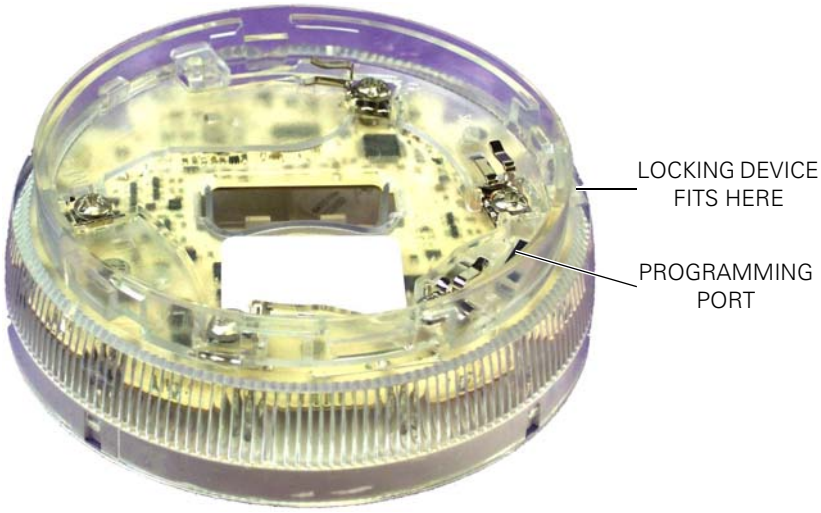
EN54-23 Open Class—FC430LPBSB LP Loop Powered Beacon-Sounder Base



: General View of EN54-23 Open Class—FC430LPBSB LP Beacon-Sounder Base

Introduction

The EN54-23 Open Class—FC430LPBSB LP Loop Powered Beacon-Sounder Base is designed to be driven from a FIRECLASS controller via the addressable loop.

The FC430LPBSB LP is designed to be fitted between a detector and a 4" mounting flange.

A 'Type A' mounting flange is supplied with the base and can be fixed to a flat surface or a suitable electrical backbox with standard 50 mm, or 70 mm fixing centres.

Alternatively, a DAB3-4 mounting flange (to be ordered separately, refer to "Order Information" on page 14) can be used with surface mount trunking.

Fig. 1 shows a general view of the base.

The beacon-sounder base may be used without a detector by fitting a blanking cap (see "Order Information" on page 14).

The detector or blanking cap must be locked onto the beacon-sounder base by using a locking device (supplied).

The sounder has four volume settings:

- High (90 dB ±3),
- Mid High (80 dB ±3),
- Mid Low (70 dB ±3) and
- Low (60 dB ±3).

The beacon emits a white flashing light and has two flash rates:

- Slow Flash (½ Hz), or
- Fast Flash (1 Hz).

The FC430LPBSB LP Beacon-Sounder Base devices are synchronised, but not synchronous with other sounders (FC430SB/FC410SNM) and beacons (FC430SAB).

The first flash of the beacon is synchronised with the start of the tone.

The FC430LPBSB LP Beacon-Sounder Base has a built in two port isolator.

The FC430LPBSB LP Beacon-Sounder Base requires two addresses, not including the associated detector.

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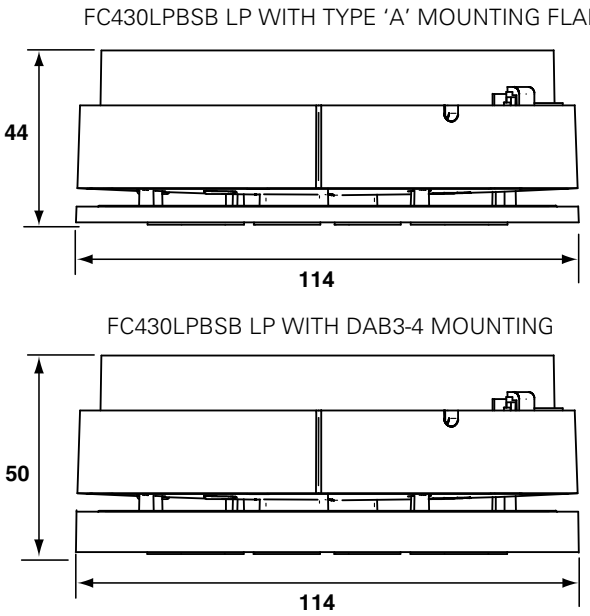

