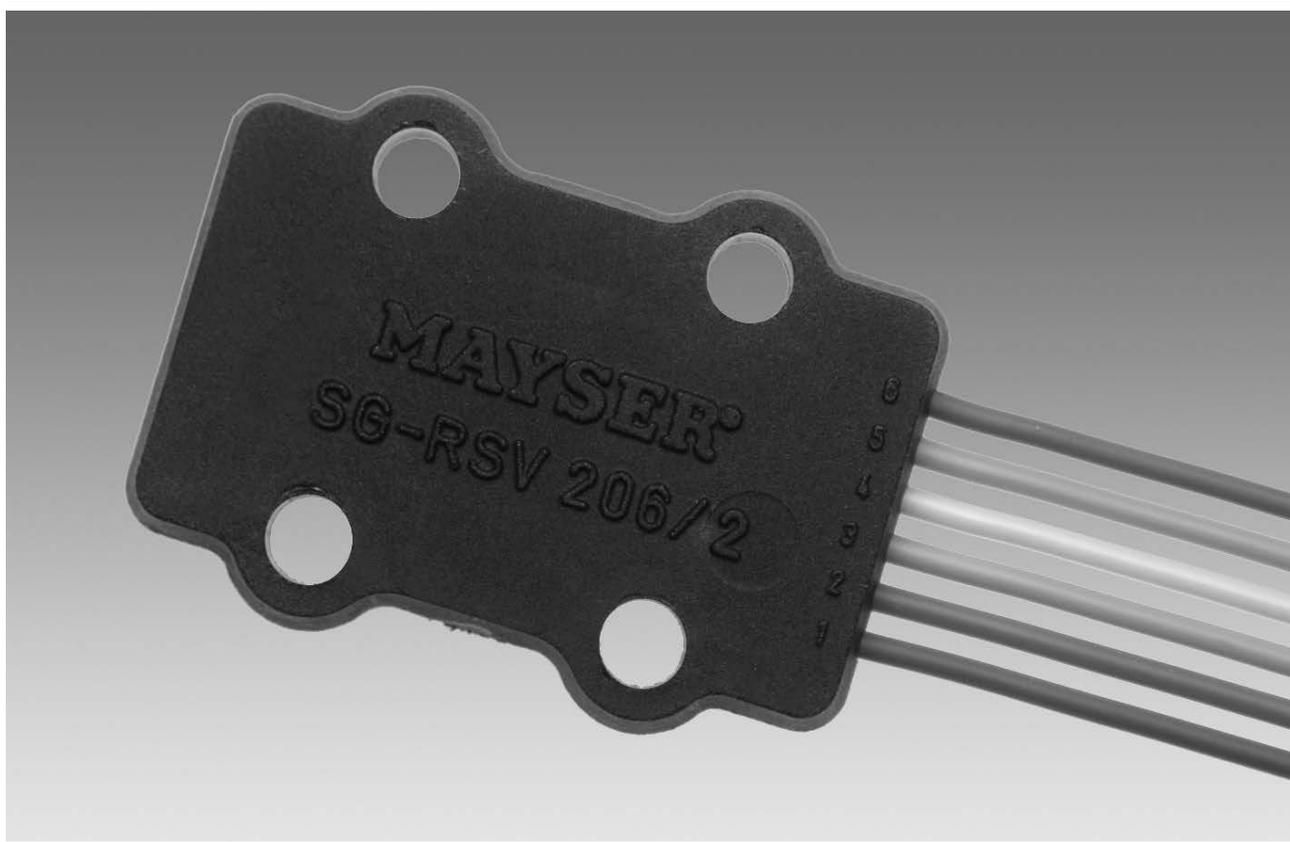




## Operating instructions



## Control unit SG-RSV 206/X

Version 2

1002565	SG-RSV 206/1	12 / 24 V=
	Output: pnp non-inverted	
1003181	SG-RSV 206/2	12 / 24 V=
	Output: pnp inverted	

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Original instructions

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## About these operating instructions

These operating instructions are part of the product.

