Smoke and Heat Ventilation
Pneumatic - Electronic
Control Systems

K + G Tectronic GmbH
In der Krause 48
52249 Eschweiler
Germany

☎ +49 (0) 24 03 / 99 50 - 0
FAX +49 (0) 24 03 / 655 30

Grasl Pneumatic-Mechanik GmbH
Europastrasse 1
3454 Reidling
Austria

☎ +43 (0) 22 76 / 21 200 - 0
FAX +43 (0) 22 76 / 21 200 - 99

ELECTRONIC PARTS - CATALOGUE

Components, Sets of Components and

Units for Electrically Controlled

Smoke and Heat Exhaust Ventilation Systems (SHEVS)

Effective June 1st, 2020

Please note that this catalogue uses a comma as decimal marker in numbers!

1. SHEVS control centres / Controls

- SHEVS control centres
- Decentralized SHEVS control centre
- SHEVS solenoid controls
- Extinguishing centre

2. Sensors / Vetilation control systems

- Wind and rain control
- Contact extension unit
- AC control system

3. Automatic detectors

- Smoke detectors
- Heat detectors
- Optical-thermal smoke detector

4. Hand operated fire alarm

- Aluminium
- Plastic

5. Actuators / Actuator controls

- Linear actuators
- Chain actuators
- Parallel actuator cut-off control
- Synchronising control

6. System accessories

- Ventilation button
- External warning devices
- Accumulators
- Service-display unit / Service-module

7. SHE mountings

- BF mounting
- BG mounting
- Upper cross beams
- Dimensional sheet for mountings

Conception of SHE Control Centres / Controls

Smoke and Heat Exhaust (SHE)
Smoke and Heat Exhaust Ventilation System (SHEVS)

1 Controlling of 24 V- actuators

SHEVS Control Centres type RWZ and SHEVS Controls type RWD for smoke extraction and ventilation in stairwells and small objects up to complex buildings.

Features of all Control Centres / Controls:

- 24 V- output for actuators (direction of motion is changed by reversing polarity)
- Signal line for automatic fire detectors
- Signal line for manual call points
- Possibility of connecting a Fire Alarm Control Panel (FACP) to activate the SHE - alarm function
- Monitoring of signal lines for wire-break and short-circuit
- Monitoring of accumulator, mains and fuse failure
- Monitoring the common line of actuators for wire-break
- Repetition of OPEN cycle for reliable opening in the case of alarm
- Emergency power supply for at least 72 hours with automatic recharge
- Reverse-connection and deep-discharge protection of the accumulators
- Accumulators with VdS approval
- Selectable function: “Auto Close” (automatic closure after resetting an alarm)
- Selectable function: “Malfunction = Alarm” (alarm upon malfunction of a signal line)
- Internal indicators Operation OK, Alarm and Malfunction ⚠
- Manual call points with indicators Operation OK / Alarm / Malfunction ⚠ and button *Reset* can be connected
- Internal service display for detailed status indication
- Maintenance mode for simplified checking of the system. Indication of due maintenance can be activated
- Possibility of connecting a Wind and Rain Control (WRC)
- Adjustable ventilation position and ventilation time
- Internal indication of active travel commands △ / ▽
- Manual ventilation in “Start-Stop mode” (no need to hold down the ventilation buttons) or in “dead man’s mode” (when the button is released, the actuators will stop)

Especially for complex buildings or for use in industrial buildings, the Control Centres type RWZ 6 are designed in a modular design. The Control Centres type RWZ 6 in modular design are specially designed for complex buildings or the use in industrial buildings. They can also be equipped with impulse modules for integration in / controlling of pneumatic systems (also see section Controlling of 24 V- solenoids / electrovalves).

The decentralised system with Controls type RWD 2 is practically as flexible as desired.
60 Controls can be organised in up to 9 smoke and heat ventilation groups in a monitored bus system. Each SHE group can contain up to 9 ventilation groups. The controls are installed in the immediate vicinity of the smoke and heat exhaust vents (SHEVs). This saves high costs for long cable routes with large cross-sections to the actuators.

Special demands can be realised cost-effectively by individual software and hardware adaptions.

More characteristic features:

	RWZ 1b	RWZ 2f	RWZ 4d	RWZ 5e	RWZ 5f-E	RWZ 5f	RWZ 6	RWD 2a
Output current at 24 V- in A	4	4	8	8 / 16 / 24 / 32	10 / 20	20 / 40	①	10 / 20
Output current at 48 V- in A	-	-	-	-	-	10 / 20	-	-
Number of SHE groups	1	1	1	1 / 2	1	1 / 2	①	①
Number of ventilation groups	1	1	1	1 - 4	1 - 2	1 - 4	①	②
Potential-free contacts (PFC) alarm / malfunction	○	○	○	○	○	○	○	○
Alarm output for warning devices	-	-	○	○	○	○	○	○
Indicators operation OK, alarm and malfunction ⚠ in enclosure door	-	-	●	●	-	-	●	③
Connection of manual call points with buzzer possible	●	-	●	●	●	●	●	●
Connection of ventilation buttons with indication of position OPEN possible	●	●	●	●	●	●	●	●
Internal Wind- and Rain Control (WRM)	○	-	○	○	○	○	○	○
Monitoring the actuators for short-circuit	●	●	●	●	●	●	-	●
Automatic travel commands (apart from the alarm) can be disabled	●	●	●	-	●	●	●	●
VdS approval	●	-	●	●	-	-	-	-
Approved according to EN 12101-10, ISO 21927-9	●	-	●	●	-	●	-	-

● Standard feature
○ Optional feature
- Not available

① Depending on the design of the system
② Up to 9 per SHE group
③ By control unit SD 2

2 Controlling of 24 V- solenoids / electrovalves

SHE Controls type IS for smoke extraction of stairwells and small objects up to complex buildings by pneumatic systems.

Building protection by Extinguishing Centre type KLZ for CO_2 extinguishing systems.

Standard features:

- 24 V- output for solenoids / electrovalves, also pressure gas generators can be connected
- Signal line for automatic fire detectors
- Signal line for manual call points
- Possibility of connecting a Fire Alarm Control Panel (FACP) to activate the SHE - alarm function
- Monitoring of signal lines for wire-break and short-circuit
- Monitoring of accumulator, mains and fuse failure
- Monitoring the common line of solenoids for wire-break
- Emergency power supply for at least 72 hours with automatic recharge
- Reverse-connection and deep-discharge protection of the accumulators
- Selectable function: “Malfunction = Alarm” (alarm upon malfunction of a signal line)
- Internal indicators Operation OK, Alarm and Malfunction ⚠
- Internal service display for detailed status indication
- Maintenance mode for simplified checking of the system. Indication of due maintenance can be activated
- Manual call points with indicators Operation OK / Alarm / Malfunction ⚠ and button *Reset* can be connected

Special demands can be realised cost-effectively by individual software and hardware adaptions.

More characteristic features:

	IS 2d	IS 3b	KLZ 1d
Output current at 24 V- in A	3,75	4	1,25
Number of SHE groups	1	1	1
Potential-free contacts (PFC) alarm / malfunction	●	○	●
Alarm output for warning devices	●	○	●
Indicators operation OK, alarm and malfunction ⚠ in front panel	●	-	●
Connection of manual call points with buzzer possible	-	●	-
Monitoring of solenoids for short-circuit	-	●	-
VdS approval	-	●	-
Approved according to EN 12101-10, ISO 21927-9	-	●	-

● Standard feature
○ Optional feature
- Not available

1 Concept of Control Centre

- Smoke and Heat Exhaust Ventilation System (SHEVS) Control Centre for the connection of 24 V- actuators
- VdS approved (to VdS 2581 and VdS 2593)
- Internal power supply designed and certified to DIN EN 12101-10
- Control unit designed and tested to prEN 12101-9
- One SHE group, two signal lines:
  Line : Automatic fire detectors or Fire Alarm Control Panel (FACP)
  Line : Manual call points **RT 2** as
  a) Main alarm point with indicators operation OK, alarm , malfunction ⚠ and button *Reset* . Connection of main alarm point with mini buzzer (alarm / malfunction) and indication of position also possible
  b) Secondary alarm point with indicator alarm
- Reset the alarm / detector using the button in the main alarm point or in the Control Centre
- Selectable functions:
  "Auto close" (automatic closure after resetting an alarm)
  "Malfunction = Alarm" (alarm upon malfunction of a signal line)
  "Automatic OFF" (automatic travel commands - apart from the alarm - are disabled)
  "Thermal alarm" (alarm on exceeding an enclosure inside temperature of 70 °C)
- Possibility of connecting ventilation buttons, also with indication of position
- Adjustable ventilation position and ventilation time
- Possibility of connecting a Wind and Rain Control (WRC), e.g. type **WRS**. Optionally internal Wind and Rain Control
- Internal service display for detailed status information during installation and maintenance
- Plug-in connection terminals (apart from actuator output)
- The use of K + G / Grasl actuators is recommended. When driving third-party actuators, compatibility is to be checked! Also note Section 2 "Technical data"
- Actuator specification: 24 V actuators, travelling time for full stroke at rated load (total travelling time) < 4 min.
- Actuators must be suitable for the repetition of OPEN and / or CLOSE cycle
- Upon direct change of the sense of travel, the actuators are briefly stopped before changing the sense
- Sheet steel enclosure, light grey (RAL 7035)

1.1 Options / Accessories

- **PK:** One potential-free contact (PFC) each for alarm / malfunction forwarding
- **WRM:** Internal Wind- and Rain Control
  Actuators are automatically closed on response of WRM. Connection of wind sensor **WM** and / or rain sensor **RS** is required (accessory)
  Direct connection of the sensors on the module. No external WRC required
  Sensitivity of the sensors is adjustable
  The closing command remains active as long as a sensor responds, but for at least 6 minutes
  Indicators for wind and rain on the module

ℹ *As there are no corresponding regulations, the optional board WRM is not VdS approved. However its usage does not affect the VdS approval of the Control Centre, since interactions have been checked and excluded during the approval process.*

2 Technical data

2.1 Version

Type	**RWZ 1-4b**
Product code	8100 1204 0000
Output current	4 A (24 V⎓ / 192 W)
Current input	0,7 A / 230 V~
Lead-gel accumulators, VdS approved	2 x 2 Ah / 12 V
I / U charging	0,2 A (28,8 V) / 27,4 V
Dimensions in mm (W x H x D)	330 x 330 x 110

The Control Centre complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

2.2 Performance data and characteristics

General	
Line voltage supply Internal voltage supply / standby time	230 V~ / 50 - 60 Hz 24 V⎓ / 72 h (mains failure)
Cable entry	from above, below or behind
Environmental class 1 / III (EN 12101-10 / VdS 2581) Relative humidity Enclosure protection rating	-5 °C … +40 °C 20 % … 80 %, non-condensing IP30
Not suitable for use outdoors. 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 − Terminating resistor − Alarm resistor	 20 pieces, of which max. 10 heat detectors [1] normally open contact 10 kΩ (± 10 %, ¼ W) 1 kΩ … 1.5 kΩ (± 10 %, ½ W)
Line ⊡, manual call points: − Secondary alarm point (**RT 2-***) − Main alarm point (**RT 2-*-BS**) − Main alarm point (**RT 2-*-BS-A**, with indication ⁄ _) − Main alarm point (**RT 2-*-BS-AA**, with buzzer 🔊)	 in total 10 pieces, of which max. 3 pieces with buzzer

In- / Outputs	
Ventilation button (**LT**) Ventilation button with indication of position ⁄ _ (**LT-A**)	unlimited 10 pieces
Wind and Rain Control (type **WRS**)	normally closed contact [2]
External malfunction	normally closed contact

[1] *Heat detectors:* **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 detectors: **RM 2-O** (65-55000-317), **RM 3-O** (SD-851-E)

[2] *In the WRC, use a separate contact for each connected Control Centre*

Actuator output

Rated voltage	24 V⎓ (+6 V / -4 V)
Mode of operation / duty cycle	S3 30 %
Maximum cable cross-section of the supply line	2 x 10 mm² (rigid)
Allowed voltage drop between Control Centre and actuator	1 V at full load
Line monitoring (unbranched common line)	wire-break, short-circuit

Allowed cable length with simple and moderately branched arrangement of the actuators

Current / Cross-section	1.0 A	2.0 A	3.0 A	4.0 A
2 x 1.5 mm²	44 m	22 m	15 m	11 m
2 x 2.5 mm²	73 m	36 m	24 m	18 m
2 x 4.0 mm²	116 m	58 m	39 m	29 m
2 x 6.0 mm²	174 m	87 m	58 m	44 m
2 x 10.0 mm²	290 m	145 m	97 m	73 m

Fuses

Primary mains (miniature fuse 5 x 20 mm)	F1: T 2 A
Accumulators (flat fuse 19 mm)	F2: 10 A
Actuators (flat fuse 19 mm)	F3: 10 A

Alarm and malfunction forwarding (option PK)

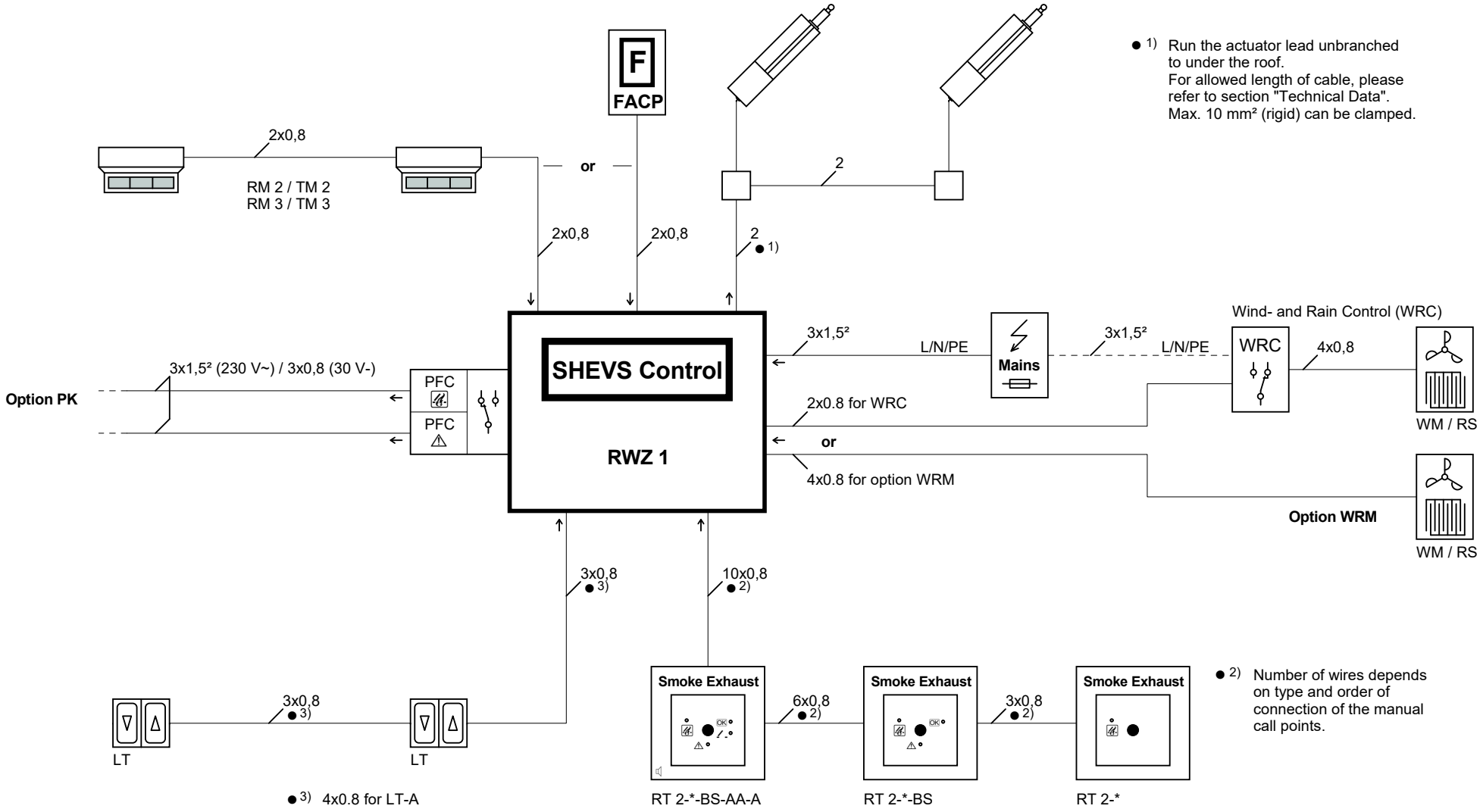
Contact load rating PFC-, PFC-⚠ (changeover contacts)	5 A / 30 V⎓ / 230 V~
Fuses PFC-, PFC-⚠ (miniature fuses 5 x 20 mm)	P:F1, P:F2: F 5 A

Internal Wind and Rain Control (option WRM)

Wind sensor **WM**, heated rain sensor **RS**	1 piece each
Adjustment range of sensitivity to wind	approx. 5 - 15 m/s (20 - 60 km/h, approx. wind force 3 - 7)
Adjustment range of sensitivity to rain	light - stronger rain

SHEVS Control Centre RWZ 1b

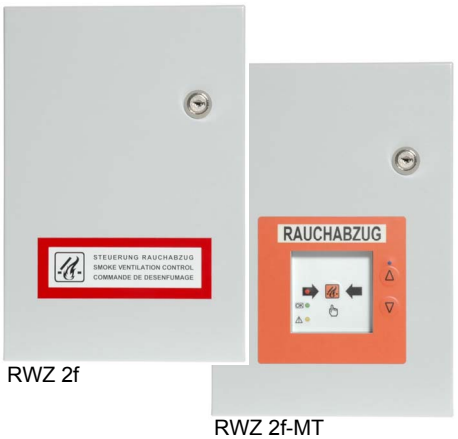
System diagram (please consider local conditions / components)



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

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

1 Concept of Control Centre



RWZ 2f

RWZ 2f-MT

- Smoke and Heat Exhaust Ventilation System (SHEVS) Control Centre with output for the connection of 24 V- actuators
- One SHE group, two signal lines:
  - Line ▭: Automatic fire detectors or Fire Alarm Control Panel (FACP)
  - Line ▭: Manual call points **RT 3** (main alarm point) with indicators operation OK, alarm, malfunction ⚠ and button *Reset*
- Reset the alarm / detector using the button in the main alarm point or in the Control Centre
- Selectable functions:
  - "Auto close" (automatic closure after resetting an alarm)
  - "Malfunction = Alarm" (alarm upon malfunction of a signal line)
  - "Automatic OFF" (automatic travel commands - apart from the alarm - are disabled)
  - "Thermal alarm" (alarm on exceeding an enclosure inside temperature of 70 °C)
- Possibility of connecting ventilation buttons, also with indication of position OPEN
- Adjustable ventilation position and ventilation time
- Possibility of connecting an external Wind and Rain Control (WRC), e.g. type **WRS**
- Internal service display for detailed status information for installation and maintenance
- Plug-in connection terminals (apart from actuator output)
- The use of K + G / Grasl actuators is recommended. When driving third-party actuators, compatibility is to be checked! Also note Section 2 "Technical data"
- Actuator specification: 24 V actuators, travelling time for full stroke at rated load (total travelling time) < 4 min.
- Actuators must be suitable for the repetition of OPEN and / or CLOSE cycle
- Upon direct change of the sense of travel, the actuators are briefly stopped before changing the sense
- The travelling current for the actuators is supplied from the Control Centre's accumulators
- Sheet steel enclosure, light grey (RAL 7035)

1.1 Options

- **PK:** One potential-free contact (PFC) each for alarm / malfunction forwarding
- **MT:** Enclosure door with integrated manual call point, ventilation button and indication of position

2 Technical data

2.1 Version

Type	**RWZ 2-4f**
Product code (with option MT)	8100 2604 0000 (8100 2604 0001)
Output current	4 A (24 V⎓ / 96 W)
Current input	0.1 A / 230 V~
Lead-acid accumulators, VdS approved	2 x 2 Ah / 12 V
I / U charging	0.15 A (28.8 V) / 27.4 V
Dimensions in mm (W x H x D)	205 x 300 x 100

The Control Centre complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

2.2 Performance data and characteristics

General

Line voltage supply	230 V~ / 50 - 60 Hz
Internal voltage supply / standby time	24V⎓ / 72 h (mains failure)
Cable feed	from above, below or behind
Environmental Class 1 / III (to EN 12101-10 / VdS 2581)	-5 °C … +40 °C
Relative humidity	20 % … 80 %, non-condensing
Enclosure protection rating (to DIN EN 60529)	IP30
Not suitable for use outdoors. 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**)	20 pieces
or	
Fire Alarm Control Panel:	normally open contact
− Terminating resistor	10 kΩ (± 10 %, ¼ W)
− Alarm resistor	1 kΩ … 1.5 kΩ (± 10 %, ½ W)
Line ⊡, manual call points:	
Main alarm point (**RT 3-*-BS**)	10 pieces

In- / Outputs

Ventilation button (**LT**)	unlimited
Ventilation button with indication of position OPEN (**LT 2-A**)	10 pieces
Wind and Rain Control (type **WRS**)	normally closed contact [1]

Actuator output

Rated voltage	24 V⎓ (+6 V / -4 V)
Max. cross-section of supply line	4 x 6 mm² (rigid)
Allowed voltage drop between Control Centre and actuator	1 V at full load
Line monitoring (unbranched common line)	wire-break, short-circuit

Allowed cable length with simple and moderately branched arrangement of the actuators

Current / Cross section	0.8 A	1.0 A	1.3 A	1.6 A	2.0 A	2.6 A	3.2 A	4.0 A
2 x 1.5 mm²	54 m	44 m	33 m	27 m	22 m	17 m	14 m	11 m
2 x 2.5 mm²	91 m	73 m	56 m	45 m	36 m	28 m	23 m	18 m
2 x 4.0 mm²	145 m	116 m	89 m	73 m	58 m	45 m	36 m	29 m
2 x 6.0 mm²	218 m	174 m	134 m	109 m	87 m	67 m	54 m	44 m
4 x 1.5 mm²	109 m	87 m	67 m	54 m	44 m	33 m	27 m	22 m
4 x 2.5 mm²	181 m	145 m	112 m	91 m	73 m	56 m	45 m	36 m
4 x 4.0 mm²	290 m	232 m	178 m	145 m	116 m	89 m	73 m	58 m
4 x 6.0 mm²	435 m	348 m	268 m	218 m	174 m	134 m	109 m	87 m

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

Fuses

Primary mains (miniature fuse 5 x 20 mm)	F1: T 125 mA
Accumulators / actuators (miniature flat fuse 11 mm)	F2: 7.5 A

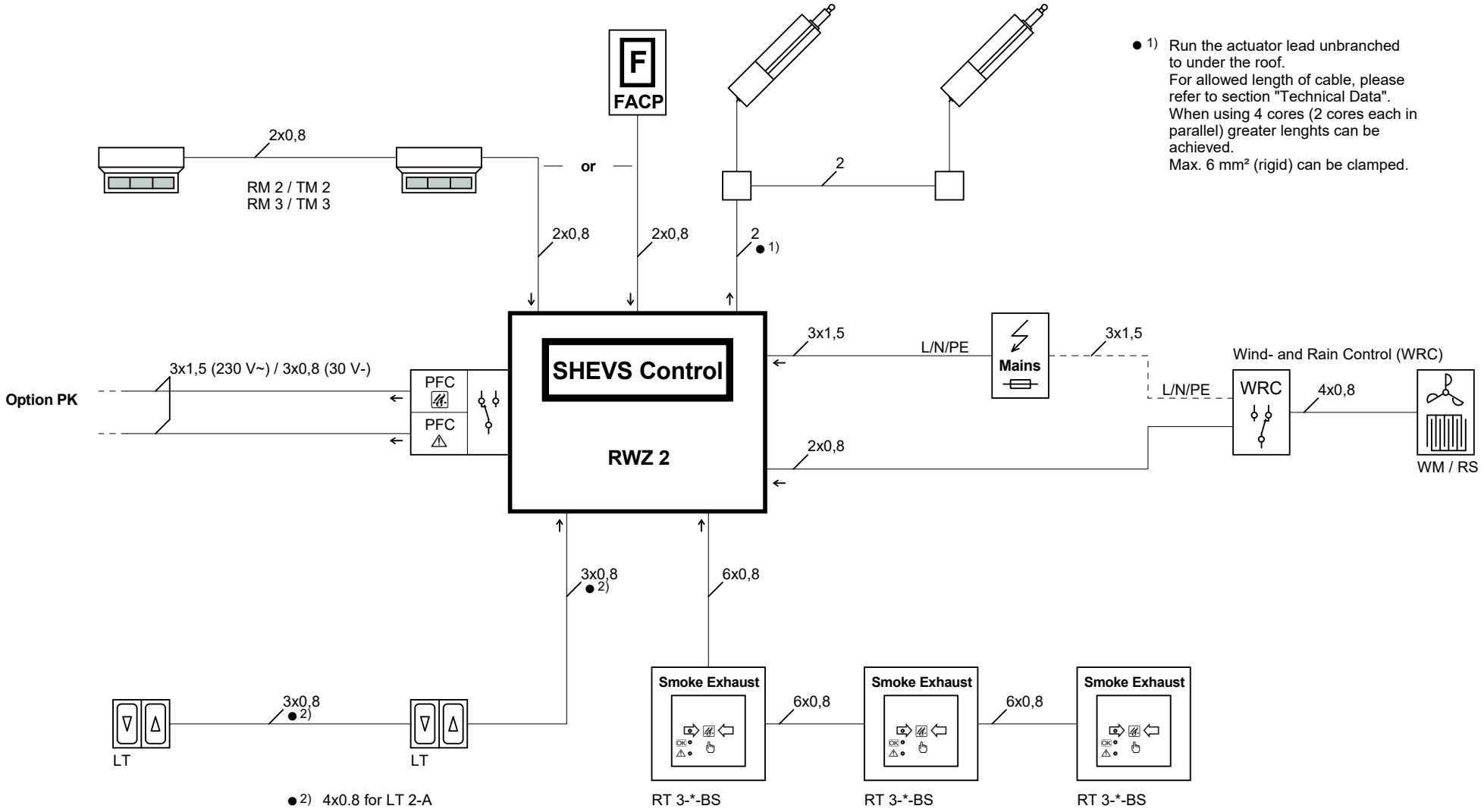
Alarm and malfunction forwarding (option PK)

Contact load rating PFC-𝒜, PFC-⚠ (changeover contacts)	5 A / 30 V⎓ / 230 V~
Fuses PFC-𝒜, PFC-⚠ (miniature fuses 5 x 20 mm)	P:F1, P:F2: F 5 A

[1] *In the WRC, use a separate contact for each connected Control Centre*

SHEVS Control Centre RWZ 2f

System diagram (please consider local conditions / components)



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

1 Concept of Control Centre

- Smoke and Heat Exhaust Ventilation System (SHEVS) Control Centre for the connection of 24 V- actuators
- VdS approved (to VdS 2581 and VdS 2593)
- Internal power supply designed and certified to DIN EN 12101-10
- Control unit designed and tested to prEN 12101-9
- One SHE group, three signal lines:
  - Line 1: automatic fire detectors
  - Line : manual call points **RT 2** as
    - a) Main alarm point with indicators operation OK, alarm, malfunction ⚠ and button *Reset*. Connection of main alarm point with mini buzzer (alarm / malfunction) and indication of position also possible
    - b) Secondary alarm point with indicator alarm
  - Line 2: connection of a Fire Alarm Control Panel (FACP) or additional automatic fire detectors
- Reset the alarm / detector using the button in the main alarm point or in the Control Centre
- Selectable functions:
  - "Auto close" (automatic closure after resetting an alarm)
  - "Malfunction = Alarm" (alarm upon malfunction of a signal line)
  - "Automatic OFF" (automatic travel commands - apart from the alarm - are disabled)
  - "Thermal alarm" (alarm on exceeding an enclosure inside temperature of 70 °C)
  - "2-detector-dependency" (2-detector-dependency for automatic fire detectors in line 1)
- Possibility of connecting ventilation buttons, also with indication of position
- Adjustable ventilation position and ventilation time
- Possibility of connecting an external Wind and Rain Control (WRC), e.g. type **WRS** (for each SHEVS Control Centre to be controlled, a separate contact is required). Optionally internal Wind and Rain Control
- Possibility of connecting an external malfunction contact (e.g. from an incoming air control)
- Indicators operation OK, alarm and malfunction ⚠ in the enclosure door
- Internal service display for detailed status information for installation and maintenance
- Plug-in connection terminals (apart from actuator output)
- The use of K + G / Grasl actuators is recommended. When driving third-party actuators, compatibility is to be checked! Also note Section 2 "Technical data"
- Actuator specification: 24 V actuators, travelling time for full stroke at rated load (total travelling time) < 4 min.
- Actuators must be suitable for the repetition of OPEN and / or CLOSE cycle
- Upon direct change of the sense of travel, the actuators are briefly stopped before changing the sense
- Sheet steel enclosure, light grey (RAL 7035)

1.1 Options / Accessories

- **PK:** One potential-free contact (PFC) each for alarm / malfunction forwarding
- **WTM:** Outputs for controlling external warning devices in case of alarm or malfunction (e.g. multiple-tone sounder **MS** and strobe **BL**)
- **WRM:** Internal Wind- and Rain Control
  - Actuators are automatically closed on response of WRM. Connection of wind sensor **WM** and / or rain sensor **RS** is required (accessory)
  - Direct connection of the sensors on the module in the Control Centre. No external WRC required
  - Sensitivity of the sensors is adjustable
  - The closing command remains active as long as a sensor responds, but for at least 6 minutes
  - Indicators for wind and rain on the module

As there are no corresponding regulations, the optional boards WRM and WTM are not VdS approved. However their usage does not affect the VdS approval of the Control Centre, since interactions have been checked and excluded during the approval process.

2 Technical data

2.1 Version

Type	**RWZ 4-8d**
Product code	8100 4408 0000
Output current	8 A (24 V⎓ / 192 W)
Current input	1.1 A / 230 V~
Lead-acid accumulators, VdS approved	2 x 7 Ah / 12 V
I / U charging	0.7 A (28.8 V) / 27.4 V
Dimensions in mm (W x H x D)	400 x 400 x 125

The Control Centre complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

2.2 Performance data and characteristics

General

Line voltage supply Internal voltage supply / standby time	230 V~ / 50 - 60 Hz 24 V⎓ / 72 hrs. (mains failure)
Cable feed through membrane grommets (from above)	11 x M16, 3 x M25
Environmental Class 1 / III (to EN 12101-10 / VdS 2581) Relative humidity Enclosure protection rating (to DIN EN 60529)	-5 °C … +40 °C 20 % … 80 %, non-condensing IP40
Not suitable for use outdoors. 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 1, automatic fire detectors: Smoke detector / heat detector (**RM 2** / **TM 2** or **RM 3** / **TM 3**)	 20 pieces, of which max. 10 heat detectors [1]
Line 2: Fire Alarm Control Panel − Terminating resistor − Alarm resistor or additional automatic fire detectors	 normally open contact 10 kΩ (± 10 %, ¼ W) 1 kΩ … 1.5 kΩ (± 10 %, ½ W) see line 1
Line, manual call points: − Secondary alarm point (**RT 2-***) − Main alarm point (**RT 2-*-BS**) − Main alarm point (**RT 2-*-BS-A**, with indication) − Main alarm point (**RT 2-*-BS-AA**, with buzzer)	 total of 10 pieces, of which max. 3 pieces with buzzer

In- / Outputs

Ventilation button (**LT**) Ventilation button with indication of position (**LT-A**)	unlimited 10 pieces
Wind and Rain Control (type **WRS**)	normally closed contact [2]
External malfunction	normally closed contact

[1] *Heat detectors:* **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 detectors: **RM 2-O** (65-55000-317), **RM 3-O** (SD-851-E)
[2] *In the WRC, use a separate contact for each connected Control Centre*

Actuator output

Rated voltage	24 V⎓ (+6 V / -4 V)
Mode of operation / duty cycle	S3 30 %
Max. cross-section of supply line	4 x 10 mm² (rigid)
Allowed voltage drop between Control Centre and actuator	1 V at full load
Line monitoring (unbranched common line)	wire-break, short-circuit

Allowed cable lengths with simple and moderately branched arrangement of the actuators

Current / Cross section	1.0 A	2.0 A	3.0 A	4.0 A	5.0 A	6.0 A	7.0 A	8.0 A
2 x 1.5 mm²	44 m	22 m	15 m	11 m	9 m	7 m	6 m	5 m
2 x 2.5 mm²	73 m	36 m	24 m	18 m	15 m	12 m	10 m	9 m
2 x 4.0 mm²	116 m	58 m	39 m	29 m	23 m	19 m	17 m	15 m
2 x 6.0 mm²	174 m	87 m	58 m	44 m	35 m	29 m	25 m	22 m
2 x 10.0 mm²	290 m	145 m	97 m	73 m	58 m	48 m	41 m	36 m
4 x 1.5 mm²	87 m	44 m	29 m	22 m	17 m	15 m	12 m	11 m
4 x 2.5 mm²	145 m	73 m	48 m	36 m	29 m	24 m	21 m	18 m
4 x 4.0 mm²	232 m	116 m	77 m	58 m	46 m	39 m	33 m	29 m
4 x 6.0 mm²	348 m	174 m	116 m	87 m	70 m	58 m	50 m	44 m
4 x 10.0 mm²	580 m	290 m	193 m	145 m	116 m	97 m	83 m	73 m

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

Fuses

Primary mains (miniature fuse 5 x 20 mm)	F1: T 2 A
Accumulators (flat fuse 19 mm)	F2: 10 A
Actuators (flat fuse 19 mm)	F3: 10 A

Alarm and malfunction forwarding (option PK)

Contact load rating PFC-, PFC-⚠ (change-over contacts)	5 A / 30 V⎓ / 230 V~
Fuses PFC-, PFC-⚠ (miniature fuses 5 x 20 mm)	P:F1, P:F2: F 5 A

Controlling external warning devices (option WTM)

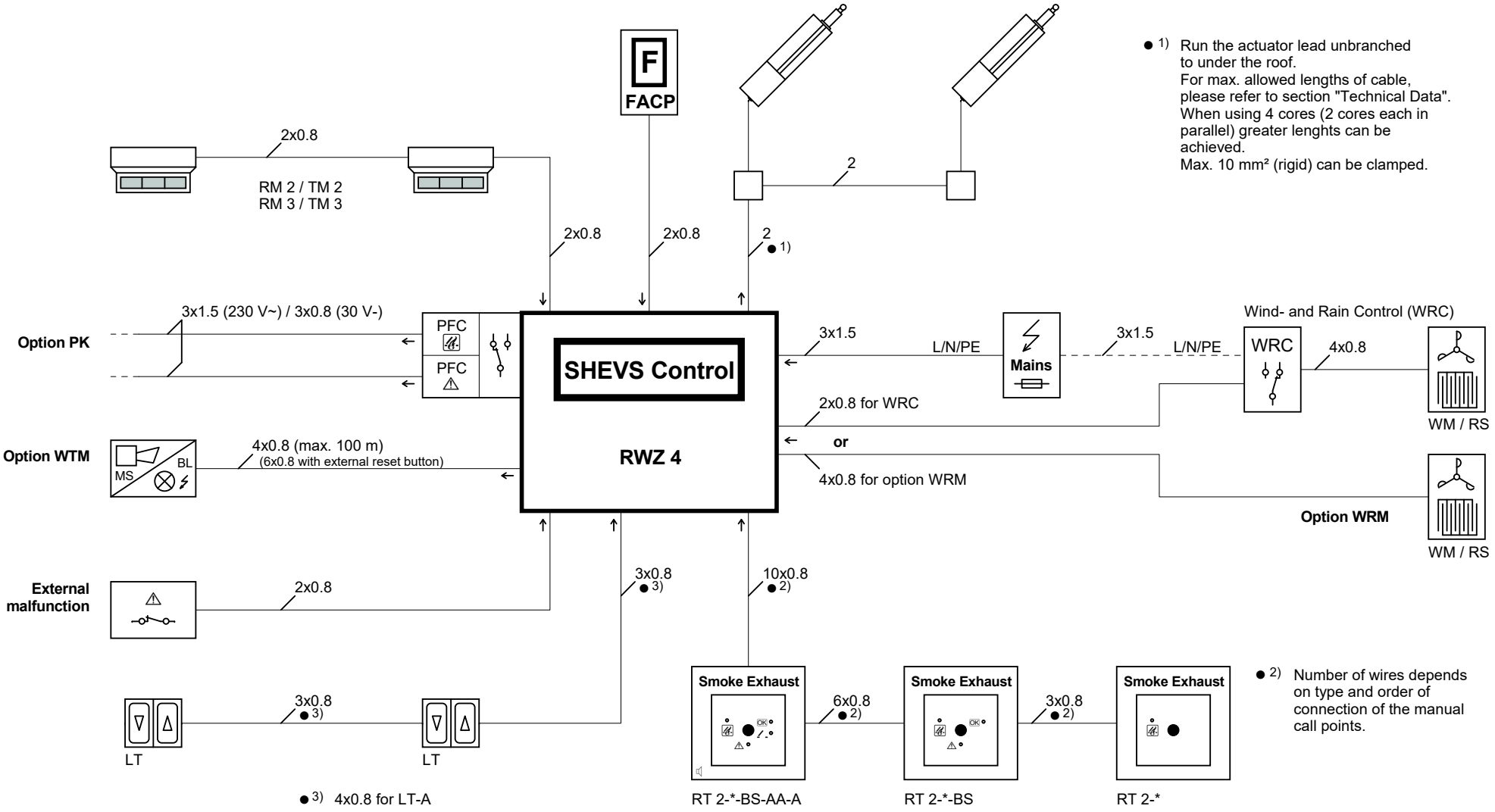
Multiple tone sounder **MS**	24 V⎓ / 100 mA
Strobe **BL**	24 V⎓ / 250 mA

Internal Wind and Rain Control (option WRM)

Wind sensor **WM**, heated rain sensor **RS**	1 piece each
Adjustment range of sensitivity to wind	approx. 5 - 15 m/s (20 - 60 km/h, approx. wind force 3 - 7)
Adjustment range of sensitivity to rain	light - stronger rain

SHEVS Control Centre RWZ 4d

System diagram (please consider local conditions / components)



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

1 Concept of Control Centre

- Smoke and Heat Exhaust Ventilation System (SHEVS) Control Centre with four outputs for the connection of 24 V- actuators
- VdS approved (to VdS 2581 and VdS 2593)
- Internal power supply designed and certified to DIN EN 12101-10
- Control unit designed and tested to prEN 12101-9
- Selectable group configuration: one or two SHE groups, up to four ventilation groups
- For every SHE group, two signal lines:
  - Line : automatic fire detectors
  - Line : manual call points **RT 2** as
    - a) Main alarm point with indicators operation OK, alarm , malfunction ⚠ and button *Reset* . Connection of main alarm point with mini buzzer (alarm / malfunction) and indication of position also possible
    - b) Secondary alarm point with indicator alarm
- Line F for connection of a Fire Alarm Control Panel (FACP)
- Reset the alarm / detector using the button in the main alarm point or in the Control Centre
- Selectable functions:
  - "Thermal alarm" (alarm on exceeding an enclosure inside temperature of 70 °C)

  Selectable for each SHE group:
  - "Malfunction = Alarm" (alarm upon malfunction of a signal line)
  - "2-detector-dependency" (2-detector-dependency for automatic fire detectors in line)

  Selectable for each actuator output:
  - "Auto close" (automatic closure after resetting an alarm)
  - "WRC" (automatic closure for active Wind and Rain Control)
  - "Travelling time 3 min" (auto-switch-off after 3 min travelling time)
  - "Alarm close" (the actuators are closed in case of alarm)
- Possibility of connecting ventilation buttons for each vent. group, also with indication of position OPEN
- For each actuator output adjustable ventilation position and ventilation time
- Possibility of connecting an external Wind and Rain Control (WRC), e.g. type **WRS** (for each SHEVS Control Centre to be controlled, a separate contact is required). Optionally internal Wind and Rain Control
- Indicators operation OK, alarm and malfunction ⚠ in the enclosure door
- Internal service display for detailed status information for installation and maintenance
- The use of K + G / Grasl actuators is recommended. When driving third-party actuators, compatibility is to be checked! Also note Section 2 " Technical data"
- Actuator specification: 24 V actuators, travelling time for full stroke at rated load (total travelling time) < 1.5 minutes or < 3 minutes
- Actuators must be suitable for the repetition of OPEN and / or CLOSE cycle
- Upon direct change of the sense of travel, the actuators are briefly stopped before changing the sense
- Sheet steel enclosure, light grey (RAL 7035)

1.1 Options / Accessories

- **PK:** One potential-free contact (PFC) each for alarm / malfunction forwarding
- **PK-SA:** Potential-free contacts for forwarding indication of position
- **WTM:** Outputs for controlling external warning devices in case of alarm or malfunction (e.g. multiple-tone sounder **MS** and strobe **BL**)
- **WRM:** Internal Wind- and Rain Control
  - Actuators are automatically closed on response of WRM. Connection of wind sensor **WM** and / or rain sensor **RS** is required (accessory)
  - Direct connection of the sensors on the module in the Control Centre. No external WRC required
  - Sensitivity of the sensors is adjustable
  - The closing command remains active as long as a sensor responds, but for at least 6 minutes
  - Indicators for wind and rain on the module

ℹ *As there are no corresponding regulations, the optional boards WRM and WTM are not VdS approved. However their usage does not affect the VdS approval of the Control Centre, since interactions have been checked and excluded during the approval process.*

2 Technical data

2.1 Versions

Type	**RWZ 5-8e**	**RWZ 5-16e**	**RWZ 5-24e**	**RWZ 5-32e**
Product code	8100 5508 0000	8100 5516 0000	8100 5524 0000	8100 5532 0000
Total output current	8 A (24 V⎓ / 192 W)	16 A (2 x 8 A) (24 V⎓ / 384 W)	24 A (3 x 8 A) (24 V⎓ / 576 W)	32 A (4 x 8 A) (24 V⎓ / 768 W)
Current input	1.1 A / 230 V~	2.2 A / 230 V~	3.3 A / 230 V~	4.4 A / 230 V~
Lead-acid accumulators, VdS approved	2 x 7 Ah / 12 V	2 x 12 Ah / 12 V	2 x 17 Ah / 12 V	
I / U charging	0.7 A (28.8 V) / 27.4 V	1.2 A (28.8 V) / 27.4 V	1.8 A (28.8 V) / 27.4 V	
Accumulator fuse F2	10 A	20 A	30 A	40 A
Dimensions in mm (W x H x D)	500 x 500 x 210		600 x 600 x 210	

The Control Centre complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

2.2 Performance data and characteristics

General

Line voltage supply Internal voltage supply / standby time	230 V~ / 50 - 60 Hz 24 V⎓ / 72 Std. (mains failure)
Cable feed through membrane grommets (from above)	12 x M16, 2 x M20, 4 x M32
Environmental Class 1 / III (to EN 12101-10 / VdS 2581) Relative humidity Enclosure protection rating (to DIN EN 60529)	-5 °C … +40 °C 20 % … 80 %, non-condensing IP40
Not suitable for use outdoors. 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**)	20 pieces per SHE group, of which max. 10 heat detectors [1]
Line, manual call points: − Secondary alarm point (**RT 2-***) − Main alarm point (**RT 2-*-BS**) − Main alarm point (**RT 2-*-BS-A**, with indication) − Main alarm point (**RT 2-*-BS-AA**, with buzzer)	total of 10 pieces per SHE group, of which max. 3 pieces with buzzer
Line F, Fire Alarm Control Panel: − Terminating resistor − Alarm resistor	normally open contact 10 kΩ (± 10 %, ¼ W) 1 kΩ … 1,5 kΩ (± 10 %, ½ W)

In- / Outputs

Ventilation button (**LT**) Ventilation button with indication of position (**LT-A**)	unlimited per ventilation group 10 pieces for each ventilation group
Wind and Rain Control (type **WRS**)	normally closed contact [2]

[1] *Heat detectors:* **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 detectors: **RM 2-O** (65-55000-317), **RM 3-O** (SD-851-E)
[2] *In the WRC, use a separate contact for each connected Control Centre*

Actuator outputs

Rated voltage	24 V⎓ (+6 V / -4 V)
Current per actuator output	8 A

*For **RWZ 5-16** note: Current sum of outputs 1 and 2 max. 8 A and Current sum of outputs 3 and 4 max. 8 A.*

*For **RWZ 5-24** note: Current sum of outputs 3 and 4 max. 8 A.*

Note maximum total output current of Control Centre (see 2.1)!

Mode of operation / duty cycle	S3 30 %
Max. cross-section of supply line	4 x 10 mm² (rigid) per output
Allowed voltage drop between Control Centre and actuator	1 V at full load
Line monitoring (unbranched common line)	wire-break, short-circuit

Allowed cable lengths with simple and moderately branched arrangement of the actuators

Cross section \ Current	1.0 A	2.0 A	3.0 A	4.0 A	5.0 A	6.0 A	7.0 A	8.0 A
2 x 1.5 mm²	44 m	22 m	15 m	11 m	9 m	7 m	6 m	5 m
2 x 2.5 mm²	73 m	36 m	24 m	18 m	15 m	12 m	10 m	9 m
2 x 4.0 mm²	116 m	58 m	39 m	29 m	23 m	19 m	17 m	15 m
2 x 6.0 mm²	174 m	87 m	58 m	44 m	35 m	29 m	25 m	22 m
2 x 10.0 mm²	290 m	145 m	97 m	73 m	58 m	48 m	41 m	36 m
4 x 1.5 mm²	87 m	44 m	29 m	22 m	17 m	15 m	12 m	11 m
4 x 2.5 mm²	145 m	73 m	48 m	36 m	29 m	24 m	21 m	18 m
4 x 4.0 mm²	232 m	116 m	77 m	58 m	46 m	39 m	33 m	29 m
4 x 6.0 mm²	348 m	174 m	116 m	87 m	70 m	58 m	50 m	44 m
4 x 10.0 mm²	580 m	290 m	193 m	145 m	116 m	97 m	83 m	73 m

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

Fuses

Primary mains (miniature fuse 5 x 20 mm)	F1: T 2 A
Accumulators (flat fuse 19 mm)	F2: value see 2.1
Actuators (flat fuse 19 mm)	F3.1 - F3.4: 10 A
Additional power supply unit (miniature fuse 5 x 20 mm)	N:F1: T 2 A

Alarm and malfunction forwarding (option PK)

Contact load rating PFC-, PFC-⚠ (change-over contacts)	5 A / 30 V⎓ / 230 V~
Fuses PFC-, PFC-⚠ (miniature fuses 5 x 20 mm)	P:F1, P:F2: F 5 A

Forwarding the indication of position (option PK-SA)

Contact load rating PFC (4 change-over contacts)	0,2 A / 30 V⎓

Controlling external warning devices (option WTM)

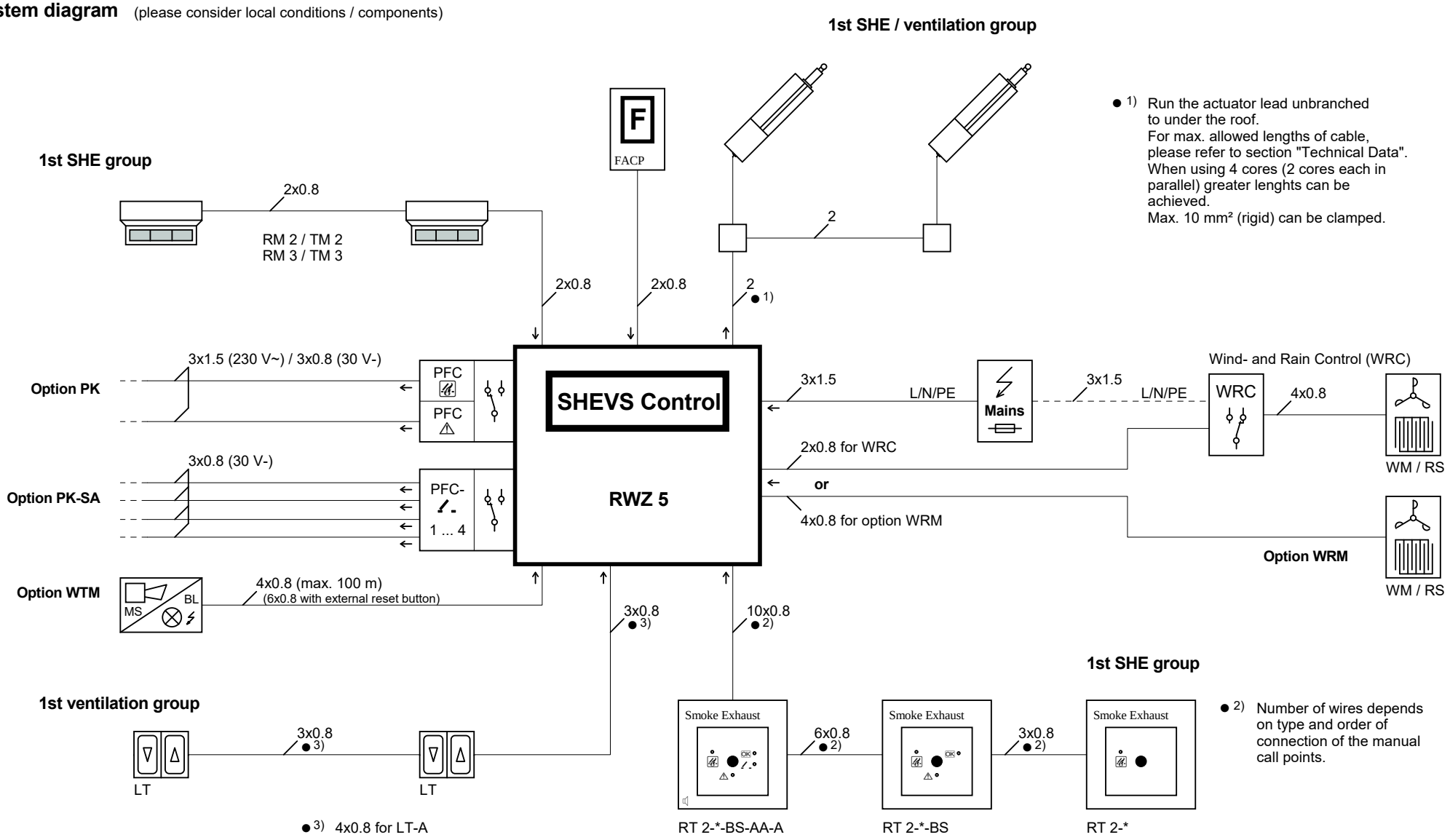
Multiple tone sounder **MS**	24 V⎓ / 100 mA
Strobe **BL**	24 V⎓ / 250 mA

Internal Wind and Rain Control (option WRM)

Wind sensor **WM**, heated rain sensor **RS**	1 piece each
Adjustment range of sensitivity to wind	approx. 5 - 15 m/s (20 - 60 km/h, approx. wind force 3 - 7)
Adjustment range of sensitivity to rain	light - stronger rain

SHEVS Control Centre RWZ 5e

System diagram (please consider local conditions / components)



Other groups:

Components in further SHE or ventilation groups will be connected in accordance with the examples given for the first group.

