

Sirenenzusatz Siren Connection Module SZ58-3

Beschreibung und Anschaltung
Description and Connection

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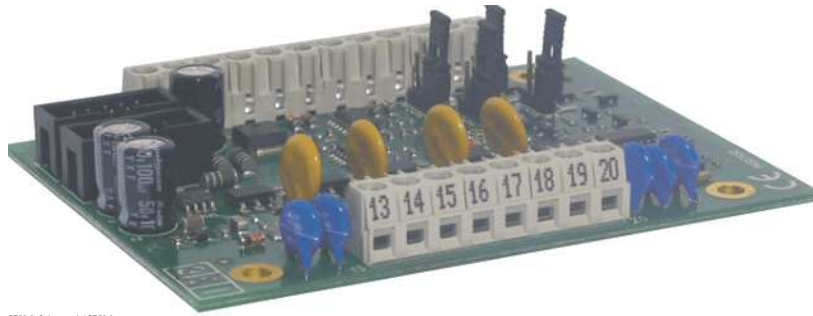
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1 Introduction

1.1 Description

The Siren Connection Module SZ58-3 allows for the expansion of fire detection control panels Series BC216, BC016 as well as BC06 by four separately actuatable, individually fused as well as line-monitored electric circuits, to each of which several signaling devices (e.g., sirens) can be connected in parallel. These electric circuits can be supplied either from the fire detection control panel itself or from an external 24V power supply. The sirens supply is automatically monitored for undervoltage by the Siren Connection Module SZ58-3.



SZ58-3_Schema.cdr / SZ58-3

Fig. 1: Siren Connection Module SZ58-3 View of the componentry

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 fire detection system must be observed.

1.3 Important tips

Fire detection systems and devices, respectively, must be installed strictly by qualified personnel that is being trained on a regular basis. The specific training of the qualified personnel must be provided by Labor Strauss Sicherungsanlagenbau Ges.m.b.H. Wien (LST) or by persons who are expressly authorized by LST.



Country-specific standards, regulations, and guidelines as well as LST specifications must be strictly observed.

To ensure the flawless function of the fire detection system, all devices must be mounted as intended and supplied with voltage. Make sure that all devices are suitable for the expected ambient conditions.



All work may only be conducted when the voltage is shut down. The installation must be checked prior to applying the voltage.



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**.

Fire detection systems must be maintained regularly and must take the country-specific standards as a basis. Any required repair work must be carried through immediately.



The fire detection system must be adapted to any constructional modification without delay.

2 Installation

The Siren Connection Module SZ58-3 by means of the screws and metal bolts from the enclosed packet of assembly material is mounted to an earthed metal mounting surface which provides mounting holes in LST standard grid (see Fig. 2). Preferably mount the Siren Connection Module SZ58-3 on a mounting bracket within the housing of the fire detection control panel.



Be sure to establish a secure earth connection between the componentry and the earthed mounting surface via the four metal bolts – only then is the componentry as well as the entire fire detection control panel effectively protected against EMC effects.

