

EACIE

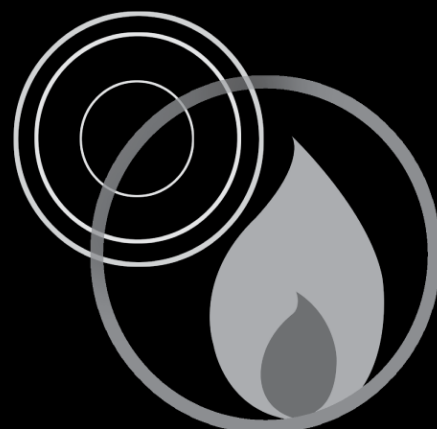
EVACUATION ALERT CONTROL AND INDICATING EQUIPMENT (EACIE)

1 to 4 Loop Panel



Installation, Maintenance & Programming Manual

Approved Document No. DFU5030020 Rev 1





CAUTION !

DO NOT connect or disconnect the panel's internal wiring / looms, or terminate field wiring at the PCBs, with the panel's power applied (either mains or battery). Failure to observe this will destroy the panel's electronic components and the warranty will be void.

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Manufacturer: Computationics Limited (C-TEC), Challenge Way, Martland Park, Wigan, Lancashire WN5 0LD. www.c-tec.com

Symbols



Read these instructions thoroughly before installation and operation



General Warning



Sign Danger Electrical Hazard

1 IMPORTANT NOTES

1.1 Relevant EACIE Standards

- Complies with BS 8629 (if installed correctly).
- Conforms to EN 54-4 (exceptions as per mandatory requirement of BS 8629).

1.2 Items Supplied

- EACIE Evacuation Alert and Indicating Equipment, as ordered.
- Installation, Maintenance & Programming manual (this manual) – Explains how to install, commission and maintain the EACIE. **This manual MUST NOT be left accessible to the user.**
- User Manual and Log Book (Document No. DFU5030070) – Gives detailed operational information and details about the panel's indicators and controls.
- Quick Start User Guide (Document No. DFU5030075) and Quick Start Installation and Programming Manual (Document No. DFU5030025).
- EACIE Typical Layout Drawing (Document No. DFU5030100).
- Electrical accessory pack containing:
 - 1 x 20mm T 2A H 230V ceramic fuse (spare primary fuse)
 - 1 x 7.5A MINI® automotive blade fuse (spare battery fuse)
 - 6K8 0.25W EOL resistors for the unused sounder circuits and unused monitored inputs
 - 1 x set of battery link wires and four cable ties
 - 4 x screws (used to secure the EACIE chassis in the protective cabinet)
 - 1 x set of labels for the Control/Display Module
 - 1 x set of labels for the 8 Zone Switch/Indicator Modules

1.3 Notices



WARNINGS!

This equipment MUST only be installed and maintained by a suitably skilled and technically competent person. Ensure you have attended C-TEC's Authorised Training Course before attempting to install and program the EACIE panel.

This equipment is a piece of Class 1 equipment and MUST BE EARTHED.

ALWAYS isolate the panel's mains and battery backup supplies before making connections to its PCBs.

Anti-static handling guidelines



Make sure that handling precautions for electro-static devices (ESD) are taken immediately before handling PCBs and other ESD components. Before handling any ESD items, engineers should get rid of any electro-static charge by touching a sound safety earth. Always handle PCBs by their sides and avoid touching any electronic components. PCBs should be stored in a clean, dry place that is free from vibration, dust and excessive heat.

Disclaimer

Errors and omissions excepted (E&OE). No responsibility can be accepted by the manufacturer or distributors of this range of panels for any misinterpretation of an instruction or guidance note or for the compliance of the system as a whole. The manufacturer's policy is one of continuous improvement and we reserve the right to make changes to product specifications at our discretion and without prior notice.

1.4 System Design

Evacuation alert system design is beyond the scope of this document. A basic understanding of general evacuation alert system components and their use is assumed.

Contact the Fire Officer concerned with the property at an early stage in case he has any special requirements. We strongly recommend that fire and rescue service (FRS), or appropriate building control body, are consulted in connection with the design of the evacuation alert systems.

The equipment must be installed, operated and maintained in accordance with these instructions and the appropriate national, regional or local regulations.

We strongly recommend you read BS 8629, code of practice for the design, installation, commissioning and maintenance of evacuation alert systems for use by the FRS in buildings containing flats.

1.5 Equipment Guarantee

This equipment is not guaranteed unless the complete installation is installed and commissioned in accordance with the laid down national, regional or local standards (in the UK this is BS 8629) by an approved and competent person or organisation.

2 EACIE PANEL FEATURES

The EACIE is a BS 8629 compliant control panel used with C-TEC's EVAC-ALERT system. It is designed exclusively for use by the fire and rescue service (FRS) in a building emergency situation. Providing a clear, straightforward interface, the EACIE panel allows the FRS to operate evacuation alert devices located in residential flats.

Evacuation alert devices include sounders, visual indicators and vibrating pillow pads (see Evacuation Alert System Overview, section 5.6). In addition to controlling and monitoring the system, the EACIE panel provides visual and audible warnings of any faults on the system, e.g. open or short-circuit faults, power supply fault. Fault signals may be sent to an alarm receiving centre (ARC) or C-TEC's ENVISION cloud-based data management system.

Housed in a robust, vandal-resistant locked cabinet, the EACIE panel has individual robust toggle switches with associated LED indicators for each evacuation alert zone in a building. **Note:** Toggle switches can be programmed and labelled on a zone-by-zone or floor-by-floor basis.

Highly flexible, the EACIE is comprised of EN 54-2/4 third-party certified components and can be used to create a customised evacuation alert system in consultation with the relevant FRS.

Dependant on the model purchased the EACIE panel includes the following features:

- Complies with the requirements of BS 8629 (if installed correctly).
- Compatible with C-TEC's EVAC-ALERT system.
- Compatible with C-TEC's sounder controllers and C-TEC's ActiV range of sounders and visual indicators.
- Full compatibility with C-TEC's CAST® (C-TEC Addressable System Technology) - a powerful, proprietary communication protocol.
- Available in 1, 2, or 4 loop models.
- Up to 48 evacuation alert zones on a single EACIE panel, extendable up to 200 zones on a shared EACIE system.
- Extendable to a networked system using C-TEC's CAST ZFP panels.
- Mains powered with internal 5A EN 54-4/A2 PSU and battery backup.
- Up to 22Ah capacity battery backup should provide standby power for 72 hours plus 30 minutes in alarm (the standby time of 72 hours is dependent on the system specification – see BS 8629). Standby batteries are accommodated for fitting internally in the EACIE panel, or fitted in an external battery enclosure. EACIE panel battery/loop calculator tools are available for download on C-TEC's website www.c-tec.com to assist with system designs.
- Fault signals may be sent to an alarm receiving centre (ARC) or C-TEC's ENVISION data management system.

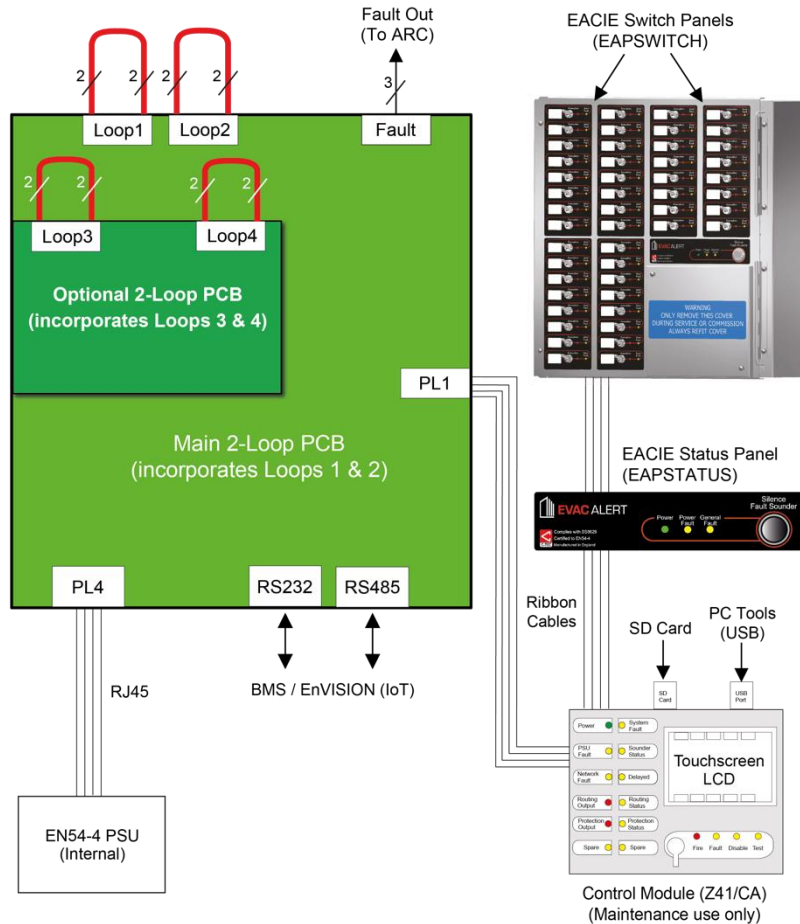
EACIE Evacuation Alert Control and Indicating Equipment

- Short-circuit protected loop driver (rated at 450mA, 40V). Each CAST loop device is fitted with a short-circuit isolator.
- Internal maintenance controls and indicators (not visible to the FRS) include a 4.3 inch, colour LCD touchscreen and LED indicators.
- Custom-made 'slide-in' labelling system for floor-by-floor or zone-by-zone layouts.
- EACIE panel housed in a separate protective cabinet which complies with STS 205 complete with a high security EN 1303 locking system.
- RS232 and RS485 ports - for ancillary devices and graphics interface (maintenance use only)
- Integrated 'galvanically isolated' USB connection to a PC running programming tools (maintenance use only).
- C-TEC system components satisfy the relevant requirements of the product standard for that component in respect of electromagnetic capability (EMC).
- 9,999 event memory for all fault and system events - all filterable (maintenance use only).
- Access levels – access level 1 (general user) and access level 3 (authorised systems engineer) with keyswitch entry to access level 2 (authorised user).

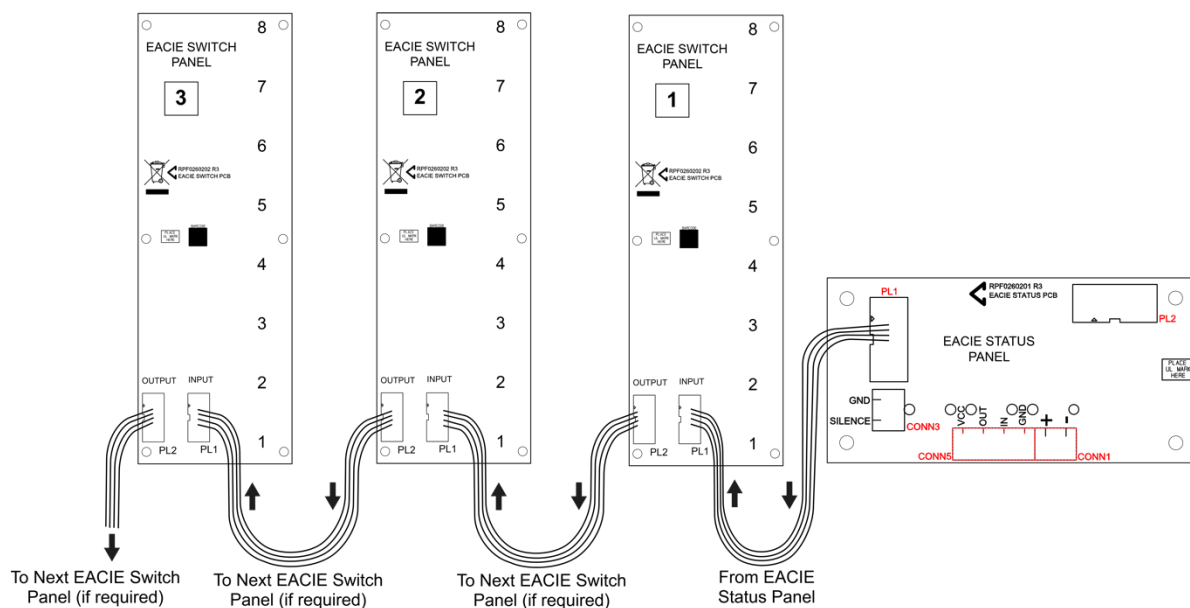
3 TYPICAL EACIE PANEL PCB CONNECTIONS

4 Loop Model Shown. Refer to Appendix 4 for fitting the optional 2-Loop PCB.

Figure 1 – Typical EACIE Panel PCB Connections



EACIE Status and Switch Panel Connections



4 CABLING REQUIREMENTS



All installation wiring must be checked and tested before termination at the panel. Always isolate the panel's mains and battery backup supplies before cable termination at the panel.

