Fire Detection Control Panel
Series BC06

User Manual – Part B

Installation – Connection – Commissioning
Parameterization – Maintenance

Contents

1 Introduction

1.1 General

This second part of the User Manual (Part B) of the fire detection control panel Series BC06 provides the authorized installer with the information necessary for planning control panel configurations as well as the installation, connection, parameterization, commissioning and maintenance of the fire detection control panel Series BC06. This part of the manual is directly based on Part A of the User Manual. The observations, remarks and explanations provided there will not be repeated here! It is, therefore, indispensable that you familiarize yourself with the contents of Part A of the User Manual before undertaking the corresponding operations.

Fig. 1: Front view of the fire detection control panel Series BC06
Left photo: Fire Detection Control Panel BC06-1 or BC06-1A
Right photo: Detailed view of the operating field of Fire Detection Control Panel BC06-2 or BC06-2A with alarm counter

In this User Manual, the single term "fire detection control panel Series BC06" will be understood to mean all of the following models:

- Fire Detection Control Panel BC06-1,
- Fire Detection Control Panel BC06-1A with a second alarming device,
- Fire Detection Control Panel with Alarm Counter BC06-2, and
- Fire Detection Control Panel with Alarm Counter BC06-2A with a second alarming device.

Externally, the control panels differ only by the four-digit alarm counter which is additionally situated in the display and operating field of models BC06-2 and BC06-2A.

All information in this manual relates to the scope of function of firmware version number PL165 V4.01 for the Central Processing Board ZTB06-1 or ZTB06-3, respectively. The release number of the firmware (V4.xx) is printed on a label on the Central Processing Board ZTB06-1 or ZTB06-3, respectively. Devices using firmware with a different release number can differ in certain functions from the range of functions described in this User Manual.

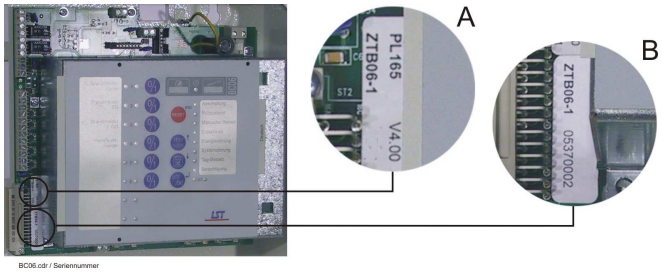


Fig. 2: Identification of the firmware release number on the Central Processing Board ZTB06-1 or ZTB06-3, respectively
In addition to the identification of the firmware release number, the serial number of the componentry is printed on a second label.
A... Firmware version
B... Serial number of Central Processing Board ZTB06-1 or ZTB06-3, respectively

1.2 Types of symbols

Especially important sections of text in this User Manual are indicated with symbols. The following symbols are used:

Means DANGER! Ignoring these tips can result in danger to life and health.

Means **ATTENTION!** Ignoring these tips can result in system malfunctions or damage to property.

Means **TIP!** Here the text contains tips for easier operation.

Means that the country-specific and/or the site-specific requirements of the **APPROVALS** of the control panel must be observed.

Menu items are set off by brackets within the description text, e.g., [Alarms].

1.3 Important tips

Fire detection systems and devices, respectively, must always be planned, installed and put into operation by specialists who are trained on a continuous basis. The specific specialist training on the functions of the fire detection control panel Series BC06 must be provided by Labor Strauss Sicherungsanlagenbau Ges.m.b.H. Wien (LST) or by persons expressly authorized by LST for this purpose.

Peripheral equipment such as fire detectors, signaling devices, etc., which are used in a fire detection system in addition to the control panel, will only be referred to as examples in this manual. The present manual does not provide any information concerning the expert planning or design of a fire detection system. It replaces neither the installer's required technical qualification nor his or her specific training.

Comprehensive precautions of a technical circuit and design nature were taken by LST as the manufacturer of the fire detection control panel Series BC06 to suppress interference caused by electromagnetic fields or noise voltages. As a result of this, the control panel – under normal conditions – can be employed in an unshielded cable network. If, nevertheless, shielded cables are used, they must be installed and connected in accordance with generally applicable installation regulations for shielded cables. Also see from page 21 onwards in Chapter 4.1: "General instructions".

Prior to opening the fire detection control panel's case, disable the mains power and ensure that it does not restart! Keep in mind that when the case is open and power is connected, certain components carrying voltage at levels that are life threatening will be exposed! The protective covering for these components should never be removed.

When working on the fire detection control panel and when handling components, observe the usual protective measures for discharging static electricity charges: Before and during the work being performed on the printed circuit boards, static charges from your body must be reliably discharged by touching an earthed piece of metal. Mains-operated tools (e.g., soldering irons) must absolutely be equipped with protective earthing or be expressly approved for use on installations that are static-sensitive. The usual protective insulation is not sufficient.

During installation, maintenance and servicing, observe the applicable laws, standards and guidelines on the installation and maintenance of fire detection systems!

1.4 Scope of delivery

The basic version of the fire detection control panel Series BC06 is assembled at the factory and supplied 100% function-tested. Please check the delivery for completeness and transport damage before assembling the equipment.

The basic version of the fire detection control panel Series BC06 consists of the following elements:

- Central Processing Board ZTB06-1 or ZTB06-3, respectively,
- case, comprised of wall piece and case cover.
  The wall piece of the case contains the Central Processing Board ZTB06-1 or ZTB06-3, respectively, with a protective covering mounted to it which integrates the Display and Operating Board ABB06-1 with keypad, or ABB06-2 with keypad and alarm counter, respectively.
- Enclosed packet of labeling strips, assembly material, battery cables, replacement fuses, end-of-line resistors and equipment documentation.

Depending on the planned functions of the control panel, componentries that are needed in addition to the basic version as well as the stand-by batteries, must be specially ordered. These componentries will be delivered separately from the control panel and are to be installed by the installer of the system. The componentries and their installation in the fire detection control panel are described starting on page 10 in Chapter 2: "Componentries of fire detection control panel Series BC06" and starting on page 17 in chapter 3.3 "Installation of optional componentries", respectively.

2 Componentries of fire detection control panel Series BC06

The componentries of the fire detection control panel Series BC06 as well as the optional expansion modules (starting on page 13 in Chapter 2.3: "Optional expansions to the basic version") are briefly introduced and explained in this chapter. Starting on page 14 in Chapter 2.3.5.1: "Determining the required capacity of the stand-by battery", it also provides information for calculating the necessary capacity of the stand-by battery.

2.1 Overview

A fire detection control panel Series BC06 consists of the operating componentries included in the basic version and can be expanded by optionally installing additional componentries.

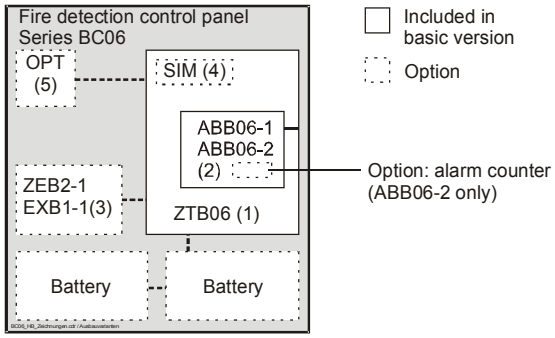


Fig. 3: Expansion versions of the fire detection control panel Series BC06
(1) Central Processing Board ZTB06-1 or ZTB06-3, respectively
(2) Display and Operating Board ABB06-1 or ABB06-2 (with alarm counter), respectively
(3) optional expansion module
(Zone Extension Board ZEB2-1 or Extinguishing Board EXB1-1)
(4) optional Serial Interface Module SIM06-1
(5) optional space for RL58-1, RL58-2, etc.

2.2 Components of the basic version

An overview on the components of the respective basic version of the fire detection control panel Series BC06 is given starting on page 9 in Chapter 1.4: "Scope of delivery".

2.2.1 Case

The powder-coated wall piece of the control panel case consists of steel sheet and is intended for surface mounting. The plastic case cover is mounted on the wall piece by means of four mounting screws. The cases of the fire detection control panels Series BC06 are identical; the keypad of the BC06-2 and BC06-2A includes the four-digit alarm counter which is located behind an additional view window.

Even with a fully expanded control panel, two stand-by batteries with 12V/max. 20Ah each can be installed in the case.

2.2.2 Central Processing Board ZTB06-1 and ZTB06-3

The central processing board ZTB06-1 or ZTB06-3, respectively, is largely responsible for the entire power supply, the internal signal processing, the communication with the display and operating board, the monitoring of the detector zones, the monitoring of inputs and outputs, and the activation of the outputs.

The Central Processing Board ZTB06-1 or ZTB06-3, respectively, provides four inputs for detector lines for connecting fire detectors and fault detectors in conventional technology as well as position detectors for disable devices of an extinguishing system.

A detector line is characterized as the cable wiring that connects the detectors with the control panel. The detectors of a monitored area which are to be displayed and operated commonly on the control panel form a detector zone which in conventional technology consists of all detectors connected to a detector line.

The voltages for powering the fire detection control panel, the automatic fire detectors, the additional devices that are connected both inside and outside the control panel, as well as for charging the stand-by batteries, are generated from the mains power by the primary switched mains supply circuit that is integrated into the central processing board. A power failure is displayed on the control panel as a fault.

The connected stand-by batteries including their supply cables as well as the Si2 fuse are being monitored continuously and a flaw will be displayed after 5 minutes at the latest.

Battery supervision will not be performed as long as a power failure is being signaled.

Supervision of the mains voltage or the stand-by batteries can be suppressed through parameter setup for special cases where either no mains voltage or no stand-by batteries are present (see from page 52 and on in Chapter 6.1: "Parameterization of the global settings for the control panel – [Global settings]").

A fire detection system must be supplied by two independent power sources.

A switching device disconnects the stand-by batteries from the charging device in the event of short-circuit or overload, preventing consequences for the control panel. The stand-by batteries are also disconnected from the control panel when there is a risk of total discharge of the battery.

For safety reasons, the charging device will no longer automatically charge stand-by batteries that have been totally discharged.

The connections for power consuming devices that are located within the control panel and outside of it are protected by fuses separately; the failure of a fuse is identified within 10 seconds at the latest and is displayed as a fault.

The entire installation connected to this control panel is monitored for earth faults by the Central Processing Board ZTB06-1 or ZTB06-3, respectively. If an earth fault occurs anywhere in the fire alarm cable system, it will be indicated on the fire detection control panel as "Earth fault".

The earth fault supervision can be taken out of service through parameterization for special cases where the cable network has been earthed on purpose (e.g., in an intrinsically safe area by the connection of a cable section with the local equipotential busbar) (see from page 52 onwards in Chapter 6.1: "Parameterization of the global settings for the control panel – [Global settings]").

In addition to the inputs for detector lines, the following components are provided on the Central Processing Board ZTB06-1 or ZTB06-3, respectively:

- a line-monitored siren output (ZTB06-1) or
- two line-monitored siren outputs (ZTB06-3),
- two control inputs with open parameters,
- one dry relay contact for common alarm as well as one for common fault,
- eight open-collector outputs for actuation tasks.
  Depending on the configuration of the control panel, these outputs are permanently assigned to specific alarm or fault and disablement messages.
- A serial interface.
  A printer for the output of the event messages can be connected to this interface by means of an optional Serial Interface Module SIM06-1.

2.2.3 Display And Operating Board ABB06-1 and ABB06-2

The following components for displaying the operating conditions are provided on the **Display And Operating Board ABB06-1**:

- general LED displays that are required in accordance with European Standard EN 54-2 and EN 54-4, respectively,
- buzzer for acoustic signaling of alarms and faults,
- six LED pairs.
  One red and one yellow LED each are permanently assigned to the detector zones and depict their condition.
- Four additional LEDs.
  If required, these LEDs together with LED pairs 5 and 6 serve for displaying the conditions and messages of the expansion modules.

The LEDs that are used in the display and operating board can also be of colors that vary from that which is indicated in the User Manual as a result of differing country-specific regulations.

In addition, signal preprocessing for the operating keyboard is done on the display and operating board.

The **Display And Operating Board ABB06-2,** in addition to the abovementioned components, includes a non-resettable four-digit alarm counter.

2.2.3.1 Labeling of the LED displays

Individual labeling of the LEDs on the Display And Operating Board ABB06-1 and ABB06-2, respectively, is done with labeling strips that are pushed in from the side behind both view windows of the front foil. For this purpose, sheets with labeling strips in different languages for labeling the standard displays are included in the scope of delivery of the control panel. Blank strips for individually labeling the zone displays as well as a sheet with pre-printed lines for labeling the standard displays by hand are also included in the scope of delivery of the control panel.

Printing templates for these labeling strips for a few standard programs (Microsoft Excel, Lotus 123, OpenOffice.org Calc) are provided in the "Tools" section of the download area of the LST-website at http://www.lst.at/ (registration required).

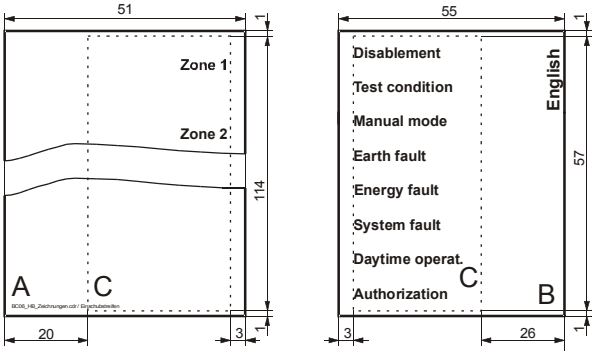


Fig. 4: Labeling strips for Display And Operating Board ABB06-1 or ABB06-2, respectively
A ... strips for site-specific labeling of the zone displays
B ... strips for labeling the standard displays
C ... visible surface of the labeling strip
In order to be able to switch out the strips easily, the excessive width on the outside of the strip should measure approximately 20mm and 26mm, respectively.

Never use sharp or pointed tools to remove a strip. The surface of the keyboard film is very susceptible to scratches on the inside and such scratches are visible from the outside.

2.3 Optional expansions to the basic version

2.3.1 Detector Zone Extension ZEB2-1

With the optional detector zone extension ZEB2-1, two detector zones for fire detectors or fault detectors using conventional technology can be connected to the control panel in addition to the four detector zones already included in the basic version. The detector zone extension is connected to connector ST2 of the Central Processing Board ZTB06-1 or ZTB06-3, respectively.

You cannot use the Detector Zone Extension ZEB2-1 and the Extinguishing Board EXB1-1 at the same time.

2.3.2 Extinguishing Board EXB1-1

In order to build small single-zone extinguishing systems, the control panel can be equipped with the optional Extinguishing Board EXB1-1 which provides for the connection of the following components:

- activation device for starting the flooding process,
- emergency hold device for interrupting the flooding process,
- fault detectors for monitoring weight and/or pressure of the extinguishing medium,
- one surveilled extinguishing output with continuous short-circuit protection (max. 1A),
- one surveilled output for displaying the Activated condition (max. 0.5A),
- one surveilled output for displaying the Released condition (max. 0.5A),
- eight open-collector outputs where the conditions of the extinguishing module are output for any possible additional control tasks.

The extinguishing board is connected to connector ST2 of the Central Processing Board ZTB06-1 or ZTB06-3, respectively. How the functions of the extinguishing module are parameterized is described starting on page 66 in Chapter 6.8: "Parameterization of the extinguishing module [Exting. module]".

You cannot use the Extinguishing Board EXB1-1 and the Detector Zone Extension ZEB2-1 at the same time.

2.3.3 Serial Interface Module SIM06-1

The optional Serial Interface Module SIM06-1 which is plugged into the ST4 connector of the ZTB06-1 or ZTB06-3, respectively, converts the signal level of the universally applicable interface integrated on the Central Processing Board ZTB06-1 or ZTB06-3, respectively, potential-free to standardized interface levels (RS232-C). You can then, for example, connect a printer for a print-out of the events to the Serial Interface Module SIM06-1.

2.3.4 Optional componentry

The case provides the opportunity to insert an optional componentry in LST standard grid (e.g., Relay Module RL58-1 or RL58-2, Control Zone Module SLM1-2, Siren Connection Module SZ58-3 or SZ58-3) into the four drillings in the upper left part of the wall piece of the case.

2.3.5 Stand-by battery

The case of the fire detection control panel Series BC06 is designed to accommodate two stand-by batteries with 12V/max. 7Ah each, connected in series. If the capacity of these batteries is not sufficient, you can double the capacity by connecting another similarly configured pair in parallel (see from page 24 onwards in Chapter 4.2.1: "Connection of the mains power, the stand-by battery and the external power consuming devices"). These additional batteries should be installed as close as possible to the built-in batteries in order to ensure ambient conditions that are as identical as possible for all batteries.

The control panel automatically adapts the charging of the stand-by batteries to the ambient temperature of the control panel.

Only 24V units (i.e., two individual 12V batteries connected in series) may be connected in parallel. The individual batteries must be of the same type.
In order to meet the requirements of the 24-hour charging time in accordance with EN 54-4, the total

capacity of the stand-by batteries must not exceed 40Ah. Keep in mind that the actual charging time for a discharged stand-by battery depends on the fire detection system's total current consumption.

Use only maintenance-free, non-gassing stand-by batteries with fixed electrolyte and low self-discharge, which are specially suited and approved for use as an emergency power supply for electronic security systems in standby parallel mode.

Do not under any circumstances use batteries of a type other than the type provided standard, which has been specially designed for use in security systems! The charging process employed in the fire detection control panel is designed for this battery type; other batteries could start leaking during operation or even burst – the fire detection control panel could be destroyed as a result!

2.3.5.1 Determining the required capacity of the stand-by battery

In general, the required stand-by battery capacity for bridging a mains failure is dependent on the following factors:

- system current during mains failure,
- system current during acoustic and optical alarms,
- required mains failure bridging time.

You must calculate the system current that is to be supplied by the stand-by battery upon mains failure during the project planning phase. To do so, take the quiescent current values from the data sheets of the devices you intend to use in the system. You can find the values for the control panel itself starting on page 77 in Chapter 10: "Specifications". Please note that the fire detection control panel will be in fault condition in the event of mains failure!

Avoid all power consuming devices that are not absolutely necessary for the operation of the system. Any permanently connected power consuming devices will be a burden on the stand-by battery in the event of mains failure. During the commissioning of the entire system, check to see whether the measured system current corresponds with the calculated value while the mains are disabled.

Determine the consumption of current during an alarm from the data sheets for the acoustic alarming devices (sirens) and the optical alarming devices (strobes) that are being used.

The required mains failure bridging time is dependent on the respective installation regulations and local conditions.

A typical requirement, for example, is that a fire detection system must be able to identify an alarm even after 72 hours of mains failure and be able to signal such an alarm optically and acoustically for 30 minutes.

Without taking into account reserves, efficiency, etc., you can approximately determine the minimum capacity of the stand-by batteries that must be used based on the abovementioned installation regulations as follows:

$$C_{MIN} = 72 \times I_{MAINS\ FAULT} + 0.5 \times I_{AL}$$

where C_{MIN} ... minimum capacity in [Ah]
$I_{MAINS\ FAULT}$ ... total system current during mains fault in [A], without raising alarm
I_{AL} ... entire system current while raising the alarm in [A]

Add a safety allowance to this calculated minimum value to compensate for exemplary fluctuations or capacity losses caused by the effect of temperature and aging.

2.3.6 Printer

A printer with serial data transmission can be connected in the fire detection control panel Series BC06 to a Serial Interface Module SIM06-1. The length of the connector cable is limited to 5m.

The control panel is ready for the connection of the following types of printer:

- Seiko DPU-414 (LST Part No. 227003),
  thermal paper printer, 80 characters per line and

- Epson LX-300 (LST Part No. 227008),
  normal paper dot matrix printer, 80 characters per line.

The printer must be set to the following values:
– 8 data bits,
– no parity bit,
– 1 stop bit,
– baud rate 1200 baud (this value must correspond to the parameterization of the control panel's serial interface, see from page 64 onwards in Chapter 6.6: "Parameterization of the interface [Interface]").

All events are printed on the printer in the order of their occurrence. Via the [Serial Interface] menu, you can furthermore start a service print-out (i.e., of the entire content of the event memory) of the control panel (see from page 64 onwards in Chapter 6.6: "Parameterization of the interface [Interface]").

2.3.7 PC

You can also connect a PC instead of a printer to the Serial Interface Module SIM06-1. A conventional terminal program is used by the PC to receive the "printer" data and process it accordingly.

You must provide the same interface settings for the terminal program on the PC as are required for a printer (see from page 14 onwards in Chapter 2.3.6: "Printer").

2.4 Accessories

2.4.1 Printer cable

Standard cables that can be obtained also in appropriate specialized stores are used to connect the compatible Seiko DPU-414 and Epson LX-300 printers to the Serial Interface Module SIM06-1. The structure of these cables is shown in the following figures.

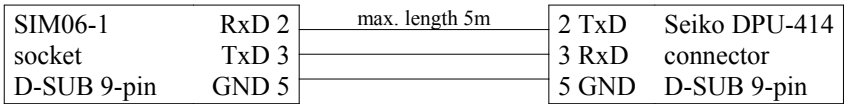


Fig. 5: Printer cable for Seiko DPU-414 (LST Part No. 227007, Length: 1.8 m)

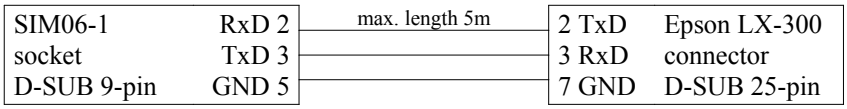


Fig. 6: Printer cable for Epson LX-300 (LST Part No. 227010, Length: 3m)

2.4.2 Connection cable between SIM06-1 and a PC

The events of the fire detection control panel Series BC06 can also be received by a PC (e.g., notebook). In this case, you need a standard cable that can be obtained also in appropriate specialized stores. The structure of the cable is shown in the following figure.

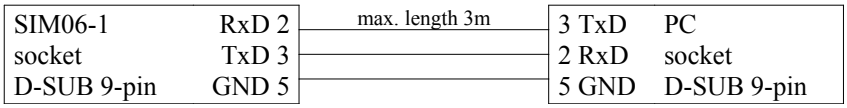


Fig. 7: Connection cable control panel – PC (LST Part No. 219010, Length: 1.8 m)

If only USB interfaces are available on your PC, you must make a virtual COM interface out of one of the USB interfaces by connecting a suitable USB/RS232 converter. If you have any questions, contact LST.

3 Assembly of the control panel and installation of optional componentries

The assembly of the fire detection control panel Series BC06 as well as the installation of the optional componentries and devices will be presented in this chapter. You can install and wire the optional componentries beforehand so that you merely have to mount and connect the already assembled control panel on-site. Parameterization (see from page 46 onwards in Chapter 5.3: "Parameterization menu of fire detection control panel Series BC06") can also be carried out beforehand. Any data that has been input will be preserved indefinitely even without supply voltage.

Under no circumstances should you transport the fire detection control panel with the stand-by batteries installed! To avoid damages of the control panel resulting from unfixed batteries during transport, the batteries must absolutely be removed from the case for transport (even over short distances)!

Be careful with MOS modules! The MOS components used in the device can be destroyed by static charges when the device is open. Before and during the work being performed on the printed circuit boards, static charges from your body must be reliably discharged by touching an earthed piece of metal (e.g., the earthed control panel case).

3.1 Location of installation for the control panel

The fire detection control panel Series BC06 must be installed in a clean and dry room on a stable wall surface. The room temperature in the immediate vicinity of the control panel must range between -5°C and +50°C, and the relative humidity of the air must not exceed 90%.

The heat generated by the control panel is actually very low, but it must still be drawn outwards. In general, the cooling effect of the air in the room is sufficient when the front side of the control panel is not covered. You should not impede this way of drawing off the heat.

Protect the control panel against splashing water and other mechanical, thermal and chemical inflow.

The place of installation must be easily accessible to rescue personnel (e.g., the fire brigade). Coordinate the location of installation with the corresponding officials.

There must be a low risk of a fire developing in the room where the fire detection control panel is to be installed. This room must be monitored by the fire detection system.

3.2 Installation of the control panel

Mount the control panel at a height above the floor at which it can be operated and the displays can be read without any problem. All necessary fasteners (screws and anchors) are included in the package accompanying the control panel.

When mounting the componentry, proceed as follows:

- Mark the three mounting points for the case on the wall, drill the mounting holes with a drill suitable for 8 mm anchors, insert the anchors into the drilled holes, and provisionally screw the mounting screws in the two upper plugs.
- Hang the control panel on the two screws that have been screwed into the wall and pull the flush-mounted cables through the cable entrances on the back of the case. Ensure that the cables carrying mains voltage and low-voltage have been properly separated.
- Screw on the case with the lower mounting screw. Correct any unevenness in the mounting surface with spacers and tightly screw in the upper two screws. When you are tightening the screws, make sure that no cables are being squashed and that the case is not being twisted as a result of the unevenness of the mounting surface. Then pull the surface-mounted cables through the openings on the upper side of the case.

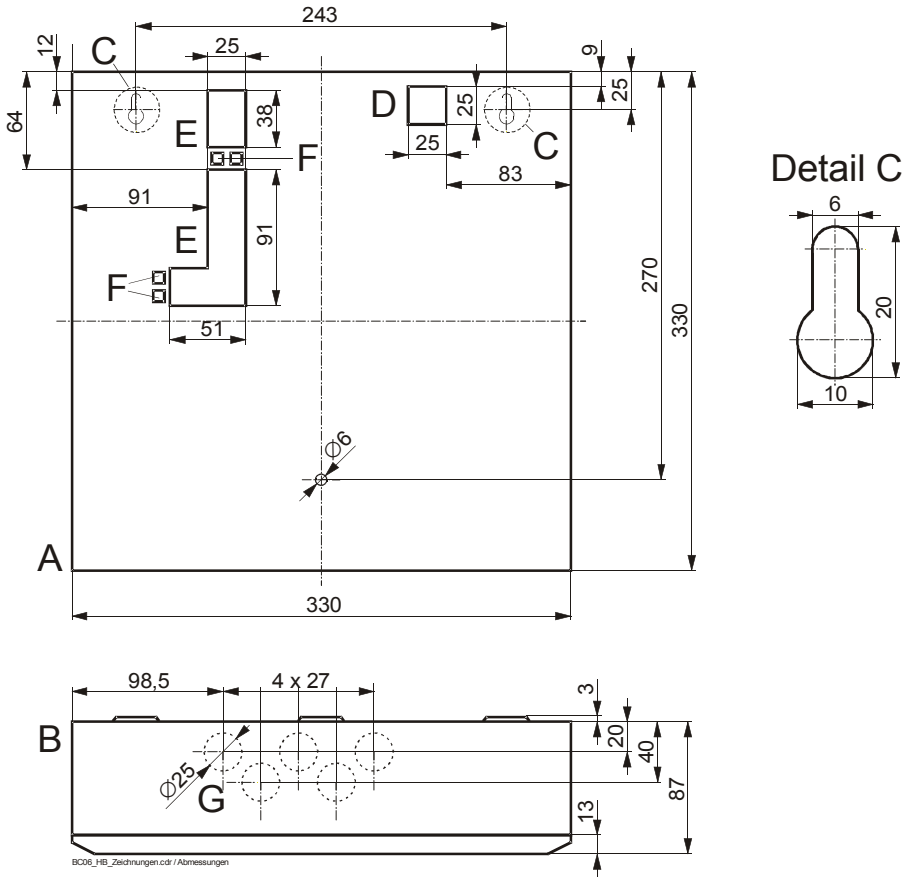


Fig. 8: Control panel – dimensions
A ... view from the front, no internals, the cover is not shown in this view to provide a clearer overview
B ... view of the control panel case from above
C ... upper mounting points
D ... cable entrance for the cable that supplies mains power
E ... cable entrance for low voltage cables (e.g., detector zone cabling)
F ... openings for fastening the inserted cables by means of cable straps
G ... cable entrance with wall surface installation
With wall surface installation, you can break out up to five openings and provide them with 20mm self-sealing grommets.

3.3 Installation of optional componentries

Optional componentries are delivered in a protective package. Before removing a componentry from the package, you must reliably discharge yourself by touching an earthed piece of metal (e.g., the control panel case). If you remove a componentry, it must be immediately returned to the protective package without storing it anywhere else in the meantime.

All installation and mounting work must only be conducted when no voltage is being supplied to the fire detection control panel. The mains power must be disabled and measures must be taken to ensure that it is not switched back on, and the stand-by batteries must be disconnected.

The earth conductor and the equipotential busbar must be clamped to the case bottom so as to ensure that electrostatic charges are drawn off as required.

