TECTRONIC

Smoke and Heat Ventilation
Pneumatic - Electronic
Control Systems

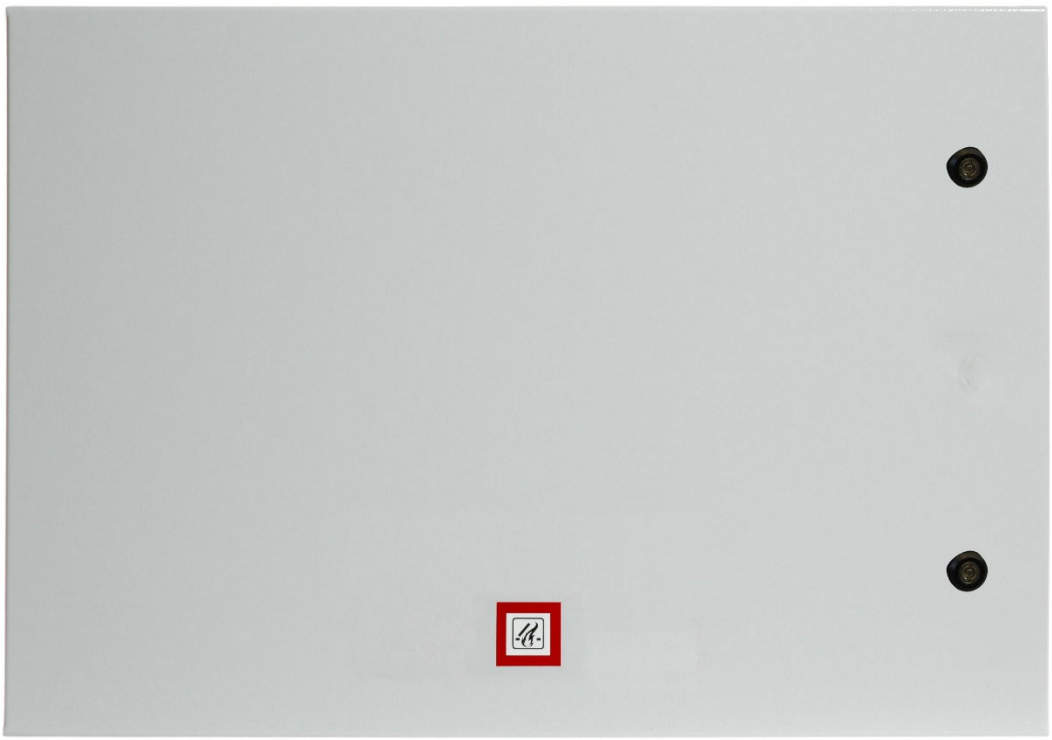
GRASL PNEUMATIC MECHANIK

Installation and Operation Instructions

Version 3-1

SHEVS Control Centre

RWZ 5f-x.y-zz



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Please read these instructions carefully.

Work at the Control Centre may be performed only by qualified personnel.

Symbols used:

OK = Trouble-free operation	= Button / travelling command "OPEN"	= Warning tone / buzzer
= Alarm	= Button / travelling command "CLOSED"	= Strobe
= Fault	= "OPEN" position	= Ventilation position
= Maintenance	= Wind	= Ventilation time
	= Rain	
= Automatic fire detector	= Manual call point	F = Fire Alarm Control Panel (FACP)

1 Concept of Control Centre

- SHEVS Control Centre for connecting 24 V actuators (RWZ 5f-x.y-zz)[1]
- Certified according to EN 12101-10 (power supply) and ISO 21927-9 (control)
- The Control Centre consists of two boards (Master and Slave) which are arranged next to each other. Both boards communicate with each other. Some settings and connections are only to be done on the Master board (left) and will be automatically adopted for the Slave board (right), i. e. for the entire Control Centre.
- Master and Slave each have 4 actuator outputs, 2 SHE groups and 4 ventilation groups. The Control Centre can therefore be configured from factory with up to 4 SHE groups and 8 ventilation groups according to client needs. The configuration of the Control Centre is shown on the sheet “Addendum to the Documentation”.
- For every SHE group, two signal lines:
  - Line : Automatic fire detectors or fire alarm control panel (FACP)
  - Line : Manual call points **RT 4** (main alarm point RT 4-*-BS or secondary alarm point RT 4-*). Connectable versions see section 2 “Technical Data”
- Line F for connecting a FACP on the Master board, FACP input on Slave is without function (activating the alarm in all SHE groups)
- Reset the alarm / the detectors using the button in the main alarm point or in the Control Centre
- Selectable functions:
  - “Auto Close” (automatic closure after resetting an alarm)
  - “Fault = Alarm” (fault in a signal line will trigger an alarm)
  - “Alarm Close” (the actuators are closed in case of alarm)
  - “Thermal Alarm” (alarm on exceeding an enclosure inside temperature of 70 °C)
  - “2-detector-dependency” (2-detector dependency for automatic fire detector in line)
  - “WRC” (automatic closure in the case of active wind and rain control)
- Possibility of connecting ventilation button for each ventilation group, also with indication of position
- For each actuator output adjustable ventilation position and ventilation time
- Possibility of connecting an external wind and rain control, e.g., type **WRS**. Internal wind and rain control, optional
- Internal service display for indicating the detailed status
- The use of K + G / Grasl actuators is recommended. When controlling 3rd party actuators, compatibility is to be checked. Also note section 2 „Technical Data“ for this
- Connectable actuators: 24 V actuators, travelling time for full stroke at rated load (total travelling time) < 4 minutes
- Note the output current of each actuator output and the total output current when connecting the actuators (see sheet “Addendum to the Documentation”)
- When directly changing the sense of travel, the actuators are stopped briefly before change of sense
- Sheet steel enclosure, light grey (RAL 7035)

1.1 Options / Accessories

The options *PK-SA* and *WTM* cannot be equipped on Master at the same time. For compatibility of the options see table below. [2]

		Master	Slave
PKM	Potential-free contacts (PFC) for alarm and/or fault forwarding of the control centre	●	●
PK-SA	Potential-free contacts for forwarding indication of position of ventilation groups	●	●
WRM	Internal wind and rain control for all ventilation groups. Connection of wind sensor **WM** and/or rain sensor **RS** is required (accessory)	●	●
WTM	Outputs for controlling external warning devices in case of alarm or fault of the control centre	●	–

[1] *x = Number of SHE groups, y = Number of ventilation groups, zz = Total output current*
[2] *● = connectable, – = not connectable*

2 Technical Data

2.1 Versions

x = Number of SHE groups; y = Number of ventilation groups

24 V types	RWZ 5f-x.y-60	RWZ 5f-x.y-80
Item number	8100 5660 20xy	8100 5680 20xy
Total output current	60 A (24 V⎓ / 1440 W)	80 A (24 V⎓ / 1920 W)
Current input	4.7 A / 400 V~	5.8 A / 400 V~
Accumulators (VRLA-AGM)	2 x 26 Ah / 12 V	2 x 42 Ah / 12 V

Only supplied or approved accumulators may be used.
See compatibility list on: www.kg-tectronic.de (Electronics - System Accessories - Accumulators)

The requirements of Directives 2014/35/EU and 2014/30/EU are met. CE
Suitable for operation in residential, business and commercial areas.

2.2 Performance data and characteristics

General

Line voltage supply Inrush current Circuit breaker with tripping characteristics C needed Internal supply voltage / standby time	400 V~ / 50 - 60 Hz approx. 105 A 24 V⎓ / 72 h (mains failure)
Dimensions in mm Cable entry through membrane grommets (from above) 2 housing openings (from behind)	W 800 x H 600 x D 255 36 x M25 214 x 34 mm (W x H)
Type of control equipment according to ISO 21927-9 Environmental class 1 (EN 12101-10 / ISO 21927-9) / III (VdS 2581) Relative humidity Enclosure protection rating	Type D -5 °C … +40 °C 20 % … 80 %, non-condensing IP30
Installation dimensions, see “Line voltage, Installation, Accumulators” diagram. Not suitable for outdoor use. Protect from direct sunlight, humidity and excessive formation of dust! Preferably, the installation should be carried out in dry, heated rooms.	

