5 Connection

5.1 Voice Alarm Controller

5.1.1 Emergency microphone

The voice alarm controller has 1 connector for an emergency microphone. A hand-held emergency microphone is supplied with the voice alarm controller. See for installation details below. Turn the lock ring clockwise to lock the plug.

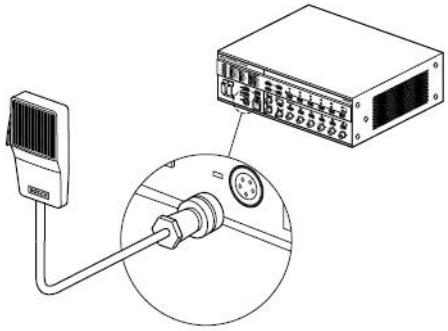

Figure 5.1: Connecting the emergency microphone

5.1.2 Call station

The voice alarm controller has 2 sockets for Call Stations. Use CAT-5 Ethernet cables with RJ45 plugs to connect call stations to the voice alarm controller. When the system requires more than 2 call stations, use the system sockets on the call stations to make loop-throughs. See the connection details below.
The controller comes with CAN bus termination installed. This is an RJ45 connector with built-in termination. Make sure that it is installed in the unused connector. On the routers and call station the termination switch setting must be in the "ON" position on the last device.

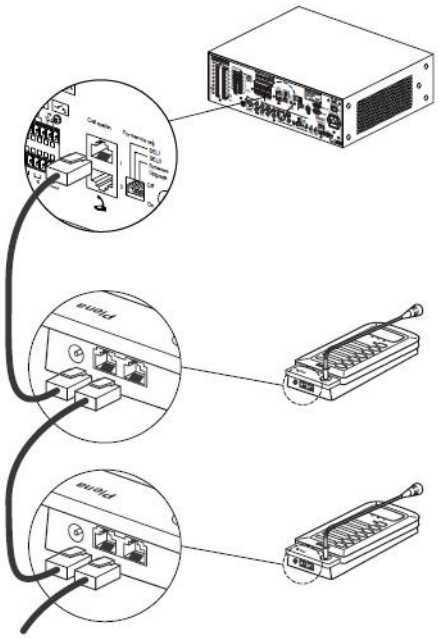

Figure 5.2: Connecting call stations

Notice!
Each connected call station must have a unique ID (see section *Call station, page 83*).

If the cable between the call station and the voice alarm controller is too long to power the call station, it is possible to connect a 24 VDC power source (see section *Power supply, page 69*).

5.1.3 Voice alarm routers

The voice alarm controller has 1 socket for Voice Alarm Routers. Use shielded CAT-5 Ethernet cables with RJ45 plugs to connect a voice alarm router to the voice alarm controller. When the system requires more than 1 voice alarm router, use the system sockets on the voice alarm router to make loop-throughs. See the connection details below.
The router come with CAN bus termination installed. This is an RJ45 connector with built-in termination. Make sure that it is installed in the unused connector. On the routers and call station the termination switch setting must be in the "ON" position on the last device.

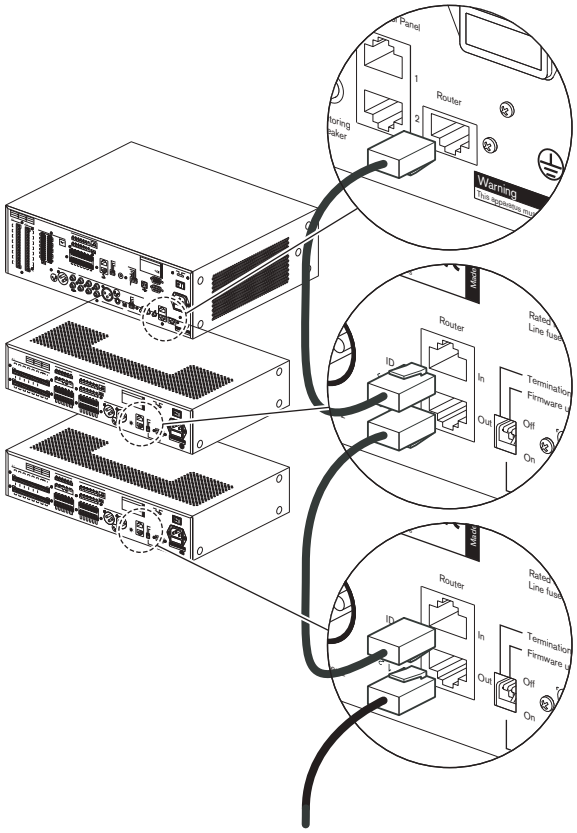

Figure 5.3: Connecting routers

Notice!
Each connected voice alarm router must have a unique ID (see section *Voice alarm router, page 82*).

Notice!
The voice alarm controller comes delivered with termination plugs (connectors) fitted in some RJ45 sockets. When connecting routers and RCP panels, the connected device must have their termination set to on, and the termination plug has to plugged in the unused socket.

5.1.4 External power amplifier

The voice alarm controller has 1 external power amplifier output (line level, 1 V) and 1 external power amplifier input (100 V) to connect an external power amplifier. The function of the external power amplifier (e.g. a Plena Power Amplifier 360/240W) depends on the channel mode for which the voice alarm controller is configured (see section *1-Channel mode operation, page 77* and section *2-Channel mode operation, page 78*).

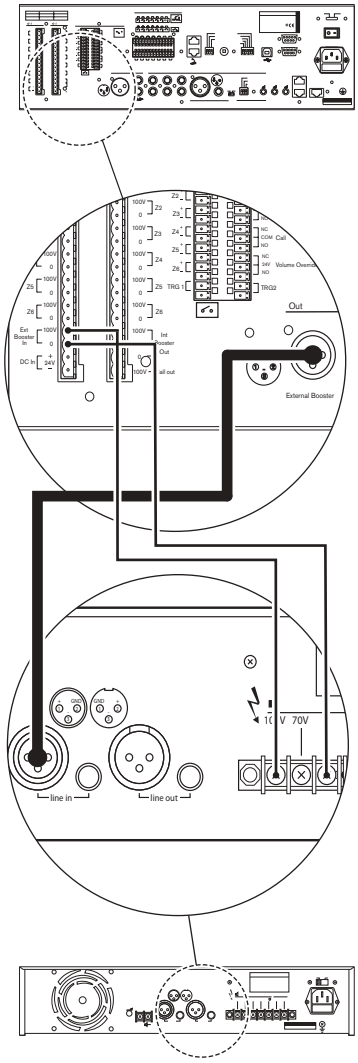

Figure 5.4: Connecting an external power amplifier

5.1.5 Remote controls

The voice alarm controller has 2 sockets for remote controls. Use shielded CAT-5 Ethernet cables with RJ45 plugs to connect a remote control to the voice alarm controller. See the connection details below:

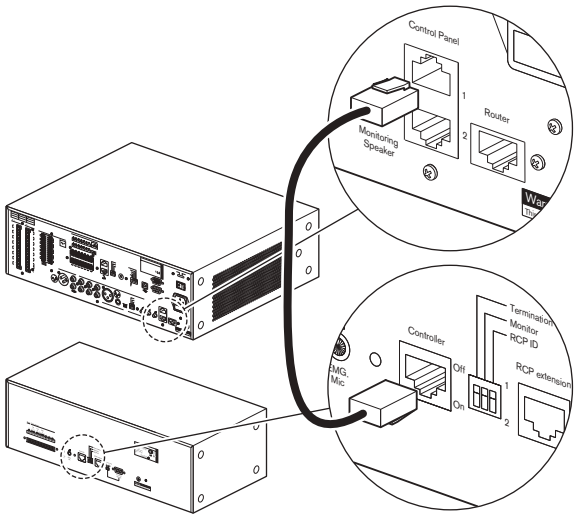

Figure 5.5: Connecting a remote control

5.1.6 Loudspeakers

The voice alarm controller has 6 zone outputs (Z1 to Z6). Each zone output consists of 2 redundant loudspeaker lines (line A and line B). Normally, calls and BGM are distributed to a zone over both loudspeaker lines. If one of the loudspeaker lines of a zone fails, it is still possible to distribute calls and BGM to the zone over the remaining loudspeaker line.

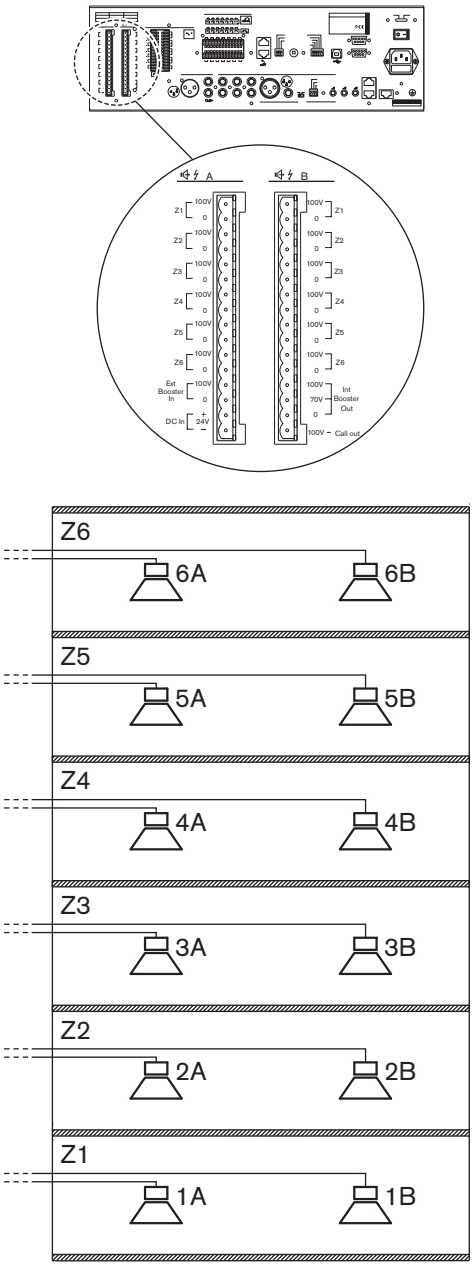

Figure 5.6: Connecting loudspeaker zones

If it is necessary to detect the removal or failure of a single loudspeaker, the following is advised:

– Do not connect more than 5 loudspeakers to the same loudspeaker line (line A or line B). Field tests have shown that the impedance of loudspeakers and loudspeaker lines varies with temperature and age. The limit of 5 loudspeakers is set due to this variation. In a more stable environment, the number of loudspeakers can be higher.
– Make sure that all loudspeakers connected to the same loudspeaker line have the same impedance.

Notice!

The impedance measurement of the Plena Voice Alarm System has an accuracy better than 2%. The system only generates a fault if the line impedance difference is greater than the configured accuracy. Use the configuration software to configure the accuracy

Notice!

See the Configuration Software Manual for more information about the configuration software.

Notice!

The maximum load for the internal power amplifier of the voice alarm controller is 240 W. However, if the voice alarm controller is used in 2-channel mode and an external 480 W amplifier is connected to it, the maximum loudspeaker load can be 480 W at 100 V. This is because in 2-channel mode, the internal power amplifier of the voice alarm controller is used for BGM only and distributes BGM at -3 dB, from which follows that the maximum power output is 240 W at 70 V and that the loading caused by 100 V loudspeakers at 70 V is also 240 W. The external amplifier is used for calls only with 480 W output power and 100 V loudspeaker line voltage.

Notice!

The voice alarm system has great flexibility, from one amplifier for all routers to one amplifier per router, or any arrangement in between. But in a 2-channel system, the number and type of amplifiers for the call-channel has to be exactly mirrored for the music channel. Getting the signal from the same routers and feeding loudspeaker signal to the same set of routers. If not, amplifier supervision and amplifier sparing will not function properly.

5.1.7 Volume overrides

The voice alarm controller has 6 override outputs; 1 for each zone in the system. These are suitable for 4-wire override (24 V) and 3-wire override.

Notice!

By default, the voice alarm controller is configured for 4-wire (24 V), power-saving override (refer to situation I below).