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

1 Zentralenkonzept

- RWA-Zentrale mit zwei Ausgängen zum Anschluss von 24 V- Antrieben
- Eine RWA-Gruppe, eine oder zwei Lüftungsgruppen (wählbar)
- Drei Meldelinien:
  - Linie : Automatische Brandmelder
  - Linie : Meldetaster **RT 2** oder **RT 4** (Hauptbedienstelle RT 2/4-*-BS oder Nebenbedienstelle RT 2/4-*). Anschließbare Ausführungen siehe Abschnitt 2 „Technische Daten“
  - Linie F zum Anschluss einer Brandmelderzentrale (BMZ)
- Zurücksetzen des Alarms / der Melder durch Taster in der Hauptbedienstelle oder in der Zentrale
- Wählbare Funktionen:
  - „Eine Lüftungsgruppe“ (Steuerung beider Ausgänge in einer Lüftungsgruppe)
  - „Auto-Zu“ (automatisches Schließen nach Zurücksetzen eines Alarms)
  - „Störung = Alarm“ (Alarm bei Störung einer Meldelinie)
  - „Automatik aus“ (Automatische Fahrbefehle - ausgenommen Alarm - sind deaktiviert)
  - „Thermo-Alarm“ (Alarm bei Überschreiten einer Gehäuseinnentemperatur von 70 °C)
  - „2-Melder-Abhängigkeit“ (2-Melder-Abhängigkeit für automatische Brandmelder in Linie)
- Anschlussmöglichkeit für Lüftungstaster je Lüftungsgruppe, auch mit Stellungsanzeige
- Je Antriebsausgang einstellbare Lüftungsposition und Lüftungsdauer
- Anschlussmöglichkeit einer Wind- und Regensteuerung, z. B. vom Typ **WRS**. Interne Wind- und Regensteuerung optional
- Internes Service-Display zur detaillierten Zustandsanzeige
- Der Einsatz von K + G / Grasl-Antrieben wird empfohlen. Bei Ansteuerung von Fremdantrieben ist die Kompatibilität zu prüfen. Dazu auch Abschnitt 2 „Technische Daten“ beachten
- Anschließbare Antriebe: 24 V- Antriebe, Fahrzeit für vollen Hub bei Nennlast (Gesamtfahrzeit) < 4 Minuten
- Bei direktem Umschalten der Fahrtrichtung werden die Antriebe vor dem Richtungswechsel kurz gestoppt
- Die Zentrale liefert den Fahrstrom für die Antriebe aus den Akkumulatoren
- Stahlblechgehäuse, lichtgrau (RAL 7035)

1.1 Optionen / Zubehör

- **PK:** Potentialfreie Kontakte (PK) zur Weiterleitung von Alarm- und/oder Störungsmeldungen
- **WTM:** Ausgänge zur Ansteuerung externer Warngeräte bei Alarm oder Störung
- **WRM:** Interne Wind- und Regensteuerung. Anschluss von Windmesser **WM** und/oder Regensensor **RS** erforderlich (Zubehör)

2 Technische Daten

2.1 Ausführung

Typ	**RWZ 5f-E-10**	**RWZ 5f-E-20**
Artikelnummer	8101 5610 0000	8101 5620 0000
Ausgangsstrom	10 A (24 V⎓ / 240 W)	20 A (24 V⎓ / 480 W)
Stromaufnahme	0,25 A / 230 V~	
Abmessungen in mm (B x H x T)	400 x 490 x 125	
Akkumulatoren (VRLA-AGM), VdS anerkannt	2 x 7 Ah / 12 V	2 x 12 Ah / 12 V
Es dürfen ausschließlich mitgelieferte oder freigegebene Akkumulatoren verwendet werden. Siehe Kompatibilitätsliste auf: www.kg-tectronic.de (Elektronik - Systemzubehör - Akkumulatoren)		

Die Anforderungen der Richtlinien 2014/35/EU und 2014/30/EU werden erfüllt. CE

2.2 Leistungs- und Kenndaten

Allgemeines

Netzspannungsversorgung Interne Versorgungsspannung / Überbrückungszeit	230 V~ / 50 - 60 Hz 24 V⎓ / 72 h bei Netzausfall
Kabelzuführung durch Membrantüllen (von oben) 2 Gehäuseöffnungen (von hinten)	7 x M16, 1 x M20, 2 x M25 110 x 34 mm (B x H)
Umweltklasse 1 / III (EN 12101-10 / VdS 2581) Relative Luftfeuchtigkeit Gehäuseschutzart	-5 °C … +40 °C 20 % … 80 %, nicht kondensierend IP30
Nicht zur Verwendung im Freien geeignet. Vor direkter Sonneneinstrahlung, Feuchtigkeit und übermäßiger Staubentwicklung schützen! Vorzugsweise sollte die Installation in trockenen, beheizten Räumen erfolgen.	

Meldelinien

Leitungsüberwachung	Drahtbruch, Kurzschluss
Linie ▭, automatische Brandmelder: Rauchmelder / Thermomelder (**RM 2** / **TM 2** oder **RM 3** / **TM 3**)	20 Stück, davon max. 10 Thermomelder [1]
Linie ▭, Meldetaster: – **RT 2/4-*** – **RT 2/4-*-BS** OK ⚠ – **RT 2/4-*-BS-AA** OK ⚠ 🔊	insgesamt 10 Stück, davon max. 3 Stück mit Summer 🔊
Linie F, Brandmelderzentrale	Öffner- / Schließerkontakt

Ein- / Ausgänge

Lüftungstaster **LT** △ ▽ Lüftungstaster **LT x-A** △ ▽	unbegrenzt je Lüftungsgruppe 10 Stück je Lüftungsgruppe
Wind- und Regensteuerung (**WRS**)	Öffnerkontakt [2]

[1] *Thermomelder:* **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),
Optische Melder: **RM 2-O** (65-55000-317), **RM 3-O** (SD-851-E)

[2] *In der WRS ist je anzusteuernder Zentrale ein separater Kontakt erforderlich*

Antriebsausgänge

Nennspannung	24 V⎓ (+6 V / -4 V)
Betriebsart / Einschaltdauer	S3 30 %
Maximaler Kabelquerschnitt der Zuleitung	4 x 10 mm² (starr)
Leitungsüberwachung (unverzweigte Sammelleitung)	Drahtbruch, Kurzschluss

Zulässiger Strom für Antriebe / zulässiger Gesamtstrom

	RWZ 5f-E-10		RWZ 5f-E-20	
Ausgang	1	2	1	2
Antriebe	10 A	8 A	16 A	8 A
Gesamt	10 A		20 A	

Zulässige Leitungslänge von Zentrale bis Antrieb bei 1 V Spannungsabfall (einfache, nicht weit verzweigte Anordnung). Abhängig vom Betriebsspannungsbereich des Antriebs kann ein höherer Spannungsabfall zulässig sein.

Strom / Querschnitt	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

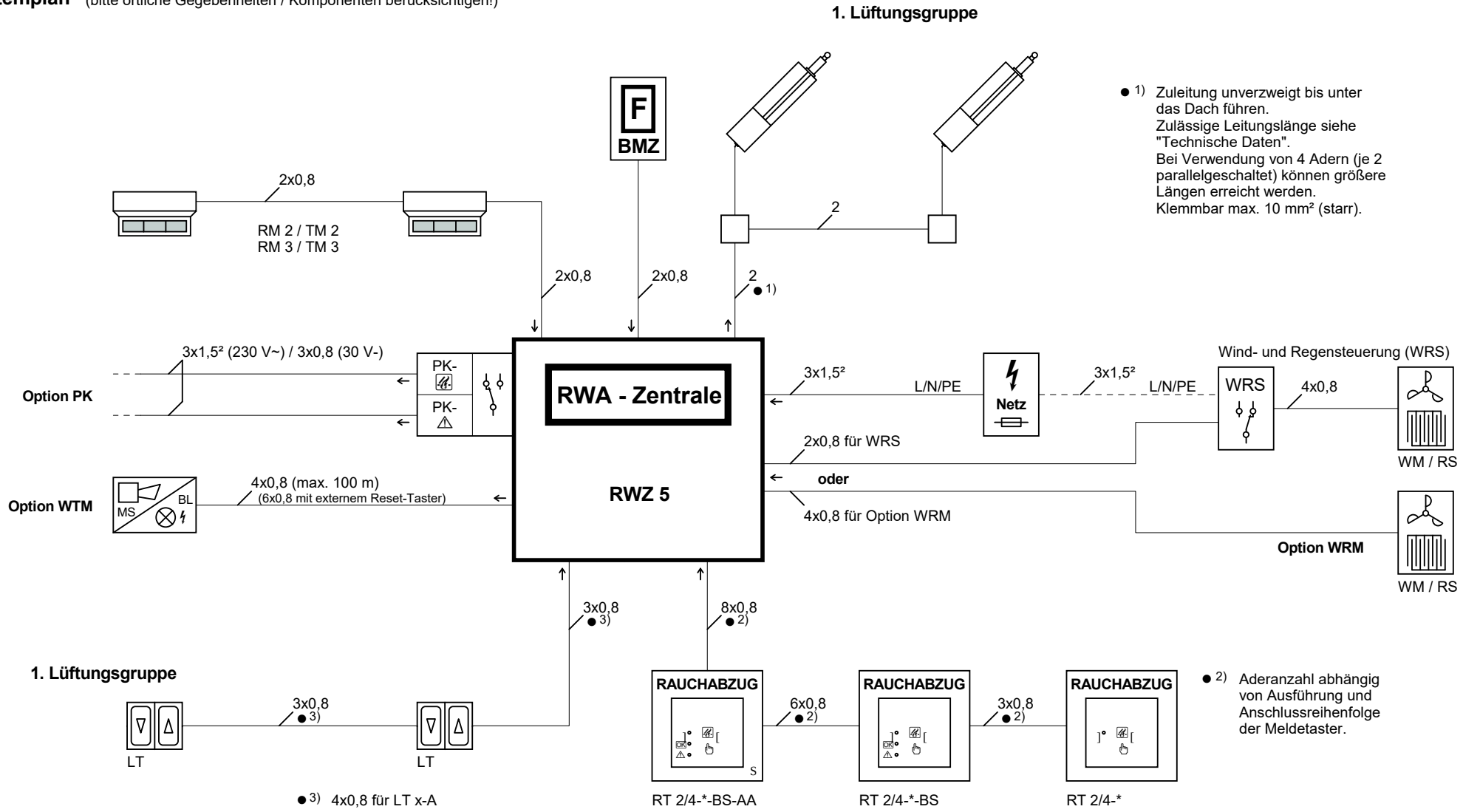
Bei Verwendung von 4 Adern jeweils 2 Adern parallelschalten.

Sicherungen

Netz primär (G-Sicherungseinsatz 5 x 20 mm)	F1.1: T 1 A
Akkumulatoren (Flachsicherung 19 mm)	F2.1: 20 A
Antriebe (Mini-Flachsicherung 11 mm)	F3.1: 20 A, F3.2: 10 A

RWA - Zentrale RWZ 5f-E

Systemplan (bitte örtliche Gegebenheiten / Komponenten berücksichtigen!)



Zweite Lüftungsgruppe:

Der Anschluss von Komponenten in der zweiten Lüftungsgruppe erfolgt entsprechend den Beispielen für die 1. Gruppe.

Allgemein: Leitungslänge max. 400 m, soweit nicht anders angegeben.

Leitungstypen (Beispiele):
Signalleitungen: J-Y(St)Y 2x2x0,8 - 4x2x0,8
Netzzuleitung: NYM-J 3x1,5 mm²
PK: NYM-J 4x1,5 mm² / NYM-O 3x1,5 mm²

1 Concept of Control Centre

- SHEVS Control Centre with four outputs for connecting 24 V actuators (RWZ 5f-xx) or 48 V actuators (RWZ 5f-xx-48V)
- Functions according to EN 12101-10 (power supply), ISO 21927-9 (control), VdS 2581 and VdS 2593
- Selectable group configuration: one or two SHE groups, up to four ventilation groups
- For every SHE group, two signal lines:
  - Line : Automatic fire detectors or fire alarm control panel (FACP)
  - Line : Manual call points **RT 2** or **RT 4** (main alarm point RT 2/4-*-BS or secondary alarm point RT 2/4-*). Connectable versions see section 2 “Technical Data”
- Line F for connecting a FACP (activating the alarm in both 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)
  - “Automatic OFF” (automatic travel commands - apart from the alarm - are disabled)
  - “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 / 48 V actuators, travelling time for full stroke at rated load (total travelling time) < 4 minutes
- 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

- **PK:** Potential-free contacts (PFC) for alarm and/or fault forwarding
- **PK-SA:** Potential-free contacts for forwarding indication of position
- **WTM:** Outputs for controlling external warning devices in case of alarm or fault
- **WRM:** Internal wind and rain control. Connection of wind sensor **WM** and/or rain sensor **RS** is required (accessory)

The PK-SA and WTM options cannot be provided at the same time!

1.2 Special version

- **Master / slave version:**
  On request, SHEVS Control Centre is also available as a master / slave version with up to 4 SHE and 8 ventilation groups.
  The 24 V version supplies a total output current of up to 80 A, the 48 V version up to 40 A.

2 Technical Data

2.1 Versions

24 V - types	RWZ 5f-20	RWZ 5f-40
Item number	8100 5620 1000	8100 5640 1000
Total output current	20 A (24 V⎓ / 480 W)	40 A (24 V⎓ / 960 W)
Current input	2.5 A / 230 V~	5.0 A / 230 V~
Inrush current	ca. 80 A	ca. 115 A
Accumulators (VRLA-AGM)	2 x 12 Ah / 12 V	2 x 17 Ah / 12 V

48 V - types	RWZ 5f-10-48V	RWZ-5f-20-48V
Item number	8100 5610 1100	8100 5620 1100
Total output current	10 A (48 V⎓ / 480 W)	20 A (48 V⎓ / 960 W)
Current input	2.5 A / 230 V~	5.0 A / 230 V
Inrush current	ca. 80 A	ca. 115 A
Accumulators (VRLA-AGM)	2 x 12 Ah / 12 V	2 x 17 Ah / 12 V

Only supplied or approved accumulators may be used.
See compatibility list on: www.kg-pneumatik.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 Circuit breaker with tripping characteristics C needed Internal supply voltage / standby time	230 V~ / 50 - 60 Hz 24 V⎓ / 72 h (mains failure)
Dimensions in mm Cable entry through membrane grommets (from above) 2 housing openings (from behind)	W 430 x H 525 x D 185 13 x M16, 1 x M20, 8 x M25 144 x 34 mm (W x H)
Environmental class 1 (EN 12101-10 / ISO 21927-9) / III (VdS 2581) Relative humidity Enclosure protection rating	-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 2/4-*** – **RT 2/4-*-BS** OK ⚠ – **RT 2/4-*-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** △ ▽	unlimited per ventilation group
Ventilation buttons **LT x-A** △ ▽	10 pieces per 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-xx)

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

	RWZ 5f-20				RWZ 5f-40			
Output	1	2	3	4	1	2	3	4
Current	16 A	8 A	16 A	8 A	16 A	8 A	16 A	8 A
Total current	20 A				20 A		20 A	

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.

Actuator outputs 48 V - types (RWZ 5f-xx-48V)

Rated voltage	48 V⎓ (+1 V / -2 V)
Operating mode / duty cycle	S3 30 %
Maximum cross-section of the supply line	4 x 6 mm² (rigid)
Line monitoring (unbranched common line)	Wire-breakage, short-circuit

Permissible current per output / permissible total current

	RWZ 5f-10-48V				RWZ 5f-20-48V			
Output	1	2	3	4	1	2	3	4
Current	5 A	5 A	5 A	5 A	5 A	5 A	5 A	5 A
Total current	10 A				10 A		10 A	

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 4 V (simple arrangement without extensive branching), the following applies:

Current / Cross-section	1.0 A	2.0 A	3.0 A	4.0 A	5.0 A
2 x 1.5 mm²	174 m	87 m	58 m	44 m	35 m
2 x 2.5 mm²	290 m	145 m	97 m	73 m	58 m
2 x 4.0 mm²	464 m	232 m	155 m	116 m	93 m
2 x 6.0 mm²	696 m	348 m	232 m	174 m	139 m
4 x 1.5 mm²	348 m	174 m	116 m	87 m	70 m
4 x 2.5 mm²	580 m	290 m	193 m	145 m	116 m
4 x 4.0 mm²	928 m	464 m	309 m	232 m	186 m
4 x 6.0 mm²	1392 m	696 m	464 m	348 m	278 m

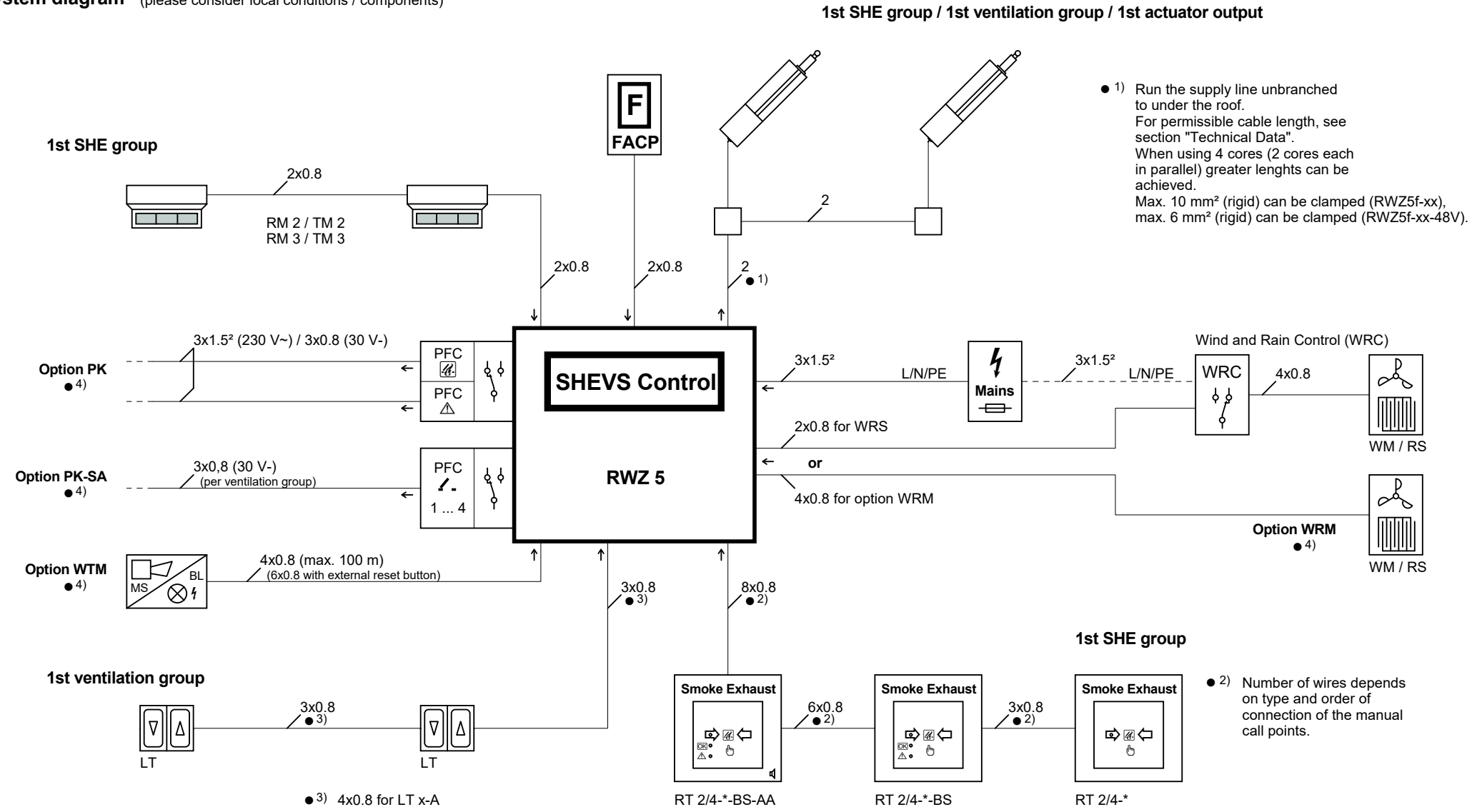
When 4 cores are used, connect 2 cores each in parallel.

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-xx	F3.1, F 3.3: 20 A, F3.2, F3.4: 10 A
	RWZ 5f-xx-48V	F3.1 - F3.4: 15 A

SHEVS Control Centre RWZ 5f

System diagram (please consider local conditions / components)



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 3x1.5 mm²
PFC: NYM-J 4x1.5 mm² / NYM-O 3x1.5 mm²

● 4) Separate documentation

1. Concept of Control Centre

- Smoke and Heat Exhaust Ventilation System (SHEVS) Control Centre for connection of 24V- actuators
- SHEVS Control Centres type RWZ 6 are individually arranged as single modules consisting of SHE-, ventilation and power output groups. All modules of one SHE group will perform the SHE functions at the same time. SHE groups may consist of several ventilation groups. To increase the output current by 8A each, additional power output groups (extension modules) will be integrated
- Type identification: **RWZ 6.x.y-z**
  x: Number of SHE groups
  y: Total number of ventilation groups
  z: Total output current of system in amps (A) at 24V⎓.
  Standard output currents:
  8A / 16A / 24A / 32A / 40A / 48A / 56A / 64A / 72A / 80A / 88A / 96A.
  For higher output currents, please inquire
- Modules:
  - Power supply, module **EV**
  - SHE group, module **KM** (one SHE, ventilation and power output group)
  - Ventilation group, module **LM** (one ventilation and power output group)
  - Power output group, module **SM** (one power output group)
  - Potential-free contacts alarm / malfunction, alarm output, module **PM**
  - Integrated Wind- and Rain Control, module **WRM**
  - Potential-free contacts for indication of position, module **SA** (last travelling command) / module **SAM** (limit switches)
  - Signal line extension, module **LEM**
- Use of K+G / Grasl actuators is recommended. Third-party actuators must be checked for compatibility! For this purpose, see also section “Technical specifications”
- Connectable actuators: 24V actuators, travelling time for full stroke at rated load (total travelling time) < 6 minutes
- Actuators must be suitable for cycle repetition functions OPEN / CLOSE
- Upon immediate change of travel direction actuators will be stopped for about 1s before change of direction
- Automatic recharge of accumulators (integrated battery charger)
- Reverse connection and deep-discharge protection for the accumulators
- Line for connection to a Fire Alarm Control Panel (FACP)
- Monitoring of accumulators, fuses, power line and FACP signal line
- Upon exceeding an enclosure internal temperature of 70°C the FACP-alarm function will be activated. When cooled down to approximately 60°C the alarm will be reset
- Possibility of connecting an external Wind and Rain Control (WRC), e.g. type **WRS** (WRC must have a separate contact for each SHEVS Control Centre to be controlled). Internal Wind and Rain control at option
- Blocking of ventilation function OPEN △ in the case of insufficient accumulator charge or mains failure
- Status lights Mains ⏀, Malfunction ⚠, WRC and FACP on the module **EV** and the enclosure door
- Driving power for the actuators is obtained from the system’s accumulators
- Sheet steel enclosure, light grey (RAL 7035)

1.1 SHE group (module KM)

- Module with one SHE, one ventilation and one power output group
- SHE group allows integration of additional ventilation and power output groups by extension modules
- Output for 24V- actuators wired on terminal strip
- Two signal lines:
  - 1st line: automatic fire detectors
  - 2nd line: hand-operated fire alarms **RT 2** (non automatic fire detectors) as
    a) Main alarm point with status lights Operation OK, Alarm, Malfunction ⚠ and button "Reset". Connection of main alarm point with mini buzzer (Alarm / Malfunction) also possible
    b) Secondary alarm point with status light Alarm
- Reset of alarm / fire detectors by push-button on the module or in the main alarm point
- Cycle repetition function in the event of alarm to VdS 2581
- Monitoring of signal lines, actuator supply line and fuse
- Possibility of connecting ventilation buttons
- Adjustable ventilation position
- Configurable functions:
  - "Auto CLOSE" (group closes automatically when alarm has been reset)
  - "Malfunction = Alarm" (malfunction in a signal line activates alarm)
- Status lights Alarm and Malfunction ⚠ on the module and in the enclosure door

1.2 Ventilation group (module LM)

- Module for the extension of a SHE group by one ventilation and one power output group
- Ventilation group allows integration of additional power output groups by extension modules
- Output for 24V- actuators wired on terminal strip
- Monitoring of actuator supply line and fuse
- Possibility of connecting ventilation buttons
- Adjustable ventilation position
- Status light Malfunction ⚠ on the module

1.3 Power output group (module SM)

- Module for the extension of a SHE or ventilation group by one power output group
- Output for 24V- actuators wired on terminal strip
- Monitoring of actuator supply line and fuse
- Status light Malfunction ⚠ on the module

1.4 Potential-free contacts for alarm / malfunction, alarm-output (module PM)

- Module for routing alarm / malfunction signals, e.g. to a FACP or Building Management System (BMS), with one potential-free contact (PFC) each for alarm / malfunction
- Output for controlling external 24V- warning devices in the event of alarm (e.g. multiple-tone sounder or strobe)
- Button for resetting external warning devices and possibility of connecting an external reset button

1.5 Internal Wind- and Rain Control (module WRM)

- Actuators / groups will automatically close on response of WRM. Requires connection of wind sensor **WM** and / or rain sensor **RS** (accessories)
- Direct sensor connection on the module in SHEVS Control Centre. No external WRC required
- Closing command remains active for at least 6 minutes, or for the time of sensor response
- Wind speed response point and rain sensor response threshold are adjustable
- Status LEDs for wind and rain on the module
- PFC for controlling an additional Control Centre / Control System or a Contact Extension Unit **KE**

1.6 Options

- **Indication of position (SA):** Indication of positions OPEN and CLOSED, e.g. for hand-operated fire alarms **RT 2-*-BS-SA**. This option is required separately for each SHE / ventilation group.
  For using the indication of position, actuators with additional limit switches, or external limit switches are required.

- **Indication of position in door of Control Centre (SA-T):** additional indication of positions OPEN ⌿ and CLOSED ⌐, in the enclosure door. This option is required separately for each SHE / ventilation group. For using the indication of position, actuators with additional limit switches, or external limit switches are required.

2. Technical data

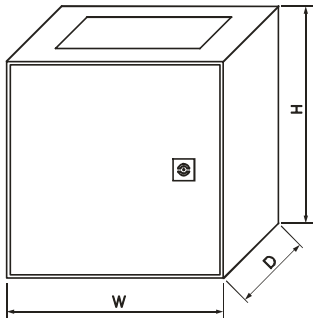
2.1 Versions

Custom configured Control Centre

Total output current for 24V⎓ actuators: max. 96A (2.300W)
(for higher output currents, please inquire)

2.2 General

Dimensions in mm (W x H x D):



W	H	D
600	600	210
600	600	300
600	800	300 / 400
800	800	300
800	1.000	300 / 400
800	1.200	300 / 400
1.000	1.000	300
1.000	1.200	300
1.000	1.400	300

Cable entry through sheet steel flange with membrane grommets: from above
(mains and signal lines M16, actuator outputs M25)

Environmental class III (to VdS 2581): -5 to +40°C
Relative humidity: 20 to 80%, no condensation
Enclosure protection rating (to DIN EN 60529): IP40 (IP54 without door LEDs)

Not to be used outdoors. To be protected from direct exposure to sun rays, moisture and excessive formation of dust! To be installed preferably at dry and heated indoor location.

2.3 Power supply unit

Line voltage supply: 230V~ / 50Hz, 150VA / 250VA

Sealed lead-acid accumulators (VdS approved): 2 x 12V / 12Ah - 65Ah
(emergency power supply for at least 72 hours to DIN EN 54-4)

2.4 Inputs

Automatic fire detectors (1st line):

Smoke detector / heat detector (**RM 2** / **TM 2** or **RM 3 / TM 3**): 20 pieces per SHE group (**KM**)

Hand operated fire alarms (non automatic fire-detectors, 2nd line): total of 10 pieces per SHE group (**KM**), max. 3 of these with buzzer

- Secondary alarm point (**RT 2-***)
- Main alarm point (**RT 2-*-BS**)
- Main alarm point (**RT 2-*-BS-AA**, with buzzer 🔊)
- Main alarm point (**RT 2-*-BS-SA**, with indication of position OPEN ⌿ / CLOSED ⌐), requires option SA / SA-T

Fire Alarm Control Panel (line): NO contact with
- Terminating resistor: 10kΩ ±10% ¼W
- Alarm resistor: 1kΩ..1,5kΩ ±10% ½W

Other:

Ventilation buttons each ventilation group (**KM** / **LM**):
- Ventilation button (**LT**): unlimited
- Ventilation button with indication of position OPEN (**LT-SA**): 10 pieces, requires option SA / SA-T

Wind and Rain Control (type **WRS**): NC contact
(WRC must have a separate contact for each SHEVS Control Centre to be controlled)

2.5 Actuator outputs (module **KM** / **LM** / **SM**)

Rated voltage: 24V⎓ (+6V / -4V)
Maximum cross section of supply cable: 4 x 10mm² (rigid) per output
Admissible voltage drop from Control Centre to actuator: 1V at full load

Admissible cable lengths per output if actuator arrangement is simple (no complex branching):

Current / Cross section	1,0A	2,0A	3,0A	4,0A	5,0A	6,0A	7,0A	8,0A
2 x 1,5mm²	44m	22m	15m	11m	9m	7m	6m	5m
2 x 2,5mm²	73m	36m	24m	18m	15m	12m	10m	9m
2 x 4,0mm²	116m	58m	39m	29m	23m	19m	17m	15m
2 x 6,0mm²	174m	87m	58m	44m	35m	29m	25m	22m
2 x 10,0mm²	290m	145m	97m	73m	58m	48m	41m	36m
4 x 1,5mm²	87m	44m	29m	22m	17m	15m	12m	11m
4 x 2,5mm²	145m	73m	48m	36m	29m	24m	21m	18m
4 x 4,0mm²	232m	116m	77m	58m	46m	39m	33m	29m
4 x 6,0mm²	348m	174m	116m	87m	70m	58m	50m	44m
4 x 10,0mm²	580m	290m	193m	145m	116m	97m	83m	73m

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

2.6 Line monitoring

Signal lines: wire-break, short-circuit
Actuators (unbranched common line): wire-break

2.7 Fuses

Mains (G fuse link 5x20mm, 1 piece): F1: T 1A / T 2A
Charge (G fuse link 5x20mm, 1 piece): F2: T 3,15A / T 5A
Accumulators (flat car fuse 19mm): F3.1 - F3.x: 25A (white)
Actuators (flat car fuse 19mm) on the module: 10A (red) each output (**KM** / **LM** / **SM**)

2.8 Potential-free contacts (module PM)

Contact load rating PFC Alarm, PFC Malfunction (change-over contacts): 5A / 30V⎓ / 230V~
(one fast-acting fuse each to be provided in the line at site. Fuse rating: max. F 5A)

Output for external warning devices (e.g. **MS** or **BL**): max. 250mA / 24V⎓
Fuse (G fuse link 5x20mm on the module): F1: T 250mA

External reset button (NO contact): unlimited

2.9 Internal Wind and Rain Control (module WRM)

Wind sensor **WM**, heated rain sensor **RS** 1 piece each
Response threshold setting range for wind: approx. 5 - 15m/s or 20 - 60km/h (approx. wind force 3 - 7)
Response threshold setting range for rain: drizzle - stronger rainfall

Contact load rating of potential free contact (change-over contact): 5A / 30V⎓ / 230V~
(fast-acting fuse to be provided in the line at site. Fuse rating: max. F 5A)

3. Special modules

3.1 SHE group (module IM)

- Module with one SHE and one power output group
- 24V- impulse output for controlling electromagnets / solenoid valves (**CA** / **CFR**), pneumatic valves with electric add-on components (**EA** / **EZ**) or pyrotechnical pressure gas generators (**DG**), wired on terminal strip
- Two signal lines:
  - 1st line: automatic fire detectors
  - 2nd line: hand-operated fire alarms **RT 2** (non automatic fire detectors) as
    a) Main alarm point with status lights Operation OK, Alarm, Malfunction ⚠ and button "Reset". Connection of main alarm point with mini buzzer (Alarm / Malfunction) also possible
    b) Secondary alarm point with status light Alarm
- Reset of alarm / fire detectors by push-button on the module or in the main alarm point
- Monitoring of signal lines, solenoid supply line and fuse
- Configurable functions:
  - "FACP alarm" (FACP alarm at module **EV** activates module **IM** as well)
  - "KM alarm" (alarm at module **KM** activates module **IM** as well)
  - "Malfunction = Alarm" (malfunction in a signal line activates alarm)
  - "Delay 1min" (output signal 1 minute delayed in the event of alarm)
  - "Continuous signal" (10s duration of output pulse, e.g. for controlling pneumatic valves with electric add-on components **EA** or **EZ**)
- Status lights Alarm and Malfunction ⚠ on the module and in the enclosure door

3.2 Potential-free contacts for indication of position (module SA) (last travelling command)

- Module for potential-free indication of position for 3 groups with module **KM** or **LM**
- One PFC for OPEN and CLOSED for each group

3.3 Potential-free contacts for indication of position (module SAM) (limit switches)

- Module for potential-free indication of position for 5 groups with module **KM** or **LM**
- One PFC for OPEN and one PFC for CLOSED for each group

3.4 Signal line extension (module LEM)

- The module is suitable
  a) for connection to the signal line of a module **KM** and therefore increases the number of usable signal lines and connectable automatic fire detectors
  b) as independent SHE module with signal lines and potential-free contacts for routing alarm / malfunction signals. In this way e. g. machines may be deactivated in the case of alarm
- Two signal lines:
  - 1st line: automatic fire detectors
  - 2nd line: hand-operated fire alarms **RT 2** (non automatic fire detectors) as
    a) Main alarm point with status lights Operation OK, Alarm, Malfunction ⚠ and button "Reset". Connection of main alarm point with mini buzzer (Alarm / Malfunction) also possible
    b) Secondary alarm point with status light Alarm and / or potential-free contact of an FACP when activating the alarm separately for each group
- Two PFCs for routing alarm signals
- Additional line for detection of an external malfunction signal
- Reset of alarm / fire detectors by push-button on the module or in the main alarm point
- Monitoring of signal lines and malfunction line
- Configurable functions:
  - "FACP alarm" (centralised FACP alarm at module **EV** activates module **LEM** as well)
  - "Indicate KM alarm" (alarm at module **KM** will be shown at module **LEM** as well)
  - "Malfunction = Alarm" (malfunction in a signal line activates alarm)
  - "2-detector-dependency" (2-detector-dependency for alarm by automatic fire detectors)
  - „Detectors RM 2 / TM 2" (change between detector types RM 3 / TM 3 and RM 2 / TM 2)
- Status lights Alarm and Malfunction ⚠ on the module

3.5 Technical data / possible connections module IM

Automatic fire detectors (1st line):

Smoke detector / heat detector (**RM 2** / **TM 2** or **RM 3 / TM 3**):	10 pieces
Hand operated fire alarms (non automatic fire-detectors, 2nd line):	total of 10 pieces, max. 3 of these with buzzer
− Secondary alarm point (**RT 2-***)	
− Main alarm point (**RT 2-*-BS**)	
− Main alarm point (**RT 2-*-BS-AA**, with buzzer 🔊)	
Monitoring of signal lines:	short-circuit, wire-break
Output for solenoids / **DG** (observe total current of Control Centre!): (rated for 25 solenoid valves **CA** or window unlocking devices **CFR**, approx. 30 electric add-on parts **EA** or **EZ** for ventilation valves or approx. 70 pyrotechnical pressure gas generators **DG**)	max. 7,5A / 24V⎓
Max. cross section of supply line:	4 x 10mm² (rigid)
Monitoring of solenoid supply line (unbranched):	wire-break
Output fuse (flat car fuse 19mm on the module):	F1: 10A

3.6 Technical data / possible connections module SA

Potential-free change-over contact OPEN / CLOSED (3 pieces):	5A / 30V⎓, 5A / 230V~

3.7 Technical data / possible connections module SAM

Potential-free NC contact OPEN (5 pieces):	0,1A / 30V⎓
Potential-free NC contact CLOSED (5 pieces):	0,1A / 30V⎓

3.8 Technical data / possible connections module LEM

Automatic fire detectors (1st line):

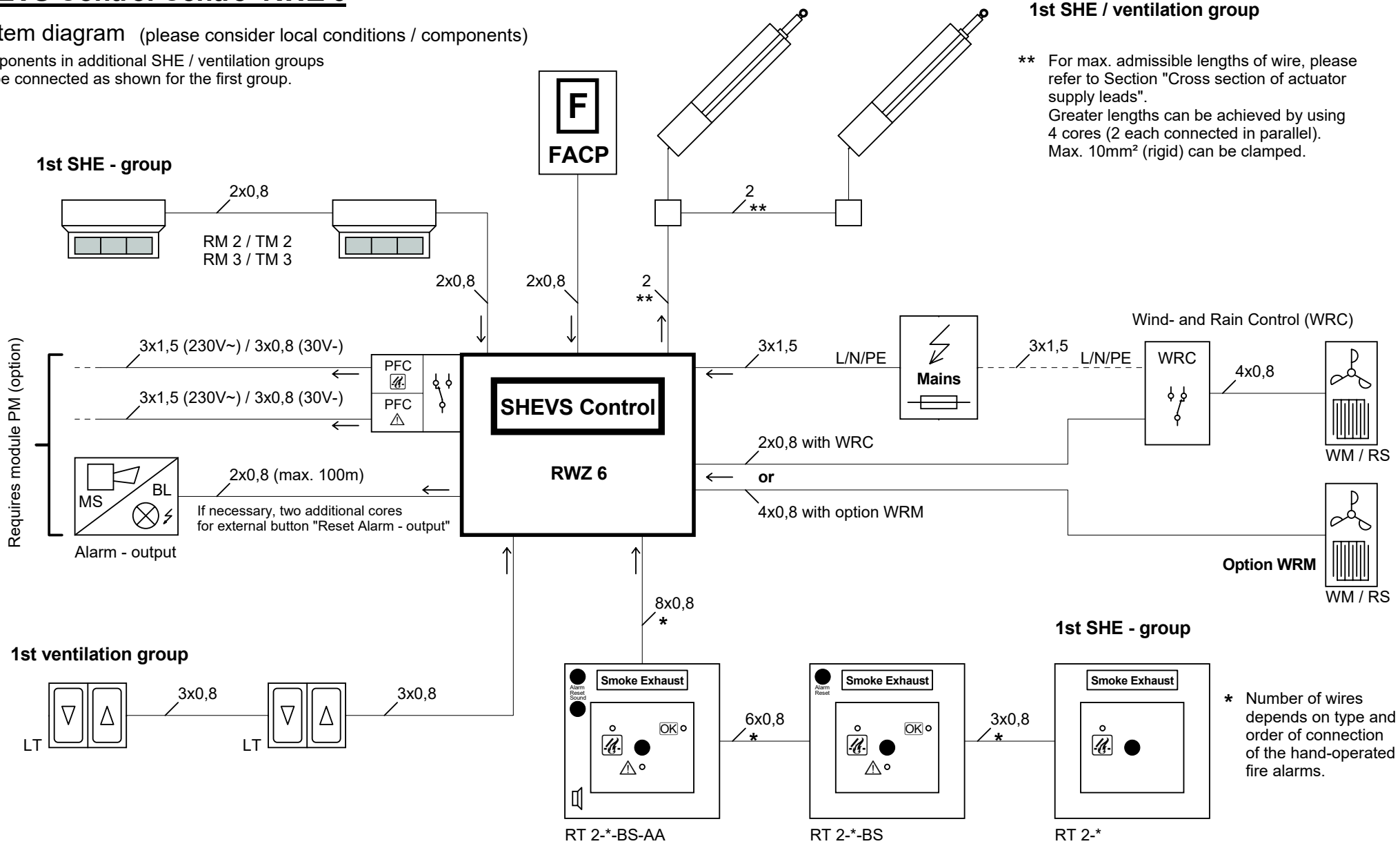
Smoke detector / heat detector (**RM 2** / **TM 2** or **RM 3 / TM 3**):	32 pieces
Hand operated fire alarms (non automatic fire-detectors, 2nd line):	total of 10 pieces, max. 3 of these with buzzer
− Secondary alarm point (**RT 2-***)	
− Main alarm point (**RT 2-*-BS**)	
− Main alarm point (**RT 2-*-BS-AA**, with buzzer 🔊)	
Activating the alarm by FACP separately for each group:	NO contact with
− Terminating resistor:	10kΩ ±10% ¼W
− Alarm resistor:	1kΩ..1,5kΩ ±10% ½W
Triggering the malfunction line:	NO contact with
− Terminating resistor:	10kΩ ±10% ¼W
− Signalling resistor:	1kΩ..1,5kΩ ±10% ½W
Monitoring of signal lines and malfunction line:	short-circuit, wire-break
Contact load rating (potential-free change-over contacts):	
− 1st contact:	0,1A / 30V⎓
− 2nd contact:	5A / 30V⎓ / 230V~

Protect the contacts by fuses (fast-acting) at site.

SHEVS Control Centre RWZ 6

System diagram (please consider local conditions / components)

Components in additional SHE / ventilation groups
will be connected as shown for the first group.



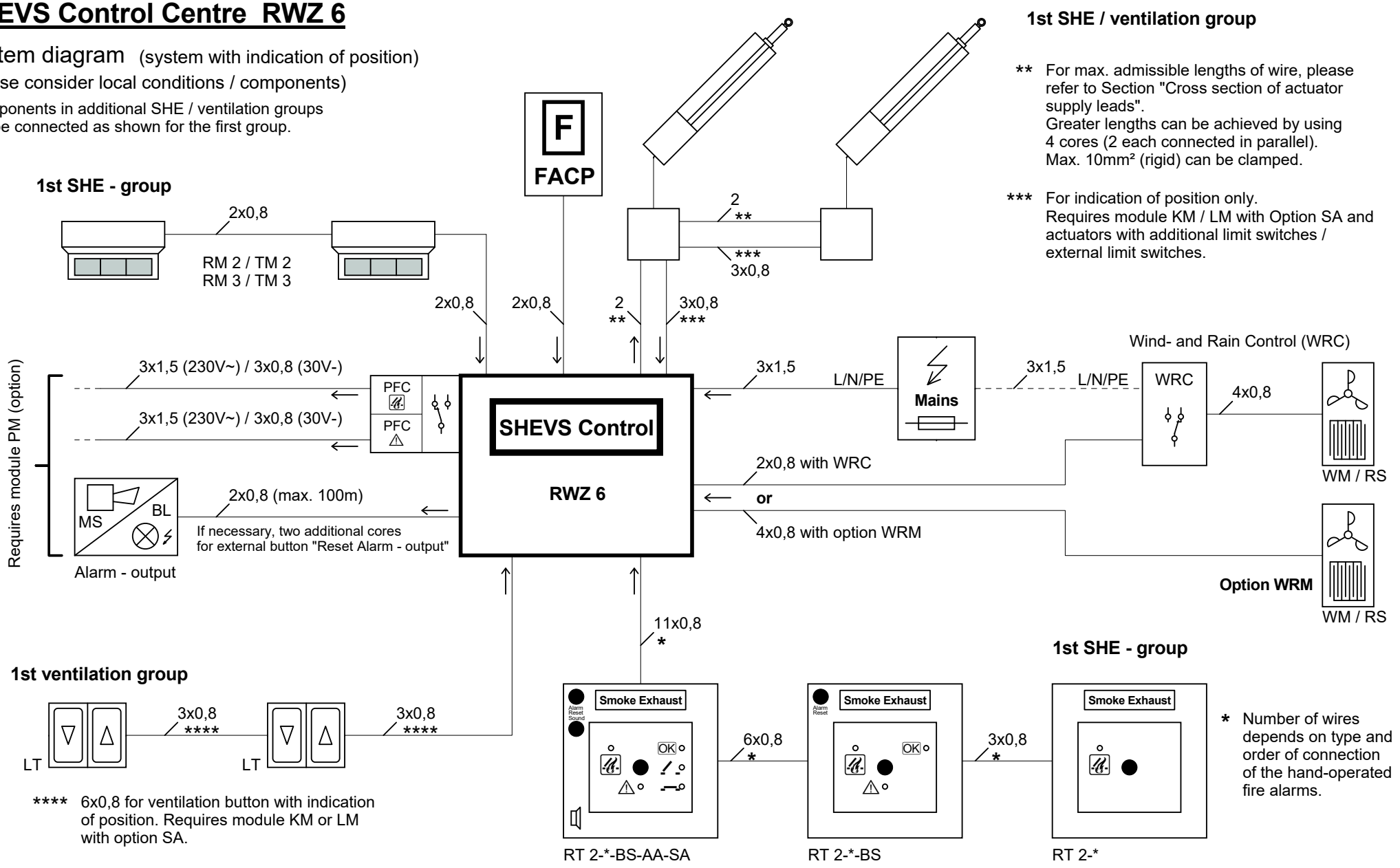
General: maximum length of line 400m, unless specified otherwise

SHEVS Control Centre RWZ 6

System diagram (system with indication of position)

(please consider local conditions / components)

Components in additional SHE / ventilation groups will be connected as shown for the first group.



1st SHE / ventilation group

** For max. admissible lengths of wire, please refer to Section "Cross section of actuator supply leads".
Greater lengths can be achieved by using 4 cores (2 each connected in parallel).
Max. 10mm² (rigid) can be clamped.

*** For indication of position only.
Requires module KM / LM with Option SA and actuators with additional limit switches / external limit switches.

**** 6x0,8 for ventilation button with indication of position. Requires module KM or LM with option SA.

* Number of wires depends on type and order of connection of the hand-operated fire alarms.

General: maximum length of line 400m, unless specified otherwise

1 Steuerungskonzept

- Steuerung zum Aufbau einer dezentralen RWA-Anlage mit 24 V- Antrieben. Sehr kurze Leitungswege und geringe Querschnitte zu den Antrieben durch Platzieren der Steuerung in Nähe der RWG
- Integrierte Energieversorgung aufgebaut nach DIN EN 12101-10
- Steuerungsteil aufgebaut nach prEN 12101-9
- Es können 60 Steuerungen in bis zu 9 RWA-Gruppen in einem überwachten Bus-System organisiert werden. Jede RWA-Gruppe kann bis zu 9 Lüftungsgruppen enthalten, in RWA-Gruppe 1 sind 19 Lüftungsgruppen möglich. Die Konfiguration erfolgt mit Hilfe von Drehschaltern
- Für den Betrieb des Bus-Systems ist ein Bediengerät **SD 2** (Zubehör) erforderlich. Es dient im Weiteren zur Parametrierung, Bedienung und Statusanzeige. Das Bediengerät kann direkt in einer beliebigen Steuerung des Systems oder an einer Anschlussdose eingesteckt werden. Optional kann ein zweites Bediengerät verwendet werden.
- Automatische Brandmelder, Meldetaster, Brandmelderzentrale (BMZ), Bediengerät, Wind- und Regensteuerung (WRS), externe Warngeräte etc. können innerhalb der RWA-Gruppe, Lüftungstaster innerhalb der Lüftungsgruppe frei wählbar an der nächstgelegenen Steuerung angeschlossen werden
- Vier Meldelinien:
  - Linie : automatische Brandmelder oder BMZ
  - Linie : Meldetaster **RT 2** oder **RT 4** (Hauptbedienstelle RT 2/4-*-BS oder Nebenbedienstelle RT 2/4-*). Anschließbare Ausführungen siehe Abschnitt 2 „Technische Daten“
  - Linie In1: Lokaler Alarm (Thermoschalter, Dachausstiegsschalter)
  - Linie In2: Zusatzfunktion (Windrichtungs- oder Sonnenschutzsteuerung, separate Dokumentation)
- Rücksetzen des Alarms / der Melder durch Taster in der Hauptbedienstelle oder in der Steuerung
- Wählbare Funktionen:
  - „Auto-Zu“ (automatisches Schließen nach Rücksetzen eines Alarms)
  - „Störung = Alarm“ (Alarm bei Störung einer Meldelinie oder des Bus-Systems)
  - „Automatik aus“ (Automatische Fahrbefehle - ausgenommen Alarm - sind deaktiviert)
  - „Thermo-Alarm“ (lokaler Alarm bei Überschreiten einer Gehäuseinnentemperatur von 70 °C)
  - „2-Melder-Abhängigkeit“ (2-Melder-Abhängigkeit für automatische Brandmelder in Linie)
  - „WRS“ (Die Steuerung reagiert auf den Schließbefehl einer Wind- und Regensteuerung)
- Anschlussmöglichkeit für Lüftungstaster, auch mit Stellungsanzeige
- Einstellbare Lüftungsposition und Lüftungsdauer
- Anschlussmöglichkeit einer externen Wind- und Regensteuerung, z. B. **WRS** (je anzusteuernder RWA-Gruppe ist ein separater Kontakt erforderlich). Interne Wind- und Regensteuerung optional
- Internes Service-Display zur detaillierten Zustandsanzeige bei Installation und Wartung
- Steckbare Anschlussklemmen (ausgenommen Antriebsausgang)
- Der Einsatz von K + G / Grasl-Antrieben wird empfohlen. Bei Ansteuerung von Fremdantrieben ist die Kompatibilität zu prüfen. Dazu auch Abschnitt 2 „Technische Daten“ beachten
- Anschließbare Antriebe: 24 V-Antriebe, Fahrzeit für vollen Hub bei Nennlast (Gesamtfahrzeit) < 4 Minuten
- Bei direktem Umschalten der Fahrtrichtung werden die Antriebe vor dem Richtungswechsel kurz gestoppt
- Stahlblechgehäuse, lichtgrau (RAL 7035)

1.1 Optionen / Zubehör

- **BA-T:** Terminator zum Abschluss des Bus-Systems. 2 Stück erforderlich
- **BA-V:** Verteilerdose mit 4 Anschlusspunkten zur Verzweigung des Bus-Systems
- **BA-SD:** Anschlussdose für Bediengerät **SD 2**
- **SD 2:** Bediengerät. Erforderlich für den Betrieb des Bus-Systems
- **BA-L1** / **BA-L2:** Anschlussleitung für Bediengerät (Länge 1 m / 2 m)
- **PK:** Ein potentialfreier Kontakt (PK) zur Weiterleitung von Alarmmeldungen oder Anforderungen an Systeme mit Sonnenschutz (Folgesteuerung) (wählbar). Ein weiterer PK zur Weiterleitung von Störungsmeldungen oder Stellungsanzeige Auf (wählbar)
- **WTM:** Ausgänge zur Ansteuerung externer Warngeräte bei Alarm oder Störung
- **WRM:** Interne Wind- und Regensteuerung. Anschluss von Windmesser **WM** und/oder Regensensor **RS** erforderlich (Zubehör)

Die Steuerung kann nicht gleichzeitig mit den Optionen PK und WTM ausgerüstet werden!

2 Technische Daten

2.1 Ausführung

Typ	RWD 2-10a	RWD 2-20a
Artikelnummer	8101 2110 0000	8101 2120 0000
Ausgangsstrom	10 A (24 V⎓ / 240 W)	20 A (24 V⎓ / 480 W)
Stromaufnahme	1,2 A / 230 V~	2,3 A / 230 V~
Abmessungen in mm (B x H x T)	480 x 310 x 180	
Akkumulatoren (AGM, VRLA), VdS anerkannt	2 x 7 Ah / 12 V	2 x 12 Ah / 12 V
Es dürfen ausschließlich mitgelieferte oder freigegebene Akkumulatoren verwendet werden. Siehe Kompatibilitätsliste auf: www.kg-tectronic.de (Elektronik - Systemzubehör - Akkumulatoren)		

Die Anforderungen der Richtlinien 2014/35/EU und 2014/30/EU werden erfüllt. CE

2.2 Leistungs- und Kenndaten

Allgemeines

Netzspannungsversorgung	115 - 230 V~ / 50 - 60 Hz
Interne Versorgungsspannung / Überbrückungszeit	24 V⎓ / 72 Std. bei Netzausfall
Kabelzuführung durch Membrantüllen (von oben)	9x M16, 2x M20, 2x M25
Umweltklasse 1 / III (EN 12101-10 / VdS 2581) Maximale Dauer-Umgebungstemperatur Relative Luftfeuchtigkeit Gehäuseschutzart	-5 °C … +75 °C +50 °C 20 % … 80 %, nicht kondensierend IP30
Nicht zur Verwendung im Freien geeignet. Vor direkter Sonneneinstrahlung, Feuchtigkeit und übermäßiger Staubentwicklung schützen! Vorzugsweise sollte die Installation in trockenen, beheizten Räumen erfolgen.	