Fig. 9: Overview of the mounting positions for optional components on Central Processing Board ZTB06-1 or ZTB06-3, respectively
B ... mounting position for Detector Zone Extension ZEB2-1 or the Extinguishing Board EXB1-1 (connector ST2)
B ... mounting position for Serial Interface Module SIM06-1 (strip ST4)

3.3.1 Mounting of a Detector Zone Extension ZEB2-1 or Extinguishing Board EXB1-1

Connect the Detector Zone Extension ZEB2-1 or the Extinguishing Board EXB1-1 to connector ST2 of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, and screw the componentry and the control panel case together by means of the screws which are included in the enclosed packet of assembly material of the componentry.

Under no circumstances should you connect cables to a componentry unless the componentry is securely screwed together with the wall piece of the case.

The enclosed packet of assembly material of the Extinguishing Board EXB1-1 includes a self-adhesive front foil which you must place on the front foil of the Display and Operating Board ABB06-1 as described in Fig. 10.

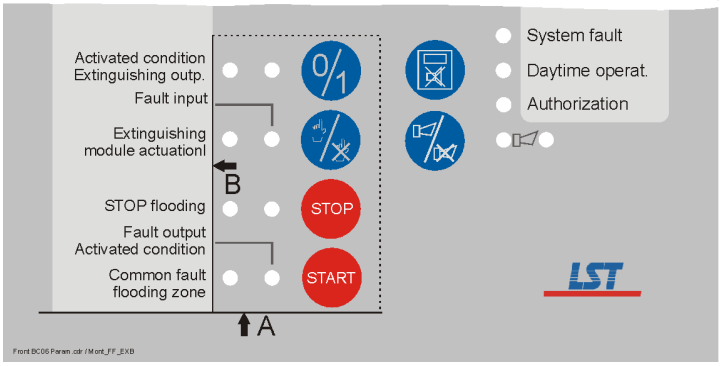


Fig. 10: Mounting position of the front foil for the optional Extinguishing Board EXB1-1
Paste the additional front foil flush with the bottom line (A) and the right edge (B) of the labeling strip for the zone displays on the front foil.

Be sure to accurately position the front foil, so that the LED displays remain fully visible. After pasting the front foil, conduct a display test (in authorization level 1 or 2).

3.3.2 Mounting of a Front Foil Evacuation Circuit FFEV06-1

If the alarming device is set to activation type "alarming device as evacuation circuit / NEN 2575" (see from page 55 onwards in Chapter 6.3: "Parameterization of the outputs [Outputs]"), you must paste the additional Front Foil Evacuation Circuit FFEV06-1 on the front foil of the Display and Operating Board ABB06-1, as described in Fig. 11.

Front foil FFEV06-1 is not included in the enclosed packet of assembly material of the fire detection control panel Series BC06 and must be ordered under LST part No. 210212.

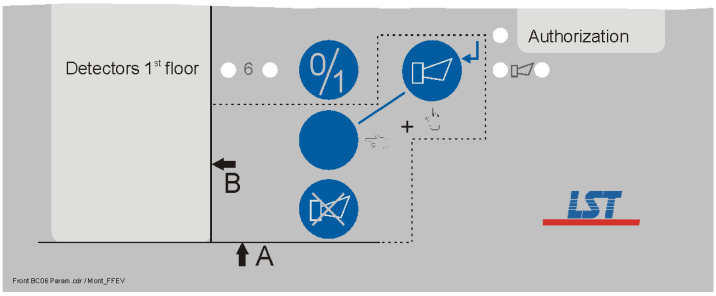


Fig. 11: Mounting position of the front foil for the evacuation circuit / NEN 2575
Paste the additional front foil flush with the bottom line (A) and the right edge (B) of the labeling strip for the zone displays on the front foil.

3.3.3 Mounting of a Serial Interface Module SIM06-1

The Serial Interface Module ZTB06-1 is attached to the Central Processing Board ZTB06-1 or ZTB06-3, respectively, and screwed on with two screws. The following Fig. 12 shows the principal way of mounting this componentry.

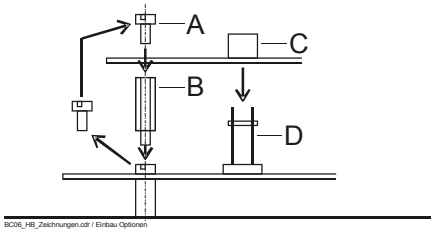


Fig. 12: Mounting of the Serial Interface Module SIM06-1 onto the Central Processing Board ZTB06-1 or ZTB06-3, respectively
A ... mounting screws of the ZTB06-1 or ZTB06-3, respectively
B ... hex bolts from the package accompanying the Serial Interface Module SIM06-1
C ... connector ST1 on the Serial Interface Module SIM06-1
D ... strip ST4 provided on the Central Processing Board ZTB06-1 or ZTB06-3, respectively

When mounting the componentry, proceed as follows:

- Remove both mounting screws (part A, Fig. 12) provided on the Central Processing Board ZTB06-1 and screw in the hex bolts that were delivered in the package accompanying the Serial Interface Module SIM06-1 instead (part B, Fig. 12).
- Place the Serial Interface Module SIM06-1 on the strip ST4 (part D, Fig. 12) of the ZTB06-1. Make sure that all pins have gone into the plug (part C, Fig. 12) and that no pins are bent.
- Fasten the componentry on the hex bolts with the screws that you unscrewed beforehand.

The mounting screws must be sufficiently screwed in for a secure bonding.

Under no circumstances should you plug in or connect cables to a componentry unless the componentry is securely screwed together with the central processing board.

3.3.4 Mounting of relay modules RL58-1 or RL58-2 and other additional componentries

The fire detection control panel provides room for installing an additional componentry (relay module or other additional componentry). The componentry is mounted onto the wall piece of the control panel case by means of the four mounting screws that are included in the package accompanying the fire detection control panel.

Fig. 13: Mounting of an additional componentry onto the wall piece of the control panel case
The required mounting screws are included in the package accompanying the control panel.

3.3.5 Stand-by batteries

Place the stand-by batteries on the bottom of the fire detection control panel case. Make sure that the terminals of the batteries do not come into contact electrically with the case or other metal parts either during assembly or later during operation – the batteries or the fire detection control panel could be destroyed as a result!

In principle, the stand-by batteries can actually be operated in any position; however, the recommended position is standing, i.e., with the terminals facing upwards.

Fig. 14: Position of the installed stand-by batteries (2 × 12V/7Ah) in the case of the fire detection control panel

Only place the stand-by batteries in the case after it has been permanently and securely fastened to the wall surface. The stand-by batteries are heavy; screws that have been screwed in provisionally could be torn out by this weight!

You must connect the stand-by batteries to the central processing panel only after all other cabling work has been completed!

Under no circumstances must a fire detection control panel Series BC06 be transported with stand-by batteries installed!

4 Connection

This chapter describes the connection of the usual components of a fire detection system to the fire detection control panel Series BC06 in a general fashion. You can obtain detailed information on connection and terminal assignment of detectors, signaling devices, etc. in the descriptions of the respective equipment.

4.1 General instructions

The conductor cross section of the connection cables to the external components must be chosen in consideration of the power consumption of the connected equipment as well as the length of the cables. When selecting wire sizes, pay special attention to the voltage drops on the connection cables of the signaling devices as well as the power supply cables of special fire detectors! To ensure adequate strength, the minimum wire diameter should not drop below 0.6mm for the connection of external components.

If there are an inadequate number of connection terminals for powering the external devices with the 24V supply, additional distribution terminals must be installed. Under no circumstances should several wires be connected to one terminal!

The wires must be secured in the control panel so that they are not subject to strain. Punched holes located in the cable inlet area (detail E, Fig. 15) to which cables can be secured by means of cable straps serve this purpose. Position the cables both inside and outside of the control panel case in such a way that no damage to the cable insulation can occur on sharp edges or otherwise, and secure the cables in the position desired (e.g., by means of cable straps, cable channels, etc.).

If shielded cables are used for the installation, the shielding wires must be connected with the control panel case on one side. A terminal connection (detail D, Fig. 15) is provided for this purpose on the bottom of the control panel case. The bare shielding wires must be insulated (e.g., by covering them with an insulating tube) so that they cannot cause any short circuits. The shielding wires of an interrupted wiring path (e.g., on a detector base) must be safely connected with each other. The connection must be insulated so that no earth fault will occur at this point.

The fire detection control panel Series BC06 is protected against electrical interference using elaborate means. As a result, under normal environmental conditions, shielded cables are not needed for safe operation of the control panel.

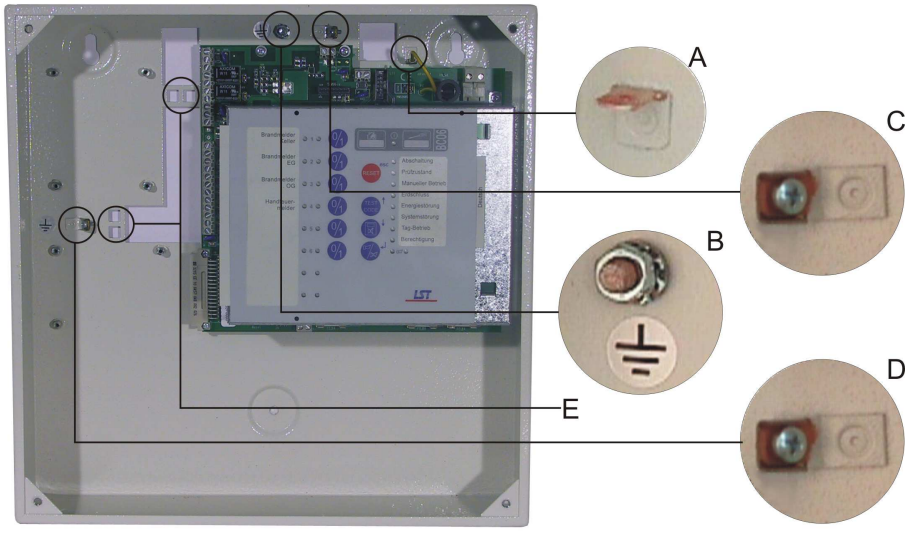


Fig. 15: Positioning of the protective conductor connection point and the strain relief points in the case of the fire detection control panel Series BC06
A ... blade terminals for protective earth connection for the power unit of the Central Processing Board ZTB06-1 or ZTB06-3, respectively
B ... connection point for the equipotential busbar of the case
C ... connection point for the protective conductor of the 230VAC mains supply line
D ... terminal connection for the shielding wires from shielded cable
E ... case breakout for installation of a strain relief for the low voltage cabling

Observe the installation regulations for fire alarm systems as well as the relevant regulations for electrical installations! Connect the local equipotential busbar carefully to the screw connection installed on the bottom of the case to ensure that the protective measures are fully effective.
Plug in or connect all protective earth connections of the control panel case prior to switching on the mains supply (see Fig. 15)!

If inductive loads (e.g., a relay coil, a solenoid valve) are switched with a switch output on the control panel, you must take appropriate measures to avoid shutdown voltage peaks! An effective measure that is recommended by LST is to provide the inductive load with a snubber circuit in the form of a clamping diode (e.g., 1N4004).

Ensure safe separation of the mains power wiring from the 24V low voltage lines. Obviously, this also applies to cabling relay modules that are used to switch mains power!

Before starting any installation work, commissioning or maintenance work, all fire prevention devices which can be automatically activated by the fire detection control panel (e.g., extinguishing systems) must be reliably taken out of service. Unintended activation of fire prevention devices can endanger human life or result in major damage to property. Contact the responsible person (e.g., fire prevention officer, safety representative) so that he or she can perform all necessary mechanical or electrical shutdowns.

All assistance materials required for the installation, connection and commissioning are included in the package accompanying the fire detection control panel and the optional componentries. Place the spare materials in the control panel case. The remaining material can be very helpful in the event of all types of expansions or conversions.

In order to provide a clearer overview, the modules of the EMC protection circuits of the inputs and outputs that are provided on the componentries are not shown in the following connection diagrams.

4.1.1 Power supply – fuse protection

The power supply devices (power unit or stand-by battery, respectively) of the control panel, in addition to supplying the fire detection control panel itself, must also take on the supply of the connected external devices in normal condition and in the event of an alarm. All outgoing supply lines are protected in the control panel either through fuses, self-healing monitoring elements or by means of short-circuit-proof current limitation. Relatively large rated values for current have been chosen for these protective measures so as to ensure that sufficient energy for the optical and acoustic signaling devices, solenoid valves of extinguishing systems, etc. is available. When determining these individual rated values, it has been acted on the assumption that at no time all outgoing supply lines will concurrently draw the nominal current of the respective protective measure (this would result in a total current of approximately 1.8A in a fire detection control panel Series BC06, and a total current of overall approximately 3.8A when an Extinguishing Board EXB1-1 is installed!).

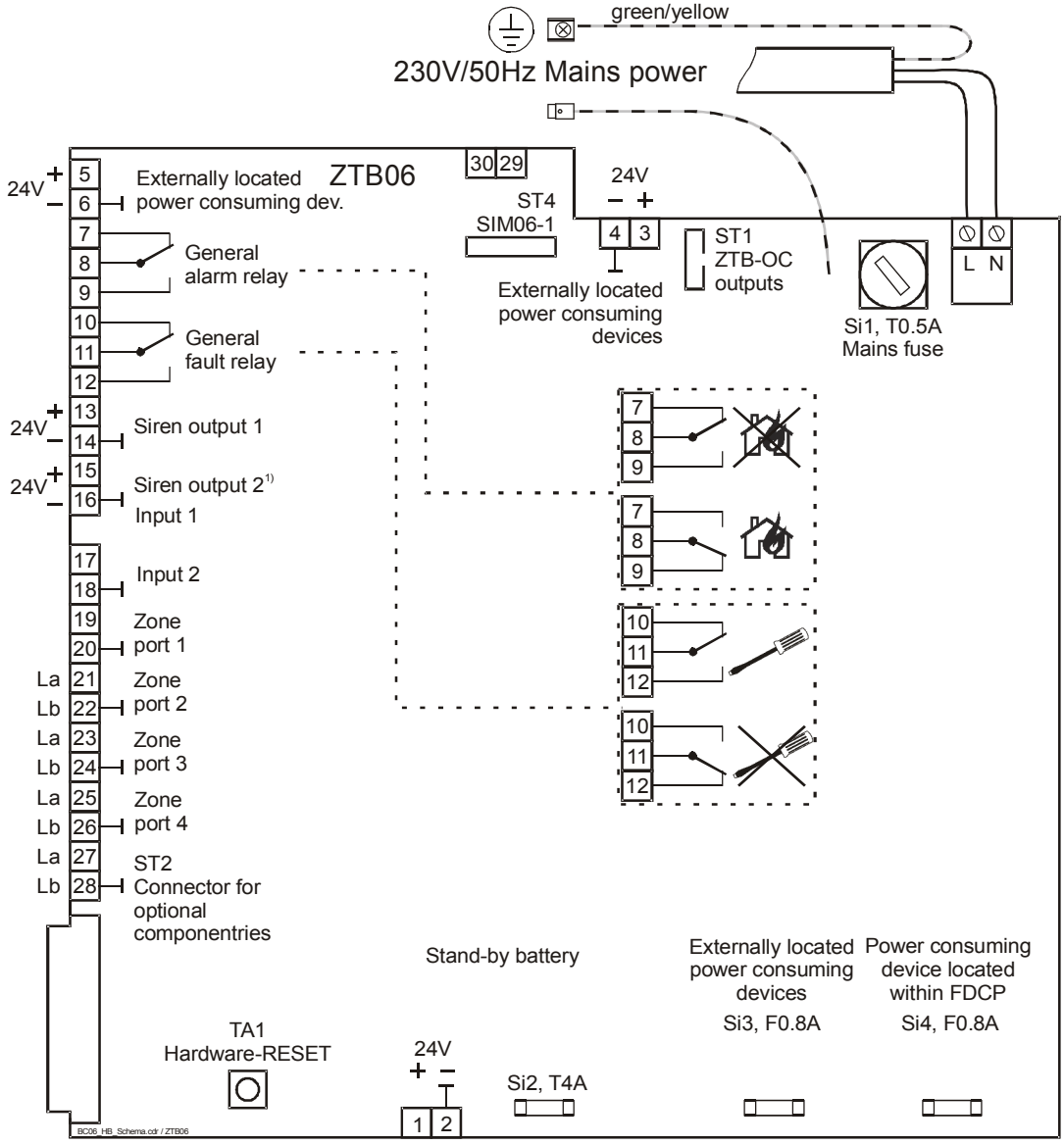
You can learn from the Specifications (see from page 77 onwards in Chapter 10: "Specifications") that the power unit of the control panel does not have the ability to supply more than 1.8A. If more energy is needed during a short period of time, this peak must be drawn from the stand-by battery which is protected with 4A. When developing and dimensioning the fire detection system, you must therefore see to it that the total current consumption of the power supply devices of the control panel remains within reasonable limits even in the event of an alarm (e.g., by choosing the peripheral components accordingly).

The relevant standards demand that each of the two power supply devices of a fire detection control panel (i.e., the power unit and the stand-by battery) must be capable of supplying the fire detection control panel on its own.

In the following overviews and connection diagrams, the fuse characteristics of the fuses is indicated by the characters "F" (fast-blow) and "T" (slow-blow), respectively, followed by the nominal current of the fuse; a slow-blow fuse with a nominal current of 4A, for example, is indicated as "T4A".

4.2 Central Processing Board ZTB06-1 and ZTB06-3

The power supply connections, the connections of the line-monitored siren output (ZTB06-1) or the two line-monitored siren outputs (ZTB06-3), respectively, the ZTB-OC auxiliary outputs (open-collector outputs), as well as the contact outputs for alarms and faults are provided on the Central Processing Board ZTB06-1 or ZTB06-3, respectively, in addition to the processor that is responsible for all of the fire detection control panel's signal processing. Furthermore, four zone ports for the conventional detector zones (zone port 1 ... 4) are integrated on the Central Processing Board ZTB06-1 or ZTB06-3, respectively.



1) Terminals 15 and 16 for siren output 2 are included only on Central Processing Board ZTB06-3.

Fig. 16: Position of connection terminals, plugs, fuses and the hardware RESET button TA1 on the Central Processing Board ZTB06-1 or ZTB06-3, respectively
The relay contacts are shown in the state where no voltage is being provided to the relay. When the control panel is in normal condition, the fault relay is engaged and the alarm relay is released. Terminals 29 and 30 must not be connected.

4.2.1 Connection of the mains power, the stand-by battery and the external power consuming devices

Perform the connection in accordance with the following connection diagram. Turn on the mains power or connect the stand-by battery to the ZTB06-1 or ZTB06-3, respectively, only after the cabling for the entire system has been completed and checked.

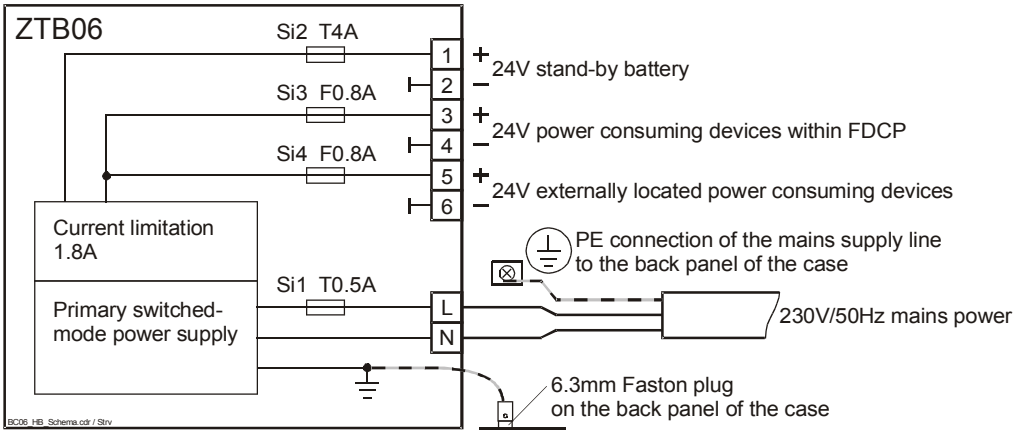


Fig. 17: Connections for mains power, stand-by battery and power consuming devices to the ZTB06-1 or ZTB06-3, respectively
Terminals 3 and 4: mainly for electric circuits that remain within the control panel.
Terminals 5 and 6: for electric circuits that lead out of the control panel to external devices (e.g., to fire prevention devices, signaling devices, etc.).

The primary switched-mode power supply on the Central Processing Board ZTB06-1 or ZTB06-3, respectively, is protected by a metal shrouding cover. Under no circumstances should you remove this cover, as this would expose components that carry life-threatening voltages! In addition, you should not operate the componentry with mains power if it has been disassembled since the high voltages are also accessible on the underside of the printed circuit board and the protective earth connection is interrupted.

The mains voltage must be supplied by way of a separately fuse-protected and marked mains electrical circuit. No power consuming devices other than those belonging to the fire detection system should be connected to this circuit. IEC950/EN 60950: An easily accessible separating device (e.g., a suitable circuit breaker) must be present in the mains power supply circuit of the fire detection control panel.

The connection and link cables for connecting a battery set to the Central Processing Board ZTB06-1 or ZTB06-3, respectively, are included in the package accompanying the control panel. Use the red cable as the plus connection and the black cable as the minus connection.

Be absolutely certain of the correct polarity (red = "+", black = "-") when connecting the stand-by battery! Incorrect polarity causes considerable damage to the control panel!

If two stand-by battery sets have to be connected in parallel, you will need two additional connection cables as well as one link cable corresponding to the original equipment. Use distribution terminals for connecting both battery sets since you should only attach one connection cable per connection terminal of the ZTB06-1 or ZTB06-3, respectively, for the stand-by battery.

Under no circumstance should the stand-by batteries or the power for any power consuming devices from different fire detection control panels be connected in parallel! The low-voltage side of the fire detection control panel Series BC06 must always work separately.

Two fuse-protected electrical circuits are available for supplying power to any additionally connected power consuming devices (e.g., relay modules, signaling devices, special detectors, etc.). It is recommended that the electrical circuits be connected as follows:

- terminals 3(+) and 4(-): electric circuits that remain within the control panel (e.g., for relay modules),
- terminals 5(+) and 6(-): electric circuits that lead out of the control panel (e.g., for external actuations, supply of special detectors, etc.).

This ensures that if a short circuit occurs in the electrical circuits leading to the outside, the control circuits that run within the control panel will not be affected.

The failure of fuses Si1, Si2, Si3 and Si4 is automatically identified by the control panel and evaluated as a fault.

4.2.2 Connection of signaling devices to an alarming device output (siren output)

The siren output is primarily designated for the line-monitored actuation of acoustic or optic signaling devices (sirens, strobes, etc.). The output is operated on the control panel by means of the operating and displaying elements of the alarming device(s).

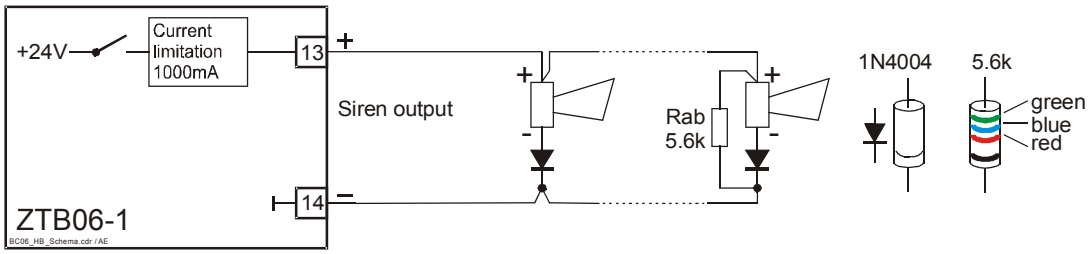


Fig. 18: Connection of signaling devices to the siren output of Central Processing Board ZTB06-1
If signaling devices with an already installed incorrect polarity protection diode are used, the indicated diodes can be omitted. Use 1N4004 or similar diodes.
An end-of-line resistor (5.6kΩ, min. 0.3W) must be connected on the last signaling device in the chain in the manner shown.

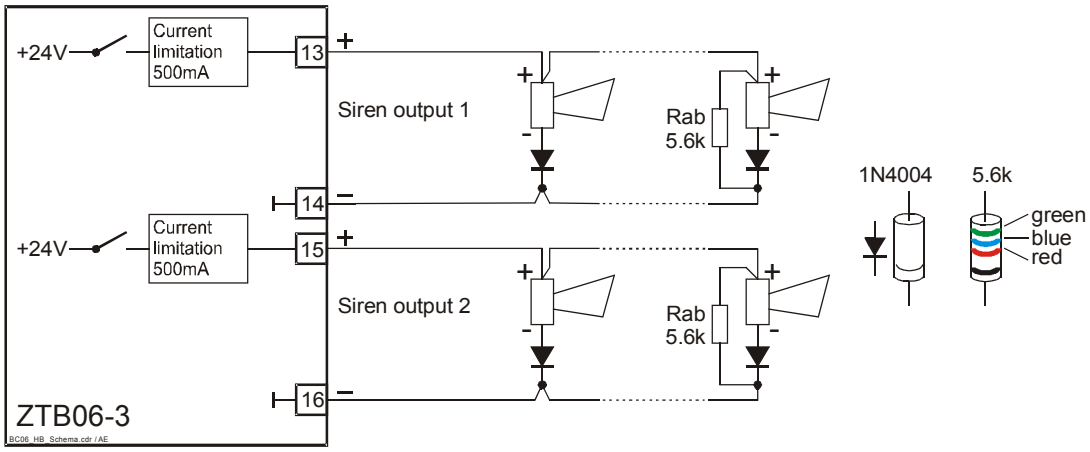


Fig. 19: Connection of signaling devices to the siren outputs of Central Processing Board ZTB06-3
If signaling devices with an already installed incorrect polarity protection diode are used, the indicated diodes can be omitted. Use 1N4004 or similar diodes.
An end-of-line resistor (5.6kΩ, min. 0.3W) must be connected on the last signaling device in the chain in the manner shown.

Line monitoring is accomplished through a negative surveillance voltage (approx. -1.2V at 5.6kΩ end-of-line resistance) that is applied to terminal 13 or 15, respectively, in normal condition. The diodes shown in Fig. 18 and Fig. 19 block this negative voltage at each signaling device. In the event of an alarm, the full supply voltage is provided current limited (1A or 500mA, respectively, see the Specifications starting on page 78 in Chapter 10.2.1: "Siren outputs") and continuous-short-circuit proof on terminal 13 or 15, respectively.

The current limitation feature of this output operates dynamically: when the limit value is exceeded, the limitation disables the output and afterwards attempts at short intervals to switch the output voltage back on again.

If several signaling devices with supervision must be operated on the siren output, they must be connected in a chain similar to conventional detectors as shown in Fig. 18 and Fig. 19. With star-shaped cabling, displaying a line interruption is only possible for that part of the cable on whose end the end-of-line resistor Rab is connected.

If no device is connected to the siren output, terminals 13 and 14 or 15 and 16, respectively, must be closed with a 5.6kΩ end-of-line resistor instead so that no fault will be displayed on the control panel.

5.6kΩ end-of-line resistors are included in the enclosed packet of assembly material of the control panel.

4.2.3 Connection to control inputs "Input 1" and "Input 2"

Two control inputs that can be parameterized for different tasks (see from page 63 onwards in Chapter 6.5: "Parameterization of the inputs [Inputs]") are available on the Central Processing Board ZTB06-1 or ZTB06-3, respectively. The respective events must be reported to the fire detection control panel by completing the ground.

Both inputs of the ZTB06-1 or the ZTB06-3, respectively are effectively protected against EMC effects, which is why the connected wires may also be positioned outside of the control panel – applicable electrotechnical regulations must be observed.

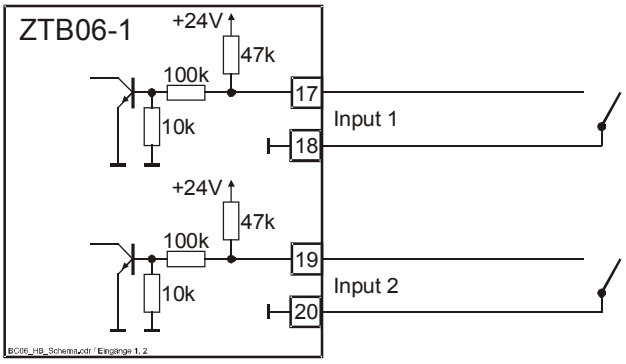


Fig. 20: Connection to the control inputs of the Central Processing Board ZTB06-1 or ZTB06-3, respectively , (input 1 and input 2)
The actuation takes place by completing the ground (NO-contact logic).