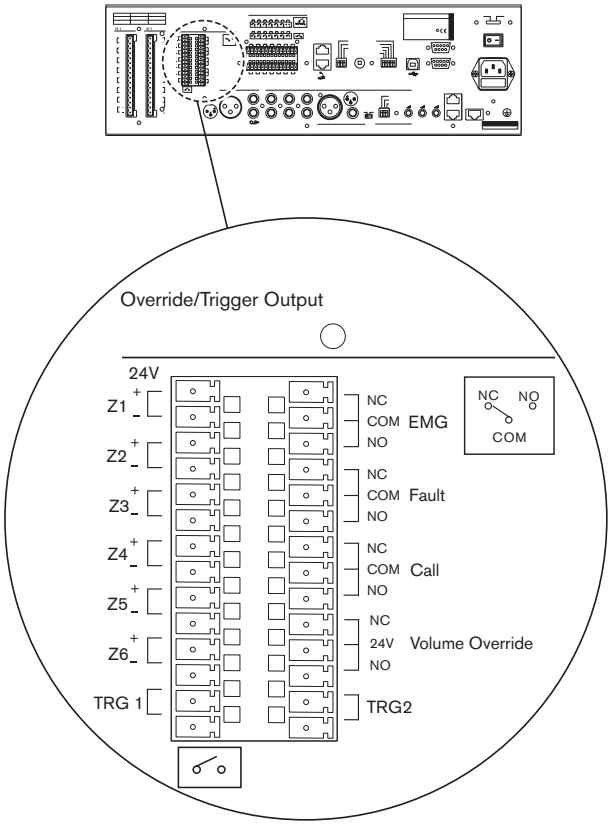

Figure 5.7: Override outputs

Internally, the positive override pins (Z+) are all connected to either the NC or the NO contact of the Volume Override output. The negative override pins (Z-) are all connected to earth.

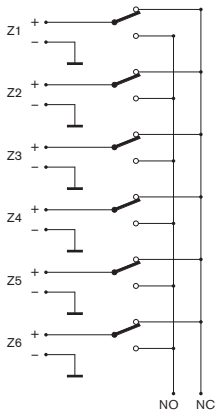

Figure 5.8: Volume override contacts

Normally, when there are no active calls, the Z+ pins are internally connected to the NC contact of the Volume Override. At the moment a call is started in a zone, the Z+ pin of the zone is internally connected to the NO contact of the Volume Override. So, the NC and the NO contacts determine which voltage is supplied to the positive pins of the override outputs (Z+).

See situation I, for an example of a power-saving 4-wire volume override:

- Connect the NO contact of the Volume Override to the 24V contact of the Volume Override.

See situation II, for an example of a fail-safe 4-wire volume override:

- Connect the NC contact of the Volume Override to the 24V contact of the Volume Override.

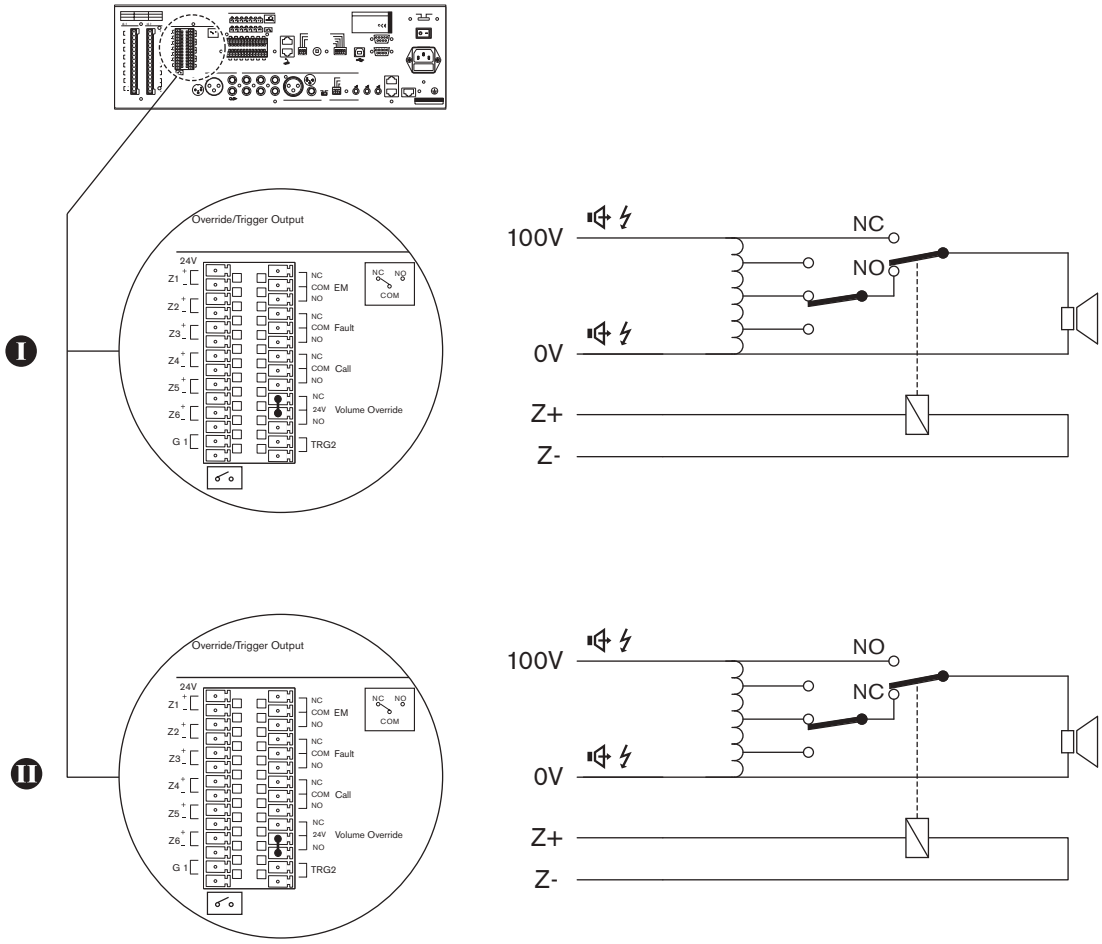

Figure 5.9: 4-wire volume override

To create a 3-wire volume override:

Notice!
It is not possible to use 3-wire volume override in combination with redundant loudspeaker lines (line A and B, see figure 5.6) and supervision. If redundant loudspeaker lines are needed, use 4-wire volume override.

1. Connect the 100 V output of loudspeaker line A to the 100 V input of the volume control.
2. Connect the 100 V/0 V (CALL/RTN) of the transformer to the 100V output of loudspeaker line B.
3. Connect the 0 output of loudspeaker line A to the 0 V of the loudspeaker.

4. Enable 3-wire volume override in the configuration software.

Notice!
See the Configuration Software Manual for more information about the configuration software.