Signal lines

Line monitoring	wire-break, short-circuit
Line ▭: Automatic fire detectors: Smoke detector / heat detector (**RM 2** / **TM 2** or **RM 3** / **TM 3**) or Fire alarm control panel	 20 pieces per SHE group, of which max. 10 heat detectors [1] NC / NO contact
Line ▭, manual call point: – **RT 4-*** – **RT 4-*-BS** OK ⚠ – **RT 4-*-BS-AA** OK ⚠ 🔊	total of 10 pieces per SHE group, of which max. 3 pieces with buzzer 🔊
Line F, Fire Alarm Control Panel	NC / NO contact

Inputs / Outputs

Ventilation buttons **LT** △ ▽ Ventilation buttons **LT x-A** △ ▽ ⁄ -	unlimited per ventilation group 10 pieces for each ventilation group
Wind and Rain Control (type **WRS**)	NC contact [2]

[1] *Heat detector:* **TM 2-D** (65-55000-122), **TM 2-M** (65-55000-137), **TM 3-D** (FD-851RE), **TM 3-M** (FD-851HTE), **RM 3-OT** (SD-851-TE),
Optical detector: **RM 2-O** (65-55000-317), **RM 3-O** (SD-851-E)
[2] *In the WRC, a separate contact is required for each Control Centre to be controlled*

Actuator outputs 24 V types (RWZ 5f-x.y-zz)

Rated voltage	24 V⎓ (+6 V / -4 V)
Operating mode / duty cycle	S3 30 %
Maximum cross-section of the supply line	4 x 10 mm² (rigid)
Line monitoring (unbranched common line)	wire-break, short-circuit

Permissible current per output / permissible total current see sheet “Addendum to the Documentation”

The permissible cable length between the control centre and the actuator control / the actuator depends on their respective minimum permissible operation voltage and the conductor cross-section.
In case of a voltage drop of 1 V (simple arrangement without extensive branching), the following applies:

Current / Cross-section	2.0 A	4.0 A	6.0 A	8.0 A	10.0 A	12.0 A	14.0 A	16.0 A
2 x 1.5 mm²	22 m	11 m	7 m	5 m	4 m	4 m	3 m	3 m
2 x 2.5 mm²	36 m	18 m	12 m	9 m	7 m	6 m	5 m	5 m
2 x 4.0 mm²	58 m	29 m	19 m	15 m	12 m	10 m	8 m	7 m
2 x 6.0 mm²	87 m	44 m	29 m	22 m	17 m	15 m	12 m	11 m
2 x 10.0 mm²	145 m	73 m	48 m	36 m	29 m	24 m	21 m	18 m
4 x 1.5 mm²	44 m	22 m	15 m	11 m	9 m	7 m	6 m	5 m
4 x 2.5 mm²	73 m	36 m	24 m	18 m	15 m	12 m	10 m	9 m
4 x 4.0 mm²	116 m	58 m	39 m	29 m	23 m	19 m	17 m	15 m
4 x 6.0 mm²	174 m	87 m	58 m	44 m	35 m	29 m	25 m	22 m
4 x 10.0 mm²	290 m	145 m	97 m	73 m	58 m	48 m	41 m	36 m

When 4 cores are used, connect 2 cores each in parallel.

Fuses

Mains primary (miniature fuse 5 x 20 mm)		F1.1, F1.2, F1.3: T 4 A
Accumulators (blade fuse 19 mm)		F2.1, F 2.2: 30 A
Actuators (mini blade fuse 11 mm)	RWZ 5f-x.y-zz	F3.1, F 3.3: 20 A, F3.2, F3.4: 10 A

3 Putting into service / Putting out of service

Work may be performed only by qualified personnel!
Before starting any work, it is mandatory to deflect static charge!
We do not assume any guarantee or liability for defects caused by faulty connection.

ℹ *Planning and design of SHEVS require observation of the following rules, as far as applicable: National building codes/model building code and regulations of local building and fire safety authorities, VDE regulations (particularly VDE 0100, 0108 and 0833), VdS Guidelines 2098 and 2221, DIN 18232, EN 12101, DIN 4102, model line systems policy.*

3.1 Installation / Putting into service

❗ *Perform work only in de-energised condition!*

❗ *Actuators must not be actuated directly (e.g., with external accumulators during installation / maintenance) when they are already connected. This can lead to defects in the power output.*

- Fasten the enclosure securely to a wall using suitable mounting material. Guide the connection cables through the openings provided and wire them according to the connection diagrams.
- Make function settings (see 4.2).
- Turn on line voltage. The indicators and the service display light up briefly. Subsequently, the indicator ⚠ flickers for about 15 s (calibration process). If the indicator ⚠ is permanently lit, there is a fault in a signal line (see 6).
- Insert the accumulators in the enclosure as illustrated on the “Line voltage, Installation, Accumulators” plan and connect them.
- The indicator OK lights up, the indicator ⚠ goes out, the system is ready for operation. If a fault is still displayed, follow the instructions in section 6 “Detection of fault / Troubleshooting”. If necessary, decommission the Control Centre again (see 3.2).
- While putting into service, check all functions and indicators of the Control Centre and its components. The individual functions are described in section 4. Also simulate faults and check detection (see 6).
- To finish putting into service, retract all actuators completely (press button ▽).

ℹ *After about 24 hours of continuous operation without mains failure, the accumulators are sufficiently charged to achieve the full standby time in case of mains failure.*

3.2 Putting out of service

- Disconnect the accumulators from the Control Centre (remove accumulator connection line or fuses F2.1 and F2.2).
  ℹ *Charged accumulators have a shelf-life of about 6 months. They must be recharged if stored for a longer period.*
- Switch off line voltage.

4 Functions and operation

Before touching the control elements in the Control Centre it is mandatory to deflect static charge!

4.1 Indicators / control elements of the Control Centre

- **Indicators on the logic board on Master and Slave:**
  - OK (green): **Trouble-free operation**. Goes out when a fault is detected.
  - 1 / 2 (red): **Alarm**, see 4.4.
  - ⚠ 1 / ⚠ 2 (yellow): **Fault**, see 6.
  - (blue): **Wind and Rain Control** is active.
  - (blue): **Maintenance is due** (flashes) or **maintenance mode enabled** (lights up).
  - (red): **Service display**, see 6.2.
  - △ / ▽ (blue): Travel command in OPEN / CLOSE direction active.
- **Control elements on the logic board on Master and Slave:**
  - **Button *Reset***: Resetting the alarm function of Master or Slave.
  - **Button *Reset***: Switching off the warning tone of Master or Slave.
  - **Buttons** / : Ventilation position (see 4.5.2) and ventilation time (see 4.5.3).

- **Button *Test***: Switching to accumulator mode and running the alarm function of Master or Slave for maintenance purposes.
  PFC- (PFC alarm) and buzzer are not enabled.
- **Button *µC-Reset***: For service purposes only.

4.2 Group configuration and selectable functions on Master and Slave

- **"Group Configuration"** DIP switches **S1-1** through **S1-3**: Do not change setting.

  The configuration of the Control Centre is shown on the sheet "Addendum to the Documentation".

- **"Thermal Alarm"** DIP switch **S1-4** (setting only on Master):
  In the ON position, the alarm function (see 4.4) is executed when the inside temperature of the enclosure exceeds 70 °C.
  Factory setting: OFF (no alarm when 70 °C is exceeded).
- DIP switches **S1-5** and **S1-6**: Do not change setting. Factory setting: OFF.
- **"Fault = Alarm"** DIP switches **S2-1** and **S2-2** (SHE group):
  In the ON position, the alarm function (see 4.4) is executed after a few seconds if a signal line is faulty. This does not apply to faults with status "undefined". The alarm can also be reset by pressing the button *Reset* in a main alarm point or the Control Centre before eliminating the fault. If a switch is in ON position, then the function is also activated in line F.
  Factory setting: OFF (no alarm in case of fault).

  The setting of DIP switches for the SHE group is shown on sheet "Addendum to the Documentation".

- **"2-detector-dependency"** DIP switch **S2-3** and **S2-4** (SHE group):
  In the ON position, two automatic fire detectors must have responded in line before the alarm function (see 4.4) is executed.
  As soon as the first automatic detector has responded, the pre-alarm is activated: The indicators on the logic board and the manual call points flash, manual call points with buzzer emit an intermittent warning tone. After changing the switch position, a recalibration is performed automatically (see 3.1).
  Factory setting: OFF (no 2-detector-dependency in line).

  When the function is activated, connect a second 10k resistor in parallel (see connection diagram A-4).

  The setting of DIP switches for the SHE group is shown on sheet "Addendum to the Documentation".

- **"Alarm Close"** DIP switches **S3-1** (actuator output 1) to **S3-4** (actuator output 4):
  In the ON position, the actuators are closed in case of alarm.
  Factory setting: OFF (opening in case of alarm).
- **"Auto Close"** DIP switches **S4-1** (actuator output 1) to **S4-4** (actuator output 4):
  In the ON position, the actuators are automatically retracted after resetting an alarm. When the function responds, ventilation can be resumed only after 4 minutes.
  Factory setting: ON (automatic closure is activated).
- **"WRC"** DIP switch **S5-1** (actuator output 1) to **S5-4** (actuator output 4):
  In the ON position, the actuators are automatically retracted if a wind and rain control is activated.
  Factory setting: ON (automatic closure in the case of active wind and rain control).

  In the OFF position, the respective output can be actuated by the corresponding ventilation button even when the WRC is active.