Mayser Polymer Electric accepts no responsibility or warranty claims for damage and consequential damage due to failure to observe the operating instructions.

- ➔ Read the operating instructions carefully before use.
- ➔ Keep the operating instructions somewhere safe so you can refer to them throughout the product's entire service life.
- ➔ Pass the operating instructions on to every subsequent owner or user of the product.
- ➔ Add any supplement received from the manufacturer to the operating instructions.

### Validity

These operating instructions are only valid for the products specified on the title page.

### Target group

The target group of these operating instructions are operators and trained specialist personnel who are familiar with installation and commissioning.

### Other applicable documents

- ➔ In addition to the operating instructions, observe the following documents:
  - Drawing of the sensor system (optional)
  - Wiring diagram (optional)
  - Installation instructions for the sensors used

### Symbols used

Symbol	Meaning
➔ ...	Action with one step or with more than one step where the order is not relevant.
1. ... 2. ... 3. ...	Action with more than one step where the order is relevant.
• ... - ...	Bullets first level Bullets second level
(see <i>Installation</i> )	Cross-reference

**Danger symbols and information**

Symbol	Meaning
<b>DANGER</b> 	Immediate danger leading to death or serious injury.
<b>CAUTION</b> 	Possible danger which may lead to minor injury or damage to property.
	Information on easier and safer working practices.

## Intended use

The control unit is designed for processing the signals of a pressure-sensitive protection device (PSPD). It evaluates the output signals of sensors with a 1k $\Omega$  monitoring resistor. The integrated output signal switching devices (OSSD) transmit the evaluated safety signals directly to the downstream machine controls.

The control unit conforms to ISO 13849-1:2006 category 1 PL c. To prevent any reduction in the safety classification, the downstream control must be of the same category or higher.

## Safety instructions

➔ **Do not open control unit**

Never open, tamper with or alter the control unit.

➔ **Check supply voltage**

Check the supply voltage. It must correspond to the connecting voltage  $U_s$  specified on the type plate.

➔ **Ensure sufficient clearance**

When installing the product in a switch cabinet, ensure sufficient clearance from heat sources (at least 2 cm).

➔ **Observe correct terminal assignment**

Observe the correct terminal assignment when connecting the supply voltage.

➔ **Do not interconnect control units**

Do not combine control units by interconnecting them.  
Terminals 2, 3 and 4 are not voltage-free.

➔ **Do not overload control unit**

Ensure that the specified switching current is not exceeded.

➔ **In the event of a fault, put out of operation**

In the event of malfunctions and visible damage, put the control unit out of operation by decommissioning it.

➔ **Do not use in ATEX zones**

Do not use the control unit in potentially explosive environments (ATEX). The control unit is not authorised for use in these zones.

## Parts supplied

**1x Control unit**

Potted electronics with permanently installed connection wires.

**1x Operating Instructions**

**1x Declaration of Conformity**

Upon receipt, immediately check the parts supplied to ensure they are complete and in good condition.

## Transport and storage

### Packaging and transport

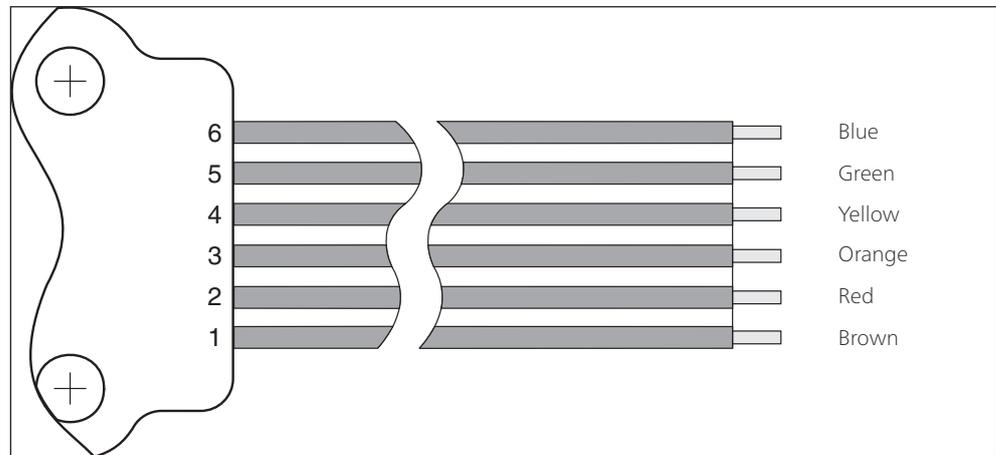
The control units are packed in such a way as to ensure a good level of protection. Several control units are stacked together in one large cardboard box. The documents are enclosed separately.

