

Compact smoke and heat vent

control unit 24V

15A(10A) – 1 – 1

30A(20A) – 2 – 1

60A(40A) – 4 – 1

75A(50A) – 5 – 1



Technical Documentation

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1 Contents

1	Contents	2
1.1	List of figures.....	2
2	Product views	3
2.1	Smoke and Heat Vent Control Unit 15A(10A)-1-1	3
2.2	Smoke and Heat Vent Control Unit 30A(20A)-2-1	4
2.3	Smoke and Heat Vent Control Unit 60A(40A)-4-1	5
2.4	Smoke and Heat Vent Control Unit 75A(50A)-5-1	6
3	Installation	7
3.1	General	7
3.2	Regulations and installation instructions.....	7
3.3	Accident prevention regulations.....	7
3.4	Layout of the control unit.....	7
3.5	Connecting the motor openers	8
3.5.1	Determining the cable cross-sections	8
3.5.2	Cable types.....	8
3.6	Relaying of trigger and fault states	9
3.7	Connecting the batteries	9
4	Functional description.....	10
4.1	Smoke and heat vent (triggered) operation	10
4.2	Ventilation mode	10
4.3	Comfort ventilation module	11
4.3.1	Stroke limitation	11
4.3.2	Automatic Close.....	11
4.4	Open display	11
4.5	Site of installation.....	11
4.5.1	Smoke and Heat Vent Control Unit 15A(10A)-1-1.....	12
4.5.2	Smoke and Heat Vent Control Unit 30A(20A)-2-1 / 60A(40A)-4-1 / 75A(50A)-5-1	12
5	Commissioning	13
6	Operator action	15
6.1	Display and operator control elements on the board.....	15
6.2	Audible signals.....	17
6.3	Fuses on the board	18
6.4	State at time of delivery	18
7	Programming (SETUP).....	19
7.1	Smoke and Heat Vent Control Unit 15A(10A)-1-1	19
7.1.1	Smoke and Heat Vent Control Units 30A(20A)-2-1 / 60A(40A)-4-1 / 75A(50A)-5-1	20
8	Locating faults / troubleshooting	21
9	Maintenance	22
10	Technical data	23
10.1	Smoke and Heat Vent Control Unit 15A(10A)-1-1	23
10.2	Smoke and Heat Vent Control Unit 30A(20A)-2-1	24
10.3	Smoke and Heat Vent Control Unit 60A(40A)-4-1	24
10.4	Smoke and Heat Vent Control Unit 75A(50A)-5-1	24
11	Annex with circuit diagrams	

1.1 List of figures

Fig. 1:	View of smoke and heat vent control unit 24V 15A(10A)-1-1	3
Fig. 2:	View of smoke and heat vent control unit 24V 30A(20A)-2-1	4
Fig. 3:	View of smoke and heat vent control unit 24V 60A(40A)-4-1	5
Fig. 4:	View of smoke and heat vent control unit 24V 75A(50A)-5-1	6
Fig. 5:	Comfort – ventilation module KL - MOD	11
Fig. 6:	Displays and control	15