Fig. 2: FC430LPBSB LP Beacon-Sounder with Mounting Flange—Overall Dimensions

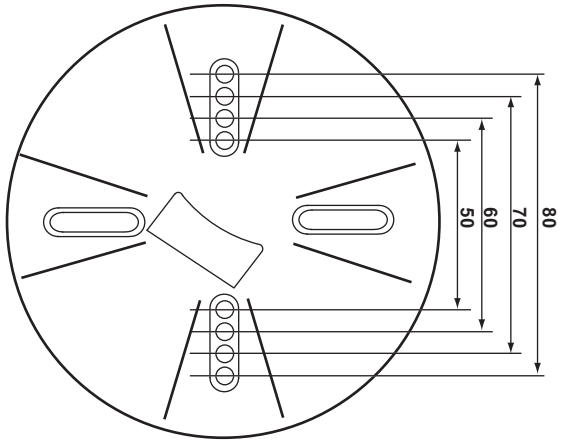

Fig. 3: Mounting Flange—Fixing Dimensions

Mounting Beacon-Sounder

The beacon-sounder body clips onto the mounting flange.

Technical Specification

Mechanical Characteristics

The overall dimensions are shown in Fig. 2. All dimensions are in mm.

Parameter	Value
Weight: ■ Beacon-Sounder Base	160 g
Materials: ■ Beacon-Sounder	ABS/PC FR
Mounting	Surface mount or conduit mount

Table 1: Technical Specification

Environmental Characteristics

Parameter	Value
Temperature: ■ Operating ■ Storage	 -10°C to +55°C -25°C to +70°C
Humidity	Up to 95% RH (non-condensing)
Pressure	Sounder output is quoted for atmospheric pressure of 1000 mBar.
Vibration	Meets the requirements of EN 54-3 and EN 54-23.
Shock	Meets the requirements of EN 54-3 and EN 54-23*.
Corrosion	Passes the SO_2 corrosion test from EN 54-3 and EN 54-23.
IP Rating	IP21C (EN 60529)

Table 2: Environmental Characteristics

**—The DAB3-4 mounting flange was not incorporated within the scope of the EN 54-23 approval.*

Performance Characteristics

Parameter	Value
Sound Performance SPL at 90° at a distance of 1m: High: Mid high: Mid low: Low: **Note:** EN54-3:2001 does not test at 90°.	 90 dB±3 80 dB±3 70 dB±3 60 dB±3
Light Performance: ■ Light colour: ■ Flash rate:	EN54-23 Category O: White flashing light Fast Flash 1 Hz, or Slow Flash ½ Hz

Table 3: Performance Characteristics

EMC:

The FC430LPBSB LP Beacon-Sounder Base complies with the following:

- Product family standard EN50130-4 in respect of:
  - Conducted Disturbances,
  - Radiated Immunity,
  - Electrostatic Discharge,
  - Fast Transients and
  - Slow High Energy.
- EN61000-6-3 for Emissions

Electrical Characteristics

Parameter	Value
Addressable Loop Voltage	20 - 40 Vdc
DC Loop Loading: ■ Quiescent ■ Alarm	 350 μA See Table 5: "Alarm Current"
Isolator:	
Maximum Loop Voltage	40 Vdc
Minimum Loop Voltage	20 Vdc
Maximum Rated Continuous Current (Isolator Closed)	2 A
Maximum Rated Switching Current (s/c)	2 A
Maximum Leakage Current (Isolator Open)	6 mA into zone (10 mA into Isolator)
Maximum Series Impedance (Isolator Closed)	0.25 Ω
Isolator Switching Threshold (Isolator Closed to Open)	20 V or below
Isolator Switching Threshold (Isolator Open to Closed):	2.9 V to 3.5 V from s/c

Table 4: Electrical Characteristics

Alarm Current

Parameter	Low/ Mid-Low	Mid-High/ High	Unit
Sound Output	60/70	80/90	dB
Sounder Only	2.55	4.5	mA
Sounder and Beacon 0.5 Hz	8.2	10	mA
Sounder and Beacon 1 Hz	9.35	11.3	mA

Table 5: Alarm Current

Sounder Tones

Table 6 details the tones available for selection in FIRECLASS Express.

NOTICE: Bell Tone

This is a simulated bell tone with a limited bandwidth. It is not advisable to mix conventional bells and electronic sounders producing a simulated bell tone.