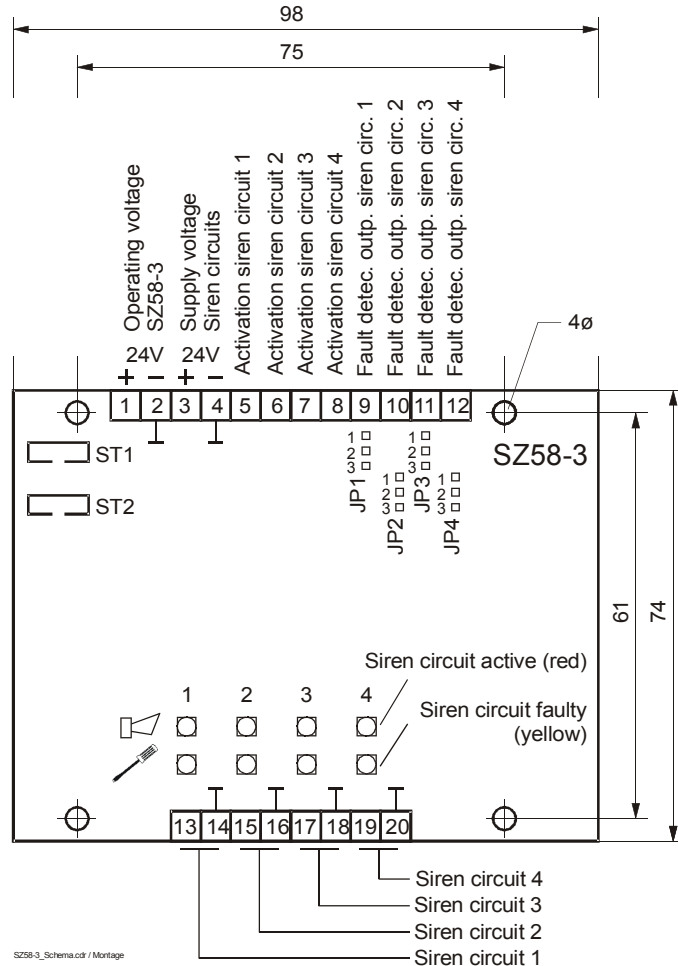


Fig. 2: Dimensions and position of the terminals, jumpers, connector slots and display elements of the Siren Connection Module SZ58-3



If possible, mount the Siren Connection Module SZ58-3 inside the housing of the fire detection control panel that also provides the operating voltage of the siren connection module (see directions on page 20 and on in Chapter 3.1: "Power supply").

3 Connection

The Siren Connection Module SZ58-3 provides four separately actuatable, individually fused as well as line-monitored electric circuits, to each of which several signaling devices (e.g., sirens) can be connected in parallel. These electric circuits can be supplied either from the fire detection control panel itself or from an external 24V power unit. The sirens supply is automatically monitored for undervoltage by the Siren Connection Module SZ58-3.

The figure below shows power connection, input and output signals as well as the internal circuit of the Siren Connection Module SZ58-3 in a simplified way.

