

AURASAFE mini

Monitoring and control of fire dampers



- Complete control system for fire dampers
- Monitors up to 500 fire dampers
- Digital error signal
- Connection to BMS by Modbus or BACnet

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AURASAFE mini

APPLICATION

AURASAFE mini is a control- and monitoring system for fire dampers. It can monitor and control up to 500 fire dampers, by combining the control unit, slave and booster modules. The system is suitable for small and medium-sized facilities where there is no need for multiple fire scenarios to be taken into account. AURASAFE mini is equipped with a relay output for stopping fans, input for fire alarm, digital error signal and Modbus/BACnet communication for BMS systems.

FUNCTION

AURASAFE Mini communicates with damper module TX-BRS3 via flexibus. A 2-wire cable with free topology is used, and this contains both bus-communication and 24V operating voltage for fire dampers. A TX-BRS3 is set up for each fire damper in the facility. AURASAFE Mini controls the fire dampers based on received signals, and exercise of dampers can be done automatically, manually via control panel, or by signal from BMS system. You can read about how to set up the master at our website: www.trox.no One control unit can control up to 100 fire dampers. However, if more dampers are to be controlled, up to 100 additional fire dampers can be controlled using an extra control module set as a slave. The maximum total number can be increased up to 500 fire dampers via these slave modules.

DESIGN

The AURASAFE Mini controller is encapsulated in an IP65 box. The other components of the system are also encapsulated in plastic boxes.

MATERIALS AND SURFACE COATING

The control cabinet and modules are made of plastic.

Technical data	
Power supply	AC 230 V, 50/60 Hz
Connection	Clamps, max 250 VAC. Cable diameter 0,5...2,5 mm ²
Communication with damper	Up to 12 dampers can be connected together in a section of 100 m, 1.5 mm, 2 2-wire cable

Table 1

ORDER CODE, AURASAFE mini

Product:	Aurasafe Mini -
Components:	<ul style="list-style-type: none"> 1 = TX-CTRL1 Controller std 12 Dampers, Modbus RTU 2 = TX-CTRL2 Controller lite 8 Dampers, Modbus RTU 3 = TX-BO1 Boostermodule 4 = TX-BRS3 Dampermodule for fire- and smoke dampers 5 = TX-RKS3 Dampermodule for smoke control dampers 6 = TX-INP3 Inputmodule for smoke detector/fire thermostat 7 = TX-FEP1 Faultpanel 8 = TX-TEM3 PT1000 Inputmodule 9 = TX-DREL3 Relaymodule 4DO 10 = TX-RBRS3 Damper/Relaymodule 230V 12 = TX-EXP1 13 = TX-CTRL-BM1 Controller 12 Dampers, BACnet/Modbus IP 30 = TX-BRS2

INSTALLATION

Mechanical installation
AURASAFE mini is attached directly to the wall with four screws.

MAINTENANCE

There are no special maintenance requirements.

ENVIRONMENT

Inquiries regarding product declarations can be directed to one of our sales reps or can be found on our website : www.trox.no

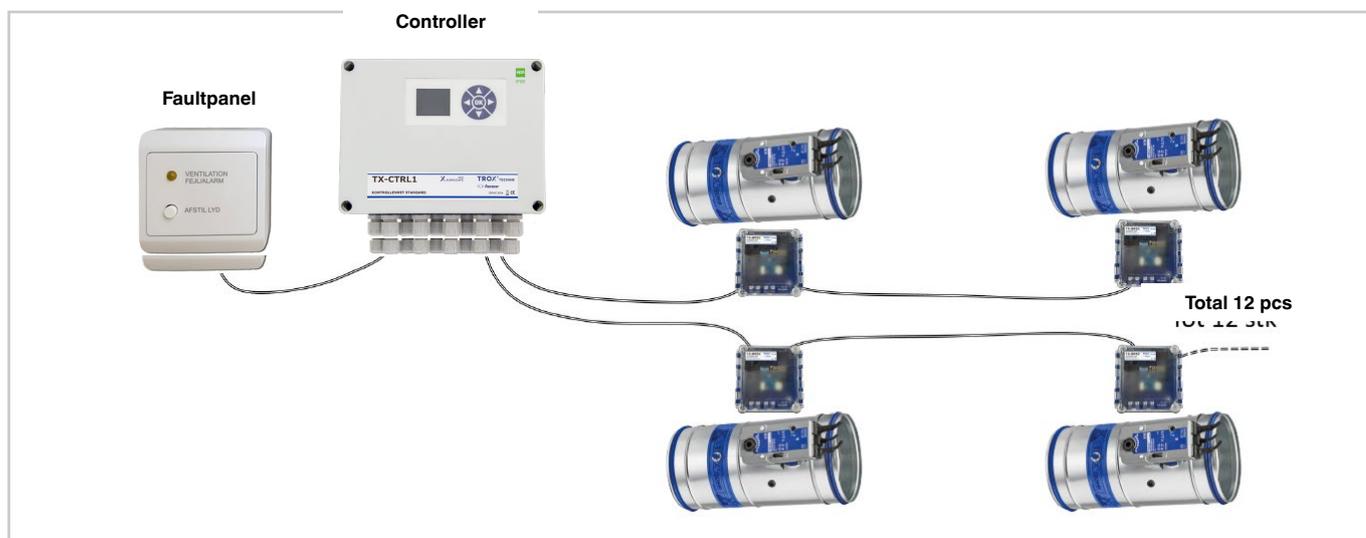


Figure 1, Shows a typical layout. From the control panel to damper modules, 2-wire cable is used for bus communication and 24V for fire dampers (no need for shielded cable). This can be wired in series, in star or in ring. Optional topology. When using 1.5 mm² you can have approx. 100 m cable lengths (from control panel to farthest damper). Use the cable calculator at www.trox.no for exact calculation. A 3-wire cable is used for the fault panel.

AURASAFE mini

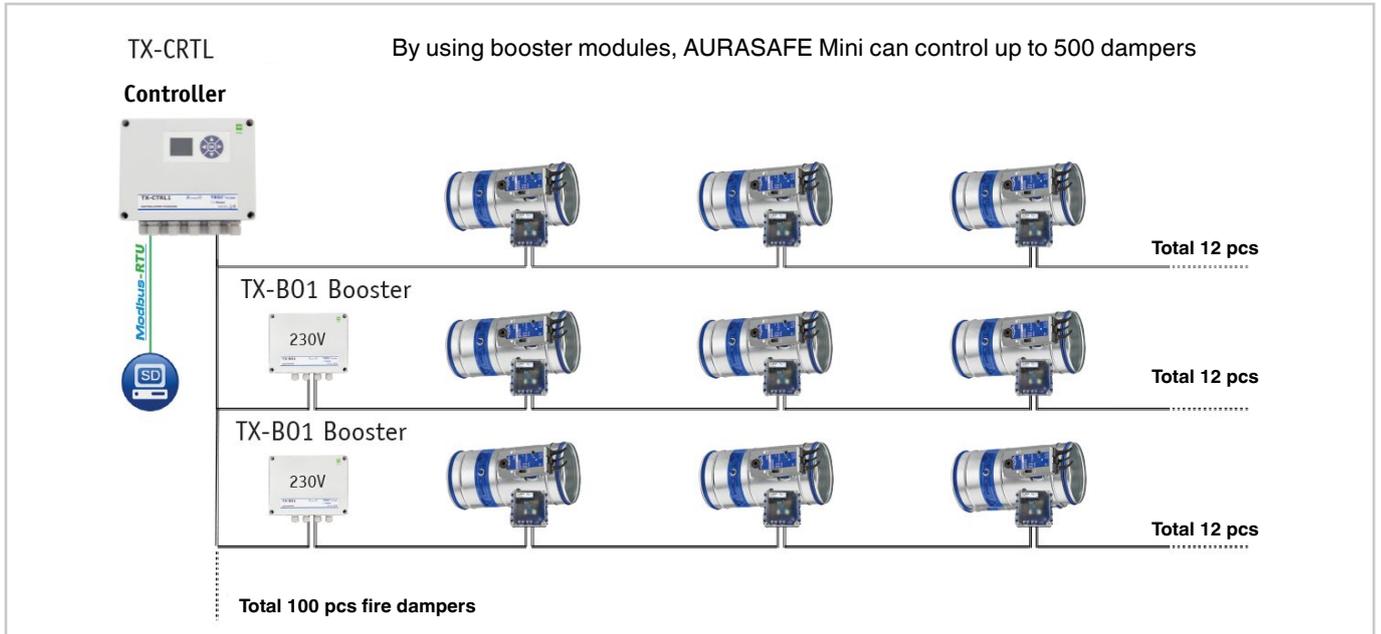


Figure 2, When controlling larger systems, the Booster module is used. Each module can communicate and provide 24V to 12 dampers. Control panel and booster modules must have a 230V supply. Beyond 100 fire dampers, a new control unit is used as a slave, and it can manage an additional 100 fire dampers.

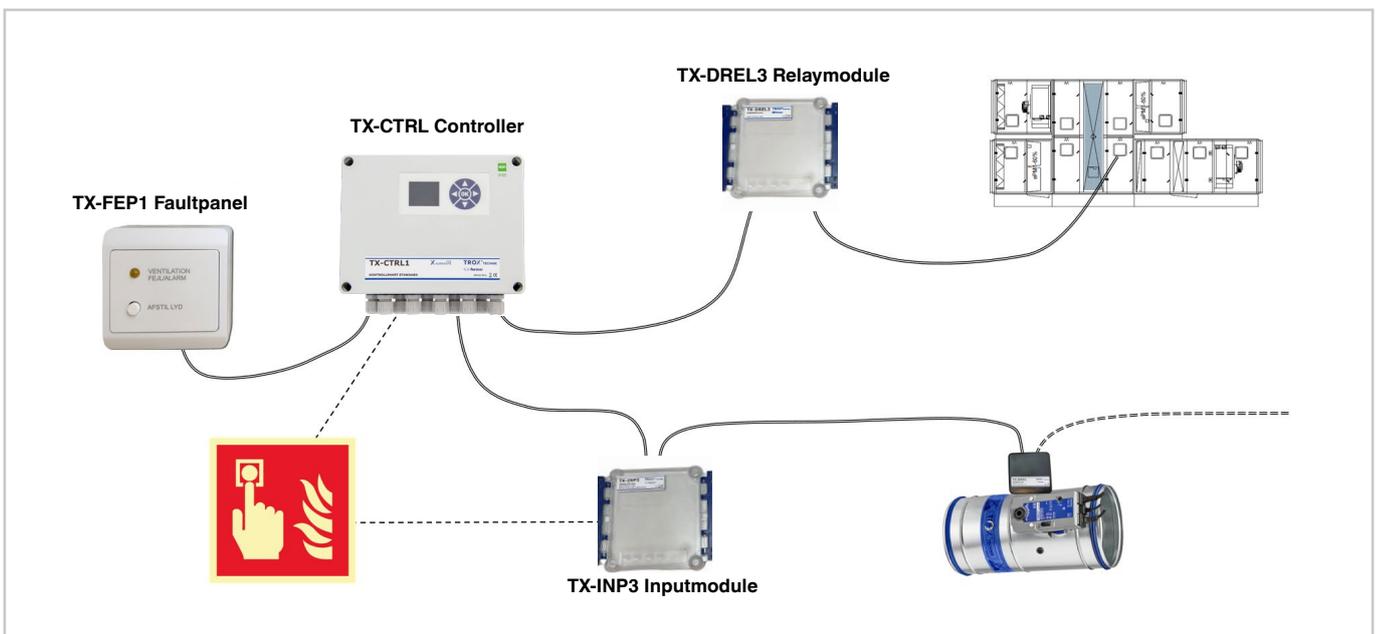


Figure 3, You can use the TX-DREL3 Relay module to distribute the relay output of the AHU to 4 units. TX-INP3 Input module is used if smoke detector or fire alarm needs to be connected outside the control panel.

