

Fire Alarm Control Panel Bx-10

Conventional fire alarm control panel with 4 zones (loops)



Installation and Commissioning Handbook

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1 Introduction

1.1 The Product

The BX-10 fire alarm control panel is a conventional panel with 4 zones. The panel is supplied as:

- BX-10/xx, fire alarm control panel with 4 zones (loops), including power supply and battery.

1.2 About the Manual

The purpose of this manual is to provide all the information necessary for the installation and commissioning of all the variants of BX-10 control panel.

- BX-10 can be supplied with variants of the system program adapted for particular markets and special functions (appendix 7.5).

1.3 The Reader

The manual is designed for use by electrical fitters and technical personnel responsible for the installation.

1.4 Other Reference Material

Further information concerning the BX-10 control panel is found in the following:

Manual	Item no.
Operators Handbook - BX-10 Fire Alarm Control Panel	P-BX-10/FE
Data sheet	P-BX10/CE

1.5 Approvals

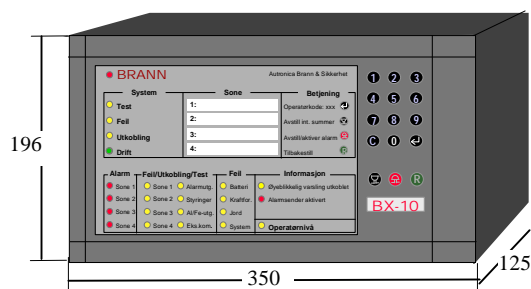
BX-10 is approved according to EN-54 part 2 and 4, and LVD (IEC 60950).

BX-10M (Maritim version) approved according to:

- Det Norske Veritas (DNV)
- Lloyd's Register of Shipping (LR)
- American Bureau of Shipping (ABS)

2 Installation

2.1 Cabinet Dimensions



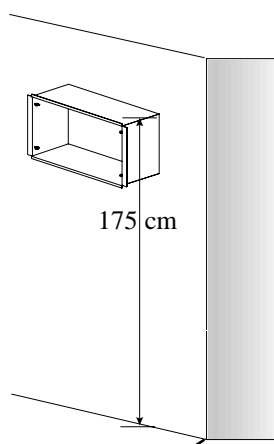
2.2 Positioning of Control Panel

The control panel should be located inside or adjacent to the main entrance of a building in accordance with local fire regulations. The position of the panel should be agreed with the local fire department.

2.3 Recommended Height for Mounting



The recommended height for mounting is 175 cm from the floor to the top of the cabinet. This is the optimal height designed for easy reading. *There should be a minimum 50 mm gap to the left of the panel to enable the door to open fully.*



2.4 Wall Mounting

The panel is primarily designed for mounting on walls (ref. sub-section 2.4.1), but may also be flush mounted on a wall or console (ref. sub-section 2.4.2).

The front should be removed from the cabinet before mounting/flush mounting on the wall.

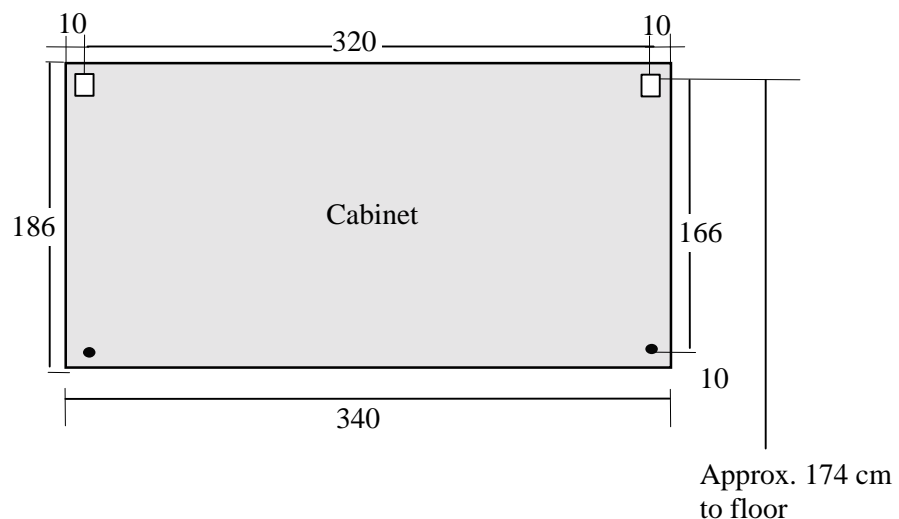
Important! Handle the unit with care.

2.4.1 Fixing Holes

- Mark off and drill holes to take 6 mm (max.) screws (and plugs if necessary (the height above the floor should be approx. 174 cm)).
- Screw in the 2 uppermost screws half way.

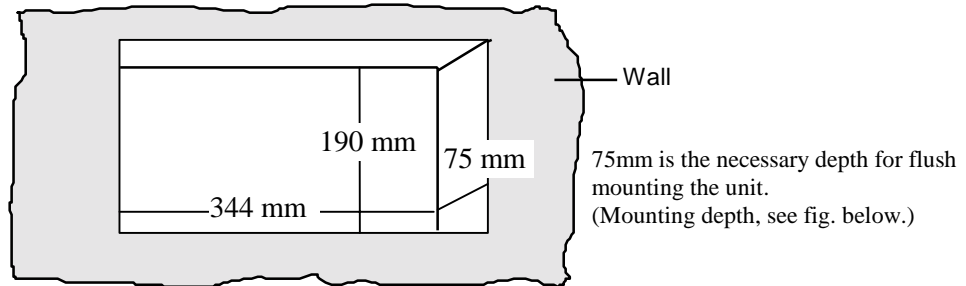
There are 4 fixing holes in the rear of the cabinet. The 2 uppermost are keyhole types.

- Hang the cabinet on the 2 uppermost screws.
- Screw in the 2 lower screws and tighten all four.



2.4.2 Recess Dimensions for Flush Mounting in Wall

The recess measurements for the terminal cabinet are as follows:



Depth of recess for cabinet (for mounting, see fig. below).

The panel can be flush mounted on a wall or console as follows:

The recess dimensions must not be more than 4 - 8mm greater than the breadth and height of the cabinet.

The depth from the front of the wall to the mounting plate must not exceed 67mm.

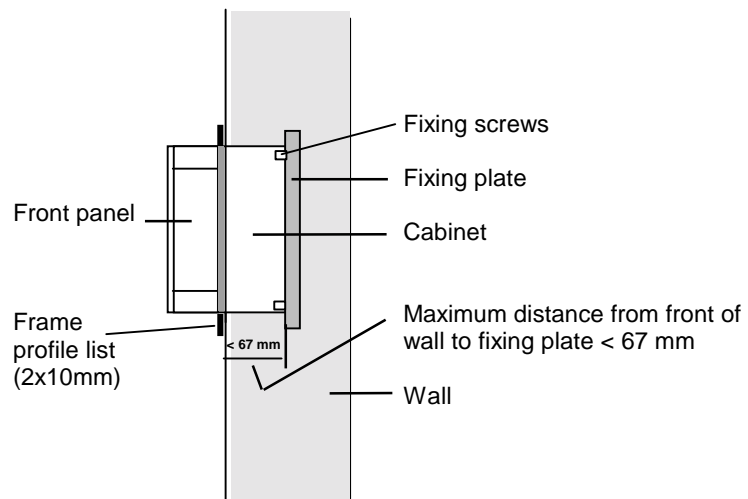
The front panel should cover any gap around the cabinet.

The front panel dimensions are (b x h): 347 x 195mm.

The cabinet dimensions are (b x h): 340 x 186mm.

The wall must be fitted with transverse screw fastenings so that the cabinet fixing holes can be utilised. The distance from the wall surface to the screw fixing plate shall be 67 mm (max.). If the recess forms a gap around the cabinet, this must be covered by a frame (max. thickness 2 mm) fitted to the side edges of the cabinet.

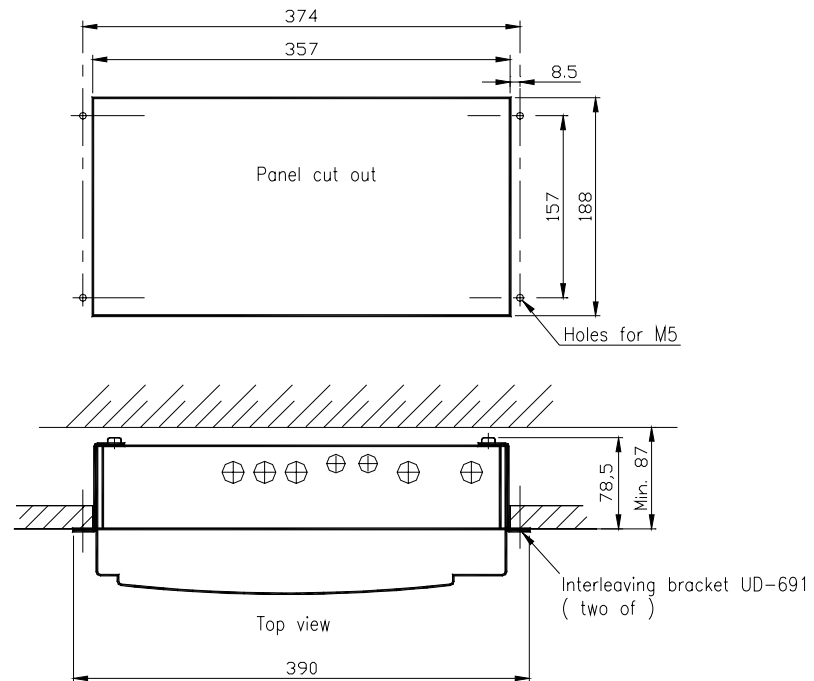
If the cabinet is to be set into the wall, vertical and horizontal reinforcement bars must be fitted inside the cabinet.



2.4.3 Flush mounting in instrument console

BX-10 can be mounted in instrument console by use of mounting brackets UD-691 (2 PCs).

