



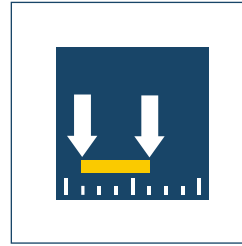
**Sizes**  
70 .. 110



**Weight**  
1.6 kg .. 5.5 kg

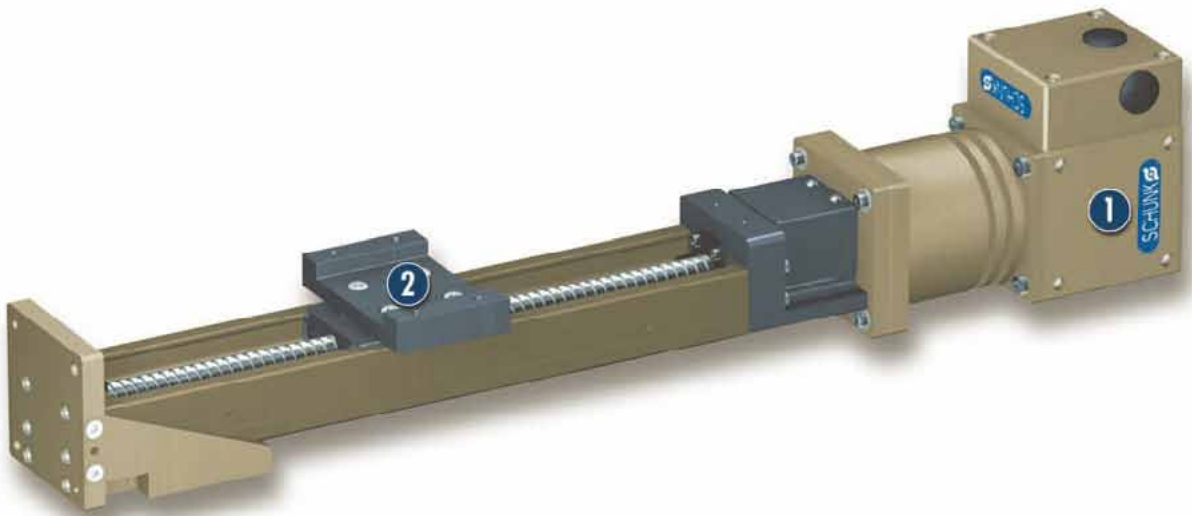


**Nominal torque**  
7 Nm .. 142 Nm



**Repeat accuracy**  
0.002° .. 0.004°

## Application example



Sturdy Spindle Axis driven by PDU motor

**1** Linear Axis with PLS 70 ball-and-screw spindle drive

**2** Servo-motor with PDU 70 precision gears

## Servo-motor

Servo-positioning motor with precision gears

### Area of application

Servo-drive for linear, rotary or CNC axes;  
axis motor for applications in the field of measuring and testing

### Your advantages and benefits

#### High torques through Harmonic Drive® gear

for optimum reserves in acceleration and braking

#### High-resolution encoder

for high precision

#### Fully integrated control and power electronics

for the creation of a decentralized control system, no separate motor controller required in the control cabinet

#### Versatile actuation options

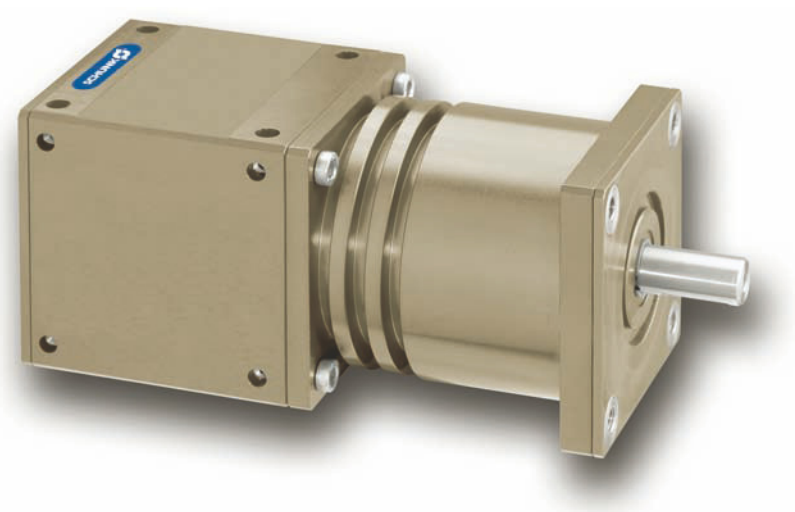
for simple integration in existing servo-controlled concepts via Profibus DP, CAN bus or RS-232

#### Standard connecting elements and uniform control concept

for extensive combinatorics with other PowerCube modules (see explanation of the PowerCube system)

#### Single-cable technology for data transmission and power supply (plug & play)

for low assembly and start-up costs



**POWER**  **CUBE**

### Information about the series

#### Working principle

with Harmonic Drive® gear driven by a brushless DC servo-motor

#### Housing material

Aluminum alloy, hard-anodized

#### Actuation

Servo-electric, with brushless servo-motor and incremental encoder for position and speed control

#### Warranty

24 months

#### Scope of delivery

"PowerCube Standard Software" CD-ROM, containing assembly and operating manual with manufacturer's declaration, quick-step software, demo and diagnostic program and various driver files (see explanation of PowerCube system).

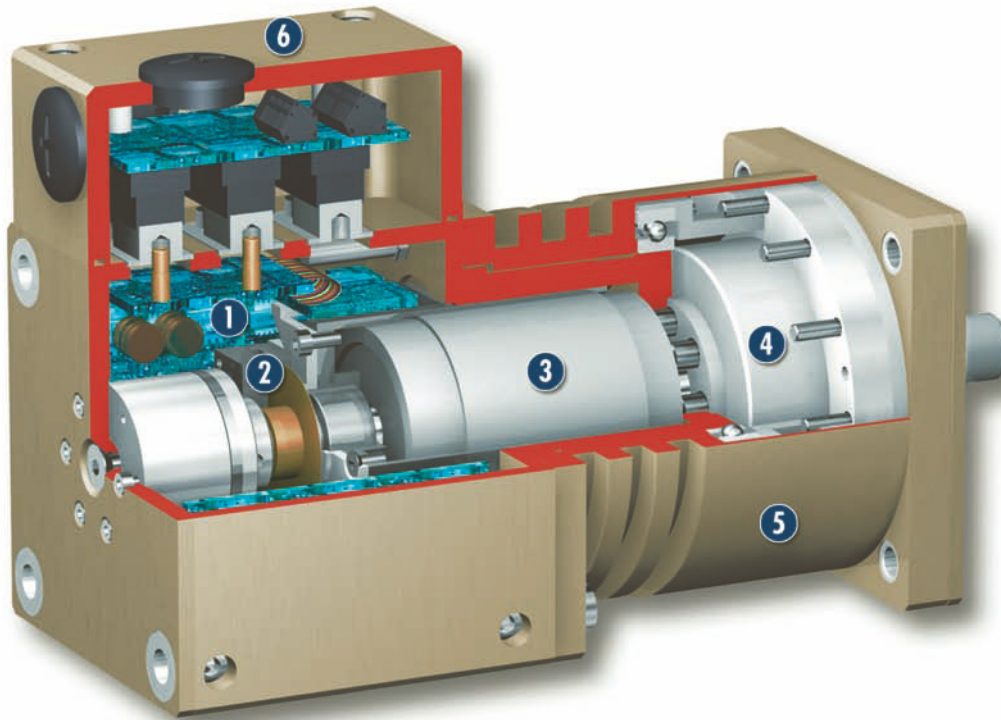
#### Optional extras

- Magnetic brake
- Input for external encoder signal
- Outdoor modification

#### Other information

- Unit suitable for use in clean room environment
- 4 digital EIA 24 VDC
- Differential encoder signal output (RS-422)

## Sectional diagram



- 1 Control electronics**  
Integrated control and power electronics
- 2 Encoder**  
for position evaluation

- 3 Motor**  
for maximum torques
- 4 Harmonic Drive® gear**

- 5 Heat sink**
- 6 Damp-proof cap**  
link to the customer's system

## Function description

The servo-gear motor is equipped with a Harmonic Drive® precision gear, which is driven directly by a brushless DC servo-motor. It is connected by a conventional motor shaft.

## Electrical actuation

The PDU servo-gear motor is electrically actuated by the fully integrated control and power electronics. In this way, the module does not require any additional external control units.

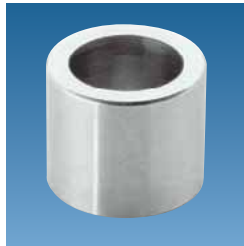
A varied range of interfaces, such as Profibus DP, CAN-Bus or RS-232 are available as methods of communication. This enables you to create industrial bus networks, and ensures easy integration in control systems. You can make use of our hybrid cables for conveying the supply voltage and for communication.

If you wish to create combined systems (e.g. linear unit with servo-motor and rotary gripping module), various other modules from our PowerCube series are at your disposal.

## Accessories

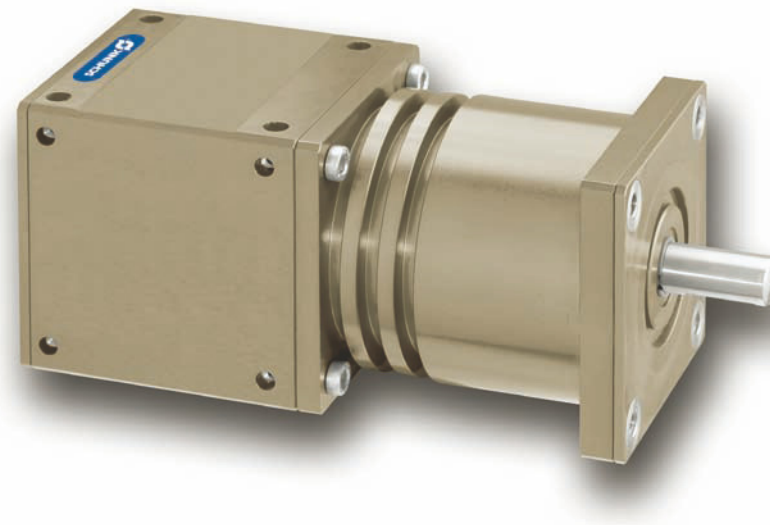
Accessories from SCHUNK – the suitable complement for the highest level of functionality, reliability and controlled production of all automation components.

### Centering sleeves



## Interfaces

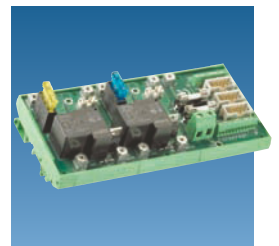
CAN-Bus	RS-232
Profibus-DP	



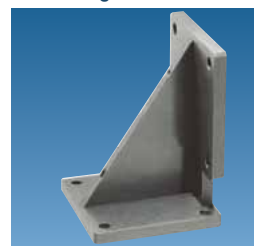
### Hybrid cable



### Electrical accessories PAE terminal block



### PAM standard connecting elements



① For the exact size of the required accessories, availability of this size and the designation and ID, please refer to the additional views at the end of the size in question. You will find more detailed information on our accessory range in the „Accessories“ catalog section.

## General information on the series

### Repeat accuracy

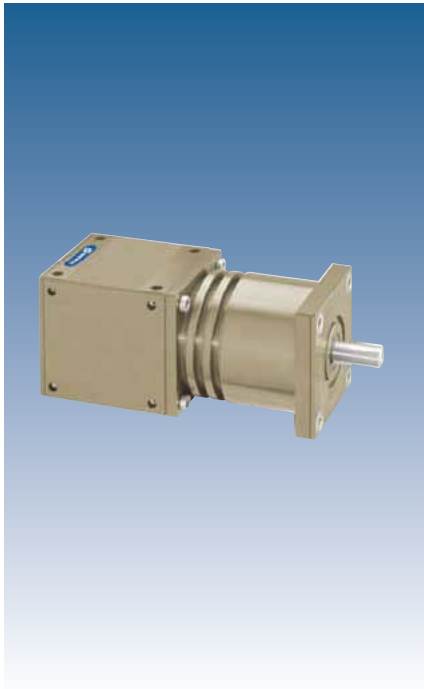
Repeat accuracy is defined as the spread of the limit position after 100 consecutive motion cycles.

### Position of motor shaft

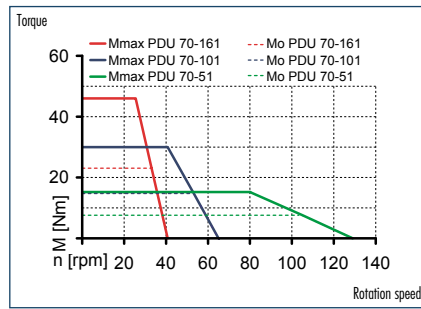
The position of the motor shaft is always shown in the drawing in the zero position (0°). From here, the motor shaft can be rotated clockwise and anti-clockwise until the memory for the position value in the control electronics overflows.

### Swiveling time

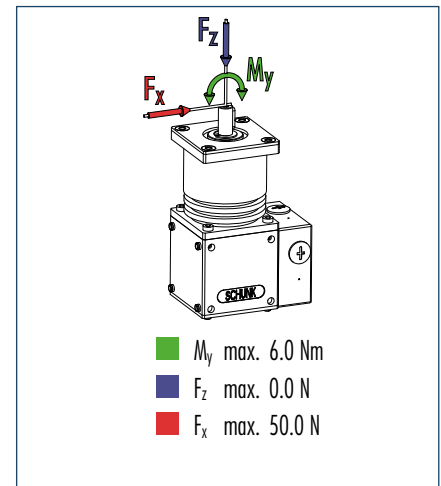
Swiveling times are purely rotation times. Relay switching times or SPC reaction times are not included in the above times and must be taken into consideration when determining cycle times. Load-dependent rest periods may have to be included in the cycle time.



## Torque characteristic



## Forces and moments



① Moments and forces may occur simultaneously.

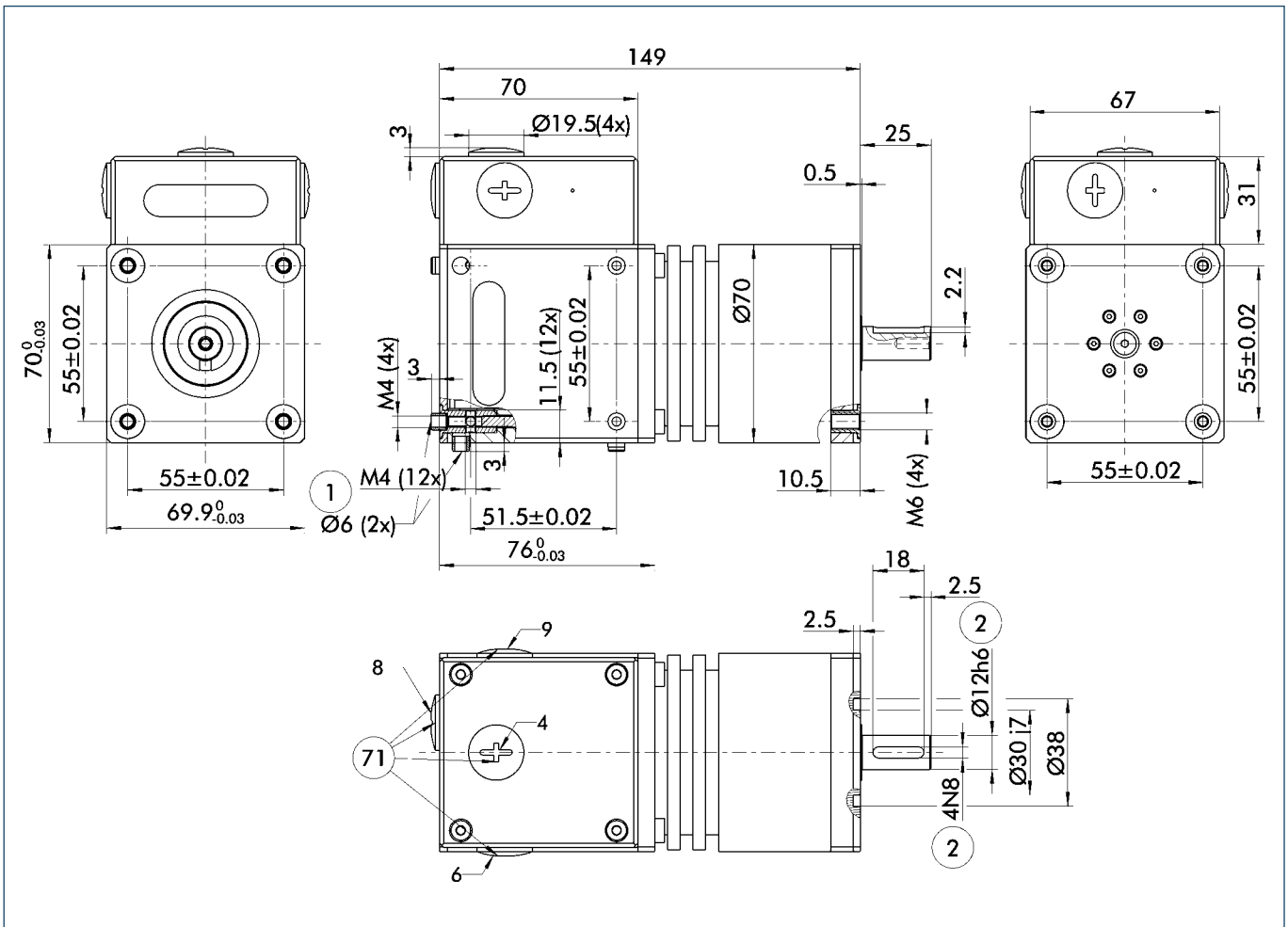
## Technical data

Description		PDU 70-161	PDU 70-101	PDU 70-51
ID		0306703	0306713	0306723
Version with brake		PDU 70-161-B	PDU 70-101-B	PDU 70-51-B
ID		0306708	0306718	0306728
<b>Mechanical operating data</b>				
Nominal torque	[Nm]	23.0	15.0	7.6
Peak torque	[Nm]	46.0	30.0	15.0
Rotating angle (>)	[°]	360.0	360.0	360.0
IP class		64	64	64
Weight	[kg]	1.6	1.6	1.6
Min. ambient temperature	[°C]	5.0	5.0	5.0
Max. ambient temperature	[°C]	55.0	55.0	55.0
Repeat accuracy*	[°]	0.02	0.03	0.04
Max. angular velocity	[°/s]	150.0	240.0	470.0
Max. acceleration	[°/s <sup>2</sup> ]	600.0	960.0	1880.0
Gear ratio		161:1	101:1	51:1
<b>Electrical operating data</b>				
Nominal voltage	[VDC]	24.0	24.0	24.0
Nominal power current	[A]	4.0	4.0	4.0
Max. current	[A]	8.0	8.0	8.0
Resolution	[arcsec]	4.0	6.0	13.0
<b>Control electronics</b>				
Integrated control electronics		Yes	Yes	Yes
Voltage supply	[VDC]	24.0	24.0	24.0
Nominal power current	[A]	0.5	0.5	0.5
Sensor system		Encoder	Encoder	Encoder
Interface		RS-232; Profibus-DP; CAN-Bus	RS-232; Profibus-DP; CAN-Bus	RS-232; Profibus-DP; CAN-Bus

① The peak torques act as a temporary drive reserve on acceleration and braking.

\* Higher accuracy on request

## Main views

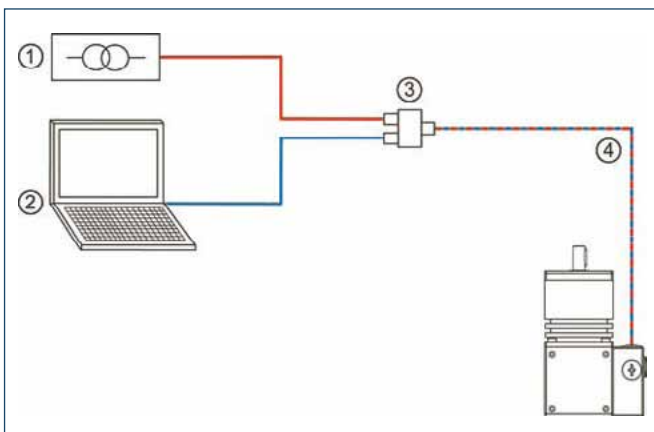


The drawing shows the servo-motor with damp-proof cap in the basic version, it does not include the options described below.

- ① Connection of rotary actuator
- ② Attachment connection
- ⑦1 M16x1.5 for cable gland



## Actuation



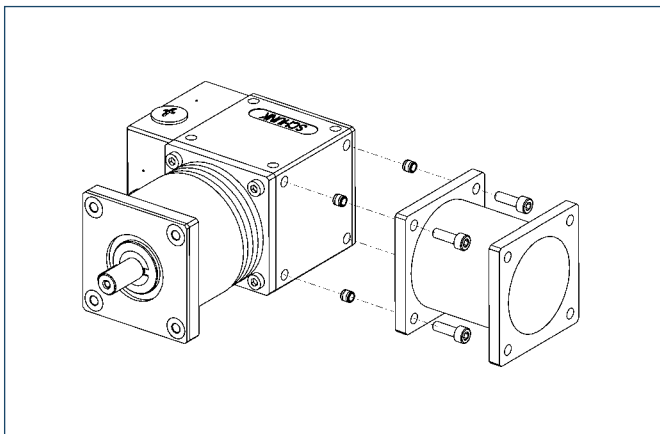
- ① Voltage supply provided by customer
- ② Control (SPC, etc.) provided by customer
- ③ PAE 130 TB terminal block for connecting the power supply, the communication and the hybrid cable
- ④ Hybrid cable for connecting the PowerCube modules

## Electrical accessories

Description	ID	Length
PowerCube Hybrid cable, coiled	0307753	0.3 m
PowerCube Hybrid cable, coiled	0307754	0.46 m
PowerCube Hybrid cable, straight (per meter)	9941120	
Terminal block PAE 130 TB	0307725	

You can find further cables in the „Accessories“ catalog section.