TX-CTRL1

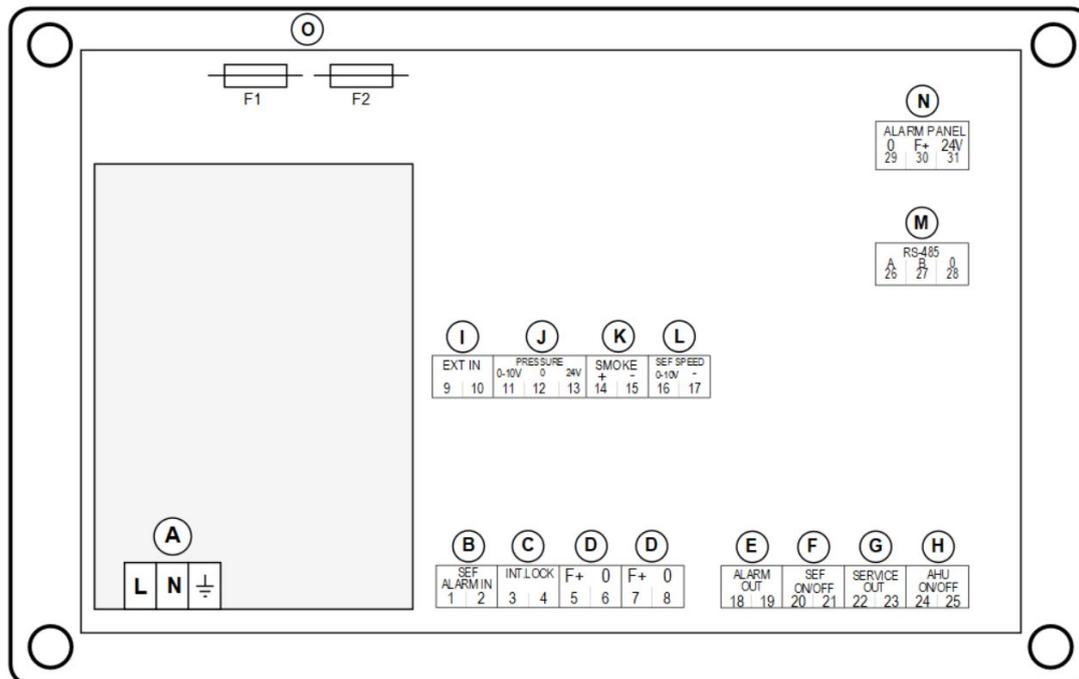
AURASAFE mini Control Unit Standard for 12 firedampers

TX-CTRL1 SPECIFICATIONS

Technical data	
Supply	230 VAC/80 VA
Bus voltage	24 VDC
Bus power	max. 48VA
Alarm relay output	3A/250 VAC, Normal-closed(NC)
Smoke ventilation relay output	3A/250 VAC, Normal-closed(NC)
Service relay output	3A/250 VAC, Normal-open(NO)
Ventilation relay output	3A/250 VAC, Normal-open(NO)
RS-485 port	Modbus 9600 baud, 1-stopbit, no parity
Dimensions	220x170x86 mm



WIRING TERMINALS



- A. 230 VAC supply**
- B. Input error signal frequency converter (ventilated system)**
If not used, lask is retained.
- C. Input for operating signal**
External override signal, can be used for night function. All dampers close if the input is not activated. If not used, lask is retained.
- D. Supply/Bus output to dampermodules**
2-wire bus for supply and communication with bus modules.
- E. Alarm relay output**
- F. Smoke fan (ventilated system) relay output**
- G. Service relay output**
Indicates if service is required for smoke detectors
- H. Ventilation relay output**
- I. External alarm input**
Signal from external unit (fire alarm system). 2.2 kohm resistor must be connected in series. If the input is not used, 2.2 kohm resistor must be mounted.
- J. 0-10 V input for pressure sensor (ventilated system)**
24 VDC can be used to supply pressure transmitter. The pressure transmitter must have a measuring range of 0-300 Pa.
- K. Smoke detector input**
Up to 10 smoke detectors can be connected in series. 2.2 kohm resistor must be mounted on the last smoke detector. If the input is not used, 2.2 kohm resistor must be mounted.
- L. 0-10 VDC output for frequency converter (ventilated system)** Analog output for PID control of smoke fan.
- M. RS-485/Modbus port**
Modbus interface
- N. Fault panel output**
- O. Fuses for fault panel**
2 x 250 mA , 20 x 5 mm

TX-CTRL2

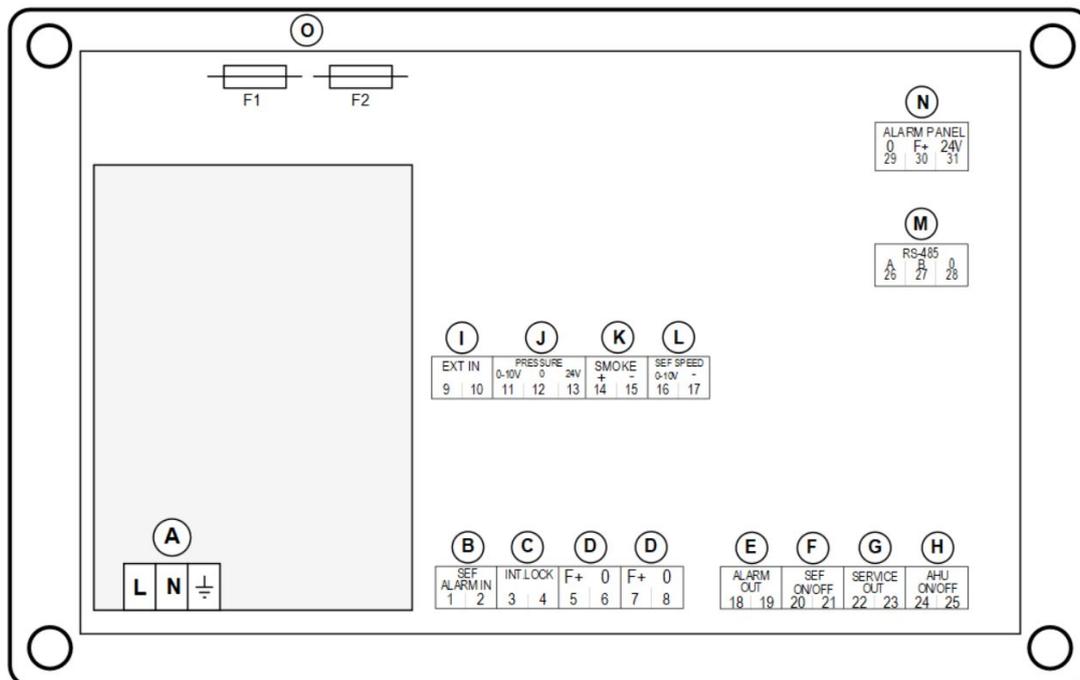
AURASAFE mini Control Unit Lite for 8 firedampers

TX-CTRL2 SPECIFICATIONS

Technical data	
Supply	230 VAC/35 VA
Bus voltage	24 VDC
Bus power	max. 21VA
Alarm relay output	3A/250 VAC, Normal-closed(NC)
Smoke ventilation relay output	3A/250 VAC, Normal-closed(NC)
Service relay output	3A/250 VAC, Normal-open(NO)
Ventilation relay output	3A/250 VAC, Normal-open(NO)
RS-485 port	Modbus 9600 baud, 1-stopbit, no parity
Dimensions	220x170x86 mm



WIRING TERMINALS



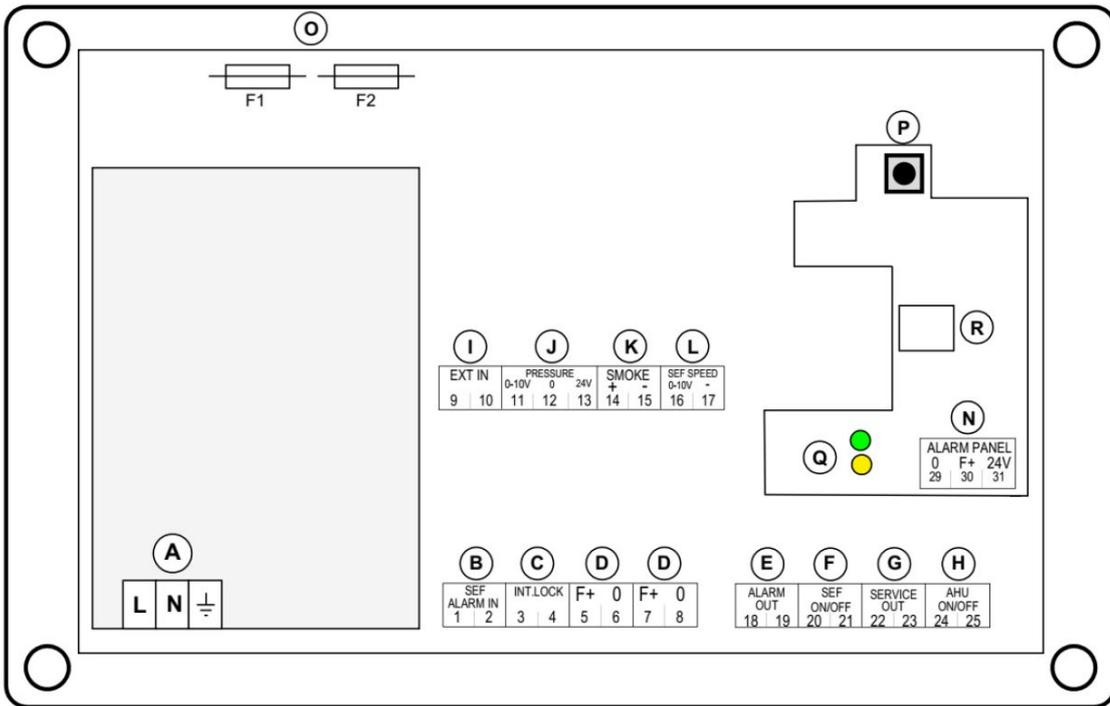
- A. 230 VAC supply**
- B. Input error signal frequency converter (ventilated system)**
If not used, lask is retained.
- C. Input for operating signal**
External override signal, can be used for night function. All dampers close if the input is not activated. If not used, lask is retained.
- D. Supply/Bus output to dampermodules**
2-wire bus for supply and communication with bus modules.
- E. Alarm relay output**
- F. Smoke fan (ventilated system) relay output**
- G. Service relay output**
Indicates if service is required for smoke detectors
- H. Ventilation relay output**
- I. External alarm input**
Signal from external unit (fire alarm system). 2.2 kohm resistor must be connected in series. If the input is not used, 2.2 kohm resistor must be mounted.
- J. 0-10 V input for pressure sensor (ventilated system)**
24 VDC can be used to supply pressure transmitter. The pressure transmitter must have a measuring range of 0-300 Pa.
- K. Smoke detector input**
Up to 10 smoke detectors can be connected in series. 2.2 kohm resistor must be mounted on the last smoke detector. If the input is not used, 2.2 kohm resistor must be mounted.
- L. 0-10 VDC output for frequency converter (ventilated system)** Analog output for PID control of smoke fan.
- M. RS-485/Modbus port**
Modbus interface
- N. Fault panel output**
- O. Fuses for fault panel**
2 x 250 mA , 20 x 5 mm

TX-CTRL-BM1

AURASAFE mini Control Unit that is an extension of the standard TX-CTRL1, allowing monitoring through BACnet or Modbus IP.