4.3 Indicators / functions of the manual call points

- For activation and reset, see 4.4.
- **Indicators:**
  - (red, **RT 4-***): **Alarm**, see 4.4.
  - OK (green, **RT 4-*-BS**): **Trouble-free operation**. Goes out when a fault is detected.
  - ⚠ (yellow, **RT 4-*-BS**): **Fault**, see 6.
- **Button *Reset*** (**RT 4-*-BS**):
  Reset the alarm function with a short press (accessible after opening the door with a key).
- Manual call point with buzzer for alarm and fault signal (**RT 4-*-BS-AA)**:
  The buzzer emits a continuous tone in the event of alarm, and an intermittent warning tone in the event of pre-alarm or fault. The warning tone is switched off by shortly pressing the button *Reset* .

4.4 Alarm functions

During the execution of an alarm function the ventilation functions are disabled.

ℹ *When configuring several SHE groups, the following description applies accordingly to each further group.*

- **Alarm function:** Upon detecting an alarm, the actuators of the SHE group are fully extended. The indicator lights up and manual call points with buzzer emit a continuous tone. Repetition of cycle △ is executed for 30 minutes (extend, briefly retract, extend again).
- **Resetting the alarm function:** Resetting is done by briefly pressing the button *Reset* in a main alarm point or the Control Centre. Then the indicators will go out and the buzzers will be switched off.

  ℹ *If the actuators are retracted by pressing the button ▽ after an alarm has been reset or if the function "Auto Close" is enabled, ventilation can be resumed only after 4 minutes.*
- **Manual call points:** For manual alarm signalling, break open the glass of the manual call point and press the control button until the indicator confirms the detection of the alarm.
  For maintenance work, the door of the manual call point can be opened with a key.
- **Automatic fire detectors:** The alarm is triggered automatically (depending on the type of detector due to smoke and/or heat detection).
  If an automatic fire detector responds immediately after resetting, press the button *Reset* again (smoke particles may still be present in the detector).
- **Fire Alarm Control Panel (FACP):** When an alarm is signalled by the FACP, the alarm function will be executed in all SHE groups. The alarm is reset at the FACP.

ℹ *Other alarm functions ("Fault = Alarm", "Thermal Alarm", "2-detector-dependency", "Alarm Close", "Auto Close") see 4.2.*

4.5 Ventilation functions

❗ *When performing ventilation functions, do not exceed the duty cycle of the actuators. After each duty cycle, the actuators need to rest for a certain time in order to avoid excessive wear.*

❗ *If the fuses F1.1, F1.2 and/or F1.3 are blown, all ventilation functions are blocked. If only the fuses F1.2 and/or F1.3 are blown, the indication of position in the ventilation button remains active.*

4.5.1 Manual ventilation

- After briefly pressing a ventilation button (△ / ▽), the actuators of the ventilation group travel up to the end position or the set ventilation position (see 4.5.2). Pressing it again stops the actuators. By pressing the button for the reverse direction of travel, the travelling direction is reversed after a brief stop.
- When pressed longer (> 1 s), the actuators travel as long as the button remains pressed. It is also possible to travel up to the end position or up to the set ventilation position.

4.5.2 Setting the ventilation position

ℹ *This setting can only be made when the system has no faults and WRC is not active.*
Initially, all actuators must be completely retracted and the travel command ▽ has to have finished.

ℹ *If an indicator △ flickers when activating the programming mode, then the actuators of the related output are not fully retracted and the ventilation position cannot be set. By pressing the button , closing can be activated for these outputs (display: ax).*

ℹ *If a changeover contact is used for ventilation, then the ventilation position can only be set for each actuator output.*

ℹ *The programming mode is cancelled automatically after 15 minutes without button activity or manually by double clicking on the button* Reset.

- The travelling times can be set for each actuator output or for each ventilation group.
  - Setting the travelling times for each actuator output (ax):
    - Briefly press the button to enter programming mode for the respective actuator output (display: ax)
    - Briefly press button to extend the actuators. When the desired ventilation position is reached, press the button again.
    - Briefly press button to retract the actuators. When the desired closing position is reached, press the button again. The indicator ax goes out.

- Setting the travelling times for each ventilation group (Lx):
  - *The setting of the button for the ventilation group is shown on the sheet "Addendum to the Documentation".*
  - Briefly press the button to enter programming mode for the respective ventilation group (display: ax) and then press the associated button (display: Lx). The indicator flashes in the ventilation buttons of the group.
  - Briefly press a ventilation button △ to extend the actuators. When the desired ventilation position is reached, press the ventilation button △ again.
  - Briefly press a ventilation button ▽ to retract the actuators. When the desired closing position is reached, press the ventilation button ▽ again. The display Lx goes out.

- After the programming, the actuators automatically travel to the ventilation position for verification and then retract again.
- Enabling / disabling the ventilation position (for each actuator output): Press button for longer than 3 s.
  Display: 1 = enabled / 0 = disabled
  - Ventilation position disabled: travelling time △ / ▽ = 4 minutes.
  - Enabled after being disabled: travelling time = previously saved time
- Reset to factory setting: Press button for longer than 6 s. The display briefly shows a.
  Factory setting: 15 s travelling time OPEN, 30 s travelling time CLOSE.

4.5.3 Setting the ventilation time

- The ventilation time can be set for each actuator output in 5-minute steps (5 to 30 minutes) using button . The first press displays the set value, pressing again changes the value. After the set time has elapsed, the actuators retract automatically. With setting 0 the ventilation time is deactivated (= factory setting).

4.5.4 Indication of position in the ventilation button

- The indicator
  - lights up: Actuators are in OPEN position
  - flickers: A travel command is active
  - blinks: Ventilation function is blocked (also see the indicator in the device)
  - flashes: Ventilation position can be set with this button (see 4.5.2)

  In case of a travel command towards CLOSED, the indicator goes out latest after 4 minutes

ℹ *In case of a mains failure the indicator is disabled.*

ℹ *If the WRC function is disabled for any actuator outputs, the ventilation buttons of these actuator outputs can be used for ventilation although their LED is blinking (note the WRC settings).*

4.5.5 External Wind and Rain Control (WRC)

- If the wind and rain control is active, the actuators are retracted automatically. The ventilation functions are disabled. The indicator on the logic board lights up, until the WRC releases the ventilation functions once again. After a reset, the indicator lights up, as long as a travel command is active. An alarm has priority.

  ℹ *Note the setting of the "WRC" function (see 4.2).*

4.6 Repetition of cycle ▽

- If not all actuators are properly retracted (e.g., actuator has switched off due to a gust of wind), the repetition of cycle function can be activated by briefly pressing the ventilation button ▽. The actuators are briefly extended and following the closing command is executed once again.

4.7 Mains failure

- In case of mains failure, the accumulators cannot be charged, but they provide the operating power for the standby time. Actuators in ventilation position are retracted and pressing the ventilation button △ is ignored. Alarm functions are not affected by the mains failure.
  The mains failure must be rectified immediately to prevent the deep-discharge protection from responding, to recharge the accumulators, and to ensure safe functioning of the system.
- **Deep discharge protection:** If the accumulators are in critical condition, the device is **switched off** completely. However, a low quiescent current continues to flow (in addition to the natural self-discharge). Therefore, without recharging, there is a risk of permanent damage to the accumulators after only a few days.

5 Maintenance

- In the course of maintenance - unless other local regulations apply - check all the functions and displays of the device and the components at least once a year. This also includes checking the terminal points, connection cables, indicators and fuses, and cleaning of various components, if necessary.
  The individual functions are described in section 4. Likewise simulate faults of the signal lines and power supply and check the detection (see 6).
- **Indication of a due maintenance**
  If the maintenance company has enabled this function, the indicator 🔧 flashes after about 11 months of service life. After about 14 months, the overdue maintenance leads to the indication of a fault ⚠.
- **Accumulators:**
  - Check the accumulators **at least once a year** for proper functioning. They should be replaced following a typical service life of 3, but no more than 4 years in an ambient temperature of 20 °C. For every 10 °C rise in ambient temperature, the service life decreases by about 1 year!
  - Checking the accumulators:
    Press the button *Test* on Master or Slave (test alarm is executed in accumulator mode) and completely extend the actuators. If the accumulator voltage drops too low during this, the accumulators are defective. A fault (code ⊔) will be displayed until the accumulators have been replaced.
    After testing the accumulators, reset the test alarm (press button *Reset* briefly) and retract all actuators again.
    ℹ *A quick check of the accumulators with low load takes place automatically every 60 minutes.*
  - The end user, i.e., the final owner, has to return used batteries / accumulators to a distributor or public waste management company. This obligation to return applies regardless of whether it is a private or commercial end user.
  - If the system needs to be put out of service / temporarily shut down, **the accumulators have to be disconnected** and the mains voltage has to be switched off!
  - Accumulators that are charged but not yet connected have a shelf-life of about 6 months. They must be recharged if stored for a longer period.

