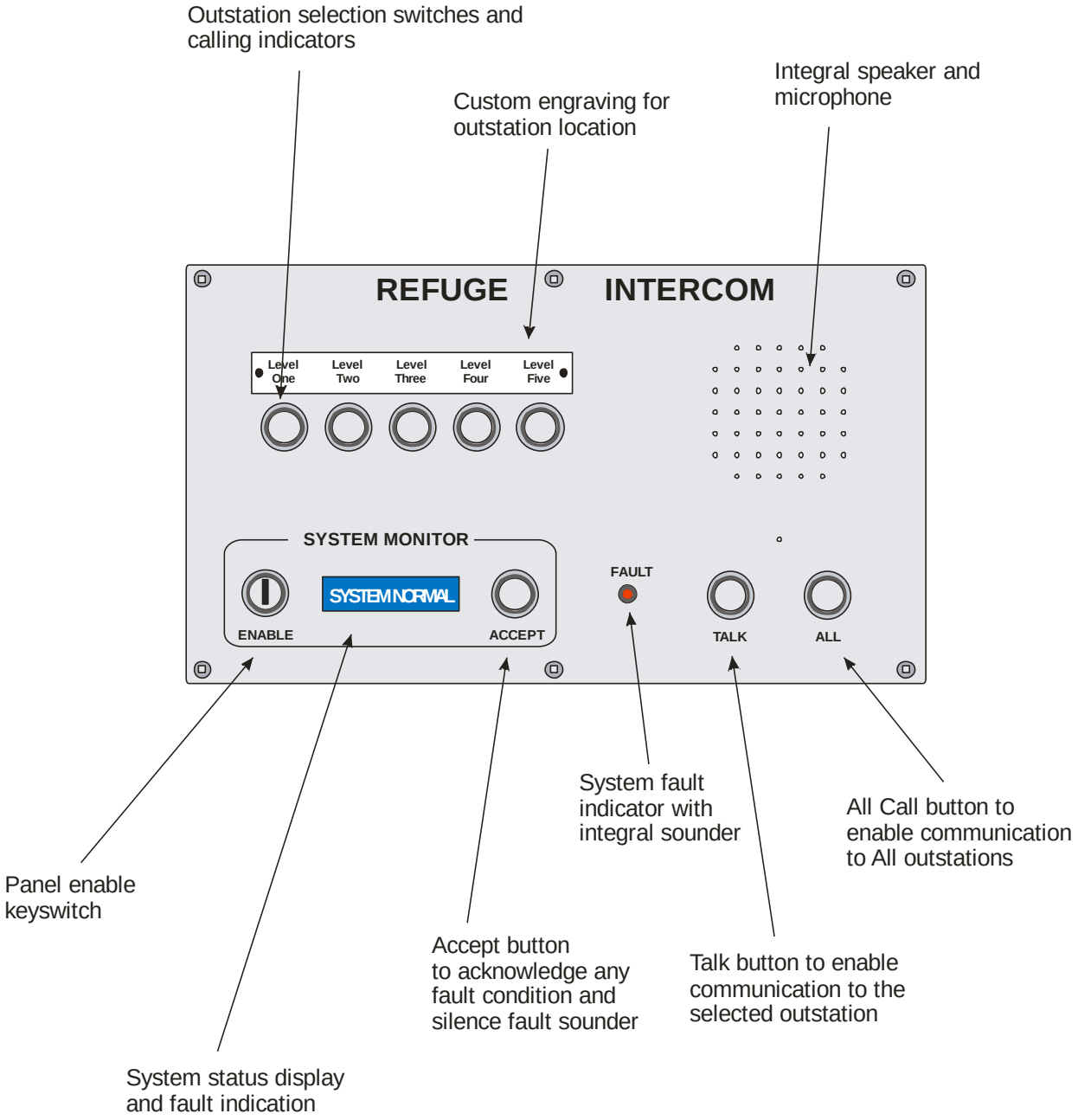


Fig 3:4 Five Way Master Station

For more information about other Folknoll Disabled Refuge EVC standard system master stations please refer to section 9 Disabled Refuge EVC Components.

3.4 STANDARD SYSTEM CONTROLLER

The standard system controller interfaces up to 5-off outstations onto the system. Each controller is addressable to identify which group of outstations it controls. The controller provides individual microphone volume and speaker volume for each of its outstations. The controller have a test input to trigger audio path testing of its outstations and has a fault output relay to drive an external fault indicator or monitoring system.

For more information about Folknoll Disabled Refuge EVC system controllers please refer to section 9 Disabled Refuge EVC Components.

3.5 STANDARD SYSTEM FAULT MONITORING

Standard faults are reported by the standard system master station, please refer to section 7 System Faults.

3.5.1 Standard System Audio Path Monitoring and Reporting

Standard Folknoll Disabled Refuge EVC systems have audio path monitoring and reporting. Audio tones are sent to outstation speakers, received by outstation microphones and compared. Any discrepancies are reported by the standard system compact master station, please refer to section 7 System Faults.

Standard system controllers will test its own outstations. To trigger a test apply a short to connector J11 on each standard system controller. Each system controller can be triggered separately or simultaneously as required. Please refer to section 9.9 Standard System Controller (P/N RA7700.02).

NOTE: Each system controller tests its own outstations. To test the entire system the short must be applied to all system controllers.

If required audio path testing can be automated by connecting the standard system controller inputs to an external timer or management system.

NOTE: During testing outstations will emit audio tones. Testing should be timed to minimise inconvenience.

Each standard system controller has a fault output relay. This can be used to activate an external indicator or management system. Connection is made to connect to relay output J6 please refer to section 9.9 Standard System Controller (P/N RA7700.02).

NOTE: Each system controller sets an output depending on the results of testing its own outstations. To detect all outstation fails the output from all system controllers must be monitored.

3.6 STANDARD SYSTEM BATTERY BACKED PSU

All Folknoll compact and standard Disabled Refuge EVC systems can be powered from a single battery backed PSU. In the event of a mains failure the backup unit is capable of providing at least 24 hours standby and 30 minutes operation. The mains supply is monitored and supply failures are reported by the master station.

Standard system power is derived from the standard system PSU and standby battery set. This combination will provide power for up to 20–off outstations, 4-off system controllers and one master station.

For more information about Folknoll Disabled Refuge EVC PSUs and Battery Sets please refer to section 9 Disabled Refuge EVC Components.

3.7 STANDARD SYSTEM CABLING

Outstations are star wired to system controllers which are daisy chained to the master station. Standard systems can be star wired back to a central point or to start wired distributed collection points, enabling a variety of cabling options, particularly useful when retrofitting systems to existing buildings.

NOTE: all type cables should conform to the relevant British Standards, fire resistant cabling may be required e.g. FIRETUFdata, please refer to section 10 APPENDIX A FIRETUFdata.

3.7.1 Standard System Cabling layout

- Each outstation is connected by a shielded 2 pair cable to its system controller.
- The master station and all of the system controllers are looped together by a 3 pair cable.
- The first system controller is connected to the PSU by 4 cores
- The PSU is connected to a mains supply.

3.7.2 Standard System Cabling Rules

- No termination resistors are required.
- Assuming FIRETUFdata cable is used the maximum length of cable between each outstation and its system Controller is 200m.
- Assuming FIRETUFdata cable is used the maximum length of cable between each system Controller is 200m.
- Assuming FIRETUFdata cable is used the maximum length of cable between the first system Controller and the master station is 200m.

3.7.3 Standard System Cable Connections

All connection is via terminal block located within the equipment, ‘knockouts’ have been provided for cable entry. Folknoll’s design has allowed sufficient room for glands for larger fire resistant cables types to comply with BS requirements.

Please refer to the Drawing below:

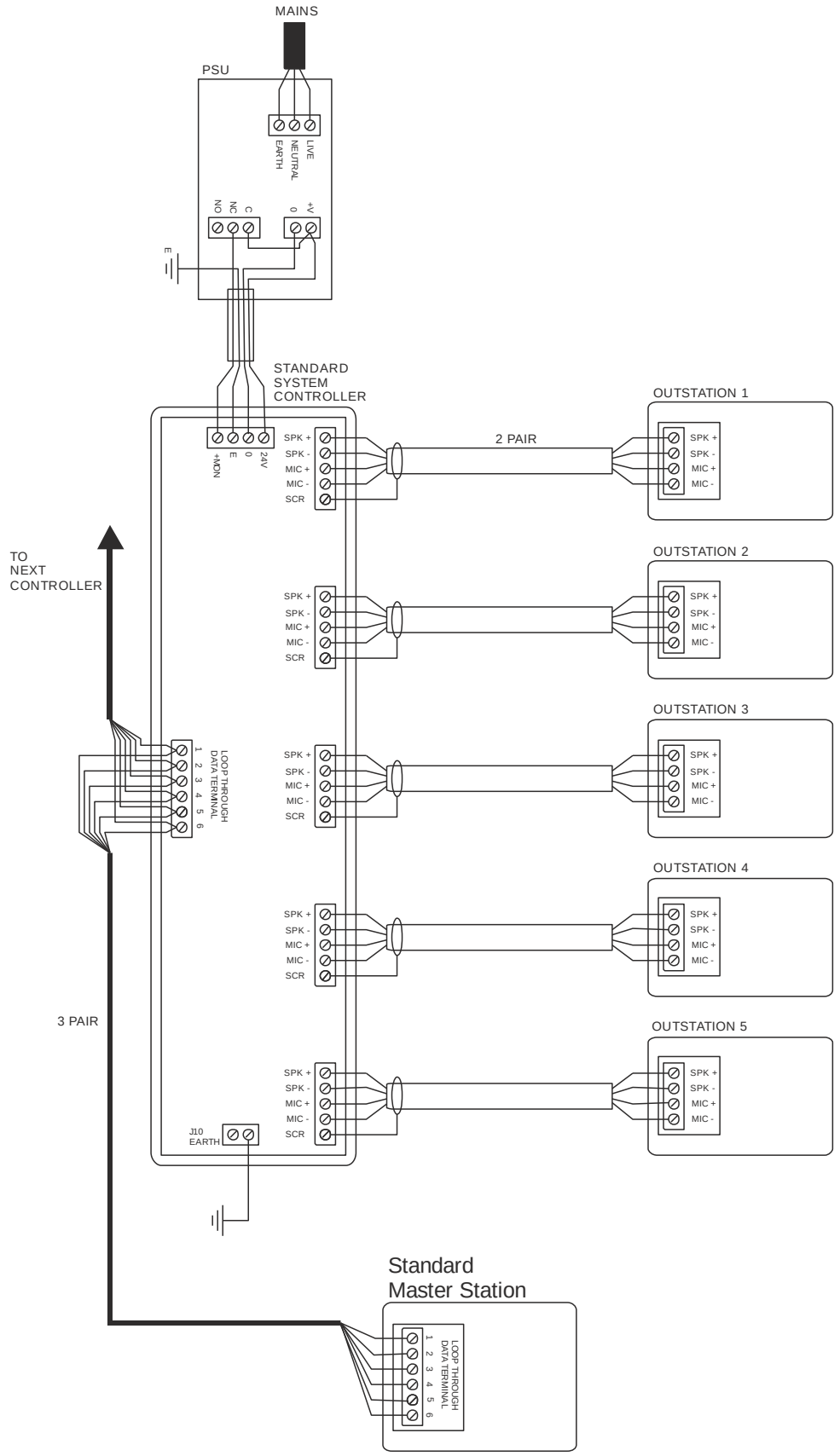


Fig 3:5 Typical Standard System Connections

4 INSTALLATION

Mount the equipment and pull the required cables, please refer to section 2 Compact Disabled Refuge EVC Systems or section 3 Standard Disabled Refuge EVC Systems as appropriate

Terminate the cables please refer to section 2.6.3 Compact System Cable Connections or section 3.7.3 Standard System Cable Connections as appropriate.

Do not power up, (please refer to Section 5 Commissioning below).

NOTE: cable and equipment should be installed in accordance with the current British Standards.

5 COMMISSIONING

5.1 SYSTEM CONTROLLER ADDRESSING (STANDARD SYSTEM ONLY)

Each standard system controller must be “addressed” to identify which group of outstations it is controlling. The controller is addressed using jumpers J8 (6-10) and J13 (11-15), please refer to section 9.9 Standard System Controller (P/N RA7700.02). The jumpers should be set according to the following table:-

	System Controller for Outstations 1-5	System Controller for Outstations 6-10	System Controller for Outstations 11-15	System Controller for Outstations 15-20
J8 (6-10)	UNLINKED	LINKED	UNLINKED	LINKED
J13 (11-15)	UNLINKED	UNLINKED	LINKED	LINKED

Fig 5:1 Table of Jumper Settings for 'Addressing' Standard System Controllers

5.2 POWER FAULT MONITORING

Compact and standard master stations are fitted with a power fault monitoring circuit. If a power fault occurs the master station will continuously emit 2 short bleeps and one long bleep, the fault LED will flash and the system status display will be off.