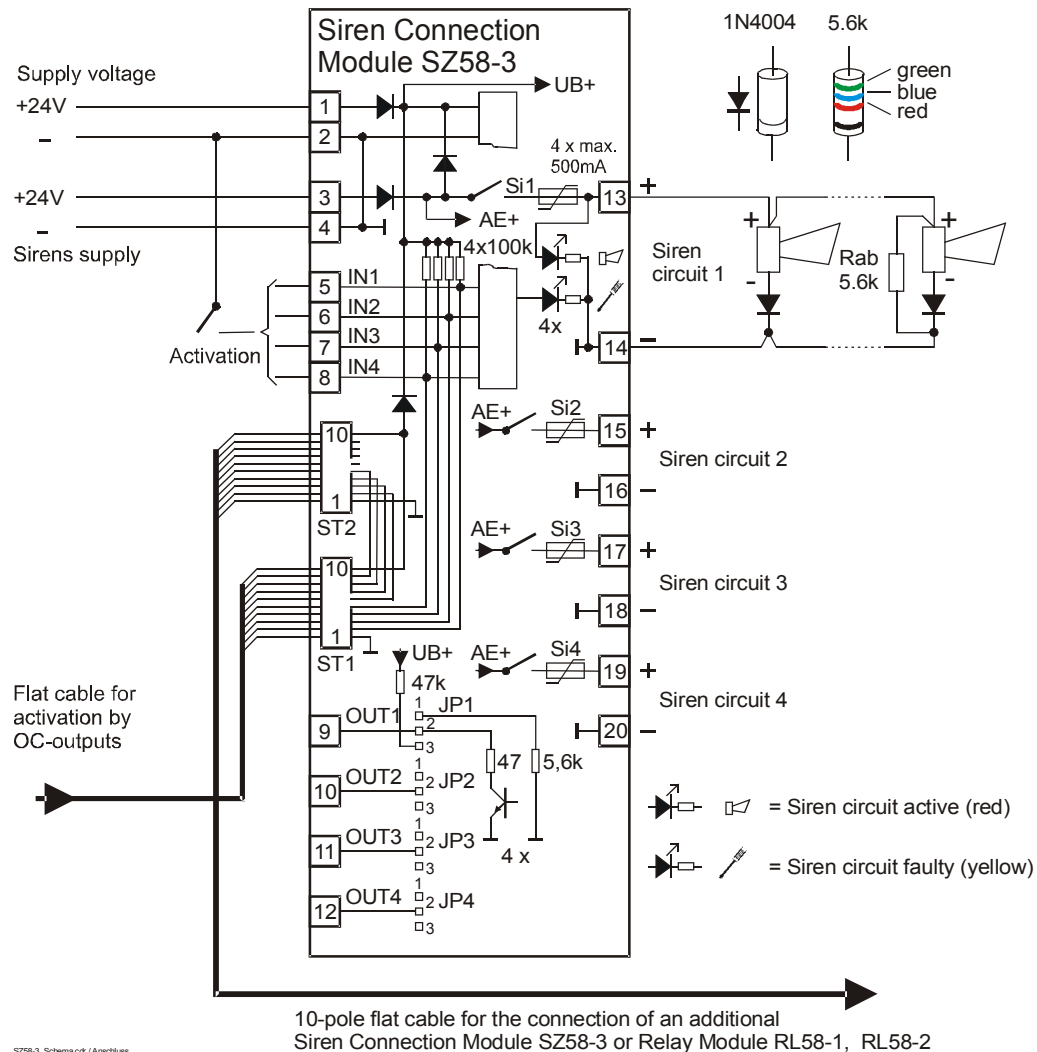


Fig. 3: Overview of the input and output signals of the Siren Connection Module SZ58-3
The individual siren circuits are activated when ground (-) is applied to the respective inputs IN1 ... IN4 or to the corresponding flat cables. Faults of the siren circuits are reported to the fire detection control panel via outputs OUT1 ... OUT4.

3.1 Power supply

The operating voltage of the control and monitoring devices on the Siren Connection Module SZ58-3 is in most cases provided by the fire detection control panel, the sirens supply can – depending on the demand of power – either also be provided by the fire detection control panel or by a separate 24V power unit.



The control and monitoring devices of the Siren Connection Module SZ58-3 (terminals 1 and 2) must be supplied with power from the same fire detection control panel to which the fault detection outputs of the Siren Connection Module SZ58-3 are connected (see page 24 and on in Chapter 3.4: "Fault detection outputs").



If you want to use a separate power unit for the sirens supply, you must keep in mind that the negative connections of the two supply voltages (terminals 2 and 4) are electrically connected with each other on the Siren Connection Module SZ58-3! This way, the entire line system that is connected to the 24V output voltage of this power unit is automatically included in the earth fault monitoring of the fire detection control panel.

Undervoltage (see page 27 and on in Chapter 4: "Specifications") or failure of the sirens supply (terminals 3 and 4) is reported as fault on all four fault detection outputs in parallel.



A breakdown of the operating voltage (terminals 1 and 2) cannot be reported by the Siren Connection Module SZ58-3. Therefore connect terminals 1 and 2 of the Siren Connection Module SZ58-3 only to a voltage output of the fire detection control panel which can have its failure (e.g., initiated by a fuse failure) detected and reported as fault by the fire detection control panel.



The permissible range of the output voltage of the additional power supply for the supply of the siren circuits that is specified in the Specifications (see page 27 and on in Chapter 4: "Specifications") must be strictly observed. If the lower limit value is under-run, a fault of all siren circuits is displayed, if the upper limit value is exceeded, the Siren Connection Module SZ58-3 and hence also the fire detection control panel can be damaged!

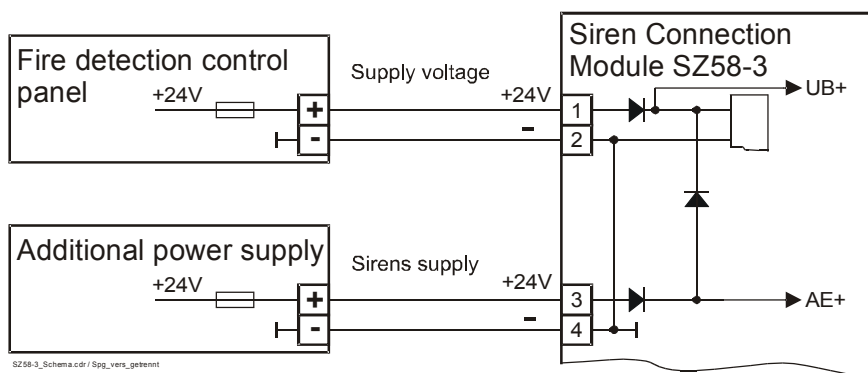


Fig. 4: Power supply of the Siren Connection Module SZ58-3 from the fire detection control panel and an additional power unit

The operating voltage of the SZ58-3 is provided by the fire detection control panel, the sirens are supplied by an additional high-capacity power unit.