❗ *Actuators must not be actuated directly (e.g., with external accumulators during installation / maintenance) when they are already connected. This can lead to defects in the power output.*

6 Detection of fault / Troubleshooting

6.1 General instructions

Occurrence of a fault is indicated by flashing of the indicator ⚠ in main alarm points and in the device. With the help of the service display, the cause can be limited (see 6.2).

- The following are detected as **faults**:
  - Accumulator or mains failure, accumulator polarity reversed
  - Failure of the fuses F1 to F3
  - Wire-break or short-circuit of the signal lines
  - Wire-break or short-circuit of the actuator line (unbranched common line)
  - Maintenance overdue (if the maintenance indicator was enabled)
- Notify the maintenance company in case of faults.
- **Spare material:** In the device, there is a bag of spare fuses and resistors.
- **Automatic calibration in case of a fault in the signal line ⊟:** After rectifying a fault that was present for more than 10 minutes, the line is automatically calibrated. The indicator ⚠ flickers for about 15 s. If the indicator ⚠ then lights up continuously, there is another fault.

6.2 Service display

- Operating conditions can be accurately displayed on Master and Slave with the help of the service display. The display is switched off in normal condition. It can be switched on for 120 s by pressing the button *Reset* for 4 s.
- The memory content of the display can be shown for 1 s by briefly pressing the button *Reset* (alarm memory) or the button *Reset* (fault memory).
- In case of alarm, fault or automatic closing, the display is switched on, but switched off again after 10 s in the event of a power failure. In this case it can be switched on again for 10 s by pressing the button *Reset* for 4 s.

Operating conditions:

Code	Description
01	Mains failure or fuse F1.1 blown
02	Fuse F1.2 blown
03	Fuse F1.3 blown
11	Wire-break of accumulators or F2.1 blown
12	Fuse F2.2 blown
21	Fuse F3.1 blown
22	Fuse F3.2 blown
23	Fuse F3.3 blown
24	Fuse F3.4 blown
31	X1.1: Wire-break / short-circuit
32	X1.2: Wire-break / short-circuit
33	X1.3: Wire-break / short-circuit
34	X1.4: Wire-break / short-circuit
41	Line X4.1: Alarm
42	Line X4.1: Wire-break
43	Line X4.1: Short-circuit
44	Line X4.1: Undefined [1]
51	Line X4.1: Alarm
52	Line X4.1: Wire-break
53	Line X4.1: Short-circuit
54	Line X4.1: Undefined [1]
61	Line X4.2: Alarm
62	Line X4.2: Wire-break
63	Line X4.2: Short-circuit
64	Line X4.2: Undefined [1]
71	Line X4.2: Alarm
72	Line X4.2: Wire-break
73	Line X4.2: Short-circuit
74	Line X4.2: Undefined [1]
81	Line F: Alarm
82	Line F: Wire-break
83	Line F: Short-circuit
84	Line F: Undefined [1]
91	X4.1: "Fault = Alarm" active
92	X4.2: "Fault = Alarm" active

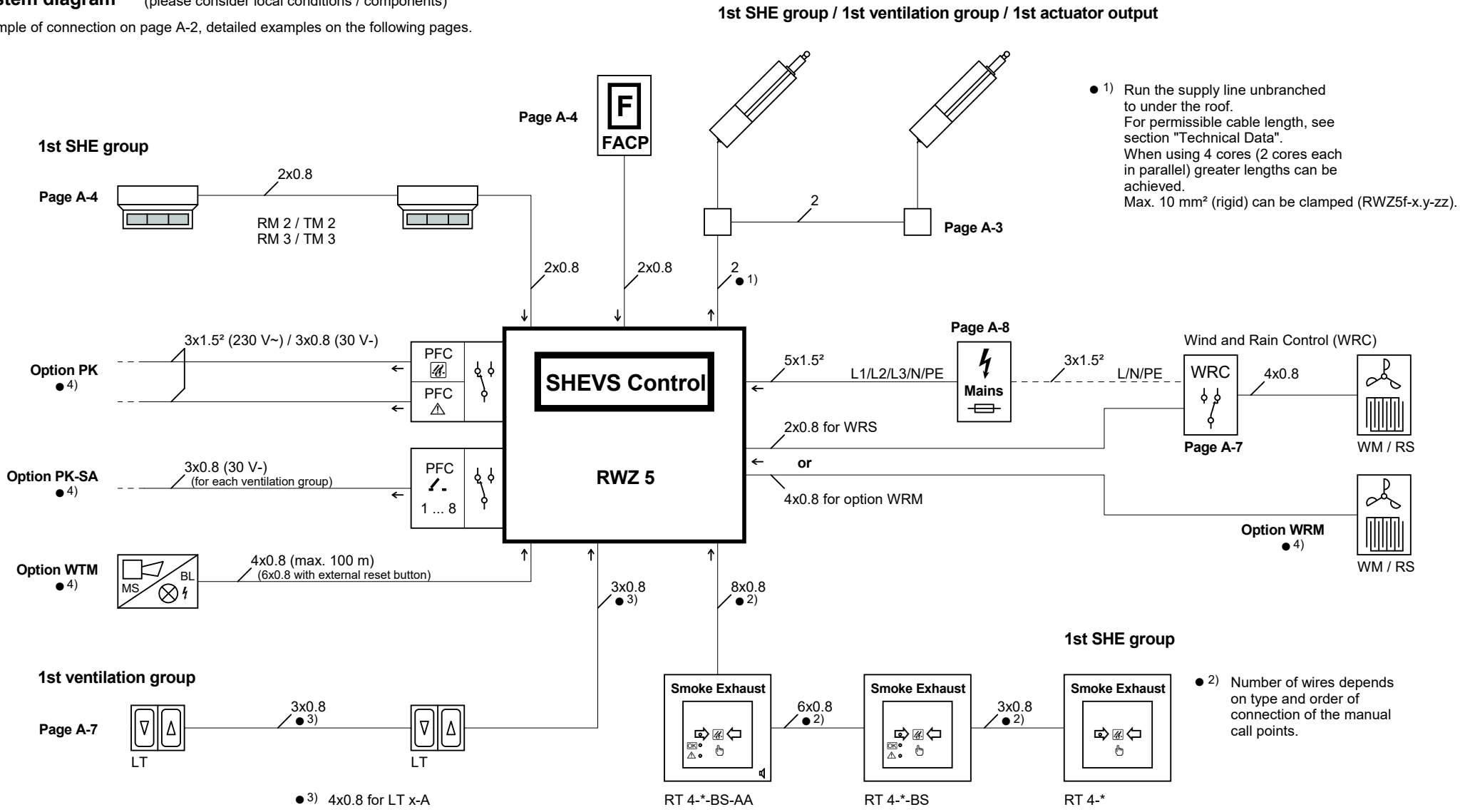
Code	Description
L1	Setting Ventilation position X2.1
L2	Setting Ventilation position X2.2
L3	Setting Ventilation position X2.3
L4	Setting Ventilation position X2.4
n1	Line X4.1: Pre-Alarm
n2	Line X4.2: Pre-Alarm
o1	Setting Ventilation position X1.1
o2	Setting Ventilation position X1.2
o3	Setting Ventilation position X1.3
o4	Setting Ventilation position X1.4
P1	Changeover contact at X2.1
P2	Changeover contact at X2.2
P3	Changeover contact at X2.3
P4	Changeover contact at X2.4
q	Alarm through internal thermal sensor
t	Accumulator test active
U	Accumulator is defective
y	Accumulator polarity reversed
--	Memory alarm / fault empty
u1	Automatic closing X1.1
u2	Automatic closing X1.2
u3	Automatic closing X1.3
u4	Automatic closing X1.4
r1	*Reset* button X4.1: Short-circuit
r2	*Reset* button X4.2: Short-circuit
r1	*Reset* button X4.x: Short-circuit
r2	*Reset* button X4.x: Short-circuit
H	Test alarm active
E	Maintenance is due
-1... -9	Error, service required
d	Factory settings
I.	Accu charging phase (on Master): I-charging
U.	Accu charging phase (on Master): U-charging
o.	Accu charging phase (on Master): trickle charging
.	Accu charging phase (on Master): no charging

[1] *Check whether the proper terminating resistor was used (see connection diagram)*

SHEVS Control Centre RWZ 5f-x.y-zz

System diagram (please consider local conditions / components)

Example of connection on page A-2, detailed examples on the following pages.



● 1) Run the supply line unbranched to under the roof.
For permissible cable length, see section "Technical Data".
When using 4 cores (2 cores each in parallel) greater lengths can be achieved.
Max. 10 mm² (rigid) can be clamped (RWZ5f-x.y-zz).

● 2) Number of wires depends on type and order of connection of the manual call points.