Power fault monitoring is disabled for shipping and installation. Once the Disabled Refuge EVC system is installed and ready to power up fault monitoring must be enabled by inserting a jumper across J14 on the rear of the master station PCB, see below:-

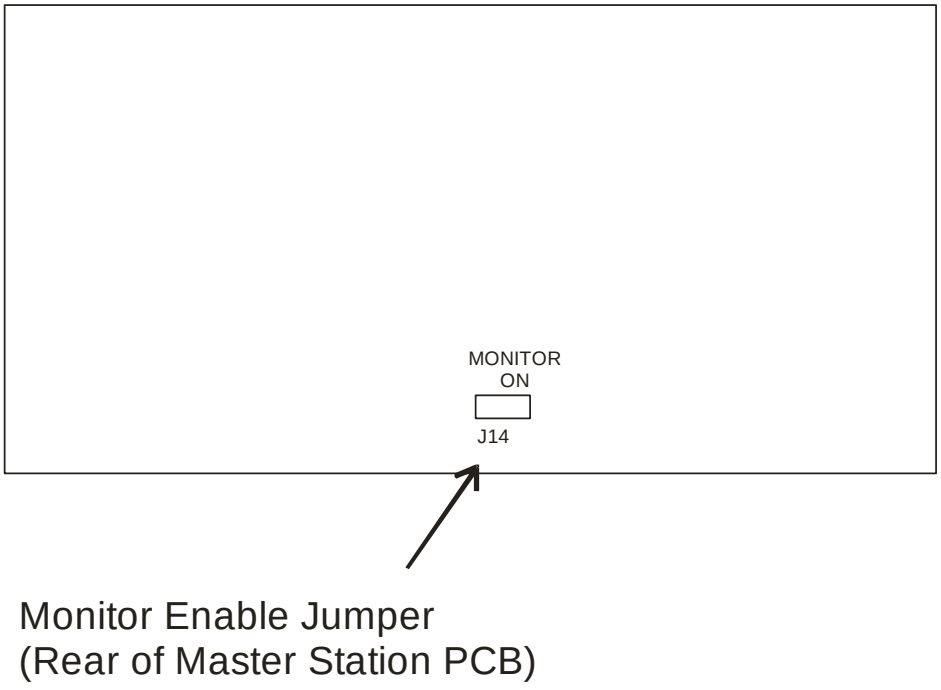


Fig 5:2 Location of Fault Monitoring Jumper

5.3 OUTSTATION CONFIGURATION

Outstation configuration is not required the system is automatically configured on power up. Please refer to Section 5.5 Initial Power Up below.

5.4 ENABLE THE MASTER STATION KEYBOARD

The master station is fitted with a keyed enable switch to enable/disable the master Panel buttons (keyboard), please refer to section 9 Disabled Refuge EVC Components. This switch is used to prevent unauthorized persons operating the system and/or to enable the system in the event of emergency. Ensure that this switch is set in the enable position, i.e. turn the key clockwise before applying power to the system.

5.5 INITIAL POWER UP

Please refer to Section to section 9 Disabled Refuge EVC Components to familiarise yourself with the layout of your master station keyboard.

When ready, power up the system.

If the system is powered up with the master station keyboard disabled the master station will continuously emit 2 short bleeps and one long bleep, the fault LED will flash and the system status display will show **PLEASE ENABLE**. Rotate the enable switch key clockwise and the power up sequence will continue.

On system power up the master station will perform a self test. 'POWER UP TEST' will be displayed on the system status display and the master station buttons will flash, check that all of the buttons flash.

If the power up test is successful, the system will scan for outstations the system status display will scroll **DETECT SUBS PRESS ACCEPT**. Press accept the **ACCEPT** button on the master station to start the system scan. The system status display will scroll **PLEASE WAIT** followed by a list of outstations detected followed by **PRESS ACCEPT**

Check the list of outstations is correct if the list is incorrect there may be a cabling fault or outstation fault.

Press **ACCEPT** on the master station once more to start an audio test, please refer to Section 5.7 Audio Path Tests below. The system status display will scroll **AUDIO TEST PLEASE WAIT**. When the test is completed the system will illuminate the buttons corresponding to the outstations that failed the test and the system status display will scroll **NOT FITTED? IS THIS CORRECT YES NO**. Check that the buttons illuminated as **NOT FITTED** are as expected.

NOTE: you may need to hold the ACCEPT button down for a short while.

If the correct buttons are not illuminated then one or more or the outstations will have failed the audio test, there may be a cabling fault or an outstation fault.

If the correct buttons are illuminated then all of the outstations on the system have passed their test and the system is ready for operation.

To select **YES** or **NO** press the **ACCEPT** button when '**YES**' or **NO** is shown on the system status display.

If **NO** is selected the system status display shows **SYSTEM RESET** fix the faults and power cycle the system.

If **YES** is selected and the one or more of the detected outstations has failed the test, the system will report the fault, please refer to section 7 System Faults below.

If 'YES' is selected and all of the detected outstations have passed the test the system will start operating. The system status display will show **PANEL ENABLED**. If local operating procedures require disable the master station keyboard using the keyed enable switch if disabled the system status display will show **SYSTEM NORMAL**.

5.6 VOLUME ADJUSTMENT

Once installed and powered up the microphone and speaker volume for each outstation should be adjusted to suite its location.

Variable resistors are available to adjust each outstation microphone speaker volumes, please refer to section 9.3 Compact System 5 Way Master Station (P/N RA7805.01), 9.4 Compact System 10 Way Master Station (P/N RA7810.01) or 9.9Standard System Controller (P/N RA7700.02) to locate these variable resistors.

Visit each outstation in turn and set the audio levels at its system controller as required.

5.7 AUDIO PATH TESTS (MICROPHONE AND SPEAKERTESTS)

Cause a fault at one or more outstations by blocking the microphone or disconnecting the speaker circuit(s). Trigger an audio circuit test by shorting the input(s) on the compact system master or standard system controller(s). Check the system reports audio path failure for the correct outstation(s), please refer to section 7 System Faults. Check the audio fault outputs are also triggered.

Configure the external audio path test trigger device as required, and connect to the input(s) on the compact system master or standard system controller(s).

If required, configure the fault indicators or monitoring system. Connect to the compact master or system controller(s) audio path fault output(s). If possible trigger a test and check that all systems respond correctly.

Check that any fitted external timers or management systems trigger audio path tests as configured.

6 OPERATION

For the purposes of this manual we will refer to persons using the system from a refuge area as users, and persons operating the system from the master station as operators. For a diagram of your master station, please refer to section 9 Disabled Refuge EVC Components.

NOTE: this system should be operated in accordance to the relevant British Standards.

6.1 ENABLING THE MASTER STATION

The master station is fitted with a keyed enable switch to enable/disable the master panel buttons. This is used to prevent unauthorized persons operating the system and/or to enable the system in the event of emergency.

Before operating the system ensure that the system has been enabled by the appropriate persons according to local procedures i.e. turn the enable switch key clockwise. The system status panel will show **'PANEL ENABLED'**.

If required by local procedures disable the master station keyboard after use, i.e. turn the enable switch key anti-clockwise. The system status panel will show **'SYSTEM NORMAL'**.

6.2 ACCEPTING CALLS FROM OUTSTATIONS

When a user presses the call button on an outstation:-

- The outstation LED will flash.
- The master station sounder will sound (buzz).
- The button on the master station corresponding to the outstation will flash red.

The operator can accept the call by pressing the flashing button corresponding to the outstation, when accepted:-

- The LED on the corresponding outstation will be illuminated.
- The master station sounder will cease.
- The button on the master station corresponding to the outstation will be illuminated (not flashing).
- The operator will be able to hear the user.
- To talk to the user the operator must hold down the **TALK** button.
- Whilst the **TALK** button is pressed the operator will not be able to hear the user.

To cancel the call the operator presses the illuminated button corresponding to the user's outstation.

- The LED on the corresponding outstation will no longer be illuminated.
- The button on the master station corresponding to the outstation will no longer be illuminated.

NOTE: the Folknoll Disabled Refuge EVC system is a Push to Talk (PTT) system. The operator must hold down the TALK button to talk to the user.

6.3 MAKING CALLS TO OUTSTATIONS

To call an outstation the operator presses the button corresponding to the required outstation, once pressed:-

- The LED on the corresponding outstation will be illuminated.
- The button on the master station corresponding to the outstation will be illuminated (not flashing).
- The operator will now be able to hear the user.
- To talk to the user the operator must hold down the **TALK** button.

To cancel the call the operator presses the illuminated button corresponding to the user's outstation.

- The LED on the corresponding outstation will no longer be illuminated.
- The button on the master station button corresponding to the outstation will no longer be illuminated.

6.4 ALL CALLS

To talk to all of the outstations simultaneously (the operator cannot hear the outstations), for example to make a reassurance announcement the operator presses and holds down the **ALL** button. Once held down:-

- The LEDs on all of the outstations will be illuminated.
- The buttons on the master station corresponding to all of the connected outstations will be illuminated.
- The system status display will show 'ALL CALL ACTIVE'
- The operator will be heard at all outstations.

To end the all call release the **ALL** button.

- The LEDs on all of the outstations will no longer be illuminated.
- The buttons corresponding to all of the connected outstations will no longer be illuminated.
- The system status display will briefly show 'ALL CALL END' followed by 'PANEL ENABLED'
- The operator will no longer be heard at any of the outstations.

NOTE: the Folknoll Disabled Refuge EVC system is a Push to Talk (PTT) system. The operator must hold down the ALL button to talk all of the outstations.

6.5 FAULTS

The system automatically monitors and reports faults. Faults are usually indicated by the master station sounder and fault LED activating for 2 short bleeps and one long bleep continuously. An error message is usually shown on the system status display.

Usually the sounder can be silenced and the fault LED turned off by pressing the **ACCEPT** button, any fault message will remain on the system status display. Please refer to section 7 System Faults for further information.

The fault should be reported or repaired according to local procedures.

NOTE: Any temporary measures e.g. partial closures required by the nature of the fault, site conditions, local regulations and procedures should be put into effect immediately.

Please refer to section 7 System Faults.

6.6 MANUAL SYSTEM TEST (COMPACT SYSTEMS ONLY)

To initiate start a system test, press the **TEST** button on the compact system master station. The system will test each outstation intern and report any errors found.

NOTE: During testing outstations will generate audio tones. Testing should be timed to minimise inconvenience.

If an error is detected the sounder can be silenced and the fault LED turned off by pressing the **ACCEPT** button, any fault message will remain on the system status display. Please refer to section 7 System Faults for further information.

The fault should be reported or repaired according to local procedures.

NOTE: Any temporary measures e.g. partial closures required by the nature of the fault, site conditions, local regulations and procedures should be put into effect immediately.

7 SYSTEM FAULTS

The system automatically monitors and reports faults. Faults are usually indicated by the master station sounder and fault LED activating for 2 short bleeps and one long bleep continuously. An error message is usually shown on the system status display.

Usually the sounder can be silenced and the fault LED turned off by pressing the **ACCEPT** button, any fault message will remain on the system status display.

The fault should be reported / repaired according to local procedures.

NOTE: Any temporary measures e.g. partial closures required by the nature of the fault, site conditions, local regulations and procedures should be put into effect immediately.

7.1 SUMMARY OF SYSTEM FAULT INDICATIONS

Sounder	*Fault LED*	*Display*	*Fault*
Continuous 2 short bleeps followed by 1 long Bleep	Continuous 2 short flashes followed by 1 long Flash	Display is off.	Power fail
Continuous 2 short bleeps followed by 1 long Bleep	Continuous 2 short flashes followed by 1 long Flash	**PLEASE ENABLE**	System powered up with master station Keyboard disabled. Enable the master station keyboard. Proceed with power up procedure please refer to section 5.5 Initial Power Up..
Continuous 2 short bleeps followed by 1 long Bleep	Continuous 2 short flashes followed by 1 long Flash	**SUB XX AUD FAULT**	Outstation XX has failed its audio test. There may be a cabling fault or an outstation fault. Report/repair the fault according to local procedures.
Master Station 'buzzes' and an outstation button flashes.	No indication	No indication	A cable connecting the indicated (flashing button) outstation has occurred. Report/repair the fault according to local procedures.

Fig 7:1 Table of System Fault Messages

7.2 MAINS POWER FAIL

- The master station will continuously emit 2 short bleeps and one long bleep
- The master station fault LED will continuously give 2 short flashes and one long flash in time with the sounder.
- The system status display will be off.
- The system will continue to operate from its standby power supply. If fully charged the system will remain on standby for at least 24 hours and allow 30 minutes of operation (calls announcements etc.).
- The sounder can be silenced and the fault LED turned off by pressing the **ACCEPT** button, any fault message will remain on the system status display.
- The mains supply should be restored as soon as possible.

NOTE: If the power is not restored the standby batteries will 'run out' and the system will cease to be operational.

7.3 SYSTEM POWERED WITH MASTER STATION DISABLED

- The master station will continuously emit 2 short bleeps and one long bleep
- The master station fault LED will continuously give 2 short flashes and one long flash in time with the sounder.
- The system status display will show **PLEASE ENABLE**.
- To rectify the fault turn the keyed enabled switch and complete the power up procedure, please refer to section 5.5 Initial Power Up.
- This situation should only occur during installation and maintenance.

NOTE: The system will not be operational until the power up procedure has been completed.

7.4 AUDIO PATH FAULT

Audio path tests are performed on initial power up and as triggered by the external timer or management system. If an outstation fails an audio path test:-

- The master station will continuously emit 2 short bleeps and one long bleep
- The master station fault LED will continuously give 2 short flashes and one long flash in time with the sounder.
- The fault will be shown on the system status display. E.g. **SUB XX AUD FAULT**
- The sounder can be silenced and the fault LED turned off by pressing the **ACCEPT** button, any fault message will remain on the system status display.
- The fault should be reported / repaired according to the local fault reporting procedure.

NOTE: The SUB or outstation indicated may not be operational until the fault is rectified.

7.5 OUTSTATION CABLE DISCONNECTED

- The master station will ‘buzz’ and the button on the master station corresponding to the outstation will flash.
- The ‘buzz’ can be silenced by accepting the call by pressing the button on the master station corresponding to the outstation.
- The fault should be reported / repaired according to the local fault reporting procedure.

NOTE: The SUB or outstation indicated will not be operational until the fault is rectified.

8 ROUTINE MAINTENANCE AND TESTING

This section gives a generic guide to the routine maintenance and testing of Folknoll Disabled Refuge EVC systems. Local maintenance, testing and repair procedures should be implemented according to local regulations, procedures, site conditions, risk assessment, and equipment installed.

Disabled Refuge EVC systems are usually only used in the event of an emergency. Faults and other issues that develop may not be discovered until an emergency arises and the system is required. It is important that routine maintenance and frequent testing is carried out to ensure that the system is fully operational.

The system should be configured for automatic audio path testing,

!!may be automatic may be boot only!! The system will automatically test audio paths, reporting faults to the operator and any local alarm gathering systems e.g. BMS. !!

8.1 ROUTINE MAINTENANCE

Folknoll Disabled Refuge EVC systems require minimal maintenance. The systems are robustly designed and have low wear as they are only used in emergency. The only parts to require regular maintenance are the PSU standby batteries.

8.1.1 Standby Batteries

The PSU backup batteries should be replaced as the battery manufacturer advises or at least every 3 years.