2 Product views

2.1 Smoke and Heat Vent Control Unit 15A(10A)-1-1

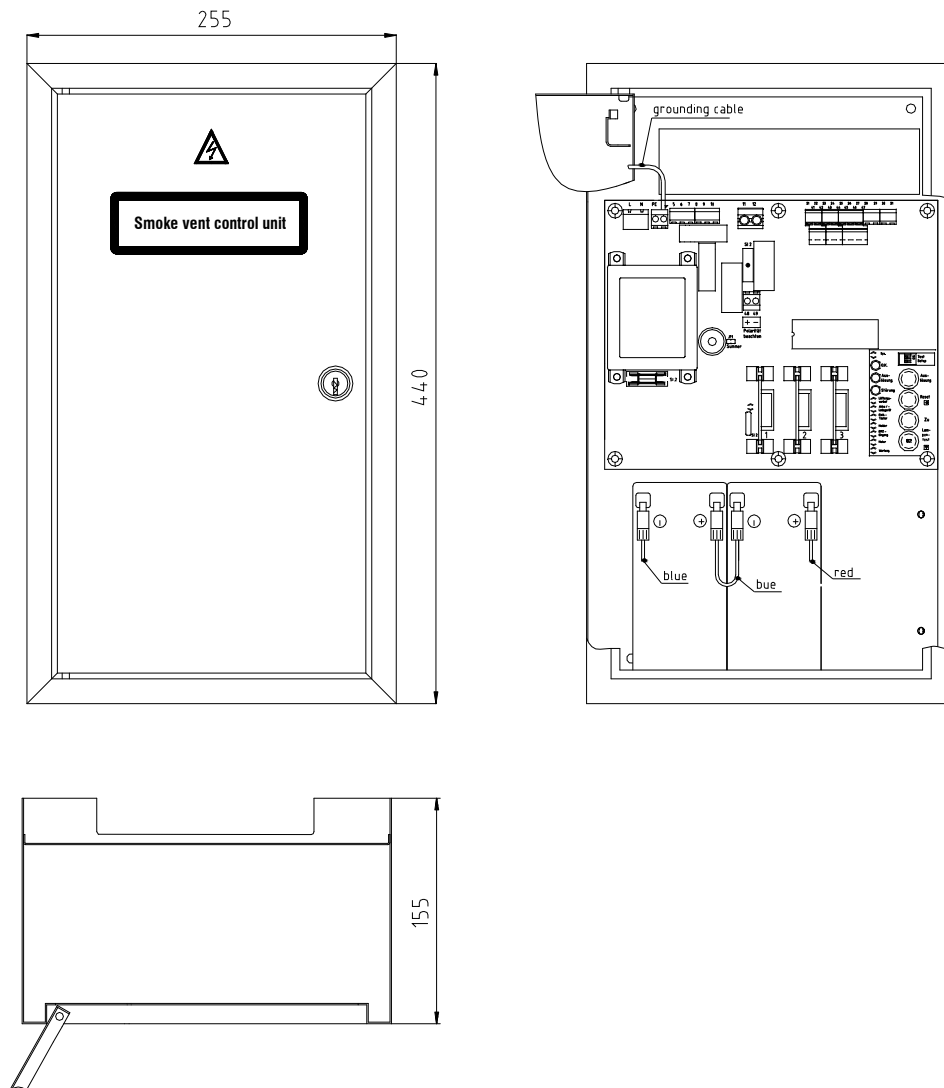


Fig.1: View of smoke and heat vent control unit 24V 15A(10A)-1-1

2.2 Smoke and Heat Vent Control Unit 30A(20A)-2-1

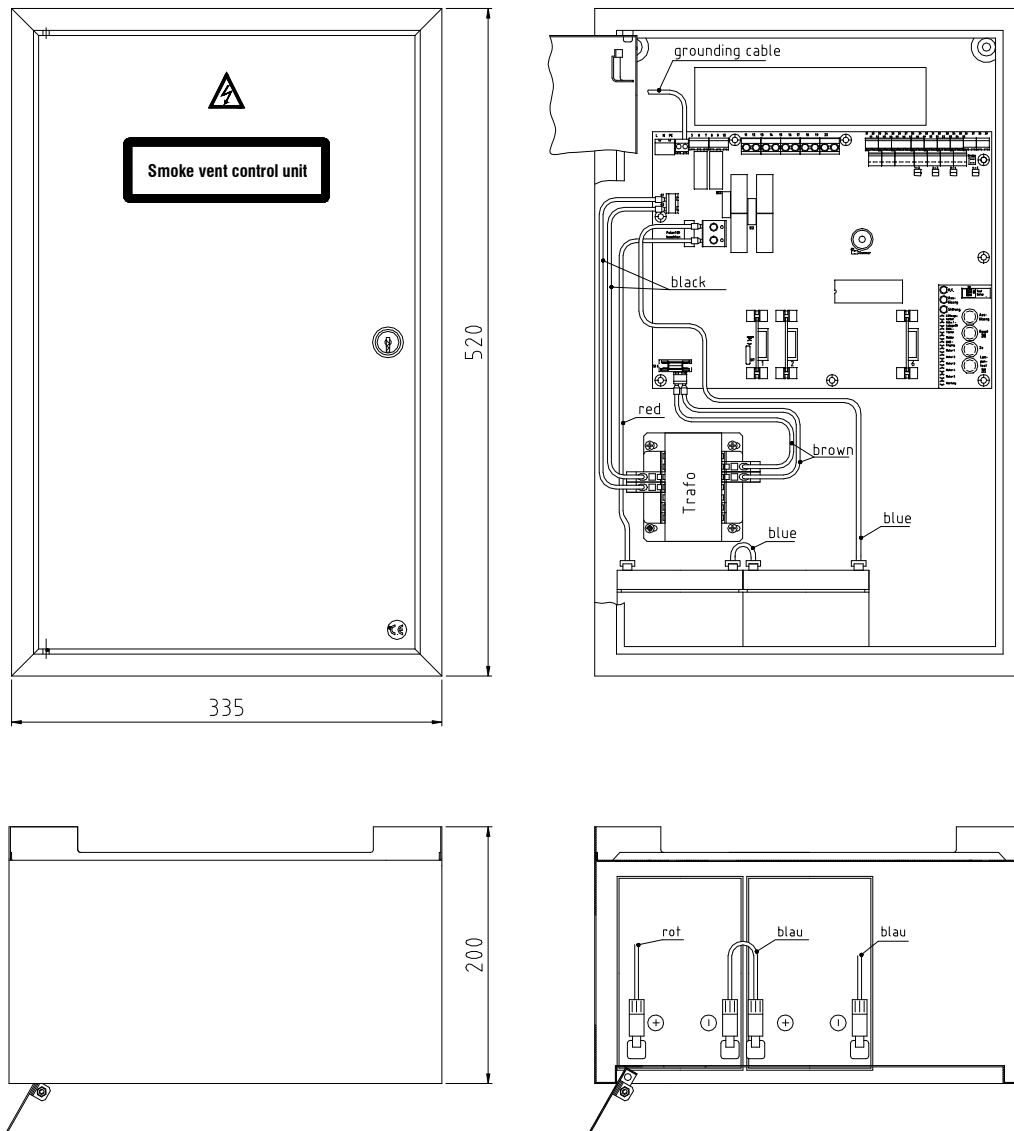


Fig. 2: View of smoke and heat vent control unit 24V 30A(20A)-2-1

2.3 Smoke and Heat Vent Control Unit 60A(40A)-4-1

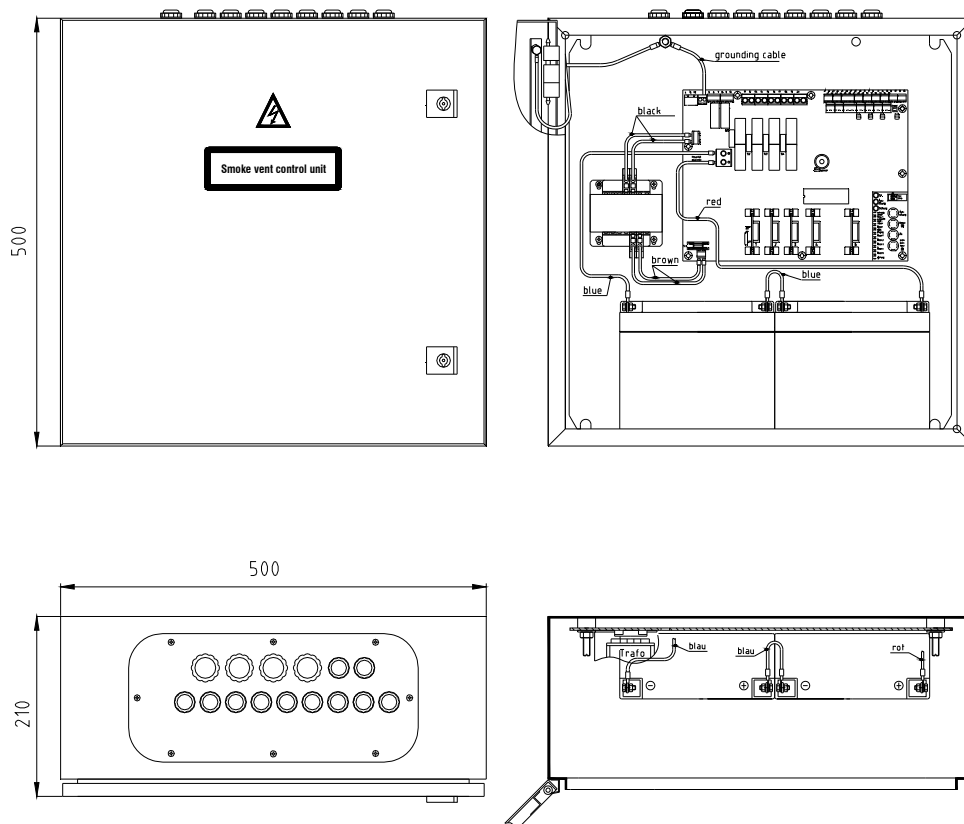


Fig. 3: View of smoke and heat vent control unit 24V 60A(40A)-4-1

2.4 Smoke and Heat Vent Control Unit 75A(50A)-5-1

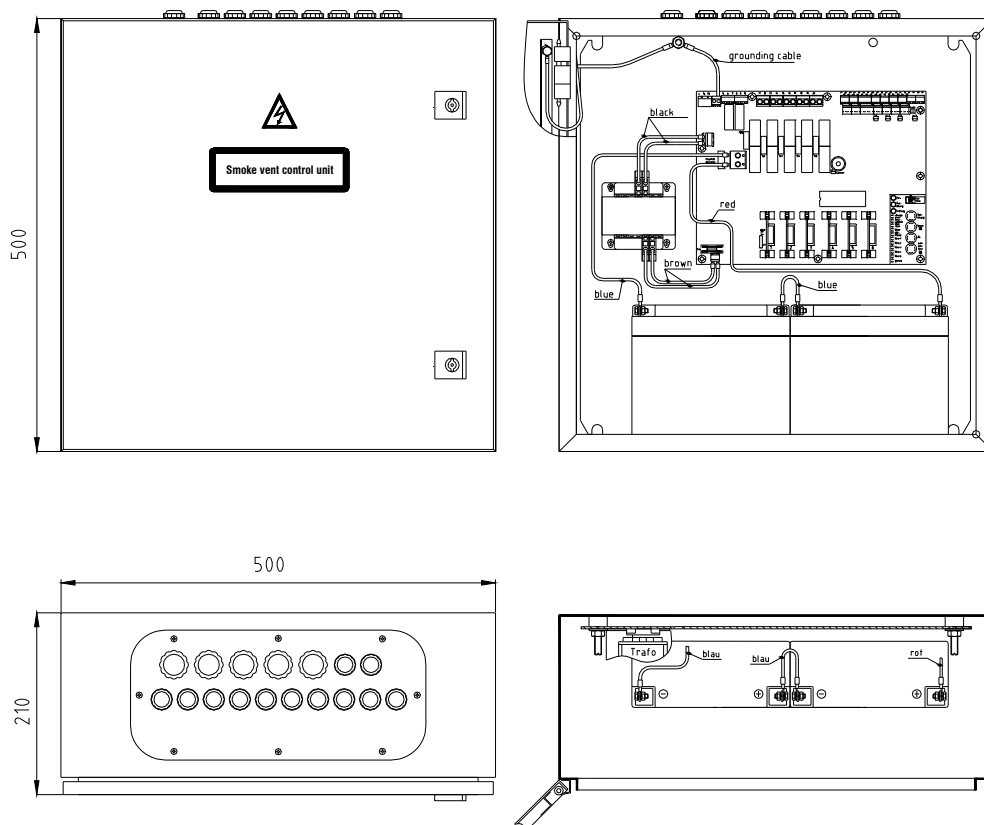


Fig. 4: View of smoke and heat vent control unit 24V 75A(50A)-5-1

3 Installation

3.1 General

Installation, commissioning, repair and maintenance of the Smoke and Heat Vent Control Unit 24V should only be carried out by trained specialists

3.2 Regulations and installation instructions

The following regulations and instructions must be observed during installation, cabling and commissioning work:

- National building regulations
- DIN 18232 – Structural fire safety in industrial buildings
- VDS Directive 2098
- regulations of the competent fire safety authorities
- guideline ZH 1/494 for power-operated windows, doors and gates
- VDE 0100, VDE 0108
- the rules of the competent power supply company
- the control unit should be installed in a location that allows unobstructed access to the control unit for subsequent maintenance and repair work
- the housing must be fastened to the wall
- for the 230V AC supply shall be provided to external isolation facility

Important note:

The batteries must be charged for at least 12 hours before commissioning can begin. When connecting the batteries, it is of the utmost importance to ensure the correct polarity.

3.3 Accident prevention regulations

The general accident prevention regulations, the accident prevention regulations for power-operated windows, doors and gates, and the VDE installation regulations must be obeyed at all times.

Important warning

The system must be isolated from voltage before any components are removed.

- **At first disconnect the batteries**
- **Then disconnect the 230V mains voltage**
- **To protect the electronic components, before carrying out work on the board the installation technician must earth him or herself → by touching the earthing connector**
- **when switching on the system again, the voltages are reconnected in reverse sequence**

3.4 Layout of the control unit

The Compact Smoke and Heat Vent Control Unit 24V has **1-5** motor lines, **1** manual detector line, **1** automatic detector line and one input for the BMZ (**B**rand- **M**elde- **Z**entrale - fire alarm unit) which make it possible to connect the following components:

- **Motors:** The motor lines can carry max. 15A for < 60 s. Run time > 60s reduces the output current to max. 10A.
- **Detectors:** Up to 10 smoke and heat vent switches can be connected to the manual detector line. Up to 50 automatic detectors [optical smoke detectors, maximum heat detectors or differential heat detectors] can also be connected in the automatic detector line on 1- or 2-detector configuration.

3.5 Connecting the motor openers

The Compact Smoke and Heat Vent Control Units 24V have 1 – 5 motor lines with a maximum output current of (15A < 60s motor run time) and (10A > 60s motor run time).

3.5.1 Determining the cable cross-sections

When 24V DC motor openers are used, the length of the motor supply cables is limited due to voltage drop. In such cases, the maximum permissible cable length is determined by the number of motors operated on a motor line and by the cable cross-section.

The following table shows the maximum permissible cable length depending on the **rated current of the connected motor openers** and the cable cross-section:

Current consumption(I) each motor line in [A]	Number of wires required (without earthing conductor)	Maximum permissible simple cable length to the last motor [m]
up to 2.5A	2 x 2,5mm ²	56m
up to 2.5A	2 x 4mm ²	88m
up to 2.5A	2 x 6mm ²	134m
5.0A	2 x 2,5mm ²	28m
5.0A	2 x 4mm ²	44m
5.0A	2 x 6mm ²	67m
7.5A	2 x 2,5mm ²	18m
7.5A	2 x 4mm ²	29m
7.5A	2 x 6mm ²	44m
10.0A	2 x 2,5mm ²	14m
10.0A	2 x 4mm ²	22m
10.0A	2 x 6mm ²	33m
12.5A	2 x 2,5mm ²	11m
12.5A	2 x 4mm ²	18m
12.5A	2 x 6mm ²	27m
15.0A	2 x 2,5mm ²	9m
15.0A	2 x 4mm ²	15m
15.0A	2 x 6mm ²	22,5m

3.5.2 Cable types

All cable types must always be approved by the responsible building authorities, fire safety authorities, or the local fire brigade.

3.6 Relaying of trigger and fault states

Two relays, each with a floating changeover contact, are provided to pass on the trigger and fault state.

The fault relay (terminals 5, 6, 7) is used for the relay of faults.

The trigger relay (terminals 8, 9, 10) is used for the relay of trigger signals.

Both relays (floating changeover contacts) can switch (24V DC / 60V AC) 3A.

In the normal state, the fault relay is picked up; it drops out in the event of a fault.

<u>Contact closed:</u>	Terminals 7 + 5:	Fault
	Terminals 7 + 6:	No fault
	Terminals 10 + 8:	No trigger
	Terminals 10 + 9:	Trigger

3.7 Connecting the batteries

When connecting the batteries, it is of the utmost importance to ensure the correct polarity. **A wrong connection will always result in immediate destruction of the board.** The red wire always indicates the positive terminal, and the blue wire always indicates the negative terminal of the battery. The lugs of the batteries are coded in the same colours.

The emergency power supply comprises two 12V batteries, which are connected in series to provide a combined 24V DC. The negative pole of the first battery is connected to the positive pole of the second battery. The two remaining terminals are then connected with the leads on the board.

(Red → Positive / Blue → Negative)

4 Functional description

The Compact Smoke and Heat Vent Control Unit 24V is a smoke and heat vent control unit with an emergency power supply for 72 hours in the event of a power outage. It is used to open and close electric motor-driven smoke vents in the event of a fire, and also for everyday ventilation.

The functional description will be kept quite general at this point. The functions of the individual operator control and display elements will be described in more detail in the next section.