4.1 Mains Wiring

Mains wiring must be installed in accordance with all applicable national, regional or local standards. In the UK this is BS 7671 IET Wiring Regulations and BS 8629 Clause 15.

Mains wiring should be standard or enhanced fire-resistant and segregated from extra low voltage field wiring.

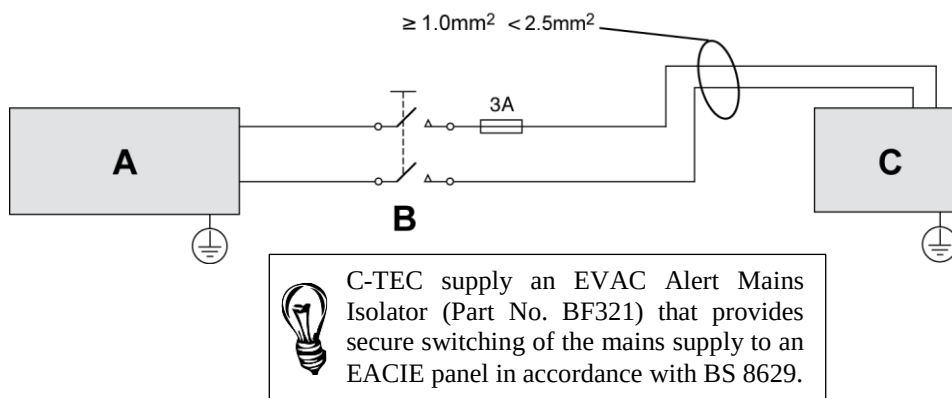
The general requirement for the 230V, 50Hz mains supply to the EACIE panel is fixed wiring, using 3 core cable (no less than 1mm² and no more than 2.5mm²), or a suitable three conductor system fed from an isolating switched fused spur, fused at 3A or a 6A Type B circuit breaker to IEC/EN 60898-1.

The mains supply **MUST** be exclusive to the panel and be reliably earthed at the indicated earthing post.

The number of isolating devices between the incoming power supply to the building and the EACIE panel's PSU should be kept to a minimum.



As an alternative to a switched fused spur, a double-pole isolating switch (B) with 3mm air gaps on the contacts & switching L & N only, may be used in the mains feed from the Main Distribution Board (A) to the EACIE panel (C), providing it meets the appropriate wiring regulations - see diagram below.



4.2 Field Wiring

Separated or Safety Extra-Low Voltage (SELV) field wiring includes loop circuits and auxiliary inputs/outputs. SELV field wiring must be installed in accordance with the relevant national, regional or local regulations.

In the UK this is the BS 7671 IET Wiring Regulations and BS 8629 Clause 15.

2-core screened, enhanced fire-resistant cable (≥ 1mm²) should be used throughout the installation. This not only shields the data moving up and down the cables from outside interference but is essential to ensure compliance with EMC regulations. All screens must only be terminated to the earth bar provided in the panel's chassis.

Screened cables such as FP 200™, Firetuff™, Firecel™ and MICC may be acceptable provided they meet national standards / the system specification as applicable.

4.3 Testing of Field Wiring

Check the continuity of the loops (including screens), loop earth faults, loop crossover faults and the resistance of all other field wiring as appropriate to ensure they are free from faults.



DO NOT test wiring with an insulation tester (Megger) with any electronic equipment connected as the 500V test will destroy these devices and invalidate the warranty.

5 INSTALLATION



Note: The installation should be carried out in accordance BS 8629 (code of practice for the design, installation, commissioning and maintenance of evacuation alert systems for use by the fire and rescue service in buildings containing flats).

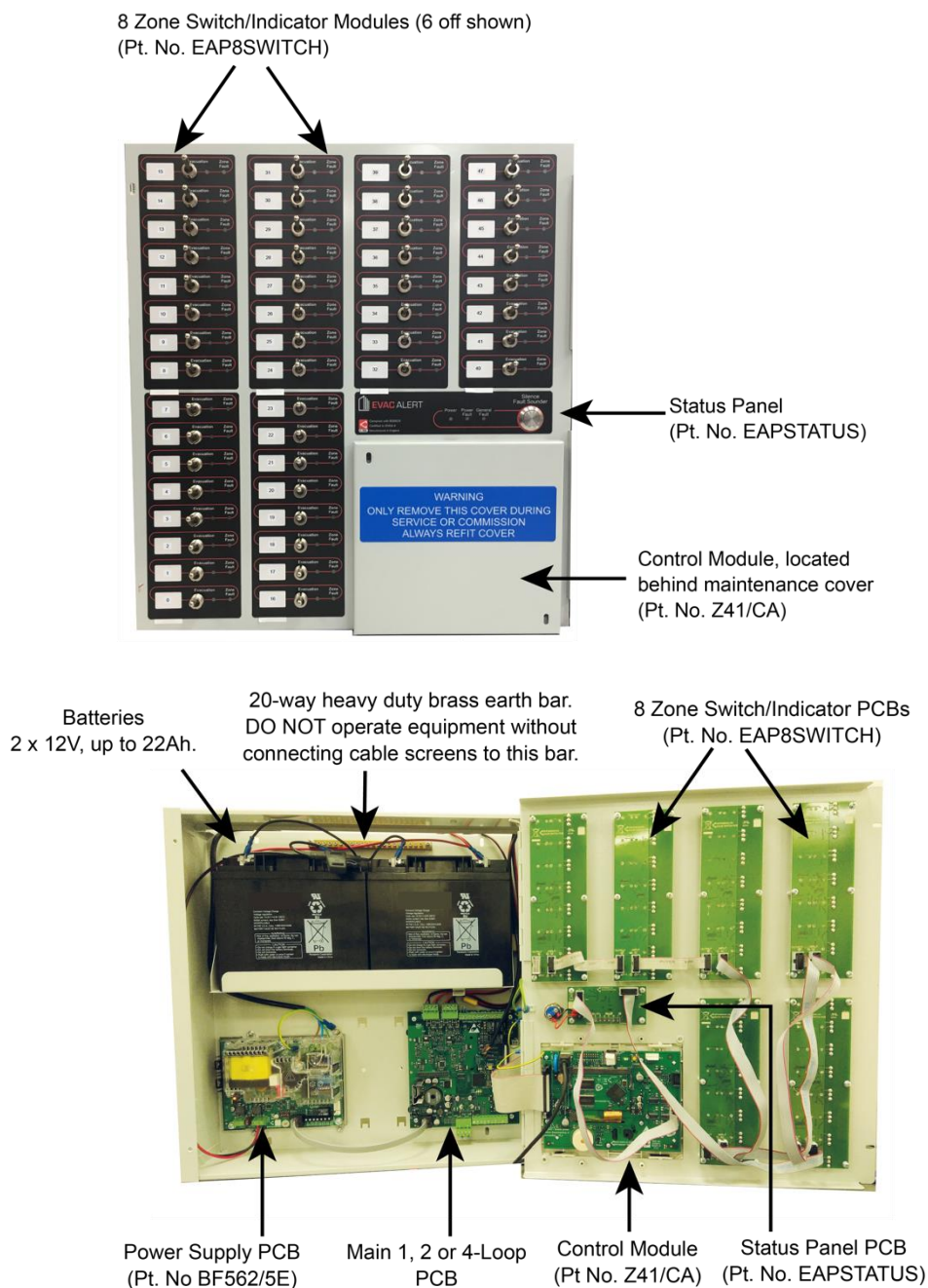
See section 7.1 for a recommended shortform installation procedure.

5.1 EACIE Panel Description

The EACIE panel is mounted inside a separate protective cabinet (not shown below). The panel's chassis comprises of a hinged steel lid and a steel back box which houses a power supply unit (PSU) and several PCBs, as shown in Figure 2 below. Space is available inside the chassis for the two backup batteries.

The EAP4/48/CA/CHASSIS, 48 zone, 4 loop version is shown below.

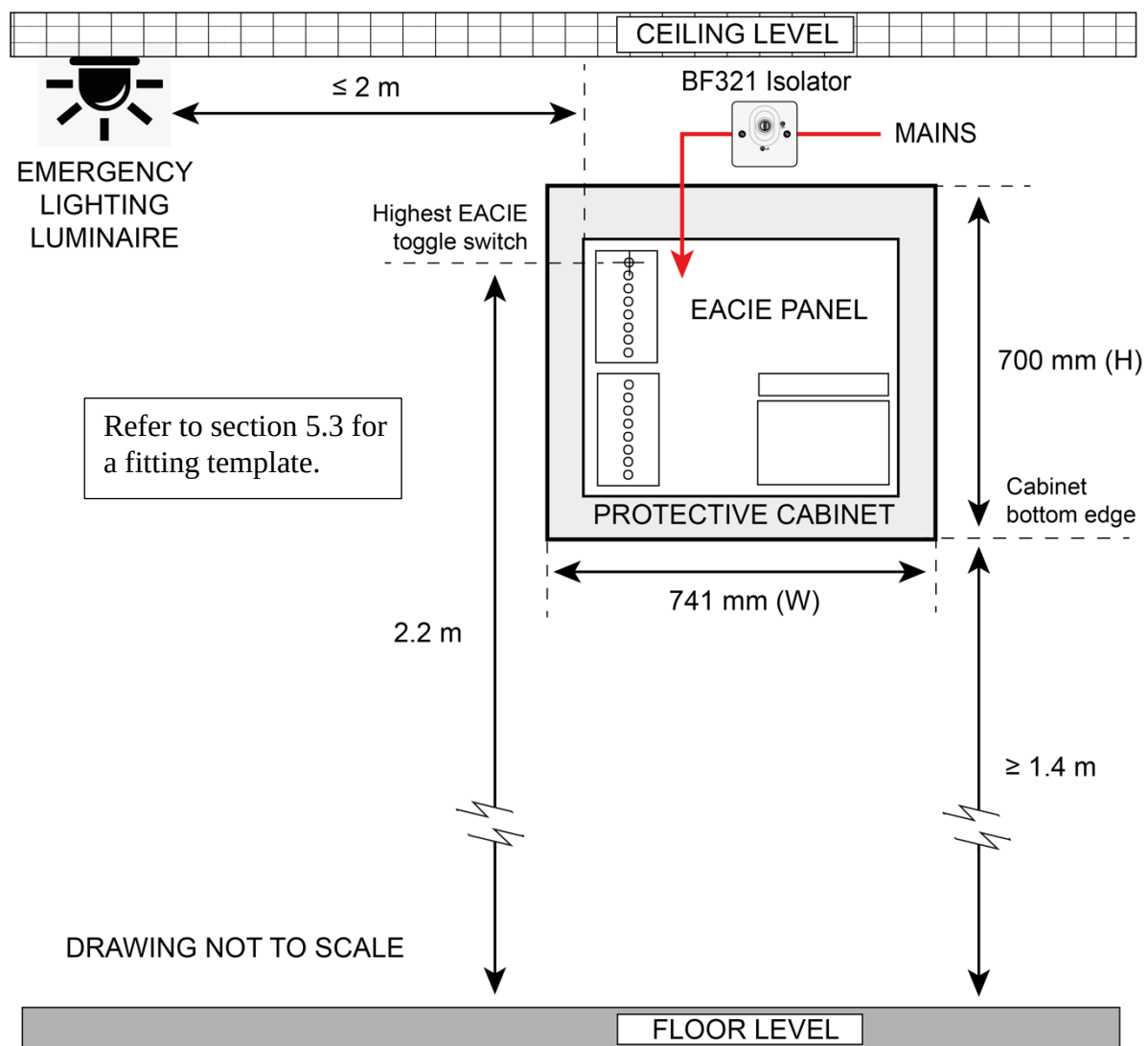
Figure 2 – Location of EACIE Panel Components



5.2 Mounting Location

- The mounting location of the EACIE must be in accordance with BS 8629 Clause 13.2 (see Figure 3).
- The EACIE must be housed inside a suitable protective cabinet.
- The EACIE must be wall mounted inside the building in a low fire hazard location, positioned to avoid accidental damage, not above a radiator, and **MUST NOT** be subjected to excessive dust, conductive or corrosive gases or liquids, nor subject to temperatures, input voltages and electrical loads outside the stated operating range.
- The EACIE must be sited at an appropriate location for the Fire and Rescue Service (FRS) responding to a fire within the building. The position should be in close proximity to the normal FRS building entry point. If there is a concierge desk (or similar) the EACIE should be sited behind the desk, providing this location is easily accessible to the FRS. Ideally, the FRS should be consulted regarding the siting of the EACIE.
- The ambient light and sound levels in the vicinity of the EACIE should allow the controls and indicators to be clearly seen, fault sounder clearly heard and any legends easily read.
- An emergency lighting luminaire should be installed within 2 metres horizontally of the EACIE.
- The EACIE's highest manual control should be located at 2.2 m above floor level.
- The bottom edge of the cabinet should be located at a minimum of 1.4 m above floor level.