8.2 VISUAL INSPECTION

Disabled Refuge EVC systems are usually located in ‘public’ areas and depending on location can be open to abuse. The frequency of visual inspections should be determined by local regulations, procedures, site conditions, risk assessment and experience.

8.2.1 Outstations

System outstations should undergo frequent visual inspections to check:

- Outstations and signage are clearly visible and accessible by disabled persons, e.g. not hidden by posters, or behind a large object such as a roll cage, in a restricted area etc.
- Outstations show no signs of physical damage e.g. water ingress, impact.
- Outstations show no signs of other forms of abuse e.g. chewing gum in the microphone hole etc.
- Outstations show no signs of any other forms of damage that might affect visibility, access or operation.

8.2.2 Master Station

The master station should undergo frequent visual inspections to check:

- The master station and any signage are clearly visible and accessible by disabled persons, e.g. not hidden by posters, or behind a large object such as a roll cage, in a restricted area etc.
- The master stations show no signs of physical damage e.g. water ingress, impact.
- The master stations show no signs of other forms of abuse e.g. chewing gum in the microphone hole etc.
- The master stations show no signs of any other forms of damage that might affect visibility, access or operation.
- The master station enable key is present and accessible by all authorised operators.

8.2.3 Control Equipment (Standard System Only)

Any control equipment and exposed cable routes should undergo regular visual inspections to check:

- All control equipment and exposed cable routes show no signs of physical damage e.g. water ingress, impact.
- All control equipment and exposed cable routes show no signs of other forms of abuse
- All control equipment and exposed cable routes show no signs of any other forms of damage that might affect operation.

8.3 FUNCTIONAL TESTING

The system should undergo frequent functional testing to ensure that the system is ready for emergency operation.

8.3.1 User Call Check

For each outstation check the following:

- A call to the master station can be initiated by the outstation user.
- The master station responds correctly and the master station operator can accept the call.
- The outstation user can be clearly heard by the master station operator.
- The master station operator can be clearly heard by the outstation user.
- The call can be cancelled by the master station operator.

8.3.2 Operator Call Check

For each outstation check the following:

- A call to the outstation can be initiated by the master station user.
- The outstation user can be clearly heard by the master station operator.
- The master station operator can be clearly heard by the outstation user.
- The call can be cancelled by the master station operator.

8.3.3 All Call Check

For each outstation check the following:

- An all call can be initiated by the master station user.
- The master station operator can be clearly heard by the outstation user.
- The all call can be cancelled by the master station operator.

8.3.4 Standby Operation Test

Disconnect the mains supply and check the following:

- The master station reports power fail and the sounder can be silenced by pressing the master station **ACCEPT** button.
- Standard systems only check the PSU unit local alarm sounds and can be silenced, by pressing the PSU unit **SILENCE** button.
- The system is still operational (check that calls can be made).

Restore the mains supply and check the following:

- The master station no longer reports mains fail.
- The system is still operational (check that calls can be made).

8.3.5 Standby Time Test

If required by local regulations or procedures test the standby time by checking how the mains can be disconnected before the system fails.

The PSU should disconnect the batteries at 19V to prevent full discharge.

NOTE: this test should not be carried out on a live system because:

- The system will fail at some point.
- When the power is restored the standby time will be reduced.

Either of these conditions may violate site operation conditions and require closure of the site.

8.3.6 Standby Battery Charging Voltage Test

–

. No adjustment possible.

8.3.7 Audio Path Test

To verify that the system responds correctly in the event of an audio path test failure, cause a failure by covering an outstation microphone or disconnecting an outstation speaker circuit.

Start an audio path test:

On **compact systems** – Press the **TEST** button on the compact master station.

On **standard systems** - If possible cause the external timer or management system to initiate a test, alternatively short the test inputs on the standard system controllers, please refer to section 9.9 Standard System Controller (P/N RA7700.02).

Audio path tests are triggered automatically by an external timer or management system.

Check that the master station correctly reports the outstation failure(s) and that any external indicators or management systems respond correctly.

8.3.8 Automatic Audio Path Testing

Check that the automatic audio path testing is triggered at the times configured.

For **compact systems** this may be the internal timer or an external trigger system.

For **standard systems** this will be an external trigger system, e.g. timer or management system.

9 DISABLED REFUGE EVC COMPONENTS

9.1 EXTERNAL OUTSTATION (P/N RA7700.60)

Fig 9:1 External Outstation

9.1.1 Features

- Weather resistant IP65 enclosure designed for external use
- Bright yellow die cast aluminium fascia
- Black die cast aluminium back box
- Integral speaker and microphone, high audio output (85dB)
- Large call button, progress LED
- Can be used with compact or standard systems

9.1.2 Description

The single button external outstation is a vandal resistant IP65 bright yellow and black die cast aluminium outstation designed for external use.

The unit has an integral microphone and speaker and is fitted with large vandal resistant call button and a call progress.

The speaker and microphone volume are adjustable to suite the operating environment with a maximum output of 85dB for noisy areas.

The unit is usually mounted in the refuge area and is used by refugees to communicate with the system operator in the event of an emergency.

This unit is annotated in black with the words “PRESS ONCE TO CALL”, alternative annotation is available on request.

The unit is supplied with a surface mount back box.

This unit can be used with compact or standard Folknoll Disabled Refuge EVC systems.

9.1.3 Parts

RA7700.60	Surface mount, aluminium, vandal resistant outstation

9.1.4 Specifications

Fascia:	Aluminium, bright yellow finish, black annotation
Surface back box:	Mild steel, black finish
Dimensions:	Width:130mm, Height:190mm, (approx.)
Power:	Line powered
Audio output:	Max 85dB

9.1.5 Connections

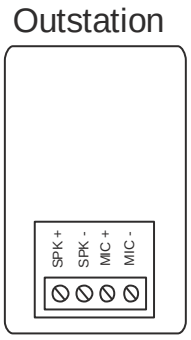


Fig 9:2 Outstation Connections

9.2 INTERNAL OUTSTATION (P/N RA7700.30 AND RA7700.35)

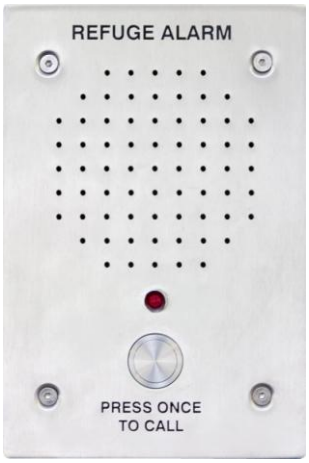


Fig 9:3 Vandal Resistant Outstation

9.2.1 Features

- Vandal resistant design
- Stainless steel fascia
- Mild steel back box
- Surface or flush mount
- Integral speaker and microphone, high audio output (85dB)
- Vandal resistant call button, progress LED
- Can be used with compact or standard systems

9.2.2 Description

The internal outstation is a vandal resistant outstation with stainless steel fascia and mild steel painted back box.

The unit has an integral microphone and speaker and is fitted with large vandal resistant call button and a call progress LED.

The speaker and microphone volume are adjustable to suite the operating environment with a maximum output of 85dB for noisy areas.

The unit is usually mounted in the refuge area and is used by refugees to communicate with the system operator in the event of an emergency.

This unit is annotated in black with the words “REFUGE ALARM” and “PRESS ONCE TO CALL”, alternative annotation is available on request.

The unit can be supplied with surface or flush mount back box.

This unit can be used with compact or standard Folknoll Disabled Refuge EVC systems.

9.2.3 Parts

RA7700.30	Surface mount, stainless steel, vandal resistant outstation
RA7700.35	Flush mount, stainless steel, vandal resistant outstation

9.2.4 Specifications

Fascia:	Stainless steel, brushed finish, black annotation
Surface back box:	Mild steel, black painted
Flush back box:	Mild steel
Dimensions:	Width:130mm, Height:190mm, (approx.)
Power:	Line powered
Audio output:	Max:85dB

9.2.5 Connections

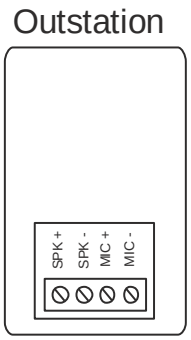


Fig 9:4 Outstation Connections

9.3 COMPACT SYSTEM 5 WAY MASTER STATION (P/N RA7805.01)

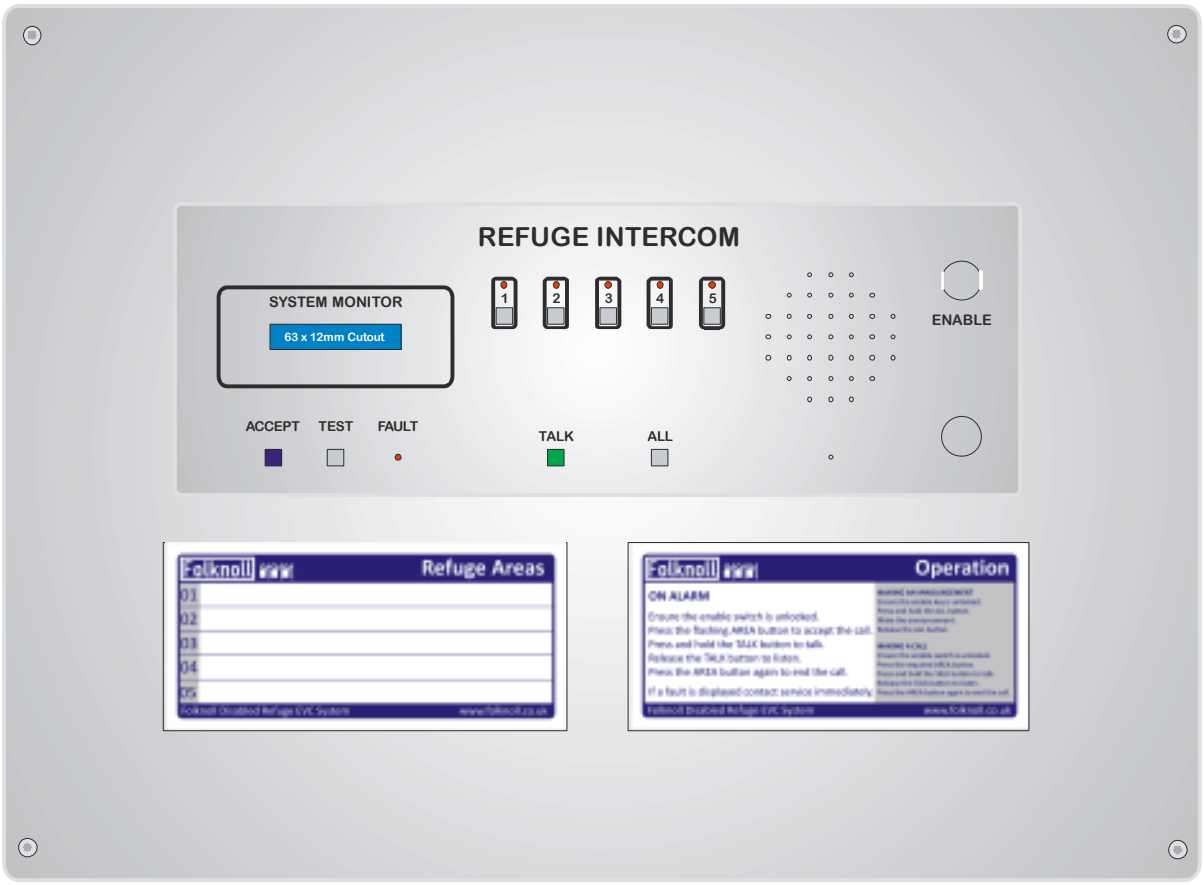


Fig 9:5 Compact System Five Way Master Station

9.3.1 Features

- Controls up to 5-off outstations
- Keyed enable switch
- LCD system status display
- Fault LED
- Internal speaker ,internal microphone
- High audio output for noisy environments (85dB)
- Audio path fault monitoring and reporting, internal and external triggers.
- Mains supply monitoring and reporting
- I/O for BMS or other external systems
- Matches standard fire panel size and quality.
- Customisable area label
- Surface semi flush mount
- Security screws

9.3.2 Description

The compact system 5 way master station is a surface/flush wall mounted master station for Disabled Refuge EVCsystems of up to 5 outstations.

All compact system master stations are designed to match standard fire panel size and quality.

The unit has an integral microphone, speaker, system controller, PSU and standby batteries. The unit is fitted with an LCD display, keyed enable switch, fault LED and large control buttons.

The speaker and microphone volume are adjustable to suite the operating environment with a maximum output of 85dB for noisy areas.

The unit is usually mounted in the control area and is used by the system operator to communicate with the system users in the event of an emergency.

This unit is annotated in black, alternative annotation is available on request.

A refuge area label is provided for noting meaningful refuge area names. The refuge area label and a simplified operating instruction label are mounted on the front panel of the master station to aid operators. A copy of the refuge area label may be found in section 11 APPENDIX B Compact System Master Station Labels.