For flush panel mounting



2.5 Dismantling the Control Panel Cabinet

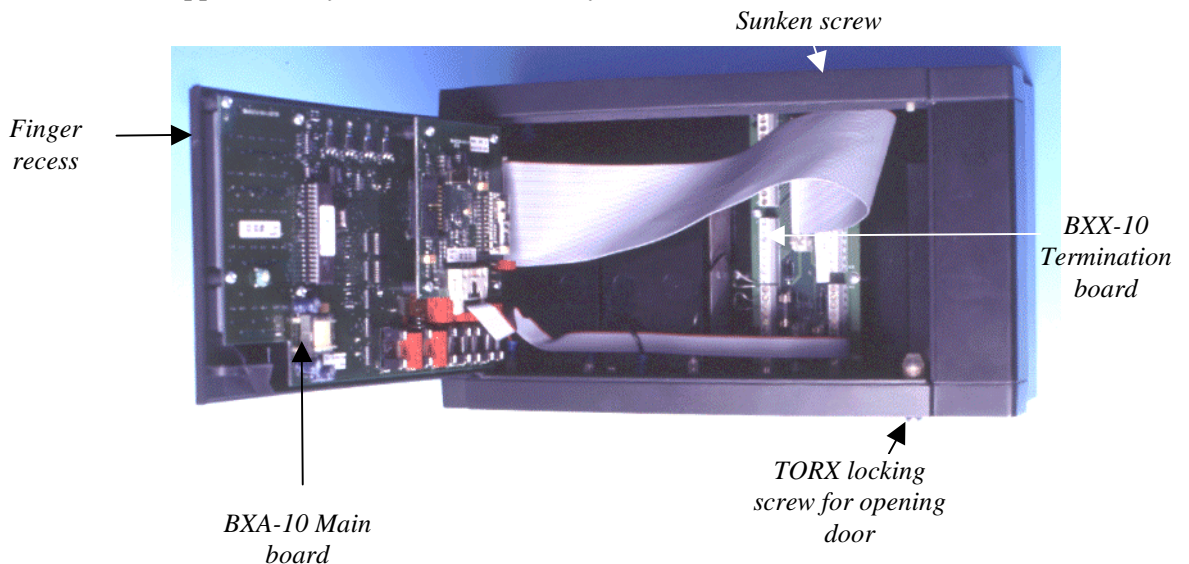
The panel front is fixed to the cabinet by industrial Velcro. This enables the front to be easily detached from the cabinet for mounting and installation purposes.

2.5.1 Opening the Front Door

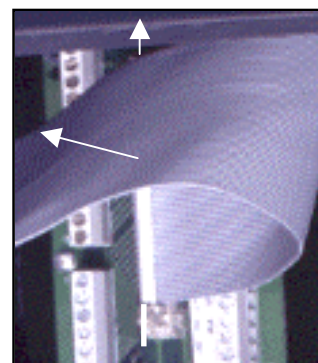
The front door is opened by unscrewing the “TORX” locking screw on the underside of right side of the front cover (see photograph).

The upper right edge of the front door is recessed to facilitate opening.

- Carefully lay the cabinet on a table.
- Open the door panel by loosening the TORX screws on the underside approximately 5-8 mm (indicated by arrows).



Remove the flat cable located inside by pushing aside the fastenings on each side of the connector and lifting up.



2.5.2 Releasing the Front Panel From the Cabinet

After opening the front door and releasing the flat cables from the printed circuit (ref. sub-section 2.5.1), the front panel may be removed from the cabinet.

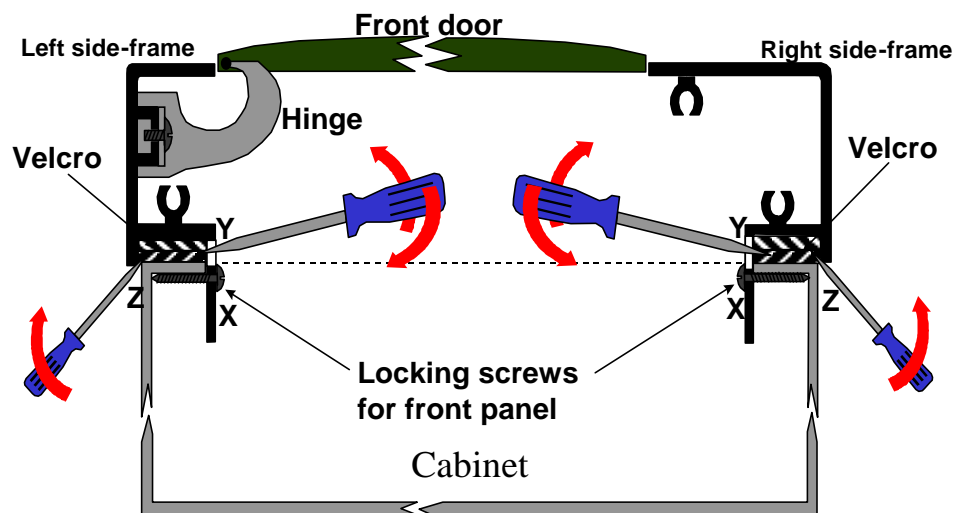
The front panel and the cabinet are joined by industrial Velcro fixed to both the sidewall surfaces (see cross-section).

To lock the front panel to the cabinet, self-tapping locking screws (X) has to be screwed into the side frame of the front panel (see diagram). This will also give an earth connection between the side profiles and connection box.

These screws must be fully removed before removing the front from the cabinet. Screwtype: No. 6 x19.

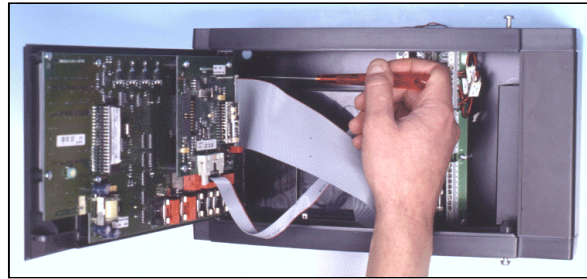
The panel is released by inserting a screwdriver through the 2 no. 5mm holes (Y) in each side, or in between the front and the cabinet along the sides (Z).

In either case, the screwdriver is levered outwards to prise the Velcro apart (see photograph and diagram).



Cross-section of BX -10, viewed from below

- Unscrew the locking screws (X) (if fitted), as shown in the diagram.



Left locking screw



Right locking screw

- Insert a screwdriver through the 5mm hole (Y), or between the cabinet and side frames (Z) and lever the driver towards the front. The Vecro will part and release the front from the cabinet.

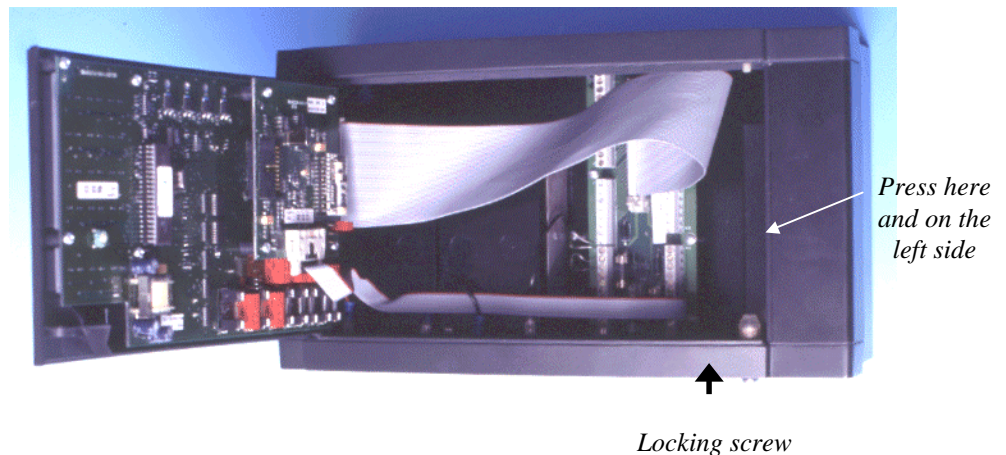


- For refitting the front, see Chap. 2.6.

2.6 Refitting the Front Panel

When all cables have been connected (except the power cable from the mains or batteries), carry out the following:

- Open the front door - if necessary unscrew the locking screw on the right-hand side (arrowed).
- Ensure that the flat cable does not become trapped when the front panel is pressed into its position (flat cables should not be connected before commissioning, see *chapter 4*).
- Fit the front panel to the cabinet, ensuring by touch that the panel overlaps the cabinet on all four (4) sides. Press firmly and evenly on both side frames so that you hear a “click” sound as the Velcro strips connect.
- Check that the panel is firmly in place by lightly pulling at the four (4) corners.
- If the front panel is to be fixed mechanically, screw locking screws (X) through the side frames (see sub-section 2.5.2).
Locking screws: Self-tapping Phillips No. 6x19 AIS1316.



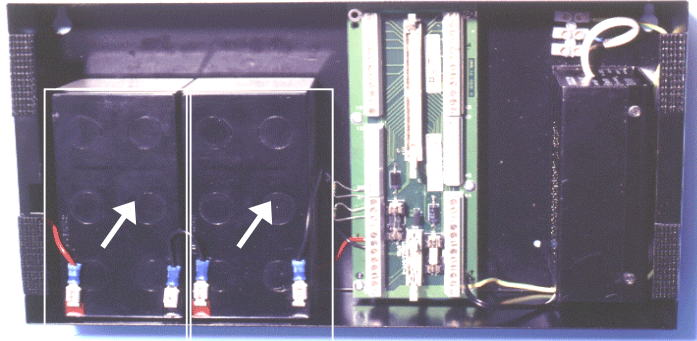
IMPORTANT!

If this is a first-time installation, go directly to chapter 4, Commissioning.

2.7 Installing the Batteries

Two sealed 12V/3-3.3Ah batteries are held in place by Velcro.

- Peel away the protective paper from the Velcro strips inside the cabinet.
- Place the batteries side by side between the side supports as shown below (indicated by arrows) and press them hard against the Velcro.



2.8 Cable Feed

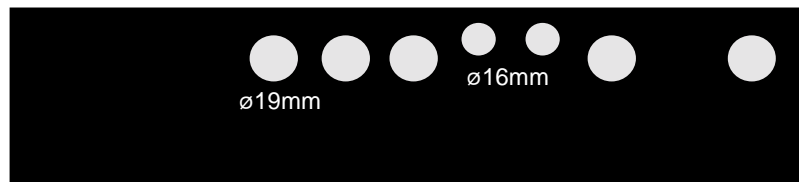
All cable feed points to the cabinet are ready to press out. The cabinet is supplied with 4 pc's $\varnothing 16$ mm and 7 pc's $\varnothing 19$ mm entry holes. Use cable entry sleeves approved for Flame Class 94HB.