### Storage

- ➔ Store control units in a dry place inside the original packaging.
- ➔ Observe the storage temperatures given in the technical data.

## Product overview

### Connections

**Connections:**

Supply voltage

Output

Sensor 1

Sensor 2

**Terminals:**

1, 5

6, 5

2, 3

4, 3

## Function, installation and commissioning

### Function

The control unit has two monitoring circuits, which operate one output circuit. The electronics monitor the electrical resistance of the sensors, which have a defined closed-circuit current.

The control unit is operated with a voltage of 12 or 24 V DC. If the supply voltage is connected, the control unit is ready for operation.

**SG-RSV 206/1**

Control unit SG-RSV 206/1 has a non-inverted pnp output, which is set to LOW when the sensors are not activated.

If a sensor is activated or if a cable break occurs on a sensor, the output switches to HIGH.

**SG-RSV 206/2**

Control unit SG-RSV 206/2 has an inverted pnp output, which is set to HIGH when the sensors are not activated.

If a sensor is activated or if a cable break occurs on a sensor, the output switches to LOW.

## Installation

**DANGER****Danger of injury from electric shock!**

- ➔ Disconnect all devices and live parts in the immediate environment from the power supply and secure them to prevent them from being switched on again (see relevant operating instructions).
- ➔ Check whether all devices and parts are de-energised.

**CAUTION****Impaired operation due to overheating**

If the control unit overheats, operation of the protection device may be impaired.

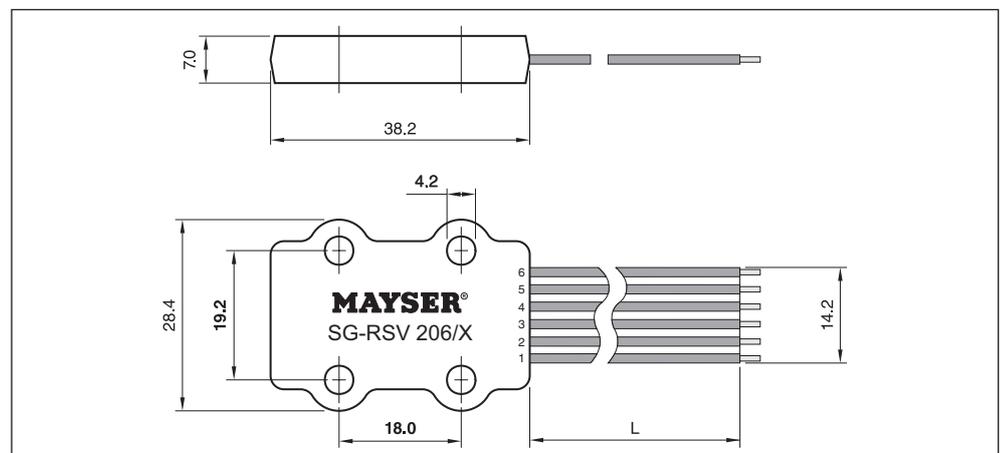
- ➔ When installing the product in a switch cabinet, ensure sufficient clearance from heat sources (at least 2 cm).