Figure 3 – Protective Cabinet and EACIE Panel Mounting Location



5.3 Wall Mounting the Protective Cabinet and Fitting the EACIE Panel



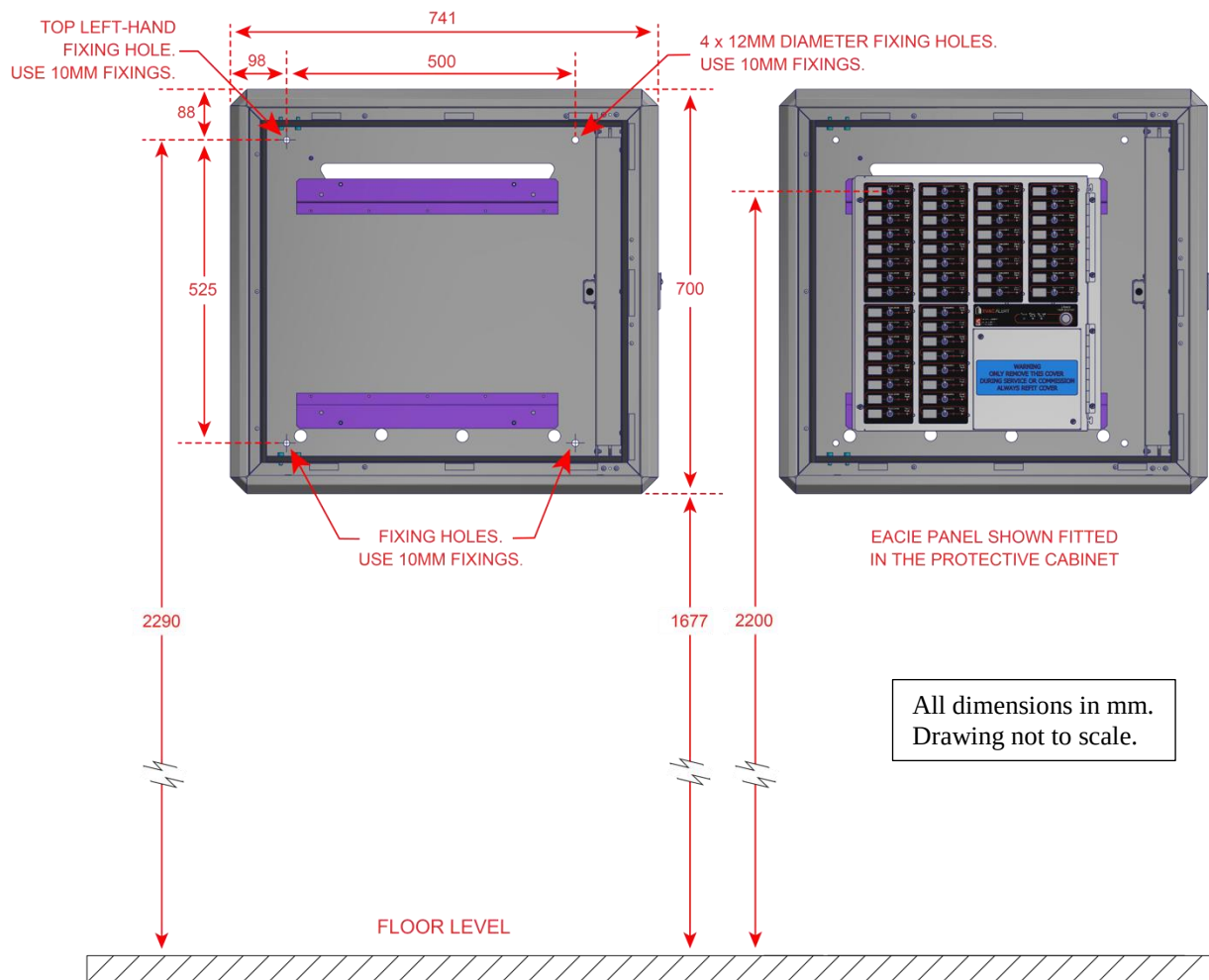
CAUTION: The empty protective cabinet is 69 kg. The EACIE panel fitted with batteries is approx. 21 kg. Therefore, use suitable screw fixings for supporting the cabinet and panel. It is recommended that a manual handling assessment is carried out before installation.

Note: A fitting template (supplied with the cabinet) may be used in conjunction to the method detailed below.

Suggested order of mounting the Protective Cabinet and EACIE Panel (see Figure 4)

- Ensure you have enough space on the wall by looking at the overall size of the finished EACIE installation on the template drawing.
- Mark out the fixing holes on the wall by starting with the top left-hand fixing point. Position this 2290mm from the floor level. **Note:** To comply with BS8629 13.2.1g, the top most switch should be at 2.2m above floor level. Positioning the top left-hand fixing point at 2290mm should ensure compliance.
- Check that the top left-hand fixing point is below the ceiling by a minimum of 88mm and 98mm away from any building obstructions on the left-hand side of the planned position of the cabinet.
- Mark out the other 3 fixing holes as shown, using a spirit level to line up the holes. We advise that 10mm diameter fixings are used.
- The installer needs to confirm the type and construction of the wall and always use appropriate fixings that are suitable for the wall construction and the weight of the cabinet and EACIE panel.
- Mount the outer protective cabinet to the wall, then fit the EACIE chassis internally by hanging it onto the cabinet's brackets. Secure the chassis into place using the four pre-drilled holes in the brackets and the 4 off supplied screws.

Figure 4 – Protective Cabinet Wall Mounting and EACIE Panel Fitting



5.4 Cable Entry in the Protective Cabinet and EACIE Panel

Mains wiring should be segregated from extra low voltage field wiring. Leave sufficient tails of at least 1m inside the panel to ensure straightforward connection of wiring to the panel's terminals.

Important Note: The security of the protective cabinet must not be compromised during installation, e.g. as result of the cable entry method.

- All field cables should be fed through the rear slot / aperture in the protective cabinet (see Photo 1).
- Feed cables through the top slot / aperture in the EACIE chassis.
- Route the mains supply cable along the left-hand side of the EACIE chassis to the PSU (see Photo 2).
- Route the loop cables (and cables to the fault relay – if used) along the right-hand side of the EACIE chassis to the Main Control PCB (see Photo 3).
- Terminate cable screens to the earth bar at the top of the EACIE chassis (see Photo 4).



PHOTO 1: FIELD CABLES FED THROUGH REAR SLOT IN PROTECTIVE CABINET



PHOTO 2: MAINS CABLES FED THROUGH TOP SLOT IN EACIE CHASSIS AND ROUTED TO PSU



PHOTO 3: LOOP CABLES FED THROUGH TOP SLOT IN EACIE CHASSIS AND ROUTED TO MAIN CONTROL PCB

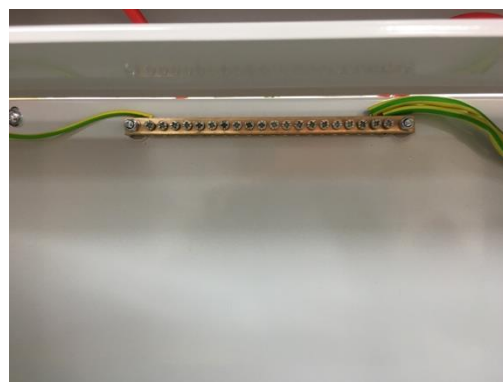


PHOTO 4: CABLES SCREENS TERMINATED AT EARTH BAR IN EACIE CHASSIS

5.5 Inserting the 'slide-in' labels

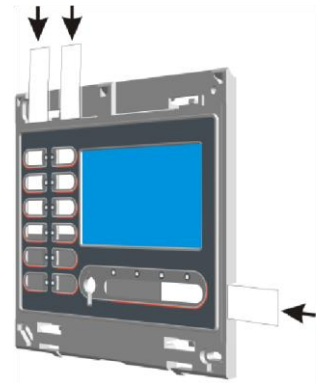
A customisable 'slide-in' label system is employed by the EACIE panel for both the Z41/CA module (for use by an authorised engineer) and the 8 way switch panels (for use by the FRS).



Label templates for customising are available on C-TEC's website www.c-tec.com.

Z41/CA Control/Display Module Label

The slide-in labels for the programmable LEDs depends on how the unit has been configured. Insert the labels (supplied in the accessory pack) for the Z41/CA, as shown right.



Important Note:

Before inserting the horizontal 'Fire/Fault/Disablement/Test' label in the Z41/CA module, create a 'slight' bend (NOT A FOLD!) at the left-hand side of the label (approx. 20mm). Gently push the label through the slot provided into its housing using the hinge on the module's rack to assist with finding its path, as shown below.



Switch/Indicator Module Label

Dependent on programming, the slide-in label can be customised on a zone-by-zone or floor-by-floor basis for each toggle switches.

Insert the slide-in labels (supplied in the accessory pack) for the switch module(s), as shown right.

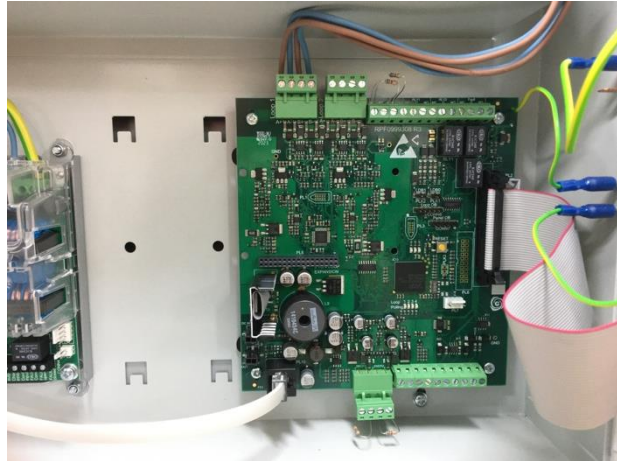
Note: The maximum thickness of paper for the label is 80gsm or standard photocopier paper.



Important Note 1: Remember to isolate the panel's mains and battery backup supplies before terminating wiring at the panel.

Important Note 2: 6k8 end of line (EOL) resistors (supplied in the accessory pack) **MUST** be fitted at the Main 1, 2 or 4-Loop PCB for the two unused sounder circuits and two unused monitored inputs.

5.7 Analogue Addressable Loop(s) Wiring



PHOTOS 1 & 2 SHOWING LOOP CABLES ROUTED AND CONNECTED TO THE MAIN PCB

Two analogue loop connections (Loop1 & Loop2) are available on a Main 2-Loop PCB, as shown in Figure 6 below. One analogue loop connection (Loop1) is available on a Main 1-Loop PCB.