A distinction is made between two basic operating modes:

4.1 Smoke and heat vent (triggered) operation

In the event of a fire (triggered by smoke and heat vent pushbutton, smoke detector or heat detector or the fire alarm system), the connected opening elements open. Smoke and heat vent operation always has priority over ventilation mode; the batteries help to ensure that after 72 hours of power outage the system can still be opened twice and closed once (smoke and heat vent operation). It can be triggered manually by pressing the "Trigger" pushbutton on the external smoke and heat vent switches, or automatically when one of the automatic detectors or the fire alarm system is triggered. Triggering is also possible when a power outage lasts for 72 hours.

If necessary, or when the fire brigade so desires, the connected opening elements can be given a Reset command and then close again. To do this, first the smoke and heat vent alarm is acknowledged by pressing the "Reset button" on the smoke and heat vent switch or on the board. Then the opening elements can be closed again by pressing the "Close pushbutton" on smoke and heat vent at button 6, the individual ventilation buttons, or the "Close button" on the board.

Smoke and heat vent operation has priority over ventilation mode, i.e. operation in ventilation mode is not possible during a smoke and heat vent operation alarm.

4.2 Ventilation mode

Three different ventilation modes (Continuous / Open only / Open and Close) can be set on the board. The settings are made in Set-up mode (see [Programming](#)).

The connected opening elements can be opened and closed by means of the individual ventilation pushbuttons.

In „Continuous“ mode, pressing the Open pushbutton at the ventilation pushbutton once moves the motor to the Open end position, and pressing the Close pushbutton once moves it to the Closed end position. Both pushbuttons can be pressed simultaneously to hold the motor in an intermediate position.

In „Push“ position, the motor can be moved in the Open direction only so long as the Open pushbutton on the ventilation pushbutton is held pressed. If the Close pushbutton on the ventilation pushbutton is pressed, the motor moves to its Closed end position („Push Open only“ mode). In „Push Open and Close“ mode, the drive also moves in Close direction.

If a wind/rain detector is connected, its function has priority over normal ventilation mode, i.e. in the event of a rain/wind alarm the connected opening elements are closed automatically, and can only be opened again manually after the rain/wind alarm has dropped out.

Operation in ventilation mode is not possible during a power outage.

“No ventilation” is also issued if a battery undervoltage is detected (*the battery cannot support additional ventilation because otherwise operation for 72 hours under emergency power would no longer be possible*). This is signalled by means of a red LED on the board.

4.3 Comfort ventilation module

If the optional comfort ventilation module is installed, the following additional ventilation functions can be used.

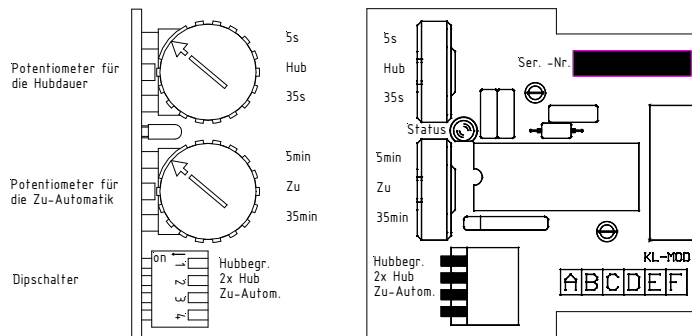


Fig. 5: Comfort – ventilation module KL - MOD

4.3.1 Stroke limitation

To enable the stroke limitation function, move the „Stroke limit.“ dip switch to „ON“ position (left). The „Continuous“ ventilation mode should be set.

An opening between 5s and 35s can be set at the „Stroke“ potentiometer. If the ventilation pushbutton moves to Open, the motor is actuated only the time set in the previous step.

Dip switch „2x stroke“ actuates the set opening time twice. The maximum opening time is double the time set. However, the ventilation pushbutton should be pressed at least twice.

The connected drive can perform an Open movement only for the time set even if the motor has meanwhile (while the set time is running) been instructed to Close.

Example:

- Time set = 20 seconds
- The pushbutton moves the motor Open
- After 10 seconds it moves Close for 5 seconds
- After that, it moves Open again with the ventilation pushbutton
- → the motor will open only for another 15 seconds!

4.3.2 Automatic Close

To enable the automatic Close, the „Autom. Close“ dip switch should be set to „ON“ position (left). An automatic time between 5s and 35s can be set at the „Close“ potentiometer. The time starts after the last move instruction (Open or Close). The time is reset automatically after at least 8 minutes of Close and the Open display has extinguished.

4.4 Open display

The smoke and heat vent control unit has an output (24V DC, 50 mA) for the Open display.

If the connected drive moves Open, this output is switched. If after a Close instruction the connected drive is at least 8 minutes in Close state, the display extinguishes (the output is reset).

The Open display works without feedback from the drive by assuming that the drive is closed if it moves close for at least 8 minutes. The Open display is switched off in this case.

Each time the Open drive is actuated, the Open display is switched on again.

4.5 Site of installation

The modules must only be installed or removed when the smoke and heat vent control unit is isolated electrically (battery and mains supply disconnected).

4.5.1 Smoke and Heat Vent Control Unit 15A(10A)-1-1

The slot for the comfort ventilation module should be in the first slot.

4.5.2 Smoke and Heat Vent Control Unit 30A(20A)-2-1 / 60A(40A)-4-1 / 75A(50A)-5-1

Depending on the function, the slot for the comfort ventilation module can be seen from the table below. Totally five modules (only 75A(50A)-5-1) can be used. Adjacent groups can be connected together in Setup mode. The table below will indicate the slot for your application.

Functional area	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6
Group 1	Yes	-	-	-	-	-
Groups 1+2	Yes	-	-	-	-	-
Groups 1+2+3	Yes	-	-	-	-	-
Groups 1+2+3+4	Yes	-	-	-	-	-
Groups 1+2+3+4+5	Yes					
Group 2	-	Yes	-	-	-	-
Groups 2+3	-	Yes	-	-	-	-
Groups 2+3+4	-	Yes	-	-	-	-
Groups 2+3+4+5						
Group 3	-	-	Yes	-	-	-
Groups 3+4	-	-	Yes	-	-	-
Groups 3+4+5	-	-	Yes	-	-	-
Group 4	-	-	-	Yes	-	-
Groups 4+5	-	-	-	Yes	-	-
Group 5	-	-	-	-	Yes	-

The functional range of the comfort ventilation module must be set up as described in the Setup menu of the control unit (see chapter 0).

In the KL-MOD assignment „all individually“, the module slots 1-5 are firmly assigned to the appropriate ventilation groups 1-5.

This means that, e.g., one KL-MOD for ventilation group 2 must be installed in module slot 2 and one KL-MOD of group 4 in slot 4.

If in Setup combinations of KL-MOD assignments are set, one KL-MOD is enough for each combination. In this case, it should be installed in the lowest slot of the combined ventilation groups.

For example, if ventilation groups 2 and 3 are to be settable by one KL-MOD, groups 1 and 4 each have one separate KL-MOD. For this, the KL-MOD assignment „2+3“ must be set in Setup and one KL-MOD each put in module slots 1, 2 and 4, i.e., the KL-MOD for the combined groups 2 and 3 must be in slot 2.

5 Commissioning

Commissioning is possible once all necessary external devices have been connected, the wiring has been double-checked, and the batteries have been charged.

First the power supply must be ensured. Only when the mains supply is connected can the batteries be connected; the green operation LEDs on the board and on smoke and heat vent switches 6 light up.

When connecting the batteries, it is of utmost importance to ensure correct polarity. Connecting the batteries incorrectly will result in immediate destruction of the board.

The Smoke and Heat Vent Control Unit is now ready for operation, and the individual functions can be tested in turn.

The following functions must be tested during commissioning:

Ventilation function:

Push ventilation pushbutton in the Open direction	- Motors open
Push ventilation pushbuttons in the Open and Closed directions simultaneously	- Motors stop
Push ventilation pushbutton in the Closed direction	- Motors close
Push ventilation pushbutton in the Open direction	- Motors open
<u>If installed:</u> Triggering of a rain alarm on the rain detector (push the test pushbutton if present) Motors should be in the open position!	- all motors close

Smoke and heat vent function (triggered by smoke and heat vent function pushbutton, autom. detector or fire alarm system contact):

Move the mode selector switch to "Test" and trigger the smoke and heat vent by pressing the red "Trigger" pushbutton on the board	<ul style="list-style-type: none"> - the green „O.K.“ LED on the board blinks (Test mode) - all motors open - The red "trigger" LED on the board and in the smoke and heat vent buttons blink - The signal buzzer sounds with an alternating frequency
Make the Smoke and Heat Vent Control Unit ready for operation again by pressing the "Reset" button on the board. Then close the motors by means of the "Close" button on the board. (Mode selector switch remains in the "Test" position)	<ul style="list-style-type: none"> - all motors close - red „trigger“ LED extinguishes - The signal buzzer goes silent - The green "O.K." LED on the board blinks (Test mode)
Trigger the smoke and heat vent by pressing the "Trigger" pushbutton on the smoke and heat vent switch (mode selector switch remains in the "Test" position)	<ul style="list-style-type: none"> - All motors open - The red „trigger“ LEDs on the board and on the smoke and heat vent switches blink - The signal buzzer sounds with an alternating frequency - The green "O.K." LED on the board blinks (Test mode)
Switch the Smoke and Heat Vent Control Unit in ready for operation state by pressing the "Reset" button on the smoke and heat vent button. Then close the motors by means of the "Close" pushbutton on the smoke and heat vent switch (mode selector switch remains in the "Test" position)	<ul style="list-style-type: none"> - All motors close - red „trigger“ LED extinguishes - The signal buzzer goes silent - The green "O.K." LED on the board blinks (Test mode)
Use test unit for signal series type ECO 1000RTU to trigger an automatic ECO type detector (mode selector switch remains in the "Test" position)	<ul style="list-style-type: none"> - All motors open - The red „trigger“ LED on the board and in the smoke and heat vent buttons blink - The signal buzzer sounds with an alternating frequency - The green „O.K.“ LED on the board blinks (Test mode)

<p>Make the Smoke and Heat Vent Control Unit ready for operation again by pressing the "Reset" button on the board. Then close the motors by means of the "Close button" on the board. (Now move mode selector switch to the "Normal" position)</p>	<ul style="list-style-type: none">- All motors close- Red „trigger“ LED extinguishes- The signal buzzer goes silent- The green „O.K.“ LED on the board shines permanently (normal operation)
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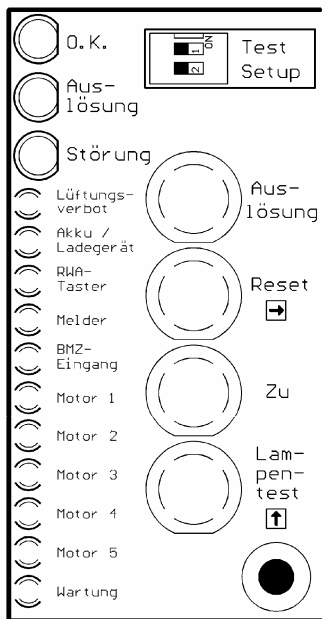
6 Operator action