## Mechanical accessories

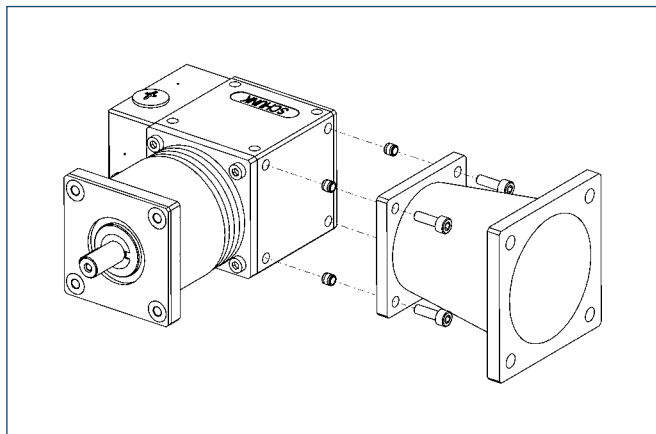


### Straight connecting element

Straight standard element for connecting size 70 PowerCube modules with complete repeat accuracy

Description	ID	Dimensions
PAM 100	0307800	70x70/35/70x70 mm
PAM 101	0307801	70x70/70/70x70 mm

Special lengths on request

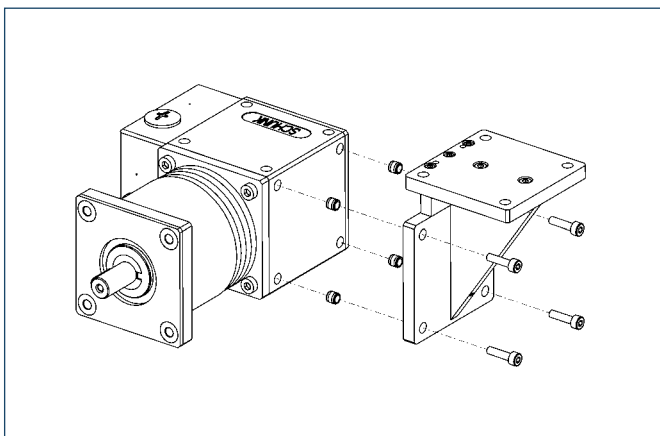


### Conical connecting element

Conical standard element for connecting size 70 and 90 PowerCube modules with complete repeat accuracy

Description	ID	Dimensions
PAM 110	0307810	90x90/45/70x70 mm
PAM 111	0307811	90x90/90/70x70 mm

Special lengths on request

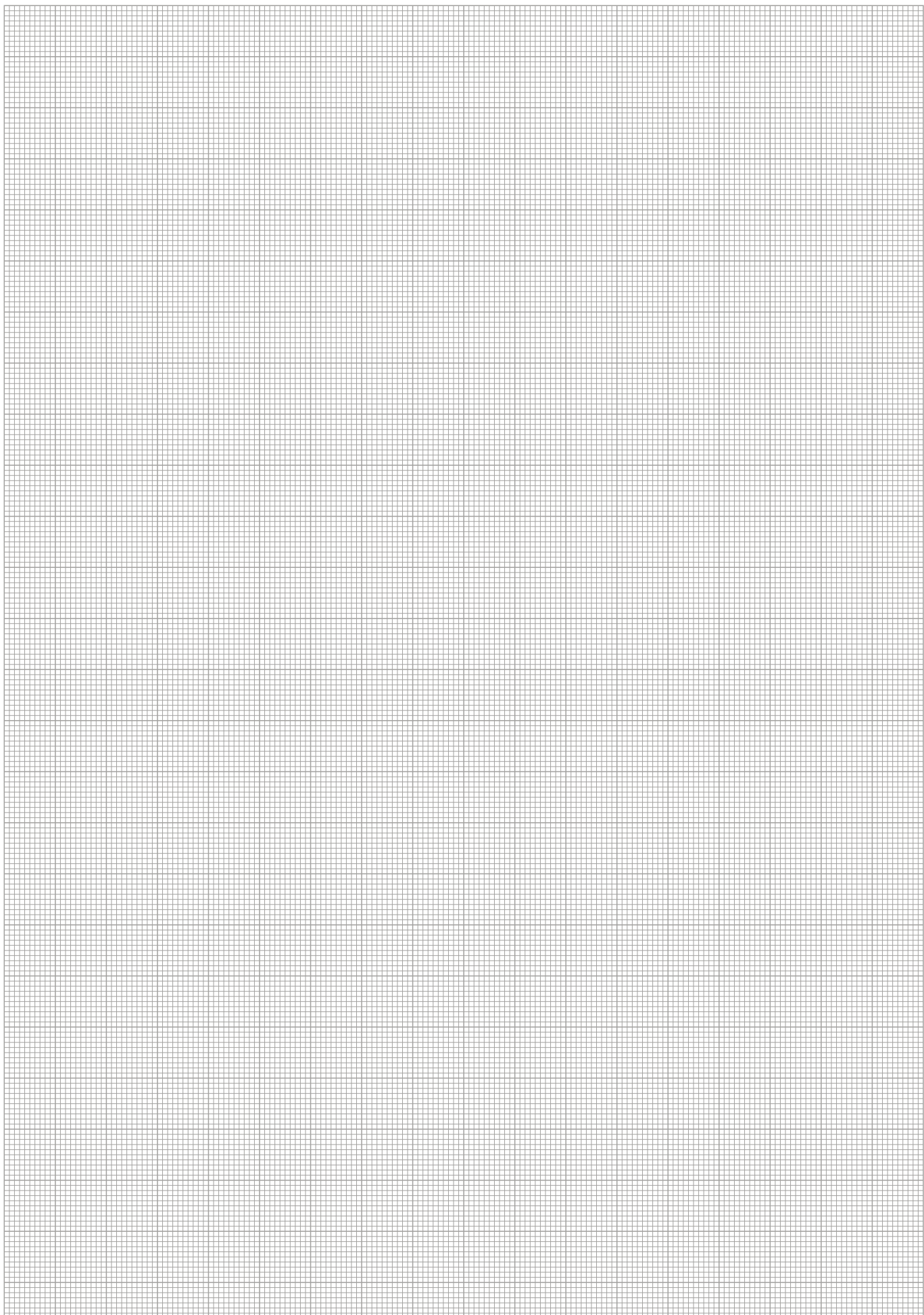


### Right-angle connecting element

Right-angle standard element for connecting size 70 PowerCube modules with complete repeat accuracy

Description	ID	Dimensions
PAM 120	0307820	90°/70.5x98

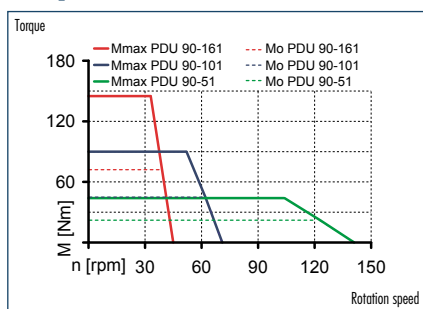
 You can find more detailed information and individual parts of the above-mentioned accessories in the „Accessories“ catalog section.



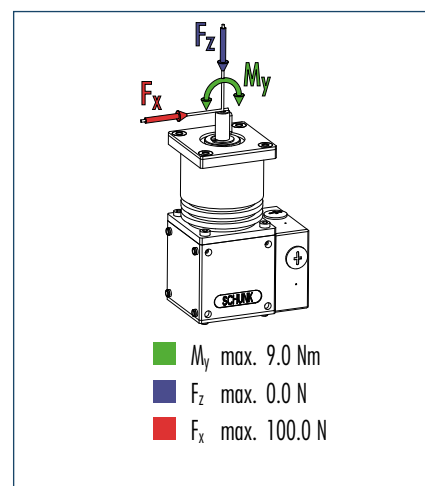




## Torque characteristic



## Forces and moments



① Moments and forces may occur simultaneously.

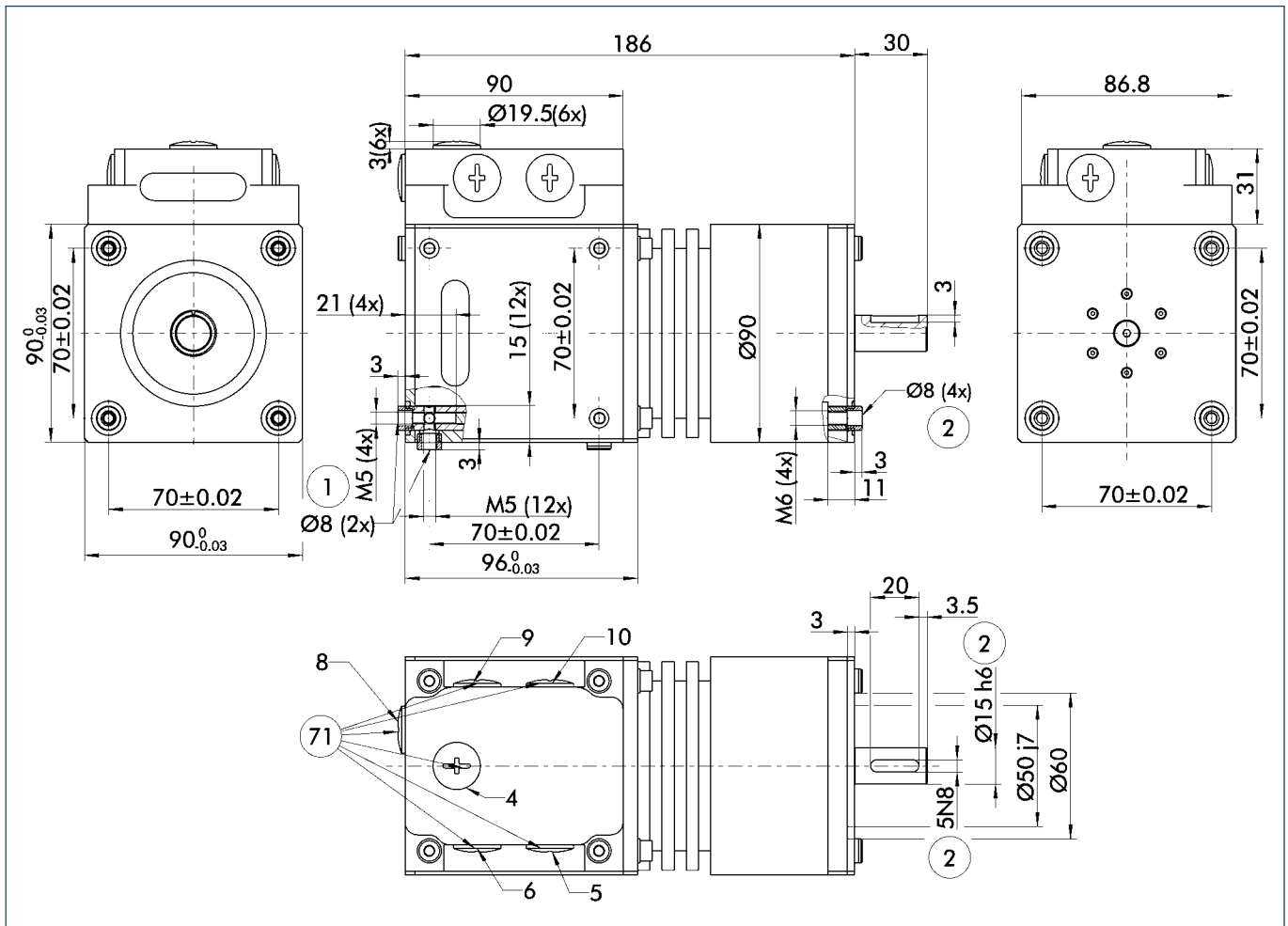
## Technical data

Description		PDU 90-161	PDU 90-101	PDU 90-51
ID		0306733	0306743	0306753
Version with brake		PDU 90-161-B	PDU 90-101-B	PDU 90-51-B
ID		0306738	0306748	0306758
<b>Mechanical operating data</b>				
Nominal torque	[Nm]	72.0	45.0	22.0
Peak torque	[Nm]	145.0	90.0	45.0
Rotating angle (>)	[°]	360.0	360.0	360.0
IP class		64	64	64
Weight	[kg]	3.1	3.1	3.1
Min. ambient temperature	[°C]	5.0	5.0	5.0
Max. ambient temperature	[°C]	55.0	55.0	55.0
Repeat accuracy*	[°]	0.02	0.03	0.04
Max. angular velocity	[°/s]	150.0	240.0	470.0
Max. acceleration	[°/s <sup>2</sup> ]	600.0	960.0	1880.0
Gear ratio		161:1	101:1	51:1
<b>Electrical operating data</b>				
Nominal voltage	[VDC]	24.0	24.0	24.0
Nominal power current	[A]	4.0	4.0	4.0
Max. current	[A]	12.0	12.0	12.0
Resolution	[arcsec]	4.0	6.0	13.0
<b>Control electronics</b>				
Integrated control electronics		Yes	Yes	Yes
Voltage supply	[VDC]	24.0	24.0	24.0
Nominal power current	[A]	0.5	0.5	0.5
Sensor system		Encoder	Encoder	Encoder
Interface		RS-232; Profibus-DP; CAN-Bus	RS-232; Profibus-DP; CAN-Bus	RS-232; Profibus-DP; CAN-Bus

① The peak torques act as a temporary drive reserve on acceleration and braking.

\* Higher accuracy on request

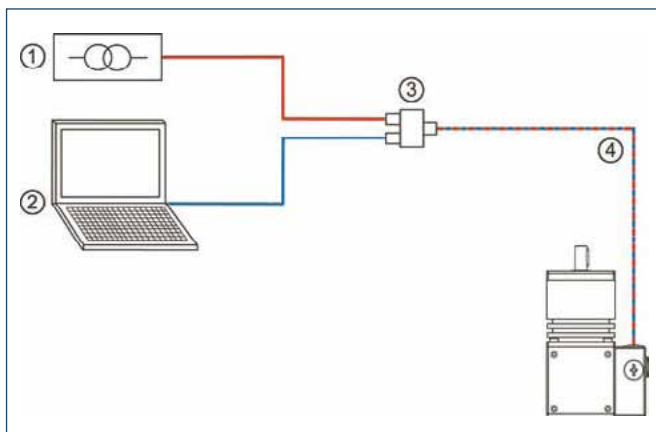
### Main views



The drawing shows the servo-motor with damp-proof cap in the basic version, it does not include the options described below.

- ① Connection of rotary actuator
- ② Attachment connection
- ⑦1 M16x1.5 for cable gland

### Actuation



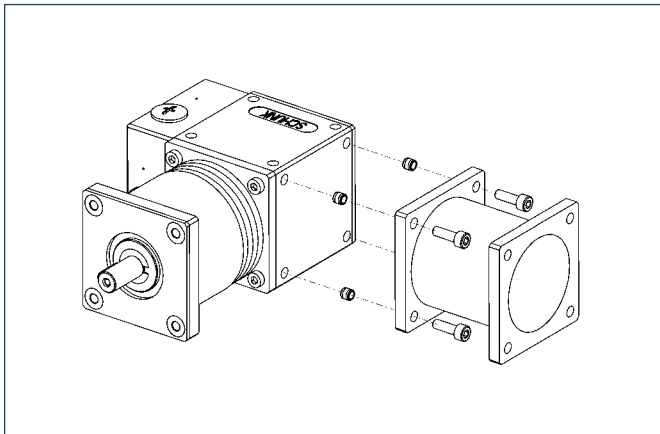
- ① Voltage supply provided by customer
- ② Control (SPC, etc.) provided by customer
- ③ PAE 130 TB terminal block for connecting the power supply, the communication and the hybrid cable
- ④ Hybrid cable for connecting the PowerCube modules

### Electrical accessories

Description	ID	Length
PowerCube Hybrid cable, coiled	0307753	0.3 m
PowerCube Hybrid cable, coiled	0307754	0.46 m
PowerCube Hybrid cable, straight (per meter)	9941120	
Terminal block PAE 130 TB	0307725	

You can find further cables in the „Accessories“ catalog section.

## Mechanical accessories

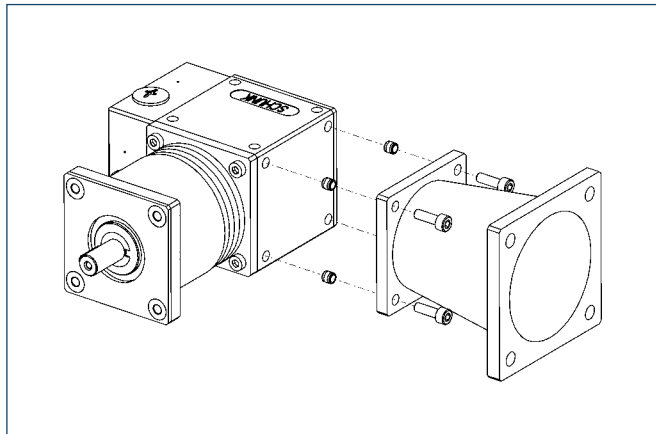


### Straight connecting element

Straight standard element for connecting size 90 PowerCube modules with complete repeat accuracy

Description	ID	Dimensions
PAM 102	0307802	90x90/45/90x90 mm
PAM 103	0307803	90x90/90/90x90 mm

Special lengths on request

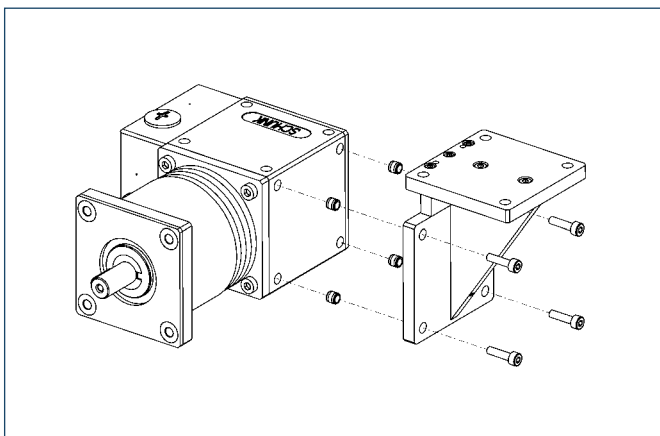


### Conical connecting element

Conical standard element for connecting size 70, 90 and 110 PowerCube modules with complete repeat accuracy

Description	ID	Dimensions
PAM 110	0307810	90x90/45/70x70 mm
PAM 111	0307811	90x90/90/70x70 mm
PAM 112	0307812	110x110/55/90x90 mm
PAM 113	0307813	110x110/110/90x90 mm

Special lengths on request

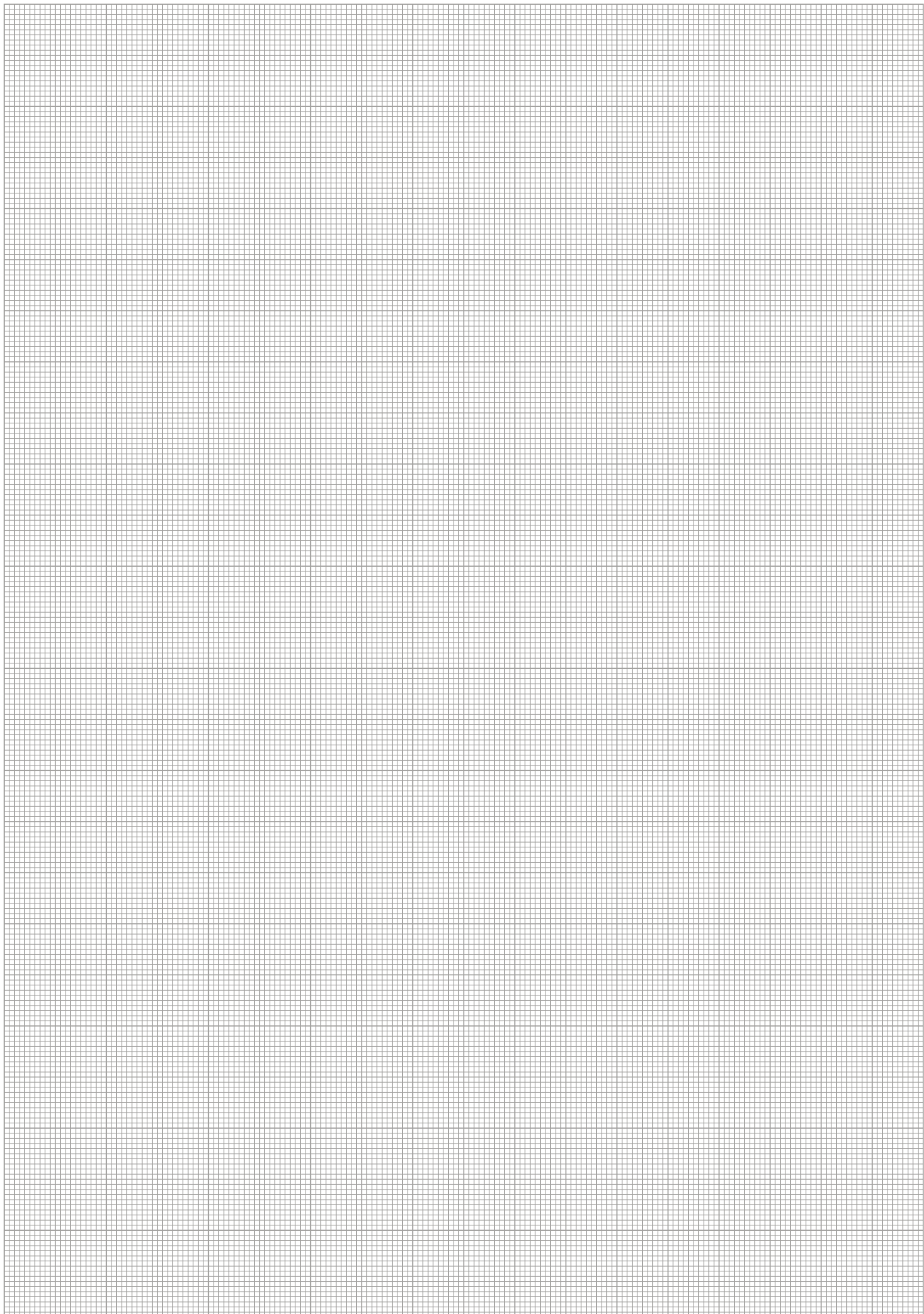


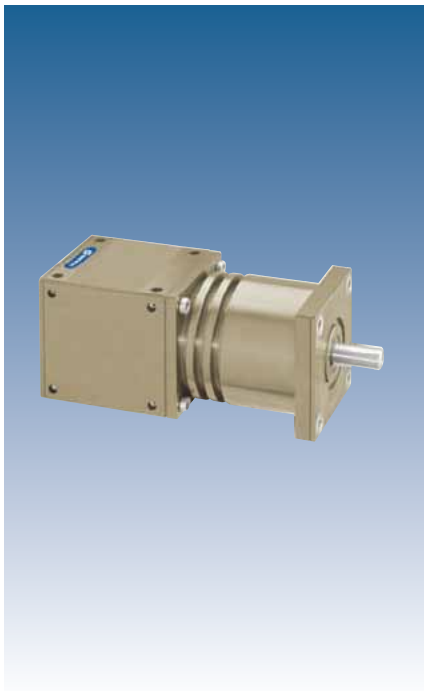
### Right-angle connecting element

Right-angle standard element for connecting size 90 PowerCube modules with complete repeat accuracy

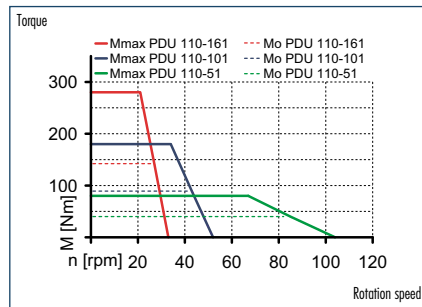
Description	ID	Dimensions
PAM 121	0307821	90°/90.5x122

 You can find more detailed information and individual parts of the above-mentioned accessories in the „Accessories“ catalog section.