- Press out the cable feed holes as required.
- Feed in the cables through the entry holes in the cabinet top.

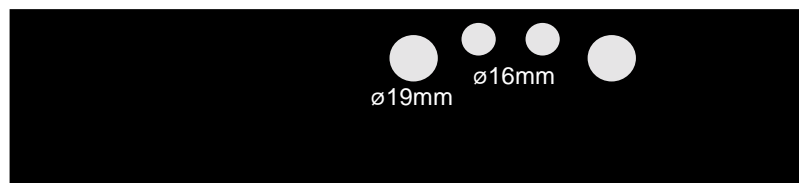
It is also possible to feed in cables (such as the mains cable) through the floor of the cabinet.

- The mains cable is fed in through the right-hand entry hole located in the cabinet base.
- The other cables are fed in through the subsequent holes.
- Feed the thinnest cables through the entry hole to the left.
- A minimum 0.5 m of cable must be fed into the cabinet before stripping and connecting up.

Top



Base



2.9 Recommended Cables

See appendix, 7.1

2.10 Cabling

- Adjust the cable lengths to fit the connection terminals.
- Strip the cables and make the required connections.

Refer to *Cable connections*, Chapter 3.

2.11 Adding Zone Information to the Front Label

A zone information label is provided behind the Plexiglas cover on the front door. The label has four fields for entering the areas covered by the respective zones (zone 1-4).

The transparent cover is attached to the front door by small lugs on the right and left sides.

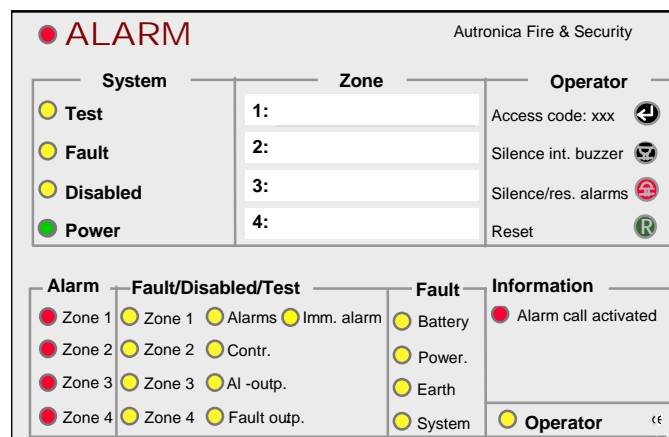


The Plexiglas cover is removed as follows:

- Insert a screwdriver under the left-hand side of the cover and gently lever the cover away from the front.
- Write the areas covered by the zones in black print on transparent tape and fix these on the respective fields on the label.

The Plexiglas cover is replaced as follows:

- Ensure that the holes in the label correspond with the holes for the indicator lamps.
- Match up and insert the lugs along the right-hand side of the cover in the slots on the front door.
- Press the left-hand side of the cover in towards the door so that it remains firmly in place.
- Check that the transparent holes in the label correspond with the LED holes in the front panel.



3 Cable Connections

3.1 Introduction

This chapter describes all necessary cable connections and procedures.

IMPORTANT:

The following procedure is for a first-time installation:



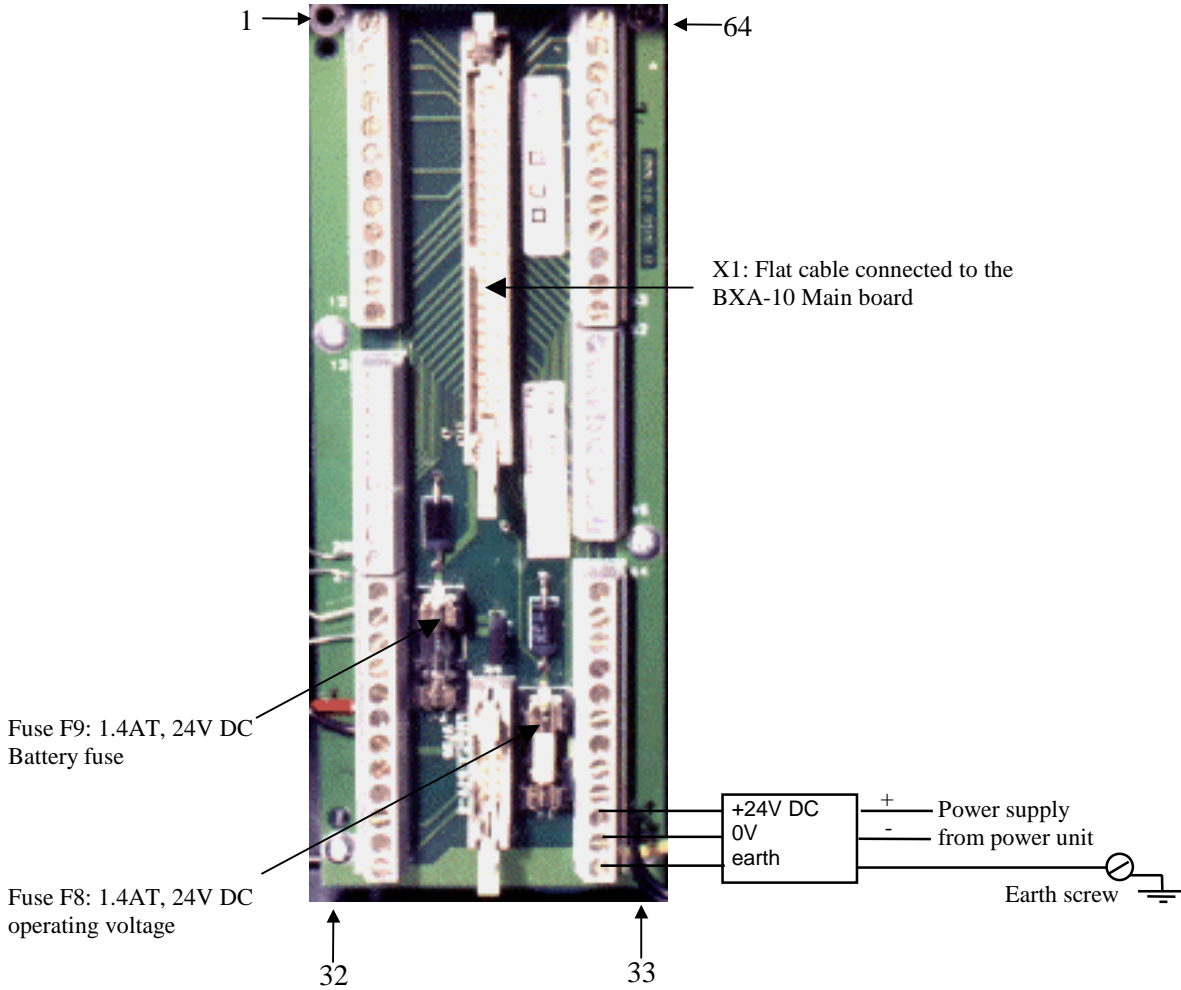
- Connect all necessary cables *except* the mains cable and cables from the batteries.
- Turn to *Commissioning, p. 29*, and systematically go through the check points described.
- Connect the mains cable, see *Mains Supply - 230V AC, p. 30*.
- When all cables are properly connected (including the mains cable), switch on the power and then connect the batteries, see *Batteries, p. 31*.

3.2 Overview - Terminal Block L1

On the BXX-10 terminal board, the terminal points are numbered consecutively in ascending order from:

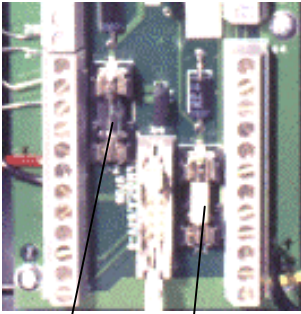
- 1 (upper left) to 32 (bottom left), and;
- from 33 (bottom right) to 64 (top right).

The maximum cross-section for the cables is 1.5 mm².

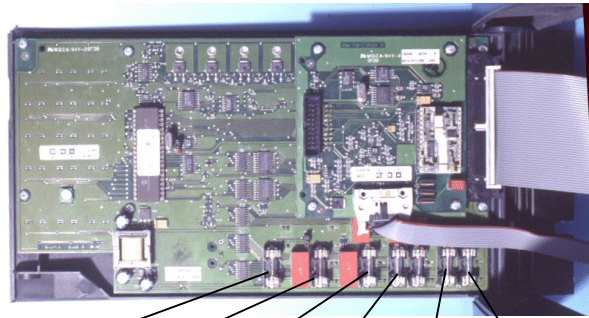


3.3 Location of Fuses

Fuses F8 - F9 on BXX-10 terminal board



Fuses F1 - F7 on motherboard on the front door



F9	F8		F5	F3	F6	F7	F1	F2
1.4AT, 24V DC Battery	1.4AT, 24V DC Operating voltage		0.2AT General control output (DHM)	0.2AT General alarm output (BMA)	0.63AT Alarm sounder circuit 1 (AK1)	0.63AT Alarm sounder circuit 2 (AK2)	0.63 AT, common for all 24V DC voltage outputs	0.4AT, common for all 12V DC voltage outputs

Mains fuse in power supply unit 1.6A.

3.4 Reference Matrix for Termination Points

NOTE:

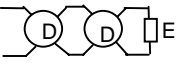
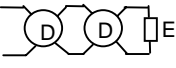
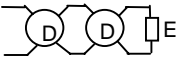
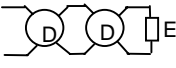
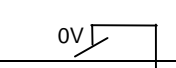
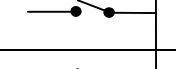
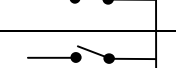
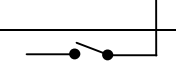
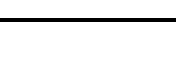
All +24V DC outputs share the same 0.63A fuse (F1).

All +12V DC outputs share the same 0.4A fuse (F2).