6.1 Display and operator control elements on the board

The Smoke and Heat Vent Control Unit 24V has a number of operator controls and displays on the board, thus providing a clear, detailed indication of the individual operating states and faults. The operator control elements can be used to make various settings and activate various functions on the Smoke and Heat Vent Control Unit. The following typical illustration shows the operator control elements on the board of the Smoke and Heat Vent Control Unit 75A(50A)-5-1:

With the exception of the ventilation function, the Smoke and Heat Vent Control Unit can be operated from the board alone

The following operator control elements are available:



- Pushbutton „Trigger“
- Pushbutton „Reset“ →
- Pushbutton „Close“
- Pushbutton „Lamp test“ ↗
- Jumper „Buzzer“
- Slide switch „Test“
- Slide switch „Setup“



The following additional display elements are available:

- green LED „O.K.“ (Operation)
- red LED „Trigger“
- yellow LED „Fault“
- LED „No ventilation“
- LED „Battery / charger“
- LED „Smoke and heat vent switch“
- LED „Detector“ (automatic alarm)
- LED „Fire alarm center input“
- LED „Motor line 1 - 5“
- LED „Maintenance“

Fig. 6: Displays and control

The following table provides an overview of the various functions and settings of the controls on the board of the Smoke and Heat Vent Control Unit 24V:

Operator action	Function / effect
Pressing the „Trigger“ pushbutton	<ul style="list-style-type: none"> - All motors open - The red trigger LED on the board and on the smoke and heat vent buttons blink - The signal buzzer sounds with an alternating frequency - Automatic alarm forwarding is active
Pressing the „Reset“ pushbutton	<ul style="list-style-type: none"> - Triggering of smoke and heat vent is reset - The signal buzzer goes silent - Automatic alarm forwarding is inactive - The red trigger LEDs on the board and on the smoke and heat vent switches are extinguished

Operator action	Function / effect
Pressing the "Close" pushbutton	- All motors close (only if smoke and heat vent triggering is not present) → ventilation closed
Pressing the "Lamp test" pushbutton	- All LED's on the board and on the connected smoke and heat vent buttons light; they are extinguished when the Reset pushbutton is pressed - The signal buzzer sounds as long as the "Lamp test" pushbutton is pressed - The lamp test automatically ends after 10 minutes
„Buzzer" jumper	- If the jumper is on, the internal signal buzzer is switched on when triggering or a fault occurs - If the jumper is off, the internal signal buzzer is not activated
"Mode" slide switch at "ON" position	- The Smoke and Heat Vent Control Unit is in Test mode - The green "O.K." LED on the board blinks - Automatic alarm forwarding is inactive - The diagnostic LED's on the board can be activated in the event of a power outage
"Mode" slide switch at "OFF" position	- Normal state of the control unit - The fire brigade relay is switched when triggering occurs
„Setup" slide switch at „ON" position OFF (left)	- Normal state of the control unit
„Setup" slide switch at „ON" position ON (right) <i>[Press Reset  and Lamp test  pushbuttons at the same time]</i>	- Setup mode active (see Programming) - all LEDs blink at high frequency

The following table provides an overview of the various display states of the displays on the board of the Smoke and Heat Vent Control Unit 24V:

Display	State
„O.K." LED (Operation)	- Is lit continuously so long as no fault is detected - blinks in Test mode - Is extinguished when a fault is active or maintenance is needed
"Trigger" LED	- blinks when smoke and heat vent is triggered
"Fault" LED	- blinks when a fault is detected - flashes during a power outage - blinks when maintenance is needed (see Maintenance LED)
"No ventilation!" LED	- Lit continuously when wind/rain alarm is active - blinks when the battery capacity drops below a certain limit (72 hours emergency power supply must be ensured)

Display	State
“Battery / charger” LED	<ul style="list-style-type: none">- blinks when battery not detected- flashes when there is exhaustive discharge of battery, is extinguished again when battery has been charged
“Smoke and heat vent switch” LED	<ul style="list-style-type: none">- lit constantly when triggering by an external control unit pushbutton occurs- blinks when there is a line interruption- flashes when there is a short circuit in the line
“Detector” LED	<ul style="list-style-type: none">- shines permanently when triggered by an external automatic detector- blinks when there is a line interruption- flashes when there is a short circuit in the line
“Central fire alarm system input” LED	<ul style="list-style-type: none">- lit constantly when triggering by an external Fire Alarm System occurs.- blinks when there is a line interruption- flashes when there is a short circuit in the line
“Motor1 – 5” LED’s	<ul style="list-style-type: none">- Fault in motor line 1 - 5- blinks when there is a line interruption / motor fuse defect (short circuit/motor line overload)
„Maintenance“ LED	<ul style="list-style-type: none">- blinks if maintenance is needed

6.2 Audible signals

When in operation, the control unit buzzer provides audible signals indicating fault states and action completed:

Caution !

The signals can be heard when the „Buzzer“ jumper is active.

Constant signal:

Fault state (The LED’s indicate the cause)

or

Lamp test pushbutton is pressed (all LEDs light).

Constant signal with alternating pitch:

Control unit trigger state. The red „Trigger“ LED blinks.

1x long beep (confirm signal)

after exiting SETUP mode:

Confirms that all settings have been adopted

6.3 Fuses on the board

To protect the electronic components, the board of the Smoke and Heat Vent Control Unit 24V contains two fuses (1 x glass tube fuse 5 x 20mm / 1 – 5 x FKS fuse). The following table shows the functions and ratings of the individual fuses:

Smoke and Heat Vent Control Unit 15A-1-1:

Designation:	Function:	Rating:
SI2	24 V AC secondary fuse downstream of transformer	1A slow-blow (5x20mm)
SI1	Motor line 1 fusing (FKS fuse)	15A FKS 80V

Smoke and Heat Vent Control Unit 30A-2-1 / 60A-4-1 / 75A-5-1:

Designation:	Function:	Rating:
SI6	24 V AC secondary fuse downstream of transformer	3.15A slow.blow (5x20mm)
SI1	Motor line 1 fusing (FKS fuse)	15A FKS 80V
SI2	Motor line 2 fusing (FKS fuse)	15A FKS 80V
SI3	Motor line 3 fusing (FKS fuse) (only units 60A and 75A)	15A FKS 80V
SI4	Motor line 4 fusing (FKS fuse) (only units 60A and 75A)	15A FKS 80V
SI5	Motor line 5 fusing (FKS fuse) (only control unit 75A)	15A FKS 80V

24V units must be fitted with fuses of nominal voltage greater than 32V (e.g., FKS 80V) → FIRE WARNING!



6.4 State at time of delivery

Because of the many options described here for setting the parameters of the Smoke and Heat Vent Control Unit 24V, the state of the control unit at the time of delivery will now be summarized in tabular form:

„Test“ slide switch	„Test“ slide switch is at position „OFF“ → automatic trigger forwarding in smoke and heat vent case
„Setup“ slide switch	Setup slide switch is at position „OFF“
„Buzzer“ jumper	Jumper is active → Buzzer is active
The following functions and settings, resp. are set in programming mode:	
Ventilation mode	set to constant mode
Smoke and heat vent button series resistance 0R / 18k function	set to 18k Ohm (short-circuit monitoring of the lines is active)
Detector dependence	set to 1 detector linkup
Trigger if fault occurs	disabled
Number of detectors	Set to 1 – 10 automatic detectors

7 Programming (SETUP)

In SETUP mode, many special functions and settings can be programmed:

This is done with the „Setup“ DIP switch which if the program is to be changed, must be at ON while at the same time the „Reset “ pushbutton and the „Lamp test “ pushbutton must be set ON. Some LEDs on the board now blink at very high frequency, which indicates that Setup mode is active.

Function can be changed with 2 pushbuttons on the board and are displayed by LEDs:

7.1 Smoke and Heat Vent Control Unit 15A(10A)-1-1

The 4 LEDs „O.K.“, „Trigger“ and „Fault“ indicate which function has been selected and the 7 small red LEDs indicate the current setting of that function.

LED	Function							
	Venting function	0R/18k	No function	Detector dependent	Trigger on fault	Number of Detector	Relays function of the fault relay	VdS-compliant
„Sys“	•	•	•	•	•	•	•	☼
„O.K.“	•	•	•	☼	☼	☼	☼	•
„Trigger“	•	☼	☼	•	•	☼	☼	•
„Fault“	☼	•	☼	•	☼	•	☼	•
	(☼ LED blinks • LED dark)							
	Setting							
„No ventilation!“	-	-	-	-	-	-	-	-
„Battery“	-	-	-	-	-	-	-	-
„Control unit pushbutton“	-	-	-	-	All	-	-	-
„Detector“	-	-	-	-	Interruption	-	-	-
„Fire alarm input“	no ventilation	-	-	-	Unit inputs	-	-	-
„Motor line“	OPEN/CLOSE pushing	-	-	2 detectors with notice	Detector	26..50 ECO	Alarm- relay	-
„Maintenance“	only pushing OPEN	0R	-	2 detectors	Control unit pushbuttons	11..25 ECO	Wind- and Rain-Relay	No
(all 7 LEDs off)	Constant	18k	-	1 detector	Off	1..10 ECO	Fault- relay	Yes



7.1.1 Smoke and Heat Vent Control Units 30A(20A)-2-1 / 60A(40A)-4-1 / 75A(50A)-5-1

The LEDs „O.K.“, „Trigger“ and „Fault“ and „No ventilation“ indicate which function has been selected and the 7 small red LEDs below indicate the current setting of that function.