9.3.3 Parts

RA7805.01	5 way surface mount compact system master station
RA7850.00	Bezel for semi flush mount
RA7750.00	Battery set

9.3.4 Specifications

Fascia:	Stainless steel, brushed finish, black annotation
Enclosure:	Mild steel, grey painted
Mounting:	Surface
Dimensions (surface mount):	Width:450mm, Height:325mm, Depth:125mm (approx.)
Dimensions (semi flush mount):	Width:450mm, Height:325mm, Depth:100+25mm (approx.)
Power:	230 Vac
Audio path test input:	Volt free
Remote enable input	Volt free
System fault output:	Closing contact (COM/NC/NO)
Audio output:	Max: 85dB

9.3.5 Connections

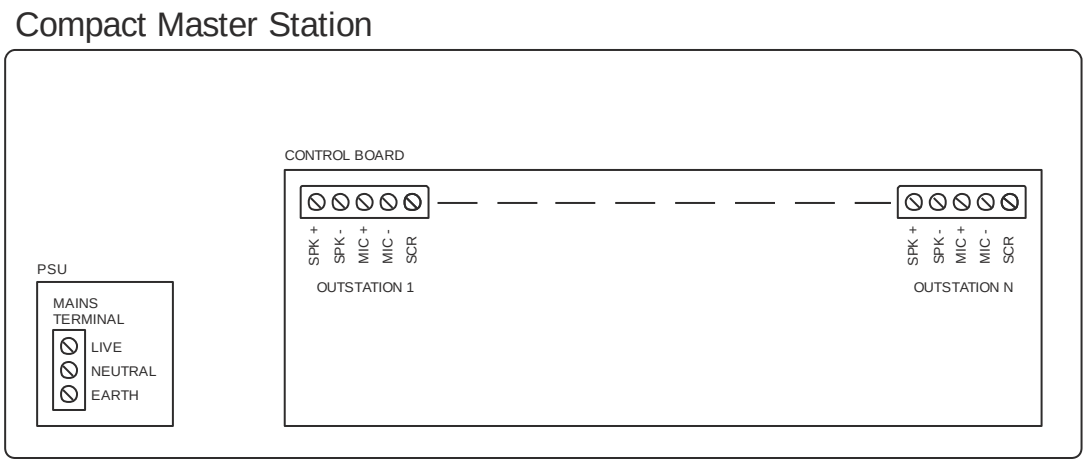


Fig 9:6 Compact Master Station Connections

9.4 COMPACT SYSTEM 10 WAY MASTER STATION (P/N RA7810.01)

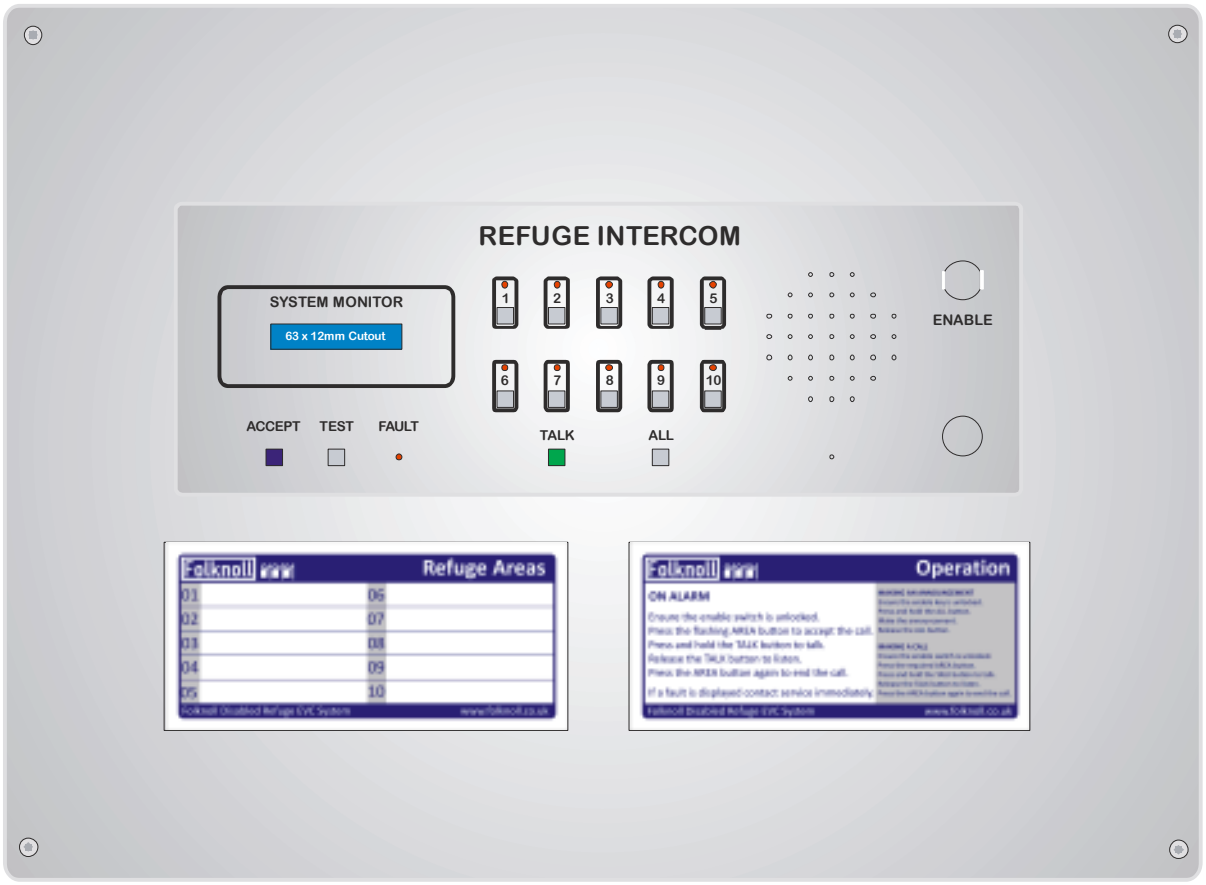


Fig 9:7 Compact System Ten Way Master Station

9.4.1 Features

- Controls up to 10-off outstations
- Keyed enable switch
- LCD system status display
- Fault LED
- Internal speaker ,internal microphone
- High audio output for noisy environments (85dB)
- Audio path fault monitoring and reporting, internal and external triggers.
- Mains supply monitoring and reporting
- I/O for BMS or other external systems
- Matches standard fire panel size and quality.
- Customisable area label
- Surface or semi flush mount
- Security screws

9.4.2 Description

The compact system 10 way master station is a surface/flush wall mounted master station for Disabled Refuge EVCsystems of up to 10 outstations.

All compact system master stations are designed to match standard fire panel size and quality.

The unit has an integral microphone, speaker, system controller, PSU and standby batteries. The unit is fitted with an LCD display, keyed enable switch, fault LED and large control buttons.

The speaker and microphone volume are adjustable to suite the operating environment with a maximum output of 85dB for noisy areas.

The unit is usually mounted in the control area and is used by the system operator to communicate with the system users in the event of an emergency.

This unit is annotated in black, alternative annotation is available on request.

A refuge area label is provided for noting meaningful refuge area names. The refuge area label and a simplified operating instruction label are mounted on the front panel of the master station to aid operators. A copy of the refuge area label may be found in section 11 APPENDIX B Compact System Master Station Labels.

9.4.3 Parts

RA7810.01	10 way surface mount compact system master station
RA7850.00	Bezel for semi flush mount
RA7750.00	Battery set

9.4.4 Specifications

Fascia:	Stainless steel; brushed finish; black annotation.
Enclosure:	Mild steel; grey painted
Mounting:	Surface
Dimensions (surface mount):	Width:450mm, Height:325mm, Depth:125mm (approx.)
Dimensions (semi flush mount):	Width:450mm, Height:325mm, Depth:100+25mm (approx.)
Power:	230 Vac
Audio path test input:	Volt free
Remote enable input:	Volt free
System fault output:	Closing contact (COM/NC/NO)
Audio output:	Max: 85dB

9.4.5 Connections

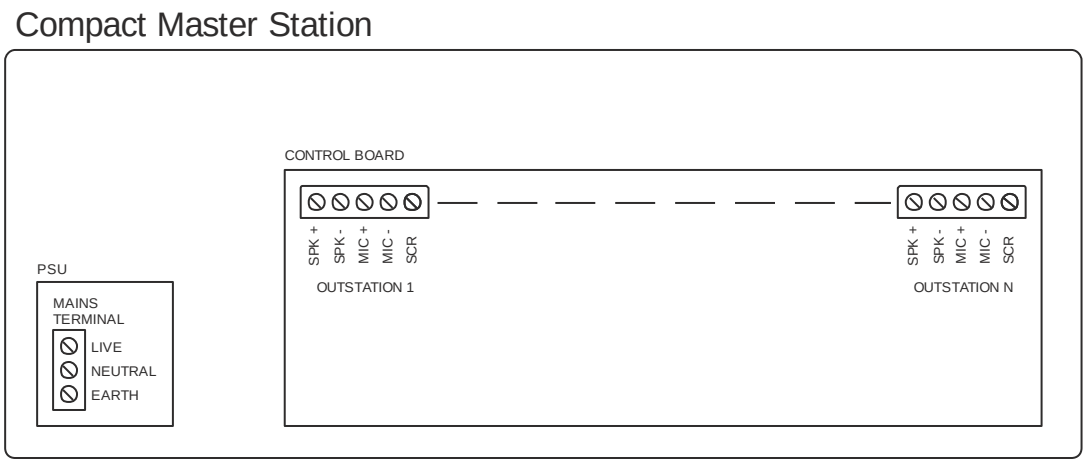


Fig 9:8 Compact Master Station Connections

9.5 STANDARD SYSTEM 5 WAY MASTER STATION (P/N RA7705.01 RA7705.05)

Fig 9:9 Standard System Five Way Master Station

9.5.1 Features

- Controls up to 5-off outstations
- Keyed enable switch
- Optional custom outstation labels
- LCD system status display
- Fault LED
- Internal speaker ,internal microphone
- High audio output for noisy environments (85dB)
- Surface or flush mount
- Vandal resistant design
- Security screws

9.5.2 Description

The 5-way standard system master station is a surface/flush desk/wall mounted master station with stainless steel fascia and painted mild steel back boxes for systems of up to 5 outstations.

The unit has an integral microphone and speaker and is fitted and LCD display, keyed enable switch, fault LED and large control button.

The speaker and microphone volume are adjustable to suite the operating environment with a maximum output of 85dB for noisy areas.

The unit is usually mounted in the control area and is used by operator to communicate with the system users in the event of an emergency.

This unit is annotated in black, alternative annotation is available on request.

The unit can be supplied with surface or flush mount back box.

9.5.3 Parts

RA7705.01	Surface mount, stainless steel, vandal resistant, 5 way standard system master station
RA7705.05	Flush mount, stainless steel, vandal resistant, 5 way standard system master station

9.5.4 Specifications

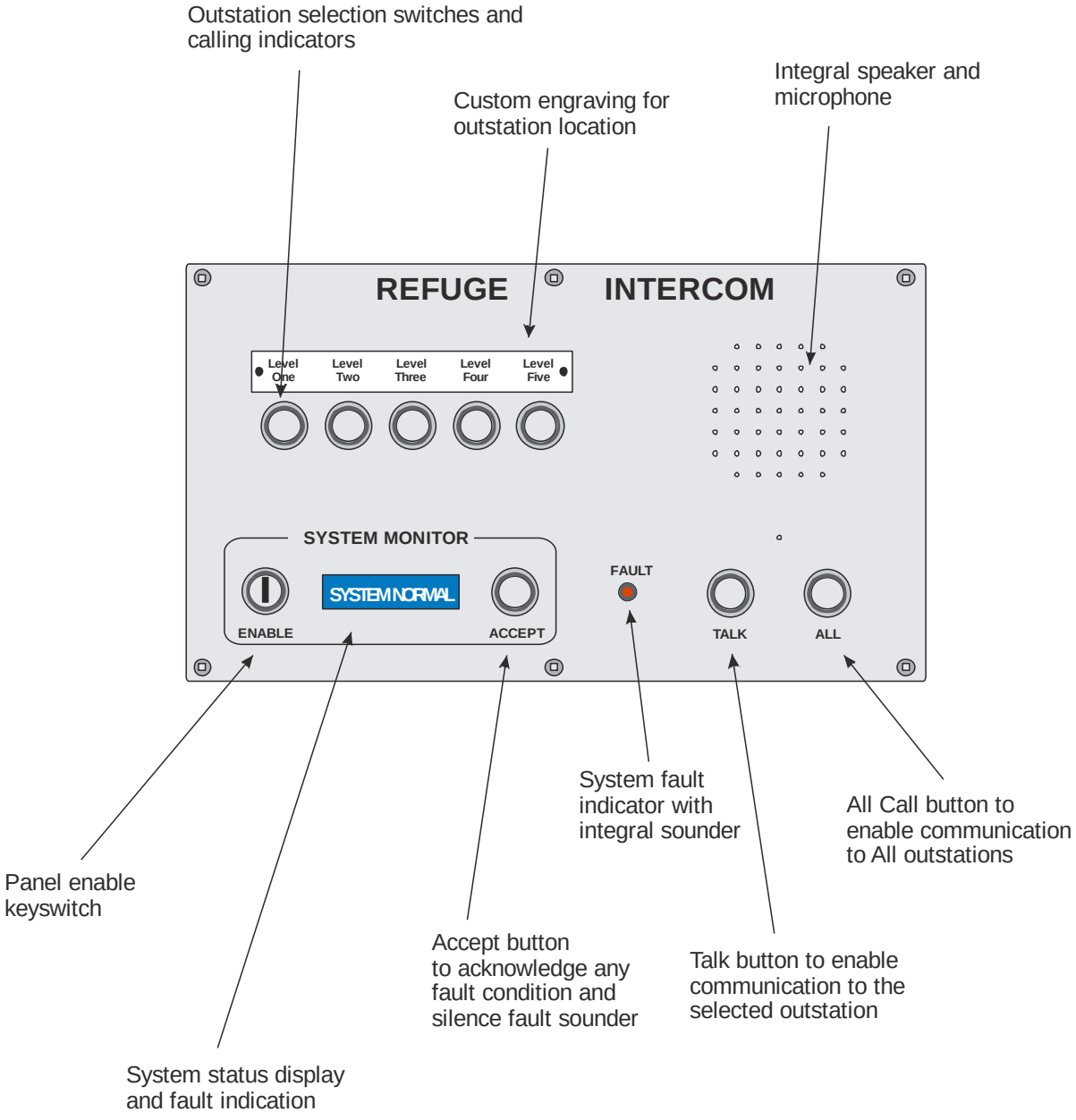
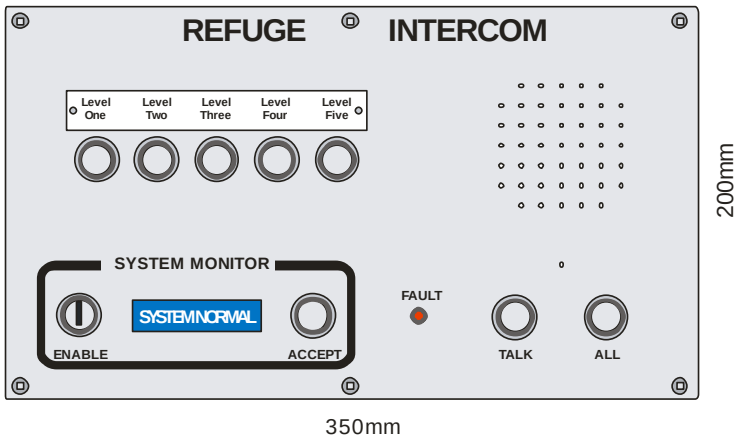