Meldelinien

Leitungsüberwachung	Drahtbruch, Kurzschluss
Linie ▭: Automatische Brandmelder: Rauchmelder / Thermomelder (**RM 2** / **TM 2** oder **RM 3** / **TM 3**) oder Brandmelderzentrale	 20 Stück, davon max. 10 Thermomelder [1] Öffner- / Schließerkontakt
Linie ▭, Meldetaster: – **RT 2/4-*** – **RT 2/4-*-BS** – **RT 2/4-*-BS-AA**	 insgesamt 10 Stück, davon max. 3 Stück mit Summer
Linie In1 (Lokaler Alarm) Linie In2 (Zusatzfunktion)	Öffner- / Schließerkontakt Öffner- / Schließerkontakt

Ein- / Ausgänge

Lüftungstaster **LT** Lüftungstaster **LT x-A**	unbegrenzt 10 Stück
Wind- und Regensteuerung (**WRS**)	Öffnerkontakt [2]

[1] *Thermomelder:* **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), *Optische Melder:* **RM 2-O** (65-55000-317), **RM 3-O** (SD-851-E)

[2] *In der WRS ist je anzusteuerndem Bus-System ein separater Kontakt erforderlich*

Bus-System

Bus-Typ	LON
Terminierung	2x BA-T (2x 100 µF / 105 Ω)
Mögliche Topologien (auch gemischt)	Ring, Linie, Bus, Baum
Bediengerät **SD 2**	1 Stück erforderlich, 2 Stück nutzbar
Maximale Anzahl Steuerungen Typ **RWD 2**	60 Stück
Maximale Leitungslänge	2500 m
Kabeltyp: H[2 x 02YS 0,57 mm/AWG23(ST) + 2 x 2Y 0,8 mm/AWG20], z. B. ConCab CC-LON-BUS-C-935 (Art.-Nr. 93512312006)	

Antriebsausgang

Nennspannung	24 V⎓ (+6 V / -4 V)
Betriebsart / Einschaltdauer	S3 30 %
Maximaler Kabelquerschnitt der Zuleitung	4x 6 mm² (starr)
Zulässiger Spannungsabfall von Steuerung bis Antrieb	1 V bei Volllast
Leitungsüberwachung (unverzweigte Sammelleitung)	Drahtbruch, Kurzschluss
Zulässiger Gesamt-Ausgangsstrom: **RWD 2-10a** (1 Ausgang) **RWD 2-20a** (2 Ausgänge)	Max. 10 A Insgesamt max. 20 A, je Ausgang max. 16 A

Zulässige Leitungslänge bei einfacher, nicht weit verzweigter Anordnung der Antriebe

Strom / Querschnitt	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
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

Bei Verwendung von 4 Adern jeweils 2 Adern parallelschalten.

Sicherungen

	RWD 2-10a	**RWD 2-20a**
Netz primär (G-Sicherungseinsatz 5 x 20 mm)	F1: T 3,15 A	F1: T 3,15 A
Antriebe (Mini-Flachsicherung 11 mm)	F2.1: 20 A	F2.1: 20 A F2.2: 20 A

1. Concept of Control

- SHE control with 24 V- impulse output for controlling electromagnets / solenoid valves (**CA** / **CFR**), pneumatic valves with electric add-on components (**EA** / **EZ**) or pyrotechnical pressure gas generators (**DG**)
- One SHE-group, two signal lines:
  - Line ▭: automatic fire detectors or Fire Alarm Control Panel (FACP)
  - Line ⊡: manual call points **RT 2** as
    a) Main alarm point with indicators operation OK, alarm 🔥, malfunction ⚠ and button *Reset* 🔥
    b) Secondary alarm point with indicator alarm 🔥
- Reset the alarm / detector using the button in the main alarm point or in the Control
- One potential-free contact (PFC) for alarm forwarding. For controlling external warning devices (e.g. **MS** or **BL**), wiring to the internal 24 V- output is possible, too
- A second PFC for alarm / malfunction forwarding (switchable)
- Selectable functions:
  - "Continuous signal" (5s duration of output pulse, e.g. for controlling pneumatic valves with electric add-on components **EA** or **EZ**)
  - "Delay" (output signal 1 minute delayed in the event of alarm)
  - "Malfunction = Alarm" (alarm upon malfunction of signal line)
  - "2-detector-dependency" (2-detector-dependency for automatic fire detectors in line ▭)
  - "2nd PFC" (2nd PFC switches in the event of malfunction or alarm)
- Indicators operation OK, alarm 🔥 and malfunction ⚠
- Internal service display for detailed status information for installation and maintenance
- Plastic enclosure, light grey (RAL 7035)

1.1 Option

- **SG:** Enclosure as described above, but with transparent door opening to the left, protection IP54

2. Technical data

2.1 Version

Type	**IS 2-4d**
Product code	8140 2404 0000
Output current	3.75 A (24 V⎓ / 90 W)
Current input	0.04 A / 230 V~
Lead-acid accumulators, VdS approved	2 x 0.8 Ah / 12 V
I / U charge	0.08 A (28.8 V) / 27.4 V
Dimensions in mm (W x H x D)	165 x 155 x 75 200 x 155 x 95 (Option **SG**)

The Control complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

2.2 Performance data and characteristics

General

Line voltage supply	230 V~ / 50 - 60 Hz
Internal voltage supply / standby time	24 V⎓ / 72 hrs. (mains failure)
Cable feed through membrane grommets (from below)	4 x M16
Environmental Class 1 / III (to EN 12101-10 / VdS 2581)	-5 °C … +40 °C
Relative humidity	20 % … 80 %, non-condensing
Enclosure protection rating (to DIN EN 60529)	IP40 (IP54 with option **SG**)

For mounting dimensions, see plan “Line voltage, mounting and accumulators”.
Not suitable for use outdoors. 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, earth fault
Line ▭:	
Automatic fire detectors:	
Smoke detector / heat detector (**RM 2** / **TM 2** or **RM 3** / **TM 3**)	20 pieces
or	
Fire Alarm Control Panel (FACP):	normally open contact
− Terminating resistor	10 kΩ (± 10 %, ¼ W)
− Alarm resistor	1 kΩ … 1.5 kΩ (± 10 %, ½ W)
Line ⊡, manual call points:	
− Secondary alarm point (**RT 2-***)	total of 10 pieces
− Main alarm point (**RT 2-*-BS**)	

Output

Rated voltage / current for 5 s (rated for 12 solenoid valves **CA** or window unlocking devices **CFR**, 17 electric add-on parts **EA** or **EZ** for ventilation valves, or about 30 pyrotechnical pressure gas generators **DG**)	24 V⎓ (+6 V / -4 V) / 3.75 A
Max. cross-section of supply line	2 x 6 mm² (rigid), 3 x 6 mm² for DG
Allowed voltage drop between Control and solenoid	1 V at full load
Line monitoring (unbranched common line)	wire-break, earth fault

Allowed cable lengths with simple and moderately branched arrangement of the solenoids

Current / Cross section	0.3A (1 CA/CFR)	0.6A (2 CA/CFR)	0.9A (3 CA/CFR)	1.2A (4 CA/CFR)	1.5A (5 CA/CFR)	1.8A (6 CA/CFR)	2.1A (7 CA/CFR)	2.4A (8 CA/CFR)	3.0A (10 CA/CFR)	3.6A (12 CA/CFR)
2 x 1.5mm²	145m	73m	48m	36m	29m	24m	21m	18m	15m	12m
2 x 2.5mm²	242m	121m	81m	60m	48m	40m	35m	30m	24m	20m
2 x 4.0mm²	387m	193m	129m	97m	77m	64m	55m	48m	39m	32m
2 x 6.0mm²	580m	290m	193m	145m	116m	97m	83m	73m	58m	48m

Allowed cable lengths for each branch line with up to 10 DG (each 0.8 - 1.5Ω / 0.6 - 1A) connected in series

Current / Cross section	1.0A (10 DG)
3 x 1.5mm²	200m
3 x 2.5mm²	333m
3 x 4.0mm²	533m
3 x 6.0mm²	800m

Fuses

Primary mains (miniature fuse 5 x 20 mm)	F1: T 125 mA
Potential-free contacts (miniature fuse 5 x 20 mm)	F2, F3: F 2.5 A

Alarm and malfunction forwarding

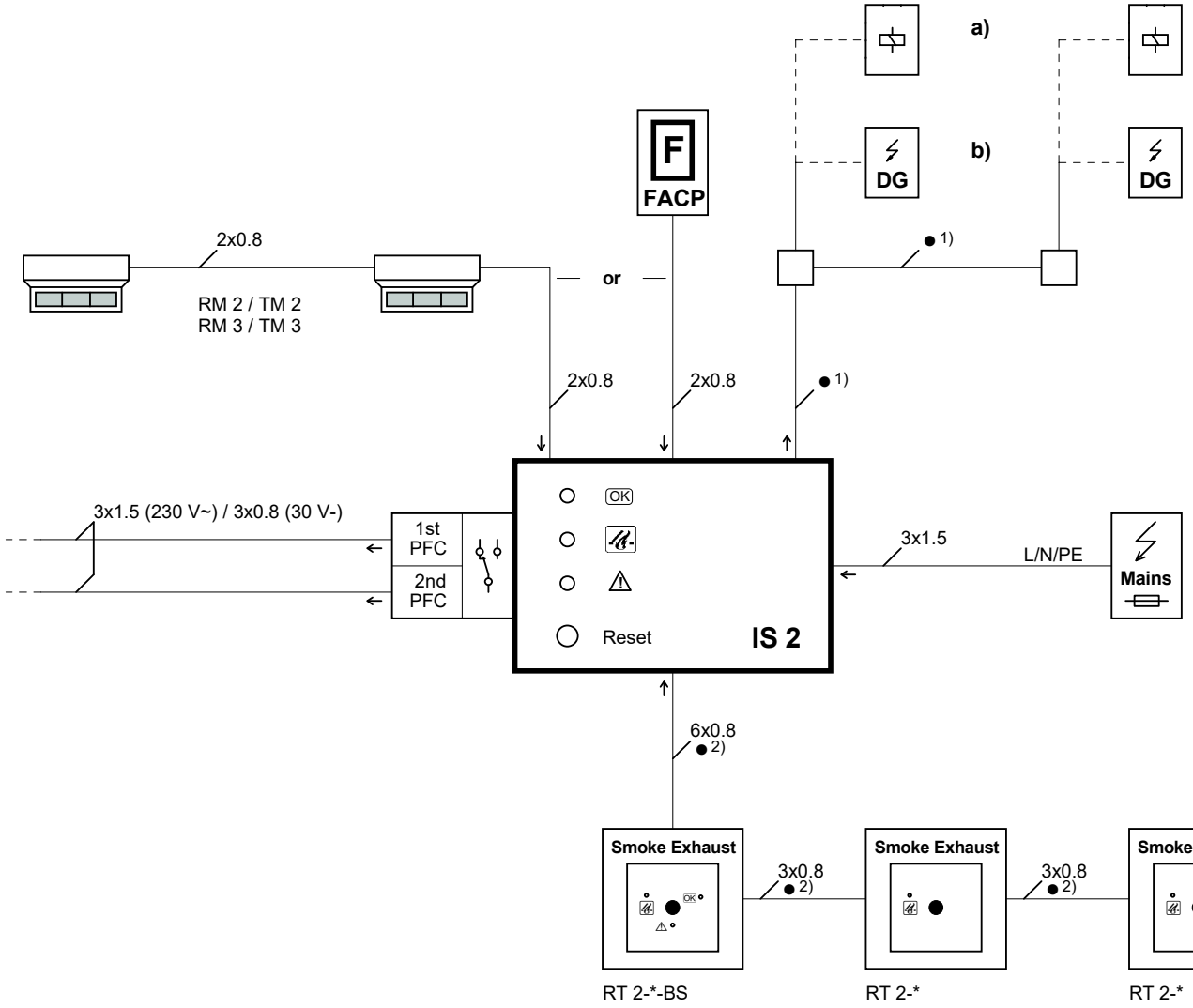
Contact load rating PFC-🔥, PFC-⚠ (change-over contacts)	2.5 A / 30 V⎓ / 230 V~

Controlling external warning devices

Multiple tone sounder **MS**	24 V⎓ / 100 mA
Strobe **BL**	24 V⎓ / 250 mA

SHE Control IS 2d

System diagram (please consider local conditions / components)



a) Connection of solenoids:
2-core supply lead required.

b) Connection of pressure gas generators (DG):
3-core supply lead (with PE) required.
When connecting more than 10 DGs, line must be divided into several branches.

● 1) Run the supply lead unbranched to under the roof.
For max. allowed lengths of cable, please refer to section "Technical Data".
Max. 6 mm² (rigid) can be clamped.

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

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

1 Concept of Control

- SHE Control with 24 V- impulse output for controlling electromagnets / solenoid valves (**CA** / **CFR**) or pneumatic valves with electric add-on components (**EA** / **EZ**)
- VdS approved (to VdS 2581 and VdS 2593)
- Internal power supply designed and certified to DIN EN 12101-10
- Control unit designed and tested to prEN 12101-9
- One SHE group, two signal lines:
  - Line : automatic fire detectors or Fire Alarm Control Panel (FACP)
  - Line : manual call points **RT 2** as
    a) Main alarm point with indicators operation OK, alarm , malfunction ⚠ and button *Reset* . Connection of main alarm point with mini buzzer (alarm / malfunction) also possible
    b) Secondary alarm point with indicator alarm
- Reset the alarm / detector using the button in the main alarm point or in the Control
- Selectable functions:
  - "Continuous signal" (5 s duration of output pulse, e.g. for actuation of pneumatic valves with electric add-on components **EA** or **EZ**)
  - "Malfunction = Alarm" (alarm upon malfunction of a signal line)
  - "Thermal alarm" (alarm on exceeding an enclosure inside temperature of 70 °C)
- Internal service display for detailed status information for installation and maintenance
- Plug-in connection terminals (apart from solenoid output)
- Sheet steel enclosure, light grey (RAL 7035)

1.1 Option

- **PK:** One potential-free contact (PFC) each for alarm / malfunction forwarding

2 Technical data

2.1 Version

Type	**IS 3-4b**
Product code	8140 3204 0000
Output current	4 A (24 V⎓ / 96 W)
Current input	0,7 A / 230 V~
Lead-acid accumulators, VdS approved	2 x 2 Ah / 12 V
I / U charging	0,2 A (28,8 V) / 27,4 V
Dimensions in mm (W x H x D)	330 x 330 x 110

The Control complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

2.2 Performance data and characteristics

General

Line voltage supply	230 V~ / 50 - 60 Hz
Internal voltage supply / standby time	24 V⎓ / 72 hrs. (mains failure)
Cable feed	from above, below or behind
Environmental Class 1 / III (to EN 12101-10 / VdS 2581)	-5 °C … +40 °C
Relative humidity	20 % … 80 %, non-condensing
Enclosure protection rating (to DIN EN 60529)	IP30
Not suitable for use outdoors. Protect from direct sunlight, humidity and excessive formation of dust! Preferably, the installation should be carried out in dry, heated rooms.	

Meldelinien

Line monitoring	wire-break, short-circuit
Line ▭:	
Automatic fire detectors:	
Smoke detector / heat detector (**RM 2** / **TM 2** or **RM 3** / **TM 3**)	20 pieces, of which max. 10 heat detectors [1]
or	
Fire Alarm Control Panel	normally open contact
− Terminating resistor	10 kΩ (± 10 %, ¼ W)
− Alarm resistor	1 kΩ … 1.5 kΩ (± 10 %, ½ W)
Line ⊡, manual call points:	
− Secondary alarm point (**RT 2-***)	total of 10 pieces, of which max. 3 pieces with buzzer
− Main alarm point (**RT 2-*-BS**)	
− Main alarm point (**RT 2-*-BS-AA**, with buzzer 🔊)	

Solenoid output

Rated voltage / current for 5 s (designed for 12 solenoid valves **CA** or window unlocking devices **CFR**, 17 electric add-on parts **EA** or **EZ** for ventilation valves)	24 V⎓ (+6 V / -4 V) / 4 A
Maximum cable cross-section of the supply line	2 x 10 mm² (rigid)
Line monitoring (unbranched common line)	wire-break, short-circuit

Allowed cable length with simple and moderately branched arrangement of the solenoids

Current / Cross-section	0.3 A (1 CA/CFR)	0.6 A (2 CA/CFR)	0.9 A (3 CA/CFR)	1.2 A (4 CA/CFR)	1.5 A (5 CA/CFR)	1.8 A (6 CA/CFR)	2.1 A (7 CA/CFR)	2.4 A (8 CA/CFR)	3.0 A (10 CA/CFR)	3.6 A (12 CA/CFR)
2 x 1.5 mm²	145 m	73 m	48 m	36 m	29 m	24 m	21 m	18 m	15 m	12 m
2 x 2.5 mm²	242 m	121 m	81 m	60 m	48 m	40 m	35 m	30 m	24 m	20 m
2 x 4.0 mm²	387 m	193 m	129 m	97 m	77 m	64 m	55 m	48 m	39 m	32 m
2 x 6.0 mm²	580 m	290 m	193 m	145 m	116 m	97 m	83 m	73 m	58 m	48 m
2 x 10.0 mm²	967 m	483 m	322 m	242 m	193 m	161 m	138 m	121 m	97 m	81 m

Fuses

Primary mains (miniature fuse 5 x 20 mm)	F1: T 2 A
Accumulators (flat fuse 19 mm)	F2: 10 A
Solenoids (flat fuse 19 mm)	F3: 10 A

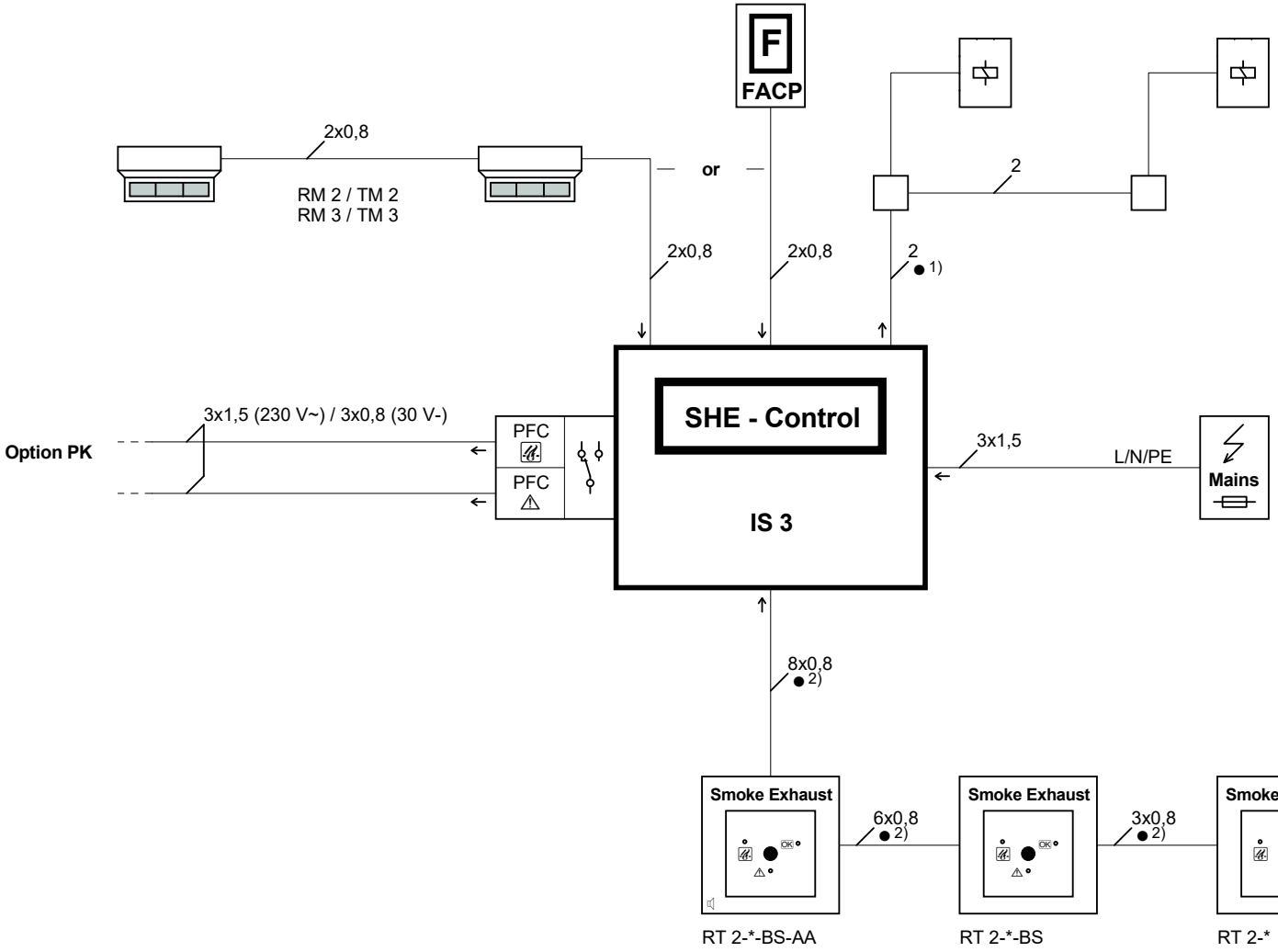
Alarm and malfunction forwarding (option PK)

Contact load rating PFC-🔥, PFC-⚠ (change-over contacts)	5 A / 30 V⎓ / 230 V~
Fuses PFC-🔥, PFC-⚠ (miniature fuses 5 x 20 mm)	P:F1, P:F2: F 5 A

[1] *Heat detectors:* **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 detectors: **RM 2-O** (65-55000-317), **RM 3-O** (SD-851-E)

SHE Control IS 3b

System diagram (please consider local conditions / components)



● 1) Run the supply lead unbranched to under the roof.
Allowed length of cable, see section "Technical Data".
Max. 10 mm² (rigid) can be clamped.

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

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

1 Concept of Extinguishing Centre

The Extinguishing Centre is suitable only for object protection. Follow the industrial safety regulations regarding "Use of fire extinguishing systems with oxygen-displacing gases" (e.g. German DGUV 105-001) and further regulations (e.g. VdS 2093 "CO_2 Fire Extinguishing Systems, Planning and Installation")!

- Extinguishing Centre with 24 V- pulse output for actuation of solenoid extinguishing valves or pyrotechnical pressure gas generators (**DG**)
- One SHE group, two signal lines:
  - Line : automatic fire detectors and/or thermal switch
  - Line : manual call points **RT 2** as
    a) Main alarm point with indicators operation OK, alarm , malfunction ⚠ and button *Reset*
    b) Secondary alarm point with indicator alarm
- Reset the alarm / detector using the button in the main alarm point or in the Extinguishing Centre
- One potential-free contact (PFC) for alarm forwarding. For actuating external warning devices, wiring to the internal 24 V- output is possible
- A second PFC for forwarding alarm and malfunction signals (switchable)
- Selectable functions:
  - "Continuous signal" (the output is activated for a duration of 5 minutes)
  - "Delay" (1 minute delay of the output signal in case of alarm)
  - "Malfunction = Alarm" (alarm upon malfunction of signal line)
  - "2-detector-dependency" (2-detector-dependency for automatic fire detectors in line)
  - "Function selection 2nd PFC" (2nd PFC switches in case of malfunction or alarm)
- Indicators operation OK, alarm and malfunction ⚠
- Internal service display for detailed status information for installation and maintenance
- Plastic enclosure, light grey (like RAL 7035)

1.1 Option

- **SG:** Enclosure as described above, but with transparent door, opening to the left, protection rating IP54

2 Technical data

2.1 Version

Type	**KLZ 1-1d**
Product code (with option **SG**)	8141 1401 0000 (8141 1401 0002)
Output current	1.25 A (24 V⎓ / 90 W)
Current input	0,04 A / 230 V~
Lead-gel accumulators, VdS approved	2 x 0.8 Ah / 12 V
I / U charge	0.08 A (28.8 V) / 27.4 V
Dimensions in mm (W x H x D)	165 x 155 x 75 200 x 155 x 95 (option **SG**)

The Extinguishing Centre complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

2.2 Performance data and characteristics

General

Line voltage supply	230 V~ / 50 - 60 Hz
Internal voltage supply / standby time	24 V⎓ / 72 hrs. (mains failure)
Cable feed through membrane grommets (from below)	4 x M16
Environmental class 1 / III (EN 12101-10 / VdS 2581)	-5 °C … +40 °C
Relative humidity	20 % … 80 %, non-condensing
Enclosure protection rating	IP40 (IP54 with option **SG**)
Not suitable for use outdoors. 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**)	20 pieces
and / or	
Thermal switch (**TS**)	1 piece
Line ⊡, manual call points: − Secondary alarm point (**RT 2-***) − Main alarm point (**RT 2-*-BS**)	in total 10 pieces

Output

Rated voltage / current for 5 minutes	24 V⎓ (+6 V / -4 V) / 1.25 A
Peak output at the moment of starting (designed for solenoid extinguishing valves up to 1.25 A current input or 10 pyrotechnical pressure gas generators **DG**)	150 W / 500 ms (6.25 A)
Maximum cable cross-section of the supply line	2 x 6 mm² (rigid), 3 x 6 mm² for DG
Allowed voltage drop from Extinguishing Centre to solenoid	1 V at full load
Line monitoring (unbranched common line)	wire-break

Allowed cable length

Extinguishing valves

Cross-section \ Current	1.25 A
2 x 1.5 mm²	35 m
2 x 2.5 mm²	58 m
2 x 4.0 mm²	93 m
2 x 6.0 mm²	139 m

Serial connection from up to 10 **DG**
(each 0.8 Ω ... 1.5 Ω / 0.6 A ... 1 A)

Cross-section \ Current	1.0 A (10 DG)
3 x 1.5 mm²	200 m
3 x 2.5 mm²	333 m
3 x 4.0 mm²	533 m
3 x 6.0 mm²	800 m

Fuses

Primary mains (miniature fuse 5 x 20 mm)	F1: T 125 mA
Potential-free contacts (miniature fuse 5 x 20 mm)	F2, F3: F 2.5 A

Alarm and malfunction forwarding

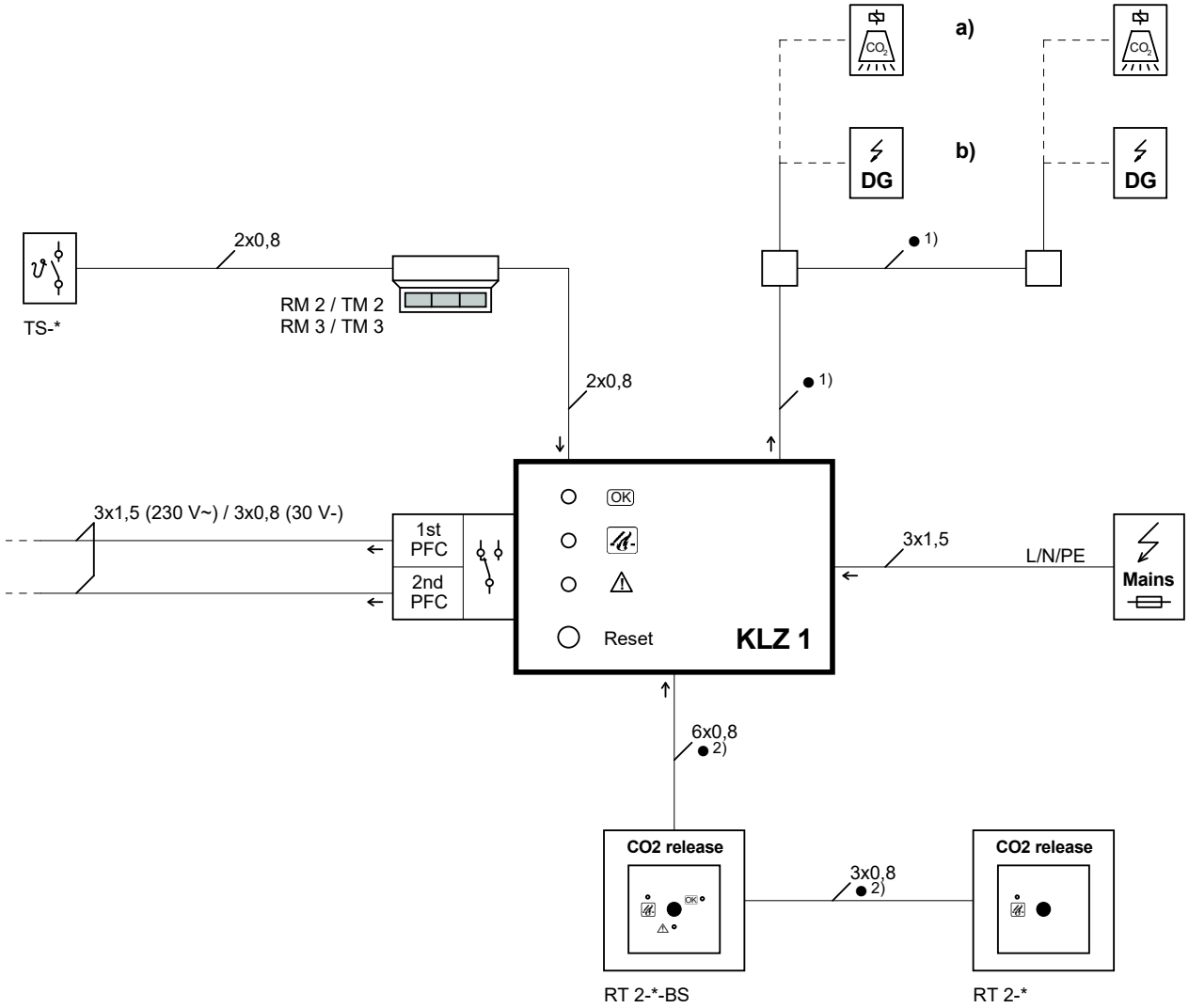
Contact load rating PFC-🔥, PFC-⚠ (change-over contacts)	2,5 A / 30 V⎓ / 230 V~

Actuating external warning devices in case of alarm

Multiple tone sounder **MS** / beacon **BL**	24 V⎓ / 55 mA

Extinguishing Centre KLZ 1d

System diagram (please consider local conditions / components)



a) Connection of 24 V- extinguishing valves: 2-wired cable required.

b) Connection of pressure gas generators (DG): 3-wired cable (with PE) required.

● 1) Allowed length of cable, see section "Technical Data". Max. 6 mm² (rigid) can be clamped.

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

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

1 Concept

- In case of wind / rain, a closing command is sent to the SHEVS Control Centre or ventilation controls. Four separate potential-free changeover contacts (output contacts) deliver the required signal. The contacts remain active as long as a sensor has responded, however for a minimum of 6 minutes
- The connection of a wind sensor **WM** or rain sensor **RS** is required
- Sensitivity to wind and rain adjustable
- Selectable functions:
  - "Reduced sensitivity to wind" (for closing, an equally strong wind must last longer)
  - "Continuous heating" (the rain sensor is heated continuously)
  - "Contact programming" (contacts 3 and 4 can be switched optionally for wind and/or rain)
  - "Output deactivated" (deactivating all output contacts for service / maintenance purposes)
  - "Reduced closing time" (the minimum closing time is reduced from 6 to 3 minutes)
  - "Malfunction contact" (contact 2 switches in case of malfunction of the rain sensor)
  - "Test" (mode for testing the function of sensors and actuators)
- Indicators for Operation ⓘ, Wind and Rain
- Plastic enclosure, light grey (RAL 7035)

1.1 Options / Accessories

- **WM 1:** Wind sensor for detecting wind speed
- **RS 2:** Heated rain sensor
- **SK:** Pedestal (40cm high) for installation of the components **WM** and **RS** on a flat roof
- **MB:** Shackle for pole mounting the components **WM** and **RS** (for pipes up to Ø 60 mm)
- **KE:** Expansion of the wind and rain control by additional potential-free contacts
- **SG:** Enclosure additionally with transparent door, opening to the left, protection rating IP54

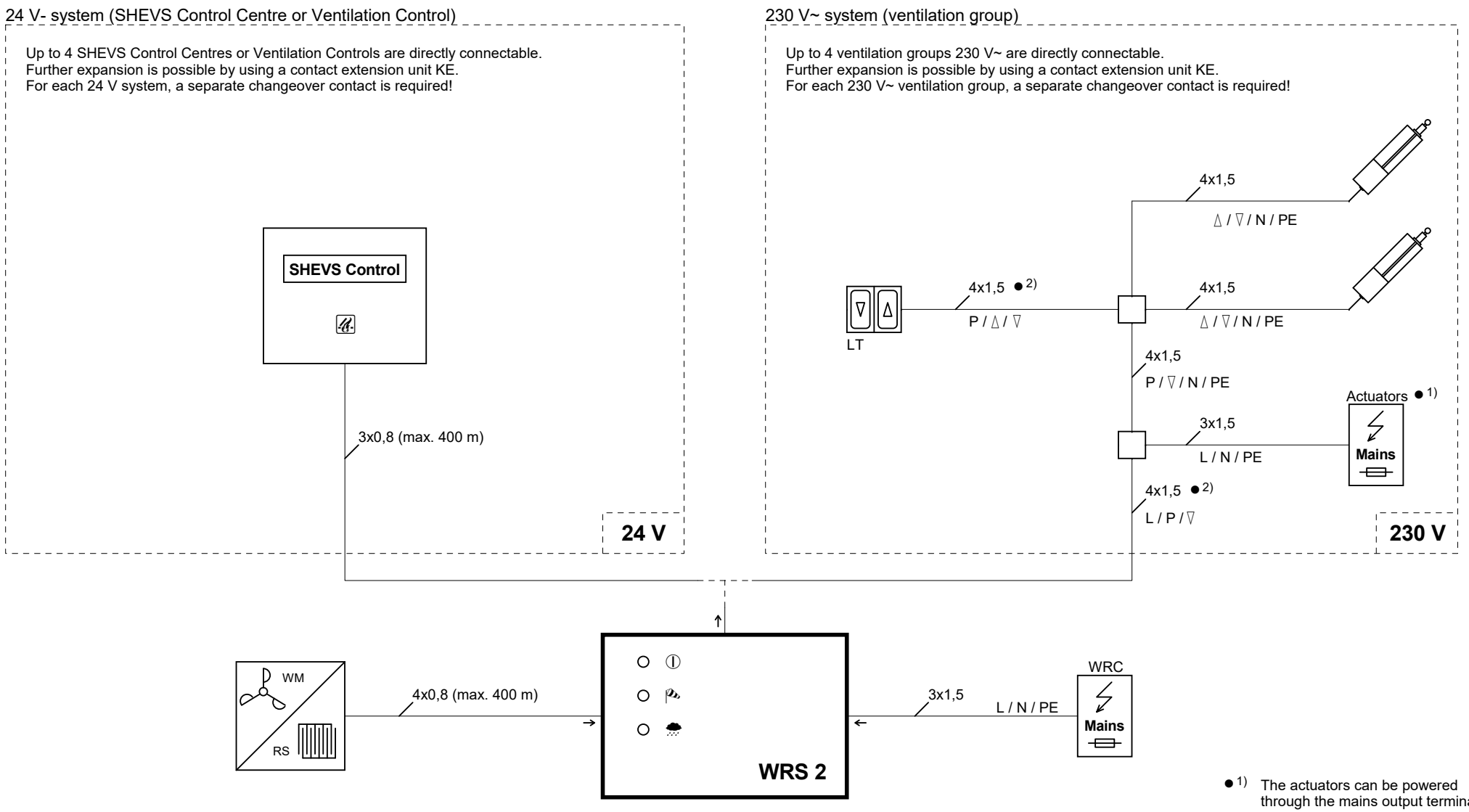
2 Technical data

General	
Type	**WRS 2b**
Part number	8161 2200 0000
Part number with **SG** option	8161 2200 0001
Line voltage supply	230 V~ / 50 - 60 Hz
Current input	0.09 A
Dimensions in mm (W x H x D)	165 x 155 x 75 200 x 155 x 95 (option **SG**)
Cable entry through membrane grommet (from bottom)	4 x M16
Ambient temperature	-5 °C to +40 °C
Relative humidity	20 % to 80 %, non-condensing
Enclosure protection rating (in accordance with EN 60529)	IP40 (option **SG**: IP54)
Not suitable for use outdoors. Protect from direct sunlight, humidity and excessive formation of dust! Preferably, the installation should be carried out in dry, heated rooms.	
The Control complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).	

Inputs / outputs, fuses	
Wind sensor **WM**, heated rain sensor **RS**	1 piece each
Adjustment range of sensitivity to wind	approx .5 - 15 m/s (20 - 60 km/h, approx. wind force 3 - 7)
Adjustment range of sensitivity to rain	light to heavy rain
4 changeover contacts, load rating	5 A / 30 V⎓ / 230 V~
Output contacts (miniature fuse 5 x 20 mm)	F1 - F4: F 5 A
Mains primary (miniature fuse 5 x 20 mm)	F5: T 125 mA

Wind and Rain Control WRS 2b

System diagram (please consider local conditions / components)



● 1) The actuators can be powered through the mains output terminals of the WRC.
Load rating max. 5A!

● 2) PE not used

When using separate contacts the Wind and Rain Control (WRC) can be used also for simultaneous actuation of 24 V- and 230 V~ systems.

General: length of cable max. 200 m, if not specified otherwise.

RS 2d

- Heated rain sensor (heater is activated only after sensor response, and deactivated after drying)
- Sensor surface approx. 80cm²
- Including mounting angle for anemometer and / or rain sensor (**WM 1** or **RS 2d**)

WM 1

Anemometer (revolving cup type) for measurement of the wind speed

RS 2d-WM 1

Combination of above described sensors **RS 2d** and **WM 1** preassembled on mounting angle

MB

Shackle for pole mounting components **RS 2** and **WM 1** (for tube diameter up to 60mm)

SK

Pedestal (40cm high) for mounting components **RS 2** and **WM 1** on a flat roof

1 Concept

- The **KE 2** has six 230 V~ relays for the extension of a Wind and Rain Control (or for using the potential-free contacts as needed)
- Terminals for actuating other **KE 2**
- Plastic enclosure, light grey (like RAL 7035)

2 Technical data

KE 2a (8168 2100 0000)	
Line voltage supply Current input	230 V~ / 50 - 60 Hz 0.02 A
Dimensions in mm (W x H x D) Installation dimensions in mm Cable entry from all sides through stepped nipples (Ø 28 mm)	158 x 118 x 76 110 x 70 2 x 3 pieces (top / bottom) 2 x 2 pieces (right / left)
Ambient temperature Relative humidity Enclosure protection rating (to EN 60529)	-5 °C … +60 °C 20 % … 80 %, non-condensing IP54
Not suitable for use outdoors. Protect from direct sunlight, humidity and excessive formation of dust! Preferably, the installation should be carried out in dry, heated rooms.	
The device complies with the requirements of the 2006/95/EC and 2004/108/EC Directives (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).	

Inputs / outputs, fuses	
6 changeover contacts, load rating	5 A / 30 V⎓ / 230 V~
Output contacts (miniature fuse 5 x 20 mm)	F1 - F6: F 5 A
Max. conductor cross section	2.5 mm²

Concept of Actuator Control

- Control for integration of 24 V- actuators in 230 V~ systems
- Connected actuators can be controlled by ventilation buttons △ / ▽ wired to 230 V~.
- Combination of type WST 2, WST 4 and WST 8 controls is possible
- Plastic enclosure, light grey (RAL 7035)

- **Option PK-SA**: Contacts for forwarding the actuator positions Open / Closed.
  For using this option, actuators with additional limit switches are required

Versions

WST 2d:

- Output current 2 A (24 V⎓ / 48 W)
- Current input 0,4 A (230 V~ / 50 - 60 Hz)
- Dimensions in mm: 200 x 120 x 90 (B x H x T)

WST 4d:

- Output current 4 A (24 V⎓ / 96 W)
- Current input 0,7 A (230 V~ / 50 - 60 Hz)
- Dimensions in mm: 255 x 180 x 75 (B x H x T)

WST 8d:

- Output current 8 A (24 V⎓ / 192 W)
- Current input 1,1 A (230 V~ / 50 - 60 Hz)
- Dimensions in mm: 255 x 180 x 75 (B x H x T)

RM 2-O

- Optical smoke detector, Type 65-55000-317
- Alarm indication: Clear LED, red in alarm state
- Wire-mesh insect guard. Cover can be removed for easy cleaning
- Easy installation with quarter-turn fastener
- Protected against theft
- Photo-electric detection of smoke particles by the scattered light method
- Multiple signal processing to avoid false alarms
- Insensible to wind and atmospheric pressure
- Complies with EN 54-7
- Operating voltage 9..33V⎓
- Quiescent current input approx. 40µA / 24V
- Suitable for -10..+60°C, 10..92% relative humidity
- 100mm diameter, flat design: with base only 50 / 59mm high (standard- / relay base)
- VdS approval no. G 200017

MS 2-S:

- Standard base for detectors series RM 2 and TM 2. Base type 65-45681-200
- Dimensions: H 16mm, Ø 100mm
- Elongated holes ensure easy mounting under ceiling even when boring tolerances are great
- Mechanical reverse polarity protection
- Earth terminal for proper wiring of screening means, if existing
- Cable entry may be concealed or surface type (surface type through break-away openings)

MS 2-R:

- Relay type base for detectors series RM 2 and TM 2. Base type 65-45681-245
- Integrated relay with change-over contact, switching capacity 30W / 50VA, max. 1A, max. 50V
- Coil current 15mA (supply voltage ≥ 9V)
- Operating voltage 9..33V⎓
- Suitable for -20..+70°C, 10..95% relative humidity
- E.g. for use in door closing systems. If you intend to use detector bases in combination with our RWA control centres, please contact us for details
- Dimensions: H 25mm, Ø 100mm
- Elongated holes ensure easy mounting under ceiling even when boring tolerances are great
- Mechanical reverse polarity protection
- Earth terminal for proper wiring of screening means, if existing
- Cable entry may be concealed or surface type (surface type through break-away openings)

RM 3-O

- Optical smoke detector, Type SD-851E
- Alarm indication by red LED
- Wire-mesh insect guard. Cover can be removed for easy cleaning
- Easy installation with quarter-turn fastener
- Protection against tampering and unauthorised removal
- Optical sensor chamber continuously monitored by micro processor control on the basis of specially developed algorithms to suppress interference fields and to avoid false alarms
- Automatic drift compensation (to ensure constant sensitivity between cleaning intervals)
- To EN 54-7:2000
- Operating voltage 8..30V⎓
- Quiescent current input approx. 50µA / 24V⎓
- Current input during alarm approx. 50mA / 24V⎓
- To be used for -30..+70°C. However, temperature range of 0..+50°C should not be exceeded for a longer time
- Relative humidity: 5..95% (non-condensing)
- Air speed up to 20m/s
- Dimensions including base **MS 3-S**: Ø102 x 45mm
- VdS approval code G 202013

MS 3-S:

- Standard base for series RM / RM 3 and TM / TM 3 detectors. Base type B 401RM1000
- Dimensions: H 19mm, Ø 105mm
- With short-circuiting spring to facilitate the installation and maintenance work. It is, for example, possible during the building construction period to test the automatic signal line of installed SHE equipment without having to use detectors.
- Safe against maloperation: the short-circuiting spring automatically opens when a detector is mounted
- Cable entry may be concealed or surface type (surface type through break-away openings)

MS 3-R:

- Relay type base for detectors series RM / RM 3 and TM / TM 3. Base type B 324RL
- Integrated 24V- relay with change-over contact, 2,2KΩ coil resistance
- E.g. for use in door retainer systems. If you intend to use relay type detector bases in combination with our RWA Control Centres, please contact us for details
- Dimensions: H 29mm, Ø 127mm
- With short-circuiting spring to facilitate the installation and maintenance work. It is, for example, possible during the building construction period to test the automatic signal line of installed RWA equipment without having to use detectors.
- Safe against maloperation: the short-circuiting spring automatically opens when a detector is mounted
- Cable entry may be concealed or surface type (surface type through break-away openings)

TM 2-M

- Fixed temperature thermal detector, Type 65-55000-137
- Alarm indication by red LED
- Easy installation with quarter-turn fastener
- Protected against theft
- Insensible to wind and atmospheric pressure
- Nominal temperature 90°C
- Response class A1R to EN 54-5:
  - Application temperature 55..80°C
  - Static reaction: 84..100°C
- Operating voltage 9..33V⎓
- Quiescent current input approx. 45µA / 24V
- Suitable for -20..+90°C, 10..95% relative humidity
- 100mm diameter, flat design: with base only 50 / 59mm high (standard- / relay base)
- VdS approval no. G 200062

MS 2

- Standard base for detectors series RM 2 and TM 2. Base type 65-45681-200
- Dimensions: H 16mm, Ø 100mm
- Elongated holes ensure easy mounting under ceiling even when boring tolerances are great
- Mechanical reverse polarity protection
- Earth terminal for proper wiring of screening means, if existing
- Cable entry may be concealed or surface type (surface type through break-away openings

MS 2-R:

- Relay type base for detectors series RM 2 and TM 2. Base type 65-45681-245
- Integrated relay with change-over contact, switching capacity 30W / 50VA, max. 1A, max. 50V
- Coil current 15mA (supply voltage ≥ 9V)
- Operating voltage 9..33V⎓
- Suitable for -20..+70°C, 10..95% relative humidity
- E.g. for use in door closing systems. If you intend to use detector bases in combination with our SHE control centres, please contact us for details
- Dimensions: H 25mm, Ø 100mm
- Elongated holes ensure easy mounting under ceiling even when boring tolerances are great
- Mechanical reverse polarity protection
- Earth terminal for proper wiring of screening means, if existing
- Cable entry may be concealed or surface type (surface type through break-away openings)

TM 3-M

- Fixed temperature thermal detector, Type FD-851HTE
- Alarm indication by red LED
- Wire-mesh insect guard. Cover can be removed for easy cleaning
- Easy installation with quarter-turn fastener
- Protection against tampering and unauthorised removal
- Response class BS: Trigger temperature approx. 78°C
- Max. detection height 6m
- To EN 54-5:2000
- Operating voltage 8..30V⎓
- Quiescent current input approx. 65µA / 24V⎓
- Current input during alarm approx. 50mA / 24V⎓
- To be used for -30..+70°C. However, temperature range of 0..+50°C should not be exceeded for a longer time
- Relative humidity: 5..95% (non-condensing)
- Dimensions including base **MS 3-S**: Ø102 x 55mm
- VdS approval code G 202017

MS 3-S:

- Standard base for series RM / RM 3 and TM / TM 3 detectors. Base type B 401RM1000
- Dimensions: H 19mm, Ø 105mm
- With short-circuiting spring to facilitate the installation and maintenance work. It is, for example, possible during the building construction period to test the automatic signal line of installed SHE equipment without having to use detectors.
- Safe against maloperation: the short-circuiting spring automatically opens when a detector is mounted
- Cable entry may be concealed or surface type (surface type through break-away openings)

MS 3-R:

- Relay type base for detectors series RM / RM 3 and TM / TM 3. Base type B 324RL
- Integrated 24V- relay with change-over contact, 2,2KΩ coil resistance
- E.g. for use in door retainer systems. If you intend to use relay type detector bases in combination with our RWA Control Centres, please contact us for details
- Dimensions: H 29mm, Ø 127mm
- With short-circuiting spring to facilitate the installation and maintenance work. It is, for example, possible during the building construction period to test the automatic signal line of installed RWA equipment without having to use detectors.
- Safe against maloperation: the short-circuiting spring automatically opens when a detector is mounted
- Cable entry may be concealed or surface type (surface type through break-away openings)

TM 2-D

- Rate of rise heat detector, Type 65-55000-122
- Alarm indication by red LED
- Easy installation with quarter-turn fastener
- Protected against theft
- Insensible to wind and atmospheric pressure
- Nominal temperature 57°C
- Response class A1R to EN 54-5:
  - Application temperature 25..50°C
  - Static reaction: 54..65°C
- Operating voltage 9..33V F
- Quiescent current input approx. 45µA / 24V
- Suitable for -20..+90°C, 10..95% relative humidity
- 100mm diameter, flat design: with base only 50 / 59mm high (standard- / relay base)
- VdS approval no. G 200059

MS 2-S:

- Standard base for detectors series RM 2 and TM 2. Base type 65-45681-200
- Dimensions: H 16mm, Ø 100mm
- Elongated holes ensure easy mounting under ceiling even when boring tolerances are great
- Mechanical reverse polarity protection
- Earth terminal for proper wiring of screening means, if existing
- Cable entry may be concealed or surface type (surface type through break-away openings)

MS 2-R:

- Relay type base for detectors series RM 2 and TM 2. Base type 65-45681-245
- Integrated relay with change-over contact, switching capacity 30W / 50VA, max. 1A, max. 50V
- Coil current 15mA (supply voltage ≥ 9V)
- Operating voltage 9..33V F
- Suitable for -20..+70°C, 10..95% relative humidity
- E.g. for use in door closing systems. If you intend to use detector bases in combination with our RWA control centres, please contact us for details
- Dimensions: H 25mm, Ø 100mm
- Elongated holes ensure easy mounting under ceiling even when boring tolerances are great
- Mechanical reverse polarity protection
- Earth terminal for proper wiring of screening means, if existing
- Cable entry may be concealed or surface type (surface type through break-away openings)

TM 3-D

- Rate-of-rise heat detector, Type FD-851RE
- Alarm indication by red LED
- Wire-mesh insect guard. Cover can be removed for easy cleaning
- Easy installation with quarter-turn fastener
- Protection against tampering and unauthorised removal
- Response class A1R: Trigger temperature approx. 58°C or temperature rise of 8°C/min
- Max. detection height 7,5m
- To EN 54-5:2000
- Operating voltage 8..30V⎓
- Quiescent current input approx. 60µA / 24V⎓
- Current input during alarm approx. 50mA / 24V⎓
- To be used for -30..+70°C. However, temperature range of 0..+50°C should not be exceeded for a longer time
- Relative humidity: 5..95% (non-condensing)
- Dimensions including base **MS 3-S**: Ø102 x 55mm
- VdS approval code G 202015

MS 3-S:

- Standard base for series RM / RM 3 and TM / TM 3 detectors. Base type B 401RM1000
- Dimensions: H 19mm, Ø 105mm
- With short-circuiting spring to facilitate the installation and maintenance work. It is, for example, possible during the building construction period to test the automatic signal line of installed SHE equipment without having to use detectors.
- Safe against maloperation: the short-circuiting spring automatically opens when a detector is mounted
- Cable entry may be concealed or surface type (surface type through break-away openings)

MS 3-R:

- Relay type base for detectors series RM / RM 3 and TM / TM 3. Base type B 324RL
- Integrated 24V- relay with change-over contact, 2,2KΩ coil resistance
- E.g. for use in door retainer systems. If you intend to use relay type detector bases in combination with our RWA Control Centres, please contact us for details
- Dimensions: H 29mm, Ø 127mm
- With short-circuiting spring to facilitate the installation and maintenance work. It is, for example, possible during the building construction period to test the automatic signal line of installed RWA equipment without having to use detectors.
- Safe against maloperation: the short-circuiting spring automatically opens when a detector is mounted
- Cable entry may be concealed or surface type (surface type through break-away openings)

RM 3-OT

- Multisensor type smoke detector (optical-thermal), Type SD-851TE
- Alarm indication by red LED
- Wire-mesh insect guard. Cover can be removed for easy cleaning
- Easy installation with quarter-turn fastener
- Protection against tampering and unauthorised removal
- Optical detection method to EN 54-7:2000 with drift compensation as in **RM 3-O**
- Thermal detection method to EN 54-5:2000.
  Response class A1R: Trigger temperature approx. 58°C or temperature rise of 8°C/min
- Max. detection height 7,5m
- Operating voltage 8..30V⎓
- Quiescent current input approx. 65µA / 24V⎓
- Current input during alarm approx. 50mA / 24V⎓
- To be used for -30..+70°C. However, temperature range of 0..+50°C should not be exceeded for a longer time
- Relative humidity: 5..95% (non-condensing)
- Air speed up to 20m/s
- Dimensions including base **MS 3-S**: Ø102 x 55mm
- VdS approval code G 202019

MS 3-S:

- Standard base for series RM / RM 3 and TM / TM 3 detectors. Base type B 401RM1000
- Dimensions: H 19mm, Ø 105mm
- With short-circuiting spring to facilitate the installation and maintenance work. It is, for example, possible during the building construction period to test the automatic signal line of installed SHE equipment without having to use detectors.
- Safe against maloperation: the short-circuiting spring automatically opens when a detector is mounted
- Cable entry may be concealed or surface type (surface type through break-away openings)

MS 3-R:

- Relay type base for detectors series RM / RM 3 and TM / TM 3. Base type B 324RL
- Integrated 24V- relay with change-over contact, 2,2KΩ coil resistance
- E.g. for use in door retainer systems. If you intend to use relay type detector bases in combination with our RWA Control Centres, please contact us for details
- Dimensions: H 29mm, Ø 127mm
- With short-circuiting spring to facilitate the installation and maintenance work. It is, for example, possible during the building construction period to test the automatic signal line of installed RWA equipment without having to use detectors.
- Safe against maloperation: the short-circuiting spring automatically opens when a detector is mounted
- Cable entry may be concealed or surface type (surface type through break-away openings)

TS

Bimetal thermal switch in aluminium enclosure, for direct connection to signal lines:

- Integrated release resistor (1,5kΩ) and terminating resistor (10kΩ)
- Suitable for connection to fire alarm systems, impulse controls or RWA control centres
- One thermal switch can be connected to each signal line of a control centre / control system
- Light grey silicone connection cable. Range of permanent ambient temperature to DIN VDE 0282: -50 up to +180°C. Length approx. 3m
- Dimensions: H 115 x W 50 x D 32mm

Types:

TS-70: Nominal response temperature 70°C
TS-93: Nominal response temperature 93°C
TS-160: Nominal response temperature 160°C
TS-200: Nominal response temperature 200°C

Bimetal thermal switches:
(switching elements only, suitable for connection to signal lines with auxiliary wiring only)

Types:

Bimetal thermal switch, normally open contact, load rating 30V / 1A:

TS-70-S: Nominal response temperature 70°C
TS-93-S: Nominal response temperature 93°C

Bimetal thermal switch, normally closed contact, load rating 30V / 1A:

TS-70-Ö: Nominal response temperature 70°C
TS-93-Ö: Nominal response temperature 93°C

Please refer to the description of the Control Centre / Control to identify the manual call points that can be connected.