Approved Tones

The tones shown in Table 6 are approved at volumes 'High', 'Mid-high' and 'Mid-low' to EN54-3 with the exception of the Alternating (NF-S 32.001) tone, which is only approved at volumes 'High' and 'Mid-High'. The approved tones meet the specification as shown in Tables 7 to 21. The data applies to both horizontal and vertical planes.

Device Mode	Name	Tone Description			Monitored No pulsing in FIRECLASS Express		Monitored with Pulse Pattern Assigned in FIRECLASS Express	
		Pattern	Frequency (Hz)	Rate	60/ 70db	80/ 90db	60/ 70db	80/ 90db
1	Dutch Slow Whoop	Sweep	500 to 1200	500 Hz rising to 1200 Hz over 3.5 s silence 0.5s repeat	No	Yes	No	No
2	7 Hz Fast Sweep	Sweep	800 to 970	0.1428 s ramp @ 7 Hz	No	Yes	No	No
3	BS 1 Hz Sweep	Sweep	800 to 970	1 Hz	No	Yes	No	No
4	2 Tone	Alternating	660 / 880	500 ms per tone	No	Yes	No	No
5	Temporal 4	Intermittent	880	500 ms on 500 ms off x 4 followed by 1.5 s silence	No	Yes	No	No
6	Australian Sound (AS 1670.4) (Temporal 3 type tone)	Intermittent + Sweep	500 to 1200	500 ms on 500 ms off x 3 followed by 1.5 s silence, sweep during on periods	No	Yes	No	No
7	March Time Beep	Intermittent	880	500 ms on 500 ms off	No	Yes	No	No
8	Continuous	Continuous	970	Steady	No	Yes	No	Yes
9	DIN 1 Hz Sweep	Sweep	1200 to 500	1200 Hz falling to 500 Hz over 1 s and repeat	No	Yes	No	No
10	Banshee LF Buzzer	Sweep	800 to 950	120 Hz	No	Yes	No	No
11	3 Hz Banshee Fast Sweep	Sweep	800 to 950	3 Hz	No	Yes	No	No
12	9 Hz Banshee Fast Sweep	Sweep	800 to 950	9 Hz	No	Yes	No	No
13	Alternating (NF-S 32.001)	Alternating	554 / 440	554 Hz for 100 ms and 440 Hz for 400 ms	No	Yes	No	No
14	Yodalarm	Alternating	800 / 1000	250 ms for each frequency	No	Yes	No	No
15	Conventional Bell (Refer to notice below)	continuous	1450	As per Banshee Multi-Tone (MT) Sounder, Tone No. 32	No	Yes	No	Yes

Table 6: Sounder Tones

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	84.3	84.2	77.6	74.4	67.8	67.2
45°	82.7	82.1	76.5	75.5	66.6	65.1
75°	91.3	90.2	83.3	82.1	73.1	72.6
105°	89.1	87.7	79.8	78.7	69.0	68.2
135°	86.6	85.5	78.2	77.0	67.4	66.9
165°	88.6	87.4	80.2	79.1	69.6	69.0

Table 7: Dutch Slow Whoop Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	83.7	82.2	75.0	74.7	65.9	64.4
45°	82.3	82.1	73.8	73.2	63.5	65.4
75°	91.0	89.6	82.5	81.7	72.2	71.8
105°	87.6	86.6	78.8	78.3	68.1	67.8
135°	84.6	83.0	76.3	75.5	65.7	65.4
165°	86.9	85.5	78.4	77.6	67.9	67.6

Table 8: 7Hz Fast Sweep Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	84.3	82.6	76.4	74.8	66.0	65.4
45°	81.2	79.3	75.6	74.4	65.4	65.6
75°	90.4	89.0	83.3	81.8	73.1	72.3
105°	87.8	86.2	78.9	77.8	68.6	67.5
135°	84.8	83.4	76.7	75.7	65.8	65.6
165°	87.4	85.9	79.4	78.1	68.2	67.7

Table 9: BS 1Hz Sweep Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	83.0	81.5	74.6	73.8	63.5	63.1
45°	80.8	79.5	75.5	74.7	63.2	63.8
75°	89.4	85.5	82.0	81.5	71.9	70.8
105°	85.6	84.3	78.7	77.8	67.7	67.3
135°	85.2	83.8	77.2	77.0	66.6	66.2
165°	85.4	84.3	78.0	77.5	67.4	66.4

