

FC1D2 FIRECLASS Display Only Repeater

Part No: 557.200.955

Introduction

This leaflet contains installation, commissioning and brief user instructions for the FireClass Display Only Repeater (FC1D2) and zonal displays with the following options:

- FireClass FC1D2 - wall mounted with a deep back cover (P-WDP)
- FireClass 80-way zonal display shallow (FCZ8DS) - wall mounted with a deep back cover (P-WDP)
- FireClass FC1D2 - wall mounted with a shallow back cover (P-WSH)
- FireClass 80-way zonal display shallow (FCZ8DS) - wall mounted with a shallow back cover (P-WSH)

The FC1D2 is supplied with the shallow back cover (P-WSH). The P-WSH is suitable only for installations where the repeater panel is flush mounted to the wall/cabinet door and cables are hidden. For other installations, use the deep back box (P-WDP). You can configure the FC1D2 to be used in monitored or unmonitored mode. In monitored mode, a device malfunction is detected on the fire control panel and indicated as a fault.

The FC1D2 has a graphical user interface (GUI), refer to the "Graphical User Interface" section for further information on the functions of the product.

Connecting the FC1D2 to the fire panel

The fire panel communicates via the Remote Bus serial port with the FC1D2. Check with the panel's system design or install documents for details of the location of the RBUS port. The

RBUS port also supports other devices which may be connected together with the FC1D2. RBUS complies with RS485 2 wire serial data bus, each FC1D2 contains a RS485 termination network. Any other devices connected to RBUS must not have any terminators fitted. Other RBUS devices may be connected on the 2 wire bus between the panel and a FC1D2 and the 2 wire bus between pairs of FC1D2.

Up to 2 monitored FC1D2s with up to 3 OCMS/MPMs/DCMs may be configured for connection to the panels RBUS.

Interconnecting FC1D2s

To connect more than one FC1D2, adopt a daisy-chaining approach for the data cable and a star topology for the power cable.

The number of FC1D2s that you can connect to a panel is limited by the power supply. Obtain the number using FireClass Designer when you set up the system. You can connect unmonitored FC1D2s to the panel before or after the monitored FC1D2s.

Ensure that the monitored FC1D2s are within the first 32 FC1D2 repeaters. For monitoring to function correctly, position a monitored FC1D2 at the beginning and at the end (or at position 32) of the chain. Any unmonitored FC1D2 repeater placed after position 32 will not flag a fault if it is disconnected. The electrical characteristics of the serial bus comply with IEEE RS-485.

The maximum distance between the FC1D2 and the panel is dependent on the resistance of the DC supply cable and the AC characteristics of the serial data cable. Check that the DC supply cable is connected in a star topology. This ensures that the effect of a cable break is limited.

Technical Specifications	
Parameter	Value
Operating temperature	-5 °C to +40 °C
Storage temperature	-20 °C to +70 °C
Operating and storage maximum relative humidity	95% RH non-condensing
Dimensions (LxHxW in mm)	230x190x28 (from the surface) excluding decorative bezel and projection into wall
Vibration	as per EN54-2
Operating voltage	17-29 VDC
Maximum current	
FC1D2	Max. current: 300mA @17V and 180mA @27V Note: The FC1D2 is a constant power device; low input voltage results in maximum current draw from the line.

Table 1: Technical Specifications

Technical Specifications	
Parameter	Value
Zonal display	Max. current: 60mA (all LEDS on) Quiescent current: 2mA

Table 1: Technical Specifications

DC Power Cable Resistance

The power-up operating requirement is a minimum of 24V from 24V power supply units (PSU) or 27V from EN54-4 power supply equipment (PSE). When operating from either a 24V PSU or a 27 PSE, the minimum voltage at the repeater terminals to power up the device is 18.7V.

For 24V PSU, the maximum voltage drop in the power cable is $24V - 18.7V = 5.3V$.

For 27V PSE with battery backup with a final battery voltage of 21.0V, the maximum voltage drop in the power cable is $21V - 17.7V = 3.3V$.

Note: Power up the system from the mains, not from batteries.

For 27V PSU without a battery backup, the maximum voltage drop in the power cable is $27V - 18.7V = 8.3V$.

For each 80 way zonal display, the maximum current is 60mA. Table 2 summarises the DC power cable maximum resistance:

System configuration	Max. power cable resistance for 27V PSE with battery backup	Max. power cable resistance for 27V PSU (no battery backup required)	Max. power cable resistance for 24V PSU (no battery backup required)
FC1D2 only	7.7 Ohm	27.5 Ohm	17.7 Ohm
FC1D2 + 1 FCZ8DS	6.4 Ohm	23 Ohm	14.7 Ohm
FC1D2 + 2 FCZ8DS	5.5 Ohm	19.7 Ohm	12.6 Ohm
FC1D2 + 3 FCZ8DS	4.8 Ohm	17.3 Ohm	11.0 Ohm

Table 2: DC power cable maximum resistance

Note: Power cable resistance sums both conductors, positive and negative.

Patch cable

The patch cable assembly (refer to item 13 in Figure 1) is used to connect FC1D2 repeaters in all combinations of monitored and unmonitored FC1D2. The cable assembly has four connectors in two block of two. Refer to Figure 2 to identify the connectors.

RS485 Isolated Data Repeater

FC1D2 may be used with an isolated RS485 data repeater to provide increased distance between two FC1D2s or a block of FC1D2s. You can use up to two RS485 data repeaters in series. Refer to Figures 6 and 7. You may power the first RS485 data repeater from the FireClass panel. The second unit must take power from a separate power supply with a 24VDC output. You may use this DC power supply to power the block of FC1D2s between the first and second RS485 data repeaters, refer to Figure 6. You must connect a block of FC1D2s after the second RS485 data repeater to a second DC power supply. Refer to Figure 7.