1 Manual call point RT 2

- Manual call point to VdS 2592 for the connection to SHEVS Control Centres / Controls
- Orange design with VdS approval
- Inscription “RAUCHABZUG” (smoke exhaust)
- Indicator alarm
- 0,9 mm thin break glass to DIN 1249
- Environmental conditions: -10 °C … +55 °C, 20 % … 80 % rel. humidity (non condensing)
- Lockable ABS housing
- Dimensions in mm (W x H x D): 125 x 125 x 35
- Protection rating IP42
- Each unit comes with a key
- Also available with customised inscriptions

Standard - Versions

Series RT 2-K-*
(secondary alarm point)

RT 2-K-OR: Version in orange, VdS approved
RT 2-K-BL: Version in blue
RT 2-K-RT: Version in red
RT 2-K-GR: Version in grey
RT 2-K-GE: Version in yellow

Series RT 2-K-*-BS
(main alarm point)

Same as secondary alarm point, but additionally
- Indicators operation OK and malfunction ⚠
- Internal button to reset the alarm

RT 2-K-OR-BS: Version in orange, VdS approved
RT 2-K-BL-BS: Version in blue
RT 2-K-RT-BS: Version in red
RT 2-K-GR-BS: Version in grey
RT 2-K-GE-BS: Version in yellow

Series RT 2-K-*-BS-A
(main alarm point with indication of position)

Same as main alarm point, but additionally
- Indication of position OPEN

RT 2-K-OR-BS-A: Version in orange, VdS approved
RT 2-K-BL-BS-A: Version in blue
RT 2-K-RT-BS-A: Version in red
RT 2-K-GR-BS-A: Version in grey
RT 2-K-GE-BS-A: Version in yellow

Aluminium versions

- Same as standard version, but aluminium housing with protection rating IP 43

Series RT 2-A-*
(secondary alarm point)

RT 2-A-OR: Version in orange, VdS approved
RT 2-A-BL: Version in blue
RT 2-A-RT: Version in red
RT 2-A-GR: Version in grey
RT 2-A-GE: Version in yellow

Series RT 2-A-*-BS
(main alarm point)

Same as secondary alarm point, but additionally
- Indicators operation OK and malfunction ⚠
- Internal button to reset the alarm

RT 2-A-OR-BS: Version in orange, VdS approved
RT 2-A-BL-BS: Version in blue
RT 2-A-RT-BS: Version in red
RT 2-A-GR-BS: Version in grey
RT 2-A-GE-BS: Version in yellow

Series RT 2-A-*-BS-A
(main alarm point with indication of position)

Same as main alarm point, but additionally
- Indication of position OPEN

RT 2-A-OR-BS-A: Version in orange, VdS approved
RT 2-A-BL-BS-A: Version in blue
RT 2-A-RT-BS-A: Version in red
RT 2-A-GR-BS-A: Version in grey
RT 2-A-GE-BS-A: Version in yellow

Options

AA:

- Internal mini-buzzer for indication of alarm and malfunction
- Internal button to reset the mini-buzzer
- Available for main alarm points only

IP54:
- Set for weather protection and sealing, increases protection rating to IP54
- For aluminium versions only

2 Manual call point RT 3

- Manual call point to VdS 2592 for the connection to SHEVS Control Centre type **RWZ 2f**
- Inscription “RAUCHABZUG” (smoke exhaust)
- Indicators operation OK, alarm and malfunction ⚠
- Internal button to reset the alarm
- 0,9 mm thin break glass to DIN 1249
- Environmental conditions: -10 °C … +55 °C, 20 % … 80 % rel. humidity (non condensing)
- Lockable ABS housing
- Dimensions in mm (W x H x D): 125 x 125 x 35
- Protection rating IP42
- Each unit comes with a key
- Also available with customised inscriptions

Series RT 3-K-*-BS
(main alarm point)

RT 3-K-OR-BS: Version in orange

3 Manual call point RT-230

- Manual call point to DIN 14655
- Inscription “RAUCHABZUG” (smoke exhaust)
- Internal lever to reset the alarm
- 0,9 mm thin break glass to DIN 1249
- 1 change-over contact, contact load rating 230 V~ / 1 A
- For direct connection to 230 V Systems (not suitable for 24 V SHEVS Control Centres)
- Terminals for cables up to 1,5 mm²
- Environmental conditions: -10 °C … +55 °C, 20 % … 80 % rel. humidity (non condensing)
- Lockable aluminium housing
- Dimensions in mm (W x H x D): 125 x 125 x 35
- Protection rating IP43
- Each unit comes with a key
- Also available with customised inscriptions

Series RT-A-*-230

RT-A-OR-230: Version in orange
RT-A-BL-230: Version in blue
RT-A-RT-230: Version in red
RT-A-GR-230: Version in grey
RT-A-GE-230: Version in yellow

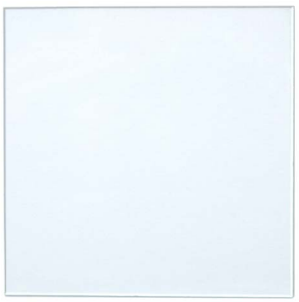
Option

IP54:
- Set for weather protection and sealing, increases protection rating to IP54

4 Accessories

RT-E

- Spare glass sheet, blank, for manual call points series **RT ***
- 0,9 mm thin break glass to DIN 1249
- Dimensions in mm (W x H): 80 x 80
- 1 packing unit = 10 pieces



RT-E:

RT-S

- Spare key for manual call points series **RT ***

RT-S-K: Standard key

RT-S-A: Metal key

S08B

- 24V- electrically operated spindle actuator, in anodized aluminium enclosure. Anodized aluminium push rod.
- rated current 0,8A
- Shapely and space saving enclosure. Minimum space required when mounted at lower end
- Extremely low noise emission
- Ambient temperature range -20 to +60°C, to VdS 2580 for 2hrs up to +110°C
- Electronic disconnection at end of stroke / emergency stop on overload
- Dimensions: see data sheet
- Protection to DIN EN 60529: IP42 (for use in dry rooms)
- Light grey silicone supply lead brought out at lower end, length approx. 2,5m, temperature range -50 to +180°C (to DIN VDE 0282)
- Mounting at upper or lower end or at variable position by mounting kit (see mounting kits for spindle actuators type S)
- Diameter of push rod eye and lower end eye 6,1mm

Types:

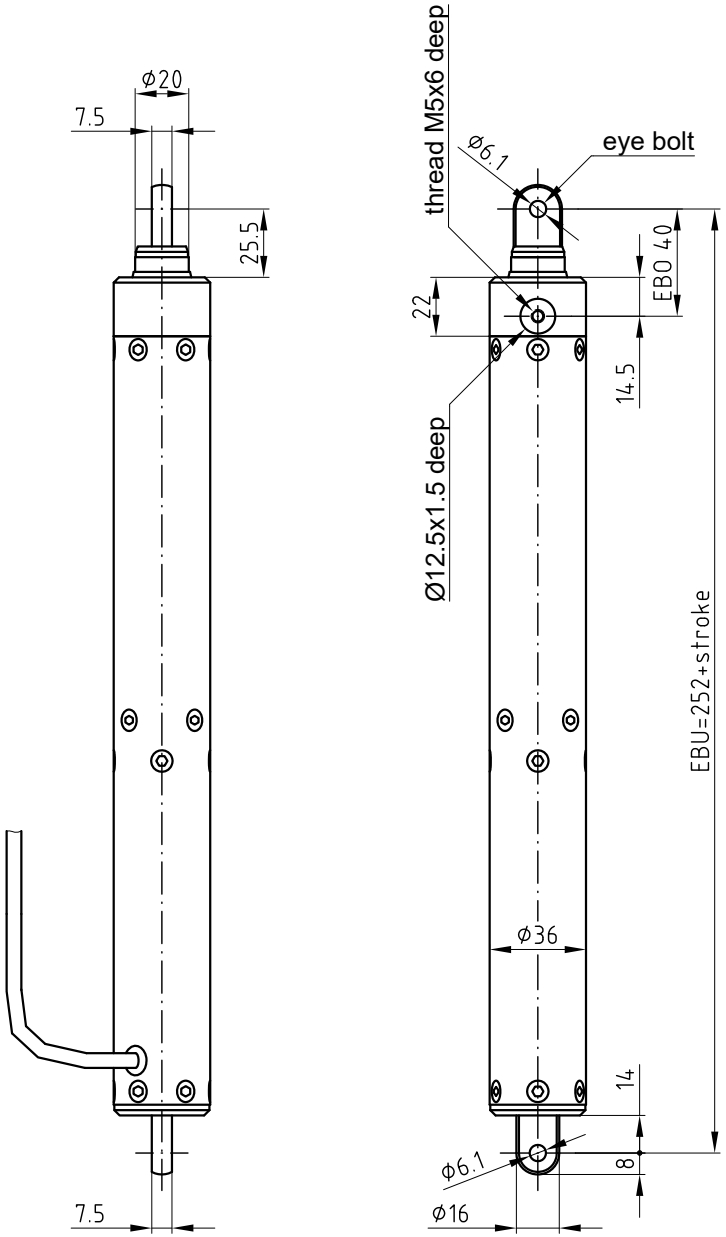
S08B-200-6-2,5: 200mm stroke
S08B-300-6-2,5: 300mm stroke
S08B-350-6-2,5: 350mm stroke
S08B-400-6-2,5: 400mm stroke
S08B-500-6-2,5: 500mm stroke
S08B-550-6-2,5: 550mm stroke
S08B-600-6-2,5: 600mm stroke
S08B-750-6-2,5: 750mm stroke
S08B-1000-6-2,5: 1.000mm stroke

Options:

RAL: Actuator enclosure painted in a RAL colour

For special types, please inquire

Dateiname: Qf0510B



Technical description:

- Aluminium housing and aluminium thrust pipe anodised
- Internal interferance suppression according to EN55011
- Switching off in both end position through overload cutout
- Electronic overload emergency cutout
- Electric shunt connection possible (CAUTION: But not syncronised operation)
- Light grey silicone connection line 2x0,75mm², jacket 6mm diameter, standart length 2,5m, sepecial length on request
- Bore diameter of eye bolt on pushrod 6,1mm
- Bore diameter in housing base 6,1mm

Technical data Elektro-linear-drive S08B:

Designation	S08B	Unit
Rated voltage	24	VDC
Avaible strokes	200/300/350 400/500/550 600/750/1000	mm
No-load current	0.2	A
Rated current (full load)	0.8	A
Thrust and tensile force	650	N
Speed (full load)	6.1	mm
Speed (no load)	7.8	mm/s
Premissible ambient temperature	-20 - +60	°C
Max. permissible temperature to EN12101-2 attachment G	300° - 30min	°C
Protection class (DIN EN 60 529)	IP42 1)	
Operating mode according to DIN VDE 0530 Part 1 (at 20°C ambient temperature)	S2 2.5min	
Stability	3500	N

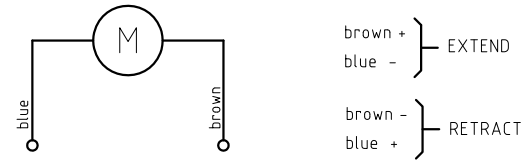
1) CAUTION: Not suitable for use in moist rooms or outdoor!

Order designation:

S08B - 350 - 6 - 2.5

- Lenght of connection cable [m]
- Bore diameter of eye bolt [mm]
- Stroke [mm]
- Motor type

Circuit diagram:



GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		
					Datum	Name
				Bear.	23.03.2010	Simetzberger
				Gepr.	19.06.2013	KW
				Norm		
03	Max. zul. Temperatur	19.06.2013	SA	Type: S08B		
02	Version Polnisch	04.12.2012	SA			
01	Version Französisch	12.12.2011	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		

Maßstab: 1:1 | Werkstoff:
ID - Nr.:
Bezeichnung:
Data sheet
Elektro - linear - actuator S08B
Zeichnung Nr.: 07.044.DAT.00.03-E | Blatt | BL.
(Ers.f.:) 07.044.DAT.00.02 | (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

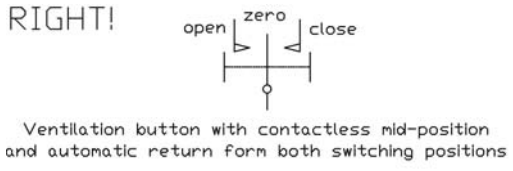
fachlich geprüft am
29.5.2002 KW

GRASL Pneumatic Mechanik GmbH
Europastraße 1
A-3454 Reidling
AUSTRIA
Tel.+43(0)2276/21200-0
Fax+43(0)2276/21200-99

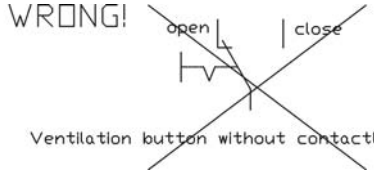
K+G Tectronic GmbH
In der Krause 48
D-52249 Eschweiler
GERMANY
Tel.+49(0)2403/9950-0
Fax+49(0)2403/655 30

Technical Information for Series S, G, SG Spindle Actuators

- Actuators are suitable for being connected to K+G / Grasl Control Centres. If control centres of external production are used, check them for control compatibility.
- Connect actuators using a pull relief type connection box available at the site. When determining the length of cable, the position of the connection box as well as the swivelling range of the actuators have to be taken into account.
- When mounting the actuators below a clearance height of **2.5m**, **adequate precautions** must be taken to avoid any hazards to the personnel (**risk of getting crushed or squashed**). For this purpose, be sure the appropriate directives, rules and standards are complied with, such as **BGR 232** for power operated windows, doors and gates, **DIN EN 12453** safe use of power operated gates and **EN 60335-2-103:2003**.
- Select the cross section of the **cable** between the connection box and the control centre in such a way that the **voltage drop** between control centre and actuator – even under **full load** conditions – will not be more than **1V** (see control centre documentation). If control centres of external production are used for control, have the cable cross sections selected or checked by a qualified electrical installation company.
- Actuator operation is admissible only with a rated voltage of **24V⎓** and a tolerance of **+30/-20%**. A **peak voltage of 42V** and a **residual ripple of 48%** must not be exceeded.
- Before installation in the smoke and heat ventilation unit the actuators must be in fully retracted condition (internal limit switches operated); if necessary initiate retraction (e.g. by using accumulators).
- For initial operation (trial run, installation or maintenance work), e.g. using accumulators, it is **absolutely necessary** to install a **fuse link equal to the actuator current rating** the in the actuator supply line. Be sure **actuators are disconnected from the actuator output of a control centre/control system** because otherwise this may result in damage to the power output of the control centre/control system. During a trial run, watch the mechanical behaviour of the complete smoke and heat ventilation unit. Be sure the actuators can **swivel freely** through the entire lifting range (internal limit switches operated at both end positions) and no fixed parts of the building may be touched (for actuator connection please see data sheets).
- For controlling the actuators, use only mechanically interlocked ventilation buttons with contactless mid-position. Do not use **change-over switches** (see illustration).



Ventilation button with contactless mid-position and automatic return form both switching positions



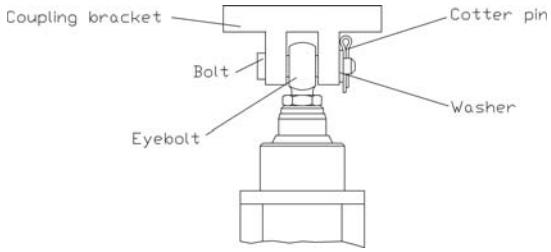
Ventilation button without contactless mid-position

- Any immediate **change of the sense of travel,** while the actuator is operating, is **not admissible,** and may result in **defects** (a pause of approx. 1s is required).

GRASL Pneumatic Mechanik GmbH
Europastraße 1
A-3454 Reidling
AUSTRIA
Tel.+43(0)2276/21200-0
Fax+43(0)2276/21200-99

K+G Tectronic GmbH
In der Krause 48
D-52249 Eschweiler
GERMANY
Tel.+49(0)2403/9950-0
Fax+49(0)2403/655 30

- After a full extension or retraction action, a **travel of about 1s in opposite direction** is required before resuming the previous direction of travel (S series).
- Be sure the **control voltage** for the travel commands OPEN or CLOSE is effective for **max. 6min.**
- Before fastening the actuators to the coupling bracket, mounting brackets or other mounting elements, be sure to have taken the applicable **installation dimension** from the **data sheets** of the actuator types concerned.
- Fasten the actuators to the the coupling bracket (or any other mounting element). Make sure the bolt of the coupling bracket is secured by means of a **washer** and a **cotter pin** (see illustration).



- **Setting the closing force** of the smoke and heat ventilation unit when pressing against the sealing (smoke and heat ventilation unit must be closed tightly all around). **Important: Be sure the maximum actuator pull is not exceeded** (see data sheets)**, because otherwise actuator would not be able to fully retract (internal limit switches would not be operated in this case).**

  a) Actuators with variable mounting (lateral guide grooves or clamp rings):
  Pull the actuators, e.g. using a spring balance; thereafter tighten the bearing pings/plugs. During setting, the bearing pins/plugs must be loose enough to enable the actuators to slide along their axes.

  b) Actuators with fixed mounting:
  Adjust the eyebolt or other pushrod mounts.

- In the case of actuators with variable mounting (lateral guide grooves) be sure the bearing pins/plugs are in line with each other (see fig. 1) and also parallel to the axis of the hinges. Furthermore, when mounting the bracket, be sure the swivelling axis of the actuators is parallel to the axis of the hinges (see fig. 2).

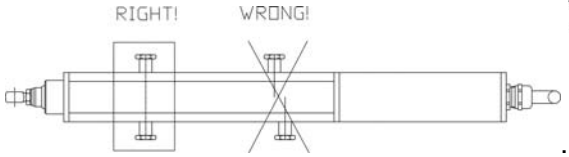


Fig. 1

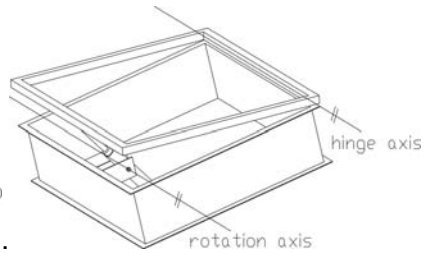


Fig. 2

Compliance with all instructions is imperative, faulty assembly may result in serious injuries! Failure of observing the above notice, as well as opening or trying to open the enclosure of the actuator will invalidate our warranty!

Mounting kits for actuators type S

BS-S-O1:

Mounting kit for mounting actuator at upper end, Type 1. Comprising mounting bracket **MK 36-1**, two bearing pins **LB12-SL5-M5x6**, coupling bracket **KB-F 6**.

BS-S-U1:

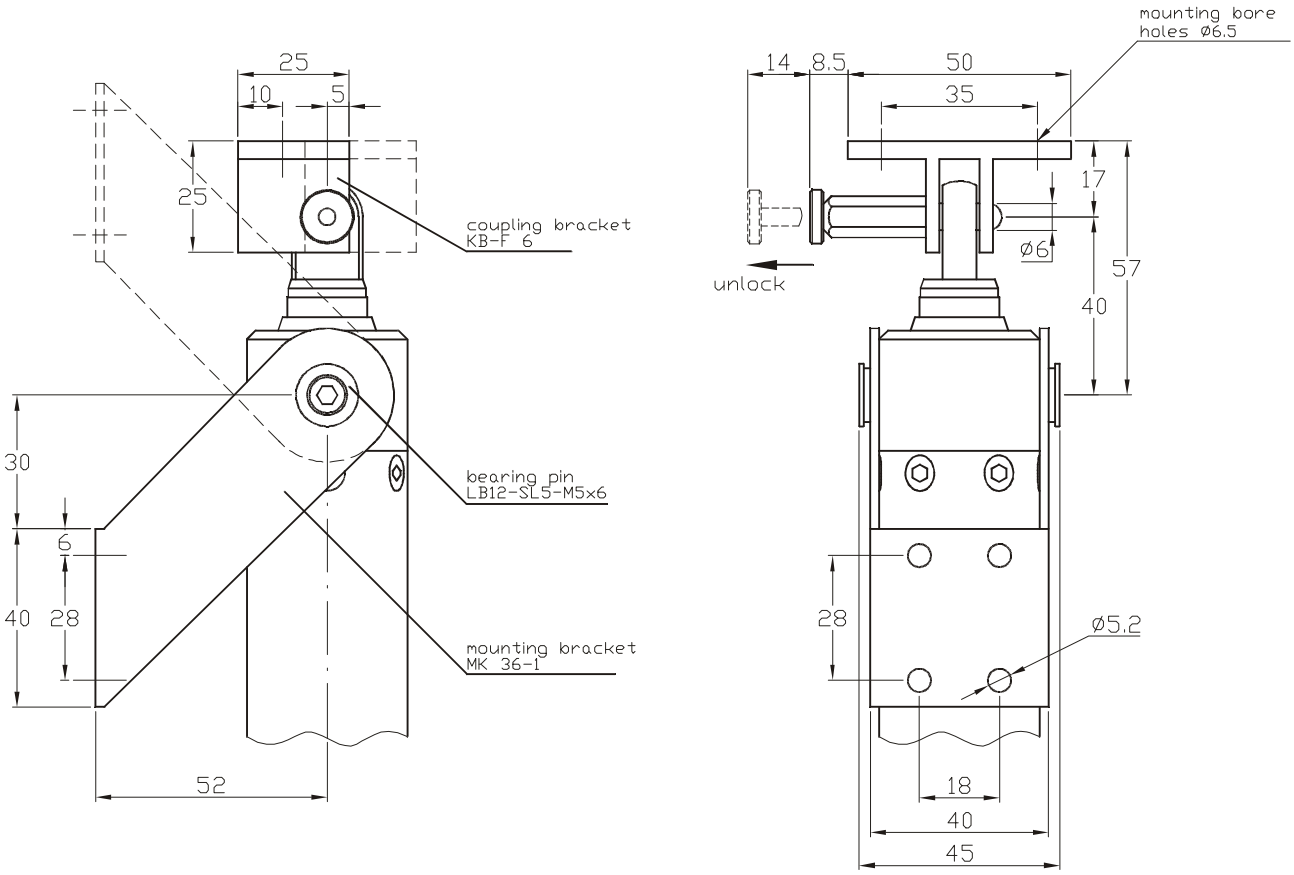
Mounting kit for mounting actuator at lower end, Type 1. Comprising window bracket **MK F-1** with bolt **MK F-B6-2** and mounting bracket **MK 13-1** with bolt **MK 13-B6**.

BS-S-V1:

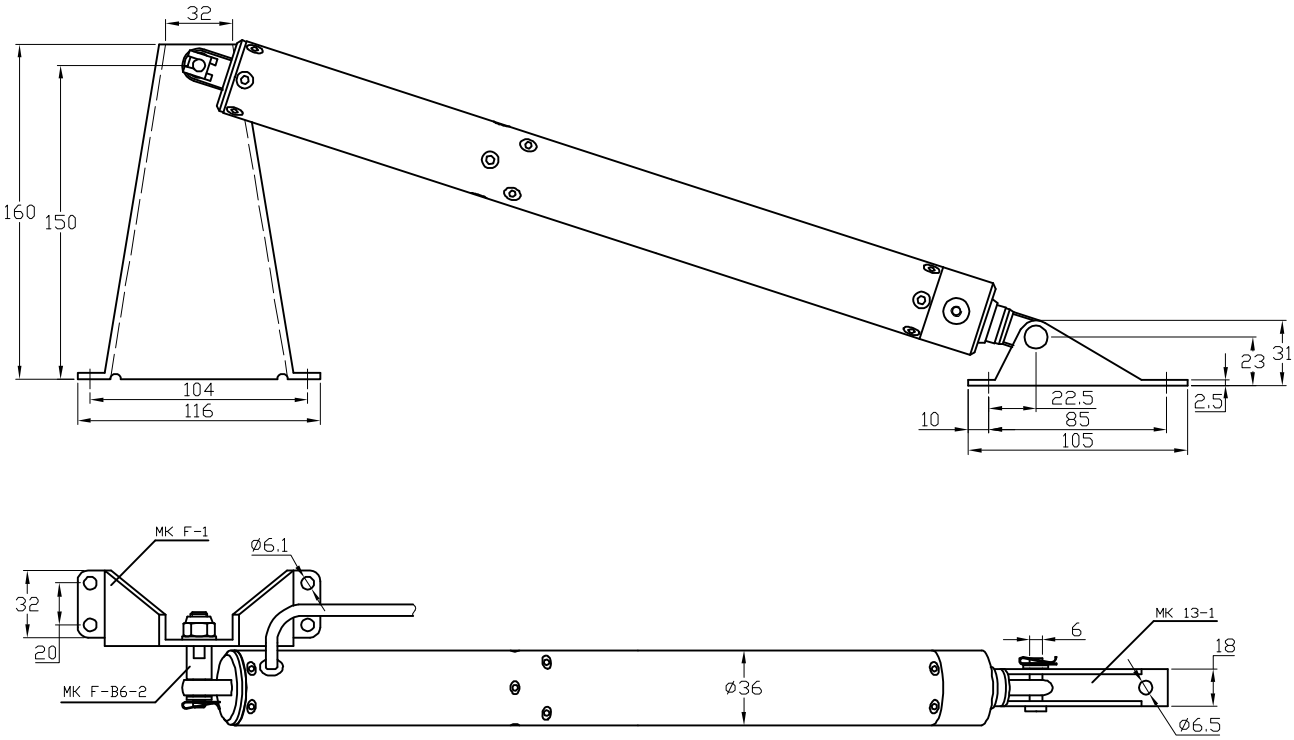
Mounting kit for variable mounting, Type 1. Comprising clamping ring **KR 47-36**, mounting bracket **MK 47-3**, 2 bearing pins **LB12-SL5-M5x6** and coupling bracket **KB-F 6**.

Drawings of mounting kits for actuators Type S

BS-S-O1: Mounting kit for mounting at upper end, Type 1

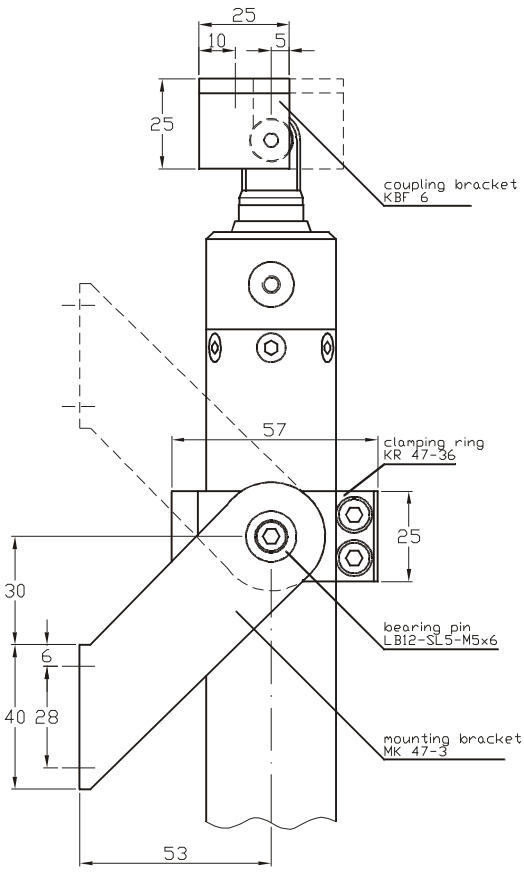


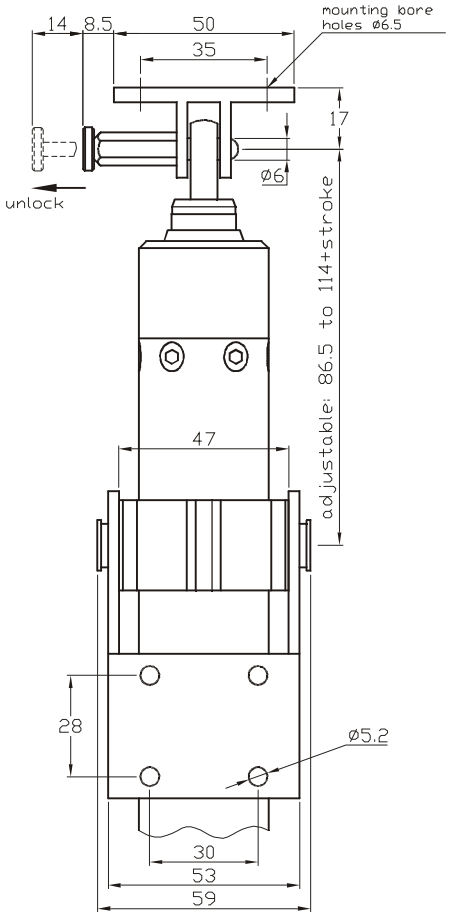
BS-S-U1: Mounting kit for mounting at lower end, Type 1 (It is also possible to mount actuator rotated through 180°)



Drawings of mounting kits for actuators Type S

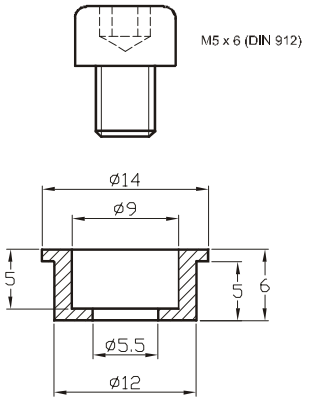
BS-S-V1: Mounting kit for variable mounting, Type 1



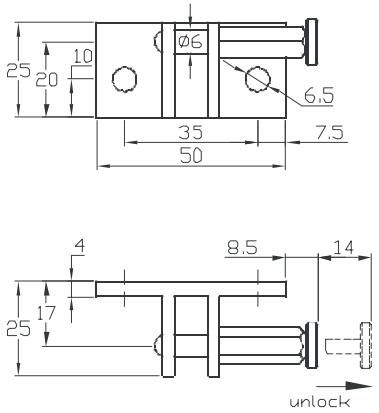


Individual components of mounting kits for actuators Type S:

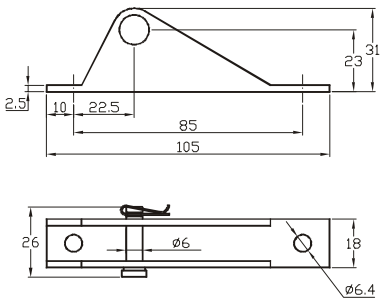
LB 12-SL5-M5x6: Bearing pins for actuators Type **S**, Ø12mm, shank length 5mm, incl. hexagons socket head cap screw M5x6mm (DIN 912). Two pieces are required for each actuator



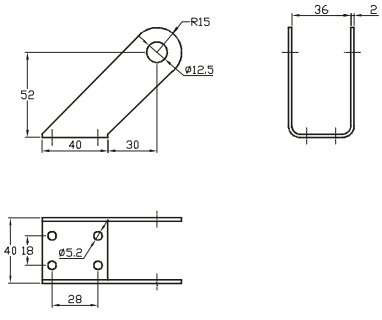
KB-F6: Coupling bracket with spring bolt Ø6mm



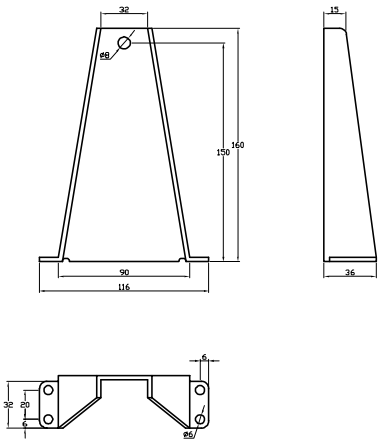
MK 13-1-B6: Mounting bracket of galvanized sheet steel for actuators Type **S**. 13mm inner width, Type 1, including bolt Ø6mm



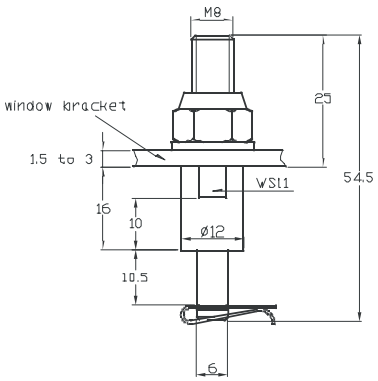
MK 36-1: Mounting bracket of galvanized sheet steel for actuators Type **S**. 36mm inner width, Type 1



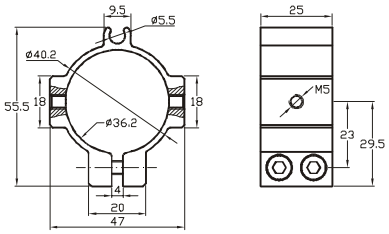
MK F-1: Window bracket of galvanized sheet steel for mounting electrical actuators on pivot-hung or swinging window casements



MK F-B6-2: Fastening bolt as a link between window bracket **MK F-1** and actuator Type **S**



KR 47-36: Aluminium clamping ring for variable mounting of actuators Type **S**. I.D. 36mm, with channel for fixing the actuator supply cable



G 08x, G10x, G13x

- 24V- electrically operated spindle actuator, in anodized aluminium enclosure. Anodized aluminium push rod
- Rated current: ,8A; 1,0A respectively 1,3A
- Ambient temperature range -25 to +60°C, to EN 12101-2 annex G for 30 min. up to +300°C
- Disconnection at either end position by integrated limit switches
- Dimensions: see data sheet
- Electronic “emergency stop” on overload
- Electronic parallel disconnection with PAS (see actuator controls) and synchronisation with SYN (see actuator controls) possible
- Protection to DIN EN 60529: IP40 (for use in dry rooms)
- Light grey silicone supply cable brought out at upper end, length approx. 2,5m, temperature range -50 to +180°C (to DIN VDE 0282)
- Continuous adjustability in mounting ensured by sliding blocks and bearing pins LB12-SL13-M5x16 (included)
- Including eyebolt M8 Ø8mm

Types:

Standard stroke: 350, 550 or 750mm,
For special stroke, please inquire.

Options: (see Data sheet)

Other cable length: specify full meters
Eyebolt: M8 Ø6mm or Ø10mm
Clevis: Also available as clevis GK8x16, GK8x32, GK10x20 or GK10x40 instead of eyebolt.
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).
RAL: Actuator enclosure painted in a RAL colour
U Ø6,1: Mounting at lower end with bore hole Ø6,1mm.
U M8: Mounting at lower end with thread M8, 11mm deep.
U Ø10,2: Mounting at lower end with bore hole Ø10,2mm.
UF Ø8,2: Mounting at lower end with bore hole Ø8,2mm for bracket **MK 24-1**.
THxx: Version with integrated thermal contact. Response temperature 70 or 93°C, available as NO or NC contact.

For more special versions please inquire

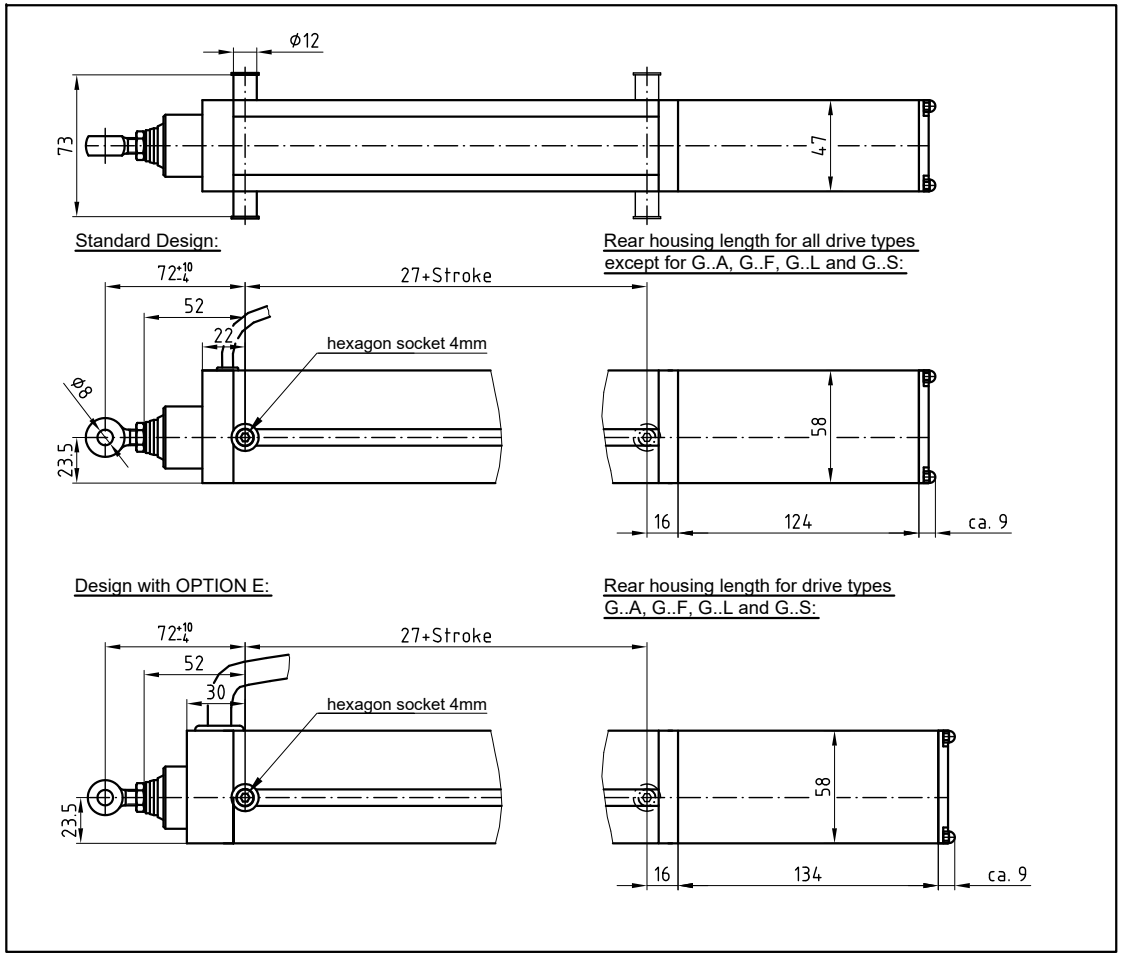
Dateiname: Qf0510B

General technical data:

1.) Anodised aluminium housing with a push rod made of aluminium (in the case of motor types G..A, G..B, G..C, G..D and G..E, the push rod is Ø18, for all other motor types it is Ø22)
2.) Radio interference suppression according to EN55011
3.) Cut-out in both limit positions by internal end switch
4.) Electronic emergency overload cut-out
5.) Electrical parallel connection is possible (NOTE: synchronising circuit is not possible)
6.) Eye bolt Ø6, Ø8 (standard) or Ø10mm
7.) Standard strokes 350, 550 and 750mm; special lengths available upon request
8.) Light grey silicone connecting cable standard length 2,5m; other lengths available upon request
-> for standard design: 2x0.75qmm / sheathing Ø ca. 6mm
-> with Option E: 2x2.5qmm / 3x1.5qmm / sheathing Ø ca. 11mm
-> with Option TH: 2x2.5qmm / 5x1.5qmm / sheathing Ø ca. 11mm
-> with Option SY: 2x2.5qmm / 5x1.5qmm / sheathing Ø ca. 11mm

Possible options:

1.) OPTION Diverse ground designs:
Motor design also provides for ground suspensions (please refer to options page "suspension variants".
2.) OPTION Diverse cardan shaft suspensions:
It is also possible to design motors with diverse cardan shaft suspensions (please refer to options page "Cardan shaft suspension variants".
3.) OPTION RAL... (available upon request):
The motor housing can be painted in an RAL colour. For instance, if option "RAL3000" is specified, the motor housing will be painted in RAL3000 (RED).
4.) OPTION E:
Internal potential-free end switches (Option E=opener) for both limit positions; current carrying capacity 24VDC/1A (e.g. for position indicator)
5.) OPTION TH... (available upon request):
Installed thermal contact that responds if a specified temperature has been exceeded. The following designs can be delivered:
TH70Ö ... response temperature 70°C - contact opens when actuated
TH70S ... response temperature 70°C - contact closes when actuated
TH93Ö ... response temperature 93°C - contact opens when actuated
TH93S ... response temperature 93°C - contact closes when actuated
Option TH... is NOT possible in connection with option SY. As this option is not possible in connection with all ground suspension variants, option TH is only possible available upon request.
6.) OPTION SY (available upon request):
See datasheets G08X-...-SY to G26X-...-SY
7.) OPTION sealing variants:
D05/D07 ..... system of protection IP54
IP42 ..... system of protection IP42 (Caution: The overall length of the actuator is extended by 4mm!)



Ordering designation:

G(Type) - (Stroke) - (Eye bolt) - (Cable length) - (Options)

Legend:

Type: Drive type as selected from list of drives
Stroke: Driving stroke in [mm]
Eye bolt: Bore diameter of eye bolt in [mm]. Instead of the eye bolt, it is also possible to specify a different cardan shaft suspension (see options page "Cardan shaft suspension variants")
Cable length: Connecting cable length in [m]
Options: List of all requested options

Ordering example: G13B - 750 - 8 - 2.5 - E - RAL3000

GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff: / ID - Nr.:
					Datum	Name
				Bear.	26.11.2009	Simetzberger
				Gepr.	25.07.2011	GH
				Norm		
02	Polnisch	25.07.2011	SA	Type: Baureihe G		Zeichnung Nr.: 07.009.DAT.00.02-E / Blatt / BL.
01	Text	12.04.2010	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		(Ers.f.:) 07.009.DAT.00.01 (Ers.d.:)

Bezeichnung: **Data sheet** Electro-linear-actuator Type: G08x, G10x and G13x

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

Dateiname: Qf0510B

General technical data:

Seal variation	Standard:	Option D05/D07	Option IP42	unit
Rated current	24			VDC
No-load current	0.2			A
Permissible ambient temperature	-25 - +60			°C
Max. permissible temperature to EN12101-2 attachment G	300° - 30min			°C
System of protection according to DIN EN 60 529	IP 40 1)	IP 54	IP 42	

Technical data for drive types G08X:

Designation	G08A	G08B	G08C	G08F	G08G	G08H	G08L	G08M	G08N	unit
Transverse and tensile forces (full load)	900	650	450	680	490	340	810	580	400	N
Current at full load	0.8									A
Velocity (no-load)	4.3	7.8	10.5	5.7	10.4	14.0	4.3	7.8	10.5	mm/s
Velocity at full load	3.4	6.1	8.4	4.5	8.1	11.2	3.4	6.1	8.4	mm/s
Maximum stroke at full load 2)	524	617	741	1288	1517	1821	944	1116	1344	mm
Class of rating for peak load according to DIN VDE 0530 Part 1 (at 25°C ambient temperature)	S2 4min.									
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 36% 4) (Maximum time of operation in one direction: 4min)									
Stability (locking force) 3)	3500 5)									N

Technical data for drive types G10X:

Designation	G10A	G10B	G10C	G10F	G10G	G10H	G10L	G10M	G10N	unit
Transverse and tensile forces (full load)	1200	850	600	910	640	450	1080	760	540	N
Current at full load	1.0									A
Velocity (no-load)	4.3	7.8	10.5	5.7	10.4	14.0	4.3	7.8	10.5	mm/s
Velocity at full load	3.2	5.5	7.7	4.3	7.3	10.3	3.2	5.5	7.7	mm/s
Maximum stroke at full load 2)	454	539	642	1113	1327	1583	818	975	1157	mm
Class of rating for peak load according to DIN VDE 0530 Part 1 (at 25°C ambient temperature)	S2 2.5min.									
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 24% 4) (Maximum time of operation in one direction: 2.5min)									
Stability (locking force) 3)	3500 5)									N

Technical data for drive types G13X:

Designation	G13A	G13B	G13C	G13F	G13G	G13H	G13L	G13M	G13N	unit
Transverse and tensile forces (full load)	1650	1150	830	1250	870	630	1480	1030	750	N
Current at full load	1.3									A
Velocity (no-load)	4.3	7.8	10.5	5.7	10.4	14.0	4.3	7.8	10.5	mm/s
Velocity at full load	2.7	4.7	6.6	3.6	6.3	8.8	2.7	4.7	6.6	mm/s
Maximum stroke at full load 2)	387	464	546	950	1138	1338	699	838	982	mm
Class of rating for peak load according to DIN VDE 0530 Part 1 (at 25°C ambient temperature)	S2 1.5min.									
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 14% 4) (Maximum time of operation in one direction: 1.5min)									
Stability (locking force) 3)	3500 5)									N

1) CAUTION: Not suitable for the use in damp locations or outside!

2) The maximum stroke at full load is the stroke that the drive can travel at full load without buckling of the spindle! The transverse force must be reduced for larger strokes. We can supply the corresponding force-stroke diagrams

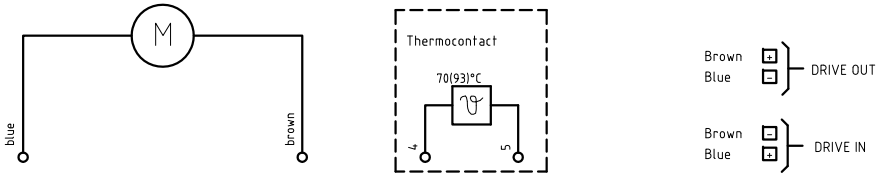
3) The stability is the maximum tensile force that may occur at the retracted cardan shaft. (locking force = locking pressure)

4) Either under load extending and load supporting retracting or under load retracting and load supporting extending.

5) If a bottom suspension (ground suspension) is used, stability is reduced to 2500N!

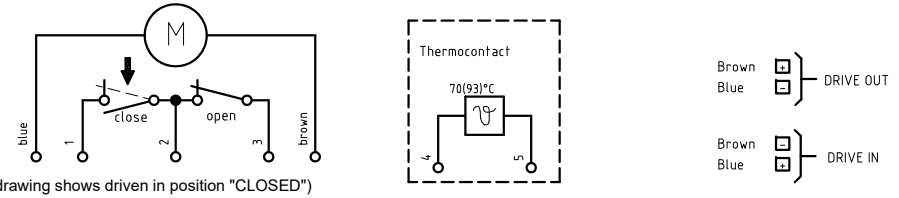
Connection diagram for standard design (with/without option TH)

OPTION TH: thermal contact integrated in the drive



Connection diagram with option E (with/without option TH)

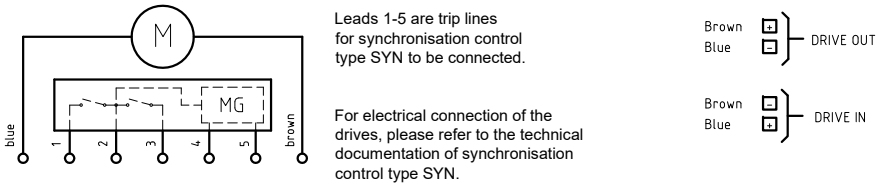
OPTION E: drive with potential-free opener contacts for both limit positions
OPTION TH: thermal contact integrated in the drive



(drawing shows driven in position "CLOSED")

Connection diagram with option SY

OPTION SY: drive with trip lines for synchronisation control type SYN



Leads 1-5 are trip lines for synchronisation control type SYN to be connected.

For electrical connection of the drives, please refer to the technical documentation of synchronisation control type SYN.

GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff:
						ID - Nr.:
					Datum / Name	Bezeichnung: **Technical data G08x, G10x and G13x** Electro-linear-actuator
				Bear.	26.11.2009 Simetzberger	
06	Zul. Umgebungstemp.	24.07.2012	SA	Gepr.	24.07.2012 HA	
05	Spindel Tr12x6 hinaus	13.06.2012	SA	Norm		
04	zusätz. Antriebstypen	12.06.2012	SA			
03	Polnisch	25.07.2011	SA	Type: Baureihe G		Zeichnung Nr.: 07.009.DAT.01.06-E / Blatt BL.
02	Text Mercor	30.05.2011	SA			
01	Französisch	05.04.2011	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		(Ers.f.:) 07.009.DAT.01.05 (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

G 16x, G20x, G26x

- 24V- electrically operated spindle actuator, in anodized aluminium enclosure. Anodized aluminium push rod
- Rated current: ,1,6A; 2,0A respectively 2,6A
- Ambient temperature range -20 to +60°C, to VdS 2580 for 2hrs up to +110°C
- Dimensions: see data sheet
- Disconnection at either end position by integrated limit switches
- Electronic “emergency stop” on overload
- Electronic parallel disconnection with PAS (see actuator controls) and synchronisation with SYN (see actuator controls) possible
- Protection to DIN EN 60529: IP40 (for use in dry rooms)
- Light grey silicone supply cable brought out at upper end, length approx. 2,5m, temperature range -50 to +180°C (to DIN VDE 0282)
- Continuous adjustability in mounting ensured by sliding blocks and bearing pins LB12-SL13-M5x16 (included)
- Including eyebolt M8 Ø8mm

Types:

Standard stroke: 350, 550 or 750mm,
For special stroke, please inquire.

