GE
Security

1200-2000 Series Fire Panels, Repeaters, and Emulators

Interconnection and Wiring Guide

GE imagination at work

1060738 / revision: **3-4** (March 2008)

Disclaimer

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. GE ASSUMES NO RESPONSIBILITY FOR INACCURACIES OR OMISSIONS AND SPECIFICALLY DISCLAIMS ANY LIABILITIES, LOSSES, OR RISKS, PERSONAL OR OTHERWISE, INCURRED AS A CONSEQUENCE, DIRECTLY OR INDIRECTLY, OF THE USE OR APPLICATION OF ANY OF THE CONTENTS OF THIS DOCUMENT. FOR THE LATEST DOCUMENTATION, CONTACT YOUR LOCAL SUPPLIER OR VISIT US ONLINE AT WWW.GESECURITY.NET.

This publication may contain examples of screen captures and reports used in daily operations. Examples may include fictitious names of individuals and companies. Any similarity to names and addresses of actual businesses or persons is entirely coincidental.

Trademarks and patents

GE and the GE monogram are registered trademarks of General Electric.

Other trade names used in this document may be trademarks or registered trademarks of the manufacturers or vendors of the respective products.

Software license agreement

GE software supplied with GE products is proprietary and furnished under license and can be used or copied only in accordance with the license terms.

THE ENCLOSED PROGRAM IS FURNISHED SUBJECT TO THE TERMS AND CONDITIONS OF THIS AGREEMENT. RETENTION OF THE PROGRAM FOR MORE THAN 30 DAYS, OPENING OF THE SEALED WRAPPER, IF ANY, SURROUNDING THE PROGRAM, OR USE OF THE PROGRAM IN ANY MANNER WILL BE CONSIDERED ACCEPTANCE OF THE AGREEMENT TERMS. IF THESE TERMS ARE NOT ACCEPTABLE, RETURN THE UNUSED PROGRAM AND ANY ACCOMPANYING DOCUMENTATION TO GE FOR A FULL REFUND OF THE LICENSE FEE PAID. (FOR INFORMATION REGARDING THE RETURN OF PROGRAMS ENCODED OR INCORPORATED WITHIN EQUIPMENT, CONTACT THE NEAREST GE SALES OFFICE.)

Intended use

Use this product only for the purpose it was designed for; refer to the data sheet and user documentation. For the latest product information, contact your local supplier or visit us online at http://www.gesecurity.eu/.

Regulatory

The European directive “Waste Electrical and Electronic Equipment” (WEEE) aims to minimise the impact of electrical and electronic equipment waste on the environment and human health. To conform with this directive, electrical equipment marked with this symbol must not be disposed of in European public disposal systems. European users of electrical equipment must now return end-of-life equipment for disposal. Further information can be found on the following website: www.recyclethis.info.

European representative for manufacture:

GE Security B.V., Kelvinstraat 7, 6003 DH Weert, The Netherlands.

CE

Contents

1 Preface

This is the 1200-2000 Series Fire Panels, Repeaters, and Emulators Interconnection and Wiring Guide. Read these instructions and all ancillary documentation entirely before installing or operating this product. For in-depth information on installation and wiring refer to the product installation manual.

1.1 Conventions used in this manual

The following conventions are used in this document:

Bold	Menu items and buttons.
Italic	Emphasis of an instruction or point; special terms.
	File names, path names, windows, panes, tabs, fields, variables, and other GUI elements.
	Titles of books and various documents.
Blue italic	(Electronic version.) Hyperlinks to URL addresses.
`Monospace`	Text that displays on the computer screen.
	Programming or coding sequences.

1.2 Safety terms and symbols

These terms may appear in this manual:

CAUTION:	Cautions identify conditions or practices that may result in damage to the equipment or other property.
WARNING:	Warnings identify conditions or practices that could result in equipment damage or serious personal injury.

2 Introduction

CAUTION: For general guidelines on fire system planning, design, installation, commissioning, use and maintenance refer to the EN54-14 standard and local regulations.

WARNING: This is a Class A product and may cause radio interference if installed in a domestic environment.

2.1 About this document

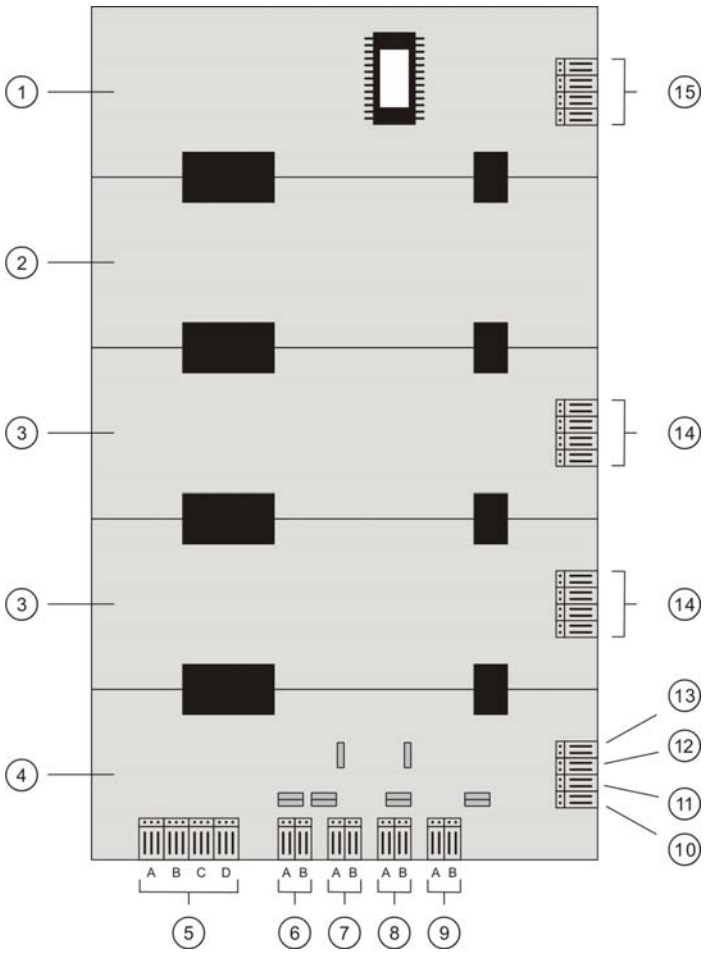
This manual explains how to install 1200 and 2000 series analogue addressable fire panels, repeaters and emulators. The manual is intended as a guide only and is not to be used to replace any local building and/or wiring codes.

Addititional information may be found in the following manuals (available from your local supplier):

- 1200-2000 Series Reference Guide.
- 1200-2000 Series Network Configuration Guide.
- 1200-2000 Series Installation And Commissioning Guide.
- 1200-2000 Series User Guide.