Internal function	Term.	External connection	Function
Signal inputs. Activated by 0 volts.		1	Input no. 1, disabling zone 1
		2	Input no. 2, disabling zone 2
		3	Input no. 3, disabling zone 3
		4	Input no. 4, disabling zone 4
		5	Input no. 5, (see appendix 7.5, BX-10M, BX-10/S1)
Common 0 volts	0 volts	6	Common 0V for use against technical inputs.
		7	Tech. analogue input 0 - 5V (not in use)
		8	Tech. analogue input 0 - 20mA (not in use)
Common 0 volts	0 volts	9	0 volts Common 0V against tech. analogue inputs.
Activated by all types of faults on the control panel. Fixed devices that are reset by resetting the control panel.		10	NO contact
		11	NC contact
		12	C contact.
		13	Common fault output (BMF) for activating fault transfer. Break and short-circuit monitored. Galvanically isolated (FWRE).
	0-volt	14	R=1kΩ, V1=diode, V2=optoisolator. A 2kΩ resistor must be applied on unused output.
Activated by alarm and reset by resetting. The outputs can be delayed by activating the day/night function.		15	NO contact
		16	NC contact
		17	C contact
		18	Common alarm output (BMA) for activating alarm transfer +24V / 0.2A power output at alarm (FARE).
	0 volts	19	Break and short-circuit monitored. R=2kΩ, V=diode, K=relay, Output secured with 0.2A.
Activated by alarm in one of the detector zones. Reset by operating the "Reset alarm" function. The outputs can be delayed by activating the day/night function.	+24V DC	20	Sounder output AK-1, +24V / 0.63A, parallel function. Pulsing outputs 1 sec. on and 1 sec. off. (appendix 7.5, BX-10M)
	0-volt	21	
	+24V DC	22	Sounder output AK-2, +24V / 0.63A, parallel function. Pulsing outputs 1 sec. on and 1 sec. off. (appendix 7.5, BX-10M)
	0 volts	23	

Internal function		Term.	External connection	Function
Battery load	+ Battery	24		Battery load, for connecting additional load resistance for loading battery during testing.
Common 0V	0V	25		
+ Battery	+ Battery	26	+24V	Battery input, 2 x 12V / 3-3.3Ah
- Battery	- Battery	27	- (0V)	
		28	+	Comm.channel, aux.units/ PC for configuration
		29	- (0V)	
		30	(screen)	
Telephone autodialer		31	Independent of polarity	Telephone line- Modem connection. (Not in use).
Telephone autodialer		32		
Common earth		33	Earth	Power, earth
Common 0 volts	0V	34	0-volt	Power, 0V
24V operating voltage	+24V	35	+24V DC	Power, +24V
Common 0 volts	0V	36		Control output (DHM) for fire doors 24V / 0,2A Voltage breaks on alarm, or with a mains power failure longer than 1 minute. Monitored via 2kΩ resistor.
The output gives out 24V DC under normal operation, and breaks on alarm or charging voltage failure >1min.	+24V 	37		
+12V DC output	+12V / 0.1A	38		+12V output, SW controlled via relay. Power breaks 2 sec. with reset.
+24V DC output	+24V / 0.1A	39		+24V output, SW controlled via relay. Power breaks 2 sec. with reset.
Common 0 volts	0V	40	0 volts	External 12V DC output, 0V
Voltage output	+12V DC	41	+12V DC	External 12V DC output for extern. equip.
Voltage output	+12V DC	42	+12V DC	External 12V DC output for extern. equip.
Common 0 volts	0V	43	0 volts	Common 0V for 24V
Voltage output	+24V DC	44	+24V DC	External 24V DC output for extern. equip.
Voltage output	+24V DC	45	+24V DC	External 24V DC output for extern. equip.
	Max. 100mA	46		Control output. Common for zone 1-4. (open collector).
	Max. 100mA	47		Control output. Activated when a zone is disabled.
	Max. 100mA	48		Control output zone no. 4, transistor output (open collector)
	Max. 100mA	49		Control output zone no. 3, transistor output (open collector)
	Max. 100mA	50		Control output zone no. 2, transistor output (open collector)
	Max. 100mA	51		Control output zone no. 1, transistor output (open collector)

(D = Detector, E = BXY-40 end load)

Internal function		Term.	External connection	Function
Zone output 4	0V	52 ⊗		Detector connection zone 4, (-), max. 32 detectors.
	+14V	53 ⊗		Detector connection zone 4, (+), max. 32 detectors.
Zone output 3	0V	54 ⊗		Detector connection zone 3, (-), max. 32 detectors.
	+14V	55 ⊗		Detector connection zone 3, (+), max. 32 detectors.
Zone output 2	0V	56 ⊗		Detector connection zone 2, (-), max. 32 detectors.
	+14V	57 ⊗		Detector connection zone 2, (+), max. 32 detectors.
Zone output 1	0V	58 ⊗		Detector connection zone 1, (-), max. 32 detectors.
	+14V	59 ⊗		Detector connection zone 1, (+), max. 32 detectors.
Common 0 volts	0V	60 ⊗		Common 0 volts for use against inputs 61-64
Signal input		61 ⊗		Input, external silence of sounders, 0V control
Signal input		62 ⊗		Input, external resetting of control panel, 0V control
Signal input		63 ⊗		Input, General Alarm/Evacuation, 0V control
Signal input		64 ⊗		Input, Alarm management OFF/ON. Delayed Sounder Alarm.

3.4.1 Connection 52- 59

Endload (E)BXY-40 has to be mounted in the last detector on the zone cable.

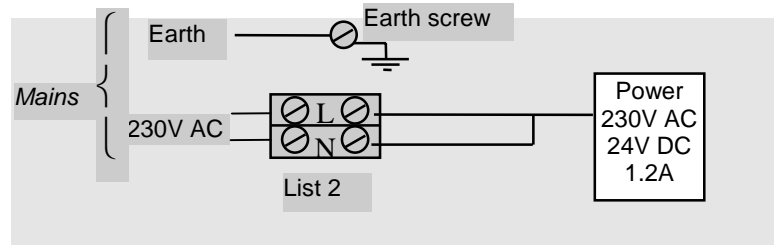
Input 64 enables external activation of alarm management, which means delayed activation of the AK- outputs and the BMA- outputs. Standard delay time is 5 minutes. For maritime application, a 2 minute delay on the AK- output applies. BMA is not delayed (appendix 7.5).

3.5 Mains Connection - 230V AC

IMPORTANT: The mains cable should be connected after all the other cabling is completed, but before connecting the batteries.

The control panel can be connected to the standard 230V AC mains power, or the 230V AC mains power circuit used for the IT power distribution.

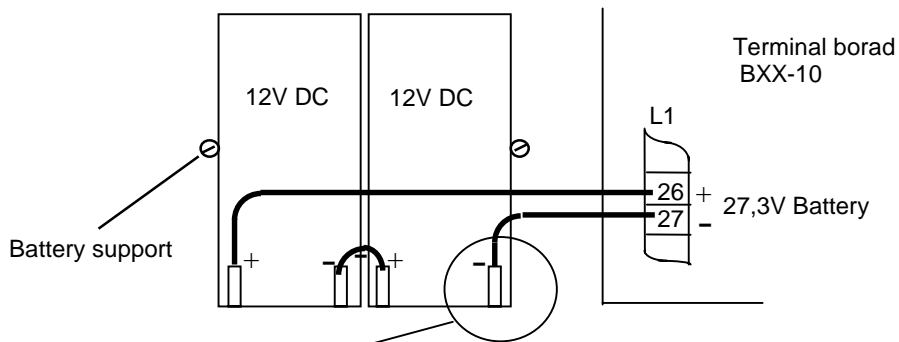
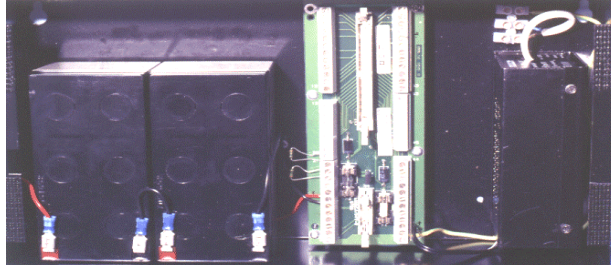
The mains supply is connected as shown below.



In the fixed mains wiring to the panel a two-pole disconnect device must be provided to disconnect the equipment from the power supply when servicing is required. Normally, this switch is a two-pole automatic fuse located in the fuse terminal box at the premises. This fuse location must be marked "Fire Alarm System".

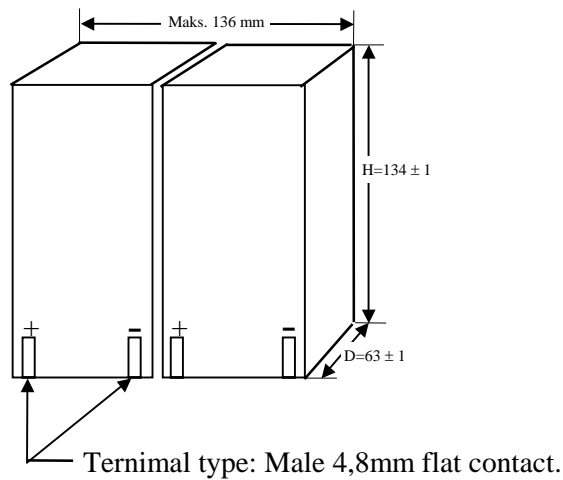
3.6 Battery Connection

Battery type: 2 no. 12V / 3-3.3Ah (h x b x d = max. 134 x 67 x 63 mm)
IMPORTANT: *The batteries should not be connected up until all other cabling (including the mains cable and powering up) has been completed.*



IMPORTANT: Connect up (-) cables when the panel is connected to the mains.