Caution!
Make sure that the correct connections have been made and the system is correctly configured.

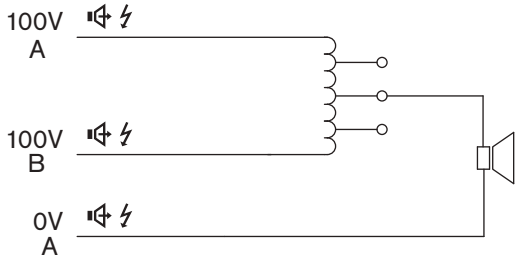

Figure 5.10: 3-wire volume override

5.1.8 Line output

The voice alarm controller has 1 line output. This output has a double cinch socket. Both cinch sockets contain the same, mono signal, which consists of the current BGM and calls. The line output can be used to connect the voice alarm controller to a recording device (e.g. a tape-deck).

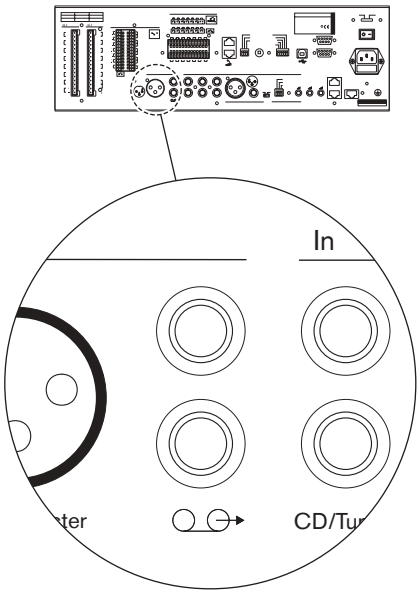

Figure 5.11: Line output

5.1.9 Mic/line input with VOX

The voice alarm controller has 1 mic/line input with voice-activated (VOX) functionality. This input has 2 sockets; a balanced XLR socket and a balanced 6.3 mm jack socket. The signals from both sockets are mixed to form a single input signal.

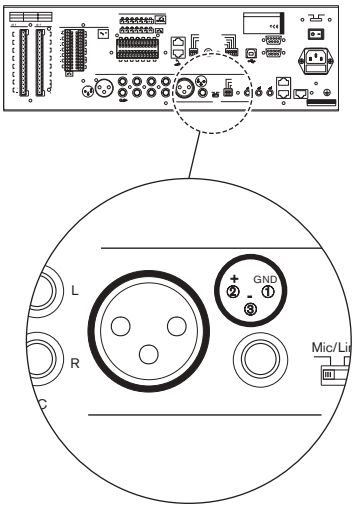

Figure 5.12: Mic/line input with VOX functionality

The input automatically starts a business or emergency call if the input is higher than -10 dB or if the VOX switch is closed. The input must be configured with the configuration software.

Notice!

See the Configuration Software Manual for more information about the configuration software.

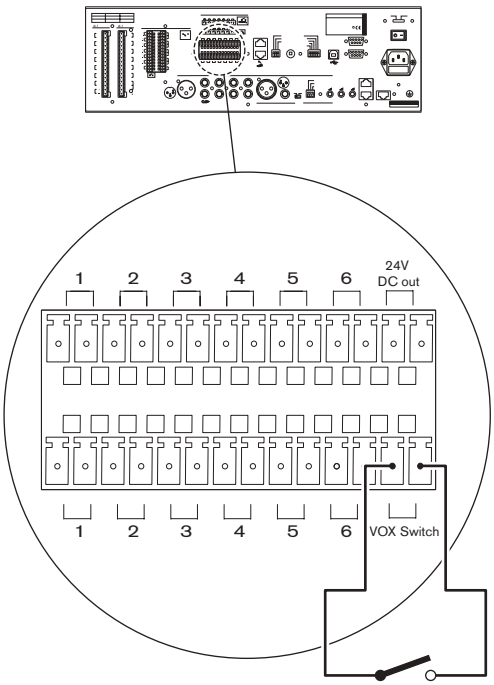

Figure 5.13: Connecting a VOX switch

For example, the mic/line input with VOX functionality can be used to create a supervised link to another emergency sound system (e.g. a Praesideo system).

5.1.10 BGM inputs

The voice alarm controller has 2 BGM inputs. Each BGM input has a double cinch socket. To these cinch outputs, a background music source can be connected (e.g. a Bosch music source). The signals connected to the L (left) and R (right) cinch sockets are mixed to form a single input signal.

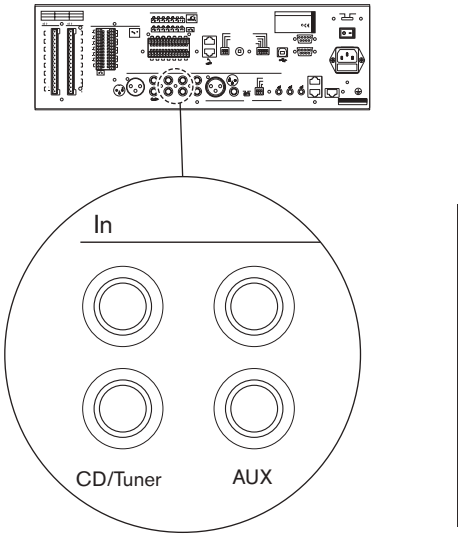

Figure 5.14: BGM inputs

Input	Source
CD/Tuner	CD or tuner
AUX	Auxiliary source

Table 5.1: BGM inputs

5.1.11 Status output contacts

The voice alarm controller has 3 status output contacts to indicate the current system state. These are used to send the status of the Plena Voice Alarm Systemto third party equipment or to connect sounders or similar indicating devices.

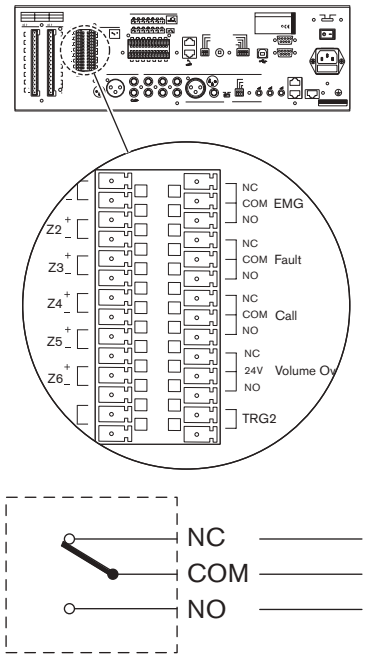

Figure 5.15: Status output contacts (default)

Contact	Description
EMG	Emergency state (see section *Emergency state, page 91*).
Fault	Fault state (see section *Fault State, page 96*).
Call	Call active state.