2.2 Internal layout of 2000 series panels

Figure 1: Internal layout of 2000 series panels

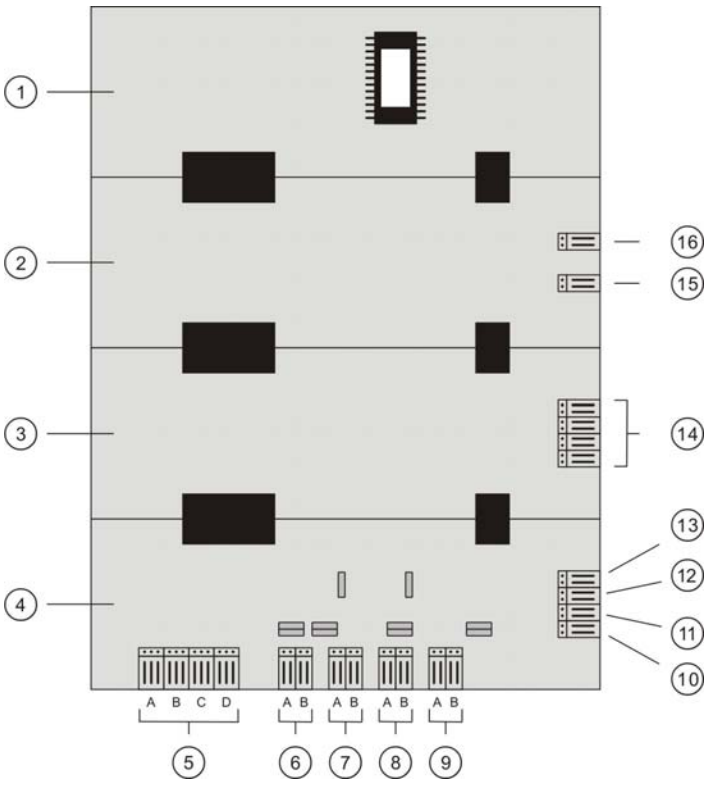


1. FEP board
2. Power supply board
3. Loop card
4. Sounder board
5. Programmable relays
6. Fault routing
7. Fire protection
8. Fire routing
9. Fire alarm devices
10. General input
11. Fault routing return input *
12. Fire protection return input *
13. Fire brigade return input *
14. 2 x Class A loops or 4 x Class B loops
15. 4 x auxiliary inputs

* VdS mode only

2.3 Internal layout of 1200 series panels

Figure 2: Internal layout of 1200 series panels



1. FEP board
2. Power supply board
3. Loop card
4. Sounder board
5. Programmable relays
6. Fault routing
7. Fire protection
8. Fire routing
9. Fire alarm devices
10. General input
11. Fault routing return input
12. Fire protection return input
13. Fire brigade return input
14. 2 x Class A loops or 4 x Class B loops
15. Auxiliary power
16. Fault relay

Note: Jumpers H and L are not included on the LC2002 loop card.

3 Interconnection and wiring

The following sections describe the cabling and system interconnection requirements for your product.

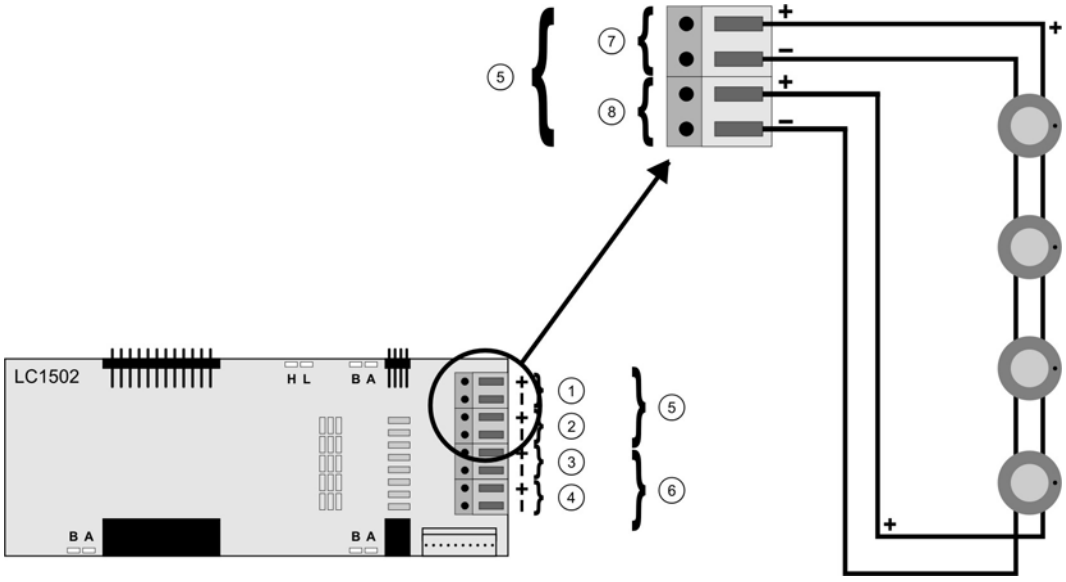
3.1 Recommended cable

Twisted and screened cable is required for all installation cabling. The cable screen should be connected to the earth stud in the panel.

3.2 Loop card connections

Connect the loop card as shown below and select the loop Class required (see Section 3.2.1).

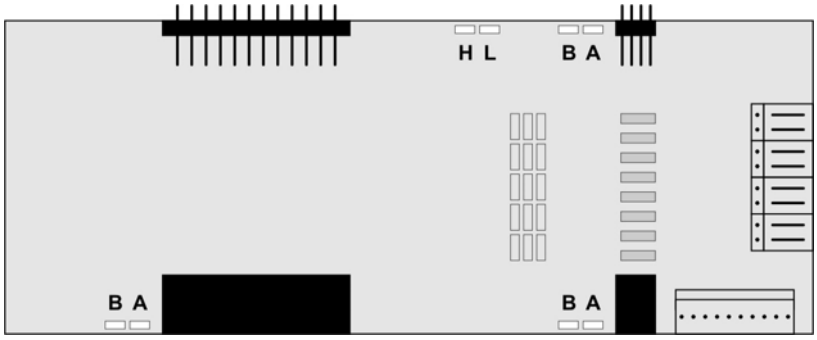
Figure 3: Loop card connections



1. Class B loop 1
2. Class B loop 2
3. Class B loop 3
4. Class B loop 4
5. Class A loop 1
6. Class A loop 2
7. Class A loop 1 forward
8. Class A loop 1 return