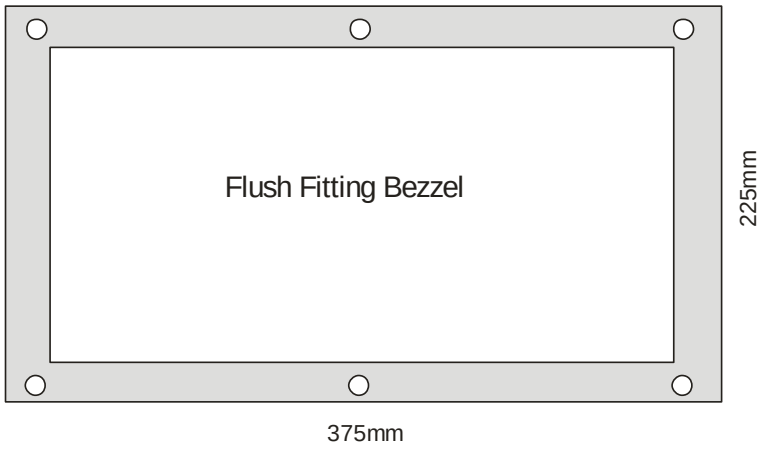
Fig 9:10 Standard System Five Way Master Station Features

Panel



Surface Mount

Flush Fitting Bezzel



Flush Mount

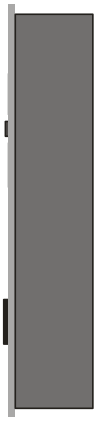


Fig 9:11 Standard System Five Way Master Station Dimensions

Fascia:	Stainless steel, brushed finished, black annotation
Surface back box:	Mild steel, black painted
Flush back box:	Mild steel
Dimensions (surface mount):	Width:350mm, Height:200mm, Depth:50-100mm (approx.)
Dimensions (flush mount):	Width:350mm, Height:200mm, Depth:55mm (approx.)
Power:	24V from standard system monitored battery backed PSU
Audio output:	Max: 85dB

9.5.5 Connections

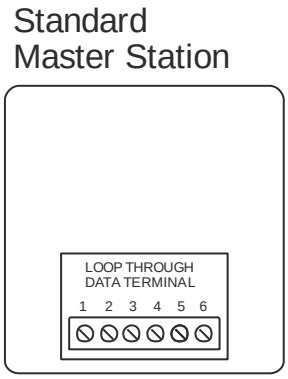


Fig 9:12 Standard Master Station Connections

9.6 STANDARD SYSTEM 10 WAY MASTER STATION (P/N RA7710.01 RA7710.05)

Fig 9:13 Standard System Ten Way Master Station

9.6.1 Features

- Controls up to 10-off outstations
- Keyed enable switch
- Optional custom outstation labels
- LCD system status display
- Fault LED
- Internal speaker ,internal microphone
- High audio output for noisy environments (85dB)
- Surface or flush mount
- Vandal resistant design
- Security screws

9.6.2 Description

The 10 way standard system master station a surface/flush desk/wall mounted master station with stainless steel fascia and painted mild steel back boxes for systems of up to 10 outstations.

The unit has an integral microphone and speaker and is fitted and LCD display, keyed enable switch, fault LED and large control button.

The speaker and microphone volume are adjustable to suite the operating environment with a maximum output of 85dB for noisy areas.

The unit is usually mounted in the control area and is used by operator to communicate with the system users in the event of an emergency.

This unit is annotated in black, alternative annotation is available on request.

The unit can be supplied with surface or flush mount back box.

9.6.3 Parts

RA7710.01	Surface mount, stainless steel, vandal resistant,10 way standard system master station
RA7710.05	Flush mount, stainless steel, vandal resistant, 10 way standard system master station

9.6.4 Specifications

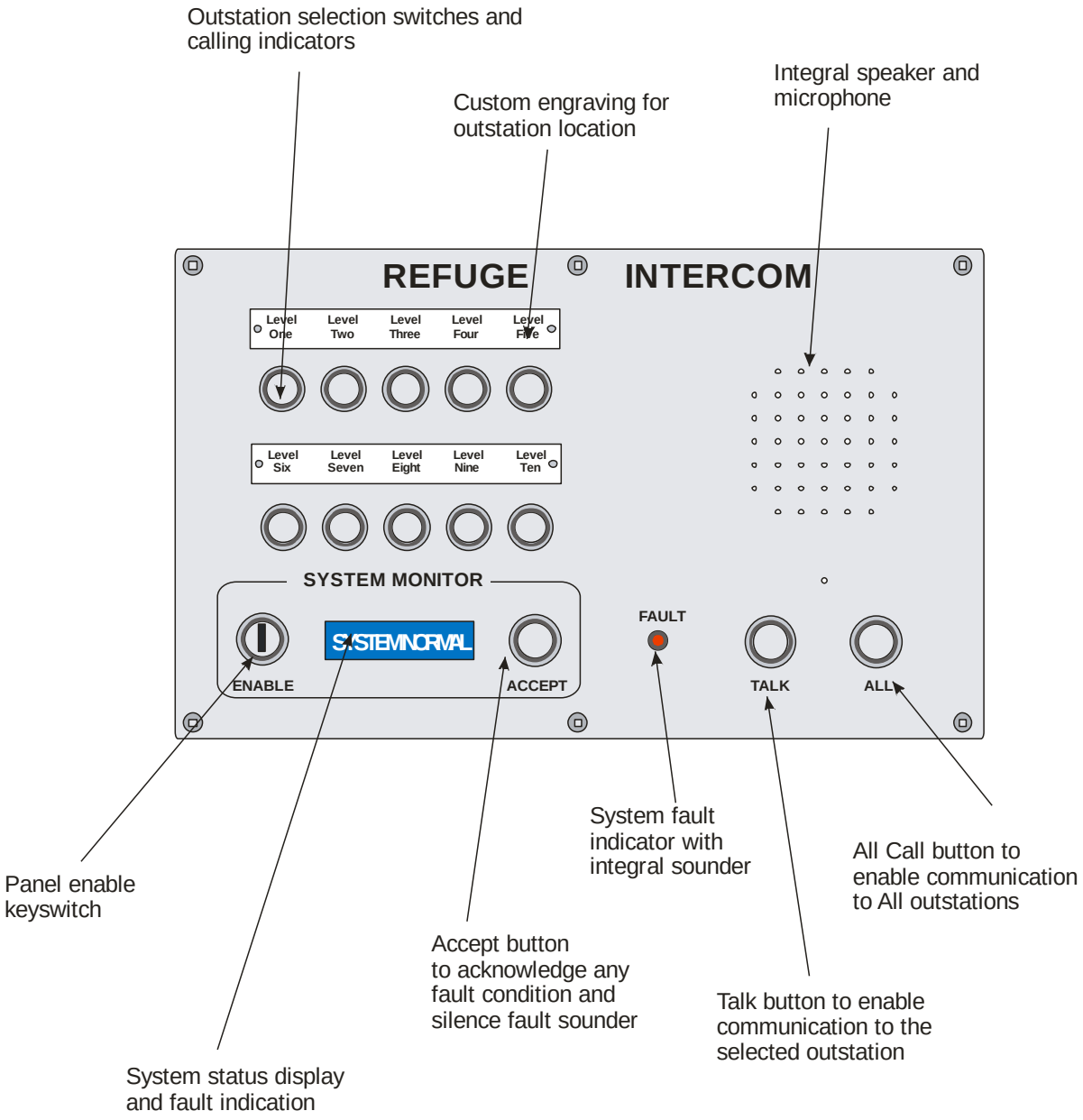
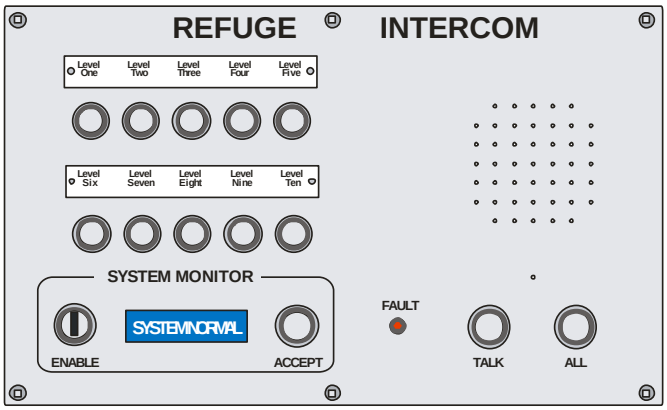
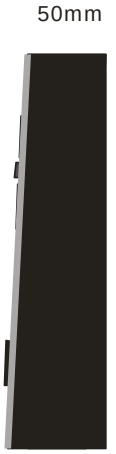


Fig 9:14 Standard System Ten Way Master Station Features

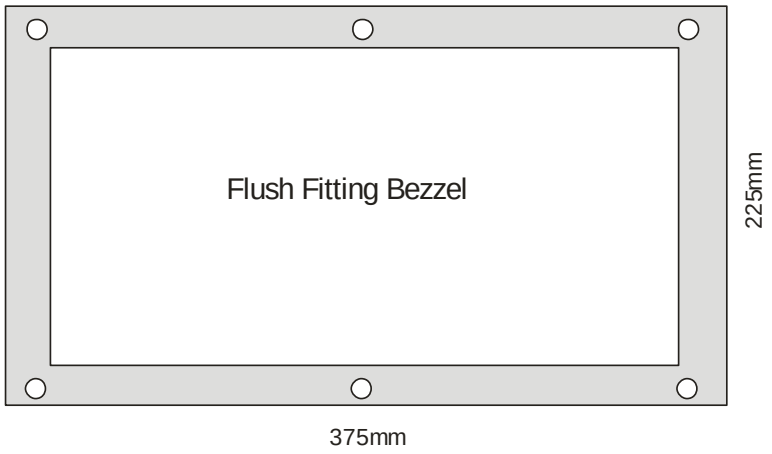
Panel



Surface Mount



Flush Fitting Bezzel



Flush Mount

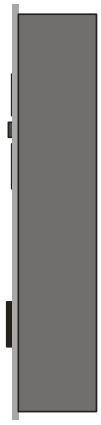


Fig 9:15 Standard System Ten Way Master Station Dimensions

Fascia:	Stainless steel, brushed finished, black annotation
Surface back box:	Mild steel, black painted
Flush back box:	Mild steel
Dimensions (surface mount):	Width 350mm, Height 200mm, Depth 50-100mm (approx.)
Dimensions (flush mount):	Width:350mm, Height:200mm, Depth:55mm (approx.)
Power:	24V from standard system monitored battery backed PSU
Audio output:	Max: 85dB

9.6.5 Connections

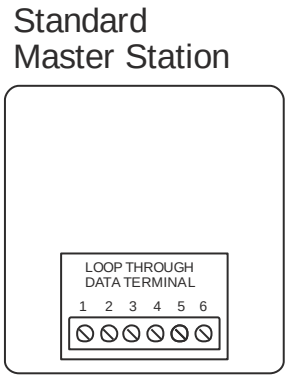


Fig 9:16 Standard Master Station Connections

9.7 STANDARD SYSTEM 15-WAY MASTER STATION (P/N RA7715.01 RA7715.05)

Fig 9:17 Standard System Fifteen Way Master Station

9.7.1 Features

- Controls up to 15-off outstations
- Keyed enable switch
- Optional custom outstation labels
- LCD system status display
- Fault LED
- Internal speaker ,internal microphone
- High audio output for noisy environments (85dB)
- Surface or flush mount
- Vandal resistant design
- Security screws

9.7.2 Description

The 15 way standard system master station is a surface/flush desk/wall mounted master station with stainless steel fascia and painted mild steel back boxes for systems of up to 15 outstations.

The unit has an integral microphone and speaker and is fitted and LCD display, keyed enable switch, fault LED and large control button.

The speaker and microphone volume are adjustable to suite the operating environment with a maximum output of 85dB for noisy areas.

The unit is usually mounted in the control area and is used by operator to communicate with the system users in the event of an emergency.

This unit is annotated in black, alternative annotation is available on request.

The unit is supplied with a flush mount back box which can fitted into a black painted wood surround for use on a console.