LED	Function						KL-MOD as- signment
	Constant/Push Group 1	Constant/Push Group 2	Constant/Push Group 3 (only 60A and 75A)	Constant/Push Group 4 (only 60A and 75A)	Constant/Push Group 5 (only 75A)		
„O.K.“	●	●	●	●	●	●	●
„Trigger“	●	●	●	☀	☀	☀	☀
„Fault“	●	☀	☀	●	●	●	☀
„No ventilation!“	☀	●	☀	●	☀	●	●
	(☀ LED blinks ● LED dark)						
	Setting						
„Fire alarm input“	-	-	-	-	-	-	1+2+3+4
„Motor 1“	-	-	-	-	-	-	2+3+4
„Motor 2“	-	-	-	-	-	-	1+2+3
„Motor 3“	-	-	-	-	-	-	1+2, 3+4
„Motor 4“	-	-	-	-	-	-	3+4
„Motor 5“	OPEN/CLOSE pushing	OPEN/CLOSE pushing	OPEN/CLOSE pushing	OPEN/CLOSE pushing	OPEN/CLOSE pushing	OPEN/CLOSE pushing	2+3
„Maintenance“	only pushing OPEN	only pushing OPEN	only pushing OPEN	only pushing OPEN	only pushing OPEN	only pushing OPEN	1+2
(all 7 LEDs off)	Constant	Constant	Constant	Constant	Constant	Constant	all individually

LED	Function							
	KL-MOD assignment Group 5	0R 18k		Detector dependent	Trigger on fault	Number of Detector	Relay func- tion of the fault relay	VdS- compli- ant
„O.K.“	●	☀	☀	☀	☀	☀	☀	☀
„Trigger“	☀	●	●	●	●	☀	☀	☀
„Fault“	☀	●	●	☀	☀	●	●	☀
„No ventilation!“	☀	●	☀	●	☀	●	☀	●
	(☀ LED blinks ● LED dark)							
	Setting							
„Fire alarm input“	-	-	-	-	-	-	-	-
„Motor 1“	-	-	-	-	-	-	-	-
„Motor 2“	-	-	-	-	-	-	-	-
„Motor 3“	-	-	-	-	Interruption	-	-	-
„Motor 4“	-	-	-	-	Unit inputs	-	-	-
„Motor 5“	-	-	-	2 detectors with notice	Detector	26..50 ECO	Alarm- relay	-
„Maintenance“	4+5	0R	-	2 detectors	Control unit pushbuttons	11..25 ECO	Wind- and Rain- Relay	No
(all 7 LEDs off)	individual	18k	-	1 detector	Off	1..10 ECO	Fault- relay	Yes

The 2 board pushbuttons „Reset “ and „Lamp test “ select the functions and change their settings:

- „Reset “ pushbutton next function (1 column to the right in the table above)
- „Lamp test “ pushbutton Setting one position up (line up in the table above)

Any change of a position is adopted by the control unit immediately, however, to protect the changed setting(s) from the effects of a power outage, the „Setup“ DIP switch must be set OFF again. The SETUP mode is exited and the setting saved about 60s after the last press of a button.

8 Locating faults / troubleshooting

All faults can be detected and isolated with the aid of the diagnostic LEDs on the board. Errors that are caused by incorrect wiring of the components can, of course, not be diagnosed. If malfunctions occur which cannot be detected with the aid of the diagnostic LED's, the first step should be to verify the wiring of the external components.

If the Smoke and Heat Vent Control Unit has detected a fault, the green "O.K." LED extinguishes and the yellow "Fault" LED blinks or flashes.

Diagnostic LED display on the board	Cause	Remedy
red "Detector" LED <u>blinks</u>	Line interruption in the detector line	<ul style="list-style-type: none"> ➤ Terminate detector line with 33K/18K/6K8 resistor ➤ Investigate cable for interruption
red "Detector" LED <u>flashes</u>	Short-circuit in the detector line	<ul style="list-style-type: none"> ➤ Investigate cable for short-circuit
red "Smoke and heat vent switch" LED <u>blinks</u>	Line interruption in the smoke and heat vent switch line	<ul style="list-style-type: none"> ➤ Terminate smoke and heat vent switch line with 33K resistor ➤ Investigate cable for interruption
red "Smoke and heat vent switch" LED <u>flashes</u>	Short-circuit in the smoke and heat vent switch line	<ul style="list-style-type: none"> ➤ Investigate cable for short-circuit
red „Fire alarm center input“ LED <u>blinks</u>	Line interruption in the Fire alarm center input line	<ul style="list-style-type: none"> ➤ Terminate Fire alarm center input line with 33K resistor ➤ Investigate cable for interruption
red „Fire alarm center input“ LED <u>flashes</u>	Short-circuit in the Fire alarm center input line	<ul style="list-style-type: none"> ➤ Investigate cable for short-circuit
red LED „Motor 1 – 5“ <u>blinks</u>	Line interruption on motor line	<ul style="list-style-type: none"> ➤ Check motor fuses ➤ Investigate cable for short-circuit ➤ Investigate cable for interruption ➤ For third-party drives, fit 33K resistor
red „No ventilation“ LED <u>blinks or flashes</u>	Battery capacity is too low	<ul style="list-style-type: none"> ➤ Wait until battery has recharged completely
red "No ventilation!" LED <u>gives constant light</u>	Wind/rain alarm is active or fault at the wind/rain detector	<ul style="list-style-type: none"> ➤ Wait until wind/rain alarm has dropped out ➤ Check connected wind/rain detector
red "Battery/charger" LED <u>blinks</u>	Battery not connected	<ul style="list-style-type: none"> ➤ Check battery and connect if necessary
red "Battery/charger" LED <u>flashes</u>	Exhaustive discharge of battery (U < 18 V)	<ul style="list-style-type: none"> ➤ Connect new batteries !!
yellow "Fault" LED <u>flashes</u>	Power outage	<ul style="list-style-type: none"> ➤ Check 230 V AC mains voltage ➤ Check SI2 and SI6, resp. secondary fuse
red „Maintenance“ LED <u>blinks</u>	Maintenance is required	<ul style="list-style-type: none"> ➤ Inform customer service

Malfunction	Cause	Remedy
Connected automatic detectors are not triggered	Wrong polarity Incorrect wiring	<ul style="list-style-type: none"> ➤ Check polarity and connections, rectify fault
Smoke and heat vent switch malfunction	Incorrect wiring	<ul style="list-style-type: none"> ➤ Check wiring

9 Maintenance

Smoke and heat vent systems are safety systems intended to protect human lives, health, and material property.

For this reason, maintenance of the smoke and heat vent system must be carried out at regular intervals, at least once per year, in accordance with DIN 18232, the VdS directives, and the manufacturer's guidelines. Functional testing, commissioning, maintenance and any repairs on the smoke and heat vent system may only be carried out by authorised specialists

Maintenance module (optionally available):

If the optional maintenance module (slots on the board of the smoke and heat vent control unit) is installed, required maintenance is indicated visually (by the Fault LED at the control unit pushbutton and the Maintenance LED on the control unit board). The maintenance interval can be changed at the maintenance module.

Before carrying out work on the open control unit the technician must earth him or herself by touching the earthing connector !!!!

Caution !

You should contact us before function testing the alarm or fault forwarding to the fire brigade or building control system by means of the integrated fire brigade relay or fault relay.

Compact Smoke and Heat Vent Control Unit 24V:

- Visual inspection of the Smoke and Heat Vent Control Unit
- Check 230 V AC mains voltage
- Inspect all fuses
- Check battery voltage (approx. 27,6V, but not less than 25 V)
- The batteries should be replaced and the old batteries disposed of after 4 years
- Examine terminal connections for firm seating
- Inspect cables for damage
- Carry out function test (see chapter 5 Start-up), set the „Test“ slide switch to „ON“ position before
- Test the functions of the Smoke and Heat Vent Control Unit by pressing/triggering all external smoke and heat vent buttons, automatic detectors and ventilation buttons
- Test display elements of the externally connected smoke and heat vent switches and automatic detectors
- Test the fault and alarm forwarding functions; to do this, place the "Test" slide switch in the "OFF" position

10 Technical data

10 Common technical data

Number of trigger groups:	1
Number of fire alarm center lines:	1
Number of smoke and heat vent pushbuttons 6, 7:	10
Number of automatic detectors	1 – 10 or 11 – 25 or 26 – 50 (see programming) (smoke detector ECO1003, maximum heat detector ECO1005T)
OPEN display output:	24V DC, max. 50mA

Terminals:

Motor terminals:	4 mm ² (flexible), 6 mm ² (solid)
Mains connection terminals:	2.5 mm ² , plug-in type
Fault and alarm relay:	2.5 mm ²
Other terminals:	1.5 mm ² (flexible), 2.5 mm ² (solid)

Line monitoring:	Motor line for line break/fuse blow Smoke and heat vent switch line for line break and short-circuit Fore alarm system for line break and short-circuit Detector line for line break and short-circuit Battery line for line break
------------------	--

Trigger relay: Breaking capacity (60 VAC and 24 VDC, resp.)

Picks up when alarm occurs

Fault relay: Breaking capacity (60 VAC and 24 VDC, resp.)

Drops out when a fault occurs

10.1 Smoke and Heat Vent Control Unit 15A(10A)-1-1

Type:	Smoke and Heat Vent Control Unit 15A-1-1
Housing:	Steel plate housing with cylinder lock 455 Dimensions W/H/D: 255/440/155 [mm] Color: grey (similar to RAL 9002)
Protection rating:	IP 30
Temperature range:	Temperature class III according to VdS 2581 (-5°C to 40°C) Temperature class III according to VdS 2593 (-5°C to 40°C)
Rated voltage:	230 VAC / 50 Hz
Rated power:	32 VA
Battery rated voltage:	24 VDC (2 x 12 VDC)
Battery rated capacity:	7,0 or 7,2 Ah
Motor line breaking capacity:	max. 15 A rated current (depends on the motor run time) 15 A for < 60s run time / 10A for > 60s to max. 3min run time
Number of motor lines:	1
Number of ventilation groups:	1

10.2 Smoke and Heat Vent Control Unit 30A(20A)-2-1

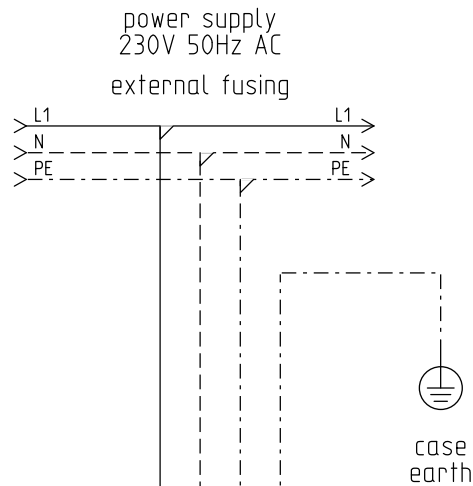
Type:	Smoke and Heat Vent Control Unit 24V 30A(20A)-2-1
Housing:	Steel plate housing with cylinder lock 455 Dimensions W/H/D: 255/440/155 [mm] Color: grey (similar to RAL 9002)
Protection rating:	IP 30
Temperature range:	Temperature class III according to VdS 2581 (-5°C to 40°C) Temperature class III according to VdS 2593 (-5°C to 40°C)
Rated voltage:	230 VAC / 50 Hz
Rated power:	100 VA
Battery rated voltage:	24 VDC (2 x 12 VDC)
Battery rated capacity:	12 Ah
Motor line breaking capacity:	max. 15 A rated current (depends on the motor run time) 15 A for < 60s run time / 10 A for > 60s to max. 3min run time
Number of motor lines:	2
Number of ventilation groups:	2