3.2.1 Loop Class and jumper selection

Figure 4: Location of loop card jumpers for loop Class selection



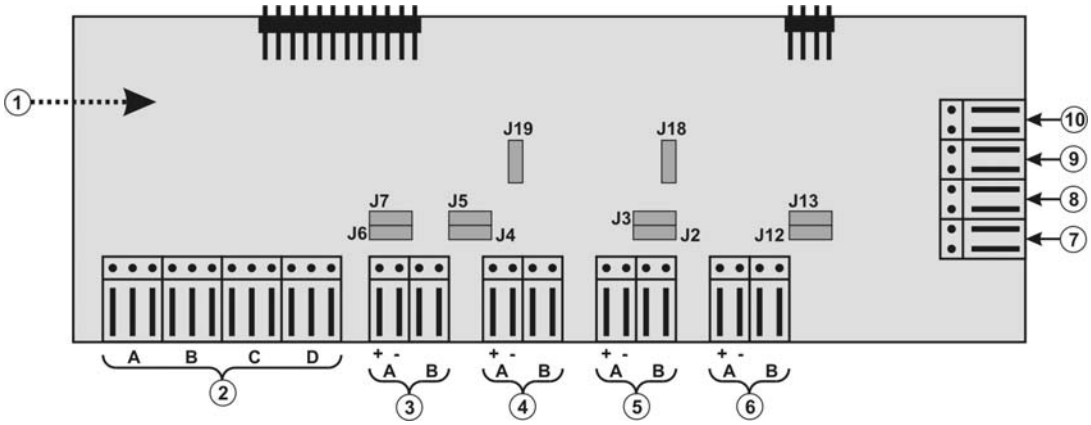
A. Jumper selection for up to 2 x Class A loops

B. Jumper selection for up to 4 x Class B loops

H. Jumper selection for 900 series and 2000 series protocol

3.3 Sounder board connections

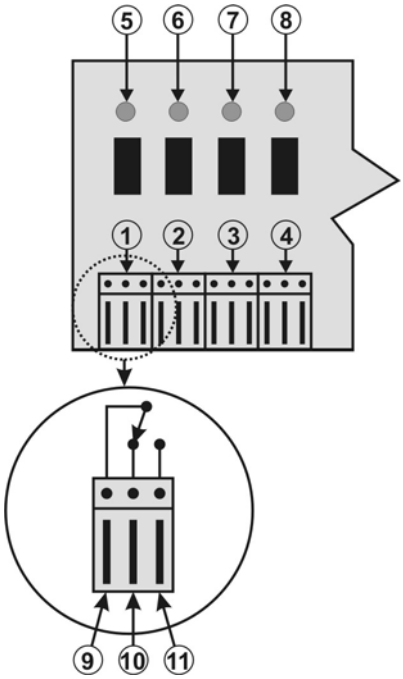
Figure 5: Location of jumpers on sounder board



1. Sounder board
2. Programmable relays (A = OUT8, B = OUT7, C = OUT6, D = OUT5)
3. Fault routing (OUT4)
4. Fire protection device (OUT3)
5. Fire routing device (OUT2)
6. Fire alarm device (OUT1)
7. General input (IN8)
8. Fault routing fault input (VdS mode only) (IN7)
9. Fire protection fault input (VdS mode only) (IN6)
10. Fire routing feedback input (VdS mode only) (IN5)

3.3.1 Programmable relay

Figure 6: Programmable relay connections

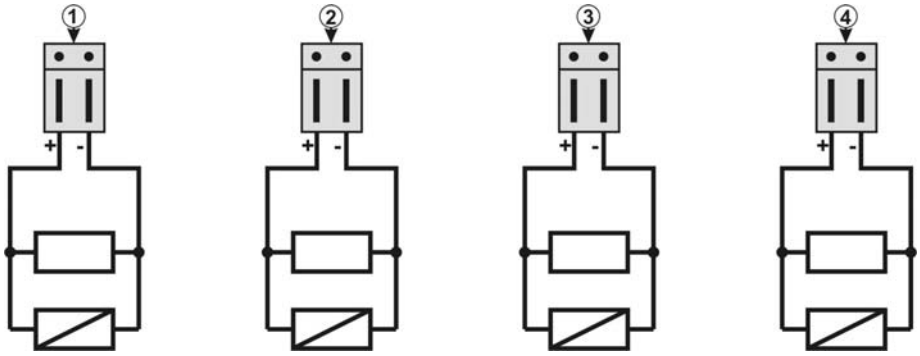


1. Programmable relay 4 (OUT8)
2. Programmable relay 3 (OUT7)
3. Programmable relay 2 (OUT6)
4. Programmable relay 1 (OUT5)
5. Output 8 switched LED indication
6. Output 7 switched LED indication
7. Output 6 switched LED indication
8. Output 5 switched LED indication
9. Common (C)
10. Normally closed (NC). Relay shown in normal state.
11. Normally open (NO)

3.3.2 Supervised outputs (Class A)

These outputs provide 24 VDC when active.

Figure 7: Supervised relay output's connection on SD2000 common I/O board



1. Fault routing (OUT4)

- Termination resistor - 3k3
- Polarity non-reversed
- Active in normal position

2. Fire protection device (OUT3)

- Termination resistor - 3k3
- Polarity non-reversed

3. Fire routing device (OUT2)

- Termination resistor - 3k3
- Polarity non-reversed

4. Fire alarm device (OUT1)

- Termination resistor - 3k3
- Polarity non-reversed

3.3.3 Relay outputs (Class B)

OUT1 / OUT2 / OUT3

Two configurations are available. The configuration is determined by jumper settings.

Figure 8: Two configurations for relay outputs 1-3 B (shown as not active)

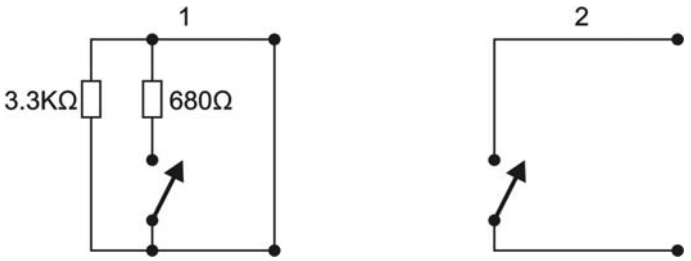


Table 1: Relay configuration option for outputs OUT1, OUT2, and OUT3

Output	Configuration 1	Configuration 2	Comment
OUT1 (Sounders)	J12 in J13 out	J12 out J13 in	J18 out J19 out
OUT2 (Fire brigade)	J2 in J3 out	J2 out J3 in	J18 out J19 out
OUT3 (Fire protection)	J4 in J5 out	J4 out J5 in	

OUT4

The configurations for OUT4 are shown below (failsafe). The switch is **closed** when there is a fault and **open** when there is no fault.