TX-CTRL-BM1 SPECIFICATIONS

Technical data	
Supply	230 VAC/80 VA
Bus voltage	24 VDC
Bus power	max. 48VA
Alarm relay output	3A/250 VAC, Normal-closed(NC)
Smoke ventilation relay output	3A/250 VAC, Normal-closed(NC)
Service relay output	3A/250 VAC, Normal-open(NO)
Ventilation relay output	3A/250 VAC, Normal-open(NO)
RJ45 port	Modbus/BACnet IP
Dimensions	220x170x86 mm



(A-O) Refer to TX-CTRL1/2

(P) Reset button

Press and hold for 5 seconds to restore to factory settings (resets only settings that can be configured from the website)

(Q) LED-indicator

(R) RJ45-connection

TX-BO1

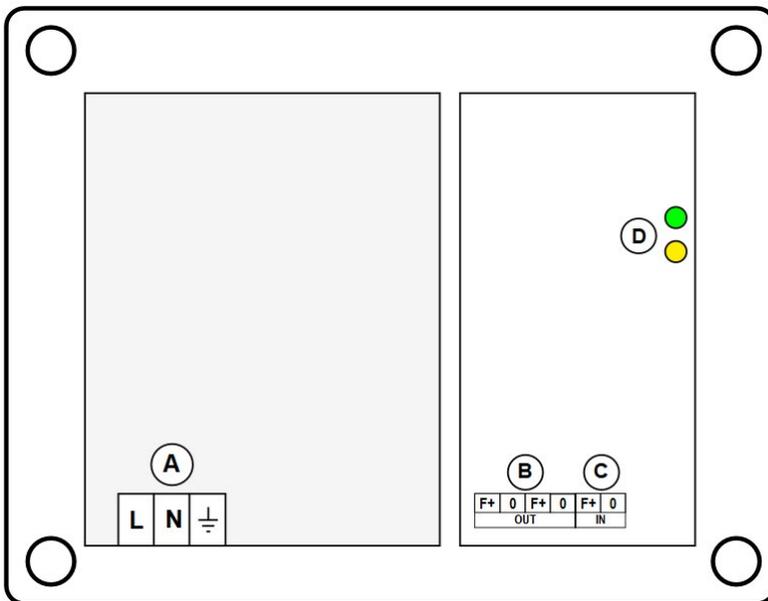
AURASAFE mini Boostermodule (TX-BO1) is intended to expand the system with more fire dampers. The module is wired with the bus and 230VAC. Compatible with both controll units

TX-BO1 SPECIFICATIONS

Technical data	
Supply	230 VAC/80 VA
Bus voltage	24 VDC
Bus power	max. 48VA
Dimensions	200x 190x100 mm



WIRING TERMINALS

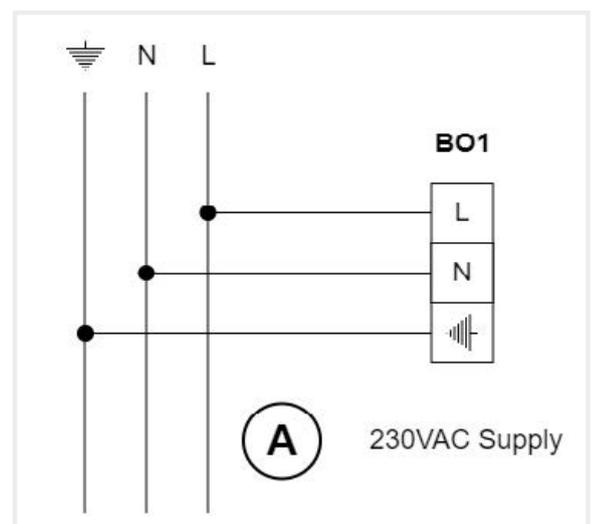
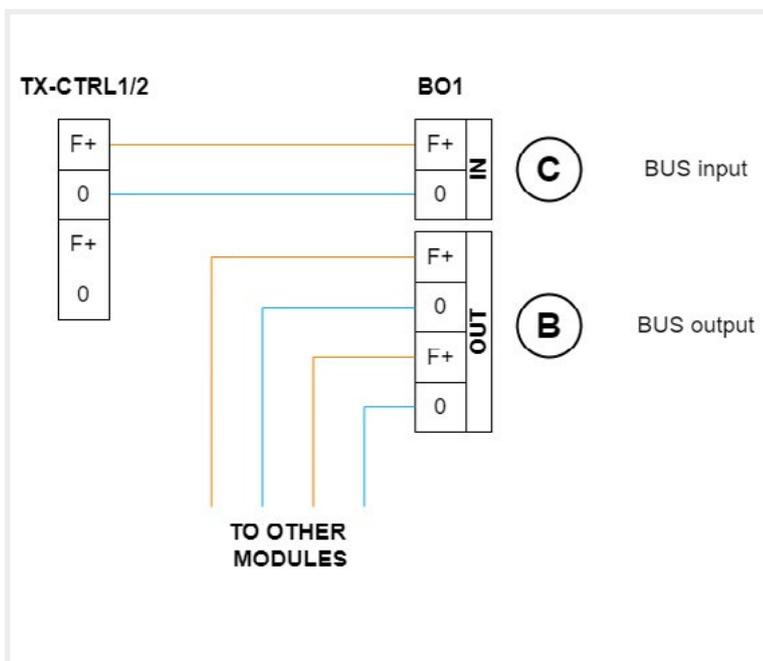


- A. 230 VAC Supply**
- B. Supply/Bus output for damper modules**
Extended 2-wire bus for supply and communication with dampers
- C. Bus input**
2-wire bus input from existing network.
- D. LED indicators**
See separate description of LED indicators

LED indicators

Green, on	230 VAC supply OK, Bus input OK
Green, blinking	230 VAC supply OK, Bus missing
Green, off	230 VAC supply missing
Yellow, on	Bus out OK
Yellow, off	Bus out error (check for short-circuits)

WIRING DIAGRAM FOR TX-CTRL1/2

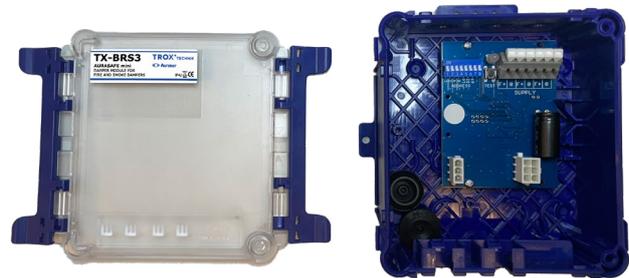


TX-BRS3

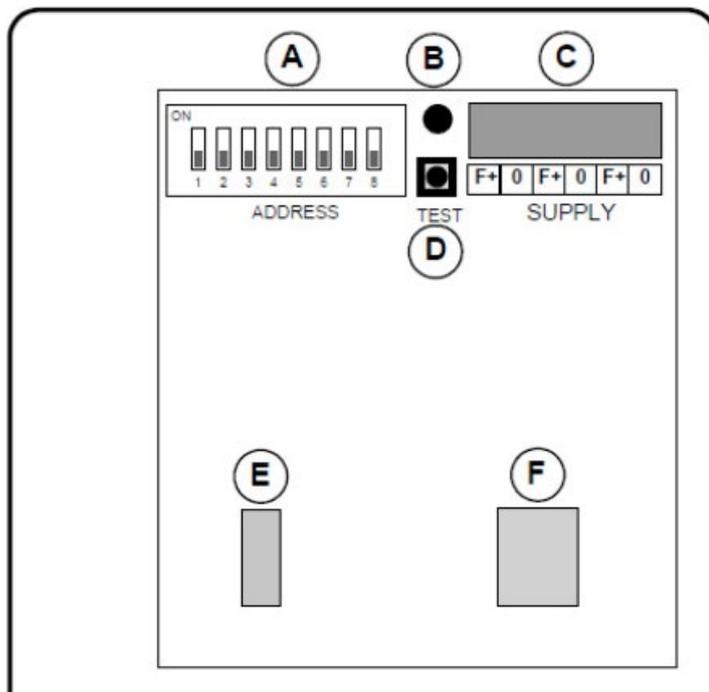
AURASAFE mini is a control unit for fire dampers, one per damper. The module is wired by the bus and the two plugs on the damper.

TX-BRS3 SPECIFICATIONS

Technical data	
Inputs	2 Digital contacts
Outputs	1 Digital contact, 24 VDC, max. 15 VA
Addressing	DIP-switch
Indicator	LED on the side
Terminals damper	2 x Contacts
Terminals	Springclamps, max. 2,5 mm ²
Dimensions	160x140x65 mm

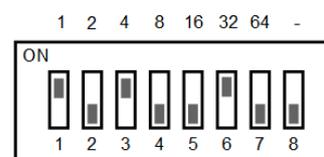
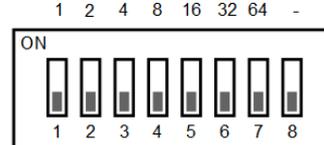


WIRING TERMINALS

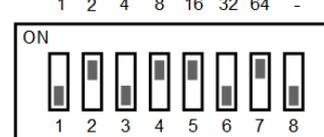


- A. Addressing DIP-switch**
- B. LED indicator**
See separate description for LED indicator
- C. Supply/Bus input**
2-wire bus supply. Two extra terminal-pairs for forwarding.
- D. Test-button for Manual Test**
- E. Connection quick plug from fire damper**
- F. Connection quick plug from fire damper**

Value:



Example 1:
Address:
 $1 + 4 + 32 = 37$



Example 2:
Address:
 $2 + 8 + 16 + 64 = 90$

ADDRESSING

The damper module is assigned an address via the DIP switches.

The modules are assigned a consecutive address between 0 - 99. It is not necessary for the modules to be placed in order during assembly.

Each of the 7 switches represents a value, as indicated on the right. The sum of the activated switches gives the module address. As Example 1 shows, switches 1, 3 and 6 are activated. They each count for 1 + 4 + 32, ie the module's address becomes 37.

The same address must not be given to more than one damper module.