9.7.3 Parts

RA7715.01	Surface mount, stainless steel, vandal resistant,15 way standard system master station
RA7715.05	Flush mount, stainless steel, vandal resistant, 15 way standard system master station

9.7.4 Specifications

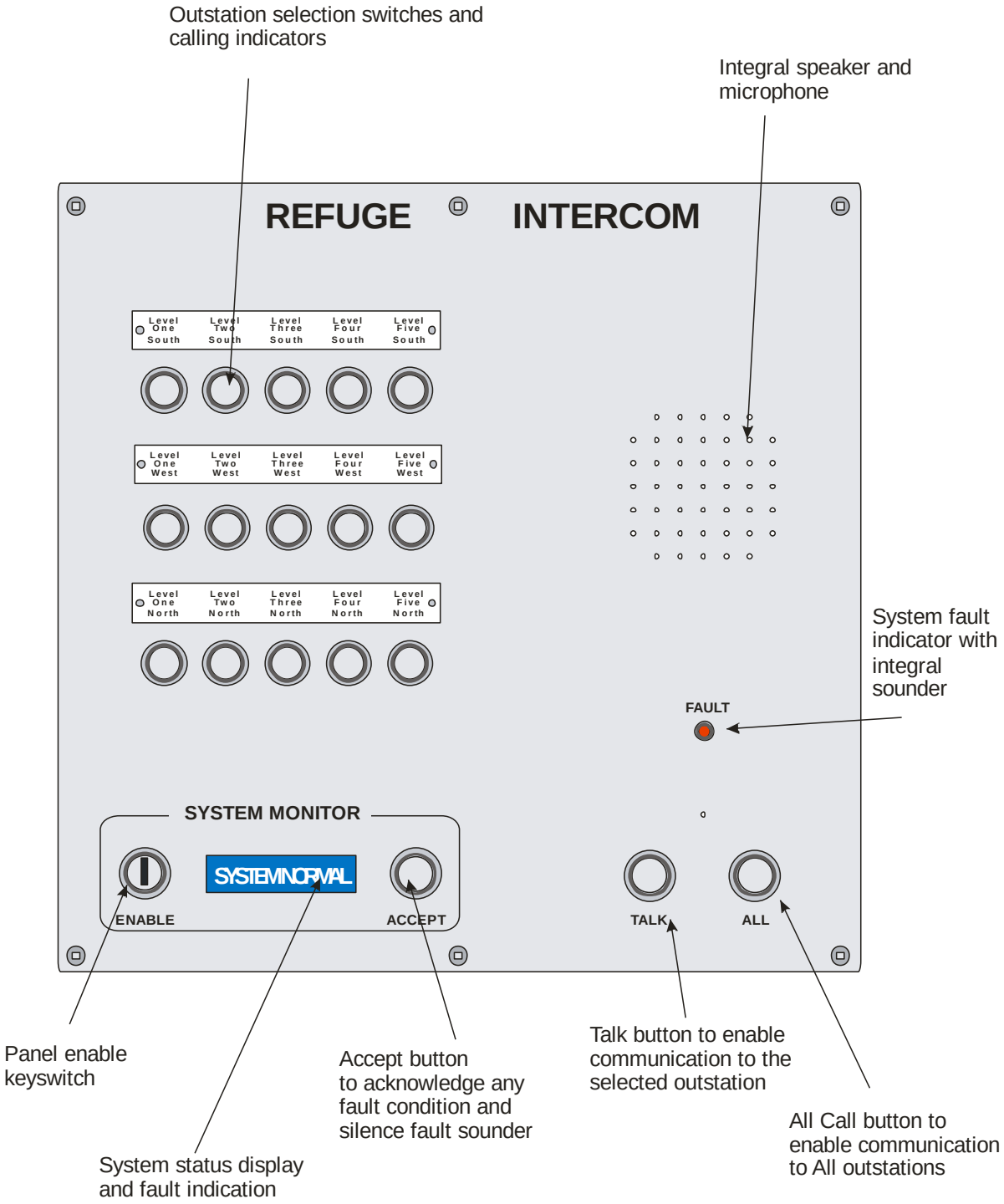
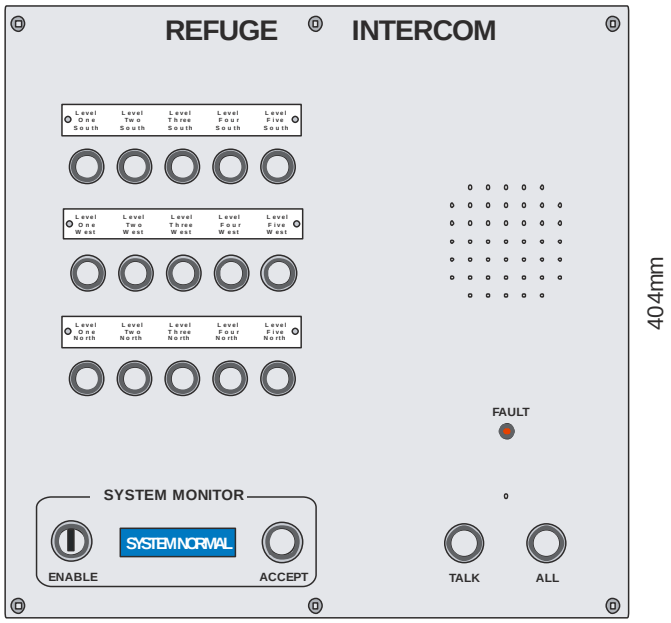
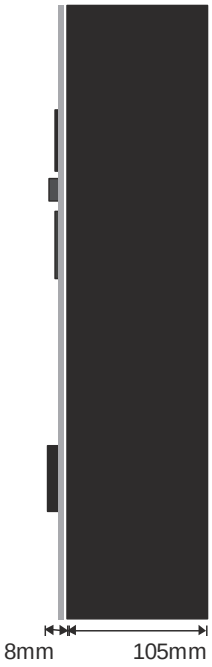


Fig 9:18 Standard System Fifteen Way Master Station Features

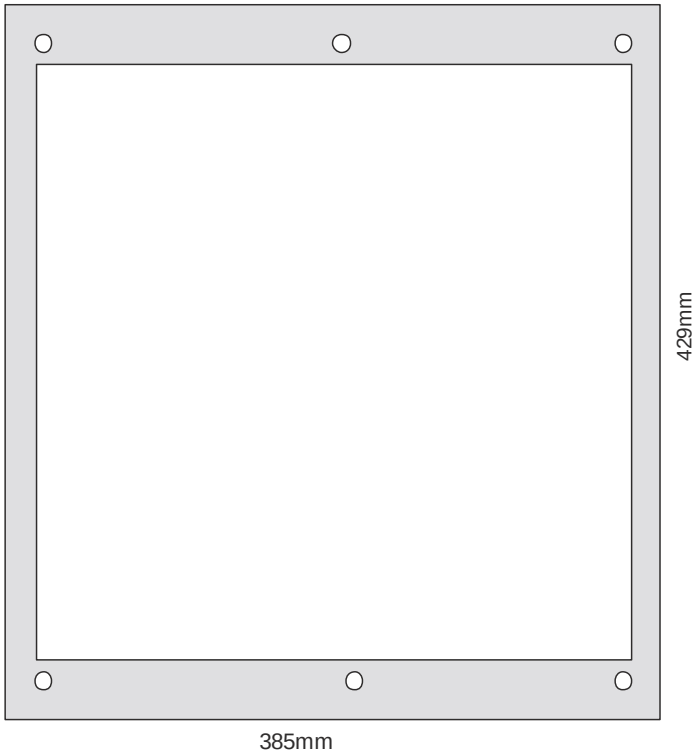
Panel



Console Mount



Flush Fitting Bezel



Flush Mount

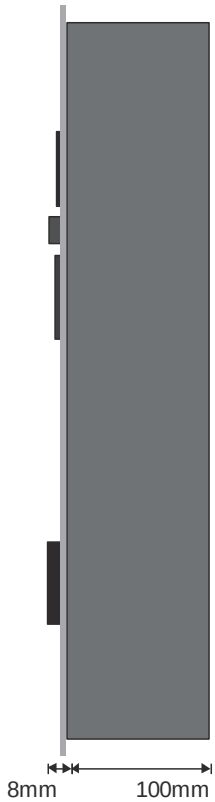


Fig 9:19 Standard System Fifteen Way Master Station Dimensions

Fascia:	Stainless steel, brushed finished, black annotation
Console mount:	Wood surround, black painted, mild steel flush back box insert.
Flush back box:	Mild steel.
Dimensions (console mount):	Width 360mm, Height 404mm, Depth 113mm (approx.)
Dimensions (flush mount):	Width 360mm, Height 404mm, Depth 108mm (approx.)
Power:	24V from standard system monitored battery backed PSU
Audio output:	Max: 85dB

9.7.5 Connections

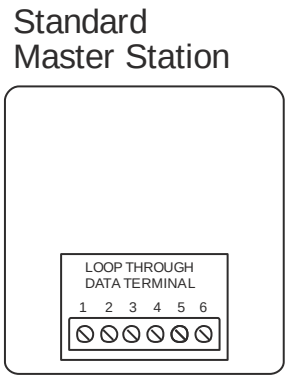


Fig 9:20 Standard Master Station Connections

9.8 STANDARD SYSTEM 20-WAY MASTER STATION (P/N RA7720.01 RA7720.05)

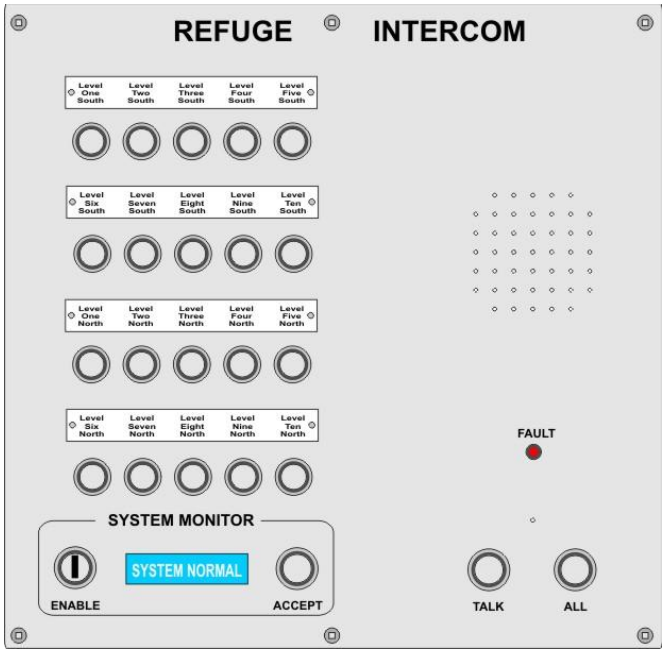


Fig 9:21 Standard System Twenty Way Master Station

9.8.1 Features

- Controls up to 20-off outstations
- Keyed enable switch
- Optional custom outstation labels
- LCD system status display
- Fault LED
- Internal speaker ,internal microphone
- High audio output for noisy environments (85dB)
- Surface or flush mount
- Vandal resistant design
- Security screws

9.8.2 Description

The 20 way standard system master station is a surface/flush desk/wall mounted master station with stainless steel fascia and painted mild steel back boxes for systems of up to 20 outstations.

The unit has an integral microphone and speaker and is fitted and LCD display, keyed enable switch, fault LED and large control button.

The speaker and microphone volume are adjustable to suite the operating environment with a maximum output of 85dB for noisy areas.

The unit is usually mounted in the control area and is used by operator to communicate with the system users in the event of an emergency.

This unit is annotated in black, alternative annotation is available on request.

The unit is supplied with a flush mount back box which can fitted into a black painted wood surround for use on a console.

9.8.3 Parts

RA7720.01	Surface mount, stainless steel, vandal resistant,20 way standard system master station
RA7720.05	Flush mount, stainless steel, vandal resistant,20 way standard system master station

9.8.4 Specifications

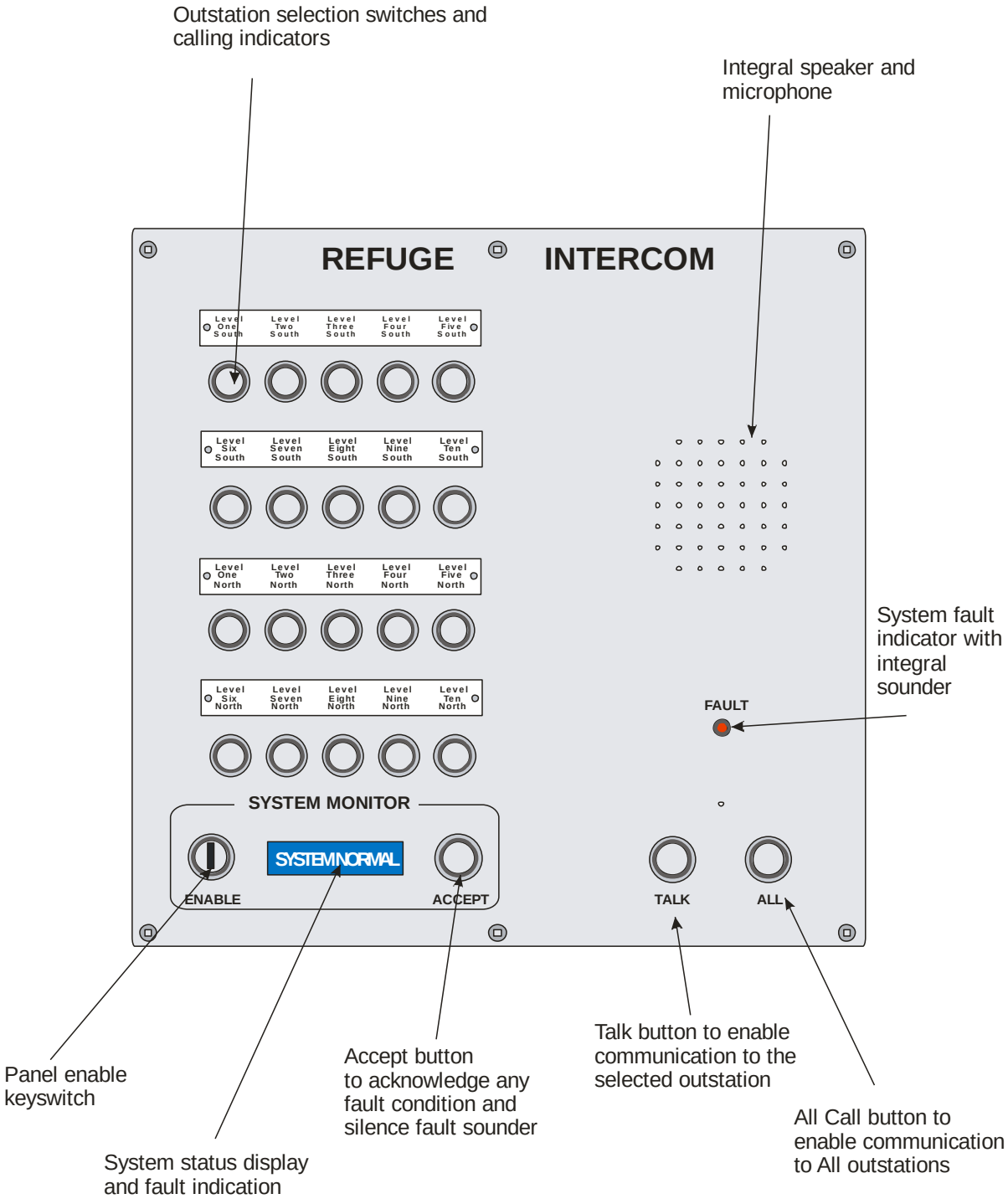
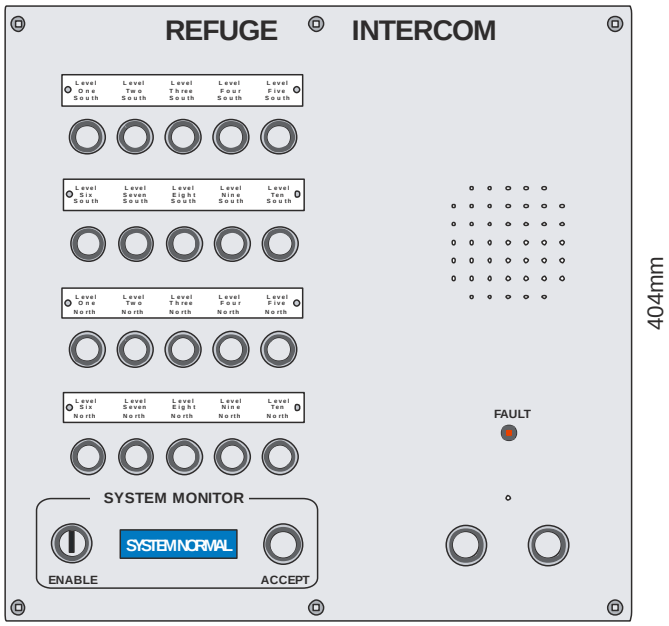
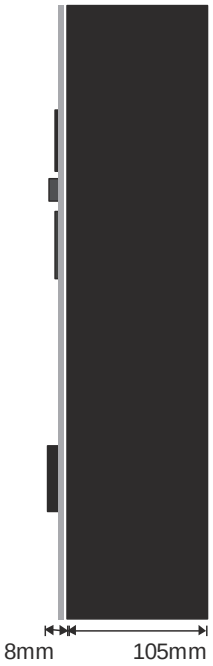


