ADDRESSABLE FIRE DETECTION SYSTEM EQUIPMENT DATA SHEET

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T2000&T2000R MARINE PANEL

MINERVA® Marine

MX T2000 & T2000R Panel Range

Features:

- Enhances fire detection and eliminates unwanted alarms using "fuzzy logic"
- Assists fire fighting and training by providing on-screen risk management information
- Helps fire crews by giving smoke density and temperature readings in the affected areas
- Simplifies maintenance by pin-pointing faults
- Enables remote fault finding to be carried out
- Flexible interfacing with graphic management systems

MINERVA® Marine Panel Range

MINERVA® MX is a comprehensive range of fire controllers designed and built to BSEN ISO9001/2 and EN54. An advanced proven microprocessor based system, MINERVA® MX provides conventional and digital addressable detection for new, refurbished and refitted detection systems.

A wide range of detectors and ancillaries makes MINERVA® MX suitable for applications from general cargo vessels to large passenger vessels and offshore installation.

What should you expect of your fire detection system?

In broad terms: cost effective reliability and flexibility. In today's vessels under today's conditions you should also be looking for ease of operation, flexible programming, precise fire source pin-pointing and the kind of circuitry and sensitivity which ensures rapid activation in the event of a fire.

MINERVA® MX meets all these expectations as a matter of course

T2000 is a comprehensive range of fire controllers designed and built to BSEN ISO9001/2 by the world's leading fire and security company. The T2000 has been approved by all the major marine authorities.

An advanced proven micro-processor based system MINERVA® MX provides conventional as well as addressable detection at the price of today's conventional systems.

The decision to sound the alarm is made at the controller allowing adjustments and compensations to be made for changes in environmental conditions. In short, maximum security whilst minimising the risk of false alarms.

Modular in design MINERVA® MX provides economical fire detection for small vessels but is also flexible enough to implement the complex event procedures required in larger ones. Detectors are controlled in groups of up to 240 zones all software configurable, so avoiding the expensive need to hardwire each zone back to the control panel. Further savings are made possible by harnessing the power of the latest micro-processing technology to enable a single loop of two-core cabling to carry both detection and command signals.

Backwards compatibility is also achieved by using an ancillary module which allows existing fire systems to be updated and extended cost effectively, utilising existing wiring where possible and with minimal disruption. Other ancillary modules offer even greater system flexibility: short circuit sensing isolation ensures the T2000 continues in operation, even if a wiring fault occurs. Local sounder activation further reduces wiring costs and switch monitoring allows easy interface to a vessels machinery control system.

Further flexibility and installation savings can be made using the loop power T2000 options. Loop powered T2000 panels allow sounders to be powered from the same loop wires that carry communications and power to the detectors and other ancillaries.

MINERVA® MX Key Functions

Thanks to powerful software each zone can be given a tailor-made response text message to help locate the source of a fire. Software configuration and reconfiguration can be carried out on site, with minimum disruption and the avoidance of system down time. Correct execution of the software is ensured by twin micro-processors that perform watchdog functions on each other.

MINERVA® MX sounders can be set for either continuous, pulse, or a combination of two tones via the system software.
To aid the rapid location of fire, remote repeater panels or geographical mimics can be connected to the controllers for greater monitoring convenience, as can visual display units.

The displayed temperature and smoke density reading allows the operator to quickly visualise the situation and select the appropriate procedures to be implemented.

For management information, a printer can also be connected to the T2000 providing a hard copy of events. The T2000 has the capacity to store up to 3000 events in its memory. Finally a weekly test reminder facility can be built in, while a walk-test facility allows truly cost-effective systems checking by a single operative.

T2000

The T2000 panels are intelligent EN54 approved and marine approved sub-panels, which can be networked.

A test report detailing compliance to naval test requirements for Shock , Vibration & EMC (NES814 , NES 1004 Iss 2 & DefStan 59-41) is available . The panel can also be ordered with a factory test certificate and label which references this test report.

The T2000 panel is supplied with 2 loops and is expandable to eight loops using additional loop expansion cards. The panel will support up to 1000 addressable devices.

The PSB800MK power expansion kit can provide additional power for the extra loops.

The panel consists of a strong stainless steel or mild steel enclosure containing:

- PSB800 5A 24Vd.c. battery backed power supply and loop booster to EN54:pt.4
- FIM800 field interface PCB incorporating two MX DIGITAL loops
- CPU800 32 bit processor and memory card
- Optional network card, additional loop card(s) and remote diagnostic modem
- Optional IOB800 input/output expansion card mounted on the PSB800

The panel has a strong cast aluminium front door, which incorporates a modular user interface that fully complies with EN54:pt.2. The user interface incorporates the ODM800 operator display module with a 16 x 40-character backlit LCD display, simple alphanumeric keypad and 5 softkeys. The OCM800 module provides all mandatory operator control keys and LED functions including Manned/Unmanned switching. Two control keys and 2 indication LEDs are provided for vessel-specific functions.

Control keys and LEDs are labelled in English according to the default approved functionality. The slide in decals can be reversed and alternative text added.

T2000 Repeaters

The MINERVA® MX full function repeater is an EN54 Marine approved repeater with optional addressable EN54:Pt.4 power supply. The repeater consists of a stainless steel or mild steel backbox and cast aluminium front door which incorporates the ODM800 operator display module with a 16 x 40-character backlit LCD display, simple alphanumeric keypad and 5 softkeys. The OCM800 operator control module provides all mandatory operator control keys and LED functions including Manned/Unmanned switching. Two control keys and 2 indication LEDs are provided for vessel-specific functions.

Control keys and LEDs are labelled in English according to the default approved functionality. The slide in decals can be reversed and alternative text added.

The back box contains the PSM800 power supply and space for 2 x 7 Ah batteries to provide 72 h backup.

The T2000 repeater with Power Supply is connected to the Panel via the remote bus (RS485, 1200 m distance). A maximum of 7 repeaters (including one MX REMOTE repeater) can be linked to each T2000 panel and can provide full repeater functions for all panels on the system.

The operator control module (OCM800) can support up to 80 inputs and outputs in the form of LED annunciators, IOB800 input/output modules, XIOM universal I/O modules or the XIOM 800 LED mimic module.

T2000CV

The T2000 panels are intelligent EN54 approved and marine approved panels, designed for commercial vessels where a large networked system is not required.

The T2000CV panel provides three loops supporting up to 750 addressable devices

The panel consists of a mild steel enclosure, containing:

- PSB800 5A 24Vd.c. battery backed power supply and loop booster
- FIM801CV field interface PCB incorporating one MX DIGITAL loop
- CPU800 32 bit processor and memory Card
- XLM800 loop expansion card containing two MX Digital loops
- Optional remote diagnostic modem
- Optional IOB800 input/output expansion card mounted on the PSB800

The panel has a strong cast aluminium front door, which incorporates a modular user interface that fully complies with EN54:pt.2. The user interface incorporates the ODM800 operator display module with a 16 x 40-character backlit LCD display, simple alphanumeric keypad and 5 softkeys. The OCM800 operator control module provides all mandatory operator control keys and LED functions including Manned/Unmanned switching. Two control keys and 2 indication LEDs are provided for vessel-specific functions.

Control keys and LEDs are labelled in English according to the default approved functionality. The slide in decals can be reversed and alternative text added.

T2000R CV indicating repeater

The T2000R CV indicating repeater is an EN54 Marine approved repeater (24Vdc Supply).

The repeater consists of a mild steel backbox and cast aluminium front door which incorporates the ODM800 operator display module with a 16 x 40-character backlit LCD display, simple alphanumeric keypad and 5 softkeys.

Operator controls comprise a panel buzzer silence button , status LED's are provided for fire , fault and power on indication.

The T2000R CV indicating repeater is connected to the Panel via the remote bus (RS485, 1200 m distance). A maximum of 7 repeaters (including one MX REMOTE repeater) can be linked to each control panel and can provide repeater functions for all panels on the system.

The repeater can support up to 80 inputs and outputs in the form of LED annunciators, IOB800 input/output modules, XIOM universal I/O modules or the XIOM 800 LED mimic module.

almar
foreign trade limited company

Technical Specifications

Mechanical

Dimensions (WxHxD)	Controller 440 x 320 x 135mm
Colour	Dawn Grey (Housing) Pantone - 431C (Modules)
Installation	Surface or Semi-flush Mounted

Environmental

Operating Temp. Range	_ 8°C to + 55°C
Storage Temp. Range	_ 20°C to + 70°C
Humidity	Up to 95% RH (Non-condensing)
Housing Protection To	IP42

Electrical

Mains Supply	120V-240Vac + 10% / -15% at 50/60Hz
Secondary Supply	24V d.c. Nominal

T2000R CV Indicating Repeater

Input Voltage	24V d.c. Nominal

Input

T2000 Panel

No. of Loops	2, expandable to 8
Addresses per panel	1000 Max

T2000CV Panel

No. of Loops	3
Addresses per panel	750 Max

Output

T2000 Panel & T2000CV

Display	240 Zone 16 x 40 Character
Sounder	There are two separate monitored sounder outputs each rated at 2A.
Alarm	Fire _ Relay output rated at 30V d.c. at 1.0A volt free c/o. Fault _ Relay output rated at 30V d.c. at 1.0A volt free c/o.

Detector Bases

801IB	Isolator Base
801RB	Relay Base
802SB	Loop Powered Sounder Base
5B	5" Universal Base

Command Modules

SNM800	Sounder Module
RIM800	Relay Module
CIM800	Contact Monitor Module
SB520	Sounder Booster Module
TM520	Timer Module
DIM800	Conventional Detector Module
APM800	Power Supply Monitor Module
MIM800	Mini Input Module
CP820M	Indoor Callpoint
CP830M	Outdoor Callpoint
MIO800	Multi-Input Output Module

8 Loop Support (T2000 Only)

SB800MK	8 Loop Power Expansion Kit
XLM800	Loop Expansion Card (Loops)
T2000	8 Loop Mounting Kit

516.850.055
851PH SMOKE & HEAT DETECTOR

850/851 Series Fire Detectors - *Generation 6*

Features:

- Choice of heat, optical and heat multi-sensor or 3*o*Tec triple multi-sensor
- Advanced multi-sensor designs
- Built-in line isolator
- Quick and easy to install
- Extended drift compensation
- Two way infra-red communication to the 850EMT Engineering Management Tool
- Fire, isolate and fault LED indications
- Comprehensive range of bases and base accessories
- SIL2 Certified

The Generation 6 fire detectors are designed to be both adaptable and flexible which means they can be used in most applications to protect against a wide range of potential fire risks. They use sophisticated digital signalling to communicate with the MZX Technology T2000 fire alarm control panel.

Using the 850EMT Engineering Management Tool, which communicates with the detector via a two way infrared link together with a range of bases and accessories, they are quick and easy to install, commission and service.

851PH Photo Heat Detector

With the ability to detect a wide range of fires from flaming to smouldering types, the combined optical and heat multi-sensor detector is the preferred choice for a range of applications. It operates in a number of approved modes and sensitivities that can be dynamically selected to suit different environmental conditions.

850H Heat Detector

To compliment the range the heat sensor can operate in fixed temperature and rate-of-rise modes with a number of approved sensitivities. Most often used in areas where high levels of dust are present or where the environment precludes the use of smoke detectors.

850PC 3*o*Tec Triple Sensor Detector

For life protection and when the environmental conditions are challenging, the 3*o*Tec detector provides the ultimate in detector performance and false alarm rejection. It is a multi sensor that monitors smoke, heat and CO levels in concert to accurately determine the presence of fire.

Detector Bases

The detector bases are designed to screw fix direct to the deck head or onto a deck head mount. A park position allows the detector to be mechanically attached to the base without making electrical connection to facilitate the testing of electronic free bases. The following versions are available:-

4B 4" Detector Base

The standard 4" Detector Base is used when short circuit isolation is not required.

4B-C 4" Continuity Base

The 4" Continuity Base is for use with the 850/851 Series detectors that have built in line isolators. The 4B-C base provides continuity when the detector is removed.

4BI 4" Isolator Base

A 4" Isolator Base which will provide local short circuit isolation for the 811 Series Fire Detectors.

5BI 5" Isolator Base

A 5" Isolator Base which will provide local short circuit isolation for the 811 Series Fire Detectors.

Deckhead Mount

The deck head mount provides an IP55 seal between the mount and the detector base to provide superior environmental protection. It is available in a diameter of 4" and 5" for use with the 4" and 5" bases.

Manual Alarm Break Glass Call Points

An indoor (IP24D) and outdoor (IP67) manual alarm break glass call point with in built isolator.

850 EMT Engineering Management Tool

The 850EMT is a commissioning tool that communicates with Generation 6 fire detectors via a two way infrared link. It is designed to speed up and simplify installation and commissioning, reduce the possibility of engineering error and improve health and safety by removing the need for working at height.

Approvals

DEVICE	APPROVAL/CLASS
851PH, 850H, 850PC, MCP820M, MCP830M	MED and Class Society Approvals have been applied for. Please check the Tyco Fire Protection Products Website for the latest approval status.

Technical Specifications

Item	Dimensions mm	Weight g	Operating Temperature	Relative Humidity
851PH Photo Heat Detector	Dia 108 x 42H	76	-25°C to +70°C	95% Non Condensing
850H Heat Detector	Dia 108 x 42H	81	-25 °C to +70 °C (short- term to +90 °C)	95% Non Condensing
850PC 3oTec Triple Sensor Detector	Dia 108 x 42H	94	-10°C to +55°C	95% Non Condensing
4B-C 4" Continuity Base	Dia 109 x 25H	64	-25°C to +70°C (+90°C for short periods)	95% Non Condensing
4B 4" Detector Base	Dia 109 x 25H	64	-25 °C to +70°C (+90°C for short periods)	95% Non Condensing
4BI 4" Isolator Base	Dia 109 x 25H	64	-25 °C to +70°C (+90°C for short periods)	95% Non Condensing
5BI 5" Isolator Base	Dia 125.6 x 23.5H	63	-25 °C to +70 °C	95% Non Condensing
4B-DHM 4" Deck Head Mount	147.5 x 115 x 41.5H	200	-25°C to +70°C	95% Non Condensing
DHM-5B 5" Deck Head Mount	163 x 132 x 40H	200	-25°C to +70°C	95% Non Condensing
MCP820M Indoor Call Point c/w Isolator	93 x 89 x 27.5H	110	-10°C to +55°C	95% Non Condensing
MCP830M Outdoor Call Point c/w Isolator	93 x 97.5 x 73H	240	-25°C to +70°C	95% Non Condensing

Ordering Information

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516.850.053	850H Heat Detector
516.850.054	850PC 3oTec Triple Sensor Detector
516.850.900	850EMT Engineering Management Tool
517.050.041	4B 4" Detector Base
517.050.042	4B-C 4" Continuity Base
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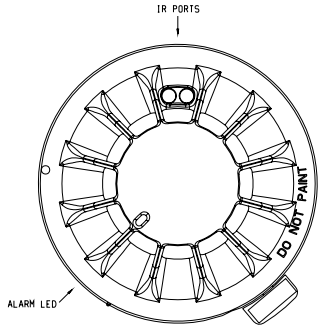
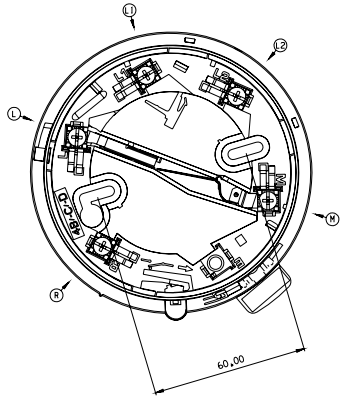
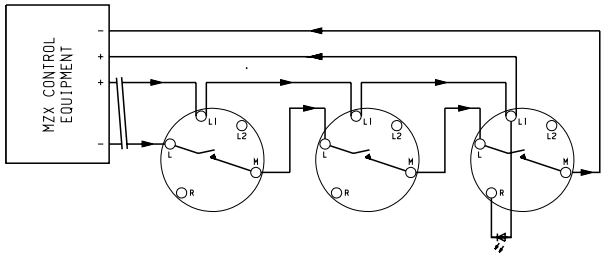
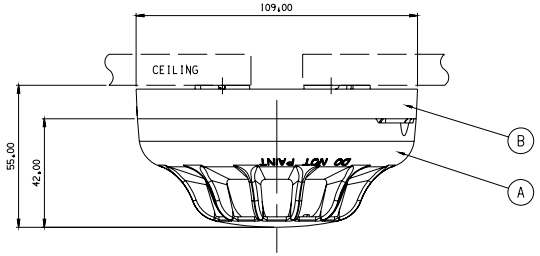
517.050.018	5BI 5" Isolator Base
517.050.051	4B-DHM 4" Deck Head Mount
517.050.603	DHM-5B 5" Deck Head Mount
514.800.609	MCP820M Indoor Call Point c/w Isolator
514.800.610	MCP830M Outdoor Call Point c/w Isolator
516.800.915	Standard Address Flag

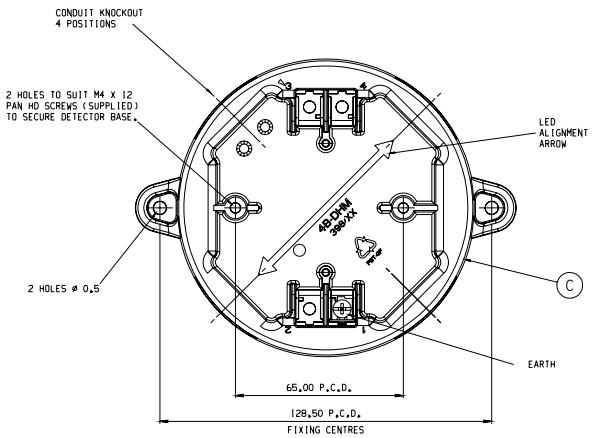


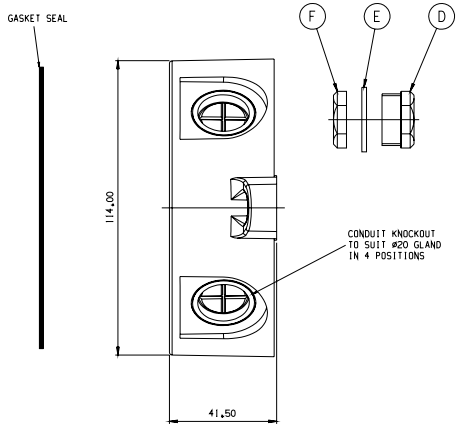




CONNECTION DIAGRAM







ELECTRICAL DATA

OPERATING VOLTAGE	20 MIN – 40 MAX (Vdc)
QUIESCENT CURRENT	400uA MAX
ALARM CURRENT	4.1mA MAX

TECHNICAL DATA

DETECTOR AND BASE

MATERIAL:	PC/ABS FR UL94-V0 AT 1.5MM
COLOUR:	WHITE
WEIGHT:	140g

DECK HEAD MOUNTING

MATERIAL:	PBT-GF 30M FR
COLOUR:	WHITE (RAL 9010)
WEIGHT:	200g

ENVIRONMENTAL

ENCLOSURE TO:	IP55 (PROVISIONAL)
EMC:	EN 50130-4 EN61000-6-3 AND MARINE REQUIREMENTS
OPERATING TEMPERATURE:	-25°C TO +70°C
HUMIDITY:	95% NON-CONDENSING
SHOCK, VIBRATION, IMPACT & CORROSION:	EN54 Pt.10 AND MARINE REQUIREMENTS

REF	ITEM	DESCRIPTION	STOCK CODE No
A	851PH	OPTICAL & HEAT DETECTOR	516.850.055
B	4B-C	4" CONTINUITY BASE	517.050.042
C	4B-DHM	4" DECKHEAD MOUNTING	517.050.051
D		20mm CABLE GLAND WHITE	400.001.022A
E		20mm SEALING WASHER WHITE (PK of 100)	400.001.022W
F		20mm LOCKNUT WHITE	400.001.022

APP'D	A.NAISH
ISSUE	1 ECN217 20-03-12

DO NOT SCALE - REMOVE ALL BURRS AND SHARP EDGES - ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED. TO BE READ IN CONJUNCTION WITH BS 308.

THORN SECURITY

TITLE

851PH OPTICAL & HEAT DETECTOR

CONNECTION AND OUTLINE DRAWING WITH 4B-C CONTINUITY BASE AND 4B-DHM DECKHEAD MOUNTING

DRAWN	L.MARRS	23-02-12	ENG'R	A.NAISH	23-02-12

DEV.No.

DRAWING No. MS 516.850.055

SHEET 1 OF 1

MATERIAL

FINISH

SCALE 1:2

THIRD ANGLE PROJECTION

TOLERANCES (UNLESS STATED)
GENERAL ±0.2mm
HOLE CENTRES ±0.12mm
HOLE DIAMETERS +0.1mm -0
ANGULAR ±30'

RELEVANT DRAWINGS

USED ON

A3

516.850.053
850H HEAT DETECTOR

850/851 Series Fire Detectors - *Generation 6*

Features:

- Choice of heat, optical and heat multi-sensor or 3*o*Tec triple multi-sensor
- Advanced multi-sensor designs
- Built-in line isolator
- Quick and easy to install
- Extended drift compensation
- Two way infra-red communication to the 850EMT Engineering Management Tool
- Fire, isolate and fault LED indications
- Comprehensive range of bases and base accessories
- SIL2 Certified

The Generation 6 fire detectors are designed to be both adaptable and flexible which means they can be used in most applications to protect against a wide range of potential fire risks. They use sophisticated digital signalling to communicate with the MZX Technology T2000 fire alarm control panel.

Using the 850EMT Engineering Management Tool, which communicates with the detector via a two way infrared link together with a range of bases and accessories, they are quick and easy to install, commission and service.

851PH Photo Heat Detector

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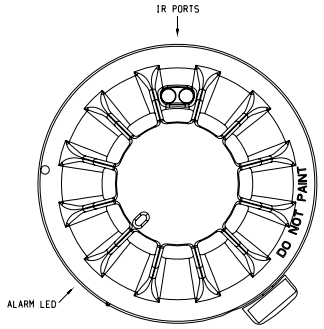
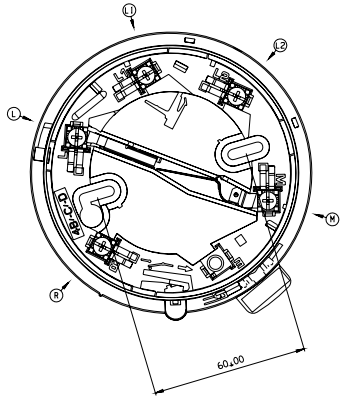
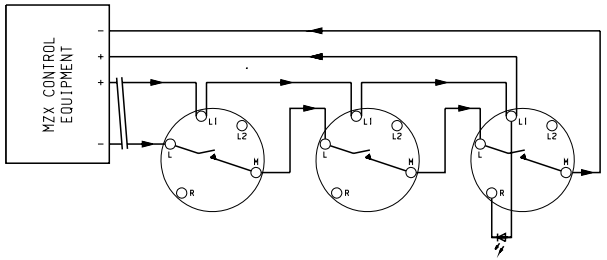
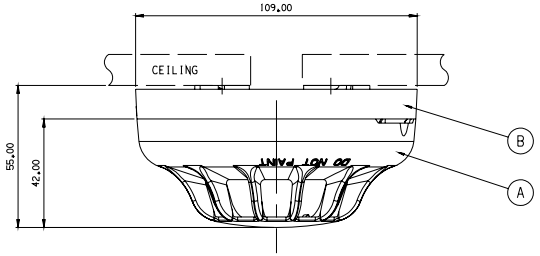
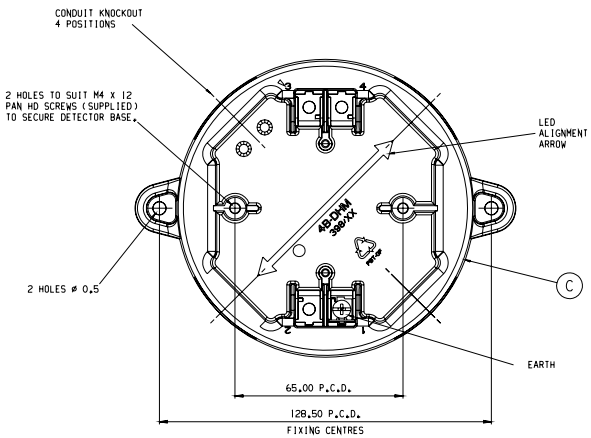


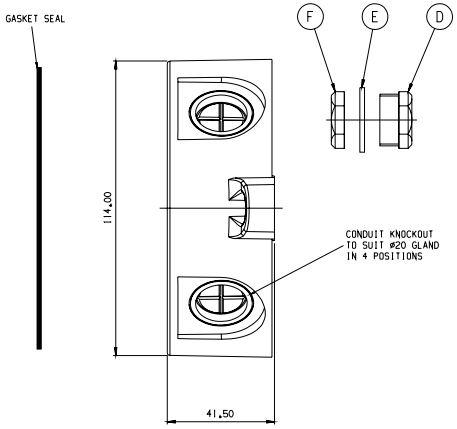




CONNECTION DIAGRAM







ELECTRICAL DATA

OPERATING VOLTAGE	20 MIN – 40 MAX (Vdc)
QUIESCENT CURRENT	350uA MAX
ALARM CURRENT	4.05mA MAX

TECHNICAL DATA

DETECTOR AND BASE

MATERIAL:	PC/ABS FR UL94-V0 AT 1.5MM
COLOUR:	WHITE
WEIGHT:	145g

DECK HEAD MOUNTING

MATERIAL:	PBT-GF 30M FR
COLOUR:	WHITE (RAL 9010)
WEIGHT:	200g

ENVIRONMENTAL

ENCLOSURE TO:	IP55 (PROVISIONAL)
EMC:	EN 50130-4 EN61000-6-3 AND MARINE REQUIREMENTS
OPERATING TEMPERATURE:	-25°C TO +70°C
HUMIDITY:	95% NON-CONDENSING
SHOCK, VIBRATION, IMPACT & CORROSION:	EN54 Pt.10 AND MARINE REQUIREMENTS

REF	ITEM	DESCRIPTION	STOCK CODE No
A	850H	HEAT DETECTOR	516.850.053
B	4B-C	4" CONTINUITY BASE	517.050.042
C	4B-DHM	4" DECKHEAD MOUNTING	517.050.051
D		20mm CABLE GLAND WHITE	400.001.022A
E		20mm SEALING WASHER WHITE (PK of 100)	400.001.022W
F		20mm LOCKNUT WHITE	400.001.022

APP'D	A.NAISH
ISSUE	1 ECN217 20-03-12

DO NOT SCALE - REMOVE ALL BURRS AND SHARP EDGES - ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED. TO BE READ IN CONJUNCTION WITH BS 308.

THORN SECURITY

TITLE

850H HEAT DETECTOR

CONNECTION AND OUTLINE DRAWING WITH 4B-C CONTINUITY BASE AND 4B-DHM DECKHEAD MOUNTING

DRAWN	L.MARRS	23-02-12	ENG'R	A.NAISH	23-02-12

DEV.No.

DRAWING No. MS 516.850.053

SHEET 1 OF 1

MATERIAL

FINISH

SCALE 1:2

THIRD ANGLE PROJECTION

TOLERANCES (UNLESS STATED)
GENERAL ±0.2mm
HOLE CENTRES ±0.12mm
HOLE DIAMETERS +0.1mm -0
ANGULAR ±30°

RELEVANT DRAWINGS

USED ON

A3

516.800.530
801PHEx OPTICAL SMOKE & HEAT DETECTOR

801PHEx Intrinsically Safe Addressable Optical Smoke & Heat Detector

Introduction

The 801PHEx Intrinsically Safe Optical Smoke & Heat Detector forms part of the 800Ex Intrinsically Safe Series of MX Addressable Fire Detectors. The detector plugs into a 5BEx 5" Universal IS Base.

The detector is designed to transmit, to a remote MX/MX2/T2000/MZX fire controller, digital signals which represent status of the optical smoke and heat elements of the detector.

Software within the controller is used to interpret the returned optical and heat values to raise alarm or other appropriate response according to the type of detector configured in 'MZX CONSYS'.

The mode of detector may be:

- Mode 1 - Optical smoke only detector (sensitivity High, Normal or Low)
- Mode 2 - HPO smoke detector (sensitivity High, Normal or Low)
- Mode 3 - Optical (sensitivity High, Normal or Low) plus heat fixed temperature 60 °C (A2S)
- Mode 4 - Heat only normal ambient R-o-R (A1R) detector (no sensitivity selection)
- Mode 5 - Heat fixed temperature 60 °C (A2S) (no sensitivity selection)
- Mode 6 - HPO (sensitivity High, Normal or Low) and heat fixed temperature 60 °C (A2S)

Notice

- The heat detection grades are to EN54-5.
- Normal and High sensitivity settings meet the requirements of EN54-7 using both normal and Fastlogic modes (see "Normal Mode" and "FASTLOGIC Mode").