Table 10: 2 Tone Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	82.9	81.5	74.2	73.8	63.5	63.4
45°	80.9	80.1	73.8	74.0	64.2	63.9
75°	89.2	87.9	81.8	81.2	71.8	71.1
105°	85.6	84.5	78.7	77.8	67.5	67.4
135°	85.1	83.4	77.5	76.5	66.5	66.0
165°	85.5	84.0	78.1	77.3	66.9	66.6

Table 11: Temporal 4 Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	82.8	81.4	75.4	74.9	65.7	64.9
45°	80.7	79.2	73.8	72.7	64.1	64.5
75°	89.6	88.3	81.8	81.0	71.9	71.1
105°	86.5	84.9	78.2	77.3	67.3	66.4
135°	83.6	82.1	76.2	75.4	66.1	65.4
165°	85.9	84.5	78.0	77.1	67.9	67.2

Table 12: Australian (AS 1670.4) (Temporal 3 Type) Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	82.1	80.2	74.4	73.8	63.6	63.3
45°	80.1	79.3	74.0	72.3	61.5	63.3
75°	88.8	87.8	82.0	81.3	71.0	70.6
105°	85.6	84.5	78.8	78.0	67.8	67.4
135°	85.5	83.8	76.8	77.1	66.9	66.5
165°	86.2	84.6	78.5	77.8	67.7	67.2

Table 13: March Time Beep Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	85.5	84.0	79.0	77.9	69.1	68.4
45°	80.4	78.7	73.7	72.0	62.6	63.0
75°	90.2	88.8	83.4	82.3	73.5	73.1
105°	83.7	83.2	77.8	76.8	67.3	67.9
135°	80.9	78.6	74.3	73.6	64.1	63.6
165°	82.0	80.6	76.0	75.0	65.8	65.6

Table 14: Continuous 970Hz Volume

Angle	High Volume		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	82.9	81.4	76.4	75.3	66.2	65.9
45°	80.3	78.9	74.3	73.5	64.1	63.8
75°	89.6	88.2	82.4	81.3	72.1	71.8
105°	86.4	85.1	78.9	77.9	68.1	67.7
135°	83.7	82.2	76.9	75.9	66.1	65.7
165°	86.1	84.4	76.9	77.7	68.0	67.4

Table 15: DIN 1Hz Sweep Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	82.7	81.5	74.3	73.8	65.4	63.3
45°	80.1	79.5	73.6	72.4	61.9	61.6
75°	90.4	89.1	82.0	81.1	71.7	71.0
105°	87.5	86.4	79.0	78.0	69.5	67.3
135°	84.6	83.4	76.5	75.8	65.6	65.6
165°	86.5	85.5	78.6	77.7	67.7	67.1

Table 16: Banshee LF Buzzer Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	82.7	81.4	74.6	74.2	65.0	63.9
45°	81.3	79.9	75.4	75.3	62.5	62.4
75°	90.1	88.9	80.3	79.6	71.8	71.5
105°	87.2	85.9	78.8	78.8	68.6	68.2
135°	84.7	83.1	73.1	72.3	65.8	65.7
165°	86.9	85.3	76.8	76.0	67.9	67.5

Table 17: 3Hz Banshee Fast Sweep Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	82.4	81.6	74.2	73.6	65.0	64.7
45°	80.1	79.6	72.6	71.4	64.6	62.3
75°	90.1	89.2	82.0	80.8	71.4	71.3
105°	87.4	86.7	78.9	78.3	68.5	67.9
135°	84.4	83.4	76.4	75.9	66.2	65.4
165°	86.8	86.1	78.6	78.0	67.9	67.5

Table 18: 9Hz Banshee Fast Sweep Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)	
	40V	20V	40V	20V
15°	80.9	80.1	73.0	72.9
45°	82.1	79.6	73.4	72.7
75°	88.5	87.6	79.9	79.8
105°	85.7	84.7	76.5	76.7
135°	82.7	81.7	73.9	74.7
165°	83.7	83.0	75.3	75.4

Table 19: Alternating (NF-S 32.001) Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	83.9	82.5	79.0	77.7	68.6	68.2
45°	81.0	78.8	76.1	74.4	65.5	65.1
75°	88.5	87.0	83.0	81.8	71.9	71.8
105°	85.6	84.1	78.1	76.6	66.2	65.7
135°	84.3	82.8	77.9	76.9	66.8	66.0
165°	85.1	83.3	79.5	78.2	68.6	68.2