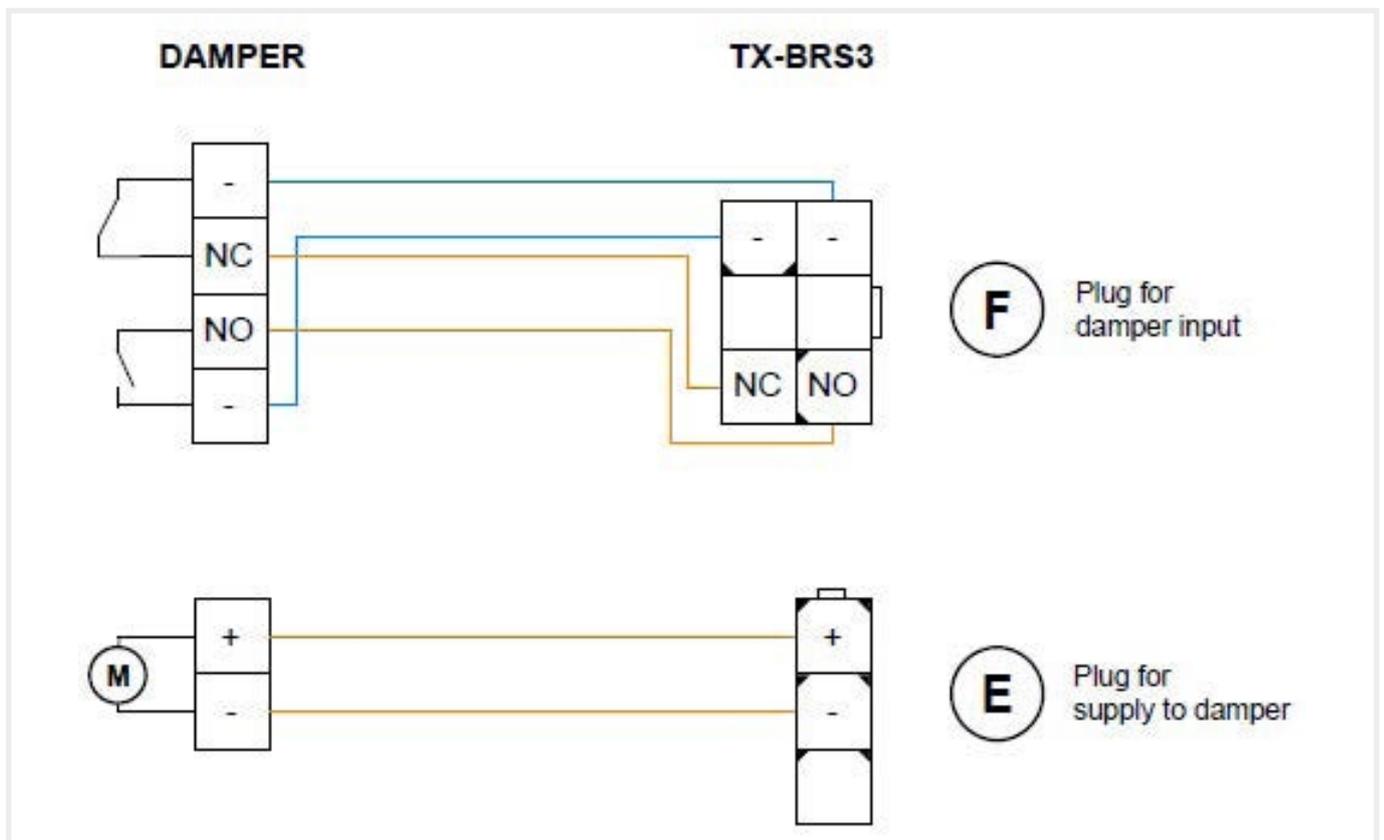
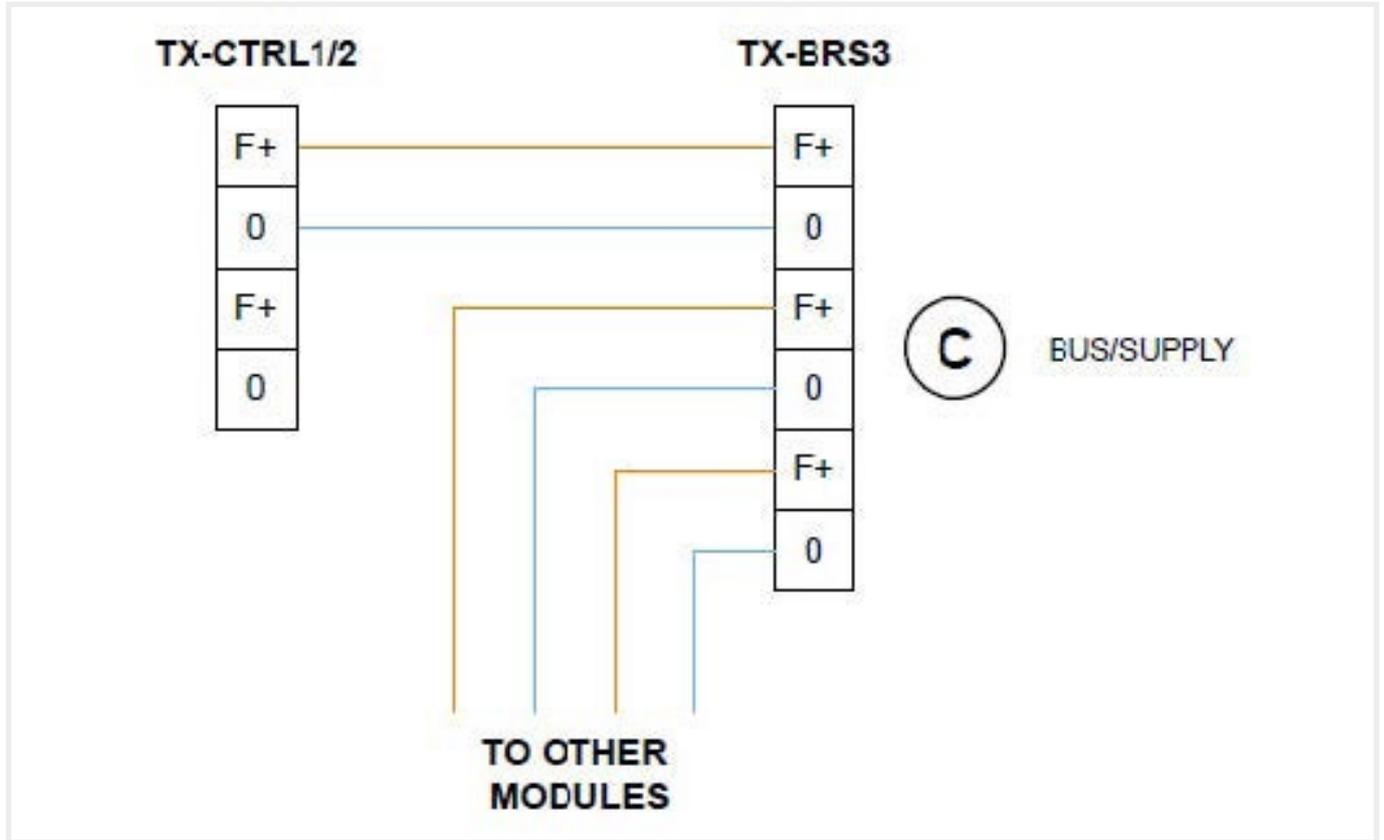
MANUAL TEST

As a part of installation and service, it is possible to perform a test cycle directly on a simple damper module. The test button is held down for approx. 5 seconds until the LED switches to fast flashing, then release the test button. A test cycle will now start, where the dampers open for approx. 180 seconds and then closes for 90 seconds.

Output C	Input A	Input B	LED indicators
0	0	0	Blue, blinking slowly
0	0	1	Blue (damper closed)
0	1	0	Blue, blinking rapidly
0	1	1	Red, blinking rapidly
1	0	0	Green, blinking slowly
1	0	1	Green, blinking rapidly
1	1	0	Green (damper open)
1	1	1	Red, blinking slowly

TX-BRS3

WIRING DIAGRAM FOR TX-BRS3



TX-RKS3

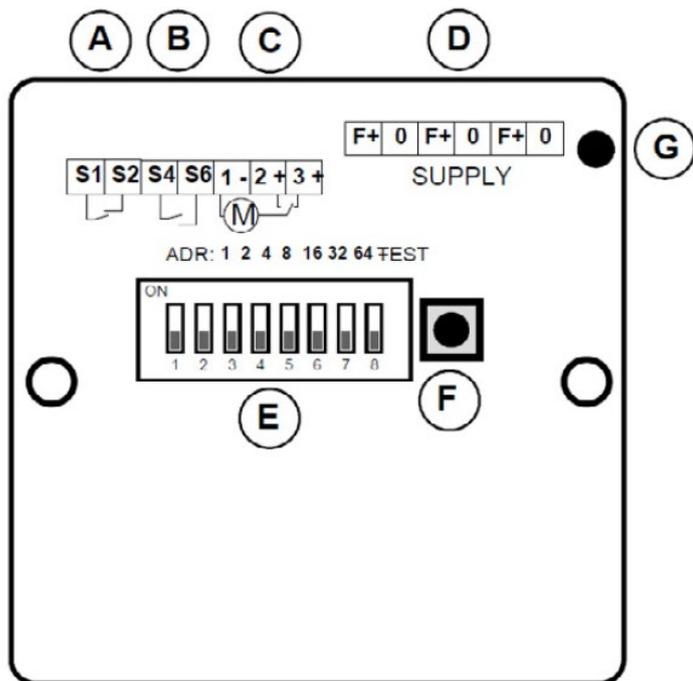
AURASAFE mini damper module (TX-RKS3) is a control unit for smokecontroldampers, one per damper. The module is wired by the bus and the damper.

TX-RKS3 SPECIFICATIONS

Technical data	
Inputs	2 Digital contacts
Outputs	Open: 24 VDC, max. 15 VA
	Closed: 24 VDC, max. 15 VA
Addressing	DIP-switch
Indicator	LED
Terminals	Springclamps, max. 2,5 mm ²
Dimensions	160x140x65 mm



WIRING TERMINALS



- A. Damper input, Normal-Closed (NC)**
- B. Damper input, Normal-Open (NO)**
- C. Supply to damper actuator**
- D. Supply/Bus input**
2-wire bus supply. Two extra terminal-pairs for forwarding.
- E. Addressing DIP-switch**
See separate description for addressing.
- F. Test-button for Manual test**
See separate description.
- G. LED indicator**
See separate description for indicator.

ADDRESSING

The damper module is assigned an address via the DIP switches.

The modules are assigned a consecutive address between 0 - 99. It is not necessary for the modules to be placed in order during assembly.

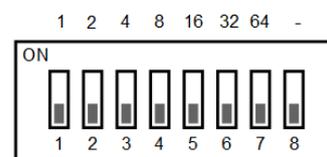
Each of the 7 switches represents a value, as indicated on the right. The sum of the activated switches gives the module address. As Example 1 shows, switches 1, 3 and 6 are activated. They each count for 1 + 4 + 32, ie the module's address becomes 37.

The same address must not be given to more than one damper.

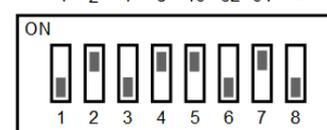
MANUELL TEST

As a part of installation and service, it is possible to perform a test cycle directly on a simple damper module. The test button is held down for approx. 5 seconds until the LED switches to fast flashing, then release the test button. A test cycle will now start, where the dampers open for approx. 180 seconds and then closes for 90 seconds.