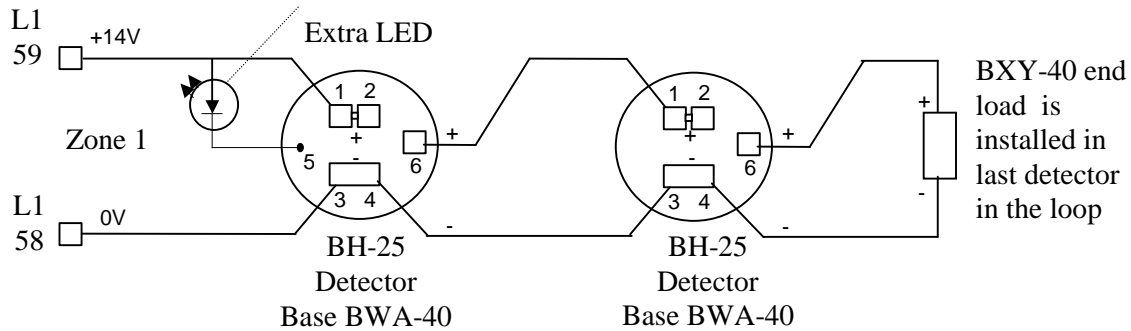
3.6.1 Battery dimensions:



3.7 Connecting the Detectors

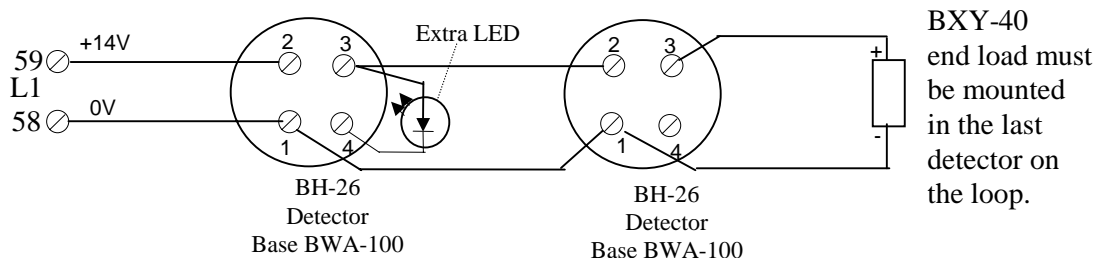
In accordance with regulations, a detector zone may include up to 32 detectors or manual call-points. Automatic detectors and manual call-points may be combined in the same zone. Disabling a zone should not disable the manual call-points in the zone (this regulation may vary from country to country).

The example below shows the connection to detector type BH-25:



By connecting +leads for input and output cables between 1 and 6, the zone will report a fault when one of the detector heads is removed.

The example below shows the connection to a detector type BH-26.

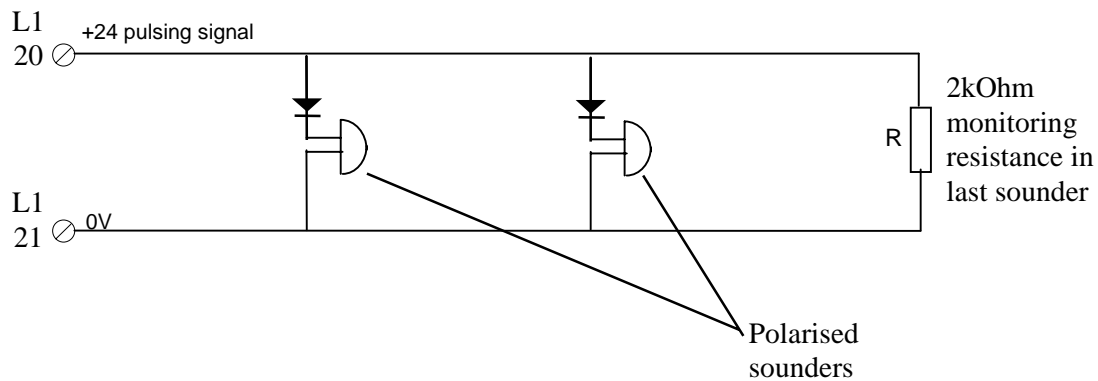


BXY-40 end load must be mounted in the last detector on the loop.

3.8 Connecting the Alarm Outputs

The control panel has two (2) sounder outputs which are activated in parallel when an alarm is given. The outputs give a 24V DC pulsing voltage on alarm and are monitored for breaks and short circuiting. Maximum load per circuit is 0.63A. A 2kOhm monitoring resistance is installed across the terminals in the last sounder.

The following is an example of an alarm output connection:



NOTE!

Maritime version BX-10M has a fix sounder output signal.

By strapping input 5 and 6 (signal on input 5) gives a pulsating output with 7 short and 1 long puls. (SOLAS regulation). Maritime version BX-10M2 has pulsating output signal and is not able to activate 7 short and 1 long signal.

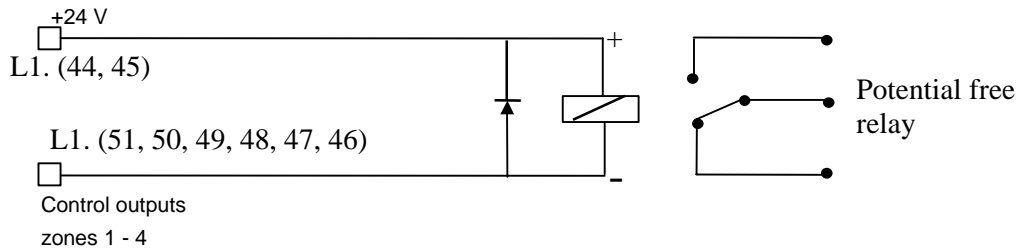
Dutch version BX-10/NL has a fix sounder output signal.

3.9 Connection of external Control Output Relays

There is a control output for each detector zone (loop), one common for all zones and one for disabled zones. The outputs are supplied as transistor controls (open collectors); one control per zone (L1. 51-L1.48).

The 24V output (44, 45) has a 0.63A fuse (F1).

The following is an example of an external relay connection:

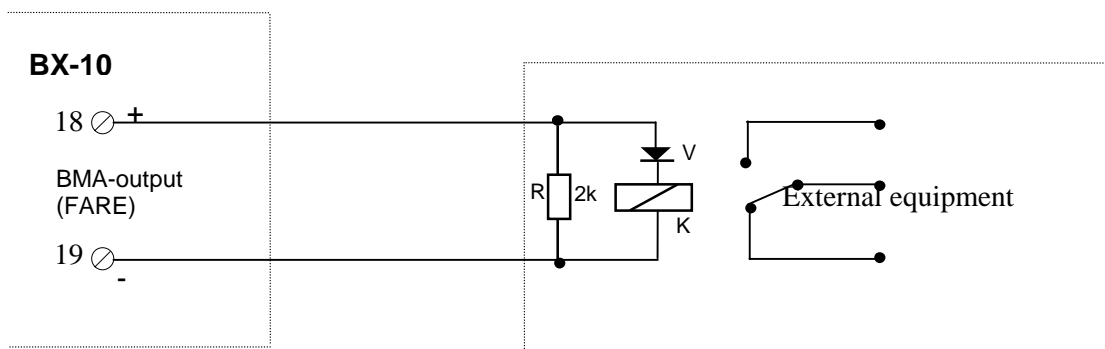


Zone 1: connection L1.51
 Zone 2: connection L1.50
 Zone 3: connection L1.49
 Zone 4: connection L1.48
 Zone 1-4: Connection L1.46
 Disabled zone: Connection L1.47

3.10 Common Alarm Output (BMA)

The output can be used for alarm transfer to an external fire alarm receiving station (for example, the fire brigade). The output consists of a non-monitored potentialfree relay output (L15-17), plus a break and shortcircuit monitored power output (L18,19). The monitored power output requires a 2k Ω end resistor and a diode connected in series with the relay coil (sounder). The output is activated at alarm from a zone and is active until the system has been reset. During alarm delay (immediate alarm disabled), the alarm output will have the same delay as the alarm sounder outputs (AK).

Monitored alarm output



Components for monitoring purposes:

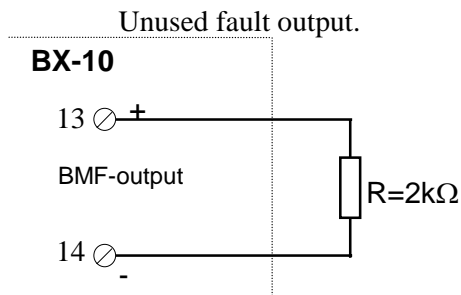
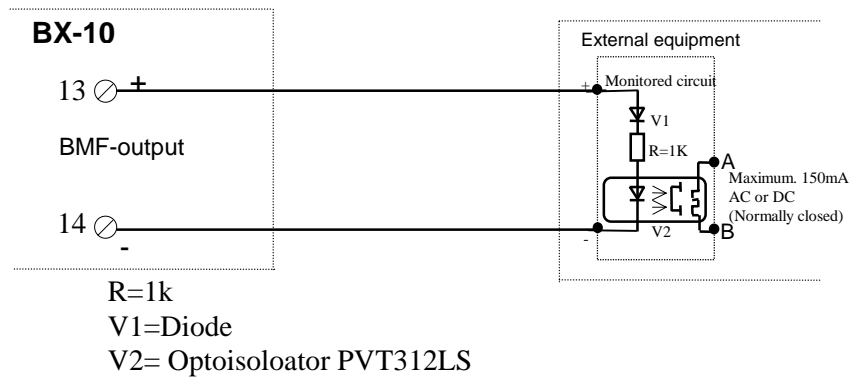
R=2k Ω

V=Diode

An end resistor R=2k Ω must be applied to an unused output.

3.11 Common Fault Output (BMF)

The output is used for fault transfer to an external fire alarm receiving station (for example, the fire brigade). The output consists of non-monitored potentialfree relay output (L10-12), plus a break and shortcircuit monitored power output (L13,14). The monitored power output requires an optoisolator for signal transfer to external equipment. An end resistor $R=2k\Omega$ must be applied to an unused output. Monitored fault output



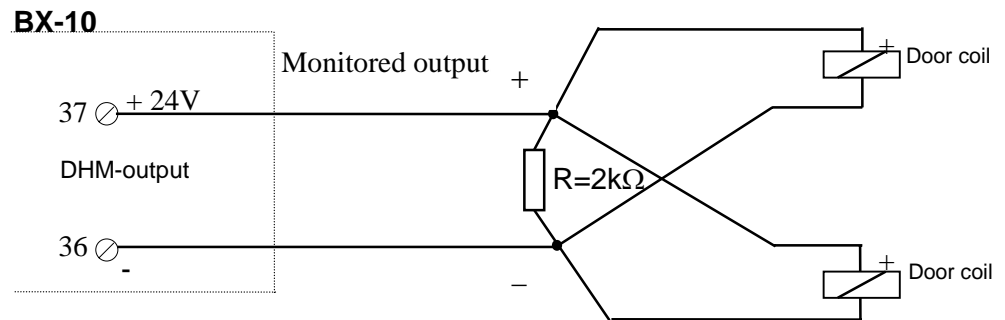
An end resistor $R=2k\Omega$ must be applied in the control panel.

