1 Introduction

Panel Software version 4.63 introduces compliance with the operational changes required by the Construction Products Directive (CPD). The panel can also be configured to meet the requirement of EN54 Part 13 whereby the sounder circuits are monitored for partial-open and partial-short circuits.

In addition, the panel function now conforms to the changes resulting from EN54 Part 2, paragraph 9.4.2 amendment A1 which states that separate, continuously-visable indications of ALL individual sounder disablements must be provided. However, compliance with this requirement in hardware would necessitate a significant amount of product re-design, so a method of meeting this requirement has been devised via panel software only. The panel default setting satisfies this requirement in that the disablement of individual sounder or control outputs are disallowed; the disable/enable menu options have changed to allow only the selection of ALL outputs.

Networking - this common disablement requirement applies to the network as a whole and not to panels independently.

In compliance with EN54 Part 13 the features described below are provided:

1 The panel can be configured so that it continuously monitors the sounder circuit outputs for partial-open and partial-short circuits. This function requires the new Processor PCB (PN: 124-360) and new Base PCB (PN: 124-361) to be fitted. Refer to the Installation & Commissioning Manual (PN: 997-274-000-6) for more details.

2 The panel continuously monitors the impedance of the battery wiring. If the impedance exceeds the limit a fault is indicated. Refer to the Installation & Commissioning Manual (PN: 997-274-000-6) for more details.

This addendum describes the additional panel configuration options for accessing or enabling these new features.

Sections 4, 5 and 6 of this document describe other functions that have been included to meet the requirements of EN54-2. Descriptions of the features offered by these additional functions are given in those sections.

1.1 Compatibility Issues

These features will only be configurable when the following installation requirements are met:

i Panel software at version 4.63, or later

ii LIB* software at version 13.02, or later

iii Processor PCB (PN: 124-360, Iss 01, or later)

iv Base PCB (PN: 124-361, Iss 01, or later)

* Includes the two loop circuits on the Base PCB.

Panel Software version 4.63

1.2 Off-line Configuration Tool

If panel software 4.5x, or earlier is used with the new Processor PCB a system fault will occur. The fault tab will appear with the 'Number of Faults = 0' and the System Fault LED will light.

Not all features described in this document are configurable using the Windows™ Configuration Tool (WCT).

As with earlier versions of panel software, the recommended method of configuring fire alarm control panels with these new features is by using the WCT v. 2.18, or later.

If the WCT is used to download panel configurations some local editing is still required at each panel as with previous versions of panel software. This procedure has not changed.

1.3 EN54 Functions

This is a change to the Panel Cofiguration Manual, Section 1.6 EN54 Functions

The declaration of conformity with the requirements of EN54-2 has changed. The panel now conforms with the EN54-2 options with requirements as listed in the table below:

Options	Clause
Indications:	
Fault signal from fire protection equipment	7.10.4
Recording of the number of entries into fire alarm condition	7.13
Fault signals from points	8.3
Controls:	
Delay to Outputs	7.11.1
Manual or automatic switching of delays to outputs	7.11.2
Dependency on more than one alarm signal, Type B	7.12.2
Dependency on more than one alarm signal, Type C	7.12.3
Disablement of each address point	9.5
Test condition	10
Outputs:	
Fire alarm device(s)	7.8
Fire alarm routing equipment	7.9.1
Fire alarm routing equipment with alarm confimation	7.9.2
Automatic fire protection equipment: Type A	7.10.1
Automatic fire protection equipment: Type C	7.10.3
Fault warning routing equipment	8.9

2 Sounder Circuit Supervision

There is a new sounder circuit fault message which can only be displayed when the later Processor and Base PCBs are fitted.

Base PCB PN:	Processor PCB PN:	OK?
124-301	124-360	Yes
124-361	124-360	Yes[1]
124-361	124-302	Yes

[1] Only combination where a 'Sounder Circuits: CPU Fault' message can occur.

At power up the new Processor PCB (PN: 124-360) establishes which type Base PCB is fitted. If the latest Base PCB (PN: 124-361) is present the Processor PCB monitors the Sounder circuit supervision CPU located on the Base PCB.