Table 20: Yodalarm Volume

Angle	High Volume dB(A)		Mid-High Volume dB(A)		Mid_Low Volume dB(A)	
	40V	20V	40V	20V	40V	20V
15°	85.4	85.2	78.2	78.6	68.2	67.8
45°	81.0	78.5	76.5	76.7	62.5	62.0
75°	91.0	89.8	81.6	81.9	74.0	73.6
105°	84.8	84.0	74.6	75.2	66.7	68.5
135°	78.0	76.7	77.9	78.4	61.0	61.3
165°	80.7	79.0	78.8	78.3	63.3	62.8

Table 21: Conventional Bell Volume

Beacon Information

Category O - open class device (See Table 22 and Fig. 4). The data applies to both the Slow Flash (1/2 Hz) and the Fast Flash (1 Hz) while it is fitted with either a detector or a blanking cap.

The light distribution is cylindrically symmetrical about an axis at a right angle (Alpha of 90°) to the surface on which the device is mounted, i.e. when the device is mounted on a horizontal ceiling, the light distribution is symmetrical about an axis extending vertically downwards through the centre of the device. The light distribution in Fig. 4 represents a cross-section through the volumetric shape using the values as indicated in Table 22.

Alpha [degrees]	Distance [metres]
90	0
75	0
60	1
45	1.4
30	1.75
15	1.95
0	1.85

Table 22: FC430LPBSB LP Beacon-Sounder— 0.4 lm/m^2 Illumination Distance

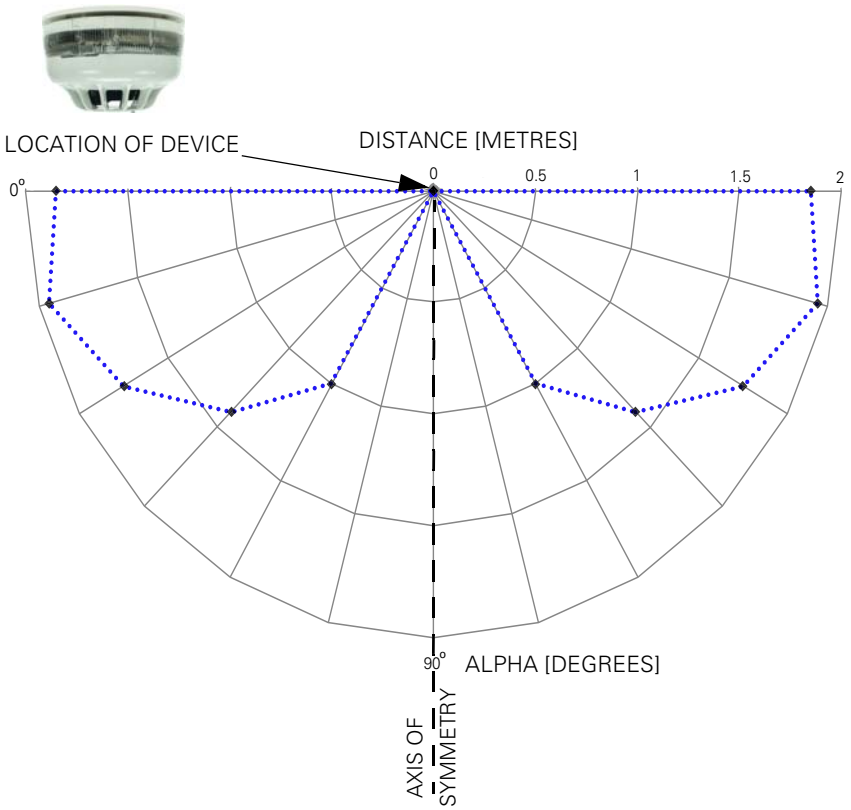

Fig. 4: FC430LPBSB LP Beacon-Sounder—Graphical Illustration of Ceiling Mount Light Distribution

Address Programming

The factory set address is 255. The device should be programmed with its loop address before installation using an FC490ST with an ancillary lead that plugs in to the device's programming port (see Fig. 1).

The FC430LPBSB LP Beacon-Sounder uses two consecutive addresses on the addressable loop, starting from the chosen programmed address number. These addresses are automatically generated when a FC430LPBSB LP Beacon-Sounder Base is selected in FIRECLASS Express.