Please note that the negative connections (terminals 2 and 4) on the Siren Connection Module SZ58-3 are electrically connected with each other (also see directions above)!

The additional power unit for the supply of the sirens must – as illustrated in the figure – absolutely be connected to terminals 3 (+24V) and 4 (-).

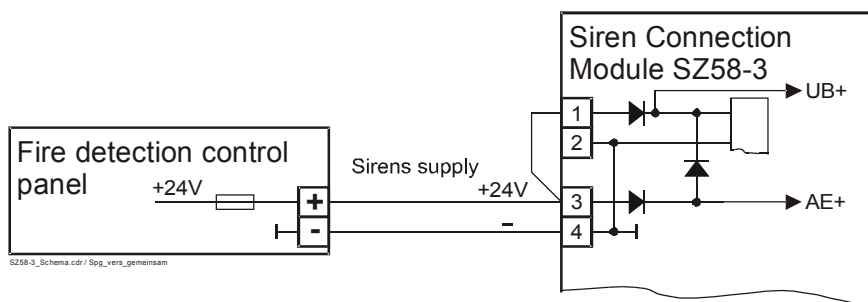


Fig. 5: Power supply of the Siren Connection Module SZ58-3 from the power unit of the fire detection control panel

Both the operating voltage of the SZ58-3 and the sirens supply are provided by the fire detection control panel.



Due to the possible high current consumption of the siren circuits, the cabling must be realized as illustrated in Fig. 5, i.e. the voltage must be connected to terminals 3 (+) and 4 (-) and terminals 1 and 3 must be connected with each other.



The power unit that caters for the sirens supply in addition to the maximum possible total current of all alarming devices connected to siren circuits 1 - 4 must have a sufficient power reserve. This power reserve must be calculated in a way that on a short circuit of a siren circuit and simultaneous activation of the other siren circuits, the required total current can be provided without nameable voltage drops (see switching threshold undervoltage siren circuit on page 27 in Chapter 4: "Specifications"). The siren circuits of the SZ58-3 itself are protected through self-healing electronic fuses. When the short circuit is removed from the siren circuit, the output is fully functional again.

3.2 Siren circuits

Four independent siren circuits for the line-monitored actuation of acoustic or optical signaling devices (sirens, strobes, etc.) are located on the Siren Connection Module SZ58-3. The outputs for the siren circuits are effectively protected against EMC effects. The appropriate regulations for electrical engineering must be observed when conducting cabling work.



For reasons of clarity, the components of EMC protective circuits of the outputs that are located on the componentries have been omitted in the following connection diagram.