Figure 9: Two configurations for relay output 4 B

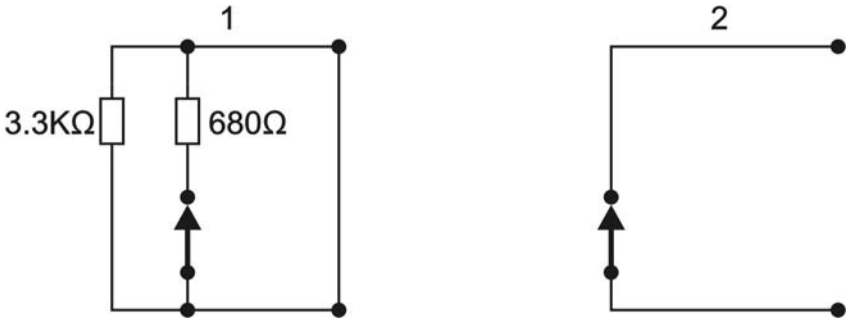


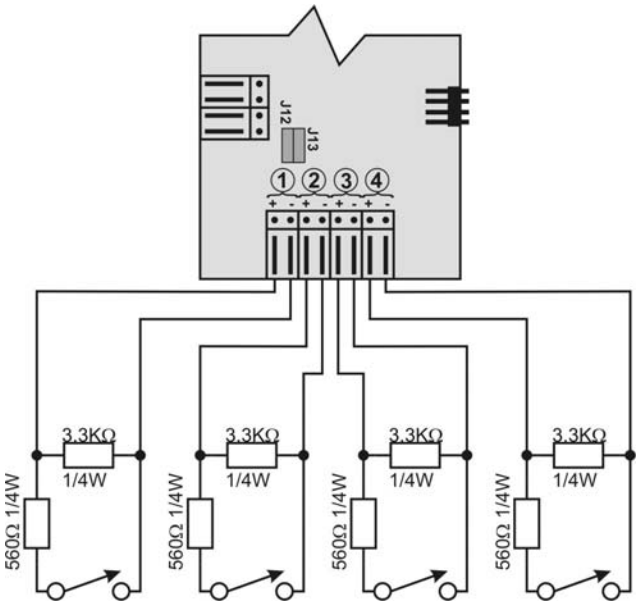
Table 2: Relay configuration option for output OUT4,

Output	Configuration 1	Configuration 2
OUT4 (Fault routing)	J6 in J7 out	J6 out J7 in

3.3.4 Supervised inputs

In EN, NEN and EP operation mode these inputs have no dedicated function and are freely programmable through I/O logic.

Figure 10: Supervised input connections

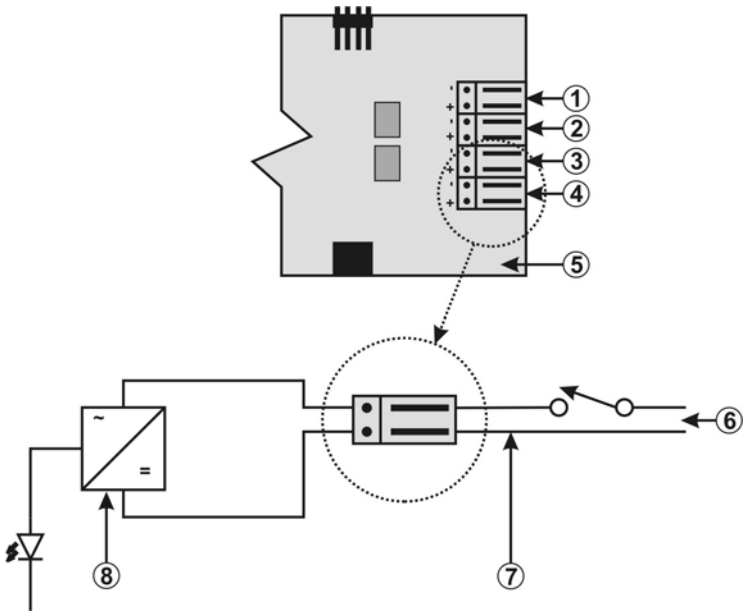


1. General input (IN8)
2. Fault routing fault input (VdS mode only) (IN7)
3. Fire protection fault input (VdS mode only) (IN6)
4. Fire routing feedback input (VdS mode only) (IN5)

3.4 Auxiliary input connections

Note: FP2000 series panels only.

Figure 11: Auxiliary inputs (FEP board)

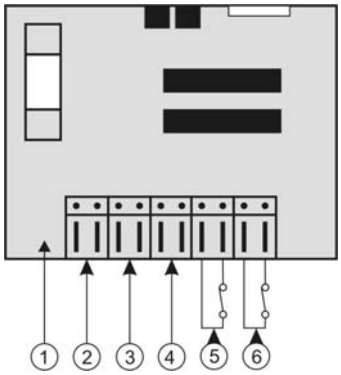


1. Auxiliary input 1 (IN1)
2. Auxiliary input 2 (IN2)
3. Auxiliary input 3 (IN3)
4. Auxiliary input 4 (IN4)
5. Section of FEP board
6. 20-28 VDC or 10-15 VAC
7. Field wiring
8. Fire panel input

3.5 Power supply connections

3.5.1 24 VDC power supply (FR2000)

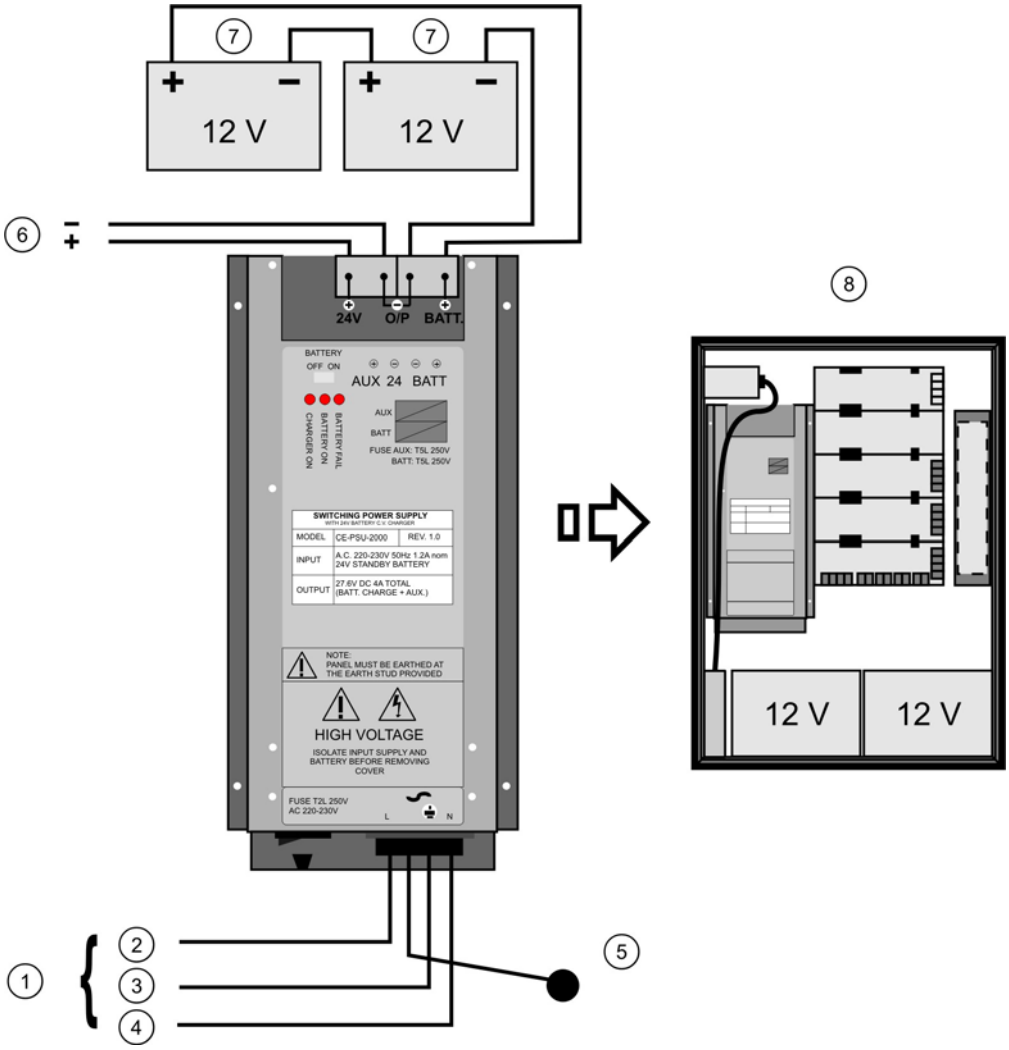
Figure 12: FR2000 24 VDC power supply connection