Further groups:

The connection of components in further SHE or ventilation groups is carried out according to the examples given for the 1st group.

General: length of cable max. 400 m, if not specified otherwise.

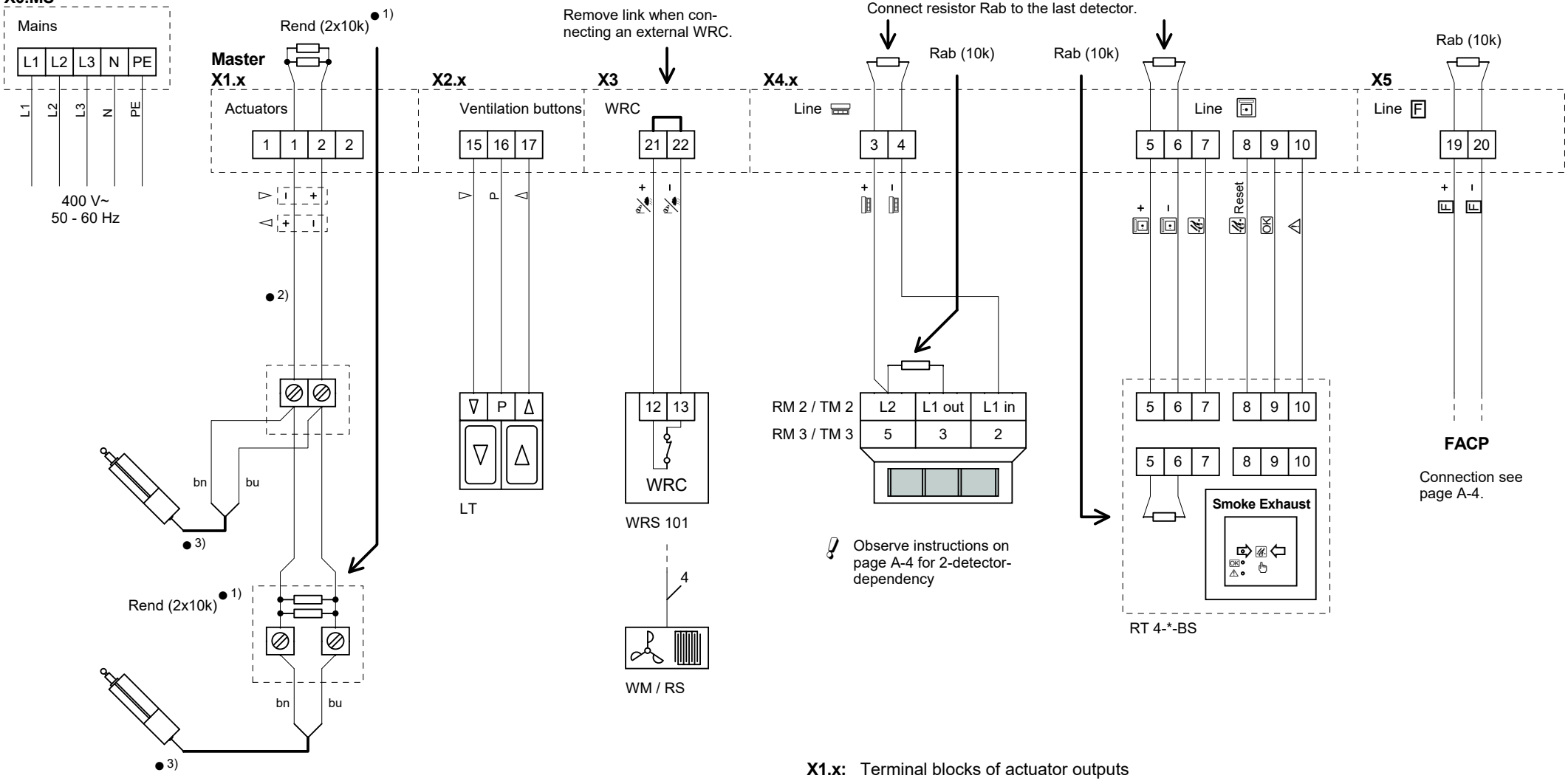
Cable types (examples):
Signal lines: J-Y(St)Y 2x2x0.8 - 4x2x0.8
Mains: NYM-J 5x1.5 mm²
PFC: NYM-J 4x1.5 mm² / NYM-O 3x1.5 mm²

● 4) Separate documentation

SHEVS Control Centre RWZ 5f-x.y-zz

Example of connection, Master

Connection at slave is identical (except WRS and FACP which are not present there).



- ● 1) Connect resistors Rend to the last actuator.
- ● 2) Run the supply line unbranched to under the roof.
- ● 3) In case of wrong travelling sense, reverse polarity of actuator cable.

Colour code for resistors: 10k = brown/black/black/red 1k5 = brown/green/black/brown

X1.x: Terminal blocks of actuator outputs

X2.x: Terminal blocks of ventilation groups

X4.x: Terminal blocks of SHE groups

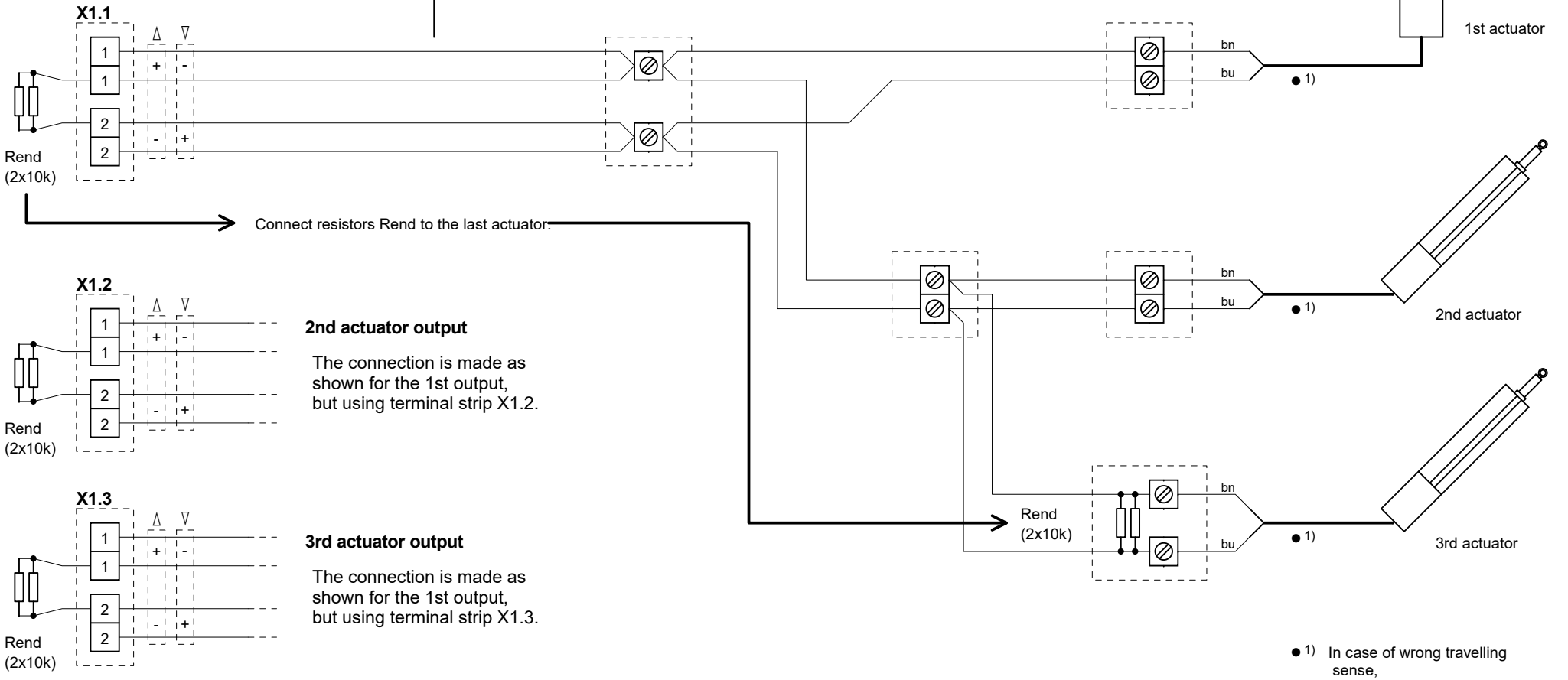
Setting see sheet "Addendum to the Documentation"

SHEVS Control Centre RWZ 5f-x.y-zz

24 V- Actuators, Master / Slave

Run the supply line unbranched
to under the roof
(monitored common line).

1st actuator output



2nd actuator output

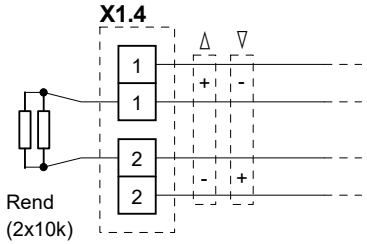
The connection is made as shown for the 1st output, but using terminal strip X1.2.