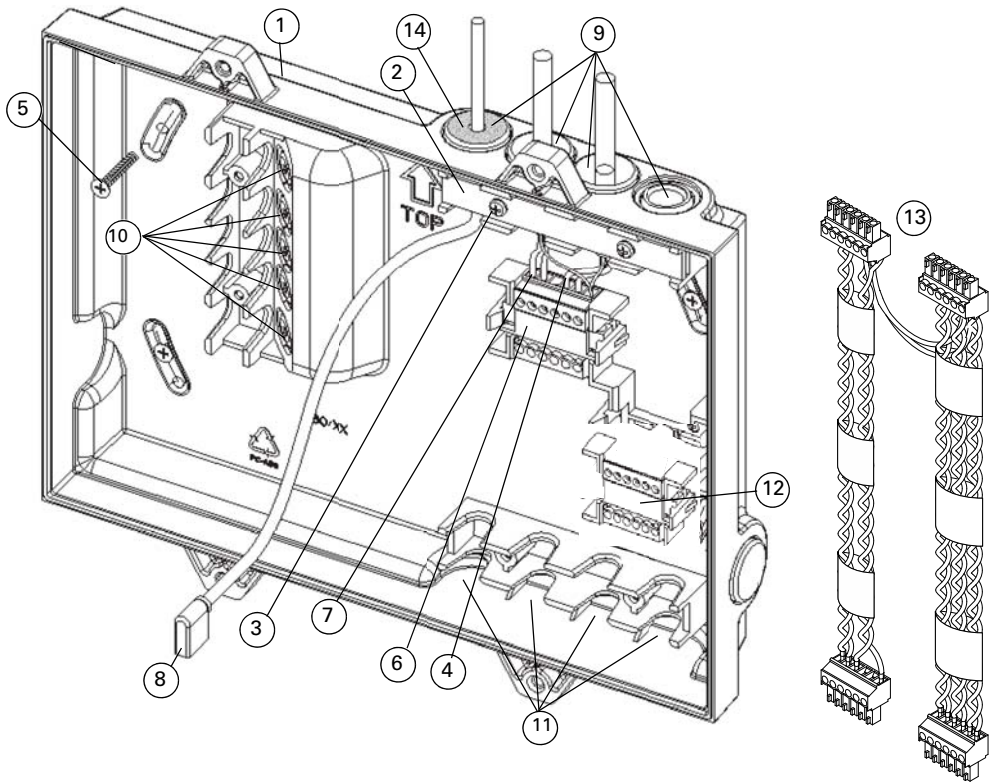
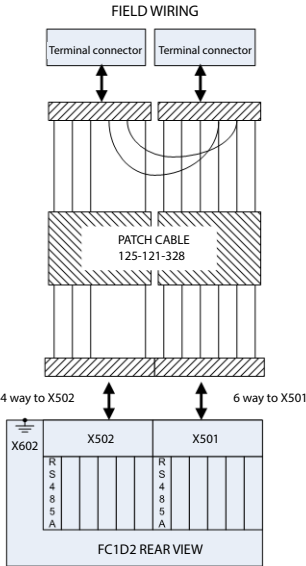


Fig. 1: Inside View of FC1D2

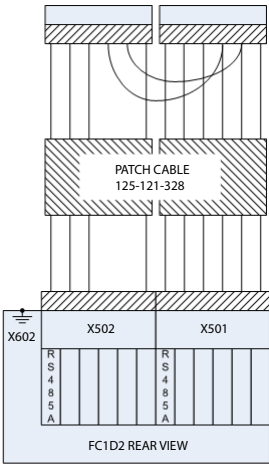
- 1– P-WDP Deep back cover (supplied with 557.200.955)
- 2– Cable holder (supplied with 557.200.955)
- 3– Cable holder screws (2x) (supplied with 557.200.955)
- 4– DC Supply cable (not supplied)
- 5– Fixing screws (4x) (supplied with 557.200.955)
- 6– DC supply terminal (supplied with 557.200.955)
- 7– 2-wire serial cable (not supplied)

- 8– Earth cable (not supplied)
- 9– Cable holes (2x)
- 10– Cable holes (5x)
- 11– Cable holes (4x)
- 12– Second terminal block (supplied with 557.200.955)
- 13– Patch cable (supplied with 557.200.955)
- 14– Sealing grommets (5x) (supplied with 557.200.955)



PATCH CABLE ASSEMBLY AND CONNECTION TO FC1D2 CONNECTORS AND FIELD WIRING TERMINALS

Fig. 2: Unconnected patch cable



PATCH CABLE
CONNECTED TO FC1D2
CONNECTORS AND
FIELD TERMINALS

Fig. 3: Connected patch cable

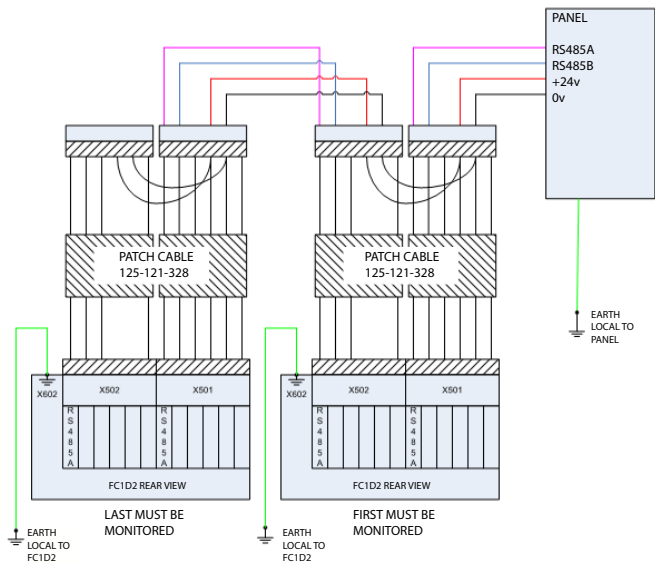


Fig. 4: Interconnection between FireClass panel and two FC1D2 monitored repeaters