Options: (see Data sheet)

Other cable length: specify full meters
Eyebolt: M8 Ø6mm or Ø10mm
Clevis: Also available as clevis GK8x16, GK8x32, GK10x20 or GK10x40 instead of eyebolt.
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).
RAL: Actuator enclosure painted in a RAL colour
U Ø6,1: Mounting at lower end with bore hole Ø6,1mm.
U M8: Mounting at lower end with thread M8, 11mm deep.
U Ø10,2: Mounting at lower end with bore hole Ø10,2mm.
UF Ø8,2: Mounting at lower end with bore hole Ø8,2mm for bracket **MK 24-1**.
THxx: Version with integrated thermal contact. Response temperature 70 or 93°C, available as NO or NC contact.

For more special versions please inquire

Dateiname: Qf0510B

General technical data:

1.) Anodised aluminium housing with a connecting rod made of aluminium (in the case of motor types G..B, G..C, G..D and G..E, the connecting rod is Ø18, for all other motor types it is Ø22)
2.) Radio interference suppression according to EN55011
3.) Cut-out in both limit positions by internal end switch
4.) Electronic emergency overload cut-out
5.) Electrical parallel connection is possible (NOTE: synchronising circuit is not possible)
6.) Eye bolt Ø6, Ø8 (standard) or Ø10mm
7.) Standard strokes 350, 550 and 750mm; special lengths available upon request
8.) Light grey silicone connecting cable standard length 2,5m; other lengths available upon request
-> for standard design: 2x0.75qmm / sheathing Ø ca. 6mm
-> with Option E: 2x2.5qmm / 3x1.5qmm / sheathing Ø ca. 11mm
-> with Option TH: 2x2.5qmm / 5x1.5qmm / sheathing Ø ca. 11mm
-> with Option SY: 2x2.5qmm / 5x1.5qmm / sheathing Ø ca. 11mm

Possible options:

1.) OPTION Diverse ground designs:
Motor design also provides for ground suspensions (please refer to options page "suspension variants".
2.) OPTION Diverse cardan shaft suspensions:
It is also possible to design motors with diverse cardan shaft suspensions (please refer to options page "Cardan shaft suspension variants".
3.) OPTION RAL... (available upon request):
The motor housing can be painted in an RAL colour. For instance, if option "RAL3000" is specified, the motor housing will be painted in RAL3000 (RED).
4.) OPTION E:
Internal potential-free end switches (Option E=opener) for both limit positions; current carrying capacity 24VDC/1A (e.g. for position indicator)
5.) OPTION TH... (available upon request):
Installed thermal contact that responds if a specified temperature has been exceeded. The following designs can be delivered:
TH70Ö ... response temperature 70°C - contact opens when actuated
TH70S ... response temperature 70°C - contact closes when actuated
TH93Ö ... response temperature 93°C - contact opens when actuated
TH93S ... response temperature 93°C - contact closes when actuated
Option TH... is NOT possible in connection with option SY. As this option is not possible in connection with all ground suspension variants, option TH is only possible available upon request.
6.) OPTION SY (available upon request):
See datasheets G08X-...-SY to G26X-...-SY
7.) OPTION sealing variants:
D05/D07 ..... system of protection IP54
IP42 ..... system of protection IP42 (Caution: The overall length of the actuator is extended by 4mm!)

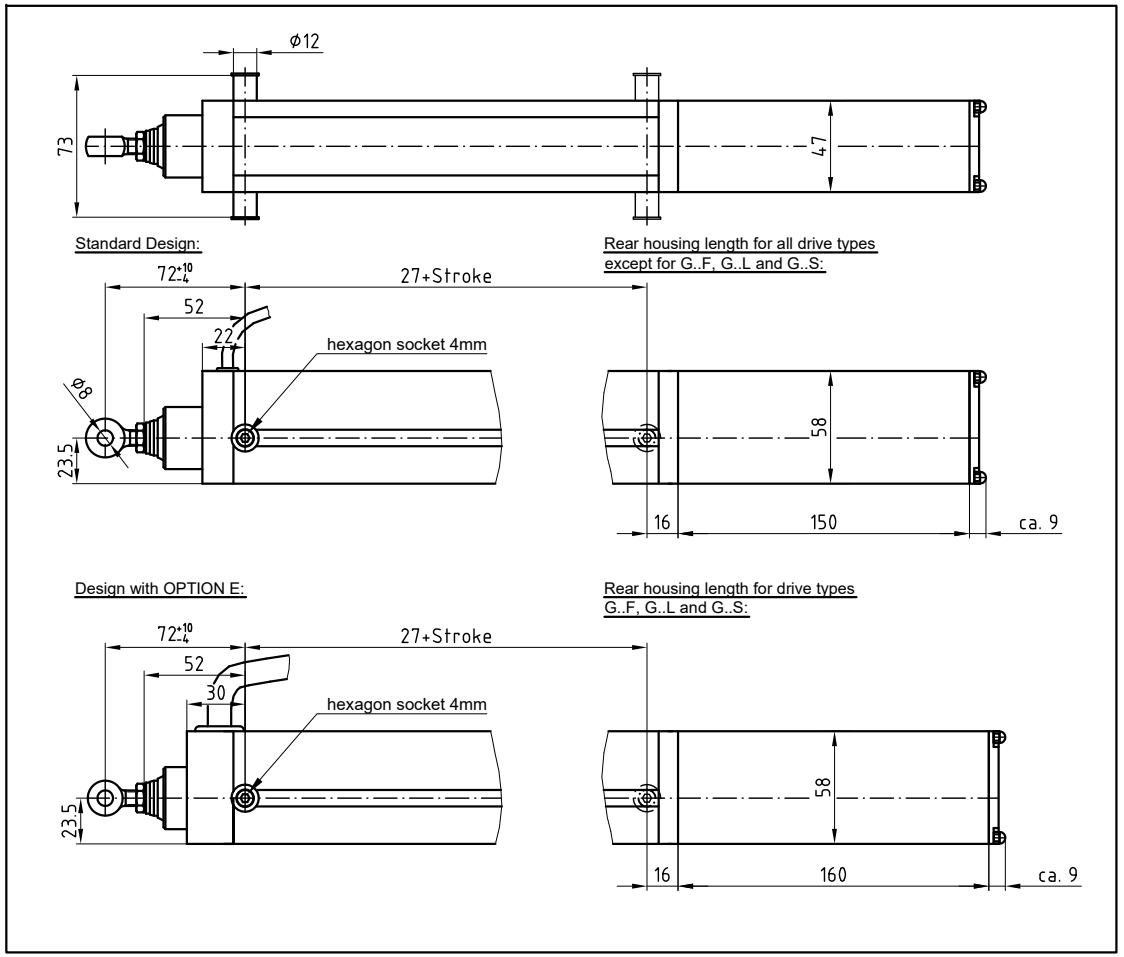
Ordering designation:

G(Type) - (Stroke) - (Eye bolt) - (Cable length) - (Options)

Legend:

Type: Drive type as selected from list of drives
Stroke: Driving stroke in [mm]
Eye bolt: Bore diameter of eye bolt in [mm]. Instead of the eye bolt, it is also possible to specify a different cardan shaft suspension (see options page "Cardan shaft suspension variants")
Cable length: Connecting cable length in [m]
Options: List of all requested options

Ordering example: G20B - 750 - 8 - 2.5 - E - RAL3000



GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff: / ID - Nr.:
					Datum	Name
				Bear.	26.11.2009	Simetzberger
				Gepr.	25.07.2011	GH
				Norm		
02	Polnisch	25.07.2011	SA	Type: Baureihe G		Zeichnung Nr.: 07.009.DAT.03.02-E / Blatt / BL.
01	Text	12.04.2010	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		(Ers.f.:) 07.009.DAT.03.01 (Ers.d.:)

Bezeichnung: **Data sheet** Electro-linear-actuator Type: G16x, G20x and G26x

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

Dateiname: Qf0510B

General technical data:

Seal variation	Standard:	Option D05/D07	Option IP42	unit
Rated current	24			VDC
No-load current	0.3			A
Permissible ambient temperature	-25 - +60			°C
Max. permissible temperature to EN12101-2 attachment G	300° - 30min			°C
System of protection according to DIN EN 60 529	IP 40 1)	IP 54	IP 42	

Technical data for drive types G16X:

Designation	G16B	G16C	G16D	G16E	G16G	G16H	G16J	G16K	G16M	G16N	G16P	G16R	unit
Transverse and tensile forces (full load)	1240	880	670	470	940	670	510	360	1110	790	600	420	N
Current at full load	1.6												A
Velocity (no-load)	8.1	11.5	14.3	19.5	10.8	15.3	19.1	26.0	8.1	11.5	14.3	19.5	mm/s
Velocity at full load	6.5	9.3	11.6	16.1	8.7	12.4	15.5	21.5	6.5	9.3	11.6	16.1	mm/s
Maximum stroke at full load 2)	446	530	607	725	1095	1297	1487	1770	807	956	1097	1312	mm
Class of rating for peak load according to DIN VDE 0530 Part 1 (at 25°C ambient temperature)	S2 4min.												
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 21% 4) (Maximum time of operation in one direction: 4min)												
Stability (locking force) 3)	3500 5)												N

Technical data for drive types G20X:

Designation	G20B	G20C	G20D	G20E	G20G	G20H	G20J	G20K	G20M	G20N	G20P	G20R	unit
Transverse and tensile forces (full load)	1630	1150	880	610	1240	870	670	460	1460	1030	790	550	N
Current at full load	2.0												A
Velocity (no-load)	8.1	11.5	14.3	19.5	10.8	15.3	19.1	26.0	8.1	11.5	14.3	19.5	mm/s
Velocity at full load	6.0	8.7	10.8	15.0	8.0	11.6	14.4	20.0	6.0	8.7	10.8	15.0	mm/s
Maximum stroke at full load 2)	389	464	530	636	954	1138	1297	1566	703	838	956	1146	mm
Class of rating for peak load according to DIN VDE 0530 Part 1 (at 25°C ambient temperature)	S2 2.5min.												
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 13% 4) (Maximum time of operation in one direction: 2.5min)												
Stability (locking force) 3)	3500 5)												N

Technical data for drive types G26X:

Designation	G26B	G26C	G26D	G26E	G26G	G26H	G26J	G26K	G26M	G26N	G26P	G26R	unit
Transverse and tensile forces (full load)	2200	1550	1190	830	1670	1180	900	630	1970	1390	1070	750	N
Current at full load	2.6												A
Velocity (no-load)	8.1	11.5	14.3	19.5	10.8	15.3	19.1	26.0	8.1	11.5	14.3	19.5	mm/s
Velocity at full load	5.3	7.7	9.6	13.4	7.1	10.3	12.8	17.9	5.3	7.7	9.6	13.4	mm/s
Maximum stroke at full load 2)	335	399	456	546	822	977	1119	1338	606	721	822	982	mm
Class of rating for peak load according to DIN VDE 0530 Part 1 (at 25°C ambient temperature)	S2 1.5min.												
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 8% 4) (Maximum time of operation in one direction: 1.5min)												
Stability (locking force) 3)	3500 5)												N

1) CAUTION: Not suitable for the use in damp locations or outside!

2) The maximum stroke at full load is the stroke that the drive can travel at full load without buckling of the spindle! The transverse force must be reduced for larger strokes. We can supply the corresponding force-stroke diagrams upon request.

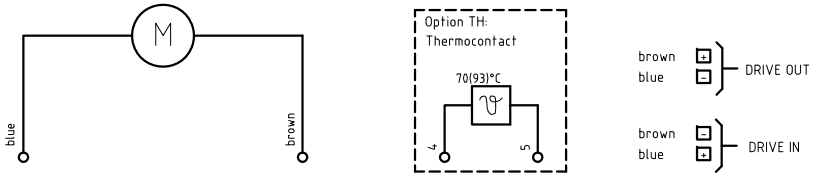
3) The stability is the maximum tensile force that may occur at the retracted cardan shaft. (locking force = locking pressure)

4) Either under load extending and load supporting retracting or under load retracting and load supporting extending.

5) If a bottom suspension (ground suspension)is used, stability is reduced to 2500N!

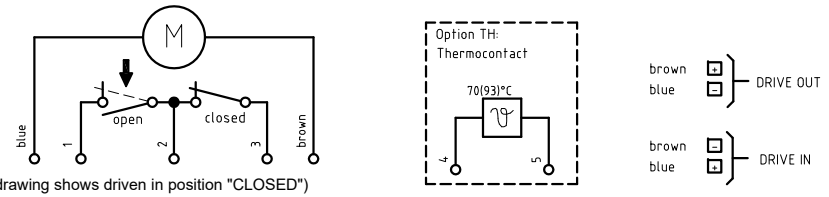
Connection diagram for standard design (with/without option TH)

OPTION TH: thermal contact integrated in the drive



Connection diagram with option E (with/without option TH)

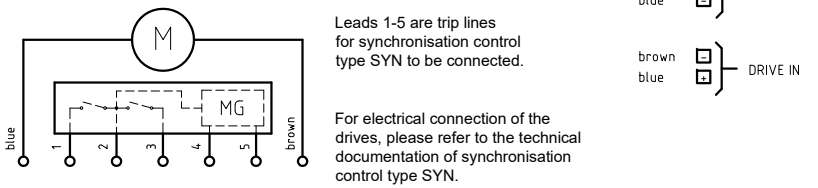
OPTION E: drive with potential-free opener contacts for both limit positions
OPTION TH: thermal contact integrated in the drive



(drawing shows driven in position "CLOSED")

Connection diagram with option SY

OPTION SY: drive with trip lines for synchronisation control type SYN



Leads 1-5 are trip lines for synchronisation control type SYN to be connected.

For electrical connection of the drives, please refer to the technical documentation of synchronisation control type SYN.

GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff: / ID - Nr.:
					Datum	Name
				Bear.	26.11.2009	Simetzberger
				Gepr.	24.07.2012	HA
05	Zul. Umgebungstemp.	24.07.2012	SA	Norm		
04	Spindel Tr12x6 hinaus	13.06.2012	SA			
03	zusätz. Antriebstypen	12.06.2012	SA	Type: Baureihe G		Zeichnung Nr.: 07.009.DAT.04.05-E / Blatt / BL.
02	Polnisch	25.07.2011	SA			
01	Text Mercor	30.05.2011	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		(Ers.f.:) 07.009.DAT.04.04 (Ers.d.:)

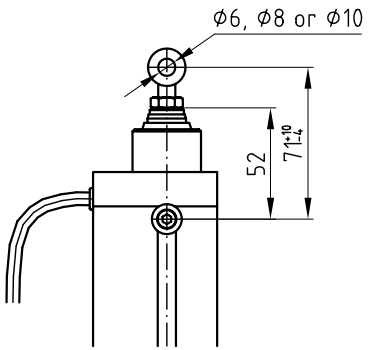
Bezeichnung: **Technical Data G16x, G20x and G26x**
Electro-linear-actuator

erstellt am
28.5.2002 ER

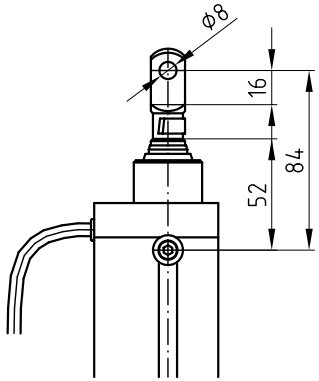
formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

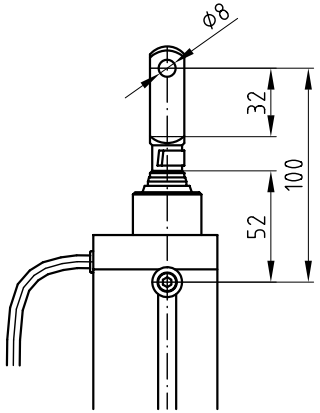
Design with eye bolt 6, 8 or 10
Designation 6, 8 or 10:



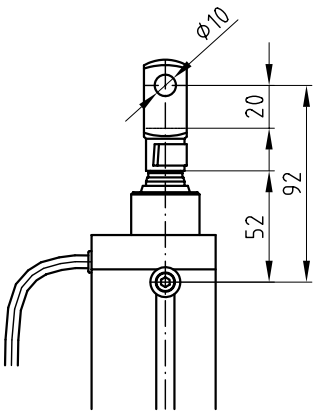
Design with fork head GK8x16
Designation GK8x16:



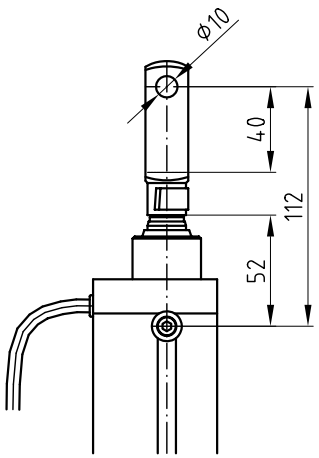
Design with eye bolt GK8x32
Designation GK8x32:



Design with fork head GK10x20
Designation GK10x20:



Design with fork head GK10x40
Designation GK10x40:



GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1	Freimaßtoleranz nach DIN 7168:	Maßstab: 1:1	Werkstoff:
		ID - Nr.:	
	Datum / Name Bear. 30.11.2009 Simetzberger Gepr. 20.01.2010 ER Norm	Bezeichnung: **Cardan shaft suspension variants** Electro-linear-actuator Type: G08x, G10x, G13x, G16x, G20x and G26x	
	Type: Baureihe G	Zeichnung Nr.: 07.009.DAT.11.00-E	Blatt BL.
Zus. Änderung Datum Name	(Urspr.)	(Ers.f.:) 07.002.26.D	(Ers.d.:)

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28.5.2002 ER

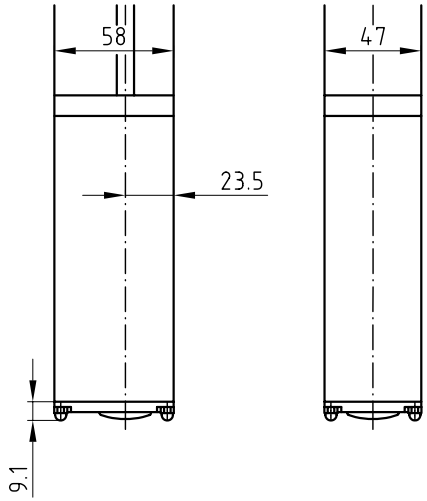
formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

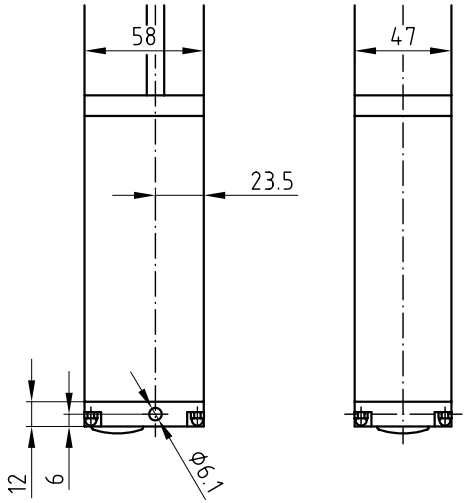
QM-FO 05.10 Rev. B-05/2002
Zeichenformat A3 quer 1

Dateiname: Qf0510B

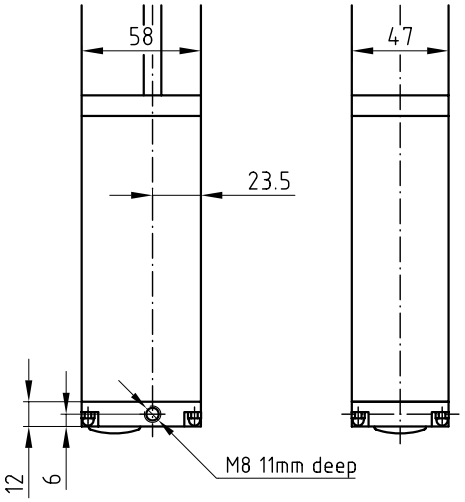
Standard design:



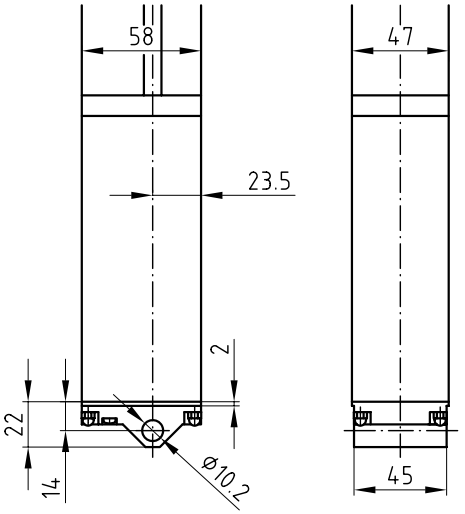
Lower suspension with bore Ød6.1
Design U Ø6.1:



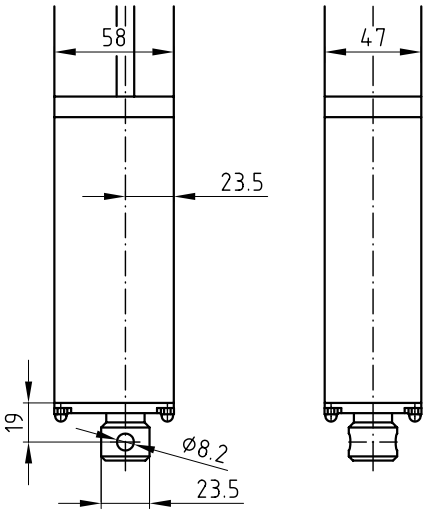
Lower suspension with thread M8
Design U M8:



Lower suspension with bore Ød10.2
Design U Ø10.2:



Window Suspension
Design UF Ø8.2:



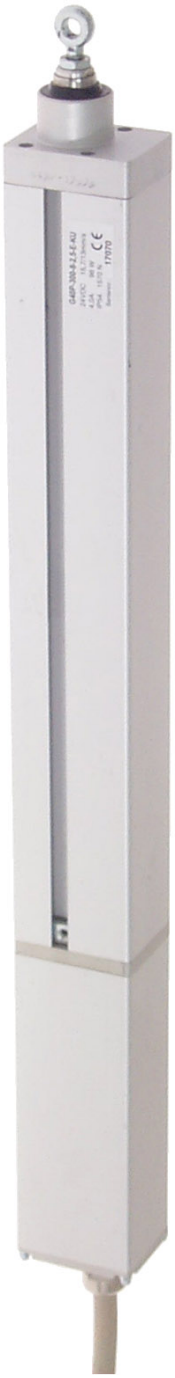
GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff:
						ID - Nr.:
					Datum / Name	Bezeichnung: **Suspension variants** Electro-linear-actuator Type: G08x, G10x, G13x, G16x, G20x and G26x
				Bear.	30.11.2009 / Simetzberger	
				Gepr.	20.01.2010 / ER	
				Norm		
				Type: Baureihe G		Zeichnung Nr.: 07.009.DAT.10.00-E / Blatt / BL.
Zus.	Änderung	Datum	Name	(Urspr.)		(Ers.f.:) 07.002.25.D / (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

G 40P-VdS, G 40J, GS 40P, GS 40J



- 24V- electrically operated spindle actuator, in anodized aluminium enclosure. Push rod: anodized aluminum Ø22 (G40P/G40J) or steel Ø22 (GS40P/GS40J)
- Rated current: 4,0A
- VdS approval G 502006
- Ambient temperature range -5 to +75°C; to VdS 2580 for 2hrs up to +110°C
- Dimensions: see data sheet
- Disconnection at either end position by integrated limit switches
- Electronic “emergency stop” on overload
- Protection to DIN EN 60529: IP54 (for use in dry rooms)
- Light grey silicone supply cable brought out at upper end, length approx. 2,5m, temperature range -50 to +180°C (to DIN VDE 0282)
- Continuous adjustability in mounting ensured by sliding blocks and bearing pins LB12-SL13-M5x16 (included)
- Including eyebolt M8 Ø8mm

Types:

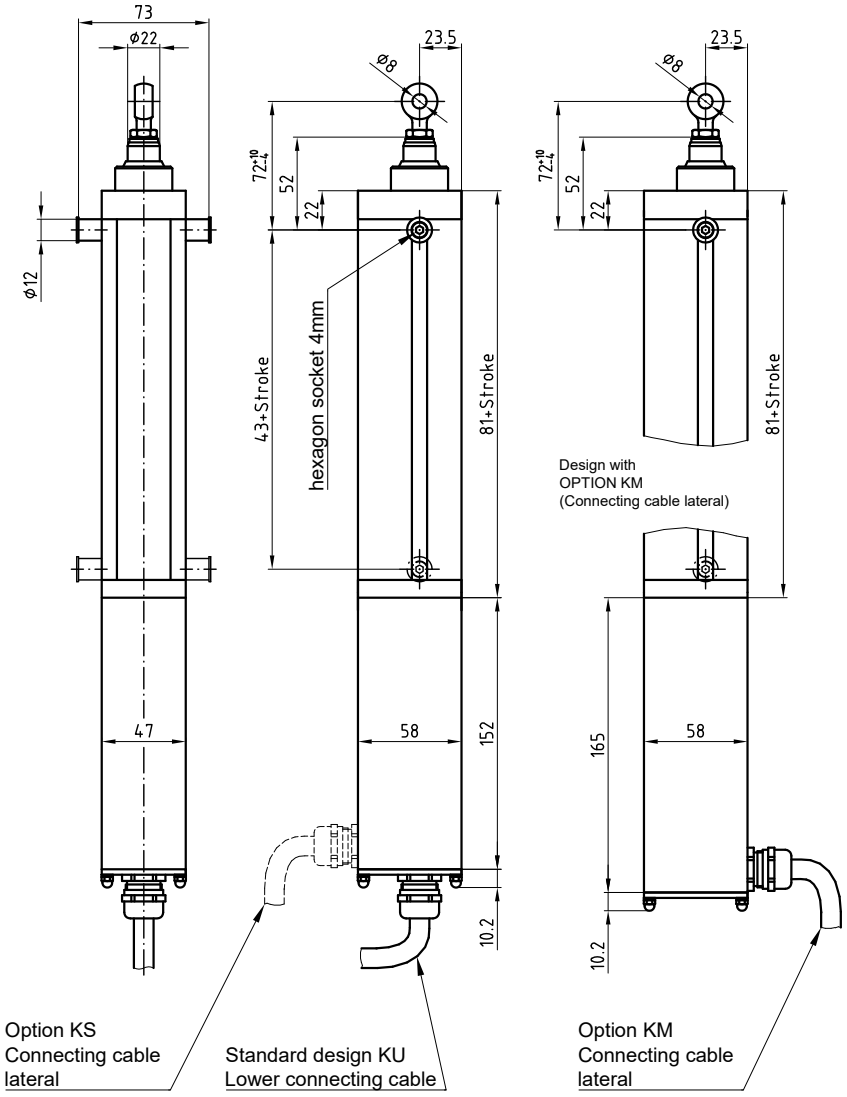
Standard stroke: 350, 550 or 750mm,
For special stroke, please inquire.

Options: (see Data sheet)

Other cable length: specify full meters
Eyebolt: M8 Ø6mm or Ø10mm
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).
RAL: Actuator enclosure painted in a RAL colour
KS / KM: : Supply cable exit is at side of lower end of actuator.

For more special versions please inquire

Dateiname: Qf0510B



Technical description:

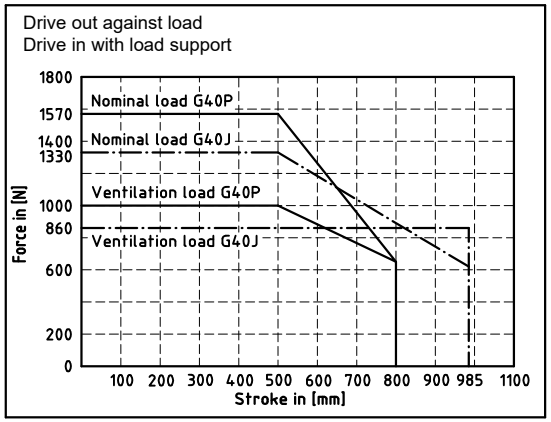
- Maintenance-free
- Anodised aluminium housing, pushrod made of aluminium Ø22 (G40P/G40J) or steel Ø22 (GS40P/GS40J)
- Radio interference suppression according to EN55011
- Cut-out in both limit positions by internal end switch
- Electronic emergency overload cut-out
- Electrical parallel connection is possible (NOTE: synchronising circuit is not possible)
- Light grey silicone connecting cable 2x2.5qmm + 3x1.5qmm, sheating Ø ca. 11mm, for standard length 2,5m, other length available upon request
- Eye bolt Ø6, Ø8 (standard) or Ø10mm
- Standard strokes 350, 550 and 750mm; special lengths available upon request
- OPTION E: potential-free end switches (opener) for both limit positions, current carrying capacity 1A/24VDC (e.g. for position indicator)
- Nominal triggering temperature of fire detection element that can be interfaced 93°C

Technical data Elektro-Linear-Drive G40P:

Designation	G40P	G40J	unit
Rated Current	24	24	VDC
Tolerance for rated voltage	-20/+30	-20/+30	%
No-load current	0.8	0.8	A
Nominal Load from 0 - 500mm stroke	1570	1330	N
Current at nominal load from 0 - 500mm stroke	4.0	4.0	A
Maximum overload cut-off current	4.8	4.8	A
Maximum current and maximum time of deadlock until system switches off by overload cut-out	14A for 80ms	14A for 80ms	
Maximum pressure force during deadlock	13000	13000	N
Number of deadlocks / time interval (trigger rate for deadlock)	15 times / 2 min	15 times / 2 min	
Ventilation- and nominal load course over the entire stroke	Load diagramm	Load diagramm	N
Max. stroke at no-load in 60s	800	985	mm
Permissible ambient temperature for RWA VdS 2580	-5 to +110 ×)	-5 to +110 ×)	°C
System of protection according to DIN EN 60 529	IP54	IP54	
Class of rating for peak load according to DIN VDE 0530 Part 1 (at 25°C ambient temperature)	S3 30%	S3 30%	
Stability (locking force)	3500	3500	N
Environmental class according to VdS 2580	I	I	

×) stress period at 110°C max 2h

Load diagramm:

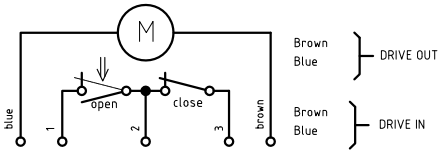


Type and ordering designation:

G40P-750-8-2,5-...-...

- Option potential-free end switches
  not specified ... without option E (standard)
  E ... with option E
- Option cable outlet
  no specified ... lower cable outlet
  KS ... cable outlet lateral
  KM ... cable outlet lateral (opposite side)
- Connecting cable length in m (standard 2,5
- Hole diameter of eye bolt in mm
- Stroke in mm
- Motor type (G40P/GS40P/G40J/GS40J)

Circuit diagramm:
(drawing shows driven in position "CLOSED")



Description of function:

When connecting the rated voltage for "DRIVE OUT" at connecting cable (see wiring diagram) the drive will drive out and disconnect in limit position by end switch. If drive is equipped with Option E, the respective potential-free contact will open (see wiring diagram).

When connecting the rated voltage for "DRIVE IN" at connecting cable (see wiring diagram) the drive will drive in and disconnect in limit position by end switch. If drive is equipped with Option E, the respective potential-free contact will open (see wiring diagram).

The drive is also provided with an overload cut-out that will disconnect the drive in the event event of overload to safeguard against any damage. This means that the overload cut-out will respond if charging rate exceeds maximum cut-off current (see technical data), and will lock to safeguard against restart. Once the drive is idle, lock is reset and drive is once again ready for operation.

GRASL
Pneumatic-Mechanik GmbH
A-3454 Reidling
Europastraße 1

Freimaßtoleranz nach DIN 7168:

Maßstab: 1:1 | Werkstoff:

ID - Nr.:

					Datum	Name
				Bear.	30.11.2009	Simetzberger
				Gepr.	07.08.2013	KW
				Norm		
04	G40J, diverse Änd.	24.06.2013	SA			
03	Version Französisch	26.07.2012	SA			
02	Text	10.06.2010	SA			
01	Text	04.05.2010	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		

Bezeichnung:
Data sheet
Electro-linear-actuator
Type: G40P / GS40P / G40J / GS40J

Type: Baureihe G

Zeichnung Nr.: 07.009.DAT.08.04-E

Blatt
BL.

(Ers.f.:) 07.009.DAT.08.03 (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

G 40x, G 60x, G 80x

- 24V- electrically operated spindle actuator, in anodized aluminium enclosure. Anodized aluminium push rod
- Rated current: 4,0A, 6,0A respectively 8,0A
- Internal interference suppression to EN55011
- Ambient temperature range -25 to +60°C, to EN 12101-2 annex G for 30 min. up to +300°C
- Dimensions: see data sheet
- Disconnection at either end position by integrated limit switches
- Electronic “emergency stop” on overload
- Electronic parallel disconnection with PAS (see actuator controls) and synchronisation with SYN (see actuator controls) possible
- dimensions: see data sheet
- Protection to DIN EN 60529: IP40 (for use in dry rooms)
- Light grey silicone supply cable brought out at upper end, length approx. 2,5m, temperature range -50 to +180°C (to DIN VDE 0282)
- Continuous adjustability in mounting ensured by sliding blocks and bearing pins LB12-SL13-M5x16 (included)
- Including eyebolt M8 Ø8mm

Types:

Standard stroke: 350, 550 or 750mm,
For special stroke, please inquire.

Options: (see Data sheet)

Other cable length: specify full meters
Eyebolt: M8 Ø6mm or Ø10mm
Clevis: Also available as clevis GK8x16, GK8x32, GK10x20 or GK10x40 instead of eyebolt.
KU, KS, und KM: Cable connection at enclosure. If this option is not specified, standard version KU will be executed.
Option KU is not possible with all types of lower end configuration
Various configuration of lower end: Actuators can also be arranged with lower end mounting
RAL: Actuator enclosure painted in a RAL colour
E and ES: Additional switches integrated (option E=NC contact / option ES=NO contact) for indication of both end positions; potential-free NC contacts, 24V- / 1A
THxx: Version with integrated thermal contact. Response temperature 70 or 93°C, available as NO or NC contact.

For more special versions please inquire

Dateiname: Qf0510B

General technical data:

1.) Anodised aluminium enclosure with a push rod of aluminium Ø22.
2.) Internal interference suppression to EN55011
3.) Disconnection at either end position by integrated limit switches
4.) Electronic "emergency stop" on overload
5.) Allows electric parallel actuator cut-off control (IMPORTANT: no synchronism)
6.) Eyebolt Ø 6, Ø 8 (standard) or Ø 10mm
7.) Standard strokes 350, 550 and 750mm; special lengths on request
8.) Light grey silicone supply lead, standard length 1.5m; other lengths on request
-> for standard version 2x2,5sq.mm / sheathing Ø approx. 9mm
-> with option E and ES: 2x2.5sq.mm / 3x1.5sq.mm / sheathing Ø approx. 11mm
-> with option TH: 2x2.5sq.mm /5x1.5sq.mm / sheathing Ø approx. 11mm
-> with option SY: 2x2.5sq.mm / 5x1.5sq.mm / sheathing Ø approx. 11mm

Possible Options:

1.) OPTION KU, KS, KO and KM:
Cable connection at enclosure (see dimensional drawing). If this option is not specified, standard version KU will be executed.
Option KU is not possible with all types of lower end configuration (cf. table under item "2 Option: Various configurations of lower end")

2.) OPTION Various configuration of lower end:
Actuators can also be arranged with lower end mounting (cf. option sheet "mounting variants").
Please refer to the following table to establish the possibilities of combining lower end configuration and variant of cable connection:

	Option KU	Option KS	Option KM	Option KO
Standard version:	●			
Option D (cap without cable outlet)		●	●	●
Option UØ6.1 (lower end borehole Ø6.1)	●	●	●	●
Option U M8 (thread M8 in lower end)	●	●	●	●
Option U Ø10.2 (lower end borehole Ø10.2)		●	●	●
Option UF Ø8.2 (mounting at lower end Ø8.2)		●	●	●

3.) OPTION Various push rod mountings:
Please refer to option sheet "Variants of push rod mounting"

4.) OPTION RAL... (on request):
Actuator enclosure can be painted to RAL colour code. Example: if "RAL 3000" is specified as an option, the actuator enclosure will have a red finish to RAL 3000.

5.) OPTION E and ES:
Internal potential-free limit switches (option E=NC contact / option ES=NO contact) for either end position; load rating 24VDC / 1A (e.g. for indication of position)

6.) OPTION TH... (on request):
Integrated thermal contact which responds as soon as a certain temperature is exceeded.
The following versions are available:
TH70Ö ... response temperature 70°C - contact opens at response
TH70S ... response temperature 70°C - contact closes at response
TH93Ö ... response temperature 93°C - contact opens at response
TH93S ... response temperature 93°C - contact closes at response
Option TH... CANNOT be combined with option SY. As option cannot be combined with all variants of lower end mounting, please inquire for option TH.

7.) OPTION SY (on request):
While the standard actuators can be electrically connected in parallel, there may be differences in stroke while operating due to various factors (such as different loads, voltage drop in supply lead etc.), PREVENTING the actuators from running in synchronism. To ensure synchronised operation, select option SY in conjunction with a synchronising control.

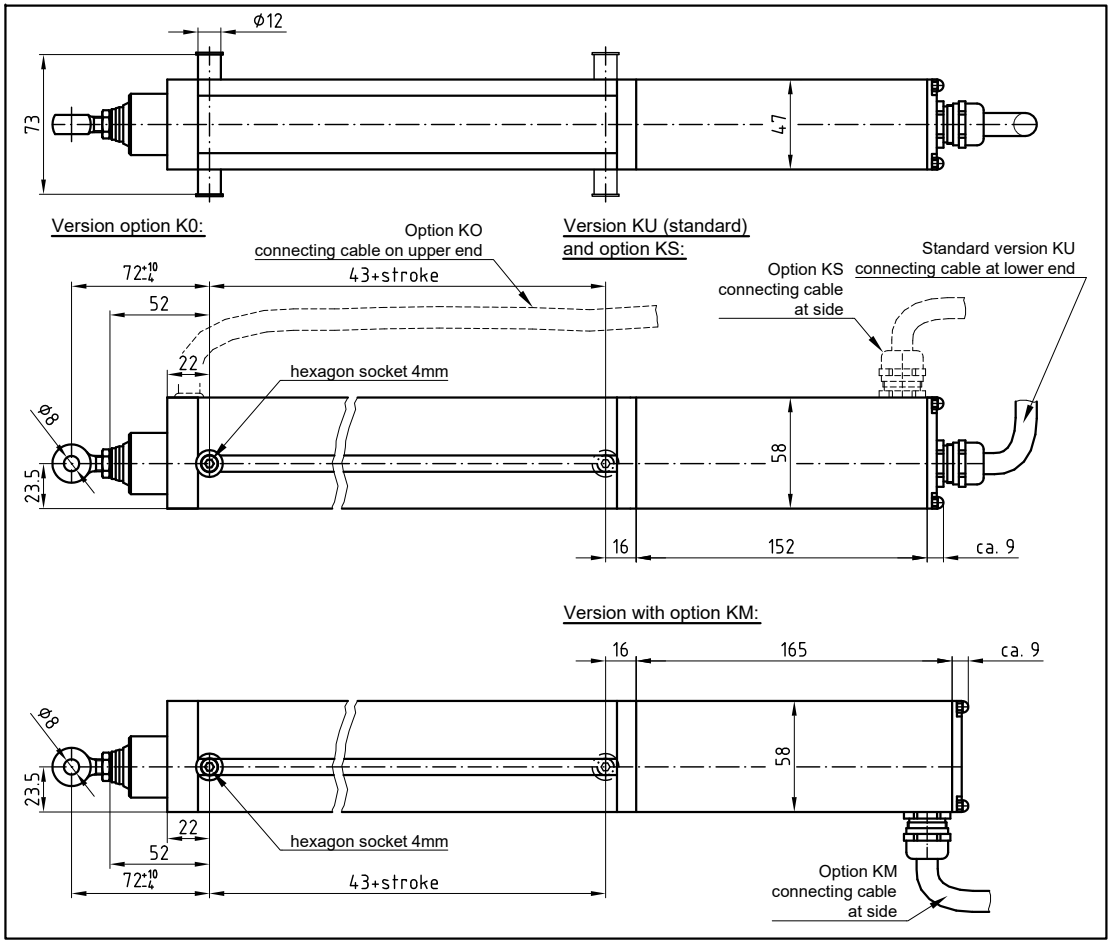
8.) OPTION sealing variants:
D05/D07 ..... system of protection IP54
IP42 ..... system of protection IP42 (Caution: The overall length of the actuator is extended by 4mm!)

Order reference:

G(type) - (stroke) - (Eyebolt) - (cable length) - (options)

Legend:
Type: Actuator type selected from list of drives
Stroke: Actuator stroke in mm
Eyebolt: Eye diameter of eyebolt in mm. Instead of eyebolt, another type of push rod mounting may be specified (see sheet of options "variants of push rod mounting")
Cable length: Length of connecting cable in mm
Options: List of all desired options

Ordering example: G40P - 750 - 8 - 2,5 - KS - E - RAL 3000



GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1	Freimaßtoleranz nach DIN 7168:	Maßstab: 1:1	Werkstoff:
		ID - Nr.:	
	Bear. 27.11.2009 Simetzberger	Bezeichnung: **Data sheet** Electro-linear-actuator Type: G40x, G60x and G80x	
	Gepr. 25.07.2011 GH		
	Norm		
02 Polnisch 25.07.2011 SA	Type: Baureihe G	Zeichnung Nr.: 07.009.DAT.06.02-E	Blatt BL.
01 Text 12.04.2010 SA			
Zus. Änderung Datum Name	(Urspr.)	(Ers.f.:) 07.009.DAT.06.01	(Ers.d.:)

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28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

Dateiname: Qf0510B

General technical data:

Seal variation	Standard:	Option D05/D07	Option IP42	unit
Rated voltage	24			VDC
No-load current	0.8			A
Admissible ambient temperature	-25 - +60			°C
Max. permissible temperature to EN12101-2 attachment G	300° - 30min			°C
Protective standard DIN EN 60 529	IP 40 1)	IP 54	IP 42	

Technical data of drive system G40X:

Description	G40G	G40H	G40J	G40K	G40N	G40P	G40R	unit
Push/pull force (full load)	2500	1600	1330	880	1890	1570	1040	N
Current at full load	4.0							A
No-load speed	11.4	16.5	21.0	28.5	12.4	15.8	21.4	mm/s
Speed at full load	9.4	13.4	17.3	23.6	10.1	13.0	17.7	mm/s
Max. stroke at full load 2)	672	839	921	1132	618	678	834	mm
Duty cycle (DIN VDE 0530 part 1) at 25° ambient temperature	S2 4min.							
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 20% 4) (Maximum time of operation in one direction: 4min)							
Stability (locking force) 3)	3500 5)							N

Technical data of drive system G60X:

Description	G60J	G60K	G60P	G60R	unit
Push/pull force (full load)	2160	1440	2560	1710	N
Current at full load	6.0				A
No-load speed	21.0	28.5	15.8	21.4	mm/s
Speed at full load	15.0	20.5	11.3	15.4	mm/s
Max. stroke at full load 2)	722	885	531	650	mm
Duty cycle (DIN VDE 0530 part 1) at 25° ambient temperature	S2 2min.				
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 10% 4) (Maximum time of operation in one direction: 2,5min)				
Stability (locking force) 3)	3500 5)				N

Technical data of drive system G80X:

Description	G80K	G80R	unit
Push/pull force (full load)	2000	2370	N
Current at full load	8.0		A
No-load speed	28.5	21.4	mm/s
Speed at full load	17.4	13.1	mm/s
Max. stroke at full load 2)	751	552	mm
Duty cycle (DIN VDE 0530 part 1) at 25° ambient temperature	S2 1min.		
Class of rating for continuous load according to DIN VDE 0530 Part 1 (at 40°C ambient temperature)	S3 5% 4) (Maximum time of operation in one direction: 1,5min)		
Stability (locking force) 3)	3500 5)		N

1) CAUTION: not suitable for use in moist rooms!

2) Maximum stroke at full load is the stroke performed by the actuator at full load without deflection of the spindle!
For longer strokes pushing force must be reduced. Appropriate force/stroke diagram swill be made available on request.

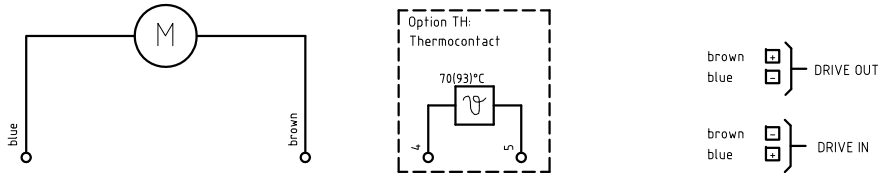
3) Stability is the maximum pulling force allowed to act on the push rod when retracted. (Locking force = closing force)

4) Either under load extending and load supporting retracting or under load retracting and load supporting extending.

5) In the case of mounting at lower end, stability will decrease to 2,500N!

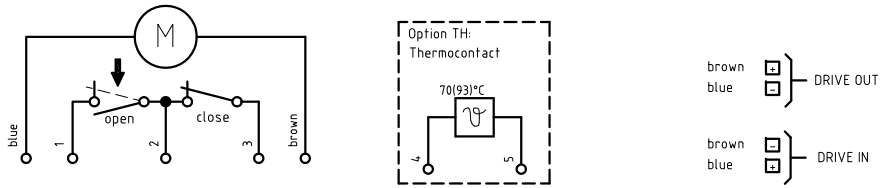
Terminal diagram standard version (with/without option TH)

OPTION TH: thermal contact integrated in drive



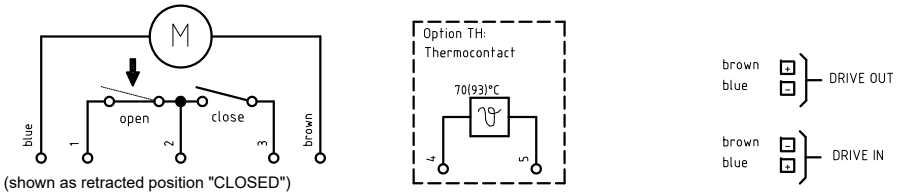
Terminal diagram with option E (with/without option TH)

Option E: drive with potential-free opening contacts for both end positions
OPTION TH: thermal contact integrated in drive



Terminal diagram with option ES (with/without option TH)

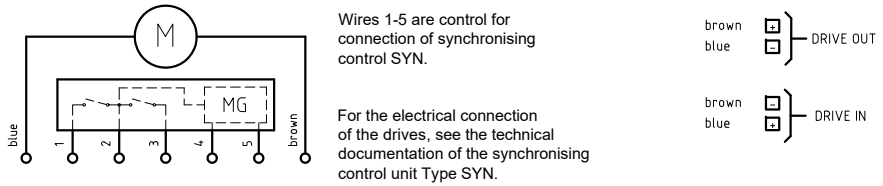
Option E: drive with potential-free closing contacts for both end positions
OPTION TH: thermal contact integrated in drive



(shown as retracted position "CLOSED")

Terminal diagram with option SY

OPTION SY: drive with control lines for synchronising control unit Type SYN



Wires 1-5 are control for connection of synchronising control SYN.

For the electrical connection of the drives, see the technical documentation of the synchronising control unit Type SYN.

GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff: / ID - Nr.:
					Datum	Name
				Bear.	30.11.2009	Simetzberger
				Gepr.	24.07.2012	HA
05	Zul. Umgebungstemp.	24.07.2012	SA	Norm		
04	Spindel Tr12x6 hinaus	13.06.2012	SA			
03	zusätz. Antriebstypen	12.06.2012	SA	Type: Baureihe G		Zeichnung Nr.: 07.009.DAT.07.05-E / Blatt / BL.
02	Polnisch	25.07.2011	SA			
01	Text Mercor	30.05.2011	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		(Ers.f.:) 07.009.DAT.07.04 (Ers.d.:)

Bezeichnung: **Technical data G40x, G60x and G80x**
Electro-linear-actuator

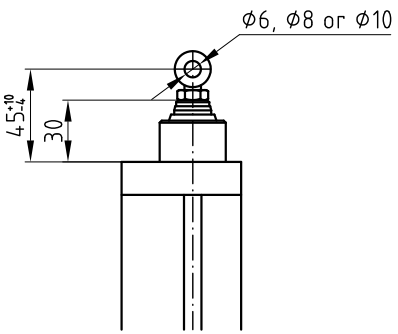
erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

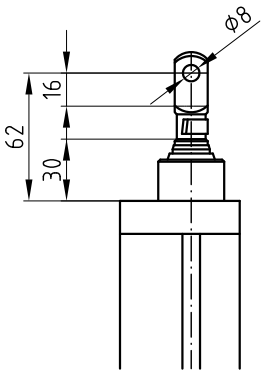
fachlich geprüft am
29.5.2002 KW

Dateiname: Qf0510B

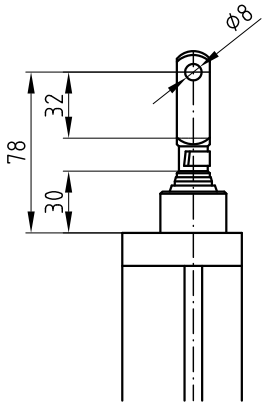
Version with eye bolt 6, 8 or 10
description 6, 8 or 10:



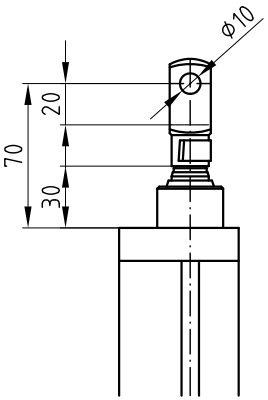
Version with clevis GK8x16
description GK8x16:



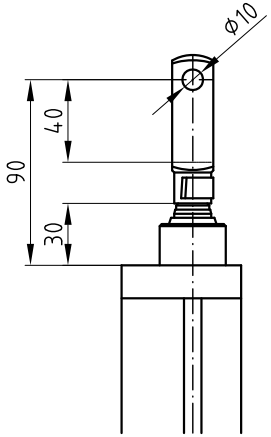
Version with clevis GK8x32
description GK8x32:



Version with clevis GK10x20
description GK10x20:



Version with clevis GK10x40
description GK10x40:



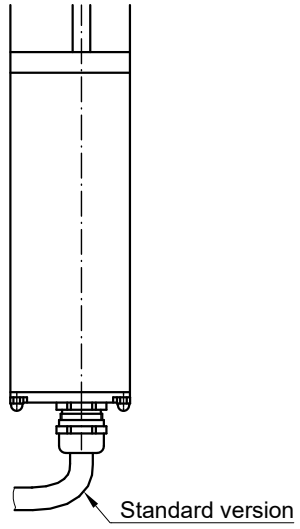
GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1	Freimaßtoleranz nach DIN 7168:	Maßstab: 1:1	Werkstoff:
		ID - Nr.:	
	Bear. 30.11.2009 Simetzberger Gepr. 20.01.2010 ER Norm	Bezeichnung: **Cardan shaft suspension variants** Electro-linear-actuator Type: G40x, G60x and G80x	
	Type: Baureihe G	Zeichnung Nr.: 07.009.DAT.13.00-E	Blatt BL.
Zus. Änderung Datum Name	(Urspr.)	(Ers.f.:) 07.001.49.E	(Ers.d.:)

erstellt am
28.5.2002 ER

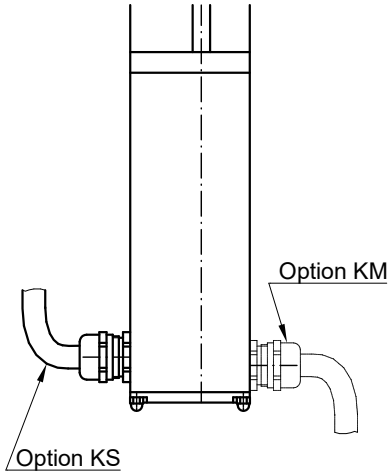
formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

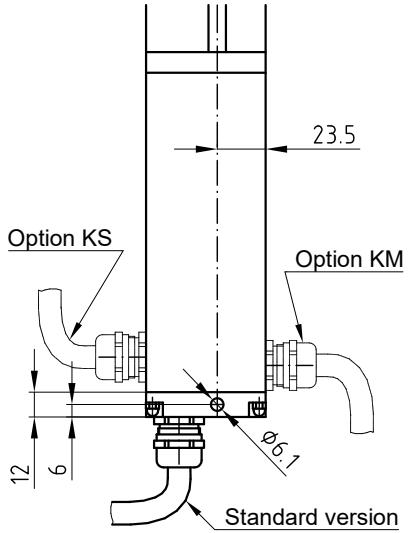
Standard version:



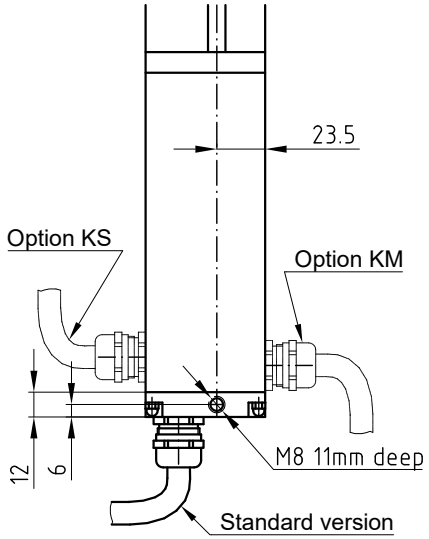
Option cable exit at side of lower end
Option D:



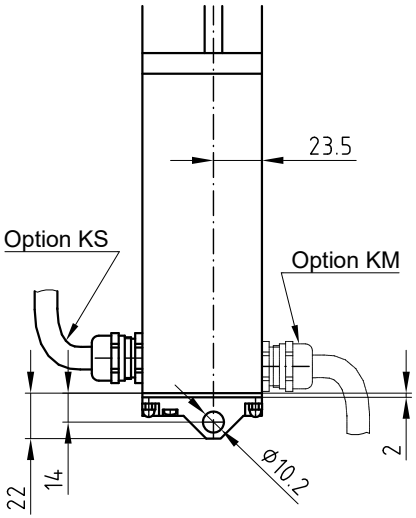
Mounting at lower end with bore hole Ø6.1
Option U Ø6.1:



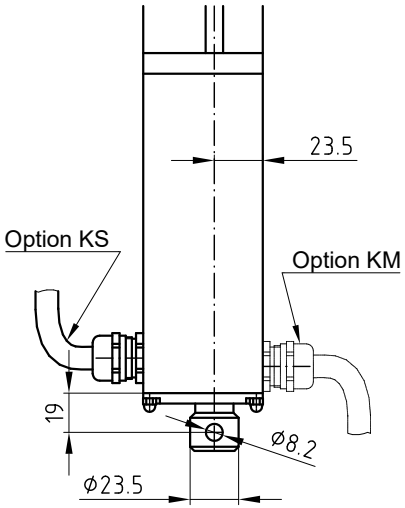
Mounting at lower end with thread M8
Option U M8:



Mounting at lower end with bore hole Ø10.2
Option U Ø10.2:



Window mounting
Option UF Ø8.2:



GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:			Maßstab: 1:1 / Werkstoff: / ID - Nr.:
					Datum	Name	Bezeichnung: **Suspension variants** Electro-linear-actuator Type: G40x, G60x and G80x
				Bear.	30.11.2009	Simetzberger	
				Gepr.	20.01.2010	ER	
				Norm			
				Type: Baureihe G			Zeichnung Nr.: 07.009.DAT.12.00-E / Blatt BL.
Zus.	Änderung	Datum	Name	(Urspr.)			(Ers.f.:) 07.001.48.E / (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

SG08x, SG10x, SG13x

- 24V- electrically operated spindle actuator, in anodized aluminium enclosure. Anodized aluminium or steel push rod
- Rated current: 0,8A; 1,0A respectively 1,3A
- Internal interference suppression according to EN55011
- Ambient temperature range -25 to +60°C, to EN 12101-2 annex G for 30 min. up to +300°C
- Disconnection in both end positions through internal limit switches
- Electronic “emergency stop switch-off” on overload
- Protection against operation with low voltage
- Dimensions: see data sheet
- Unit can be electronic parallel disconnected with PAS (see actuator controls) possible (NOTE: but no synchronous operation)
- Protection motor/electronic to DIN EN 60529: IP54
- Light grey silicone supply cable with connector brought out at side at lower end, length approx. 2,5m, other length on request.
  Temperature range -50 to +180°C (to DIN VDE 0282)
- Continuous adjustability in mounting ensured by sliding blocks and bearing pins LB12-SL13-M5x16 (included)
- Including eyebolt M10 Ø8mm

Types:

Standard stroke: 350, 550 or 750mm,
For special stroke, please inquire.

Options: (see data sheet)

Other cable length: specify full meters
Eyebolt: M10 Ø6mm or Ø10mm
Clevis: Also available as clevis GK6x12, GK6x24, GK8x16, GK8x32, GK10x20 or GK10x40 instead of eyebolt.
Pushrod: made of steel
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).
RAL: Actuator enclosure painted in a RAL colour
U M8: Mounting at lower end with thread M8, 11mm deep.
U Ø10,2: Mounting at lower end with bore hole Ø10,2mm.
U G1/8”: Mounting at lower end with thread 1/8”.
IP65: Protection motor/electronic: IP65
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).

For more special versions please inquire

Dateiname: Qf0510B

Technical description:

1.) Anodised aluminium housting with a pushrod of aluminium or steel
2.) Internal interference suppression according to EN55011
3.) Disconnection in both end positions through internal limit switches
4.) Electronic overload emergency disconnection
5.) Electric shunt connection possible (NOTE: but no synchronous operation)
6.) Eye bolt Ø6, Ø8 (Standard) or Ø10mm
7.) Clevis Ø6, Ø8 or Ø10mm
8.) Light grey silicone connection line - standard lenght 2,5m; other lenghts on request
-> with standard version: 2x2.5qmm / sheath Ø approx. 9mm
-> with option E: 2x2.5qmm / 3x1.5qmm / sheath Ø approx. 11mm

Possible options:

1.) OPTION Various floor versions:
It is also possible to design motors with floor mountings (see data sheet 07.021.DAT.01.xx).
2.) OPTION Various torque tube suspensions:
See data sheet 07.021.DAT.02.xx.
3.) OPTION RAL .... (on request):
It is possible to paint the motor housing in a RAL shade or colours. This means that if the Option "RAL3000" is indicated for exaple the housing will be painted in RAL3000 (red)
4.) OPTION E:
Internal floating limit switch (Option E=NCC) for both end positions;
load capacity 24VDC/1A (e.g. for position indication)

Ordering designation:

SG(typ)/(torque tube) - (stroke) - (torque tube mounting) - (cable lenght) - (options)

Legend:

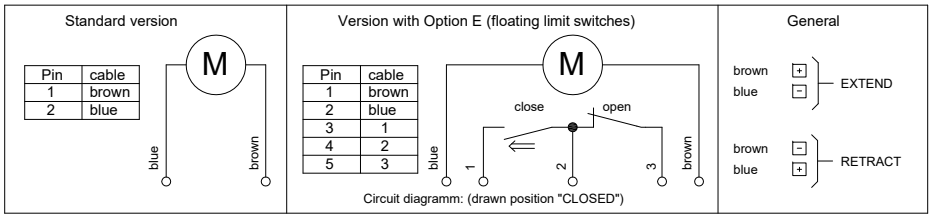
type: type of drive selected is the drive list
torque tube: available in aluminium (Ø25A), stainless steel 1.4301 (Ø25), or St52 zinc-plated (Ø25S)
stroke: stroke in [mm]
torque tube attachement: - eye bolt (standard): bore hole of eye bolt in [mm].
- clevis: bore hole and lenght of slot of the clevis in [mm].
cable lenght: lenght of connection cable in [m]
protection class: protection class according DIN EN 60 529
options: list of all desired options

Ordering example: SG13P/25 - 750 - 8 - 2,5 - RAL 3000

General technical data:

sealing version	standard
rated voltage	24VDC
no load current	0,8A
permissible ambient temperature	-25°C - +60°C
max. permissible temperature to EN 12101-2 attachment G	300° - 30min
protection type according to DIN EN 60 529	IP 54

Connecting diagramms:



Technical data drive types SG08X:

Designation	SG08A	SG08B	SG08C	SG08D	SG08E	SG08F	SG08G	SG08H	SG08J	SG08K	SG08L	SG08M	SG08N	SG08P	SG08R	
																Unit
Pushing and pulling force (full load)	820	530	380	300	210	550	360	260	200	150	1080	700	510	390	280	N
Current with full load	0.8															A
speed (no load)	5.5	10.0	14.0	17.9	24.8	8.3	15.1	20.9	26.9	37.2	4.1	7.5	10.5	13.5	18.6	mm/s
speed at full load	4.1	7.5	10.4	13.4	18.5	6.2	11.2	15.6	20.0	27.7	3.1	5.6	7.8	10.0	13.9	mm/s
Maximum stroke at full load 1)	1120	1391	1640	1859	2186	2355	2927	3449	3911	4599	690	857	1010	1145	1347	mm
Operating mode for peak load according DIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 4min.															
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 36% 3) (Maximum time of operation in one direction: 4min)															
Stability (locking force) 2)	3200 (with standard bearing pins LB12-SL13) / 3500 (with bearing pins LB18-2-SL13)															N
possible torque tube versions	Ø25A, Ø25, Ø25S					Ø25, Ø25S					Ø25A, Ø25, Ø25S					mm
standard bearing pin diameter	Ø12															mm
Dimensions (see dimesional drawing):	Figure 1															

Technical data drive types SG10X:

Designation	SG10A	SG10B	SG10C	SG10D	SG10E	SG10F	SG10G	SG10H	SG10J	SG10K	SG10L	SG10M	SG10N	SG10P	SG10R	
																Unit
Pushing and pulling force (full load)	1090	710	510	400	290	740	480	340	270	190	1440	940	670	520	380	N
Current with full load	1.0															A
speed (no load)	5.5	10.1	14.0	18.0	24.8	8.3	15.1	21.0	26.9	37.2	4.1	7.5	10.5	13.5	18.6	mm/s
speed at full load	3.7	6.8	9.4	12.1	16.7	5.6	10.1	14.1	18.1	25.0	2.8	5.1	7.0	9.1	12.5	mm/s
Maximum stroke at full load 1)	981	1219	1436	1629	1915	2063	2564	3022	3426	4029	604	751	885	1003	1180	mm
Operating mode for peak load according DIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 2.5min.															
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 24% 3) (Maximum time of operation in one direction: 2.5min)															
Stability (locking force) 2)	3200 (with standard bearing pins LB12-SL13) / 3500 (with bearing pins LB18-2-SL13)															N
possible torque tube versions	Ø25A, Ø25, Ø25S					Ø25, Ø25S					Ø25A, Ø25, Ø25S					mm
standard bearing pin diameter	Ø12															mm
Dimensions (see dimesional drawing):	Figure 1															

Technical data drive types SG13X:

Designation	SG13A	SG13B	SG13C	SG13D	SG13E	SG13F	SG13G	SG13H	SG13J	SG13K	SG13L	SG13M	SG13N	SG13P	SG13R	
																Unit
Pushing and pulling force (full load)	1500	970	700	540	390	1020	660	470	370	270	1990	1290	930	720	520	N
Current with full load	1.3															A
speed (no load)	5.5	10.1	14.0	18.0	24.8	8.3	15.1	21.0	27.0	37.3	4.1	7.5	10.5	13.5	18.6	mm/s
speed at full load	3.1	5.7	7.9	10.1	14.0	4.7	8.5	11.8	15.2	21.0	2.3	4.2	5.9	7.6	10.5	mm/s
Maximum stroke at full load 1)	845	1049	1237	1402	1649	1777	2208	2602	2950	3469	520	647	762	864	1016	mm
Operating mode for peak load according DIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 1.5min.															
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 14% 3) (Maximum time of operation in one direction: 1.5min)															
Stability (locking force) 2)	3200 (with standard bearing pins LB12-SL13) / 3500 (with bearing pins LB18-2-SL13)															N
possible torque tube versions	Ø25A, Ø25, Ø25S					Ø25, Ø25S					Ø25A, Ø25, Ø25S					mm
standard bearing pin diameter	Ø12															mm
Dimensions (see dimesional drawing):	Figure 1															

1) The maximum stroke with full load is the stroke which the drive is able to extend with full load without articulating the spindle.
For greater strokes the pushing force must be reduced. Corresponding force-stroke diagramms are supplied by us on request.

2) The stability is the maximum pulling force that may occur on the retracted torque tube. (Locking force = holding force)

3) Either under load extending and load supporting retracting or under load retracting and load supporting extending.

GRASL
Pneumatic-Mechanik GmbH
A-3454 Reidling
Europastraße 1

Freimaßtoleranz nach DIN 7168:

Maßstab: 1:1 | Werkstoff:

ID - Nr.:

					Datum	Name
				Bear.	23.09.2009	Simetzberger
				Gepr.	21.08.2012	KW
05	Standsicherheit	21.08.2012	SA	Norm		
04	Zul. Umgebungstemp.	24.07.2012	SA			
03	Polnisch	11.08.2011	SA	Type:		
02	Tabelle	21.09.2010	SA		SG	
01	Tabelle	22.12.2009	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		

Bezeichnung:
Data sheet
Electro-linear-actuator
Type: SG08x - SG10x - SG13x

Zeichnung Nr.: 07.021.DAT.03.05-E | Blatt BL.

(Ers.f.:) 07.021.DAT.03.04 (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

SG16x, SG20x, SG26x

- 24V- electrically operated spindle actuator, in anodized aluminium enclosure. Anodized aluminium or steel push rod
- Rated current: 1,6A; 2,0A respectively 2,6A
- Internal interference suppression according to EN55011
- Ambient temperature range -25 to +60°C, to EN 12101-2 annex G for 30 min. up to +300°C
- Disconnection at either end position by integrated limit switches
- Electronic “emergency stop switch-off” on overload
- Protection against operation with low voltage
- Dimensions: see data sheet
- Unit can be electronic parallel disconnected with PAS (see actuator controls) possible (NOTE: but no synchronous operation)
- Protection motor/electronic to DIN EN 60529: IP54
- Light grey silicone supply cable with connector brought out at side at lower end, length approx. 2,5m, other length on request.
  Temperature range -50 to +180°C (to DIN VDE 0282)
- Continuous adjustability in mounting ensured by sliding blocks and bearing pins LB12-SL13-M5x16 (included)
- Including eyebolt M10 Ø8mm

Types:

Standard stroke: 350, 550 or 750mm,
For special stroke, please inquire.

Options: (see data sheet)

Other cable length: specify full meters
Eyebolt: M10 Ø6mm or Ø10mm
Clevis: Also available as clevis GK6x12, GK6x24, GK8x16, GK8x32, GK10x20 or GK10x40 instead of eyebolt.
Pushrod: made of steel
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).
RAL: Actuator enclosure painted in a RAL colour
U M8: Mounting at lower end with thread M8, 11mm deep.
U Ø10,2: Mounting at lower end with bore hole Ø10,2mm.
U G1/8”: Mounting at lower end with thread 1/8”.
IP65: Protection motor/electronic: IP65
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).

For more special versions please inquire

Dateiname: Qf0510B

Technical description:

1.) Anodised aluminium housing with a pushrod of aluminium or steel
2.) Internal interference suppression according to EN55011
3.) Disconnection in both end positions through internal limit switches
4.) Electronic overload emergency disconnection
5.) Electric shunt connection possible (NOTE: but no synchronous operation)
6.) Eye bolt Ø6, Ø8 (Standard) or Ø10mm
7.) Clevis Ø6, Ø8 or Ø10mm
8.) Light grey silicone connection line - standard lenght 2,5m; other lenghts on request
-> with standard version: 2x2.5qmm / sheath Ø approx. 9mm
-> with option E: 2x2.5qmm / 3x1.5qmm / sheath Ø approx. 11mm

Possible options:

1.) OPTION Various bottom versions:
It is also possible to design motors with bottom mountings (see data sheet 07.021.DAT.01.xx).
2.) OPTION Various pushrod suspensions:
See data sheet 07.021.DAT.02.xx.
3.) OPTION RAL .... (on request):
It is possible to paint the motor housing in a RAL shade or colours. This means that if the Option "RAL3000" is indicated for exaple the housing will be painted in RAL3000 (red)
4.) OPTION E:
Internal floating limit switch (Option E=NCC) for both end positions;
load capacity 24VDC/1A (e.g. for position indication)

Ordering designation:

SG(typ)/(pushrod) - (stroke) - (pushrod mounting) - (cable lenght) - (options)

Legend:

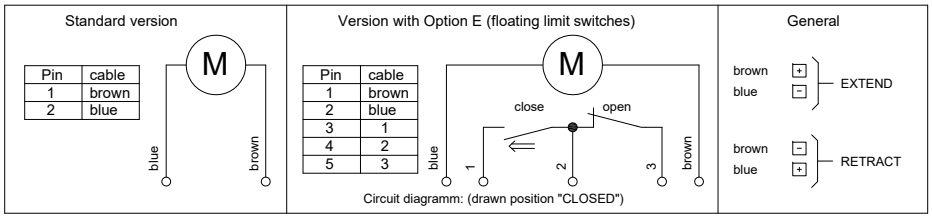
type: type of drive selected is the drive list
pushrod: available in aluminium (Ø25A), stainless steel 1.4301 (Ø25), or St52 zinc-plated (Ø25S)
stroke: stroke in [mm]
pushrod mounting: - eye bolt (standard): bore hole of eye bolt in [mm].
- clevis: bore hole and lenght of slot of the clevis in [mm].
cable lenght: lenght of connection cable in [m]
protection class: protection class according DIN EN 60 529
options: list of all desired options

Ordering example: SG20P/25 - 750 - 8 - 2,5 - RAL 3000

General technical data:

sealing version	standard
rated voltage	24VDC
no load current	0,8A
permissible ambient temperature	-25°C - +60°C
max. permissible temperature to EN 12101-2 attachment G	300° - 30min
protection type according to DIN EN 60 529	IP 54

Connecting diagramms:



Technical data drive types SG16X:

Designation	SG16A	SG16B	SG16C	SG16D	SG16E	SG16F	SG16G	SG16H	SG16J	SG16L	SG16M	SG16N	SG16P	SG16R	
															Unit
Pushing and pulling force (full load)	1530	990	710	560	400	1040	670	480	380	2030	1320	950	740	530	N
Current with full load	1.6														A
speed (no load)	6.2	11.2	15.6	20.0	27.7	9.2	16.8	23.4	30.0	4.6	8.4	11.7	15.0	20.8	mm/s
speed at full load	5.1	9.3	12.9	16.6	23.0	7.7	14.0	19.4	24.9	3.8	7.0	9.7	12.5	17.2	mm/s
Maximum stroke at full load 1)	842	1046	1232	1397	1643	1770	2200	2592	2940	518	644	759	861	1012	mm
Operating mode for peak load accordingDIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 4min.														
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 21% 3) (Maximum time of operation in one direction: 4min)														
Stability (locking force) 2)	3200 (with standard bearing pins LB12-SL13) / 3500 (with bearing pins LB18-2-SL13)														N
possible pushrod versions	Ø25A, Ø25, Φ25S					Ø25, Φ25S				Ø25A, Ø25, Φ25S					mm
standard bearing pin diameter	Ø12														mm
Dimensions (see dimesional drawing):	Figure 2	Figure 1				Figure 2	Figure 1			Figure 2	Figure 1				

Technical data drive types SG20X:

Designation	SG20A	SG20B	SG20C	SG20D	SG20E	SG20F	SG20G	SG20H	SG20J	SG20L	SG20M	SG20N	SG20P	SG20R	
															Unit
Pushing and pulling force (full load)	2000	1300	930	730	530	1360	880	630	490	2660	1720	1240	960	700	N
Current with full load	2.0														A
speed (no load)	6.2	11.2	15.6	20.0	27.7	9.2	16.8	23.4	30.1	4.6	8.4	11.7	15.0	20.8	mm/s
speed at full load	4.8	8.8	12.2	15.7	21.7	7.2	13.2	18.3	23.6	3.6	6.6	9.2	11.8	16.3	mm/s
Maximum stroke at full load 1)	739	918	1082	1227	1443	1555	1932	2277	2582	455	566	667	756	889	mm
Operating mode for peak load accordingDIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 2.5min.														
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 13% 3) (Maximum time of operation in one direction: 2.5min)														
Stability (locking force) 2)	3200 (with standard bearing pins LB12-SL13) / 3500 (with bearing pins LB18-2-SL13)														N
possible pushrod versions	Ø25A, Ø25, Φ25S					Ø25, Φ25S				Ø25A, Ø25, Φ25S					mm
standard bearing pin diameter	Ø12														mm
Dimensions (see dimesional drawing):	Figure 2	Figure 1				Figure 2	Figure 1			Figure 2	Figure 1				

Technical data drive types SG26X:

Designation	SG26A	SG26B	SG26C	SG26D	SG26E	SG26F	SG26G	SG26H	SG26J	SG26M	SG26N	SG26P	SG26R	
														Unit
Pushing and pulling force (full load)	2710	1760	1260	980	710	1840	1190	860	670	2330	1680	1300	940	N
Current with full load	2.6													A
speed (no load)	6.2	11.2	15.6	20.1	27.7	9.2	16.8	23.4	30.1	8.4	11.7	15.0	20.8	mm/s
speed at full load	4.4	8.1	11.2	14.4	19.9	6.6	12.1	16.8	21.6	6.1	8.4	10.8	14.9	mm/s
Maximum stroke at full load 1)	638	793	934	1059	1245	1342	1667	1965	2228	488	575	653	767	mm
Operating mode for peak load accordingDIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 1.5min.													
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 8% 3) (Maximum time of operation in one direction: 1.5min)													
Stability (locking force) 2)	3200 (with standard bearing pins LB12-SL13) / 3500 (with bearing pins LB18-2-SL13)													N
possible pushrod versions	Ø25A, Ø25, Φ25S					Ø25, Φ25S				Ø25A, Ø25, Φ25S				mm
standard bearing pin diameter	Ø12													mm
Dimensions (see dimesional drawing):	Figure 2	Figure 1				Figure 2	Figure 1							

1) The maximum stroke with full load is the stroke which the drive is able to extend with full load without articulating the spindle.
For greater strokes the pushing force must be reduced. Corresponding force-stroke diagramms are supplied by us on request.

2) The stability is the maximum pulling force that may occur on the retracted pushrod. (Locking force = holding force)

3) Either under load extending and load supporting retracting or under load retracting and load supporting extending.

GRASL
Pneumatic-Mechanik GmbH
A-3454 Reidling
Europastraße 1

Freimaßtoleranz nach DIN 7168:

Maßstab: 1:1 | Werkstoff:

ID - Nr.:

					Datum	Name
				Bear.	23.09.2009	Simetzberger
				Gepr.	21.08.2012	KW
05	Standsicherheit	21.08.2012	SA	Norm		
04	Zul. Umgebungstemp.	24.07.2012	SA			
03	Polnisch	11.08.2011	SA	Type:		
02	Tabelle	21.09.2010	SA		SG	
01	Tabelle	22.12.2009	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		

Bezeichnung:
Data sheet
Electro-linear-actuator
Type: SG16x - SG20x - SG26x

Zeichnung Nr.: 07.021.DAT.04.05-E | Blatt BL.

(Ers.f.:) 07.021.DAT.04.04 (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

SG40x, SG60x, SG80x

- 24V- electrically operated spindle actuator, in anodized aluminium enclosure. Anodized aluminium or steel push rod
- Rated current: 4,0A; 6,0A respectively 8,0A
- Internal interference suppression according to EN55011
- Ambient temperature range -25 to +60°C, to EN 12101-2 annex G for 30 min. up to +300°C
- Disconnection at either end position by integrated limit switches
- Electronic “emergency stop switch-off” on overload
- Protection against operation with low voltage
- Dimensions: see data sheet
- Unit can be electronic parallel disconnected with PAS (see actuator controls) possible (NOTE: but no synchronous operation)
- Protection motor/electronic to DIN EN 60529: IP54
- Light grey silicone supply cable with connector brought out at side at lower end, length approx. 2,5m, other length on request.
  Temperature range -50 to +180°C (to DIN VDE 0282)
- Continuous adjustability in mounting ensured by sliding blocks and bearing pins LB18-SL13-M5x16 (included)
- Including eyebolt M10 Ø8mm

Types:

Standard stroke: 350, 550 or 750mm,
For special stroke, please inquire.

Options: (see data sheet)

Other cable length: specify full meters
Eyebolt: M10 Ø6mm or Ø10mm
Clevis: Also available as clevis GK6x12, GK6x24, GK8x16, GK8x32, GK10x20 or GK10x40 instead of eyebolt.
Pushrod: made of steel
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).
RAL: Actuator enclosure painted in a RAL colour
U M8: Mounting at lower end with thread M8, 11mm deep.
U Ø10,2: Mounting at lower end with bore hole Ø10,2mm.
U G1/8”: Mounting at lower end with thread 1/8”.
IP65: Protection motor/electronic: IP65
E: Additional switches integrated for indication of both end positions (potential-free NC contacts, 24V- / 1A).

For more special versions please inquire

Dateiname: Qf0510B

Technical description:

1.) Anodised aluminium housing with a pushrod of aluminium or steel
2.) Internal interference suppression according to EN55011
3.) Disconnection in both end positions through internal limit switches
4.) Electronic overload emergency disconnection
5.) Electric shunt connection possible (NOTE: but no synchronous operation)
6.) Eye bolt Ø6, Ø8 (Standard) or Ø10mm
7.) Clevis Ø6, Ø8 or Ø10mm
8.) Light grey silicone connection line - standard lenght 2,5m; other lenghts on request
-> with standard version: 2x2.5qmm / sheath Ø approx. 9mm
-> with option E: 2x2.5qmm / 3x1.5qmm / sheath Ø approx. 11mm

Possible options:

1.) OPTION Various bottom versions:
It is also possible to design motors with bottom mountings (see data sheet 07.021.DAT.01.xx).
2.) OPTION Various pushrod suspensions:
See data sheet 07.021.DAT.02.xx.
3.) OPTION RAL .... (on request):
It is possible to paint the motor housing in a RAL shade or colours. This means that if the Option "RAL3000" is indicated for exaple the housing will be painted in RAL3000 (red)
4.) OPTION E:
Internal floating limit switch (Option E=NCC) for both end positions; load capacity 24VDC/1A (e.g. for position indication)

Ordering designation:

SG(typ)/(pushrod) - (stroke) - (pushrod mounting) - (cable lenght) - (options)

Legend:

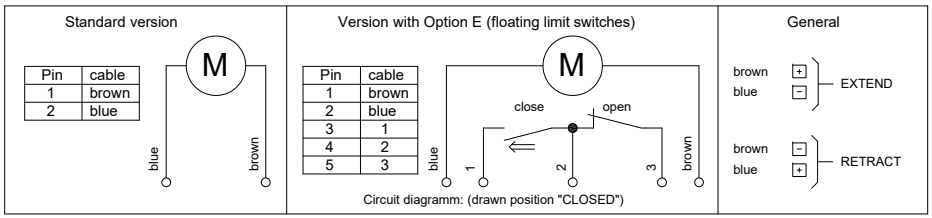
type: type of drive selected is the drive list
pushrod: available in aluminium (Ø25A), stainless steel 1.4301 (Ø25), or St52 zinc-plated (Ø25S)
stroke: stroke in [mm]
pushrod mounting: - eye bolt (standard): bore hole of eye bolt in [mm].
- clevis: bore hole and lenght of slot of the clevis in [mm].
cable lenght: lenght of connection cable in [m]
protection class: protection class according DIN EN 60 529
options: list of all desired options

Ordering example: SG40P/25 - 750 - 8 - 2,5 - RAL 3000

General technical data:

sealing version	standard
rated voltage	24VDC
no load current	0,8A
permissible ambient temperature	-25°C - +60°C
max. permissible temperature to EN 12101-2 attachment G	300° - 30min
protection type according to DIN EN 60 529	IP 54

Connecting diagramms:



Technical data drive types SG40X:

Designation	SG40A	SG40B	SG40C	SG40D	SG40E	SG40F	SG40G	SG40H	SG40J	SG40L	SG40M	SG40N	SG40P	SG40R	SG40RL	SG40S	SG40T	SG40U	SG40V	SG40W	
																					Unit
Pushing and pulling force (full load)	3850	2490	1800	1400	1010	2610	1690	1220	950	4850	3330	2600	1660	1300	2750	3290	2250	1760	1130	880	N
Current with full load	4.0																				A
speed (no load)	6.7	12.2	17.0	21.9	30.2	10.1	18.4	25.5	32.8	6.1	9.6	12.2	19.1	24.5	10.8	9.2	14.3	18.4	28.7	36.7	mm/s
speed at full load	5.3	9.7	13.5	17.4	24.1	8.0	14.6	20.3	26.1	4.9	7.6	9.7	15.2	19.5	7.2	7.3	11.4	14.6	22.8	29.2	mm/s
Maximum stroke at full load ×1)	529	657	774	878	1032	1112	1382	1629	1847	471	569	644	805	910	640	991	1197	1354	1693	1915	mm
Operating mode for peak load accordingDIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 4min.																				
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 20% 3) (Maximum time of operation in one direction: 4min)																				
Stability (locking force) ×2)	6400 (with standard bearing pins LB18-2-SL13)																				N
possible pushrod versions	Ø25A, Ø25, Ø25S					Ø25, Ø25S				Ø25A, Ø25, Ø25S					Ø25, Ø25S						mm
standard bearing pin diameter	Ø18																				mm
Dimensions (see dimesional drawing):	Figure 2	Figure 1				Figure 2	Figure 1			Figure 3	Figure 2				Figure 4	Figure 3	Figure 2				

Technical data drive types SG60X:

Designation	SG60D	SG60E	SG60F	SG60J	SG60M	SG60N	SG60P	SG60R	SG60S	SG60T	SG60U	SG60V	SG60W	
														Unit
Pushing and pulling force (full load)	2220	1600	4140	1500	5280	4130	2640	2060	5220	3580	2800	1790	1400	N
Current with full load	6.0													A
speed (no load)	21.9	30.3	10.1	32.8	9.6	12.3	19.2	24.5	9.2	14.4	18.4	28.7	36.8	mm/s
speed at full load	15.2	21.0	7.0	22.8	6.7	8.5	13.3	17.0	6.4	10.0	12.8	20.0	25.6	mm/s
Maximum stroke at full load ×1)	702	826	890	1478	455	515	644	728	793	958	1083	1354	1532	mm
Operating mode for peak load accordingDIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 2min.													
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 10% 3) (Maximum time of operation in one direction: 2min)													
Stability (locking force) ×2)	6400 (with standard bearing pins LB18-2-SL13)													N
possible pushrod versions	Ø25A, Ø25, Ø25S		Ø25, Ø25S		Ø25A, Ø25, Ø25S				Ø25, Ø25S					mm
standard bearing pin diameter	Ø18													mm
Dimensions (see dimesional drawing):	Figure 1		Figure 2	Figure 1	Figure 2				Figure 3	Figure 2				

Technical data drive types SG80X:

Designation	SG80E	SG80N	SG80P	SG80R	SG80T	SG80U	SG80V	SG80W	
									Unit
Pushing and pulling force (full load)	2200	5660	3620	2830	4900	3830	2450	1920	N
Current with full load	8.0								A
speed (no load)	30.3	12.3	19.2	24.5	14.4	18.4	28.7	36.8	mm/s
speed at full load	18.1	7.3	11.5	14.7	8.6	11.0	17.2	22.0	mm/s
Maximum stroke at full load ×1)	708	442	552	625	821	929	1161	1314	mm
Operating mode for peak load accordingDIN VDE 0530 part 1 (with 25°C ambient temperature)	S2 1min.								
Operating mode for continuous load according DIN VDE 0530 part 1 (with 40°C ambient temperature)	S3 5% 3) (Maximum time of operation in one direction: 1min)								
Stability (locking force) ×2)	6400 (with standard bearing pins LB18-2-SL13)								N
possible pushrod versions	Ø25A, Ø25, Ø25S				Ø25, Ø25S				mm
standard bearing pin diameter	Ø18								mm
Dimensions (see dimesional drawing):	Figure 1	Figure 2							

1) The maximum stroke with full load is the stroke which the drive is able to extend with full load without articulating the spindle. For greater strokes the pushing force must be reduced. Corresponding force-stroke diagramms are supplied by us on request.

2) The stability is the maximum pulling force that may occur on the retracted pushrod. (Locking force = holding force)

3) Either under load extending and load supporting retracting or under load retracting and load supporting extending.

GRASL
Pneumatic-Mechanik GmbH
A-3454 Reidling
Europastraße 1

Freimaßtoleranz nach DIN 7168:

Maßstab: 1:1 | Werkstoff:

ID - Nr.:

					Datum	Name
				Bear.	23.09.2009	Simetzberger
				Gepr.	24.07.2012	HA
05	Zul. Umgebungstemp.	24.07.2012	SA	Norm		
04	SG40RL erweitert	25.10.2011	GS			
03	Polnisch	11.08.2011	SA	Type:		
02	Tabelle	21.09.2010	SA		SG	
01	Tabelle	22.12.2009	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		

Bezeichnung:
Data sheet
Electro-linear-actuator
Type: SG40x - SG60x - SG80x

Zeichnung Nr.: 07.021.DAT.05.05-E | Blatt BL.

(Ers.f.:) 07.021.DAT.05.04 (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

Dateiname: Qf0510B

Figure 1:

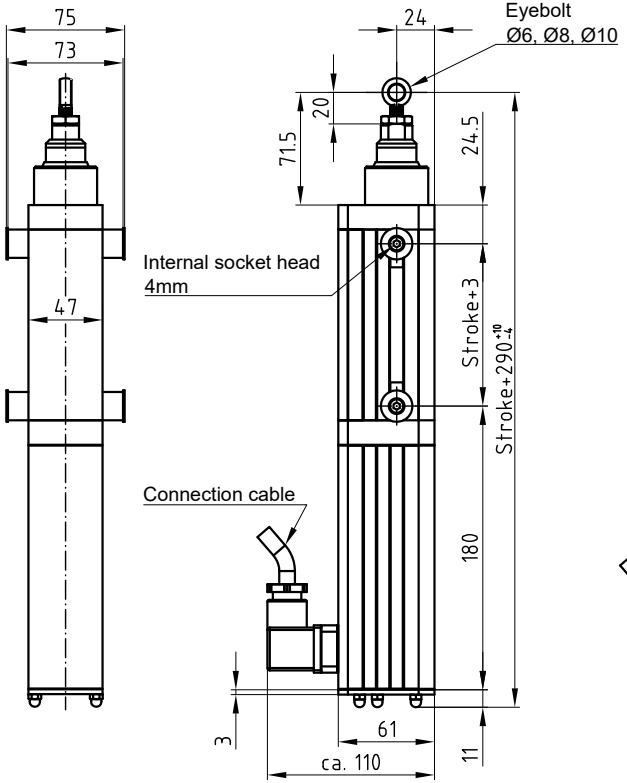


Figure 2:

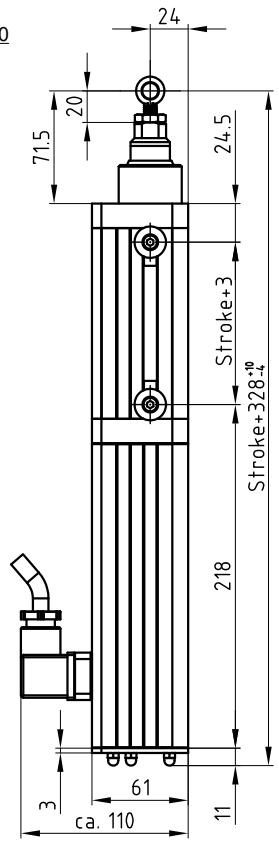


Figure 3:

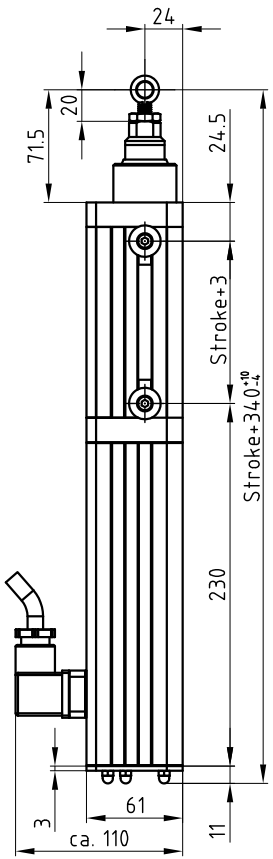


Figure 4:

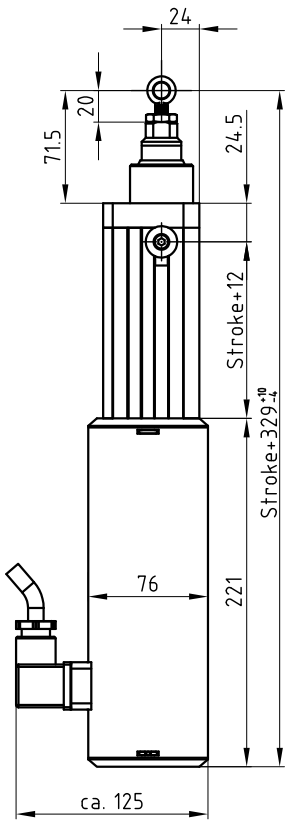
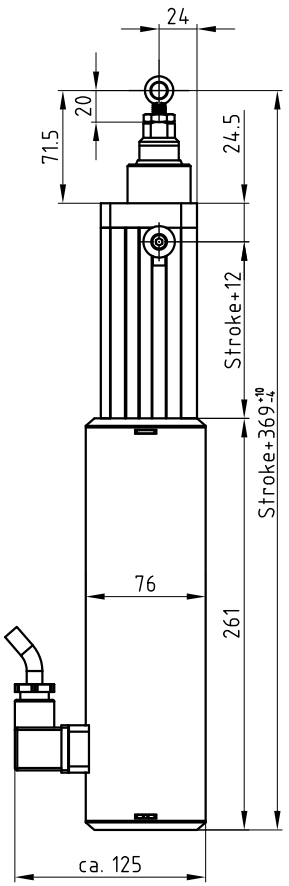
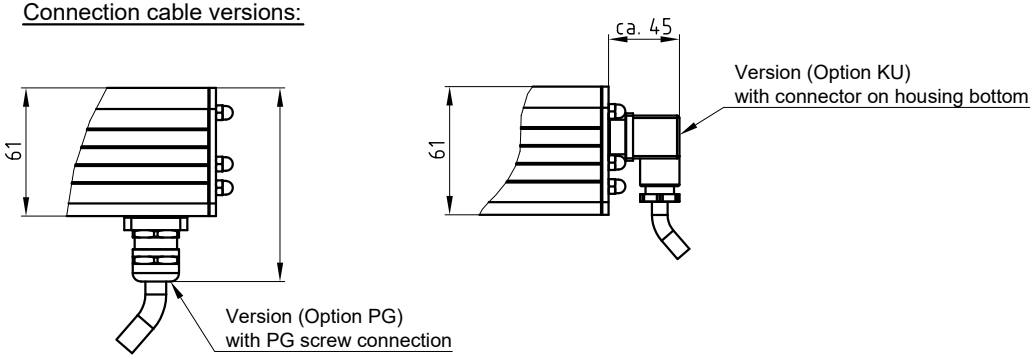


Figure 5:



Connection cable versions:



GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff:
						ID - Nr.:
					Datum / Name	Bezeichnung: **Data sheet** Electro-linear-actuator SG
				Bear.	22.09.2009 / Simetzberger	
				Gepr.	16.08.2011 / KW	
				Norm		
B	Polnisch	11.08.2011	SA	Type: SG		Zeichnung Nr.: 07.021.DAT.00.02-E / Blatt BL.
A	Anschlussstecker	18.11.2009	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		(Ers.f.:) 07.021.DAT.00.01 (Ers.d.:)

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28.5.2002 ER

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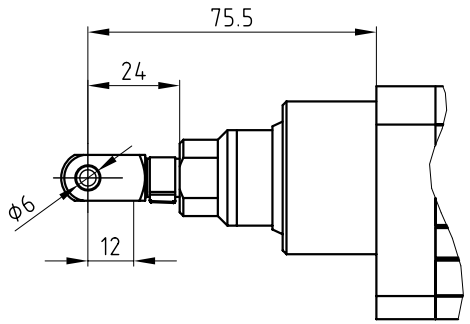
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

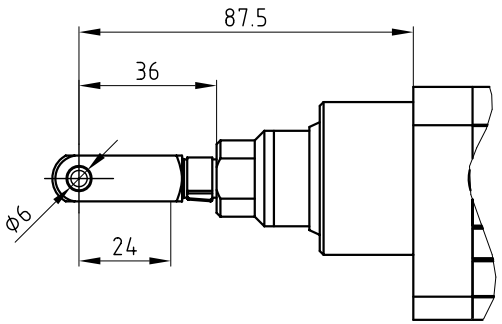
Dateiname: Qf0510B

Versions of clevis:

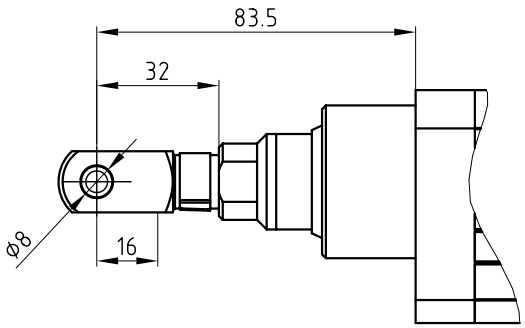
Clevis GK6x12:



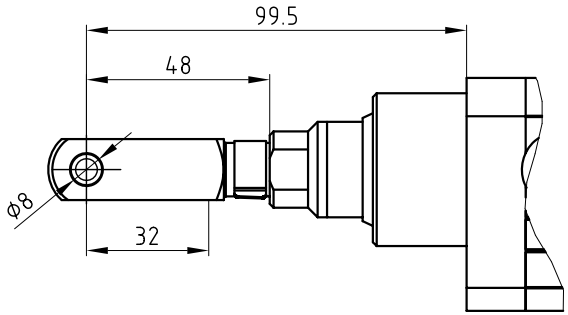
Clevis GK6x24:



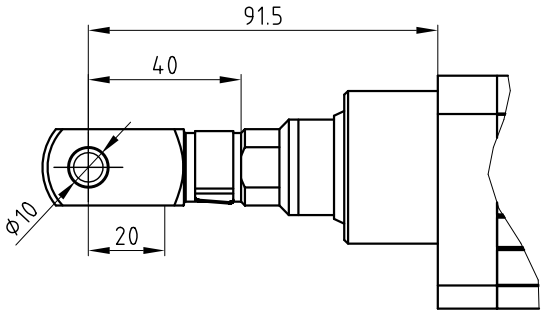
Clevis GK8x16:



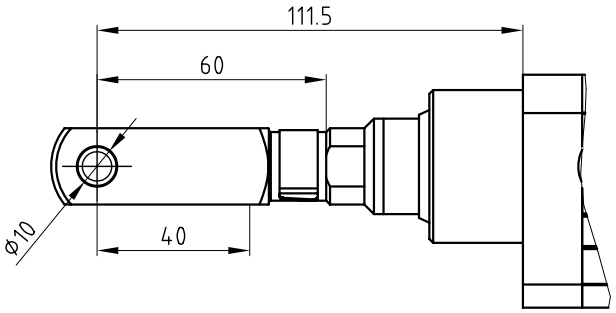
Clevis GK8x32:



Clevis GK10x20:



Clevis GK10x40:



GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1	Freimaßtoleranz nach DIN 7168:	Maßstab: 1:1	Werkstoff:
		ID - Nr.:	
	Bear. 22.09.2009 Simetzberger Gepr. 20.01.2010 ER Norm	Bezeichnung: **Data sheet** Electro-linear-actuator SG Versions of clevis	
	Type: SG	Zeichnung Nr.: 07.021.DAT.02.00-E	Blatt BL.
Zus. Änderung Datum Name	(Urspr.)	(Ers.f.:) 07.021.000.A0.00__3	(Ers.d.:)

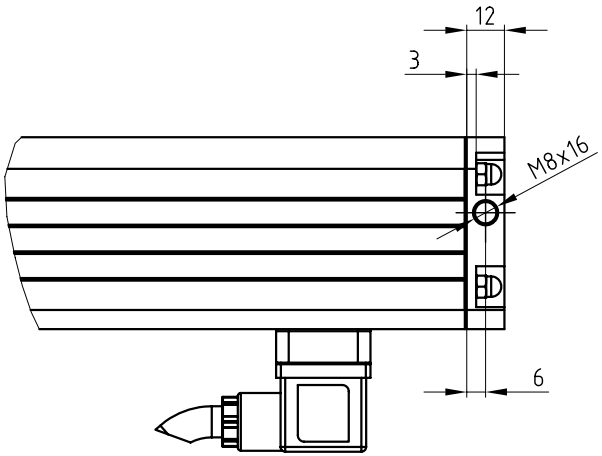
erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

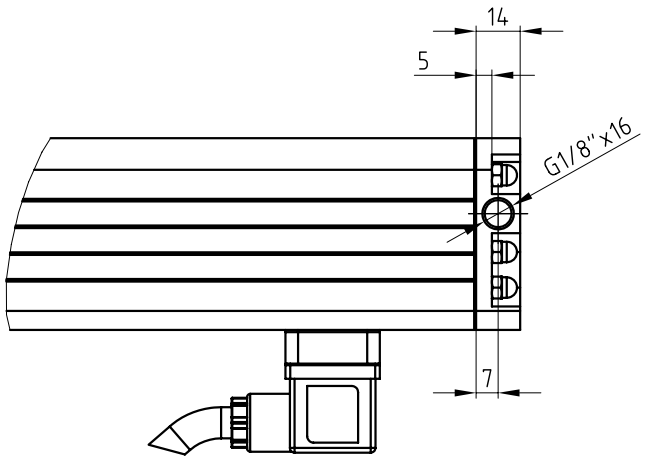
fachlich geprüft am
29.5.2002 KW

Versions of mounting at lower end:

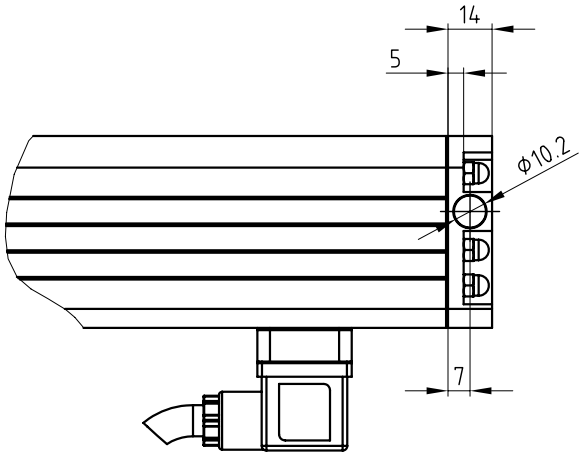
Mounting at lower end with bottom bore M8:



Mounting at lower end with bottom bore G1/8":



Mounting at lower end with through bore Ø10,2:



GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1	Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff:
			ID - Nr.:
	Datum	Name	Bezeichnung:
	Bear. 22.09.2009	Simetzberger	**Data sheet**
	Gepr. 20.01.2010	ER	Electro-linear-actuator SG
	Norm		Versions of mounting at lower end
	Type: SG		Zeichnung Nr.: 07.021.DAT.01.00-E / Blatt / BL.
Zus. Änderung Datum Name	(Urspr.)		(Ers.f.:) 07.021.000.A0.00__2 (Ers.d.:)

erstellt am
28.5.2002 ER

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29.5.2002 KW

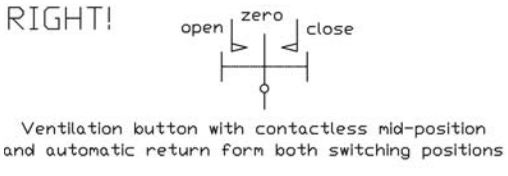
fachlich geprüft am
29.5.2002 KW

GRASL Pneumatic Mechanik GmbH
Europastraße 1
A-3454 Reidling
AUSTRIA
Tel.+43(0)2276/21200-0
Fax+43(0)2276/21200-99

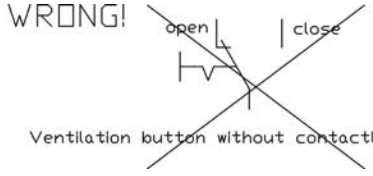
K + G Tectronic GmbH
In der Krause 48
D-52249 Eschweiler
GERMANY
Tel.+49(0)2403/9950-0
Fax+49(0)2403/655 30

Technical Information for Series S, G, SG Spindle Actuators

- Actuators are suitable for being connected to K+G / Grasl Control Centres. If control centres of external production are used, check them for control compatibility.
- Connect actuators using a pull relief type connection box available at the site. When determining the length of cable, the position of the connection box as well as the swivelling range of the actuators have to be taken into account.
- When mounting the actuators below a clearance height of **2.5m**, **adequate precautions** must be taken to avoid any hazards to the personnel (**risk of getting crushed or squashed**). For this purpose, be sure the appropriate directives, rules and standards are complied with, such as **BGR 232** for power operated windows, doors and gates, **DIN EN 12453** safe use of power operated gates and **EN 60335-2-103:2003**.
- Select the cross section of the **cable** between the connection box and the control centre in such a way that the **voltage drop** between control centre and actuator – even under **full load** conditions – will not be more than **1V** (see control centre documentation). If control centres of external production are used for control, have the cable cross sections selected or checked by a qualified electrical installation company.
- Actuator operation is admissible only with a rated voltage of **24V⎓** and a tolerance of **+30/-20%**. A **peak voltage of 42V** and a **residual ripple of 48%** must not be exceeded.
- Before installation in the smoke and heat ventilation unit the actuators must be in fully retracted condition (internal limit switches operated); if necessary initiate retraction (e.g. by using accumulators).
- For initial operation (trial run, installation or maintenance work), e.g. using accumulators, it is **absolutely necessary** to install a **fuse link equal to the actuator current rating** the in the actuator supply line. Be sure **actuators are disconnected from the actuator output of a control centre/control system** because otherwise this may result in damage to the power output of the control centre/control system. During a trial run, watch the mechanical behaviour of the complete smoke and heat ventilation unit. Be sure the actuators can **swivel freely** through the entire lifting range (internal limit switches operated at both end positions) and no fixed parts of the building may be touched (for actuator connection please see data sheets).
- For controlling the actuators, use only mechanically interlocked ventilation buttons with contactless mid-position. Do not use **change-over switches** (see illustration).



Ventilation button with contactless mid-position and automatic return form both switching positions



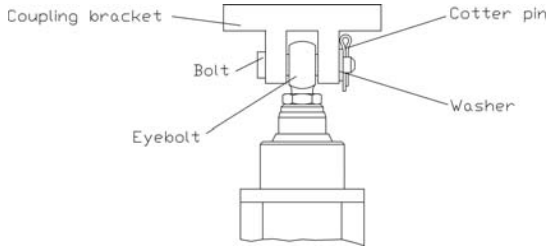
Ventilation button without contactless mid-position

- Any immediate **change of the sense of travel,** while the actuator is operating, is **not admissible,** and may result in **defects** (a pause of approx. 1s is required).