1. Fix the control unit in any position with  $\varnothing$  4 mm screws or secure it using cable ties.
2. Mount the control unit
  - on a level installation surface
  - with the rear side and type plate pointing towards the assembly surface. The raised lettering must not face the assembly surface; otherwise, it will result in a bending moment.

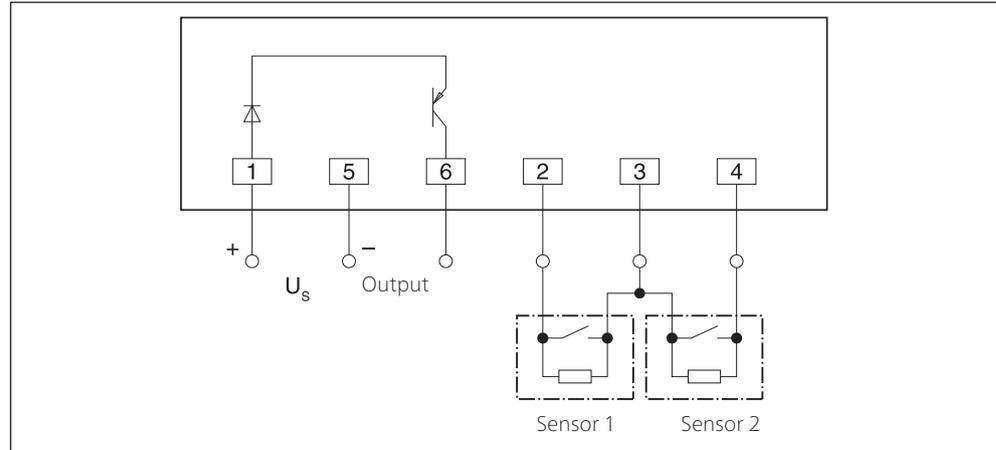
**CAUTION****Impaired operation due to mechanical loads**

Incorrect installation can generate a bending moment. The bending moment can impair operation of the protection device.

- ➔ Avoid any kind of bending moment.



2. Wire the sensors, relay contacts and supply voltage to the cable terminals.



## CAUTION



### Overall safety endangered

Overall safety is affected by the quality and reliability of the interface between the protection device and the machine.

- ➔ Take particular care when setting up the interface.
- ➔ In the case of screw terminals, only use non-tin-plated conductor cores with wire end ferrules.



### Operation with only one monitoring circuit

It is also possible to operate the control unit with only one monitoring circuit.

- ➔ To do this, use a 1k2 resistor to bridge the monitoring circuit that is not required.

## Commissioning

- ➔ Connect the supply voltage.

## DANGER



### Danger of injury from electric shock!

- ➔ Never disconnect terminals while live.

## Testing the function

### Control unit RSV 206/1

1. Make sure no sensors are activated.
  - Output is set to LOW

2. Activate sensor 1.
  - Output is set to HIGH
3. Repeat step 1.
4. Activate sensor 2.
  - Output is set to HIGH
5. Repeat step 1.
6. Disconnect sensor 1.
  - Output is set to HIGH
7. Repeat step 1.
8. Disconnect sensor 2.
  - Output is set to HIGH
9. Repeat step 1.

### **Control unit RSV 206/2**

1. Make sure no sensors are activated.
  - Output is set to HIGH
2. Activate sensor 1.
  - Output is set to LOW
3. Repeat step 1.
4. Activate sensor 2.
  - Output is set to LOW
5. Repeat step 1.
6. Disconnect sensor 1.
  - Output is set to LOW
7. Repeat step 1.
8. Disconnect sensor 2.
  - Output is set to LOW
9. Repeat step 1.

## Recommissioning

**DANGER**



**Danger of injury!**

➔ Never start your machine as long as the danger remains.