Table 5.2: Status output contact

The status output contacts are internal relays. By default, NC is connected to COM. When the Plena Voice Alarm System enters one of the states that are indicated, the relay connects NO to COM.

5.1.12 Power

Introduction

The voice alarm controller has the following power connections:

– Mains power connection.
– Back-up power connection.

Mains power

Proceed as follows to connect the voice alarm controller to the mains power:

▸ Select the local mains voltage using the voltage selector on the rear of the voice alarm controller.

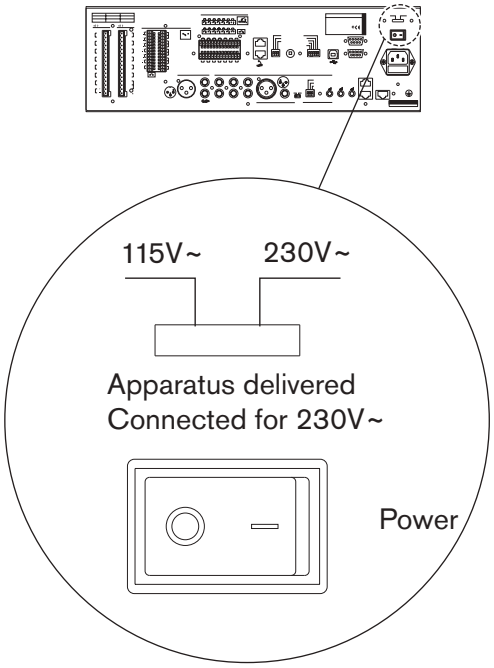

Figure 5.16: Voltage selector

Selector	Mains voltage V(AC)	Fuse
115	100 - 120	115 V - 10 AT
230	220 - 240	230 V - 6,3 AT

Table 5.3: Voltage selector

Notice!

The Voice Alarm Controller is delivered with the voltage selector in the 230 V position.

1. Put the correct type of fuse in the voice alarm controller.

Notice!

The Voice Alarm Controller is delivered with a T6.3L 250 V fuse for a mains voltage of 220 to 240 V(AC).

2. Connect a locally approved mains cord to the voice alarm controller.
3. Connect the mains cord to a locally approved mains outlet.

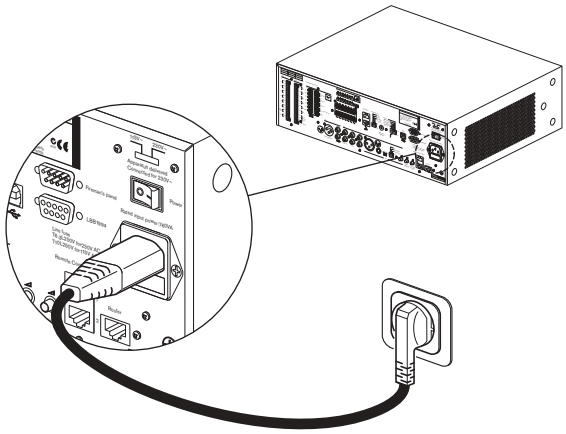

Figure 5.17: Connecting the mains cord

Back-up power

The voice alarm controller has a 24 V(DC) input to connect a back-up power supply (e.g. a battery) which powers the system if the mains power is not available. See the connection details below:

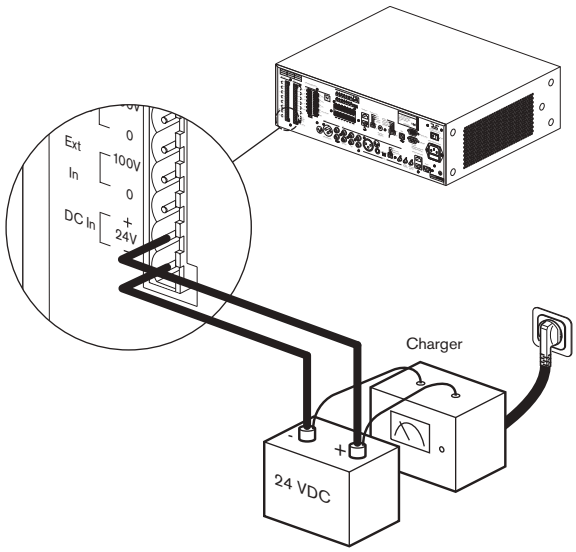

Figure 5.18: Connecting a back-up power supply

5.1.13 Trigger inputs

Introduction

The voice alarm controller has a terminal block to which 6 emergency (EMG) and 6 business trigger inputs can be connected. Third party systems can use the trigger inputs to start emergency and business calls in the Plena Voice Alarm System. The trigger inputs must be configured with the configuration software.

Emergency trigger inputs

The upper part of the terminal block contains the emergency trigger inputs. The emergency trigger inputs have a higher priority than the business trigger inputs.

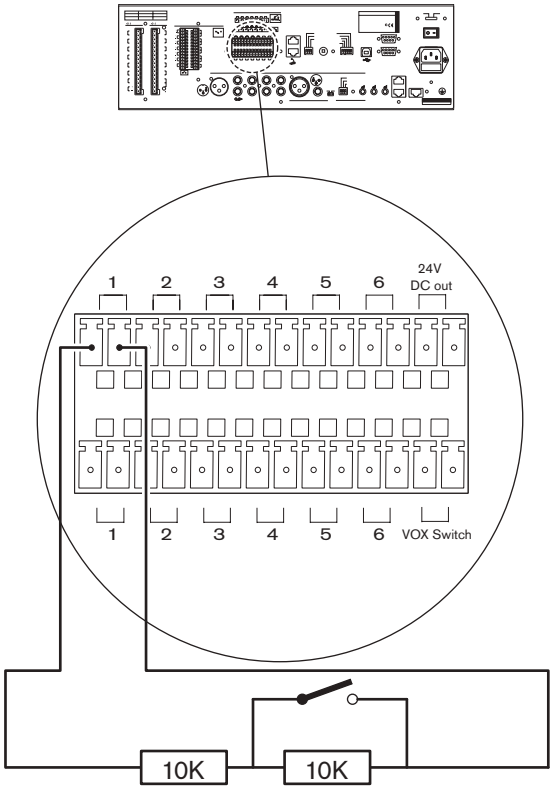

Figure 5.19: Connecting emergency trigger inputs

Business trigger inputs

The lower part of the terminal block contains the business trigger inputs. The business trigger inputs have a lower priority than the emergency trigger inputs.