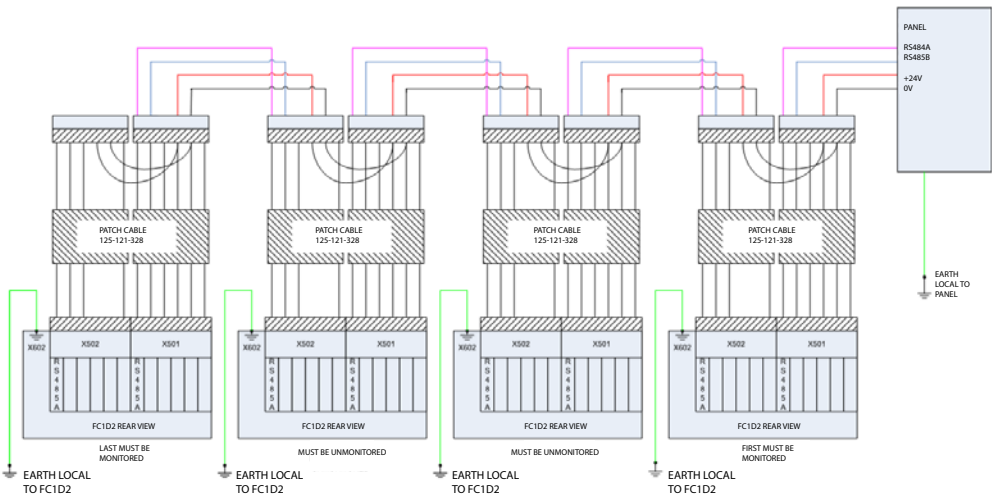


Fig. 5: Interconnection between FireClass panel and four FC1D2 monitored and unmonitored repeaters

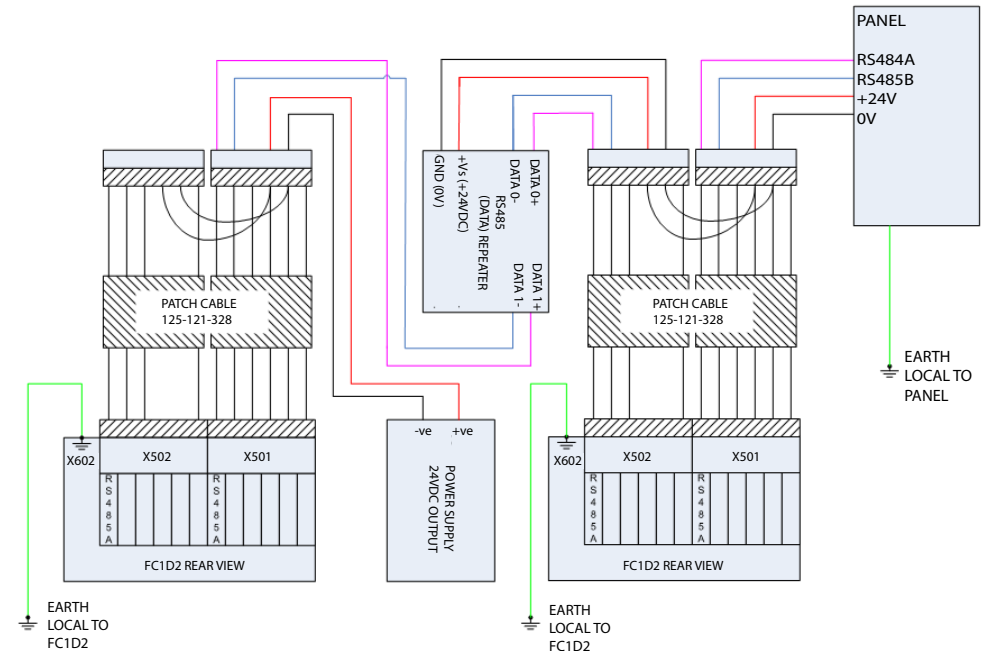


Fig. 6: Interconnection between FireClass panel and FC1D2 monitored repeaters using isolated RS485 isolated (data) repeater, adam-4510S (modules not to scale)

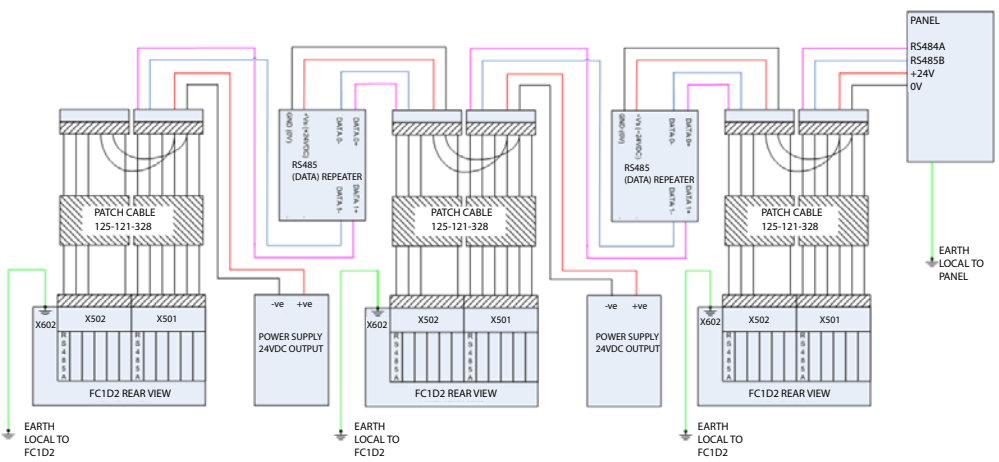


Fig. 7: Interconnection between FireClass panel and FC1D2 monitored repeaters using two isolated RS485 (data) repeaters in series and two power supplies (modules not to scale)

Installing the FC1D2 with a P-WDP

There are three types of cables required to connect the FC1D2 and P-WDP to the fire panel:

- DC supply cable
- 2-wire serial cable
- Earth cable



NOTICE: EARTH Cable Connection
To provide optimum EMC immunity, use an earth cable to connect each FC1D2 to the nearest convenient earth point. The FC1D2 does not require an electrical safety protective earth connection.