### Automatic reset

#### Control unit RSV 206/1

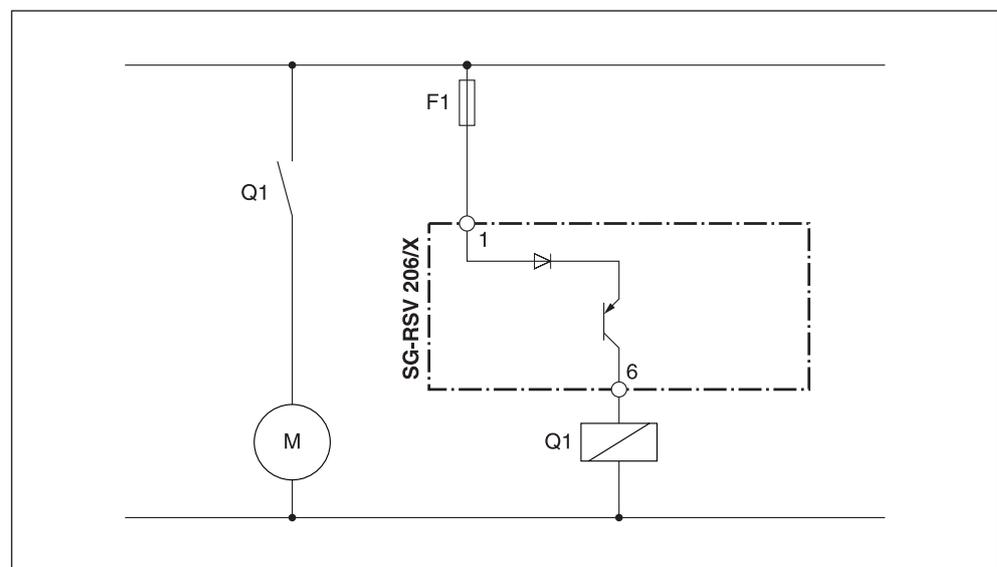
The control unit works without a reset. If the sensor is released after activation, the output returns to "LOW" after a delay  $t_w$ .

#### Control unit RSV 206/2

The control unit works without a reset. If the sensor is released after activation, the output returns to "HIGH" after a delay  $t_w$ .

➔ After recommissioning, check the unit for proper functioning (see section *Commissioning*).

### Connection example



## Maintenance and cleaning

### Maintenance

The control unit is maintenance-free.  
 ➔ Repeat the functional test monthly.

### Cleaning

**DANGER**



#### Danger of injury from electric shock!

- ➔ Disconnect the control unit – as well as all devices and live parts in the immediate environment – from the power supply and secure them to prevent them from being switched on again (see relevant operating instructions).
- ➔ Check whether all devices and parts are de-energised.

- ➔ Clean the outside of the enclosure with a dry cloth.

## Troubleshooting and remedies

### Control unit RSV 206/1

Pre-requisites: the control unit is connected to the supply voltage and sensors; the sensors are not activated.

Error state	Possible cause	Remedy
Output remains set to LOW when the state changes	No or incorrect supply voltage	1. Check supply voltage, compare with type plate 2. Check terminal assignment
Output is set to HIGH	Incorrect monitoring resistor in sensor 1 or 2, or sensor short circuit	1. Check non-activated sensor; resistance = $1k2 \pm 5\%$ 2. Measured resistance deviates significantly ➔ Replace sensor
	Cable break	1. Check activated sensor; resistance < 400 ohms 2. Measured resistance deviates significantly ➔ Replace sensor
	If supply voltage is correctly connected and sensor is OK: control unit is faulty	➔ Replace control unit

Still unable to remedy the fault?  
 ➔ Contact Mayser-Support: Tel. +49 731 2061-0.

## Control unit RSV 206/2

Pre-requisites: the control unit is connected to the supply voltage and sensors; the sensors are not activated.