1. 24 VDC termination board
2. +24 VDC
3. –24 VDC
4. Earth
5. Charger fail (normally shorted input)
6. Mains fail (normally shorted input)

3.5.2 230 VAC power supply (FP2000)

Figure 13: FP2000 panels 230 VAC power supply connection



1. 230 VAC
2. Live
3. Neutral
4. Earth
5. To M5 earth stud mounted on back panel
6. 24 VDC power to ancillary fire panel equipment
7. 12 V batteries (installed in base of cabinet)
8. Location of power supply / batteries in cabinet

The Direct Online power supply PS2000 has been designed according to EN54-4. A mains switch (on the bottom) is provided, as well as a battery ON/OFF switch. Three LED's on top of the power supply indicate the following:

- Charger On
- Battery On
- Battery fail

On top there is a 24 volt auxiliary output for other fire panel equipment.

As part of the building installation, the 230 VAC should be derived directly from a separate group in the distribution board. This group should have a bi-polar disconnect device, clearly marked and only used for fire detection equipment.

The recommended mains cable is 3 x 1.5 mm² (live, neutral, earth).

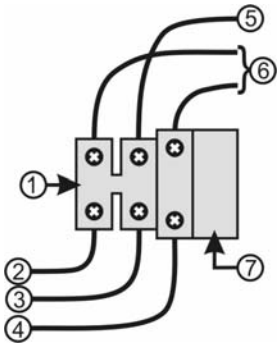
Two 12 V batteries have to be put in series and connected to the battery terminals. No other equipment may be connected to the battery terminations.

The PSU-2000 is designed for use in FP2000 fire panel housing only.

An optional third source battery (9V, PP3) can be installed as a third source of power.

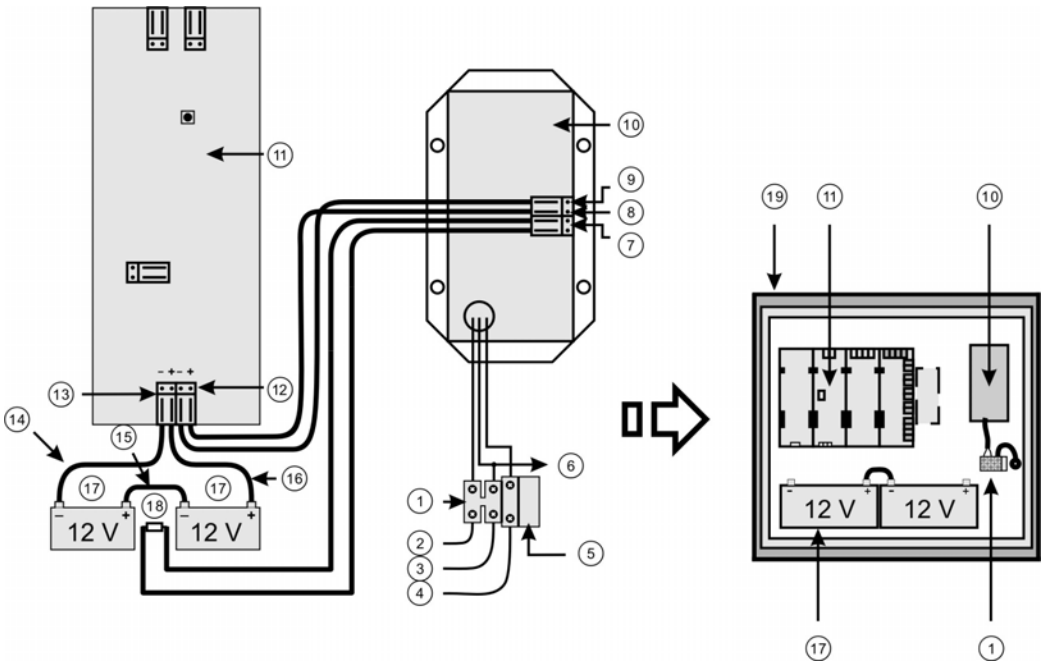
3.5.3 230 VAC power supply (FP1200)

Figure 14: FP1200 and KSA1204 230 VAC power supply connection



1. Mains terminal block
2. Neutral
3. Earth
4. Live
5. To earth stud on panel
6. To transformer
7. Mains disconnect with fuse

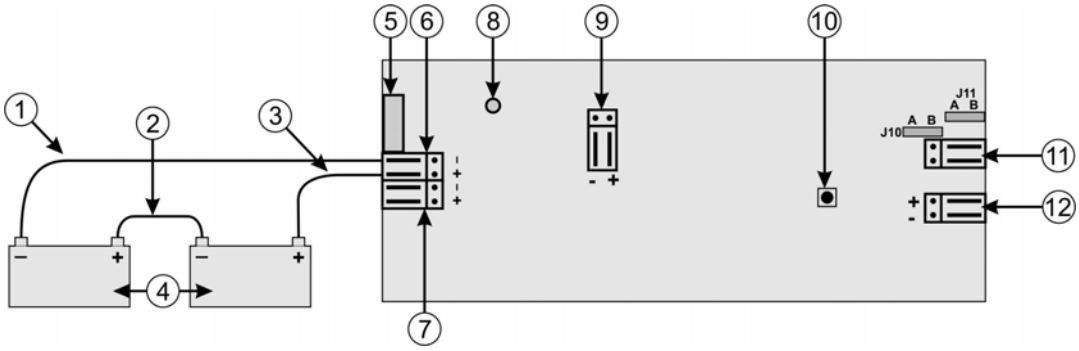
Figure 15: FP1200 panel power supply / transformer connection