If the Sounder Circuit supervision CPU develops a fault and the Processor PCB is unable, after three successive attempts, to reset it the following fault message is displayed:

'Sounder Circuits: CPU Fault'

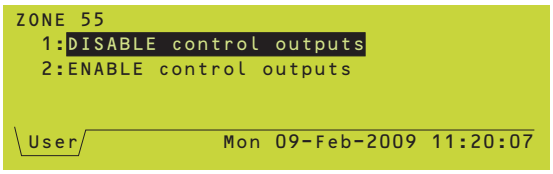
Action: Power the panel down and up again. If problem persists replace the Base PCB.

3 Disable Sounders

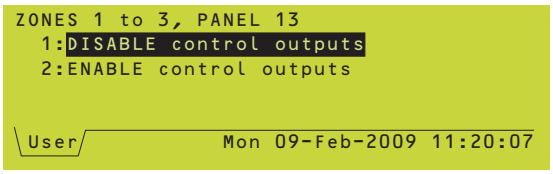
These are changes to the Operating Manual, Section 7.3

There are new restrictions with the selection of sounders for a disablement function. When accessing the ***2: Disable/Enable/2: Alarm Ouputs by Zone*** menus there are restrictions to the available options when disabling outputs by zone. If a specific zone or range of zones is selected, or ALL zones if the panel is on a network, the disable and enable sounder options are not displayed. Instead, the following typical menu options are displayed:

Selection of a specific zone:

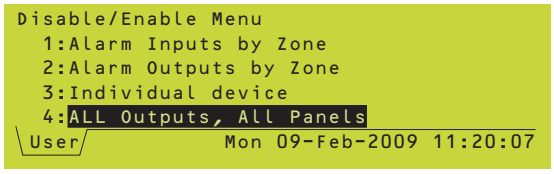


Selection of a range of zones:

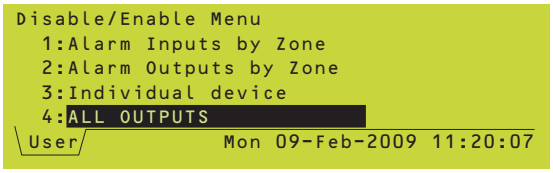


To disable or enable sounders a new menu option ***2: Disable/Enable/4: ALL Outputs, All Panels*** is available. Select ALL OUTPUTS (for stand-alone panels) or ALL Outputs, All Panels (for networked panels). The next Disable/Enable menu displays various options including the selection of sounders.

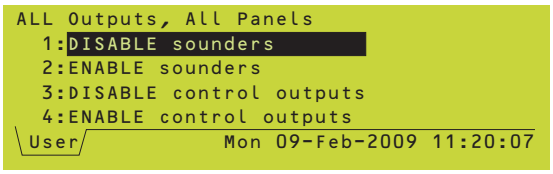
Menu option with a networked panel:



Menu option with a stand-alone panel:

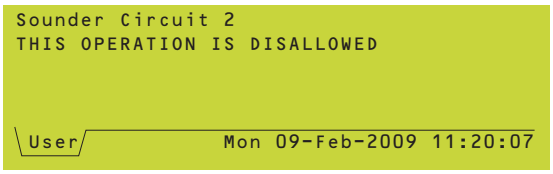


Disable/Enable menu with sounder options:



If the option ***3: Individual Device*** is selected from the main Disable/Enable menu and an individual device or sounder is selected the operation aborts to the top-level menu with the typical warning messages displayed.

Note: Similar restrictions apply if the * key is pressed from the Disable tab on a zone or device which is already disabled.



4 Device Coincidence

This feature satisfies the requirements of EN54-2: paragraph 7.12.2 Type B dependency (Option with Requirement) in that a panel configuration option is provided to enable a fire alarm condition of the panel, or system, to be deferred until certain coincidence criteria have been satisfied. This applies to sensors only.

Note: This feature operates completely independently of any coincidence requirements, already provided for in earlier versions of panel software, applied against Control-by-Event (CBE) or Control Matrix rules in the panel.

To better explain how this differs from the existing arrangement: with CBE rules,coincidence criteria rules are checked after the system has been put into an alarm state. With this new feature, the panel (or system) has not yet entered an alarm state, having only entered a pre-alarm state - an alarm state will only be entered once the required coincidence rules are satisfied.