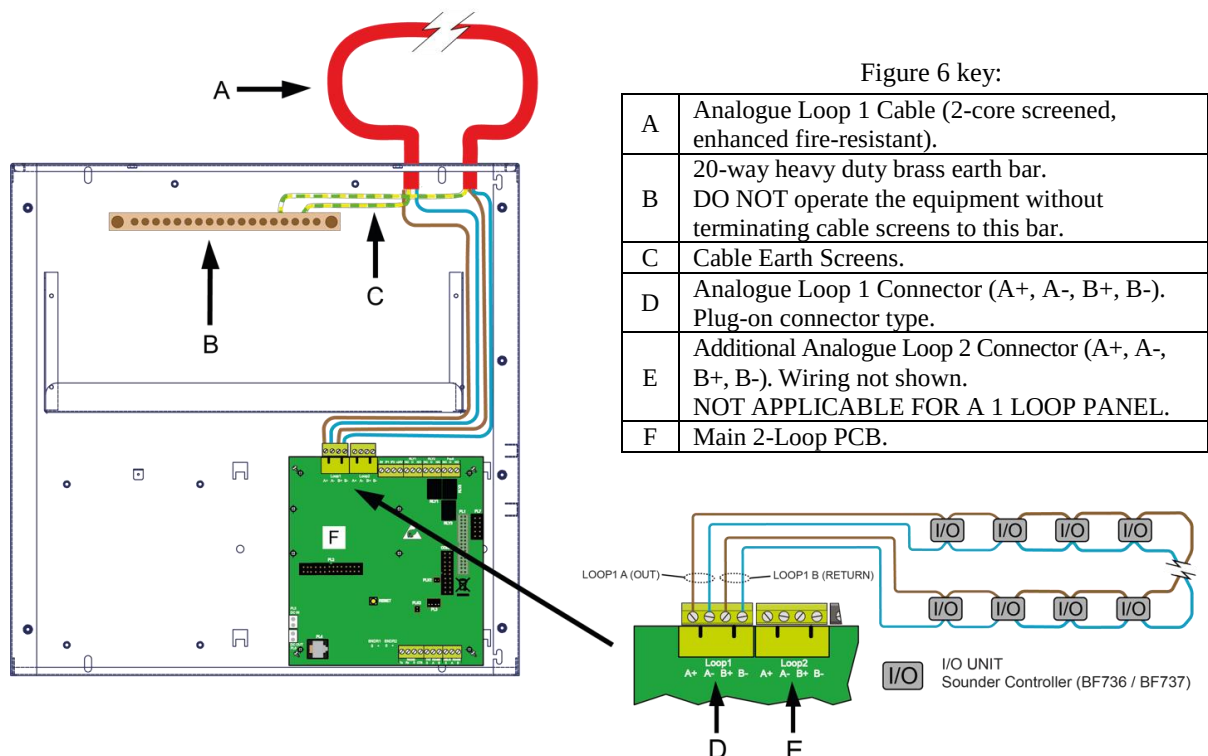
An optional 2-Loop PCB (not available for the 1 loop panel version) provides two additional analogue loop connections (Loop3 & Loop4) if required (see Appendix 4 for fitting details).

Design to a maximum of 450mA demand per loop.

Plug-on 5mm connectors accept up to 2.5mm² cable.

The loop's earth screens should be adequately insulated and **ONLY** terminated at the earth bar in the EACIE's chassis to ensure earth continuity. Check for loop earth faults and loop crossover faults.

Figure 6 – Analogue Addressable Loop Connections



5.8 Relay Output Wiring

One volt-free relay output connection is provided on the Main PCB - a fail-safe fault output, which switches under any fault condition or total power failure. The relay is capable of switching 1A @ 30Vdc.

DO NOT use this relay for switching mains voltages.

This relay may be used to send a fault signal to an alarm receiving centre (ARC).

The wiring for the output should be connected to the relevant connector block on the Main 1, 2, or 4-Loop PCB (model dependent) as shown in Figure 7 below.

Figure 7 – Relay Output Detail

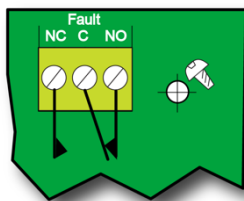
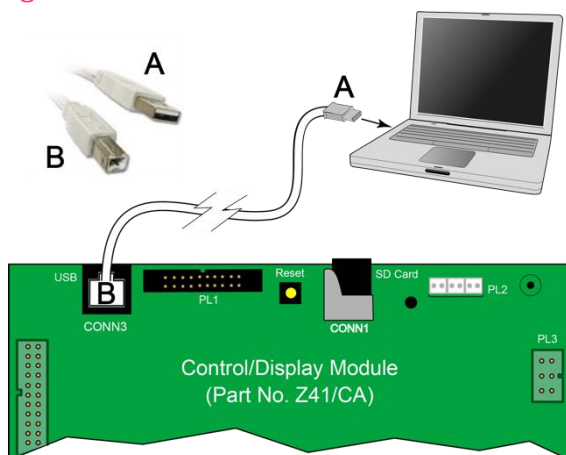


Figure 7 shows the position of the relay contacts in quiescent, no fault condition.

5.9 Remote PC Connection

Figure 8 – PC Connection



A 'galvanically - isolated' USB connector (CONN3) is provided on the Control/Display Module PCB for the connection of a Windows™ based PC running programming software.

The recommended cable is a USB Type A male connector to USB Type B male connector.

EACIE programming tools (Part No. ZTOOLS) are available that allow quick and easy input of data, device and zone naming.

5.10 Connecting Mains to the Panel's PSU



The PSU is equipment and **MUST BE EARTHED**.

The panel's PSU is a mains to regulated DC power supply providing 5A @ 24Vdc nominal. Combining the functions of a PSU, battery charging unit and battery monitoring unit, it is fully compliant with EN 54-4/A2.

Remove the PSU's 'small' protective cable cover and terminate the mains cable at the power supply's PCB connector block CONN1 (see Photo 1 right & Figure 9 below). After terminating, refit and secure the small cover.

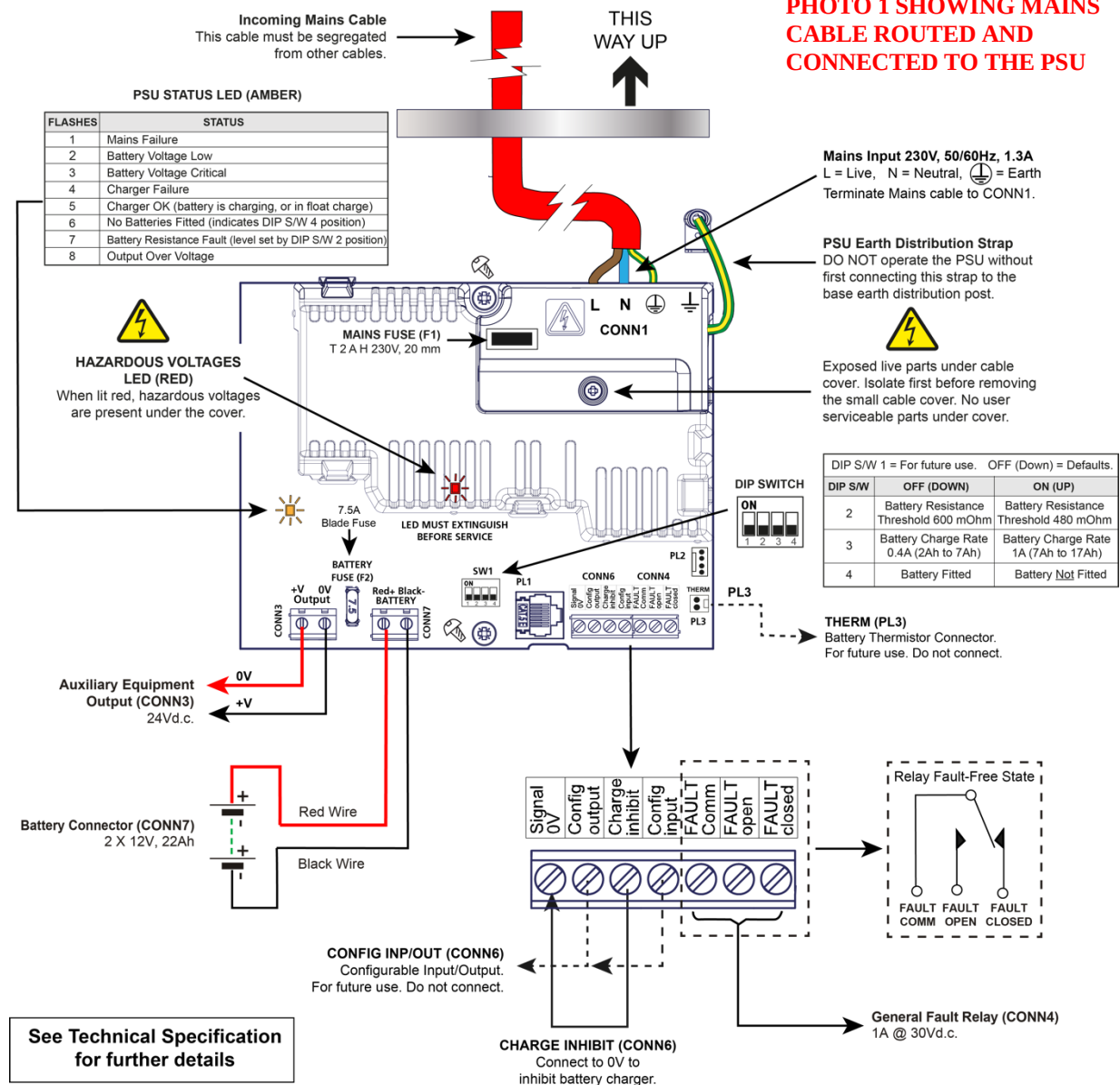


CAUTION: Do not connect mains to the PSU until the installation is complete and the panel is ready to be tested. One method of isolation is to open and lock off the panel's mains isolator.



PHOTO 1 SHOWING MAINS CABLE ROUTED AND CONNECTED TO THE PSU

Figure 9 – 5A PSU Layout and Mains Connection Details



5.11 Connecting the Standby Batteries



CAUTION: There is a risk of explosion if an incorrect battery type is used. Always dispose of used batteries in accordance with the battery manufacturers' instructions.

Do not connect the batteries until the installation is complete and the panel is ready to be tested. One method of isolating battery power is to disconnect the battery link wire.



PHOTOS 1 & 2 SHOWING LOCATION OF BATTERIES AND CONNECTIONS TO THE POWER SUPPLY PCB

Two new, good quality, fully charged 12V, up to 22Ah capacity valve regulated lead acid (VRLA) batteries are required as the emergency standby power supply for the panel. They should have a battery life of 4 years and should be clearly labelled with the date of installation. YUASA REC22-12I batteries are recommended.

The batteries should be connected in series and positioned on the shelf at the top of the EACIE chassis. Connect the 'Red' (+ve) and 'Black' (-ve) battery wires from the battery terminals to connector block CONN7 on the power supply's PCB. The battery wires (red and black), link wire (green/yellow) and cable ties are supplied in the accessory pack. Secure the batteries into position using the four cable ties.

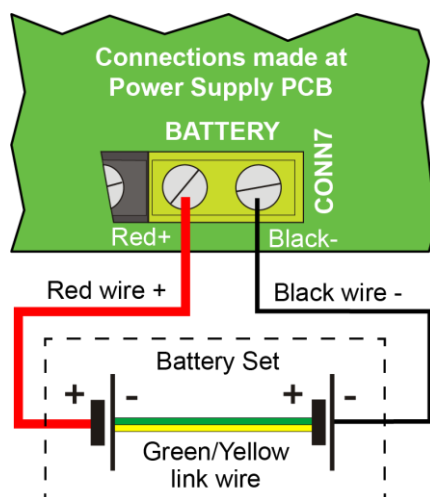
The panel's sophisticated battery monitoring unit protects the batteries against deep discharge by activating a cut off circuit when the standby supply voltage reaches 21V approx. If batteries are not fitted, are discharged or in poor condition, a PSU fault will show at the panel.