Value:



Example 1:
Address:
1 + 4 + 32 = 37

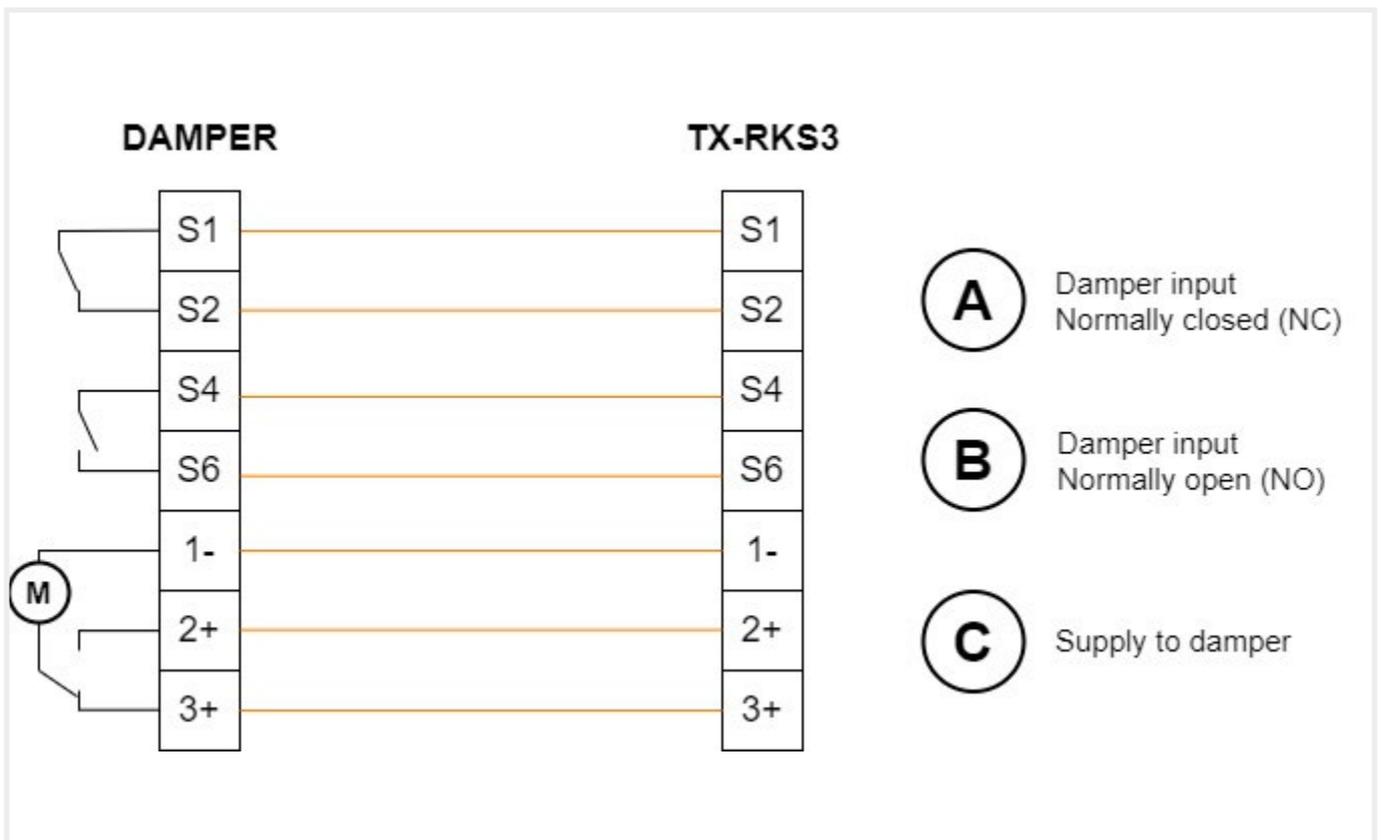
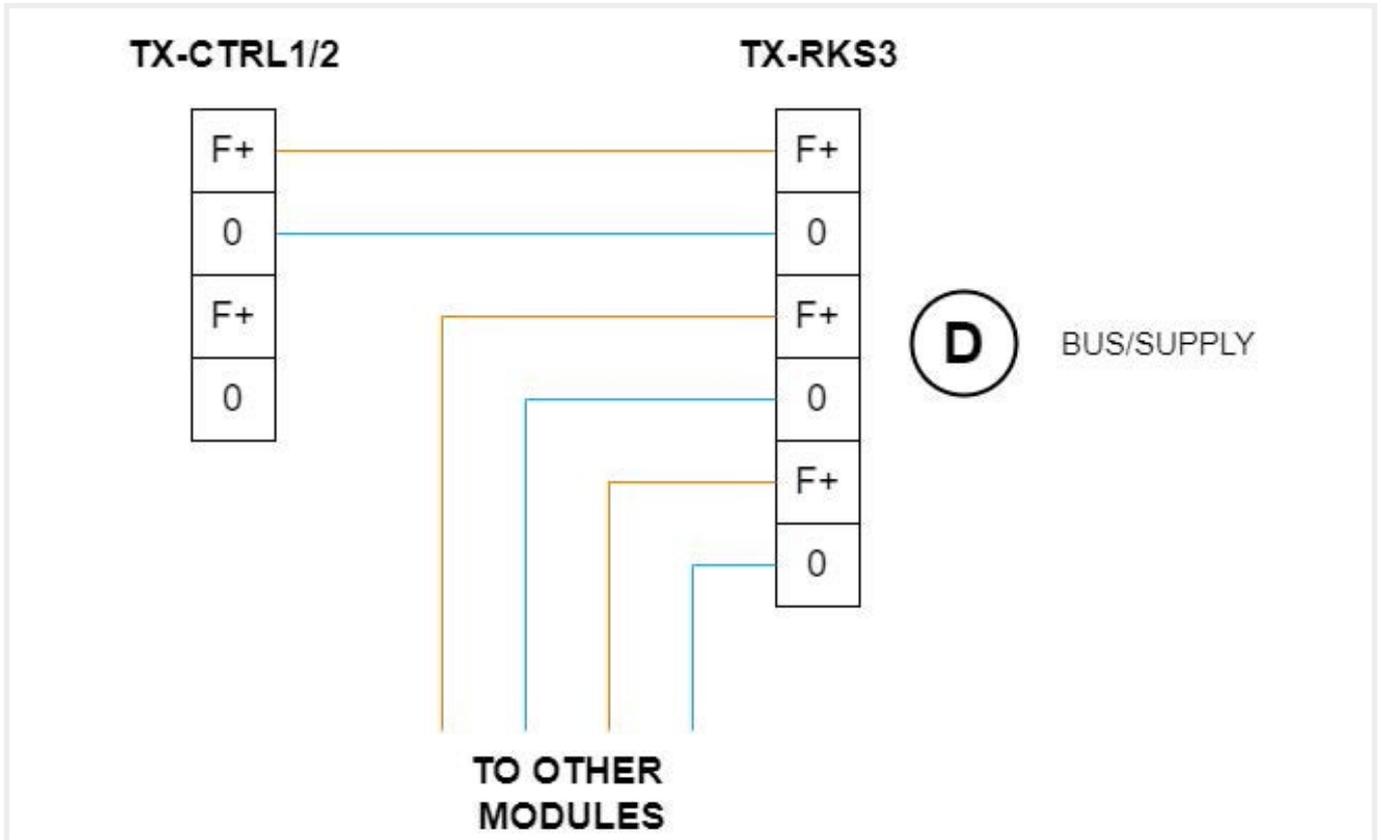


Example 2:
Address:
2 + 8 + 16 + 64 = 90

Output C	Input A	Input B	LED indicators
0	0	0	Blue, blinking slowly
0	0	1	Blue (damper closed)
0	1	0	Blue, blinking rapidly
0	1	1	Red, blinking rapidly
1	0	0	Green, blinking slowly
1	0	1	Green, blinking rapidly
1	1	0	Green (damper open)
1	1	1	Red, blinking slowly

TX-RKS3

WIRING DIAGRAM FOR TX-RKS3



TX-INP3

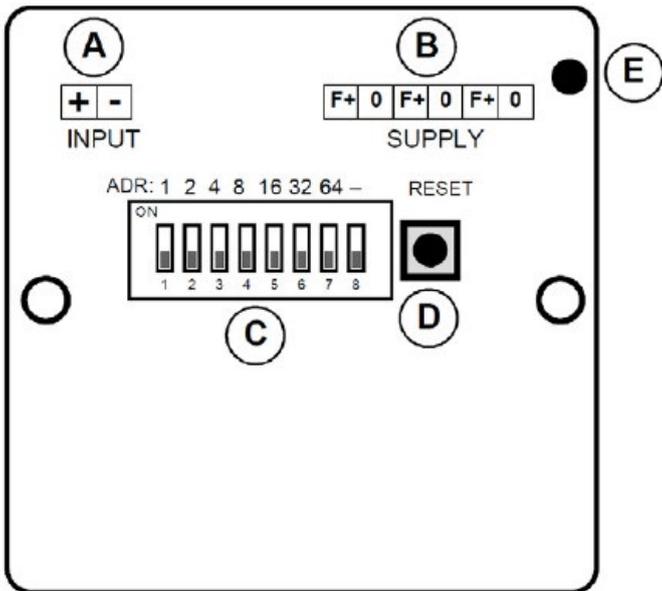
AURASAFE mini TX-INP3 is intended as an input module for smoke detector or fire thermostat. The module is wired by the bus and the sensor.

TX-INP3 SPECIFICATIONS

Technical data	
Inputs	Monitored input for fire alarm system / smoke detector. 2K2 end resistor must be mounted.
Addressing	DIP-switch
Indicator	LED
Terminals	Springclamps, max. 2,5 mm ²
Dimensions	160x140x65 mm

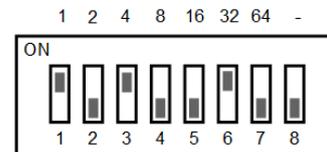
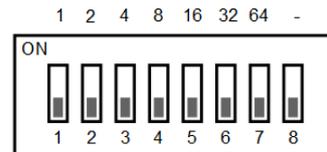


WIRING TERMINALS

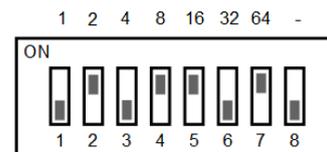


- A. Fire alarm system / Smoke detector input**
Up to two smoke detectors can be connected in a series. 2,2 kohm resistance must be mounted on the last smoke detector.
- B. Supply/Bus input**
2-wire bus supply. Two extra terminal-pairs for forwarding.
- C. Addressing DIP-switch**
See separate description for addressing.
- D. Reset-button**
See separate description.
- E. LED indicator**
See separate description for indicator.

Value:



Example 1:
Address:
 $1 + 4 + 32 = 37$



Example 2:
Address:
 $2 + 8 + 16 + 64 = 90$

ADDRESSING

The module is assigned an address via the DIP switches. It is not necessary for the modules to be placed in order during assembly.

If the module is connected to a fire alarm, choose an address between 0 - 99. If it is connected to a smoke detector, choose an address between 100-119.

Each of the 7 switches represents a value, as indicated on the right. The sum of the activated switches gives the module address. As Example 1 shows, switches 1, 3 and 6 are activated. They each count for $1 + 4 + 32$, ie the module's address becomes 37.

The same address must not be given to more than one damper.