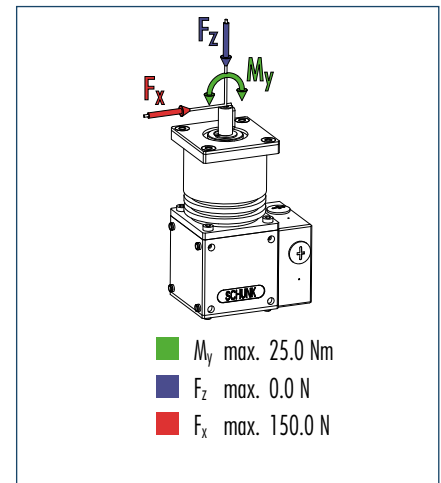




## Torque characteristic



## Forces and moments



① Moments and forces may occur simultaneously.

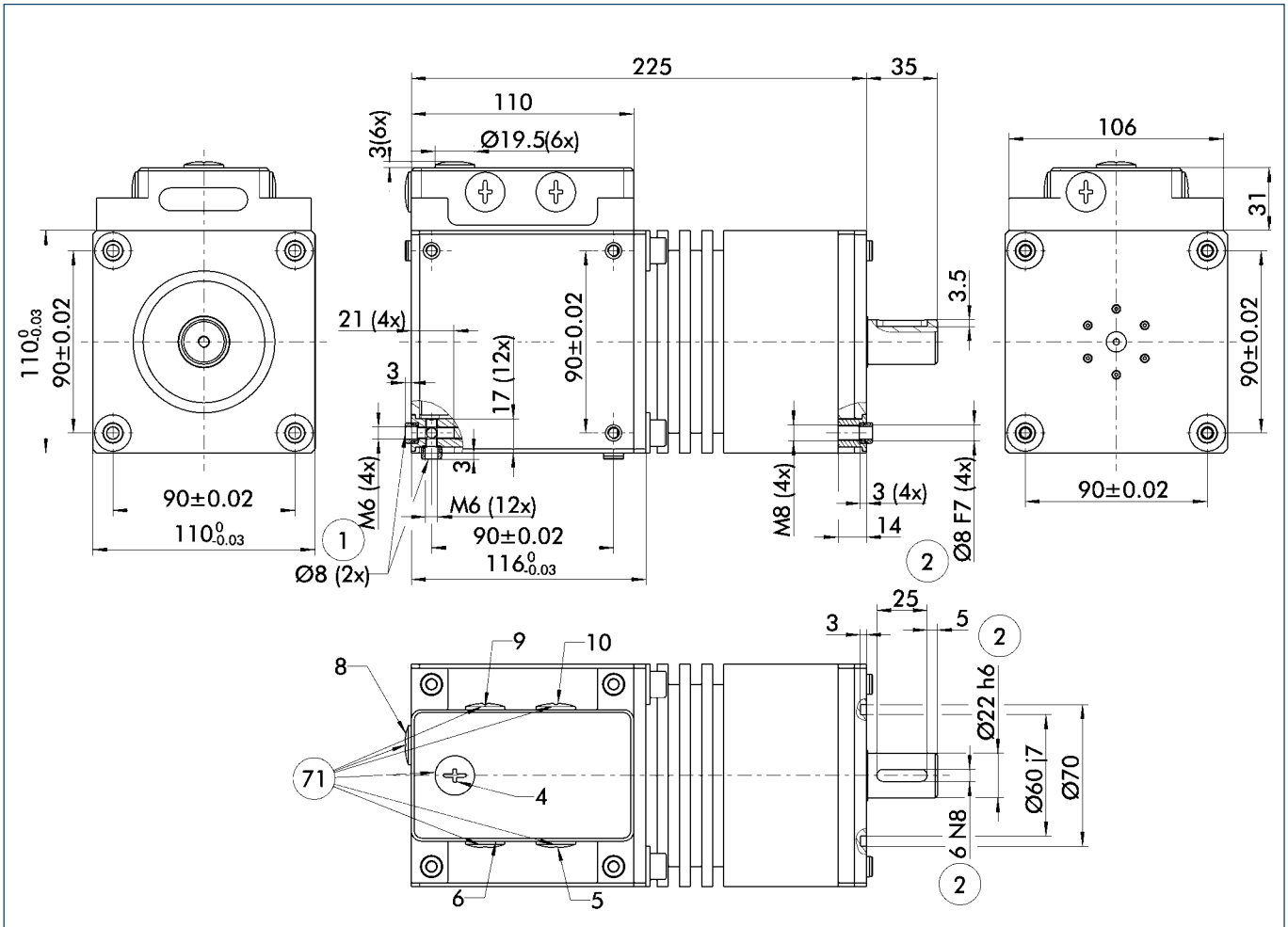
## Technical data

Description		PDU 110-161	PDU 110-101	PDU 110-51
ID		0306763	0306773	0306783
Version with brake		PDU 110-161-B	PDU 110-101-B	PDU 110-51-B
ID		0306768	0306778	0306788
<b>Mechanical operating data</b>				
Nominal torque	[Nm]	142.0	89.0	40.0
Peak torque	[Nm]	280.0	180.0	80.0
Rotating angle (>)	[°]	360.0	360.0	360.0
IP class		64	64	64
Weight	[kg]	5.5	5.5	5.5
Min. ambient temperature	[°C]	5.0	5.0	5.0
Max. ambient temperature	[°C]	55.0	55.0	55.0
Repeat accuracy*	[°]	0.02	0.03	0.04
Max. angular velocity	[°/s]	150.0	240.0	470.0
Max. acceleration	[°/s <sup>2</sup> ]	600.0	960.0	1880.0
Gear ratio		161:1	101:1	51:1
<b>Electrical operating data</b>				
Nominal voltage	[VDC]	48.0	48.0	48.0
Nominal power current	[A]	4.0	4.0	4.0
Max. current	[A]	12.0	12.0	12.0
Resolution	[arcsec]	4.0	6.0	13.0
<b>Control electronics</b>				
Integrated control electronics		Yes	Yes	Yes
Voltage supply	[VDC]	24.0	24.0	24.0
Nominal power current	[A]	0.5	0.5	0.5
Sensor system		Encoder	Encoder	Encoder
Interface		RS-232; Profibus-DP; CAN-Bus	RS-232; Profibus-DP; CAN-Bus	RS-232; Profibus-DP; CAN-Bus

① The peak torques act as a temporary drive reserve on acceleration and braking.

\* Higher accuracy on request

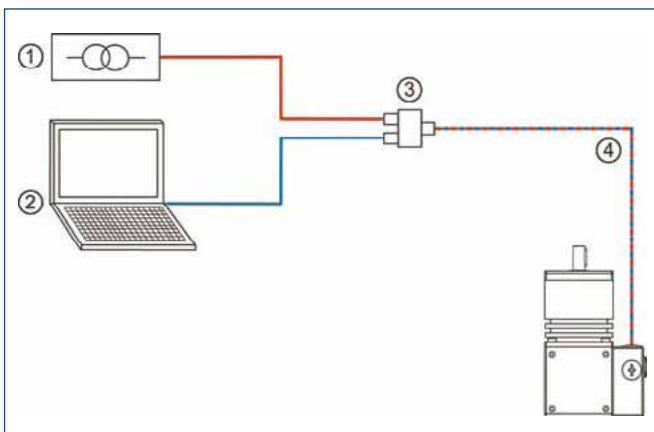
## Main views



The drawing shows the servo-motor with damp-proof cap in the basic version, it does not include the options described below.

- ① Connection of rotary actuator
- ② Attachment connection
- ⑦ M16x1.5 for cable gland

## Actuation



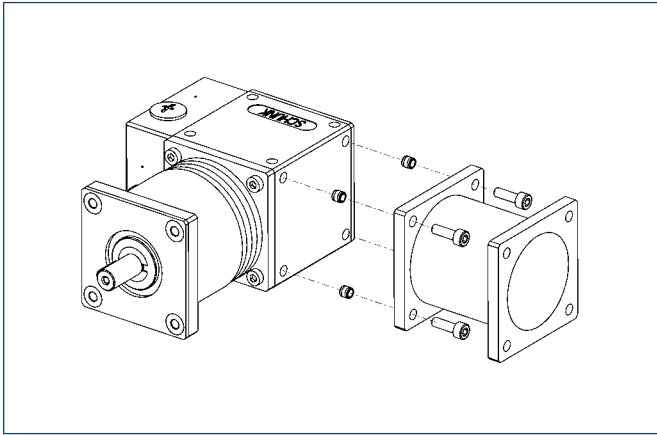
- ① Voltage supply provided by customer
- ② Control (SPC, etc.) provided by customer
- ③ PAE 130 TB terminal block for connecting the power supply, the communication and the hybrid cable
- ④ Hybrid cable for connecting the PowerCube modules

## Electrical accessories

Description	ID	Length
PowerCube Hybrid cable, coiled	0307753	0.3 m
PowerCube Hybrid cable, coiled	0307754	0.46 m
PowerCube Hybrid cable, straight (per meter)	9941120	
Terminal block PAE 130 TB	0307725	

You can find further cables in the „Accessories“ catalog section.

## Mechanical accessories

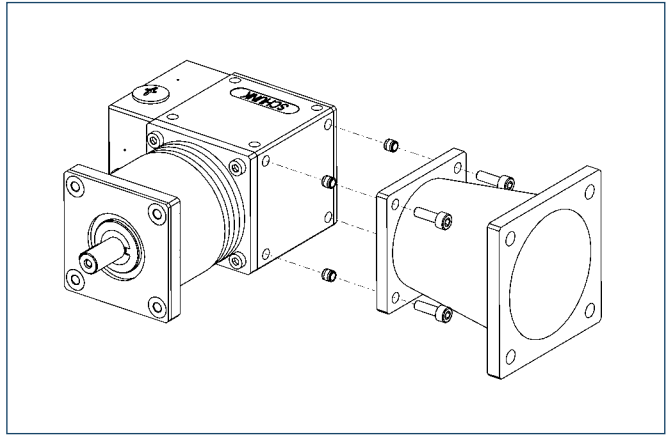


### Straight connecting element

Straight standard element for connecting size 110 PowerCube modules with complete repeat accuracy

Description	ID	Dimensions
PAM 104	0307804	110x110/55/110x110 mm
PAM 105	0307805	110x110/110/110x110 mm

Special lengths on request

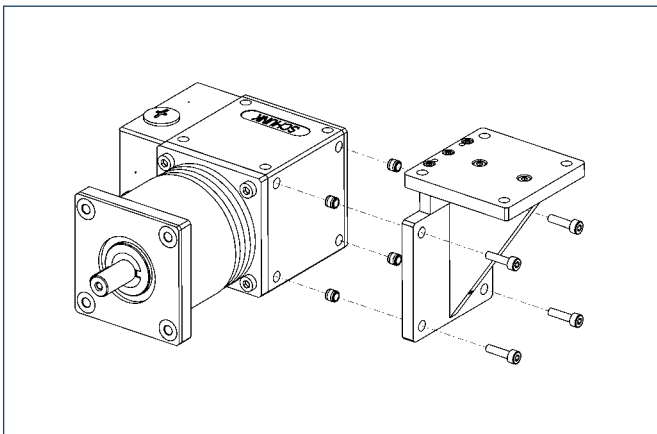


### Conical connecting element

Conical standard element for connecting size 90 and 110 PowerCube modules with complete repeat accuracy

Description	ID	Dimensions
PAM 112	0307812	110x110/55/90x90 mm
PAM 113	0307813	110x110/110/90x90 mm

Special lengths on request



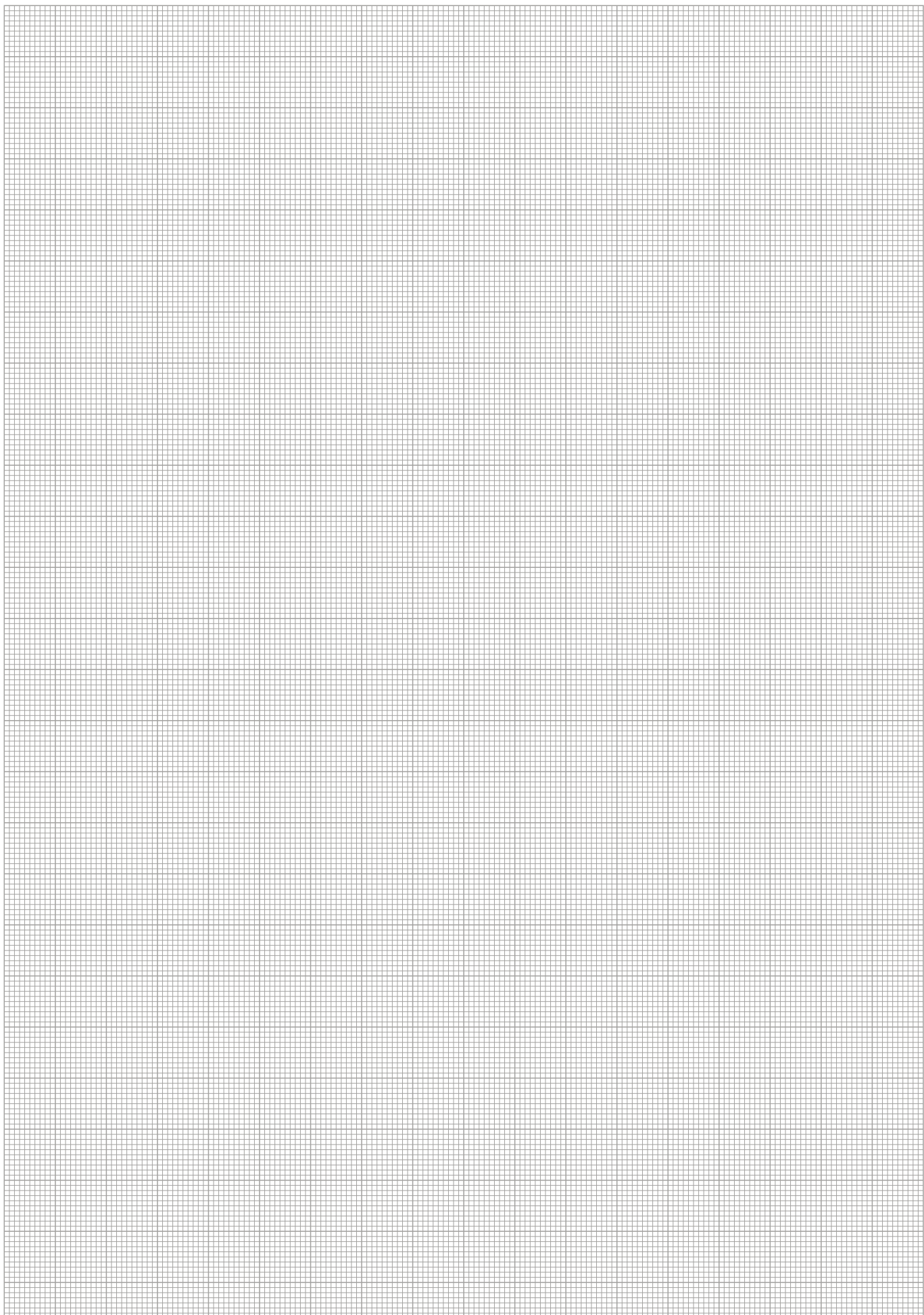
### Right-angle connecting element

Right-angle standard element for connecting size 110 PowerCube modules with complete repeat accuracy

Description	ID	Dimensions
PAM 122	0307822	90°/110.5x146



You can find more detailed information and individual parts of the above-mentioned accessories in the „Accessories“ catalog section.





# Accessories



# ACCESSORIES

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## Inductive Proximity Switches

Inductive proximity switches are used to monitor the current position of automation components. They are available from SCHUNK in the versions IN (sensor with 30 cm molded cable and cable connector) or INK (sensor with 2 m long feeder cable and litz wires for wiring).



### Function description

With their oscillator coil, inductive proximity switches produce a high-frequency, alternating magnetic field. This field occurs on the active surface of the sensor. If a metal object enters the field, it draws energy from the magnetic field, thereby reducing the oscillation amplitude. This change is detected, and the sensor switches.

### Your advantages and benefits

#### Mounting through bracket

for simple, fast assembly

#### Version with LED display

for checking the switching state directly at the sensor

#### Version with connector

for easy, rapid replacement of the extension cable

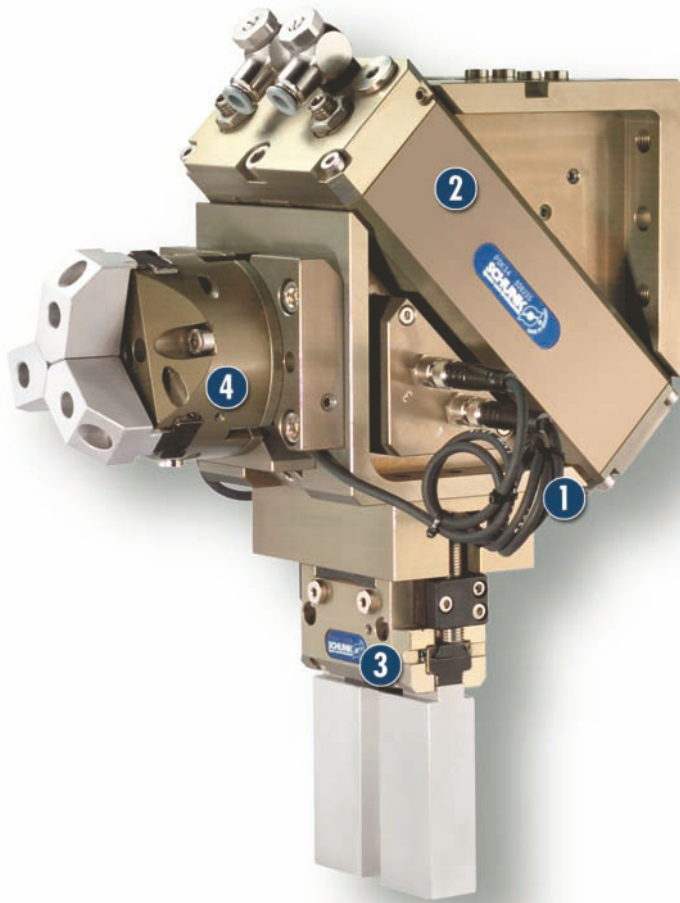
#### Ultra-flexible PUR cable

for a long life and resistance to many chemicals

#### Proximity switch can be installed flush

for minimal interfering contours in the application

## Application example



### Area of application

For monitoring of gripping and rotary modules, linear modules and robot accessories. Inductive SCHUNK sensors detect metals without contact and are resistant to vibration, dust and humidity.

1 Plug-in IN Sensors

2 PSK Swivel Head

3 PGN 2-Finger Parallel Gripper with ABR finger blanks

4 PZN 3-Finger Centric Gripper with workpiece-specific gripper fingers

### General information

#### Protection class according to DIN 40050

IP 67 in connected condition for use in clean or dusty environments or in the event of contact with water. Contact with other media (cooling lubricants, acidic or caustic substances, etc.) frequently does not impair the function, but this cannot be guaranteed by SCHUNK.

#### Voltage

10 – 30 V DC, residual ripple < 15 %

#### Switching method

PNP switching

#### Warranty

24 months

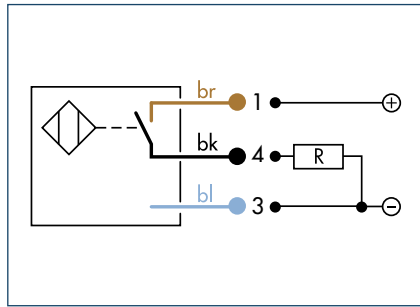
### Notes

SCHUNK gripping, rotary and linear modules and robot accessory components must always be ordered from SCHUNK with the matching sensors, as these are ideally adapted to work together.

If major characteristics such as switching distance, switching function, hysteresis and voltage are largely the same, then proximity switches from other manufacturers may be used instead of inductive proximity switches (IN, INK) from SCHUNK.

However, if proximity switches from other manufacturers are used, SCHUNK cannot guarantee either their function or their functional reliability.

## Circuit diagram of closer

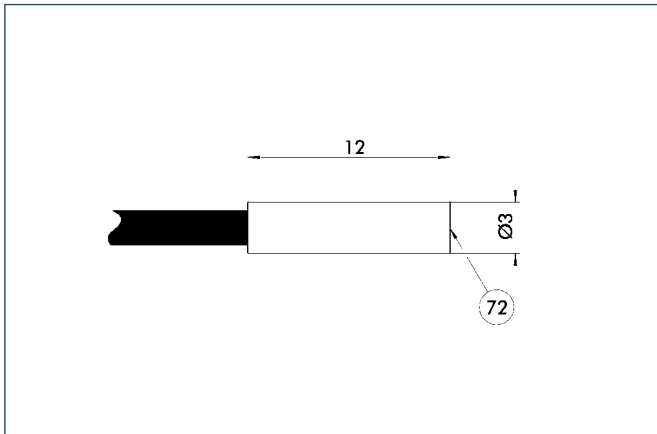


## Technical data

Description	ID	IN 3-S-M8-PNP
		0301466
Switching function		Closer
Switching distance	[mm]	0.6
Hysteresis of nominal switching distance		< 5%
Switching method		PNP
Cable length	[cm]	30.0
Cable connector/cable end		M8
Type of voltage		DC
Nominal voltage	[V]	24.0
Min. voltage	[V]	10.0
Max. voltage	[V]	30.0
Voltage drop	[V]	1.5
Max. power on contact	[A]	0.1
Min. ambient temperature	[°C]	-25.0
Max. ambient temperature	[°C]	75.0
Max. switching frequency	[Hz]	1000.0
IP class (sensor)		67
IP class (connector, plugged in)		67
LED display on sensor		No
Cable diameter	[mm]	2.5
Min. bending radius (dynamic)	[mm]	25.0
Min. bending radius (static)	[mm]	12.5
No. of wires		3
Wire cross section	[mm <sup>2</sup> ]	0.14

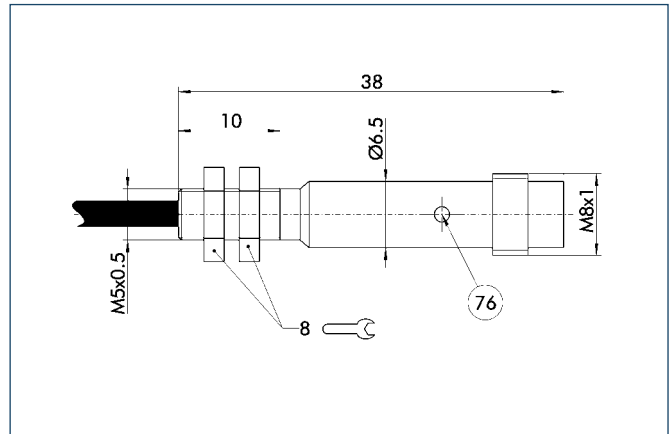
ⓘ The cable between the sensor and the club must not be disconnected in any case.