The capacity of the batteries used will depend upon the standby time which must be sufficient to maintain the operation of the system for a minimum of 72 hours (the standby time of 72 hours is dependent on the system specification – see BS 8629). To calculate the batteries required for any given standby period see the battery calculation guide in Appendix 3.



EACIE panel battery calculator tools are available for download on C-TEC's website www.c-tec.com to assist with system designs.

Figure 10 – Battery Connection Details



CAUTION! Inferior and New Batteries stored over 6 months.

The panel's PSU is an EN 54-4/A2 power supply and as such measures accurately the internal battery resistance down to a fraction of an ohm. The fault threshold is a function of EN 54-4 and as such cannot be changed, otherwise, it would NOT be a certifiable power supply. Batteries stored for long periods of time before use (especially new ones!), suffer a progressive degradation of internal resistance the longer they are kept off charge after manufacture. Contrary to popular opinion they DO NOT recover this degradation once re-charged. In order for the battery to recover it MUST be discharged and charged several times (more than once), each time you will see a reduction in the internal resistance.

Therefore, if you install one of these batteries AND it shows a fault AND you just leave it AND expect the fault to go away, it will not! In this instance it is not the charger at fault, it is the battery.

6 TOUCHSCREEN, INDICATORS & CONTROLS

Note that information on the EACIE's front panel toggle switches and indicators (for use by the FRS) can be found in the separate User Manual (Document No. DFU5030070).

6.1 Removing the Maintenance Cover

To access the engineer's LCD touchscreen remove the EACIE panel's maintenance cover using a Pozidrive screwdriver, as shown below. ALWAYS refit this cover after use.



7 COMMISSIONING & PROGRAMMING

IMPORTANT NOTICE

**THIS SECTION IS FOR AUTHORISED SYSTEM ENGINEERS ONLY.
ENSURE YOU HAVE ATTENDED C-TEC'S AUTHORISED TRAINING COURSE
BEFORE ATTEMPTING TO PROGRAM THE EACIE PANEL.**

7.1 Recommended Shortform Installation & Commissioning Procedure

Note: DO NOT connect mains or battery power to the panel until the installation is complete, i.e. panel PCBs are fitted and field wiring has been tested and connected to the panel.

- Wall mount the EACIE panel's protective cabinet at the correct height in a suitable location – see sections 5.2 & 5.3.
- Fit the EACIE panel inside its protective cabinet – see section 5.3.
- Feed field cables through the rear aperture in the protective cabinet, then route cables through the top aperture in the EACIE panel. Terminate all screens to the earth bar in the EACIE panel's chassis – see section 5.4.
- Test field cables and ensure they are fault-free, i.e. check continuity of cable runs (including screens). Check the continuity on the negative (-ve) line of the device loop to ensure it is fault free. **Note:** Loop isolators are in the positive (+ve) line, therefore continuity cannot be tested. Check the resistance of all field wiring to ensure they are fault free.
DO NOT MEGGER! Remove all electronic devices if 500V testing is demanded.
- Connect external mains cable to the panel (with mains isolated) – see section 5.10.
- Connect panel's internal batteries (with battery supply isolated) – see section 5.11.
- Connect analogue loop(s) wiring to the panel – see section 5.7.
- Connect additional field wiring to the panel (if required) – see sections 5.8.
- Apply mains and battery supply to power up the panel.
- Remove the maintenance cover to access the panel's touchscreen (see section 6.1). Investigate and rectify any messages reported as faults on the touchscreen.

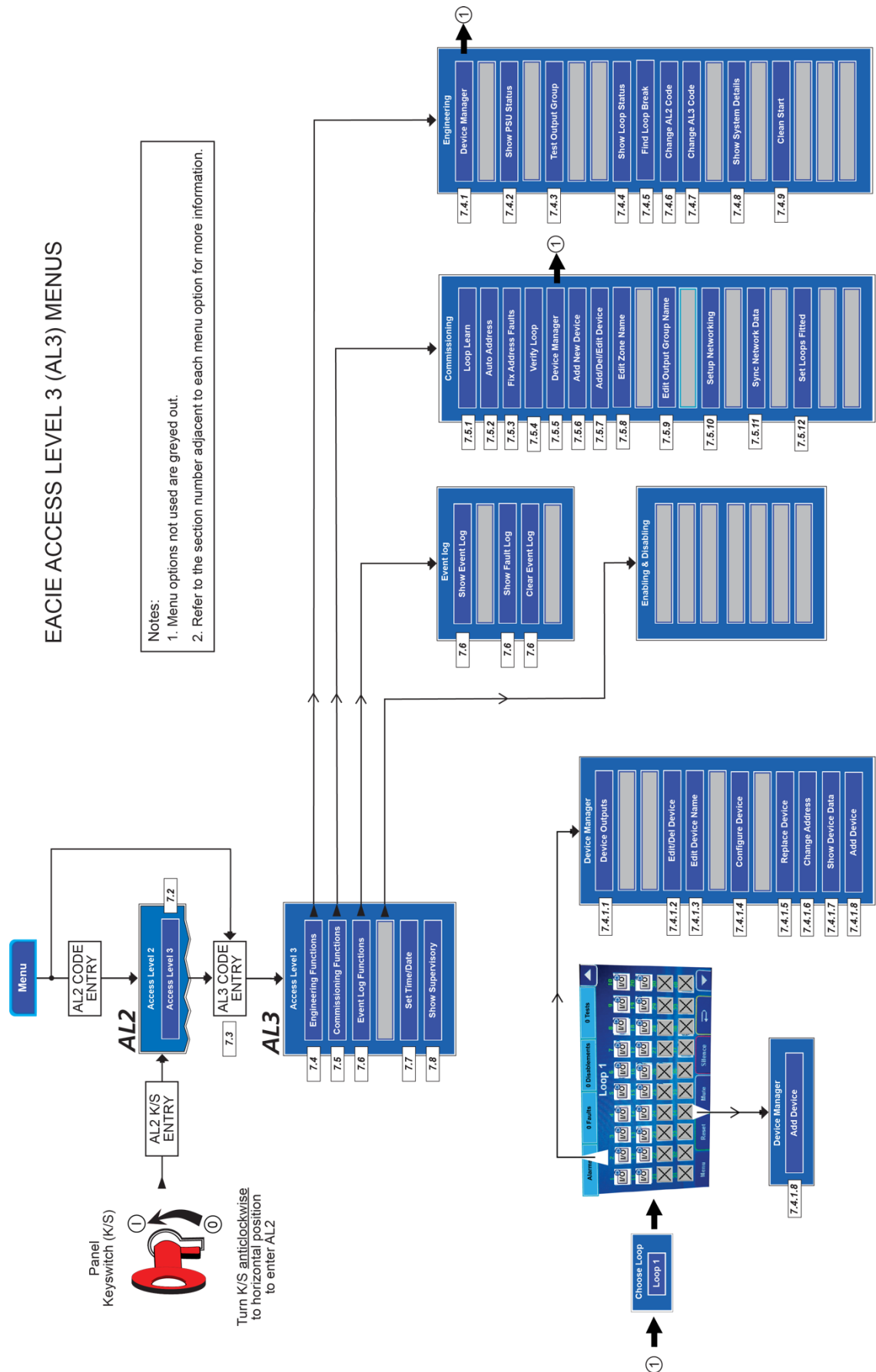
The panel is now ready to be commissioned and programmed.

- Commission the EACIE panel by performing out a loop learn or auto address, as detailed in sections 7.5.1 & 7.5.2. Rectify any problems resulting from the loop learn.
Note: The EACIE panel MUST be programmed and MUST NOT be configured as a 'one out, all out' system for compliance with BS 8629.
- Proceed to program the panel using the ZTOOLS programming tools.
- When you are satisfied the panel has been programmed and is working correctly refit the maintenance cover, lock the protective cabinet and instruct the client / customer in the operation of the system.
- Complete and hand over all necessary manuals and other documentation prior to leaving site.



EACIE panel programming tools (Part No. ZTOOLS) are available on C-TEC's website (www.c-tec.com) that allow quick and easy input of data, device and zone naming.

Figure 11 – Access Level 3 Menu Structure



7.2 Access Level 3 Menu Structure

Figure 11 shows the menu options available at access level 3.

Three ‘access levels’ are available at the panel; general user is access level 1, authorised user is access level 2 and authorised systems engineer is access level 3. This manual focuses on the programming functions available at access level 3 only.

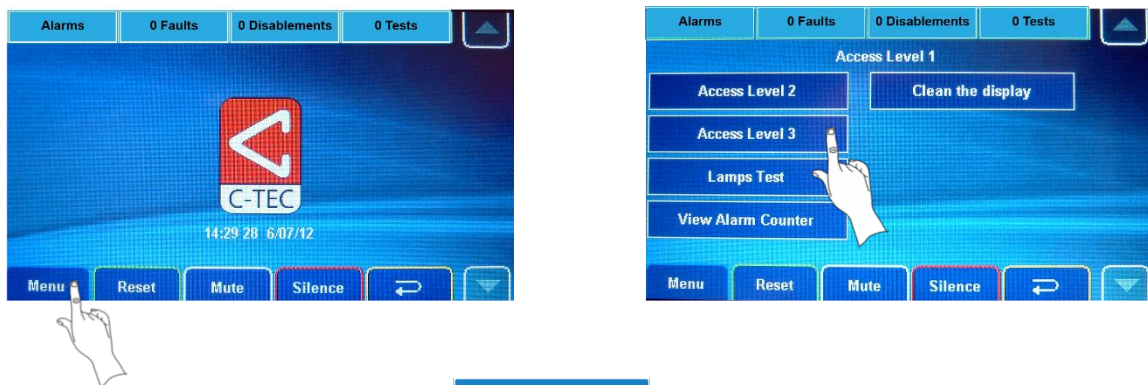
At access level 3, you can:

- View any active faults that are displayed on the touchscreen.
- Gain access to a wide range of engineering functions (see section 7.4) and commissioning functions (see section 7.5).
- Display, filter or clear the panel’s event log (see section 7.6).
- Set the panel’s time and date (see section 7.7).

7.3 How to Enter Access Level 3 (AL3)

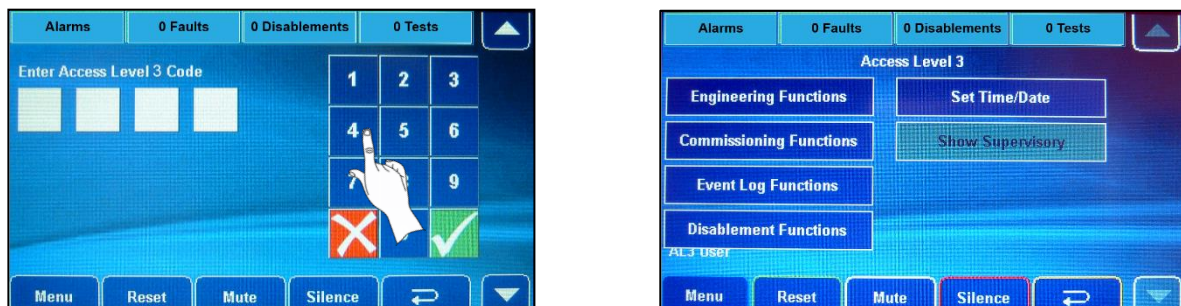
- **Entry to AL3 using the panel’s touchscreen**

With the panel operating under normal conditions (shown below left), press the **Menu** button on the panel’s touchscreen to show the access level 1 menu options (shown below right).



Press the **Access Level 3** button and the display shown below left appears.

Using the touchscreen’s numeric keypad, enter the four-digit access level 3 code. The default code is **4444**. When the code has been entered correctly, the access level 3 menu options are displayed (shown below right). Note that the panel will automatically exit access level 3 after approx. 20 minutes without a button press.



- **Entry to AL3 using the panel’s keyswitch and touchscreen**

With the panel operating under normal conditions, turn the panel’s keyswitch anticlockwise to the horizontal position to display the access level 2 menu options. As detailed above, press the **Access Level 3** button and input the four-digit access level 3 code.

7.4 Engineering Functions

The Engineering Functions menu is used to access the panel's comprehensive test functions and display important system status information.