3.12 Output for Fire Door Control (DHM)

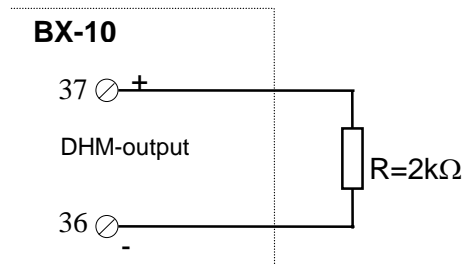
This output is used for automatic closing of fire doors (L36,37).
24V DC during normal operation breaks on alarm, or with a mains power failure longer than 1 minute.

The output is break and short circuit monitored via a $2k\Omega$ parallel resistor
Secured with a 0,2A fused.

An end resistor $R=2k\Omega$ must be applied to an unused output.



3.12.1 Unused output



An end resistor $R=2k\Omega$ must be applied in the control panel.

4 Commissioning

4.1 Commissioning Responsibility for the Control Panel

The commissioning of the control panel and setting of voltages should only be carried out by authorised personnel.

4.2 Recommended Testing Equipment

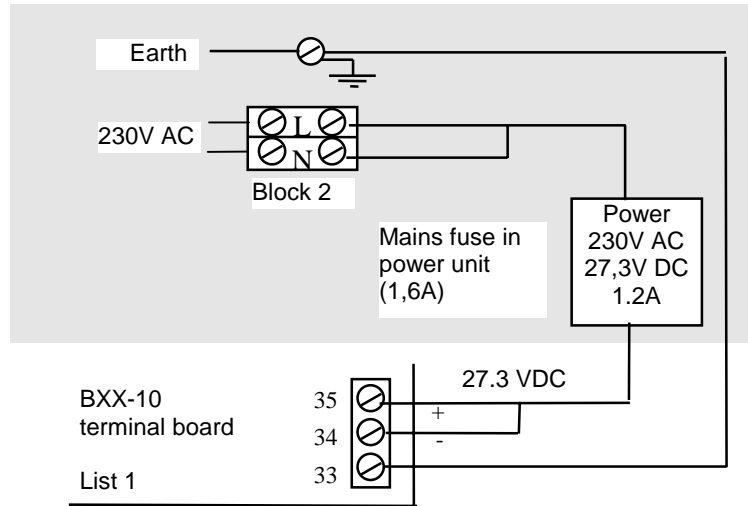
Testing requires a universal ohm meter with an internal resistance greater than 5 Mohm.

4.3 Pre-commissioning Checks

- Check that the mains supply and batteries are *not* connected.
- Check that all cables are connected correctly.
- Check that the broad flat cable between the Main board and terminal board (X1 plug) is *disconnected*.
- Check that all cables are free from external power sources.
- Check that the control panel is properly earthed.

4.4 Mains Supply - 230V AC

- Connect up the mains supply as shown below.
- Check that the voltage to the L1.26 and L1.27 terminals is approximately 27.3V DC (20°C).
- Disconnect the 230V mains supply and connect the flat cable to the terminal board (see *page 8*).
- Connect up the 230v AC mains supply to the panel (230V±10%).

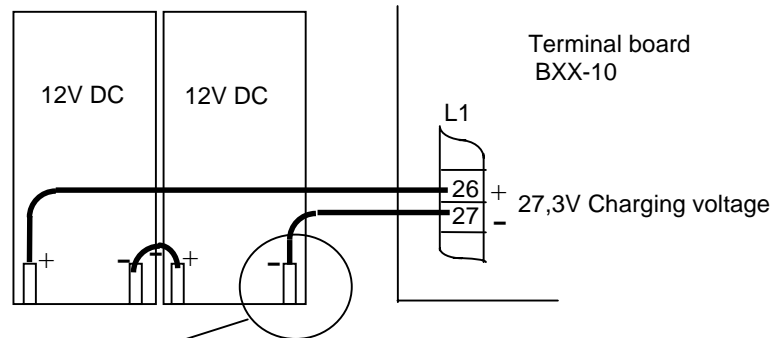
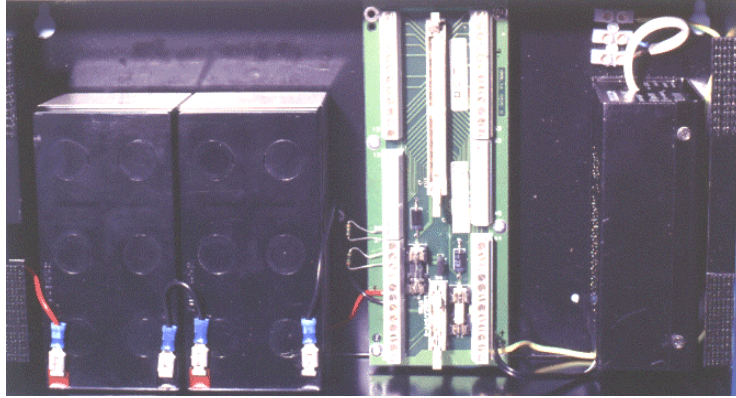


4.5 Battery Connection

Battery type: 2 no. 12V / 3 -3.3Ah (H x B x D = 134 x 67 x 63 mm)

Battery capacity: 24V / 3 - 3.3A

IMPORTANT: *The batteries should not be connected up until all other cabling (including the mains cable) has been completed and the power switched on.*



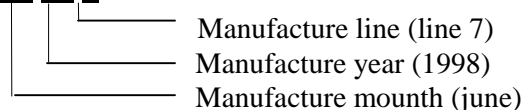
- Connect the (-) leads when the panel is connected to the mains.
- Terminal type: 4,8mm flat contact (male).
- RESET the panel to check if the unit is in order.

If everything is in order (i.e. no faults or alarms) the green POWER light will come on (steady light).

If an alarm or fault is given, the panel must be reset to check whether the alarm or fault recurs. If the problem continues, then the alarm or fault must be rectified.

The batteries are marked with a label which indicates the manufacture date.

Ex...: 06 98 7



4.5.1 Temperature compensated charging of battery

The charger in BX-10 is charging with temperature compensated voltage. That's mean that the charging voltage is reduced when temperature increase. The charging characteristic is 27,4V dc at 20°C and will change with a compensation factor of $-4\text{mV/battery cell}/^\circ\text{C}$, For a 24V battery this will give a charging voltage at 28,5V at 0°C and 26,4V at 40°C.

4.5.2 Adjusting the charging voltage

If there should be necessary to adjust the charging voltage, there is a potmeter inside the power supply unit. Unscrew the two fixing screws on top of the unit and bend the unit out and remove the cover. Measure the charging voltage and turn the motmeter to the correct voltage (27,4VDC/20°C).

The panel and battery shall be maintained at least 24h at the ambient temperature before adjusting the charging voltage.

BX-10 is tested and approved with batteries from Power-Sonic Europe. Battery capacity is 12V/3Ah.

If battery from other companies are used, please check the charging characteristic for the battery type and if necessary adjust the charging voltage.


4.6 Final Task

- Close the front door and tighten the locking screw in the base.



4.7 Operating Levels

The BX-10 control panel has 2 operating levels. Level 1 is the lowest level and does not require a password. For the higher level (operator level), the operator is required to enter a password from the keyboard. Cancelling alarms and resetting/disabling operations are carried out on the operator level (Operator Level 2). For a more detailed overview of operating levels, refer to the *Operating Manual for BX-10*.

Operator code: 110 + .

4.8 Commissioning Checks


- Check that all automatic detectors and manual call-points give alarm.
- Check that the alarm outputs are activated on alarm.
- Check that the detectors and manual call-points function correctly during zone (loop) disablement. As a standard feature, manual call-points will remain operative even when a zone is disabled (this may vary from country to country depending on national regulations).
- Check that the power consumption on the power and control outputs does not exceed the safety value.
- Check that the system functions correctly with reference to the Operating Manual.

4.9 Configuration

The BX-10 fire alarm control panel is supplied in a standard version from the manufacturer.

5 Additional functions

5.1 Disabling/Restoring of Zones (loops) from Aux. Switch

All *disabling and activating* operations (of zones, alarm outputs, control outputs and alarm transfers) can be implemented from the front panel using the keys 1-8 followed by  when the control panel is in operator mode.

Each of the four detector zones can also be disabled via external disabling switches connected between terminals 1 and 6 (zone 1), 2 and 6 (zone 2), 3 and 6 (zone 3) and 4 and 6 (zone 4). The zone is disabled as long as the contact is closed.

A cycle timer can be used for variable time-controlled disabling.

IMPORTANT: When a *zone* (detector loop) is disabled the detectors will be disabled, while manual call-points will remain active.

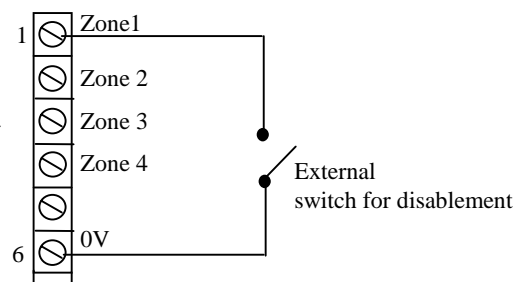
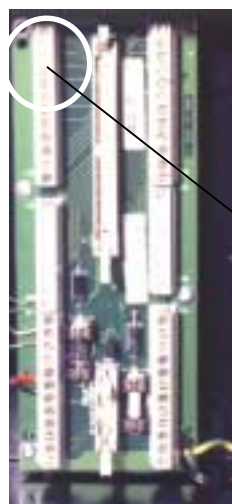
If a zone is disabled using an auxiliary switch, it will not be possible to re-activate the zone from the control panel's front panel.