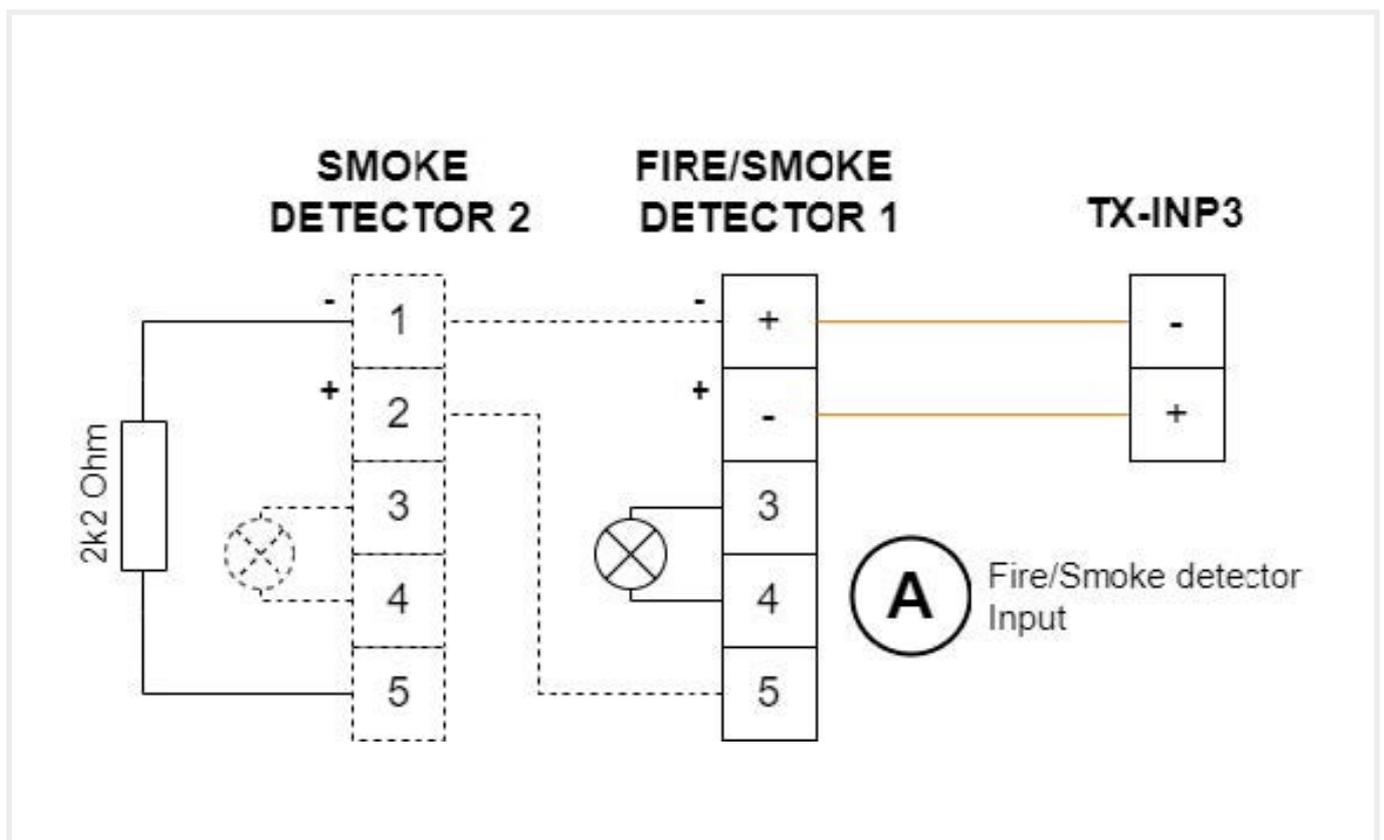
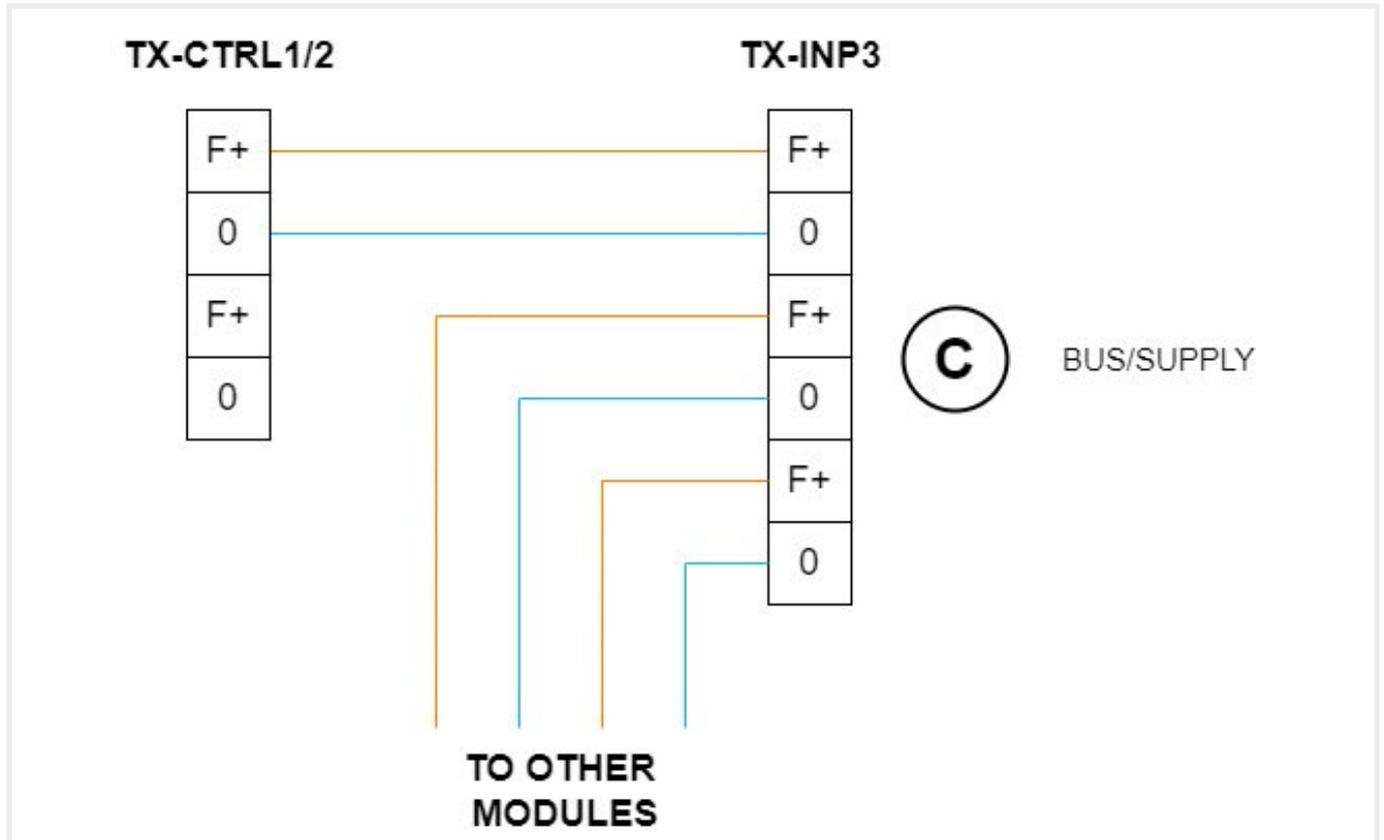
MANUAL RESET OF SMOKE DETECTOR

By using the reset button it is possible to perform a manual reset of a connected smoke detector. The button is held down until the LED indicator starts blinking rapidly and the output is reset.

LED indicators	Status
Green	OK
Green, blinking slowly	Reset smoke detector
Blue, blinking slowly	Service detector
Red, blinking slowly	Alarm

TX-INP3

WIRING DIAGRAM FOR TX-INP3



TX-FEP1

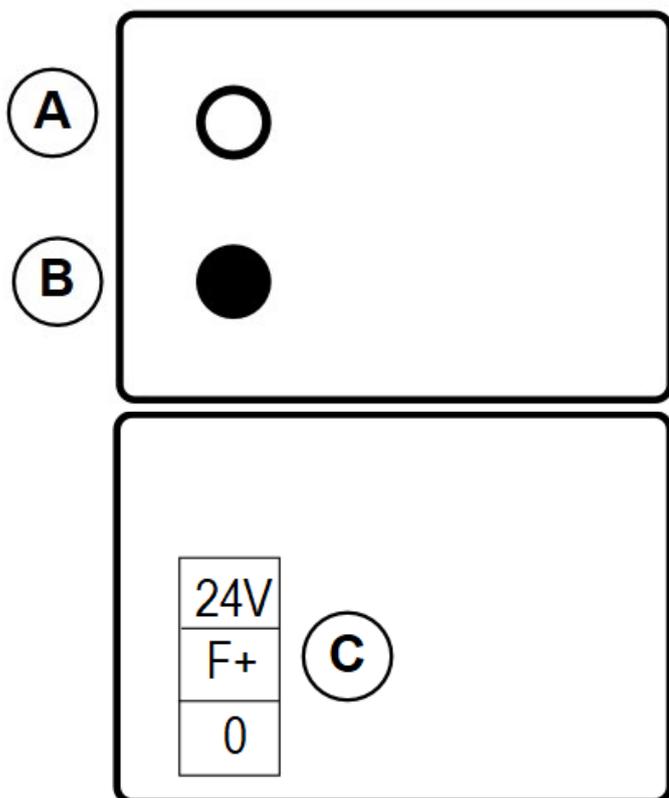
AURASAFE mini TX-FEP1 is intended for acoustic and visual indication of alarm or fault.

TX-FEP1 SPECIFICATIONS

Technical data	
Addressing	Fixed address
Fault/Alarm Indicator	Yellow LED
Acoustic alarm	Buzzer > 50 dB(A)
Terminals	Springclamps, max. 2,5 mm ²
Dimensions	66x66x32 mm. Opus66 socket m. 23 mm base



WIRING TERMINALS



- A. LED indicator, yellow
- B. Button to turn off acoustic alarm
- C. 24 VDC supply/Bus input/1000 inganger
Hvis ingang ikke benyttes, monteres 1 kohm/1 % motstand
- B. Forsyning/Bus ingang
2-leder bus forsyning. To ekstra terminal-par for videreføring.
- C. Adressering DIP-switch
Se separat beskrivelse for adressering.
- D. DIP-switch «8» for alarm
Se separat beskrivelse for adressering.
- E. Reset knap
Se separat beskrivelse for virkemåte
- F. LED indikering
Se separat beskrivelse for farge indikering.

ADDRESSING

Fault panel does not need to be given an address (fixed address 127)

FUNCTION

In case of fault/alarm signal from the control unit the LED will light up and acoustic alarm starts. When activating the button the acoustic alarm is turned off. Test of LED and buzzer is activated by a long press of the button.

MOUNTING

Fault panel is delivered as Opus66 socket with a 23mm base and frame.

TX-TEM3

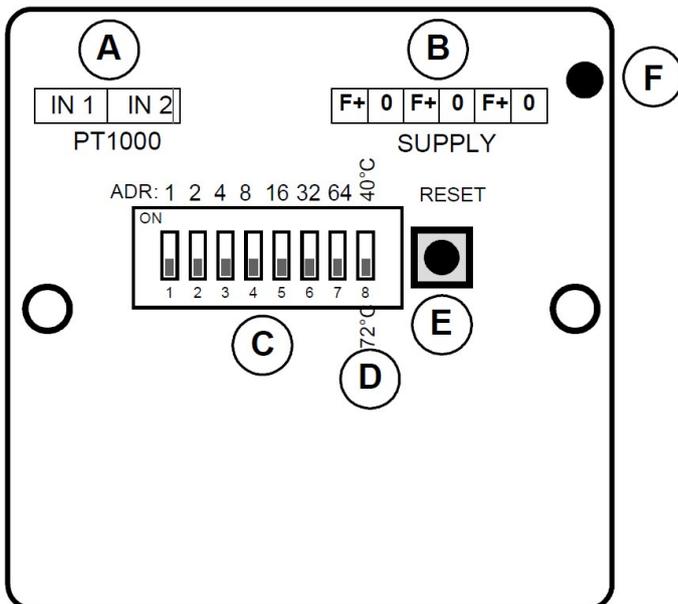
AURASAFE mini TX-TEM3 is intended as an input module for PT1000. The module is wired by the bus and the sensor.