3rd actuator output

The connection is made as shown for the 1st output, but using terminal strip X1.3.

4th actuator output

The connection is made as shown for the 1st output, but using terminal strip X1.4.



● 1) In case of wrong travelling sense,

RWZ 5f-x.y-zz: Outputs for 24 V actuators

Load rating of the individual outputs: see sheet "Addendum to the Documentation".

Actuators must not be actuated directly (e.g. with external accumulators during installation / maintenance) when they are already connected. This can lead to defects in the power output.

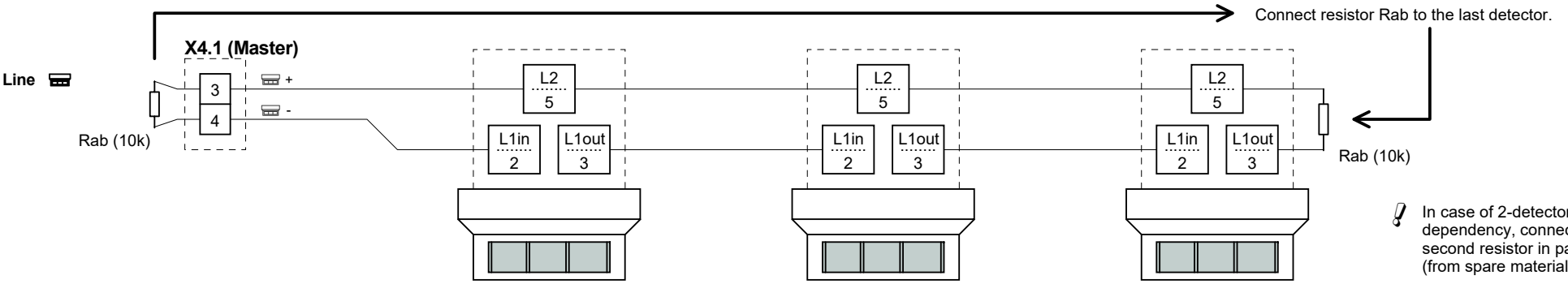
Colour code for resistors: 10k = brown/black/black/red

SHEVS Control Centre RWZ 5f-x.y-zz

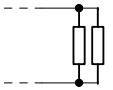
Automatic fire detectors, Fire Alarm Control Panel (FACP)

1st SHE group

Automatic fire detectors RM 2 / TM 2 (terminals L1 in, L1 out and L2) **or RM 3 / TM 3** (terminals 2, 3 and 5)

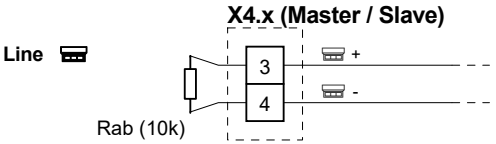


In case of 2-detector-dependency, connect a second resistor in parallel (from spare material bag).



Further SHE groups

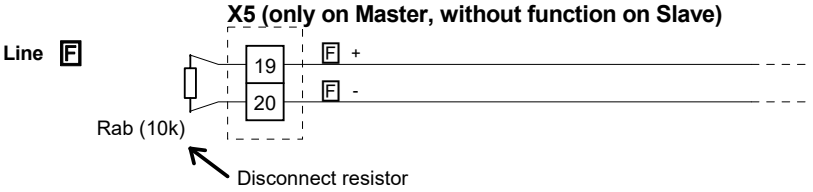
Automatic fire detectors

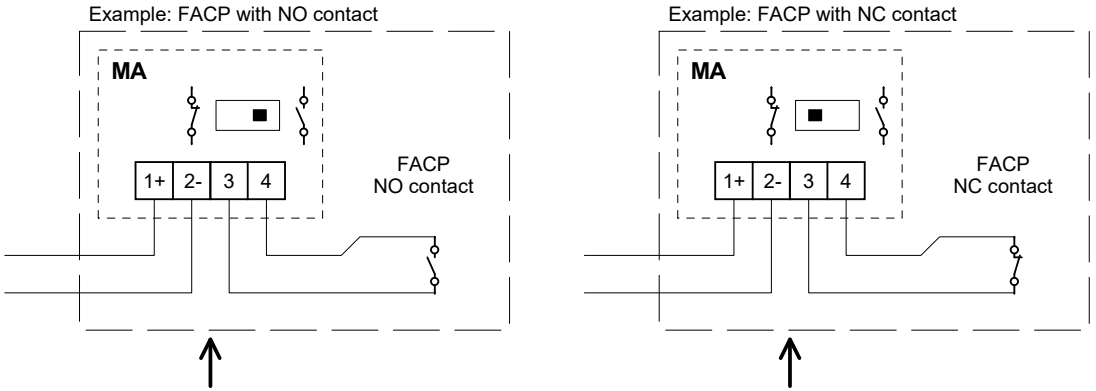


The connection is made as shown for the 1st group at terminals X4.x (setting see sheet "Addendum to the Documentation").

For separate control of the SHE groups by an FACP, the FACP contacts can also be connected to the lines for automatic fire detectors by using the MA module (X4.1 / X4.2), as shown below.

Fire Alarm Control Panel (FACP)





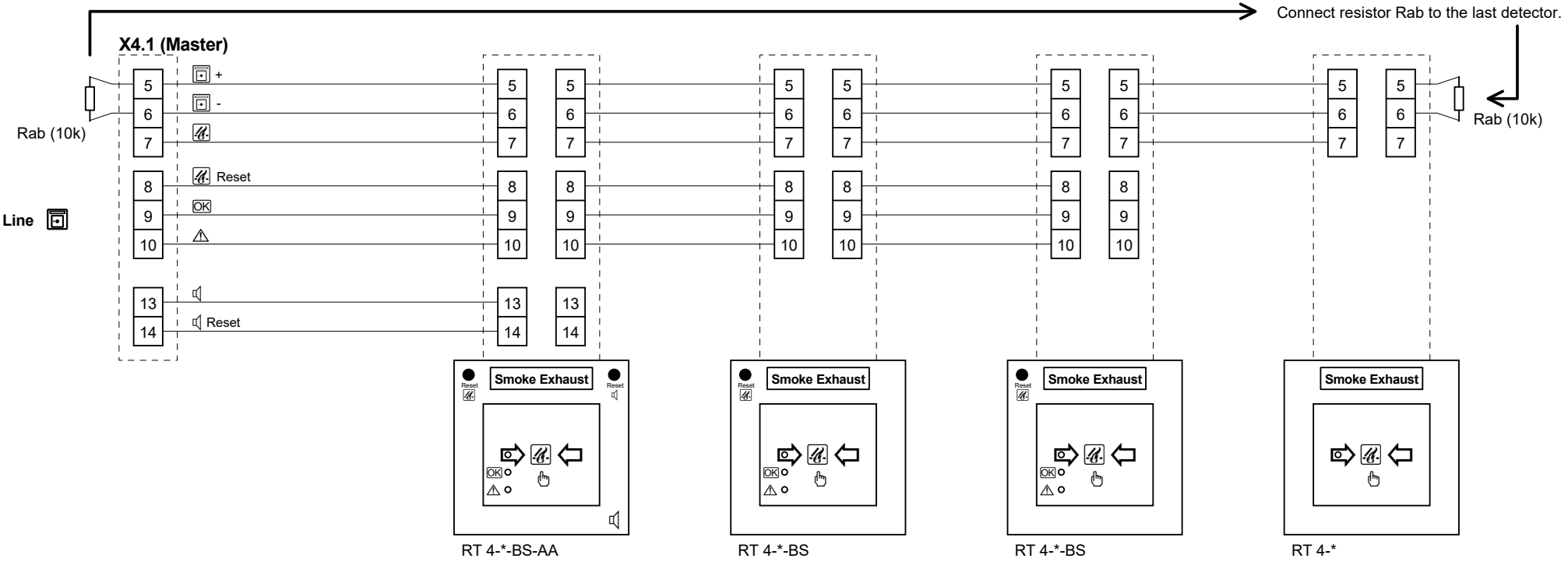
Connect MA module (from spare material bag) in the FACP. One MA module is delivered with the control centre.