## IN 3 sensor



72 Active sensor surface

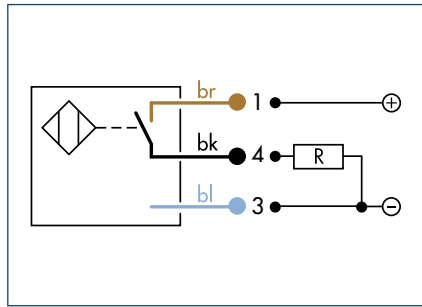
## M8 connector



76 LED



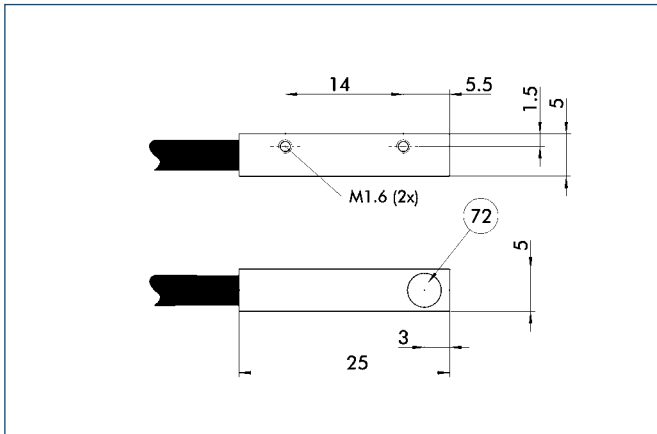
## Circuit diagram of closer



## Technical data

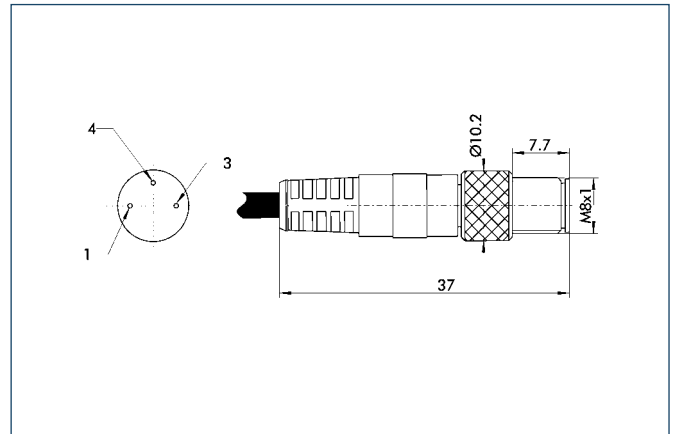
Description	ID	IN 5-S-M8	IN 5-S-M12	IN K 5-S
		0301469	0301569	0301501
Switching function		Closer	Closer	Closer
Switching distance	[mm]	1.0	1.0	1.0
Hysteresis of nominal switching distance		< 15%	< 15%	< 15%
Switching method		PNP	PNP	PNP
Cable length	[cm]	30.0	30.0	200.0
Cable connector/cable end		M8	M12	Open wire
Type of voltage		DC	DC	DC
Nominal voltage	[V]	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0	70.0
Max. switching frequency	[Hz]	1000.0	1000.0	1000.0
IP class (sensor)		67	67	67
IP class (connector, plugged in)		67	67	67
LED display on sensor		No	No	No
Cable diameter	[mm]	3.5	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5	17.5
No. of wires		3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14

## IN 5/S sensor

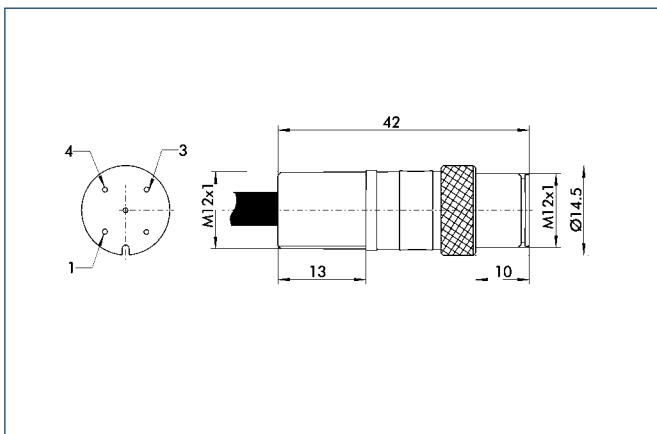


72 Active sensor surface

## M8 connector

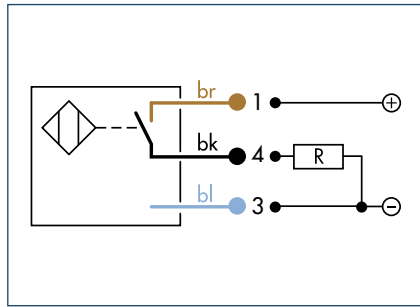


## M12 connector





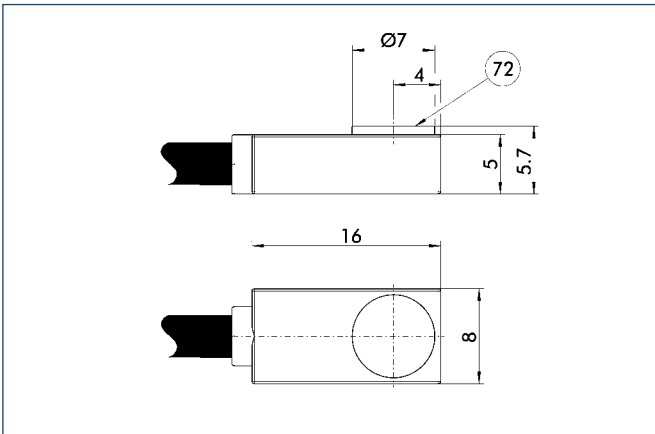
## Circuit diagram of closer



## Technical data

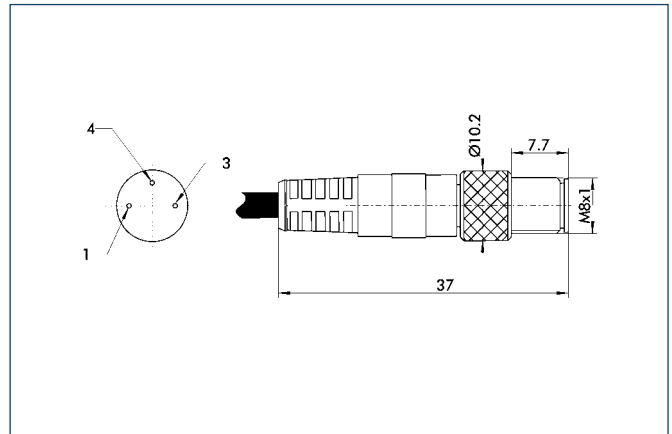
Description	ID	IN 8-S-M8	IN 8-S-M12	IN K 8-S
		0301481	0301581	9700052
Switching function		Closer	Closer	Closer
Switching distance	[mm]	0.8	0.8	0.8
Hysteresis of nominal switching distance		< 15%	< 15%	< 15%
Switching method		PNP	PNP	PNP
Cable length	[cm]	30.0	30.0	200.0
Cable connector/cable end		M12	M12	Open wire
Type of voltage		DC	DC	DC
Nominal voltage	[V]	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0	70.0
Max. switching frequency	[Hz]	1000.0	1000.0	1000.0
IP class (sensor)		67	67	67
IP class (connector, plugged in)		67	67	67
LED display on sensor		No	No	No
Cable diameter	[mm]	3.5	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5	17.5
No. of wires		3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14

## IN 8/S sensor

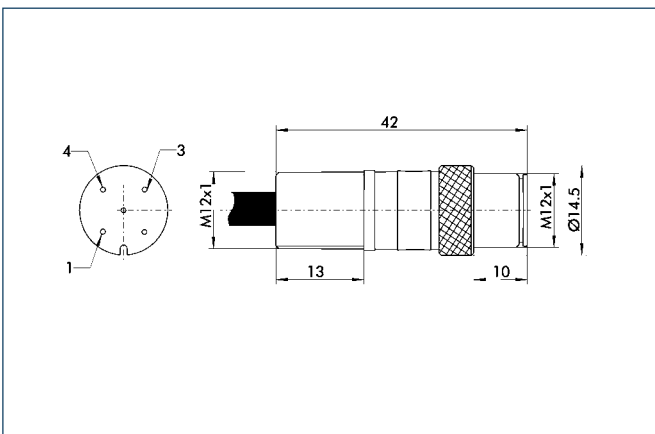


72 Active sensor surface

## M8 connector

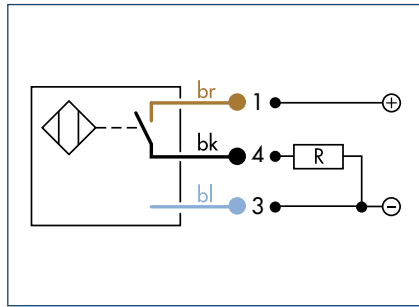


## M12 connector

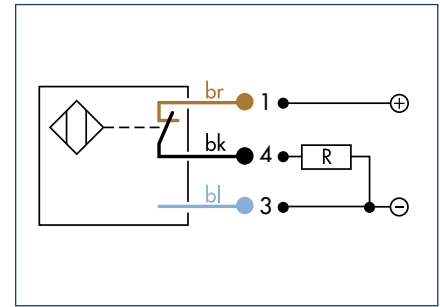




Circuit diagram of closer



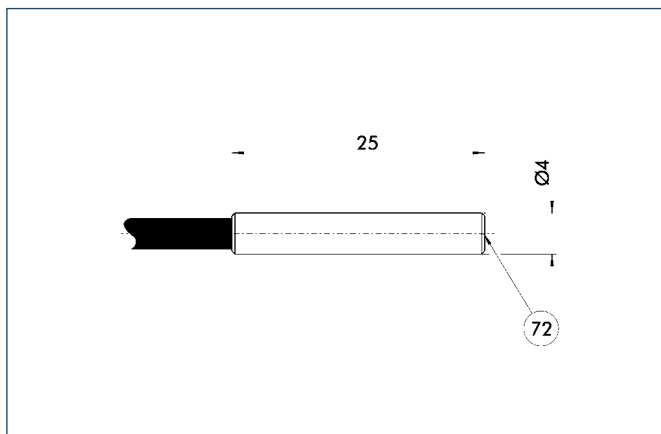
Circuit diagram of opener



## Technical data

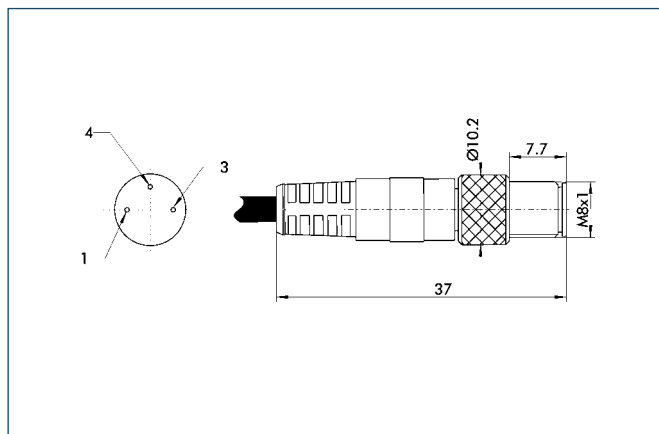
Description	ID	IN 40-S-M8	IN 40-S-M12	INK 40-S	IN 40-O-M8	IN 40-O-M12	INK 40-O	IN 40-S-M5-PNP	IN 40-S-M5-NPN
		0301474	0301574	0301555	0301484	0301584	0301556	0301491	0301492
Switching function		Closer	Closer	Closer	Opener	Opener	Opener	Closer	Closer
Switching distance	[mm]	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hysteresis of nominal switching distance		< 15%	< 15%	< 15%	< 15%	< 15%	< 15%	< 15%	< 15%
Switching method		PNP	PNP	PNP	PNP	PNP	PNP	PNP	NPN
Cable length	[cm]	30.0	30.0	200.0	30.0	30.0	200.0	30.0	30.0
Cable connector/cable end		M8	M12	Open wire	M8	M12	Open wire	M8	M8
Type of voltage		DC	DC	DC	DC	DC	DC	DC	DC
Nominal voltage	[V]	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Max. switching frequency	[Hz]	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0
IP class (sensor)		67	67	67	67	67	67	67	67
IP class (connector, plugged in)		67	67	67	67	67	67	67	67
LED display on sensor		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cable diameter	[mm]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
No. of wires		3	3	3	3	3	3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14

## IN 40 sensor

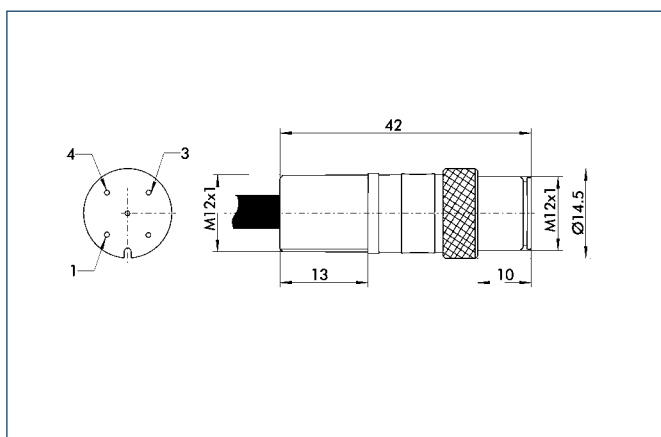


72 Active sensor surface

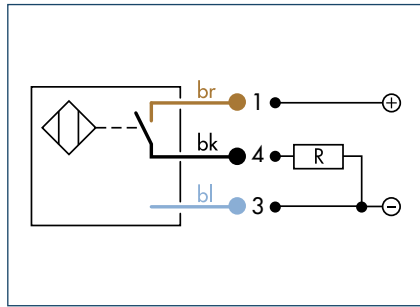
## M8 connector



## M12 connector



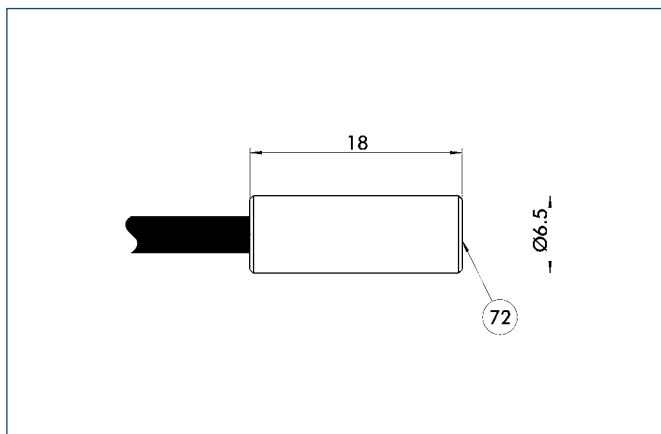
## Circuit diagram of closer



## Technical data

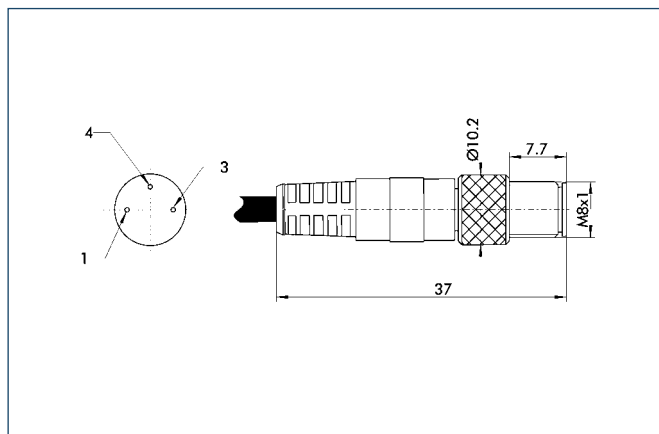
Description	ID	IN 60-S-M8	IN 60-S-M12	INK 60-S
		0301485	0301585	0301553
Switching function		Closer	Closer	Closer
Switching distance	[mm]	1.5	1.5	1.5
Hysteresis of nominal switching distance		< 15%	< 15%	< 15%
Switching method		PNP	PNP	PNP
Cable length	[cm]	30.0	30.0	200.0
Cable connector/cable end		M8	M12	Open wire
Type of voltage		DC	DC	DC
Nominal voltage	[V]	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0	70.0
Max. switching frequency	[Hz]	1000.0	1000.0	1000.0
IP class (sensor)		67	67	67
IP class (connector, plugged in)		67	67	67
LED display on sensor		No	No	No
Cable diameter	[mm]	3.5	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5	17.5
No. of wires		3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14

## IN 60/S sensor

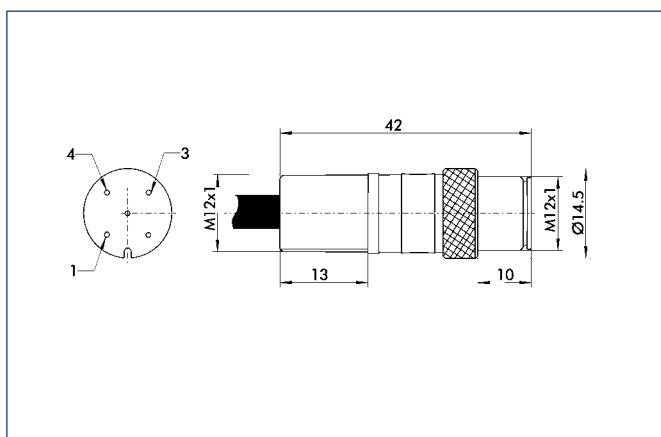


72 Active sensor surface

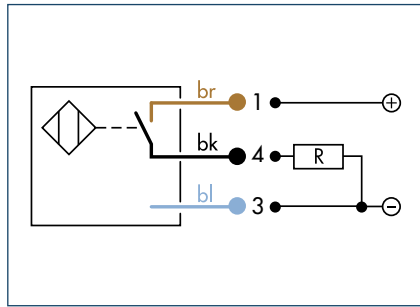
## M8 connector



## M12 connector



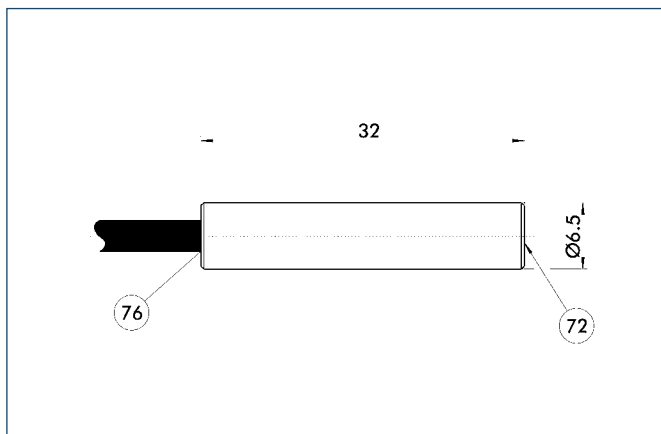
## Circuit diagram of closer



## Technical data

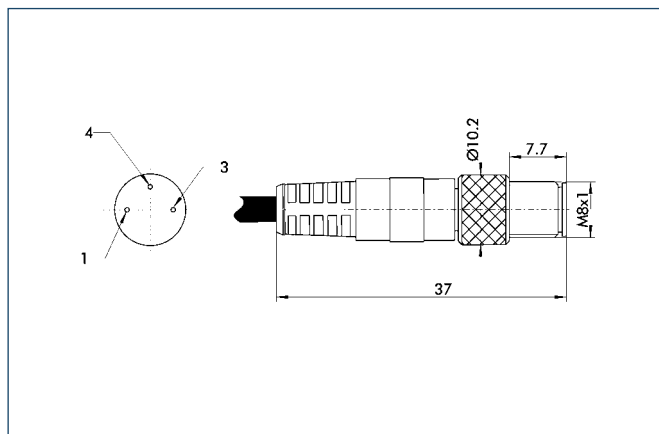
Description		IN 65-S-M8	IN 65-S-M12	IN K 65-S
	ID	0301476	0301576	0301554
Switching function		Closer	Closer	Closer
Switching distance	[mm]	1.5	1.5	1.5
Hysteresis of nominal switching distance		< 15%	< 15%	< 15%
Switching method		PNP	PNP	PNP
Cable length	[cm]	30.0	30.0	200.0
Cable connector/cable end		M8	M12	Open wire
Type of voltage		DC	DC	DC
Nominal voltage	[V]	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0	70.0
Max. switching frequency	[Hz]	1000.0	1000.0	1000.0
IP class (sensor)		67	67	67
IP class (connector, plugged in)		67	67	67
LED display on sensor		Yes	Yes	No
Cable diameter	[mm]	3.5	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5	17.5
No. of wires		3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14