The voltage values that are permissible for the actuation are indicated in the Specifications on page 78 in Chapter 10.2.2: "Actuation inputs (Input 1, 2)".

4.2.4 Connection to contact outputs output "Alarm" (common alarm) and "Fault" (common fault)

Two switching relays, each with a dry change-over contact, are provided on the Central Processing Board ZTB06-1 or ZTB06-3, respectively. These two relays are preset in factory setting for forwarding the operating conditions of "Alarm" and "Fault" but can also be parameterized to output type "Panel reset" (see page 55 and on in Chapter 6.3: "Parameterization of the outputs [Outputs]").

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If the factory settings for outputs "Alarm" or "Fault" are changed in the course of system parameterization, the requirements of European Standard EN 54-2 will no longer be fulfilled.

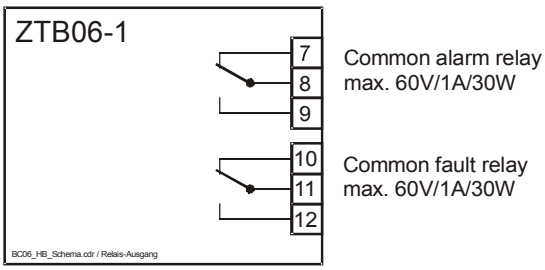


Fig. 21: Connection of dry relay outputs "Alarm" and "Fault"
The contacts are shown in the state where no voltage is being provided to the relay. If the factory settings have not been altered, the fault relay is engaged in the normal condition of the control panel, and the alarm relay is released.

4.2.5 Connection of relay modules RL58-1 or RL58-2 and similar devices to the open-collector outputs of the Central Processing Board ZTB06-1 or ZTB06-3

Eight open-collector outputs – abbreviated as "ZTB-OC outputs" – which are provided for connecting relay modules RL58-1 and RL58-2 or devices that have equivalent input circuits, are connected to the 10-pin flat cable connector ST1 on the Central Processing Board ZTB06-1 or ZTB06-3, respectively. A maximum of 20 inputs from relay modules RL58-1 or RL58-2 can be connected to each ZTB-OC output. See the Specifications for the relay modules.

Relay modules RL58-1 and RL58-2 are linked directly with connector ST1 of the central processing board according to Fig. 22 using the flat cables that accompany the relay module.

The ZTB-OC outputs are meant exclusively for the connection of RL58-1 and RL58-2-type relay modules or devices whose input circuit is of equivalent construction. Under no circumstances should the wires that are connected to these outputs be led out of the fire detection control panel case or an auxiliary case that is mounted immediately beside the control panel case!

The flat cables that are required for the connection of the relay modules to the ZTB06-1 or ZTB06-3, respectively, are included with the relay modules. If relay modules are installed in an auxiliary case, you must either switch the flat cable connector ST1 on the ZTB06-1 or ZTB06-3, respectively, to terminals (e.g., by means of a Connector Adaptor SUB58-2) and wire them individually with the relay modules, or use longer flat cables.

The supply voltage provided via the flat cable may exclusively be used for operating the respective relay module. Under no circumstances should the negative potential that is supplied to terminal 1 of the relay module via the flat cable be used as a "ground base" for further switching tasks!

Do not connect relay modules and similar devices to a supply voltage that can be influenced by a line short-circuit that occurs outside of the control panel!

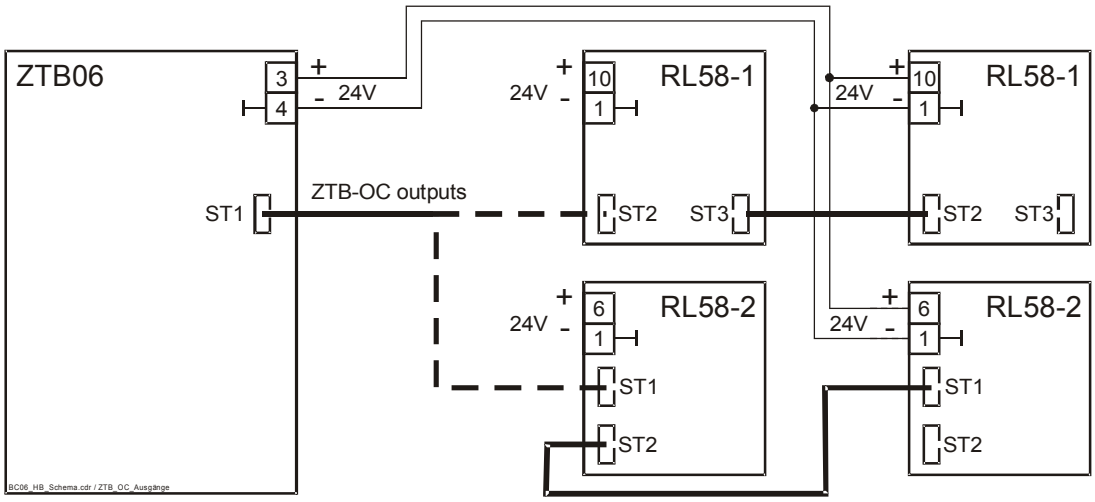


Fig. 22: Connection of relay modules RL58-1 and RL58-2 to the ZTB-OC outputs 1 through 8 of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, by means of flat cable
A Relay Module RL58-1 or, alternatively, RL58-2 can be connected to connector ST1 of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, via flat cable (bold dashed lines).
If the relay module that is controlled by the Central Processing Board ZTB06-1 or ZTB06-3, respectively, controls further relay modules, these must be supplied with operating voltage from the ZTB06-1 or ZTB06-3, respectively, via terminals 3(+) and 4(-) (thin unbroken lines).

The assignment of the eight ZTB-OC outputs on flat cable connector ST1 to the relays on relay modules RL58-1 or RL58-2 as well as the corresponding event is depicted in the following overview table.

Connector point ST1	Relay number RL58-1	Relay number RL58-2	Event or signal
1			- (ground)
2	1	1	Alarm condition zone 1
3	2	2	Alarm condition zone 2
4	3	3	Alarm condition zone 3
5	4	4	Alarm condition zone 4
6	5	1	Alarm condition zone 5[1)]
7	6	2	Alarm condition zone 6[1)]
8	7	3	Fault message condition of the fire detection control panel
9	8	4	Disablement condition of the fire detection control panel
10			+ 24V

1) Alarm outputs for zones 5 and 6 are only available if the optional Detector Zone Extension ZEB2-1 is installed. If no Detector Zone Extension ZEB2-1 is installed in the control panel, relays 5 and 6 can be used for any control tasks. Please pay regard to the documentation of the respective relay module.

Table 1: Assignment of the connection points of flat cable connector ST1 to the connected relay modules RL58-1 or RL58-2 as well as the corresponding event and the connections for (+) and (-)

4.3 Connection of conventional detectors

Four zone ports for conventional detector zones are provided on the Central Processing Board ZTB06-1 or ZTB06-3, respectively. By installing a Detector Zone Extension ZEB2-1, the control panel is expanded to an additional two conventional detector zones.

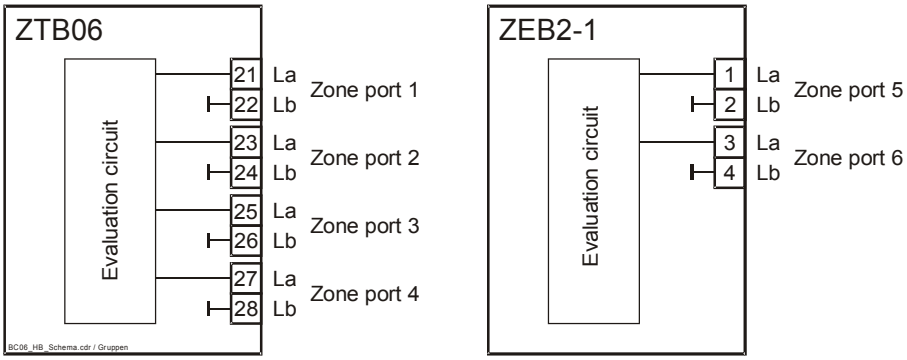


Fig. 23: Connection terminals for the detector zones on the Central Processing Board ZTB06-1 or ZTB06-3, respectively, as well as on the optional Detector Zone Extension ZEB2-1
La = positive zone connection
Lb = negative zone connection

4.3.1 General

The zone ports of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, and of the Detector Zone Extension ZEB2-1 are constructed entirely in the same way electrically. The functions of the connected detector zones are determined exclusively through the firmware and the parameterization.

The maximum permissible line resistance of each detector zone line is 50Ω per conductor; this corresponds to a line length of approximately 1,400m with a core cross section of 0.5mm² between the fire detection control panel and the last detector of the detector zone. If larger distances must be traversed, cables with a correspondingly larger core cross section must be installed.

In the global settings (see from page 52 onwards in Chapter 6.1: "Parameterization of the global settings for the control panel – [Global settings]"), you can choose collectively at a time for the four zone ports of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, and for the two zone ports of the

Detector Zone Extension ZEB2-1 whether an end-of-line resistor or an end-of-line capacitor is to be used as the end-of-line element.

- A resistance of 5.6kΩ is used for the Rab end-of-line resistor for conventional detector zones (see Fig. 24 on page 30 in Chapter 4.3.1.1: "End-of-line resistor") in LST fire detection control panels.
- A capacitor of 47µF is used for the Cab end-of-line capacitor for conventional detector zones (see Fig. 25 on page 30 in Chapter 4.3.1.2: "End-of-line capacitor" in fire detection control panels Series BC06.

The requirement existing in some countries that in spite of an automatic detector that has been removed, it must be possible to recognize alarms from detectors located behind the missing detector can be fulfilled if the zone ports are parameterized to "47µF end-of-line capacitor", an end-of-line capacitor is used as line termination, and detector bases with built-in Schottky diodes are used.

The evaluation circuit of the conventional detector zones is responsible primarily for the transmission of an alarm that has been identified by a detector to the control panel. The connected detector lines are constantly monitored and depending on the amount of the measured total resistance or total capacitance, respectively, of a detector line (comprised of the equivalent resistance of the detectors, the end-of-line element, the cable resistance as well as a possibly activated alarm resistor), the evaluation circuit decides in favor of a short circuit, an alarm situation, a normal condition or a wire breakage (you can find the approximate values for this data in the Specifications starting on page 78 in Chapter 10.2.5: "Conventional detector zones").

In addition, detectors with very low individual power consumption (e.g., with quiescent currents of approximately 100µA) can be supplied with power via the detector lines. Detectors that require a higher supply current for their operation (e.g., beam smoke detectors, aspiration smoke detection systems, etc.) must be supplied with energy via their own leads.

Please note that the line voltage, to some extent, may be considerably lower than the supply voltage of the control panel. Automatic detectors which are supplied via the line voltage must be specified for decreased line voltage and, in the event of an alarm, the alarm criterion of the detector zone evaluation must be fulfilled with certainty.

In addition to these stationary ratios, you must keep in mind that, when switching on a detector zone, some types of detectors may draw a higher current from the detector line for a short period of time than later when they are in stationary status. This switch-on current peak can be so high that the thresholds for an alarm situation or short-circuit situation are exceeded. The evaluation circuit for the conventional detector zones takes this possibility into consideration and begins the evaluation only 6 seconds after a detector line has been switched on.

If the detector's switch-on current peaks have not sufficiently decreased by the actual start of the evaluation, the fire detection control panel decides in favor of an alarm situation with all of the related consequences. You can find additional information in the relevant LST documentation regarding the connection of conventional detectors or in the Specifications for the respective detectors.

The identification of a line interruption in a detector line is only guaranteed if all detectors are connected one after another in a chain and the end-of-line element (resistor or capacitor) is actually used at the end of the line, i.e., on the last detector of the chain. If branch-offs are present in the cabling, a line interruption within this branch cannot be identified. A line interruption will also not be identified if the end-of-line element is used on a detector situated before the last detector in the chain and the interruption has occurred behind the resistor.
A line interruption in detector lines with end-of-line resistor also cannot be identified with certainty if the individual power consumption of the connected detectors is so large that the criterion for a wire breakage (see from page 78 onwards in Chapter 10.2.5: "Conventional detector zones") is not clearly exceeded when the end-of-line resistor is disconnected.
Every detector line from the control panel must be of the 2-core type! Although the Lb connections are actually connected to the negative supply voltage within the conventional detector interface, you should nevertheless refrain from connecting the Lb lead of a detector line to a negative supply voltage available anywhere in the installation! Parallel connection of the Lb leads of several detector lines is also not permitted!

If zone ports are not used (e.g., reserve zones that are kept free), either the end-of-line element that has been set in the parameterization must be connected to the respective terminals, or the zone type must be

parameterized as "Detector zone not defined" (see from page 54 onwards in Chapter 6.2: "Parameterization of the conventional detector zones [Zone settings]").

The total current consumption of the control panel is reduced by typically 3.7mA (end-of-line resistor) or typically 0.35mA (end-of-line capacitor), respectively, per undefined zone port if you parameterize the zone type that is not needed to "Detector zone not defined".

5.6kΩ end-of-line resistors are included in the package accompanying the control panel or the expansions. If end-of line capacitors are used, they must be ordered separately. You can order a packing unit of 25 pieces of end-of-line capacitors with 47µF/63V under LST part No. 229011.

4.3.1.1 End-of-line resistor

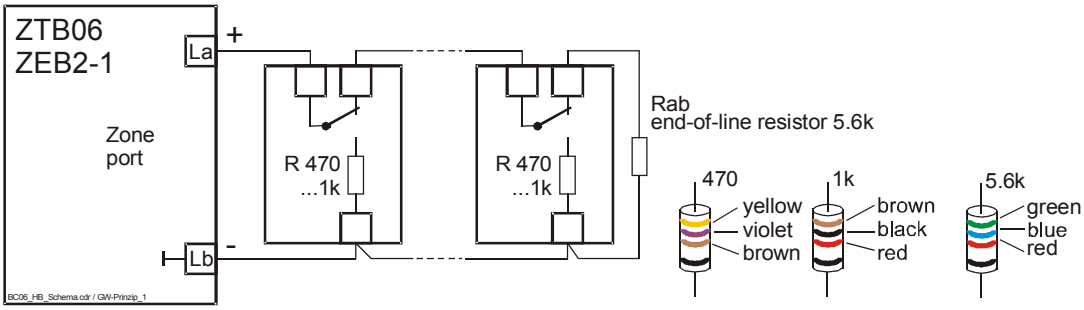


Fig. 24: Typical connection of contact detectors (e.g., of manual call points) to a conventional detector zone port whose parameters have been set for end-of-line resistor
The alarm resistor R (470Ω ... 1kΩ, min. 0.3W) must be installed with each contact detector; the Rab end-of-line resistor (5.6kΩ, min. 0.3W) only needs to be installed on the last detector of the detector chain.

In practice, the typical connection of contact detectors depicted in Fig. 24 often is altered in such a way that the leads from zone port terminals La and Lb to the first contact detector are crossed over. In the event of an alarm, the Lb lead is interrupted then instead of the La lead. This does not influence the alarm recognition in the control panel.

In order to ensure that a line interruption on a detector line with end-of-line resistor is identified at every location, the total individual current usage of the connected detectors must be clearly lower than the supervisory current through the end-of-line resistor. In general, this requirement is fulfilled with the use of modern detectors, e.g., 32 automatic fire detectors typically require a current of 32 × 75µA = 2.4mA; a current of 3.8mA typically flows through a standard end-of-line resistor of 5.6kΩ. The evaluation circuit of the zone port evaluates a drop of the total line current under typically 3mA (due to a cut-off end-of-line resistor caused by a line interruption) as a fault.

In accordance with European Standard EN 54-2 (as well as the majority of other country-specific regulations), no more than 32 detectors may be affected by a simple line fault, i.e., no more than 32 detectors may be included in one conventional detector zone.
Practically all installation regulations for fire detection systems require that the failure of a detector due to a line fault must be displayed on the control panel.

4.3.1.2 End-of-line capacitor

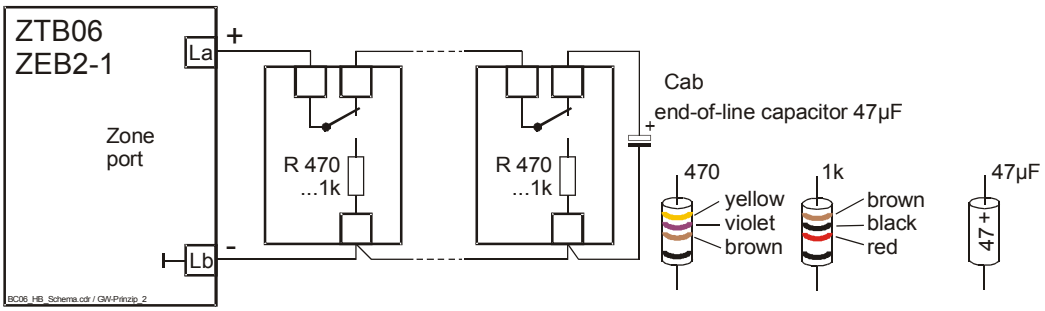


Fig. 25: Typical connection of contact detectors (e.g., of manual call points) to a conventional detector zone port whose parameters have been set for end-of-line capacitor
The alarm resistor R (470Ω ... 1kΩ, min. 0.3W) must be installed with each contact detector; the Cab

end-of-line capacitor (47µF/63V) only needs to be installed on the last detector of the detector chain.

In practice, the typical connection of contact detectors depicted in Fig. 25 often is altered in such a way that the leads from zone port terminals La and Lb to the first contact detector are crossed over. In the event of an alarm, the Lb lead is interrupted then instead of the La lead. You must also reverse the polarity of the end-of-line capacitor. This does not influence the alarm recognition in the control panel.

Check the polarity of the voltage that is applied to the end-of-line capacitor by means of a multimeter when the system is put into operation. The positive line voltage must be applied to the "+" marked lead of the capacitor!

A capacitor that has been connected with reversed polarity will operate inconspicuously in the beginning. After some time, however, the capacitor may become defective due to the steadily rising leakage current and may produce a false alarm at the detector zone.
An end-of-line capacitor that has been connected with reversed polarity is to be considered defective and must not be used anymore!

By using a capacitor as end-of-line element for a detector line,
– the current consumption of the fire detection control panel will be reduced (the surveillance current does not permanently flow through the Rab end-of-line resistor) and
– more detectors or detectors with a higher current consumption can be used.
To zone ports whose parameters have been set to "47µF end-of-line capacitor", detectors with an individual current consumption of max. 6mA (see Specifications starting on page 78 and on in Chapter 10.2.5: "Conventional detector zones") may be connected.

The application of end-of-line capacitors offers an additional advantage: When using special detector bases with a built-in Schottky diode, the control panel indeed displays a line failure if an automatic detector is removed from its base, however the detectors that are connected behind the removed detector are not cut off but remain fully functional. Additional information thereto is given in Chapter 4.3.2: "Connection of the most common conventional detectors to the fire detection control panel Series BC06" that follows.

4.3.2 Connection of the most common conventional detectors to the fire detection control panel Series BC06

This chapter describes the connection of the most common conventional detectors to the fire detection control panel Series BC06. You can find a complete list of the common and special detectors that can be used in the relevant LST documentation regarding the connection of conventional detectors to the fire detection control panel Series BC06.

The use of Remote Indicator PA58-1, as well as MCP Coding Modules MCM1-1, which are shown, is optional.

In accordance with the requirements of European Standard EN 54-2, a maximum of 32 fire detectors per detector zone/detector line is permitted. Due to the low individual power consumption of the fire detectors that are described below, from an electrical engineering standpoint, 32 of these detectors may also be connected to each detector zone port of the fire detection control panel Series BC06. For fire detectors with higher individual power consumption, the maximum number of fire detectors per detector zone must be calculated specially for end-of-line resistor and end-of-line capacitor, respectively.

The functionality of optional additional devices (such as, for example, relay bases, etc.) may be limited. For example, the relay in a relay base may not be activated in the event of an alarm when the line resistance is high and the supply voltage is low.

4.3.2.1 Connection of manual call points from LST

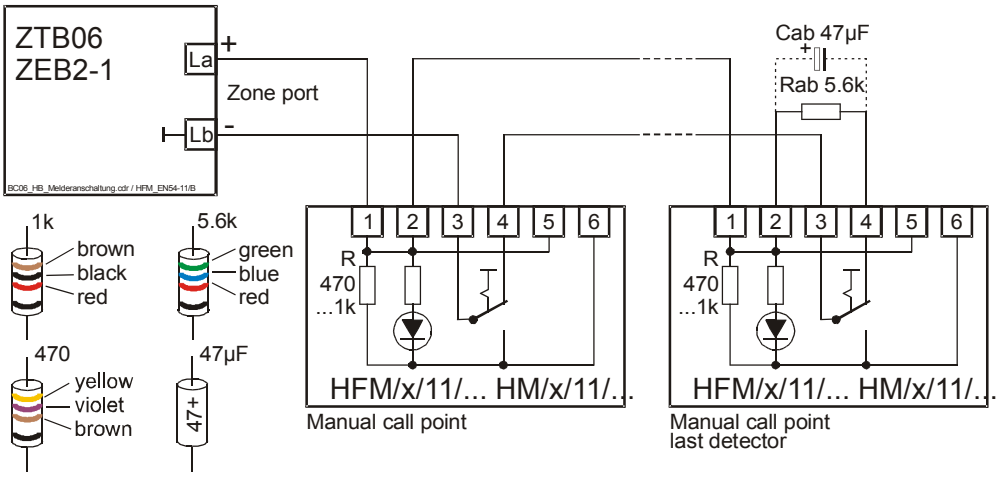


Fig. 26: Connection of manual call points (make: LST) to a fire detection control panel Series BC06
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.

4.3.2.2 Connection of manual call points from other manufacturers

A wide range of manual call points with different designs are available on the international market. The following Fig. 27 therefore depicts only the minimum requirements to the detector circuit. The installation of a LED for signaling the activation is optional. Please pay regard to the individual power consumption of the activation display.

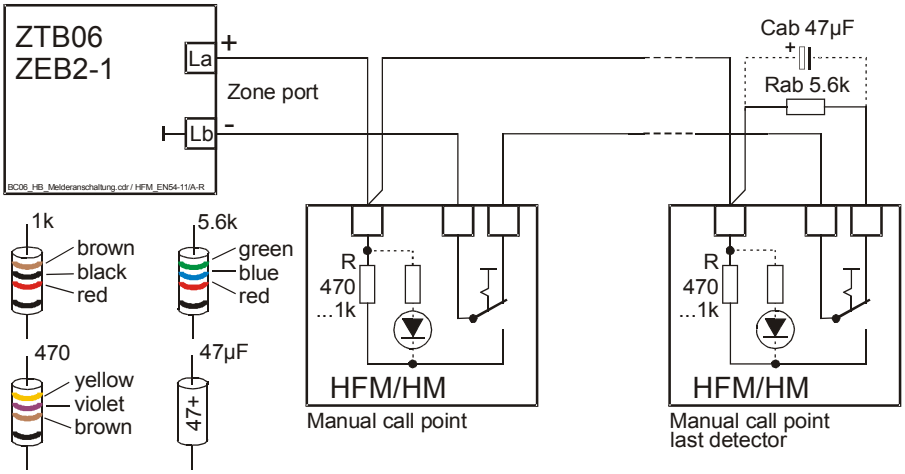


Fig. 27: Connection of manual call points (non-LST) to a fire detection control panel Series BC06
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.

4.3.2.3 Combined connection of manual call points and automatic detectors to a zone

Combined connection of automatic and non-automatic detectors (manual call points) to one zone can be prohibited by country-specific regulations.

The fire detection control panel Series BC06 can distinguish the activation of manual call points from automatic detectors and can process the alarm dependent on the detector type if

- the zone is parameterized to zone type "Detector zone for combined application of manual call points and automatic fire detectors",
- the manual call points of this zone are equipped with a 1kΩ alarm resistor, and
- an MCP Coding Module MCM1-1 is connected to the respective manual call points.

The activation of a manual call point which has a MCM1-1 connected will be promptly evaluated as fire alarm by the fire detection control panel, however, it will then take up to 6 seconds until the alarm is classified as alarm from a manual call point.

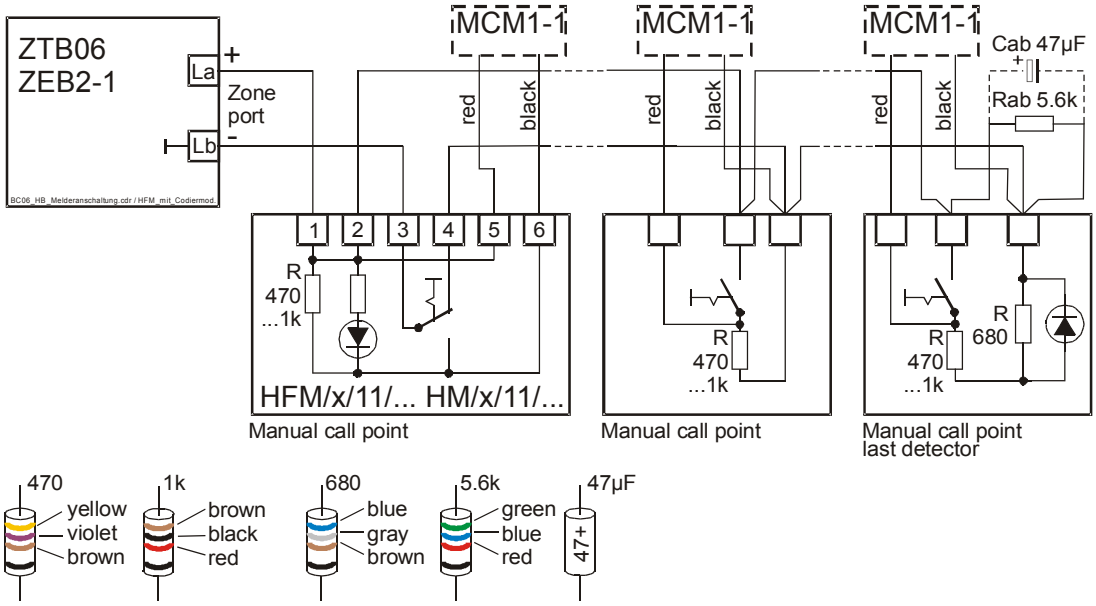
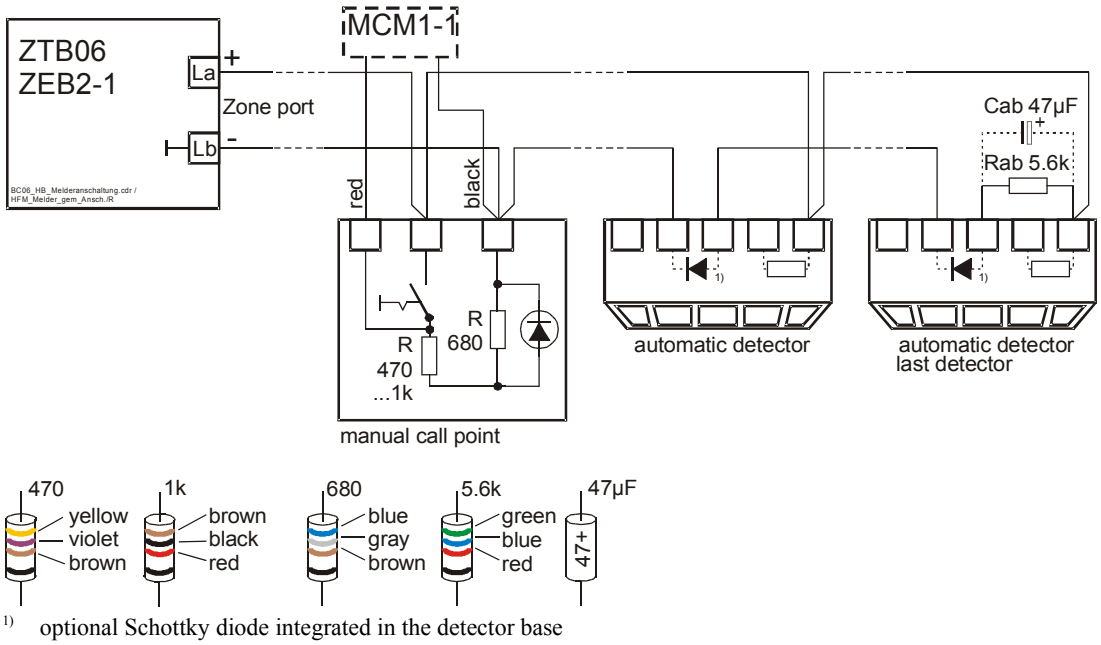


Fig. 28: Connection of the MCP Coding Module MCM1-1 to manual call points of a fire detection control panel Series BC06
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.
left detector: manual call point Series HFM/x/11 (make: LST)
middle detector: manual call point (non-LST)
right detector: manual call point with LED (non-LST)
In order to provide a clearer overview, the automatic detectors that are connected to the same zone are not depicted in this connection diagram.