With each disabling operation (from either the front panel or an auxiliary switch), the output for auxiliary warning of a disabled zone (output 47 - AUX1) will be activated (e.g. this may be used to activate an auxiliary warning light).


NB!

All disabling will be automatically restored after 24 hours.

- Disabled zones in BX-10L for agricultural are automatically restored after 4 hours.
- BX-10I for intruder version, zone 4 will not be automatically restored.



5.2 Activating Alarm Delay from an Auxiliary Switch

To avoid causing any unnecessary disturbances at specific times of the day and night, it is possible to *disable immediate alarm warnings*. When immediate alarm is disabled (i.e. when alarm delay is active), 5 minutes will elapse before the sounders start to ring and the general alarm output (BMA) is activated. For example, it may be desirable to activate the alarm delay during the day and deactivate it during the night (D/N function). The “immediate warning mode” can be disabled either by using either the external switch/timer device or from the front panel by pressing 9 +  in operator mode (see Operating Manual).

If alarm delay is activated using an auxiliary switch, it will not be possible to deactivate the delay from the control panel, i.e. the switch overrides the key code.

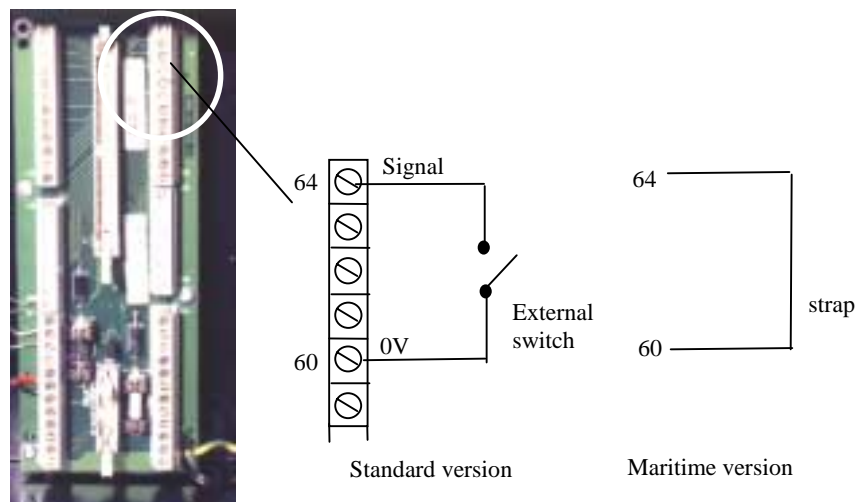
An external switch for activating/deactivating alarm delay can be installed on terminals 60 and 64 in the control panel. Delay is activated when the contact is closed.

NB!

Activation of alarm delay (D/N function) is restored automatically after 12 hours (note 5.2.1).

When alarm delay is active, the following indicators on the front panel will come on (note 5.2.1):

- LED for common disabling
- LED for immediate warning disabled



5.2.1 Note

BX-10M (Maritime version) must always have a strapping between 60 and 64. This will give a 2 minutes delay on sounder outputs, and the activation of alarm delay will not restore automatically after 12 hours. Common LED-indications “Disabled” and “Imm.alarm disabled” are not activated (Appendix 7,5). BMA-output will not be delayed.

6 Service and maintenance

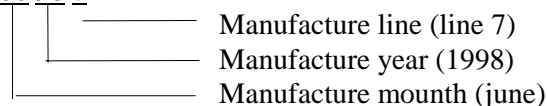
6.1 Annual Service

The whole system (control panel, detectors, alarms and control functions) should be inspected annually. An annual service inspection comprises the following:

- Visual inspection of the control panel.
- Testing of indicator lights and internal audio warning device.
- Testing of all operating keys by pressing and checking that a short “PIP” is heard with each press.
- Disabling of any alarm transference to the fire service/alarm control panel.
- Testing of sounders by activating an alarm from a manual call-point.
- Checking of all manual call-points and detectors in each zone.
- Activation of alarm from at least one detector/manual call-point in each zone and a check that all respective outputs are activated.
- Testing the action of any auxiliary operating functions (disabling, cancelling and resetting buttons).
- Checking of alarm transference outputs (BMA, if used) by connecting from outgoing outputs (potential free relay and 24V output) activated by alarm in a zone.
- Checking of fault warning function from detector zones by removing a detector in each zone.
- Testing of charging voltage to the battery (terminals 26(+) and 27(-) approx. 27.2V at 20-25°C.
- A battery voltage check by disconnecting from the charger and measuring the voltage across the battery after approx. 1-2 minutes. The voltage should be >24.5V.
- A change of battery every 4 years.

The batteries are marked with a label which indicates the manufacture date.

Ex.: 06 98 7



- On completion of checks, go out of “Operator mode” and ensure that only the green “Power” indicator is on.
- If a fault arises on the panel that cannot be rectified, contact your nearest Autronica Fire and Security office for qualified assistance.

7 Appendix

7.1 Recommended Cable Types

The table below shows recommended cable types in accordance with relevant regulations. This information should be used purely as a guide. Section 4 of “Regulations for Automatic Fire Alarm Systems”, issued by insurance companies in Norway, provides clear guidelines for the design and installation of cables.

All installation work should be carried out in accordance with the Norwegian Water Resources and Energy Administration (NVE)’s regulations for electrical building installations.

Connection	Exposed system cabling	Max. cable length L(m)	Concealed system cabling	Max. cable length L(m)	Marine cabling	Max. cable length L(m)
Mains	PR 2x1.5 mm ²		2 x PN 1.5 mm ²		RCOP 2x1.5 mm ²	
Sounders	PR 2x1.5 mm ²		2 x PN 1.5 mm ²		RCOP 2x1.5 mm ²	
Detector loops	BPR 2x1mm ϕ	680	2xPN 0.75 mm ²	650	RCOP 2x0.50 mm ²	430
	PVXP 2x1mm ϕ	680				
	PR 2x1.5 mm ²	1250				
Cable riser	PTS 0.6 mm ϕ	260	PTS 0.6 mm ϕ	260	RCOP	
	PFSP 1.5 mm ²		PFSP 1.5 mm ²			
Control outputs	PTS 0.6 mm ϕ		PTS 0.6 mm ϕ		RCP 0.5 mm ϕ	
Aux. battery capacity	PR 2x2.5 mm ²	10	2 x PN 2.5 mm ²	10	RCOP 2x2.5 mm ²	10
	PR 2x4 mm ²	18	2 x PN 4 mm ²	18	RCOP 2x4 mm ² RCOP 2x6 mm ²	18 25

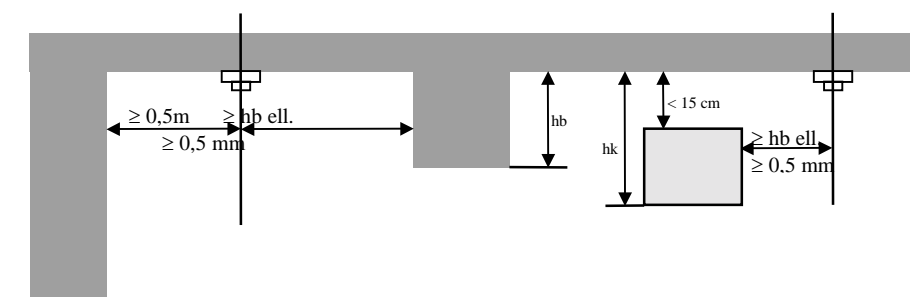
7.2 Positioning of Detectors

(“Regulations for Automatic Fire Alarm Systems” issued by insurance companies in Norway).

- a) The number and position of automatic fire detectors depends on the detector type, size/condition of the room, ceiling/roof construction, ceiling/roof height, ventilation situation and fire-risk classification.
- b) Roofs and ceilings with falls shallower than 1:10 are defined as flat. Roofs with falls of 1:10 and steeper, together with arched roofs, are defined as sloping roofs, and (a row of) detectors should be placed at the highest point (the ridge).

The height of the roof is equal to the max. height of the room.

- c) All references to beams in these regulations, mean sealed beams, etc., that prevent the free movement of hot air and smoke between the roof sections. If there is doubt as to whether beams should be regarded as sealed, the insurance company will assess the situation.
- d) The distance from a detector and between detectors should be measured horizontally, unless specified otherwise.
- e) Detectors should not be placed closer than 0.5 m to a wall unless the room is less than 1.0 m wide/deep. Exemption from this rule requires written dispensation from the insurance company.
- f) The distance between stacked commodities, storage shelves, etc., and detectors should be at least 0.5 m.
- g) In areas/passageways between shelves, etc., where the height from the top of stacked goods or shelves to the ceiling/roof, beams, etc., is less than 0.5 m, so that the free movement of air is impeded, detectors should be positioned as if these areas were separate rooms.
- h) If detectors are to be positioned in the vicinity of beams or ventilation ducts, etc., which are positioned less than 15 cm from the roof/ceiling, then the detectors must be placed at a minimum 0.5 m from these, or at a distance equivalent to the height hb/hk (see below) from the underside of the beam/duct to the roof/ceiling.



- i) Detectors should be placed a minimum 1 m from air-conditioning inlets/outlets.

- j) Where the roof construction comprises perforated cladding, allowing the free flow of air through the perforations, an area of 1 m^2 around the detector should be sealed.

7.3 Installation of Heat Detectors.

The monitoring distance/area of cover for a heat detector is Class 1. No part of a roof/ceiling should have a horizontal distance (cover distance) or cover area greater than that stated in the table below.

Ceiling/roof height (m)	Cover distance	Cover area
0 - 2.5 m	4.5 m	30 m^2
2.51 - 4 m	4.5 m	30 m^2
4.01 - 6 m	3.5 m	20 m^2

- a) Heat detectors should always be installed in ceilings/roofs.
- b) In rooms where building components, ventilation ducts, etc., are suspended under the ceiling/roof at a greater distance than 15 cm, heat detectors can normally be positioned without having to take these components/ducts into consideration.
- c) In buildings with shed roofs, each shed should be installed with detectors positioned 1 m from the ridge and in that part of the roof which has the least incline.