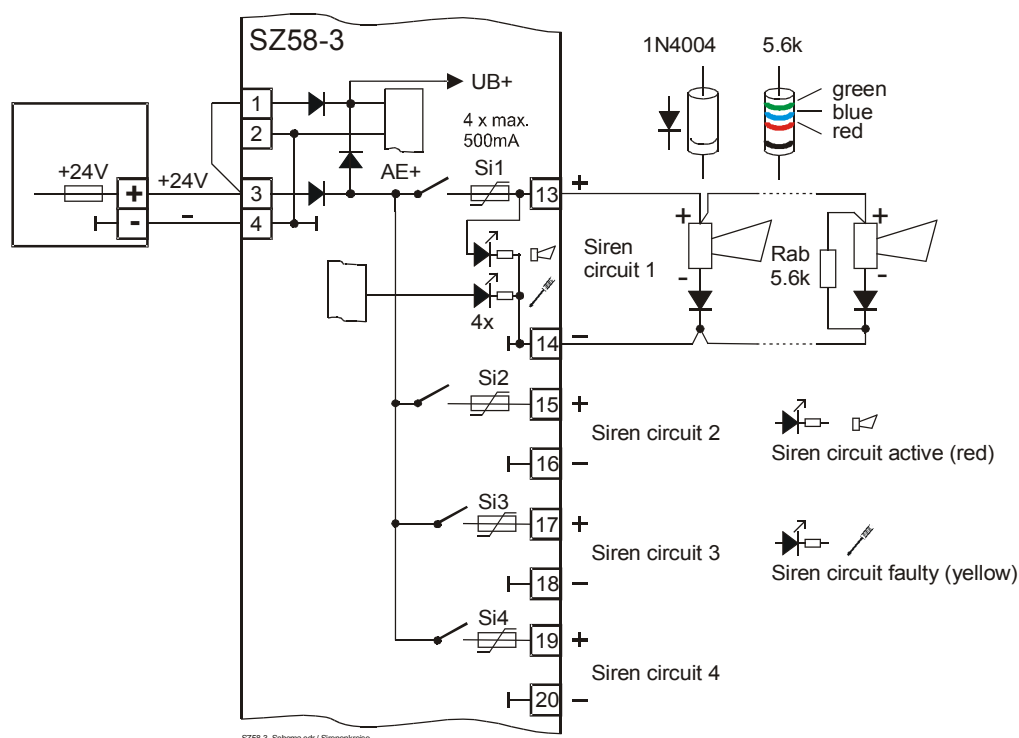


Fig. 6: Connection of the signaling devices to the siren outputs
 For each siren circuit two LEDs are designated for the display of the conditions 'Siren circuit active' (red illuminated) and 'Siren circuit faulty' (yellow illuminated).
 The siren circuits are protected through self-healing electronic fuses Si1 ... Si4. When the short circuit is removed from the siren circuit, the output is fully functional again.
 Siren circuit 1 is activated through input IN1 (terminal 5, see Fig. 7), siren circuit 2 is activated through input IN2, etc.

Line monitoring is accomplished through a negative surveillance voltage (approx. -1.2V at 5.6kΩ end-of-line resistance) that is applied to terminals 13, 15, 17, and 19 in normal condition. The serial diodes of the signaling devices shown in Fig. 6 block this negative voltage for each signaling device. In the event of activation, the sirens supply less 1V is output current-limited (see page 27 in Chapter 4: "Specifications") and short-circuit-proof on terminals 13, 15, 17, and 19.

The maximum current consumption of all devices must not exceed 0.5A per siren circuit. The total current consumption of all signaling devices connected to the SZ58-3 may amount to 2A at most. Also note the directions concerning the capacity of the power unit on page 20 and on in Chapter 3.1: "Power supply".



If the electronic fuse responded due to an overload of the siren circuit, it is recommended that you switch off the siren circuit for several seconds after the cause of the error has been removed.



If several signaling devices are to be operated monitored on one siren output, they must be connected in a chain as illustrated in Fig. 6. With star-shaped cabling, the display of a line interruption is only possible for the part of the line that has the end-of-line resistor connected on its end.

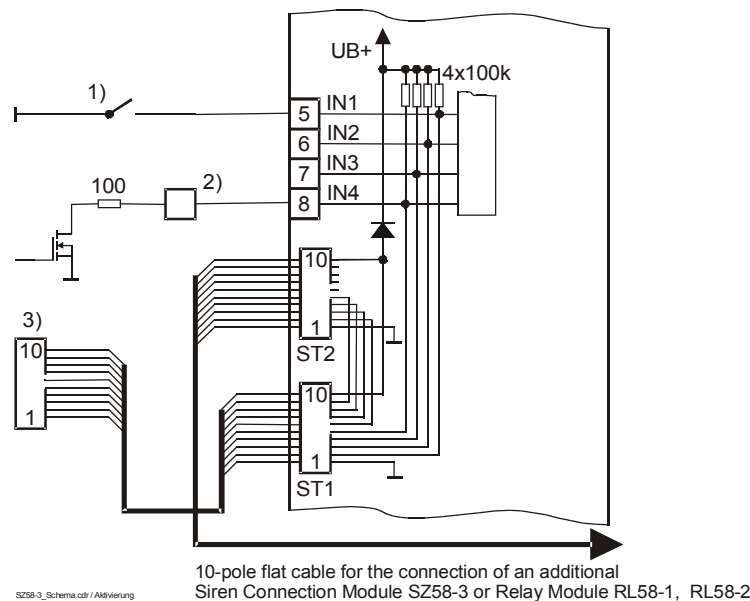
If no signaling device is connected to a siren output, both terminals of the output must be terminated with a 5.6kΩ end-of-line resistor instead to prevent the fault detection output and the yellow LED 'Siren circuit faulty' from indicating a fault.