## IN 65/S sensor

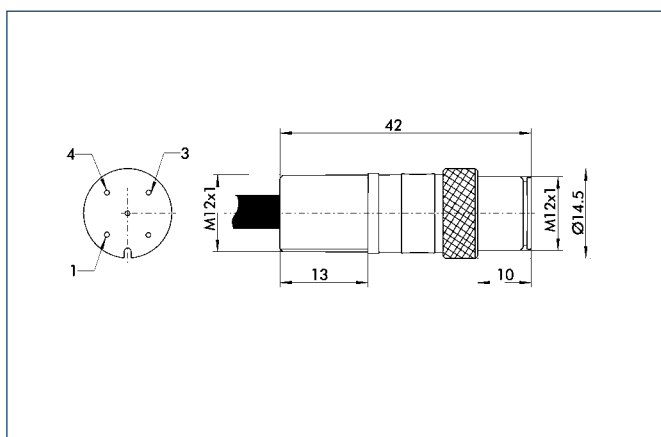


- 72 Active sensor surface
- 76 LED

## M8 connector



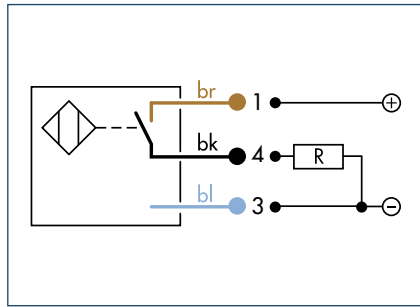
## M12 connector



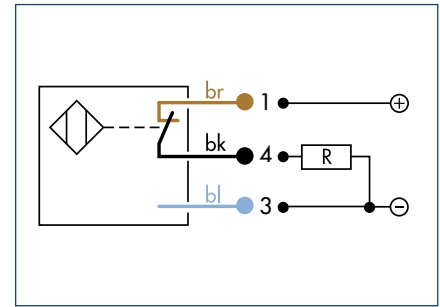




**Circuit diagram of closer**



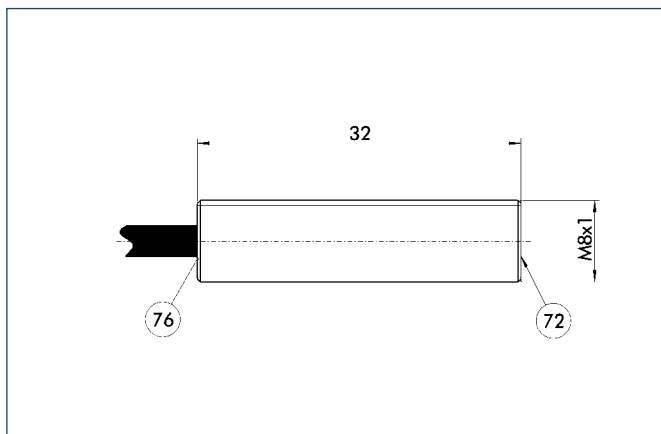
**Circuit diagram of opener**



## Technical data

Description		IN 80-S-M8	IN 80-S-M12	INK 80-S	IN 80-O-M8	IN 80-O-M12	INK 80-O
	ID	0301478	0301578	0301550	0301488	0301588	0301551
Switching function		Closer	Closer	Closer	Opener	Opener	Opener
Switching distance	[mm]	1.5	1.5	1.5	1.5	1.5	1.5
Hysteresis of nominal switching distance		< 15%	< 15%	< 15%	< 15%	< 15%	< 15%
Switching method		PNP	PNP	PNP	PNP	PNP	PNP
Cable length	[cm]	30.0	30.0	200.0	30.0	30.0	200.0
Cable connector/cable end		M8	M12	Open wire	M8	M12	Open wire
Type of voltage		DC	DC	DC	DC	DC	DC
Nominal voltage	[V]	24.0	24.0	24.0	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2	0.2	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0	70.0	70.0	70.0	70.0
Max. switching frequency	[Hz]	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0
IP class (sensor)		67	67	67	67	67	67
IP class (connector, plugged in)		67	67	67	67	67	67
LED display on sensor		Yes	Yes	Yes	Yes	Yes	Yes
Cable diameter	[mm]	3.5	3.5	3.5	3.5	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0	35.0	35.0	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5	17.5	17.5	17.5	17.5
No. of wires		3	3	3	3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14	0.14	0.14	0.14

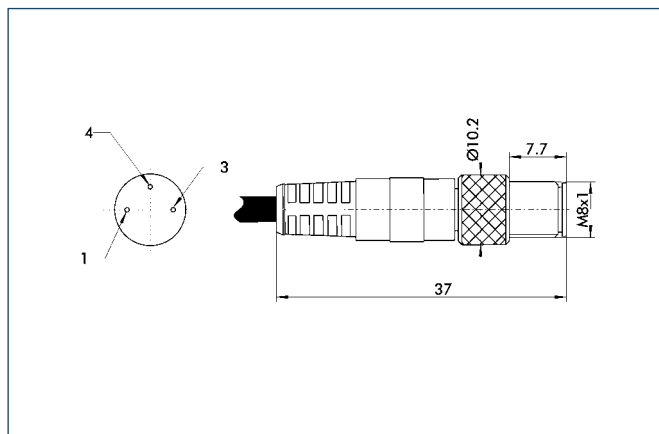
## IN 80 sensor



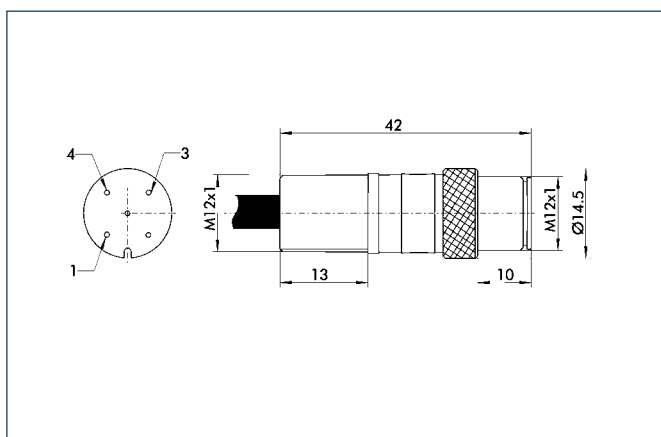
72 Active sensor surface

76 LED

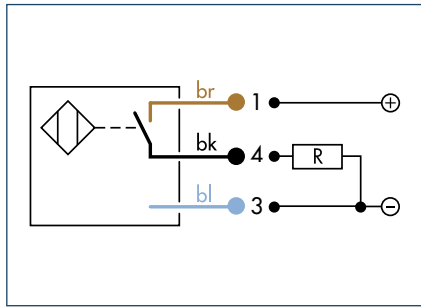
## M8 connector



## M12 connector



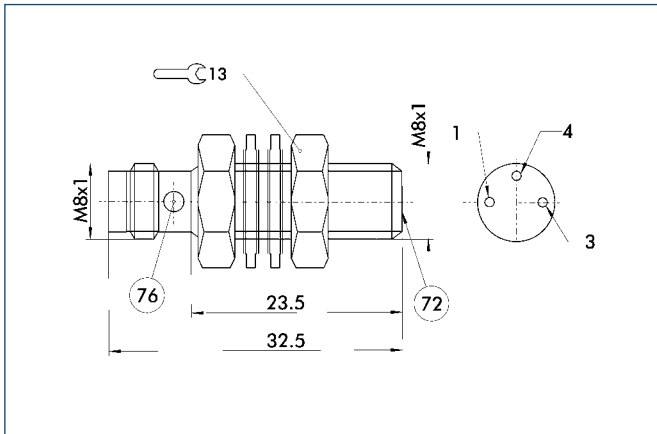
## Circuit diagram of closer



## Technical data

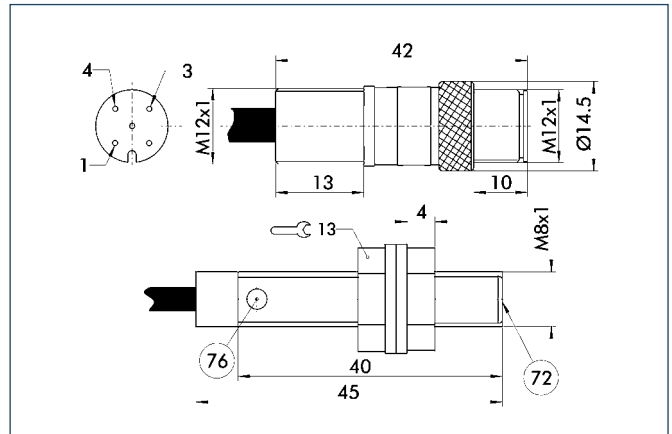
Description		IN 80-SL-M12	INK 80-SL
	ID	0301529	0301579
Switching function		Closer	Closer
Switching distance	[mm]	3.0	3.0
Hysteresis of nominal switching distance		< 15%	< 15%
Switching method		PNP	PNP
Cable length	[cm]	30.0	200.0
Cable connector/cable end		M12	Open wire
Type of voltage		DC	DC
Nominal voltage	[V]	24.0	24.0
Min. voltage	[V]	10.0	10.0
Max. voltage	[V]	30.0	30.0
Voltage drop	[V]	1.5	1.5
Max. power on contact	[A]	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0
Max. switching frequency	[Hz]	1000.0	1000.0
IP class (sensor)		67	67
IP class (connector, plugged in)		67	67
LED display on sensor		Yes	Yes
Cable diameter	[mm]	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5
No. of wires/contacts		3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14

## IN B-80 sensor



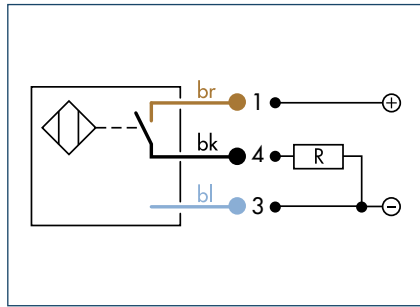
- 72 Active sensor surface
- 76 LED

## IN 80/SL sensor



- 72 Active sensor surface
- 76 LED

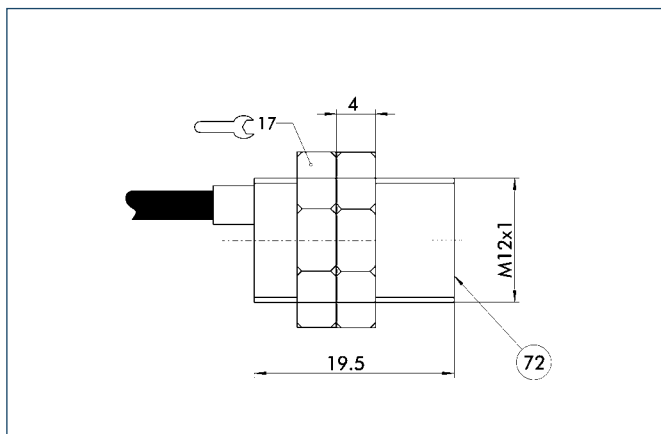
## Circuit diagram of closer



## Technical data

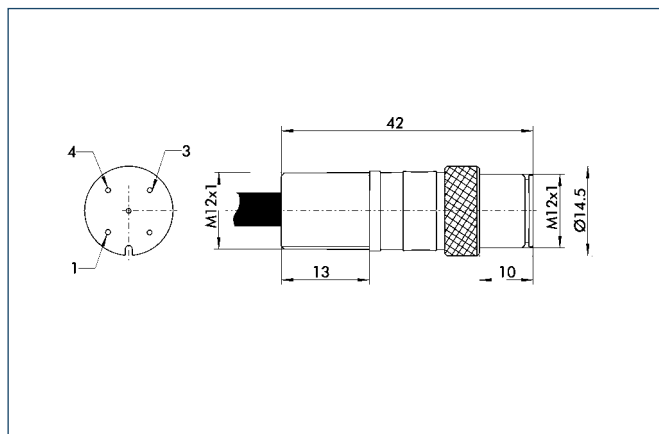
Description		IN 120-S-M12 0301592	INK 120-S 0301562
Switching function		Closer	Closer
Switching distance	[mm]	2.0	2.0
Hysteresis of nominal switching distance		< 15%	< 15%
Switching method		PNP	PNP
Cable length	[cm]	30.0	200.0
Cable connector/cable end		M12	Open wire
Type of voltage		DC	DC
Nominal voltage	[V]	24.0	24.0
Min. voltage	[V]	10.0	10.0
Max. voltage	[V]	30.0	30.0
Voltage drop	[V]	1.5	1.5
Max. power on contact	[A]	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0
Max. switching frequency	[Hz]	1000.0	1000.0
IP class (sensor)		67	67
IP class (connector, plugged in)		67	67
LED display on sensor		No	No
Cable diameter	[mm]	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5
No. of wires		3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14

## IN 120/S sensor



72 Active sensor surface

## M12 connector



## Reed Switches

Reed switches are mechanical switches that react to the presence of magnetic fields (magnets). They are frequently used as low-price alternatives to electronic magnetic switches (MMS).



### Function description

Reed switches consist of tiny, metal contacts (reeds). Under the influence of a magnetic field, they bend and touch one another, closing the contact.

### Your advantages and benefits

#### Economical

for cost-saving applications

#### Installed in the sensor slot

for space-saving, simple and fast assembly

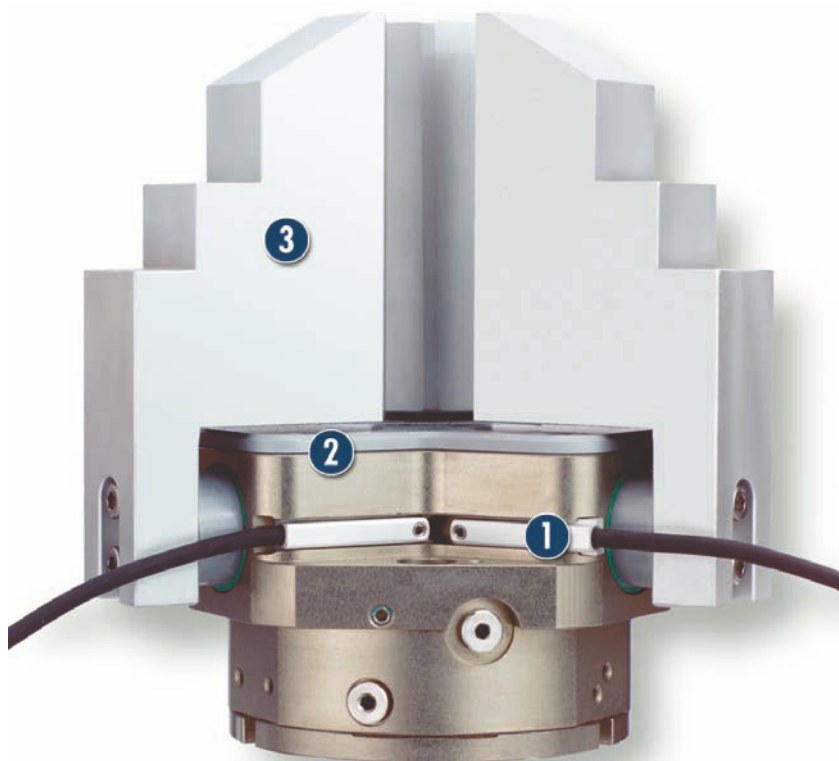
#### Version with connector

for easy, rapid replacement of the extension cable

#### Ultra-flexible PUR cable

for a long life and resistance to many chemicals

## Application example



1 RMS Reed Switches for mounting in the C-slot of the gripper

2 Sealed 3-Finger Centric Gripper

3 Workpiece-specific Gripper Fingers

## General information

### Material

Sensor housing: PA in the RMS 22, stainless steel in the RMS 80  
Cable: PUR sheath

### Fastening

Clamps in sensor slot (RMS 22) / brackets (RMS 80)

### Protection class according to DIN 40050

IP 67 in connected condition for use in clean or dusty environments or in the event of contact with water. Contact with other media (cooling lubricants, acidic or caustic substances, etc.) frequently does not impair the function, but this cannot be guaranteed by SCHUNK.

### Warranty

24 months

## Area of application

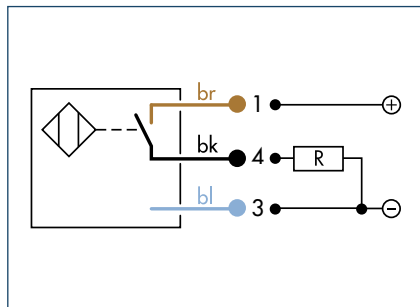
For monitoring of gripping and rotary modules, linear modules and robot accessories. Reed switches from SCHUNK detect metals without contact or wear and are resistant to dust and humidity. Magnetic switches are fitted in slots and therefore do not form any additional interfering contours. Please note that not all SCHUNK products with sensor slot can be monitored using low-cost reed switches.

## Notes

SCHUNK gripper, rotary and linear modules and robot accessory components that are to be monitored by RMS slot-fitted reed switches can generally only be reliably monitored with the appropriate RMS reed switches from SCHUNK. Sensors and products are matched on the basis of the relationships between the parameters type and field strength of the magnet, distance, wall thickness and wall material of the magnet and the sensor, and the orientation and sensitivity of the sensor itself. For this reason, sensors from other manufacturers employed in SCHUNK products rarely give satisfactory switching results.



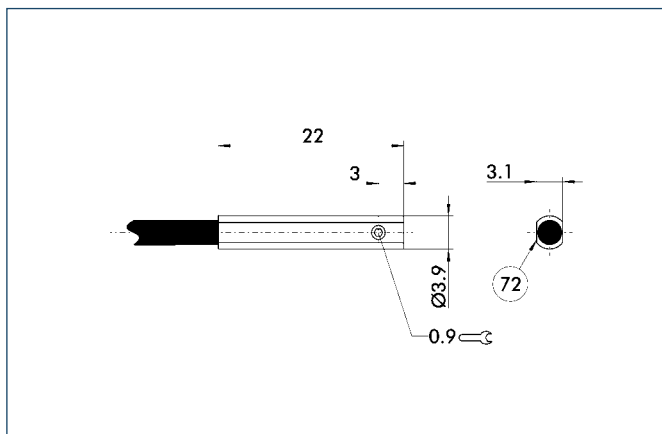
## Circuit diagram of closer



## Technical data

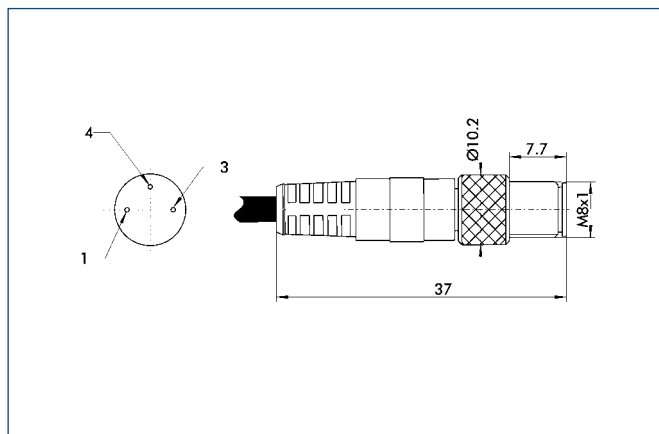
Description		RMS 22-S-M8
	ID	0377720
Switching function		Closer
Switching method		PNP, NPN
Cable length	[cm]	30.0
Cable connector/cable end		M8
Type of voltage		DC
Max. voltage DC	[V]	120.0
Voltage drop DC	[V]	0.0
Max. power on contact DC	[A]	0.4
Type of voltage		AC
Max. voltage AC	[V]	120.0
Voltage drop AC	[V]	0.0
Max. power on contact AC	[A]	0.4
Min. ambient temperature	[°C]	-5.0
Max. ambient temperature	[°C]	70.0
Typical switching time	[s]	0.01
IP class (sensor)		67
IP class (connector, plugged in)		67
LED display on sensor		No
Cable diameter	[mm]	2.1
Min. bending radius (dynamic)	[mm]	21.0
Min. bending radius (static)	[mm]	10.5
No. of wires		2
Wire cross section	[mm <sup>2</sup> ]	0.14

## RMS 22 sensor

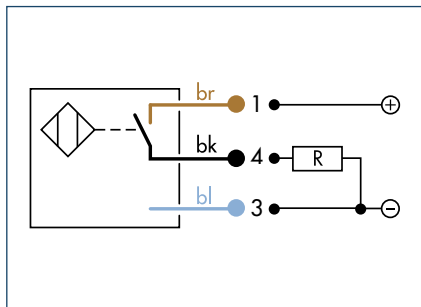


72 Active sensor surface

## M8 connector



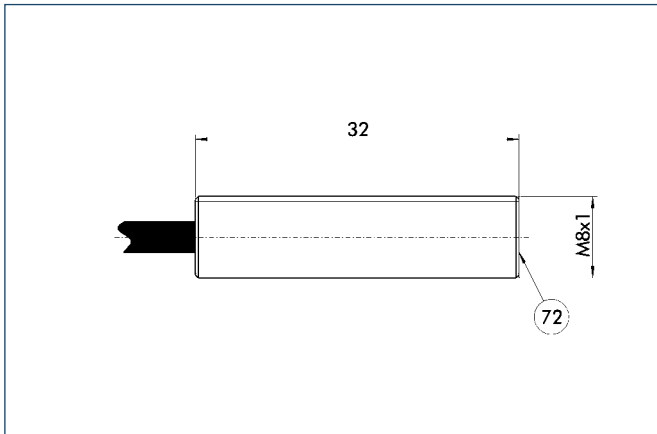
## Circuit diagram of closer



## Technical data

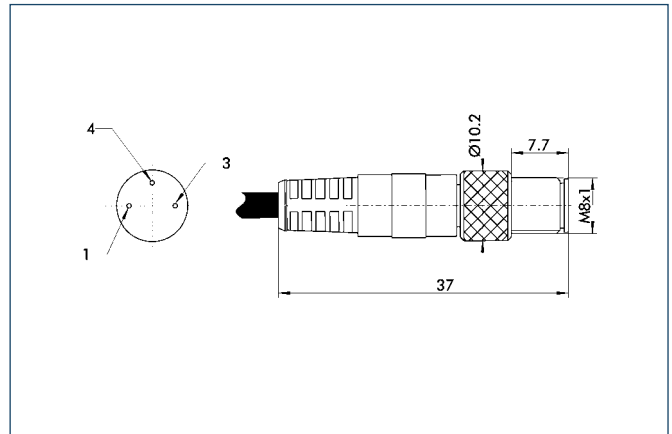
Description		RMS 80-S-M8
	ID	0377721
Switching function		Closer
Switching method		PNP, NPN
Cable length	[cm]	30.0
Cable connector/cable end		M8
Type of voltage		DC
Max. voltage DC	[V]	120.0
Voltage drop DC	[V]	0.0
Max. power on contact DC	[A]	0.4
Type of voltage		AC
Max. voltage AC	[V]	120.0
Voltage drop AC	[V]	0.0
Max. power on contact AC	[A]	0.4
Min. ambient temperature	[°C]	-5.0
Max. ambient temperature	[°C]	70.0
Typical switching time	[s]	0.01
IP class (sensor)		67
IP class (connector, plugged in)		67
LED display on sensor		No
Cable diameter	[mm]	2.1
Min. bending radius (dynamic)	[mm]	21.0
Min. bending radius (static)	[mm]	10.5
No. of wires		2
Wire cross section	[mm <sup>2</sup> ]	0.14

### RMS 80 sensor



72 Active sensor surface

### M8 connector



## Magnetic Switches

Magnetic switches are used for monitoring the position of automation components. They detect the approach of a magnet without contact and, above a certain switching threshold, enable their output.