Detection logic

The optical smoke detector can be selected in one of two logic modes as follows:

Normal Mode

In the normal detection mode, an alarm is generated when an alarm threshold is reached.

FASTLOGIC Mode

In the FASTLOGIC mode, the logic operates using a system that looks at both the output level and the pattern of the signals. Using information gathered from many different fire and false alarm situations, a fuzzylogic expert system has been created. This determines the likelihood of fire based on a combination of change in output level with time and the absolute output values.

Split device

The detector may be used as two seperate detectors using two loop addresses.

If the detector is selected as a split device in Consys, then Address 1 can only be Mode 1 or 2.

Address 2 can only be Mode 4 or 5.

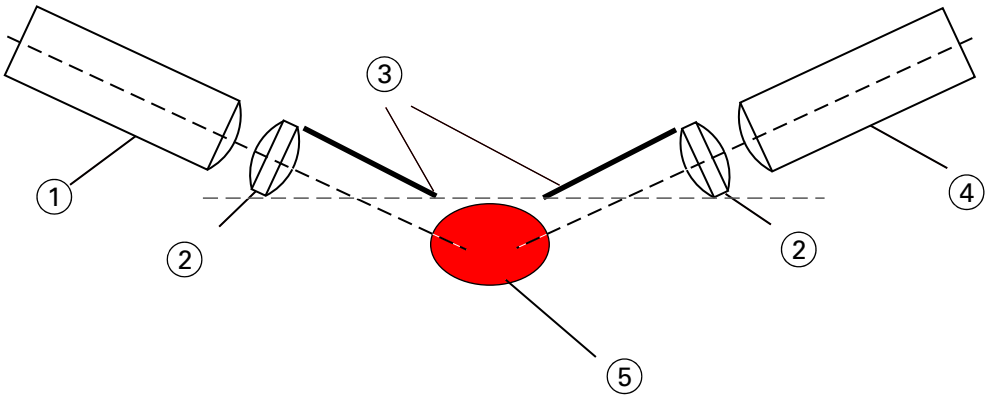


Fig. 1: Optical Chamber Schematic
1– Emitter
2– Lens
3– Baffles
4– Photo detector
5– Sampling volume

Day/night switching

Two modes of detector operation are selectable from the list of possible modes as follows:

- 'Normal' mode, ie, night time operation in which the detector will be evaluated most of the time.
- 'Day' mode in which the detector can be switched under certain circumstances, for example, during daytime when the building is occupied with people being able to detect a fire manually. Switching to the 'daytime' mode can be done either by user action (pressing the DAY/NIGHT switch on the controller), event or time driven.

Sensitivity switching

In addition to mode switching, the sensitivity can be changed within the actual mode. This can be done either by user action or be event or time driven (for example, day/night switching). Changing the sensitivity is done by shifting the sensitivity by one level up or down.

Intrinsic safety

The detectors are for use in potentially explosive gas and dust atmospheres (zone 0 gas, zone 20 dust).

The detectors are designed to comply with EN/IEC 60079-0:2012+A11:2013 and EN/IEC 60079-11:2012 for Intrinsically Safe apparatus. They are certified:

- ATEX code: Ⓔx II 1 GD
- Certificate: BAS01ATEX1394X
- Gas/Dust code:
  - Ex ia IIC T5 Ga
  - Ex ia IIIB T100°C Da
- IECEx Certificate: IECEx BAS 07.0063X

These detectors are designed and manufactured to protect against other hazards as defined in paragraph 1.2.7 of Annex II of the ATEX Directive 94/9/EC.

Detector use

The detectors may only be used in conjunction with an EXI800 Interface Module and a Pepperl+Fuchs KFD0-CS-Ex1.54/KFD0-CS-Ex2.54 galvanic isolator.

Special conditions of safe use

The apparatus has a plastic enclosure which constitutes a potential electrostatic hazard. The enclosure must be cleaned only with a damp cloth and do not mount in a high velocity dust laden atmosphere.

Operating principle

The 801PHEx operates by sensing the optical scatter from smoke particles generated in a fire. While the optical scatter detector can give good detection performance for the majority of fires, some fast burning fires produce little visible smoke and some produce very black smoke, neither of which are easily detected by the optical scatter detector. (Such fires are represented in EN54-7 by Polyurethane and Heptane type fires respectively). These fires do, however, produce high heat outputs with an associated rise in air temperature.

The detector has been designed to offer improved detection of such fires, by detecting the rapid rate-of-rise of air temperature and under these conditions, increasing the smoke detection sensitivity. This gives an earlier detection of such fires and a broader detection capability than a standard detector.

The 801PHEx detector has two sensing systems as follows:

- An optical chamber with associated electronics to measure the presence of smoke by light scatter.
- A thermistor with its associated electronics to detect the presence of hot air draughts or high temperatures.

Optical system

The 801PHEx detects visible particles produced in fires by using the light scattering properties of the particles. The detector uses the optical arrangement shown diagrammatically in Fig. 1.

The optical system consists of an infra-red emitter and receiver, with a lens in front of each, so arranged that their optical axes cross in the sampling volume. The emitter, with its lens, produces a narrow beam of light which is prevented from reaching the receiver by the baffles. When smoke is present in the sampling volume a proportion of the light is scattered, some of which reaches the receiver. For a given type of smoke, the light reaching the photodetector is proportional to the smoke density.

Self-Test

The 'Self-Test' facility induces a signal into the receiver to produce an output above the alarm threshold, to signal an alarm condition when requested by the controller.

Features of measuring chamber

The 801PHEx uses vertical chevrons to exclude ambient light.

Smoke incident on the detector is channelled into the detector by the outer cover fins (see Fig. 2) and passes through the vertical chevrons. The smoke is deflected into the optical chamber and through the sampling volume before passing out the other side of the detector.

The emitter (see Fig. 1) is a GaAlAs solid state type operating in the near infra-red (880nm peak), while the detector is a matched silicon photodiode. These devices, together with their associated lenses, are held in place by the chamber mouldings. The design of the optical system is such that the presence of small insects such as thrips, should not cause false alarms.

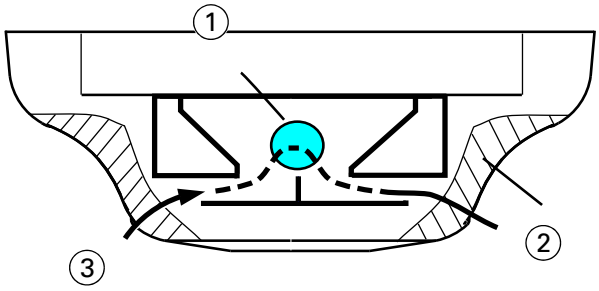


Fig. 2: Measuring Chamber Showing Smoke Flow Path
1– Sampling volume
2– Fins
3– Smoke path

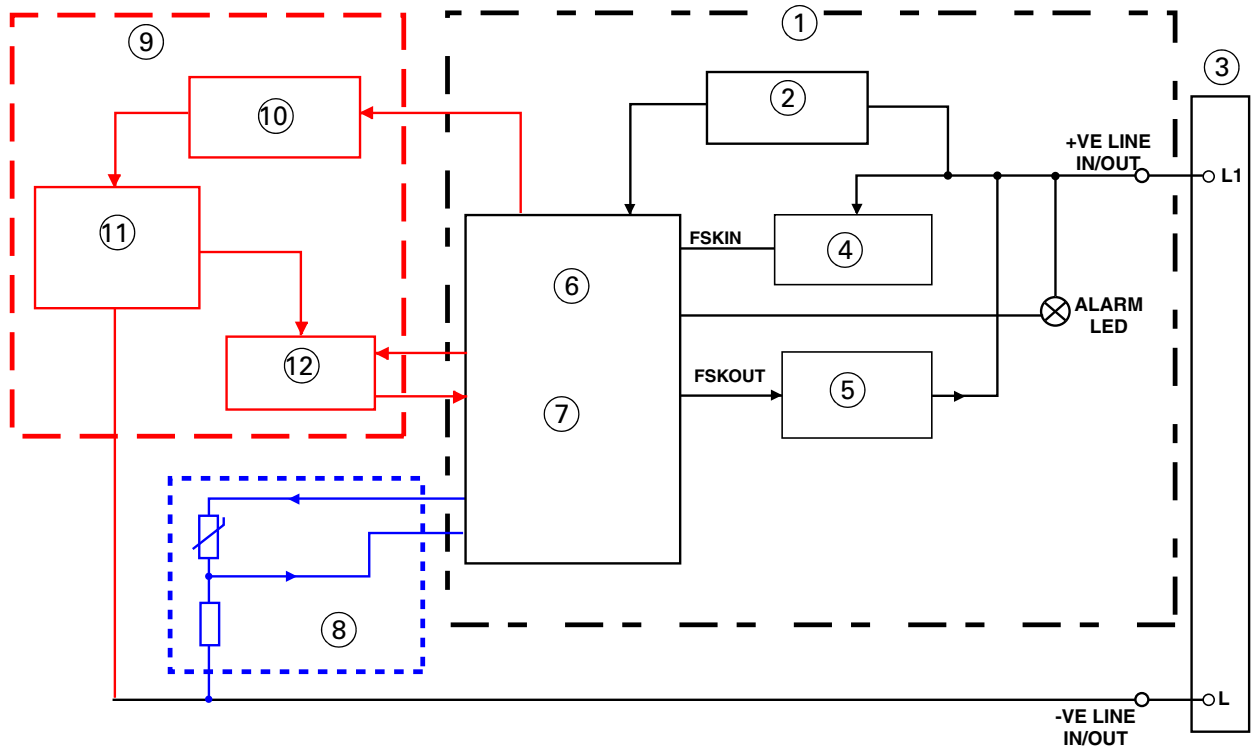


Fig. 3: Simplified Block Schematic of Detector
1– Common circuit
2– Voltage regulator
3– Base
4– Discriminataion circuit
5– Tx driver circuit/current sink
6– Communications ASIC interface
7– Address set/latch signal processing logic
8– Heat elemen
9– Optical element
10–Self-Test circuit
11–Optical sensing circuit
12–Optical ASIC

Thermal measuring system

The heat element of the detector uses a single thermistor to produce a linear output dependent on absolute temperature. Rate of change of temperature is determined by the controller by using differences between consecutive temperature values returned to the controller.

Circuit descriptions

Optical

Refer to Fig. 3. The emitter is only pulsed every time the detector is polled from the controller, to reduce quiescent current. The optical pulse signal as received by the photodetector (a signal proportional to the scatter within the optical chamber), is fed to the 'Optical ASIC'. The optical ASIC amplifies the analogue signal which is fed to an analogue input on the common circuit.

Heat

Refer to Fig. 3.

The negative temperature coefficient thermistor produces a linear analogue output which is fed to an analogue input on the common circuit.

Common circuit

Refer to Fig. 3.

Communications between the controller and detector uses the Frequency Shift Keying (FSK) method.

The 'Discrimination Circuit' filters the FSK signal from the +ve line voltage and converts it to a digital square wave input for the 'Communications ASIC'.

The 'Communications ASIC' decodes the signal and when its own address is decoded, the analogue inputs received from the optical and heat sensing elements are converted to corresponding digital values. These digital

values are then passed to the 'Tx Driver Circuit/Current Sink' which applies them to the +ve line for transmission to the controller.

Wiring

Loop cabling is connected to base terminals L (-ve) and L1 (+ve).

Mechanical construction

The major components of the detector are:

- Body Assembly
- Printed Circuit
- Optical Chamber
- Optical Chamber Cover
- Thermistor
- Light Pipe
- Outer Cover

Assembly

The body assembly consists of a plastic moulding which has four embedded detector contacts which align with contacts in the 5BEx base. The moulding incorporates securing features to retain the detector in the base.

The PCB is soldered to the body contacts. These contacts act as a mechanical fixture during assembly and provide electrical contact between the contacts and the PCB. The PCB is then potted.

The chamber cover is clipped to the body over the optical chamber ensuring the thermistor protrudes through the cover. The light pipe is slotted into the chamber cover. Finally, the outer cover is clipped to the body.

Fig. 4: 801PHEx Optical Smoke and Heat Detector with 5BEx 5" Base

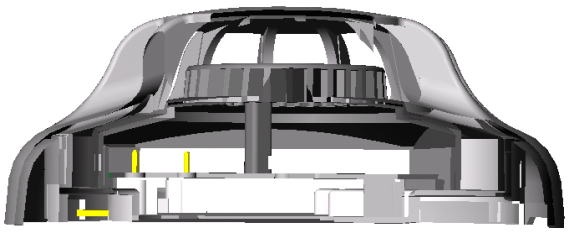


Fig. 5: Sectioned View of the Detector

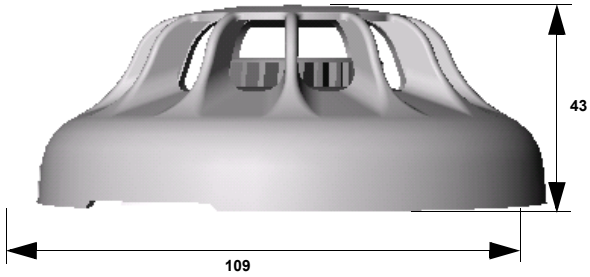


Fig. 6: Overall Dimensions of 801PHEx Detector

Technical specifications

Mechanical

Parameter	Value
Dimensions	See Fig. 6 (less base).
Materials: ■ Body, cover, and closure	 FR3010 'BAYBLEND' flame retardant.
Weight: ■ Detector ■ Detector + Base	 0.126 kg 0.192 kg

Table 1: Mechanical Specifications

Environmental

Parameter	Value
Temperature: ■ Operating ■ Storage	 -25 °C to +70 °C -40 °C to +70 °C
Relative Humidity	95 % (non-condensing)
■ Shock ■ Vibration ■ Impact ■ Corrosion	EN54-5, EN54-7

Table 2: Environmental Specifications

Notice
The operating temperatures quoted exceed the ATEX Certification limits.

The detectors comply with Lloyd's Register Test Specification Number 1 (1996). Environmental Category ENV5.

Electromagnetic compatibility

The detector complies with the following:

- Product family standard EN50130-4 in respect of:
  Conducted Disturbances
  Radiated Immunity
  Electrostatic Discharge
  Fast Transients
  Slow High Energy.
- EN 61000-6-3 for Emissions

Electrical characteristics

The following characteristics (Table 3) apply at 25 °C and nominal supply voltage of 22V unless otherwise specified.

Characteristics	Min.	Typ.	Max.	Unit
Loop Voltage	18		24	V
Quiescent Current		350	400	µA
Alarm Current		3	3.5	mA

Table 3: Electrical characteristics

Intrinsic Safety Rating:

Parameter	Value
Maximum Voltage for safety (U_i)	28 V
Maximum Current for Safety (I_i)	93 mA
Maximum Power Input (P_i)	650 mW
Equivalent Inductance (L_i)	0
Equivalent Capacitance (C_i)	0

Table 4: Safety Rating

Performance characteristics

The 801PHEx detector, with its base, forms an addressable detector which transmits signals representing the detector digital current levels to a remote control unit. The control unit evaluates these signals against predetermined criteria and decides when an alarm condition has occurred. The information given below, therefore, relates to the performance of the 801PHEx as a transducer only, since the system alarm response is determined by the control unit.

Response to smoke

The response of an optical smoke detector is normally measured with reference to the obscuration produced by smoke. Obscuration is measured in percent per metre, or in dB per metre. The latter unit is used in EN54-7 and is designated 'm'.

Unfortunately, there is no fixed relationship between optical scattering and obscuration, the ratio between them being dependent on the type of smoke. For convenience, 'grey' smoke is normally used but white and black smokes give more or less scattered light respectively, for a given obscuration level.

The working of the 801PHEx is a linear function of obscuration for a given type of smoke, as shown graphically in Fig. 7.

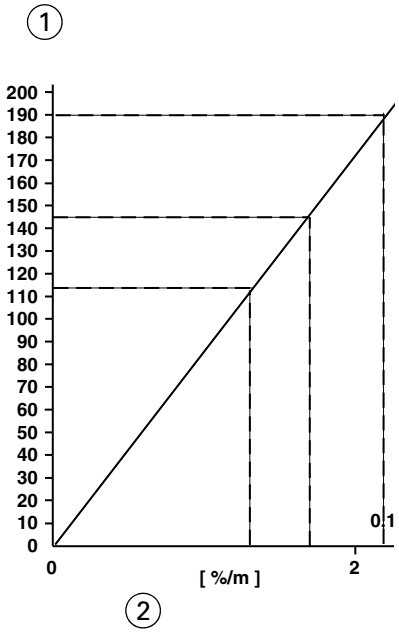


Fig. 7: Smoke density
1– Working output (bits)
2– Obscuration :m-value

Response to rate of change of temperature

The detector will not be enhanced by slow rates of change of temperature or negative rates of change of temperature. The detector is designed to detect sudden horizontal draughts of hot air produced by fast burning fires. The enhancement switching point has been set to allow the detection of TF1 type fires.

Detector identification

The detector is identified by the logo label colouring as shown in Fig. 8.

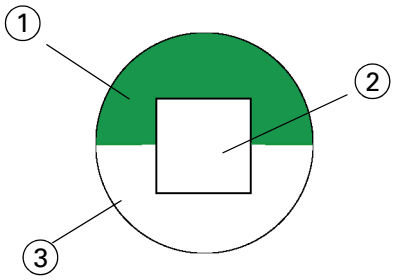


Fig. 8: Detector Identification
1– Green
2– Company identifier
3– White

Detector address

The loop address of the detector is held in internal E^2PROM which is programmed either from the controller, or by a 801AP MX Service Tool/850EMT Engineering Management Tool.

A Service Tool Dongle (supplied with the EXI800) may be required to be fitted to the 'AUX' port of the 801AP MX Service Tool to program the 800Ex detectors.

Notice

The detector must be programmed in the Safe Area when using the 801AP MX Service Tool/850EMT Engineering Management Tool.

Address flag

Refer to Fig. 9. The address flag is used to identify the address and zone of the detector. The address flags are supplied in one of two packs (address 1-127 or 128-255, with a different colour for each loop) and are ordered separately from the detector. The address flag is fitted to the bottom of the detector. When the detector is fitted to the base and turned until fully located, the address flag is then transferred to the base. If the detector is removed from the base, the address flag remains with the base.

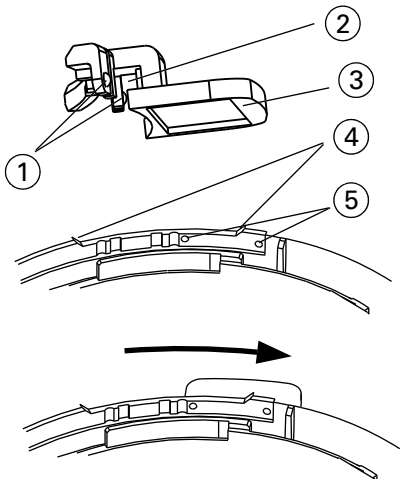


Fig. 9: Fitting Address Flag Carrier
1– Retaining pimples
2– 'U'shaped channel
3– 'D'shaped part
4– Mounting recess
5– Retaining depressions

CPR information

CE
0832

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

15

DoP-2015-4097

EN 54-5: 2001 + A1: 2002
EN 54-7: 2000 + A1: 2002 + A2: 2006
Intrinsically safe digital addressable multi sensor detector for use in fire detection and alarm systems in buildings.

801PHEx

Essential Characteristics
EN54-5 and EN54-7
Nominal activation conditions/Sensitivity, Response delay (response time) and Performance under fire conditions: Pass
Operational reliability: Pass
Tolerance to supply voltage: Pass
Durability of operational reliability and response delay; temperature resistance: Pass
Durability of operational reliability; vibration resistance: Pass
Durability of operational reliability; humidity resistance: Pass
Durability of operational reliability; corrosion resistance: Pass
Durability of operational reliability; electrical stability: Pass

Application & Design 17A-02-PHEx
Installation Instructions 17A-03-5BEx
Service Instructions 17A-04-S

Ordering information

Item	Order Code
801PHEx Intrinsically Safe Optical Smoke + Heat detector	516.800.530
5BEx 5" Universal Base	517.050.023
Address Flag Labels - Loop A (White)	516.800.931
Address Flag Labels - Loop B (Yellow)	516.800.932
Address Flag Labels - Loop C (Purple)	516.800.933
Address Flag Labels - Loop D (Green)	516.800.934
Address Flag Labels - Loop E (Grey)	516.800.935
Address Flag Labels - Loop F (Blue)	516.800.936
Address Flag Labels - Loop G (Orange)	516.800.937
Address Flag Labels - Loop H (Red)	516.800.938

Table 5: Order codes

516.800.067
811FEx FLAME DETECTOR

801FEx/811FEx Intrinsically Safe Infra-red Flame Detector

Introduction

The 801FEx Intrinsically Safe Infra-red Flame Detector forms part of the 800Ex Intrinsically Safe Series of MX Addressable Fire Detectors. The detector plugs into a 5BEx IS base.

The 811FEx is the Marine version of the 801FEx.

The detector is designed to transmit, to a remote MX/MX2/T2000/MZX fire controller, a digital signal which represents the status of the flame detector.

Intrinsic Safety

The detectors are for use in potentially explosive gas and dust atmospheres (zone 0 gas, zone 20 dust).

The detectors are designed to comply with EN/IEC 60079-0:2012+A11:2013 and EN/IEC 60079-11:2012 for Intrinsically Safe apparatus.

They are certified:

- ATEX code: ⟨Ex⟩ II 1 GD
- Certificate: Baseefa03ATEX0422X
- Gas/Dust code for ATEX and IECEx:
  - Ex ia IIC T4 Ga (-20 °C ⩽ Ta ⩽ +70 °C)
  - Ex ia IIIB T135 °C Da (-20 °C ⩽ Ta ⩽ +70 °C)
- IECEx Certificate: IECEx BAS 07.0075X

These detectors are designed and manufactured to protect against other hazards as defined in paragraph 1.2.7 of Annex II of the ATEX Directive 94/9/EC.

Detector Use

The detectors may only be used in conjunction with an EXI800 Interface Module and a Pepperl+Fuchs KFD0-CS-Ex1.54/KFD0-CS-Ex2.54 galvanic isolator.

Special Conditions of Safe Use

The apparatus has a polyester enclosure which constitutes a potential electrostatic hazard. The enclosure must be cleaned with a damp cloth and do not mount in a high velocity dust laden atmosphere.

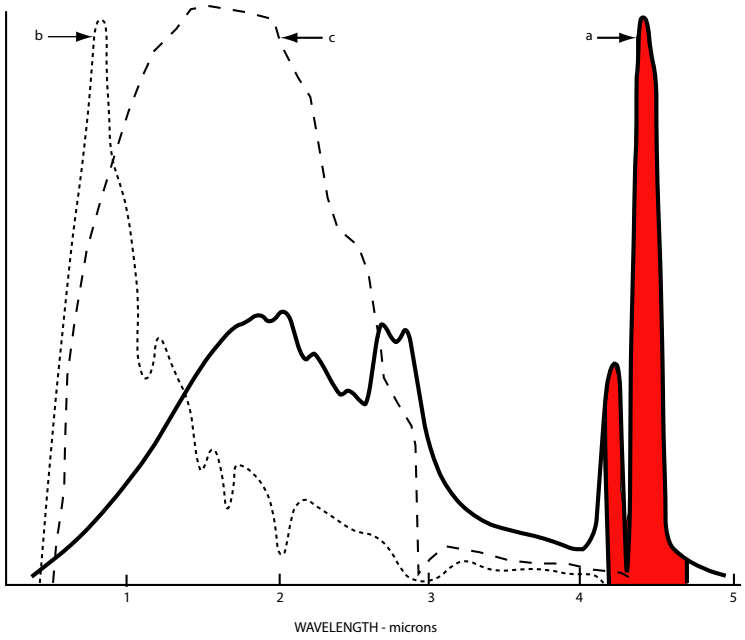


Fig. 1: Spectrums of:
a) Typical Carbonaceous Fire
b) Solar Radiation at Ground Level
c) Tungsten Filament Lamp

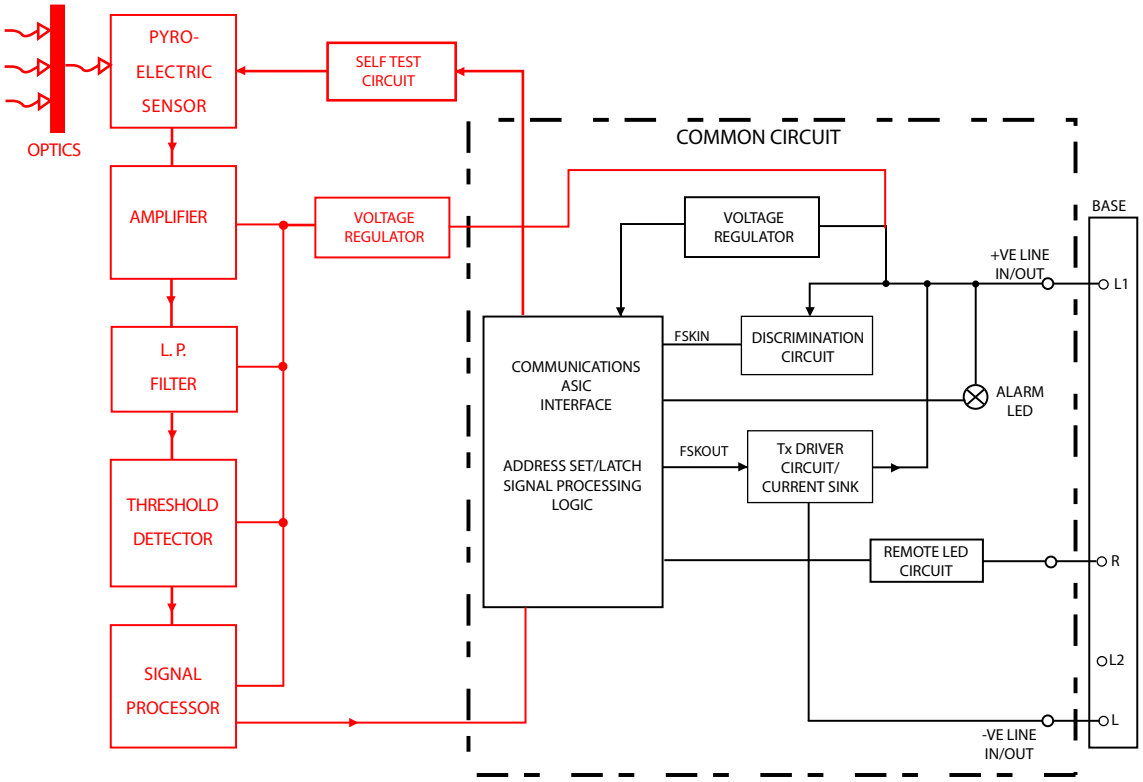


Fig. 2: Simplified Block Schematic Diagram of Detector

Operating Principle

Optical Characteristics

The 801FEx is designed to detect the infra-red radiation produced by flaming fires involving carbonaceous materials.

- Fig. 1(a) shows the spectrum of a typical fire of this type
- Fig. 1(b) the spectrum of the radiation of the sun and
- Fig. 1(c) that of a tungsten filament lamp.

It can be seen that there is a large peak in the flame output at wavelengths in the region of 4.45 µm. This peak is a characteristic of carbonaceous flames and results from the formation of carbon dioxide in the flame. It will be seen also that the radiation from the sun and from the filament lamp is relatively low in this region.

In order to exploit these spectral characteristics, the 801FEx uses an optical filter, which transmits infra-red between 4.38 µm and 4.56 µm (shown shaded in Fig. 1(a)). This bandwidth allows high sensitivity to flames with low sensitivity to other interfering sources.

Flicker Characteristics

It is observed that the radiation from a flame is not constant but varies with time. This flicker is present in all flames to a greater or lesser degree (including those resulting from high pressure gas jets) and can be used to give improved discrimination between flames and other sources of infra-red.

The 801FEx responds to flicker frequencies in the range 1-10 Hz which provides high sensitivity to almost all types of accidental fire.

Circuit Operation

Flame Sensor

A simplified block schematic of the circuit is given in Fig. 2.

The infra-red radiation passing through the narrow-band filter falls on a pyroelectric sensor, which responds to the flickering component of the radiation. The electrical signal produced is amplified and filtered, to remove frequencies outside the required flicker region.

The threshold detector and signal processor evaluate the amplitude and frequency characteristics of the flicker and pass the results to the signal processing logic in the common circuit.