The optional MCP Coding Module MCM1-1 must absolutely be situated in the manual call point case due to the following reasons:

- A short circuit of the lead to the MCP Coding Module MCM1-1 is not recognized as fault; if the manual call point is activated, a short circuit is reported to the fire detection control panel.
- An interruption of the lead to the MCP Coding Module MCM1-1 makes is impossible to classify the alarm as manual call point alarm.



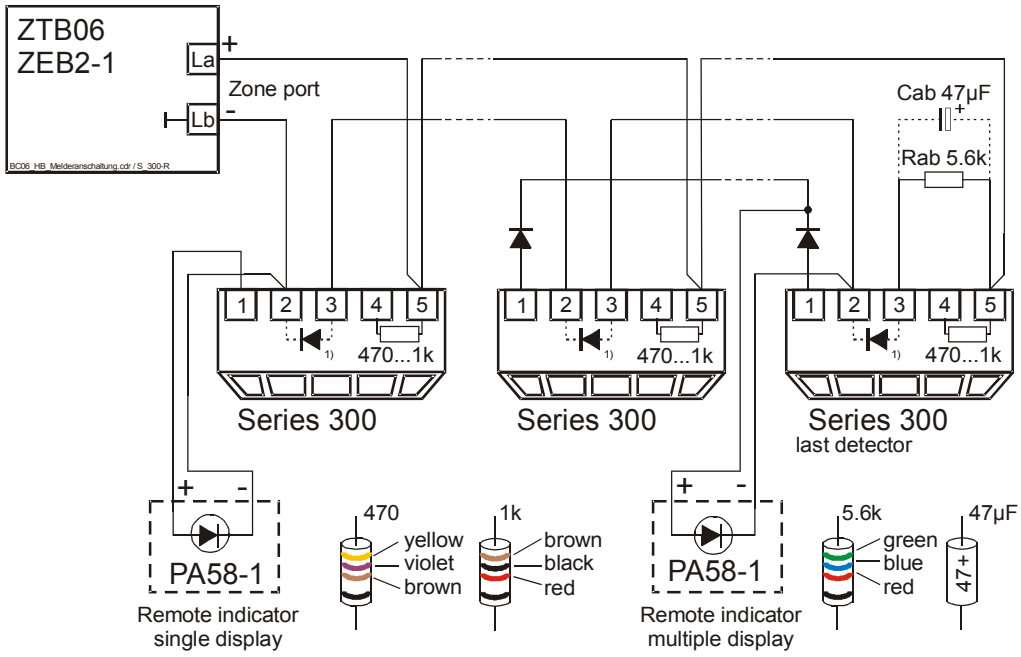
1) optional Schottky diode integrated in the detector base

Fig. 29: Common connection of manual call points and automatic fire detectors to a zone of the fire detection control panel Series BC06
Additional detectors (automatic as well as non-automatic, i.e., manual call points) can be inserted into the zone on any position.
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.
The application of end-of-line capacitors in connection with detector bases with integrated Schottky diodes can safeguard alarm recognition at the control panel in case an automatic fire detector has been removed even from detectors connected behind the removed detector.

If no diode bases are used, alarms from detectors that are located behind a removed automatic detector cannot be recognized even if end-of-line capacitors are used.

You may use diode bases only if an end-of-line capacitor is used as line termination. Do not use diode bases together with end-of-line resistors!

4.3.2.4 Connection of automatic fire detectors of Series 300 (make: System Sensor)



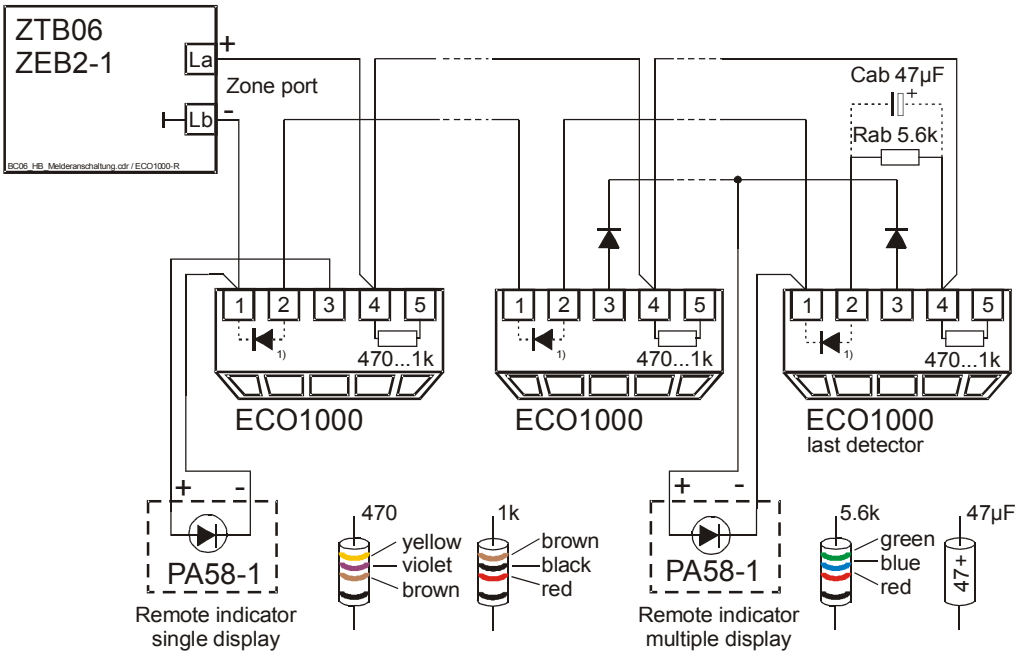
1) optional Schottky diode integrated in the detector base

Fig. 30: Connection of automatic fire detectors of Series 300 (make: System Sensor) to a fire detection control panel Series BC06
Signal diodes (not indicated): 1N4004 or equivalent
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.
The application of end-of-line capacitors in connection with detector bases with integrated Schottky diodes can safeguard alarm recognition at the control panel in case an automatic fire detector has been removed even from detectors connected behind the removed detector.

If no diode bases are used, alarms from detectors that are located behind a removed automatic detector cannot be recognized even if end-of-line capacitors are used.

You may use diode bases only if an end-of-line capacitor is used as line termination. Do not use diode bases together with end-of-line resistors!

4.3.2.5 Connection of automatic fire detectors of Series ECO1000 (make: System Sensor)



1) optional Schottky diode integrated in the detector base

Fig. 31: Connection of automatic fire detectors of Series ECO1000 (make: System Sensor) to a fire detection control panel Series BC06
Signal diodes (not indicated): 1N4004 or equivalent
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.
The application of end-of-line capacitors in connection with detector bases with integrated Schottky diodes can safeguard alarm recognition at the control panel in case an automatic fire detector has been removed even from detectors connected behind the removed detector.

If no diode bases are used, alarms from detectors that are located behind a removed automatic detector cannot be recognized even if end-of-line capacitors are used.

You may use diode bases only if an end-of-line capacitor is used as line termination. Do not use diode bases together with end-of-line resistors!

4.3.2.6 Connection of automatic fire detectors of Series 65 (make: Apollo)

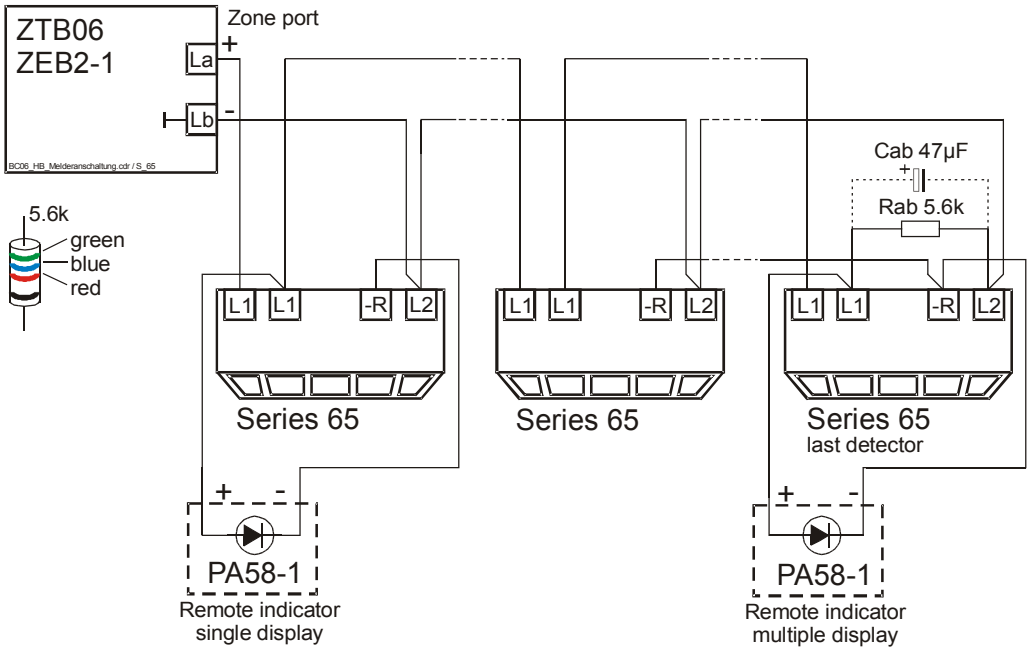
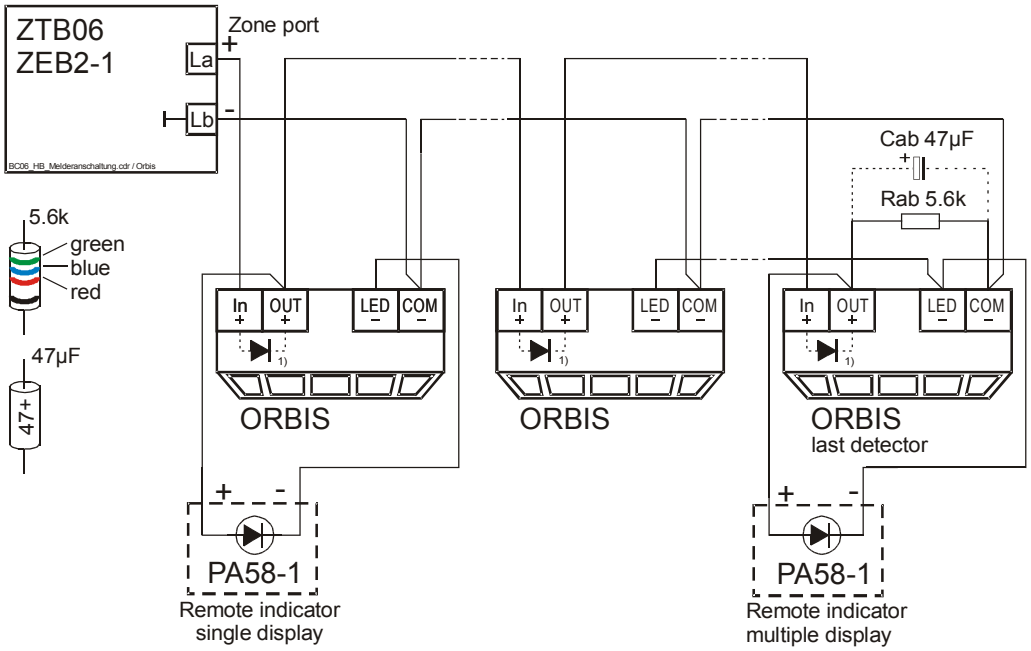


Fig. 32: Connection of automatic fire detectors of Series 65 (make: Apollo) to a fire detection control panel Series BC06
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.

4.3.2.7 Connection of automatic fire detectors of Series ORBIS (make: Apollo)



[1] optional Schottky diode integrated in the detector base

Fig. 33: Connection of automatic fire detectors of Series ORBIS (make: Apollo) to a fire detection control panel Series BC06
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.
The application of end-of-line capacitors in connection with detector bases with integrated Schottky diodes can safeguard alarm recognition at the control panel in case an automatic fire detector has been removed even from detectors connected behind the removed detector.

If no diode bases are used, alarms from detectors that are located behind a removed automatic detector cannot be recognized even if end-of-line capacitors are used.

You may use diode bases only if an end-of-line capacitor is used as line termination. Do not use diode bases together with end-of-line resistors!

4.3.3 Connection of mechanical disable devices of the extinguishing agent's network

If no Extinguishing Board EXB1-1 is installed in your fire detection control panel, you may disregard the information in this chapter. The zone ports of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, cannot be parameterized as disable device in this case.

Two position switches, which are referred to as s1 and s2 in Fig. 34, are used to monitor the position of a mechanical disable device of the extinguishing agent's network. The "disabled" position of the disable device is surveilled by the s1 switch, and the "open" position is surveilled by the s2 switch.

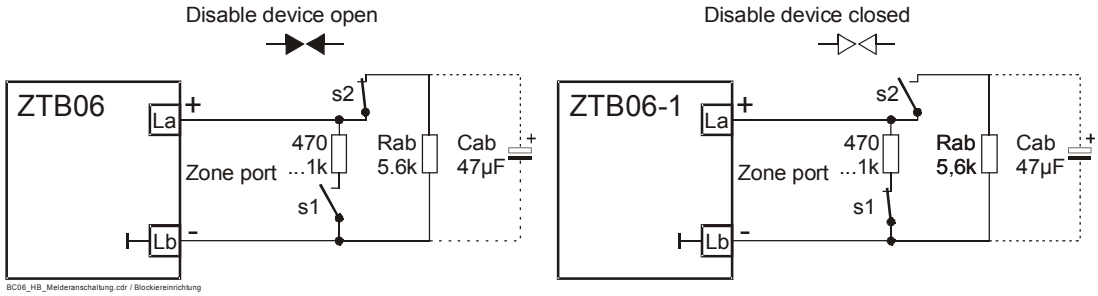


Fig. 34: Surveilled positions of the position switches of mechanical disable devices of the extinguishing agent's network
Left figure: In the normal position position switch s2 is closed and position switch s1 is open – the disable device is open.
Right figure: If position switch s2 is open and position switch s1 is closed, the disable device is closed.

When s1 is closed, the extinguishing agent's network is disabled and when s2 is closed, the extinguishing agent's network is completely open. If neither the "open" nor the "disabled" position is taken for more than 10 seconds, i.e., if both switches are open, a fault of the zone is displayed. Perform the connection of the two position switches to the fire detection control panel Series BC06 in accordance with Fig. 35.

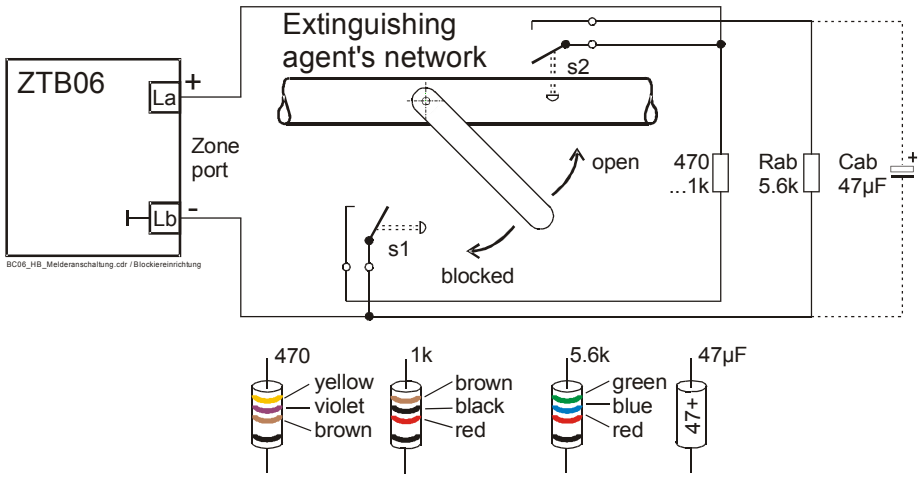


Fig. 35: Connection of mechanical disable devices of the extinguishing agent's network to a fire detection control panel Series BC06
In the "disabled" position, the s1 switch is closed and the alarm resistor is active.
In the "disabled" position, the s2 switch is closed and the end-of-line element (end-of-line resistor or end-of-line capacitor) is active.
In accordance with the parameterization of the detector zones either a 5.6kΩ end-of-line resistor or a 47µF end-of-line capacitor can be used as an end-of-line element.

4.4 Connection to the Extinguishing Board EXB1-1

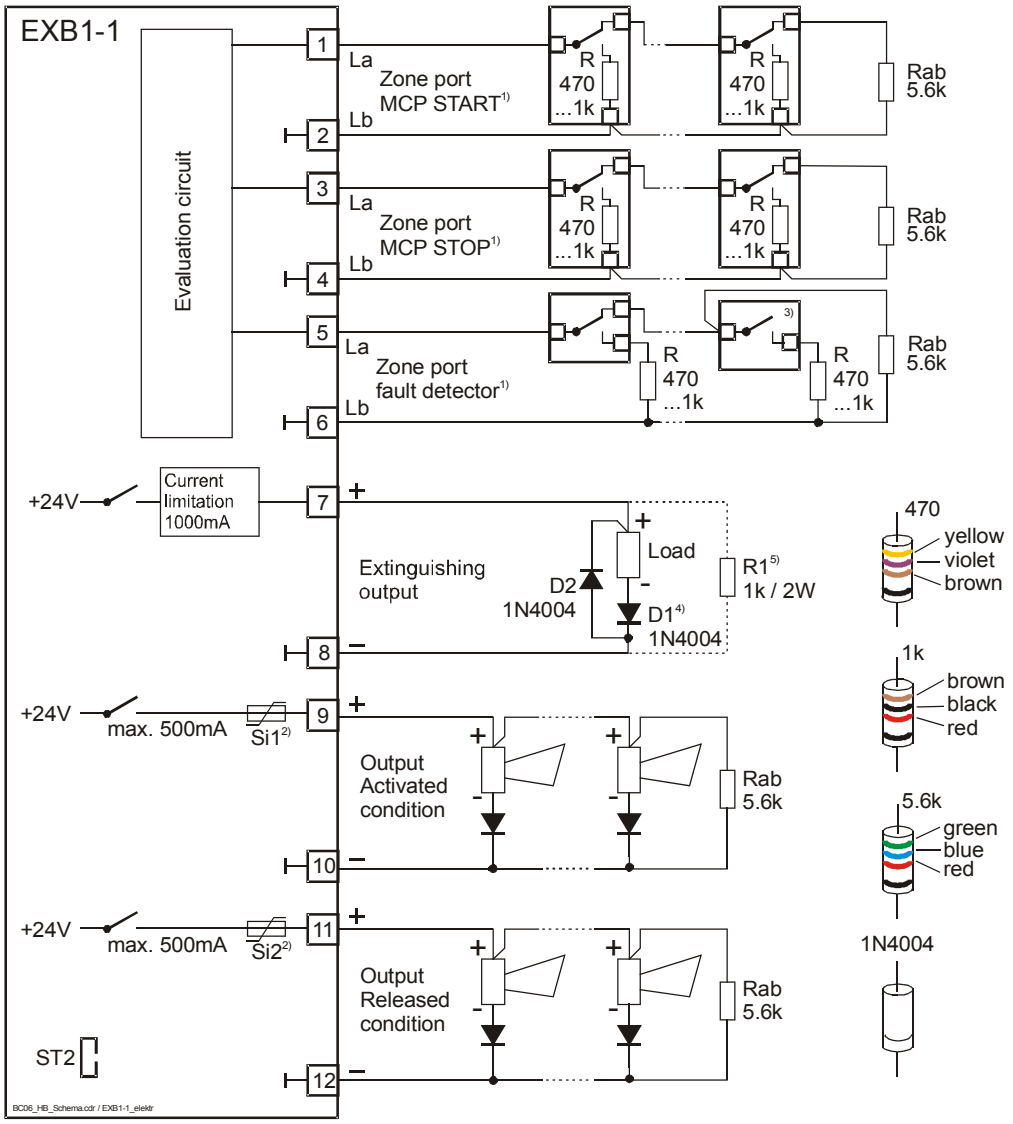
The following features are integrated on the Extinguishing Board:

- signal processing and line supervision for three detector zones (devices for activation and emergency hold as well as fault detectors),
- supervision circuit for the three outputs (extinguishing output, Activated condition, Released condition),
- actuation of the eight open-collector outputs (LM-OC outputs).

4.4.1 Connection of zones and outputs

Perform the connection on the basis of the following connection diagram.

The Extinguishing Board must be plugged on or off only when no voltage is being supplied to the control panel.
Connect the cables only after the Extinguishing Board has been securely fastened to the fire detection control panel.



1) The alarm resistance of the zone ports can range between 470Ω and 1kΩ. The end-of-line resistor must amount to 5.6kΩ.
2) Si1, Si2: self-healing monitoring elements
3) Connection example for normally open contact
4) If the internal resistance of the load ranges from 25Ω to 40Ω, the serial diode D1 is mandatory.
5) The equivalent resistor R1 is required only if the internal resistance of the load amounts to more than 1kΩ.

Fig. 36: Connection of the inputs and outputs to the Extinguishing Board EXB1-1
– Zone for activation devices

– *Zone for emergency hold devices*
– *Zone for fault detectors*
The connection of the individual detector types is described in detail starting on page 32 in Chapter 4.3.2.1: "Connection of manual call points from LST" and starting on page 32 in Chapter 4.3.2.2: "Connection of manual call points from other manufacturers", respectively.
– *Extinguishing output*
If an inductive load is connected to the extinguishing output, you must take appropriate measures to avoid shutdown voltage peaks (e.g., clamping diode D2 1N4004 or equivalent as depicted).
– *Signaling device for displaying the Activated condition*
– *Signaling device for displaying the Released condition*
If signaling devices with an already installed incorrect polarity protection diode are used, the indicated diodes can be omitted.
An Rab end-of-line resistor (5.6kΩ, min. 0.3W) must be connected on the last signaling device in the chain in the manner shown.

The zone ports of the Extinguishing Board must be terminated with a 5.6kΩ end-of-line resistor. Do not use end-of-line capacitors as line termination!

The zones for the activation devices and the emergency hold devices as well as for the fault detectors cannot be operated on their own. They can be disabled and enabled only collectively via the '0/1' button 0/1 of the extinguishing module.

The function of the zones is defined in the firmware of the control panel and cannot be changed.

Concerning the connection of the three zones for activation device, emergency hold device and fault detectors, the information and requirements described starting on page 28 in Chapter 4.3: "Connection of conventional detectors" must be observed to the full extent. Furthermore, the Specifications starting on page 79 in Chapter 10.4: "Extinguishing Board EXB1-1" must be considered.

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European Standard EN 12094-1 demands that a fault of the activation device be displayed separately. If this requirement is to be fulfilled, the activation device must be connected to a zone port of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, whose parameters have been set to "Detector zone for manual call points" and the zone port must be combined with the extinguishing output accordingly.

The **extinguishing output** is designed for the line-monitored actuation of an activation device (control valve, etc.). The output is operated on the control panel by means of the operating and displaying elements of the extinguishing module. If the internal resistance of the load (e.g., resistance of the solenoid valve) amounts to less than 40Ω, a silicon diode D1 (e.g., 1N4004) must be connected directly to the load or its connector in the direction depicted in Fig. 36. If the internal resistance of the load is greater than or equals 40Ω, this diode is not required.

Please note that the resistance of the coil of a solenoid valve considerably depends on the temperature of the coil. For instance, the resistance of a solenoid coil made of copper wire is decreased by 10% at 0°C compared with 25°C.

If a solenoid valve is already equipped with a silicon diode by default, it is not necessary to connect additional diodes externally. With an internal resistance of the coil of 40Ω or above, the serial diode is not required, however, a diode integrated in the solenoid coil does not interfere.

Line supervision for wire breakage and short circuit is accomplished by means of a small surveillance current (approx. 2.5mA) which flows through the load and, if applicable, through the serial diode. In the event of an alarm, the full supply voltage is provided current limited (see Specifications starting on page 79 in Chapter 10.4: "Extinguishing Board EXB1-1") and short-circuit proof on terminal 7.

The two **outputs for displaying the Activated condition and the Released condition**, respectively, are used for the line-monitored actuation of acoustic or optical signaling devices (sirens, strobes, danger signs, etc.). The outputs are operated on the control panel by means of the operating and displaying elements of the extinguishing output.

On the control panel, the two outputs 'Activated condition' and 'Released condition' can be disabled only together with the extinguishing module

European Standard EN 12094-1 requires that faults be displayed separately for each output. Since faults of the signaling devices connected to the 'Activated condition' and 'Released condition' outputs are displayed collectively on the 'Output Activated condition/Released condition fault' LED, only one of the two outputs may be used if the requirement of EN 12094-1 is to be met.

For the outputs for the Activated condition and the Released condition, line monitoring for short circuit and wire breakage is accomplished through a negative surveillance voltage (approx. -1.2V at 5.6kΩ end-of-line resistor) that is applied to terminals 9 and 11 in normal condition. The diodes shown in Fig. 36 block this negative voltage at each device. In the event of an alarm, the full supply voltage is provided current limited (see Specifications starting on page 79 in Chapter 10.4: "Extinguishing Board EXB1-1") and short-circuit proof on terminals 9 and 11.

The current limitation feature of the EXB1-1 outputs operates dynamically: when the limit value is exceeded, the limitation disables the output and afterwards attempts at short intervals to switch the output voltage back on again.

If several devices with supervision must be operated on one output, they must be connected in a chain similar to conventional detectors as shown in Fig. 36. With star-shaped cabling, displaying a line interruption is only possible for that part of the cable on whose end the end-of-line resistor Rab is connected.

If no device is connected to an output, the respective terminals must be closed with a 5.6kΩ end-of-line resistor instead so that no fault will be displayed on the control panel.

5.6kΩ end-of-line resistors are included in the enclosed packet of assembly material of the Extinguishing Board.

If the fire detection control panel Series BC06 is only used to build a single-zone extinguishing system, the latter can be activated externally by means of connection to a superordinate fire detection control panel or danger detection system as shown in Fig. 37.

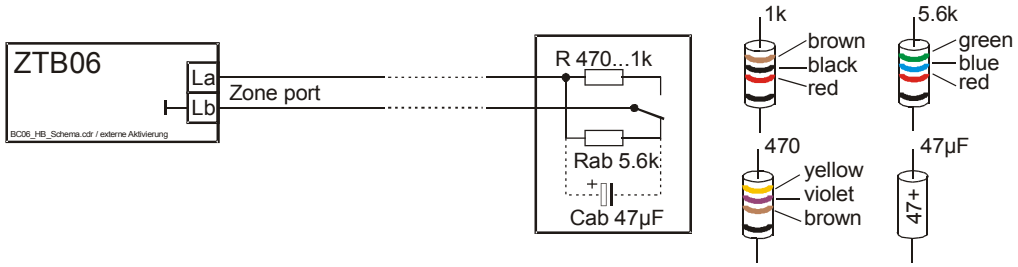


Fig. 37: Connection of a superordinate external control panel for activation of the flooding zone to a detector zone of the fire detection control panel Series BC06 whose parameters have been set to 5.6kΩ end-of-line resistor or 47µF end-of-line capacitor, respectively

In order to activate the detector zone that receives the flooding command from the external fire detection control panel, it must be logically combined with the extinguishing output (in most cases through an "OR" combination).

For reasons of safety, most regulations demand a local activation device in addition to the external activation of the flooding zone.

4.4.1.1 Connection of relay modules RL58-1 or RL58-2 and similar devices to the open-collector outputs of the Extinguishing Board EXB1-1 (connector ST2)

Eight open-collector outputs – abbreviated as "LM-OC outputs" – which are provided for connecting relay modules RL58-1 and RL58-2 or devices that have equivalent input circuits, are connected to the 10-pin flat cable connector ST2 on the Extinguishing Board EXB1-1. A maximum of 20 inputs from relay modules RL58-1 or RL58-2 can be connected to each LM-OC output. See the Specifications for the relay modules.

Using the flat cables that accompany the relay module, the relay modules RL58-1 and RL58-2 are linked directly with connector ST2 of the componentry according to Fig. 38.