GRASL Pneumatic Mechanik GmbH
Europastraße 1
A-3454 Reidling
AUSTRIA
Tel.+43(0)2276/21200-0
Fax+43(0)2276/21200-99

K + G Tectronic GmbH
In der Krause 48
D-52249 Eschweiler
GERMANY
Tel.+49(0)2403/9950-0
Fax+49(0)2403/655 30

- After a full extension or retraction action, a **travel of about 1s in opposite direction** is required before resuming the previous direction of travel (S series).
- Be sure the **control voltage** for the travel commands OPEN or CLOSE is effective for **max. 6min.**
- Before fastening the actuators to the coupling bracket, mounting brackets or other mounting elements, be sure to have taken the applicable **installation dimension** from the **data sheets** of the actuator types concerned.
- Fasten the actuators to the the coupling bracket (or any other mounting element). Make sure the bolt of the coupling bracket is secured by means of a **washer** and a **cotter pin** (see illustration).



- **Setting the closing force** of the smoke and heat ventilation unit when pressing against the sealing (smoke and heat ventilation unit must be closed tightly all around). **Important: Be sure the maximum actuator pull is not exceeded** (see data sheets)**, because otherwise actuator would not be able to fully retract (internal limit switches would not be operated in this case).**

  a) Actuators with variable mounting (lateral guide grooves or clamp rings):
  Pull the actuators, e.g. using a spring balance; thereafter tighten the bearing pings/plugs. During setting, the bearing pins/plugs must be loose enough to enable the actuators to slide along their axes.

  b) Actuators with fixed mounting:
  Adjust the eyebolt or other pushrod mounts.

- In the case of actuators with variable mounting (lateral guide grooves) be sure the bearing pins/plugs are in line with each other (see fig. 1) and also parallel to the axis of the hinges. Furthermore, when mounting the bracket, be sure the swivelling axis of the actuators is parallel to the axis of the hinges (see fig. 2).

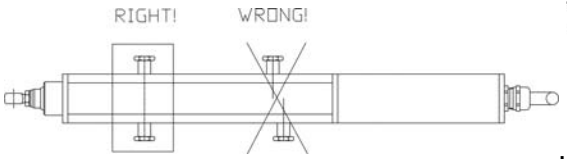


Fig. 1

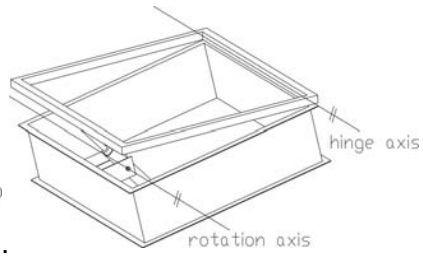


Fig. 2

Compliance with all instructions is imperative, faulty assembly may result in serious injuries! Failure of observing the above notice, as well as opening or trying to open the enclosure of the actuator will invalidate our warranty!

E-xxx-24

- 24V- electrically operated rack actuator in plastic enclosure, colour RAL 7035
- Power input 16W (24V- / 0,65A)
- Ambient temperature -10°C to +60°C
- Push force 500N, pull force 250N
- Travelling speed approx. 8mm/s
- Electronic disconnection on overload
- Duty cycle S3 25% (to DIN EN 60034)
- Protection to DIN EN 60529 see below (IPxx)
- Potential-free contact CLOSE (opens when actuator has switched off on retraction), load rating 1A / 24V
- Stability: 3.500N
- Dimensions: see drawing
- Light grey silicone supply cable, approx. 2,5m
- Including eyebolt M8 Ø6mm, without fixing plug

Types:

E-300-24: Stroke length 300mm, with protective bellows (IP54)
E-500-24: Stroke length 500mm, without protective bellows (IP33)
E-750-24: Stroke length 750mm, without protective bellows (IP33)

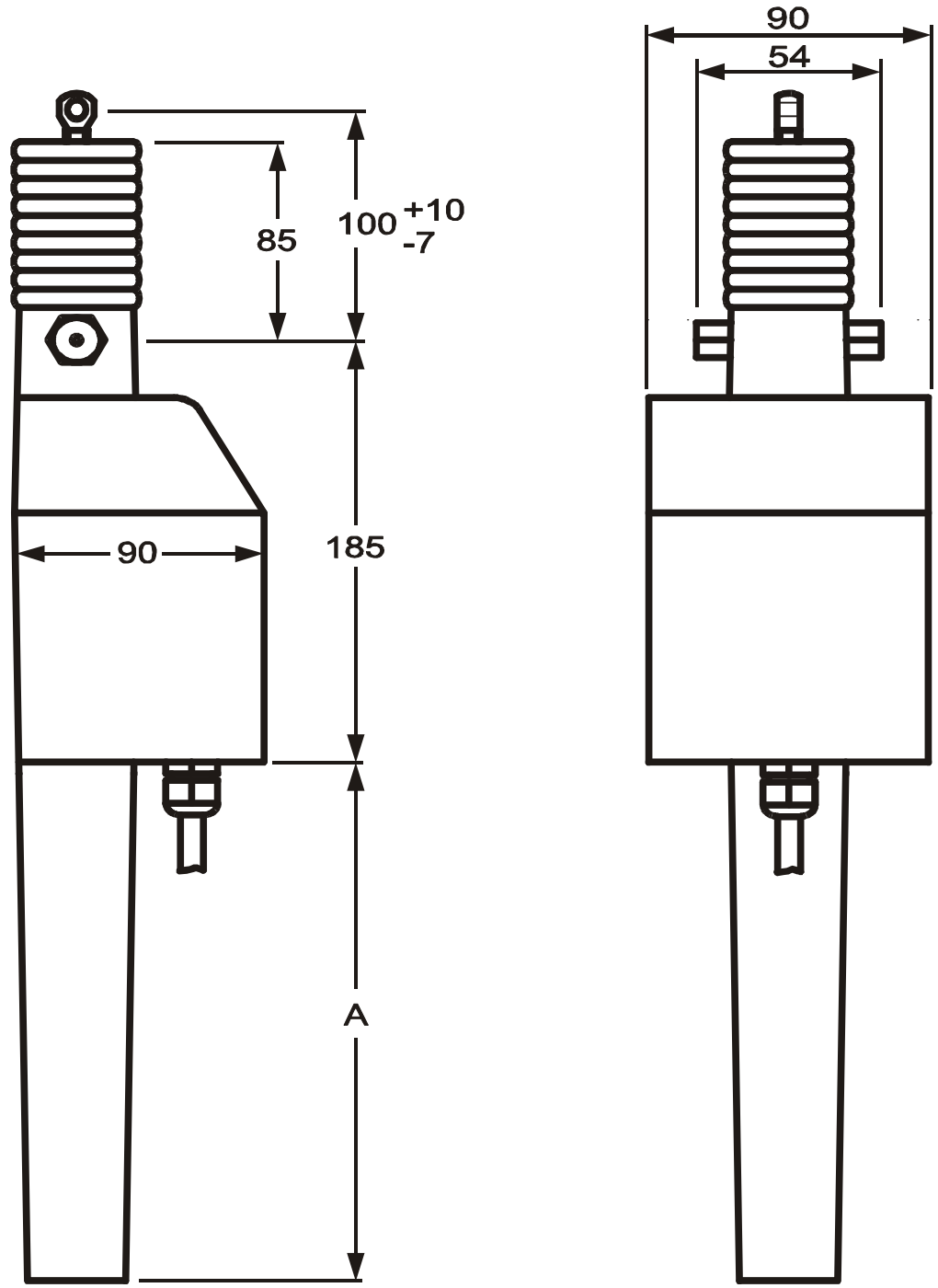
E-xxx-230

- 230V~ electrically operated rack actuator in plastic enclosure, fully insulated, colour RAL 7035
- Power input 23W (230V~ / 0,1)
- Ambient temperature -10°C to +60°C
- Push force 500N, pull force 250N
- Travelling speed approx. 10mm/s
- Electronic disconnection on overload
- Duty cycle S3 25% (to DIN EN 60034)
- Protection to DIN EN 60529 see below (IPxx)
- The internal disconnect relay allows the actuators to be arranged in random groups or connected in parallel without interfering with each other
- Potential-free contact CLOSE (opens when actuator has switched off on retraction), load rating 1A / 230V~
- Stability: 3.500N
- Dimensions: see drawing
- Light grey silicone supply cable, approx. 2,5m
- Including eyebolt M8 Ø6mm, without fixing plug

Types:

E-300-230: Stroke length 300mm, with protective bellows (IP54)
E-500-230: Stroke length 500mm, without protective bellows (IP33)
E-750-230: Stroke length 750mm, without protective bellows (IP33)

Dimensional drawing Type E

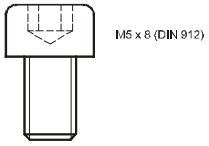


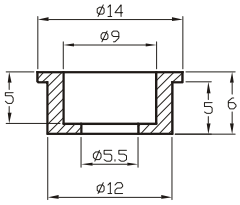
Typ	Maß A
E-300-*	225
E-500-*	430
E-750-*	680

Mounting accessories for actuators Type G,SG and E

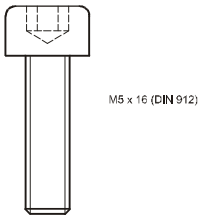
With respect to actual mounting conditions and forces to be dealt with, please contact us for clarification of the assembly components to be selected.

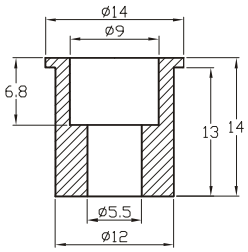
Bearing pins / fixing plugs:





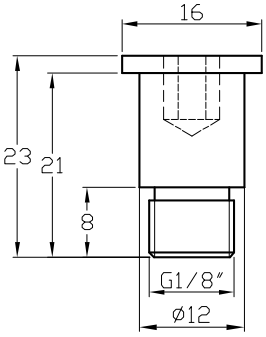
LB 12-SL5-M5x8: Bearing pins for actuators Type **G**, Ø12mm, shank length 5mm (short type), including. hexagon socket head cap screw M5x8mm (DIN 912). Two pieces are required for each actuator





LB 12-SL13-M5x16: Bearing pins for actuators Type **G, SG 08x - SG 26x**, Ø12mm, shank length 13mm, incl. hexagon socket head cap screw M5x16mm (DIN 912). Two pieces are required for each actuator

LB 18-2-SL13-2xM5x16: Bearing pins for actuators Type **SG 40x - SG 80x**, Ø18mm, shank length 13mm, incl. hexagon socket head cap screw M5x16mm (DIN 912). Two pieces are required for each actuator



ST 12-1/8: Fixing plugs 1/8" for actuators
Type **E**, Ø12mm, shank length 13mm. Two pieces are required for each actuator

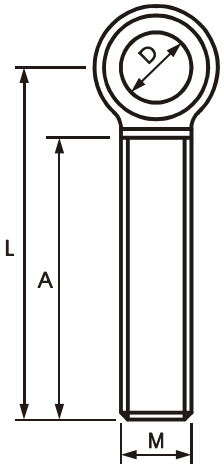
Mounting accessories for actuators Type G,SG and E

Eyebolts:

AS M8x40-Ø6: Eyebolt including locknut, galvanized steel. Thread M8x40mm, eye diameter 6mm

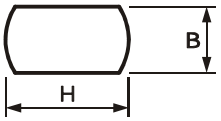
AS M8x40-Ø8: Eyebolt including locknut, galvanized steel. Thread M8x40mm, eye diameter 8mm

AS M8x40-Ø10: Eyebolt including locknut, galvanized steel. Thread M8x40mm, eye diameter 10mm



AS M8x60-Ø8: Eyebolt including locknut, galvanized steel. Thread M8x60mm, eye diameter 8mm. When using this eyebolt, installation size will be 20mm greater

AS M8x60-Ø10: Eyebolt including locknut, galvanized steel. Thread M8x60mm, eye diameter 10mm. When using this eyebolt, installation size will be 20mm greater



AS M8x80-Ø8: Eyebolt including locknut, galvanized steel. Thread M8x80mm, eye diameter 8mm. When using this eyebolt, installation size will be 40mm greater

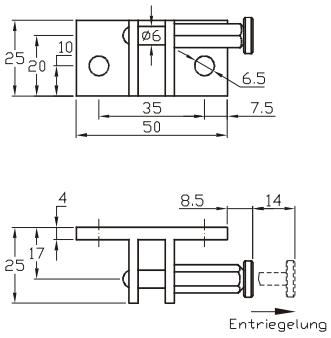
AS M8x80-Ø10: Eyebolt including locknut, galvanized steel. Thread M8x80mm, eye diameter 10mm. When using this eyebolt, installation size will be 40mm greater

measures (mm)	A	B	D	H	L	M
AS M8x40-Ø6	30	7,5	6,1	18	40	M8
AS M8x40-Ø8	30	7,5	8,1	18	40	M8
AS M8x40-Ø10	30	7,5	10,1	18	40	M8
AS M8x60-Ø8	50	7,5	8,1	18	60	M8
AS M8x60-Ø10	50	7,5	10,1	18	60	M8
AS M8x80-Ø8	40	7,5	8,1	18	80	M8
AS M8x80-Ø10	40	7,5	10,1	18	80	M8

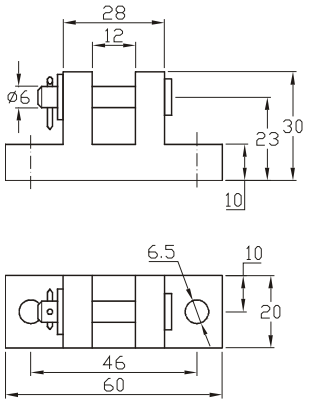
Mounting accessories for actuators Type G,SG and E

Coupling brackets and bolts:

KB-F6: Coupling bracket with spring bolt Ø6mm



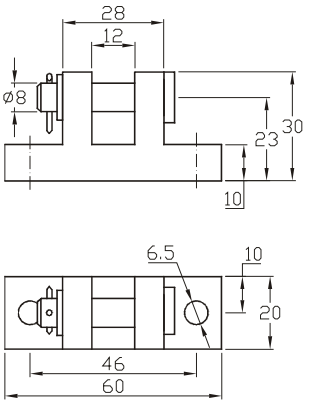
KB-KBB 6: Coupling bracket with bolt Ø6mm (including washer and cotter pin)



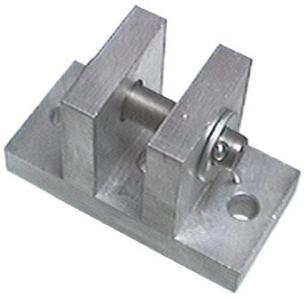
Mounting accessories for actuators Type G,SG and E

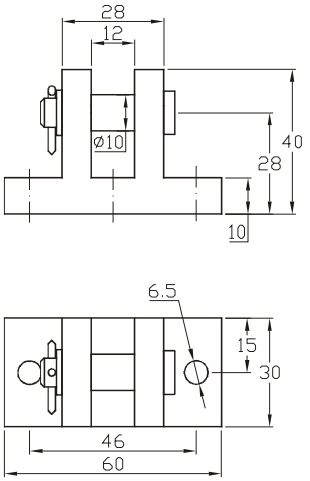
Coupling brackets and bolts:

KB-KBB 8: Coupling bracket with bolt Ø8mm (including washer and cotter pin)



KB-KBB 10: Coupling bracket with bolt Ø10mm (including washer and cotter pin)

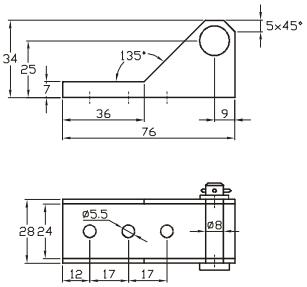




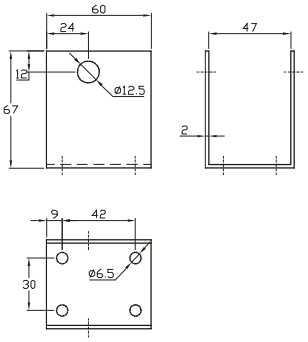
Mounting accessories for actuators Type G,SG and E

Mounting brackets:

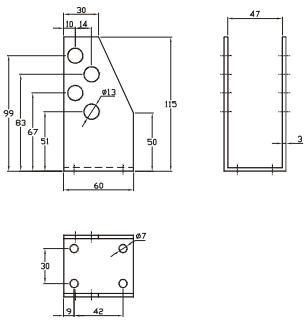
MK 24-1-KBB 8: Mounting bracket of galvanized steel for actuators Type **G** with option **UF Ø8,2** (mounting at lower end for fastening to window). 24mm inner width, Type 1, including fastening bolt Ø8mm



MK 47-1: Mounting bracket of galvanized steel for actuators Type **G, SG**. 47mm inner width, Type 1

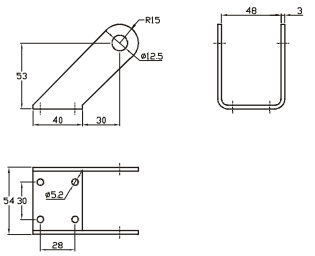


MK 47-2: Mounting bracket of galvanized steel for actuators Type **G, SG**. 47mm inner width, Type 2

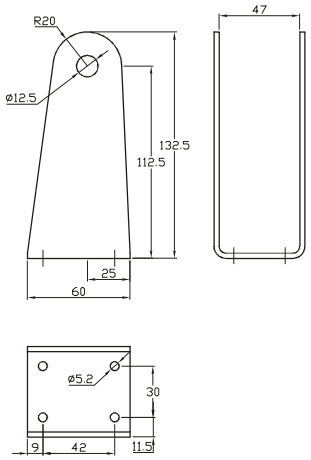


Mounting accessories for actuators Type G,SG and E

MK 47-3: Mounting bracket of galvanized steel for actuators Type **G, SG**. 47mm inner width, Type 3



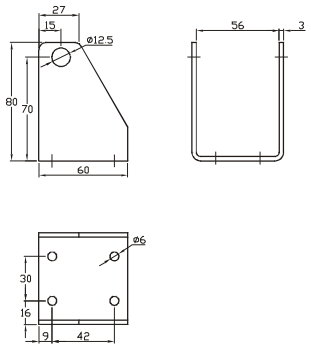
MK 47-4: Mounting bracket of galvanized steel for actuators Type **G, SG**. 47mm inner width, Type 3



MK 56-1: Mounting bracket of galvanized steel for actuators Type **E**. 56mm inner width, 60 x 62 x 90mm, Type 1

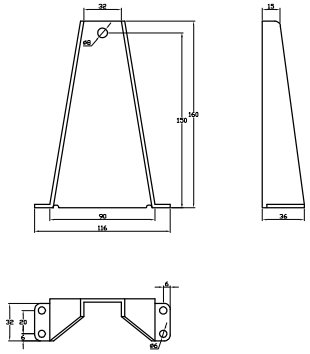
MK 56-2: Mounting bracket of galvanized steel for actuators Type **E**. 56mm inner width, 60 x 62 x 115mm, Type 2

MK 56-3: Mounting bracket of galvanized steel for actuators Type **E**. 56mm inner width, 60 x 62 x 80mm, Type 3



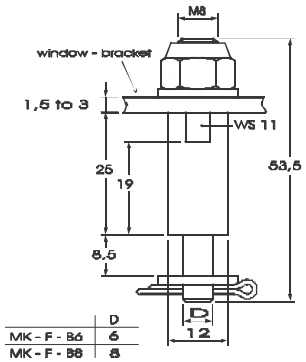
Mounting accessories for actuators Type G,SG and E

MK F-1: Window bracket of galvanized sheet steel for mounting electrical actuators on pivot-hung or swinging window casements

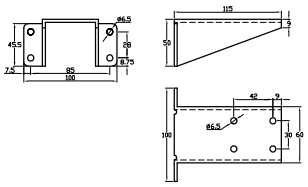


MK F-B6: Fastening bolt as a link between window bracket **MK F-1** and eyebolt. Bolt diameter 6mm

MK F-B8: Fastening bolt as a link between window bracket **MK F-1** and eyebolt. Bolt diameter 8mm



MK W-1: Angle bracket for fastening of mounting brackets rotated through 90° (requires reboring of **MK 47-3**)



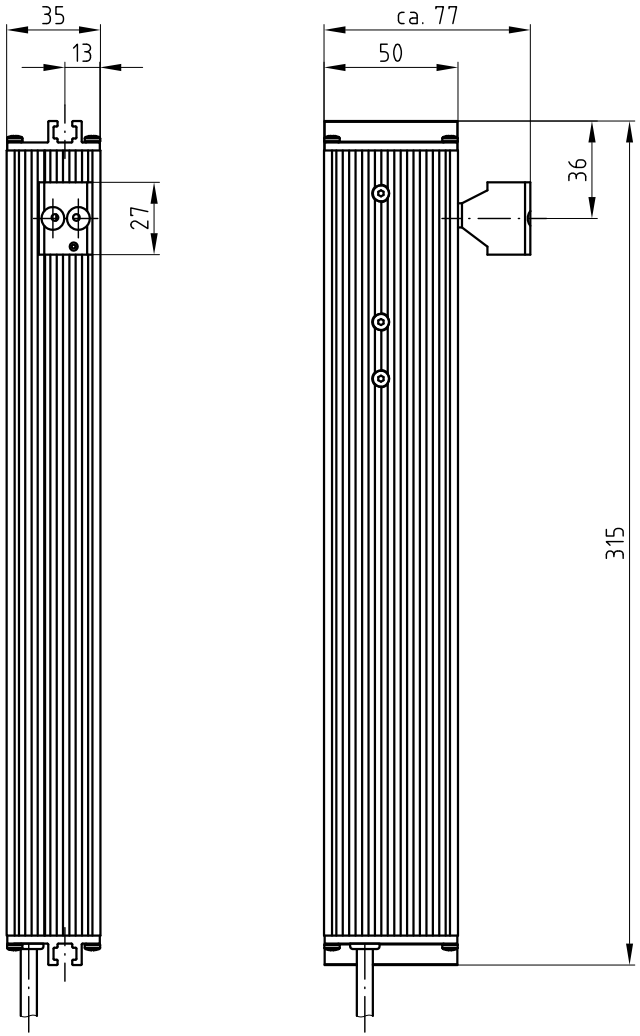
K05C.1

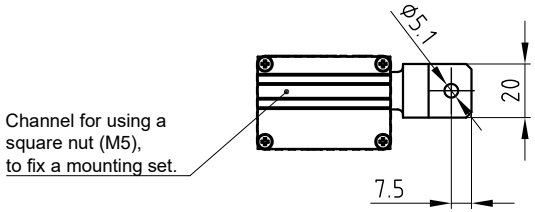
- 24V- electric chain actuator in stylish, anodized aluminium enclosure
- Internal interference suppression according to EN55011
- Current input at no-load approx. 0,25A, at full load approx. 0,5A
- Stroke 250mm
- Push and pull force 150N
- Maximum locking force 800N
- Full load speed 6,7mm/s, speed at no load 7,5mm/s
- Disconnection in both end positions through internal load break switches
- Electronically controlled stop at end position
- Integrated electronically controlled emergency stop on overload
- Electric shunt connection possible (Caution: But no synchronised operation)
- Ambient temperature range -20 to +60°C
- Light grey silicon supply cable, length approx. 2,5m, temperature range -50 to +180°C (to DIN VDE 0282)
- Protection IP20 (to DIN EN 60529)

Types:

K05C.1-250

Dateiname: Qf0510B





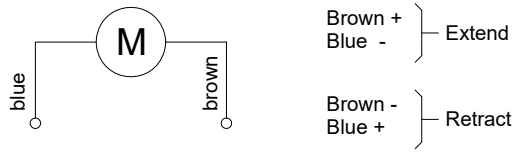
Technical description:

- Anodized aluminium housing, aluminiumchain
- Internal interference suppression according to EN55011
- Disconnection in both end positions through internal load break switches
- Electronic overload emergency disconnection
- Electric shunt connection possible (Caution: But no synchronised operation)
- Light grey silicone connection line 2x0.75mm², sheat Ø6mm, standard length 2.5m, special lengths on request

Technical data:

Designation	K05C.1	Unit
Rated voltage	24	VDC
Stroke	250	mm
Rated current (full-load/ no-load)	0,5/ 0,25	A
Pushing and pulling force	150	N
Maximum locking force	800	N
Speed at full-load	6,7	mm/s
Speed at no-load	7,5	mm/s
Ambient temperature range	-20 - +60	°C
Max. permissible temperature to EN12101-2 attachment G	300° - 30min	°C
Protection (DIN EN 60 529)	IP 20	
Operating mode according to DIN VDE 0530 part 1 (at 20°C ambient temperature)	S2 10min	

Circuit diagram:



Order designation:

K05C.1 - 250 - 2,5

- cable lenght
- stroke
- motor type
- current at full load
- chain actuator

GRASL Pneumatic-Mechanik GmbH A-3454 Reidling Europastraße 1				Freimaßtoleranz nach DIN 7168:		Maßstab: 1:1 / Werkstoff: / ID - Nr.:
					Datum	Name
				Bear.	30.03.2010	Simetzberger
				Gepr.	20.09.2012	KW
				Norm		
				Type: K05C.1		Bezeichnung: Data sheet Chain actuator type K K05C.1-250
						Zeichnung Nr.: 07.008.DAT.04.01-E / Blatt BL.
01	Version Französisch	18.09.2012	SA			
Zus.	Änderung	Datum	Name	(Urspr.)		(Ers.f.:) 07.008.DAT.04.00 (Ers.d.:)

erstellt am
28.5.2002 ER

formell geprüft am
29.5.2002 KW

fachlich geprüft am
29.5.2002 KW

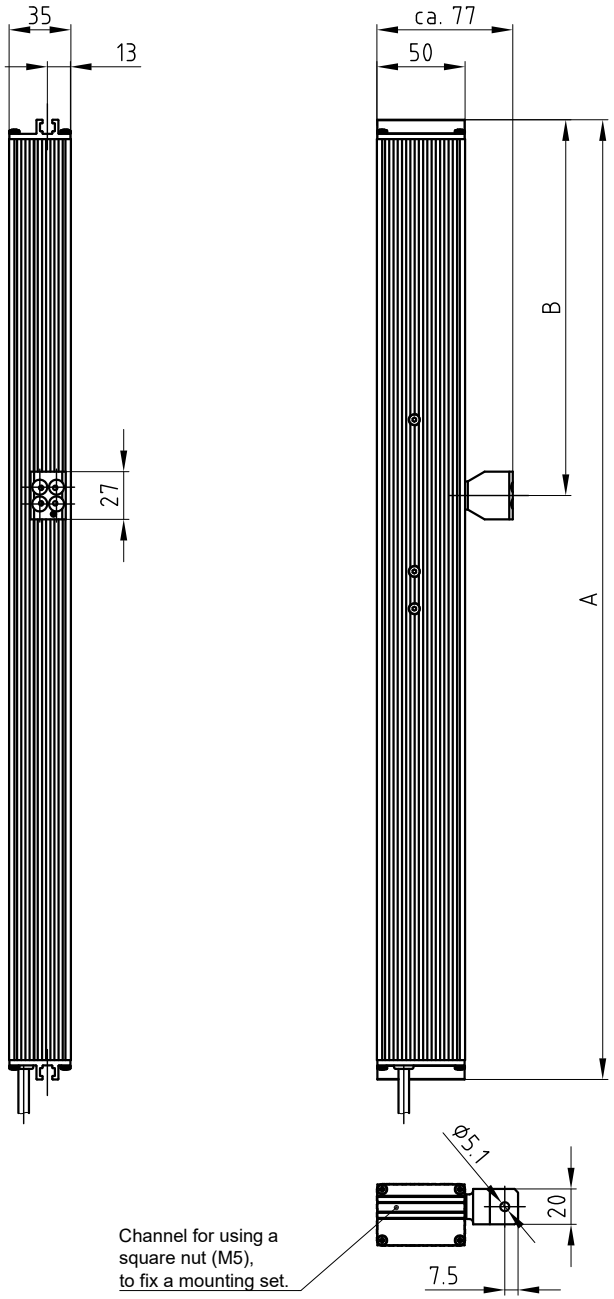
KR10B.1

- 24V- DC actuator
- Rated current input 1,0A
- Stroke 300, 400, 500 and 600mm
- Push / pull force 300N/150N (150N only, if the chain of the actuator with 600mm stroke is extended more than 500mm)
- stroke is extended more than 500mm)
- Max. closing force 1.600N
- Full load speed 7,6mm/s, speed at no load 11,4mm/s
- Electronically controlled cut-off at end position
- Electronically controlled emergency stop on overload
- Heat resistant silicon connecting cable 2,5m
- Ambient temperature range -20 to +60°C
- Protection IP20
- Shapely aluminium enclosure, anodised

Types:

- KR10B.1-300
- KR10B.1-400
- KR10B.1-450
- KR10B.1-500
- KR10B.1-600

(picture similar)



Technical description:

- Anodized aluminium housing, aluminiumchain
- Internal interference suppression according to EN55011
- Disconnection in both end positions through internal limit switches
- Electronic overload emergency disconnection
- Electric shunt connection possible (Caution: But no synchronised operation)
- Light grey silicone connection line 2x0.75mm², sheat Ø6mm, standard length 2.5m, special lengths on request

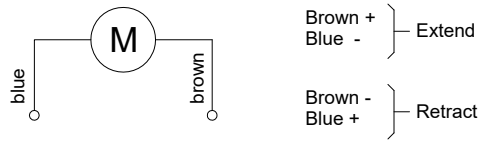
Technical data:

Designation	KR10B.1	Unit
Rated voltage	24	VDC
Rated current (full-load/ no-load)	1,0/ 0,35	A
Pushing / pulling force	300* / 150	N
Maximum locking force	1600	N
Speed at full-load	7,6*	mm/s
Speed at no-load	11,4	mm/s
Ambient temperature range	-20 - +60	°C
Max. permissible temperature to EN12101-2 attachment G	300° - 30min	°C
Protection (DIN EN 60 529)	IP 20	
Operating mode according to DIN VDE 0530 part 1 (at 20°C ambient temperature)	S2 2,5min	

*) Maximum load and speed depending on the stroke:

stroke range [mm]	pushing force [N]	speed [mm/s]
0-300	300	7,6
301-450	180	8,3
451-600	100	10
601-800	50	10

Circuit diagram:



Order designation:

KR10B.1 - 400 - 2,5

- 2,5 — cable lenght
- 400 — stroke
- B — motor type
- 1 — current at full load
- KR10B.1 — chain actuator

	max. stroke	A	B
KR10B.1 - 300 -2,5	300mm	544mm	213mm
KR10B.1 - 400 -2,5	400mm	594mm	263mm
KR10B.1 - 450 -2,5	450mm	694mm	313mm
KR10B.1 - 500 -2,5	500mm	694mm	313mm
KR10B.1 - 600 -2,5	600mm	794mm	363mm

Tolerance Scale 1:3 Material

Created	Sheet	Format	Title	Document Style
Simetzberger	1/2	A3	Chain actuator KR10B.1	Data sheet
Approved	Issue Date			Document State
HA	16.02.2016			Valid
Grasl Pneumatic Mechanik Gmbh QM FO 05.24.0				Document Number 07.008.DAT.05.05-E

Mounting kits for chain actuators

BS-K:
Basic mounting kit to be used in brackets provided at site, comprising bearing pins,
fastening bolts, nuts and bolts for coupling brackets

BS-K-40/20-S-I:
Mounting kit for opening inwards. Actuator will be fastened to window frame (minimum frame height 40mm, maximum window thickness 20mm)

BS-K-50/20-S-I:
Mounting kit for opening inwards. Actuator will be fastened to window frame (minimum frame height 50mm, maximum window thickness 20mm)

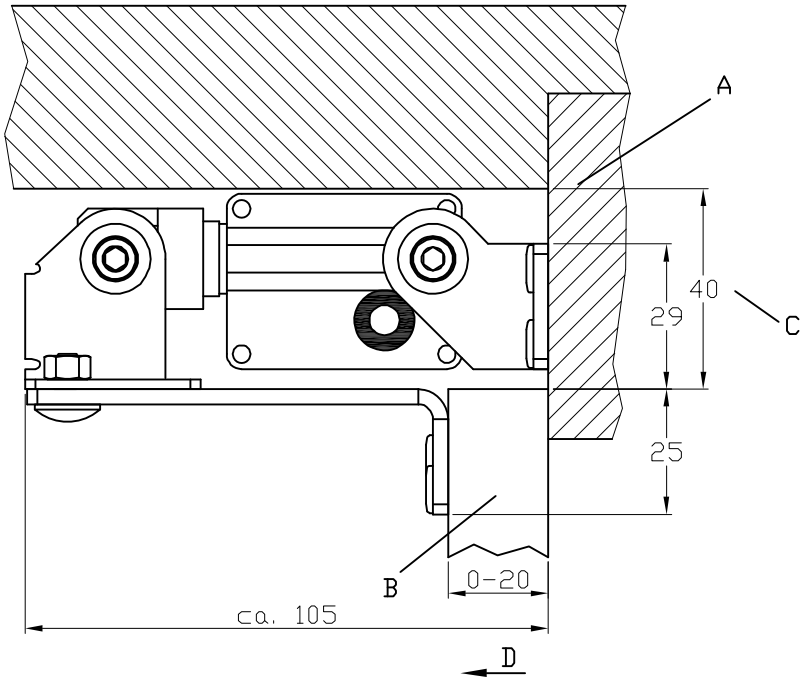
BS-K-30/20-F-I:
Mounting kit for opening inwards. Actuator will be fastened to casement (minimum window frame height 30mm, maximum window thickness 20mm)

BS-K-40/20-F-I:
Mounting kit for opening inwards. Actuator will be fastened to casement (minimum window frame height 40mm, maximum window thickness 20mm)

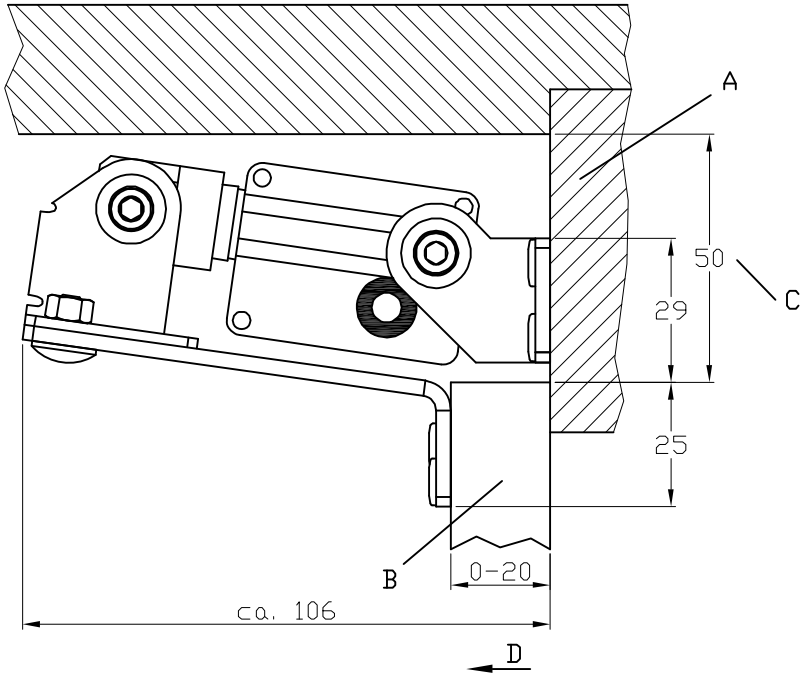
BS-K-25/20-S-A:
Mounting kit for opening outwards. Actuator will be fastened to window frame (minimum frame height 25mm, maximum window thickness 20mm)

Drawings of mounting kits for chain actuators

Mounting kit BS-K-40-20-S-I (actuator mounted on window frame, opening inwards)

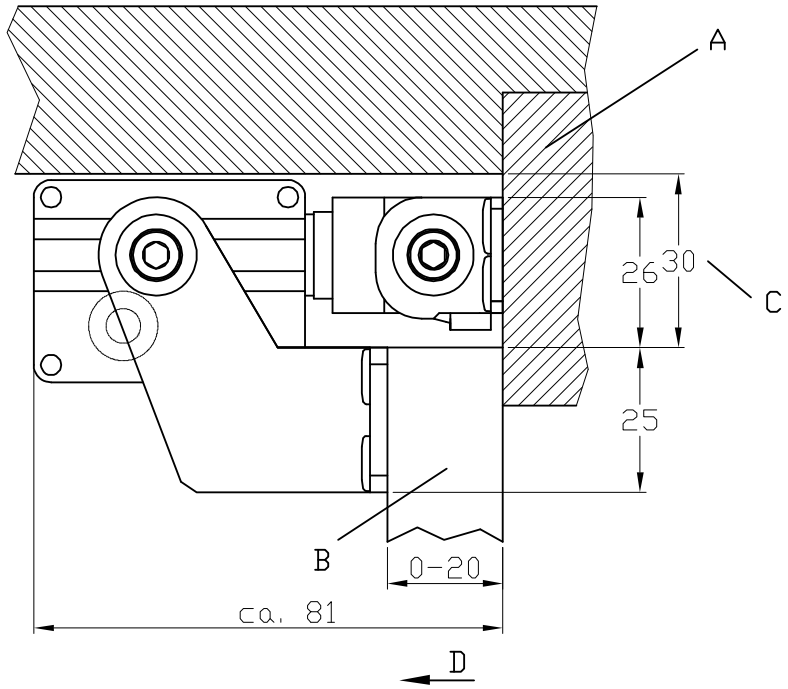


Mounting kit BS-K-50-20-S-I (actuator mounted on window frame, opening inwards)

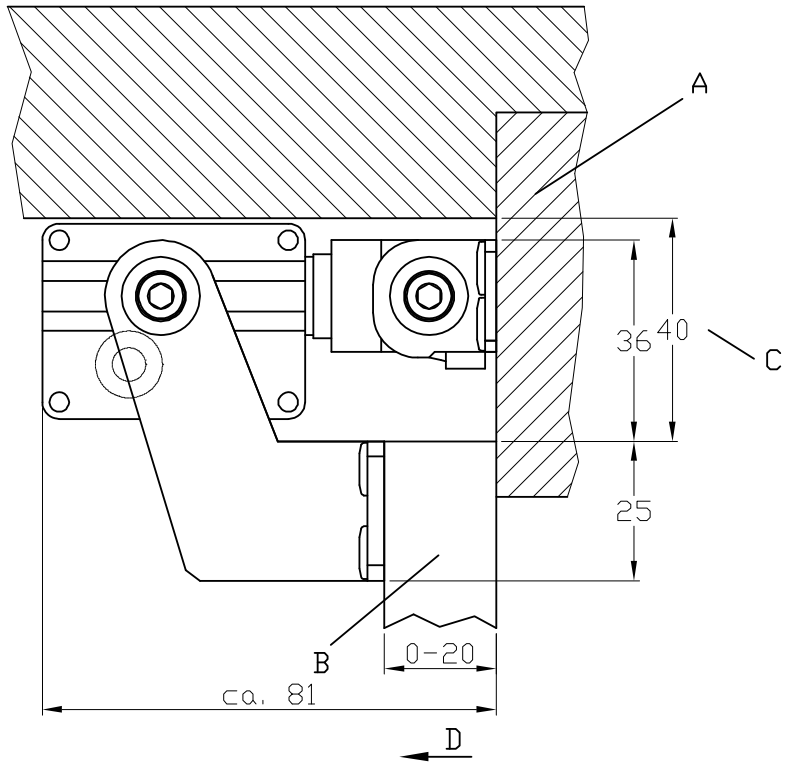


A	window frame
B	casement
C	minimum space requirement above casement
D	casement

Mounting kit BS-K-30-20-F-I (actuator mounted on window frame, opening inwards)

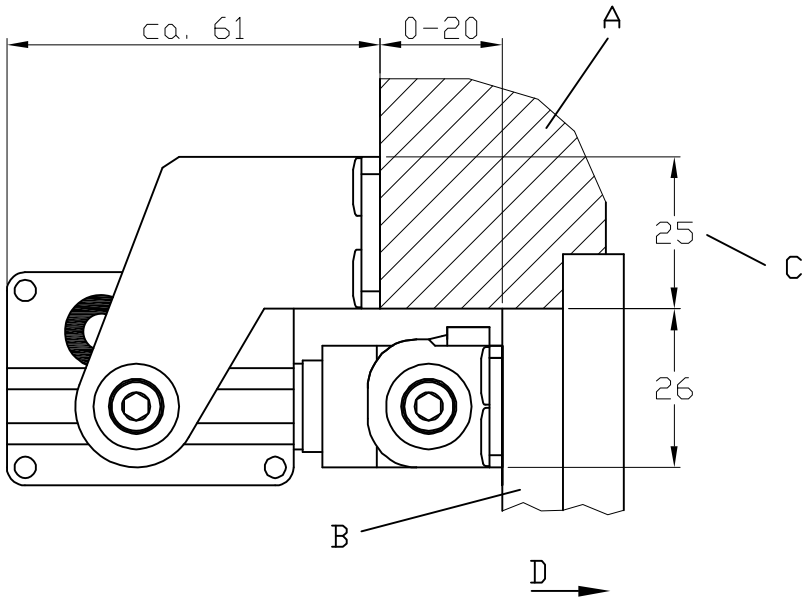


Mounting kit BS-K-40-20-F-I (actuator mounted on window frame, opening inwards)



A	window frame
B	casement
C	minimum space requirement above casement
D	casement

Mounting kit BS-K-25-20-S-A (actuator mounted on window frame, opening outwards)

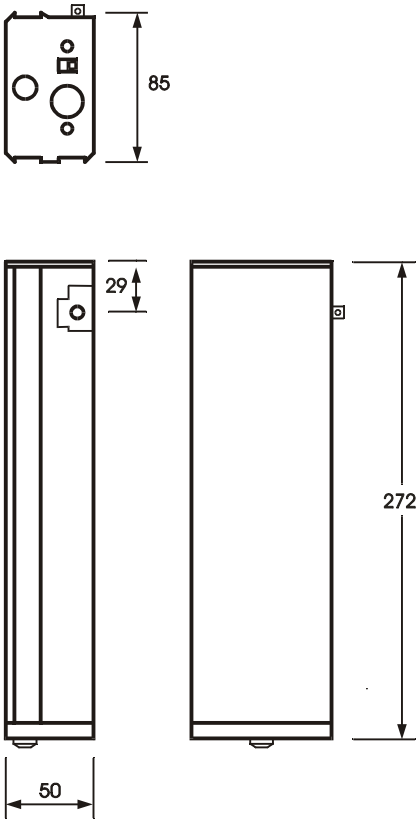


A	window frame
B	casement
C	minimum space requirement above casement
D	casement

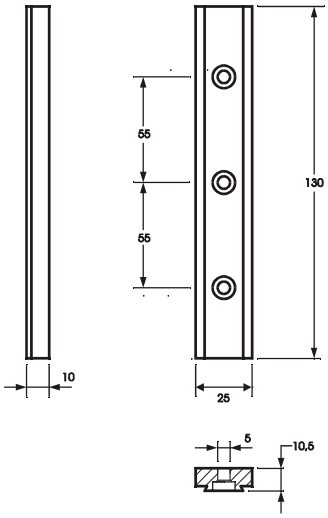
K 1-250/380-230

- Linear chain actuator, 230V~ / 50Hz / 0,7A
- Push force 150N, pull force 300N, stroke selection by switch (250mm or 380mm)
- **Min. window height 500mm**, min. height of window - stock 50mm
- Integrated limit switches
- Internal uncoupling relay for parallel connection
- Including mounting material
- Eloxated aluminium housing, black plastic end caps
- Degree of protection IP20, for use in dry rooms only
- Dimensions L272 x W85 x H50mm

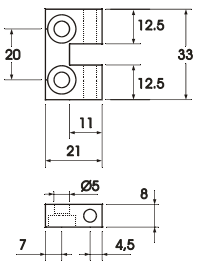
Dimensions



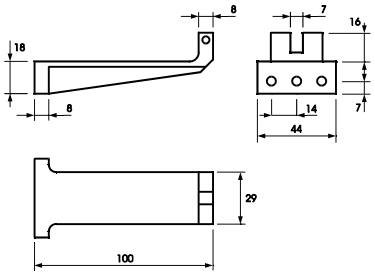
Fixing profile



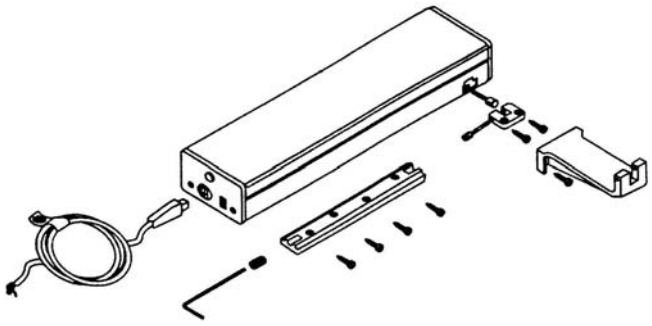
Coupling bracket

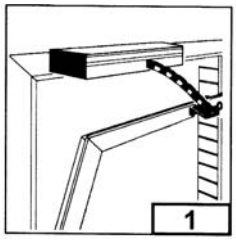


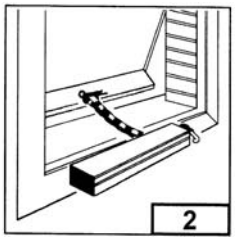
Distance bracket



Installation







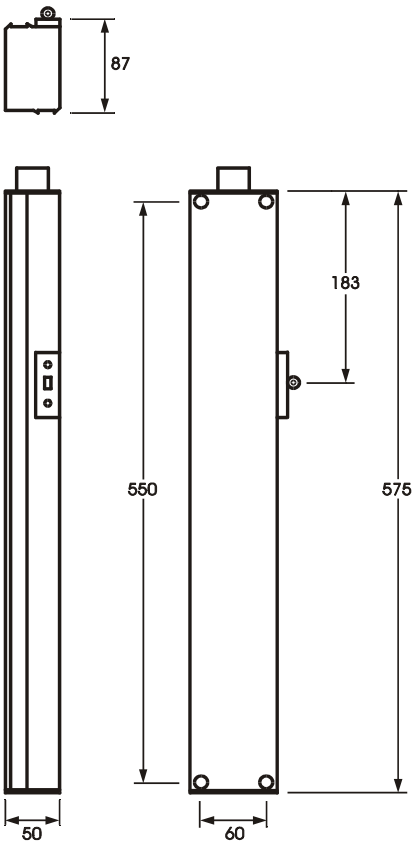
Pict. 1: Window opens to the inside, installation with distance bracket

Pict. 2: Window opens to the outside

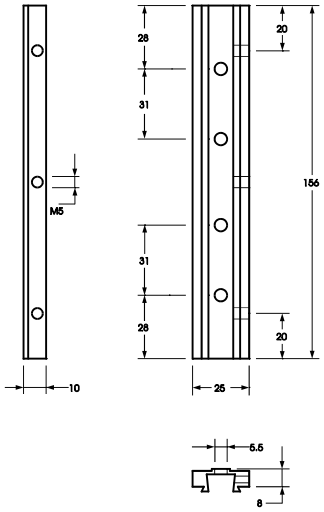
K 2-600-230

- Linear chain actuator, 230V~ / 50Hz / 0,7A
- Push / pull force 400N, stroke 600mm
- **Min. window height 1100mm**, min. height of window - stock 50mm
- Integrated limit switches
- Internal uncoupling relay for parallel connection
- Duty cycle: 36s ON / 144s OFF
- Including mounting material
- Eloxated aluminium housing, black plastic end caps
- Degree of protection IP22, for use in dry rooms only
- Dimensions L575 x W87 x H50mm

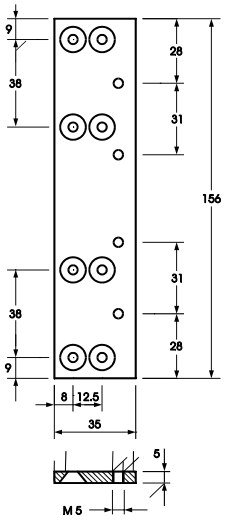
Dimensions



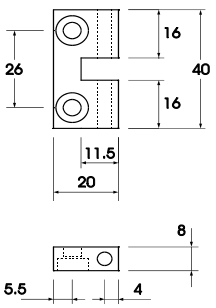
Fixing profile



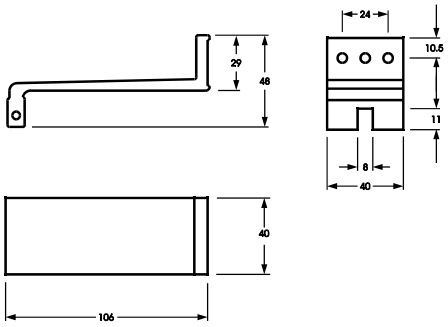
Mounting plate



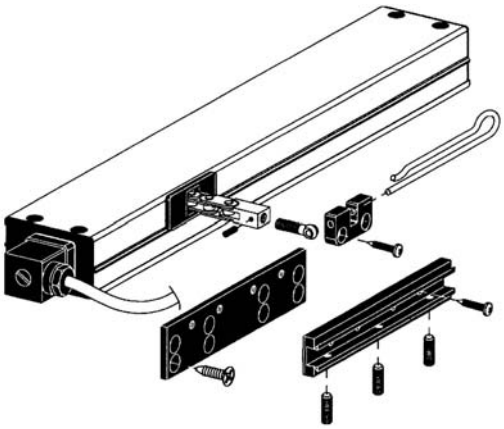
Coupling bracket

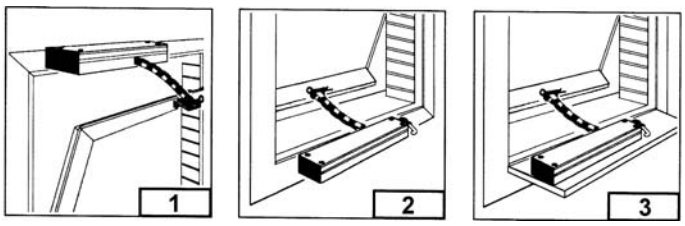


Distance bracket

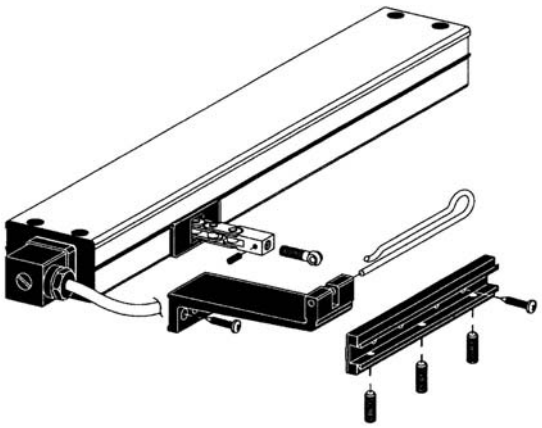


Standard - installation





Installation using distance bracket



Pict. 1: Window opens to the inside, installation with distance bracket

Pict. 2: Window opens to the outside

Pict. 3: As pict. 2, installation on the windowsill

1 Concept

- Control for monitoring the functions of two identical 24 V- actuators (current consumption max. 4 A each) on a Smoke and Heat Vent (SHV)
- Both actuators are de-energised instantly if any of the two actuators should fail (when falling below the minimum current consumption). So actuators will be de-energised in the case of wire breakage, short-circuit or response of the overload cut-off
- Power supply and control via the actuator output of a Smoke and Heat Exhaust Ventilation System Control Centre (SHEVS Control Centre) or Ventilation Control
- Selectable functions:
  - "Repetition of cycle △" (repeated attempt to start-up in travelling direction △)
  - "Repetition of cycle ▽" (repeated attempt to start-up in travelling direction ▽)
  - "Follow-up time" (compensation of possibly arisen run-time differences)
  - "Soft start-up" (supply voltage will not be switched to output at full level directly)
- Internal status indication for travelling commands △ / ▽ and malfunction ⚠
- Plastic enclosure, light grey (RAL 7035)

There will be no speed synchronisation of the actuators while running.