Cable Function	Cable Type	Min. conductor size	Max. conductor size
DC power (24V nominal)	2 conductors	0.8mm diameter/ 0.5mm ² area/ 20AWG	1.25mm diameter/ 1.5mm ² / 16AWG
Serial (RS485)	2 conductors, twisted pair	0.3mm diameter/ 0.08mm ² area/ 28AWG	1.25mm diameter/ 1.5mm ² / 16AWG
Earth (EMC)	1 conductor	0.7mm diameter/ 1.5mm ² area/ 16AWG	1.7mm diameter/ 2.5mm ² / 13AWG

Table 3: Cable parameters for the FC1D2



NOTICE
Ensure that the panel is isolated from the mains and that it is not running on batteries.

- 1 Use a 9.3 to 11.5 mm diameter parallel pin punch or similar to remove the circular knock-outs (refer to items 9 and 11 in Figure 1). Use a 6.3 to 9.1 mm parallel pin punch or similar to remove the oval knock-outs (refer to item 10) as required around the outline on the P-WDP. The holes used depend on the direction of the cables going into or out of the P-WDP. A maximum of three holes is required per position on the outside edge of the back cover. When the unit is part of a daisy chain or when you are using it with a FCZ8DS, it may be necessary to use two or three sets of holes.
- 2 Prepare four holes in the wall by following the dimensions given in Figure 8 for the screws plugs supplied.
- 3 Mount the P-WDP on the wall using the screw plugs and fixing screws supplied (refer to item 5).
- 4 Tighten the screws and ensure that the P-WDP is firmly mounted on the wall.

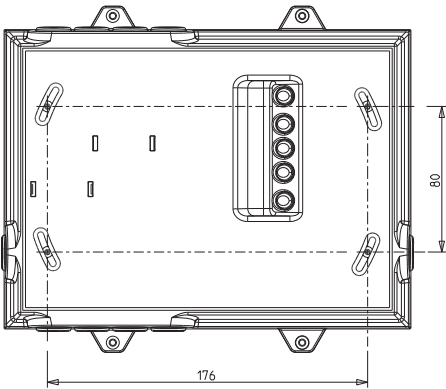


Fig. 8: Back View of P-WDP - Fixing Screw Positions

- 5 Fit the grommets supplied into the cut-out holes made in the P-WDP and then lead the cables through them.
- 6 Connect the power supply cables and the 2-wire serial cables into the terminal block supplied in the order shown in Figure 9.

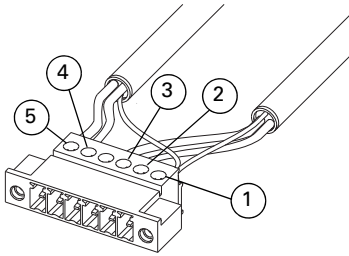


Fig. 9: Terminal Block Connections

1– Shield of cable

2– 0 V

3– +27 V

4– Negative receiver input

5– Positive receiver input

7 Fit the cable holder (refer to item 2 in Figure 1) to the cables and tighten it with the screws (refer to item 3 in Figure 1).

8 For patch cable assembly (item 13 in Figure 1), identify the ends of the cable for connection to the field wiring using two terminal connectors (item 6 in Figure 1). For connection to the FC1D2, refer to Figure 2. Plug one end of

the patch cable to the FC1D2 front cover rear PCB and plug the other end into the terminal blocks (items 6 and 12) inside the P-WDP. Ensure that each terminal block is retained by the back cover clips.

9 Ensure that the earth cable connects to the male (NEMA tab 6.35mm [0.25 inch]) connector X601 on the GUI using a female [NEMA receptacle] connector (not supplied). When installing with a FCZ8DS, connect the RJ11 plug on the cable supplied with the FCZ8DS to the RJ11 socket on the FC1D2. Remove the WAGO terminal at the other end of the cable to pass the cable through the grommet on each back cover.

10 Mount the FC1D2 front cover on to the P-WDP with the four screws supplied.

11 Tighten the screws and ensure that the assembled unit is firmly mounted on the wall.

12 After installing all units, configure each device to monitored or unmonitored mode and RS485 bus address.

13 Power **ON** the panel.

14 Remove the protective cover from the repeater front cover and check that the unit is functioning.

Installing the FC1D2 with a P-WSH

To install the FC1D2 with a P-WSH as a flush mounting on to a wall/surface, prepare a recess in the wall/surface. An e2 47mm deep back box (not supplied) is suitable.