The LM-OC outputs are meant exclusively for the connection of RL58-1 and RL58-2-type relay modules or devices whose input circuit is of equivalent construction. Under no circumstances should the wires that are connected to these outputs be led out of the fire detection control panel case or an auxiliary case that is mounted immediately beside the control panel case!

The flat cables that are required for the connection of the relay modules to the EXB1-1 are included with the relay modules. If relay modules are installed in an auxiliary case, you must either switch the flat cable connector ST2 on the Extinguishing Board EXB1-1 to terminals (e.g., by means of a connector adaptor SUB58-2) and wire them individually with the relay modules, or use longer flat cables.

The supply voltage provided via the flat cable may exclusively be used for operating the respective relay module. Under no circumstances should the negative potential that is supplied to terminal 1 of the relay module via the flat cable be used as a "ground base" for further switching tasks!

Do not connect relay modules and similar devices to a supply voltage, which can be influenced by a line short-circuit that occurs outside of the control panel!

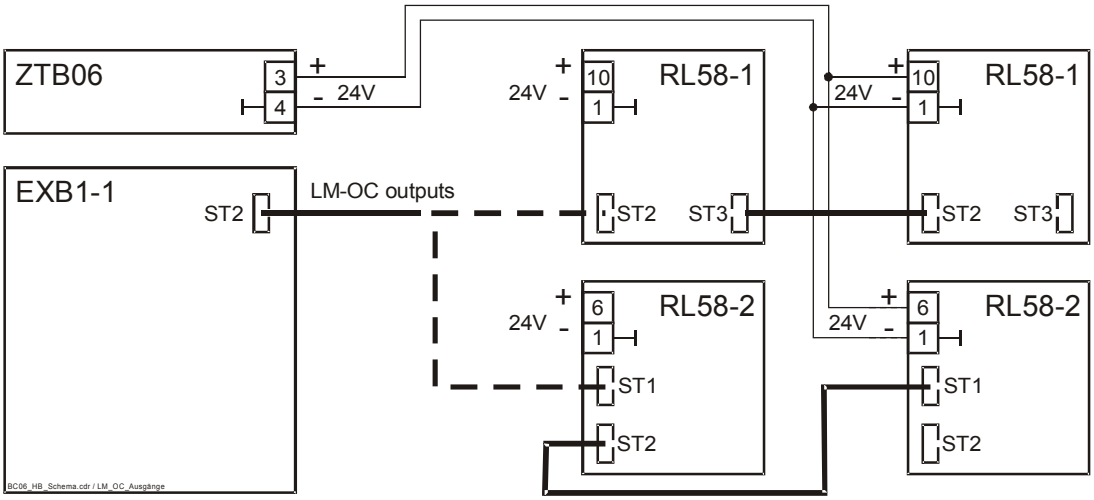


Fig. 38: Connection of relay modules RL58-1 and RL58-2 to the LM-OC outputs 1 through 8 of the Extinguishing Board EXB1-1 by means of flat cable
A Relay Module RL58-1 or, alternatively, RL58-2 can be connected to connector ST2 of the Extinguishing Board EXB1-1 via flat cable (bold dashed lines).
If the relay module that is controlled by the Extinguishing Board EXB1-1 controls further relay modules, these must be supplied with operating voltage from the ZTB06-1 or ZTB06-3, respectively, via terminals 3(+) and 4(-) (thin unbroken lines).

The assignment of the eight LM-OC outputs on flat cable connector ST2 to the relays on relay modules RL58-1 or RL58-2 as well as the corresponding event is depicted in the following overview table.

Connector point ST1	Relay number RL58-1	Relay number RL58-2	Event or signal
1			- (ground)
2	1	1	Pre-activated condition (activation of the first zone of a two-zone or three-zone dependency)
3	2	2	Activated condition – a "two-zone dependency" combination is fulfilled (at least two zones are activated) – a "three-zone dependency" combination is fulfilled (at least three zones are activated) – an "OR" combination is fulfilled (at least one zone is activated) For additional information on combinations see from page 59 onwards in Chapter 6.4: "Description of the logic combinations".

Connector point ST1	Relay number RL58-1	Relay number RL58-2	Event or signal
4	3	3	Fault message condition of the extinguishing module or the fire detection control panel[1)]
5	4	4	Disablement condition of the extinguishing module or the fire detection control panel[2)]
6	5	1	Stand-by condition of the extinguishing module (the fire detection control panel is not in fault message condition or disablement condition and the extinguishing module is in normal condition)
7	6	2	Released condition of the extinguishing module
8	7	3	Activation function (external emergency hold device or 'Emergency hold' button on the display and operating unit) has been activated. The output is activated by the first activity and remains active until the extinguishing module is reset.
9	8	4	Manual mode of the extinguishing module
10			+ 24V

1) The relay will be activated by all fault messages from the fire detection control panel or the extinguishing module, respectively.

2) The relay will be activated by all disablements on the fire detection control panel or the extinguishing module, respectively.

Table 2: Assignment of the connection points of flat cable connector ST2 to the connected relay modules RL58-1 or RL58-2 as well as the corresponding event and the connections for (+) and (-)

4.5 Connection of devices with serial actuation

4.5.1 Connection of a printer or computer

Installation of the Serial Interface Module SIM06-1 is necessary for the connection of a printer with an RS232-C connector to the control panel. The connection to the control panel itself takes place by means of a cable that can be purchased in most stores (see from page 15 onwards in Chapter 2.4.1: "Printer cable"). Secure the printer cable within the control panel case against strain by means of cable straps so that the plug cannot be inadvertently ripped out.

Currently, two printers are supported by the fire detection control panel Series BC06:
- Seiko DPU-414,
- Epson LX-300.

Both printers are supplied with power via the mains supply.

Instead of a printer you can also connect a computer to the Serial Interface Module SIM06-1 for processing the data from the fire detection control panel.

The serial interface module SIM06-1 is constructed with a potential barrier, and as a result, you can connect or disconnect the printer or computer while the fire detection control panel is being operated, or switch a printer that is powered by the mains supply on or off without endangering the operation of the control panel.

However, under no circumstances should you connect or disconnect the Serial Interface Module SIM06-1 to or from the central processing board before the control panel has been completely powered down!

You must make sure that you do not touch any energized part of the control panel with the metal connector shell when connecting or disconnecting the 9-pin D-SUB plug. If you do, you could cause a short-circuit that could result in considerable damage to the control panel.

5 Operating the control panel in authorization level 3

In the fire detection control panel Series BC06, the entire operation and parameterization of the control panel is made up of three hierarchically arranged authorization levels in accordance with international standards (also see the Chapter entitled "Basic operation of the fire detection control panel Series BC06" in Part A of the Series BC06 User Manual).

- **Authorization level 1**: No permanent modifications of conditions (e.g., disablement of a detector zone) can be made. Access to authorization level 1 is not limited.
- **Authorization level 2**: Unrestricted operation of the fire detection control panel is possible; however, modifying system-specific parameters is not possible. Access to authorization level 2 is possible by entering the four-digit user code.
- **Authorization level 3**: Parameterization of site-specific data is possible. This authorization level is reserved for the trained authorized installer of the fire detection system. Authorization level 3 can be accessed from level 1 by entering the 5-digit installer code.

During activities that require authorization level 3, the fire detection control panel is completely out of service! While in authorization level 3, it is not able to display or forward any alarm or fault messages.

5.1 Function of the buttons in authorization level 3

The fire detection control panel Series BC06 is parameterized by means of the zone buttons 1 through 4 and the four buttons 'RESET' (panel reset), 'TEST/CODE', 'Silence buzzer' and 'Alarming'. Please note that these buttons have different functions (which are indicated by the icons to the upper right of the buttons) in authorization level 3 than in authorization levels 1 and 2. Table 3 describes the special functions of the buttons of fire detection control panel Series BC06 during parameterization (authorization level 3).

You as the authorized installer set the installer code yourself (see from page 64 onwards in Chapter 6.7: "Changing the authorization code [Authorizat. code]"), and it is in your best interest that you keep the code confidential. What to do in the event the installer code is lost can be found starting on page 66 in Chapter 6.7.1: "Lost installer code".

Authorization level 2 (button label)		Authorization level 3 (icon top right of button)		Implication of a keystroke in authorization level 3
RESET (panel reset)			'esc' button	Discarding a value entry and returning to superordinate level From the main menu: following a warning signal and after pressing 'esc' once again, authorization level 3 will be terminated.
TEST/CODE			'↑' button	Value will be decreased one grade or previous menu item will be called
Silence buzzer			'↓' button	Value will be increased one grade or next menu item will be called
Alarming			'↵' button (Enter button)	Confirming a value entry and returning to superordinate level Entering the selected subordinate level main menu → submenu → values
Zone buttons 1 ... 4 (6)[1)]			Combination of zone 1 ... 4 (6)[1)]	Assignment or deletion of a (previously assigned) zone to a combination

[1)] The number of zone buttons which can be used for parameterization depends on the number of available zones and, consequently, on the level of expansion of the fire detection control panel Series BC06. If a Detector Zone Extension ZEB2-1 is installed, six zone buttons are available, otherwise four zone buttons are available.

Table 3: Function of the buttons of fire detection control panel Series BC06 in authorization level 2 and authorization level 3, respectively

5.2 Entering and exiting authorization level 3

To be able to parameterize the system-specific data, the fire detection control panel must be switched into authorization level 3. In order to enter authorization level 3 from level 1, proceed as follows:

- Enter the control panel's 5-digit installer code ("22222" when the control panel is put into operation) by means of zone buttons 1 through 4 

. With the first keystroke, the 'Daytime operation' LED starts flashing. The number of the respective zone button corresponds to the entered digit, each entry is confirmed by a short buzzer sound. Pressing any zone button in authorization level 1 will automatically be identified as code entry by the fire detection control panel.


You must replace the default installer code by a 5-digit code of your choice when you enter authorization level 3 for the first time.


The installer code can only be composed of the digits 1, 2, 3, and 4. For example, an installer code of "42213" is entered by pressing 'Zone button 4' – 'Zone button 2' – 'Zone button 2' – 'Zone button 1' – 'Zone button 3'.


Alternatively, you can initiate the code entry by shortly pressing the 'TEST/CODE' button 

. The 'Daytime operation' LED starts flashing and you have 10 seconds to start entering the installer code.

- Complete the installer code entry by pressing the 'TEST/CODE' button. The entry was successful when the green 'Authorization' LED is flashing and the 'Daytime operation' LED goes out.


When entering authorization level 3, the monitoring features of the fire detection control panel are out of order. Any alarms that might be present, the alarming device(s) as well as activated open-collector outputs will also be reset as a consequence.
If after exiting authorization level 3 the alarm criterion is still present (e.g., because a manual call point has not been reset yet), a new alarm will be initiated.

If the installer code is entered incorrectly five times consecutively, entry of the installer code will be prevented for 10 minutes.


You cannot directly enter authorization level 3 from authorization level 2. You must first switch back to authorization level 1 by pressing the 'TEST/CODE' button for at least 3 seconds. Only then can you enter the installer code as described above.

To return to authorization level 1 after parameterization has been completed, switch to the main menu by using the 'esc' button 

and exit the main menu with the 'esc' button. The control panel will sound a short warning signal in order to remind you that authorization level 3 will be exited when the 'esc' button is pressed the next time. Confirm the exit by pressing the 'esc' button once again. The green 'Authorization' LED in the display field of the control panel goes out. Each time authorization level 3 is exited, the control panel will automatically restart.

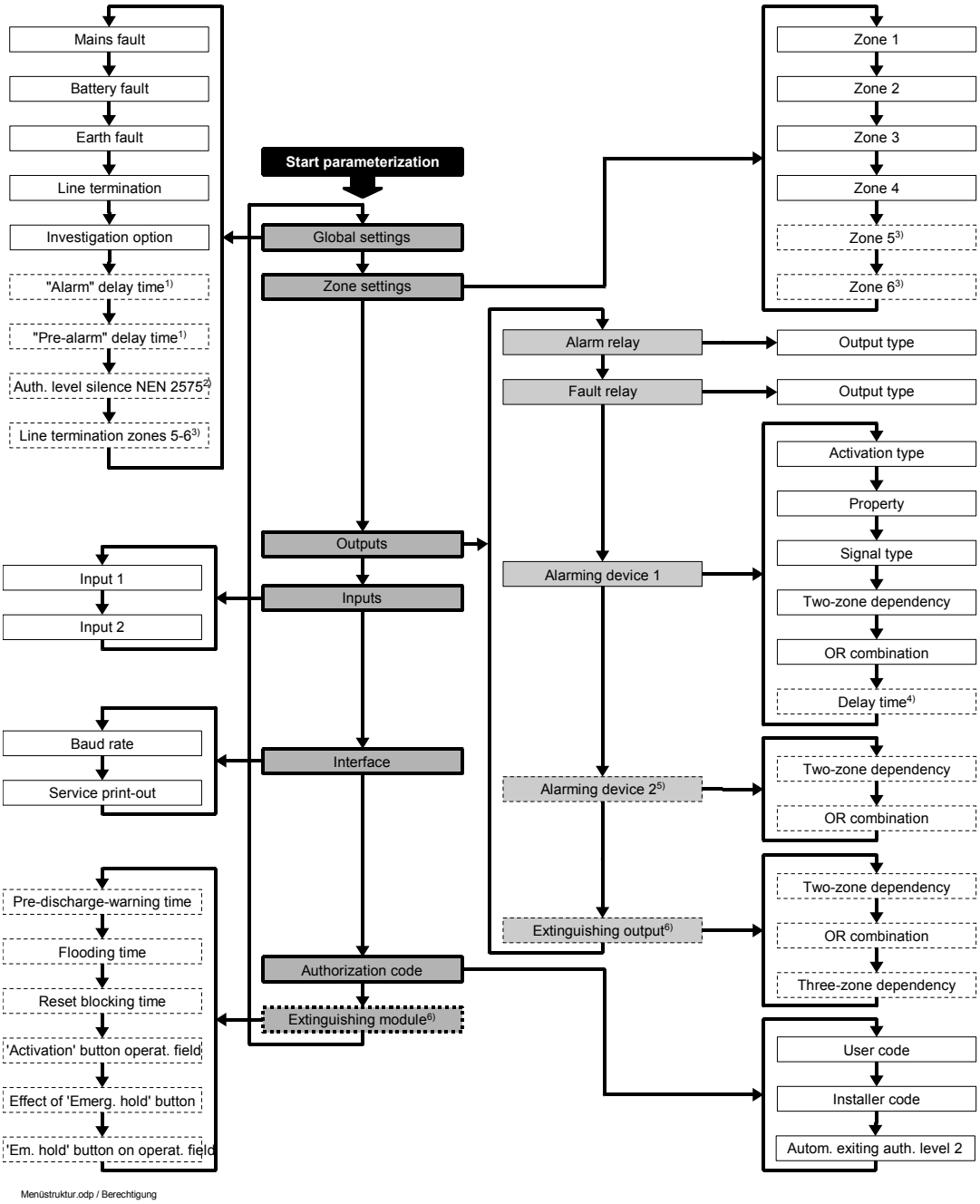

If the control panel sounds a warning signal in the form of two brief buzzer sounds, you have not changed the factory setting of the installer code yet and therefore cannot exit authorization level 3. Change the installer code as described starting from page 64 in Chapter 6.7: "Changing the authorization code [Authorizat. code]".

Authorization level 3 is time-monitored: If no operation has occurred for 10 minutes, the control panel automatically returns to authorization level 1. All changes in the parameters, which have been made but have not been confirmed with the '↵' button up to that point in time, will be lost at that moment. Changes that have already been confirmed with the '↵' button will be effective after the following restart of the control panel. An acoustic signal will sound one minute prior to automatically exiting authorization level 3 as a warning of the impending loss of changes not yet confirmed.


Please note that the control panel will resume operation with a possibly incomplete parameterization if authorization level 3 is exited by timeout!

5.3 Parameterization menu of fire detection control panel Series BC06

All menu items for the parameterization of the fire detection control panel are available in authorization level 3. The menu items for the parameterization are clearly illustrated in Fig. 39.



1) This submenu item is only available if the investigation option initiated by 'Silence buzzer' button is activated.

2) This submenu item is only available if the parameters of the alarming device 1 are set to activation type "alarming device as evacuation circuit / NEN 2575" in main menu item [Outputs].

3) This submenu item is only available if the Detector Zone Extension ZEB2-1 is installed in the fire detection control panel.

4) This submenu item is only available if the parameters of the alarming device 1 are set to activation type "automatic fire detector zones activate with delay in daytime operation" or "all fire detector zones activate with delay in daytime operation".

5) Alarming device 2 can be parameterized only in the fire detection control panels BC06-1A and BC06-2A.

6) This menu item is only available if the Extinguishing Board EXB1-1 is installed in the fire detection control panel.

Fig. 39: Overview of the parameterization menu of fire detection control panel Series BC06
The main menu is displayed in dark gray, submenu items are white. Optional menu items are marked with a dashed border.

An additional menu [Output selection] is available for menu item [Outputs]. This menu is displayed in light gray.
The menu items will scroll in the order indicated by pressing the '↓' button and will scroll in the reverse order by pressing the '↑' button. By means of the '↵' button you will enter the submenu that is displayed (always the topmost submenu item in the graphic will be proposed).
With the 'esc' button, you exit a submenu and return to the superordinate main menu or use it to terminate parameterization and exit authorization level 3 after confirmation by pressing the 'esc' button once again.

5.4 Menu control

In authorization level 3, the LEDs in the operating field of the control panel are used to display all the necessary information for the parameterization. The LEDs beneath the right text field (status LEDs) are used to display the main menu items, and the LEDs beneath the left text field (zone LEDs) are used to display the submenu items (red LEDs) and the defined values (yellow LEDs).

To facilitate orientation during parameterization, a labeling strip containing the parameterization main menu is included in delivery of the fire detection control panel. You can insert this labeling strip into the right text field during parameterization.

The 'Authorization' LED indicates the current authorization level: It is flashing in authorization level 3 and is illuminated in authorization level 2. In authorization level 1 the 'Authorization' LED is dark.

Zone buttons 1 through 4 0/1 are used to enter numerical values.

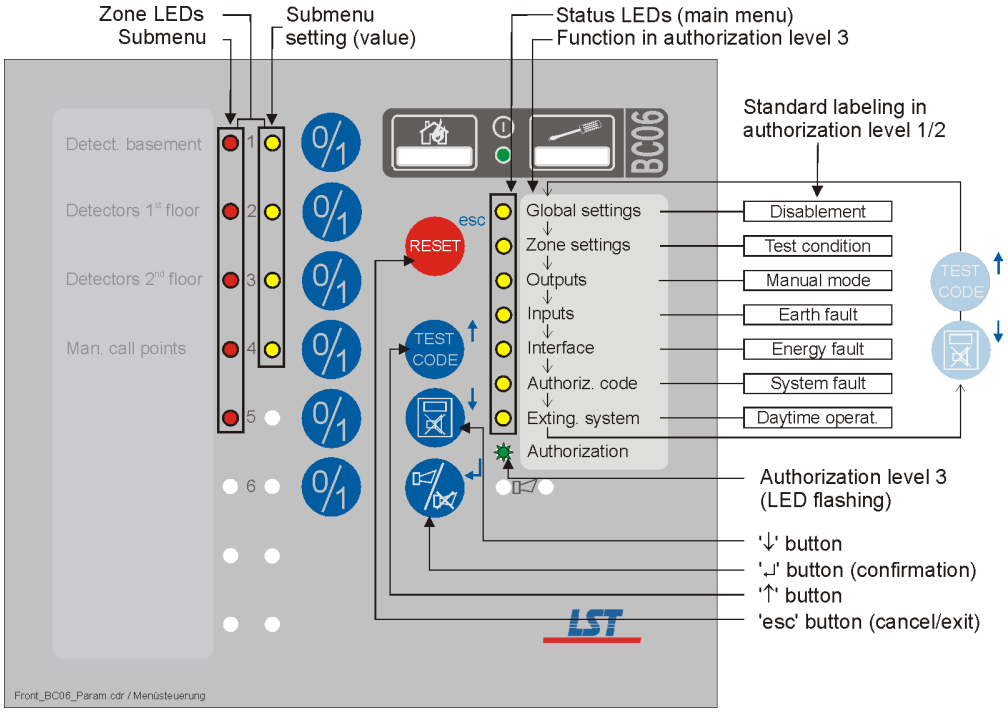


Fig. 40: Menu control in authorization level 3
The menu items will scroll in the order indicated by pressing the '↓' button and will scroll in the reverse order by pressing the '↑' button.
The '↵' button confirms the selected menu item and selects the subordinate submenu.
With the 'esc' button, you exit a submenu and return to the superordinate main menu or use it to terminate authorization level 3 after confirmation by pressing the 'esc' button once again.
The status LEDs indicate the position in the main menu and the red (left) zone LEDs indicate the position in the corresponding submenu.
Defined values are displayed by means of the yellow (right) zone LEDs.

5.4.1 Selecting a menu item and entering values

After you have entered your installer code (see from page 45 onwards in Chapter 5.2: "Entering and exiting authorization level 3"), main menu item [Global settings] is indicated by the corresponding status LED which is flashing. By using the arrow buttons, you can scroll through the individual main menu items and the current menu items will always be indicated by flashing of the corresponding status LED.

When you confirm the desired main menu item with the '↵' button, the corresponding status LED changes to illuminated and the red (left) zone LED of the first submenu items starts flashing. You can now scroll through the submenu items with the arrow buttons. The defined values of the respective submenu are indicated by the yellow (right) zone LED.

If you press the '↵' button again, you will change into the submenu and can alter the defined value by means of the arrow buttons.

A flashing LED ☼ indicates a possible but not yet selected value or menu item. An illuminated LED ● indicates a confirmed value or menu item.

After you have completed the parameterization process, you must absolutely write down the settings in a parameterization record. For this purpose you can use the tables starting on page 80 in Chapter 10.6: "Settings", for example. Only in this way will you have the multiple parameters of the fire detection control panel clearly and permanently archived for future changes as well as maintenance and servicing work.

You can repeat the parameterization process as often as you like since the memory chips being used are practically unlimited in their amount of storage.

5.4.2 Example of a parameterization process

For a detailed description of the parameters see from page 51 onwards in Chapter 6: "Parameter settings". Each main menu item is devoted a chapter of its own.

The state of the LEDs is depicted in the parameterization examples as follows:
○ ... not illuminated,
● ... illuminated,
☼ ... flashing,
◌ ... not relevant.

The following Table 4 shows a typical parameterization process of fire detection control panel Series BC06. For reasons of clarity, the LEDs are depicted in the fields only if the state will change due to the keystroke described before. Menu items are set off by brackets within the description text, e.g., [Global settings].

Submenu LEDs	Value LEDs	Button	Main menu LEDs	Explanation
○ 1 ◌ ○ 2 ◌ ○ 3 ◌ ○ 4 ◌ ○	◌ 1 ○ ◌ 2 ○ ◌ 3 ○ ◌ 4 ○ ◌		☼ Global settings ○ Zone settings ○ Outputs ○ Inputs ○ Interface ○ Authorizat. code ○ Exting. module	**Initial situation** after entering authorization level 3 (parameterization). No submenu selected. No value displayed. Main menu item [Global settings] can be confirmed by pressing the '↵' button.
				Scroll through the menu by means of the '↑' and '↓' buttons to select the desired main menu item. Pressing the '↓' button once, for example, will select the next main menu item [Zone settings].

Submenu LEDs	Value LEDs	Button	Main menu LEDs	Explanation
			○ Global settings ☼ Zone settings ○ Outputs ○ Inputs ○ Interface ○ Authorizat. code ○ Exting. module	Main menu item [Zone settings] can be confirmed, the corresponding LED is flashing.
				The selected main menu item (e.g., [Zone settings]) is entered by pressing the '↵' button.
☼ 1 ◌ ○ 2 ◌ ○ 3 ◌ ○ 4 ◌ ○	◌ 1 ● ◌ 2 ○ ◌ 3 ○ ◌ 4 ○ ◌		○ Global settings ● Zone settings ○ Outputs ○ Inputs ○ Interface ○ Authorizat. code ○ Exting. module	The status LED changes from flashing to illuminated and at the same time, the first possible submenu item is indicated by a flashing LED. Together with the indicated sub menu item, also its currently defined value is displayed by means of illuminated yellow (right) zone LED(s).
				Scroll through the menu by means of the '↑' and '↓' buttons to select the desired submenu item. Pressing the '↓' button once, for example, will select the next submenu item.
○ 1 ◌ ☼ 2 ◌ ○ 3 ◌ ○ 4 ◌ ○	◌ 1 ○ ◌ 2 ○ ◌ 3 ● ◌ 4 ○ ◌			
				The selected submenu item is entered by pressing the '↵' button.
○ 1 ◌ ● 2 ◌ ○ 3 ◌ ○ 4 ◌ ○	◌ 1 ○ ◌ 2 ○ ◌ 3 ● ◌ 4 ○ ◌			The red (left) zone LED changes from flashing to illuminated. The currently defined value still is displayed by the illuminated yellow (right) zone LED.
				Scroll through the menu by means of the '↑' and '↓' buttons to select the desired value.
	◌ 1 ○ ◌ 2 ○ ◌ 3 ○ ◌ 4 ☼ ◌			Selected but not yet confirmed values are displayed by flashing LEDs. You can scroll through all values that are possible in this submenu by means of the '↑' and '↓'buttons.
				Exiting by means of the 'esc' button leaves the original value unchanged. Confirmation by means of the '↵' button accepts the selected new or unchanged value.
○ 1 ◌ ☼ 2 ◌ ○ 3 ◌ ○ 4 ◌ ○	◌ 1 ○ ◌ 2 ○ ◌ 3 ● ◌ 4 ○ ◌			After exiting, the submenu item that was illuminated so far is displayed by flashing LEDs again. The last confirmed value is displayed by illuminated LEDs.

Table 4: Parameterization example for fire detection control panel Series BC06

5.5 Comments on parameterization

All possible parameters of the fire detection control panel Series BC06 are listed in the following Chapter 6: "Parameter settings" starting on page 51.

Please note that the control panel is automatically disabled in authorization level 3! Events that occur while the control panel is in authorization level 3 will therefore neither be received nor processed or displayed, and operation of the control panel is also not possible.

Inform the user of the fire detection system about this circumstance and do not leave the control panel in authorization level 3 longer than is absolutely needed for parameterization! Return to authorization level 1 immediately after completing the parameterization, so that the fire detection control panel can resume the monitoring mode again.

It is not mandatory that you always go through all of the parameter steps. You can also change only parts of an existing parameterization (e.g., the factory settings). However, take special care when making changes to a parameterization that incorrect, nonsensical parameter situations do not arise (e.g., if an alarming device is parameterized; however, the activating event can no longer occur because the corresponding parameterization has been removed).

You can exit the parameterization process by repeatedly pressing the 'esc' button (see from page 45 onwards in Chapter 5.2: "Entering and exiting authorization level 3").

You access the main menu by pressing the 'esc' button one or several times (depending on your current menu level). If the 'esc' button is pressed when you are in the main menu, the buzzer sounds a short warning signal so as to alert you that authorization level 3 will be exited next time the 'esc' button is pressed, and that the defined settings will become effective for the fire detection control panel.

6 Parameter settings

Below, the settings and operations of the main menu items as well as the corresponding submenu items together with their values and options are described that are needed for the parameterization of fire detection control panel Series BC06.

The menu structure as well as the operation of fire detection control panel Series BC06 in authorization level 3 is described starting on page 44 in Chapter 5: "Operating the control panel in authorization level 3".
After entering the installer code, you automatically arrive at the main menu item [Global settings].

The following main menu items are included in the control panel:

- [Global settings] – Global settings for the control panel.
  Here you set the evaluation of current supply faults as well as the line termination of the detector zones and the special functions of the alarming device(s).
- [Zone settings] – Parameterization of the detector zones.
  Here you set the types of detector zones.
- [Outputs] – Parameterization of the outputs.
  Here you set the functions of the outputs of the Central Processing Board ZTB06-1 or ZTB06-3, respectively.
  Furthermore, you define their properties, the event that will activate these outputs, and the logical combinations as well as the logical combinations for the optional Extinguishing Board EXB1-1.
- [Inputs] – Parameterization of the inputs.
  Here you set the functions of the two inputs of the Central Processing Board ZTB06-1 or ZTB06-3, respectively.
- [Interface] – Parameterization of the serial interface
  Here you set the transfer rate for the serial interface.
  Furthermore, the service print-out can be started from within this menu.
- [Code] – Parameterization of the access control.
  Here you change the user code and the installer code as well as the period of time until authorization level 2 is automatically exited.
- [Extinguishing module] – Parameterization of the Extinguishing Board EXB1-1.
  Here you set the properties and delay times for the extinguishing output. Furthermore, you can define the behavior of the 'Activation' button and the 'Emergency hold' button. This main menu item is skipped if no Extinguishing Board EXB1-1 is installed in the fire detection control panel.