All critical parts of the circuit are fed by an internal voltage regulator to make the sensitivity independent of supply over a wide range.

Common Circuit

Refer to Fig. 2.

Communications between the controller and detector uses the Frequency Shift Keying (FSK) method.

The 'Discrimination Circuit' filters the FSK signal from the +ve line voltage and converts it to a digital square wave input for the 'Communications ASIC'.

The 'Communications ASIC' decodes the signal and when its own address is decoded, the analogue inputs received from the flame sensing elements are converted to corresponding digital values. These digital values are then passed to the 'Tx Driver Circuit/Current Sink' which applies them to the +ve line for transmission to the controller.

Wiring

Loop cabling is connected to base terminals L (-ve) and L1 (+ve).

Approvals

The 801FEx/811FEx meet all the requirements of EN 54 Part 10 as a Class 2 flame detector.

Mechanical Construction

The major components of the detector are:

- Body Assembly
- Printed Circuit
- Outer Cover
- Sapphire window

Body Assembly

The body assembly consists of a plastic moulding, secured with the four detector contacts, which align with contacts in the 5BEx base. The moulding incorporates securing features to retain the detector in the base.

The PCB assembly is fitted into the body and then soldered to the body contacts; the underside of the PCB is encapsulated.

Final Assembly

The assembly described in "Body Assembly" is, in effect, a complete detector. The outer cover is fitted with sapphire window, which is clipped onto the body assembly. The outer cover provides a further protection against external influences.

Technical Specifications

Mechanical

Parameter	Value
Overall Dimensions	See Fig. 3.
Materials: ■ Body, Cover and Closure	 FR3010 'BAYBLEND' flame retardant.
Weight: ■ Detector ■ Detector + Base	 110 g 174 g

Table 1: Mechanical Specifications

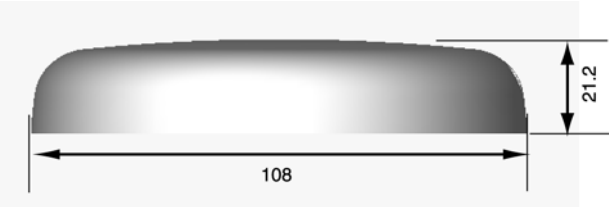


Fig. 3: Overall Dimensions of 801FEx Detector

Environmental

Parameter	Value
Operating Temperature	-20 °C to +70 °C
Storage Temperature	-40 °C to +80 °C
Relative Humidity - Operational	90% RH continuous (non-condensing) and up to 99% RH intermittent (non-condensing)
Relative Humidity - Storage	40% RH and <70% RH
■ Shock ■ Vibration ■ Impact ■ Corrosion	To EN54-10

Table 2: Environmental Specifications

Operating Temperature

The operating temperatures quoted exceed the ATEX Certification limits.

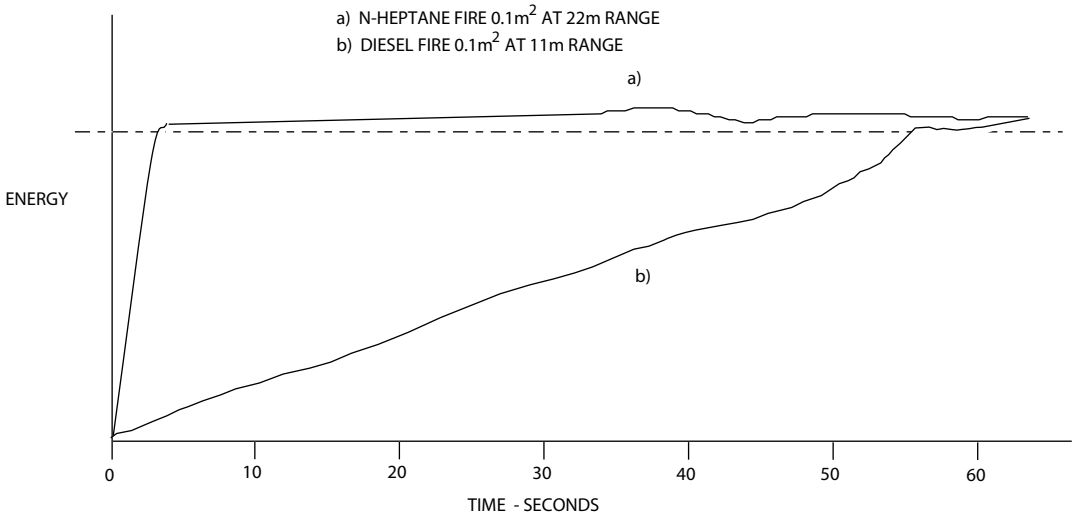


Fig. 4: Typical Response to Fires

Electromagnetic Compatibility

The detector complies with the following:

- Product family standard EN50130-4 in respect of:
  Conducted Disturbances
  Radiated Immunity
  Electrostatic Discharge
  Fast Transients
  Slow High Energy.
- EN 6100-6-3 for Emissions

Compatibility Standards

The above standards fulfil the requirements of the European Directive for EMC (89/336/EEC).

Electrical Characteristics

The following characteristics (Table 3) apply at 25 °C and nominal supply voltage of 22 V unless otherwise specified.

Characteristic	Min.	Typ.	Max.	Unit
Loop Voltage	20	-	24	V
Quiescent Current	-	300	350	µA
Alarm Current	-	3	3.3	mA

Table 3: Electrical Characteristics

Intrinsic Safety Rating

Parameter	Value
Maximum Voltage for safety (U_i)	28 V
Maximum Current for Safety (I_i)	93 mA
Maximum Power Input (P_i)	650 mW
Equivalent Inductance (L_i)	0
Equivalent Capacitance (C_i)	0

Table 4: Safety Rating

Performance Characteristics

Mode of Operation - Behaviour in Fire Tests

The operating principles of the detector has been described in "Operating Principle" on page 2 and the information given below is intended to supplement this basic description.

It has already been noted that the detector analyses the signal flicker frequency and produces an alarm if the level is above a preset threshold for three seconds. It is worth stressing that if the signal is below this threshold the detector will not respond even after a long time.

The level of the signal received depends on the size of the flame and its distance from the detector. For liquid fuels the level is almost proportional to the surface area of the burning liquid. For any type of fire, the signal level varies inversely with the square of the distance.

Fire tests are normally carried out using liquid fuels, burning in pans of known area. The sensitivity of a detector is then expressed as the distance at which a particular fire size can be detected.

It is important to think in terms of distance rather than time because of the burning characteristics of different fuels. Fig. 4 shows the typical response of two different fuels which ultimately produce the same signal level. The signal level given by n-heptane quickly reaches its maximum approximately 6 seconds after ignition. Diesel, being less volatile, takes approximately 60 seconds to reach equilibrium burning state and an alarm is given approximately 55 seconds after ignition.

The time taken by the fire to reach equilibrium depends on the initial temperature of the fuel. If diesel is preheated to a temperature above its flash point, then it behaves the same as n-heptane at 25 °C.

The fire test data presented in Fig. 4 refers to fires which have reached their equilibrium condition. The range specified is that obtained with the detector axis horizontal and with the fire on the detector axis.

Fire Test Data

N-Heptane

The most convenient fuel for fire tests is n-heptane since it is readily available and quickly reaches its equilibrium burning rate. The range of figures specified in "Other Liquid Hydrocarbons" on page 6 relates to a n-heptane fire in a 0.1 m^2 pan on the main axis of the detector field of view.

The graph in Fig. 5 shows the typical detection ranges as a function of pan area for n-heptane fires. It will be seen that this curve is approximately a square law; that is to say that to obtain detection at twice the distance the pan area must be multiplied by four.

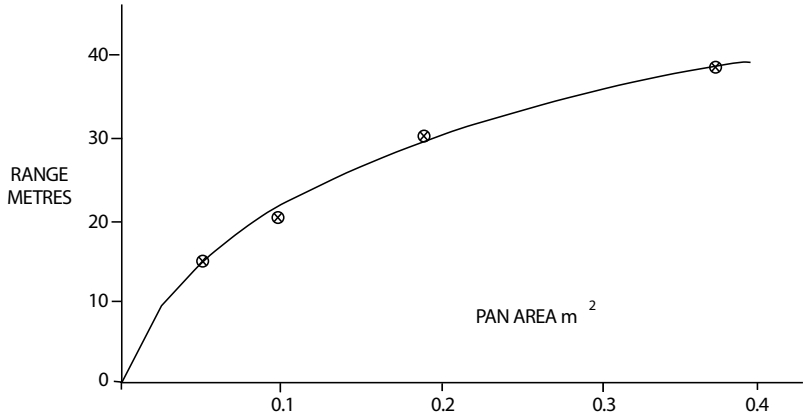


Fig. 5: Typical Detector Range vs Pan Area - n-heptane

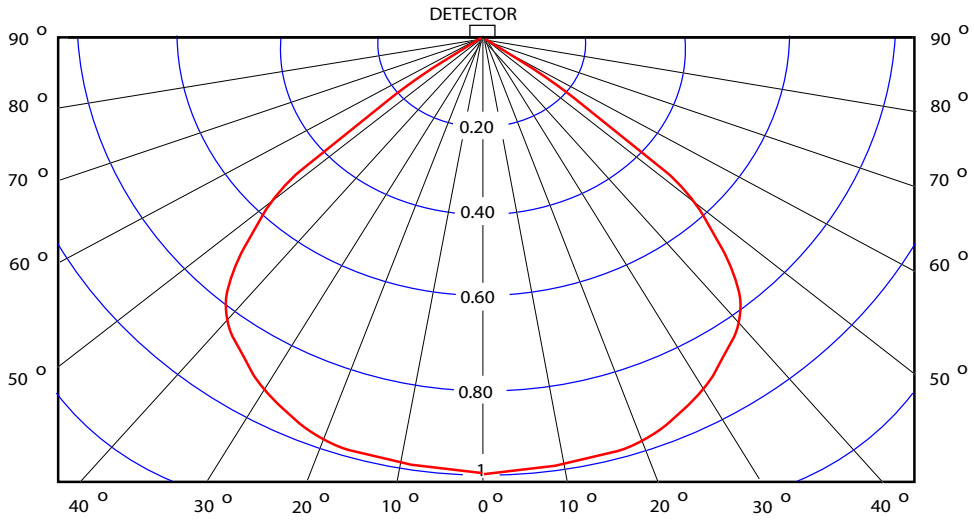


Fig. 6: Relative Range vs Angle of Incidence

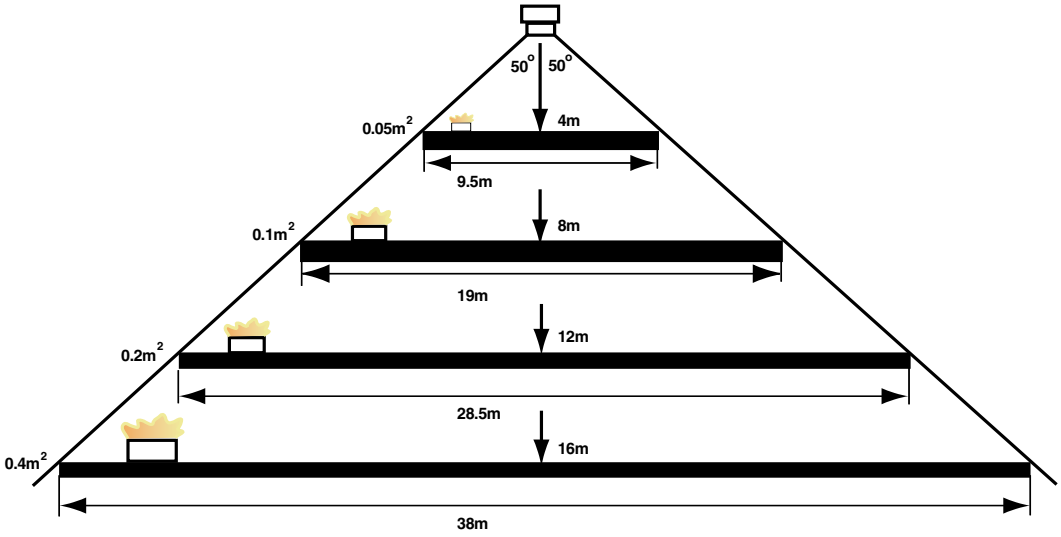


Fig. 7: Field of View

Other Liquid Hydrocarbons

Ranges achieved with other fuels burning in 0.1 m^2 pans are as follows:

Fuel	Range
Kerosene	15.5 m
Alcohol (I.M.S.)	13 m
Diesel oil	13 m
Ethylene glycol	15.5 m

Table 5: Fuel Burning Ranges

The typical detection range for other pan areas may be calculated using the square law relationship given in the "Fire Test Data" on page 5.

Directional Sensitivity

The sensitivity of the 801FEx is at a maximum on the detector axis. The variation of range with angle of incidence is shown in Fig. 6.

Design of System

General

Using the information given in "Operating Principle" on page 2 to "Technical Specifications" on page 3, it is possible to design a flame detection system having a predictable performance. Guidance on the application of the above data and on siting of detectors is given in the following section.

Use of Fire Test Data

It has been explained in the "Technical Specifications" on page 3 that the sensitivity of the detector is specified in terms of its response to well-defined test fires. Tests are carried out using a 0.1 m^2 pan. Sensitivity to other pan areas is calculated from the square law relationship. That is to obtain detection at twice the distance, the pan area must be multiplied by four.

Accidental fires are rarely of a well-defined size. It is still possible, however, to calculate the response to a 'real' fire using the fire test data.

For example, a spillage fire involving a highly volatile liquid, for example, n-heptane: will spread quickly from the point of ignition to cover the complete surface of the pool. Such a spillage would normally cover approximately 2 m^2. Using the data for n-heptane fires and extrapolating to an area of 2 m^2, the 801FEx should respond at a distance of about 120 m.

If the spillage is of a less volatile material (for example, diesel), the spread of the flame from the ignition point will be much slower. The detector will then respond in a time dependent on the distance from the fire.

Determining the Number of Detectors

The number of detectors required for a particular risk will depend on the area involved and the fire size at which detection is required. Large areas or small fires require large numbers of detectors.

As there are no agreed 'rules' for the application of flame detectors, the overall system sensitivity must be agreed between the designer and the end user. When agreement has been reached the system designer can determine the area to be covered by each detector using the fire test data.

The detector is designed primarily for ceiling mounting with its axis vertically downwards. When used in this way it will cover a circular area at ground level, the diameters of the circle being proportional to the height. Under these conditions the effective sensitivity is that which is achieved at the edge of this circular area taking into account the slant range and the angle of incidence.

Fig. 5 shows the effective sensitivity for n-heptane fires when used in this configuration. Sensitivity to other fuels can be determined from the data given in "Other Liquid Hydrocarbons" on page 6.

NOTICE: Installation Guidance

Any object within the detector's field of view will cause a 'shadow' in the protected area. Small objects close to the detector can cause large shadows.

The detectors should not be installed directly below or in close proximity to watermist nozzles/sprinkler heads or where they will be directly affected by water when a release takes place.

NOTICE: Hot Vibrating Body

Engines (and other hot vibrating bodies) can cause false alarms. This happens when the rising column of hot air above the engine has a wave motion from the vibration. This is interpreted by the detector as the flickering of a flame, which could cause a false alarm.

To prevent this the detector should not be mounted above the engine. You should mount the detector so it points diagonally at the engine on a suitable bracket. Alternatively, mount the detector to a vertical wall pointing sideways at the engine.

Detector Address

The loop address of the detector is held in the internal E2PROM which is programmed either from the controller, or by the 801AP MX Service Tool/ 850EMT Engineering Management Tool.

NOTICE: Programming Detector

The detector must be programmed in the Safe Area when using the 801AP MX Service Tool/ 850EMT Engineering Management Tool.

Address Flag

Refer to Fig. 8. The address flag is used to identify the address and zone of the detector. The address flags are supplied in one of two packs (address 1 - 127 or 128 - 255, with a different colour for each loop) and are ordered separately from the detector. The address flag is fitted to the bottom of the detector. When the detector is fitted to the base and turned until fully located, the address flag is then transferred to the base. If the detector is removed from the base, the address flag remains with the base.

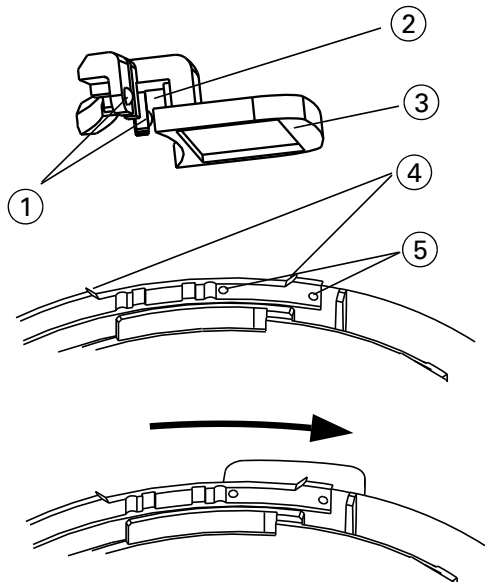


Fig. 8: Fitting Address Flag
1– Retaining pimples
2– 'U'shaped channel
3– 'D'shaped part
4– Mounting recess
5– Retaining depressions

Configuration

The detector may be configured as Immediate (interrupt) or Verified (5 second delay).

CPD Information

CE

0832

Tyco Safety Products
Dunhams Lane
Letchworth SG6 1BE
UK

07

0832-CPD-0503

EN 54-10: 2002 + A1: 2005

MX Intrinsically Safe Addressable Class 2 point type flame detector for use in fire detection and alarm systems in buildings.

801FEx
811FEx (Marine)

Application & Design 17A-02-FEx
Installation Instructions 17A-03-5BEx
Service Instructions 17A-04-S

Order Information

Item	Order Code
801FEx Infra-red Flame Detector	516.800.066
811FEx Infra-red Flame Detector (Marine)	516.800.067
5BEx 5" Universal Base	517.050.023
Address Flag Labels - Loop A (White)	516.800.931
Address Flag Labels - Loop B (Yellow)	516.800.932
Address Flag Labels - Loop C (Purple)	516.800.933
Address Flag Labels - Loop D (Green)	516.800.934
Address Flag Labels - Loop E (Grey)	516.800.935
Address Flag Labels - Loop F (Blue)	516.800.936
Address Flag Labels - Loop G (Orange)	516.800.937
Address Flag Labels - Loop H (Red)	516.800.938

Table 6: Order Codes

516.800.007
811F FLAME DETECTOR

801F/811F Infra-red Flame Detector

Introduction

The 801F Infra-red flame detector forms part of the 800 Series Addressable Fire detectors. The 811F is the Marine version of the 801F.

The detector is intended to plug into the following:

- 5B 5" Base
- 5B 5" Isolator Base

The detector is designed to transmit, to a remote MX/MX2/T2000/MZX fire controller, digital signals which represent status of the flame sensing element. The flame detector also has a self-test facility.

Operating Principle

Optical Characteristics

The 801F is designed to detect the infra-red radiation produced by flaming fires involving carbonaceous materials.

- Fig. 1(a) shows the spectrum of a typical fire of this type
- Fig. 1(b) the spectrum of the radiation of the sun and
- Fig. 1(c) that of a tungsten filament lamp.

It can be seen that there is a large peak in the flame output at wavelengths in the region of 4.45 µm. This peak is a characteristic of carbonaceous flames and results from the formation of carbon dioxide in the flame. It will be seen also that the radiation from the sun and from the filament lamp is relatively low in this region.

In order to exploit these spectral characteristics, the 801F uses an optical filter, which transmits infra-red between 4.38 µm and 4.56 µm (shown shaded in Fig. 1(a)). This bandwidth allows high sensitivity to flames with low sensitivity to other interfering sources.

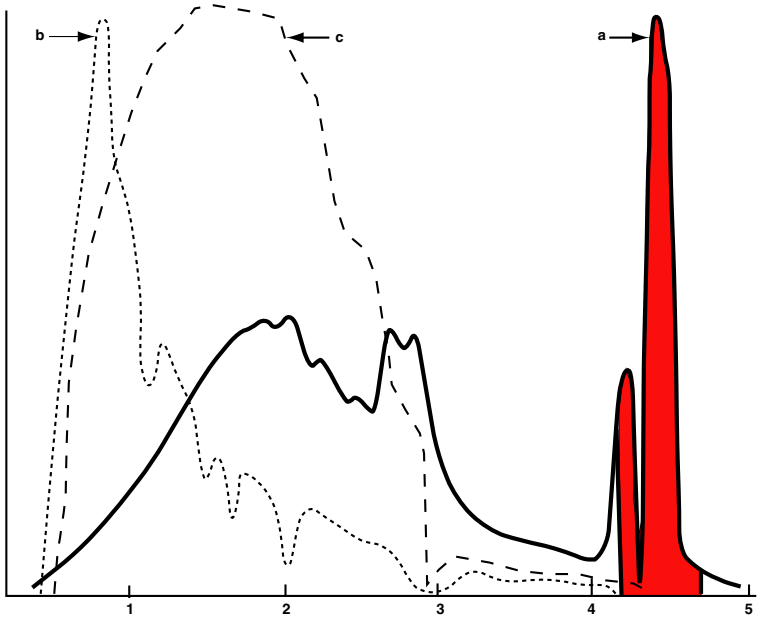


Fig. 1: Spectrums of:
a) Typical Carbonaceous Fire
b) Solar Radiation at Ground Level
c) Tungsten Filament Lamp

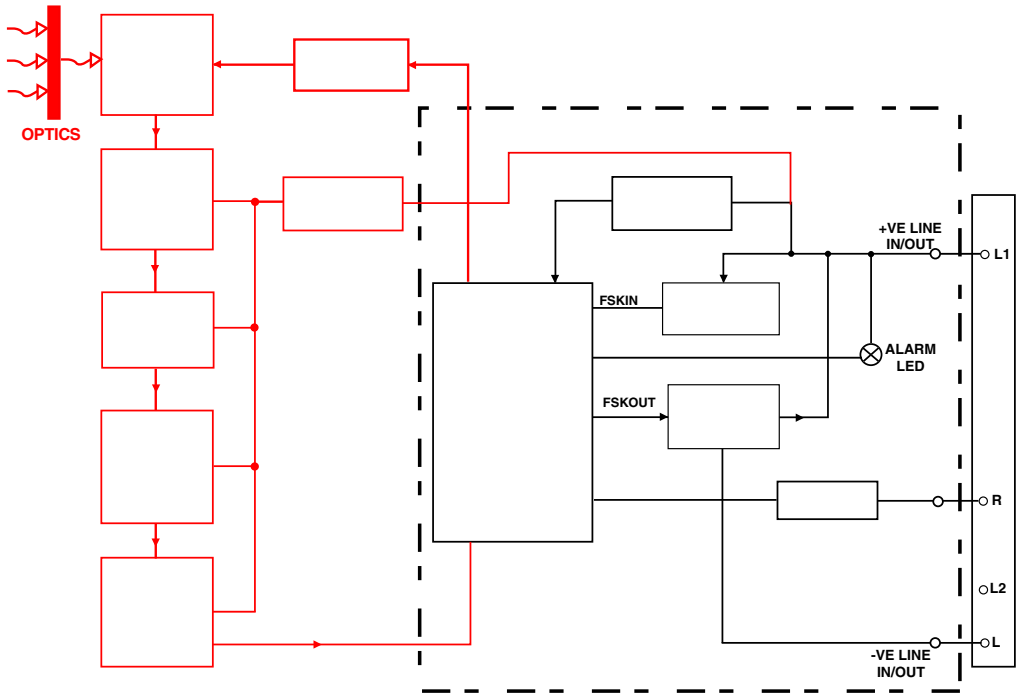


Fig. 2: Simplified Block Schematic Diagram of Detector

Flicker Characteristics

Radiation from a flame is not constant but varies with time. This flicker is present in all flames to a greater or lesser degree (including those resulting from high pressure gas jets) and can be used to give improved discrimination between flames and other sources of infra-red.

The 801F responds to flicker frequencies in the range of 1 - 10 Hz, which provides high sensitivity to almost all types of accidental fire.

Circuit Operation

Flame Sensor

A simplified block schematic of the circuit is given in Fig. 2.

The infra-red radiation passing through the narrow-band filter falls on a pyroelectric sensor, which responds to the flickering component of the radiation. The electrical signal produced is amplified and filtered, to remove frequencies outside the required flicker region.

The threshold detector and signal processor evaluate the amplitude and frequency characteristics of the flicker and pass the results to the signal processing logic in the common circuit.

All critical parts of the circuit are fed by an internal voltage regulator to make the sensitivity independent of supply over a wide range.

Common Circuit

Refer to Fig. 2.

Communications between the controller and detector uses the Frequency Shift Keying (FSK) method.

The 'Discrimination Circuit' filters the FSK signal from the +ve line voltage and converts it to a digital square wave input for the 'Communications ASIC'.

The 'Communications ASIC' decodes the signal and when its own address is decoded, the analogue inputs received from the flame sensor circuit are converted to corresponding digital values. These digital values are then passed to the 'Tx Driver Circuit/Current Sink' which applies them to the +ve line for transmission to the controller.

The Common Circuit is also used to:

- Control the operation of the Remote LED via the 'Remote LED Circuit' from controller commands.

Wiring

Loop cabling is connected to the base terminals L (-ve) and L1 (+ve). A drive is provided for a remote indicator connected between loop positive and terminal R. Terminal L2 is for use with functional sounder and relay bases.

Mechanical Construction

The major components of the detector are:

- Body Assembly
- Printed Circuit
- Outer Cover
- Sapphire Lens

Body Assembly

The body assembly consists of a plastic moulding, secured with the four detector contacts, which aligns with contacts in the MUB/5B bases. The moulding incorporates securing features to retain the detector in the base.

The PCB is clipped to the body by four spring contacts. These contacts both hold the assembly together mechanically and provides electrical contact between the base contacts and the PCB.

Final Assembly

The assembly described in "Body Assembly" is, in effect, a complete detector. The outer cover is fitted with sapphire window, which is clipped onto the body assembly. The outer cover provides a further protection against external influences.

Approvals

The 801F/811F meet all the requirements of EN 54: Part 10 as a Class 2 flame detector.

Technical Specification

Mechanical

Parameter	Value
Materials: Body, Cover and Closure	FR3010 'BAYBLEND' flame retardant.
Weight	74 g

Table 1: Technical Specification

The overall dimensions are shown in Fig. 3:

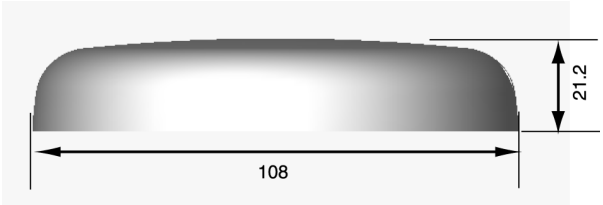


Fig. 3: Overall Dimension of 801F Detector

Environmental

Parameter	Value
Operating Temperature	-20 °C to +70 °C
Storage Temperature	-40 °C to +80 °C
Relative Humidity - Operational:	90% RH continuous (non-condensing) and up to 99% RH intermittent (non-condensing)
Relative Humidity - Storage:	>40% RH and <70% RH
Shock	To EN54 Part 10
Vibration	
Impact	
Corrosion	

Table 2: Environmental Conditions

Electromagnetic Compatibility

The detector 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

Compatibility Standards
The EMC standards fulfil the requirements of the European Directive for EMC(89/336/EEC).

Electrical Characteristics

The following characteristics (Table 3) apply at 25 °C and detector nominal supply voltage of 37.5 V unless otherwise specified.

Characteristics	Min.	Typ.	Max.	Unit
Loop Voltage	20	-	40	V
Quiescent Current	-	300	350	µA
Alarm Current*		3	3.3	mA

Table 3: Electrical Characteristics
Note: ** No remote indicator fitted.*

Performance Characteristics

Mode of Operation

The "Operating Principle" of the detector has been described on page 1. This section is intended to illustrate how that electrical performance translates into practical fire detection operation.

It has been stated that the detector looks at radiation with a 'flame flicker' frequency, and will reach the alarm level approximately 5 seconds after receiving radiation that is above a threshold level. Below the threshold level no alarm will be raised, and if the level hovers around the threshold level the alarm may take slightly longer to be reached.

The level of the signal depends on the size of the flame and its distance from the detector. For liquid fuels the size of the flame is almost proportional to the surface area on fire, but for any fire, the signal level drops off with the square of the distance.

Fire tests are normally carried out using liquid fuels, burning in pans of known area. The sensitivity of a detector is usually then expressed as the on axis distance at which a 0.1 m^2 N-heptane (similar to petrol), pan fire can be detected.