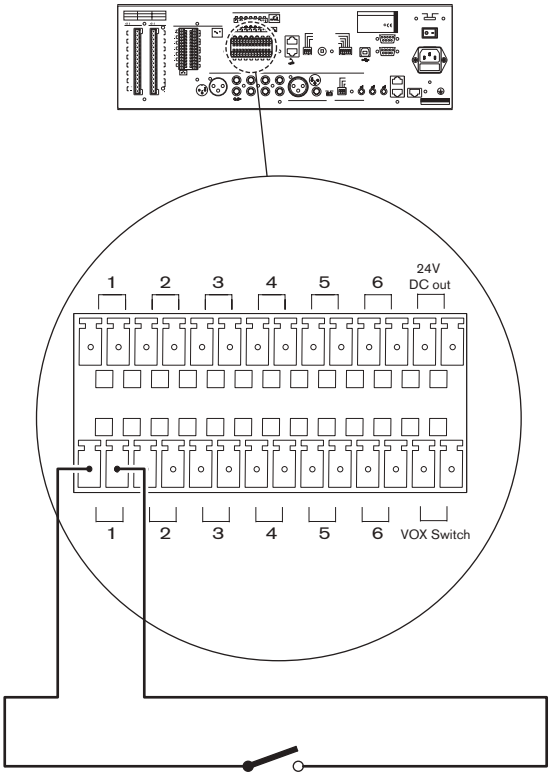

Figure 5.20: Connecting business trigger inputs

5.2 Voice Alarm Router

5.2.1 Voice alarm controller

Connect the voice alarm router to the voice alarm controller (see section *Voice alarm routers, page 51*).

5.2.2 Loudspeakers

The voice alarm router has 6 zone outputs (Z1 to Z6). The procedure for connecting loudspeakers to a voice alarm router is the same as the procedure for connecting loudspeakers to a voice alarm controller (see section *Loudspeakers, page 54*).

5.2.3 Volume overrides

The voice alarm router has 6 override outputs; 1 for each connected zone. These are suitable for 4-wire override (24 V) and for 3-wire override. The procedure for using volume override in zones that are connected to a voice alarm router is the same as the procedure for using volume override in zones that are connected to the voice alarm controller (see section *Volume overrides, page 56*).

5.2.4 Trigger inputs

The voice alarm router has a terminal block to which 6 emergency (EMG) and 6 business trigger inputs can be connected. Third party systems can use the trigger inputs to start emergency and business calls in the Plena Voice Alarm System. The trigger inputs must be configured with the configuration software. The procedure for connecting trigger inputs to a voice alarm router is similar to the procedure for connecting trigger inputs to the voice alarm controller (see section *Trigger inputs, page 64*).

5.2.5 External power amplifiers

The voice alarm router has 2 external power amplifier outputs (line level, 1 V) and 1 external power amplifier input (100 V) to connect two external power amplifiers. The function of the external power amplifier (e.g. a Plena Power Amplifier) depends on the channel mode for which the system is configured (see section *1-Channel mode operation, page 77* and section *2-Channel mode operation, page 78*).

See the next information about connecting external power amplifier 1 to a voice alarm router:

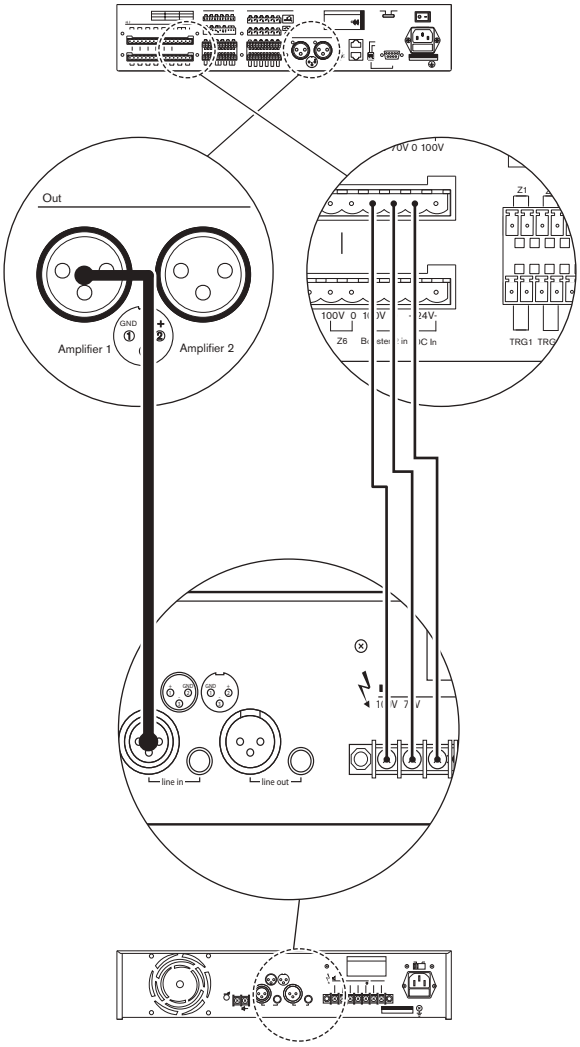

Figure 5.21: Connecting external power amplifier 1

See the next information about connecting external power amplifier 2 to a voice alarm router:

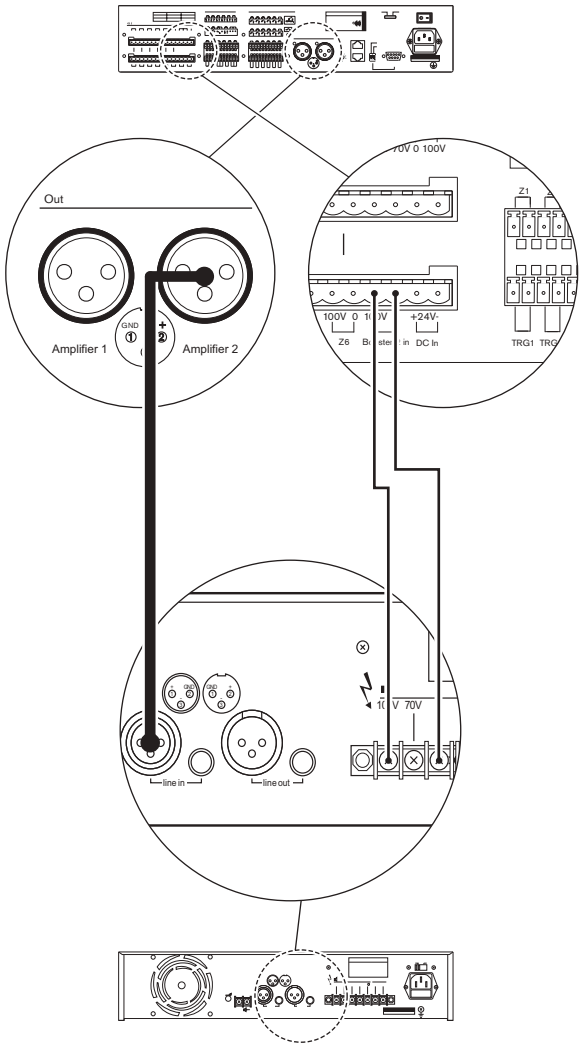

Figure 5.22: Connecting external power amplifier 2

Notice!

The internal power amplifier of the voice alarm controller can also be used as external power amplifier for the voice alarm router.

5.2.6 Power

The procedure for connecting a voice alarm router to the mains power is the same as the procedure for connecting the voice alarm controller to the mains (see section *Power, page 62*).

5.3 Call Station

5.3.1 Voice alarm controller

Connect the call station to the voice alarm controller (see section *Call station, page 50*).

5.3.2 Power supply

If the cable between the voice alarm controller or the previous call station is longer than 100 m, the call station may sometimes need to be connected to a 24 V(DC) power source. See the connection details below:

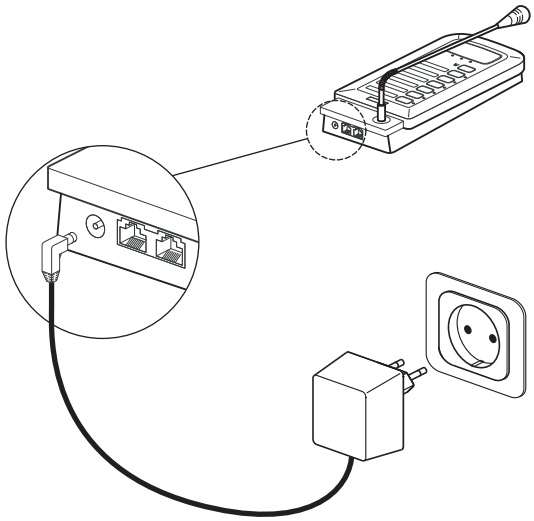

Figure 5.23: Connecting a power supply

5.3.3 Keypads

The maximum number of keypads that can be connected to a call station is 8 (see section *Call Station Keypad, page 44*).

5.4 Voice Alarm Remote Control

5.4.1 Voice alarm controller

Connect the remote control panel to the voice alarm controller (see section *Remote controls, page 53*).

5.4.2 Remote control extensions

The remote controller has 1 socket for remote control extensions (Remote Control Extension, Remote Control Extension kit). Use shielded CAT-5 Ethernet cables with RJ45 plugs to connect a remote control extension to the remote control. When the system requires more than 1 remote control extension, use the system sockets on the remote control extension to make loop-throughs. See the connection details below.
The termination switch must be set to ON. If not, over long distances, the data bus can malfunction.

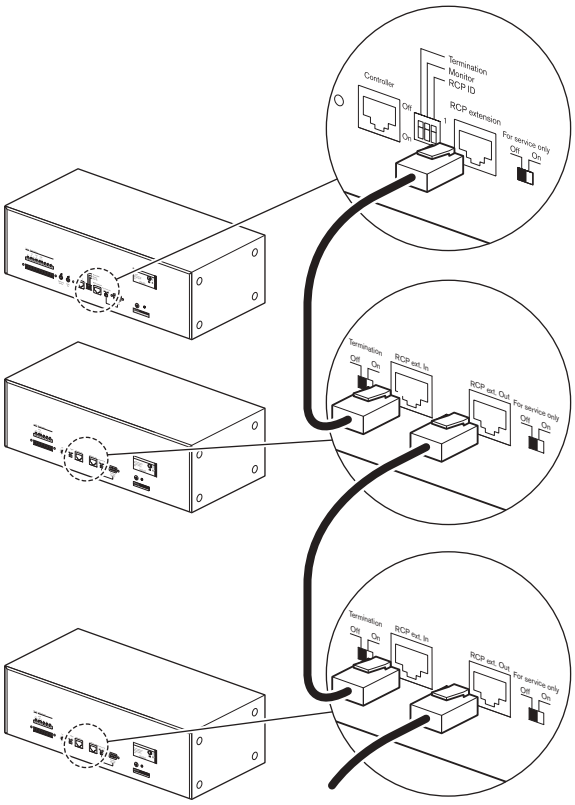

Figure 5.24: Connecting remote control extensions

5.4.3 Status output contacts

The remote control panel has 3 status output contacts to indicate the current system state. The procedure for connecting the status outputs is the same as the procedure for connecting status outputs to the voice alarm controller (see section *Status output contacts, page 61*).

5.4.4 Power

Connect a power supply to the remote control panel:

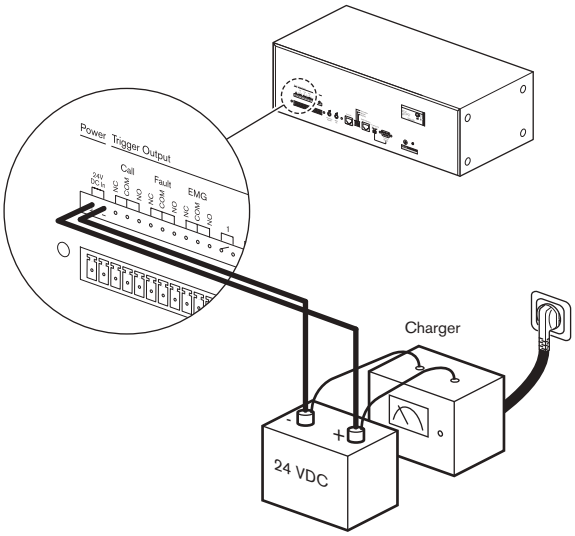

Figure 5.25: Connecting a 24 VDC power supply

5.5 Voice Alarm Remote Control Kit

5.5.1 Rear panel

The rear panel of the remote control kit has the same connectors and controls as the rear panel of the Voice Alarm Remote Control. See section *Voice Alarm Remote Control, page 70* for connection details.