The three types of cables required to connect the FC1D2 to the fire panel are:

- 2-wire serial cable
- DC supply cable
- Earth cable

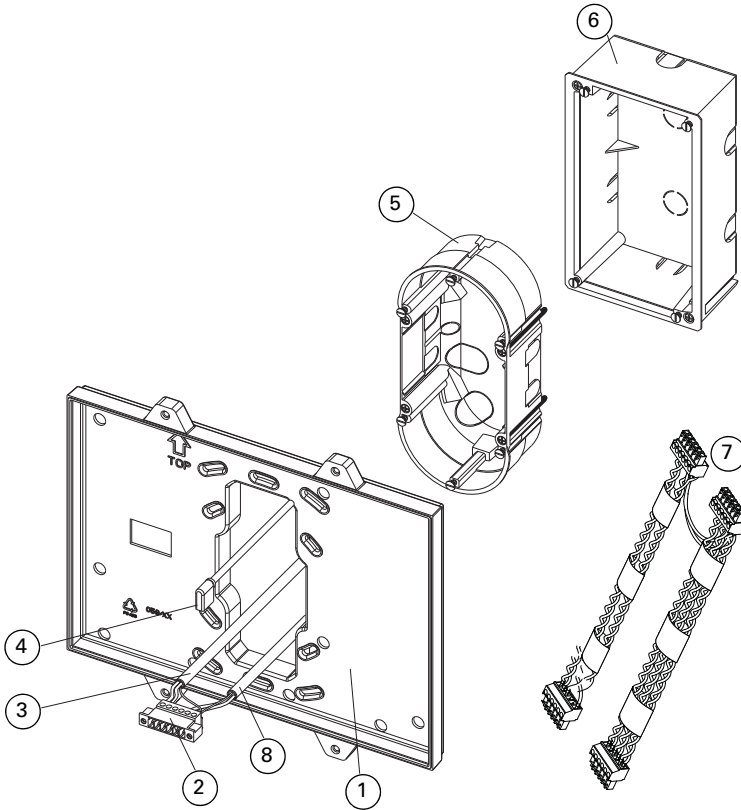


Fig. 10: Installation Overview of P-WSH- To be mounted with FC1D2

- 1– P-WSH shallow back cover (supplied with 557.200.955)
- 2– DC supply terminal block (supplied with 557.200.955)
- 3– 2-wire serial cable (not supplied)
- 4– Earth cable (not supplied)

- 5– Flush mount back box (not supplied)
- 6– 47 mm deep double gang back box (not supplied)
- 7– Patch cable (supplied with 557.200.955)
- 8– DC supply cable (not supplied)

**NOTICE**

Ensure that the panel is isolated from the mains and it is not running on batteries.

- 1 Determine the method of attaching the P-WSH to the wall/surface. If using a flush mount back box, install it prior to attaching the P-WSH. Check that the cables ends have at least 100mm protruding to allow for connection to the supplied terminal block (refer to item 2 in Figure 1).
- 2 Connect the DC power supply cables and 2-wire serial cables into the terminal block. Connect cable conductors to positions on the terminal block as shown in Figure 9.
- 3 Mount the P-WSH on to the wall/surface. Ensure that the field wiring cables come through the rear central aperture. Tighten the screws and ensure that the assembled unit is firmly mounted on the wall.
- 4 For patch cable assembly (item 13 in Figure 1), identify the ends of the cable for connection to the field wiring using two terminal connectors (item 6 in Figure 1). For connection to the FC1D2, refer to Figure 2. Plug one end of the patch cable to the terminal blocks inside the flush mount box.
- 5 Connect the patch cable to the connectors on the back of the FC1D2. Connect the earth cable to connector X601. When installing with a FCZ8DS, connect the RJ11 plug on the cable supplied with the FCZ8DS to the RJ11 socket on the FC1D2.
- 6 Mount the FC1D2 to the P-WSH using the four fixing screws.
- 7 After installing all units, configure each device to monitored or unmonitored mode and RS485 bus address.
- 8 Power **ON** the panel.
- 9 Remove the protective cover from the repeater front cover and check the unit to ensure that it is functioning.

Installing FireClass 80-Way Zonal Display with P-WDP

One cable is required for the interconnection between the FC1D2 and zonal display. This cable comes with RJ11 on one side and other side has to be fitted with a WAGO connector after passing it through the grommet.

Note: You may connect up to three FCZ8DS units to provide a 240-way zonal display.

For more installation information, refer to the fixing instructions supplied with the FCZ8DS 80-way shallow zonal display ('Installing FireClass-Compact Repeater and Zonal Display with Deep Back Cover').

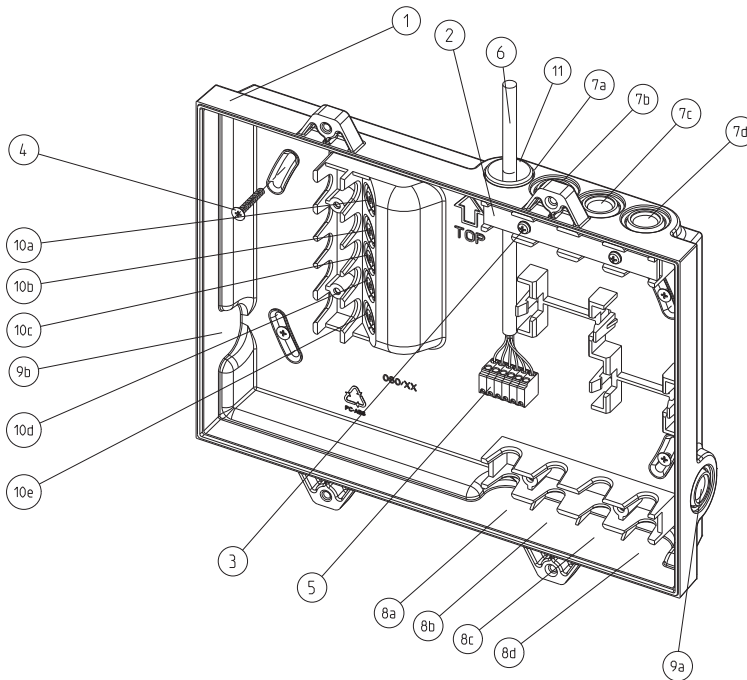


Fig. 11: Inside View of P-WDP- To be mounted with zonal display

1– P-WDP

2– Cable holder

3– Cable holder screws (2x)

4– Fixing screws (4x)

5– Connector to PCB

6– Cable to FC1D2

7a-7d– Cable holes (top entrance)

8a-8d– Cable holes (bottom entrance)

9a-9b– Cable holes (side entrance)

10a-10b– Cable holes (back entrance)

11– Sealing grommet (5x)

FC1D2 and Zonal Display Wall Mounting Dimensions

Figure 12 illustrates how to 'wall mount' the FC1D2 and the zonal display in a vertical or horizontal position with the required dimensions.