### Function description

Magnetic switches react to magnetic fields. The resistors in the sensor consist of several ferromagnetic and non-magnetic layers. Two shielded and two non-shielded resistors are combined in a bridge circuit, which produces a signal proportional to the magnetic field when one is present. Above a threshold value, an output signal is switched via a comparator, and the sensor reacts.

### Your advantages and benefits

#### Installation in the sensor slot

for space-saving, simple and fast assembly

#### Version with LED display (MMS 22)

for checking the switching position directly at the sensor

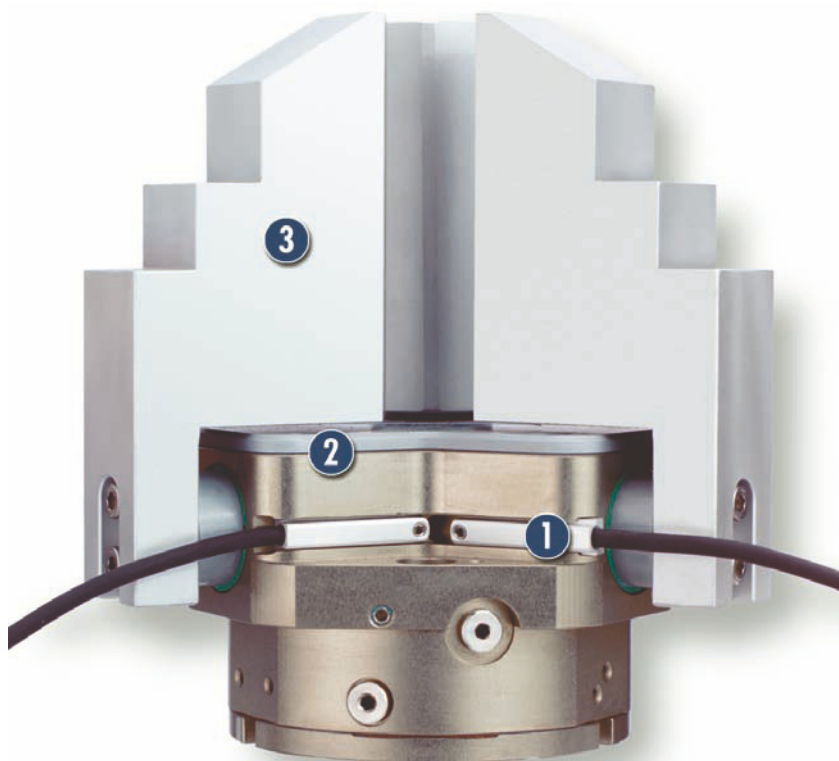
#### Version with connector

for easy, rapid replacement of the extension cable

#### Ultra-flexible PUR cable

for a long life and resistance to many chemicals

## Application example



**1** MMS Electronic Magnetic Switches for mounting in the C-slot of the gripper

**2** Sealed 3-Finger Centric Gripper

**3** Workpiece-specific Gripper Fingers

## General information

### Material

Sensor housing: PA in the MMS 22, aluminum in the MMS 30  
Cable: with PUR sheath

### Fastening

Clamps in the sensor slot

### Protection class according to DIN 40050

IP 67 in connected condition for use in clean or dusty environments or in the event of contact with water. Contact with other media (cooling lubricants, acidic or caustic substances, etc.) frequently does not impair the function, but this cannot be guaranteed by SCHUNK.

### Voltage

10 – 30 V DC at < 10 % residual ripple

### Switching method

PNP switching / NPN switching

### Warranty

24 months

## Area of application

For use in the monitoring of gripping and rotary modules, linear modules and robot accessories. Magnetic switches from SCHUNK detect metals without contact or wear and are resistant to vibration, dust and humidity. Magnetic switches are fitted in slots and therefore do not form any additional interfering contours.

## Notes

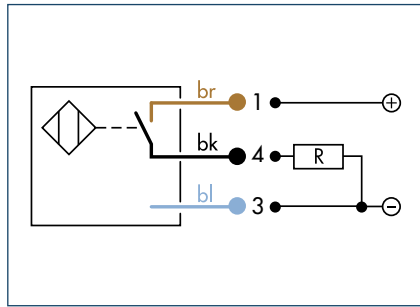
SCHUNK gripper, rotary and linear modules and robot accessory components that are to be monitored with electromagnetic slot-fitted switches can generally only be reliably monitored with the appropriate electromagnetic switches from SCHUNK.

Sensors and products are matched on the basis of the relationships between the parameters type and field strength of the magnet, distance, wall thickness and wall material of the magnet and the sensor, and the orientation and sensitivity of the sensor itself.

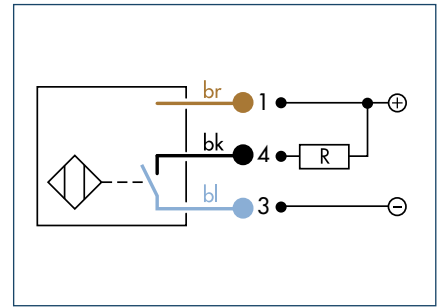
For this reason, sensors from other manufacturers employed in SCHUNK products rarely give satisfactory switching results.



**Circuit diagram of closer**



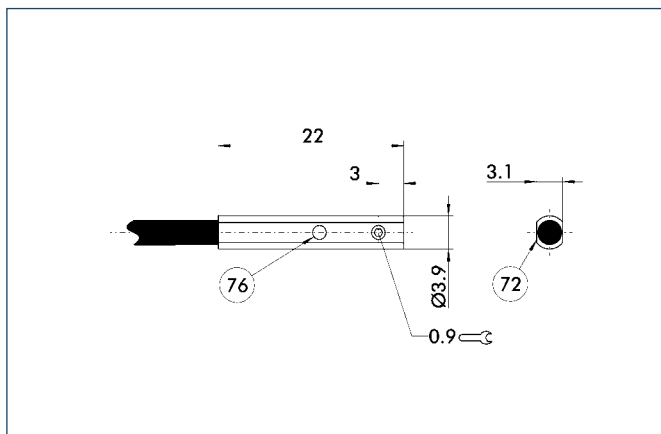
**Circuit diagram of NPN closer**



## Technical data

Description		MMS 22-S-M5-PNP	MMS 22-S-M5-NPN	MMS 22-S-M8-PNP	MMS 22-S-M8-NPN	MMSK 22-S-PNP	MMSK 22-S-NPN
	ID	0301438	0301439	0301432	0301433	0301434	0301435
Switching function		Closer	Closer	Closer	Closer	Closer	Closer
Switching method		PNP	NPN	PNP	NPN	PNP	NPN
Cable length	[cm]	30.0	30.0	30.0	30.0	200.0	200.0
Cable connector/cable end		M5	M5	M8	M8	Open wire	Open wire
Type of voltage		DC	DC	DC	DC	DC	DC
Nominal voltage	[V]	24.0	24.0	24.0	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2	0.2	0.2	0.2
Min. ambient temperature	[°C]	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
Max. ambient temperature	[°C]	70.0	70.0	70.0	70.0	70.0	70.0
Typical switching time	[s]	0.001	0.001	0.001	0.001	0.001	0.001
IP class (sensor)		67	67	67	67	67	67
IP class (connector, plugged in)		67	67	67	67	67	67
LED display on sensor		Yes	Yes	Yes	Yes	Yes	Yes
Cable diameter	[mm]	2.1	2.1	2.1	2.1	2.1	2.1
Min. bending radius (dynamic)	[mm]	21.0	21.0	21.0	21.0	21.0	21.0
Min. bending radius (static)	[mm]	10.5	10.5	10.5	10.5	10.5	10.5
No. of wires		3	3	3	3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14	0.14	0.14	0.14

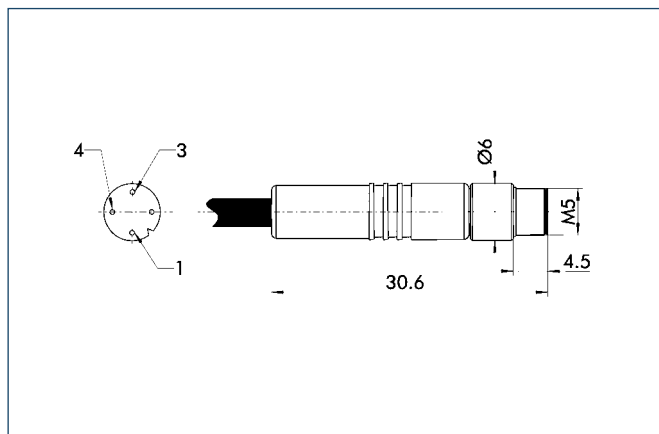
## MMS 22 sensor



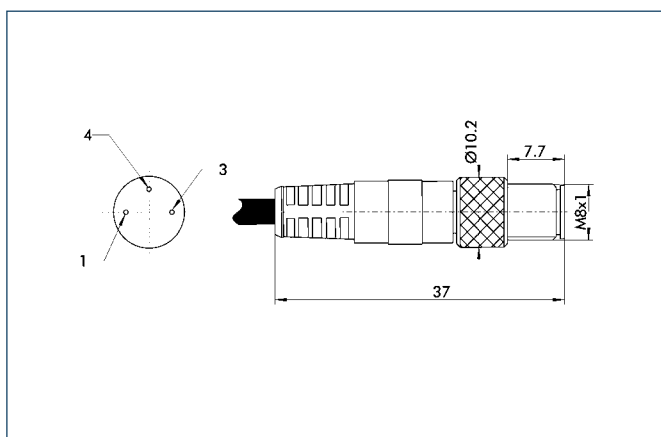
72 Active sensor surface

76 LED

## M5 connector



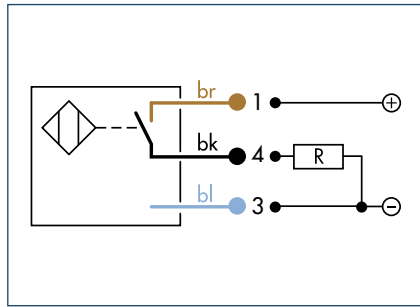
## M8 connector



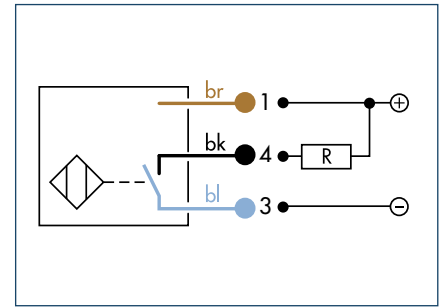




**Circuit diagram of closer**



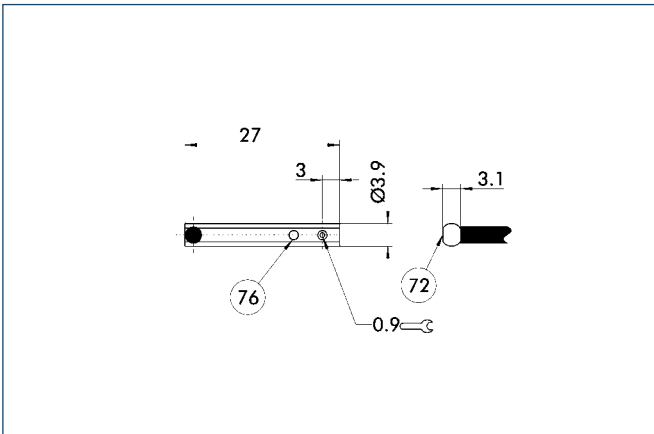
**Circuit diagram of NPN closer**



## Technical data

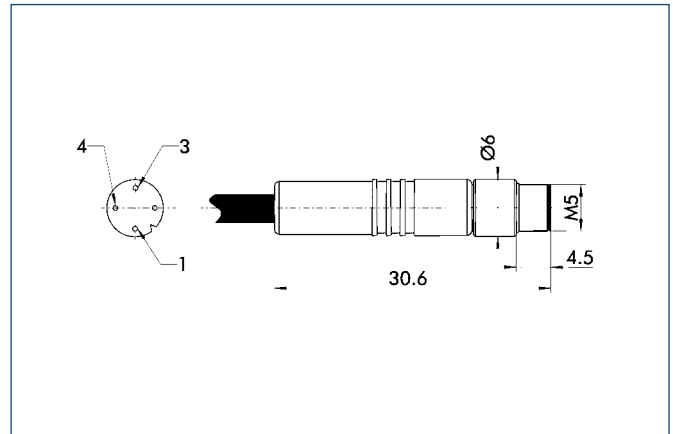
Description	MMS 22-S-M5-PNP-SA	MMS 22-S-M5-NPN-SA	MMS 22-S-M8-PNP-SA	MMS 22-S-M8-NPN-SA	MMSK 22-S-PNP-SA	MMSK 22-S-NPN-SA	
	ID	0301448	0301449	0301442	0301443	0301444	0301445
Switching function	Closer	Closer	Closer	Closer	Closer	Closer	
Switching method	PNP	NPN	PNP	NPN	PNP	NPN	
Cable length	[cm]	30.0	30.0	30.0	30.0	200.0	200.0
Cable connector/cable end	M5	M5	M8	M8	Open wire	Open wire	
Type of voltage	DC	DC	DC	DC	DC	DC	
Nominal voltage	[V]	24.0	24.0	24.0	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2	0.2	0.2	0.2
Min. ambient temperature	[°C]	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
Max. ambient temperature	[°C]	70.0	70.0	70.0	70.0	70.0	70.0
Typical switching time	[s]	0.001	0.001	0.001	0.001	0.001	0.001
IP class (sensor)	67	67	67	67	67	67	
IP class (connector, plugged in)	67	67	67	67	67	67	
LED display on sensor	Yes	Yes	Yes	Yes	Yes	Yes	
Cable diameter	[mm]	2.1	2.1	2.1	2.1	2.1	2.1
Min. bending radius (dynamic)	[mm]	21.0	21.0	21.0	21.0	21.0	21.0
Min. bending radius (static)	[mm]	10.5	10.5	10.5	10.5	10.5	10.5
No. of wires		3	3	3	3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14	0.14	0.14	0.14

## MMS 22-SA sensor

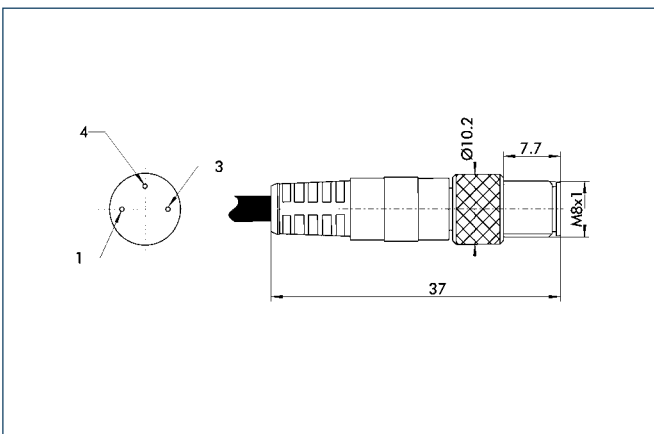


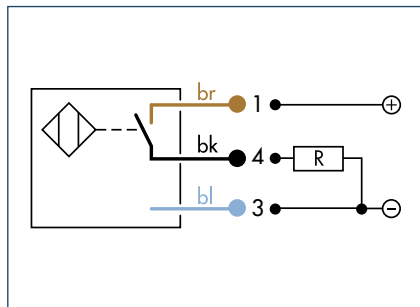
- 72 Active sensor surface
- 76 LED

## M5 connector



## M8 connector

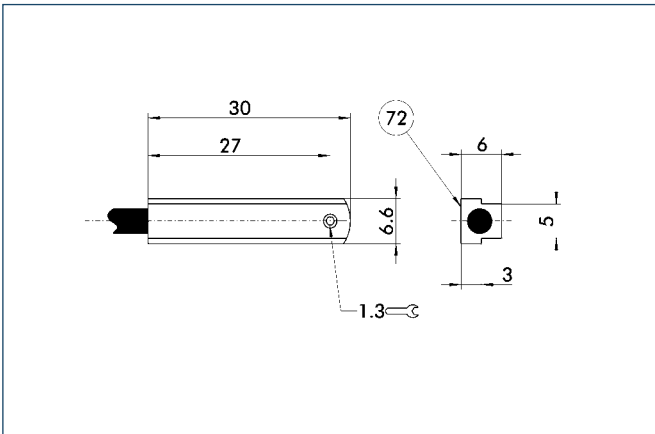




## Technical data

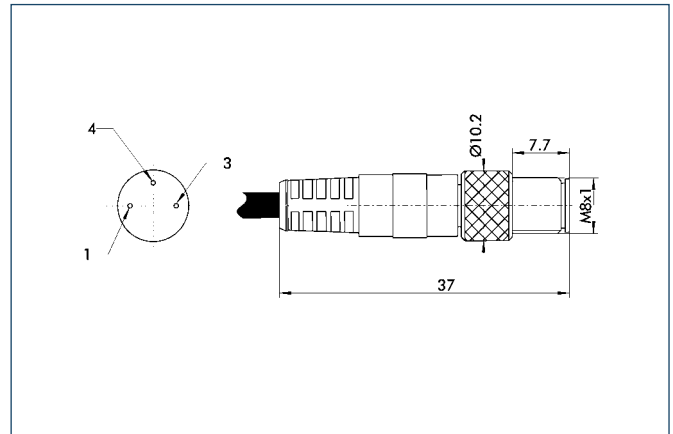
Description		MMS 30-S-M8-PNP	MMS 30-S-M12-PNP	MMSK 30-S-PNP
	ID	0301471	0301571	0301563
Switching function		Closer	Closer	Closer
Switching method		PNP	PNP	PNP
Cable length	[cm]	30.0	30.0	200.0
Cable connector/cable end		M8	M12	Open wire
Type of voltage		DC	DC	DC
Nominal voltage	[V]	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0
Voltage drop	[V]	1.5	1.5	1.5
Max. power on contact	[A]	0.2	0.2	0.2
Min. ambient temperature	[°C]	-25.0	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0	70.0
Typical switching time	[s]	0.001	0.001	0.001
IP class (sensor)		67	67	67
IP class (connector, plugged in)		67	67	67
LED display on sensor		No	No	No
Cable diameter	[mm]	3.5	3.5	3.5
Min. bending radius (dynamic)	[mm]	35.0	35.0	35.0
Min. bending radius (static)	[mm]	17.5	17.5	17.5
No. of wires		3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14

## MMS 30 sensor

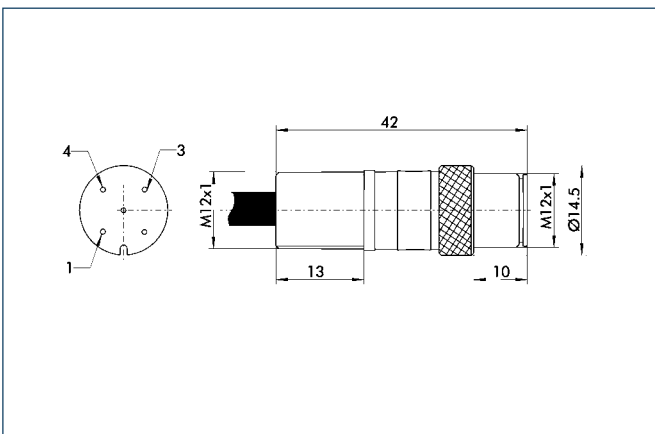


72 Active sensor surface

## M8 connector

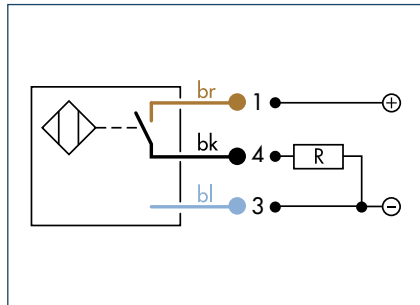


## M12 connector

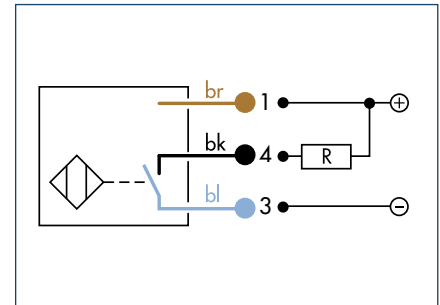




**Circuit diagram of closer**

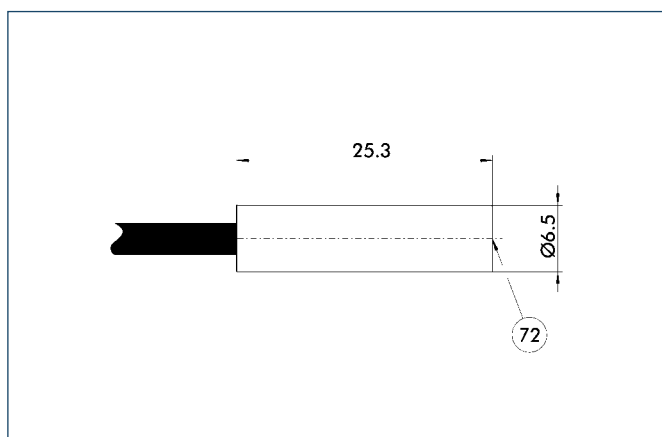


**Circuit diagram of NPN closer**



Description		MMS-K 65-5-PNP	MMS-K 65-5-NPN
	ID	0301423	0301424
Switching function		Closer	Closer
Switching method		PNP	NPN
Cable length	[cm]	20.0	20.0
Type of voltage		DC	DC
Nominal voltage	[V]	24.0	24.0
Min. voltage	[V]	10.0	10.0
Max. voltage	[V]	30.0	30.0
Max. power on contact	[A]	0.2	0.2
Min. ambient temperature	[°C]	-20.0	-20.0
Max. ambient temperature	[°C]	70.0	70.0
IP class (sensor)		67	67
IP class (connector, plugged in)		67	67
No. of wires		3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14

## MMSK 65/S sensor



72 Active sensor surface



## Optical switch



### Function description

The optical sensor ONS emits light via the optical wave guide ONS-LWL. By analyzing the quantity of reflected light, the ONS can detect positions of the gripper being monitored and set or delete its output based on the programming.

### Your advantages and benefits

**Easy programming**  
for short commissioning times

**LED display**  
for fast and easy functional checks

**Light optical wave guide**  
for low weight on the gripper

**Application example**



**Area of application**

Use in clean environments in connection with the corresponding SCHUNK grippers.