As different fuels will take different lengths of time for a fire to establish, comparative figures for different types of fuel are always measured by exposing the detector to an already established fire. For example, diesel takes about 60 seconds to completely burn across the surface of a pan, whereas n-heptane takes about 6 seconds, although pre-heating the diesel to just below its flash point will generate similar behaviour to the n-heptane at 25 ^{o}C.

Fire Test Data

The fire test data presented is for fires which have reached equilibrium and with the detector axis horizontal with respect to the fire.

N-Heptane

This is chosen as the reference fuel because of availability and consistent burn. The graph in Fig. 4 shows how the detection range varies with pan size, and it can be seen that this approximates to a square law; that is to say that to obtain detection at twice the distance the pan area must be multiplied by 4.

The sensitivity of the detector also varies by how close to the axis the fire occurs. The polar diagram in Fig. 5 illustrates this. To read this diagram the curve which comes out from the detector represents the line of just detecting a fire. The curved gridlines give the fraction of range, so on axis the range is 1, dropping to about 80% at 40^{o} off axis, but by 50^{o} off axis it is already down to 50% and from then on it drops very rapidly.

The siting of detectors depends on how large a fire can be tolerated before an alarm has to be raised. The diagram in Fig. 6 uses the 50% range at 50^{o} angle of incidence to give an outline of the typical size of fire that can be seen at what distance to give an idea of both the ceiling mounting height and the area that can be covered when so mounted.

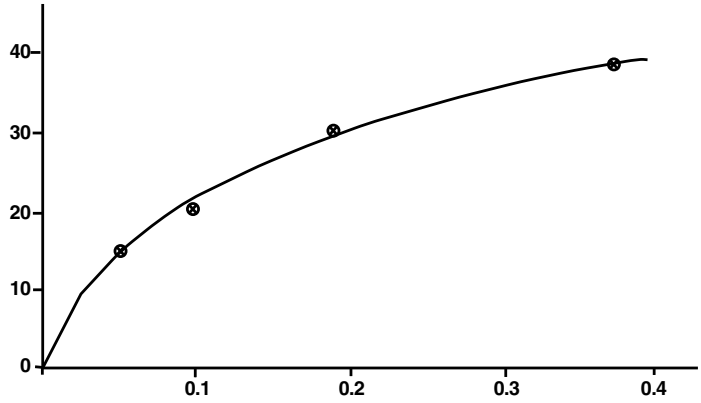


Fig. 4: Typical Detector Range vs. Pan Area - n-heptane

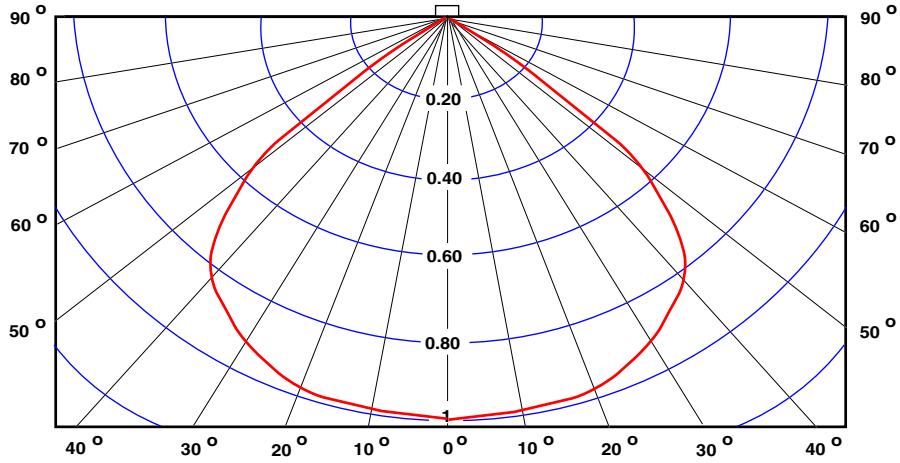


Fig. 5: Relative Range vs Angle of Incidence

Other Liquid Hydrocarbons

Ranges achieved with other fuels burning in 0.1 m^2 pans are as follows:

Fuel	Range
Kerosene	15.5 m
Alcohol (I.M.S.)	13 m
Diesel oil	13 m
Ethylene glycol	15.5 m

Table 4: Fuel Burning Ranges

The typical detection range for other pan areas may be calculated using the square law relationship given in the "Fire Test Data" on page 4.

Design of System

General

Using the information given in "Operating Principle" on page 1 to "Performance Characteristics" on page 4, it is possible to design a flame detection system having a predictable performance. Guidance on the application of the above data and on siting of detectors is given in the following section.

Use of Fire Test Data

It has been explained in "Performance Characteristics" on page 4 that the sensitivity of the detector is specified in terms of its response to well-defined test fires. Tests are carried out using a 0.1 m^2 pan. Sensitivity to other pan areas is calculated from the square law relationship. That is to obtain detection at twice the distance, the pan area must be multiplied by four.

Accidental fires are rarely of a well-defined size. It is still possible; however, to calculate the response to a 'real' fire using the fire test data.

For example, a spillage fire involving a highly volatile liquid, e.g., n-heptane: will spread quickly from the point of ignition to cover the complete surface of the pool. Such a spillage would normally cover approximately 2 m^2. Using the data for n-heptane fires and extrapolating to an area of 2 m^2, the 801F should respond at a distance of about 120 m.

If the spillage is of a less volatile material (e.g. diesel), the spread of the flame from the ignition point will be much slower, as will the detector response time.

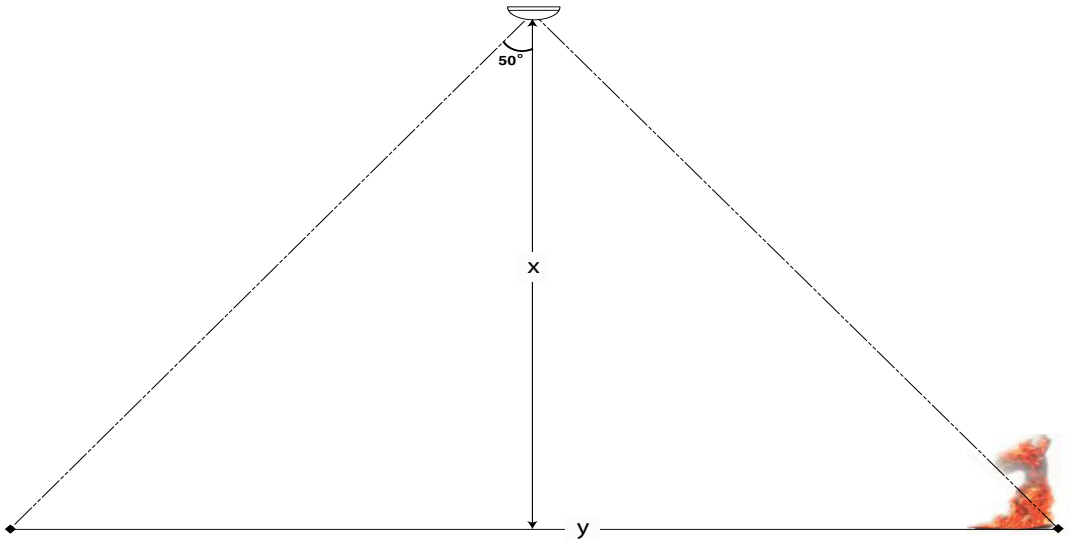


Fig. 6: Field of View

Determining the Number of Detectors

The number of detectors required for a particular risk will depend on the area involved and the fire size at which detection is required. Large areas or small fires require large numbers of detectors.

As there are no agreed 'rules' for the application of flame detectors, the overall system sensitivity must be agreed between the designer and the end user. When agreement has been reached the system designer can determine the area to be covered by each detector using the fire test data.

The detector is designed primarily for ceiling mounting with its axis vertically downwards. When used in this way it will cover a circular area at ground level, the diameters of the circle being proportional to the height. Under these conditions the effective sensitivity is that which is achieved at the edge of this circular area taking into account the slant range and the angle of incidence.

Fig. 5 shows the effective sensitivity for n-heptane fires when used in this configuration. Sensitivity to other fuels can be determined from the data given in "Other Liquid Hydrocarbons" on page 5.

NOTICE: Hot Vibrating Body

Engines (and other hot vibrating bodies) can cause false alarms. This happens when the rising column of hot air above the engine has a wave motion from the vibration. This is interpreted by the detector as the flickering of a flame, which could cause a false alarm.

To prevent this the detector should not be mounted above the engine. You should mount the detector so it points diagonally at the engine on a suitable bracket. Alternatively, mount the detector to a vertical wall pointing sideways at the engine.

NOTICE: Installation Guidance

Any object within the detector's field of view will cause a 'shadow' in the protected area. Small objects close to the detector can cause large shadows.

The detectors should not be installed directly below or in close proximity to watermist nozzles/sprinkler heads or where they will be directly effected by water when a release takes place.

Detector Address

The loop address of the detector is held in the internal E2PROM, which is programmed either from the controller, or by the 801AP MX Service Tool or the 850EMT Engineering Management Tool.

Configuration

The detector may be configured as Immediate (interrupt) or Verified (5 second delay).

Address Flag

Refer to Fig. 7. The address flag is used to identify the address and zone of the detector. The address flags are supplied in one of two packs (address 1 - 127 or 128 - 255, with a different colour for each loop) and are ordered separately from the detector. The address flag is fitted to the bottom of the detector. When the detector is fitted to the base and turned until fully located, the address flag is then transferred to the base. If the detector is removed from the base, the address flag remains with the base.

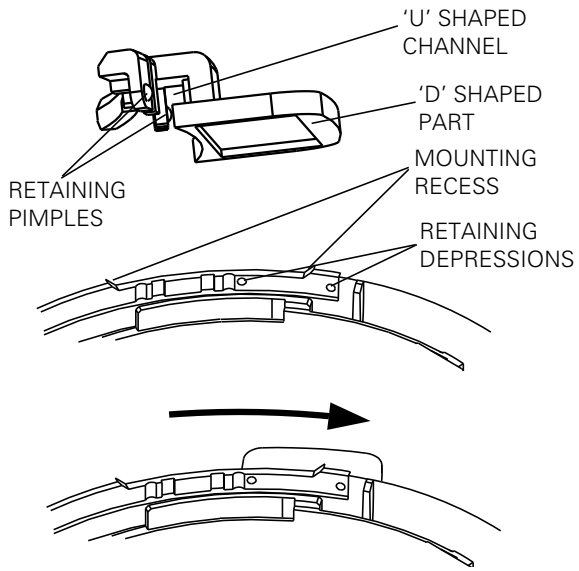


Fig. 7: Fitting Address Flag

CPR Information

CE

0832

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

15

DoP-2015-4063

EN54-10: 2002 + A1: 2005

MX addressable Class 2 point type flame detector for use in fire detection and alarm systems in buildings.

801F

811F (Marine)

Essential Characteristics

EN54-10: 2002 + A1: 2005

Nominal activation conditions/Sensitivity, Response delay (response time) and Performance under fire conditions: Pass

Operational reliability: Pass

Tolerance to supply voltage: Pass

Durability of operational reliability and response delay; temperature resistance: Pass

Durability of operational reliability; vibration resistance: Pass

Durability of operational reliability; humidity resistance: Pass

Durability of operational reliability; corrosion resistance: Pass

Durability of operational reliability; electrical stability: Pass

Application & Design 17A-02-F

Installation Instructions 17A-03-5B

Service Instructions 17A-04-S

Ordering Information

Item	Order Code
801F Infra-red Flame Detector	516.800.006
811F Infra-red Flame Detector (Marine)	516.800.007
5B 5" Universal Base	517.050.017
5BI 5" Isolator Base	517.050.018
Address Flag Labels - Loop A (White)	516.800.931
Address Flag Labels - Loop B (Yellow)	516.800.932
Address Flag Labels - Loop C (Purple)	516.800.933
Address Flag Labels - Loop D (Green)	516.800.934
Address Flag Labels - Loop E (Grey)	516.800.935
Address Flag Labels - Loop F (Blue)	516.800.936
Address Flag Labels - Loop G (Orange)	516.800.937
Address Flag Labels - Loop H (Red)	516.800.938

Table 5: Order Codes

514.800.609
MCP 820M CALLPOINT

MCP820M BREAK GLASS CALLPOINT

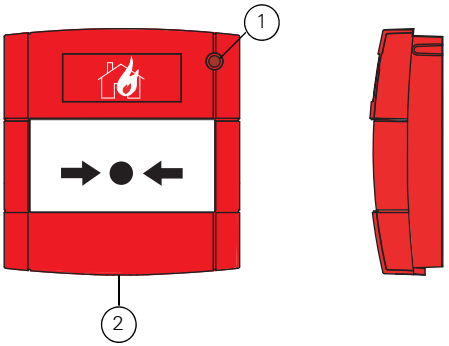


Fig. 1: MCP820M Break Glass Callpoint - Overall
1– Short Circuit Isolator Activation (Yellow) and Alarm Indicator LED (Red)
2– Test/Release Key Access

Introduction

The MCP820M Addressable Break Glass Callpoint is an indoor callpoint for marine applications.

The callpoint is designed to monitor and signal the condition of a switch contact that is operated by breaking a glass sheet.

The MCP820M has an integral short-circuit isolator for monitoring the field wiring.

The MCP820M callpoint meets the requirements of EN54 Pt. 11 and EN54 Pt. 17.

Technical Specification

Table 1 shows the technical specification information.

Parameter	Value
System Compatibility	Use only with MX T2000 Fire Alarm Controllers
Environment	Indoor Application only
Operating Temperature	-10 to +55 °C
Storage Temperature	-30 to +70 °C
Relative Humidity	Up to 95 % non-condensing
Dimensions (HWD)	93 x 89 x 27.5 mm
Weight	110 g
Mounting Requirements	Surface/Flush Mounting

Table 1: Technical Specifications

Terminals

Table 2 shows the terminal information.

Description	Marking	Comment
Loop Interface	1	Loop+ IN
	2	Loop- Left
	3	Loop+ OUT
	4	Loop- Right

Table 2: Terminals

Address Programming

The MCP820M has a default factory set address of 255.

The MCP820M is programmed with the address prior to installation using an address programming tool. The associated ancillary programming lead plugs into the programming port (see Items 1 and 2 in Fig 2). Refer to Fig 3 for proper orientation.

NOTICE

Ensure that the pins of the ancillary programming lead are inserted completely into the lower row of the programming port (see item 7 in Fig 2) for effective communication with the Address programming tool.

Site Drawings

Once the address has been programmed, take note of the device location and address number, to include on site drawings.

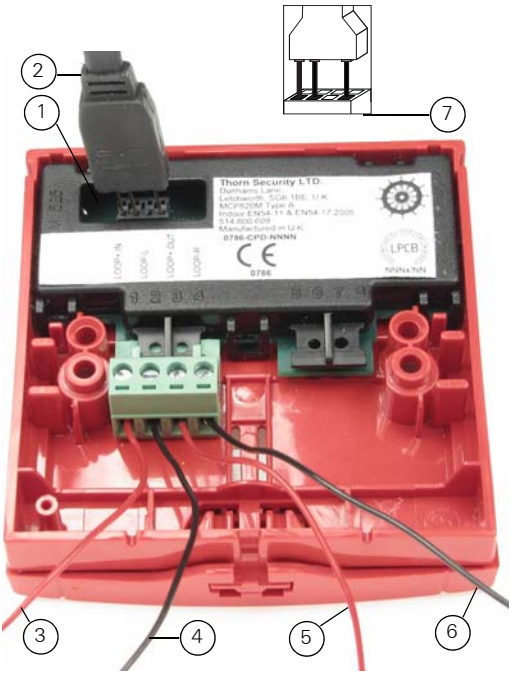


Fig. 2: MCP820M Rear View and Wiring Information
1– Ancillary Programming Port
2– Ancillary Programming Lead
3– Connected to Loop+IN
4– Connected to Loop-Left
5– Connected to Loop+Out
6– Connected to Loop-Right
7– Programming Lead Orientation

Mounting & Cabling

How to mount the MCP820M

1 Connection to the MCP820M is made via the 4 way terminal connector as shown in Fig. 2, ensuring correct polarity.

Each terminal can accommodate a conductor of up to 2.5 mm^2.

2 The MCP820M is fitted to a standard KAC break glass callpoint backbox, standard single gang metal plaster box (27.5 mm for flush mounting) or standard single gang metal plaster box (25 mm). (See Fig 4 for overall dimensions).

Knockouts

Plaster boxes should have 20 mm knock-outs.

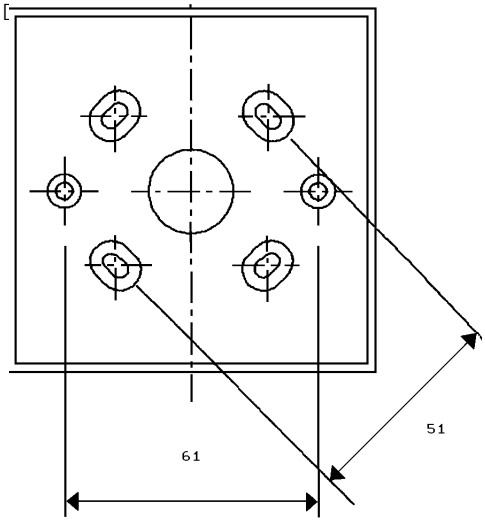


Fig. 3: MCP820M Fixing Dimensions Surface Mount Backbox

3 Mount the backbox to a suitably flat surface using the fixing holes and the screws provided in the installation kit.

4 Insert the test/release key fully into the bottom of the front cover and pull down to remove the cover. Carefully, remove the glass element and the detachable lid exposing the 2 fixing holes.

5 Insert the screws into the fixing holes to fix the housing onto the back box.

6 Fit the glass element and the replaceable lid and slide the bottom of the housing upwards until it clicks into position.

7 Select all cables in accordance with local standards.

8 Couplers are to be used with MICC cable.

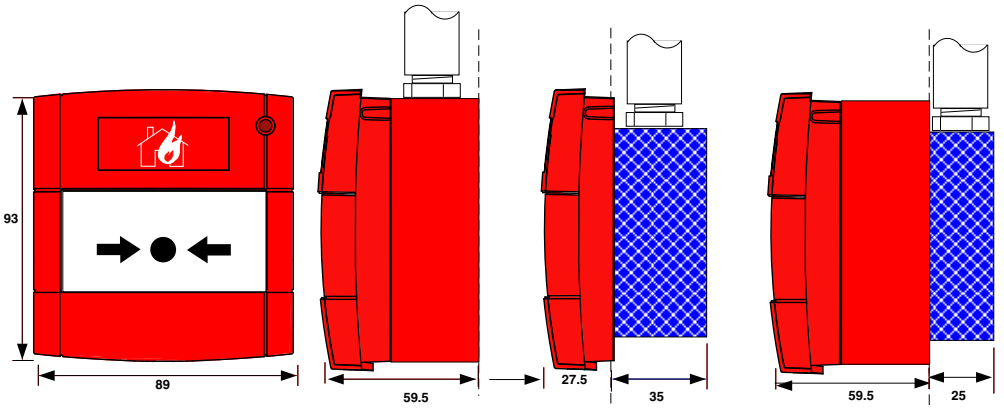


Fig. 4: MCP820M Overall Fixing Dimensions

Wiring Notes

- There are no user-required settings (such as switches or headers) on the MCP820M.
- All wiring must conform to the current edition of the local standards.
- All conductors to be free of earths. For typical wiring configuration see Fig. 4.

Ordering Information

Components	Ordering Numbers
MCP820M Break Glass Callpoint	514.800.609
MCP EN54 Pt11 Spare Glass (pk 5)	515.001.119
KAC Backbox	515.001.021

Table 3: Ordering Information

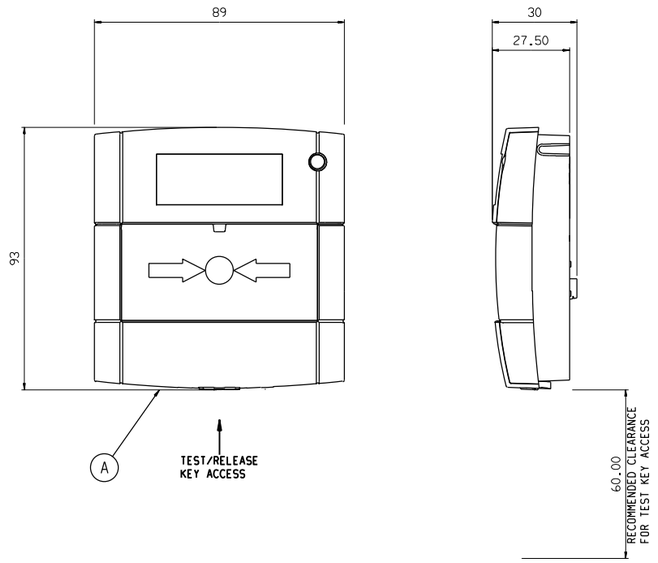
CPR Information

CE
0832

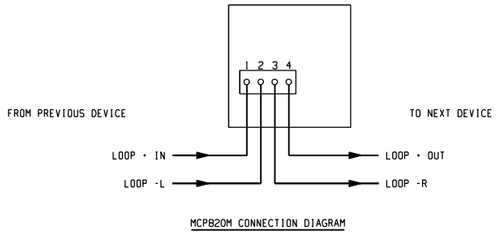
Tyco Fire & Security GmbH
Victor von Bruns-Strasse 21
8212 Neuhausen am Rheinfall
Switzerland
15
DoP-2015-4080

EN 54-11 and EN 54-17
Manual callpoint with Short-Circuit Isolator for fire detection & fire alarm systems for buildings
Type A, Indoor
MCP820M

Essential Characteristics
EN54-11
Nominal activation conditions / Sensitivity and Performance under fire conditions: Pass
EN54-17
Performance under fire conditions: Pass
EN54-11 and EN54-17
Operational reliability: Pass
Durability of operational reliability temperature resistance: Pass
Durability of operational reliability; vibration resistance: Pass
Durability of operational reliability; humidity resistance: Pass
Durability of operational reliability; corrosion resistance: Pass
Durability of operational reliability; electrical stability: Pass



CALLPOINT



MCP820M CONNECTION DIAGRAM

ELECTRICAL DATA

OPERATING VOLTAGE	20 MIN – 40 MAX (Vdc)
QUIESCENT CURRENT	280µA MAX
ALARM CURRENT	3.8mA MAX

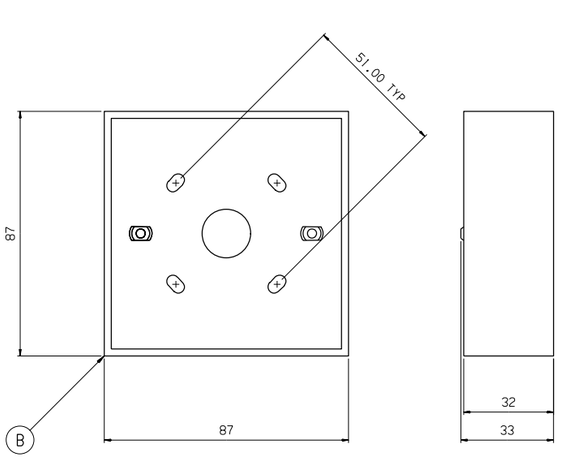
TECHNICAL DATA

CALLPOINT HOUSING	
MATERIAL:	PC/ABS (C1200HF)
COLOUR:	RED
HINGED COVER	
MATERIAL:	POLYCARBONATE
COLOUR:	TRANSPARENT

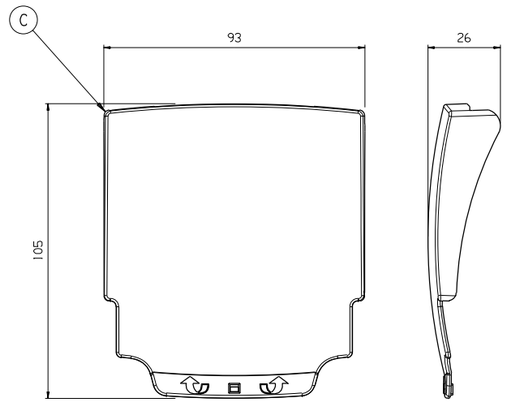
ENVIRONMENTAL

EMC:	EN 50130-4 EN 61000-6-3 AND MARINE REQUIREMENTS
OPERATING TEMPERATURE:	-10°C TO +55°C
HUMIDITY:	95% NON-CONDENSING
SHOCK, VIBRATION, IMPACT & CORROSION:	EN54 AND MARINE REQUIREMENTS

REF	ITEM	DESCRIPTION	STOCK CODE No	WEIGHT
A	MCP820M	INDOOR BREAK GLASS CALLPOINT	514.800.609	104g
B		BACKBOX	515.001.021	50g
C		TRANSPARENT HINGED COVER	515.001.128	24g



BACKBOX



TRANSPARENT HINGED COVER

NOTES
WIRING:
CONNECTION TO THE CALLPOINT IS VIA A 4-WAY BLOCK CONNECTOR AS SHOWN IN THE CONNECTION DIAGRAM. EACH TERMINAL WILL ACCOMMODATE A CONDUCTOR OF 2.5mm² .

ISSUE		APP'D
1	ECN217 20-03-12	A.NAISH

DO NOT SCALE - REMOVE ALL BURRS AND SHARP EDGES - ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.TO BE READ IN CONJUNCTION WITH BS 308.

THORN SECURITY

TITLE: MCP820M INDOOR ADDRESSABLE CALLPOINT
CONNECTION AND OUTLINE DRAWING

A3

DRAWN: L.MARRS 05-03-12 | ENG'R: A.NAISH 05-03-12

DEV.No.