4.1 Using Coincidence Levels

The following possible coincidence levels, or rules, may be applied to any sensor, or ALL sensors, in a fire alarm system:

1 None - the system goes into alarm status immediately.

2 Two or more sensors *in same zone*.

3 Two or more sensors *in different zones but in same panel*.

4 Two or more sensors *in same or different zones and in same panel*.

5 Two or more sensors *in different zones, in the same or different panels (network systems only)*.

6 Two or more sensors *in same or different zones, in the same or different panels (network systems only)*.

The default is ‘1’ - i.e. no coincidence rules.

Coincidence Limitations

Coincidence levels cannot be applied to modules. For input modules the effective coincidence level is always ‘1’, i.e. NONE. An alarm input from the module puts the system immediately into alarm.

Coincidence levels of *more than two* devices, or zones, and coincidence levels involving *combinations of different device types* are not supported in this software release.

4.2 ‘First Alarm’ Status

If a sensor, or sensors, has/have gone into alarm status but the coincidence level associated with this/these device(s) is not yet satisfied then it/they is/are placed in FIRST FIRE status. FIRST FIRE status is reported at the panel as for a PRE-ALARM; with all indications on the LCD and other visual and audible annunciations and any CBE actions configured for PRE-ALARM. The red

any CBE actions configured for PRE-ALARM. The red FIRE LED annunciator will not be lit.

The panel treats the FIRST ALARM status input exactly the same as a PRE-ALARM input, even though this status is not the result of a sensor's analogue value having not attained the level of FIRE.

A system may be reset at any time while a FIRST FIRE status condition exists. However, if the sensor(s) still registers an alarm input then the FIRST ALARM will be reinstated after the reset.

IMPORTANT - if a sensor input returns to normal while the system is in FIRST FIRE status, a RETURN FROM FIRE event is logged; the sensor remains in FIRST FIRE state and subsequently **may be promoted to FIRE status before a reset has been achieved**.

4.3 'First Fire' to 'Fire' Status

Once a coincidence requirement has been satisfied, or a sensor (or module) for which no coincidence requirement is programmed has gone into Alarm state, then all sensors that are currently in the FIRST FIRE state, even those that are not included in the coincidence rule, are promoted immediately to full FIRE state. In short, it is not possible for sensors in FIRST FIRE state and devices in full FIRE state to exist simultaneously in the same system, except in different sectors of a network configured for network event filtering).

Note: Any delays set up in the CBE will not take effect until the promotion of FIRST FIRE status to full FIRE state.

FIRE Event Logging

FIRE events are logged at the time of promotion to full FIRE state - the device whose alarm completed the coincidence rule criteria is logged as the first FIRE on the LCD and the other promoted sensors immediately afterwards. This ensures that logging of fire alarm events does not pre-date the transition of the system into Fire status.

4.4 Coincidence Conflicts

When two sensors are *both* in FIRST FIRE state and their *individual* coincidence configurations do not agree as to whether coincidence criteria has been confirmed, the ruling is as follows:

- If *either* of the sensor's configuration states that a coincidence is satisfied, then that coincidence *is* satisfied.

With reference to the tables below left, this can be illustrated using a number of scenarios:

Sensor	Zone	Coincidence Level
11	1	2: Two in same zone
12	1	3: Two in different zones
13	1	2: Two in same zone
14	1	3: Two in different zones
15	2	2: Two in same zone
16	2	3: Two in different zones

First Scenario - sensors 11 and 12 report a FIRE condition.

Result - **FIRE**

Reason - As both sensors are in the same zone, then Sensor 12 coincidence criteria are not satisfied; sensor 11 coincidence criteria are satisfied.

Sensor	Zone	Coincidence Level
11	1	2: Two in same zone
12	1	3: Two in different zones
13	1	2: Two in same zone
14	1	3: Two in different zones
15	2	2: Two in same zone
16	2	3: Two in different zones

Second Scenario - sensors 11 and 13 report a FIRE condition.

Result - **FIRE**

Reason - As both sensors are in the same zone, then Sensor 11 and 13 coincidence criteria are satisfied.

Sensor	Zone	Coincidence Level
11	1	2: Two in same zone
12	1	3: Two in different zones
13	1	2: Two in same zone
14	1	3: Two in different zones
15	2	2: Two in same zone
16	2	3: Two in different zones

Third Scenario - sensors 12 and 14 report a FIRE condition.

Result - **FIRST FIRE**

Reason - Neither sensor's coincidence criteria are satisfied, hence coincidence is not satisfied.