1. Mains terminal block
2. Neutral
3. Ground
4. Live
5. Mains switch with fuse
6. To ground stud on panel
7. Temperature compensation terminal
8. +V out
9. –V out
10. Transformer (TRF1200)
11. Power supply (PS1200S77)
12. V in
13. Bat
14. Black wire
15. Battery connection wire
16. Red wire
17. 12 V Batteries
18. Battery charging temperature compensation thermistor
19. Location of power supply / batteries in cabinet

PCB power supply connections

Figure 16: FP1200 panel power supply and fault relay connection

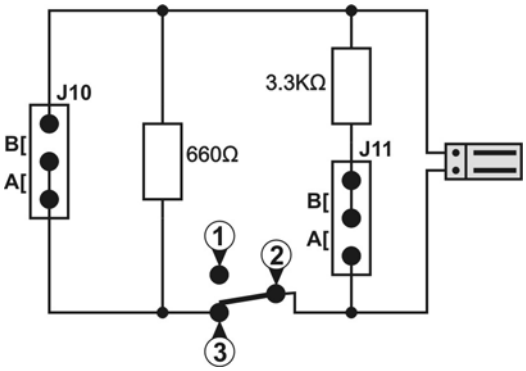


1. Black
2. Link
3. Red
4. 12 V Batteries
5. Host CPU connection
6. BAT connection
7. V in connection
8. VR3 LCD contrast adjuster
9. Modem (MOD2000) connection
10. Start-up button (required for start up without mains connection)
11. Fault relay output
12. Auxiliary output

CAUTION: Observe polarity when connecting battery.

FP1200 panel power supply fault relay connection

Figure 17: FP1200 panel power supply fault relay connection on PS1200 board



1. Normally open (NO)
2. Common (C)
3. Normally closed (NC)

Fault output (NC) (Jumpers default position = A)

J10 (pins for position A connected on PCB)

- Position A = 660Ω
- Position B = 0Ω

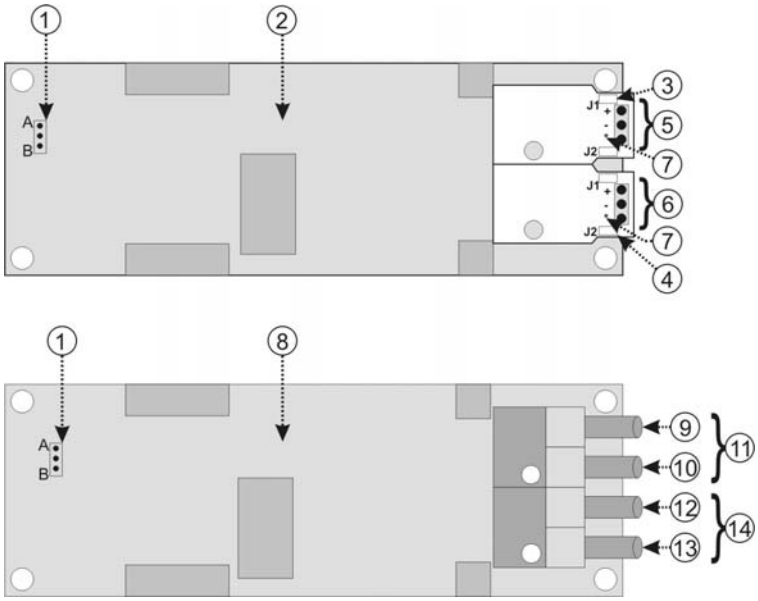
J11 (Pins for position B connected on PCB)

- Position A = 3.3kΩ
- Position B = 0Ω

3.6 Network connections

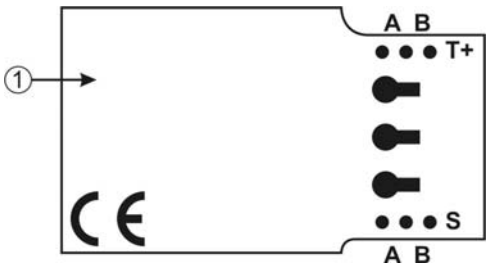
3.6.1 RS485 / fibre-optic network interface

Figure 18: Network interface and associated connection



1. Repeater mode selection
2. NC2011 (RS485)
3. Jumper J1 –Termination end of line (see Figure 19)
4. Jumper J2 – Earth connection (see Figure 19)
5. Channel A
6. Channel B
7. Screen
8. NC2051 (optical)
9. Tx – Transmit A
10. Rx – Receive A
11. Optical fibre connection channel A
12. Tx – Transmit B
13. Rx – Receive B
14. Optical fibre connection channel B

Figure 19: NE2011 network extension module



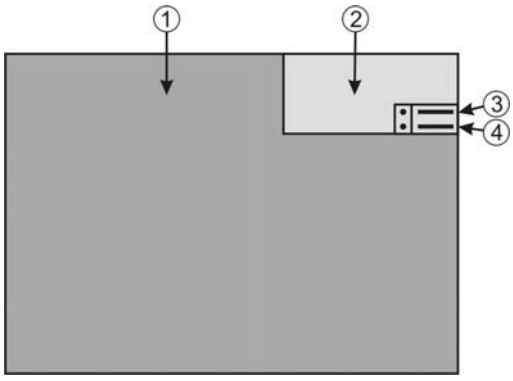
1. NE2011

T+. Termination (A-side: Not terminated, B-side: Terminated)

S. Screen (A-side: Not earthed, B-side: Earthed)

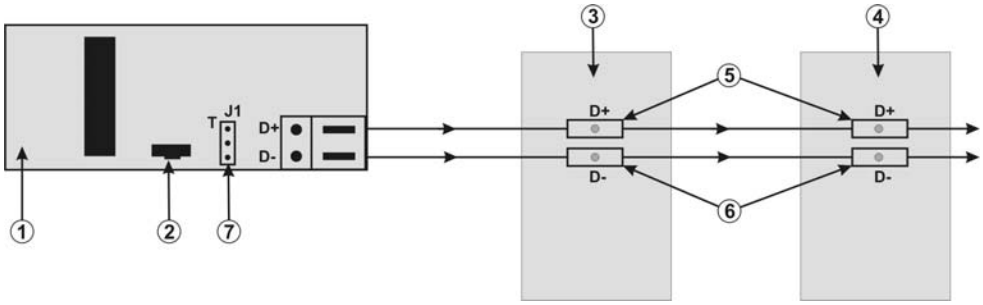
3.6.2 Serial communication network (LON2000)