The address configuration is as follows:

Address	Type
n	Sounder Device
n+1	Beacon Device

Table 23: Address Configuration

FC430LPBSB LP Beacon-Sounder Base Configuration

Sounder tone (Device Mode), sounder volume output (Sensitivity) and beacon flash rate (Device Mode) are configured in FIRECLASS Express.

Sounder Beacon Processing

Reference Document

Refer to the latest version of the FIRECLASS Express Help File for information on Sounder Beacon Processing.

Output Pulse Pattern

Output pulse patterns are restricted such that the period between a sounder Low to High transition to the next Low to High transition is a multiple of the beacon flash rate period.

Fault Monitoring

Both the beacon and sounder are monitored. The last 2 columns of Table 6, "Sounder Tones," on page 5, shows if the sounder is monitored, as a function of volume setting and system configuration. Sound monitoring is also referred to as Reflective Sound Monitoring (RSM). For further details on the application of this function, refer to the Technical Publications of the relevant Control and Indicating equipment.

Isolator Operation

The built-in isolator serves as a protection device against short circuits. It operates by isolating the section of line containing the short circuit from devices on the line and from the rest of the line (refer to Fig. 5).

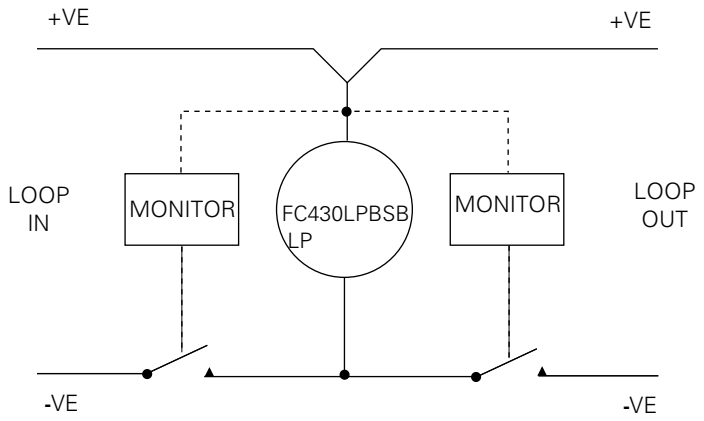

Fig. 5: Simplified Isolator Diagram

Optimum operation requires the line to be wired as a loop, so that a section of line with a short circuit can be isolated between a pair of isolator devices (including FC430LPBSB LP Beacon-Sounder Base).

In order to enable the isolator's use in a looped circuit, it is capable of passing current in both directions:

- Loop IN to Loop OUT or
- Loop OUT to Loop IN.

In the event of a line short circuit, the line isolator continues to power its Beacon-Sounder, providing that either Loop IN or Loop OUT remains intact. When a short circuit develops, the adjacent isolator devices will isolate both sides of the loop from the faulty device/ cable.

The operation of the loop driver means that there are effectively 2 operational modes for the built-in isolator.

- When the loop is first powered, if a section of the line appears as a low impedance (with an equivalent resistance of <400Ω), the isolator will restrict the power to that section of line until the fault is cleared.
- If a short circuit is introduced onto the line when the loop is already powered up, in most instances the controller's internal protection will switch in before the line isolator. The voltage is then removed from the line by the controller, on restoration, the isolator devices will isolate the low impedance section of the line.

Cabling

Cables should be selected in accordance with local standards. Cabling should be connected as shown in Fig. 6 ensuring correct polarity.

Each terminal connection will accept wire size up to 2.5 mm^2 (MICC or similar).