DRAWING No. MS 514.800.609

SHEET 1 OF 1

MATERIAL

FINISH

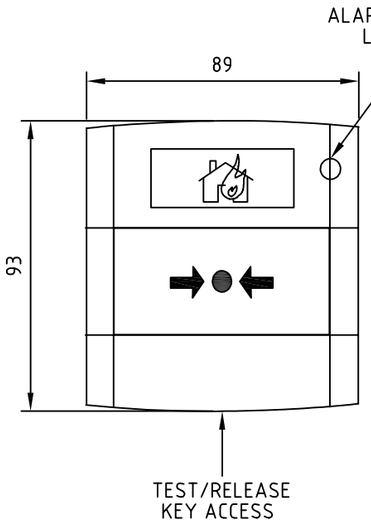
SCALE 1:2 | THIRD ANGLE PROJECTION

TOLERANCES (UNLESS STATED)
GENERAL ±0.2mm
HOLE CENTRES ±0.12mm
HOLE DIAMETERS +0.1mm -0
ANGULAR ±30°

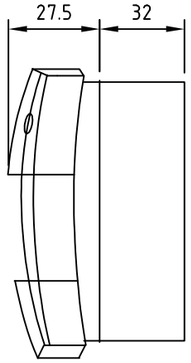
RELEVANT DRAWINGS

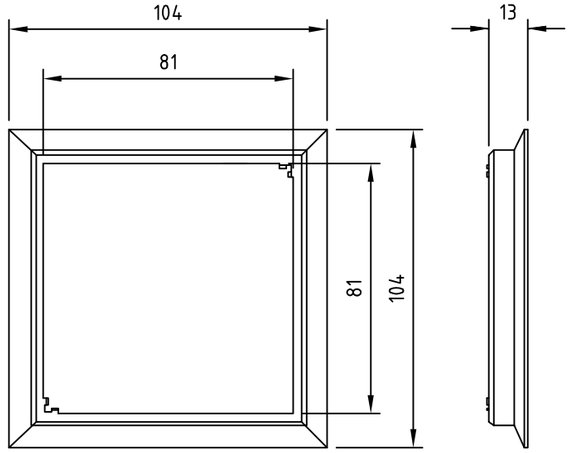
USED ON

515.001.021
MOUNTING BACK BOX FOR CALLPOINTS

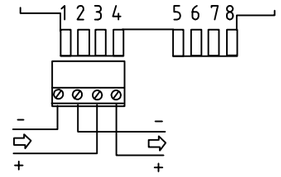


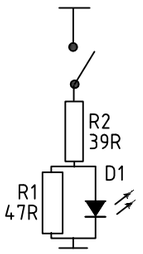
CALLPOINT

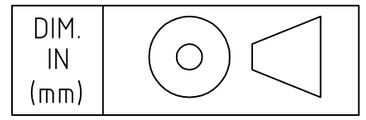




BEZEL







MCP250M WIRING DIAGRAM

ELECTRICAL CHARACTERISTICS

CONTACT RATING: 2A @ 30VDC MAX

EMC: EN50130-4
EN61000-6-3

NOTES

MATERIAL

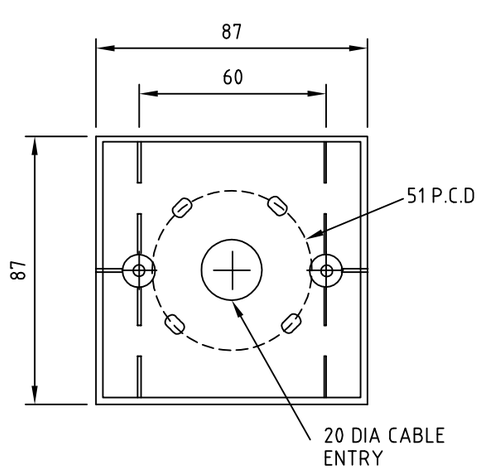
MAIN BODY:	PC/ABS
BEZEL:	THERMOPLASTIC 1.5mm THICK
HINGED COVER:	POLYCARBONATE
COLOUR:	RED
MAIN BODY:	IP24D
BEZEL (OPTIONAL):	BLACK

OPERATING TEMPERATURE: -10°C TO +55°C

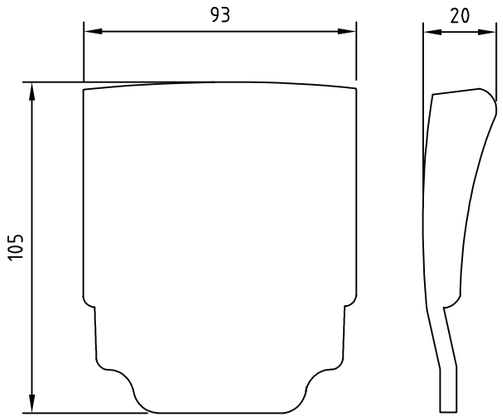
ITEM	STOCKCODE No.	WEIGHT
MCP250M CALLPOINT:	514.001.113	0.098KG
BEZEL:	515.001.026	0.1kg
BACKBOX:	515.001.021	0.1kg
HINGED COVER:	515.001.128	0.024kg
SPARE GLASS (PK 5):	515.001.119	0.1kg

NOTE: THE FIXING SCREWS MUST NOT BE OVER TIGHTENED

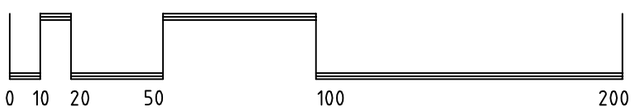
THIS CALLPOINT CAUSES A 'FIRE ALARM' RESPONSE
I.E. BOTH OF THE FIRE ALARM CONTROL PANELS SOUNDER CIRCUITS
OPERATE INSTANTLY



BACK BOX



TRANSPARENT HINGED COVER



REV.	DESCRIPTION	TASK	DATE	DRAWN
2	RESISTOR VALUES ADDED	6275	24.02.10	JCS
1	'ALARM' SOUNDER RESPONSE NOTE ADDED	6105	17.07.08	JCS
0	NEW DRAWING	5566	20/04/2007	JCS

tyco Fire & Security Marine Services

DRN.	JCS
DATE	20/04/2007
CHKD.	RDS
DATE	26/02/2010
APPR.	GAD
DATE	26/02/2010

CLIENT: STANDARD DRAWING

PROJECT: STANDARD DRAWING

TITLE: FIRE ALARM
MCP250M MARINE INDOOR CALLPOINT
OUTLINE / CONNECTION DRAWING

SIZE	SCALE	DRAWING No.	SHT.	REV.
A3	1:2	MNSTD-0276	1 OF 1	2

514.800.610
MCP 830M CALLPOINT

MCP830M WEATHERPROOF BREAK GLASS CALLPOINT

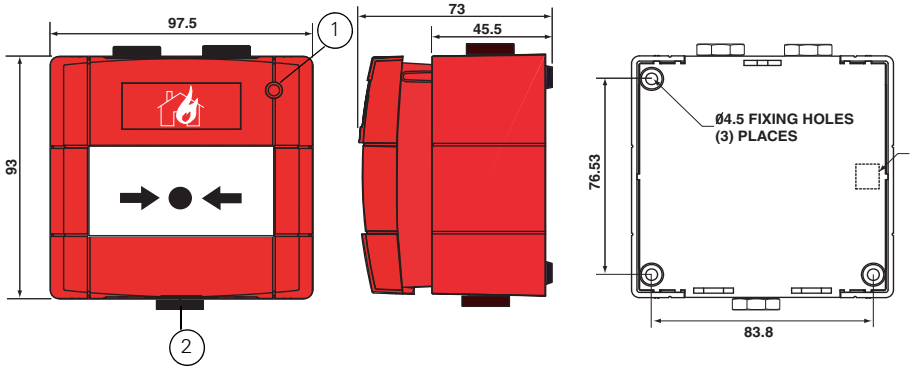


Fig. 1: MCP830M Weatherproof Break Glass Callpoint - Overall and Fixing Dimensions
1– Short Circuit Isolator Activation (Yellow) and Alarm Indicator LED (Red)
2– Test/Release Key Access
3– Earth Continuity Terminal (Internal)

Introduction

The MCP830M Weatherproof Addressable Break Glass Callpoint is an outdoor callpoint for marine applications.

The callpoint is designed to monitor and signal the condition of a switch contact that is operated by breaking a glass sheet.

The MCP830M is fitted onto a standard KAC weatherproof backbox, which is supplied with the callpoint.

The MCP830M has an integral short-circuit isolator for monitoring the field wiring.

The MCP830M callpoint meets the requirements of EN54 Pt. 11 and EN54 Pt. 17.

Technical Specification

Table 1 shows the technical specification information.

Parameter	Value
System Compatibility	Use only with MX T2000 Fire Alarm Controllers
Environment	Outdoor applications
Operating Temperature	-25 to +70 °C
Storage Temperature	-30 to +70 °C
Operating Humidity	Up to 95 % non-condensing
Dimensions (HWD)	93 x 97.5 x 73 mm
Weight	240 g
IP Rating	IP67

Table 1: Technical Specifications

Terminals

Table 2 shows the terminal information.

Description	Marking	Comment
MX Loop Interface	1	Loop+ IN
	2	Loop- Left
	3	Loop+ OUT
	4	Loop- Right

Table 2: Terminals

Address Programming

The MCP830M has a default factory set address of 255.

The MCP830M is programmed with the address prior to installation using an address programming tool. The associated ancillary programming lead plugs into the programming port (see items 1 and 2 in Fig 2). Refer to Fig 2 for proper orientation.

NOTICE

Ensure that the pins of the ancillary programming lead are inserted completely into the lower row of the programming port (see item 7 in Fig 2) for effective communication with the Address programming tool.

Site Drawings

Once the address has been programmed, take note of the device location and address number, to include on site drawings.

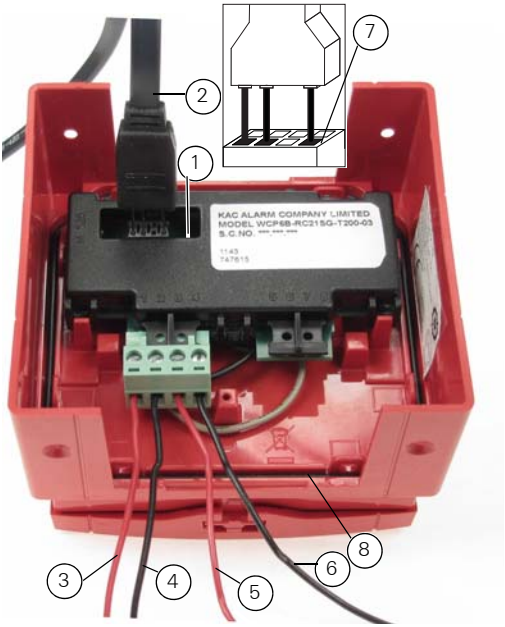


Fig. 2: MCP830M Rear View and Wiring Information
1– Ancillary Programming Port
2– Ancillary Programming Lead
3– Connected to Loop+IN
4– Connected to Loop-Left
5– Connected to Loop+Out
6– Connected to Loop-Right
7– Programming Lead Orientation
8– Gasket

Mounting & Cabling

How to mount the MCP830M with earthing plate fitted

1 Mount the backbox to a suitably flat surface in the required location, using the three fixing holes and screws provided in the installation kit.

NOTICE

Ensure that the cable entry holes are in the vertical plane. The backbox can be mounted with either the single or the double entry holes at the top.

2 Fit the appropriate cable glands into the 20 mm diameter threaded holes as required.

Spare Washers

Use only the supplied spare washer(s) to fit the respective cable gland(s) or hole stopper(s).

The 2 hole stoppers with plastic washers are provided for use where cable glands are not required.

3 Connection to the MCP830M is made via the 4 way terminal connector as shown in Fig. 2, ensuring correct polarity.

Each terminal can accommodate a conductor of up to 2.5 mm^2.

CAUTION

Ensure that the backbox's cable entry holes are not expanded to accommodate cable glands wider than 20 mm in diameter. It must not be subjected to stress by the cable or conduit.

Ensure that all the cable entries and unused entry points are securely sealed against water and moisture ingress.

Sealant

It is recommended to use Loctite 5331 as sealant.

NOTICE

Ensure that the gasket is correctly seated in the channel on the rear of the cover. The gasket should be replaced if damaged.

4 Place the callpoint squarely over the backbox and carefully push the callpoint until the locating clips have engaged.

Use the four fixing screws to lock the callpoint into place.

5 Select all cables in accordance with local standards,

6 Couplers are to be used with MICC cable.

Earthing

An Earth Continuity Terminal is situated in the rear of the backbox. This is designed to accommodate 2 conductors of up to 2.5 mm^2.

An earthing plate is provided for continuity of metal conduits. This must be placed behind the backbox prior to fixing the box to the wall.

If the earthing plate is fitted, fit the 3 spare washers (supplied with each call point) between the metal earth continuity strap and the call point backbox.

WARNING

While installing the MCP830M:

- **Do not overtighten the fixing screws**
- **Avoid using lubricants, cleaning solvents or petroleum based products.**

Wiring Notes

- There are no user-required settings (such as switches or headers) on the MCP830M.
- All wiring must conform to the current edition of the local standards.
- All conductors to be free of earths. For typical wiring configuration see Fig 2.

Call Point Removal

How to remove the MCP830M

1 Remove the four fixing screws used to lock the callpoint to the backbox.

2 Place the edge of a large flat bladed screwdriver into the slot between the callpoint cover and the backbox (see item 1 in Fig 3).

Fig. 3: MCP830M Removal
1– Screwdriver inserted into slot

3 Gently twist until the latches are disengaged.

4 Pull the cover away from the backbox.

Ordering Information

Components	Ordering Numbers
MCP830M Break Glass Callpoint	514.800.610
MCP EN54 Pt11 Spare Glass (pk 5)	515.001.119

Table 3: Ordering Information

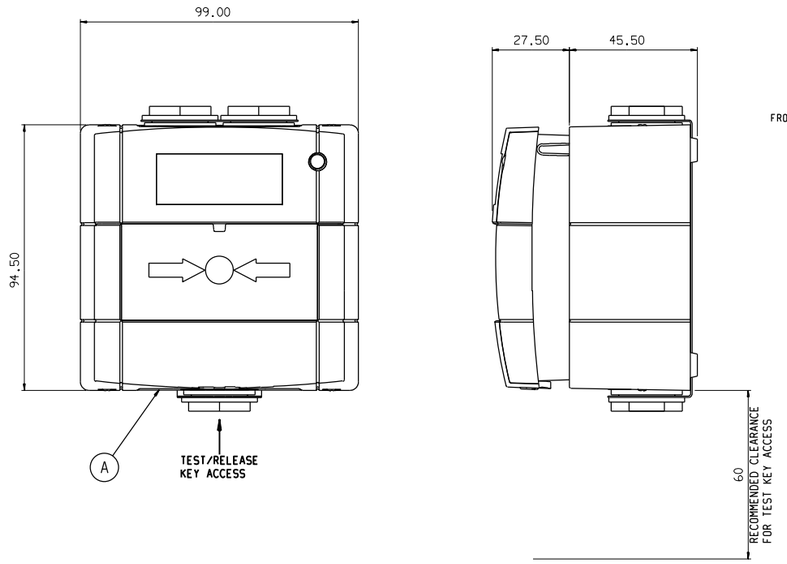
CPR Information

CE
0832

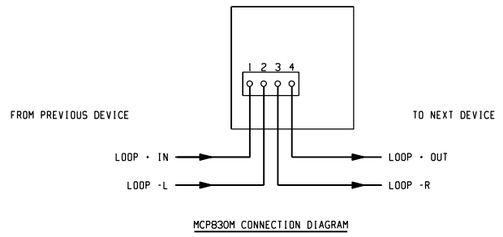
Tyco Fire & Security GmbH
Victor von Bruns-Strasse 21
8212 Neuhausen am Rheinfall
Switzerland
15
DoP-2015-4081

EN 54-11 and EN 54-17
Manual callpoint with Short-Circuit Isolator for fire detection & fire alarm systems for buildings
Type A, Outdoor
MCP830M

Essential Characteristics
EN54-11
Nominal activation conditions / Sensitivity and Performance under fire conditions: Pass
EN54-17
Performance under fire conditions: Pass
EN54-11 and EN54-17
Operational reliability: Pass
Durability of operational reliability temperature resistance: Pass
Durability of operational reliability; vibration resistance: Pass
Durability of operational reliability; humidity resistance: Pass
Durability of operational reliability; corrosion resistance: Pass
Durability of operational reliability; electrical stability: Pass



CALLPOINT



MCP830M CONNECTION DIAGRAM

ELECTRICAL DATA

OPERATING VOLTAGE	20 MIN – 40 MAX (Vdc)
QUIESCENT CURRENT	280uA MAX
ALARM CURRENT	3.8mA MAX

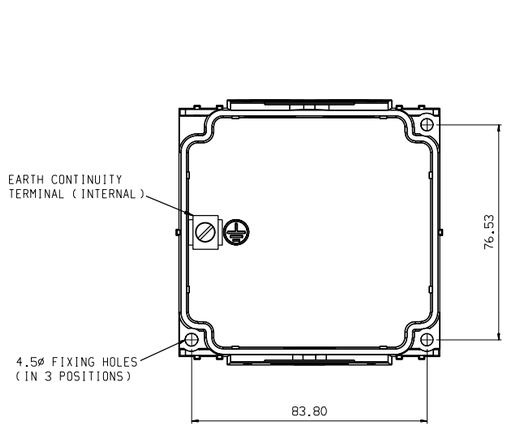
TECHNICAL DATA

CALLPOINT HOUSING	
MATERIAL:	PC/ABS (C1200HF)
COLOUR:	RED
WEATHERPROOF COVER	
MATERIAL:	PC RD3D011
COLOUR:	RED
WEATHERPROOF BACKBOX	
MATERIAL:	GLASS REINFORCED (GFN2)
COLOUR:	BLACK
HINGED COVER	
MATERIAL:	POLYCARBONATE
COLOUR:	TRANSPARENT

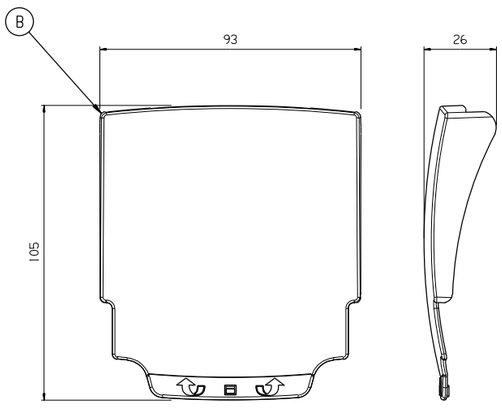
ENVIRONMENTAL

ENCLOSURE TO:	IP67
EMC:	EN 50130-4 EN 61000-6-3 AND MARINE REQUIREMENTS
OPERATING TEMPERATURE:	-25°C TO +70°C
HUMIDITY:	95% NON-CONDENSING
SHOCK, VIBRATION, IMPACT & CORROSION:	EN54 AND MARINE REQUIREMENTS

REF	ITEM	DESCRIPTION	STOCK CODE No	WEIGHT
A	MCP830M	WEATHERPROOF BREAK GLASS CALLPOINT	514.800.610	310g
B		TRANSPARENT HINGED COVER	515.001.128	24g



BACKBOX



TRANSPARENT HINGED COVER

NOTES
INSTALLATION:
THE INTEGRAL BACK BOX HAS THREE M20 THREADED HOLES.
TWO HOLE STOPPERS ARE PROVIDED FOR USE AS REQUIRED.
THE CABLE ENTRY HOLES OF THE BACK BOX MUST NOT BE SUBJECTED TO STRESS BY THE CABLE OR CONDUIT. THE USE OF SEALANT SUCH AS LOCTITE 5331 IS RECOMMENDED.

WIRING:
CONNECTION TO THE CALLPOINT IS VIA A 4-WAY BLOCK CONNECTOR AS SHOWN IN THE CONNECTION DIAGRAM. EACH TERMINAL WILL ACCOMMODATE A CONDUCTOR OF 2.5mm².

EARTHING:
AN EARTH CONTINUITY TERMINAL IS SITUATED IN THE REAR OF THE BACK BOX. THIS IS DESIGNED TO ACCOMMODATE 2 CONDUCTORS OF UP TO 2.5mm². AN EARTHING PLATE IS PROVIDED FOR CONTINUITY OF METAL CONDUITS. THIS MUST BE PLACED BEHIND THE BACKBOX PRIOR TO MOUNTING THE BACKBOX.

APP'D	ISSUE
A.NAISH	1 ECN217 20-03-12

DO NOT SCALE - REMOVE ALL BURRS AND SHARP EDGES - ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED. TO BE READ IN CONJUNCTION WITH BS 308.

THORN SECURITY

TITLE: MCP830M WEATHERPROOF ADDRESSABLE CALLPOINT
CONNECTION AND OUTLINE DRAWING

DRAWN: L.MARRS 05-03-12 | ENG'R: A.NAISH 05-03-12

DEV.No.

DRAWING No.: MS 514.800.610

SHEET 1 OF 1

MATERIAL

FINISH

SCALE: 1:2

THIRD ANGLE PROJECTION

TOLERANCES (UNLESS STATED)
GENERAL ±0.2mm
HOLE CENTRES ±0.12mm
HOLE DIAMETERS +0.1mm -0
ANGULAR ±30°

RELEVANT DRAWINGS

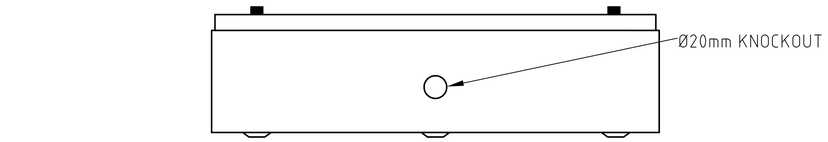
USED ON

A3

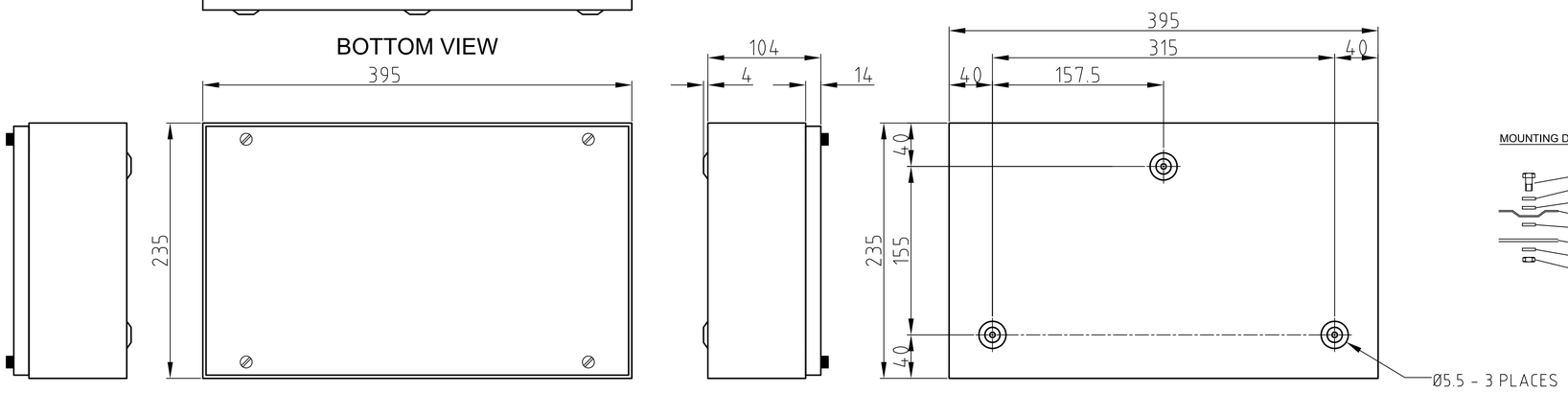
T1200B-C BATTERY BOX

FIRST ANGLE

DRAWING No.	SHT.	REV.
MS508.023.123	1/2	0



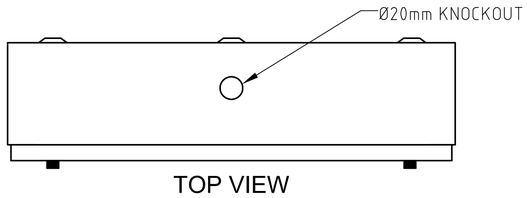
BOTTOM VIEW



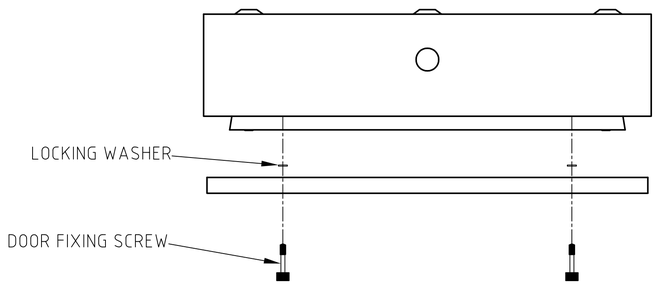
FRONT VIEW

REAR VIEW

MOUNTING DETAILS (3 PLACES)



TOP VIEW



TECHNICAL DATA
DIMENSIONS: 395mm WIDE x 235 HIGH x 104 DEEP
ENCLOSURE: ENCLOSED SPACES SUBJECT TO TEMPERATURE, HUMIDITY & VIBRATION.
WEIGHT: WITHOUT BATTERIES - T1200B-C - 4.4Kg

ENCLOSURE
DOOR: 1.6mm MILD STEEL
BACKBOX: 1.6mm MILD STEEL

FINISH: i. PRE TREATMENT - ELECTRO ZINC PLATED & FULL PASSIVATION
ii. POWDER COAT, SEMI GLOSS LEATHERETTE POLYESTER AT 70-80 MICRONS.
iii. COLOUR - DAWN GREY BS4800 10A 03.

CABLE ENTRY
1 x 20mm TOP, 1 x 20mm BOTTOM MOUNTING

WIRE SIZE
MIN: 0.5 sqmm
MAX: 2.5 sqmm

PART NUMBERS
T1200B-C - BATTERY BOX -
TYCO PART NUMBER 508.023.123

REV.	TASK	DESCRIPTION	DATE	DRAWN	CHKD.	APPR.
0		NEW DRAWING				

DRN.	B.E.
DATE	06-09-12
CHKD.	A.J.C.
DATE	06-09-12
APPR.	J.B.J.
DATE	06-09-12

CLIENT STANDARD DRAWING

PROJECT STANDARD DRAWING

TITLE
T1200B-C
ENCLOSURE INSTALLATION DETAILS

SIZE	SCALE	DRAWING No.	SHT.	REV.
A1	N.T.S.	MS508.023.123	1 OF 2	0

REVISION

NOTES
1: All dimensions shown are toleranced as +/- 0.25mm (Unless otherwise stated)

CONTRACT No.	
PROJECT	N/A
CLIENT	N/A
DATE	06-09-2012
SCALE	N.T.S.
DRAWN BY	B.E.
ENGINEER	AJC
CHECKED BY	AJC
DISK ID.	DS508.023.123-1_0.dwg

Control Equipment Limited
Hillcrest Business Park
Dudley
West Midlands, DY2 9AP.
TEL. 01384 456851
CONTROL EQUIPMENT FAX. 01384 458972

OFFICE OF ISSUE	DUDLEY
TITLE	T1200B-C ENCLOSURE INSTALLATION DETAILS
DRAWING No.	DS508.023.123-1
REV.	0

PS-12170
BATTERY 12V 17Ah

POWER PS SONIC
TRUSTED BATTERY SOLUTIONS

PS SERIES

General Purpose | Emergency Lighting | Medical | Fire & Security

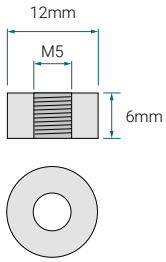
PS-12170VdS

12V 17.0 AH @ 20-hr.
12V 16.0 AH @ 10-hr.

Rechargeable Sealed Lead Acid Battery
PS – General Purpose Series

TERMINALS: (mm)

T12: Threaded insert with 5mm stud fastener



Torque: 2.0~3.0 Nxm

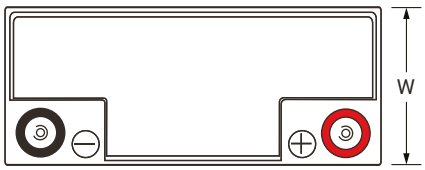
FEATURES

- VdS and NCP approved VRLA battery
- Absorbent Glass Mat (AGM) technology for superior performance
- Valve regulated, maintenance free spill proof construction
- Power/volume ratio yielding excellent energy density
- Rugged vibration and impact resistant ABS case and cover
- Gas recombination technology

APPROVALS

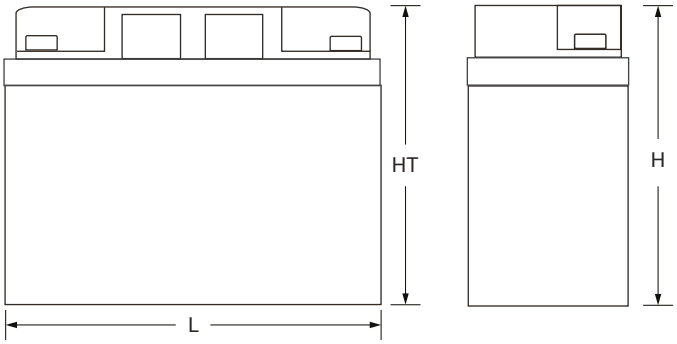
- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified
- U.L. recognized
- ISO9001:2015 – Quality management systems
- VdS
- NCP

DIMENSIONS: inch (mm)



L: 7.14 (181.5)
W: 3.03 (77)
H: 6.59 (167.5)
HT: 6.59 (167.5)

Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.



PERFORMANCE SPECIFICATIONS

Nominal Voltage	12 volts (6 cells)
Nominal Capacity	
20-hr. (850mA to 10.50 volts)	17.00 AH
10-hr. (1.60A to 10.50 volts)	16.00 AH
5-hr. (2.84A to 10.20 volts)	14.20 AH
1-hr. (9.76A to 9.00 volts)	9.76 AH
Approximate Weight	12.57 lbs. (5.7 kg)
Internal Resistance (approx.)	16.0 milliohms
Max Short-Duration Discharge Current (10 Sec.)	170.0 amperes
Shelf Life (% of nominal capacity at 68°F (20°C)	
1 Month	97%
3 Month	91%
6 Month	83%
Operating Temperature Range	
Charge	5°F (-15°C) to 122°F (50°C)
Discharge	-4°F (-20°C) to 140°F (60°C)
Case	ABS Plastic
Power Sonic Chargers	PSC-124000-PC PSC-122000A-C PSC-122000-PC

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(USA AND INTERNATIONAL EXCLUDING EMEA)
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7550 Panasonic Way, San Diego,
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F: +1 (619) 661 3650
E: customer-service@power-sonic.com

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POWER PS SONIC
TRUSTED BATTERY SOLUTIONS

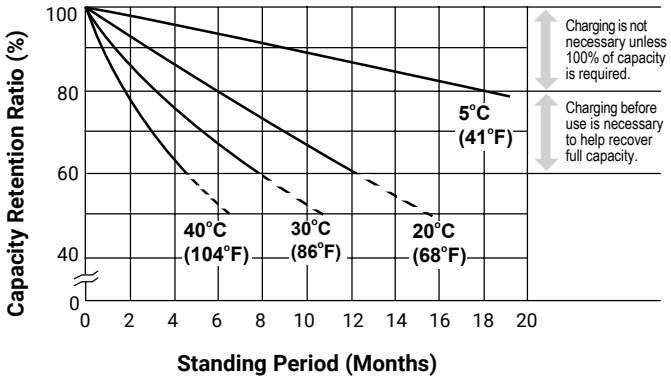
PS SERIES

PS-12170VdS

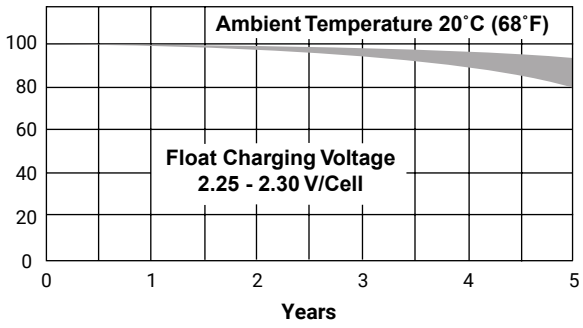
12V 17.0 AH @ 20-hr.
12V 16.0 AH @ 10-hr.