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

3.3 Activation of the siren circuits

A siren circuit is activated when ground (-) is applied to the respective activation input IN1 ... IN4 (terminals 5 ... 8) or to the corresponding connection pin of the flat cable connector ST1 of the Siren Connection Module SZ58-3. Each of the four siren circuits can be activated individually.



- 1) Activation of siren circuit 1 via a contact connected to ground (-).
- 2) Activation of siren circuit 4 via an open collector output (e.g., FWI2-1, FWI016-1).
- 3) Activation of siren circuits 1 through 4 via the open collector auxiliary outputs of the fire detection control panel. Depending on the version of the fire detection control panel, the control and monitoring devices of the SZ58-3 can also be supplied with power via the flat cable. The power supply of the siren circuits, however, must always take place on terminals 3 and 4 of the Siren Connection Module SZ58-3!
Via the flat cable connector ST2, you can further connect the open collector auxiliary outputs 5 through 8 to different componentries (e.g., to an additional Siren Connection Module SZ58-3 or to Relay Modules RL58-1 or RL58-2).

Fig. 7: Connection to the activation inputs of the siren circuits
The activation signal (-) on input IN1 acts on siren circuit 1, IN2 acts on siren circuit 2, etc.

As long as a siren circuit is activated, the corresponding LED 'Siren circuit active' is illuminated.



The terminal of the activation input is electrically connected with the corresponding connection of the flat cable connector on the componentry. An activation signal that is applied to the flat cable connector is also available on the corresponding terminal and vice versa.

If required, you can also connect two signals in parallel (i.e. one signal via the flat cable and one signal via the activation input) for one siren circuit.

The Siren Connection Module SZ58-3 does not distinguish between activation signals applied to the terminal and those applied to the corresponding connection of the flat cable connector.



If several siren circuits are to be activated by the same input signal, you must connect the respective activation inputs with each other and actuate them jointly.



The cables connected to the terminals of the activation inputs may only then leave the interior of the housing of the fire detection control panel or an auxiliary case mounted in the immediate vicinity of the control panel housing if no open collector auxiliary output of the fire detection control panel is connected to the flat cable connector ST1.

Furthermore, please note that although the activation inputs are indeed sufficiently protected against EMC effects, due to the high input resistance, however, an influence of power lines running in parallel to activation lines outside the control panel housing cannot entirely be ruled out.

3.4 Fault detection outputs

The fault detection outputs report a detected wire breakage or a short circuit in the line system of the corresponding siren circuits. In addition, on undervoltage or failure of the sirens supply connected to terminals 3 and 4 of the SZ58-3 (see page 27 in Chapter 4: "Specifications"), a fault of the siren circuits is indicated simultaneously on all four fault detection outputs.

To indicate a fault, the fault detection outputs can be connected

- ♦ to zone ports for conventional detectors (fire detection control panels Series BC216, BC016, or BC06, respectively) which are parameterized, for example, as fault detection zones, or
- ♦ to actuation inputs (fire detection control panels Series BC216 or BC016, respectively).

As long as a fault is indicated, the corresponding yellow LED 'Siren circuit faulty' on the siren connection module is illuminated.

3.4.1 Connection of the fault detection outputs to zone ports for conventional detectors

In normal condition, the respective zone port of the fire detection control panel is terminated with an end-of-line resistor (5.6kΩ) located on the Siren Connection Module SZ58-3. In the event of a fault (e.g., on line failure of a siren circuit), the SZ58-3 applies the short-circuit criterion to the respective zone port and thus displays a fault on the fire detection control panel.