Figure 20: Mounting position of LON2000 board



1. FC1200N/2011
2. LON2000
3. Data + (D+)
4. Data - (D-)

Figure 21: LON port PCB connections



1. LON2000
2. Service switch
3. LON device
4. LON device
5. Data + (D+)
6. Data - (D-)
7. Termination

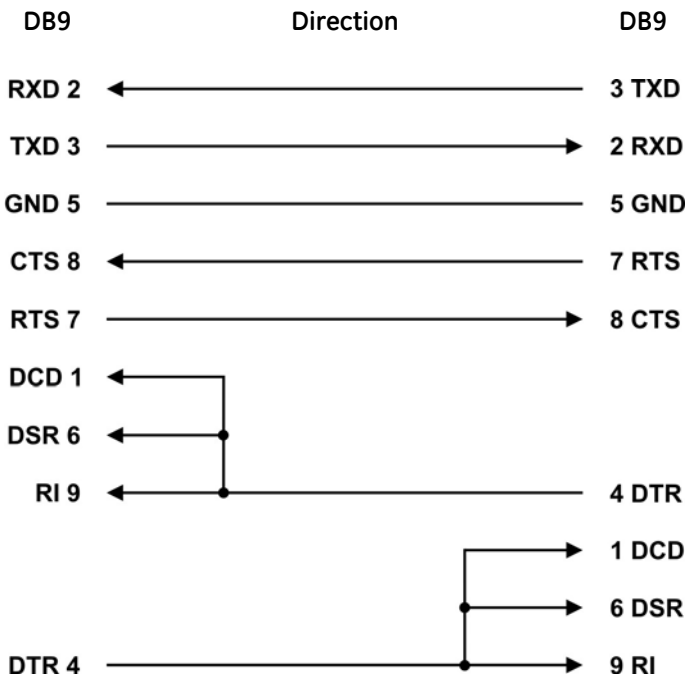
Jumper in terminated (T) position: serial communication port is terminated into 120Ω

Jumper removed: serial communication port is not terminated.

If a LON2000 interface board is used in the first or last panel of a LON network, the jumper has to be set to (T) (terminated).

3.7 Null modem cable

Figure 22: DB9 (panel side – female) to DB9 (PC side – female) connection



4 First-time start-up and configuration

This section describes first-time start-up, the DIP switch, software, and protocol configuration options for your product.

4.1 First-time start-up

When first starting up the control panel the FC12xx / FC20xx CPU module (located inside the control panel door) must be configured as follows:

- Memory switch **LOCKED**
- Service Mode switch **OFF**

The memory should only be unlocked when prompted during the initial start-up procedure.

4.2 Configuration of 2000 series panels

Use the panel DIP switch located on the host power supply board to set the system protocol, mode, and language.

4.2.1 Protocol selection

Use DIP switches 7 and 8 to select the protocol.

Table 3: Protocol selection (DIP switches 7 and 8)

1	2	3	4	5	6	7	8	Protocol
						ON	OFF	900 series protocol
						OFF	OFF	2000 series protocol

4.2.2 Mode selection

Use DIP switches 4 to 6 to select the panel operating mode.

Table 4: Mode selection (DIP switches 4 to 6)

1	2	3	4	5	6	7	8	Mode
			OFF	OFF	OFF			EN mode
			OFF	OFF	ON			VdS mode (if VdS module installed)
			OFF	ON	OFF			NEN mode
			OFF	ON	ON			EP mode
			ON	OFF	OFF			BS mode

4.2.3 Language selection

Use DIP switches 1 to 3 to select the panel language.

Each panel is shipped with one language group only (numbered 0 to 5) and may include up to 5 languages.

Table 5: Language selection (DIP switches 1 to 3)

1	2	3	4	5	6	7	8	Language group (0 to 5) and languages					
								0	**1**	**2**	**3**	**4**	**5**
OFF	OFF	OFF						English	English	English	English	English	English
OFF	OFF	ON						Dutch (Holland)	Polish	Danish	Lithuanian	Italian	Romanian
OFF	ON	OFF						Dutch (Belgium)	Hungarian	Swedish	Estonian	Spanish	Greek
OFF	ON	ON						French (Belgium)	Czech	Norwegian	Latvian	Portuguese	Luxemburgish
ON	OFF	OFF						German	Slovak	Finnish	Russian	Brazilian	English

4.3 Configuration of 1200 series panels

The protocol, mode and language are all selected via the panel LCD menu (System > Configuration > System Setup).

5 Maintenance and support

This section provides information to help you maintain your GE Security product.

CAUTION: This product must be installed and maintained by qualified personnel adhering to all applicable standards and local authority laws.

5.1 Maintenance

Your fire system must be regularly tested and serviced in order to ensure its reliable operation. The following maintenance routine is recommended:

5.1.1 Daily

The following tasks should be performed each day:

- Check that the panel indicates normal operation. If it does not, check that any fault indicated is recorded in the log book and reported to the maintenance personnel.
- Check that any fault warning recorded the previous day has received attention.

5.1.2 Quarterly

The following tasks should be performed each quarter:

- Check the log book entries and that any necessary action has been taken.
- Check the state of the batteries and corresponding connections.
- Visually inspect the fire panel for signs of moisture ingress and other deterioration.
- Test the alarm, fault and ancillary functions of the fire panel.

5.1.3 Yearly

The following tasks should be performed each year:

- Carry out the recommended daily and quarterly inspection and test routines.
- Check each detector for correct operation in accordance with the manufacturer's recommendations.
- Visually inspect all cable fittings and equipment to ensure that no damage has taken place.
- Visually inspect all electrical connections to make sure that they are securely fastened, that they have not been damaged and that they are appropriately protected.
- Visually inspect the manual call points, detectors and sounders to ensure that no structural or occupancy changes have affected their siting requirements.

5.2 Contacting technical support

For assistance installing, operating, maintaining, and troubleshooting this product, please contact your local supplier.

6 Technical specifications

6.1 Loop specifications

Maximum number of loops per panel

1200 series 4
2000 series 8

Loop current

Loop overload ..... >500 mA
Loop operating load ..... max. 100 mA

Class A / Class B loop configuration

LC2002 ..... 2 x Class A / 4 x Class B
LC1502 ..... 2 x Class A / 4 x Class B

With the following exceptions:

FP1200-00 ..... 2 x Class A / 4 x Class B or 4 x Class A / 4 x Class B
FP1200-01 ..... 2 x Class A / 2 x Class B
FP1200-02 ..... 2 x Class A / 2 x Class B

Maximum number of addressable devices per loop

900 protocol 126
2000 protocol 128

Maximum number of addressable devices per panel

900 protocol 1008
2000 protocol 1024

Zones

Maximum number of zones ..... 16 or 64 zones*
Maximum number of zones (for control purposes) 255

* Expandable to 32/128, 48/192 or 64/255 zones in cabinet size B

6.2 Current loop specifications

Maximum number of devices 15
Maximum distance between devices..... max. 1 km between 2 current loop devices
Cable capacitance..... max. 150 nF

Current loop is not supported in panels with software v8.xx and later.