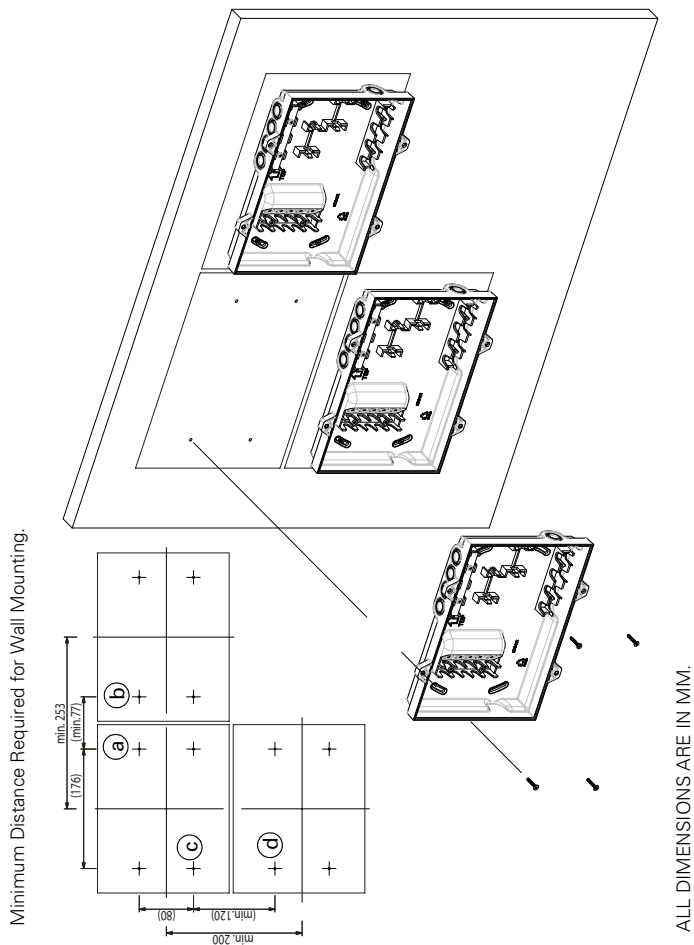


Fig. 12: FC1D2 and Zonal Display Wall Mounting

Note: 1. To mount the units in a horizontal position (side by side), leave a minimum distance of 77 mm between fixing screws positions a and b.

Note 2. To mount the units in a vertical position (top and bottom), leave a minimum distance of 120 mm between fixing screws positions c and d.

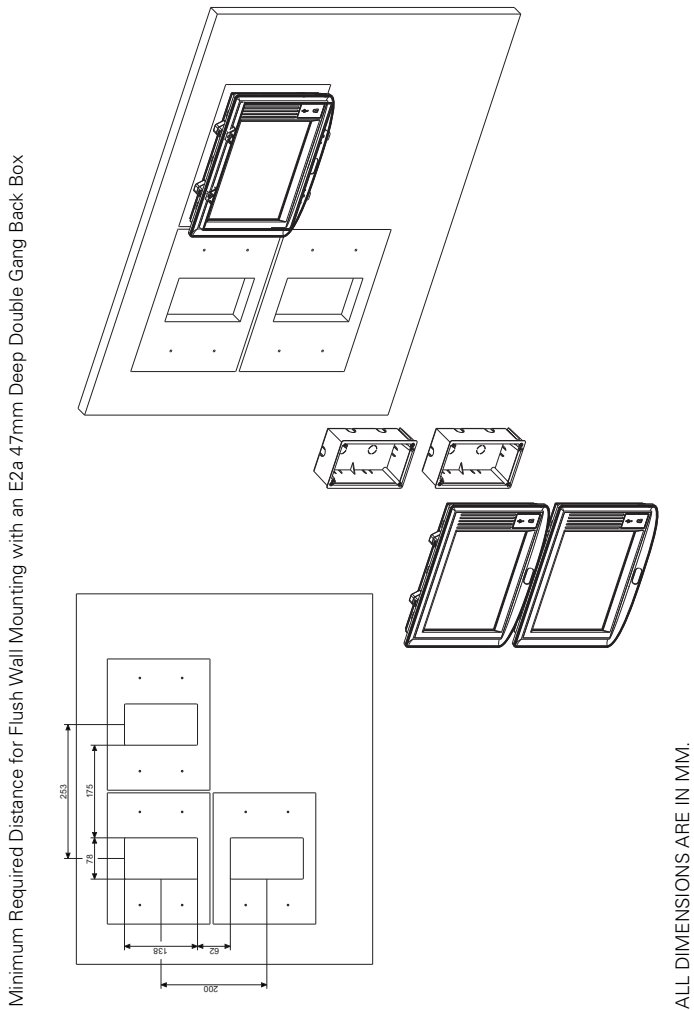


Fig. 13: FC1D2 and Zonal Display - Flush Wall Mounting with a 47 mm Deep Double Gang Back Box

Note 1. To mount the units in a horizontal position (side by side), leave a minimum distance of 175 mm between the double gang back boxes.

Note 2. To mount the units in a vertical position (top and bottom), leave a minimum distance of 62 mm between the double gang back boxes.