Fig 9:22 Standard System Twenty Way Master Station Features

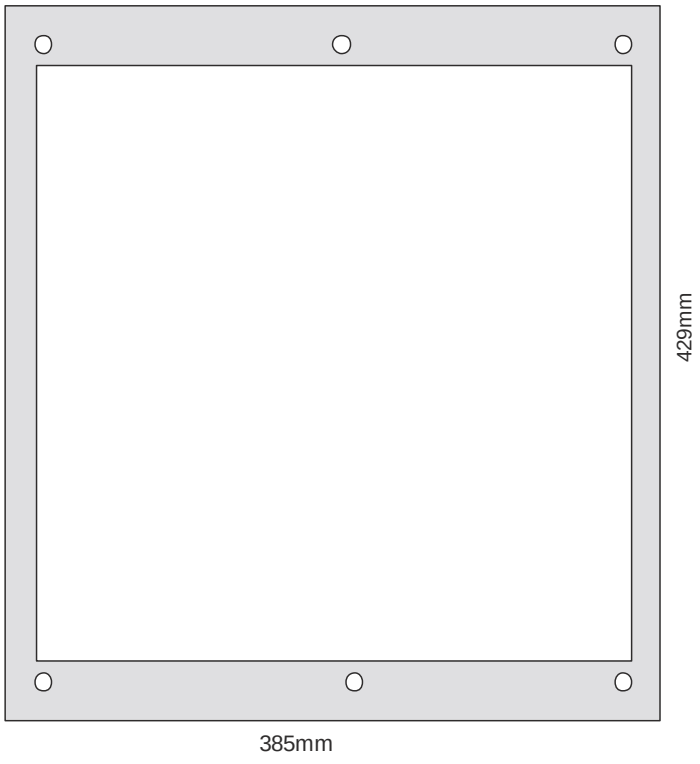
Panel



Console Mount



Flush Fitting Bezel



Flush Mount

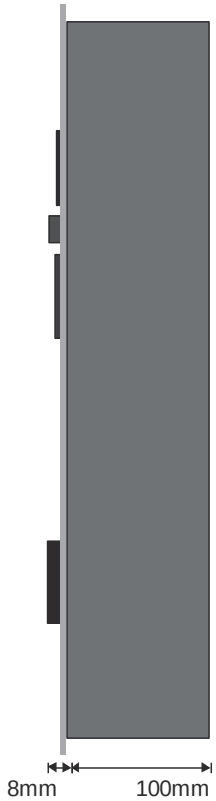


Fig 9:23 Standard System Twenty Way Master Station Dimensions

Fascia:	Stainless steel, finished, black annotation
Console mount:	Wood surround, black painted, mild steel flush back box insert.
Flush back box:	Mild steel
Dimensions (console mount):	Width 360mm, Height 404mm, Depth 113mm (approx.)
Dimensions (flush mount):	Width 360mm, Height 404mm, Depth 108mm (approx.)
Power:	24V from standard system monitored battery backed PSU
Audio output:	Max: 85dB

9.8.5 Connections

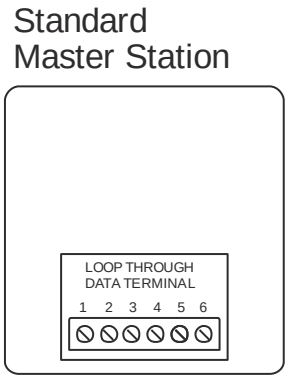


Fig 9:24 Standard Master Station Connections

9.9 STANDARD SYSTEM CONTROLLER (P/N RA7700.02)

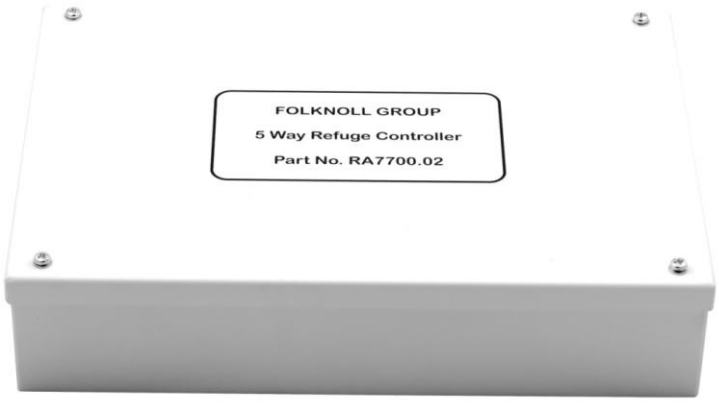


Fig 9:25 Standard System Controller

9.9.1 Features

- Controls up to 5-off slave outstations
- Microphone level adjust for slave outstations
- Speaker volume adjust for slave outstations
- I/O for BMS or other external systems
- Fused
- Mild steel surface mount enclosure
- Knockouts for cable glands designed to accommodate larger fire resistant cables

9.9.2 Description

The standard system controller interfaces controls up to 5-off outstations. Outstations are star wired to the controllers using 2 pair cable. Controllers are looped together with the master station over 3 pair cable. The combination of loop and star cabling enables installers to match system cabling to building layouts.

The standard system controller allows adjustment of slave outstation microphone and speaker level.

The standard system controller will test the audio path to all slave outstations. Testing is triggered externally e.g. by BMS or timer. Faults are reported at the master station and there is a fault output for indication to external devices e.g. BMS.

The standard system controller is powered from the 3 pair loop through cable.

9.9.3 Parts

RA7700.02	Surface mount, standard system controller

9.9.4 Specifications

Enclosure	Mild steel
Finish:	White painted, Black annotation
Mounting:	Surface
Dimensions (surface mount):	Width 320mm, Height 220mm, Depth 72mm (approx.)
Power:	24V from standard system monitored battery backed PSU
Internal fuse:	2 amp
Audio test input:	Volt free
System fault output:	Closing contact (COM/NC/NO)

9.9.5 Connections

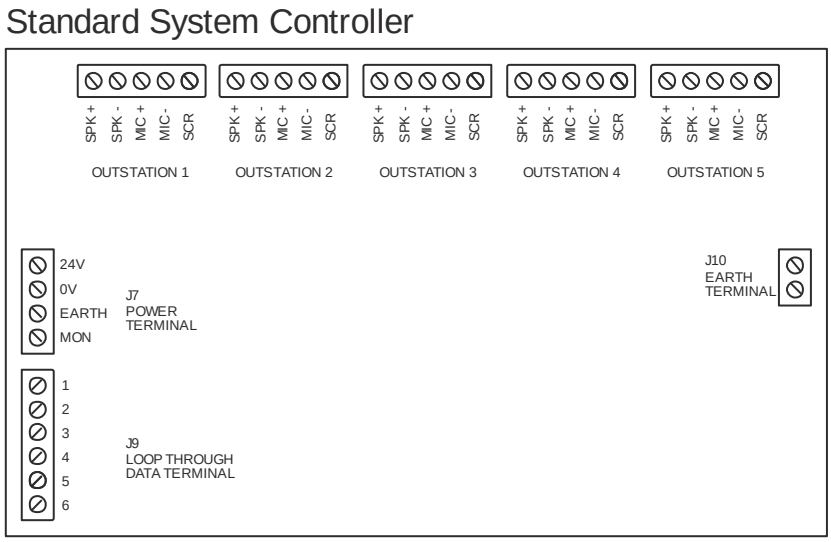


Fig 9:26 Standard System Controller Connections

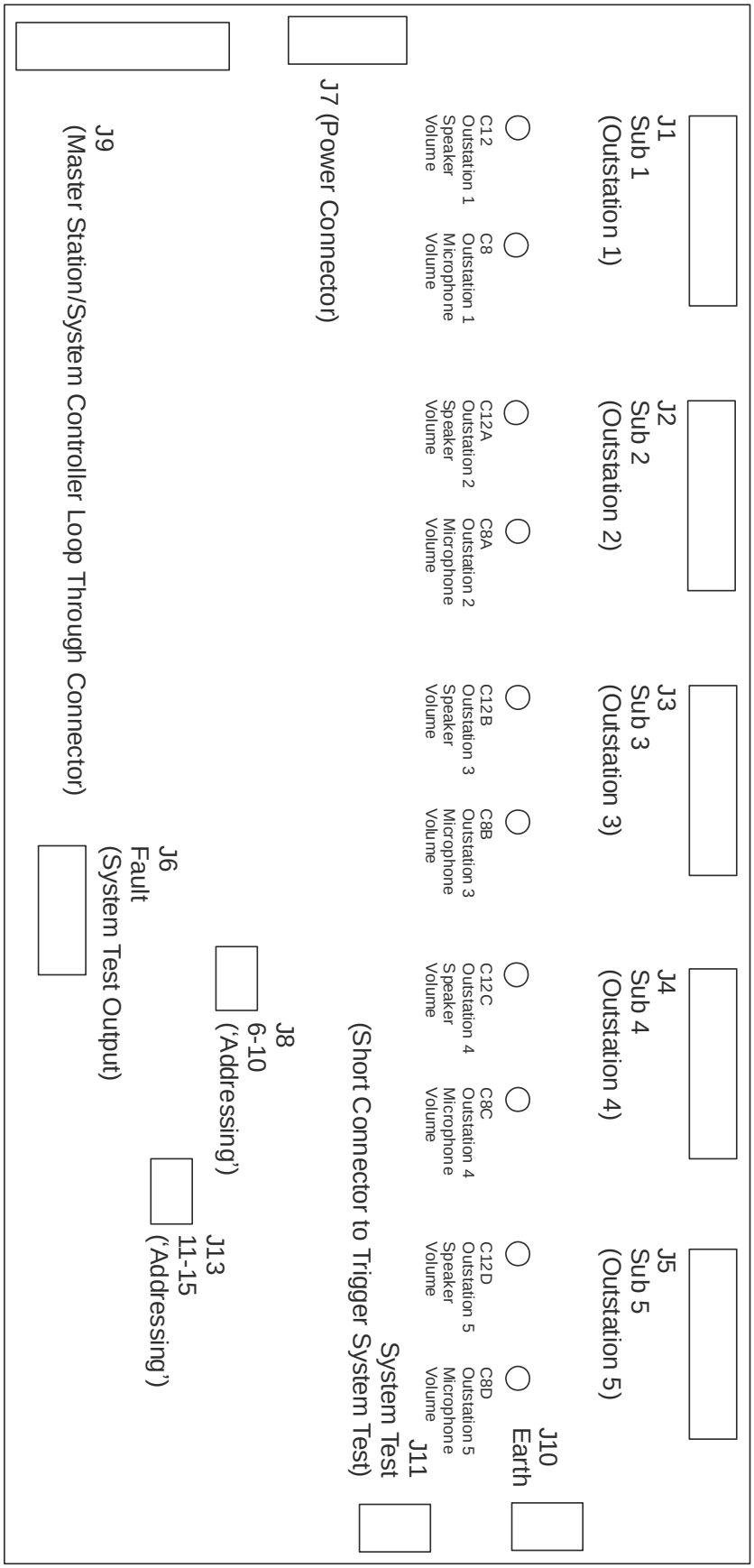


Fig 9:27 **Standard System Controller PCB Layout**

9.10 STANDARD SYSTEM BATTERY BACKED PSU (P/N RA7750.02, RA7750.04)

Fig 9:28 Standard System Power Supply Unit

9.10.1 Features

- Provides powers for standard Disabled Refuge EVC system with up to 20-off outstations.
- Standby power
- Houses battery set for standby power
- Lockable, surface/wall mount, enclosure
- Mains fail monitoring (reported by master station)
- Local mains fail alarm, with silence button
- Status LEDs

9.10.2 Description

The standard system monitored PSU is the standard Disabled Refuge EVC system power supply and standby battery unit. The unit is usually mounted on a wall in an equipment room near to one of the standard system controllers.

The PSU unit is supplied fully enclosed and ready for wall mounting. The unit is convection cooled and should be mounted in a cool place with room for convection cooling to take place.

A single standard system monitored PSU will provide power for a complete Folknoll standard Disabled Refuge EVC system of up to 20-off outstations.

When fitted with a standard system battery set the PSU will provide power for 24 hours standby and 30 minutes operation in the event of a main supply failure.

The unit enables the mains supply to be monitored by the Disabled Refuge EVC system. Mains failure is reported by the master station.

The PSU unit has local mains fail alarm which can be silenced by means of a **SILENCE** button located on the outside of the enclosure.