Colour code for resistors: 10k = brown/black/black/red 1k5 = brown/green/black/brown

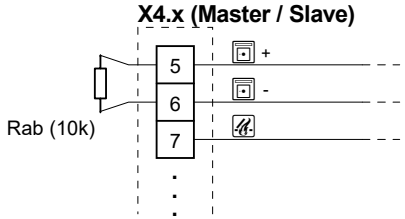
SHEVS Control Centre RWZ 5f-x.y-zz

Manual call point RT 4

1st SHE group



Further SHE groups



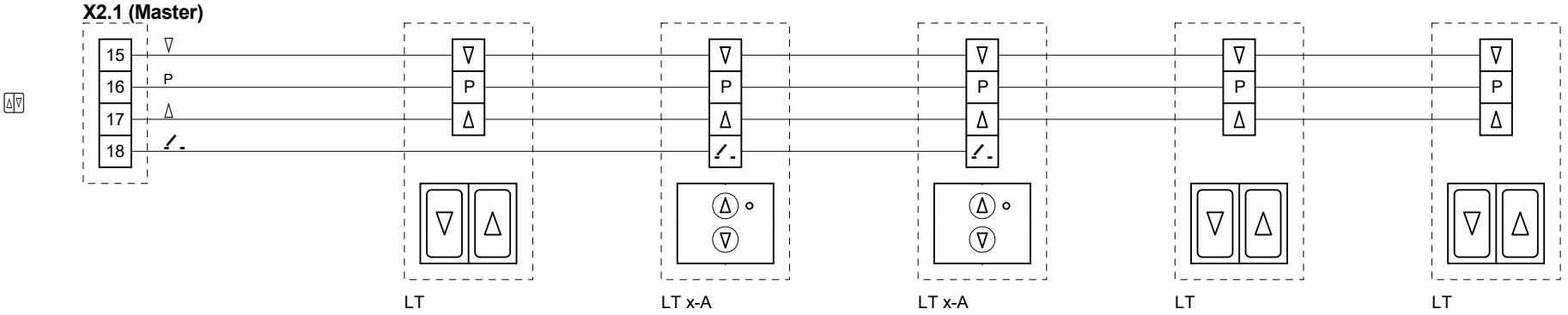
The connection is made as shown for the 1st group at terminals X4.x (setting see sheet "Addendum to the Documentation").

Colour code for resistors: 10k = brown/black/black/red

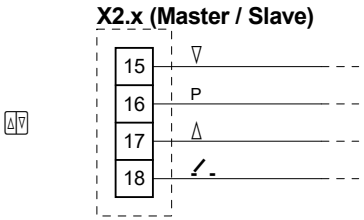
SHEVS Control Centre RWZ 5f-x.y-zz

Ventilation button, external Wind and Rain Control

1st ventilation group

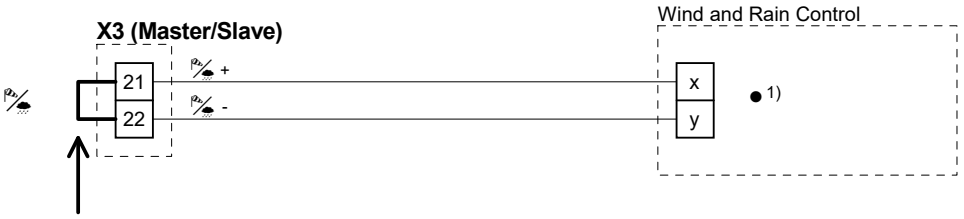


Further ventilation groups

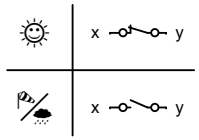


The connection is made as shown for the 1st group at terminals X1.x (setting see sheet "Addendum to the Documentation").

External Wind and Rain Control



Remove link when connecting an external wind and rain control.



● 1)

WRS 101	x	y
Output contact 1	12	13
Output contact 2	16	17

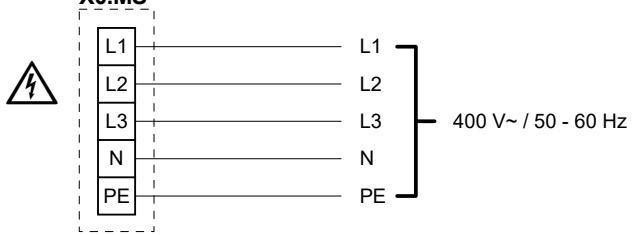
Use a separate contact for each Control Centre / Control to be controlled.
Extension to four output contacts possible with Option PKM 101.

SHEVS Control Centre RWZ 5f-x.y-zz

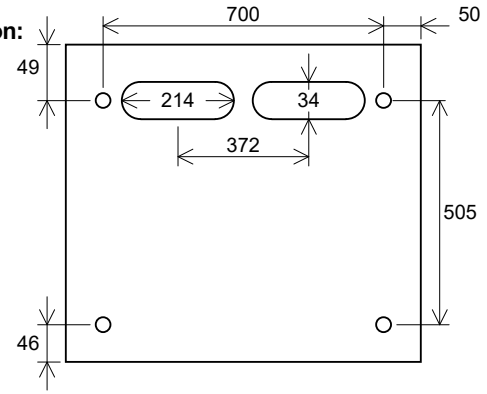
Line voltage, Installation, Accumulators

Line voltage:

Terminals X0.MS



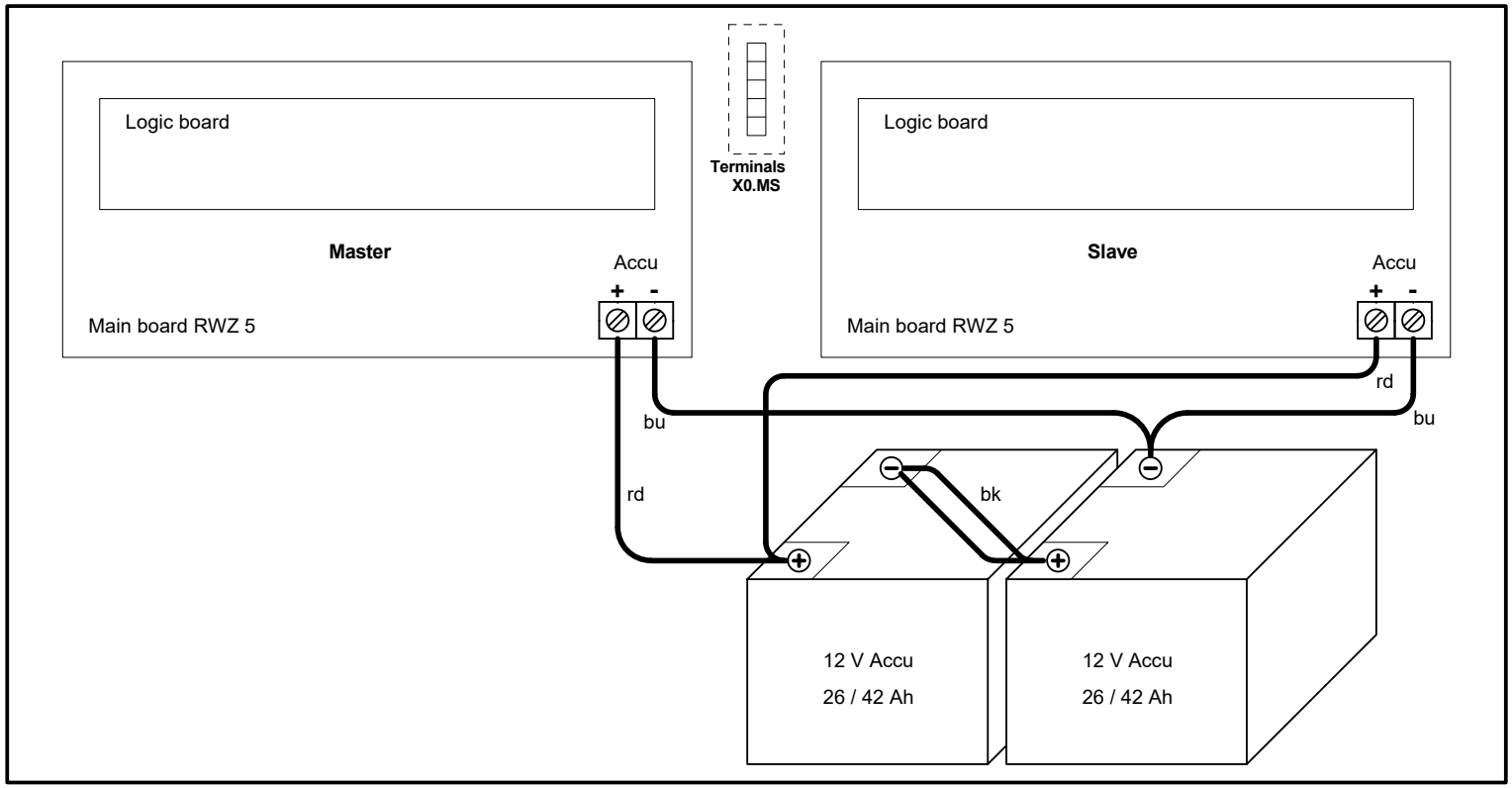
Installation:



Accumulators:

Insert the accumulators in the enclosure as illustrated and connect them.

RWZ 5f-x.y-zz



When putting into / out of service, observe the operating instructions!
Be sure to unplug the accumulators if mains voltage supply is cut out for a longer time.