At Access Level 3, press the **Engineering Functions** button and the window shown below left appears. Scroll down ▼ to view additional engineering menu options (shown below right).

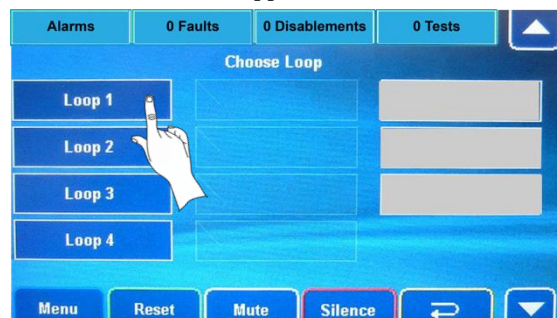


Engineering functions are listed in sections 7.4.1 to 7.4.9.

7.4.1 Device Manager

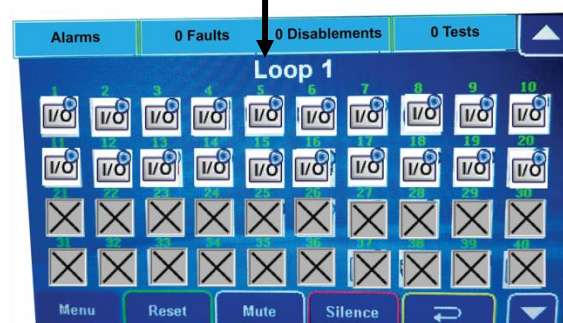
Using this function you can display, edit and test all the addressable devices stored in the panel's memory which include loop devices and system devices.

At Access Level 3 > Engineering Functions, press the **Device Manager** button and a window similar to the one shown below appears.



Loop 1 is shown selected as an example.

Loop 1 shown selected



Loop Devices window:

- displays loop addresses (up to 66 devices per loop)
- displays loop device icons, examples shown below:

 - CAST CA736/CA737 Sounder Controller

 - denotes 'no device fitted'

To view all the devices on the loop, use the ▲ and ▼ buttons to scroll through all the devices.

EACIE Evacuation Alert Control and Indicating Equipment

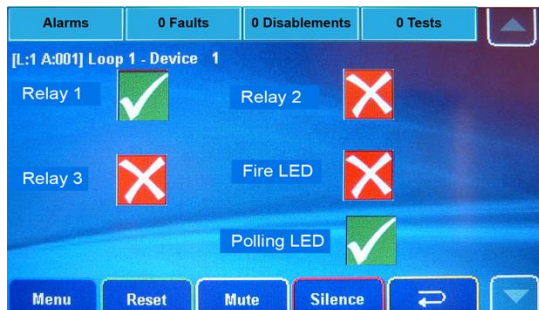
When an individual loop device icon is pressed the Device Manager window appears (shown below) allowing the user to perform additional functions, which are listed below.



7.4.1.1 Device Outputs

This function allows you to turn ON/OFF the selected device's outputs.

Note: To activate a sounder in a flat click Relay 1, shown below.



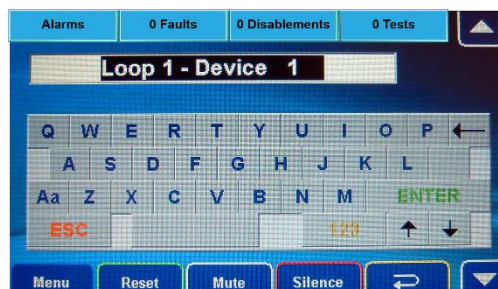
7.4.1.2 Edit/Delete Device



This function allows a device's parameters to be edited including:

- Device type
- Zone (including creating a new zone)
- Output Group (including creating a new output group)
- Device name

7.4.1.3 Edit Device Name



This function allows the text description assigned to specific devices to be created or amended.

When selected, use the touchscreen's QWERTY keyboard to change the text description.

7.4.1.4 Configure Device

This function allows you to resend the configuration for the selected device.

7.4.1.5 Replace Device

This function may be used, for example, to replace a faulty loop device without requiring a new loop learn.

When the Replace Device button is pressed, select the loop and device number. Replace the selected loop device, as required. If a device has been replaced, the panel will auto-address the new device at the selected loop and device number.

7.4.1.6 Change Address

This function allows you to change the address for the selected device.

7.4.1.7 Show Device Data

This function allows you to read the selected device's type, loop address and debug information.

7.4.1.8 Add Device



This function allows devices to be added to a loop.

In the Loop Devices window (shown in section 7.4.1), press a 'no device fitted' icon  and the display shown left appears.

Press the  button and the display shown in section 7.4.1.2 appears allowing the device's parameters to be added.

After the device's parameters have been added, perform a loop learn.

7.4.2 Show PSU Status

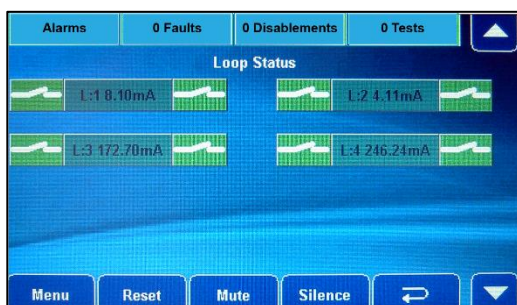
This function allows you to view information regarding the state of the panel's PSU and its standby batteries.

7.4.3 Test Output Group

This function allows you to perform tests on the panel's Output Groups.

At Access Level 3 > Engineering Functions, press the  button and choose the Output Group to be tested from the list of available groups. In the next window choose the type of test to be performed on the Output Group including: OFF, ON and PULSED test.

7.4.4 Show Loop Status



This function allows you to check the loop isolator(s) condition.

At Access Level 3 > Engineering Functions, press the  button and a window similar to the one shown left appears.

If there is a fault on one of the loops the background colour of the switch will change from green to yellow.

Bear in mind the actual loop current shown is indicative only and may not be the precise electrical current drawn by the loop(s).

7.4.5 Find Loop Break

This function allows you to find and display where a break in the loop exists.

When the FIND LOOP BREAK prompt appears select a loop, then press Accept and the panel will initialize both ends of the loop.

Assuming there is a break in the loop, the device LEDs on either side of the break will be lit. The panel display will also identify the precise location of the loop break between devices 'X + Y'.

7.4.6 Change Access Level 2 (AL2) Code

This function is used to change the four-digit code needed to enter the panel's access level 2 menu options.

At Access Level 3 > Engineering Functions, press the **Change AL2 Code** button and the window below appears:



Use the touchscreen's numeric keypad buttons to enter the new access level 2 code. After the fourth digit has been entered, the panel will request you confirm the new code by re-entering it.

Enter the code again by pressing the buttons in the same sequence. If the two codes match, the panel will accept the code and you will be taken back to the engineering menus. If you type an incorrect confirmation code you will be prompted to start the new code entry sequence again.

7.4.7 Change Access Level 3 (AL3) Code

This function is used to change the four-digit code needed to enter the panel's access level 3 menu options.

At Access Level 3 > Engineering Functions, press the **Change AL3 Code** button.

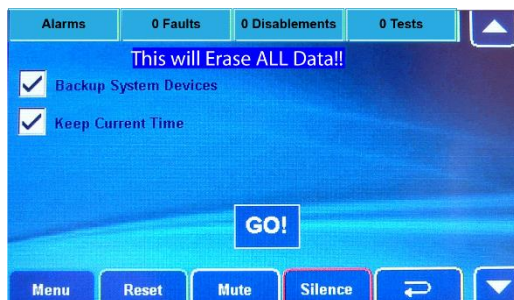
Use the touchscreen's numeric keypad buttons as detailed above in section 7.4.6.

7.4.8 Show System Details

This function lists system details including the panel's firmware version number and internal SD memory card information.

7.4.9 Clean Start

This function allows you to clear the panel's memory back to its factory default settings. When selected, you will be asked to enter the five-digit security code. The default code is **32767**.



CAUTION: This function is for trained engineers only. Performing a clean start COMPLETELY ERASES the panel's memory (held on the internal SD memory card).

7.5 Commissioning Functions

The Commissioning Functions menu is used to carry out various commissioning tasks including a loop learn and auto address.



EACIE panel programming tools (Part No. ZTOOLS) are available on C-TEC's website (www.c-tec.com) that allow quick and easy input of data, device and zone naming.

At Access Level 3, press the **Commissioning Functions** button and the window shown below left appears.

Scroll down  to view additional commissioning menu options (shown below right).



Commissioning functions are listed in sections 7.5.1 to 7.5.12.

Commissioning Note: All the loop devices connected to the EACIE panel need to have a unique address assigning to them. In addition, the panel needs to read all the loop devices and identify their address by performing a 'loop learn'.

There are two recommended options to do this:

- **Option 1:** At **Access Level 3 > Commissioning Functions** select the **Auto Address** menu option.
See section 7.5.2.

The Auto Address function will automatically assign an address to each loop device in sequentially wired order.

Note: If additional devices are later fitted to the loop, and an Auto Address is performed, you will have the choice to:

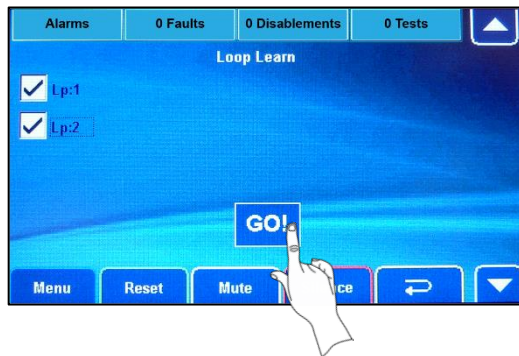
- either continue assigning addresses from the last loop device,
- or, re-assign a new address to all the loop devices.

- **Option 2:** First, use a CAST Hand-Held Programmer (Part No. CAPROG) to manually assign an address to each loop device.
Second, at **Access Level 3 > Commissioning Functions** select the **Loop Learn** menu option.
See section 7.5.1.

7.5.1 Loop Learn

During a loop learn, the panel interrogates every device fitted on a selected loop to identify their address and to find out the type of device. This provides the opportunity to identify any missing devices, double-addressed devices, incomplete loops as well as wrong device types.

At Access Level 3 > Commissioning Functions, press the **Loop Learn** button and the window shown below appears.



Select the loop(s) you want the panel to learn (Loop 1 and Loop 2 are shown selected left), then press the **GO!** button. A progress bar will be shown during the loop learn process. Depending on the size of the installation, the loop learn process can take several minutes.

THE LOOP LEARN WILL SIMULTANEOUSLY ASSIGN ALL I/O UNITS TO OUTPUT GROUP 1 AND ZONE 1.

AFTER A SUCCESSFUL LOOP LEARN YOU WILL HAVE A SINGLE ACTIVE ZONE (I.E. ZONE 1) AND A SINGLE “ONE OUT, ALL OUT” EVACUATION SYSTEM.

IMPORTANT NOTE:

BS 8629 STATES THAT A “MASTER” OR “WHOLE BUILDING” EVACUATION CONTROL, WHEREBY A SIMULTANEOUS EVACUATION ALERT IS SOUNDED IN ALL FLATS BY OPERATION OF A SINGLE CONTROL SHOULD NOT BE PROVIDED. THEREFORE, YOU CANNOT HAVE A SINGLE ACTIVE ZONE (I.E. ZONE 1) “ONE OUT, ALL OUT” EVACUATION SYSTEM! THESE DEFAULT SETTINGS MUST BE MODIFIED USING THE ZTOOLS!

7.5.2 Auto Address

This function may be used as an alternative to the Loop Learn function.

During an auto address, the panel automatically assigns an address to each loop device in sequentially wired order. When the AUTO ADDRESS prompt appears, press the Accept button to confirm that you want to continue with the loop learn.

You now have two options as detailed below:

Option 1:

CAUTION: USING THIS OPTION WILL COMPLETELY ERASE THE PANEL’S DATABASE OF STORED LOOP DEVICE DATA. THEREFORE, USE WITH EXTREME CARE.

Only select this option if the panel has not previously been programmed, or if you want to program an existing system as if it were a new system, and you are confident to proceed.