TX-TEM3 SPECIFICATIONS

Technical data	
Inputs	2 analogue inputs for PT1000 temperature sensors
Addressing	DIP-switch
Indicator	LED
Terminals	Springclamps, max. 2,5 mm ²
Dimensions	160x140x65 mm
Temperature	0-50 °C

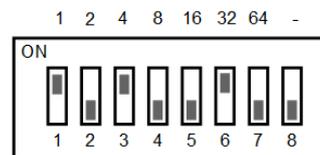
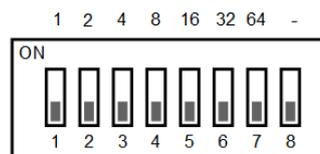


WIRING TERMINALS

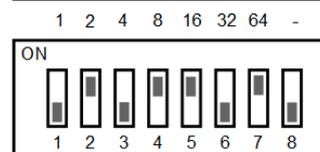


- A. PT1000 inputs**
PT1000 inputs if input is not used, 1 kohm/1% resistance must be mounted.
- B. Supply/Bus input**
2-wire bus supply. Two extra terminal-pairs for forwarding.
- C. Addressing DIP-switch**
See separate description for addressing.
- D. DIP-switch «8» for alarm**
See separate description for addressing.
- E. Reset-button**
See separate description.
- F. LED indicator**
See separate description for indicator.

Value:



Example 1:
Address:
1 + 4 + 32 = 37



Example 2:
Address:
2 + 8 + 16 + 64 = 90

ADDRESSING

The damper module is assigned an address via the DIP switches.

The modules are assigned a consecutive address between 0 - 99. It is not necessary for the modules to be placed in order during assembly.

Each of the 7 switches represents a value, as indicated on the right. The sum of the activated switches gives the module address. As Example 1 shows, switches 1, 3 and 6 are activated. They each count for 1 + 4 + 32, ie the module's address becomes 37.

The same address must not be given to more than one damper.

SETTING TEMPERATURE FOR ALARM

Use DIP-switch 8 to set the alarm limit to 40 or 72 °C.

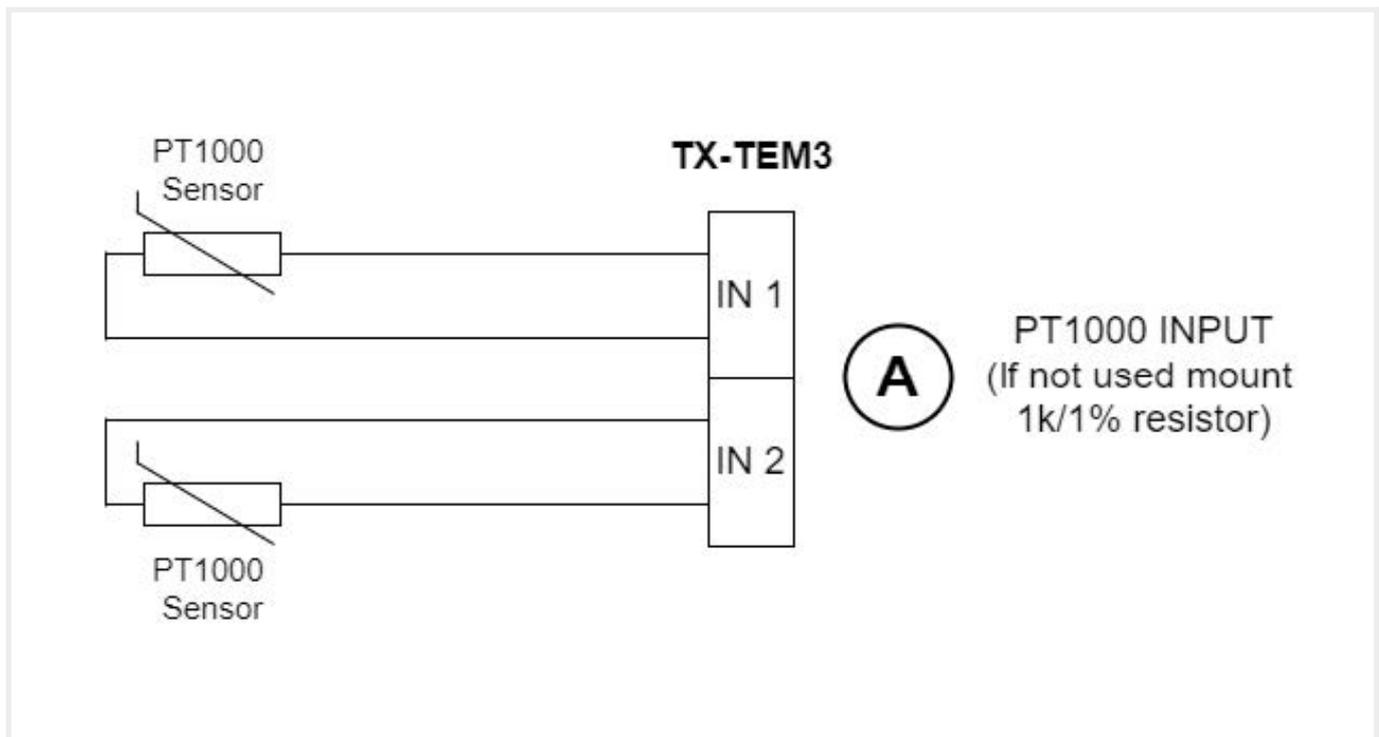
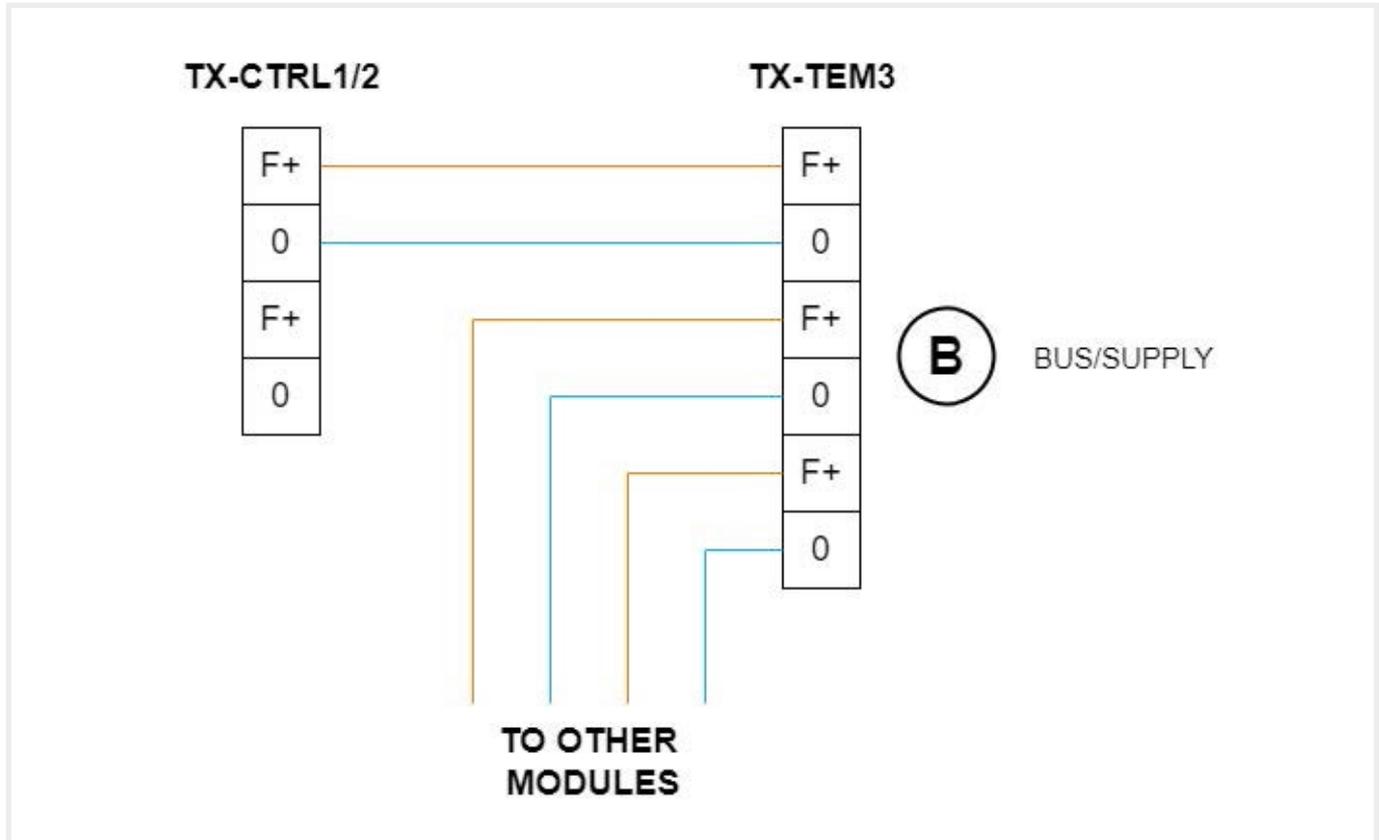
RESET AFTER ALARM

The module will blink green if there has been a temperature alarm or if the input has had a short-circuit/been interrupted. The button is held down until the LED light starts blinking rapidly and the module is reset.

LED indicators	Status
Green	OK
Green, blinking slowly	Reset module
Blue, blinking rapidly	PT1000 short-circuited
Red, blinking slowly	Alarm temperature or missing PT1000

TX-TEM3

WIRING DIAGRAM FOR TX-TEM3



TX-DREL3

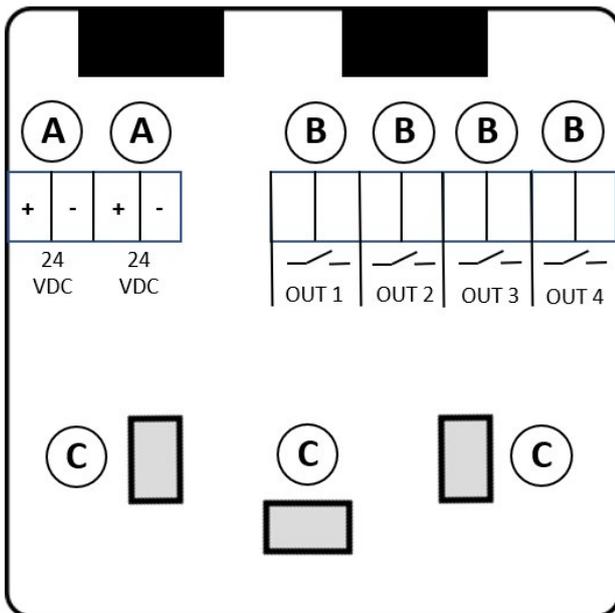
AURASAFE mini TX-DREL3 (optional) The relay module is used in decentralized ventilation systems to re-distribute the control unit's stop signal, so that all units are stopped in the event of a fire or test. If you want the signal to be connected to the bus, use TX-RBRS3.