Rechargeable Sealed Lead Acid Battery
PS – General Purpose Series

SHELF LIFE & STORAGE



LIFE CHARACTERISTICS IN STAND-BY USE



CHARGING

Cycle Applications: Apply constant voltage charge at 2.35v/c – 2.45v/c (14.1 – 14.7v for 12v Monobloc) at 20°C. Initial charging current should be set at less than 0.25C Amps. Switch to float charge to avoid overcharging.

"Float" or "Stand-By" Service: Apply constant voltage charge of 2.25v/c – 2.30v/c (13.5 to 13.8 volts for 12v Monobloc at 20°C. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

Temperature Compensation: Charging Voltage for both Cyclic and Standby applications should be regulated in relation to ambient temperature. As temperature rises charging voltage should be reduced to prevent overcharge and increased as temperature falls to avoid undercharge.

For further charging information including temperature compensation factors, see Power Sonic Technical Manual/ Power Sonic Charger specifications.

APPLICATIONS

- General purpose
- Emergency lighting
- Medical
- Fire and security

CHARGERS

Power Sonic offers a wide range of chargers suitable for batteries with a variety of capacities.

Please refer to our website for more information on our switch mode and transformer type chargers.

Please contact our technical department for advice if you have difficulty in locating a suitable charger.

FURTHER INFORMATION

Please refer to our website **www.power-sonic.com** for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc.

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almar
foreign trade limited company

PS-1270
BATTERY 12V 7Ah

POWER PS SONIC
TRUSTED BATTERY SOLUTIONS

PS SERIES

General Purpose | Emergency Lighting | Medical | Fire & Security

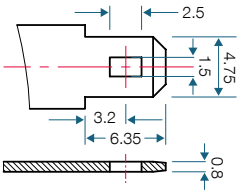
PS-1270

12V 7.0 AH @ 20-hr.
12V 6.5 AH @ 10-hr.

Rechargeable Sealed Lead Acid Battery
PS – General Purpose Series

TERMINALS: (mm)

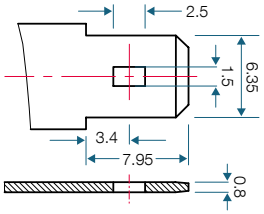
F1: Quick disconnect tabs, 0.187" x 0.032" – Mate with AMP. INC. FASTON "187" series



Torque – Not Applicable

OR

F2: Quick disconnect tabs, 0.250" x 0.032" – Mate with AMP. INC FASTON "250" series

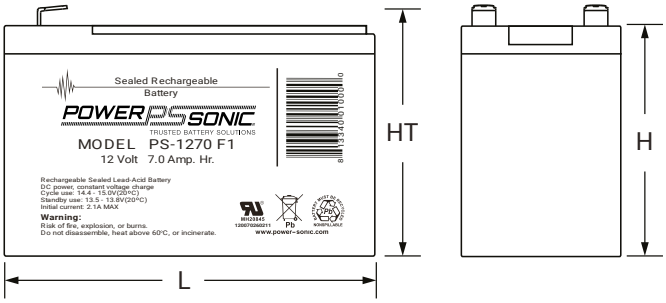


Torque – Not Applicable

DIMENSIONS: inch (mm)

L: 5.95 (151)
W: 2.56 (65)
H: 3.70 (94)
HT: 3.86 (98)

Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.



FEATURES

- Absorbent Glass Mat (AGM) technology for superior performance
- Valve regulated, maintenance free spill proof construction
- Power/volume ratio yielding excellent energy density
- Rugged vibration and impact resistant ABS case and cover
- Gas recombination technology
- 5 year design life

APPROVALS

- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified
- U.L. recognized
- ISO9001:2015 – Quality management systems

PERFORMANCE SPECIFICATIONS

Nominal Voltage	12 volts (6 cells)
Nominal Capacity	
20-hr. (350mA to 10.50 volts)	7.00 AH
10-hr. (650mA to 10.50 volts)	6.50 AH
5-hr. (1.2A to 10.20 volts)	6.00 AH
1-hr. (4.5A to 9.00 volts)	4.50 AH
Approximate Weight	4.80 lbs. (2.18 kg)
Internal Resistance (approx.)	23.0 milliohms
Max Short-Duration Discharge Current (10 Sec.)	70.0 amperes
Shelf Life (% of nominal capacity at 68°F (20°C)	
1 Month	97%
3 Month	91%
6 Month	83%
Operating Temperature Range	
Charge	5°F (-15°C) to 122°F (50°C)
Discharge	-4°F (-20°C) to 140°F (60°C)
Case	ABS Plastic
Power Sonic Chargers	PSC-12800A-C PSC-121000-PC

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almar foreign trade limited company

POWER PS SONIC
TRUSTED BATTERY SOLUTIONS

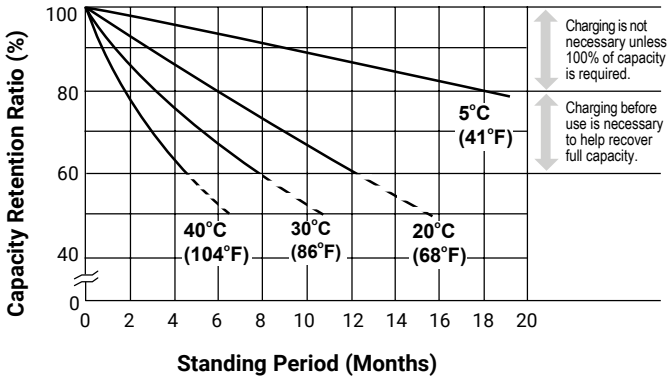
PS SERIES

PS-1270

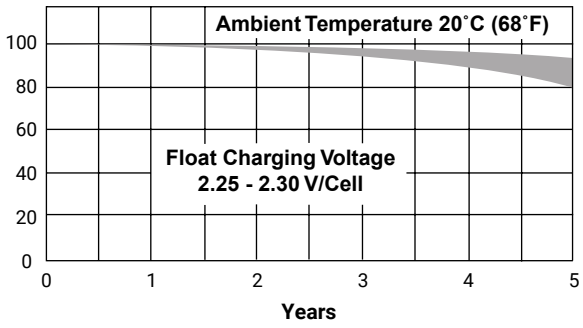
12V 7.0 AH @ 20-hr.
12V 6.5 AH @ 10-hr.

Rechargeable Sealed Lead Acid Battery
PS – General Purpose Series

SHELF LIFE & STORAGE



LIFE CHARACTERISTICS IN STAND-BY USE



CHARGING

Cycle Applications: Apply constant voltage charge at 2.35v/c – 2.45v/c (14.1 – 14.7v for 12v Monobloc) at 20°C. Initial charging current should be set at less than 0.25C Amps. Switch to float charge to avoid overcharging.

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Temperature Compensation: Charging Voltage for both Cyclic and Standby applications should be regulated in relation to ambient temperature. As temperature rises charging voltage should be reduced to prevent overcharge and increased as temperature falls to avoid undercharge.

For further charging information including temperature compensation factors, see Power Sonic Technical Manual/ Power Sonic Charger specifications.

CHARGERS

Power Sonic offers a wide range of chargers suitable for batteries with a variety of capacities.

Please refer to our website for more information on our switch mode and transformer type chargers.

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FURTHER INFORMATION

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APPLICATIONS

- General purpose
- Emergency lighting
- Medical
- Fire and security

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foreign trade limited company

517.050.042 4B-C 4'' CONTINUITY DETECTOR BASE

517.050.051 4B-DHM 4'' DECK MOUNT

4B Bases and Accessories

Overview

Detector bases provide the physical mounting for their detectors, and the electrical connections to their detectors.

This leaflet is intended for use in planning and implementing an installation. It provides specifications and useful notes on the 4B series bases.

The 4B series derives its name from widest the diameter of the bases, which is 4" (approximately 100 mm).

Figure 1 shows a typical base in the series (the 4B-C). The numbered items are explained further throughout this guide.

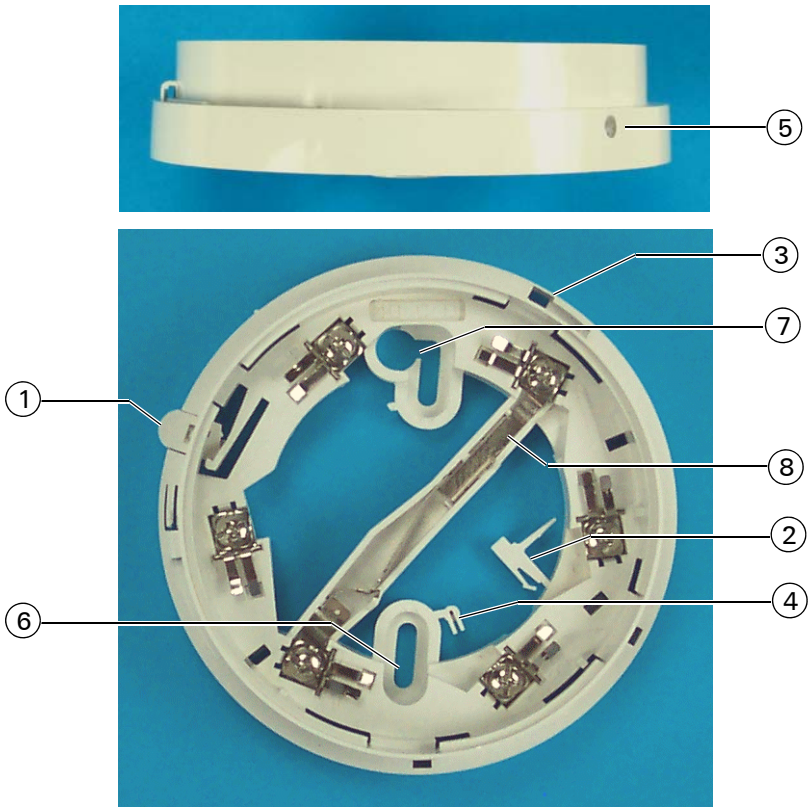


Fig. 1: 4B-C 4" base
1–Temporary park plunger
2–Detector locking pin (as supplied)
3–Detector locking pin fits here
4–LED aperture plug (as supplied)
5–LED aperture plug fits here
6–Fixing screw slot
7–Fixing screw slot enlarged
8–Continuity Spring loaded contact (4B-C only)

Variants

There are a number of variants in the series, to suit varying installation requirements and detector design. All the variants are similar, in terms of construction and dimensions. The variants are summarised in Table 1.

Name	Summary	Usage	Typical Wiring Details
4B	Base variant.	Use with 830 series detectors.	Figure 5 on page 4
4B-C	Continuity base. For use with detectors that normally provide the continuity of the loop. On removing the detector a spring loaded contact closes to maintain loop continuity. The contact is item 8 in Figure 1.	Use with 850 series detectors.	Figure 7 on page 5
4B-EN	This is identical to the 4B-C, but approved for use in hazardous areas.	Use with 850 Type Ex 'n' approved detectors.	Figure 7 on page 5
4B-I	Isolator base. If a loop short circuit is detected on one side of the base, loop continuity is automatically broken to maintain a functioning section of loop on the other side of the base. The base itself remains functioning. Once the short circuit is no longer detected, loop contiguity is automatically restored.	Use with 830 series detectors.	Figure 6 on page 5

Table 1: 4B Base Variants

Inserting Detectors

To fit a detector to a base

1 Identify the raised rib alignment markers on the edges of the detector and base.

2 With the detector marker positioned approximately 15 mm/15 ° anti-clockwise from the base marker, offer up and mate the detector to the base.

3 Twist the detector clockwise to align the markers and lock the detector in place.

Detector locking

Normally the detector is removed by first rotating it anti-clockwise to disengage the contacts.

This rotation can be prevented, using the detector locking pin.

To use the locking pin

1 Snap the pin free of the moulding (see Item 2 in Figure 1).

2 Insert the pin into its aperture on the rim of the base (see Item 3 in Figure 3). The pin should sit flush in its aperture, with the sprung tab upwards.

3 Fit a the detector to the base as normal.

Now, before the detector can be removed, you need to depress the sprung tab of the locking pin. To do this use a suitable tool inserted into the access hole in the detector cover. As an example of a suitable tool, see the section "Lock release tool".

Lock release tool

For details on using a lock release tool see the section "Detector locking".

For the lock release tool, a small diameter flat ended rod is all the is required. This could be made by adapting a screwdriver as shown in Figure 2.

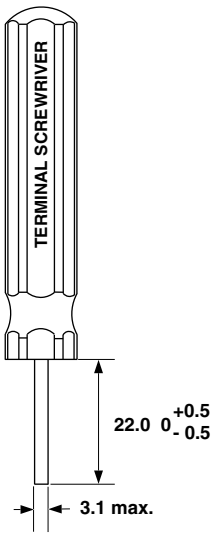


Fig. 2: Making an unlocking tool
1–End ground down perpendicular to shaft

Park Position

The Park position allows you to fit a detector into a base to keep them together. However electrical contact is not made, so the detector is not installed into the system.

The sections below cover using the Park position. You can also use the Park position with the Detector Removal Tool (see "Detector Removal Tool" on page 10).

To fit a detector to a base in the Park position

1 Off up and mate the detector, as described in the section "Inserting Detectors", steps 1 and 2.
2 Depress and hold in the Temporary Park Plunger (see item 1 in Figure 1).
3 Twist the detector anti-clockwise until you feel resistance (approximately 10 mm/10 °).
4 Release the plunger.

To take a detector out of Park position

1 Depress and hold in the Temporary Park Plunger.
2 Twist the detector clockwise approximately 10 mm/10 °.
3 Release the plunger.
4 Remove the detector.

Labelling

For labelling the base is fitted with an Address Flag. This can then be fitted with Address Flag Labels.

There are two options for labelling:

- Pre-printed Address Flag Labels, fitted to address flags.
- Dymo-tape labels, fitted to 4B-DAF DIN Address Flags.

An Address Flag is shown in Figure 3, the 4B-DAF DIN Address Flag is very similar.

The Address Flag is first fitted to the detector. On fitting the detector to the base, the flag is then transferred to the base.

If the detector is removed the Address Flag remains with the base.

The address label carrier is made from Flame Retardant PC-ABS.

.

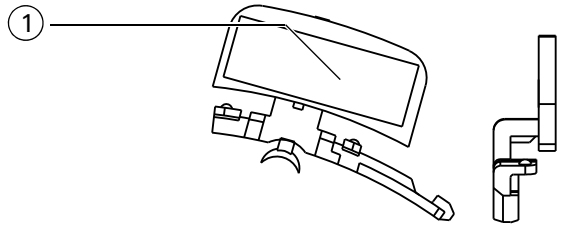


Fig. 3: Address Label Flag
1–Address label flag affixed here

The Dymo labels should be to the following format:

- Tape width: 12mm
- Tape length: 52 mm maximum
- Font size: 10mm
- Layout: zzzzz / nn or zzzzz - nn

Where zzzzz is the zone number and nn is the detector address within this zone.

LED aperture plug

Bases with an isolating function have an indicator LED fitted. This leaves an empty aperture in bases without an isolator. You can optionally plug this aperture.

The LED aperture plug is shown in Figure 4.

Following is a procedure for inserting the plug. Using a screwdriver makes the procedure less difficult.

To insert the LED plug

1 Snap the plug free of the moulding (see Item 4 in Figure 1).
2 Insert a small flat bladed screwdriver into the plug slot.
3 From the inside, push the plug into the apperture, as shown in Figure 4.

Fig. 4: Inserting the LED aperture plug

Technical specification

Physical

- Dimensions
  - Height: 25 mm
  - Diameter overall: 109 mm
- Material
  - Base: Flame Retardant PC-ABS
  - Base Contacts: annealed spring steel
  - Base screws: stainless steel
- Weight
  - Base: 0.064 kg

Environmental

- Operating Temperature: -25 °C to +70 °C (+90 °C for short periods)
- Storage Temperature: -40 °C to +80 °C
- Relative Humidity: 95 % non-condensing

Wiring

The base wiring differs according to particular base and detector variants.

Some simplified typical wiring diagrams are shown in the figures below.

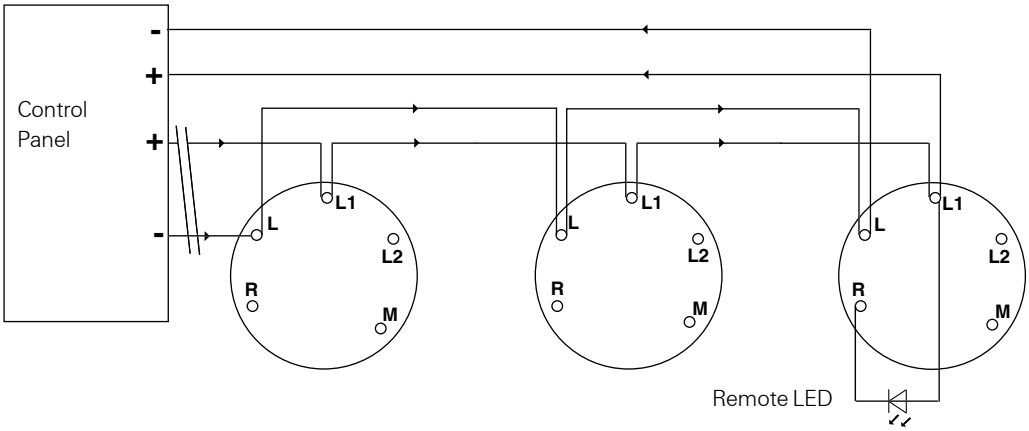


Fig. 5: Typical implementation wiring diagram – 4B

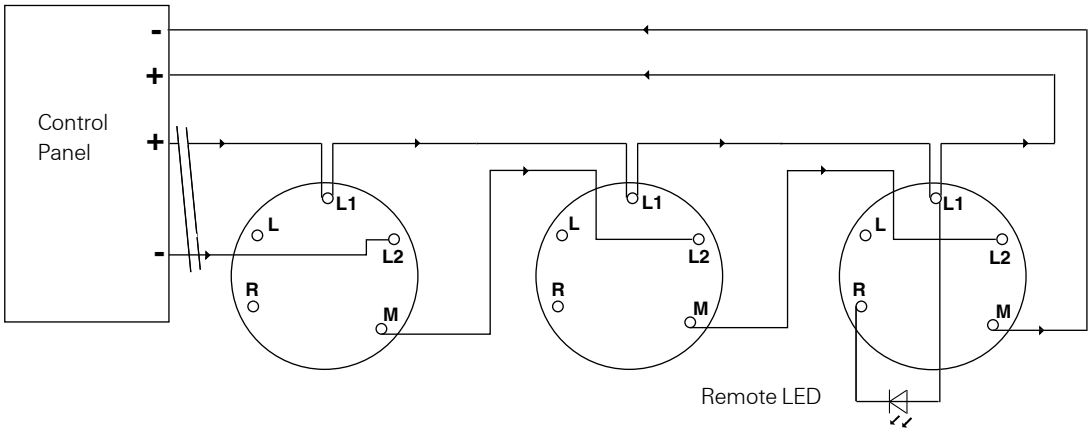


Fig. 6: Typical implementation wiring diagram – 4B-I Isolator Base

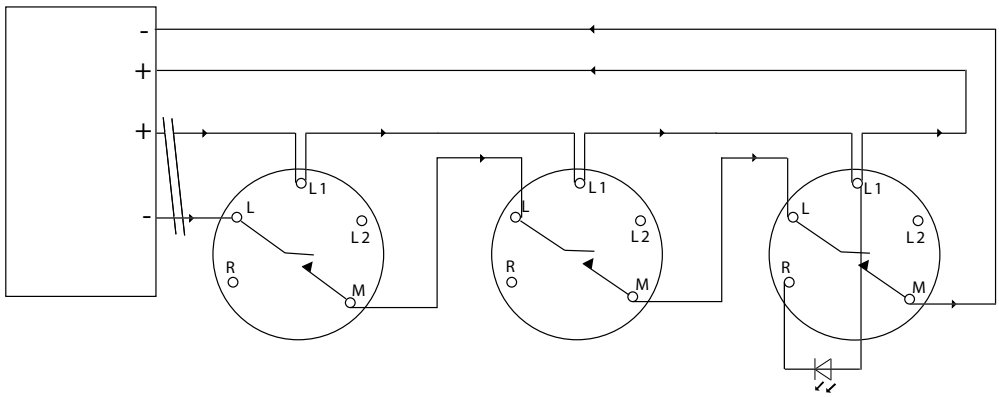


Fig. 7: Typical implementation wiring diagram – 4B-C and 4B-EN Continuity Bases

Fixing

As described in the sections below, a 4B base can be fixed to the following:

- Conduit junction boxes.
- 4B-DHM Deckhead mountings.
- 4B-EM Euro Mounting Boxes.
- CTA-BB/CTA-BC Ceiling Tile Adapters.
- Directly to the ceiling.

A 4B base cannot be used with:

- EM-5B Euro Mounting Box
- DHM-5B Deckhead Mounting

Fixing Screw Slots

The fixing screw slots are shown as item 6 and 7 in Figure 1.

Direct fixing to surfaces

The base can be fixed directly to surfaces such as plywood ceilings. The surface should be flat in the area covered by the base, to ensure stability.

Use two No. 8 x 1.5" pan head screws, or the equivalent.

Conduit junction box

The base can be fitted to conduction junction boxes, at fixing centres of either 50 mm (British standard) or 70 mm (European standard).

Fig. 8: Conduit Junction Box
1–Fixing centre

4B-DHM deckhead mounting

The Deckhead Mounting is designed to be used in particularly damp or dirty environments. The kit is illustrated in Figure 9.

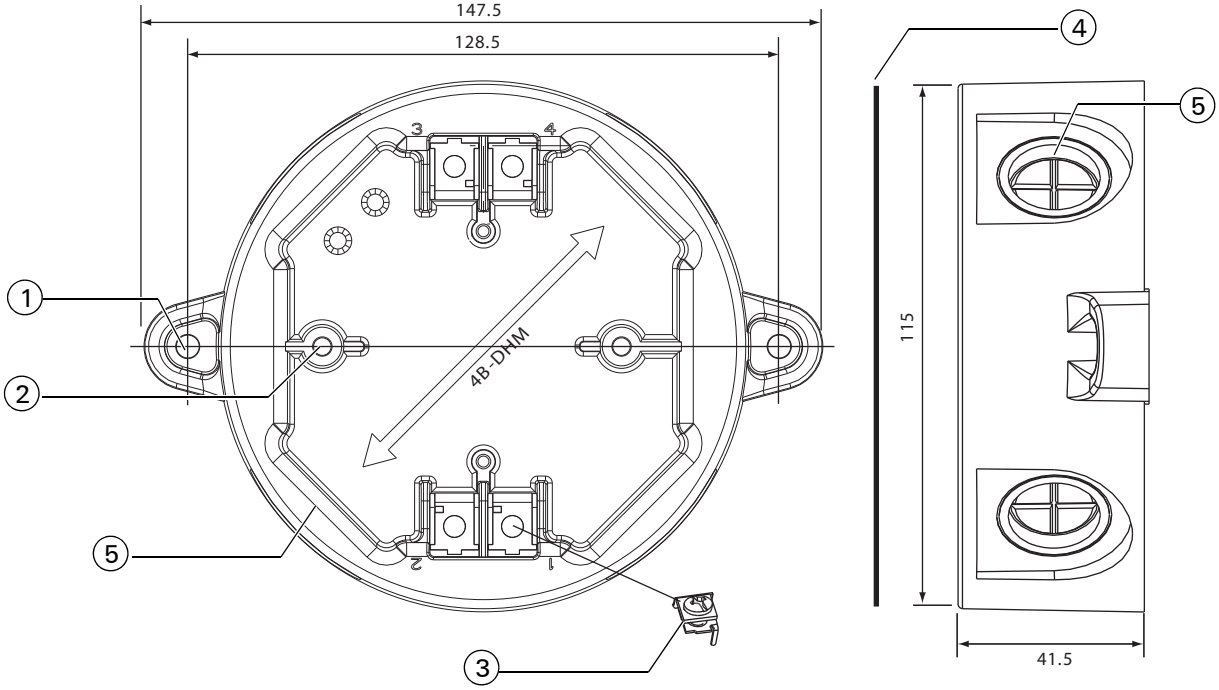


Fig. 9: 4B-DHM deckhead mounting
1–Fixing hole (x 2). 5 mm diameter
2–Detector base mounting post (x 2)
3–Base accessory terminal (only one factory fitted – more can be ordered)
4–Sealing gasket
5–Gland/conduit knockout, 4 positions. 20 or 25 mm diameter

The Deckhead Mounting Kit comprises:

- The mounting housing.
- Two self tapping posidrive pan head screws to secure the detector base.
- Sealing gasket.

4B-DHM Technical specification

- Weight: 200 g
- Material
  - Body: glass filled P.B.T.
  - Base Accessory Terminal: annealed spring steel
  - Base Accessory Terminal Screw: stainless steel
- Environmental

- Storage Temperature: -30 °C to +75 °C
- Operating Temperature: -25 °C to +70 °C
- Relative Humidity: up to 95 % RH (non-condensing)

To install the 4B-DHM

1 Note that the item numbers in this procedure refer to Figure 9. Remove gland/conduit knockouts (Item 5) as appropriate. For the larger 25 mm diameter, a hole cutter is required.

2 Note the alignment required for detector Status Indicator LED visibility.

An arrow is embossed in the bottom of the 4B-DHM. Mount the 4B-DHM so this arrow is aligned in the direction required for visual inspection of the detector Status Indicator LED.

3 Choose a mounting position that that is flat in the area contacting the housing.

To mount using welding, now jump to the section "4B-DHM Installation – welded" on page 7. Otherwise carry on at the next step.

4 Fix the 4B-DHM to the surface by screwing through the fixing holes – item 1 in Figure 9.

For the screws, use two No. 8 x 1" countersunk zinc plated and passivated steel screws, for example.

5 Remove the backing from the sealing gasket (Item 4 in Figure 9). Carefully stick the gasket to the front surface of the 4B-DHM. Fit the gasket round the rim, so that it will form a seal with the detector base.

6 Fit the LED Apperture Plug to the base – see the section "LED aperture plug" on page 3.

7 Secure the base to the 4B-DHM using the supplied two 4.2 x 25mm self tapping posidrive pan head screws.

4B-DHM Installation – welded

You will have jumped here from Step 3 in the procedure "To install the 4B-DHM" on page 7.

The 4B-DHM can be fixed to metal surfaces using welding. Two screws are inserted into the back of the 4B-DHM. These screws are then welded to the surface.

To fix the 4B-DHM using welding

1 Position the 4B-DHM so the flat base (that contacts the mounting surface) is towards you. This position corresponds to Figure 10. The item numbers in Figure 10 are referred to in this procedure.

2 Using pliers, nibble away the thin knockout section in the circular wall (Item 4).

3 Cover the knockouts and surrounding area with high temperature masking tape. This provides protection from weld spatter. Clear the tape from over the knockouts with a knife.

4 Insert screws (not supplied) into the holes (Item 1) . Use 6.3 x 25mm (No. 14 x 1") self tapping screws.

5 Using a double sided adhesive pad (Item 2), or tape, fix the 4B-DHM to the surface.

6 Weld the screw heads to the surface. Use Mig/ Tig welding for approximately 1.5 seconds per weld. For access, use the knockouts you removed previously.