Removing and Replacing the FC1D2 'Insert'

To Remove and Replace FC1D2 'Insert':

- 1 Inside the front cover of the repeater, identify the exposed edge of the flexible plastic 'insert' labelled as 'TOP', which is just behind the PCB. Refer to Figure 14.
- 2 Insert a flat edge screw driver under the edge of the 'insert', and lift it clear off the locating post.
- 3 Firmly grip the 'insert' with your finger tips and slide it out
- 4 Replace the 'insert' with the applicable language 'insert', ensuring the holes locates around the locating posts.
- 5 Ensure that the 'insert' is correctly inserted by checking the display screen.
- 6 Screw the front cover onto the back cover.

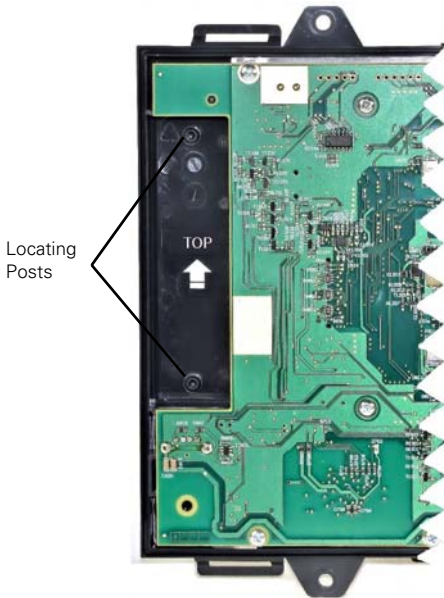


Fig. 14: FC1D2 - Rear View of Front Cover

To Remove and Replace Zonal Display 'Insert':

- 1 Inside the front cover of the zonal display, identify the exposed edge of the flexible plastic 'insert' labelled as 'TOP', which is just behind the PCB. Refer to Figure 15.
- 2 Insert a flat edge screw driver under the edge of the 'insert', and lift it clear off the locating post.
- 3 Firmly grip the 'insert' with your fingertips after lifting it clear off the locating post.
- 4 On the opposite side of the 'insert'; insert the flat edge of a screw driver under the edge of the 'insert', and lift it clear. Refer to Figure 15.
- 5 Firmly grip the 'insert' with your finger tips and slide it out, whilst releasing the other end of the 'insert' at the locating post.
- 6 Replace the 'insert' with the applicable language 'insert', ensuring that the holes locates around the locating posts.
- 7 Ensure that the 'insert' is correctly inserted by checking the display screen.
- 8 Screw the front cover onto the back cover.

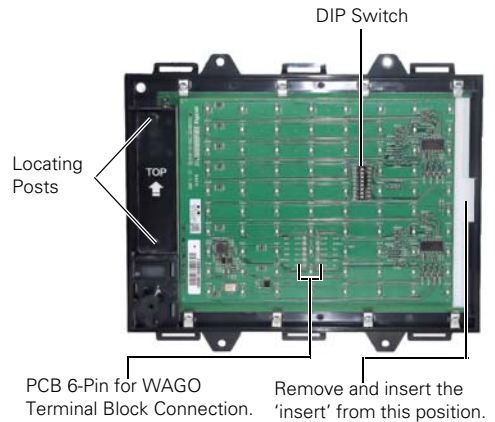


Fig. 15: Zonal Display - Rear View of Front Display

**NOTICE: Additional Replacement 'Inserts' for FC1D2**

The zonal display may be supplied with additional replacement 'inserts' for the FC1D2.

Use the replacement 'insert', only if the zonal display is connected to a FC1D2.

Follow the steps described in "To Remove and Replace FC1D2 'Insert':" on page 15 to:

- remove the current 'insert' in the FC1D2, and replace it with the required language 'insert' supplied.

The DIP switch is located at rear of the front cover of the zonal display. Refer to the fixing instructions supplied with the FCZ8DS ('Installing FireClass Compact Repeater and Zonal Display with Deep Back Cover').

Commissioning the FC1D2

The selection of monitored or unmonitored mode is part of the commissioning procedure for the FC1D2. The procedure includes setting the FC1D2 RBUS address. Because the commissioning procedure is dependent on the software version installed in the FC1D2 the appropriate technical information bulletin should be consulted.

Graphical User Interface

The FC1D2 Graphical User Interface (GUI) is shown below. This works similarly to the main GUI on the panel. However, the operator actions that require authentication will not be available. Hence, the GUI is used only for displaying information.

The FC1D2 must be subject to the commissioning procedure prior to use by the operator. The following screens are only seen on a commissioned FC1D2 and may be subject to change when new software functions are added.

**NOTICE: Single Zonal Display Installation**

The FC1D2 currently supports up to three 80-way zonal displays. For more details, refer to the 'FireClass FC700 Series Panels' User Manual.

FCZ8DS DIP Switch Setting

The FCZ8DS is provided with a DIP switch which provides several functions.



- | | | |
|---|----------------|--|
| ① | Screen Title | The blue background changes to red for a fire or yellow for fault warning conditions. |
| ② | LEDs | Various LEDs indicate conditions including 'fire', 'disabled' or 'faulty' – see "LED Details" below. |
| ③ | Events Summary | Alerts you to any abnormal conditions you need to be aware of. Touch here to further investigate and take possible action. |
| ④ | Home | Returns you to the starting screen for navigating the menus (or the 'View Fires' screen). |
| ⑤ | Back | Cancels the last screen touch and returns you to the previous screen. |
| ⑥ | Information | Displays background information on the system. |
| ⑦ | Silence Buzzer | Silences the panel's internal buzzer. |

LED Details

The LED colours in the GUI are as follows:



Not Activated: OK.



Green: OK (the 'Power On' LED should always be green).