TX-DREL3 SPECIFICATIONS

Technical data	
Inputs/supply	24 VDC +/- 10% 20 mA consumption
Outputs	4 NO relay-contacts 1,0A/24 VDC/AC
Terminals	Springclamps, max. 2,5 mm ²
Dimensions	160x140x65 mm



WIRING TERMINALS



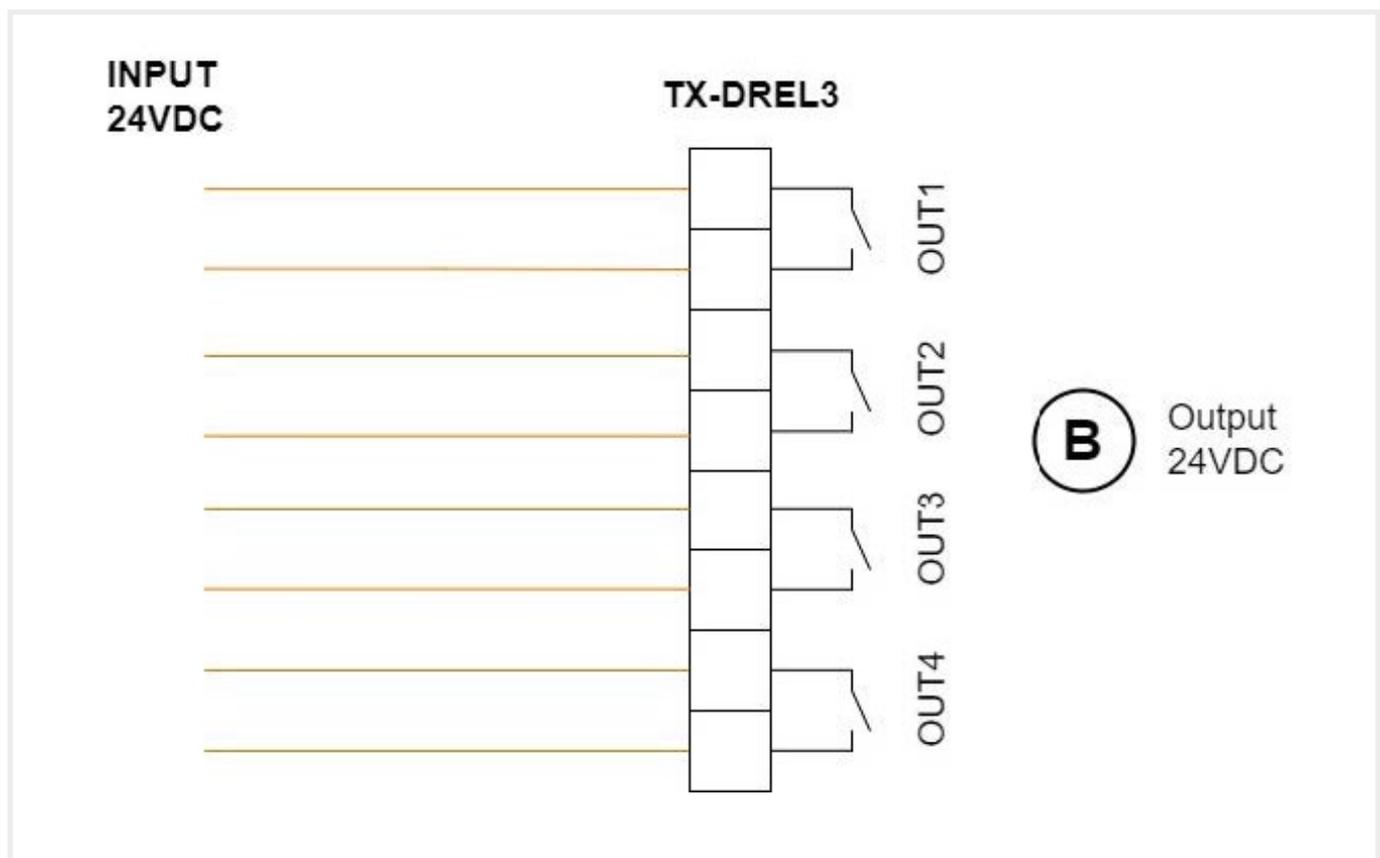
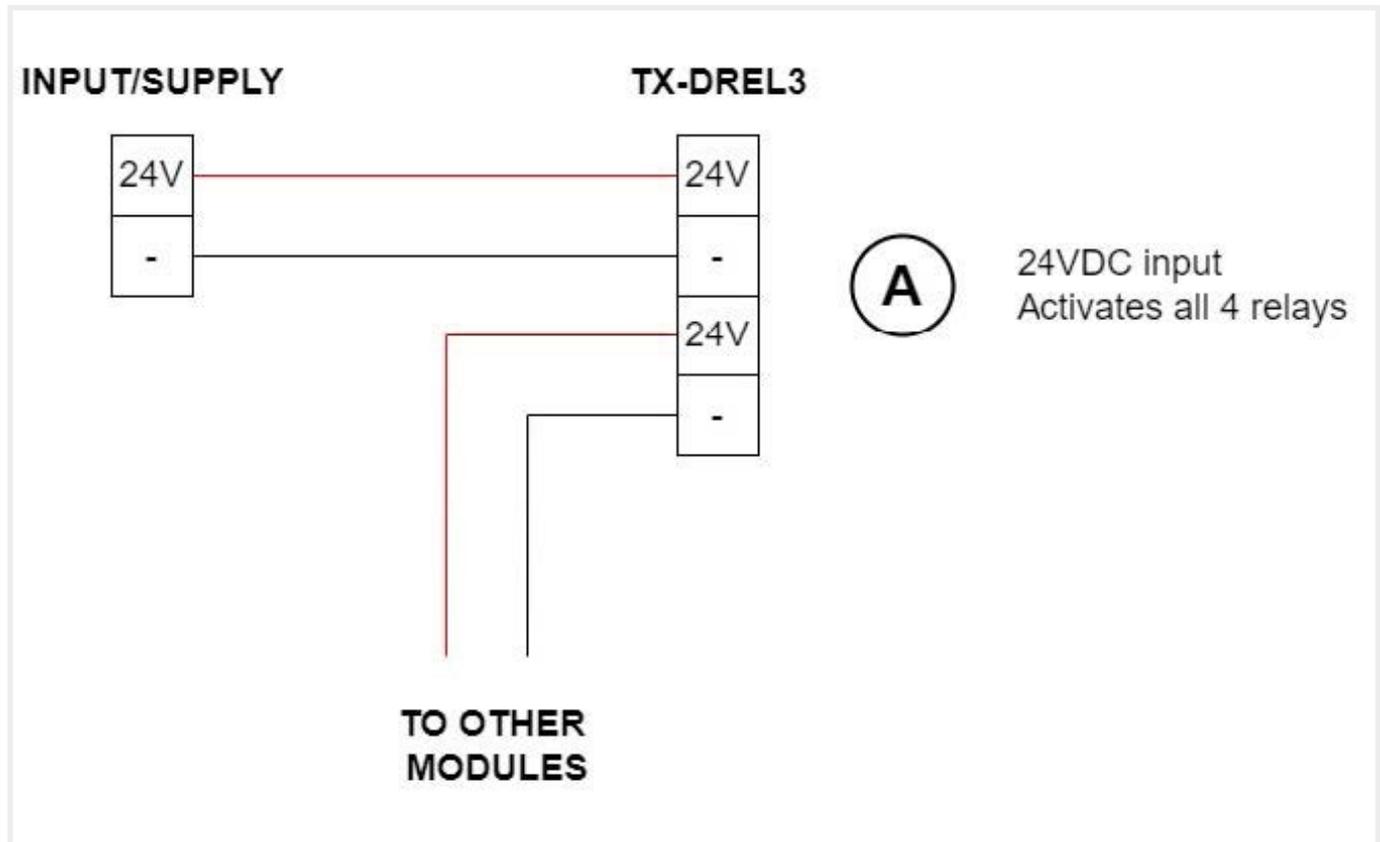
- A. 24 VDC input/supply**
With 24VDC supply connected to +/-, all 4 relay outputs are activated extra terminal set for continuation of 24 VDC supply
- B. Relay output**
- C. Cable fixation**

FUNTION

The relay module is used in ventilation systems to further distribute the control unit's stop signal, so that all units are stopped in the event of a fire or test. Note that the relay module must not be connected to Flexibus, but is connected directly to the control panel.

TX-DREL3

WIRING DIAGRAM FOR TX-DREL3



TX-RBRS3

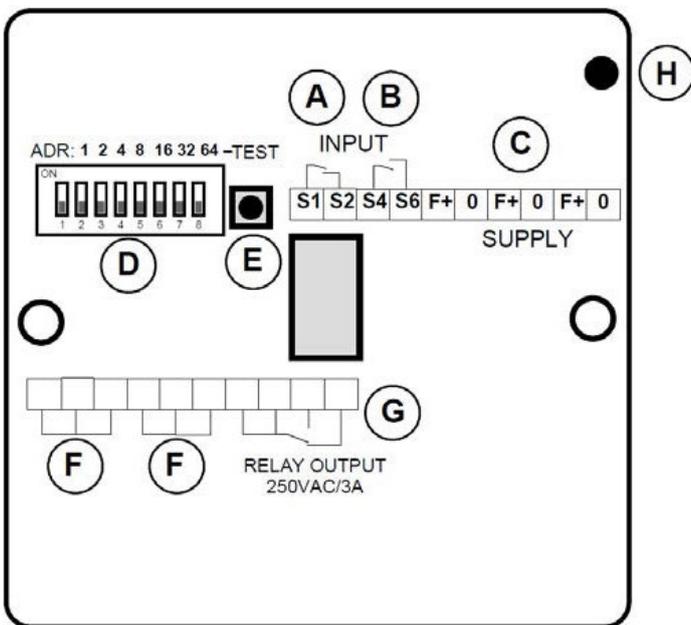
AURASAFE mini TX-RBRS3 is a damper/relay module intended for controlling 230V fire dampers or as a decentralized relay on bus.

TX-RBRS3 SPECIFICATIONS

Technical data	
Inputs/supply	2 Digital contacts
Outputs	250 VAC, 3A change-over
Addressing	DIP-switch
Indication	LED
Terminals	Springclamps, max. 2,5 mm ²
Dimensions	160x140x65 mm

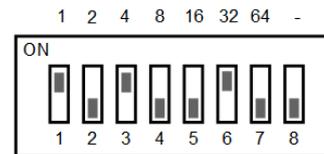
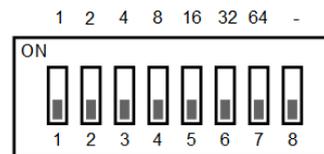


WIRING TERMINALS



- A. Damper input, Normal-closed (NC)
- B. Damper input, Normal-open(NO)
- C. Supply/Bus input
2-wire bus supply. Two extra terminal-pairs for forwarding.
- D. Addressing DIP-switch
See attached address form.
- E. Test button for manual test
See separate description for operation mode.
- F. Further wiring
Two individually shorted connector groups for further wiring.
- G. Relay output
Possibility of normally-open and normally-closed output.
- H. LED indication
See separate description for indicator.

Value:



Example 1:
Address:
1 + 4 + 32 = 37

Example 2:
Address:
2 + 8 + 16 + 64 = 90

ADDRESSING

The damper module is assigned an address via the DIP switches. The modules are assigned a consecutive address between 0-99. It is not necessary for the modules to be placed in sequence during assembly.

The modules are assigned an address between 120-126. A relay function corresponding to output relays can be selected in the control unit, or a separate relay function can be created using the modbus command. The same address can be given to more than one relay module if the same output signal is desired in several places.

- Adr. # 120: Alarm.
- Adr. # 121: Smoke from.
- Adr. # 122: Service.
- Adr. # 123: Ventilation fan.
- Adr. # 124: Modbus output bit 249.
- Adr. # 125: Modbus output bit 251.
- Adr. # 126: Modbus output bit 253.

MANUAL TEST

During installation and service, a test cycle can be started at the individual damper by use of the test button. The test button is pressed for approx. 5 seconds until the LED change to fast flashing. When the test button is released, a test cycle is started. The damper will open (output on) for approx. 180 seconds, after which the damper will close (output off) for approx. 90 seconds.

Output C	Input A	Input B	LED indicators
0	0	0	Blue, blinking slowly
0	0	1	Blue (damper closed)
0	1	0	Blue, blinking rapidly
0	1	1	Red, blinking rapidly
1	0	0	Green, blinking slowly
1	0	1	Green, blinking rapidly
1	1	0	Green (damper open)
1	1	1	Red, blinking slowly

TX-RBRS3

KOBLINGSSKJEMA FOR TX-RBRS3