7 Remove the masking tape and clean away any deposits.

8 Jump back to Step 5 in the procedure "To install the 4B-DHM".

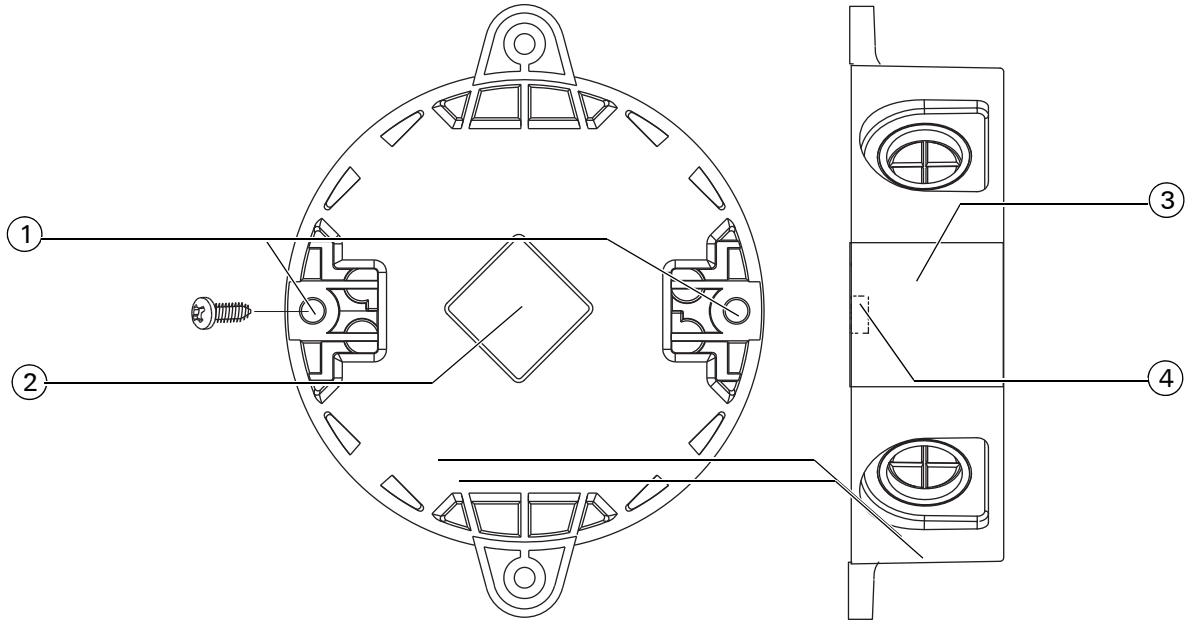


Fig. 10: 4B-DHM welding option
1 – Screw holes
2 – Double sided adhesive pad or tape
3 – masking tape
4 – Knockout

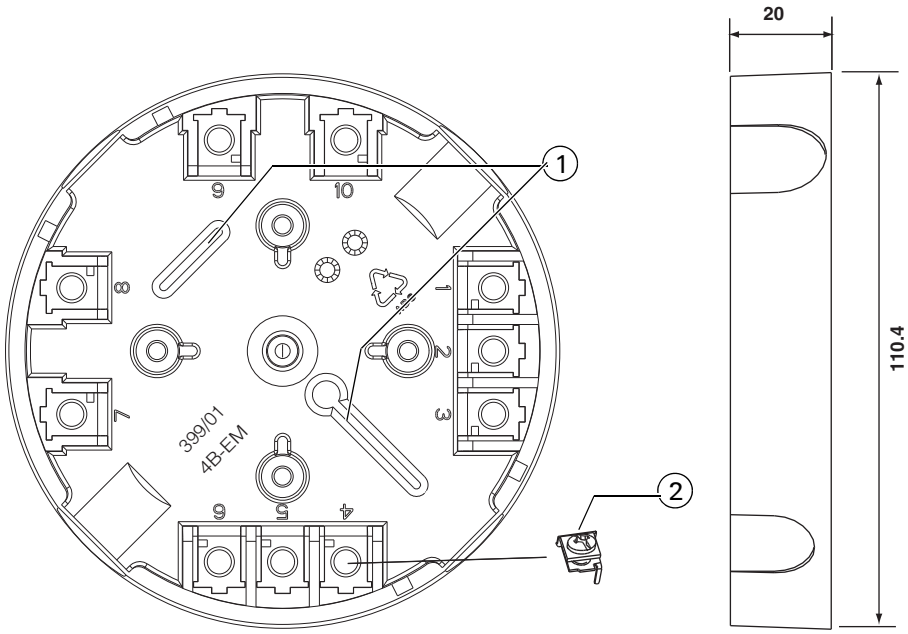


Fig. 11: 4B-EM Euro mounting box
1 – Mounting slots
2 – Base accessory terminal (only one factory fitted – more can be ordered)

4B-EM european mounting box

The European Mounting Box is shown in Figure 11).

This is intended for use in EC countries using 18 mm and 21 mm cable breakouts.

The housing is secured with two No. 8 x 1 inch countersunk zinc plated and passivated steel screws (or equivalent).

The surface chosen for the mounting should be flat over the area of the underside of the housing to ensure a stable fixing and strong enough to take the weight of the mounting, detector base and sensor.

4B-EM Technical specification

- Dimensions
  - Height: 21.5 mm
  - Diameter: 126 mm
  - Weight: 82 g
- Material
  - Body: Flame Retardant PC-ABS.
  - Base Accessory Terminal: Annealed spring steel
  - Base Accessory Terminal Screw: stainless steel
- Environmental
  - Operating Temperature: -25 °C to +70 °C
  - Relative Humidity: up to 95 % RH (non-condensing)

4B-6A 6" Base Adapter

Use the 4B-6A Base Adaptor for a larger area of coverage. This is useful, for example, where an older larger base is being replaced, and the marks of the old installation need to be covered.

The adapter is shown in Figure 12.

To use the adaptor

1 Snap off the two mounting slot covers (1).

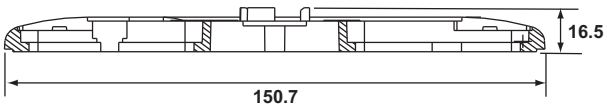
2 Fix the adapter in place using screws in the slots (2). The adapter can be fitted directly to the ceiling or to a conduit junction box.

3 Fix the base to the adapter using screws in the slots (3).

4 Fix the mounting slot covers over the outer ends of the mounting slots.

4B-6A Technical specification

- Dimensions
  - Height: 16.35 mm
  - Diameter: 152 mm
  - Weight: 44 g
- Material
  - Body: Flame Retardant PC-ABS.



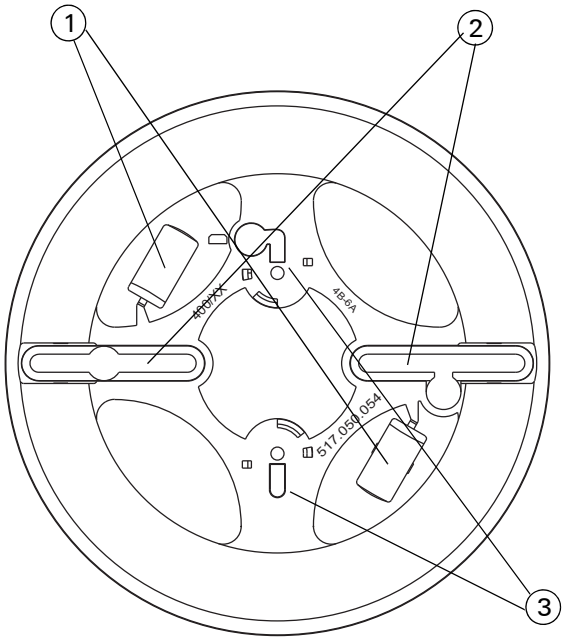


Fig. 12: 4B-6A 4" base 6" adaptor
1–Mounting slot covers
2–Mounting slots - adapter to surface
3–Mounting slots - base to adaptor

4B-CTA Ceiling tile adaptor

The Ceiling Tile Adaptor (CTA) is used to prepare a ceiling tile to be able to accept a complete base and detector assembly.

Normally the base is installed without the detector, as mounting screws must be inserted through the back plate of the base.

The CTA can save time by allowing a system to be installed and commissioned before the ceiling is installed. Once the ceiling is installed the base and detector assembly can be fitted without the need for disassembly and re-testing.

The adapter can be ordered as a complete kit or as individual items (clamping rings and backbox).

Full details are provided in the leaflet packaged with the adapter kit. This can also be downloaded from the Tyco EMEA website.

Detector Removal Tool

The Detector Removal Tool is shown in Figure 13.

This tool is mainly used in reaching high locations, in conjunction with the optional extension poles.

The tool is used for the following:

- Fitting detectors from their bases, and removing them. (The Park position can also be used – see the section "Park Position" on page 3).
- Fitting detector dust covers to detectors, and removing them.

Operating instructions are shipped with the unit. These instructions can also be downloaded from the Tyco EMEA website.

Fig. 13: Detector Removal Tool

Remote Indicators

Remote indicators are used when the LED of the detector LED is not visible, for example if the detector is mounted in a roof void.

The following sections detail the two remote indicator units available.

The remote indicators appear in the simplified wiring diagrams above (for example in Figure 5 on page 4).

Full installation and specification details are packaged with the product and are also available for download from the Tyco EMEA website.

801RIL Remote Indicator

The 800RIL is shown in Figure 14. This is mounted to a single-gang electrical box.

Fig. 14: 801RIL Remote indicator

801HL Remote Indicator

The 800HL Remote Indicator is show in Figure 15.

This differs from the 801RIL in that it is more visible and can monitor up to four detectors. The indicator will illuminate when at least one of its monitored detector LEDs illuminates.

A simplified wiring diagram is shown in Figure 16.

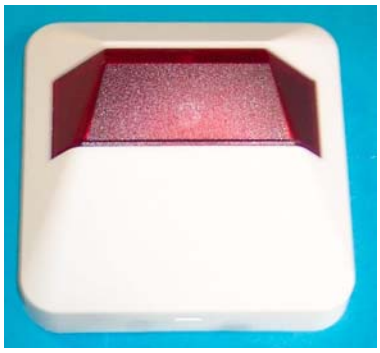


Fig. 15: 801HL remote LED indicator

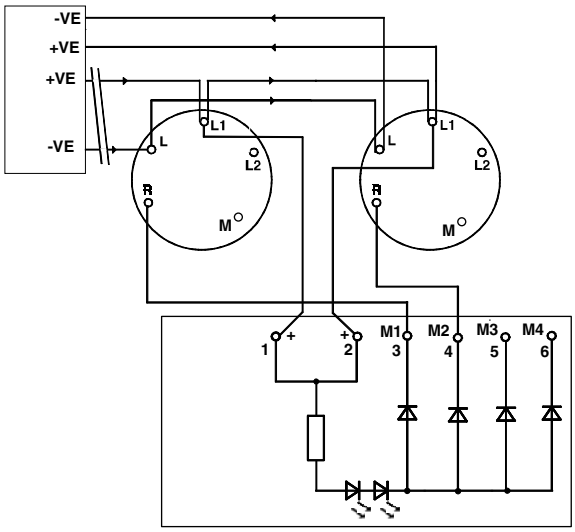


Fig. 16: 801HL remote LED indicator wiring

Detector Protective Cage

The detector protective cage is shown in Figure 17.

This is designed to be fitted in areas where there is a high risk of mechanical damage to a detector.

The detector cage is fitted after the detector has been commissioned. Use 4 x fixing screws suitable for the location.

Fig. 17: Detector Cage

CPD Information (4B-I)

CE

0786

Thorn Security Limited
Dunhams Lane
Letchworth SG6 1BE
UK

11

0786-CPD-21075

EN54-17: 2005

Short-circuit isolator for fire detection and fire alarm systems for buildings

4B-I

Technical information in this document (MZX-D-4B-PI)

Ordering information

Item	Order Code
4B Base	517.050.041
4B-C Continuity Base	517.050.042
4B-I Isolator Base	517.050.043
4B-EN "Ex and Ex n" Isolator Base	517.050.044
Address Flags (pack of 100)	516.800.915
Address Flag Labels Loop A (white)	516.800.931
Address Flag Labels Loop B (yellow)	516.800.932
Address Flag Labels Loop C (purple)	516.800.933
Address Flag Labels Loop D (green)	516.800.934
Address Flag Labels - Loop E (Grey)	516.800.935
Address Flag Labels - Loop F (Blue)	516.800.936
Address Flag Labels - Loop G (Orange)	516.800.937

Fig. 18: Order codes

Item	Order Code
Address Flag Labels - Loop H (Red)	516.800.938
800RT Detector Removal Tool	516.800.917
801RIL Remote Indicator	516.800.908
800HL Remote Indicator	516.800.909
4B-DAF DIN Address Flag (pack of 100)	517.050.055
4B-DHM Deckhead Mounting	517.050.051
4B-EM Euro Mounting Box	517.050.052
Ceiling Tile Adaptor Kit	517.050.060
Ceiling Tile Adaptor Back Box	517.050.056
Ceiling Tile Adaptor Bezel and Clamp	517.050.057
Ceiling Tile Adaptor Plate	517.050.058
4B-6A 6" Base Adaptor	517.050.054
Base Accessory Terminal (pack of 10)	517.050.612

Fig. 18: Order codes (cont.)

514.001.063 EXI800 MX LOOP INTERFACE MODULE

EXI800 MX I.S. Loop Interface Module

Introduction

Fig. 1: EXI800 Interface Module

The EXI800 Interface Module, used with a galvanic isolator, provides a path for an MX Panel to transparently communicate to slave devices (800Ex Detectors, IF800Ex Interface Module or CP840Ex Addressable Break Glass Call Point) connected to the Intrinsically Safe loop. The interface reduces the standard MX loop supply voltage and signalling currents to levels that are acceptable for hazardous areas.

The EXI800 includes an integral isolator, which serves as protection against short circuits.

The EXI800 meets the requirements of EN54 Pt 17.

The IS loop output of the EXI800 interfaces with the Pepperl+Fuchs KFD0-CS-Ex1.54 Galvanic Isolator, supplying loop voltage and signalling currents to the Intrinsically Safe loop.

Mechanical construction

As shown in Figure 1, the EXI800 electronics is mounted into a Pepperl+Fuchs DIN rail housing.

The housing is clipped onto a standard DIN rail mounted inside an enclosure located in the safe area.

Refer to document 17A-13-D2, I.S. System 800 Product Application and Design Information, for a selection of appropriate enclosures.

Two triple terminal blocks are used to terminate field wiring. The terminal blocks accommodate a single 12 AWG to 24 AWG (2.97mm to 0.508mm) solid or stranded wire.

The EXI800 terminal connections are as follows:

- MX Loop R + (5) MX Loop R - (2)
- MX Loop L + (6) MX Loop L - (3)
- IS Loop IS + (4) I S Loop IS - (1)

Terminal idents, shown in brackets, are screened on to the top cover of the housing.

Operation

Refer to Fig. 2. The EXI800 behaves like a semi-transparent bi-directional signalling path for the FSK communication signals and for loop supply voltages.

The EXI800 is loop powered, drawing its own low quiescent power from the safe area loop supply.

The EXI800, combined with a galvanic isolator, limits the energy levels entering the hazardous area.

Signalling current pulses are reduced to levels such that a minimum amount of voltage drop is seen across the galvanic isolator, whilst still maintaining effective communication.

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 circuit.

Optimum operation requires the line in the Safe Area 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.

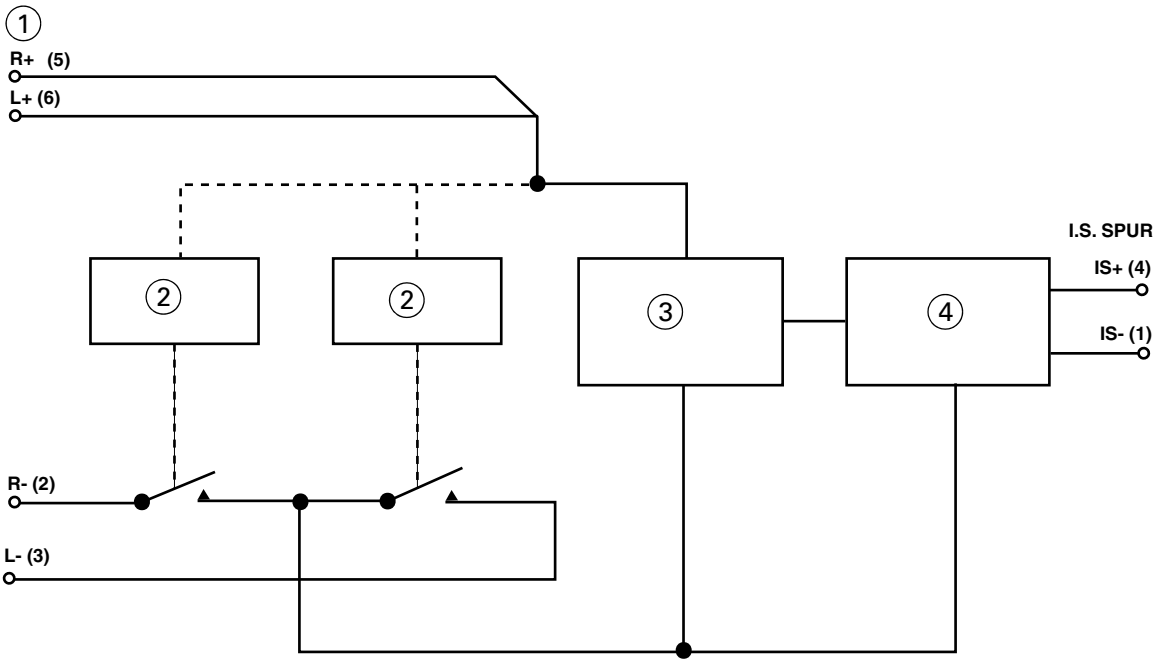


Fig. 2: EXI800 Schematic
1– Save area loop
2– S/C monitor
3– Voltage level shifter and DC current limiter
4– Signalling level shifter and line driver

In order to enable the isolator's use in a looped circuit, it is capable of passing current in both directions (LOOP IN LEFT to LOOP IN RIGHT or LOOP IN RIGHT to LOOP IN LEFT).

In the event of a line short circuit in the Safe Area, the built-in isolator continues to power the Intrinsically Safe spur, providing that either LOOP IN LEFT or LOOP IN RIGHT remains intact.

A short on the Intrinsically Safe spur will also cause the built-in isolator to open circuit both the Intrinsically Safe spur and Safe Area loop at that point.

The operation of the MX 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 <400 ohms), 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.

Technical specifications

Mechanical

The overall dimensions are shown in Fig. 3.

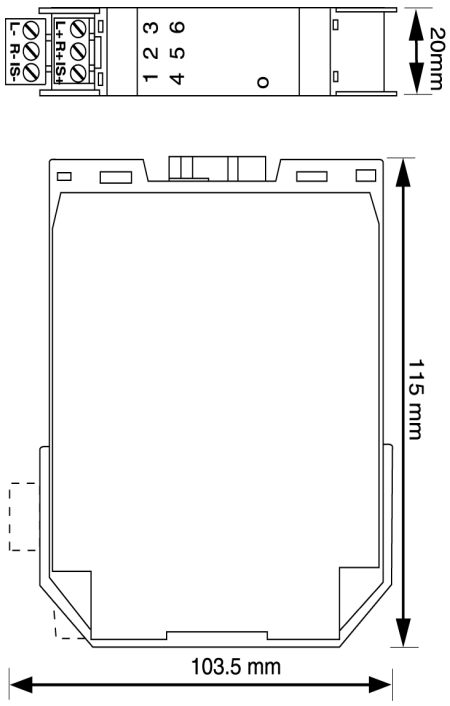


Fig. 3: EXI800 Interface Module

Parameter	Value
Materials	Makrolon
Environmental ■ Operating Temperature: ■ Storage Temperature: ■ Relative Humidity:	 -25 ° to + 70 °C -40 °C to + 70 °C up to 95% RH (non-condensing)
Dimensions (HWD)	115 mm x 103.5 mm x 20 mm
Weight	88 g approx.
IP Rating	20

Table 1: Mechanical Specifications

Electrical Characteristics

Parameter	Value
DC input voltage	Maximum 37.5 ± 1.5 V
DC input voltage	Minimum 20.0 V (minimum voltage required to operate a detector or ancillary)
DC output voltage	Maximum 28.0 V
AC input signalling voltage Maximum: Minimum:	 4 V ± 0.2 V pp 1 V pp.
AC output signalling voltage Maximum: Minimum:	 4 V ± 0.2 Vpp 1 Vpp.
AC input signalling Current:	40 mA max.
Isolator Maximum Loop Voltage: Minimum Loop Voltage:	 40 Vdc 19 Vdc
Maximum Rated Continuous Current (Isolator Closed):	2 A
Maximum Rated Switching Current (s/c):	2 A

Table 2: Electrical Characteristics

Parameter	Value
Maximum Leakage Current (Isolator Open):	– 6 mA into zone (10 mA into Isolator)
Maximum Series Impedance (Isolator Closed):	0.25 ohms
Isolator Switching Threshold (Isolator Closed to Open):	19 V or below
Isolator Switching Threshold (Isolator Open to Closed):	3.3 V from s/c

Table 2: Electrical Characteristics

Electromagnetic compatibility

The EXI800 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

Cabling

Cables are to be selected in accordance with Publication 05A-02-D1 and the requirements of the current issue of BS5839. Cabling should be connected as shown in Fig 5, ensuring correct polarity.

All EXI800 wiring must be kept in the safe area wiring section of the housing.

Programming 800Ex detectors

The EXI800 is supplied with an Ex dongle adaptor which must be fitted to the 'AUX' port of the 801AP Service Tool to enable the detectors to be programmed.

Notice

On later models of the 801AP Service Tool, the Ex dongle adaptor is not required for programming Intrinsically Safe 800Ex detectors. The applicable models of the 801AP can be identified by the C-tick mark on the product identification label on the underside of the tool. See Fig. 4.

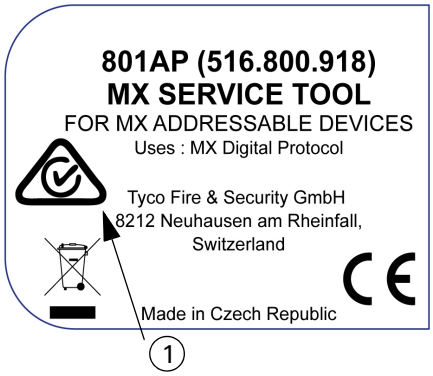


Fig. 4: 801AP MX Service Tool
1–C-Tick mark

CPR Information

CE
0786

Tyco Fire & Security GmbH,
Victor von Bruns-Strasse 21,
8212 Neuhausen am Rheinfall,
Switzerland
15
DoP-2015-4102

EN54-17: 2005
Short-circuit isolator device for use in fire detection and alarm systems
EXI800

Essential Characteristics
EN54-17: 2005
Performance under fire conditions: Pass
Operational reliability: Pass
Durability of operational reliability and response delay; temperature resistance: Pass
Durability of operational reliability; vibration resistance: Pass
Durability of operational reliability; humidity resistance: Pass
Durability of operational reliability; corrosion resistance: Pass
Durability of operational reliability; electrical stability: Pass

Fixing Instructions 120.415.578_17A-03-EXI

Ordering information

Item	Order Code
EXI800 Interface Module	514.001.063
801PHEx Optical Smoke & Heat Detector	516.800.530
801CHEx Carbon Monoxide & Heat Detector	516.800.531
801HEx Heat Detector	516.800.532
CP840Ex Break Glass Call Point	514.800.513
IF800Ex Contact Input Monitor	514.001.062
5BEx 5" Universal Base	517.050.023
MUBEx Base for use with Ex Detectors	517.050.610
Pepperl+Fuchs KFD0-CS-Ex1.54 Galvanic Isolator	517.001.259
Spare Service Tool Ex Dongle	557.203.008

Fig. 5: Order codes

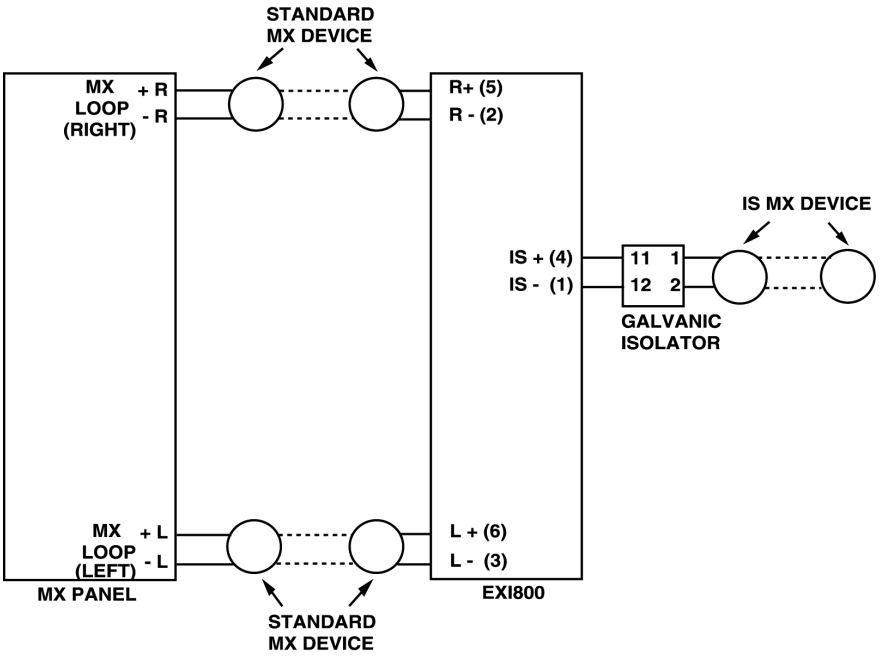


Fig. 6: EXI800 Simplified Wiring Diagram

517.001.259 KFDO-CS Ex1.54 BARRIER

Features

- 1-channel isolated barrier
- 24 V DC supply (loop powered)
- SMART fire alarm input
- Current input 1 mA ... 20 mA
- Up to SIL 3 acc. to IEC 61508

Function

This isolated barrier is used for intrinsic safety applications. It provides control and signal transfer for SMART compatible fire and smoke alarm transmitters inside hazardous areas.

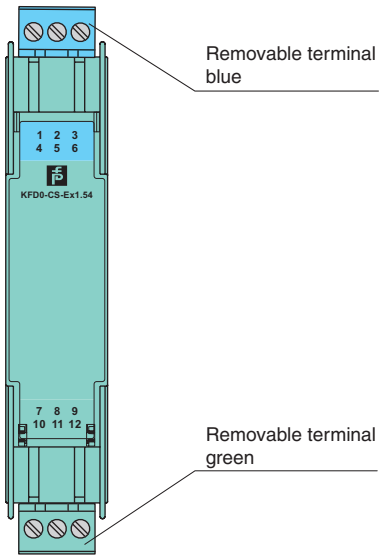
Digital signals may be superimposed (AC up to 6 V) on the analog values in the hazardous or safe area and are transferred bidirectionally.

The fall time of the digital signal must be smaller than 50 µs, the current in the hazardous area must be bigger than 1 mA.

Since this isolator is loop-powered, use the technical data to verify that proper voltage is available to the field devices.