Sensor	Zone	Coincidence Level
11	1	2: Two in same zone
12	1	3: Two in different zones
13	1	2: Two in same zone
14	1	3: Two in different zones
15	2	2: Two in same zone
16	2	3: Two in different zones

Fourth Scenario - sensors 11 and 15 report a FIRE condition.

Result - **FIRST FIRE**

Reason - As the sensors are in different zones, neither sensor's coincidence criteria are satisfied, hence coincidence is not satisfied.

Sensor	Zone	Coincidence Level
11	1	2: Two in same zone
12	1	3: Two in different zones
13	1	2: Two in same zone
14	1	3: Two in different zones
15	2	2: Two in same zone
16	2	3: Two in different zones

Fifth Scenario - sensors 11 and 16 report a FIRE condition.

Result - **FIRE**

Reason - As the sensors are in different zones, sensor 11 coincidence criteria are not satisfied; sensor 16 coincidence criteria are satisfied, hence coincidence is satisfied.

Note: The shaded rows above indicate the sensors/ zones that are in an alarm state.

Important:

It is strongly recommended that coincidence levels must not be mixed in this way within a system as it can lead to confusion as to what constitutes a confirmed fire.

These are changes to the Panel Configuration Manual, Section 5.1.1

4.5 Device Coincidence - Configuration

To configure the coincidence level for sensors, navigate to the ***6:Configuration/Loop Device Configuration/ Configure Individual Device*** panel menu. Once a sensor has been selected and the main configuration is displayed, press the right-arrow push-button repeatedly until the following typical display is reached:

```
Device Configuration - Loop n Sensor nn
Type MULT  Zone   nn  Cell   n
Zone  <(no zone text defined)          >
Loc.  <Device text description         >
Alarm Coincidence: NONE
◆▶=select *=edit ▲▼=next device ✓=finish
```

The default coincidence level, NONE, is high-lighted. Press the 'star' push-button to edit the selected sensor's coincidence level. The following options (spread over two screens) are selectable:

```
Device Configuration - Loop n Sensor nn
Set Coincidence Level required to
confirm Alarm on this Device:
    1: NONE
    2: >1 Device in Zone
  ▼ 3: >1 Zone in Panel
```

```
Device Configuration - Loop n Sensor nn
Set Coincidence Level required to
confirm Alarm on this Device:
  ▲ 4: >1 Device in Panel
    5: >1 Zone in System
    6: >1 Device in System
```

Select the appropriate device/zone coincidence option.

Caution

When the level is changed from the default of NONE to any of the other selectable levels, then on the first, and only the first, time this selection is made the following warning message is displayed briefly:

```
Device Configuration - Loop n Sensor nn
CAUTION: This setting will cause Alarm
Confirmation and action from this
Device to be deferred.
```

5 Sounder Operation after 'SILENCE SOUNDERS'

These are changes to the Panel Configuration Manual, Section 11 - Panel Settings.

Access Level 3A.

The response by the panel to the detection of a new alarm after the sounders have been silenced, may now be configured as follows:

1 Always Re-sound

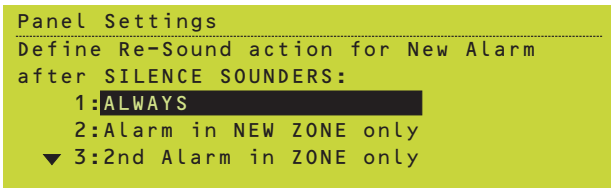
2 Re-sound only when the new alarm is in a new zone not previously in alarm state.

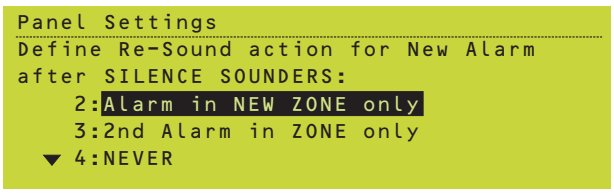
3 Re-sound only when the new alarm is in a zone already in alarm state.

4 Never re-sound.

5.1 Configure 'Sounder Operation'

Enter the access level 3A passcode and navigate to the following panel configuration menu: ***6:Configuration/ 6:Panel Settings/10:Panel Functions***. Step through the menus until the 'Define Re-sound...' option is displayed:





Make the desired selection. Press the 'tick' pushbutton to confirm selection.