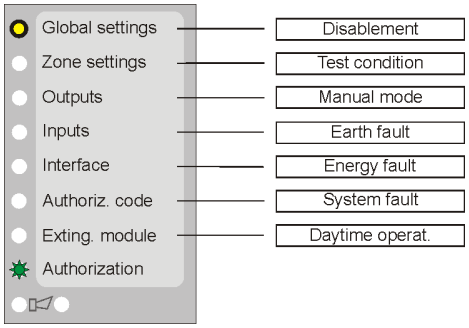
You terminate the parameterization process by pressing the 'esc' button twice or several times (depending on the menu level you are currently in). This initiates a restart of the control panel and the newly entered and confirmed parameters will be effective after this occurs.

The submenu items belonging to the respective main menu items will be described in detail in the following sections in the form of a list.

The following applies for all submenu lists:
The lists are to be read from top to bottom. Upon entering a submenu, the menu item that is in the first place and the currently defined value will be shown.
During the initial parameterization, the preset standard values (factory settings) for the selection lists will be displayed. If individual values have already been entered, these will be displayed.
Selection lists that are not self-explanatory (as, for example, numeric entries) will likewise be displayed in the form of menu items.

Please observe the comments and footnotes that are given in the following lists! For purposes of clarity, special warnings regarding dangerous situations will not be indicated with symbols in these lists!

6.1 Parameterization of the global settings for the control panel – [Global settings]



In this menu item you affect the evaluation of a mains fault, battery fault or earth fault and set the line termination as well as the special functions of the alarming device(s).

This menu item is indicated when the green status LED 'Authorization' is flashing (authorization level 3) and the [Global settings] LED (status LED 'Disablement') is illuminated. You can skip this menu item if the fire detection control panel Series BC06 is being used in a standard application. You only need to change the global parameters in this menu item if you have special requirements with regard to the control panel functions.

Submenu item		Submenu settings (values)
Mains fault[1)]	● 1 ○ ◌ 2 ● ◌ 3 ◌ ◌ 4 ◌	1 = ignore 2 = **evaluate** (default value) You can select whether a mains fault will be displayed on the control panel or ignored[2)]. The standard setting should only be changed in extraordinary cases and following consultation with the appropriate authorities. Observe country-specific regulations!
Battery fault[1)]	◌ 1 ○ ● 2 ● ◌ 3 ◌ ◌ 4 ◌	1 = ignore 2 = **evaluate** (default value) You can select whether a failure of the stand-by battery will be displayed on the control panel or ignored[3)]. The standard setting should only be changed in extraordinary cases and following consultation with the appropriate authorities. Observe country-specific regulations!
Earth fault	◌ 1 ○ ◌ 2 ● ● 3 ◌ ◌ 4 ◌	1 = ignore 2 = **evaluate** (default value) You can select whether an earth fault of the fire detection installation will be displayed on the control panel or ignored[4)]. If you connect a part of the system with the local equipotential busbar in accordance with regulations (e.g., in an ex-area with intrinsically safe electric circuit), you must take the earth fault supervision out of service.
Line termination for zone ports 1 ... 4	◌ 1 ● ◌ 2 ○ ◌ 3 ◌ ● 4 ◌	1 = **5.6kΩ end-of-line resistor** (default value) 2 = 47µF end-of-line capacitor Here you select whether line termination is to be processed for end-of-line resistor or end-of-line capacitor. This determination affects all four detector zones of the Central Processing Board ZTB06-1 or ZTB06-3, respectively[5)].
Investigation option initiated by 'Silence buzzer' button	● 1 ● ◌ 2 ○ ◌ 3 ◌ ● 4 ◌	1 = **disabled** (default value) 2 = enabled When the investigation option is enabled, pressing the 'Silence buzzer' button during the "alarm" delay time or the "pre-alarm" delay time in fire alarm condition will start an exploration time of the alarming device(s). This exploration time is not limited by the fire detection control panel itself and can only be terminated by the following events: – An alarm from an additional zone for manual call points activates the alarming device(s) and thus starts the evacuation alarm. – An alarm from an additional zone for automatic fire detectors initiates a restart of the "alarm" delay time and, after its expiration, activates the alarming device(s) and thus starts the evacuation alarm. In this case, no investigation is possible while the "alarm" delay time is running, i.e., pressing the 'Silence buzzer' button once again has no effect on the "alarm" delay time. – Termination of the fire alarm condition. The standard setting should only be changed in extraordinary cases and following consultation with the appropriate authorities. Observe country-specific regulations!

Submenu item		Submenu settings (values)
"Alarm" delay time for the investigation option[6]	◌ 1 ● ● 2 ○ ◌ 3 ○ ● 4 ○ ◌	The "alarm" delay time is displayed on the right zone LEDs according to the following overview, the default value is **1 minute**. 1 2 3 4 5 6 7 8 9 10 min. 1 ● ○ ○ ○ ● ○ ○ ● ○ ● 2 ○ ● ○ ○ ○ ● ○ ○ ● ● 3 ○ ○ ● ○ ○ ○ ● ● ● ● 4 ○ ○ ○ ● ● ● ● ● ● ● If an alarm from at least one zone for manual call points or from at least two zones for automatic fire detectors is received, the alarm condition is obtained from the investigation option's point of view. Observe country-specific regulations!
"Pre-alarm" delay time for the investigation option[6]	◌ 1 ● ◌ 2 ○ ● 3 ○ ● 4 ○ ◌	The "pre-alarm" delay time is displayed on the right zone LEDs according to the following overview, the default value is **1 minute**. 1 2 3 4 5 6 7 8 9 10 min. 1 ● ○ ○ ○ ● ○ ○ ● ○ ● 2 ○ ● ○ ○ ○ ● ○ ○ ● ● 3 ○ ○ ● ○ ○ ○ ● ● ● ● 4 ○ ○ ○ ● ● ● ● ● ● ● If an alarm from at least one zone for for automatic fire detectors is received, the pre-alarm condition is obtained from the investigation option's point of view. Observe country-specific regulations!
Required authorization level for silencing the evacuation circuit / NEN 2575[7]	● 1 ○ ◌ 2 ● ● 3 ○ ● 4 ○ ◌	1 = authorization level 1 2 = **authorization level 2** (default value) Observe country-specific regulations!
Line termination for zone ports 5 and 6[8]	◌ 1 ● ● 2 ○ ● 3 ○ ● 4 ○ ◌	1 = **5.6kΩ end-of-line resistor** (default value) 2 = 47µF end-of-line capacitor Here you select whether line termination is to be processed for end-of-line resistor or end-of-line capacitor. This determination affects both detector zones of the Detector Zone Extension ZEB2-1[5].

1) A mains fault or battery fault is identified and evaluated 10 seconds after a restart of the control panel; during operation, a check is conducted at 5 minute intervals. In the event of a fault, the intervals will be reduced to approximately 10 seconds, and the end of a mains fault or battery fault will be identified within approximately 10 seconds of its completion.

2) If mains fault evaluation has been suppressed, a mains fault or a fault in the power unit will not be displayed on the control panel or forwarded. If the stand-by battery also fails, a complete failure of the entire fire detection system will immediately occur without any further acoustic or optic warning.

3) If battery failure evaluation has been suppressed, the failure of the stand-by batteries (or their fuse) will not be displayed on the control panel. If the mains or the control panel power unit also fail, a complete failure of the entire fire detection system will immediately occur without any further acoustic or optic warning.

4) An earth fault at a single point in the fire detector installation will generally not result in any impairment of function. An additional earth fault at another point in the installation can, however, lead to the failure of parts of the fire detection system! If earth fault supervision is disabled, this must be taken into consideration during the course of maintenance (see from page 75 onwards in Chapter 9.1: "Maintenance") through expanded controls. Earth fault supervision is not required in the relevant European standards.

5) For further information on the selection of the end-of-line element (end-of-line resistor or end-of-line capacitor) and the consequences resulting therefrom see from page 28 onwards in Chapter 4.3: "Connection of conventional detectors".

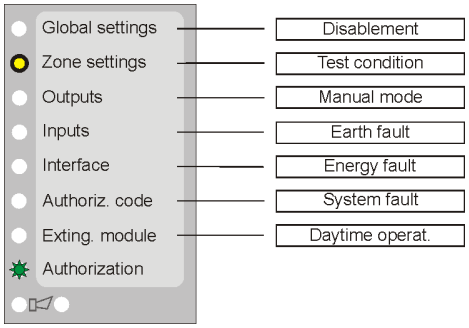
6) This submenu item is only available if the investigation option initiated by 'Silence buzzer' button is activated.

7) This submenu item is only available if the parameters of the alarming device 1 are set to activation type "alarming device as evacuation circuit / NEN 2575" in main menu item [Outputs].

8) This submenu item is only available if the optional Detector Zone Extension ZEB2-1 is installed.

Menu 1: Main menu item [Global settings]

6.2 Parameterization of the conventional detector zones [Zone settings]



The functions of the detector zone ports are determined and their properties are set in this menu item.

This menu item is indicated when the green status LED 'Authorization' is flashing (authorization level 3) and the [Zone settings] LED (status LED 'Test condition') is illuminated.

Submenu item	Submenu settings (values)
The zone number is displayed on the red (left) zone LEDs according to the following overview: 1 2 3 4 5[1] 6[1] ● ○ ○ ○ ● ○ 1 ○ ● ○ ○ ○ ● 2 ○ ○ ● ○ ○ ○ 3 ○ ○ ○ ● ● ● 4	● 1 ● ○ 2 ○ ○ 3 ○ ○ 4 ○ Detector zone not defined The zone port will not be used, earlier parameterizations are deleted.
	○ 1 ○ ○ 2 ● ○ 3 ○ ○ 4 ○ **Detector zone for manual call points** (default value) The applied detectors must provide an alarm resistor which ranges from 470Ω ... 1kΩ.
	○ 1 ○ ○ 2 ○ ○ 3 ● ○ 4 ○ Detector zone for manual call points without alarm resistor You can use both detectors without alarm resistor and detectors with an alarm resistor up to a maximum of 1kΩ on the detector line. A short circuit of the detector zone will also be evaluated as alarm by the control panel
	○ 1 ○ ○ 2 ○ ○ 3 ○ ○ 4 ● Detector zone for automatic fire detectors
	○ 1 ● ○ 2 ○ ○ 3 ○ ○ 4 ● Detector zone for combined application of manual call points and automatic fire detectors If the manual call points are equipped with an MCP Coding Module MCM1-1, within this detector zone the fire detection control panel Series BC06 can distinguish between alarms from automatic fire detectors and from manual call points and can further process the alarm in accordance with the type of alarm. Alarms from a manual call point have always a higher priority.
	○ 1 ○ ○ 2 ● ○ 3 ○ ○ 4 ● Detector zone for automatic fire detectors with temporary alarm verification
	○ 1 ○ ○ 2 ○ ○ 3 ● ○ 4 ● Detector zone for fault detectors, self-holding After the triggering cause has disappeared, the detector zone, and hence the control panel, remains in fault alarm until the alarm is reset.
	○ 1 ● ○ 2 ○ ○ 3 ● ○ 4 ● Detector zone for fault detectors with self-resetting Once the triggering cause disappears, the detector zone, and hence the control panel, automatically returns to normal condition.
	○ 1 ○ ○ 2 ● ○ 3 ● ○ 4 ● Detector zone for displaying mechanical disable devices of the extinguishing agent's network (e.g., manual valves, etc.)[2] How the two position switches for monitoring the valve positions are to be connected is described starting on page 38 in Chapter 4.3.3: "Connection of mechanical disable devices of the extinguishing agent's network".

[1] Zone numbers 5 and 6 are only displayed if the optional Detector Zone Extension ZEB2-1 is installed.

[2] Zone type "Detector zone for displaying mechanical disable devices of the extinguishing agent's network" can only be defined if the optional Extinguishing Board EXB1-1 is installed in the fire detection control panel.

Menu 2: Main menu item [Zone settings]

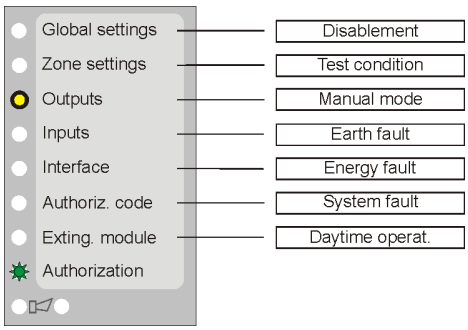
A conventional detector zone always includes all detectors that are connected to the respective zone port.

If you change the parameters of a zone which is already included in a combination, this can have serious consequences on the functions of the output concerned.

If the optional Detector Zone Extension ZEB2-1 is removed from the fire detection control panel, any settings already defined for the two zones 5 and 6 will be deleted again. When the Detector Zone Extension is installed again, the factory settings for the parameters of zones 5 and 6 will be automatically applied.

After you have entered and confirmed the parameters of a detector zone, you can select the next zone and parameterize it in the same manner.

6.3 Parameterization of the outputs [Outputs]



The functions for the two relay outputs on the ZTB06-1 or ZTB06-3, respectively, for the alarming device(s) and for the extinguishing output of the optional extinguishing module are determined and their properties are set set in this menu item.

This menu item is indicated when the green status LED 'Authorization' is flashing (authorization level 3) and the [Outputs] LED (status LED 'Manual mode') is illuminated.

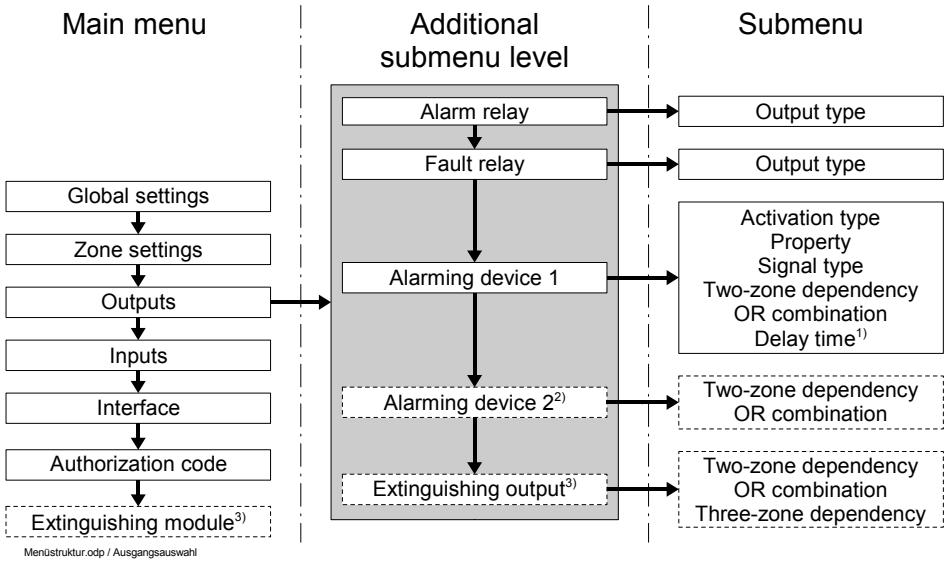
You can determine the following properties for the outputs:

- Output type – which task should the output fulfill, i.e., to which event within the fire detection system will the output react
- Activation type – which alarms will activate the alarming device(s) immediately or delayed
- Alarming device properties – Silencing the alarming device(s) depending on the alarming device as well as activation by subsequent alarms
- Contact type of alarming device(s) – Continuous signal or periodical signal for synchronizing sirens with subsequent tones
- Combinations – which zones can activate the outputs
- Delay times for the alarming device(s)

Depending on the level of expansion of the fire detection control panel or the selected output, menu items that are not applicable are skipped in the menu flow.

The open-collector outputs on the Central Processing Board ZTB06-1 or ZTB06-3, respectively, or the Extinguishing Board EXB1-1 are permanently defined in their functions and are therefore not included in the table below. For a functional description of the open-collector outputs see from page 27 onwards in Chapter 4.2.5: "Connection of relay modules RL58-1 or RL58-2 and similar devices to the open- collector outputs of the Central Processing Board ZTB06-1 or ZTB06-3" and from page 41 onwards in Chapter 4.4.1.1: "Connection of relay modules RL58-1 or RL58-2 and similar devices to the open- collector outputs of the Extinguishing Board EXB1-1 (connector ST2)".

Unlike all other main menu items, main menu item [Outputs] includes an additional submenu level [Output selection]. See from page 46 onwards in Chapter 5.3: "Parameterization menu of fire detection control panel Series BC06" for a detailed description of the menu structure of fire detection control panel Series BC06.



1) This submenu item is only available if the parameters of the alarming device 1 are set to activation type "automatic fire detector zones activate with delay in daytime operation" or "all fire detector zones activate with delay in daytime operation".

2) Alarming device 2 can be parameterized only in the fire detection control panels BC06-1A and BC06-2A.

3) This menu item is only available if the Extinguishing Board EXB1-1 is installed in the fire detection control panel.

Fig. 41: Additional submenu level [Output selection] in main menu item [Outputs]
You select the output in submenu level [Output selection] before you parameterize its properties.

After confirming the main menu item [Outputs] with the '↵' button, the menu control enters the additional submenu level [Output selection]. In this submenu level, you can select the desired output (displayed on the left zone LEDs) with the '↑' and '↓' buttons and confirm your choice with the '↵' button.

Output selection		Connection
Alarm relay	● 1 ◌ ○ 2 ◌ ○ 3 ◌ ○ 4 ◌ ◌	Terminals 7, 8 and 9 on Central Processing Board ZTB06-1 or ZTB06-3, respectively
Fault relay	○ 1 ◌ ● 2 ◌ ○ 3 ◌ ○ 4 ◌ ◌	Terminals 10, 11 and 12 on Central Processing Board ZTB06-1 or ZTB06-3, respectively
Alarming device 1	○ 1 ◌ ○ 2 ◌ ● 3 ◌ ○ 4 ◌ ◌	Terminals 13 and 14 on Central Processing Board ZTB06-1 or ZTB06-3, respectively
Alarming device 2[1)]	○ 1 ◌ ○ 2 ◌ ○ 3 ◌ ● 4 ◌ ◌	Terminals 15 and 16 on the Central Processing Board ZTB06-3
Extinguishing output[2)]	● 1 ◌ ○ 2 ◌ ○ 3 ◌ ● 4 ◌ ◌	Terminals 7 and 8 on Extinguishing Board EXB1-1

1) This output is available only in the fire detection control panels BC06-1A and BC06-2A. In the fire detection control panels BC06-1 and BC06-2, this output cannot be selected; the control panel will sound a short warning signal if the '↵' button is pressed.

[2] This output can only be selected if the optional Extinguishing Board EXB1-1 is installed in the fire detection control panel, otherwise the control panel will sound a short warning signal if the '↵' button is pressed.

Menu 3: Additional submenu item [Output selection] for selecting the outputs

If the red (left) LED of zone 5 ('Released condition extinguishing output' LED if an extinguishing module is installed) is illuminated, this indicates that an output has been selected and that you are now in the submenu for parameterizing the functions and properties of the selected output. Here you can select the desired submenu items (displayed on the left zone LEDs again) with the '↑' and '↓' buttons and confirm your choice with the '↵' button. This way, the menu control jumps to the setting of the values which – similar to all other main menu items – are displayed with the right zone LEDs.

Submenu item	Submenu settings (values)
The submenu items of main menu item [Outputs] are indicated by the illuminated red (left) LED of zone 5 or the 'Released condition extinguishing output' LED, respectively.	
Output type[1]	● 1 ● **Fire alarm condition**[2] (default value for the **alarm relay**) ○ 2 ○ As long as the control panel is in the fire alarm condition, this output is acti- ○ 3 ○ vated and the relay is engaged. ○ 4 ○ ●
	◌ 1 ● **Fault message condition**[2] (default value for the **fault relay**) ◌ 2 ○ As long as the control panel is in the fault message condition, this output is ◌ 3 ○ activated and the relay is released. ◌ 4 ○
	◌ 1 ○ Panel reset ◌ 2 ● If the 'RESET' button (panel reset) is pressed on the fire detection control ◌ 3 ○ panel, the output is activated and the relay is engaged for 8 seconds from the ◌ 4 ○ beginning of the keystroke.
Activation type[3]	● 1 ● **all zones activate the alarming device immediately** (default value) ○ 2 ○ The alarming device is activated without delay and independent from the ○ 3 ○ function of the zone (manual call point or automatic fire detector) combined ○ 4 ○ with it. ●
	◌ 1 ○ automatic fire detector zones activate with delay in daytime operation ◌ 2 ● Upon alarms from zone for automatic detectors, the alarming device is acti- ◌ 3 ○ vated with delay in daytime operation. Upon alarms from a zone for manual ◌ 4 ○ call points, the alarming device is activated immediately.
	◌ 1 ○ all fire detector zones activate with delay in daytime operation ◌ 2 ○ Upon alarms from any zone, the alarming device is activated with delay in ◌ 3 ● daytime operation. ◌ 4 ○
	◌ 1 ○ alarming device with Evacuate function ◌ 2 ○ In authorization level 2 the alarming device can be activated also without ◌ 3 ○ fire alarm condition.[4] ◌ 4 ●
	◌ 1 ● alarming device as evacuation circuit / NEN 2575 ◌ 2 ○ The alarming device can be operated like an evacuation circuit / ◌ 3 ○ NEN 2575.[4][5][6] ◌ 4 ●
Property[3]	○ 1 ● no silencing, no reactivation ● 2 ○ The activated alarming device can only be silenced in authorization level 2 ○ 3 ○ and will not be reactivated by subsequent alarms. ○ 4 ○ ●
	◌ 1 ○ silencing possible, no reactivation ◌ 2 ● The activated alarming device can be silenced in authorization level 1 and 2 ◌ 3 ○ and will not be reactivated by subsequent alarms. ◌ 4 ○
	◌ 1 ○ no silencing, reactivation possible ◌ 2 ○ The activated alarming device can only be silenced in authorization level 2 ◌ 3 ● and will be reactivated by subsequent alarms. ◌ 4 ○

Submenu item		Submenu settings (values)
	◌ 1 ○ ◌ 2 ○ ◌ 3 ○ ◌ 4 ●	**silencing/reactivation possible** (default value) The activated alarming device can be silenced in authorization level 1 and 2 and will be reactivated by subsequent alarms.
Contact type[3)]	○ 1 ● ○ 2 ○ ● 3 ○ ○ 4 ○ ●	**continuous signal** (default value) The output will be switched on for the duration of the activation.
	◌ 1 ○ ◌ 2 ● ◌ 3 ○ ◌ 4 ○	periodical signal The output will be switched on for 5 minutes, switched off for 1 second, etc. The ratio cannot be changed on the fire detection control panel.
"Two-zone dependency" combination[7)]	○ 1 ○ ○ 2 ○ ○ 3 ○ ● 4 ○ ●	**no zone** (default value) Enter the zones for this combination by means of zone buttons 1 ... 4 (6)[8)].
"OR" combination[7)]	● 1 ○ ○ 2 ○ ○ 3 ○ ● 4 ○ ●	**no zone** (default value) Enter the zones for this combination by means of zone buttons 1 ... 4 (6)[8)].
"Three-zone dependency" combination[9)]	○ 1 ○ ● 2 ○ ○ 3 ○ ● 4 ○ ●	**no zone** (default value) Enter the zones for this combination by means of zone buttons 1 ... 4[8)].
Delay time[3)10)]	○ 1 ● ○ 2 ○ ● 3 ○ ● 4 ○ ●	**30 seconds** (default value) The delay time is displayed on the right zone LEDs according to the following overview. 30s 45s 60s 90s 2 min. 3 min. 4 min. 5 min. 8 min. 10 min. 1 ● ○ ○ ○ ● ○ ○ ● ○ ● 2 ○ ● ○ ○ ○ ● ○ ○ ● ● 3 ○ ○ ● ○ ○ ○ ● ● ● ● 4 ○ ○ ○ ● ● ● ● ● ● ●

1) This submenu items is available only for the alarm relay and the fault relay.

2) The first submenu items (which is also the default value) depends on the previously selected output: It is "Fire alarm condition" for the alarm relay and "Fault message condition" for the fault relay.

3) This submenu item is available only for the alarming device 1. In fire detection control panels with two alarming devices, the settings are valid for both of the alarming devices together.

4) Please note the differences concerning the operation of "Evacuate function" and "evacuation circuit" as well as the options that result from this setting for the user of the system. See Part A of the Series BC06 User Manual for a detailed description of the functions. In addition, country-specific regulations concerning alarming, evacuation, evacuation alarm, etc. must be observed.

5) In order to facilitate the operation of the alarming device(s) as an evacuation circuit / NEN 2575, the optional front foil ("Front Foil Evacuation Circuit", FFEV06-1, LST part No. 210212) must be affixed on the display and operating field of the control panel as illustrated in Fig. 11 on page 19.

6) If an Extinguishing Board EXB1-1 is installed in the fire detection control panel, the alarming device cannot be parameterized as evacuation circuit / NEN 2575.

7) This submenu item is available only for the alarming device(s) or the extinguishing output.

8) How to add zones to a combination as well as the functions of the combinations and the necessary details is described starting on page 61 in Chapter 6.4.3: "Parameterization of the combinations".

9) This submenu item is available only for the extinguishing output.

10) This submenu item is available only for the alarming device 1. Either "automatic fire detector zones activate with delay in daytime operation" or "all fire detector zones activate with delay in daytime operation" must be selected as activation type.

Menu 4: Main menu item [Outputs]

The following applies concerning the state of the outputs:

- Relay outputs
  - When output type "Fire alarm condition" is selected, the relay is released in normal condition (terminals 7 and 8 are linked with each other) and engaged in the alarm condition (terminals 8 and 9 are linked with each other).
  - When output type "Fault message condition" is selected, the relay is engaged in normal condition (terminals 11 and 12 are linked with each other) and released in the fault condition (terminals 10 and 11 are linked with each other).
- An alarming device is considered as "not activated" if the output transistor is open (i.e., only the negative surveillance voltage (approx. -1,2V) is measured at the output terminals) and as "activated" if 24V applies at both output terminals (i.e., the output transistor is through-switched).

If the optional Extinguishing Board EXB1-1 is removed from the fire detection control panel, any settings already defined for the extinguishing output will be deleted again. In this case, you will have to set the parameters for the system anew when the Extinguishing Board is installed again, since the factory settings for the parameters of the extinguishing module will be automatically applied upon re-installation.

After you have completely defined the first output, exit the submenu item by pressing the 'esc' button, and select the next output in the additional submenu level [Output selection] and parameterize it in the same manner. After you have completely defined the last output, exit the submenu by pressing the 'esc' button like in any other submenu.

6.4 Description of the logic combinations

The alarming device(s) as well as the extinguishing output are always activated by alarms from detector zones for fire detectors. By using the combinations, you determine which logic dependencies of the alarms from the detectors zones should actuate these devices.

Combinations are permissible only with detector zones that have been parameterized for manual call points, automatic fire detectors or automatic fire detectors with alarm verification.

You can choose from among the following options for building combinations:

- "Two-zone dependency" combination of fire detector zones entered individually for an alarming device or the extinguishing output.
  The combination requirement is met when at least two of the involved detector zones are in alarm condition. A combination of this type is used when high reliability against erroneous activation (e.g., of an extinguishing system) is required.
- "OR" combination of fire detector zones entered individually for an alarming device or the extinguishing output.
  The combination requirement is met when at least one of the involved detector zones is in alarm condition.
- "Three-zone dependency" combination of fire detector zones entered individually for extinguishing output.
  The combination requirement is met when at least three of the involved detector zones are in alarm condition. A combination of this type is used when especially high reliability against erroneous activation of an extinguishing system is required.

Observe all relevant official restrictions as well as country-specific regulations for the use of a "two-zone dependency" combination. The "three-zone dependency" combination can also be banned completely.

The combinations themselves are also linked by an "OR" combination to the actuation of an alarming device or the extinguishing output.

The "two zone dependency" and the "three-zone dependency" – as illustrated in the following paragraphs – is processed differently by the control panel for the alarming device(s) and the extinguishing output.

The following options are available for each combination:
- No fire detector zones are assigned (i.e., combination is deleted).
- An "OR" combination can be assigned at least one and a maximum of all fire detector zones.
- A "two-zone dependency" must at least consist of two fire detector zones but can also include all fire detector zones.
- A "three-zone dependency" must at least consist of three fire detector zones but can also include all fire detector zones.