2 Technical data

PAS 2c (8163 2300 0000)

Dimensions in mm (W x H x D)	122 x 120 x 57
Cable entry through membrane grommets (from below)	3 x M25
Environmental Class I (to VdS 2581)	-5 °C … +75 °C
Max. permanent ambient temperature	+60 °C
Relative humidity	20 % … 80 %, non-condensing
Enclosure protection rating (to EN 60529)	IP54
Voltage supply (inversion of polarity for △ / ▽):	24 V⎓ (+6 V / -4 V)
Maximum output current (= current input)	2 x 4.0 A
Maximum cable cross section	10 mm²
Allowed cable length from the **PAS** to the actuators	< 3 m

Allowed cable length from the Control Centre to the **PAS** with simple and moderately branched arrangement

Current / Cross-section	1.0 A	2.0 A	3.0 A	4.0 A	5.0 A	6.0 A	7.0 A	8.0 A
2 x 1.5 mm²	44 m	22 m	15 m	11 m	9 m	7 m	6 m	5 m
2 x 2.5 mm²	73 m	36 m	24 m	18 m	15 m	12 m	10 m	9 m
2 x 4.0 mm²	116 m	58 m	39 m	29 m	23 m	19 m	17 m	15 m
2 x 6.0 mm²	174 m	87 m	58 m	44 m	35 m	29 m	25 m	22 m
2 x 10.0 mm²	290 m	145 m	97 m	73 m	58 m	48 m	41 m	36 m
4 x 1.5 mm²	87 m	44 m	29 m	22 m	17 m	15 m	12 m	11 m
4 x 2.5 mm²	145 m	73 m	48 m	36 m	29 m	24 m	21 m	18 m
4 x 4.0 mm²	232 m	116 m	77 m	58 m	46 m	39 m	33 m	29 m
4 x 6.0 mm²	348 m	174 m	116 m	87 m	70 m	58 m	50 m	44 m
4 x 10.0 mm²	580 m	290 m	193 m	145 m	116 m	97 m	83 m	73 m

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

The device complies with the requirements of the Directives 2006/95/EC and 2004/108/EC (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

1 Concept

- Control for monitoring the functions of two identical 24 V- actuators (current consumption max. 8 A each) on a Smoke and Heat Vent (SHV)
- Both actuators are de-energised instantly if any of the two actuators should fail (when falling below the minimum current consumption). So actuators will be de-energised in the case of wire breakage, short-circuit or response of the overload cut-off
- Power supply and control via two 8 A actuator outputs or a single 16 A output of a Smoke and Heat Exhaust Ventilation System Control Centre (SHEVS Control Centre) or Ventilation Control
- Selectable functions:
  - "Repetition of cycle △" (repeated attempt to start-up in travelling direction △)
  - "Repetition of cycle ▽" (repeated attempt to start-up in travelling direction ▽)
  - "Follow-up time" (compensation of possibly arisen run-time differences)
  - "Soft start-up" (supply voltage will not be switched to output at full level directly)
- Internal status indication for input signals IN1 OK / IN2 OK, travelling commands △ / ▽ and malfunction ⚠
- Plastic enclosure, light grey (RAL 7035)

There will be no speed synchronisation of the actuators while running.

2 Technical data

PAS 3a (8163 3100 0000)

Dimensions in mm (W x H x D)	255 x 180 x 75
Cable entry through membrane grommets (from below)	2 x M32, 2 x M25
Environmental Class I (to VdS 2581)	-5 °C … +75 °C
Max. permanent ambient temperature	+60 °C
Relative humidity	20 % … 80 %, non-condensing
Enclosure protection rating (to EN 60529)	IP54
Voltage supply (inversion of polarity for △ / ▽):	2 x 24 V⎓ (+6 V / -4 V)
Maximum output current (= current input)	2 x 8.0 A
Maximum cable cross section	4 x 10 mm² (rigid) for each input 2 x 10 mm² (rigid) for each output
Allowed cable length from the **PAS** to the actuators	< 3 m

Allowed cable length from the Control Centre to the **PAS** with simple and moderately branched arrangement

Current / Cross-section	1.0 A	2.0 A	3.0 A	4.0 A	5.0 A	6.0 A	7.0 A	8.0 A
2 x 1.5 mm²	44 m	22 m	15 m	11 m	9 m	7 m	6 m	5 m
2 x 2.5 mm²	73 m	36 m	24 m	18 m	15 m	12 m	10 m	9 m
2 x 4.0 mm²	116 m	58 m	39 m	29 m	23 m	19 m	17 m	15 m
2 x 6.0 mm²	174 m	87 m	58 m	44 m	35 m	29 m	25 m	22 m
2 x 10.0 mm²	290 m	145 m	97 m	73 m	58 m	48 m	41 m	36 m
4 x 1.5 mm²	87 m	44 m	29 m	22 m	17 m	15 m	12 m	11 m
4 x 2.5 mm²	145 m	73 m	48 m	36 m	29 m	24 m	21 m	18 m
4 x 4.0 mm²	232 m	116 m	77 m	58 m	46 m	39 m	33 m	29 m
4 x 6.0 mm²	348 m	174 m	116 m	87 m	70 m	58 m	50 m	44 m
4 x 10.0 mm²	580 m	290 m	193 m	145 m	116 m	97 m	83 m	73 m

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

The device complies with the requirements of the Directives 2006/95/EC and 2004/108/EC (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

1 Concept

- Control for synchronising the travelling speed of two identical 24 V-actuators on a Smoke and Heat Vent (SHV)
- Both actuators are de-energised instantly if any of the two actuators should fail
- Power supply and control via the actuator output of a Smoke and Heat Exhaust Ventilation System Control Centre (SHEVS Control Centre) or Ventilation Control
- Selectable functions:
  - "Repetition of cycle" (repeated attempt to start-up in travelling direction △)
  - "Follow-up time" (compensation of possibly arisen stroke differences)
- Internal status indication ⚠
- Plastic enclosure, light grey (like RAL 7035)

2 Versions

- **SYN 2.1c**: Control for actuators type S08x, G08x, SG08x, S10x, G10x, SG10x
- **SYN 2.2c**: Control for actuators type G13x, SG13x, G16x, SG16x, G20x, SG20x
- **SYN 2.3c**: Control for actuators type G26x, SG26x
- **SYN 2.4c**: Control for actuators type G40x, SG40x

- The **SYN** mustn't be operated with the SHEVS Control RWD 1 or the actuators G201, G205, G209, G401, G405, G409

3 Technical data

SYN 2.1c (8300 0SYN 2103) / **SYN 2.2c** (8300 0SYN 2203) / **SYN 2.3c** (8300 0SYN 2303) / **SYN 2.4c** (8300 0SYN 2403)

Dimensions in mm (W x H x D) Cable entry through membrane grommets (from below)	122 x 120 x 57 3 x M25
Environmental Class I (to VdS 2581) Max. permanent ambient temperature Relative humidity Enclosure protection rating	-5 °C … +75 °C +60 °C 20 % … 80 %, non-condensing IP54
Synchronisation deviation (movement without interruption)	max. 0.5 % of the total stroke
Voltage supply (inversion of polarity for △ / ▽) Maximum output current (= current input): **SYN 2.1** / **SYN 2.2** / **SYN 2.3** / **SYN 2.4**	24 V⎓ (+6 V / -4 V) 2 A / 4 A / 5.2 A / 8 A
Maximum cable cross-section (Control Centre / actuators) Allowed cable length from the **SYN** to the actuators	10 mm² / 6 mm² < 3 m

Allowed cable length from the Control Centre to the **SYN** with simple and moderately branched arrangement

Current / Cross section	1,6 A (2x 0.8 A)	2,0 A (2x 1.0 A)	2,6 A (2x 1.3 A)	3,2 A (2x 1.6 A)	4,0 A (2x 2.0 A)	5,2 A (2x 2.6 A)	8,0 A (2x 4.0 A)
2 x 1,5 mm²	27 m	22 m	17 m	14 m	11 m	8 m	5 m
2 x 2,5 mm²	45 m	36 m	28 m	23 m	18 m	14 m	9 m
2 x 4,0 mm²	73 m	58 m	45 m	36 m	29 m	22 m	15 m
2 x 6,0 mm²	109 m	87 m	67 m	54 m	44 m	33 m	22 m
2 x 10,0 mm²	181 m	145 m	112 m	91 m	73 m	56 m	36 m

The device complies with the requirements of the Directives 2006/95/EC and 2004/108/EC (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

1 Concept

- Control for synchronising the travelling speed of three (**SYN 3**) or four (**SYN 4**) identical 24 V- actuators on a Smoke and Heat Vent (SHV)
- The actuators are de-energised instantly if any of them should fail
- Power supply and control via the actuator output of a Smoke and Heat Exhaust Ventilation System Control Centre (SHEVS Control Centre)
- Selectable functions:
  - "Repetition of cycle" (repeated attempt to start-up in travelling direction △)
  - "Follow-up time" (compensation of possibly arisen stroke differences)
- Internal status indications ⚠
- Plastic enclosure, light grey (like RAL 7035)

2 Versions

- **SYN 3.1a / 4.1a**: Control for actuators type S08x, G08x, SG08x, S10x, G10x, SG10x
- **SYN 3.2a / 4.2a**: Control for actuators type G13x, SG13x, G16x, SG16x, G20x, SG20x
- **SYN 3.3a / 4.3a**: Control for actuators type G26x, SG26x
- **SYN 3.4a / 4.4a**: Control for actuators type G40x, SG40x
- The **SYN** mustn't be operated with the SHEVS Control RWD 1 or the actuators G201, G205, G209, G401, G405, G409

3 Technical data

SYN 3.1a (8300 0SYN 3101) / **SYN 3.2a** (8300 0SYN 3201) / **SYN 3.3a** (8300 0SYN 3301) / **SYN 3.4a** (8300 0SYN 3401)
SYN 4.1a (8300 0SYN 4101) / **SYN 4.2a** (8300 0SYN 4201) / **SYN 4.3a** (8300 0SYN 4301) / **SYN 4.4a** (8300 0SYN 4401)

Dimensions in mm (W x H x D) Cable entry through membrane grommets (from below)	250 x 175 x 75 1 x M32, 4 x M20, 1 x M16
Environmental Class I (to VdS 2581) Max. permanent ambient temperature Relative humidity Enclosure protection rating	-5 °C … +75 °C +60 °C 20 % … 80 %, non-condensing IP54
Synchronisation deviation (movement without interruption)	max. 0.5 % of the total stroke
Voltage supply (inversion of polarity for △ / ▽) Maximum output current (= current input): **SYN 3.1** / **SYN 3.2** / **SYN 3.3** / **SYN 3.4** **SYN 4.1** / **SYN 4.2** / **SYN 4.3** / **SYN 4.4**	24 V⎓ (+6 V / -4 V) 3 A / 6 A / 7.8 A / 12 A 4 A / 8 A / 10.4 A / 16 A
Maximum cable cross-section (Control Centre / actuators) Allowed cable length from the **SYN** to the actuators	4 x 10 mm² / 2 x 6 mm² < 3 m

Allowed cable length from the Control Centre to the **SYN** with simple and moderately branched arrangement

Current / Cross section	**SYN 3**						**SYN 4**					
	3,0 A (3x 1.0 A)	3,9 A (3x 1.3 A)	4,8 A (3x 1.6 A)	6,0 A (3x 2.0 A)	7,8 A (3x 2.6 A)	12,0 A (3x 4.0 A)	4,0 A (4x 1.0 A)	5,2 A (4x 1.3 A)	6,4 A (4x 1.6 A)	8,0 A (4x 2.0 A)	10,4 A (4x 2.6 A)	16,0 A (4x 4.0 A)
2 x 1,5 mm²	15 m	11 m	9 m	7 m	6 m	4 m	11 m	8 m	7 m	5 m	4 m	3 m
2 x 2,5 mm²	24 m	19 m	15 m	12 m	9 m	6 m	18 m	14 m	11 m	9 m	7 m	5 m
2 x 4,0 mm²	39 m	30 m	24 m	19 m	15 m	10 m	29 m	22 m	18 m	15 m	11 m	7 m
2 x 6,0 mm²	58 m	45 m	36 m	29 m	22 m	15 m	44 m	33 m	27 m	22 m	17 m	11 m
2 x 10,0 mm²	97 m	74 m	60 m	48 m	37 m	24 m	73 m	56 m	45 m	36 m	28 m	18 m
4 x 1,5mm²	29 m	22 m	18 m	15 m	11 m	7 m	22 m	17 m	14 m	11 m	8 m	5 m
4 x 2,5mm²	48 m	37 m	30 m	24 m	19 m	12 m	36 m	28 m	23 m	18 m	14 m	9 m
4 x 4,0mm²	77 m	59 m	48 m	39 m	30 m	19 m	58 m	45 m	36 m	29 m	22 m	15 m
4 x 6,0mm²	116 m	89 m	73 m	58 m	45 m	29 m	87 m	67 m	54 m	44 m	33 m	22 m
4 x 10,0mm²	193 m	149 m	121 m	97 m	74 m	48 m	145 m	112 m	91 m	73 m	56 m	36 m

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

The device complies with the requirements of the Directives 2006/95/EC and 2004/108/EC (emission: EN 61000-6-3 and EN 55022, immunity: EN 61000-6-2 and EN 50130-4).

LT-UP

- Flush mounted rocker push-button for mounting box installation
- Mechanical reverse lock-out and electrical interlock
- Single pole, with zero position
- Contact load rating 10 A / 250 V AC
- With claw and screw fixing
- Cream white, **without frame**

LT-UP-K

- Flush mounted twist knob switch for mounting box installation
- Can be used as push-button with the provided locking disc
- 2 poles, with zero position
- Contact load rating 10 A / 250 V AC
- With claw and screw fixing
- Cream white, **without frame**

LT-UP-S

- Flush mounted push-button, key operated, for mounting box installation
- Single pole, with zero position
- Contact load rating 10 A / 250 V AC
- Operated with half cylinder lock **PHZ** (accessory)
- With claw and screw fixing
- Cream white, **without frame**

Accessories

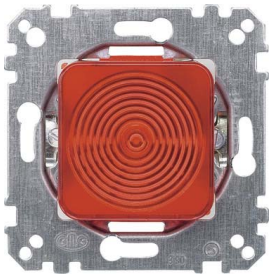
PHZ:

- Half cylinder lock for key operated switch type **LT-AP-S** or **LT-UP-S**
- Keyed alike
- Key removal in centre position
- With 3 keys

LT 2-UP-A

- Flush mounted push-button for mounting box installation
- Indication of position OPEN (blue)
- For connection to SHEVS Control Centres / Controls **RWZ 1**, **RWZ 2f**, **RWZ 4d**, **RWZ 5e**, **RWD 1**, **RWD 2**, **AEZ**
- Contact load rating 24 V DC / 40 mA
- With screw fixing
- Cream white, **without frame**

AU



- Flush mounted signal light for mounting box installation
- Lamp socket E10
- For lamps up to 250 V AC / 3 W
- With claw and screw fixing
- Cream white, red light, **without frame**

AU-24:

- With LED lamp 24 V AC/DC
- Current consumption approx. 20 mA

AU-230:

- With LED lamp 230 V AC
- Current consumption approx. 3 mA

RU-E

- Single frame, cream white
- Suitable for all ventilation buttons of series **LT-UP**, **LT 2-UP** and indicators **AU**

RU-D

- Double frame, cream white
- Suitable for all ventilation buttons of series **LT-UP**, **LT 2-UP** and indicators **AU**

GA-E

- Single box, cream white
- For surface mounting of ventilation buttons of series **LT-UP**, **LT 2-UP** and indicators **AU**

GA-D

- Double box, cream white
- For surface mounting of ventilation buttons of series **LT-UP**, **LT 2-UP** and indicators **AU**

LT-AP

- Surface mounted rocker push-button, wet room series
- Mechanical reverse lock-out and electrical interlock
- Single pole, with zero position
- Contact load rating 10 A / 250 V AC
- Protection rating IP44
- Light grey

LT-AP-S

- Surface mounted push-button, key operated, wet room series
- Single pole, with zero position
- Contact load rating 10 A / 250 V AC
- Operated with half cylinder lock **PHZ** (accessory)
- Protection rating IP44
- Light grey

Accessories

PHZ:

- Half cylinder lock for key operated switch type **LT-AP-S** or **LT-UP-S**
- Keyed alike
- Key removal in centre position
- With 3 keys

AA

- Surface mounted signal light, wet room series
- Lamp socket E14
- For lamps up to 250 V AC / 5 W
- Protection rating IP44
- Light grey, red light

AA-24:

- With lamp 24 V / 5 W

AA-230:

- With lamp 230 V / 5 W

Multiple tone sounder MS 4

- Multiple tone sounder for audible alarm
- Certified to EN 54-3
- VdS approved
- 32 selectable tones, two stage alarm
- Automatic synchronisation
- Operating voltage: 9 - 28 VDC
- Current input: 3 - 32 mA
- Sound pressure: 94 - 112 dB(A)
- DIN-tone (24 VDC): 15 mA / 103 dB(A)
- Selectable 10 dB attenuation
- Reverse polarity protection
- Protection rating: IP54
- Dimensions: Ø 93 mm x H 63 mm
- Ambient temperature: -10 °C … +70 °C
- ABS housing (ABS V0), red
- Including socket type S

Strobe light BL 4

- Strobe light for visual alarm
- Operating voltage: 9 - 60 VDC
- Power-saving LED technology
- Current input: 3 / 5 / 15 mA
- Luminous intensity: 0,5 / 1 / 3 cd (selectable)
- Flash rate: 1 Hz (single or double flash) or continuous
- Flash colour: red
- Reverse polarity protection
- Protection rating: IP21C
- Dimensions: Ø 93 mm x H 53 mm
- Ambient temperature: -10 °C … +55 °C
- ABS housing (ABS FR, lens: PC), red
- Including socket type S

Combined warning device MS-BL 4

- Combined multiple tone sounder and strobe light for audible and visual alarm
- Certified to EN 54-3
- VdS approved
- 32 selectable tones, two stage alarm
- Automatic synchronisation
- Operating voltage: 9 - 28 VDC
- Power-saving LED technology
- Current input: 6 - 35 mA
- Sound pressure: 94 - 112 dB(A)
- DIN-Ton (24 VDC): 18 mA / 103 dB(A)
- Selectable 10 dB attenuation
- Luminous intensity: > 0,5 cd
- Flash rate: 1 Hz
- Flash colour: red
- Reverse polarity protection
- Protection rating: IP21C
- Dimensions: Ø 93 mm x H 79 mm
- Ambient temperature: -10 °C … +55 °C
- ABS housing (ABS V0, lens: PC), red
- Including socket type S

Accumulators

- Maintenance-free sealed lead acid accumulators
- Independent working position
- Service life approx. 1.200 cycles
- Note: capacity rating may slightly vary depending
- upon accumulator availability

Rated voltage	Rated capacity (K20)	Dimensions (LxBxH in mm)	Connections	VdS - approved	Ident no.
12V	0,8Ah	96 x 25 x 62	AMP plug connectors	-	861200080000
12V	1,2Ah	97 x 43 x 59	2 x flat connector (4,8 x 0,8mm)	●	861200120000
12V	2,0Ah	178 x 34 x 67	2 x flat connector (4,8 x 0,8mm)	●	861200200000
12V	4,0Ah	90 x 70 x 107	2 x flat connector (4,8 x 0,8mm)	-	861200400000
12V	7,0Ah	151 x 65 x 102	2 x flat connector (4,8 x 0,8mm)	●	861200720000
12V	12Ah	151 x 98 x 101	2 x flat connector (6,3 x 0,8mm)	●	861201200000
12V	18Ah	181 x 76 x 167	Zwei screw terminals (M5)	●	861201800000
12V	26Ah	166 x 175 x 125	Zwei screw terminals (M5)	●	861202700000
12V	42Ah	198 x 166 x 171	Zwei screw terminals (M6)	●	861204200000
12V	65Ah	272 x 166 x 191	Zwei screw terminals (M6)	●	861206500000

Please also note the details on the next page

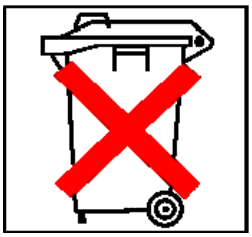
Notes on Accumulators / Battery Ordinance:

The Battery Ordinance (BattV) of the Federal Republic of Germany dated March 27, 1998, with amendment 1 dated June 26, 2001, became fully effective on September 1, 2001. It is the objective of this ordinance to reduce the entry of harmful substances from batteries into waste. For this reason, certain batteries containing harmful substances must not be marketed,
used batteries have to be returned and properly and harmlessly recovered in accordance with the provisions of the Closed Substance Cycle and Waste Management Act, and those batteries which cannot be recovered have to be disposed of in a manner compatible with public welfare.

Summary:

1. Anyone who sells batteries shall notify customers at the point of sale, by means of easily recognisable and legible notice boards,
- that after use, the batteries can be returned free of charge to the point of sale or its immediate vicinity,
- that the end user is obliged by law to return used batteries, and
- explain the meanings of the symbols to be used for marking

2. Batteries containing harmful substances have to bear one of the two symbols shown right:



The symbols (Xx) used for marking have the following meaning:
Pb: battery contains lead
Cd: battery contains cadmium
Hg: battery contains mercury

Xx **Xx**

3. Manufacturers, distributors and public waste management authorities are obliged to accept, free of charge, the return of used batteries. All returned batteries have to be properly and harmlessly recovered or disposed of in a manner compatible with public welfare.

4. The end user as last possessor is obliged to return waste batteries to a distributor or to the public waste management authorities. This obligation to return batteries concerns any end user, both private and commercial.

Note:

The recycling symbol shown on the right side identifies a product containing portions of recycled waste material.

The symbol shown thereunder identifies a product suitable for being recycled.

Service Display Unit SD 1

- Service display unit to show details of alarm, malfunction and charging conditions
- Display will simply be plugged into a diagnostic slot of the Control Centre / Control and removed upon completion of the work
- Simplified fault finding during installation and maintenance work by precise identification of the cause of a failure (e.g. signal line concerned, wire breakage or short-circuit, etc.)
- The display is suitable for use with the following devices:
  - **KLZ 1c, IS 2c, IS 3a, IS 4-Ia**
  - **RWD 1a**
  - **RWZ 1a, RWZ 2e, RWZ 3a, RWZ 4c, RWZ 5d**
- Dimensions in mm (W x H x D): 22 x 48 x 20

Service Module SVM 1

- Service module for indication of maintenance intervals of SHE Control Centres / Controls
- Required maintenance will be shown after one year from date of module installation. The Control Centre / Control indicates a malfunction, while an LED lights up on the service module
- In normal operating conditions of the Control Centre / Control, without extended periods of line failure, the module can be used for several years before replacing the battery
- In the case of activated module and permanent line failure, the battery will be discharged after about two months
- The module can be simply plugged into position in the Control Centre / Control
- The module is suitable for use with the following devices:
  - **IS 3a, IS 4-Ea**
  - **RWD 1a**
  - **RWZ 1a, RWZ 2c, RWZ 2d, RWZ 3a, RWZ 5c, RWZ 5d**
- Dimensions in mm (W x H x D): ca. 28 x 36 x 28

BF mounting

- Electrically operated mounting for installation in domelights etc.
- Opening angle 91° respectively 105°
- Opening time under load within 60s or 90s
- Opening mounting is factory adjustable to suit any domelight or continuous roof light (from approx. 780mm to 2.100mm inner width of curb or frame / continuous roof light opening)
- Due to cross beam design, only small forces are introduced into the curb and domelight frame
- Space-saving due to flat design
- Ease of assembly by hanging the mounting from above into the curb or frame
- Preassembled and adapted to actual building conditions.
- Available in 5 sizes with different actuators type **G** and **SG** (depending on run-time and snow load). Please select from table shown hereunder
- Domelight latched in closed position by mechanical hook locking device **MHV** and adjustable locking bolt **EVB 3-M12** (accessories)
- When ordering, please complete the dimensional sheet, indicating inner width and hinge dimensions

Types:

see synoptic table of appropriate actuators / types

Accessories:

EVB 3-M12: Adjustable locking bolt
Upper cross beams: (including **MHV**) see upper cross beams

For special types please inquire

BF mounting

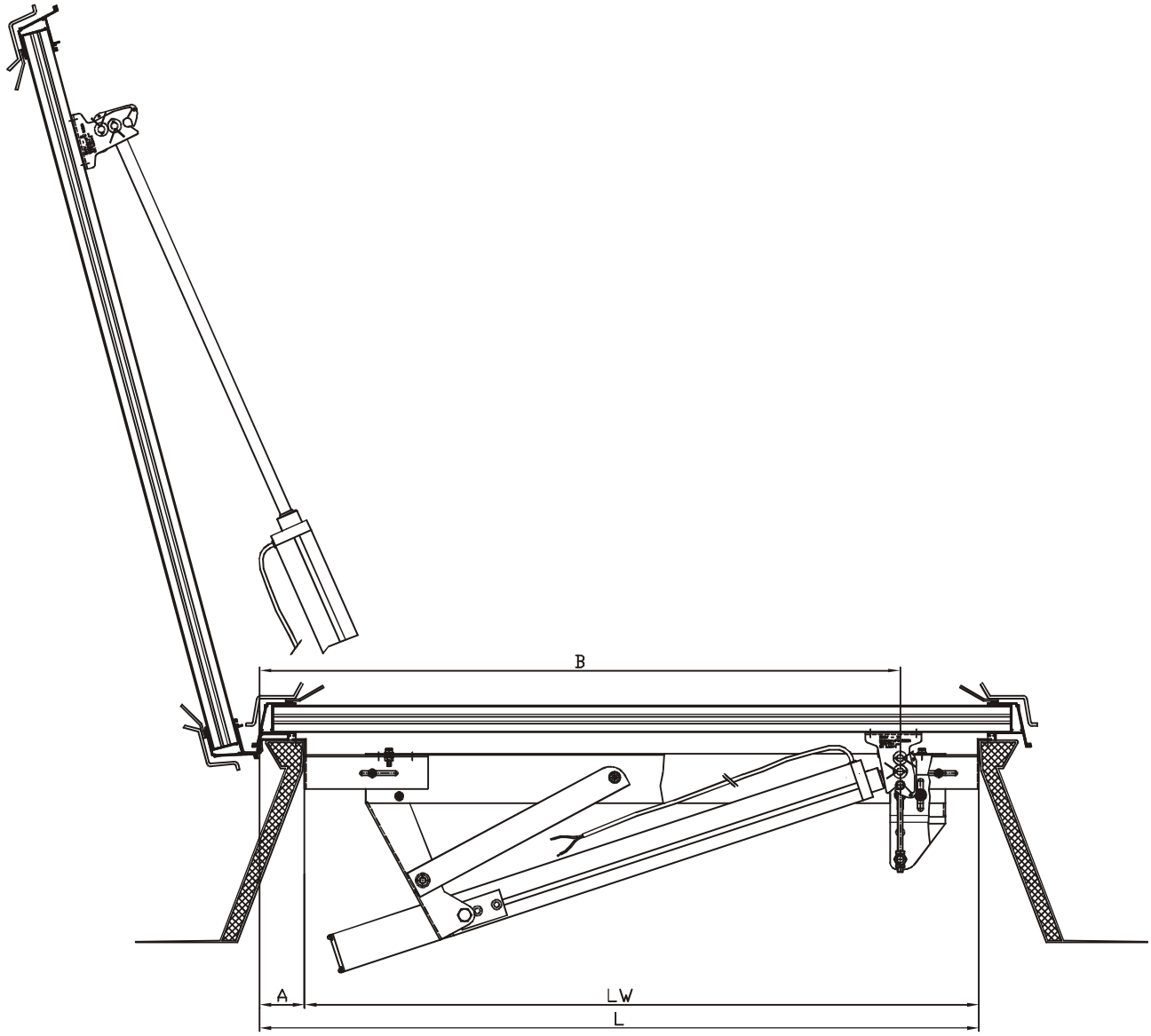
Synoptic table of appropriate actuators / types:

nominal width in mm		weight of flap in N	snow load 500 / <60s		snow load 500 / <90s		order identification (select type of drive)
			91°	105°	91°	105°	
1000	1000	125	**G16B**	**G26C***	**G16B**	**G20B***	BF1.2-xxx°- type of drive
	1500	190	**G40G***		**G26B**	**G26B***	BF1.2-xxx°- type of drive
	2000	250	**G40G***		**G40G***		BF1.2-xxx°- type of drive
	2400	300	**SG40M***	**2xG26C* ****	**SG40A***		BF1.2-xxx°- type of drive
	3000	380	**SG60F***	**2xG40G* ****	**SG40A***	**2xG26B* ****	BF1.2-xxx°- type of drive
1200	1200	180	**G40G**		**G20B**		BF2.2-xxx°- type of drive
	1500	230	**G40G**		**G26B**		BF2.2-xxx°- type of drive
	1800	270	**G40G**		**G40G**		BF2.2-xxx°- type of drive
	2000	300	**SG40N**	**SG60N***	**SG40M**	**SG40M***	BF2.2-xxx°- type of drive
	2400	360	**SG60N**	**SG60N***	**SG40M**	**SG40M***	BF2.2-xxx°- type of drive
	3000	450	**SG60N**	**SG60N***	**SG60F**	**SG60F***	BF2.2-xxx°- type of drive
1500	1500	285	**G60P**		**G40G**		BF3.2-xxx°- type of drive
	1800	340	**SG60T**		**SG40M**		BF3.2-xxx°- type of drive
	2000	380	**SG80P**		**SG40M**		BF3.2-xxx°- type of drive
	2400	450	**2xSG40T****		**SG60F**		BF3.2-xxx°- type of drive
	3000	560	**2xSG60P****		**SG80T**		BF3.2-xxx°- type of drive
1800	1800	410	**SG80P**		**SG60N**		BF4.2-xxx°- type of drive
	2400	540	**2xSG60P****		**SG80T**		BF4.2-xxx°- type of drive
	3000	680	**2xSG80P****		**2xSG60N****		BF4.2-xxx°- type of drive
2000	2000	500	**2xSG60P****		**SG80T**		BF4.2-xxx°- type of drive
	3000	750	**2xSG80P****		**2xSG60N****		BF4.2-xxx°- type of drive
2200	2200	610	**2xSG80R****		**2xSG60P****		BF5.2-xxx°- type of drive

*) Respect installation situation (construed for a size of hinge of 67mm)!

**) Tandem type required: Please order 2 mountings and 2 actuators.
Use of a parallel cut-off control is recommended (see actuator controls)

BF-mounting



Type	Lmin - Lmax	A	B-105°	B-91°
BF 1	842 - 1041	50 - 102	750	780
BF 2	1042 - 1341	50 - 132	950	990
BF 3	1342 - 1641	50 - 232	1250	1300
BF 4	1642 - 1991	50 - 232	1550	1620
BF 5	1992 - 2341	50 - 232	1900	1970
size L = inner width LW + size of hinge A)				

BG mounting - fixed type

- Electrically operated mounting for installation in domelights etc.
- Opening angle 140°or 165°. For special opening angles, please inquire
- Opening time under load within 60s or 90s
- Fixed cross beam type for domelights with 800, 1.000, 1.300 and 1.600mm inner width of curb and a hinge size of 65 to 70mm
- Ideally suited for domelights:
  Inner width = nominal width - 200mm
- Due to cross beam design, only small forces are introduced into the curb and domelight frame
  Space-saving due to flat design
- Ease of assembly by hanging the mounting from above into the curb or frame
- Available in 4 sizes with different actuators type **SG** (depending on run-time and snow load).
  Please select from table shown hereunder
- Domelight latched in closed position by mechanical hook locking device **MHV** and adjustable locking bolt **EVB 3-M12** (accessories)
- When ordering, please complete the dimensional sheet (see dimensional sheet), and specify inner width

Types:

see synoptic table of appropriate actuators / types

Accessories:

EVB 3-M12: Adjustable locking bolt
Upper cross beams (including. **MHV**) see upper cross beams

For special types please inquire.

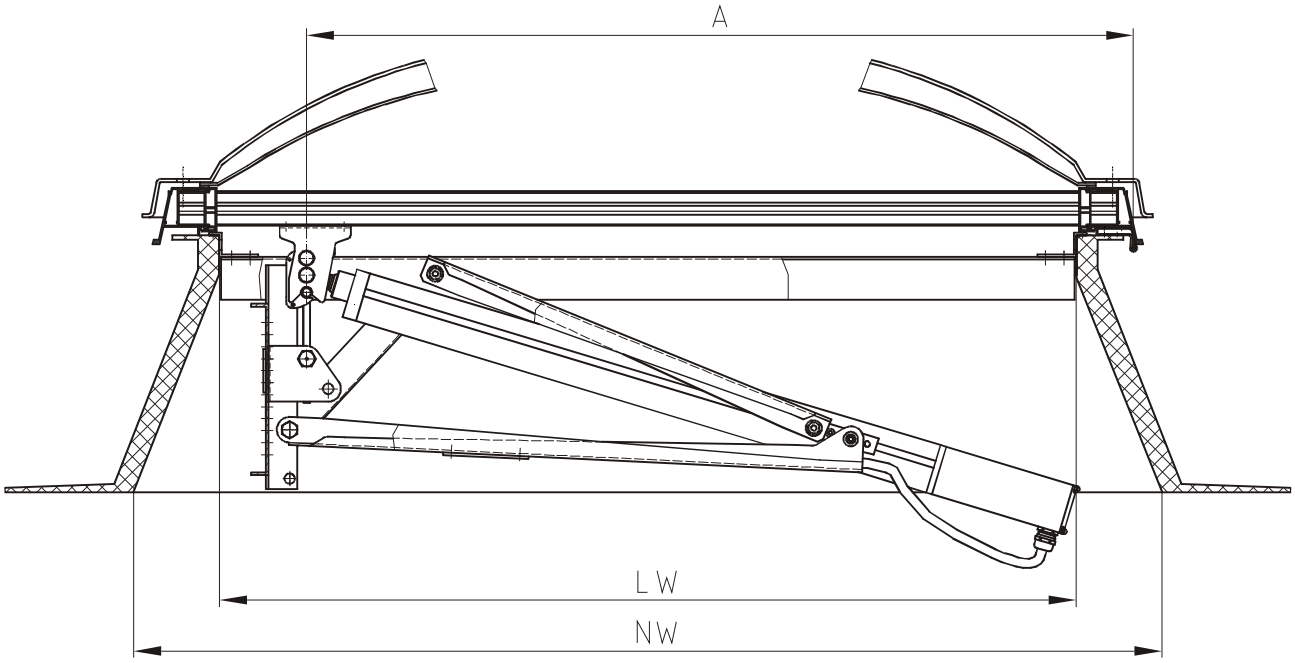
BG mounting - fixed type

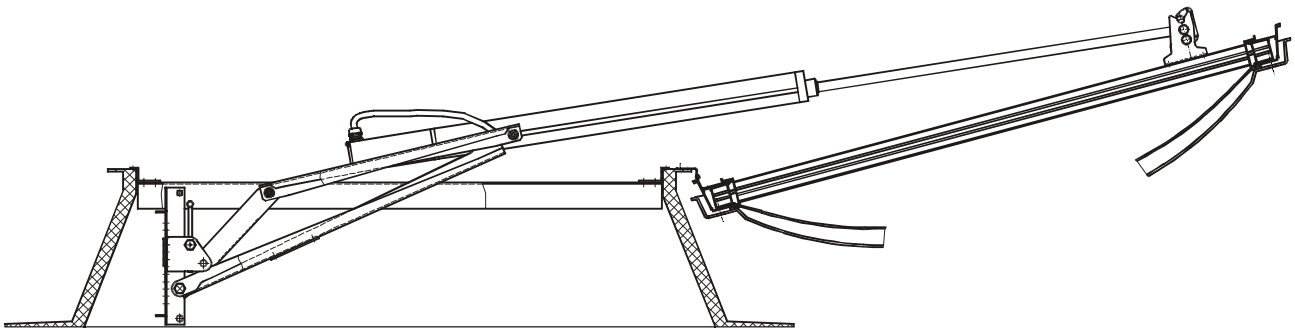
Synoptic table of appropriate actuators / types:

nominal width in mm		weight of flap [N]	snow load 500 / <60s		snow load 750 / <60s		order identification (select type of drive)
			140°	165°	140°	165°	
1000	1000	125	**SG16M**	**SG20N**	**SG20M**	**SG26N**	BG1.11-xxx°-type of drive
	1500	190	**SG26M**	**SG26F***	**SG40F**	**SG40F***	BG1.11-xxx°- type of drive
	2000	250	**SG40B**		**SG60F**	**SG60F***	BG1.11-xxx°- type of drive
	2400	300	**SG40M**	**SG40M***	**SG60F**	**SG60F***	BG1.11-xxx°- type of drive
	3000	380	**SG60F**	**SG60F***	**SG60M**	**SG60M***	BG1.11-xxx°- type of drive
1200	1200	180	**SG26N**		**SG40B**		BG2.11-xxx°- type of drive
	1500	230	**SG40B**		**SG40M**	**SG60N**	BG2.11-xxx°- type of drive
	1800	270	**SG40F**	**SG40N**	**SG60F**	**SG60N**	BG2.11-xxx°- type of drive
	2000	300	**SG40M**	**SG60N**	**SG60F**	**SG60N**	BG2.11-xxx°- type of drive
	2400	360	**SG60F**	**SG60N**	**SG80T**		BG2.11-xxx°- type of drive
	3000	450	**SG80T**		on request		BG2.11-xxx°- type of drive
1500	1500	285	**SG60P**		**SG60T**	**SG80P**	BG3.11-xxx°- type of drive
	1800	340	**SG60T**	**SG80P**	**SG80T**	on request	BG3.11-xxx°- type of drive
	2000	380	**SG60T**	**SG80P**	**SG80T**	on request	BG3.11-xxx°- type of drive
	2400	450	**SG80T**	on request	on request		BG3.11-xxx°- type of drive
	3000	560	on request		on request		BG3.11-xxx°- type of drive
1800	1800	410	on request		on request		BG4.11-xxx°- type of drive
	2400	540	on request		on request		BG4.11-xxx°- type of drive
	3000	680	on request		on request		BG4.11-xxx°- type of drive
2000	2000	500	on request		on request		BG4.11-xxx°- type of drive -1800
	3000	750	on request		on request		BG4.11-xxx°- type of drive -1800

*) Respect installation situation (construed for a size of hinge of 67mm)!

BG mounting - fixed type





Type	NW	LW	A
BG1.11	1000	800	765
BG2.11	1200	1000	965
BG3.11	1500	1300	1250
BG4.11	1800	1600	1550

(NW = nominal width, LW = inner width)

BG mounting - adjustable type

- Electrically operated mounting for installation in domelights etc.
- Opening angle 140°or 165°.For special opening angles, please inquire
- Opening time under load within 60s or 90s
- Opening mounting is factory adjustable to suit any domelight or continuous roof light (from approx. 780mm to 2.000mm inner width of curb or frame / continuous roof light opening)
- Due to cross beam design, only small forces are introduced into the curb and domelight frame
- Space-saving due to flat design
- Ease of assembly by hanging the mounting from above into the curb or frame
- Preassembled and adapted to existing building conditions.
- Available in 4 sizes with different actuators type **SG** (depending on run-time and snow load).
  Please select from table shown hereunder
- Domelight latched in closed position by mechanical hook locking device **MHV** and adjustable locking bolt **EVB 3-M12** (accessories)
- When ordering, please complete the dimensional sheet (see dimension sheet), specifying inner width and hinge size

Types:

see synoptic table of appropriate actuators / types

Accessories:

EVB 3-M12: Adjustable locking bolt
Upper cross beams: (including. **MHV**) see upper cross beams

For special types please inquire

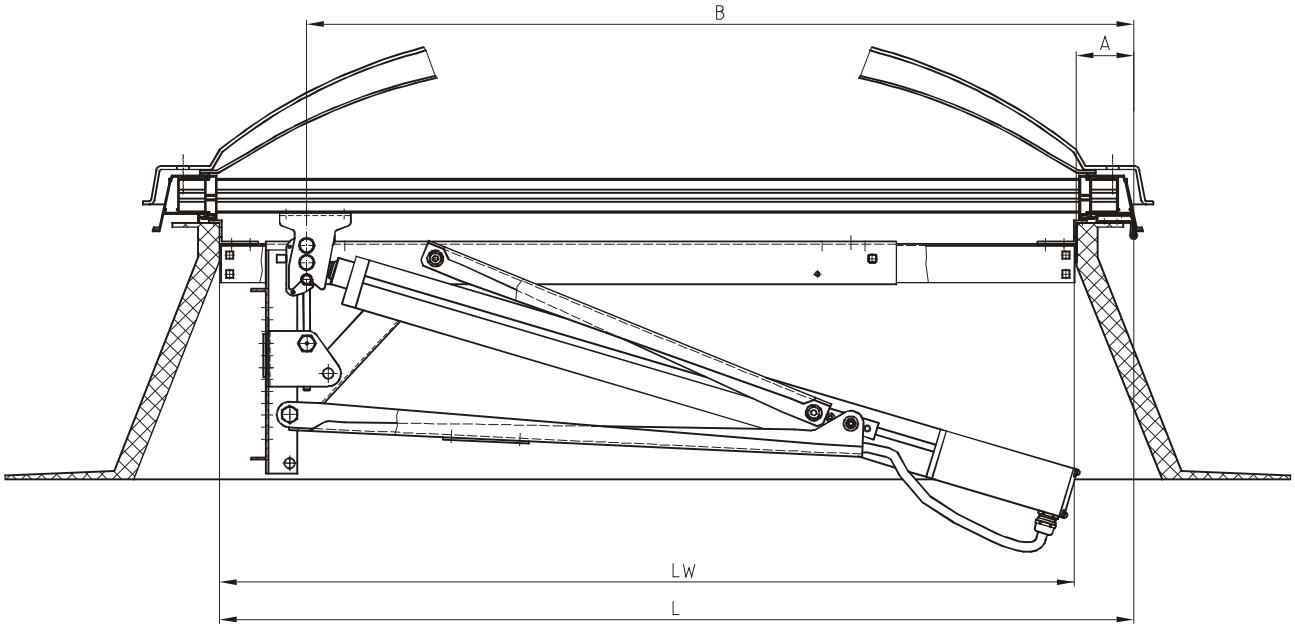
BG mounting - adjustable type

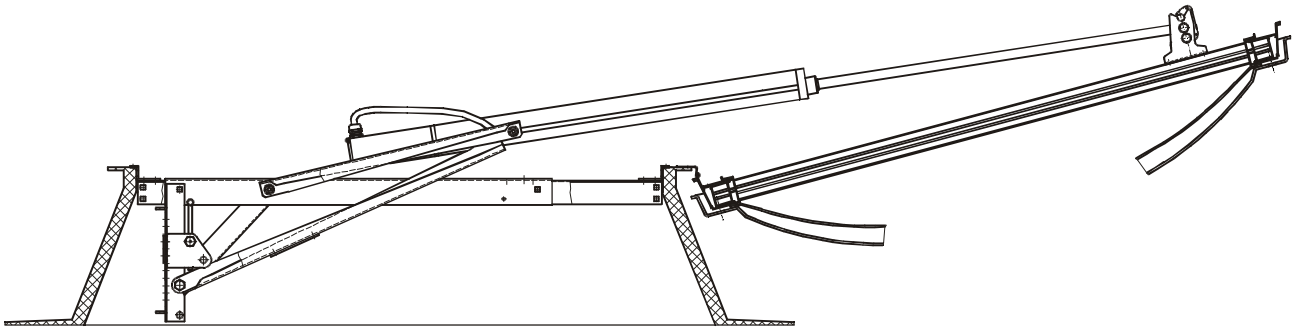
Synoptic table of appropriate actuators / types

nominal width in mm		weight of flap [N]	snow load 500 / <60s		snow load 750 / <60s		order identification (select type of drive)
			140°	165°	140°	165°	
1000	1000	125	**SG16M**	**SG20N**	**SG20M**	**SG26N**	BG1.12-xxx°-type of drive
	1500	190	**SG26M**	**SG26F***	**SG40F**	**SG40F***	BG1.12-xxx°- type of drive
	2000	250	**SG40B**		**SG60F**	**SG60F***	BG1.12-xxx°- type of drive
	2400	300	**SG40M**	**SG40M***	**SG60F**	**SG60F***	BG1.12-xxx°- type of drive
	3000	380	**SG60F**	**SG60F***	**SG60M**	**SG60M***	BG1.12-xxx°- type of drive
1200	1200	180	**SG26N**		**SG40B**		BG2.12-xxx°- type of drive
	1500	230	**SG40B**		**SG40M**	**SG60N**	BG2.12-xxx°- type of drive
	1800	270	**SG40F**	**SG40N**	**SG60F**	**SG60N**	BG2.12-xxx°- type of drive
	2000	300	**SG40M**	**SG60N**	**SG60F**	**SG60N**	BG2.12-xxx°- type of drive
	2400	360	**SG60F**	**SG60N**	**SG80T**		BG2.12-xxx°- type of drive
	3000	450	**SG80T**		on request		BG2.12-xxx°- type of drive
1500	1500	285	**SG60P**		**SG60T**	**SG80P**	BG3.12-xxx°- type of drive
	1800	340	**SG60T**	**SG80P**	**SG80T**	on request	BG3.12-xxx°- type of drive
	2000	380	**SG60T**	**SG80P**	**SG80T**	on request	BG3.12-xxx°- type of drive
	2400	450	**SG80T**	on request	on request		BG3.12-xxx°- type of drive
	3000	560	on request		on request		BG3.12-xxx°- type of drive
1800	1800	410	on request		on request		BG4.12-xxx°- type of drive
	2400	540	on request		on request		BG4.12-xxx°- type of drive
	3000	680	on request		on request		BG4.12-xxx°- type of drive
2000	2000	500	on request		on request		BG4.12-xxx°- type of drive -1800
	3000	750	on request		on request		BG4.12-xxx°- type of drive -1800

*) Respect installation situation (construed for a size of hinge of 67mm)!

BG mounting - adjustable type





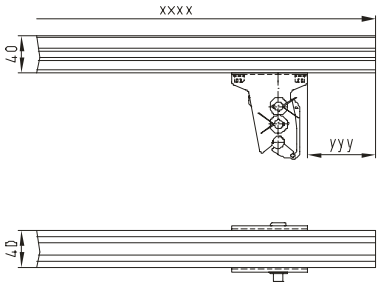
Type	Lmin - Lmax	A	B
BG1.12	843 - 1042	50 - 200	765
BG2.12	1043 - 1342	50 - 200	965
BG3.12	1343 - 1642	50 - 250	1250
BG4.12	1643 - 1992	50 - 250	1550

(size L = inner width LW + size of hinge A)

Typ OT 1.04:

- Upper cross beam to be mounted at site
- Extruded aluminium section 40x40
- Mechanical hook locking device **MHV** preassembled
- Available up to 1.950mm length

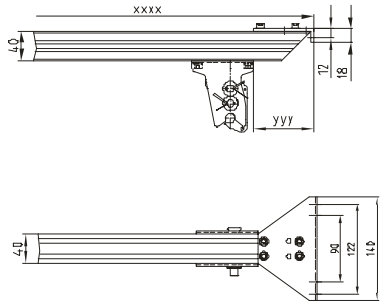
OT 1.04-xxxx-yyy:
(xxxx ... inner width of domelight frame)
(yyy ... position of MHV)



Typ OT 5.04:

- Upper crossbeam to be mounted with preassembled end plates
- Extruded aluminium section 40x40
- Mechanical hook locking device **MHV** preassembled
- Available up to 1.950mm length

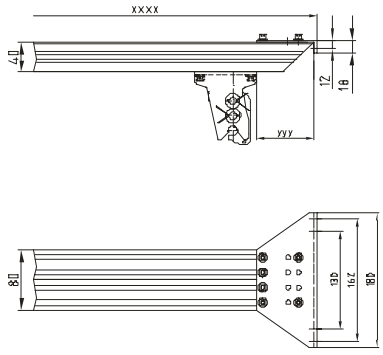
OT 5.04-xxxx-yyy:
(xxxx ... inner width of domelight frame)
(yyy ... position of MHV)



Typ OT 9.04:

- Upper crossbeam to be mounted with preassembled end plates
- Extruded aluminium section 80x40
- Mechanical hook locking device **MHV** preassembled
- Available up to 2.250mm length

OT 9.04-xxxx-yyy:
(xxxx ... inner width of domelight frame)
(yyy ... position of MHV)

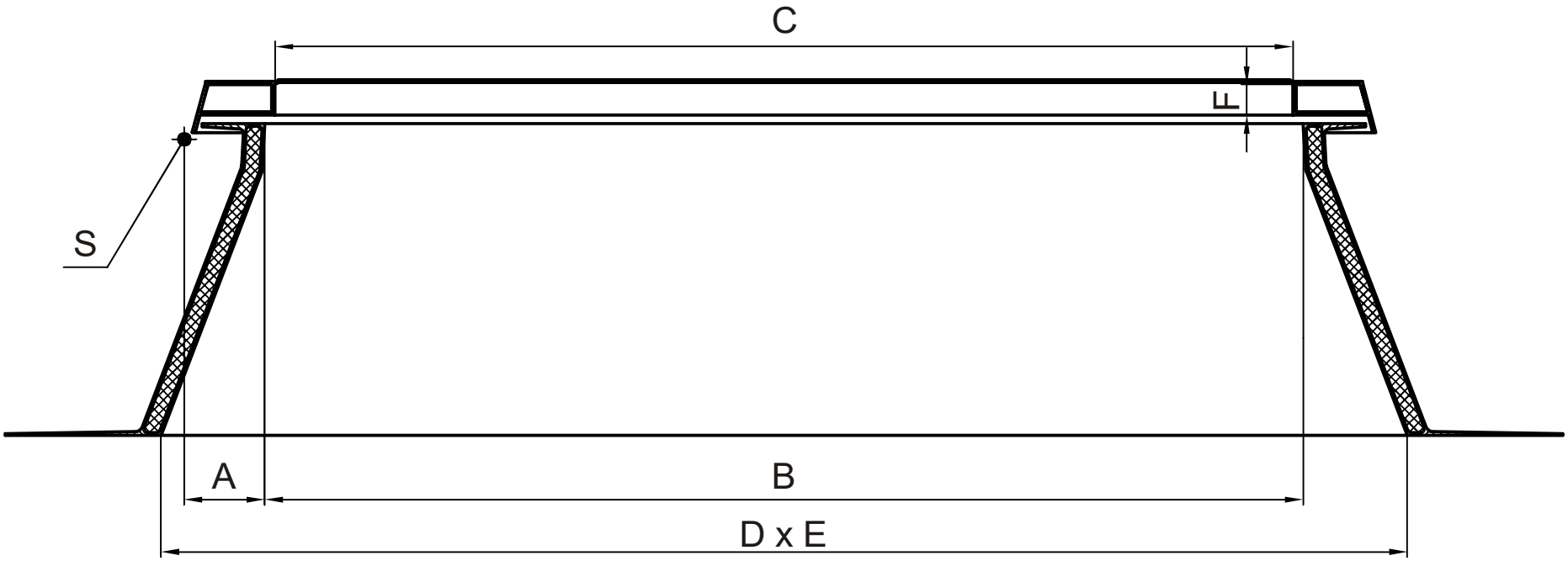


For special types, please inquire

K + G Tectronic GmbH
In der Krause 48
52249 Eschweiler (Deutschland/Germany)
http://www.kg-tectronic.de

SHE mountings
Dimensional sheet for mountings

Grasl Pneumatic-Mechanik GmbH
Europastraße 1
3454 Reidling (Österreich/Austria)
http://www.graslrwa.at



A = ____ **mm** Size of hinge

B = ____ **mm** Inside width of curb

C = ____ **mm** Inside width of vent frame

D = ____ **mm** Nominal spacing (width)

E = ____ **mm** Nominal spacing (length)

F = ____ **mm** Height of vent frame

α = ____ ° Opening angle

(S = Hinge)