6 Configuration of Fault Routing Output Using a Zone Module

Panel Configuration Manual, Section 5.1.4. Change Device Configuration - Modules refers.

A monitored fault routing output can be set up using a sounder output configured as a fault relay output, an input module (M710-CZ) and an RTU01 Routing Termination Unit. The connection between the input module and the third-party fault routing equipment is monitored by the RTU01 which is located at the fault routing equipment end of the monitored circuit.

The contol panel back box has provision for mounting the module internally; threaded fixing points allow the module to be fitted in either of two positions at the bottom of the box (either side of the standby batteries). The M710-CZ module uses an address on the loop and can be configured (using the panel menus or off-line configuration tool) to provide a fault indication should a comms fault occur between the zone monitor module and the RTU01.

6.1 Configuring the Fault Routing Output

When configuring the M710-CZ module it is displayed in the panel menus as a ZMX device type. The module is to be configured as a fault routing output with short- and open-circuit supervision enabled. To configure the fault routing output function for this module, access the ***6: Configuration/Loop Device Configuration/Configure Individual Device*** menu. The following typical screeen is displayed:

```
Device Configuration - Loop n Sensor nn
Type ZMX   Zone   nn  Cell   n
Zone  <Fault Relay Output              >
Loc.  <Device text description         >
Supervision: ALARM=OFF S/C=ON  O/C=ON  ▶
◀▶=select *=edit ▲▼=next device ✓=finish
```

In the above screen appropriate zone text for the fault relay output has been entered to clearly identify the function of this zone monitor module.

It is essential that this module is configured exactly as follows:

ALARM = OFF

S/C = ON

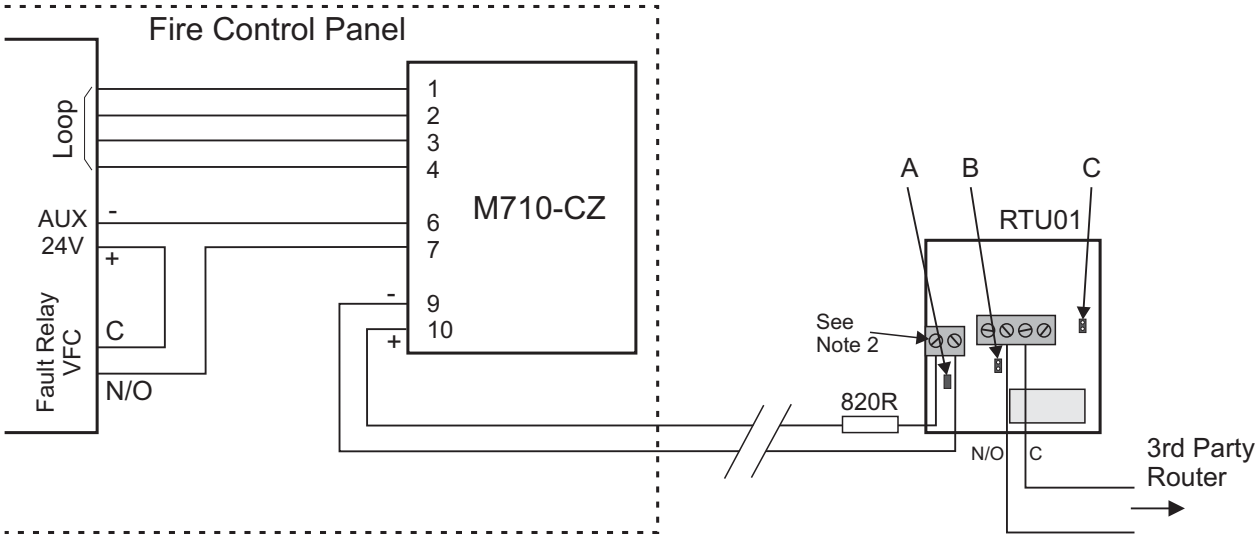
O/C = ON

To prevent an ‘extra fault’ indication at the panel in the event of the control module activation due to a fault routing transmission fault, a rule in the control matrix rule needs to be created as follows:

INPUT = FAULT - general panel fault

OUTPUT = Loop ‘n’ Module ‘m’ (individual reference to this specific zone monitor module).

The diagram below shows the wiring connections that are required between the fire control panel, conventional zone module and the RTU01 PCB.