10.3 Smoke and Heat Vent Control Unit 60A(40A)-4-1

Type:	Smoke and Heat Vent Control Unit 24V 60A(40A)-4-1
Housing:	Steel housing with 2 cylinder locks Dimensions W/H/D: 500/500/210 [mm] Color: grey (RAL 7035 light grey)
Protection rating:	IP 54
Temperature range:	Temperature class III according to VdS 2581 (-5°C to 40°C) Temperature class III according to VdS 2593 (-5°C to 40°C)
Rated voltage:	230 VAC / 50 Hz
Rated power:	100 VA
Battery rated voltage:	24 VDC (2 x 12 VDC)
Battery rated capacity:	26 Ah
Motor line breaking capacity:	max. 15 A rated current (depends on the motor run time) 15 A for < 60s run time / 10 A for > 60s to max. 3min run time
Number of motor lines:	4
Number of ventilation groups:	4

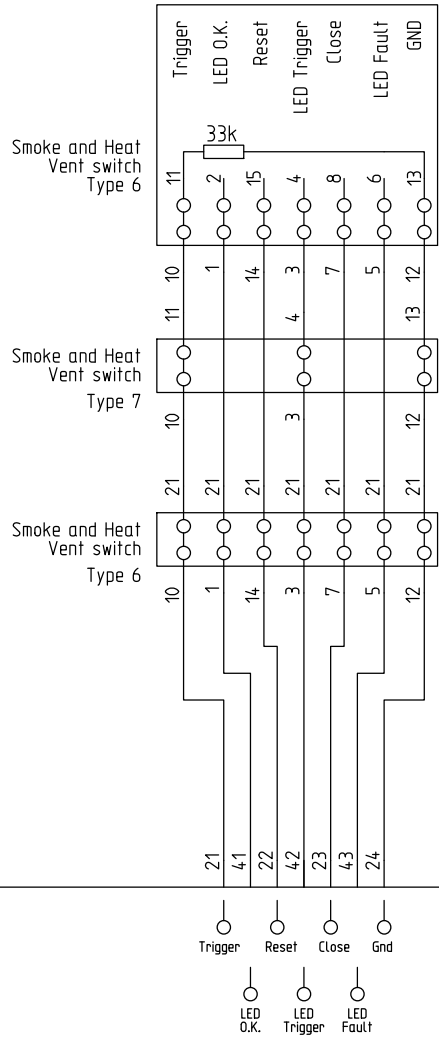
10.4 Smoke and Heat Vent Control Unit 75A(50A)-5-1

Type:	Smoke and Heat Vent Control Unit 24V 75A(50A)-5-1
Housing:	Steel housing with 2 cylinder locks Dimensions W/H/D: 500/500/210 [mm] Color: grey (RAL 7035 light grey)
Protection rating:	IP 54
Temperature range:	Temperature class III according to VdS 2581 (-5°C to 40°C) Temperature class III according to VdS 2593 (-5°C to 40°C)
Rated voltage:	230 VAC / 50 Hz
Rated power:	100 VA
Battery rated voltage:	24 VDC (2 x 12 VDC)
Battery rated capacity:	26 Ah
Motor line breaking capacity:	max. 15 A rated current (depends on the motor run time) 15 A for < 60s run time / 10 A for > 60s to max. 3min run time
Number of motor lines:	5
Number of ventilation groups:	5

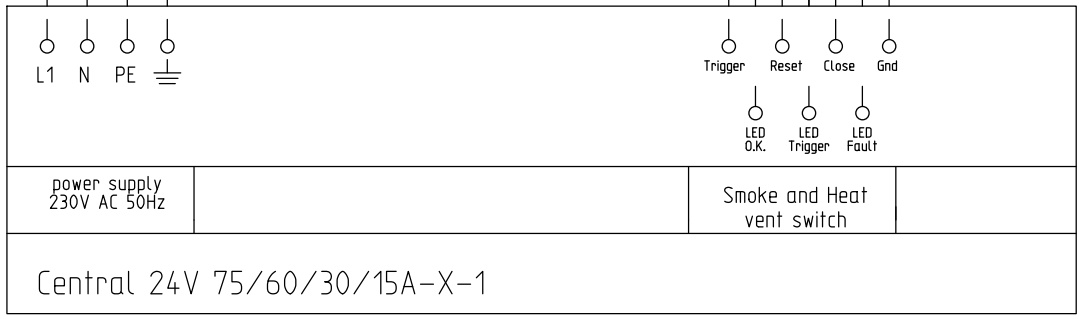


The last smoke and Heat Vent switch must be terminated with a 33k Ohm resistor.

max. of 10 in a single line



Connection of
Smoke and Heat
Vent switch



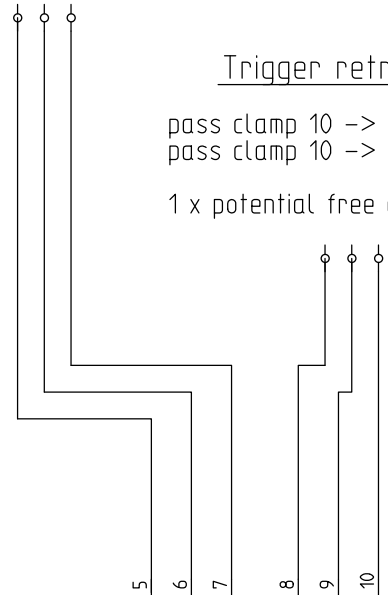
--24_0103--0150_E004_--

previous page							customer	project description	page description	next page 2		
state	amendment	date	name	project	date	name	Smoke Heat vent control unit 75/60/30/15A-X-1	power supply 230V 50Hz AC Smoke and Heat vent switch Connection diagram	order number:	plant:		
		26.08.2019		editor	26.08.2019	Krause				location	commission:	sheet: 1
				proofed						Urspr.	Ers.f	Ers.d

Fault retransmission

pass clamp 7 -> 6: no Fault
 pass clamp 7 -> 5: Fault

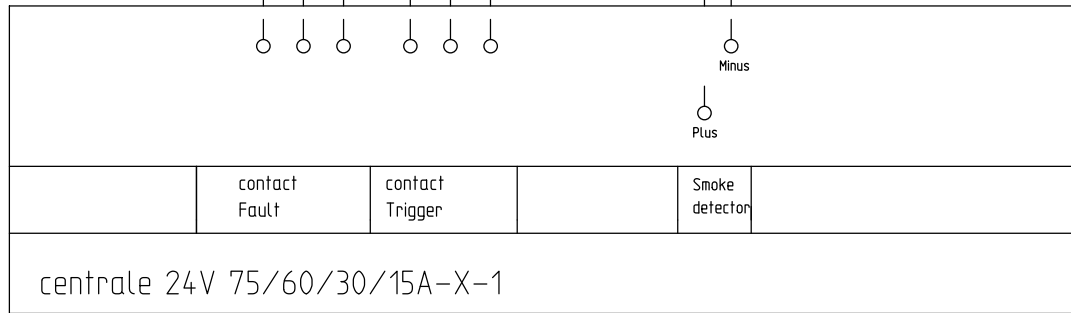
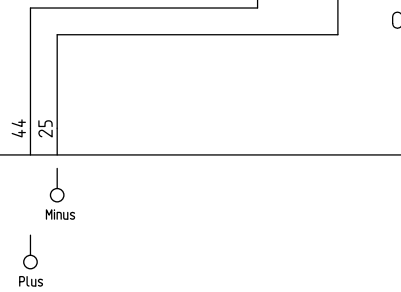
1 x potential free alternating contact



Trigger retransmission

pass clamp 10 -> 9: Trigger
 pass clamp 10 -> 8: no Trigger

1 x potential free alternating contact

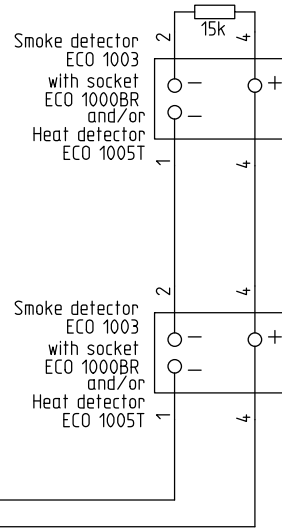


centrale 24V 75/60/30/15A-X-1

--24_0103--0150_E004__

Connecting diagram 0 up to 10 detectors

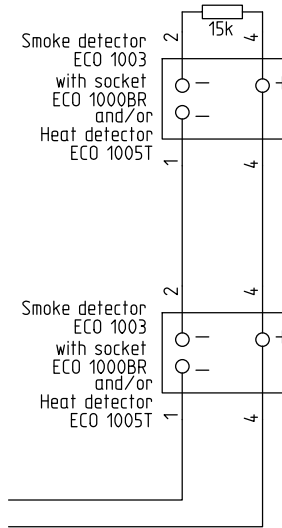
While connecting only 0-10 pcs.
 the last detector must be
 terminated with a 33k Ohm
 resistor. (standard adjustment)



Connecting diagram 11 up to 25 detectors

While connecting only 11-25 pcs.
 the last detector must be
 terminated with a 15k Ohm
 resistor. (SETUP adjustment)

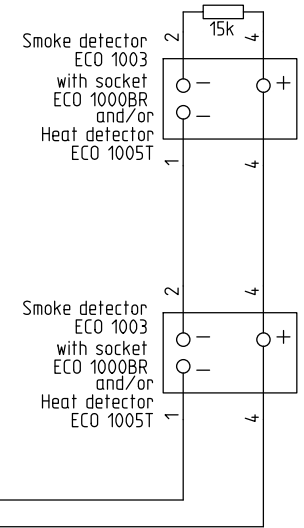
You will find the 15k Ohm resistor in a
 bag with the batterie brigde.



Connecting diagram 26 up to 50 detectors

While connecting only 26-50 pcs.
 the last detector must be
 terminated with a 6,8k Ohm
 resistor. (SETUP adjustment)

You will find the 6,8k Ohm resistor in a
 bag with the batterie brigde.