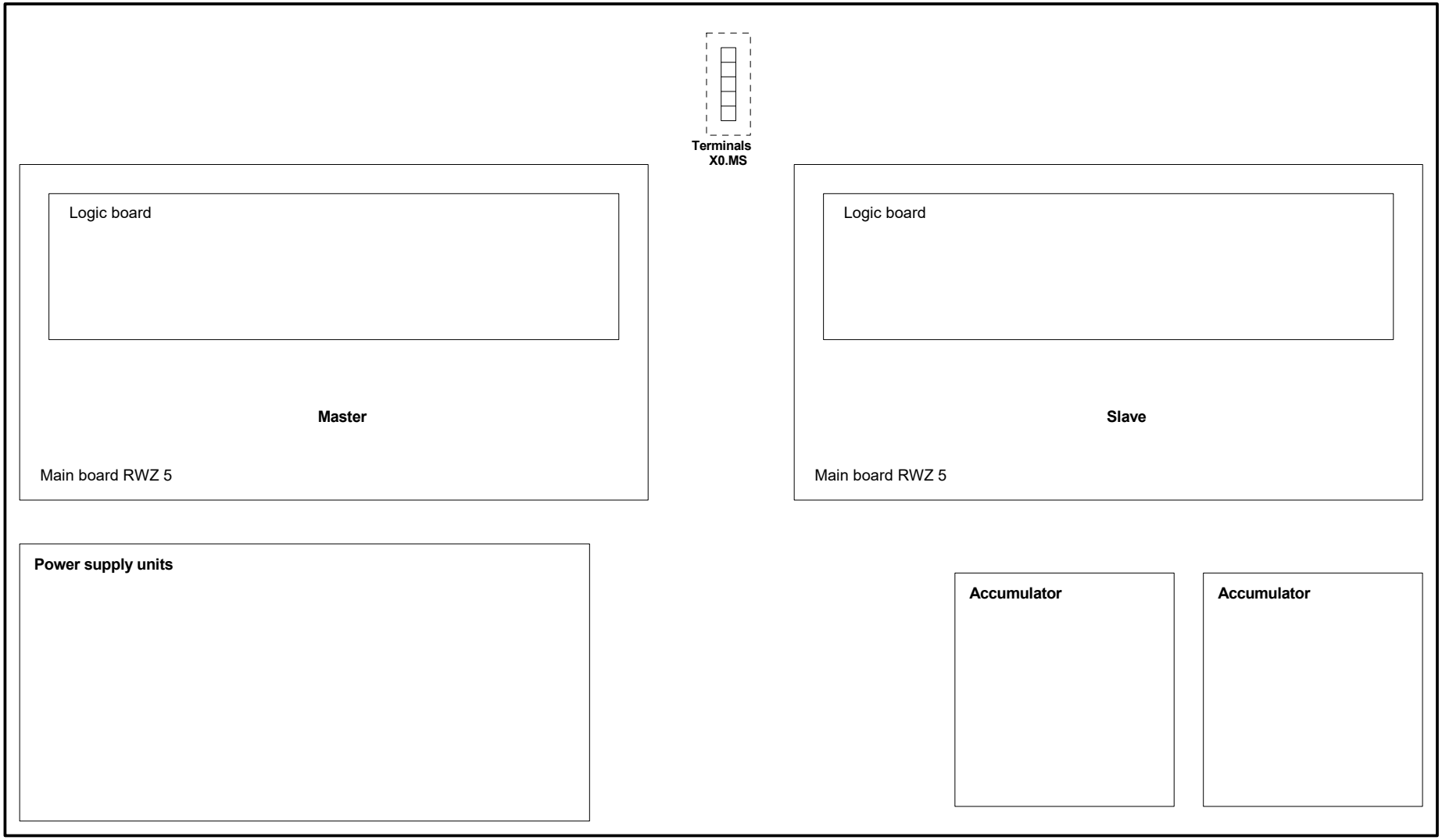
SHEVS Control Centre RWZ 5f-x.y-zz

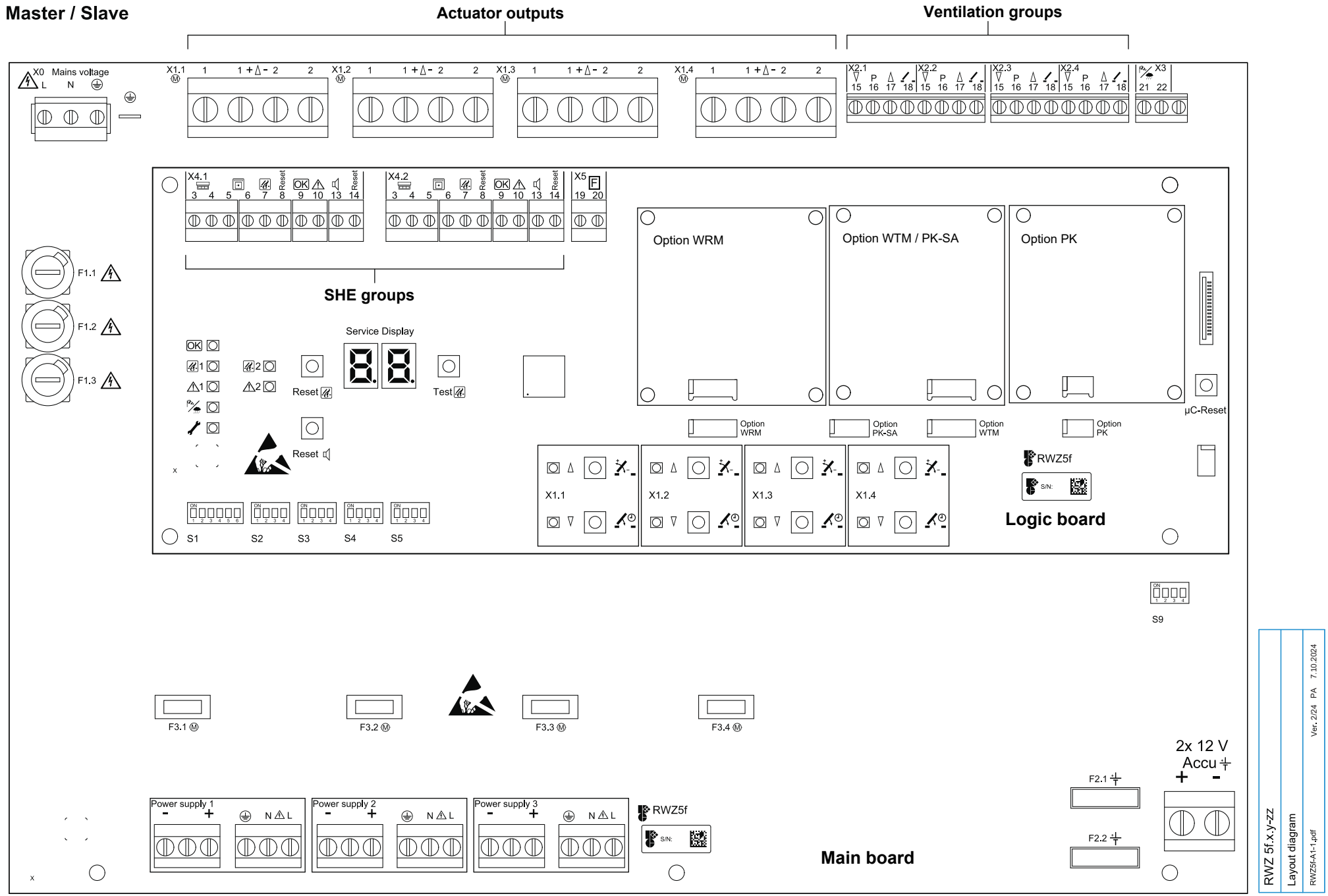
Control centre overview

The mains voltage is connected to the terminals X0.MS (see A-8).
The terminals X0.MS are connected ex works to the terminal X0 on master and slave.

The power supply units are pre-wired ex works to the terminals Power supply 1 to 3 on master and slave.

RWZ 5f-x.y-zz





DIP switch
S1: 1-3: Do not change the setting
4: Thermal alarm
5+6: Do not change the setting

DIP switch for each SHE group
S2: 1+2: Fault = Alarm
3+4: 2 detector dependency

DIP switch for each actuator output
S3: 1-4: Alarm Close
S4: 1-4: Auto Close
S5: 1-4: WRC

Fuses

	RWZ 5f-*	
F1.x	T 4 A	Mains primary
F2.x	30 A	Accumulators
F3.1, F3.3	20 A	Actuators
F3.2, F3.4	10 A	Actuators

DIP switch
S9: 1-4: Do not change the setting

RWZ 5f..x.y-zz
Layout diagram
RWZ5f-A1-1.pdf
Ver. 2/24 PA 7.10.2024