RTU01 Unit - links

Link A - fitted

Link B - not fitted

Link C - not fitted.

Notes:

1 To avoid a fault condition, the 820R resistor must be in line with the connection to the + terminal of the RTU01 PCB 2-way connector.

2 If the module reports open-circuit faults for the FRM, fit the end-of-line capacitor supplied with the M710-CZ module across the + and - terminals of the RTU01.

Appendix 1 - VdS 2540 Options with Requirements

In addition to satisfying the requirements of EN54-2 Options with Requirements, the table below defines whether the CIE is configurable in accordance with the mandatory or optional requirements of VdS 2540.

EN54-2 Option	Description	VdS 2540 Option	C.I.E. Configurable?
	INDICATIONS		
7.10.4	Fault signal from fire protection equipment	Required	Yes
7.13	Alarm counter	Required	Yes
8.3	Fault signals from points	Optional	Yes
8.4	Total loss of power supply	Optional	No
	CONTROLS		
7.11.1	Delays to outputs	Optional	Yes
7.11.2	Manual or automatic switching of delays to outputs	Optional	Yes
7.12.1	Dependency on more than one alarm signal: Type A	Optional	No
7.12.2	Dependency on more than one alarm signal: Type B	Required	Yes
7.12.3	Dependency on more than one alarm signal: Type C	Prohibited	Yes
9.5	Disablement of each address point	Optional	Yes
10	Test condition	Required	Yes
	OUTPUTS		
7.8	Fire alarm device(s)	Required	Yes
7.9.1	Fire alarm routing equipment	Required	Yes
7.9.2	Fire alarm routing equipment with alarm confirmation	Required	Yes
7.10.1	Automatic fire protection equipment: Type A	Optional	Yes
7.10.2	Automatic fire protection equipment: Type B	Optional	No
7.10.3	Automatic fire protection equipment: Type C	Required	Yes
8.9	Fault warning routing equipment	Required	Yes
11	Standardized I/O interface[1]	Required	Yes

[1] Interface meets VdS 2540 which requires DIN 14675 & 4662, but not full EN54-2, 11.

A1 Fault Signal From CIE

This is a VdS 2540 requirement. The CIE provides for this EN54-2 option.

The CIE comprises a volt-free contact relay configured as a dedicated fault output. Refer to **Section 5.7.2 Cables and Wiring** and **Section 7.4.7 Fault Relay Wiring** of the Installation & Commissioning Manual for further details.

A2 Alarm Counter

The CIE can record a maximum number of 65,535 alarm events. Once this value is reached the counter no longer increments. The CIE provides a facility, at access level 4, to manually clear the alarm counter.

A3 Fault Signals from Points

This is an optional VdS 2540 requirement. The CIE provides a configurable option. Refer to Section 5.3.5 Fault Event Display of the Operating Manual for further details.

A4 Total Loss of Power Supply

This is an optional VdS 2540 requirement. The CIE does not allow this EN54-2 option to be configured.

A5 Delays to Outputs

This is an optional VdS 2540 requirement. The CIE allows this EN54-2 option to be configured. Refer to the CIE Panel Configuration Manual, **Sections 3.11 Time of Day, 3.15 Delays** and **7.4 Output Modes**.

With Type B applications, if an input module is used to provide a return signal from the external system, the module must be configured as a type MON to prevent this input overriding Day/Night Mode switched delays.

A6 Manual or Automatic Switching of Delays to Outputs

This is an optional VdS 2540 requirement. The CIE does not allow this EN 54-2 option to be configured.

A7 Dependency on More Than One Alarm Signal: Type A

This is an optional VdS 2540 requirement. The CIE does not allow this EN 54-2 option to be configured.

A8 Dependency on More Than One Alarm Signal: Type B

This is also a VdS 2540 requirement. The CIE allows this EN54-2 option to be configured.

For further details, refer to **Section 4 Coincidence** of this document.

A9 Dependency on More Than One Alarm Signal: Type C

This requirement is prohibited under VdS 2540.

The CIE does not allow this EN54-2 option to be configured.

A10 Disablement of Each Address Point

This is an optional VdS 2540 requirement. The CIE complies with this EN54-2 option requirement.

For further details, refer to **Section 7.4 Individual Device** of the Operating Manual.