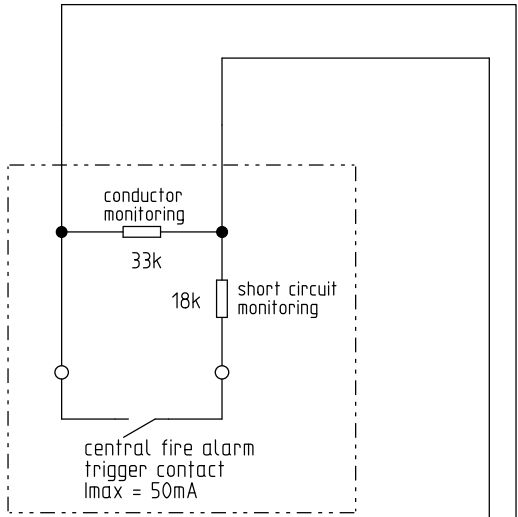


Connecting Smoke detector Signal retransmission

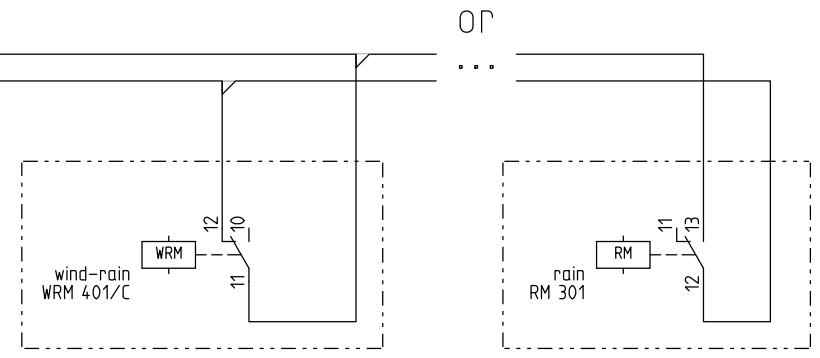
Note Protection Mark according DIN ISO 160161

previous page 1							customer	project description	page description	next page 3		
state	amendment	date	name	project editor	date	name	Smoke Heat vent control unit 75/60/30/15A-X-1	Smoke detectors Connection diagram signal retransmission	order number:		plant:	
		26.08.2019		26.08.2019	Krause	location			commission:	sheet: 2		
						Urspr.			Ers.f	Ers.d	of 7	

Connection of a fire alarm system and Wind- and Rain detector



At the state at time of delivery you will find the 33k resistor between clamp 45 and 26. The 18k resistor is packed in a bag by the battery bridge.

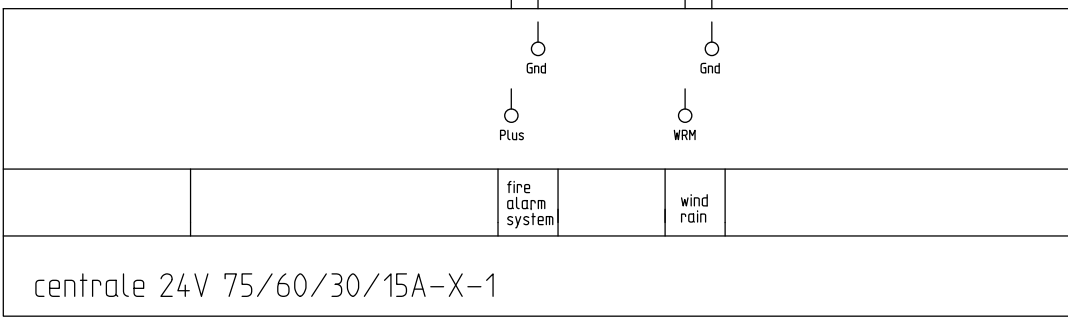


Connection (WRM 401/C)
(use only the potential free contacts)

Connection RM 301

While connecting an alternative Wind/rain detector, please consider it will have a potential free contact closing by wind / rain.

While Wind/rain clamp 27 and 46 are short-circuiting with contact of Wind/rain detector.



Note Protection Mark according DIN ISO 160161

--24_0103--0150_E004_--

previous page 2							customer	project description	page description	next page 4		
state	amendment	date	name	project editor	date	name	75/60/30/15A-X-1	Input (fire alarm system) Connection Wind-Rain system	order number:		plant:	
		26.08.2019			26.08.2019	Krause			location		commission:	sheet: 3
				proofed								of 7
				Norm		Urspr.	Ers.f	Ers.d				

Note Protection Mark according DIN ISO 160161

Connection ventilation pushbuttons

Double push button
without locking at each other

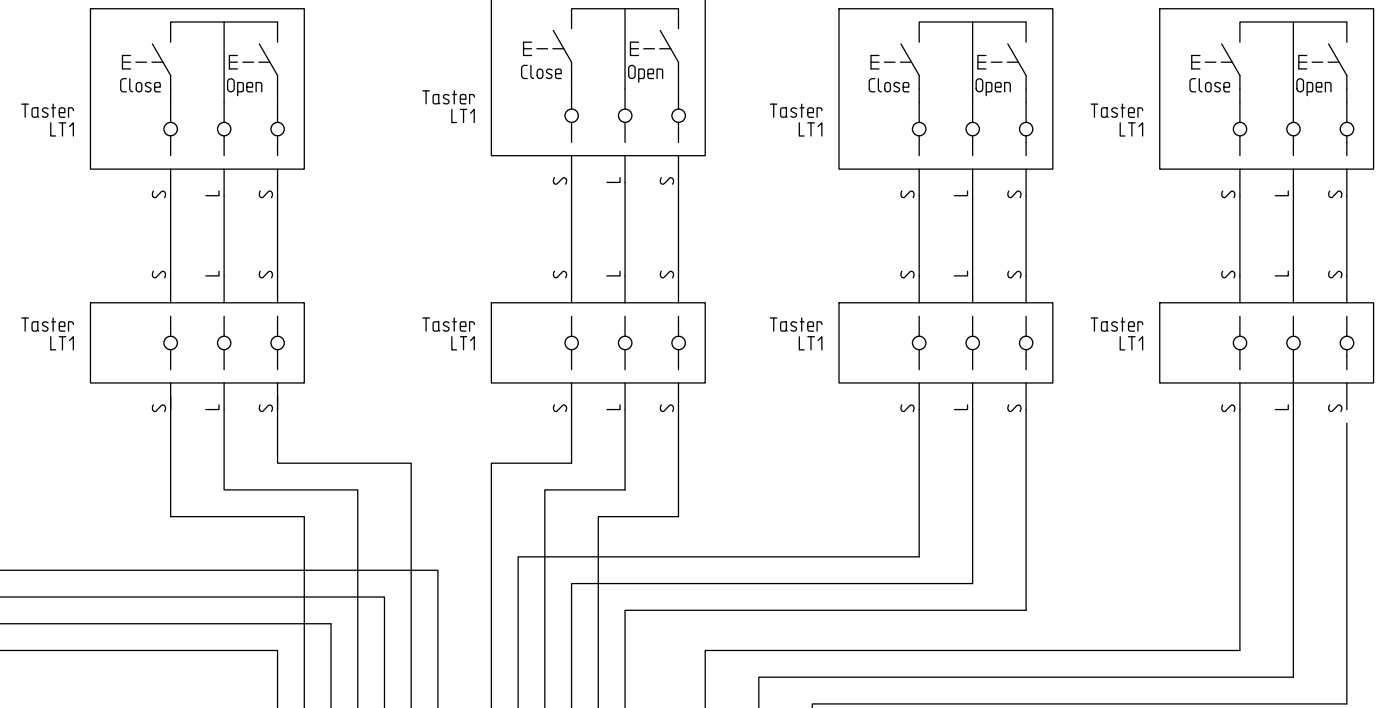
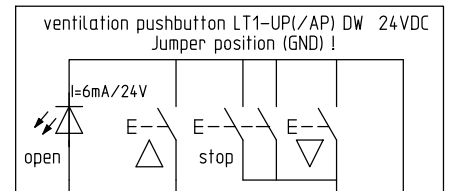
ventilation group 1
Max. output power for the display open:
24V DC / 50mA (1,2W)
Max. of 8 in a single line

ventilation group 2
as many as required

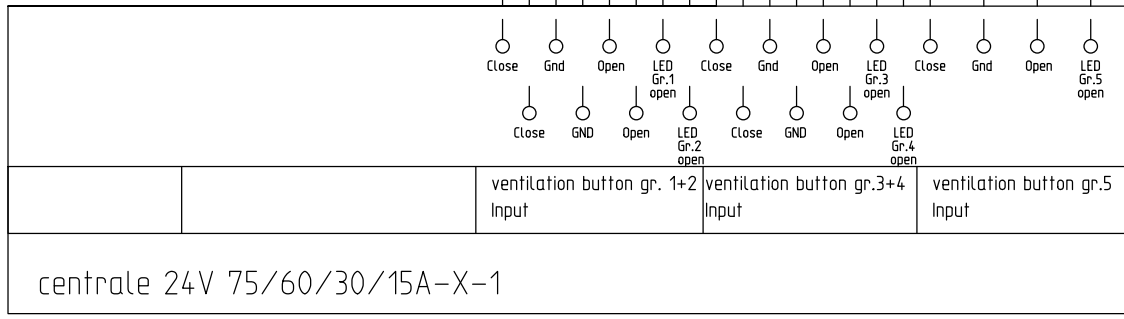
ventilation group 3
as many as required

ventilation group 4
as many as required

ventilation group 5
as many as required



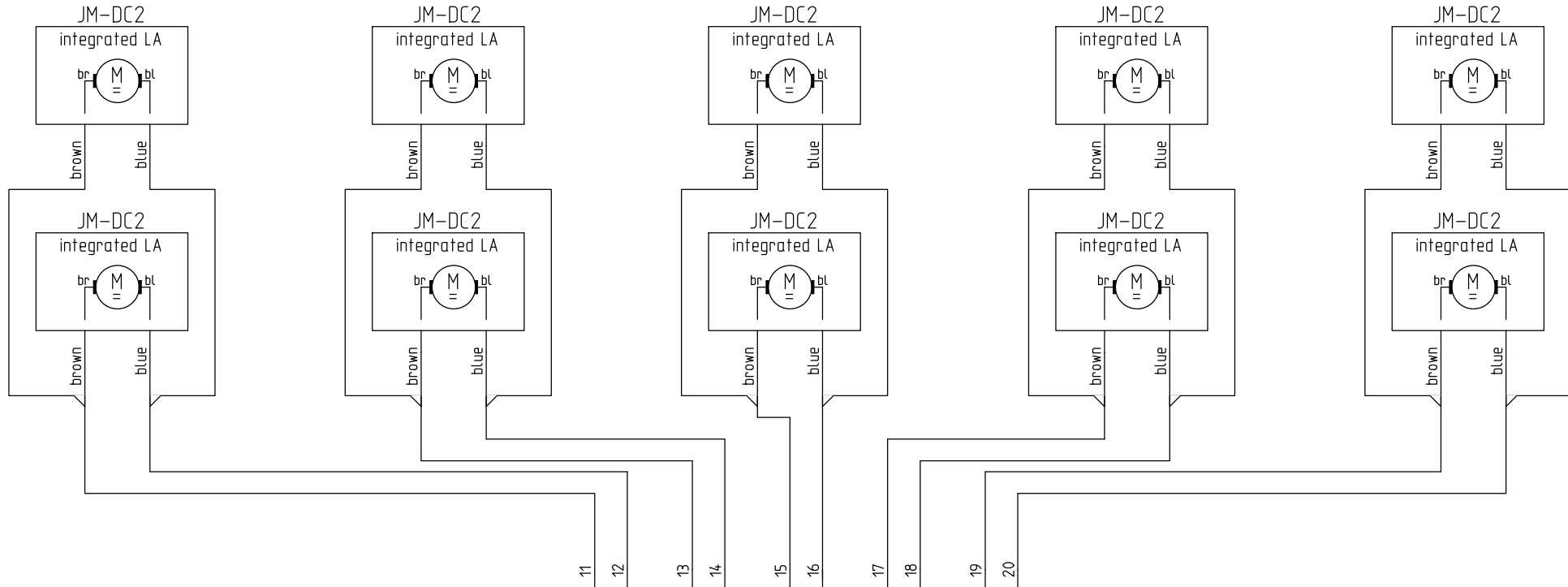
Both kinds of ventilation push buttons
are at each Ventilation Input connectable.