7.4 Installation of Smoke Detectors

The monitoring distance/area of cover for a smoke detector. No part of a roof/ceiling should have a horizontal distance (cover distance) or cover area greater than that stated in the table below.

Ceiling/roof height (m)	Cover distance	Cover area
Up to 6 m	7.5 m	80 m^2
6 to 12 m	9 m	100 m^2
> 12 m	Smoke test must be carried out.	

If the room in which a detector is installed has an air-change value greater than 10 times/hour, the above values must be reduced. For further information, refer to *“Regler for automatisk brannalarmanlegg”* [“Regulations for Automatic Fire Alarm Systems”] issued by insurance companies in Norway, or contact Autronica AS direct. For the installation of detectors, interface units and alarm systems, see separate installation instructions.

7.5 BX-10 Control Panel variants

BX-10 can now be supplied with variants of the system program adapted for particular markets and special functions, e.g. the agricultural industry, maritime installations, and control panels to which intruder detectors can be connected.

Special program versions for specific countries are also available. If the program features for the individual country do not vary in relation to the Norwegian version, then only the front panel notation (language) is different.

The following versions are available:

BX-10	Standard version, Norwegian.
BX-10L	Agricultural version, Norwegian.
BX-10I	Fire and intruder version, Norwegian.
BX-10LI	Agricultural version with fire and intruder detection, Norwegian.
BX-10M	Maritime version.
BX-10M2	Maritime special version
BX-10M/ xx-24	Maritime version, 24V DC powered
BX-10M2/ xx-24	Maritime special version, 24V DC powered
BX-10/S1	Swedish version.
BX-10I/S1	Swedish version with fire and intruder detection
BX-10/NL	Dutch version

Language variants of standard versions are denoted by BX-10M/xx, where xx is the language code.

Brief explanation of what is unique about the different control panel variants.

- BX-10:** *Standard Norwegian version (program PIBX10-110-xx)*
This version has an automatic safety coupling for disabled functions after 12 and 24 hours. This means that:
- disabled detector zones (loops) are automatically restored after 24 hours (oversight safety coupling). This automatic coupling overrides any disabling via an external trip switch with a closed contact.
 - disabling of immediate detection (D/N function) is automatically restored after 12 hours.
- BX-10L:** *Agricultural version (PIBX10-112-xx)*
This version has a 4-hour automatic safety coupling feature for disabled loops. Otherwise it is identical to the standard version.
- BX-10I:** *Fire and intruder detection (PIBX10-111-xx).*
This version does not have automatic safety coupling for loop 4. This enables intruder detectors on loop 4 to be disabled with the possibility for manual disabling/restoring via an external code switch on input 4.
- BX-10LI:** *Agricultural version with fire and intruder detection (PIBX10- 113-xx)*
Combination of functions for BX-10L and BX-10I versions.

BX-10M: *Maritime version (PIBX10-116-xx).*

This version is approved in accordance with the maritime regulations, SOLAS. The maritime version has the following variances from the standard version:

- Internal buzzer and alarm sounders (AK1 and AK2) are activated with a fixed signal on alarm.
- The delay for the alarm outputs is 2 minutes. The BMA output has no delay.
- A stropping between terminator 60 and 64 activates the standard 2 minutes delay of alarm outputs.
- No LED indication on front panel for delayed alarm outputs.
- No automatically restoring of delayed alarm function after 12 hours.
- Input signal on terminal 5, will give pulsating sounder output signal (AK), 7 short and 1 long, independent of panel status.

BX-10M2: *Maritime special version (PIBX10-118-xx)*

Same basic functions as the standard M-version, except for the following functions:

- 5 minutes delay of main power supply default
- Pulsating sounder outputs (1s ON, 1 s OFF)
- No activation of 7 short and 1 long signal by strapping 5 and 6

BX-10M/xx-24: *Maritime version, 24 V DC powered (PIBX10-116-xx)*

- 24 V DC powered panel (18-32 V DC)
- No room for battery inside cabinet
- Standard maritime functions like BX-10

BX-10M2: *Maritime special version, 24 V DC powered (PIBX10-118-xx)*

- Functions like BX-10M2
- 24 V DC powered (18-32 V DC)
- No room for battery inside cabinet

BX-10/S1: *Swedish version (PIBX10-114-xx).*

Same as the standard Norwegian version, but with the possibility for connection of an external key box BW-10/S for a standard fire key. This is made possible by the external key switch giving 0 volts on input 5 on the terminal board. The key function will work parallel with operator code 110.

BX-10I/S1: *Swedish version with fire and intruder detection (PIBX10-115-xx).*

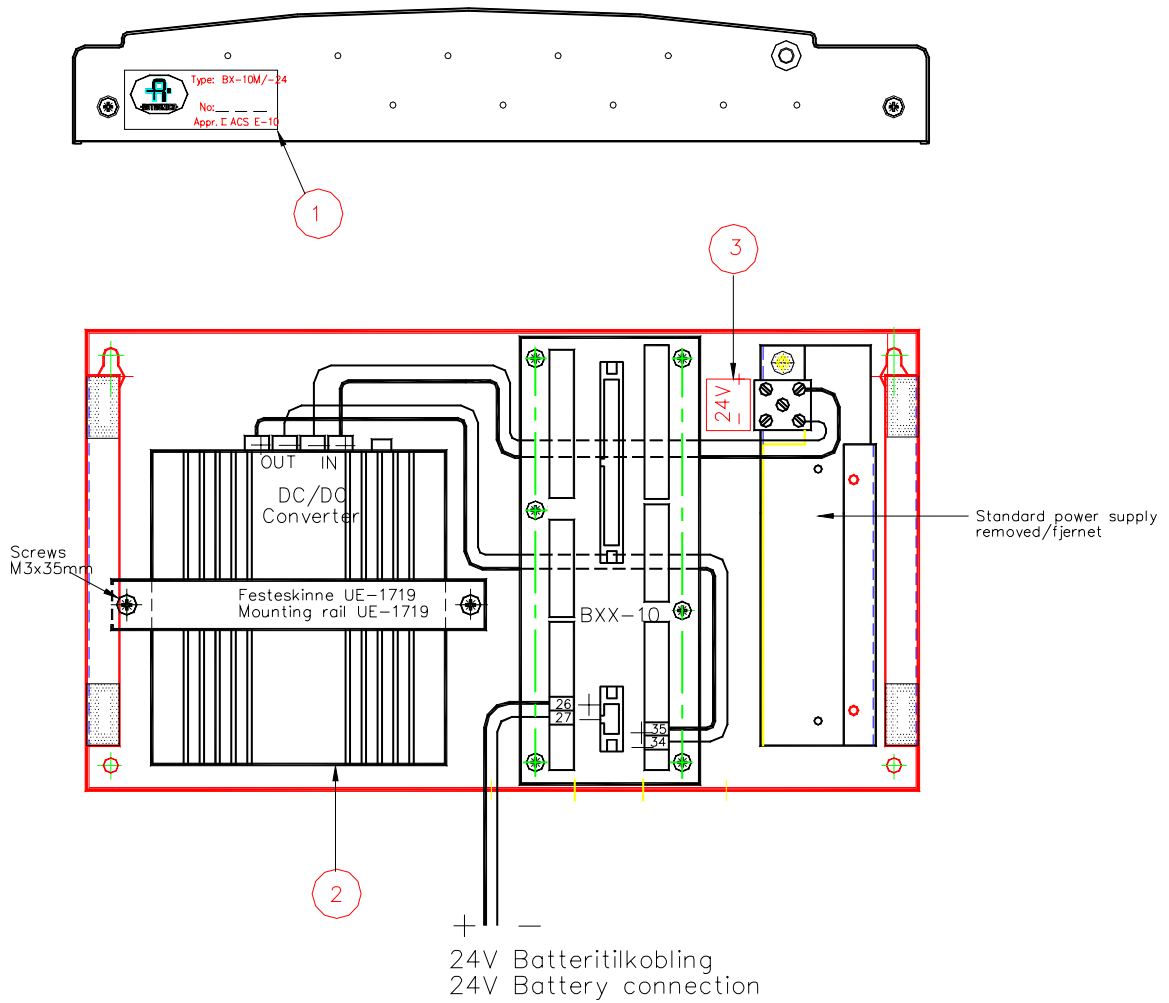
Similar to the standard Norwegian BX10I version, but with the possibility for connection of an external key box.

BX-10/NL: *Dutch version (PIBX10-117-xx)*

This version has fixed alarm output signal on AK1 and AK2. Else like the standard BX-10.

7.5.1 BX-10M(M2)/ xx-24

- Panel powered only from 24V DC power supply.
- The panel has no internal 230VA/ 24V DC power supply.
- The space for internal battery is used for a 24V/ 27,2V DC/ DC-converter.
- Back-up battery has to be installed in a separate battery box. Internal connections, see drawing below.



8 Reader's Comments

Please help us to improve the quality of our documentation by returning your comments on this manual:

Title: *Installation- And Commissioning Handbook*, Fire Alarm Control Panel BX-10

Ref. No.: *P-BX10/IE - Rev. L, 040504*

Your information on any inaccuracies or omissions (with page reference):

Please turn the page

Suggestions for improvements

Thank you! We will investigate your comments promptly.

Would you like a written reply? Yes No

Name: -----

Title: -----

Company: -----

Address: -----

Telephone: -----

Fax: -----

Date: -----

Please send this form to: Autronica Fire and Security AS
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Autronica Fire and Security AS is an international company, based in Trondheim, Norway and has a world-wide sales and service network. For more than 40 years Autronica's monitoring systems have been saving lives and preventing catastrophes on land and at sea. Autronica Fire and Security's most important business area is fire detection & security. Autronica Fire and Security stands for preservation of environment, life and property.

Quality Assurance

Stringent control throughout Autronica Fire and Security assures the excellence of our products and services. Our quality system conforms to the Quality System Standard NS-EN ISO 9001, and is valid for the following product and service ranges: marketing, sales, design, development, manufacturing, installation and servicing of:

- fire alarm and security systems
- petrochemical, oil and gas instrumentation systems for monitoring and control

In the interest of product improvement, Autronica Fire and Security reserves the right to alter specifications according to current rules and regulations.

Autronica Fire and Security AS

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Visit Autronica Fire and Security's website: www.autronicafire.com