Aritech FM800 / FR800 German fire brigade panel (according to DIN 14661) can be connected.

6.3 Panel specifications

Standard outputs

The following standard outputs are located on the sounder board:

- OUT1 - alarm devices (sounders)
- OUT2 - fire routing equipment (fire brigade)
- OUT3 - fire protection equipment
- OUT4 - fault warning routing equipment
- OUT5 - OUT8 - four programmable relays (each with C, NO, NC terminals)

The maximum supervision for all supervised outputs is 5 V.

Output	A/B	FP1x00 & FP1216 (SD1200 card)	FP1216EN & FP1264/2xxx & FP1216N / FP1264N (SD2000 card)
OUT1	A	24 V – 100 mA supervised*	24 V - 0.8 A supervised
	B	3K3/680 Ohm switched output	3K3/680 Ohm switched output
OUT2	A	24 V – 100 mA supervised*	24 V - 0.8 A supervised
	B	3K3/680 Ohm switched output	3K3/680 Ohm switched output
OUT3	A	24 V – 100 mA supervised*	24 V - 0.1 A supervised
	B	3K3/680 Ohm switched output	3K3/680 Ohm switched output
OUT4	A	24 V – 100 mA supervised*	24 V - 0.1 A supervised
	B	3K3/680 Ohm switched output	3K3/680 Ohm switched output
OUT5 – OUT8		Maximum switching current: 2 A @ 24 VDC Maximum power rating: 60 W DC	Maximum switching current: 2 A @ 24 VDC Maximum power rating: 60 W DC

* The maximum specified current of 100 mA for Output 1 and Output 2 can be exceeded as long as the total current drawn by the outputs (1-4) is limited to 400 mA.

Standard inputs

Input	FP/FR12xx / FR2000 [1]	FP1216EN / FP1264 / FP12xxN [2]	FP/FR2xxx [3]
Sounder board	4 x supervised inputs (1-4) 3.3 kOhm termination	4 x supervised inputs (1-4) 3.3 kOhm termination	4 x supervised inputs (1-4) 3.3 kOhm termination
FEP board (FP2xxx and FB2x00 only)			4 x auxiliary inputs 15 VAC or 20-28 VDC 3 mA

[1] FP1216 only; FP1200 optional SD1200 card used.

[2] SD2000 card.

[3] FP2xxx only - SD2000 card used.

Power supply requirements

	FP/FR12xx & FR2000	FP1216EN & FP1264	FP/FR2xxx / FP2xxxN	FR2032/20128 FR2064/20255
Input	230 VAC (+10%, -15%) 50 Hz (±10%) 50 VA 21 – 28 VDC 24 V standby battery	230 VAC (+10%, -15%) 50 Hz (±10%) 220 VA 21 – 28 VDC 24 V standby battery	230 VAC (±15%) 50 Hz (±10%) 200 VA 21 – 28 VDC 24 V standby battery	21 – 28 VDC 24 V standby battery
Output	Aux. Power: 19-27.5 VDC, 100 mA (max) Modem: 5 VDC (±0.1V), 75mA (max) Battery charge: 27.6 VDC (±0.2 V) @ 25 °C, 300 mA (max)	Aux. Power: 19-27.5 VDC, 100 mA (max) Modem: 5 VDC (±0.1V), 75mA (max) Battery charge: 27.6 VDC (±0.2 V) @ 25 °C, 1.6 A (max)	Auxiliary Voltage: 20.5-28 V 27.6V DC battery charge voltage, 4A total (battery charge and aux. with or without batteries.)	
Supervisory	- Mains fail - Battery disconnect - Battery flat - Flat battery cut-out - Earth fault - Auxiliary supply fault	- Mains fail - Battery disconnect - Battery flat - Flat battery cut-out - Earth fault - Auxiliary supply fault	- Mains fail - Battery disconnect - Battery flat - Flat battery cut-out	- Mains fail - Charger fail
Fuses	Mains: T 0.8A 250V	Mains: T 2A 250V	Mains: T 2A 250V Battery / AUX output: T 5A	Mains: T 1A 250V
Maximum current drawn from the primary input	250 mA	1 A	1 A	0.3 A (no options installed)
Maximum output ripple voltage	± 300 mV	± 300 mV	± 300 mV	
Fault Relay (Configuration depends on jumper setting.)	Maximum switching current: 2A @ 24VDC Maximum power rating: 50 W	Maximum switching current: 2A @ 24VDC Maximum power rating: 50 W	-	-

Current requirements

Table 6: Normal operation (battery powered)

	FP12XX	FR1200/FR2000	FP1216EN / FP1264 / FP12xxN
Current required by system	200 mA (max)	200 mA (max)	200 mA (max)
Loop current - 2 loops - 127 devices/loop @ 340 µA/device (DP951)	86 mA	0 mA	86 mA
Auxiliary current	0 mA	0 mA	0 mA
Total normal current	286 mA	200 mA	286 mA

Table 7: Alarm operation (battery powered)

	FP12XX	FR1200/FR2000	FP1216EN / FP1264 / FP12xxN
Normal current (as Table 6)	286 mA (max)	200 mA (max)	286 mA (max)
Extra loop current (20 x LED @ 4 mA)	80 mA	0 mA	80 mA
Sounders (sounder board: outputs 1-4)	200 mA	0 mA	200 mA
Total alarm current	566 mA	200 mA	566 mA

Table 8: Normal operation (mains powered)

	FP2416/2464 & FP2432/24128	FP2864/28255 & FP2864N/28255N
Mains load (maximum)	200 VA	200 VA
Total output current (27.6 V)	4 A	4 A
Battery capacity I_{AUX} = 0 (72H standby)	36 AH	58 AH
Battery capacity (maximum)	68 AH	68 AH
Required battery charging current (maximum battery capacity)	3.05 A	3.05 A
Current required by system (I_{SYS})*	0.5 A	0.8 A
Available auxiliary current	0.45 A	0.15 A

*I_{SYS} calculated at 252 x 900 series ionisation detectors (FP2416/64) 1008 x 900 series ionisation detectors (FP2864/255)

Table 9: Alarm operation (mains powered)

	FP2416/2464 & FP2432/24128	FP2864/28255 & FP2864N/28255N
Mains load (maximum)	200 VA	200 VA
Total output current (27.6 V)	4 A	4 A
Required battery charging current (maximum battery capacity)	0 A	0 A
Current required by system	0.6 A	1 A
Available auxiliary current	3.4 A	3 A

Charging current based to charge batteries up to 80% in 24 hours at 75% efficiency.

Environmental specifications

	FP/FR12xx & FR2000	FP1216EN & FP1264 & FP1216N / FP1264N	FP/FR2xxx & FP2864N/28255N
IP rating (enclosure)	IP54	IP54	IP54
Operating temperature	-5 °C to +40 °C	- 5 °C to +40 °C	- 5 °C to +40 °C
Storage temperature	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C