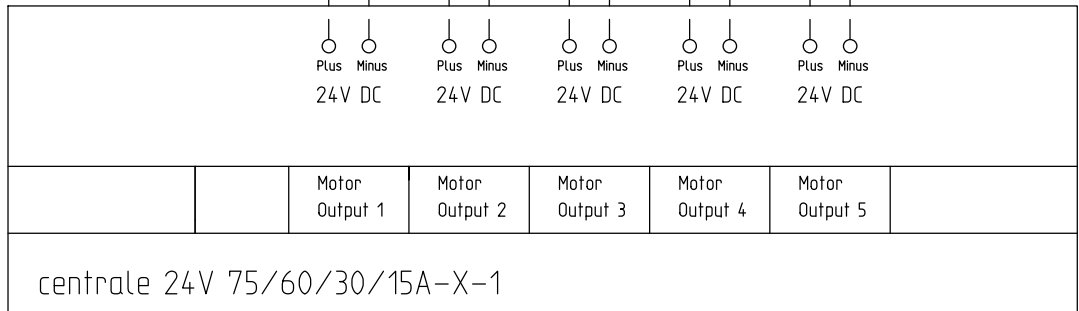
--24_0103--0150_E004_---

previous page 3							customer	project description	page description	next page 5		
state	amendment	date	name	project editor	date	name	Smoke Heat vent control unit 75/60/30/15A-X-1	daily ventilation Connection diagram	order number:		plant:	
		26.08.2019			26.08.2019	Krause			location		commission:	sheet: 4
				proofed					Urspr.		Ers.f	Ers.d

The max. number of spindle drives are depending on the opening time of the drives. By an opening time > 60s the max. output current is limited to 10A instead of 15A by an opening time < 60s.



Maximum of 2 spindle drives JM-DC2 at each motor output connectable!



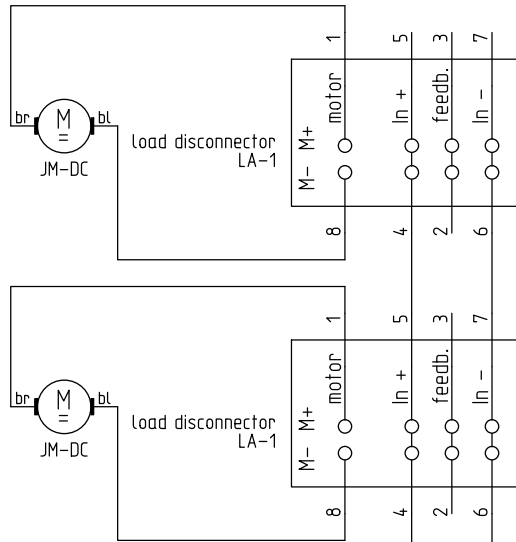
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previous page 4							customer	project description	page description	next page 6		
state	amendment	date	name	project editor	date	name	Smoke Heat vent control unit 75/60/30/15A-X-1	spindle drives JM-DC2 up to 7A Connection diagram	order number:		plant:	
		26.08.2019			26.08.2019	Krause			location		commission:	sheet: 5
				proofed					Urspr.		Ers.f	Ers.d

Note Protection Mark according DIN ISO 160161

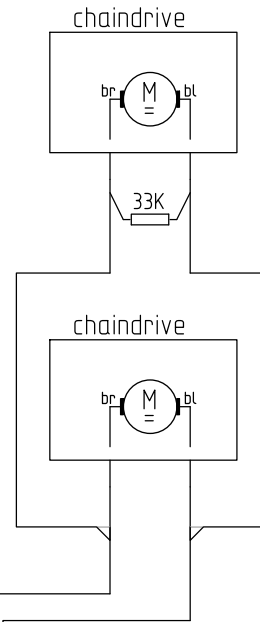
Note Protection Mark according DIN ISO 160161

Connection spindle drives JM-DC or chaindrives with internal disconnection

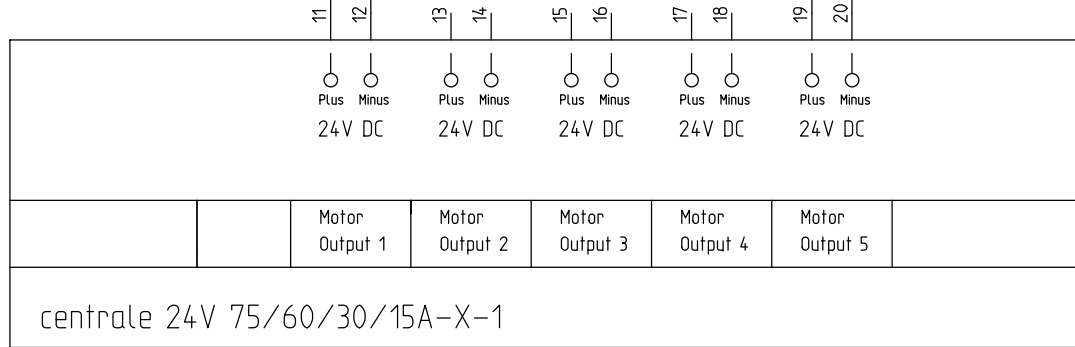


The max. number of spindle drives are depending on the opening time of the drives. By an opening time > 60s the max. output current is limited to 10A instead of 15A by an opening time < 60s.

Maximum of 12 spindle drives JM-DC with 0,8A at each motor output connectable!



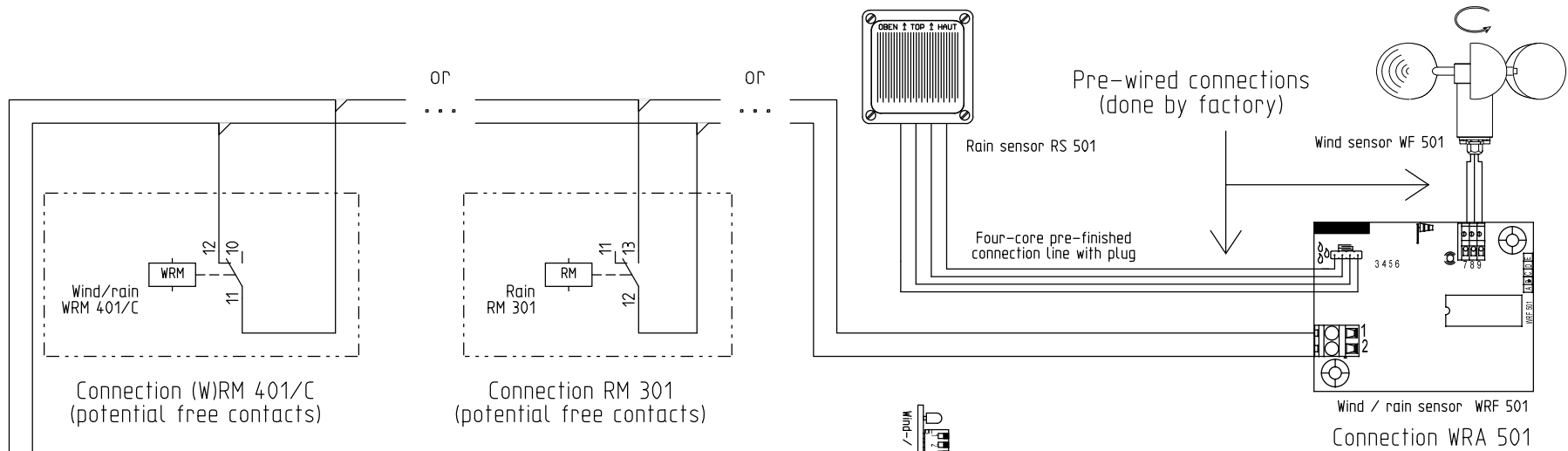
The last chaindrive must be terminated with a 33k Ohm resistor.



--24_0103--0150_E004_--

previous page 5							customer	project description	page description	next page 7		
state	amendment	date	name	project editor	date	name	Urspr.	Smoke Heat vent control unit 75/60/30/15A-X-1	spindle drives JM-DC2 up to 7A Connection diagram	order number:		plant:
		26.08.2019		26.08.2019	Krause	location				commission:	sheet: 6	
											of 7	

Connection wind/rain detector



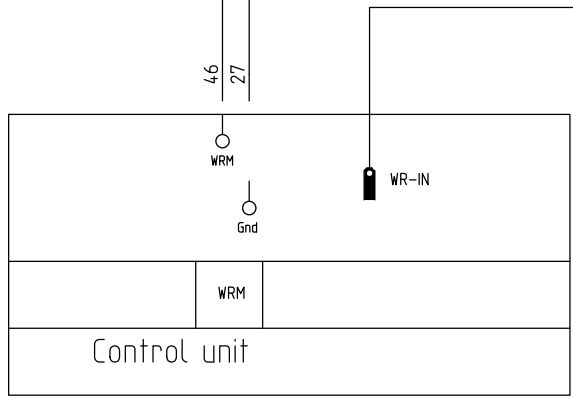
Connection (WRM 401/C
(potential free contacts)

Connection RM 301
(potential free contacts)

When connecting a wind/rain detector the type-specific manual must be observed.

With wind or rain, terminals 47 and 48 are short-circuited via the wind or rain detector.
(WRM 401 / RM 301)

Attention:
The module may only be inserted into the slot when the system is in de-energised condition!
The same applies for take out.



--24_0103--0150_E004_--

Note Protection Mark according DIN ISO 160161

previous page 6							customer	project description	page description	next page		
state	amendment	date	name	project editor	date	name	Smoke Heat vent control unit 75/60/30/15A-X-1	WRA 501 Weather System Connection diagram	order number:		plant:	
		26.08.2019			26.08.2019	Krause			location		commission:	sheet: 7
				proofed								of 7
				Norm			Urspr.	Ers.f	Ers.d			