You can connect the fault detection outputs of as much siren circuits with each other as you like – also from several siren connection modules – and jointly connect them to a zone port for conventional detectors. You can tell from the respective illuminated yellow LED of the Siren Connection Module SZ58-3 which of the siren circuits is faulty.



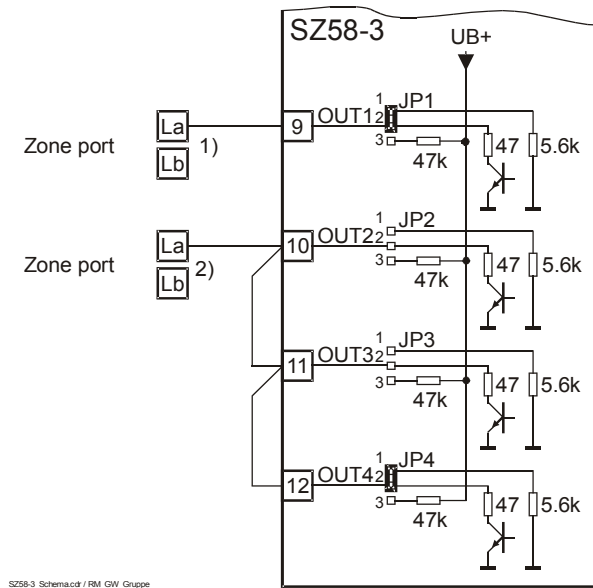
Fault detection outputs of different Siren Connection Modules SZ58-3 may only then be combined if all concerned siren connection modules are connected to the same operating voltage.



The cables connected to the fault detection outputs must under no circumstances leave the interior of the housing of the fire detection control panel or an auxiliary case mounted in the immediate vicinity of the control panel housing!



You must not connect fault detectors or fire detectors to a zone port which is used for displaying faults of a siren connection module! The fault message of the siren connection module prevents any messages from additionally connected detectors!



- 1) Fault message of a single siren circuit to a zone port.
Connect contact pins 1 and 2 of the corresponding jumper (JP) by means of a shorting plug.
- 2) Fault message of several siren circuits to a zone port.
Only at the last fault detection output connect contact pins 1 and 2 of the corresponding jumper (JP) by means of a shorting plug, at all the remaining jumpers whose outputs form the joint message line, the contact pins must not be connected.
If required, the joint message line can lead through several siren connection modules which must all be connected to the same operating voltage.

Fig. 8: Connection of the fault detection outputs to zone ports for conventional detectors
In the event of a line failure of a siren circuit, the SZ58-3 applies the short-circuit criterion to the respective zone port and thus displays a fault on the fire detection control panel.
The fault signal on output OUT1 (terminal 9) indicates the fault of siren circuit 1, OUT 2 (terminal 10) indicates the fault of siren circuit 2, etc.



Fault detection outputs may only be connected to zone ports in the very fire detection control panel that also provides the operating voltage for the SZ58-3 (terminals 1 and 2).



Plug the shorting plugs that are not required into a single contact pin of the respective jumper (without connecting the contact pins) – this way the shorting plugs are available for possible later use.



The zone ports of the fire detection control panel must be set to end-of-line resistors of 5.6kΩ.

3.4.2 Connection of the fault detection outputs to actuation inputs

The fault detection outputs of the Siren Connection Module SZ58-3 can be connected to all actuation inputs of fire detection control panels Series BC216 as well as BC016. This applies both to the actuation inputs on the individual central processing boards and to the inputs on the fire brigade interfaces.