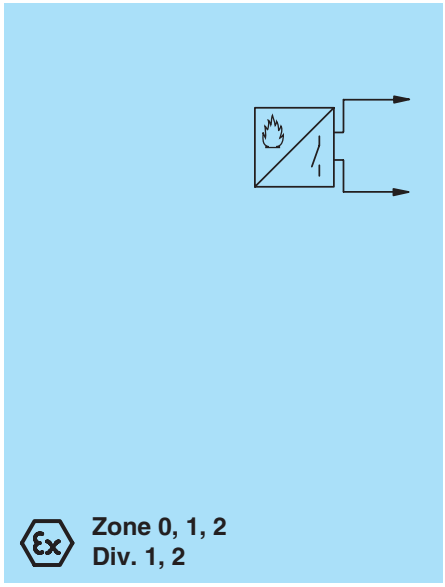
Assembly

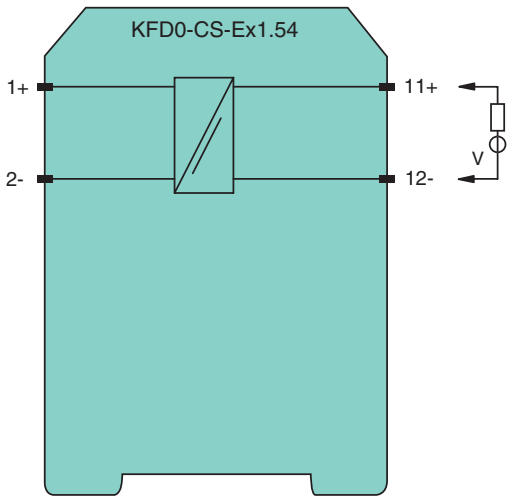
Front view



SIL 3

Connection





Release date 2018-03-26 15:16 Date of issue 2018-03-26 207802_eng.xml

General specifications		
Signal type		Analog input
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Supply		
Rated voltage	U_r	loop powered
Power dissipation		< 0.2 W for U_{in} = 24 V, I_o = 20 mA
Control circuit		
Connection		terminals 11+, 12-
Voltage		0 ... 24 V for 4 V ≤ U_e ≤ 24 V: ≥ U_e - (0.41 x input current in mA) - 0.5
Current		0 ... 20 mA
Field circuit		
Connection		terminals 1+, 2-
Short-circuit current		≤ 65 mA
Transmission range		voltage: 4 ... 20 V DC/0 ... 6 V_{pp} AC current: 1 ... 20 mA
Transfer characteristics		
Deviation		
After calibration		≤ 3.5 mA current loss at 20 mA load current
Influence of ambient temperature		± 20 µA / K
Rise time/fall time		≤ 50 µs (load current ≥ 1 mA)
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Indicators/settings		
Labeling		space for labeling at the front
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Conformity		
Electromagnetic compatibility		NE 21:2006
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 100 g
Dimensions		20 x 107 x 115 mm (0.8 x 4.2 x 4.5 inch) , housing type B1
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas		
EU-Type Examination Certificate		BAS 00 ATEX 7087
Marking		⟨Ex⟩ II (1)GD, I (M1) [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I (-20 °C ≤ T_{amb} ≤ 60 °C) [circuit(s) in zone 0/1/2]
Voltage	U_o	28 V
Current	I_o	93 mA
Power	P_o	653 mW
Supply		
Maximum safe voltage	U_m	253 V (Attention! The rated voltage can be lower.)
Type of protection [Ex ia]		
Certificate		TÜV 99 ATEX 1499 X
Marking		⟨Ex⟩ II 3G Ex nA II T4 Gc [device in zone 2]
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
FM approval		
Control drawing		116-0129 (cFMus)
UL approval		
Control drawing		116-0348 (cULus)
IECEx approval		IECEx BAS 08.0079 IECEx BAS 10.0007X
Approved for		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I Ex nA II T4 Gc
General information		

Release date 2018-03-26 15:16 Date of issue 2018-03-26 207802_eng.xml

ROSHNI SOUNDER

almar
foreign trade limited company

RoLP
Sounder

Datasheet Version 1.1

Output: 102dB(A)

32 tones, 2 stages

IP rating: IP54/IP65

Available voltages: 9-28Vdc/24Vac

Audio visual signalling

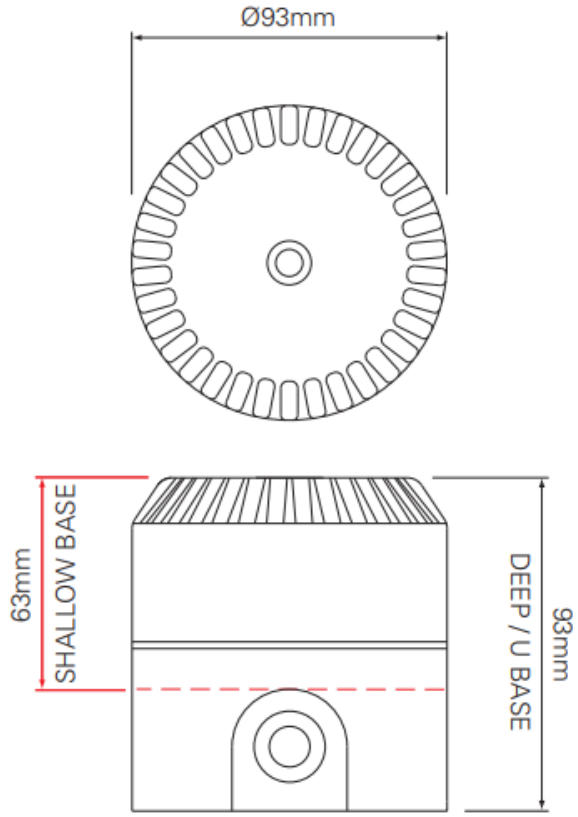
Tel: +44(0)1252 725257 Fax: +44(0)1252 727627

Email: sales@lgmproducts.com Web: www.lgmproducts.com
ISO 9001:2015 certified
Address: LGM Products Ltd, Unit 15 Riverside Industrial Park, Farnham, Surrey, GU9 7UG, United Kingdom.

RoLP
Sounder

Datasheet Version 1.1

Sound output	102dB(A)
Volume control	10dB
Alarm tones	32
Alarm stages	2
Current	12mA
IP rating	IP54(shallow) IP65(deep)
Unit weight	0.25kg
Temperature range	-25°C to +70°C
IP Rating	IP54(shallow base), IP65(deep base)
Body material	ABS
Unit colour	Red/White
Approvals	VDS
	LPCB
	EN54-3:2001+A1:2002+A2:2006



110vac/230vac variant with powered base also available

Part Codes

ROLP/SV/R/S/3	RoLP, (Roshni Low Profile) Shallow Base,
ROLP/SV/W/S/3	RoLP, (Roshni Low Profile) Shallow Base,
ROLP/SV/R/D/3	RoLP, (Roshni Low Profile) Deep Base, Red
ROLP/SV/W/D/3	RoLP, (Roshni Low Profile) Deep Base,
ROLP/SV/R/U	RoLP, (Roshni Low Profile) U - Base, Red
ROLP/SV/W/U	RoLP, (Roshni Low Profile) U - Base,
ROLP/SV/R/S	RoLP, (Roshni Low Profile) Shallow, Red

Tel: +44(0)1252 725257 Fax: +44(0)1252 727627

Email: sales@lgmproducts.com Web: www.lgmproducts.com
ISO 9001:2015 certified
Address: LGM Products Ltd, Unit 15 Riverside Industrial Park, Farnham, Surrey, GU9 7UG, United Kingdom.

FLASHNI SOUNDER

almar
foreign trade limited company

Flashni

Xenon Sounder Beacon

Datasheet Version 1.1

0.7J, 103/101dB(A)

Up to IP65

32 tones

Red/Amber/Blue/Green/Clear

Audio visual signalling

CE

VdS

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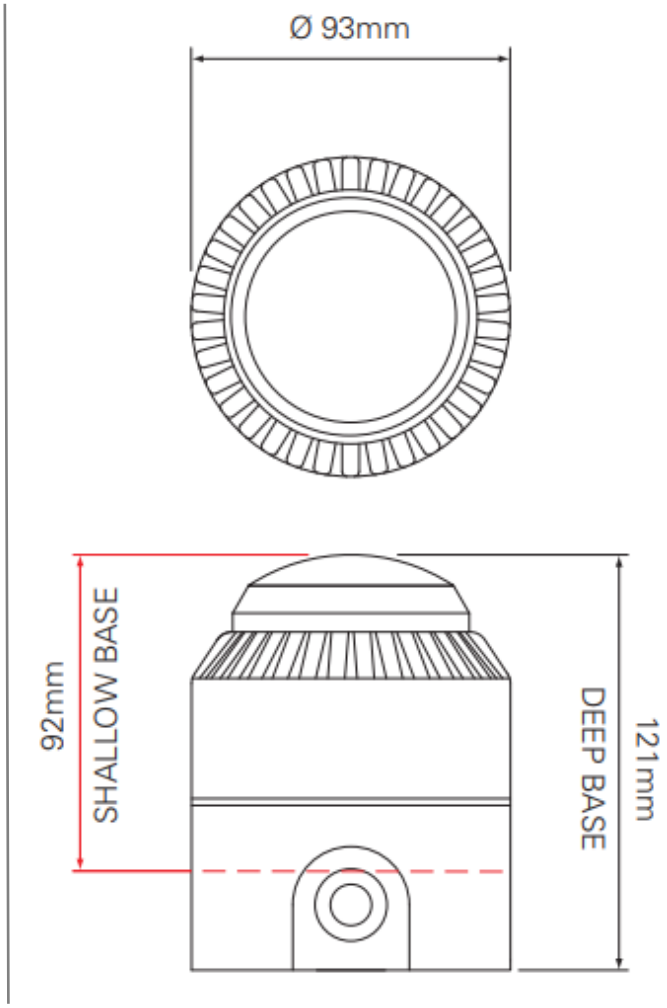
Flashni

Xenon Sounder Beacon

Datasheet Version 1.1

Sound output	12Vdc: 103dB(A)
	24Vdc: 101bB(A)
Alarm tones	32
Sounder current	12Vdc: 110mA
	24Vdc: 68mA
Volume control	10dB(A)
Light output	0.7J Xenon bulb
Flash rate	1Hz
IP rating	IP54 (shallow base)
	IP65 (deep base)
Voltage	9-15Vdc (12Vdc version)
	18-28Vdc (24Vdc version)
Unit weight	0.33kg
Temperature	-10°C to +55°C
Unit material	ABS. Polycarbonate lens
Light colour	Red/Amber/Blue/Green/Clear
Unit colour	Red/White
Approvals	EN54-3 compliant
	Vds



Shallow Base, Deep Base, U Base and Powered Deep Base options available

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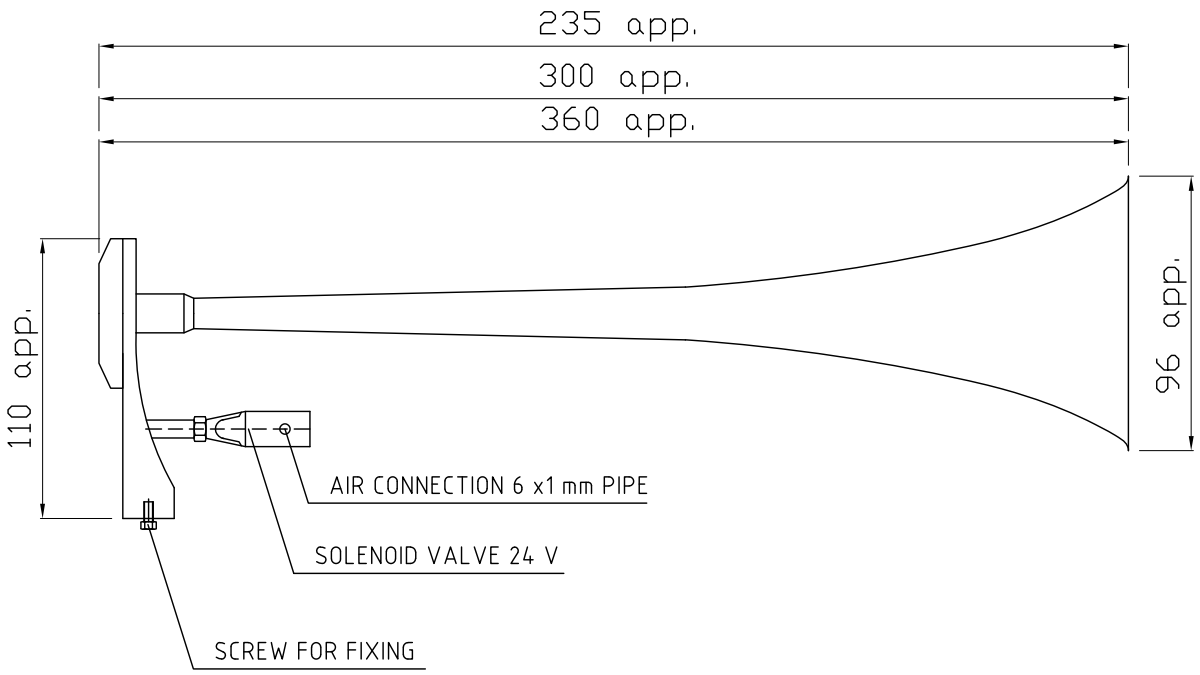
AIR HORN WITH SELENOID VALVE



THE MARINE AIR HORN IS USED FOR EXTINGUISHING GAS RELEASE ALARM IN MACHINERY SPACES WITH A HIGH BACKGROUND NOISE LEVEL. IT CAN ALSO BE USED FOR SPACES WHICH ARE CONSIDERED HAZARDOUS EG. TANKER PUMP ROOMS ETC.
THE UNIT IS CONNECTED TO THE LOW PRESSURE AIR RECEIVER VIA A PERMANENTLY LOCKED VALVE AND IS ACTUATED BY SOLENOID VALVE.

- BODY AND TRUMPETS MADE FROM ALUMINIUM
- SOUND LEVEL AT 2 m 125 dB
- WORKING PRESSURE 6 BAR

Designed by	Checked by	Approved by - date	File name	Date	Scale
C.LATIFOGLU		10/07/2017	FA	DATE	SCALE

ALMAR
FOREIGN TRADE LIMITED COMPANY

Project: MARINE HORN

Drawing no.: D42/A103

Edition: EDITION

Sheet: 1

TM520 Timer Module

Product Application & Design Information

Introduction

The TM520 Timer Module when used with the MX range of controllers is used to disable detectors in an area/zone(s), ie,. disable detectors in specified areas/ zone(s) for a predetermined time, ie, whilst loading/ unloading is in progress in a large internal loading bay. The module may be connected via a CIM800 Contact Input Module or MIO800 Small Addressable Multi-Input/Output Module. The TM520 provides two sets of three volt free contacts (Common, Normally Open and Normally Closed). Once operated by the keyswitch, the module activates a relay for a predetermined period of time selected via a 7-way DIL switch (see Table 1) plus a 5 minute safety timeout period.

The TM520 Timer Module is contained on a double sided printed circuit board (PCB) which is fitted to a custom built facia plate with a protective covering being fitted over the PCB, leaving only the connection terminals and DIL switch exposed. The facia plate is then fitted onto a standard dual-gang MK box. The TM520 is designed for internal applications.

Mechanical construction

As stated, the TM520 Timer Module is fitted onto a custom built facia plate designed to be mounted onto a standard dual-gang MK box. The dimensions of this facia plate are given in Fig. 1.

The MK box is surface mounted. Suitable holes are required to be drilled in the box for electrical connection. A cable gland is required for MICC cable and conduit use, whilst a grommet must be fitted when using PVC cable. The PCB is fitted with a red (TIME-OUT) and a yellow (TIMING) LED which extend through the front of the facia plate and provide indication of unit operation.

x=ON o=OFF

SWITCHES 1, 2, 3, 4	SWITCHES 5, 6, 7							
	000	**X00**	**0X0**	**XX0**	**00X**	**X0X**	**0XX**	**XXX**
0000		2hr 40	5hr 20	8hr	10hr 40	13hr 20	16hr	18hr 40
X000	10	2hr 50	5hr 30	8hr 10	10hr 50	13hr 30	1hr 10	18hr 50
0X00	20	3hr	5hr 40	8hr 20	11hr	13hr 40	1hr 20	19hr
XX00	30	3hr 10	5hr 50	8hr 30	11hr 10	13hr 50	1hr 30	19hr 10
00X0	40	3hr 20	6h3	8hr 40	11hr 20	14hr	1hr 40	19hr 20
X0X0	50	3hr 30	6hr 10	8hr 50	11hr 30	14hr 10	1hr 50	19hr 30
0XX0	1hr	3hr 40	6hr 20	9hr	11hr 40	14hr 20	17hr	19hr 40
XXX0	1hr 10	3hr 50	6hr 30	9hr 10	11hr 50	14hr 30	17hr 10	19hr 50
000X	1hr 20	4hr	6hr 40	9hr 20	12hr	14hr 40	17hr 20	20hr
X00X	1hr 30	4hr 10	6hr 50	9hr 30	12hr 10	14hr 50	17hr 30	20hr 10
0X0X	1hr 40	4hr 20	7hr	9hr 40	12hr 20	15hr	17hr 40	20hr 20
XX0X	1hr 50	4hr 30	7hr 10	9hr 50	12hr 30	15hr 10	17hr 50	20hr 30
00XX	2hr	4hr 40	7hr 20	10hr	12hr 40	15hr 20	18hr	20hr 40
X0XX	2hr 10	4hr 50	7hr 30	10hr 10	12hr 50	15hr 30	18hr 10	20hr 50
0XXX	2hr 20	5hr	7hr 40	10hr 20	13hr	15hr 40	18hr 20	21hr
XXXX	2hr 30	5hr 10	7hr 50	10hr 30	13hr 10	15hr 50	18hr 30	21hr 10

Table 1: TM520 Timer Module Switch Settings

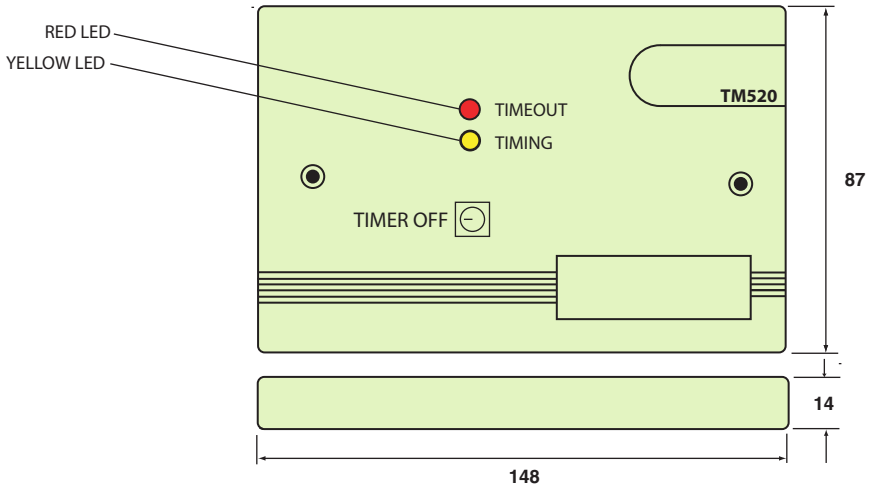


Fig. 1: TM520 Timer Module Front Cover

Operation

The operation of the TM520 Timer Module is controlled by the TIMER OFF keyswitch, on operation of the key switch the timing sequence is initiated. The yellow TIMING LED will flash one second ON, one second OFF. At the end of the pre-determined time period, the red TIMEOUT LED will light and the internal buzzer will sound synchronously with the yellow TIMING LED for the 5 minute safety timeout period.

Operation may be cancelled at any time by turning the TIMER OFF keyswitch OFF. Turning the TIMER OFF keyswitch OFF then ON within 3 seconds reinitiates the timeout period.

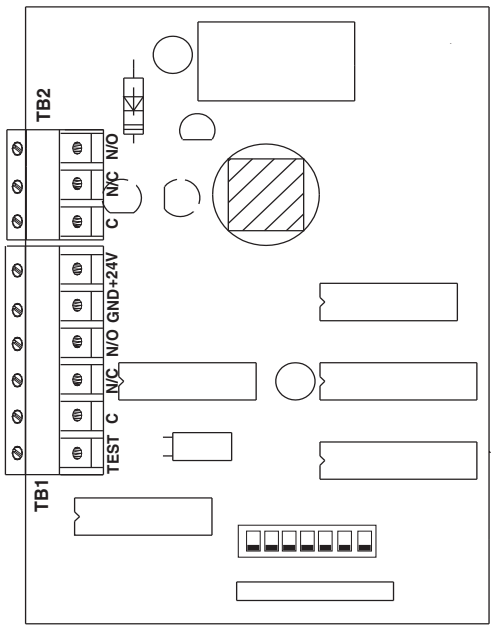


Fig. 2: TM520 Timer Module PCB

Technical Specification

Overall Dimensions (see Fig. 1)

Weight: 100g

Material

Housing: 'BAYBLEND' (polycarbonate /ABS alloy)

Environmental

Operating Temperature: -20^0C to $+70^0$C

Relative Humidity: up to 95% RH (non-condensing)

Electrical Characteristics

Power supply: 18 - 28V d.c. (from external supply or controller)

Current consumption: 40mA max when operated

Relay Contact Rating: 1A @ 24V d.c.

Relay Operation/Release: 7ms / 3ms

Electromagnetic Compatibility

The TM520 complies with the following:

Product family standard EN 50130-4 in respect of Conducted Disturbances, Radiated Immunity, Electrostatic Discharge, Fast Transients, and Slow High Energy

EN 61000-6-3 for Emissions

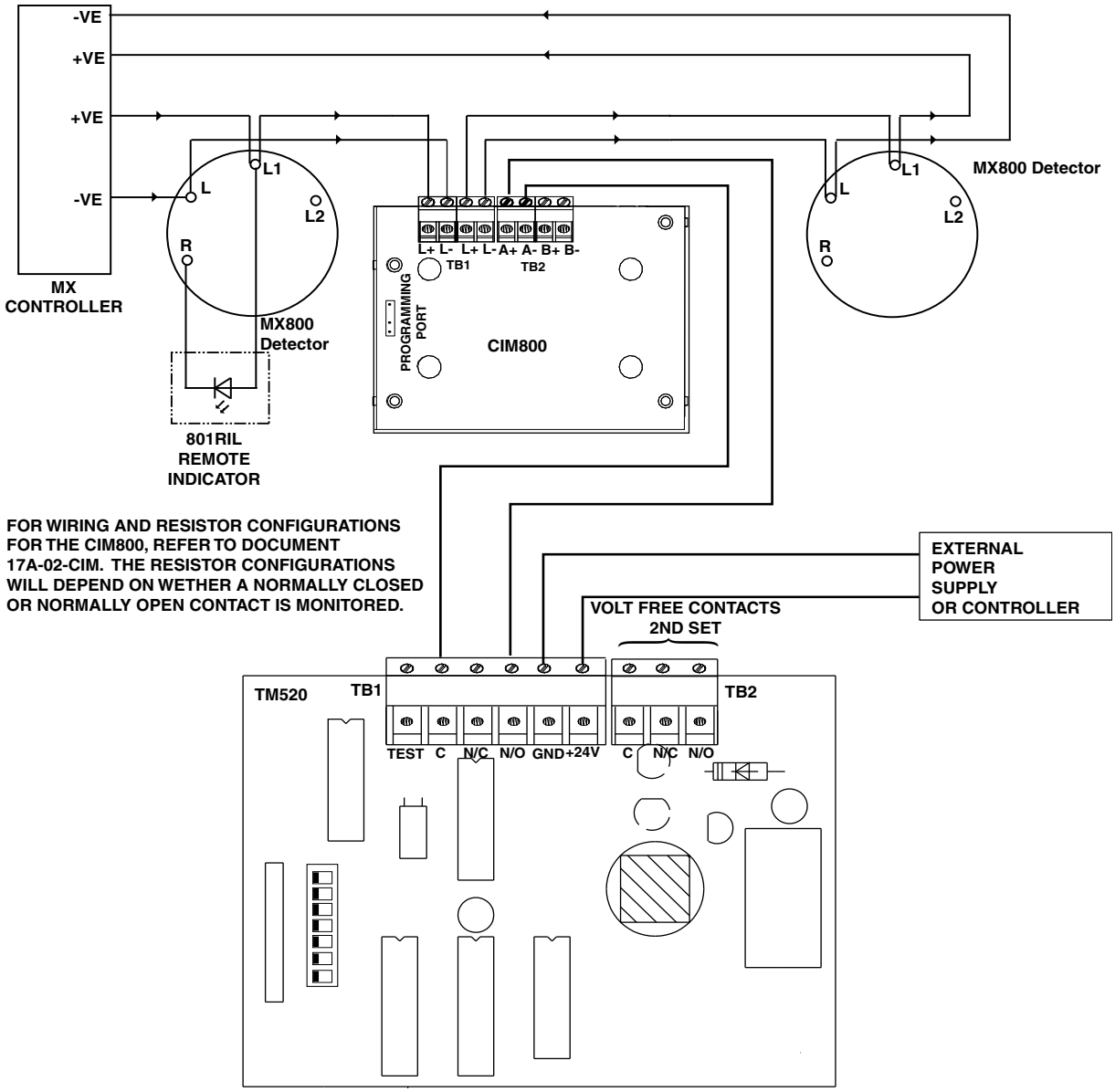


Fig. 3: TM520 Simplified Wiring Diagram Using a CIM800 Contact Input Module

Cabling

Refer to Figs. 3and 4. A maximum of one 1.5mm cable may be connected at any one terminal.

The external power supply is connected as follows:

- Positive (+24V)
- Negative (GND)

Ordering Information

TM520 Timer Module: 557-180-423

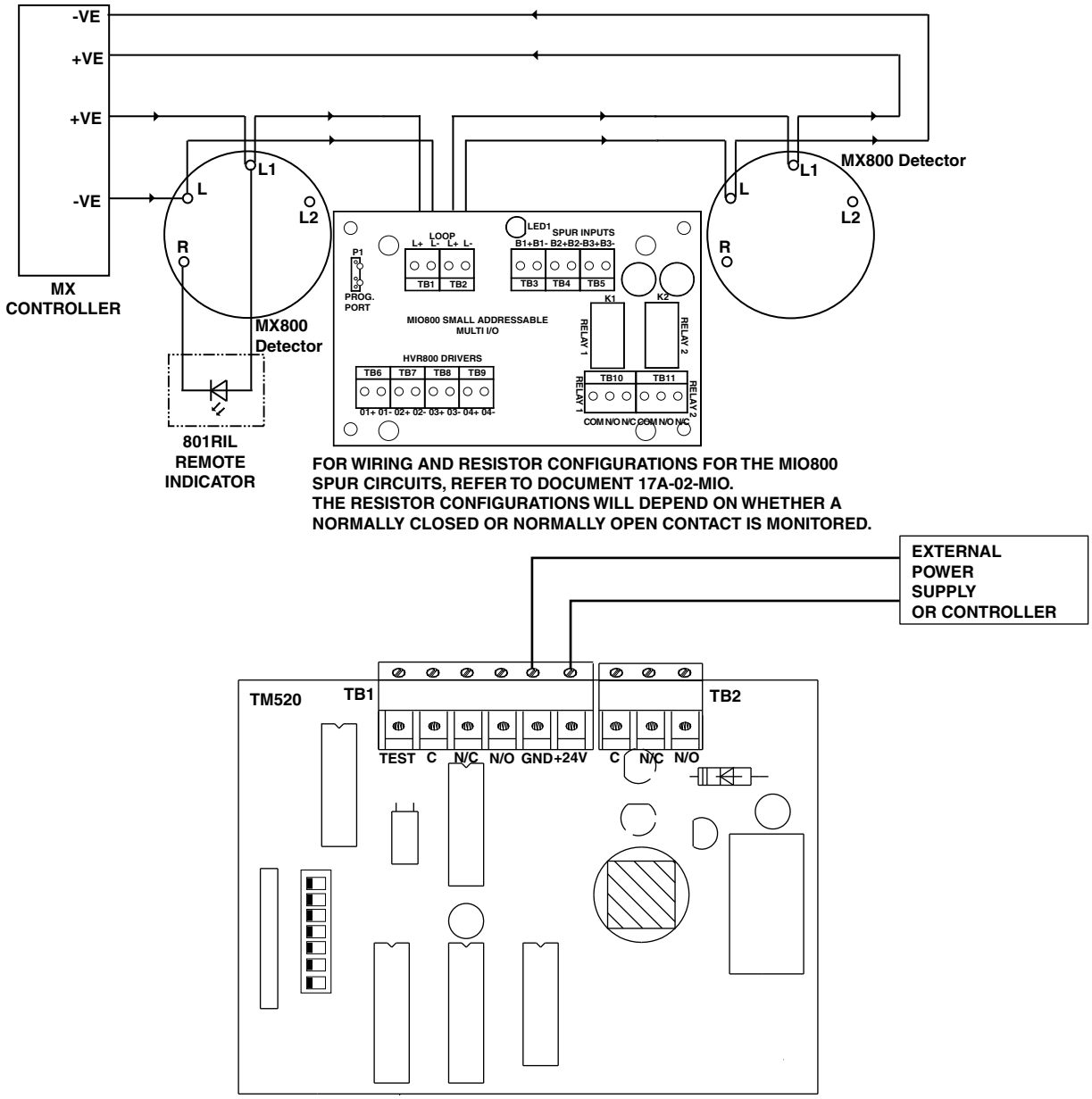
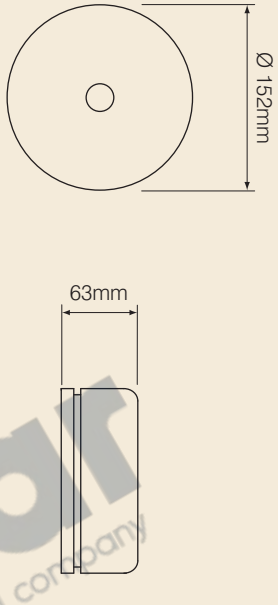


Fig. 4: TM520 Simplified Wiring Diagram Using an MIO800 Small Addressable Input/Output Module

6" Motorised Bell 24VDC "Fire" Text
576.501.022T



Bells still remain a popular choice for many applications such as schools where they can sometimes be used as a signal for non fire purposes such as class change. All CF bells incorporate highly efficient rotary centrifugal movements combining high sound output with low current consumption.

- HIGH SOUND OUTPUT
- LOW CURRENT CONSUMPTION
- SIMPLE INSTALLATION
- MULTIFIXING BASEPLATE

Specification

Voltage	8-16Vdc 20-28Vdc
Current	222mA (typical) @ 12V 25mA (typical) @ 24V
Sound Output	93dB(A) 12V 95dB(A) 24V
Monitoring	Reverse polarity
Temperature	- 10°C to + 55°C
Protection	IP21C
Construction	Gong -Steel, Base - Polycarbonate
Weight	0.85Kg
Colours	Gong - Red Base - Black