Red: A critical problem or a fire alarm condition. Following a red LED, the Control and Indicating Equipment (CIE) enters a fire alarm state.



Yellow: A problem or condition that is less serious than red, but should still be investigated (typically a fault) as it may be critical to the functioning of the fire detection and fire alarm system (FDAS).

Most of the LEDs have a text label. LEDs with a symbol or number, are explained below.



There is a fault with Sounders, Signalling or Protection (the LED appears in each of these areas of the GUI).



There is a disablement of the Sounders, Signalling or Protection (the LED appears in each of these areas of the GUI).



The sounders have activated. This LED appears in the Sounders area of the GUI.



Fire Alarm Signalling has activated. This LED appears in the Signalling area of the GUI.



Protection equipment has activated, such as a door control. This LED appears in the Protection area of the GUI.



There is a fire in the labelled zone.



Note
Slight differences may occur between the screens which the users see and what appears in this manual due to software updates.

Additional Indications

Below are more details on other symbols which might feature on the GUI.



This icon changes as an acknowledgement that you are touching the panel.



There is a fire alarm.



The control panel is busy processing.



Note
Some functions described in this manual may not be available in certain software versions or FireClass Express templates.

Fire Alarm

When a fire alarm is triggered, the red FIRE LED and buzzer activate as the primary fire alarm indication. The information displayed in Figure 16 will then appear on the screen.



Fig. 16: GUI in fire alarm

Detailed fire information is displayed indicating the origin and spread of fire:

- The ‘First Fire’ sub-window shows the first fire to occur, with details of the zone number and description, and the point address. The ‘Last Fire’ sub-window shows information on the latest zone to enter alarm, with details of the first fire detected within that zone.
- The number of alarms is displayed at the bottom in the fire window.

In addition:

- The **SOUNDERS-ACTIVATED** LED lights up.
- The **SIGNALLING-ACTIVATED** LED lights up.

Alarm Operator Actions

In an alarm situation, follow the local site procedures.

Additional Fire Alarm Information

For additional information press the ‘First Fire’ or ‘Last Fire’ sub-window of the Fire Alarm screen (Figure 16).

The additional information includes details about the point in alarm and other alarms within that zone.

The view can be switched between ‘Fires in Zone’ to display the points in alarm in that zone, or ‘Zones in Fire’ to display the zones in alarm.

Press the Information button to see a zonal image configured for the zone in alarm.



DANGER
In an alarm situation, inappropriate use of the panel functions may lead to death, serious injuries or damage to property.
You must ensure you use the appropriate local site procedures.

Alarm Warnings

Depending on the configuration, the panel may respond in stages to device activations. The following messages may be displayed in the ‘Events Summary’ window on the Home screen:

- ‘Alarm Warning’ message (with the internal buzzer sounding). This occurs because the control panel has been configured for a partial alarm response if only one detector is in alarm. The panel waits for another device to alarm, before issuing an alarm.
- ‘Pre Alarm Warning’ message (with the internal buzzer sounding). This occurs because, for example, a detector has identified a build-up that might be the result of a fire, but the alarm threshold has not yet been reached. The panel waits for the alarm threshold to be reached, before issuing an alarm.

User Functions

The basic functions of FireClass repeaters are as shown in Table 4.

Function
Touch screen buttons
Silence Buzzer
Events summary
Essential functions available from menu
Panel test

Table 4: Repeater User Functions

Panel Test

The Panel test is used to test the panel’s display, LEDs and buzzer. During the test, all LEDs, GUI pixels and the buzzer are turned on for the audio-visual check of the User Interface.

Silence Buzzer

Use the Silence Buzzer button to silence the internal buzzer on the FC1D2. New faults on the system may re-enable the buzzer.

Note: On a FC1D2, the Silence Buzzer button silences the local buzzer. To silence all FC1D2 repeaters, use the Silence Buzzer button on the panel GUI.

Event Log

FireClass panels store up to 10,000 system events in their event logs.

The event logging is configurable, so there may be variations between panels (for example in what types of events are logged).
To review logged events use the Event Log button (refer to Figure 17) on the main menu.

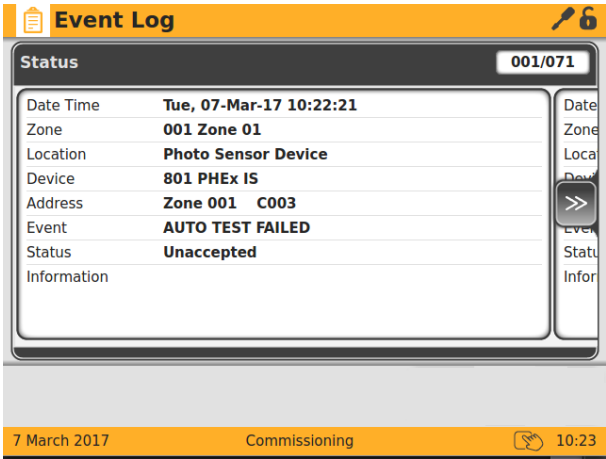


Fig. 17: Event Log

Faults

Faults must be investigated and resolved. You are alerted to faults by the LEDs activating, such as the Mains Fault LED and also by a change in the background colour of the GUI, see “Graphical User Interface” on page 16.
For a list of faults, use the ‘Events Summary’ window on the Home screen.



DANGER
Incorrect responses to event alerts may lead to death, serious injuries or damage to property.
For example it is important that fault alerts such as a mains failure are acted upon. (The battery backup will maintain panel operation, but only for a limited period before failing.)

Ordering Information

Product Code	Item
557.200.955	FC1D2 FIRECLASS DISPLAY ONLY REPEATER
557.202.802	P-WDP FIRECLASS DEEP BACKBOX

Table 5: Ordering information