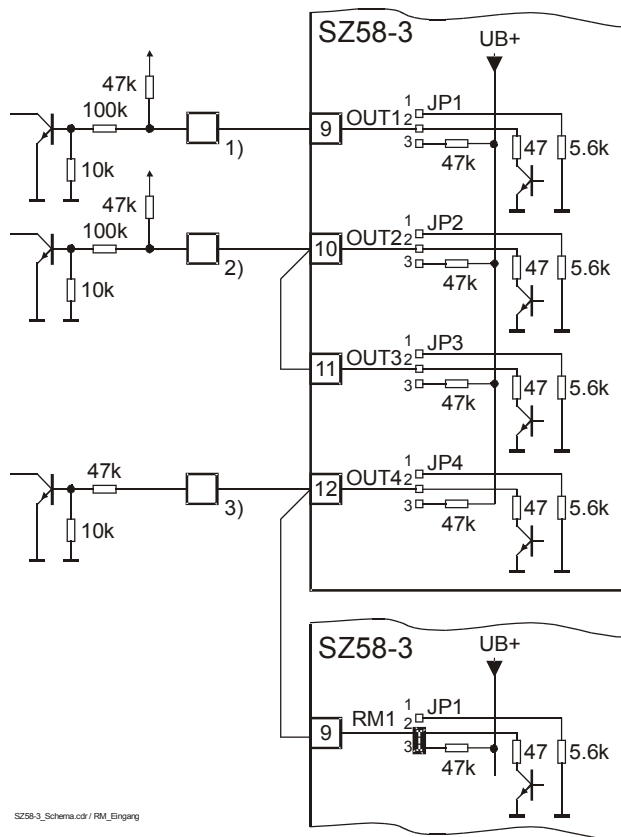
You can also connect the fault detection outputs of as much siren circuits with each other as you like – also from several Siren Connection Modules SZ58-3 – and jointly connect them to an actuation input. You can tell from the respective illuminated yellow LED(s) of the Siren Connection Module SZ58-3 which of the siren circuits is faulty.



Fault detection outputs of different Siren Connection Modules SZ58-3 may only then be combined if all concerned siren connection modules are connected to the same operating voltage.



The cables connected to the fault detection outputs must under no circumstances leave the interior of the housing of the fire detection control panel or an auxiliary case mounted in the immediate vicinity of the control panel housing!



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- 1) Fault message of a single siren circuit to an input that can be activated by applying ground. Contact pins 1, 2, and 3 on the jumper (JP) remain open (are not connected). The input must be parameterized as "NO-contact" on the fire detection control panel.
- 2) Fault message of several siren circuits to an input that can be activated by applying ground. Contact pins 1, 2, and 3 on the jumpers (JP) remain open (are not connected) at all fault detection outputs of this joint message line. If required, the joint message line can lead through several Siren Connection Modules SZ58-3 which must all be connected to the same power supply. This input must be parameterized as "NO-contact" on the fire detection control panel.
- 3) Fault message of one or several siren circuits to an input that can be activated by applying a positive voltage. Only at the last (or only, respectively) fault detection output of this joint message line connect contact pins 2 and 3 of the corresponding jumper (JP) by means of a shorting plug, at all the remaining jumpers whose output form the joint message line, the contacts must not be connected. If required, the joint message line can lead through several Siren Connection Modules SZ58-3 which must all be connected to the same power supply. This input must be parameterized as "NC-contact" on the fire detection control panel.

Fig. 9: Connection of the fault detection outputs to actuation inputs of the central processing boards or fire brigade interfaces of fire detection control panels Series BC216 or BC016
 In the event of a line failure of a siren circuit, the SZ58-3 applies ground (-) to the respective actuation input and thus displays a fault on the fire detection control panel.
 The fault signal on output OUT1 (terminal 9) indicates the fault of siren circuit 1, OUT 2 (terminal 10) indicates the fault of siren circuit 2, etc.



Fault detection outputs may only be connected to inputs in the very fire detection control panel which also provides the operating voltage for the SZ58-3 (terminals 1 and 2).



Plug the shorting plugs that are not required into a single contact pin of the respective jumper (without connecting the contacts) – this way the shorting plugs are available for possible later use.

4 Specifications

Operating voltage (terminals 1 and 2)	21 to 30VDC
Sirens supply (terminals 3 and 4)	21 to 30VDC
Switching threshold undervoltage siren circuit	typ. 20.7V
Current consumption at 24V (terminals 1 and 2)	typ. 15mA (all 4 siren circuits quiescent)
Siren circuits	
Number	4
Permissible load current of each siren circuit	max. 0.5A permanently
Current limitation of each siren circuit	0.7 ... 2.1A
Output voltage quiescent	typ. -1.2V (at Rab 5.6kΩ)
Output voltage activated	sirens supply less typ. 1V
End-of-line resistor	5.6kΩ
Dimensions L × W × H	98 × 74 × 18 (mm)
Weight	60g
Ambient temperature	-5°C to +50°C