6.4.1 Combinations for the alarming device

If you have not entered any combinations, the alarming device will be activated upon an alarm from any fire detector zone.

You can limit this general activation by entering combinations in the following manner:

- If an "OR" combination but no "two-zone dependency" combination has been entered, activation results only through the alarms that are included in the "OR" combination. Alarms that fall outside of this combination will not lead to activation.

Example for clarification:
The control panel is equipped with six fire detector zones (1 ... 6).
An "OR" combination {1 or 2 or 3} has been entered for the alarming device.
The alarming device will only be activated if at least one detector zone out of {1, 2, 3} reports an alarm. Alarms from detector zones 4 ... 6 will have no influence on the alarming device.

- If a "two-zone dependency" combination, but no "OR" combination has been entered, activation occurs both when the combination requirement for the "two-zone dependency" is fulfilled as well as when an alarm occurs in detectors zones that fall outside of the "two-zone dependency".

Example for clarification:
The control panel is equipped with six fire detector zones (1 ... 6).
A "two-zone dependency" {1, 4, 5} has been entered for the alarming device.
The alarming device will be activated if
– at least two detector zones from {1, 4, 5} report an alarm, or
– at least one detector zone from zones {2, 3, 6} reports an alarm.

- If "two-zone dependency" and "OR" combination have been entered together, activation will occur both when one of these "two-zone dependency" is fulfilled, as well as when the alarms that are included in the "OR" combination occur. Alarms from detector zones that fall outside of these combinations will not, in this instance, lead to activation.

Example for clarification:
The control panel is equipped with six fire detector zones (1 ... 6).
A "two-zone dependency" {1, 2, 3} and an "OR" combination {4 or 5} have been entered for the alarming device.
The alarming device will be activated if
– at least two detector zones from {1, 2, 3} report an alarm, or
– at least one detector zone from zones {4, 5} reports an alarm.
Alarms from detector zone 6 will have no influence on the alarming device.

If a zone that is combined in a two-zone dependency experiences a fault, the alarming device will nevertheless be activated upon a fire alarm if the other zone that is required for fulfilling the dependency is in alarm condition.
Zones that have been disabled do not meet the combination requirement.

6.4.2 Combinations for the extinguishing output

If no Extinguishing Board EXB1-1 is installed in your fire detection control panel, you may disregard the information in this chapter.

The extinguishing output is only activated if the requirements of the defined combinations are fulfilled.

If no combinations are entered for the extinguishing output, it can never be activated by events from detector zones!

The following combinations are possible:

- If only an "OR" combination but neither a "two-zone dependency" nor a "three-zone dependency" combination has been entered, activation results only through alarms that are included in the "OR" combination. Alarms that fall outside of this combination will not lead to activation of the output.

Example for clarification:
The control panel is equipped with four fire detector zones (1 ... 4).
Only the "OR" combination {1} has been entered for the extinguishing output.
The extinguishing output will only be activated if detector zone 1 reports an alarm.
Alarms from detector zones 2 ... 4 will have no influence on the extinguishing output.

- If only a "two-zone dependency" combination but neither an "OR" nor a "three-zone dependency" combination has been entered, activation results through fulfilling the combination requirement. Alarms from detector zones that fall outside of the "two-zone dependency" will not lead to activation of the extinguishing output.

Example for clarification:
The control panel is equipped with four fire detector zones (1 ... 4).
A "two zone-dependency" {1, 2, 4} has been entered for the extinguishing output.
The extinguishing output will be activated if at least two detector zones out of {1, 2, 4} are in alarm condition. If only one of the three detector zones is in alarm condition, the extinguishing output will not be activated. Alarms from detector zone 3 will also not lead to the activation.

- If "two-zone dependency", "three-zone dependency" and "OR" combination have been entered together, activation will occur when one of these combinations is fulfilled. Alarms from detector zones that fall outside of these combinations will not, in this instance, lead to activation of the extinguishing output.

Example 1 for clarification:
The control panel is equipped with four fire detector zones (1 ... 4).
A "two-zone dependency" {1, 3} and an "OR" combination {4} have been entered for the extinguishing output.
The extinguishing output will be activated if
– both of detector zones {1, 3} report an alarm, or
– detector zone {4} reports an alarm.
Alarms from detector zone 2 do not lead to activation of the extinguishing output.

Example 2 for clarification:
The control panel is equipped with four fire detector zones (1 ... 4).
A "three-zone dependency" {1, 2, 3} and an "OR" combination {4} have been entered for the extinguishing output.
The extinguishing output will be activated if
– all of detector zones {1, 2, 3} report an alarm, or
– detector zone {4} reports an alarm.

If a zone that is combined in a two-zone or three-zone dependency experiences a fault, the extinguishing module will nevertheless be activated upon a fire alarm if the other zone(s) that is (are) required for fulfilling the dependency is (are) in alarm condition.
Zones that have been disabled do not meet the combination requirement.

6.4.3 Parameterization of the combinations

This section describes the parameterization of the combinations. All operational steps can easily be carried out be means of the zone buttons. If you press a zone button, the corresponding zone will
– either be added to the combination (provided the zone has not been assigned to the combination before)
– or be removed from the combination (provided that the zone has already been assigned to the combination).

Operation is alike for all types of combinations ("two-zone dependency", "three-zone dependency" and "OR"), therefore the example below is valid for all types of combinations.

You can only exit the submenu ["Two zone dependency" combination] if either no zone has been assigned at all (i.e., no combination exists) or at least two fire detector zones have been assigned.
You can only exit the submenu ["Three zone dependency" combination] if either no zone has been

assigned at all (i.e., no combination exists) or at least three fire detector zones have been assigned. If too little zones have been assigned to the combination, the buzzer will sound a short signal when the '↵' button is pressed and it is not possible to exit. In this case, you can only exit the submenu item with the 'esc' button which will restore the last saved value.

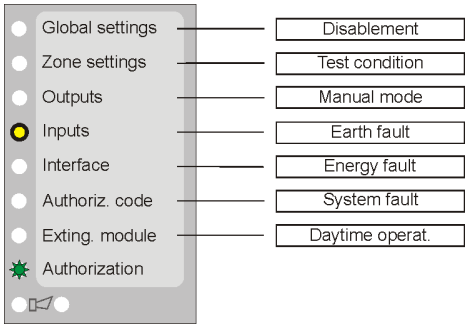
	Button	Explanation
1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○		**no combination** (default value) The combination is empty (i.e., the combination is not defined) since no zone is assigned.
	1 0/1	You can assign fire detector zones (zone 1 in the example) to the combination by pressing the zone buttons.
1 ● 2 ○ 3 ○ 4 ○ 5 ○ 6 ○		A zone that has been successfully assigned (only fire detector zones can be assigned!) is indicated by the right (yellow) LED of the respective zone being illuminated. Example: Zone 1 is included in the combination set.
	4 0/1	Zone 4 is added to the combination set by pressing zone button 4.
1 ● 2 ○ 3 ○ 4 ● 5 ○ 6 ○		Example: Zones 1 and 4 are included in the combination set.
	5 0/1	Zone 5 is added to the combination set by pressing zone button 5.
1 ● 2 ○ 3 ○ 4 ● 5 ● 6 ○		Example: Zones 1, 4 and 5 are included in the combination set.
	1 0/1	Zone 1 is removed from the combination set again by pressing zone button 1 once again.
1 ○ 2 ○ 3 ○ 4 ● 5 ● 6 ○		Example: Zones 4 and 5 are included in the combination set.
	↵	As with any other submenu item, you must confirm the entered values with the '↵' button (example) or discard the input with the 'esc' button.

Table 5: Example of a parameterization of combinations for fire detection control panel Series BC06

Zones 5 and 6 are not available if an Extinguishing Board EXB1-1 is installed in the fire detection control panel.

If inadvertently a zone button of a fault detection zone or a disable device has been pressed, the buzzer will sound a short warning signal and the yellow zone LED remains dark.

6.5 Parameterization of the inputs [Inputs]



The functions of each of the two inputs located on the ZTB06-1 or on the ZTB06-3, respectively, are determined and their properties are set in this menu item.

This menu item is indicated when the green status LED 'Authorization' is flashing (authorization level 3) and the [Inputs] LED (status LED 'Earth fault') is illuminated.

Submenu item		Submenu settings (values)
The number of the selected input is indicated with the red (left) zone LEDs: 1 = Input 1[1] (example) 2 = Input 2[1]	● 1 ○ ○ 2 ○ ◌ 3 ● ◌ 4 ○	**daytime operation** (default value for **Input 1**) The control panel will be changed between daytime and nighttime operation via the input[2].
	◌ 1 ● ◌ 2 ○ ◌ 3 ○ ◌ 4 ○	**not defined** (default value for **Input 2**) The input is not being operated by the control panel.
	◌ 1 ○ ◌ 2 ● ◌ 3 ○ ◌ 4 ○	Class Change If this input is active, the alarming device connected to the control panel is being activated for the duration of the activation of the input. The function can be used for identification signals, evacuations, etc.
	◌ 1 ○ ◌ 2 ○ ◌ 3 ○ ◌ 4 ●	Authorization key If a contact (e.g., a key-operated switch) is connected to an input that has been parameterized for "Authorization key", authorization level 2, in addition to entering the user code, can also be reached by activating the input. When the input is activated once again, authorization level 2 will be exited again (as if the 'TEST/CODE' button would have been pressed for at least 3 seconds). Pressing the button is on an equal footing with activating the input.
	◌ 1 ● ◌ 2 ○ ◌ 3 ○ ◌ 4 ●	End of reset blocking time[3] By means of a switching impulse[4] on this input (i.e., applying ground), the defined reset blocking time can be terminated before it has elapsed and the extinguishing module can thus be reset.
	◌ 1 ○ ◌ 2 ● ◌ 3 ○ ◌ 4 ●	Manual mode[3] As long as the input is active, the extinguishing module remains switched into the manual mode. The manual mode will be exited when the input is being deactivated.[5]

1) The input is active if ground is applied to the input (i.e., the contact between terminals 17 and 18 or between terminals 19 and 20 is closed). The input is not active if no potential is applied to the input.

2) The daytime/nighttime mode acts on the alarming device(s) with the delayed activation that occurs during daytime operation.
At any one time, the control panel is switched into daytime operation with the closing of the input contact (i.e., when ground is applied). When the input is deactivated again, the control panel is switched back into nighttime operation. If both inputs are defined with this input type, the fire detection control panel is in daytime operation as long as one of the inputs is activated. The current status is indicated on the yellow 'Daytime operation' status LED: If the LED is illuminated, then the fire detection control panel is in daytime operation.

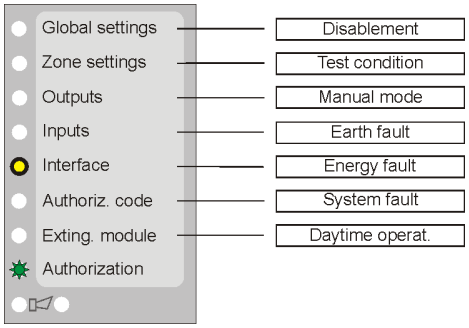
3) This setting is only possible if the optional Extinguishing Board EXB1-1 is installed in the fire detection control panel.

4) The reset blocking time is terminated with a switching impulse (push button). The switching impulse must last for at least 300ms. Permanent activation has no effects on the reset blocking time.

5) If the manual mode has been switched on via the 'Manual mode' button on the operating field and then, additionally, an input is activated that has been parameterized with "manual mode", then the manual mode remains switched on even after the deactivation of the input and can only be terminated by pressing the 'Manual mode' button. While the switch is activated, you cannot change the mode with the button.

Menu 5: Main menu item [Inputs]

6.6 Parameterization of the interface [Interface]



The functions of the serial interface (ST4 on the Central Processing Board ZTB06-1 or ZTB06-3, respectively) are determined and their properties are set in this menu item. A Serial Interface Module SIM06-1 which offers a RS232-C interface for the connection of a printer or PC for displaying the control panel events can be connected to strip ST4.

This menu item is indicated when the green status LED 'Authorization' is flashing (authorization level 3) and the [Interface] LED (status LED 'Energy fault') is illuminated.

Submenu		Submenu settings (values)
Baud rate	1 ● ● 2 ○ ○ 3 ○ ○ 4 ○ ○	**1200 baud** (default value) The baud rate is displayed on the yellow (right) zone LEDs according to the following overview. 1200 2400 4800 1 ● ○ ○ 2 ○ ● ○ 3 ○ ○ ● 4 ○ ○ ○
Start service print-out	1 ○ ● 2 ● ○ 3 ○ ○ 4 ○ ○	When the submenu [Start service print-out] is called, the left (red) LED of zone 2 changes from flashing to illuminated and the right (yellow) LED of zone 1 illuminates. If both LEDs are illuminated, this indicates that data is being output via the serial interface. Data output is completed if the left (red) LED of zone 2 changes from illuminated back to flashing and the right (yellow) LED goes out.

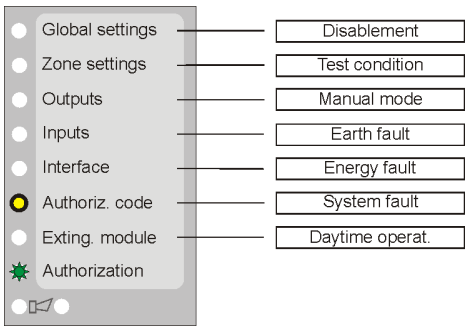
Menu 6: Main menu item [Interface]

The control panel permanently outputs all control panel events at the time of their occurrence at the control panel independent of whether or not a Serial Interface Module SIM06-1 is installed in the control panel.

The service print-out produces a listing of the event memory content (the most recent event is printed first). The lines are printed with descending event number. The number range is limited to 50, i.e., the last 50 events are printed out and the most recent event shows number 50.

The service print-out can be terminated by pressing the 'esc' button. The data temporarily stored in the printer's buffer memory will be printed out even after termination!

6.7 Changing the authorization code [Authorizat. code]



New values for the user code and for your installer code are set, and the period of time until authorization level 2 is automatically exited is determined in this menu item.

This menu item is indicated when the green status LED 'Authorization' is flashing (authorization level 3) and the [Authorizat. code] LED (status LED 'System fault') is illuminated.

The code is entered – similar to when entering authorization level 2 or 3 – by means of the zone buttons 1 ... 4. If you want to enter the four-digit user code "1224", for instance, you must consecutively press the following zone buttons:

1 0/1 2 0/1 2 0/1 4 0/1

Confirm the entry of a valid code with the '↵' button .

Submenu item		Submenu settings (values)
Change user code	● 1 ● ◌ 2 ○ ◌ 3 ◌ ◌ 4 ◌ ◌	enter new user code The user code must consist of a four-digit number which may be composed of any combination of digits 1, 2, 3 and 4. Enter the user code by means of the zone buttons 1 ... 4 and complete the entry with the '↵' button.
	◌ 1 ○ ◌ 2 ● ◌ 3 ◌ ◌ 4 ◌	confirm new user code Enter the new user code once again for confirmation and complete the entry with the '↵' button.
Change installer code	◌ 1 ● ● 2 ○ ◌ 3 ○ ◌ 4 ◌ ◌	enter current installer code Enter the current installer code by means of the zone buttons 1 ... 4 and complete the entry with the '↵' button. The control panel automatically calls the next submenu item. The control panel is delivered with "22222" as the factory setting. You must change this code during initial commissioning!
	◌ 1 ○ ◌ 2 ● ◌ 3 ○ ◌ 4 ◌	enter new installer code The installer code must consist of a 5-digit number which may be composed of any combination of digits 1, 2, 3 and 4. Complete the entry of the installer code with the '↵' button; the control panel will automatically call the next submenu item.
	◌ 1 ○ ◌ 2 ○ ◌ 3 ● ◌ 4 ◌	confirm new installer code Enter the new installer code once again for confirmation and complete the entry with the '↵' button.
Automatically exiting authorization level 2	◌ 1 ● ◌ 2 ○ ● 3 ◌ ◌ 4 ◌ ◌	**10 minutes** (default value) Authorization level 2 is automatically exited after 10 minutes if no button is pressed.
	◌ 1 ○ ◌ 2 ● ◌ 3 ◌ ◌ 4 ◌	5 Minutes Authorization level 2 is automatically exited after 5 minutes if no button is pressed.

Menu 7: Main menu item [Authorization code]

In submenu item [Change user code], you as the authorized installer define the user code, i.e., the code that is used by the user to enter authorization level 2, by entering a four-digit code of your choice twice (the control panel accepts the old code as well). If the two entries do not match, the control panel reports an error by sounding a short buzzer signal and you must repeat the procedure.

The control panel is delivered with "1111" as the user code.

In submenu item [Change installer code], you as an authorized installer define a new installer code. To this aim, you must once again prove your authorization by entering the current installer code and then enter a 5-digit code of your choice twice. If the current installer code is not entered correctly, the control panel reports an error by sounding a short buzzer signal and you must repeat the procedure. The number of wrong entries is not limited.

The control panel is delivered with "22222" as the installer code. When entering authorization level 3 for the first time, the authorized installer must change this code prior to exiting authorization level 3. Code "22222" is locked for further use as an installer code. You cannot exit main menu [Authorization code] with an installer code "22222".

The entire fire detection system can be disrupted in its operation or in extreme cases can become completely ineffective if unauthorized or incorrect parameterization occurs! As a result, it is in your best interest that your installer code be known only to a very limited group of personnel whom you trust.

You can cancel the code entry at any time by pressing the 'esc' button. In this case, the old installer code remains valid.

6.7.1 Lost installer code

It is impossible to get a readout of the installer code from the control panel. If the installer code that has been saved in the control panel has been lost, you can only obtain access authorization for authorization level 3 with the assistance of LST or its regional representative.

For this purpose, you must advise the serial number of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, (see Fig. 2 on page 7) from which an individual emergency code can be calculated. This emergency code serves as "old installer code". You can use this emergency code like an installer code to enter authorization level 3, however, you must then change the emergency code in menu item [Authorization code] to a valid installer code before you can exit parameterization.

6.8 Parameterization of the extinguishing module [Exting. module]

If no Extinguishing Board EXB1-1 is installed in your fire detection control panel, you may disregard the information in this chapter. The menu items for the extinguishing module are not available in this case.

The extinguishing module manages the inputs and outputs which can be used to build a single-zone extinguishing system. The frequently used features are already integrated in the control panel's firmware so that only a few parameters have to be set.

The operating and display elements of the Extinguishing Board EXB1-1 are described in detail in Part A of the fire detection control panel Series BC06 User Manual.

A disable device whose signaling switches are connected to a zone port (zone 1 ... 4) that has been parameterized accordingly does not influence the sequence of the extinguishing process. In accordance with EN 12094-1, it is displayed on the control panel only to inform the user about the position of the disable device. If required, the ZTB-OC output of the Central Processing Board ZTB06-1 or ZTB06-3, respectively, that is assigned to the zone port can be used for forwarding this information to a superordinate system. Connection takes place like for the activation of the extinguishing area by a superordinate system and is illustrated in Fig. 37 on page 41.

6.8.1 Function of the extinguishing module's outputs

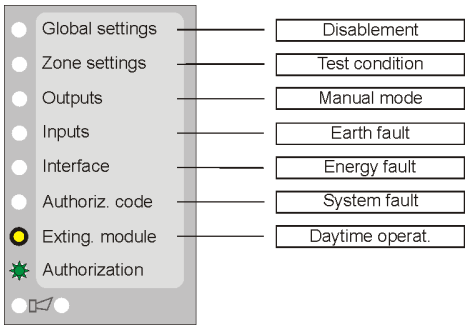
- The extinguishing output (terminals 7 and 8 on the Extinguishing Board EXB1-1) is activated upon expiration of the pre-discharge-warning time (i.e., at the beginning of the Released condition) for the set duration of the flooding time. If the flooding time has been set to permanent activation, the extinguishing output will be reset only when the Released condition is terminated (by pressing the 'RESET' button (panel reset) 

).
- The 'Activated condition' output (terminals 9 and 10 on the Extinguishing Board EXB1-1) is activated at the beginning of the pre-discharge-warning time and will be reset when the Released condition is terminated.
- The 'Released condition' output (flooding) (terminals 11 and 12 on the Extinguishing Board EXB1-1) is activated simultaneously with the extinguishing output and will be reset when the Released condition is terminated.
- The functions of the LM-OC outputs are described starting on page 41 in Chapter 4.4.1.1: "Connection of relay modules RL58-1 or RL58-2 and similar devices to the open- collector outputs of the Extinguishing Board EXB1-1 (connector ST2)".

The extinguishing module is reset by pressing the 'RESET' button (panel reset) either before the beginning of the Activated condition or following the activation of the extinguishing output, provided that a possibly set reset blocking time has already elapsed.

If the 'RESET' button (panel reset) is pressed during the Activated condition before the reset blocking time has elapsed, only the functions of the fire detection control panel but not the functions of the extinguishing module will be reset.

6.8.2 Parameters of the extinguishing module



The functions of the Extinguishing Board EXB1-1 are determined and their properties are set in this menu item.

This menu item is indicated when the green status LED 'Authorization' is flashing (authorization level 3) and the [Exting. module] LED (status LED 'Daytime operat.') is illuminated.

Submenu item	Submenu settings (values)
Pre-discharge-warning time[1)]	**60 seconds** (default value) The pre-discharge-warning time is displayed on the right LEDs according to the following overview. 0 s · 15 s · 30 s · 45 s · 60 s · 90 s · 2 min. · 3 min. · 4 min. · 5 min. 1 ● ○ ○ ○ ○ ● ○ ○ ● ○ ● 2 ○ ● ○ ○ ○ ○ ● ○ ○ ● ● 3 ○ ○ ● ○ ○ ○ ○ ● ● ● ● 4 ○ ○ ○ ● ● ● ● ● ● ● ●
Flooding time[2)]	**until reset** (default value) The flooding time is displayed on the right LEDs according to the following overview. reset · 15 s · 30 s · 45 s · 60 s · 90 s · 2 min. · 3 min. · 4 min. · 5 min. 1 ● ○ ○ ○ ○ ● ○ ○ ● ○ ● 2 ○ ● ○ ○ ○ ○ ● ○ ○ ● ● 3 ○ ○ ● ○ ○ ○ ○ ● ● ● ● 4 ○ ○ ○ ● ● ● ● ● ● ● ●
Reset blocking time[3)]	**10 minutes** (default value) The reset blocking time is displayed on the right LEDs according to the following overview. none · 30 s · 60 s · 2 min. · 3 min. · 4 min. · 5 min. · 10 min. · 20 min. · 30 min. 1 ● ○ ○ ○ ● ○ ○ ● ○ ● 2 ○ ● ○ ○ ○ ● ○ ○ ● ● 3 ○ ○ ● ○ ○ ○ ● ● ● ● 4 ○ ○ ○ ● ● ● ● ● ● ●
'Activation' button in operating field	**not enabled** (default value) The 'Activation' button in the control panel's operating field has no function. The extinguishing output can only be activated by the combined fire detector zones or by an external activation device.
	undelayed Pressing the 'Activation' button in the control panel's operating field immediately effects the Activated condition (i.e., the pre-discharge-warning time is started).
	delayed Pressing the 'Activation' button in the fire detection control panel's operating field permanently for at least 3 seconds effects the Activated condition (i.e., the pre-discharge-warning time is started).
Effect of an activated 'Emergency hold' button (in the operating field or on an external manual call point) on the pre-discharge-warning time	**progress of pre-discharge-warning time is stopped** (default value) While the 'Emergency hold' button is being pressed, the pre-discharge-warning time stops to elapse. As soon as it is released, the pre-discharge-warning time continues to elapse. The button can also be pressed several times consecutively.

Submenu item		Submenu settings (values)
	◌ 1 ○ ◌ 2 ● ◌ 3 ○ ◌ 4 ○	The pre-discharge-warning time is started each time the emergency hold device or the 'Emergency hold' button in the operating field, respectively, is pressed upon releasing the button. While the button is being pressed, the activation of the extinguishing output is prevented in any case.
	◌ 1 ○ ◌ 2 ○ ◌ 3 ● ◌ 4 ○	The pre-discharge-warning time continues to elapse irrespective of the pressed 'Emergency hold' button, however after the pre-discharge-warning time has elapsed, the flooding (activation of the extinguishing output) will start only after the 'Emergency hold' button has been released.
'Emergency hold' button in the operating field	◌ 1 ● ● 2 ○ ◌ 3 ○ ● 4 ◌ ◌	**not enabled** (default value) Pressing the 'Emergency hold' button in the control panel's operating field has no function.
	◌ 1 ○ ◌ 2 ● ◌ 3 ○ ◌ 4 ○	enabled[4)] Pressing the 'Emergency hold' button in the control panel's operating field influences the progress of the pre-discharge-warning time.

1) The pre-discharge-warning time starts when the Activated condition is reached and ends when the extinguishing output is activated.

2) The flooding time starts when the extinguishing output is activated and ends when the fire detection control panel is reset or through expiration.

3) The reset blocking time starts when the Activated condition is reached and ends through expiration. The extinguishing module cannot be reset during the reset blocking time.

4) If an external emergency hold device is installed in addition to the enabled 'Emergency hold' button, the pre-discharge-warning time will be influenced in accordance with the parameterization when one of the two emergency hold facilities is activated. 'Emergency hold' button is on an equal footing with the external emergency hold device in this case.

Menu 8: Main menu item [Exting. module]

6.9 Factory settings of the parameters

The fire detection control panel Series BC06 is shipped from the factory with preset standard parameters. This standard parameterization makes the fire detection control panel Series BC06 a simple, uncomplicated and powerful fire detection control panel, which completely complies with the relevant European standards EN 54-2 (fire detection control panels) and EN 54-4 (power supply equipment) – without the need of additional parameterization. A control panel that has been expanded with an Extinguishing Board EXB1-1 furthermore completely complies with the requirements of European Standard EN 12094-1 (Requirements and test methods for electrical automatic control and delay devices).

During commissioning of the control panel you can change these factory settings according to your requirements. As the authorized installer you must responsibly decide whether or not you change the settings in a way that is not consistent with EN 54-2 or EN 54-4 in all details.

6.9.1 Factory settings of the parameters for the fire detection control panel without expansion modules

Global settings:

Mains faults:	will be evaluated
Battery faults:	will be evaluated
Earth faults:	will be evaluated
Line termination:	5.6kΩ end-of-line resistor
Investigation option:	disabled

Detector zones:

Zones 1 ... 4:	Detector zones for manual call points

Outputs:

Alarm relay:

Output type:	Fire alarm condition

Fault relay:

Output type:	Fault message condition

Alarming device 1:
Activation type: all zones immediately
Property: silencing/reactivation possible
Contact type: continuous signal
Combinations: none (zones 1 ... 4 will activate the alarming device)
Alarming device 2 (only in BC06-1A and BC06-2A):
Combinations: none (zones 1 ... 4 will activate the alarming device)

Inputs:
Input 1: daytime operation
Input 2: not defined

Serial interface:
Baud rate: 1200 baud

Authorization code:
Automatically exiting authorization level 2 after: 10 minutes

The settings that are underlined are laid down in European Standards EN 54-2 and EN 54-4. Please observe these standards as well as other country-specific regulations if you wish to change the indicated factory settings.

6.9.2 Factory settings of the parameters for the Detector Zone Extension ZEB2-1

If the control panel is expanded by two additional zones with a **Detector Zone Extension ZEB2-1**, the following settings will automatically be made in the control panel:

Global settings:
Line termination of zones 5 and 6: 5.6kΩ end-of-line resistor

Detector zones:
Zones 5 and 6: detector zones for manual call points

If Detector Zone Extension ZEB2-1 is removed from parameterization and re-inserted later on, the settings for zones 5 and 6 will be reset to the abovementioned factory settings.

6.9.3 Factory settings of the parameters for the Extinguishing Board EXB1-1

If the control panel is expanded with an **Extinguishing Board EXB1-1**, the following settings, which completely comply with European Standard EN 12094-1, will automatically be made:

Outputs:
Extinguishing output:
Combinations: none (the extinguishing output will not be activated by fire alarms from zones 1 ... 4)

Extinguishing module:
Pre-discharge-warning time: 60 seconds
Flooding time: until reset
Reset blocking time: 10 minutes
'Activation' button in the operating field: delayed
Effect of the 'Emergency hold' button: pre-discharge-warning time will be interrupted
'Emergency hold' button in the operating field: not enabled

6.10 Parameterization according to EN 12094-1

In order that the fire detection control panel complies with the European Standard EN 12094-1, be sure to adhere to the following settings.

The **activation device** must be connected to one of the zone ports 1 through 3 and must be assigned to the Extinguishing Board EXB1-1 by means of an OR combination.