The panel will erase its database of stored loop devices, re-assign all the loop devices with a new address and start a loop learn.

Option 2:

If you do not want to erase the stored loop device data, select this option.

The panel will start to learn the loop from the last known address in its memory. Existing data will not be overwritten, e.g. zone and group allocation, device names, etc., will remain unchanged. The only data that will be overwritten is device type and whether or not it is fitted.

Depending on the installation size, the loop learn process can take several minutes. When the loop learn is complete a summary window is displayed.

7.5.3 Fix Address Faults

This function helps to locate and fix devices with duplicate (double) addresses and also activates device (polling) LEDs. Typically, a fault may have been displayed at the panel stating 'Duplicate Address'.

When the FIX ADDRESS FAULTS prompt is displayed press Accept. The panel will reinitialise and check the loop, then find the double address and automatically fix the fault. No user interaction is required.

7.5.4 Verify Loop

This function restarts the loop and displays any loop configuration faults. This function may be used, for example, if there is a problem with a missing device, or a device not closing its s/c isolator.

When selected, press Accept, select a loop number and the panel will power down the loop and then re-initialize the loop devices.

7.5.5 Device Manager

At Access Level 3 > Commissioning Functions, press the  button.

For ease of access, this is a duplicate of Device Manager under Engineering functions (see section 7.4.1 for details).

7.5.6 Add New Device

This function may be used, for example, to replace a faulty loop device or add a new loop device.

When selected, press Accept, select the loop and device number then press Accept.

Replace or add the selected loop device.

If a device has been replaced the panel will auto address the new device at the selected loop and device number. If a device has been added the panel will force a loop learn when exiting access level 3.

7.5.7 Add/Delete/Edit a Device

Refer to Device Manager section 7.4.1 for details.

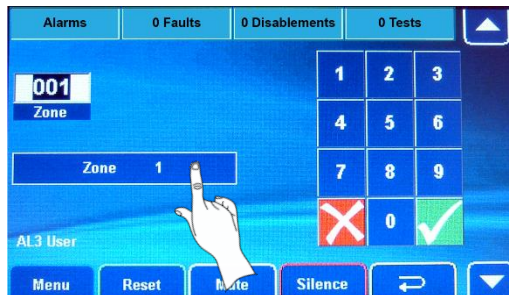
7.5.8 Edit Zone Name

This function allows a text description to be assigned to an evacuation alert zone.

At Access Level 3 > Commissioning Functions, press the **Edit Zone Name** button and a window similar to the one shown below left appears.

To change a zone's text description, press the text description button ('Zone 1' is shown as an example) and the window shown below right appears. Amend the text using the touchscreen's standard QWERTY keyboard controls.

To select a different zone for editing, either press the zone number field (001 shown below left) and use the ▲ and ▼ buttons to scroll through the zones, or enter the zone number directly into the zone number field using the touchscreen's numeric keypad.



7.5.9 Edit Output Group Name

This function allows text descriptions for Output Groups to be changed.

At Access Level 3 > Commissioning Functions, press the **Edit Output Group Name** button and a window similar to the one shown below appears.



Amend the text descriptions by following the same operating procedure detailed in section 7.5.8.

7.5.10 Setup Networking

This function only applies to networked panels.

7.5.11 Synchronise Network Data

This function only applies to networked panels.

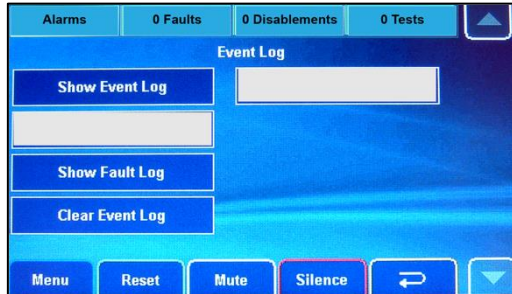
7.5.12 Set Loops Fitted

This function sets the number of loops the panel's firmware assigns to a panel. Note that the actual physical number of loops that can be connected to a panel is dependent on the number of loop driver modules fitted, i.e. Main 1, 2 or 4-Loop PCB.

7.6 Event Log Functions

This function lists, filters and resets the panel's event or fault log.

At Access Level 3, press the **Event Log Functions** button and the window shown below appears:



The **Show Event Log** button, when pressed, lists both the panel's event and alarm log (up to 9999 events). This includes faults and system events.

The **Show Fault Log** button, when pressed, lists the panel's fault log. Typically, faults include missing devices, earth faults, open/short circuit faults and watchdog resets.

The **Clear Event Log** button, when pressed, clears the respective log from the panel's memory. To ensure a log is not erased by mistake, a five-digit security code requires entering using the touchscreen's numeric keypad. The default code is **32767**.

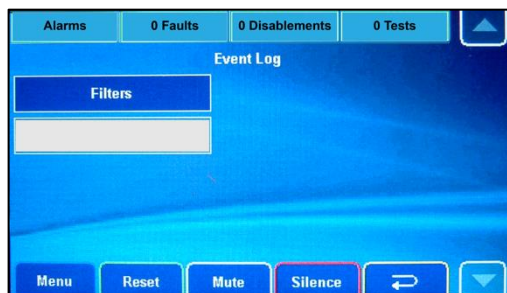


The window shown left is a typical list of saved events.

Press the  and  buttons (or use the scroll bar) to scroll through the list. Events are listed in chronological order with the most recent listed last. When the log is full, the oldest record is deleted and replaced by the newest record.

Event log button
(displays panel events)

To filter the log, press one of the blue event log buttons and the window shown below appears.



The **Filters** button, when pressed, allows events to be listed by Date Range or Device Address.

7.7 Set the Panel's Time and Date

This function is used to set the panel's time and date which is required for accurate logging of events in the panel's log. The panel has a real-time 24 hour clock with default time and date settings. An automatic DST (Daylight Saving Time) option is available which will automatically adjust the panel's clock one hour forward on the last Sunday in March and one hour backward on the last Sunday in October.

At Access Level 3, press the **Set Time/Date** button and a window similar to the one shown below appears.



Adjust the time and date using the touchscreen's numeric keypad and   buttons. Also, set/unset the daylight saving time by pressing the **DST** tick box.

When correct, press the  button to return to the main access level 3 menus.

7.8 Show Supervisory Events

This function is only available if relevant to the panel's status, i.e. if access level 3 supervisory events have been programmed by an authorised systems engineer.

At Access Level 3, press the **Show Supervisory** button. The display shows all access level 3 non-alarm, non-fault related events, e.g. panel keyswitch activated.

8 MAINTENANCE

BS 8629 is the British Standard code of practice for the design, installation, commissioning and maintenance of evacuation alert systems for use by fire and rescue services in buildings containing flats.

Clause 21 of BS 8629 (Maintenance) states that the evacuation alert system should be subject to inspection, testing and servicing by a competent person every six months. If this recommendation is not implemented, the system is no longer compliant with this British Standard.

Note: Maintenance of evacuation alert system equipment external to the EACIE panel will be detailed in the individual instructions supplied with each device.

BS 8629 Clause 21.1.2 states the competent person should carry out the following recommendations every six months:

- 1) The system log book (see separate User Manual DFU5030070) should be examined, ensuring that any faults recorded have received appropriate attention.
- 2) The battery voltage should be measured with the mains on to check the steady state charge voltage and check it is within the manufacturer's recommendations before any other tests that might discharge the battery and with no load on the power supply other than the quiescent or standing load.
- 3) The standby battery should be disconnected, the alarms activated and the power supply output voltage checked that it is at least 95% of the nominal voltage.
- 4) The evacuation functions of the EACIE should be checked by the operation of every manual control for each evacuation alert zone in turn. It should be confirmed that, on operation of each manual control, an evacuation alert signal is given within the corresponding evacuation alert zone.
- 5) All other controls and visual indicators at the EACIE should be checked for correct operation.
- 6) All fault indicators and their circuits should be checked, where practicable, by simulation of fault conditions.
- 7) Radio systems (there are no facilities for radio systems at this time).
- 8) Radio systems (there are no facilities for radio systems at this time).
- 9) A visual inspection should be made to confirm that all readily accessible cable fixings within common parts are secure and undamaged.
- 10) The standby power supply capacity should be checked to establish it remains suitable for continued service.
- 11) In buildings with more than one evacuation alert zone on any storey, a check should be made to determine whether a suitable plan of the evacuation alert zones is displayed on or adjacent to the EACIE.
- 12) All further checks and tests recommended by the manufacturer of the system should be carried out.
- 13) On completion of the work, any outstanding defects should be reported to the premises management, the system log book (see separate User Manual DFU5030070) should be completed and an inspection and servicing certificate should be issued.

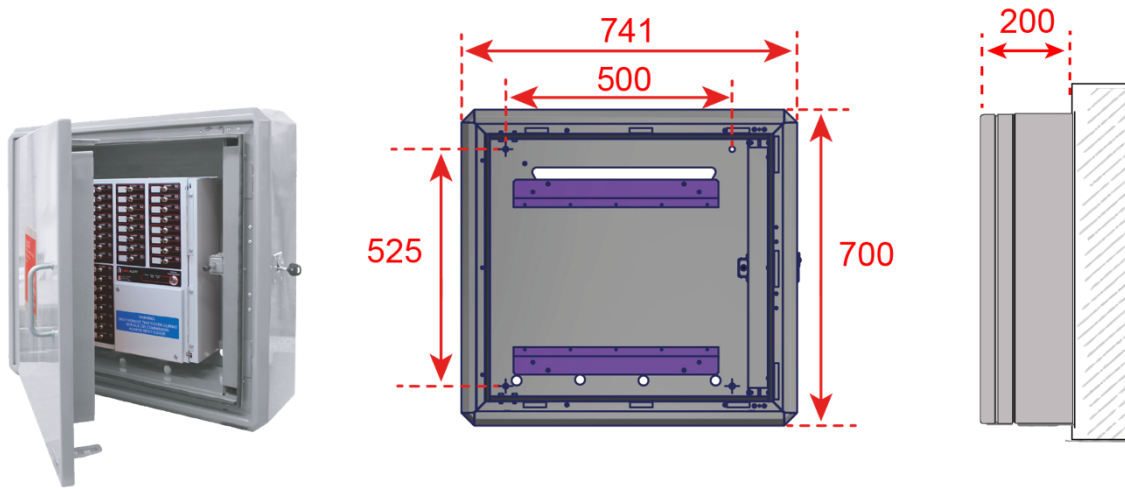
BS 8629 Clause 21.1.2 states the competent person should carry out the following recommendations over a 12 month period:

All evacuation alert devices should be checked for correct operation. In the case of evacuation alert sounders, the test facilities at the EACIE should be used to operate each sounder in turn (without operating any other sounders), and it should be confirmed that each sounder operates. The duration of the test of each sounder should be as short as practicable and not more than 10 s.

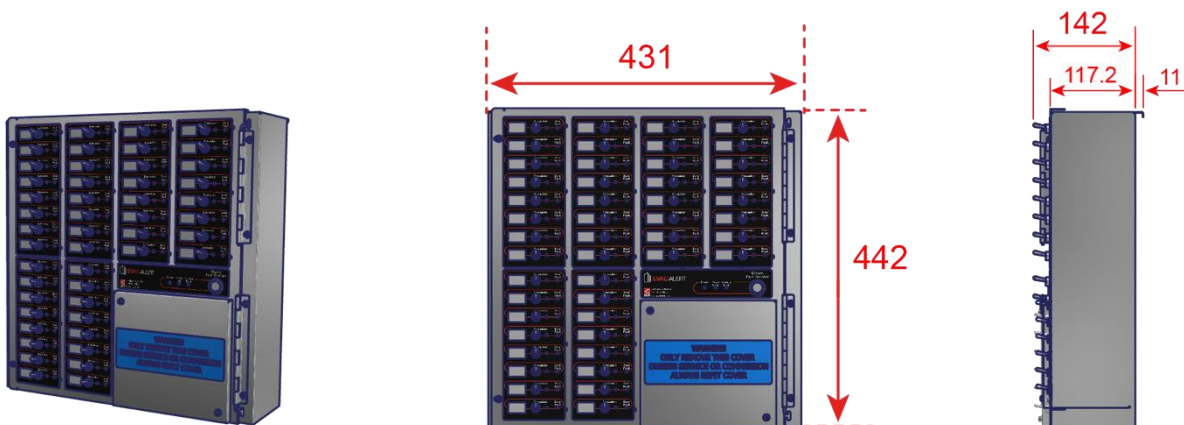
Appendix 1 – Protective Cabinet and EACIE Panel Dimensions

All dimensions in mm. Drawings not to scale.