A11 Test Condition

This is also a VdS 2540 requirement. The CIE complies, using an access level 3 passcode, with this EN54-2 option requirement.

For further details, refer to **Section 6.3 Control Output Tests** of the Operating Manual.

A12 Fire Alarm Device(s)

This is also a VdS 2540 requirement. To satisfy the requirements of EN54-2 7.8 the CIE is provided with the required access level 2 controls as described in the following user documentation:

7.8a - Refer to **Section 4.3 Silence/Resound Sounders** of the Operating Manual.

7.8b - Refer to **Section 4.3 Silence/Resound Sounders** of the Operating Manual.

7.8d - Refer to **Section 5 Sounder Operation after 'SILENCE SOUNDERS'** of this document.

A13 Fire Alarm Routing Equipment (7.9.1)

This is also a VdS 2540 requirement. The CIE allows this EN54-2 option to be configured.

A dedicated fire output (transfer) relay is provided by the CIE. In addition, the internal sounder/relay circuits are configurable as remote fire outputs. The CIE provides an LED to indicate when the fire relay or any configured remote fire outputs are active. Refer to **Section 2 Panel Controls & Indicators** of the Operating Manual and **Section 11.18 Remote Fire Output Options** of the Panel Configuration Manual.

A14 Fire Alarm Routing Equipment with Alarm Confirmation (7.9.2)

This is also a VdS 2540 requirement. The CIE allows this EN54-2 option to be configured.

The CIE allows a remote fire output (transfer) to be configured. In addition, a fire output active condition, using a return signal from the remote fire signal routing equipment, can be configured using digital input circuit 2. With the panel function set to VdS mode activation of a fire alarm routing equipment return signal drives this indicator. More details can be found in the appropriate, translated product manuals.

A15 Automatic Fire Protection: Type A

This is an optional VdS 2540 requirement. The CIE does **not** allow this EN54-2 option to be configured.

A16 Automatic Fire Protection: Type B

This is an optional VdS 2540 requirement. The CIE allows this EN54-2 option to be configured. Refer to Appendix 2 of this document.

A17 Automatic Fire Protection: Type C

This is also a VdS 2540 requirement. The CIE allows this EN54-2 option to be configured.Refer to Appendix 2 of this document.

A18 Fault Warning Routing Equipment

This is also a VdS 2540 requirement. The CIE allows this EN54-2 option to be configured.

The CIE may be configured to provide a fault signal to external equipment, such as a fault transmission router. Refer to Section 6 of this document for further details.

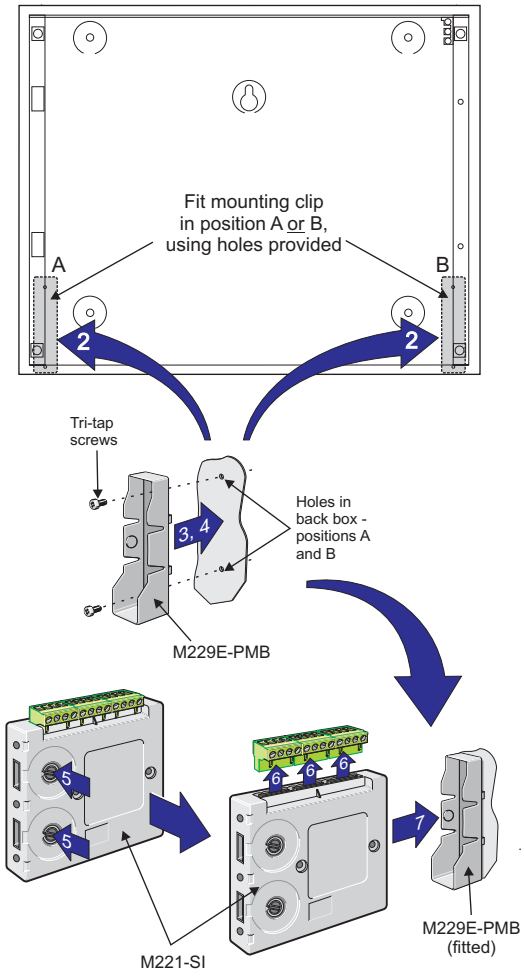
A19 Standardized I/O Interface

This is also a VdS 2540 requirement. The CIE does not fully support the requirements of EN54 Section 11. However, it does meet the requirements of VdS 2540 which requires the ability to connect to an FBF (fire brigade panel). More details can be found in the appropriate, translated product manuals.