9.10.3 Indicators

- External Green LED – Supply healthy
- External Yellow LED – Common fault (flashes if alarm sounder is silenced)
- Internal Yellow LED - Battery fault
- Internal Yellow LED - Mains fault
- Internal Yellow LED – Volts fault

9.10.4 Parts

RA7750.02	Surface mount, standard system PSU
RA7750.04	Standard system PSU battery set

9.10.5 Specifications

Enclosure:	Mild steel (18 SWG)
Finish:	Metallic Silver (Radon MW334E) painted
Mounting:	Surface (5 holes in rear), 20m knockouts in top.
Dimensions (surface mount):	Width 400mm, Height 300mm, Depth 80mm (approx.)
ROHS:	Compliant lead free construction
Power:	90V-264V ac, <2amps, 47-63Hz.
Output:	19V d.c. min (battery) 30V d.c. max (mains)
Fuse (Input):	T3.1A 250 V a.c.
Fuse (Load):	5A self setting Polyfuse
Fuse (Battery Bypass):	6.3A (not replaceable)

9.10.6 Connections

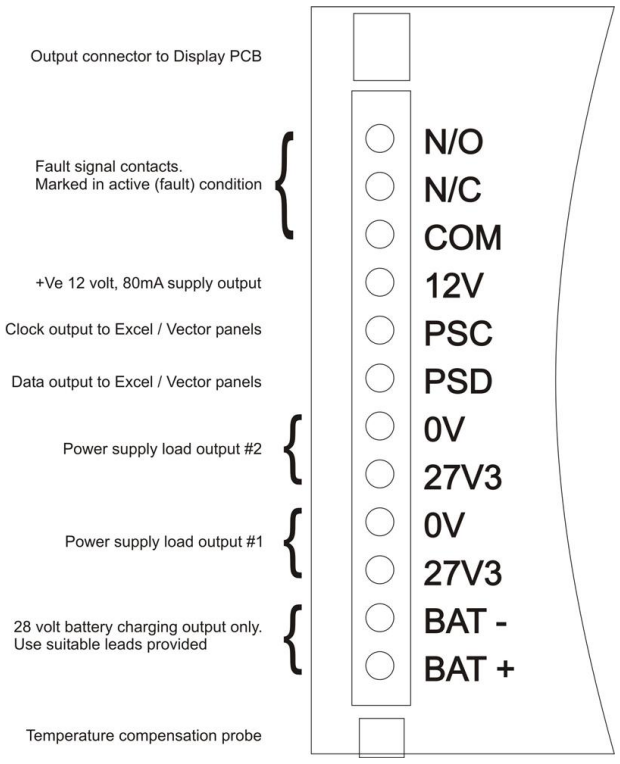


Fig 9:29 Standard PSU Connections

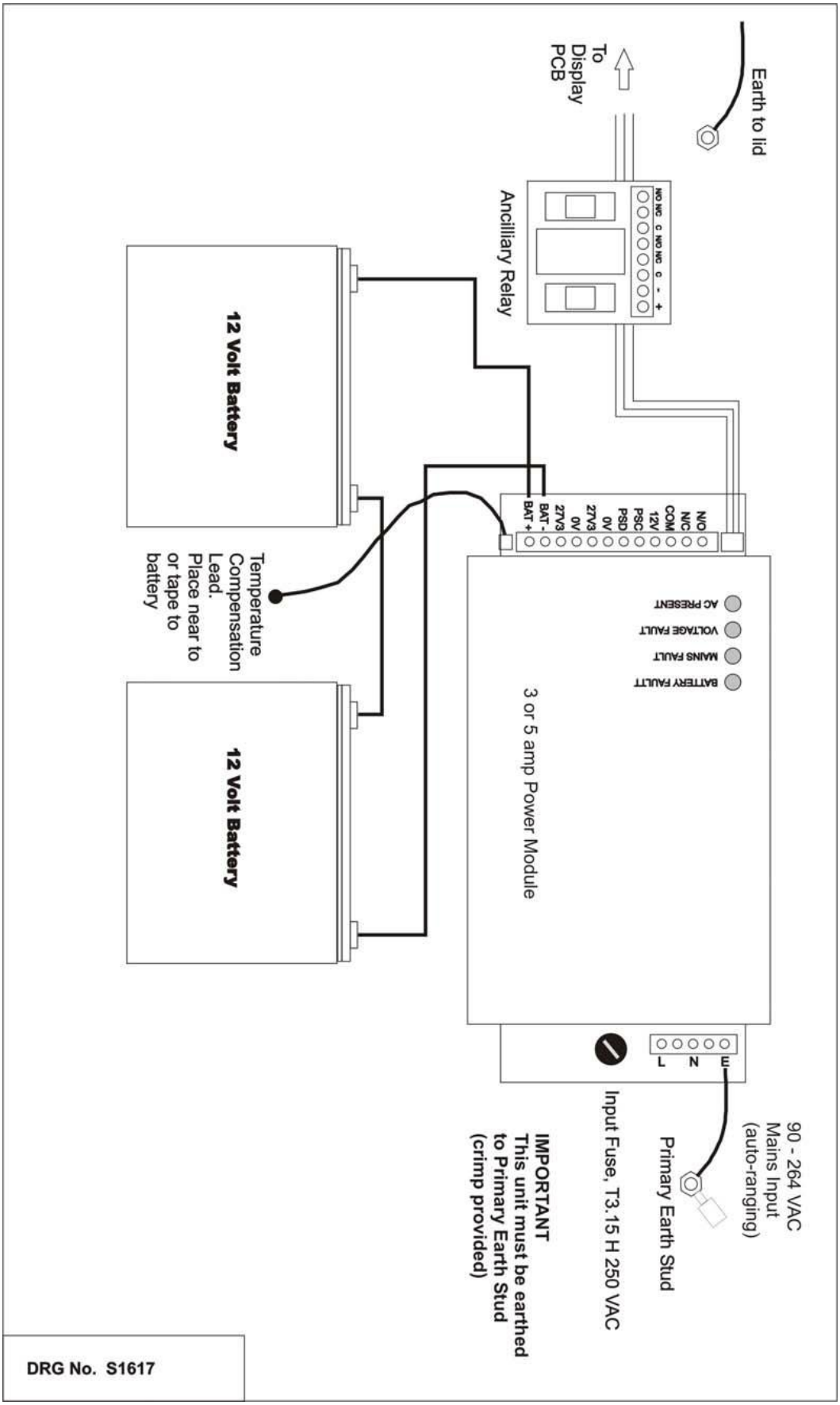


Fig 9:30 PSU General Layout

10 APPENDIX A FIRETUFDATA

Wellington Road, London Colney, Herts, AL2 1EY
Tel: 01727 828 828 - Fax: 01727 824 825
e-mail sales@fscables.com web: www.fscables.com

FIRETUFdata

2 Pair 0.65mm (0.33mm2 – 22AWG)

FS Cables part number 387FTD203 **Draka Comteq part number 910244**

Application	Applicable Standards
Fire resistant low smoke halogen free data cable providing circuit integrity and high speed data transmission. Ideal for use on B.M.S., alarm and evacuation systems in public buildings and tunnels.	Generally to ISO/IEC 11801:95, EN 50173 95 and EN 50288-2-1. Suitable for standard Insulation Displacement Connector L.A.N. sockets. RS-485 10Mb/s

Cable Construction		Physical Characteristics	
Conductor	Bare Cu Wire	Outside Diameter of Conductor	0.65 mm
Insulator Material	PE/Sil Rbr	Outside Diameter of Insulation	1.70 mm
Number of Twisted Pairs	2 (two)	Outside Diameter of Sheath	8.10 mm
Glass Tape	Fibre	Weight	97 kg/km
Screen Material	Al/Mylar	Sheath Colour	Red
Braid	TCWB		
Sheath Material	OHLS		

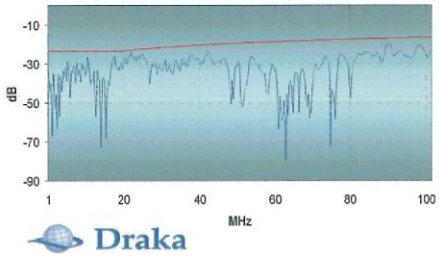
Cable Properties		Electrical Characteristics @ 20°C	
Min. Installation Bend Radius	6 x Dia	Structural Return Loss SRI	IEC dB
Min. Installed Bending Radius	8 x Dia	Characteristic impedance @ 10MHz	100±5Ω
Max. Installation Tension	30N	DC Conductor Loop Resistance	<19 Ω/100m
Max. Installed Tension	Zero	Nominal Velocity of Propagation	57%
Installation Temp. Range	0°C to +50°C	Insulation Resistance (500V)	≥5000 MΩ.km
Installed Operating Temp. Range	-20°C to +60°C	Voltage	300/500V

Fire Tests & Standards		London Underground Tests & Approvals	
Fire Resistant BS5839 Enhanced	>2hrs @ 950°C	Fire Resistant BS5839-1 Clause 26.2E	>2hrs @ 950°C
Fire Resistant BS6387	>3hrs @ 950°C	Fire Resistant BS8434-2 2003	PH120 120min
Fire Resistant IEC60331-23	>3hrs @ 750°C	Fire Resistant BS EN 50200 2000	>3hrs @ 950°C
Fire Resistant BS EN 50200	>3hrs @ 950°C	Flame Retardant	BS4066 part 3
Flame Retardant	IEC60332-3-24	Smoke Emission	BS EN 20568
Corrosivity : acid & halogen free	IEC60754-1+2	LUL - Flammability, smoke & fume	2-01001-002
Smoke Test: low smoke emission	IEC61034-1+2	DP99 Compound approval	E4156 part 1
		LUL standard E4156 part 1	Approved

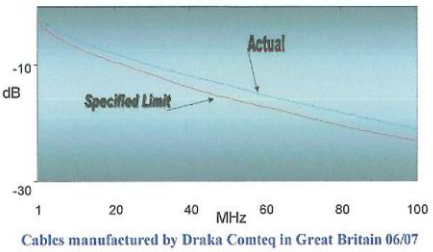
FIRETUF data

LUL Approved Cables

SRI



Attenuation



Draka

Cables manufactured by Draka Comteq in Great Britain 06/07

11 APPENDIX B COMPACT SYSTEM MASTER STATION LABELS

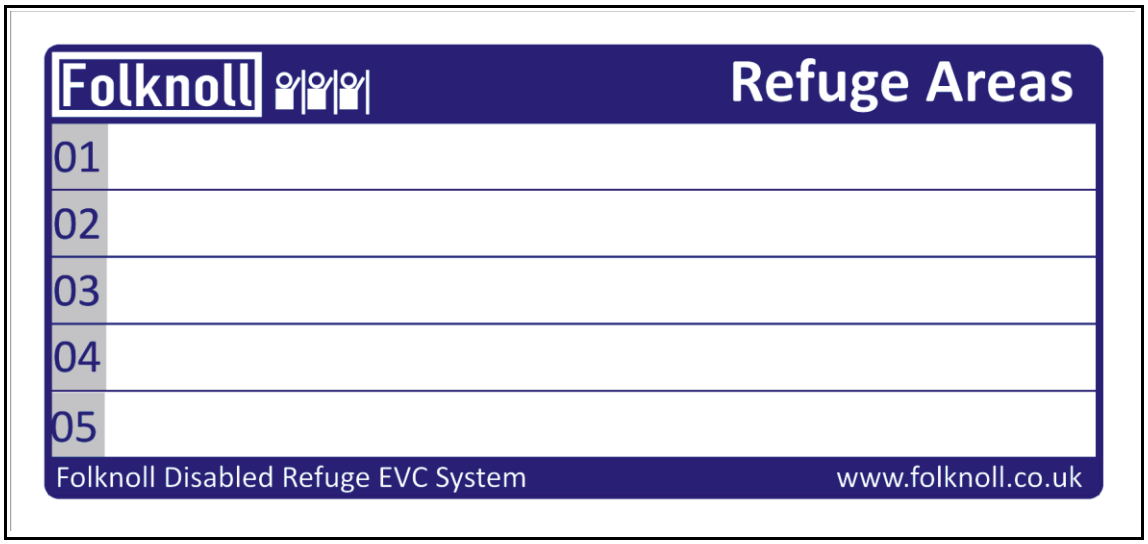


Fig 11:1 Compact System Five Way Master Station Label

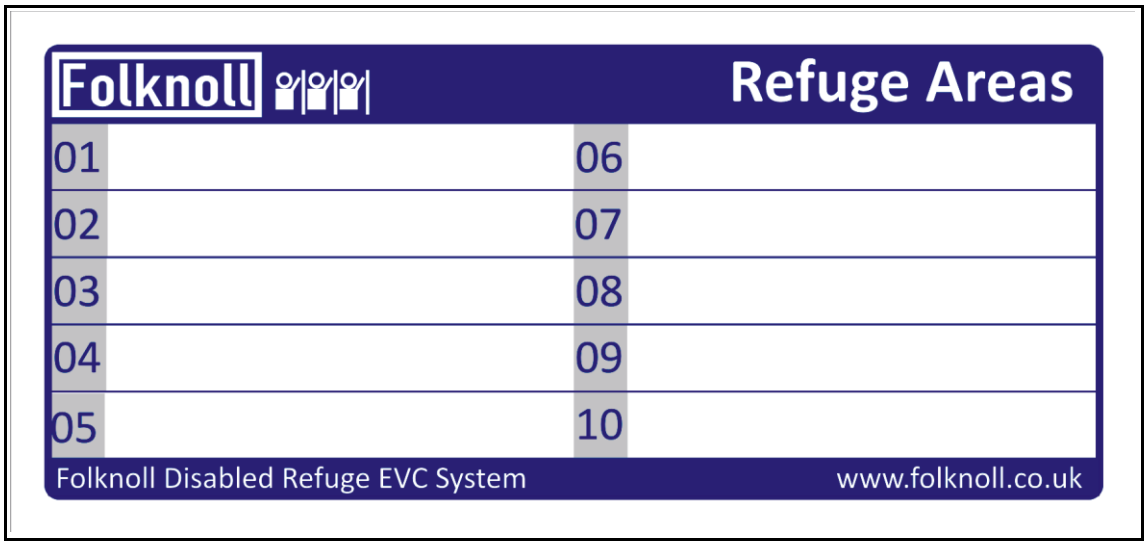


Fig 11:2 Compact System Ten Way Master Station Label

12 USER NOTES

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