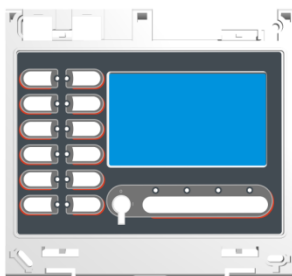
Protective Cabinet



EACIE Panel



Appendix 2 – EACIE Panel Programming Module



Control/Display module c/w 4.3" touchscreen, keyswitch, 16 LEDs
- Part No. Z41/CA

Appendix 3 – Standby Battery Calculation

The standby time of the EACIE panel, after the mains has failed, depends on the quiescent and alarm loading of the panel, and the capacity of the batteries.

There are two options to determine the capacity of batteries required for any given standby period:

1. Refer to the EACIE panel battery calculator tools available on C-TEC's website www.c-tec.com.
2. Use the following formula:

$$C_{\min} = 1.25 (T_1 I_1 + D I_2 T_2)$$

where:

$C_{\min}$ = minimum battery capacity when new at the 20 h discharge rate and at 20°C, in ampere hours (Ah);

T_1 = the total battery standby period in hours (h);

T_2 = the total battery alarm period in hours (h);

I_1 = the total battery standby load in amperes (A);

I_2 = the total battery alarm load in amperes (A);

D = a derating factor.

NOTES:

Where $C_{\min}/20$ is equal to, or greater, than I_2 , it can be assumed that $D = 1$.

When $C_{\min}/20$ is less than I_2 , the value of D should either be based on the battery manufacturer's data or be 1.75.

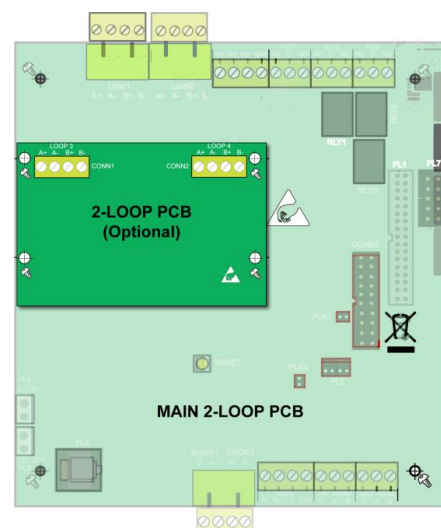
In practice, $C_{\min}$ is unlikely to correspond exactly to an available battery capacity and therefore the next highest available capacity size should be used.

Appendix 4 – Fitting the 2-Loop PCB (Optional)

An optional 2-Loop PCB (Part No. Z02LOOP/X) provides two additional analogue loop connections (Loop3 & Loop4) if required. Note this PCB is not available for the 1 loop EACIE panel version (EAP1/8/CA/CHASSIS).

With reference to the diagram right:

- Take the 2-Loop PCB and carefully align its holes up with the four mounting holes on the Main 2-Loop PCB.
- Insert the four PCB 'plug-on' pillars (supplied with the 2-Loop PCB) through the holes on the 2-Loop PCB and into the holes on the Main 2-Loop PCB. Push the pillars until they click and lock in position.
- Refer to section 5.7 for analogue loop connections.



Appendix 5 – EACIE Panel Technical Specification

EACIE Panel Part Numbers	
EAP1/8/CA/CHASSIS	8 Zone 1 Loop EVAC-ALERT Panel Chassis ONLY c/w 5A PSU, CAST Protocol. Requires EAPBOX.
EAP2/8/CA/CHASSIS	8 Zone 2 Loop EVAC-ALERT Panel Chassis ONLY c/w 5A PSU, CAST Protocol. Requires EAPBOX.
EAP4/16/CA/CHASSIS	16 Zone, 4 Loop EVAC-ALERT Panel Chassis ONLY c/w 5A PSU, CAST Protocol. Requires EAPBOX.
EAP4/24/CA/CHASSIS	24 Zone, 4 Loop EVAC-ALERT Panel Chassis ONLY c/w 5A PSU, CAST Protocol. Requires EAPBOX.
EAP4/32/CA/CHASSIS	32 Zone, 4 Loop EVAC-ALERT Panel Chassis ONLY c/w 5A PSU, CAST Protocol. Requires EAPBOX.
EAP4/40/CA/CHASSIS	40 Zone, 4 Loop EVAC-ALERT Panel Chassis ONLY c/w 5A PSU, CAST Protocol. Requires EAPBOX.
EAP4/48/CA/CHASSIS	48 Zone, 4 Loop EVAC-ALERT Panel Chassis ONLY c/w 5A PSU, CAST Protocol. Requires EAPBOX.
EAPBOX	EVAC-ALERT Panel Cabinet to house 1 x EAP chassis. Custom FRS area specific 'N' security key required.
Approvals / Certifications	
Compliant with:	Evacuation Alert Panel designed to meet BS 8629. PSU certified to EN54-4/A2.
Power Supply, Charger and Batteries	
Mains supply operating voltage:	230V ~ 50/60Hz
Mains rated current:	1.3A r.m.s.
Internal power supply:	27.3Vdc ±1% nominal @ 20°C
Total output current limited to:	5A @ 230Vac (4A with 1A battery charging)
Battery charge capacity:	7Ah min to 22Ah max.
Maximum battery size and type:	2 x 12V, up to 22Ah capacity VRLA connected in series. YUASA REC22-12I batteries are recommended.
Battery standby time:	72 hours plus 30 minutes in alarm (the standby time of 72 hours is dependent on the system specification – see BS 8629)
Power rating:	'I max a' = 4A; 'I max b' = 5A; 'I min' = 0mA
Max. internal battery resistance 'Ri max':	600mΩ
Maximum power output voltage 'V max':	30V
Minimum power output voltage 'V min':	20V ± 2% with mains On; 21V ± 2% with mains Off
Output ripple voltage (peak-to-peak):	≤ 320mV over the full input and output range of the PSU
EACIE panel quiescent currents:	1 loop variant = 110mA; 2 loop variant = 120mA; 4 loop variant = 130mA. Refer to C-TEC's EACIE panel battery calculator tools for details.
Mains supply/battery charger monitored for failure:	√ Yes
Batteries monitored for disconnection and failure:	√ Yes
Earth fault monitoring:	√ Yes
Loop Driver Specification (programmable & monitored)	
Number of loops:	1, 2 or 4 (model dependent). 1 loop variant - fixed. 2 loop variant - may be extended to 4 loops plus optional network card. 4 loop variant - optional network card.
Loop driver PCB types:	Main 1, 2 or 4-loop PCB
Max. output current per loop:	450mA (40V max.) per loop
Communication Protocol:	C-TEC's CAST
Max. cable length per loop:	1km
Cable type:	2-core screened, enhanced fire-resistant cable, min. size 1mm ² for loop wiring, network wiring and wiring to sounders in flats.
Max. allowable loop impedance (each conductor):	20 ohm
Max. cable capacitance:	.27μF
Auto-polling from each loop end:	√ Yes
Line monitored for o/c and s/c faults:	√ Yes
Relay Output (programmable)	
Relay type:	1 x fail safe fault relay to alarm receiving centre (ARC). Volt-free, single-pole changeover. Max. switch current 1A, Max. switch voltage 30Vdc. Active when faults are present or on total power failure.
Fuses (compliant to IEC EN60127 Pt2)	
Primary fuse (F1):	T 2 A H 230V, 20mm ceramic (T = Time Delay; H = High Breaking Capacity)
Battery fuse (F2):	7.5A MINI [®] automotive blade fuse
Communication Buses	
Pager / DECT or IoT/BMS interface:	1 x RS232 connector. Compatible with ESPA and C-TEC ENVISION cloud-based data management system.
Diagnostics or IoT/BMS interface:	2 x RS485 connector. Compatible with C-TEC's ENVISION cloud-based data management system.
Programming PC interface:	Via galvanically isolated USB connector (provided on the Z41/CA Control/Display module)
Network	
Network connection:	RS485 Hi-NET high integrity multi-path network connection via optional ZHN Hi-NET card. Up to 8 CAST ZFP panels. Max length between nodes = 1km.
Max. number of Evacuation Alert Zones:	Up to 48 on a standalone EACIE panel. Up to 200 on a shared EACIE panel system.
Indicators and Controls	
User indicators (Switch Module):	Next to toggle switches are individual Evacuation LED (Red) & Zone Fault LED (Yellow).
User controls (Switch Module):	Individual toggle switches to activate/deactivate evacuation alert devices.
User indicators (Status Panel):	Power LED (Green), Power Fault (Yellow), General Fault (Yellow).
User controls (Status Panel):	Silence Fault Sounder.
Maintenance indicators:	LCD Touchscreen, 4.3 inch, 480 x 272 pixel, 24 bit, 16M RGB colour, all relevant EN54 indicators plus 4 programmable indicators.

EACIE Evacuation Alert Control and Indicating Equipment

Maintenance controls:	Interactive touchscreen with menu sensitive buttons. 1 keyswitch provides entry to Access Level 2
Connections	
Connections:	Fixed and plug-on connectors, largest acceptable conductor size 2.5mm ²
Expansion connections:	RS485 peripheral bus connection allows the connection of up to 15 'A-Bus' PCBs (2 control cores plus screen plus 2 cores for power).
EACIE Panel Programming Module	
Control / Display module:	Control/Display module c/w LCD, touchscreen, keyswitch, 16 LEDs. Part No. Z41/CA.
Mechanical	
Protective cabinet overall dimensions (mm):	700 (H) x 741 (W) x 200 (D)
Protective cabinet weight (empty):	69kg
Protective cabinet construction & finish:	Silver grey steel RAL 9006 silver grey epoxy paint
Protective cabinet locking system:	Lock certified to EN 1303
Keys (carried by registered key holder):	"N" High Security keys included
Protective cabinet compliance:	STS 205 Issue 4/BR2 BMTrada Certificate
EACIE panel overall dimensions (mm):	442 (H) x 431 (W) x 153 (D) including toggle switch heights
EACIE panel weight (excluding batteries):	7.5 - 10kg (model dependent)
EACIE panel weight (including batteries):	20 – 22.5kg (model dependent)
Environmental	
Operating temperature:	-10°C to +40°C
Maximum humidity:	95 % non-condensing
Protective cabinet IP Rating (to EN 60529):	IP30

Appendix 6 – Glossary of Terms

AL1: Access Level 1 (for general users).

AL2: Access Level 2 (for authorised users).

AL3: Access Level 3 (for authorised systems engineers).

ARC: Alarm Receiving Centre.

BS 7671: IET Wiring Regulations.

BS 8629:2019: Evacuation Systems for Fire & Rescue Services. Code of practice for the design, installation, commissioning and maintenance of evacuation alert systems for use by fire and rescue services in buildings containing flats.

EACIE: Evacuation Alert Control & Indicating Equipment. Component of an evacuation alert system through which evacuation alert devices (sounders) can be controlled, and that is used to monitor the correct functioning of the system and give audible and visible warning of any faults.

EAS: Evacuation Alert System. Comprises of evacuation alert devices, sounder controllers and an EACIE panel with manual controls for the FRS to activate the evacuation alert devices.

EN 54-2: Fire Detection and Fire Alarm Systems. Control and Indicating Equipment.

EN 54-3: Fire Detection and Fire Alarm Systems. Sounders.

EN 54-4: Fire Detection and Fire Alarm Systems. Power Supply Equipment.

Evacuation Alert Device (sounder): Component of the evacuation alert system, not incorporated in the EACIE, which is used to signal to the occupants of a flat that evacuation is required by the FRS.

Evacuation Alert Zone: May contain flats, part floors, or a complete floor of a building.

FRS: Fire & Rescue Service.