In addition, the **parameters for the Extinguishing Board EXB1-1** must be set as follows:

Pre-discharge-warning time:	0 ... 60 seconds
Flooding time:	until reset (i.e., the flooding time in not limited in time. The flooding will be terminated when the extinguishing module is reset.)
Reset blocking time:	30 seconds ... 30 minutes
'Activation' button in the operating field:	not enabled
Effect of the 'Emergency hold' button:	extend pre-discharge-warning time
'Emergency hold' button in the operating field:	not enabled

Optionally, the inputs "**End of reset blocking time**" and "**Manual mode**" may be parameterized.

In accordance with EN 12094-1, the following inputs and outputs on the Extinguishing Board EXB1-1 **must not be used**:

- "Released condition" output,
- "Activation device" zone port,
- "Fault detector" zone port.

7 Commissioning

This chapter is devoted mainly to providing general information aimed at facilitating rapid and successful commissioning of the fire detection control panel Series BC06. The major prerequisites for a successful commissioning are the expert installation and the correct connection of the external components of the fire detection system to the control panel.

7.1 Preparation

Prior to commissioning, follow the checklist below and check the following points on the basis of the existing control panel structure:

Central Processing Board ZTB06-1 or ZTB06-3:

- Are the protective earth conductor and the equipotential busbar connected to the rear of the control panel case?
- Has a protective earth connection between the componentry and the rear of the control panel case been established?
- Is the protective cover of the power unit (parts carrying high voltage are located underneath!) firmly screwed on?
- Are all mounting screws of the componentry securely tightened? Only then is protection fully effective!
- Is the supply for external devices (terminals 5 and 6) connected correctly?
- Is the monitored siren output properly wired, or are terminals 13 and 14 equipped with a 5.6kΩ end-of-line resistor if no device is connected to the output?
- Are the alarm and fault relay contacts properly connected?
- Are the flat cables for the auxiliary outputs connected to connector ST1?
- Are the stand-by batteries charged?

Conventional detector zones:
(Zones 1 ... 4 on the ZTB06-1 or ZTB06-3, respectively, as well as zones 5 and 6 on the ZEB2-1)

- Are the detector lines properly connected?
- Is an end-of-line resistor or an end-of-line capacitor installed with the last detector of each detector line?
- Are the end-of-line capacitors connected in the correct polarity?
- Are the maximum permissible line resistances not exceeded?
- Are all detectors in normal condition?
- Is every unused detector line equipped with an end-of-line resistor or end-of-line capacitor or parameterized as "Detector zone not defined"?

Other additional components:

- Are the componentries properly plugged in, screwed on and connected?

Recheck the earthing of the case once again.

Check whether all mounting screws for the componentries that are being used are securely tightened. This is of particular importance for the effectiveness of the EMC measures taken for all componentries!

In order to exclude undesired alarms or activations of fire prevention devices completely during commissioning, you must disable the alarming device(s) and the actuation of the fire prevention devices (e.g., by disconnecting the cables). In cases involving a greater safety risk (e.g., activation of extinguishing systems, disabling production lines, etc.), you should have additional mechanical and/or electrical safeguards installed by the persons responsible for these systems in order to prevent undesired activations or disablements of these devices.

Monitored outputs, which you disconnect for safety reasons, must be equipped with adequate replacement resistors for the duration of the commissioning.

After completed commissioning, all previously disabled devices must be placed back into operation!

7.2 Power supply connection

Plug the mains power connector into the ZTB06-1 or into the ZTB06-3, respectively, and switch on the mains power. A short signal from the installed buzzer will sound and after the initialization phase of some seconds, the control panel will begin to operate. When the fire detection control panel is ready for operation, the 'POWER' LED illuminates. Approximately 10 seconds later, the fault message 'ENERGY FAULT' is displayed since no stand-by batteries have been connected as of yet.

Connect the stand-by batteries, making sure that the polarity is correct (red = "+", black = "-"). No power supply faults should be active on the control panel after 10 seconds.

It is imperative that you adhere to the sequence: first switch on the mains power, then connect the stand-by battery! The power unit of the fire detection control panel is current-limited and short-circuit proof. In the event of fault in the cabling of the fire detection system, the current limitation will limit the effects even in the event of a short-circuit. However, the stand-by battery may supply a very high current in the event of a short-circuit. This current will rapidly blow the fuses, but considerable damage may result by the time it does.

Connecting the power supply will not alter configuration parameters entered at an earlier stage.

7.3 Parameterization and function tests

The fire detection control panel Series BC06 is delivered with a factory-set parameterization that is fully functional. How you make the necessary changes to the factory parameterization during the course of commissioning is described in detail in the above chapters of this User Manual.

You can overwrite the parameters as often as you wish.

After the parameterization, check all system functions carefully. Make sure that all system parts operate in the way you, as a specialist installer of fire detection systems, determined during the planning phase of the entire system.

You should absolutely make a record of the final parameters for the fire detection control panel Series BC06, for example by completing the table starting on page 80 in Chapter 10.6: "Settings" that has been provided for this purpose.
Keep the list in a safe place – this configuration data is very important, for example, in the event of a repair/exchange.

7.3.1 Configuring printers

You can configure a printer that is connected to the control panel for the duration of the commissioning or maintenance and servicing for the following options:

- print-out of the event memory,
- permanent print-out of the events at the time of occurrence.

You can find additional information regarding this starting on page 64 in Chapter 6.6: "Parameterization of the interface [Interface]".

7.4 Recalculation of the mains failure bridging time

Once you have ensured that all system parts are connected and are operating correctly, you must recalculate the mains failure bridging time of the control panel's emergency power supply. For this purpose, the stand-by battery must be charged so that its voltage does not drop below 24V during the measuring process described below.

- Connect a suitable ampere-meter into the positive connection line (red cable) of the stand-by battery.
- Put the system in normal condition.
- Switch off the control panel power supply, wait until "Mains fault" is indicated (this can take up to 5 minutes!), and reset the built-in buzzer by pressing the 'Silence buzzer' button.
- Now measure the current supplied by the stand-by battery for the entire system in the "mains failure" fault condition.

- Activate an alarm and measure the current with activated optical and acoustic signaling devices, activated fire prevention devices, etc. For system parts that cannot be activated for testing (e.g., the activation of an extinguishing system), you will have to add the calculated current value of that system part to the measured current consumption.

You must ensure beforehand that the alarm activation will be understood to be a test alarm by all persons concerned. Coordinate your work with the user of the fire detection system (e.g., with the fire prevention officer) and the fire brigade.

With the measured current values, recalculate the required capacity of the stand-by battery (see from page 14 onwards in Chapter 2.3.5.1: "Determining the required capacity of the stand-by battery"). If the measured current differs significantly from the planned value that was calculated earlier, determine the reason for this. You must be able to rule out that the cause is due to defects in the cabling or a faulty device with certainty.

7.5 Concluding activities

Clearly mark the stand-by batteries with the planned expiration date (defined by the battery manufacturer).

Demonstrably instruct the user on all of the functions of the control panel (and, of course, of the entire fire detection system) that are relevant to the user and enter all data in the system book.

Keep the user code in a place that has been agreed upon by the rescue personnel (fire brigade), and which is accessible only to that personnel.

8 Fault situation

The fire detection control panel Series BC06 carries out functions internally, running a multitude of tests, and reporting identified errors on the indicator LEDs of the display and operating field and also acoustically by means of the installed buzzer. By means of the indicator LEDs or the 'Reading out fault code' function (see User Manual Series BC06 / Part A, Chapter "Reading out the fault code"), you can call up the present fault cause(s) as well as detailed complementary information about every fault that has occurred. This information generally suffices for a trained authorized installer to eliminate the fault quickly.

A "fault" is understood to mean an error in the installed fire detection system, not the reaction of a fault detector.

The 'POWER' LED on the display and operating field of the fire detection control panel only shows, in accordance with the requirements of European standard EN 54-2, that the control panel is being supplied with current – as a result, no conclusions can be drawn with regard to the actual function of the control panel!

8.1 System fault

An especially critical case of a fault of the fire detection control panel occurs when important parts (e.g., the processor system of the Central Processing Board ZTB06-1 or ZTB06-3, respectively) enter into fault condition partially or completely, and because of this displaying events on the display field is interfered with or prevented – this condition is known as a system fault.

In this type of fault, the control panel is inoperative and cannot identify any alarms!

The system fault is displayed on the operating field of the control panel by the flashing (i.e., ZTB06-1 or ZTB06-3, respectively, is in fault) or constant illumination (i.e., Display and Operating Board ABB06-1 is in fault) of the 'System fault' LED; furthermore, the general fault relay becomes currentless and, because of this, makes it possible to forward a fault message.

9 Maintenance, service

This chapter is devoted exclusively to providing information for maintenance and service of the fire detection control panel Series BC06. This chapter does not provide instruction for specialized maintenance or servicing of an installed fire detection system!

The chapter of the manual does not replace the training of an authorized installer by LST or its authorized representative for the expert planning, installation, commissioning, maintenance or servicing of a fire detection system in which a fire detection control panel Series BC06 is installed.

9.1 Maintenance

With the exception of the stand-by batteries, no components whose duration of operation is limited by wear and tear are used in the fire detection control panel. Maintenance of the fire detection control panel itself is thus essentially limited to a check for external damage (e.g., of the keypad, etc.), a check of the stand-by power supply and a comprehensive function test.

Be absolutely sure to prevent unwanted activation of fire prevention devices through the function tests that are conducted as a part of maintenance! You may be responsible for the compensation of expenses for damages that result from this!

Inform the user of the fire detection system that parts of the fire detection system or the entire system itself will be out of service during maintenance work!

9.1.1 Check of the final charge voltage

The final charge voltage is automatically adapted to the ambient temperature by the control panel. The charge voltage on the stand-by batteries, with the stand-by batteries fully charged and with the mains power connected, must, at the temperatures listed below, equal as follows:

0°C ... 28.35V,
10°C ... 28.00V,
20°C ... 27.60V,
30°C ... 27.20V,
40°C ... 26.85V,
50°C ... 26.50V.

When the mains power is connected, a voltage value of under 26V is only permissible when the stand-by batteries have been discharged and are currently being charged. In this instance, you should determine whether or not sufficient charging current is flowing.

If, during a mains power failure, the voltage value of the stand-by batteries drops under 21V during operation, the batteries will be disconnected by the control panel to protect against total discharge. Once the mains power returns, the stand-by batteries will automatically begin charging. However, if the voltage of the stand-by batteries drops under approximately 16V (i.e., if the battery is defective), charging will no longer be automatically started.

Check whether the charge voltage on both serially-connected 12V batteries is of the same magnitude.

9.1.2 Check of the stand-by batteries

The expected usable life of the stand-by batteries is provided by the manufacturer. Regular stand-by batteries have a usable life of approximately four years; however, there are also stand-by batteries that have a significantly longer usable life (according to the manufacturer's information of up to 10 years) on the market.

Make sure that the discarded stand-by batteries are disposed of in accordance with regulations. The batteries are lead acid batteries. These types of batteries should under no circumstances be disposed of in domestic waste!

Replace used or defective stand-by batteries only with a type whose parameters (rated voltage, rated capacity, size, approvals, etc.) correspond to the type that is being replaced.

Clearly mark the newly installed stand-by batteries with an expiration date that corresponds to usable life indicated by the manufacturer, taking into consideration a margin of safety.

Close examination of the stand-by batteries requires a large expenditure of time and is only possible in conjunction with the respective manufacturing firm. A rough assessment of the condition of the batteries is, however, possible through a brief load test with a strong load (e.g., with a load that would result in a complete discharge in 5-10 hours). You must absolutely disconnect the stand-by batteries from the control panel! Separate the serially-connected batteries and test each battery individually.

The individual batteries must be of the same construction; under no circumstances should you connect 12V batteries that have different rated capacities together in series.

The expected usable life or aging of the individual serially-connected 12V batteries should be as close to identical as possible. Equal charging of the batteries can be expected only if this is true. Thus, in the event one of the 12V batteries must be replaced prematurely due to a defect, it is strongly recommended that the two batteries that are serially-connected be replaced at the same time.

9.1.3 Earth fault supervision

In accordance with the factory setting, the fire detection control panel Series BC06 continuously tests the wiring of the fire detection system for earth faults. If the parameters of this test are changed during commissioning because parts of the system must be permanently connected to the ground equipotential busbar due to operational reasons (e.g., with intrinsically safe electrical circuits), an additional earth fault in the control panel cannot be automatically identified.

In such instances, you should disconnect the electrical circuits that are connected to the earth equipotential busbar from the control panel during the course of maintenance and resume earth fault supervision on the control panel for a short period of time (see from page 52 onwards in Chapter 6.1: "Parameterization of the global settings for the control panel – [Global settings]"). By doing so, you can check that the rest of the fire detection system wiring is free of earth faults. Next, deactivate earth fault supervision again and reconnect the disconnected electrical circuits to the control panel.

Under no circumstance should you break the connection of intrinsically safe electrical circuits with the earth potential (e.g., of the equipotential busbar)! Ignition sparks whose energy would be sufficient to trigger an explosion in a dangerous area could occur as a result of this!

9.1.4 Function test

Conduct the following function tests during maintenance on the control panel:

- displaying devices (LEDs and buzzer) as well as, on a fire detection control panel BC06-2, additionally also the display of the alarm counter with the display test function,
- all buttons of the keypad,
- all inputs (detector zones and inputs),
- all outputs (relay outputs, auxiliary outputs, alarming device(s), etc.),
- other peripheral devices (such as printers, for example).

You must prevent unwanted activations of extinguishing systems or other fire prevention devices or unannounced activation of the alarming device(s) that may be triggered by the function tests! Contact the person responsible for the fire detection system (e.g., fire prevention officer, safety representative, extinguishing system technician, etc.) – before you begin the function tests – so that he or she can perform all necessary mechanical or electrical shutdowns at the proper time or can inform the persons who are involved of the test alarm.

10 Specifications

Please adhere to the absolute limit values for the load current of the control panel Series BC06: the total current of all devices (detectors, signaling devices, etc.) that are being supplied by the power unit of the control panel, including the control panel itself,

must at no time exceed the value of 1.8A.

The automatic current limitation of the power supply unit is set to this value. This value must also not be exceeded in the event of an alarm. Please take into account that the fire detection system must also work without limitation in the event of a stand-by battery failure; even peak output currents (e.g., for the alarming device(s) or the signaling devices of the extinguishing module) must be covered by the power unit on its own without the help of the energy stored in the stand-by battery.

In order to be able to charge a 24V stand-by battery with a rated capacity of, for example, 7Ah within the time prescribed in European Standard EN 54 "Fire detection and fire alarm systems, Part 4 Power supply equipment", no more than 1.5A must be drawn from the connections for external power consuming devices when the fire detection system is in normal mode. Concerning the mains failure bridging time please pay regard to the notes starting on page 14 in Chapter 2.3.5.1: "Determining the required capacity of the stand-by battery".

10.1 Fire Detection Control Panel BC06-1, BC06-2

Case	
Installation	wall installation, surface type
Material (case wall piece)	steel sheet, 1 mm, powder coated
Material (case cover)	Polystyron
Color	gray-white, RAL 9002
Protection class	IP30
Dimensions w × h × d	330 × 330 × 90 (mm)
Panel power consumption from the stand-by battery upon mains failure, fault relay released, without optional components, without fire detectors,	
4 zones with 5.6kΩ end-of-line resistor	typ. 70mA
4 zones with 47µF end-of-line capacitor	typ. 55mA
Number of detector zones	4, expandable to 6
Weight without battery	approx. 3kg
Ambient temperature	-5°C to +50°C
Relative humidity	95% (no condensation)

10.2 Central Processing Board ZTB06-1, ZTB06-3

Mains	
Mains voltage	230VAC +10/-15%, 50Hz
Power requirement	60VA
Mains power consumption	max. 0.26A
Output voltage	typ. 27.6VDC
Peak output current, total	max. 1.8A
Stand-by battery	
Rated voltage	24V
Final charge voltage at 20°C	27.6V
Charge current	max. 1.7A, current limited
Capacity	max. 7Ah in case max. 34Ah in auxiliary case
Connection	4A slow-blow fuse
Connection internal/external devices	2 × 0.8A fast-blow fuse, separately protected
Connection type	screw terminals, max. 1.5mm² (single wire)
Dimensions w × h × d	120 × 230 × 50 (mm)
Weight	330g

10.2.1 Siren outputs

Number	
ZTB06-1	1
ZTB06-3	2
Line supervision	by negative voltage in the normal condition, approx. -1.2V
Continuous load per siren output	
ZTB06-1	max. 1A, short-circuit proof
ZTB06-3	max. 500mA, short-circuit proof

10.2.2 Actuation inputs (Input 1, 2)

Inputs, activated with earth	2
Input voltage	activated (NO-contact): max. 3V not activated (NO-contact): at least 12V
Inputs with pulsed actuation	pulse duration of at least 1 second

10.2.3 Relay contacts (common alarm or common fault)

Contact type	1 dry change-over contact each
Contact load	max. 60V/1A/30W
Contact service life	3×10^5 switching processes

10.2.4 ZTB-OC outputs (output 1 ... 8)

Number	1 × 8
Contact type	open-collector outputs
Switching current per output	max. 35mA
Switching voltage	power supply of the control panel
Connection type	flat cable connector, corresponding to relay module RL58-1 or RL58-2 Note: These outputs are not permitted for direct actuation of external devices!

10.2.5 Conventional detector zones

Line voltage at 24V	
with 5.6kΩ end-of-line resistor[1)]	typ. 20V
with 47µF end-of-line capacitor[1)]	typ. 23V
Number of detector lines or detector zones	4
Line termination Rab / Cab	alternatively 5.6kΩ / 47µF[1)]
Line current without fire detectors at line termination 5.6kΩ (47µF)[1)]	typ. 3.7mA (typ. 0mA)
Detector supply current through the line line termination 5.6kΩ (47µF)[1)]	max. 2.5mA (max. 6mA)
Evaluation criterion (approximate value)	resulting line resistance including detectors, line resistance and end-of-line element
Short-circuit	< 120Ω (Rab = 5.6kΩ) < 120Ω (Cab = 47µF)
Alarm	< 2.3kΩ (Rab = 5.6kΩ) < 2.3kΩ (Cab = 47µF)
Interruption	> 6.6kΩ (Rab = 5.6kΩ) line resistance > 150Ω (Cab = 47µF)
Line resistance	max. 50Ω per wire
Alarm recognition time	≤ 300ms

[1)] The type of the end-of-line element (end-of-line resistor Rab or end-of-line capacitor Cab) is selected by means of parameterization (see from page 52 onwards in Chapter 6.1: "Parameterization of the global settings for the control panel – [Global settings]").

10.3 Detector Zone Extension ZEB2-1

The same parameters as those of the conventional detector zones for the Central Processing Board ZTB06-1/ZTB06-3 are applicable.

Power consumption at 24V, without fire detectors	
2 zones with end-of-line resistor 5.6kΩ(47µF)	typically 14mA (typ. 7mA)
Connection type	screw terminals, max. 1.5mm² (single wire)
Ambient temperature	-5°C to +50°C
Dimensions l × w × h	103 × 58 × 15 (mm)
Weight	34g

10.4 Extinguishing Board EXB1-1

For the three zone inputs, the same parameters as those of the conventional detector zones for the Central Processing Board ZTB06-1 or ZTB06-3, respectively are applicable.

The zone ports of the Extinguishing Board must be terminated with a 5.6kΩ end-of-line resistor. Do not use end-of-line capacitors as line termination for these zone ports!

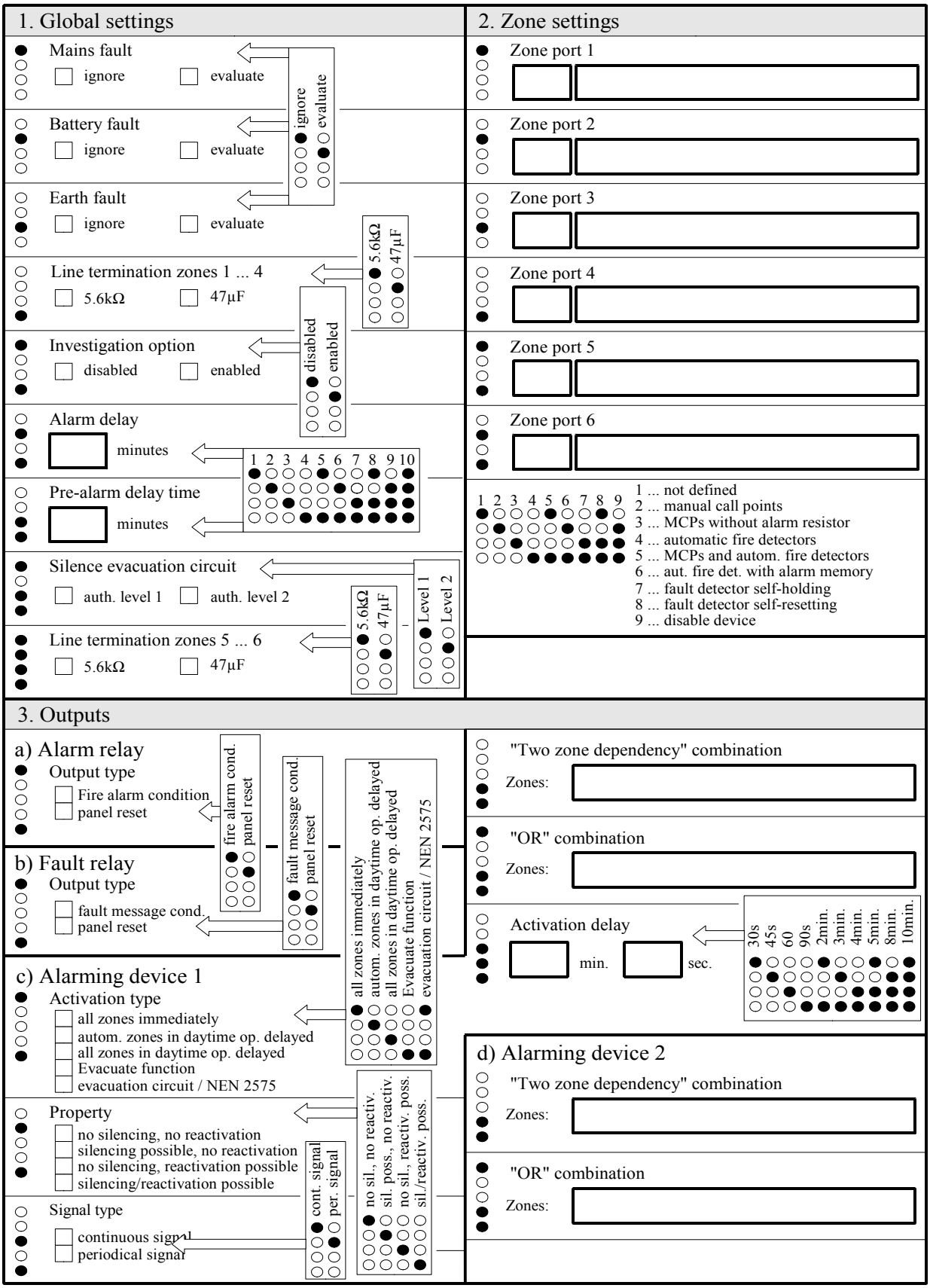
Power consumption at 24V, without fire detectors	
3 zones with 5.6kΩ end-of-line resistor	typ. 10mA (all outputs in normal condition)
Extinguishing output	1
Line supervision	by surveillance current, approx. 2.5mA
Permanent load	max. 1A, short-circuit proof
Line resistance	max. 5Ω per wire
Permissible load resistance	40Ω ... 1kΩ (without serial diode, see Fig. 36)
	25Ω ... 800Ω (with serial diode 1N4004 or similar)
Activated condition output	1
Line supervision	by negative voltage in the normal condition, approx. -1.2V
Permanent load	max. 500mA, short-circuit proof
Released condition output	1
Line supervision	by negative voltage in the normal condition, approx. -1.2V
Permanent load	max. 500mA, short-circuit proof
Connection type	screw terminals, max. 1.5mm² (single wire)
Ambient temperature	-5°C to +50°C
Dimensions l × w × h	103 × 58 × 15 (mm)
Weight	50g

10.5 Serial Interface Module SIM06-1

Power consumption at 24V	typ. 15mA
Interface	RS232-C, galvanically isolated
Lines	RxD, TxD
Baud rate	1200, 2400, 4800 baud
Connection type	D-SUB plug, 9-pin
Ambient temperature	-5°C to +50°C
Dimensions l × w × h	88 × 35 × 17 (mm)
Weight	32g

10.6 Settings

In the tables that follow, the current submenu (i.e., the left (red) zone LEDs) of the parameterization menu (see Fig. 42 on page 81) is always depicted in the left margin of the table. The applicable values can be found in the boxes that are assigned with arrows.



3. Outputs (continued)

e) Extinguishing output

"Two zone dependency" combination

Zones:

"OR" combination

Zones:

"Three zone dependency" combination

Zones:

4. Inputs

Input 1

Input 2

1 2 3 4 5 6

1 ... not defined
2 ... Class Change
3 ... daytime operation
4 ... authorization key
5 ... end of reset blocking time
6 ... manual mode

5. Interface

Baud rate

1200 2400 4800

Start service print-out

6. Authorization

Change user code

old code new code confirm

new code confirm

Change installer code

old code new code confirm

Autom. exiting auth. level 2

10 minutes 5 minutes

10min. 5min.

7. Extinguishing module (optional)

Pre-discharge-warning time

min. sec.

0s 15s 30s 45s 60s 90s 2min. 3min. 4min. 5min.

Flooding time

min. sec.

Reset 15s 30s 45s 60s 90s 2min. 3min. 4min. 5min.

Reset blocking time

min. sec.

none 30s 60s 2min. 3min. 4min. 5min. 10min. 20min. 30min.

'Activation' button operat. field

not enabled
undelayed
delayed

not enabled undelayed delayed

Effect of 'Emerg. hold' button

pause pre-disch.-warn. time
restart pre-disch.-warn. time
extend pre-disch.-warn. time

interrupt restart extend

'Emerg. hold' button on operating field

not enabled
enabled

not enabled enabled

Table 6: Defined settings of the fire detection control panel Series BC06

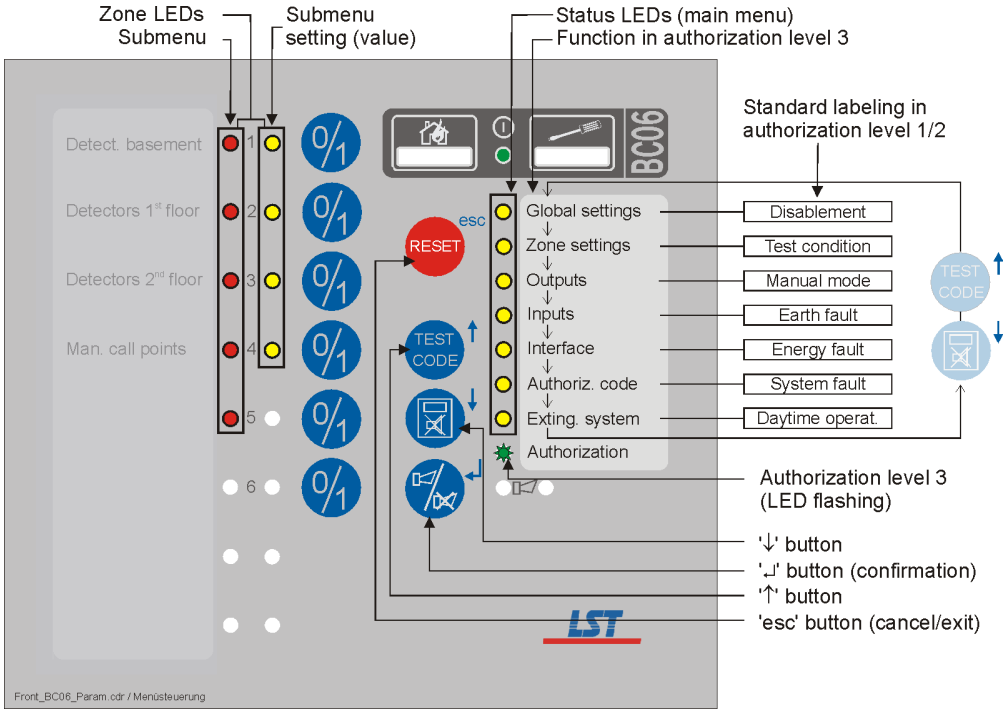


Fig. 42: Menu control in authorization level 3

11 Index