5.5.2 LEDs

To the LEDS/LAMPS connectors on the front panel of the remote control kit, the LEDs can be connected.

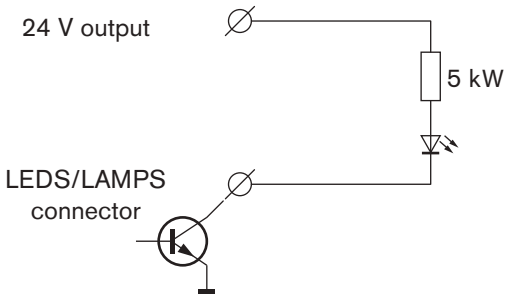

Figure 5.26: Connecting LEDs

5.5.3 Lamps

To the LEDS/LAMPS connectors on the front panel of the remote control kit, lamps can be connected:

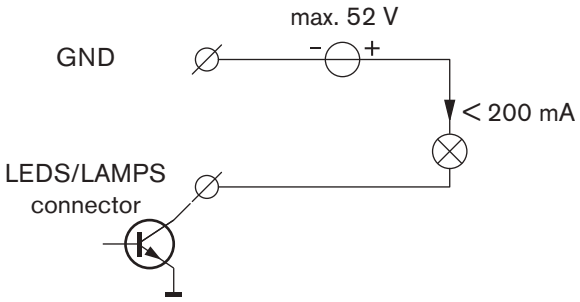

Figure 5.27: Connecting lamps

5.5.4 Relays

To the LEDS/LAMPS connectors on the front panel of the remote control kit, relays can be connected:

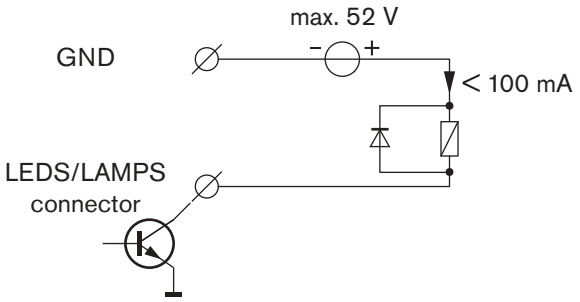

Figure 5.28: Connecting relays

5.6 Remote Control Extension

5.6.1 Remote control

Connect the remote control extension to the remote control (see section *Remote control extensions, page 70*).

5.6.2 Status output contacts

The remote control extension has 3 status output contacts to indicate the current system state. The procedure for connecting the status outputs is the same as the procedure for connecting status outputs to the voice alarm controller (see section *Status output contacts, page 61*).

5.6.3 Power

Connect a back-up power supply to the remote control extension.
The 24 V output of the Controller or the Router can be used for this. Those outputs are powered by mains and back-up power. It is also possible to install a floating (without ground reference) 24 V power supply with backup battery (EN54-4 compliant for EN54-16 compliant systems, or EN60849 compliant).

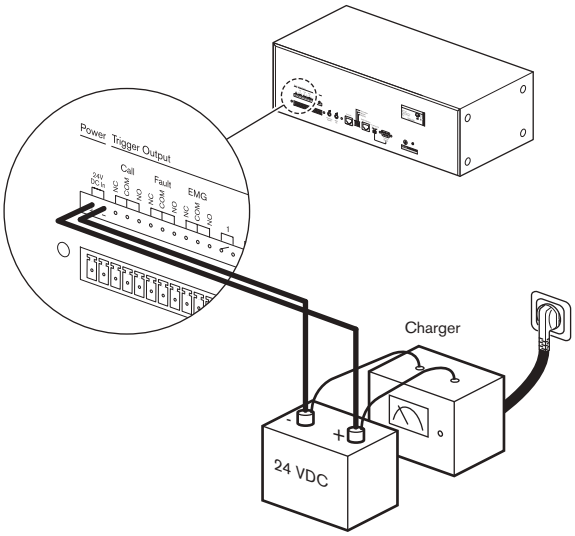

Figure 5.29: Connecting a power supply

5.7 Remote Control Extension Kit

5.7.1 Rear panel

The rear panel of the remote control extension kit has the same connectors and controls as the rear panel of the Voice Alarm Control Extension. See section *Remote Control Extension, page 73* for connection details.

5.7.2 LEDs

To the LEDs/LAMPS connectors on the front panel of the remote control extension kit, the LEDs can be connected (see *Voice Alarm Remote Control kit, page 27*).

5.7.3 Lamps

To the LEDs/LAMPS connectors on the front panel of the remote control extension kit, lamps can be connected (see *Voice Alarm Remote Control kit, page 27*).

5.7.4 Relays

To the LEDs/LAMPS connectors on the front panel of the remote control extension kit, relays can be connected (see *Voice Alarm Remote Control kit, page 27*).

5.8 Fireman's Panel

5.8.1 Voice alarm controller

Connect the fireman's panel to the voice alarm controller (see section *Remote controls, page 53*).

5.8.2 Remote control extensions

The fireman's panel has 1 socket for remote control extensions (Remote Control Extension, Remote Control Extension kit). Use shielded CAT-5 Ethernet cables with RJ45 plugs to connect a remote control extension to the fireman's panel. When the system requires more than 1 remote control extension, use the system sockets on the remote control extension to make loop-throughs. See section *Remote control extensions, page 70* for connection details.

5.8.3 Status output contacts

The fireman's panel has 3 status output contacts to indicate the current system state. The procedure for connecting the status outputs is the same as the procedure for connecting status outputs to the voice alarm controller (see section *Status output contacts, page 61*).

5.8.4 Power

The procedure for connecting a fireman's panel to a power supply is the same as the procedure for connecting a remote control to a power supply (see section *Power, page 71*).