Error state	Possible cause	Remedy
Output is set to LOW	No or incorrect supply voltage	<ol style="list-style-type: none"> <li>1. Check supply voltage, compare with type plate</li> <li>2. Check terminal assignment</li> </ol>
	Incorrect monitoring resistor in sensor 1 or 2	<ol style="list-style-type: none"> <li>1. Check non-activated sensor; resistance = <math>1k2 \pm 5\%</math></li> <li>2. Measured resistance deviates significantly</li> </ol> <p>➔ Replace sensor</p>
	Cable break	<ol style="list-style-type: none"> <li>1. Check activated sensor; resistance &lt; 400 ohms</li> <li>2. Measured resistance deviates significantly</li> </ol> <p>➔ Replace sensor</p>
	Sensor short circuit	<ol style="list-style-type: none"> <li>1. Check non-activated sensor; resistance = <math>1k2 \pm 5\%</math></li> <li>2. Measured resistance deviates significantly</li> </ol> <p>➔ Replace sensor</p>
	Control unit faulty	➔ Replace control unit

Still unable to remedy the fault?

➔ Contact Mayser-Support: Tel. +49 731 2061-0.

## Replacement parts

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CAUTION



### Overall safety endangered

If the sensor and control unit are not replaced using original parts from Mayser, operation of the protection device may be impaired.

➔ Only use original parts from Mayser.

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## Disposal

The control units produced by Mayser are professional electronic tools exclusively intended for commercial use (known as B2B devices). Unlike the B2C (business-to-consumer) devices mainly used in private households, they must not be disposed of at the collection centres of public waste management organisations (e.g. municipal recycling depots). At the end of their useful life, the devices may be returned to us for disposal.

WEEE reg. no. DE 39141253

## Technical data

	SG-RSV 206/1	SG-RSV 206/2
Testing basis	ISO 13849-1, 72/245/EEC	
<b>Connecting voltage <math>U_s</math></b>	<b>8 to 32 V DC</b>	<b>8 to 32 V DC</b>
Voltage tolerance	–	–
Nominal current	5 to 16 mA	6 to 24 mA
Nominal frequency	–	–
External fuse protection	100 mA time-lag	100 mA time-lag
Power consumption	< 1.0 W (without load)	< 1.0 W (without load)
<b>Times</b>		
Reaction time $t_a$	< 1 ms	< 1 ms
Restart time $t_w$	< 1 ms	< 1 ms
<b>Safety classifications</b>		
EN 1760: Reset function	Without	Without
ISO 13849-1:2006	Category 1 PL c	Category 1 PL c
MTTF <sub>d</sub>	860 years	801 years
DC <sub>avg</sub>	–	–
$n_{op}$ (assumption)	52,560 per year	52,560 per year
CCF	–	–
<b>Control unit inputs</b>		
Sensors 1 and 2	Y1, Y2 and Y3, Y4	Y1, Y2 and Y3, Y4
Monitoring resistor	1k2 ohms	1k2 ohms
Short-circuit resistance	≤ 400 ohms	≤ 400 ohms
Line resistance	≤ 100 ohms	≤ 100 ohms
Line length (max.)	100 m	100 m
Switching thresholds		
Sensor activated	< 650 ohms	< 650 ohms
Cable break	> 3.2 kilohms	> 3.2 kilohms
<b>Control unit outputs</b>		
Output (PNP)	1, 6	1, 6
	Non-inverted	Inverted
HIGH (min.)	$U_s - 1.0 V$	$U_s - 1.0 V$
LOW (max.) with		
$R_L \leq 100$ kilohms	0.5 V	0.5 V
Switching current (max.)	50 mA	50 mA
<b>Mechanical operating conditions</b>		
Flat ribbon cables	6 × 0.22 mm <sup>2</sup>	6 × 0.22 mm <sup>2</sup>
IEC 60529: degree of protection	IP67	IP67
Max. humidity (23 °C)	85%, non-condensing	85%, non-condensing
Operating temperature	–30 to +80 °C	–30 to +80 °C
Storage temperature	–30 to +80 °C	–30 to +80 °C
Vibration fatigue limit	1 g in all 3 levels	1 g in all 3 levels
Dimensions (W × H × D)	38 × 28 × 7 mm	38 × 28 × 7 mm
Weight	15 g	15 g