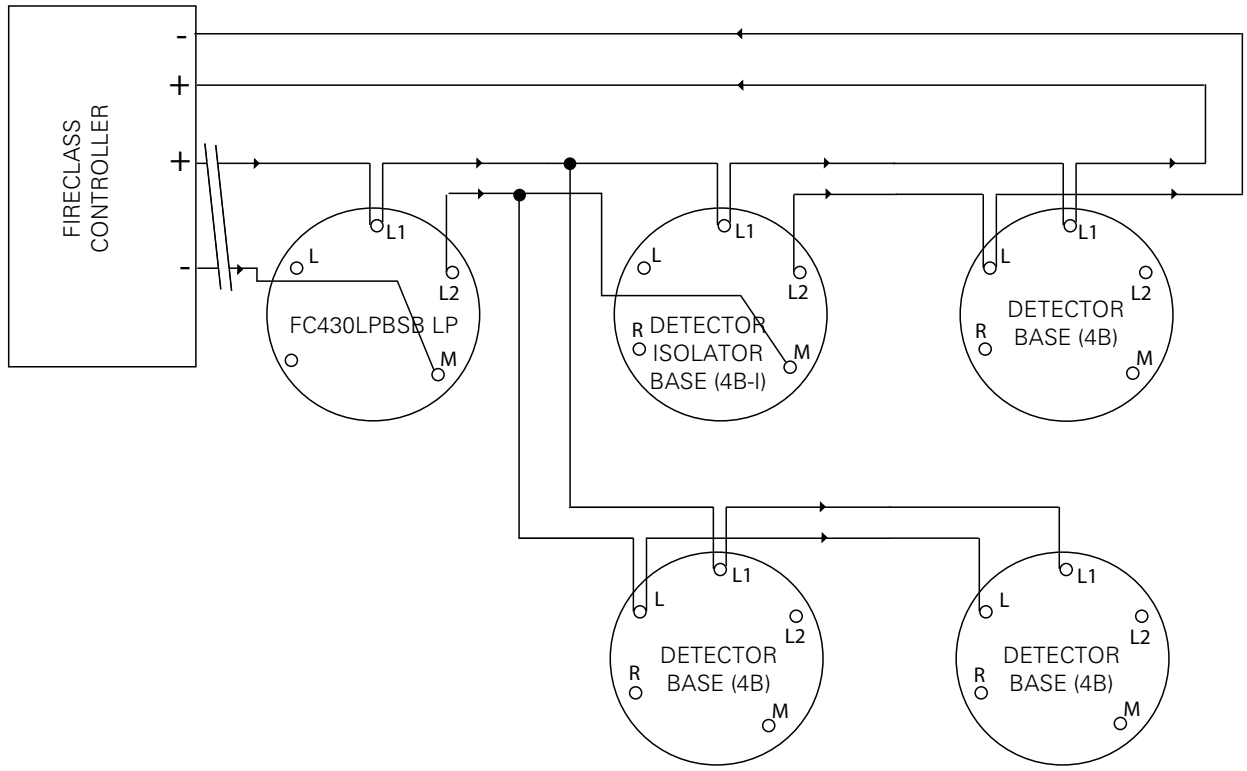

Fig. 6: Simplified Wiring Diagram for FC430LPBSB LP Beacon-Sounder

CPR Information

CE

0832

Tyco Fire & Security GmbH, Victor von Bruns-Strasse 21, 8212, Neuhausen am Rheinfall, Switzerland

15

DoP-2014-2009

516.800.973 FC430LPBSB LP

Fire alarm device – Sounder and Visual alarm device (VAD) with short circuit isolator for use in fire detection and fire alarm systems installed in and around buildings
Type A

Essential Characteristics

EN54-3: 2001 + A1:2002 + A2:2006

Performance under fire condition: Pass
Operational reliability: Pass

Durability:

Temperature resistance: Pass
Humidity resistance: Pass
Corrosion resistance: Pass
Shock and vibration resistance: Pass
Electrical stability: Pass
Resistance to ingress: Pass

EN54-17:2005

Performance under fire conditions: Pass
Operational reliability: Pass

Durability:

Temperature resistance: Pass
Vibration resistance: Pass
Humidity resistance: Pass
Corrosion resistance: Pass
Electrical stability: Pass

EN54-23: 2010

Duration of operation: Pass
Provision for external conductors: Pass
Flammability of materials: Pass
Enclosure protection: Pass
Access: Pass
Manufacturer's adjustments: Pass
On-site adjustment of behaviour: Pass
Requirements for software controlled devices: Pass
Coverage volume: Pass
Variation of light output: Pass
Minimum and maximum light intensity: Pass
Light colour: White
Light temporal pattern / frequency of flashing: Pass / 0.5Hz and 1Hz
Marking and data: Pass
Synchronization: Pass

Durability:

Temperature resistance: Pass
Humidity resistance: Pass
Shock and vibration resistance: Pass
Corrosion resistance: Pass
Electrical stability: Pass

Fig. 7: CPR Information

Order Information

Product	Order Code
EN54-23—FC430LPBSB LP Loop Powered Beacon-Sounder Base	516.800.973
DAB3-4 Mounting Flange (Conduit)	516.800.959
Sounder Blanking Cap	557.001.040

Table 24: Order Information

FIRECLASS

www.fireclass.net
FC-D-LPBSOC-PI, doc. version 3, 22. April 2015