- 1 Gripper
- 2 Optical wave guide

- 3 Force/torque sensor system controller

**General information**

**Warranty**  
24 months

**Notes**

The ONS sensor is attractive due to its low sales price. It is based on the product FS-V31P from Keyence. By specifying the hardware and software, the user friendliness was increased for use with SCHUNK grippers and the functions optimized.

For technical details see the operating manual.



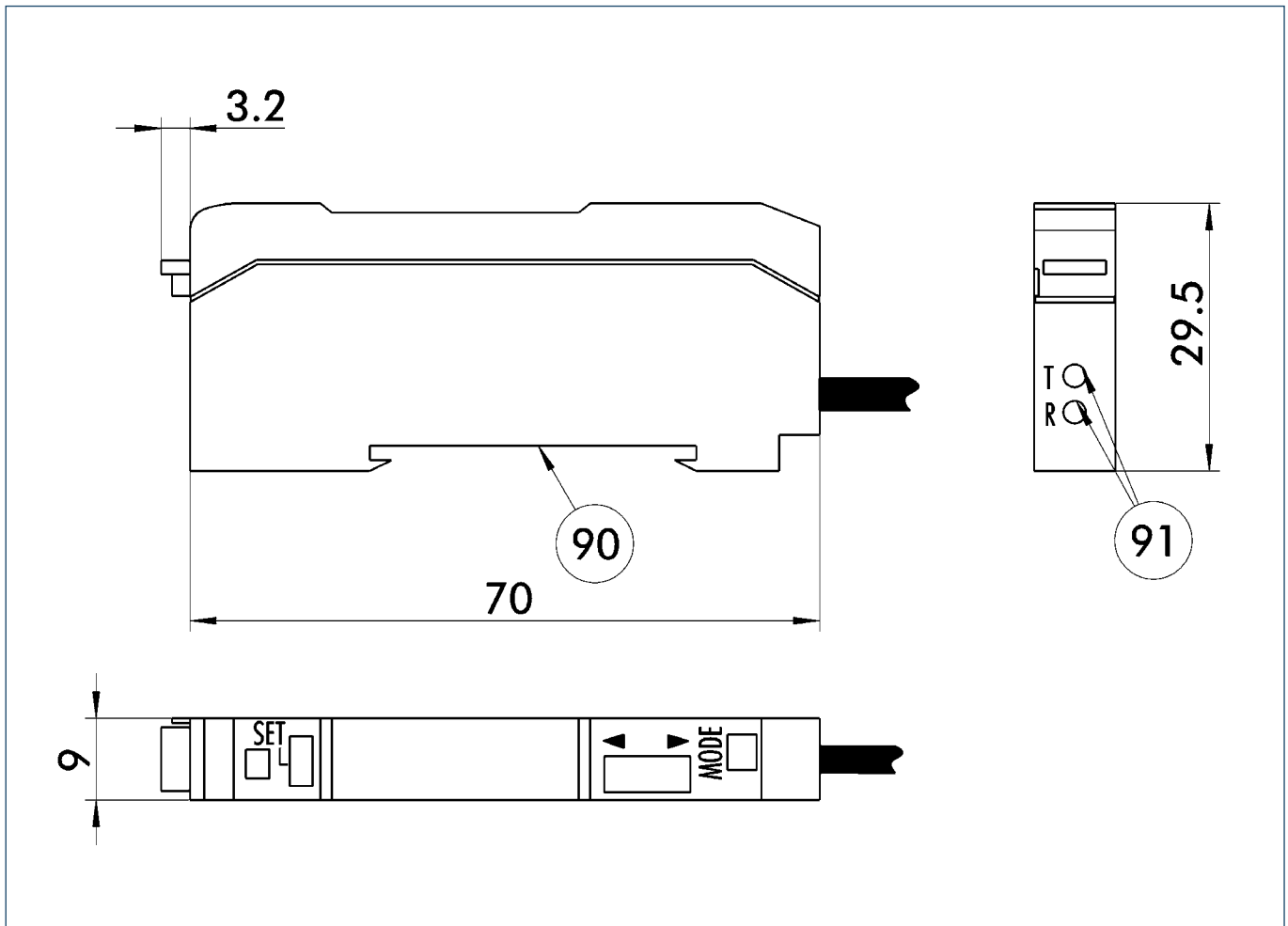


## Technical data

Description		ONS 01
ID		0301390
Voltage supply		DC
Min. voltage	[V]	12
Max. voltage	[V]	24
Number of digital switching outputs		1
Max. power on contact	[mA]	100
Min. ambient temperature	[°C]	-10
Max. ambient temperature	[°C]	55
IP class		20

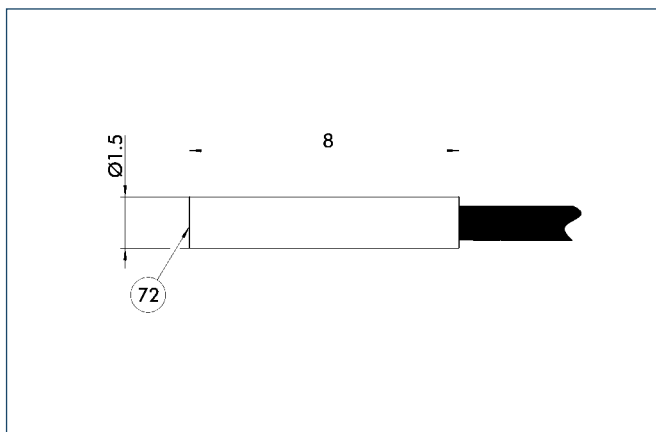
Description		ONS 01-LWL
ID		0301391
Cable diameter	[mm]	1
Diameter ob cable end	[mm]	1.5
Cable length	[m]	1
Min. bending radius (dynamic)	[mm]	40
Min. bending radius (static)	[mm]	30

## Main views of the ONS 01



- ⑨⑩ Assembly rail
- ⑨① Connection for sensor

## ONS 01-LWL



- ⑦② Active sensor surface

① One optical wave guide ONS 01-LWL is needed for each ONS 01.

## Sensor Tester

The SST sensor tester enables the rapid testing and adjustment of inductive sensors, magnetic switches and reed contacts. The necessary power is supplied by a 9 V compound battery.



### Function description

The sensor is connected to the M8 - M12 or terminal connection of the sensor tester and the ON button pressed. The sensor position is displayed visually by LEDs and output acoustically via a signal buzzer.

### Your advantages and benefits

#### Visual and acoustic signal

for simple function checking and adjustment

#### For 2 and 3-wire DC technology

enabling the connection of reed contacts, capacitive and inductive sensors

#### Tests possible without dismantling sensors

for short maintenance times

#### Connections for M8 and M12 or open cable ends possible

ensuring suitability for all SCHUNK sensors

#### PNP and NPN sensors can be tested

#### Operating voltage with 9 V compound battery

for mobile use

#### Automatic cut-off function

for an extended battery life

## Application example



### Area of application

Sensor testing and adjustment of the switching point  
(sensor calibration)

1 Sensor tester SST

3 Metal plate

2 Inductive proximity switches IN 80

## General information

### Scope of delivery

Sensor tester incl. assembly and operating manual with manufacturer's declaration,  
9 V compound battery

## Notes

Please note that only one SST input (M8 or M12 or cable terminal input)  
can be used at once.

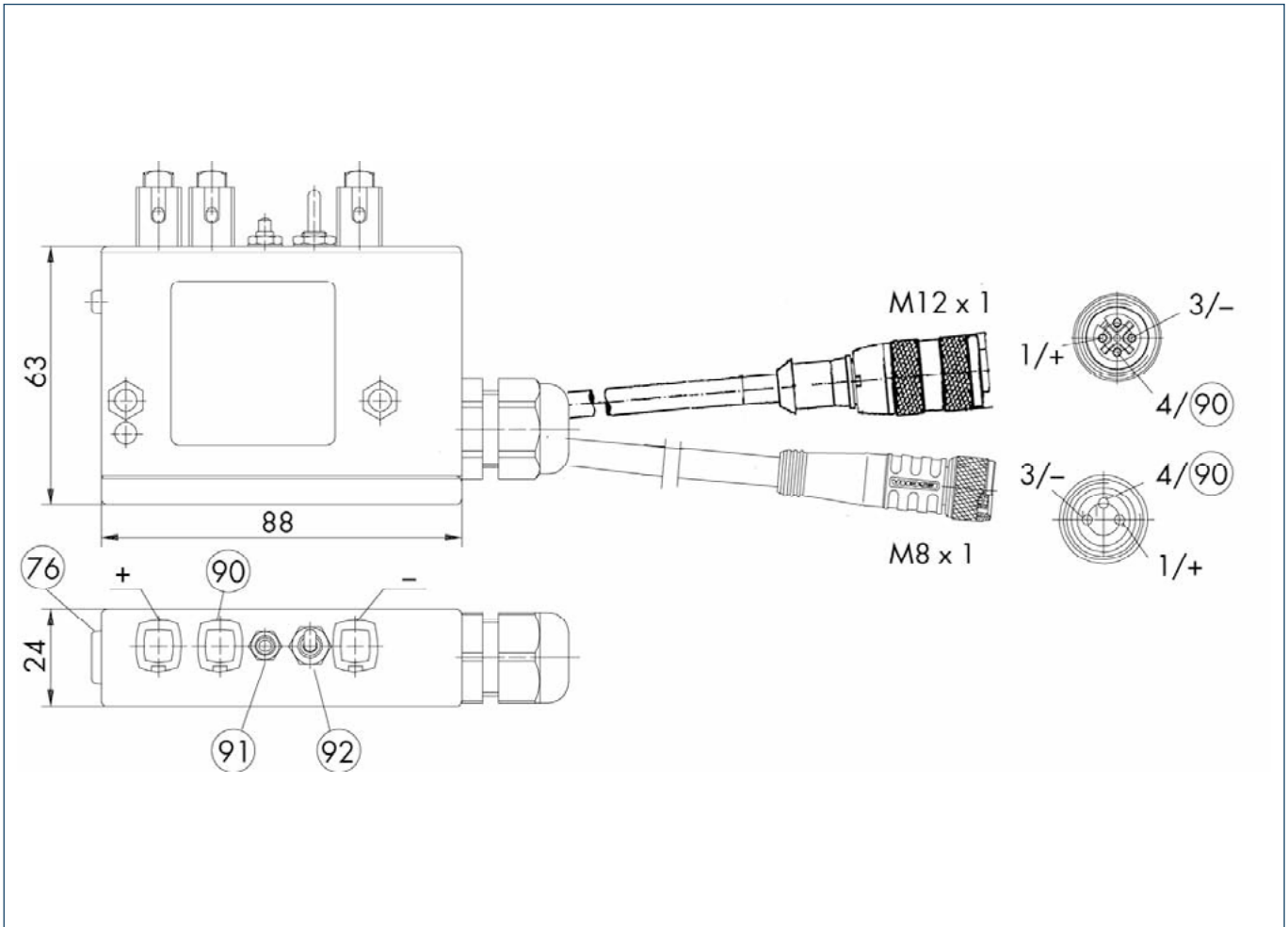
If the toggle switch is towards the sticker (nameplate), PNP is selected,  
if not, NPN.



## Technical data

Description	ID	SST
Battery		9 V DC (compound battery Type LR 61)
Connection 1		M12*1
Connection 2		M8*1
Connection 3		direct clamping
Housing material		plastic
IP class		20

**Main views**



- ⑦⑥ LED
- ⑨⑩ Output
- ⑨① ON button
- ⑨② PNP/NPN changeover switch



## Adjustable housing for proximity switch

The adjustable housings enable the position of the sensor to be set once only. If the sensor is changed, the sensor position is retained.



### Function description

The sensor is inserted in the adjustable housing and fastened with the coupling ring. Next, the switching position is set. When the sensor is changed, the adjustable housing remains in the same location – only the sensor is changed by removing the coupling ring.

### Your advantages and benefits

**Setting has to be carried out only once**  
for rapid sensor replacement without recalibration

**Corrosion-free material**  
for a long service life

**Switches are protected against shocks**  
preventing mechanical destruction

## Application example

### Area of application

For universal use in the monitoring of automation modules with proximity switches



1 NHG Adjustable Housing

2 SRU 63 Flat Rotary Actuator

## General information

**Warranty**  
24 months

## Notes

The coupling ring is slotted for fitting onto the cable.

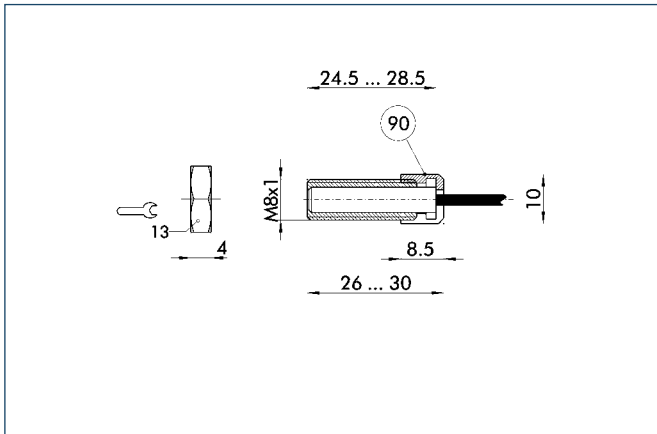




## Technical data

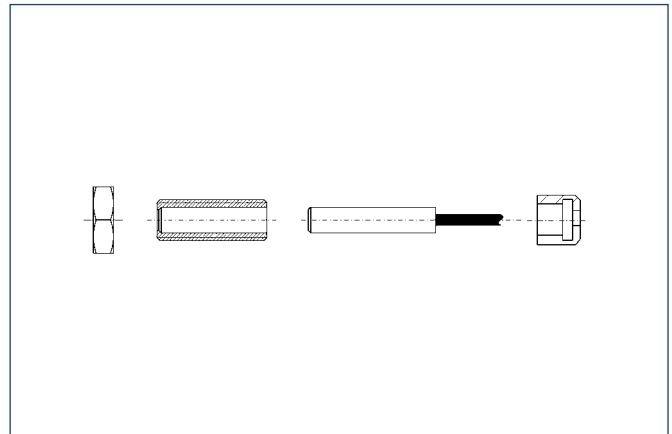
Description		NHG 5	NHG 8
	ID	9646006	9646007
Suitable sensor Ø		M5	M8
Min. sensor length	[mm]	24.5	31.5
Max. sensor length	[mm]	28.5	35.5
Weight	[kg]	0.006	0.008
Material		Steel	Steel

## NHG 5

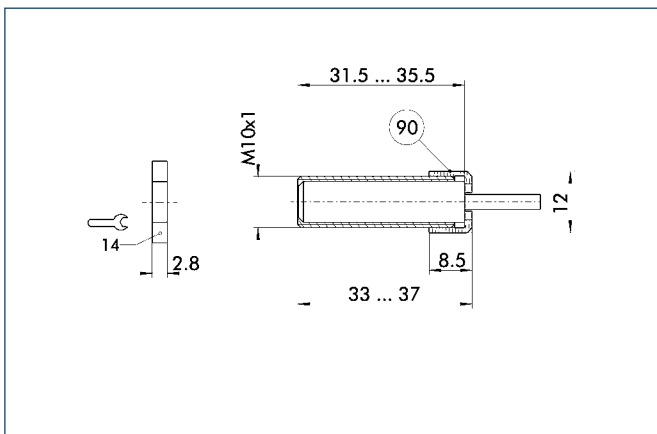


⑨ Coupling ring is slotted for fitting onto the cable

## NHG 5 assembly

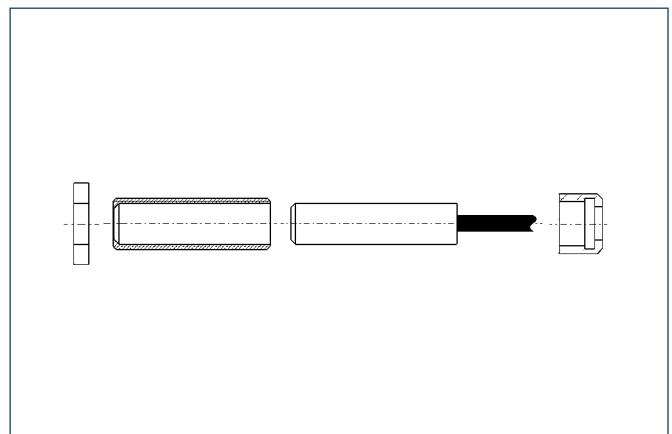


## NHG 8



⑨ Coupling ring is slotted for fitting onto the cable

## NHG 8 assembly



## Sensor Distributor

For connecting all SCHUNK sensors and sensor systems (IN/INK/MMS/APS-M1, etc.). In the versions 2 (V2), 4 (V4) and 8 (V8).



### Function description

Distributors collect incoming signals and forward them in a single cable. This dispenses with unnecessary cables. The switching state of the connected components can be checked by the LEDs integrated in the distributor.

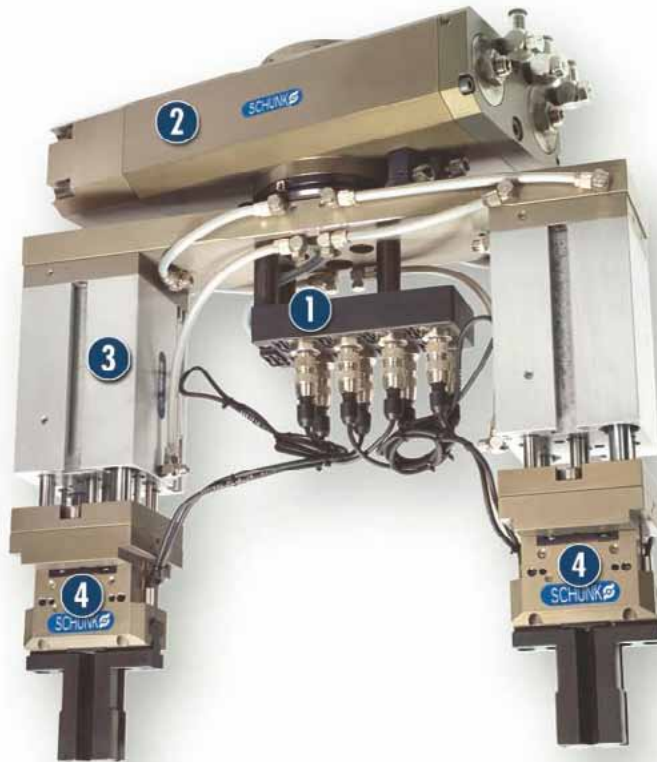
### Your advantages and benefits

**Status and switching display via LED**  
for directly checking the switching state

**One feeder cable**  
making it ideal for feeding through signals

**Sturdy PA housing**  
for a long life and resistance to many chemicals

## Application example



## Area of application

Sensor distributors from SCHUNK are universal and resistant to vibration, dust and humidity. They are therefore suitable for use in both clean and dirty environments.

**1** V 8 Sensor Distributor

**2** SRU 63 Flat Rotary Actuator

**3** PHE Stroke Module

**4** PGN 2-Finger Parallel Gripper with workpiece-specific gripper fingers

## General information

### Materials

Housing: PA 6 GF 30, black  
Cable: PUR sheath

### Fastening

with screws

### Protection class according to DIN 40050

IP 67 in connected condition for use in clean or dusty environments or in the event of contact with water. Contact with other media (cooling lubricants, acidic or caustic substances, etc.) frequently does not impair the function, but this cannot be guaranteed by SCHUNK.