Appendix 2 - Module M221-SI Interface to Extinguishing Release Control Equipment (SST)

The M221-SI Module Kit (PN: 020-877) is used to interface a fire control panel with approved fire extinguishant release control equipment (SST). The module must be mounted in the fire control panel internally using the mounting clip and screws provided. Connection to the fire control panel and SST equipment is also described in this document.

With reference to the standard back box illustrated at left, proceed as follows:



1 Remove the cover from the fire control panel (refer to the panel user documentation).

2 Locate the module on the back face of the back box, close to the bottom - use position ‘A’ or ‘B’.

3 Having selected the mounting position, offer the module mounting clip to the pair of holes provided - ensure that it is the correct way up (see drawing).

4 Secure the clip using the two M4 x6mm tri-tap screws provided.

5 Set the rotary address switch to an address other than 0, while making sure that a duplicate address is not set.

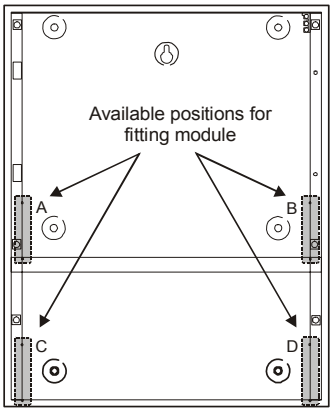
6 Remove the three wiring connectors from the module until required for making wiring connections (see overleaf for details).

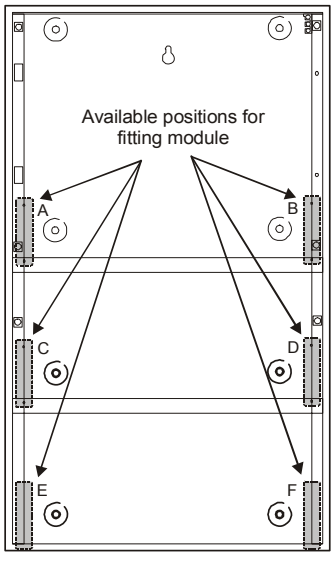
7 With the module correctly orientated, insert it into the fitted mounting clip.

8 Refer overleaf for details on the module wiring connections

Extended & Double-extended Back Boxes

The drawings below show all the location options for fitting the M221-SI module when using the extended or double-extended back boxes.



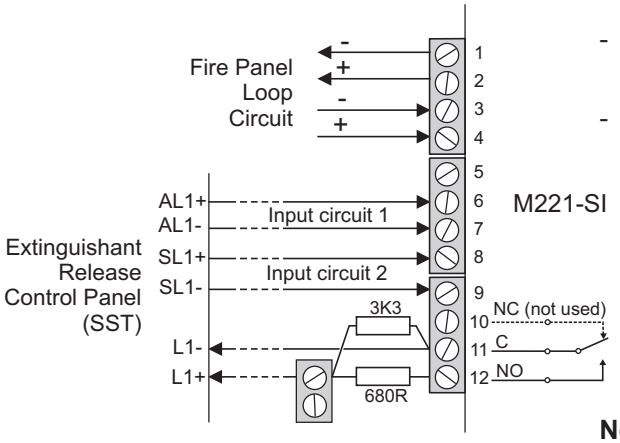


M221-SI Wiring Procedure

The extinguishing system communicates with the panel using an M221-SI monitor module (2 inputs/1 output) on the loop (or can be a separate spur). The module provides the control and status indication interface between the fire control panel and the extinguishant release control panel.

Make the following wiring connections to the M221-SI module:

- Loop wiring - connectors 1, 2, 3 and 4
- First input - connectors 6, 7 (connected to AL1+ and AL1-)
- Second input - connectors 8, 9 (connected to SL1+ and SL1-)
- Output - connectors 11(C), 12 (NO) (connected to L1- and L1+).



Note: To avoid an extinguishing system fault indication an unused input must have a 3K3 EOL resistor fitted.

The M221-SI module output circuit must have two resistors (a 680R and a 3K3) connected as shown below. Use a wiring termination block to connect the 'L1+' and one end of each resistor across the module's 'C' and 'NO' relay (11 and 12) contacts. The 'NC' connection (10) is not used in this application.