### Scope of delivery

complete incl. sealing plugs for sealing unused connections, 1 set of labels

### Warranty

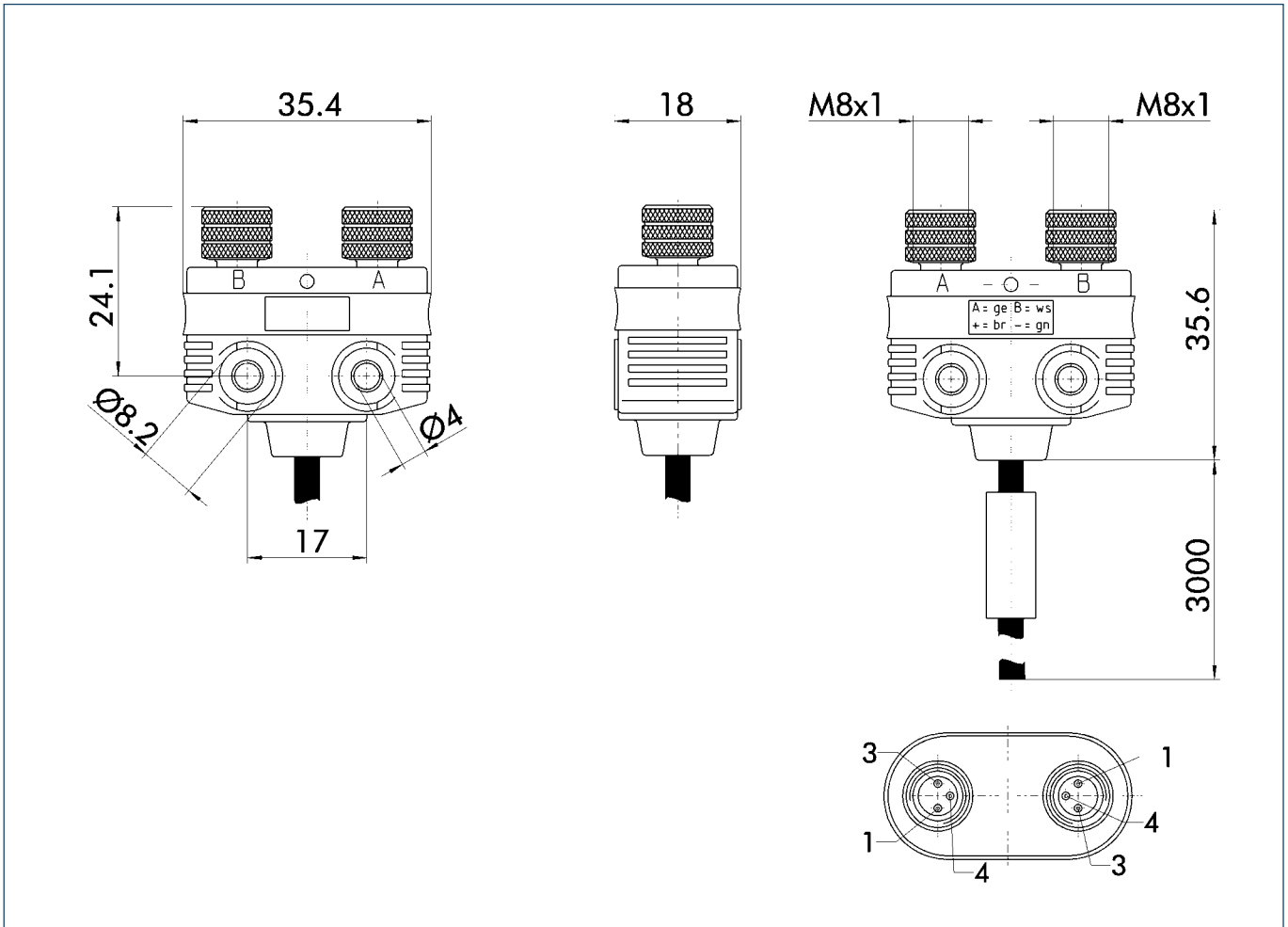
24 months



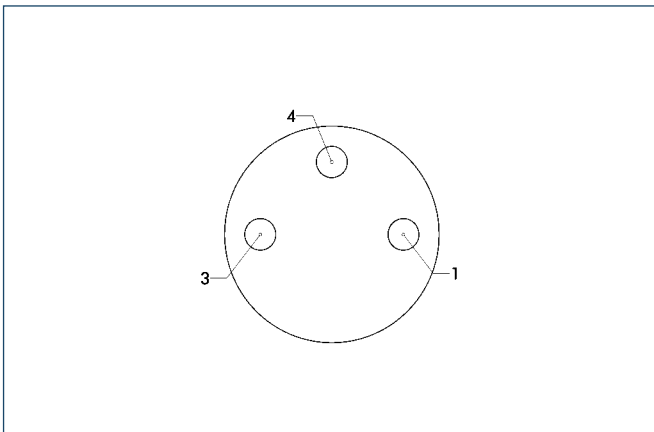
## Technical data

Description		V 2-M8	V 2-M12
	ID	0301900	0301589
Socket		M8*1	M12*1
Cable length	[m]	3.0	3.0
Nominal voltage	[V]	24.0	24.0
Min. voltage	[V]	10.0	10.0
Max. voltage	[V]	30.0	30.0
Max. current per wire	[A]	2.0	2.0
Max. overall current		2.0	2.0

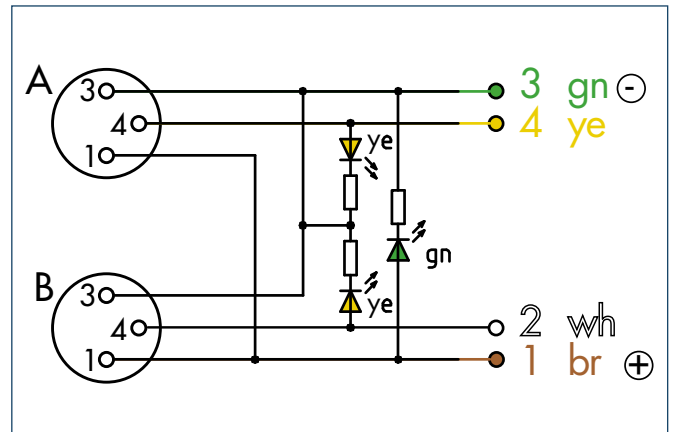
## Main views of the V 2-M8



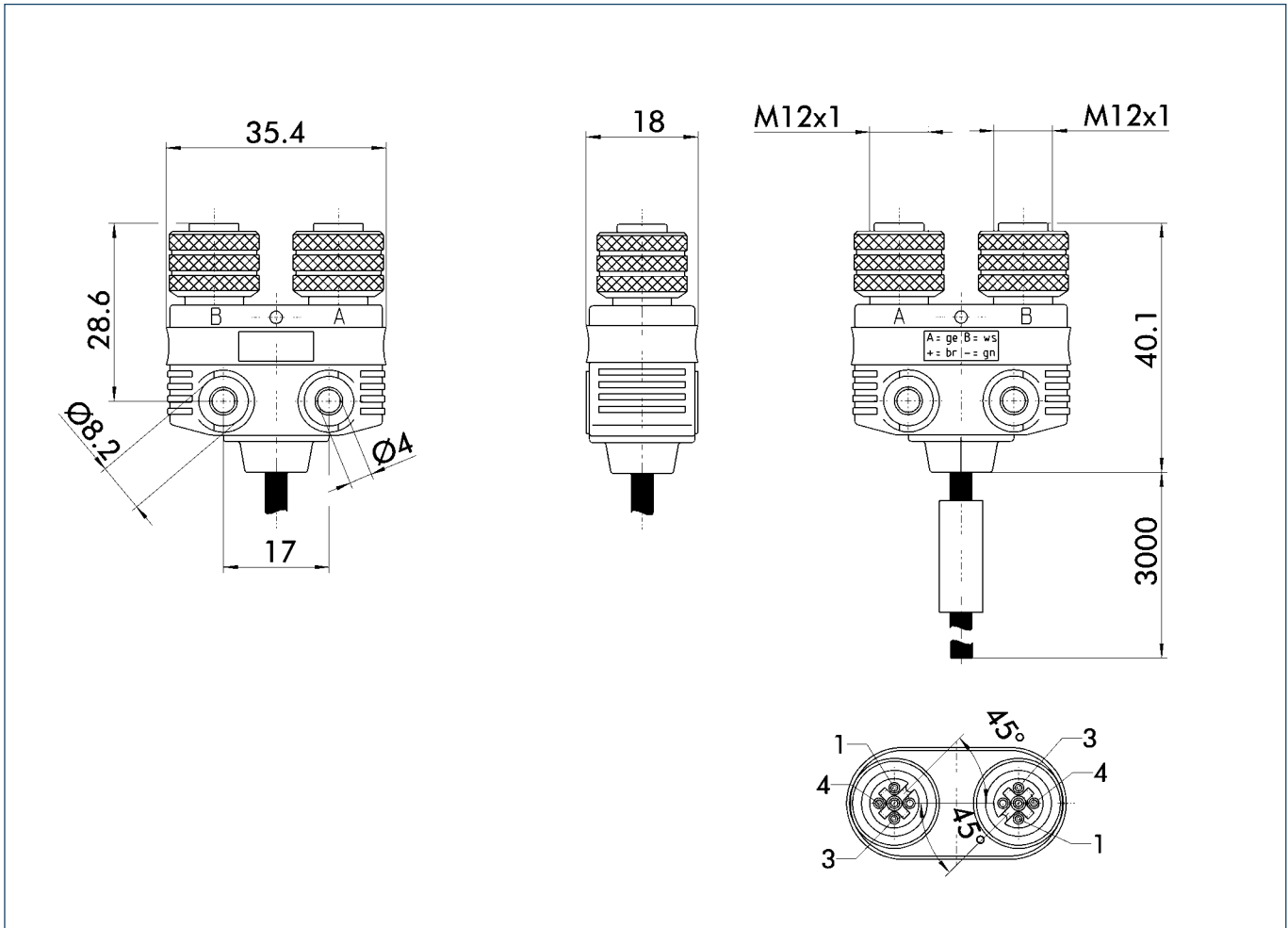
### M8 contact assignment



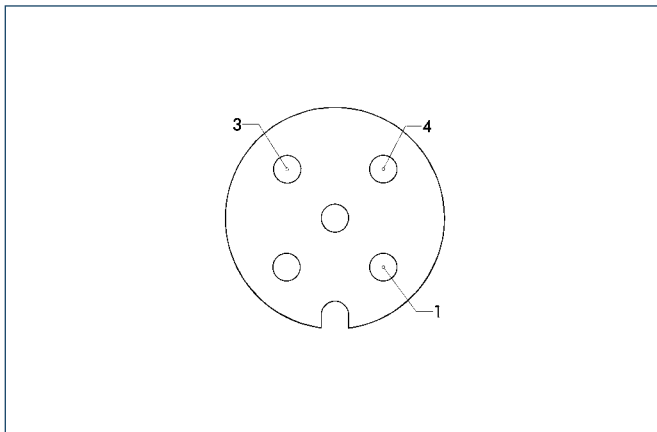
### Wiring diagram



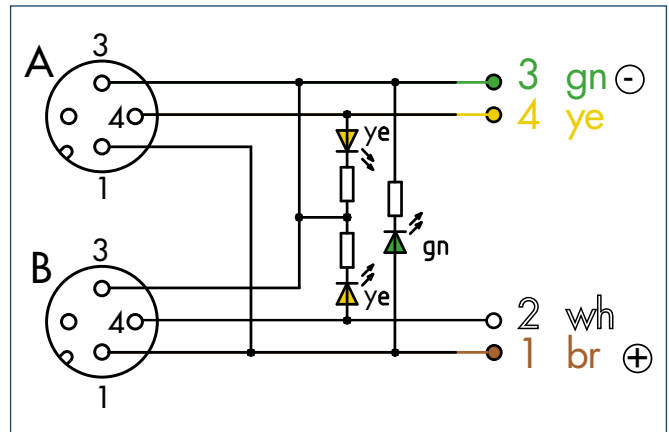
## Main views of the V 2-M12

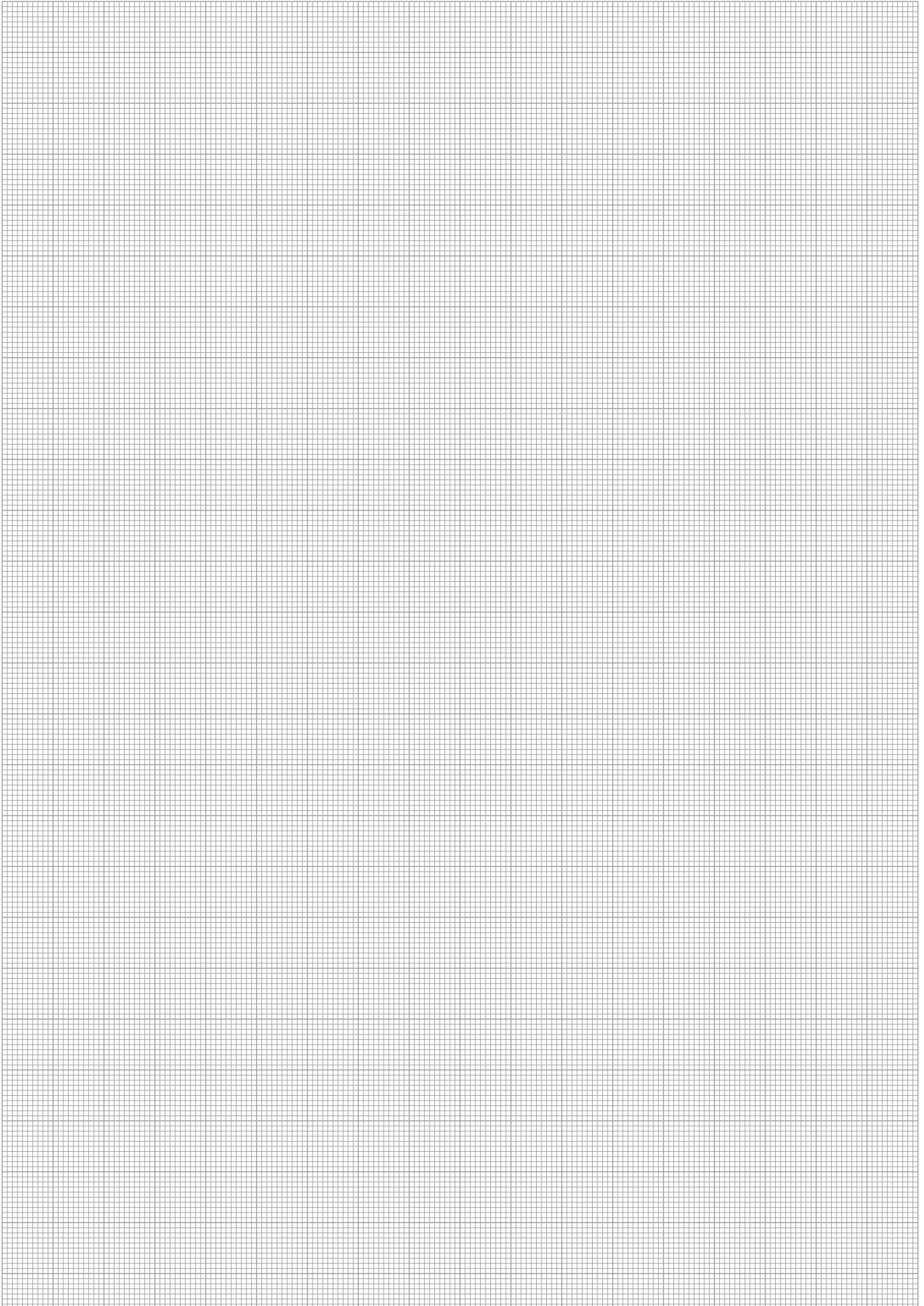


### M12 contact assignment



### Wiring diagram





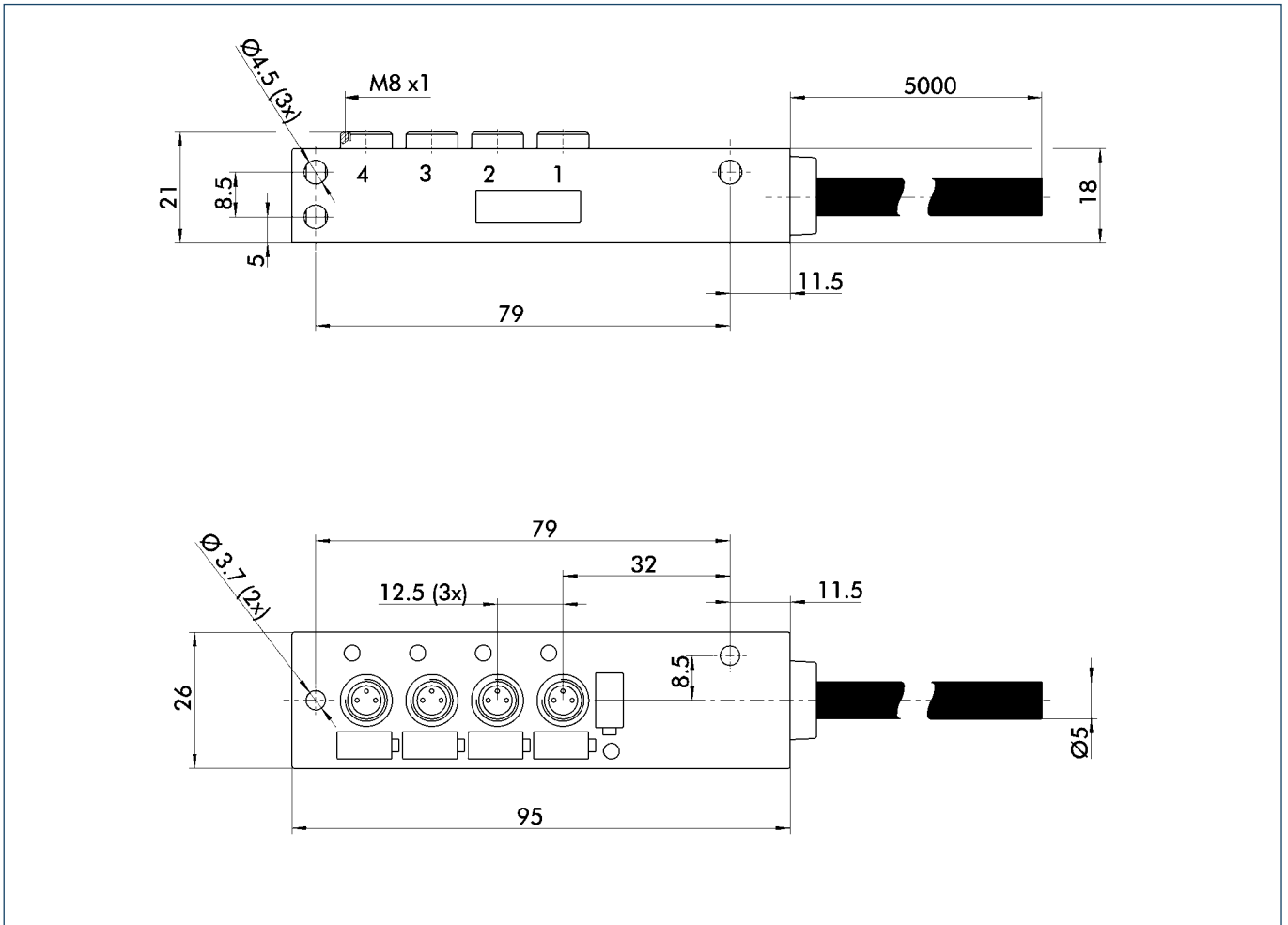




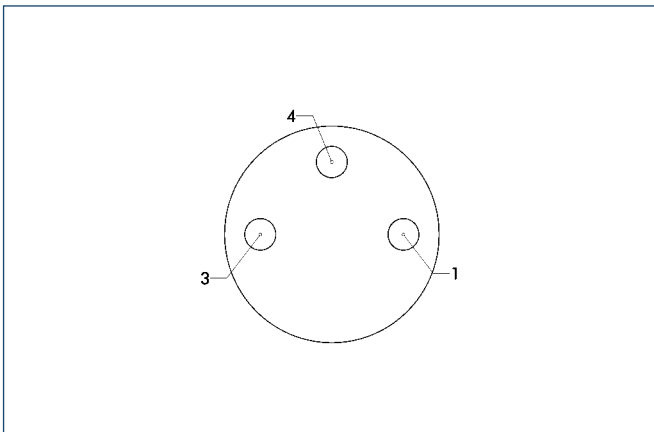
## Technical data

Description		V 4-M5	V 4-M8	V 4-M12
ID		0301661	0301904	0301902
Socket		M5*1	M8*1	M12*1
Cable length	[m]	3.0	3.0	3.0
Nominal voltage	[V]	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0
Max. current per wire	[A]	2.0	2.0	2.0
Max. overall current		2.0	2.0	2.0

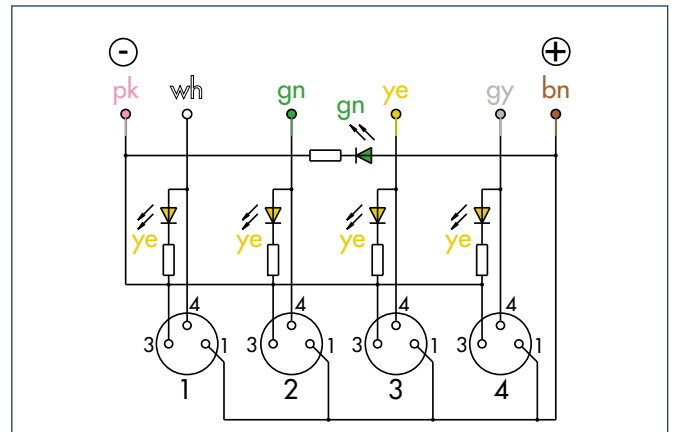
## Main views of the V 4-M8



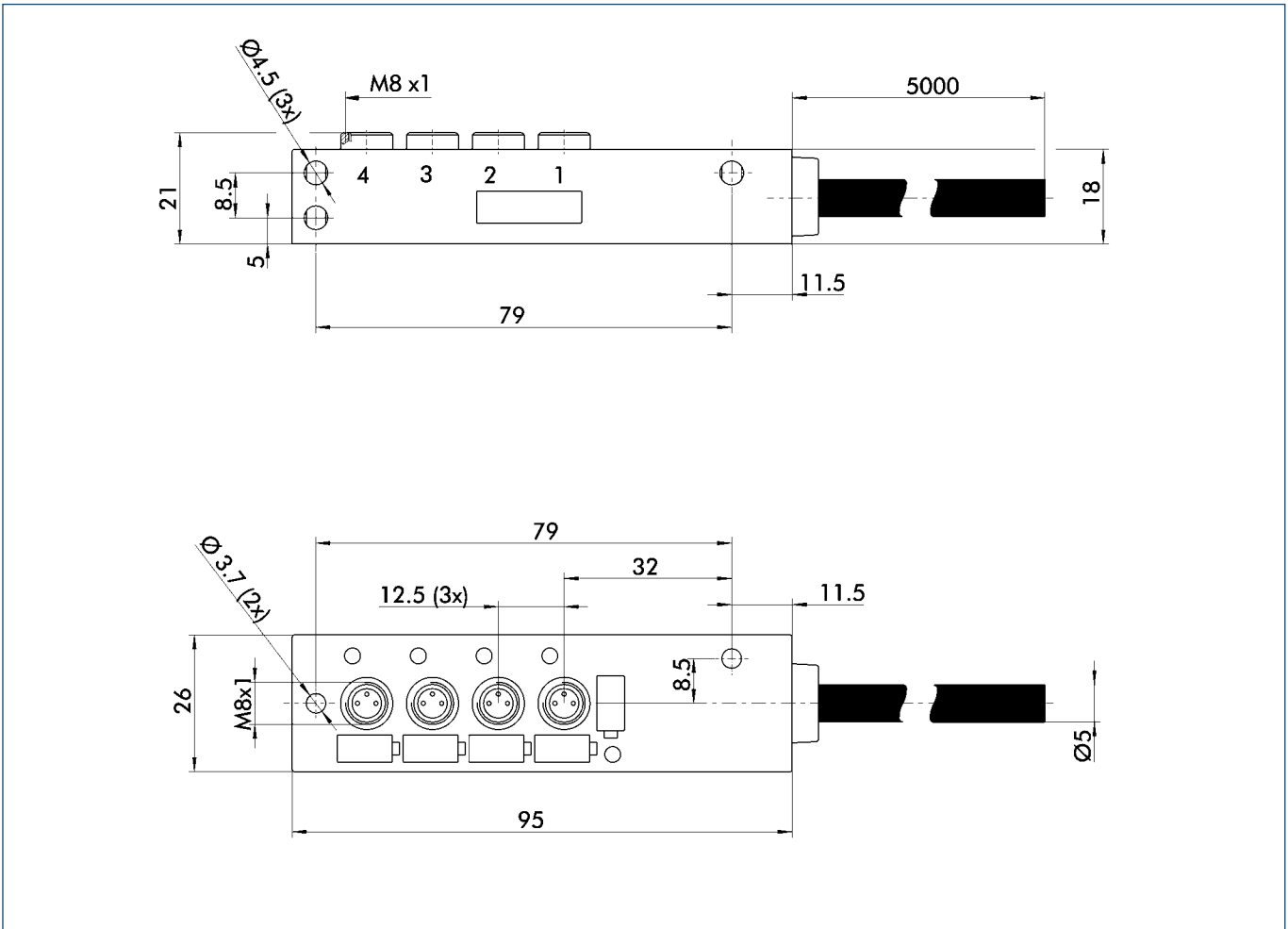
### M8 contact assignment



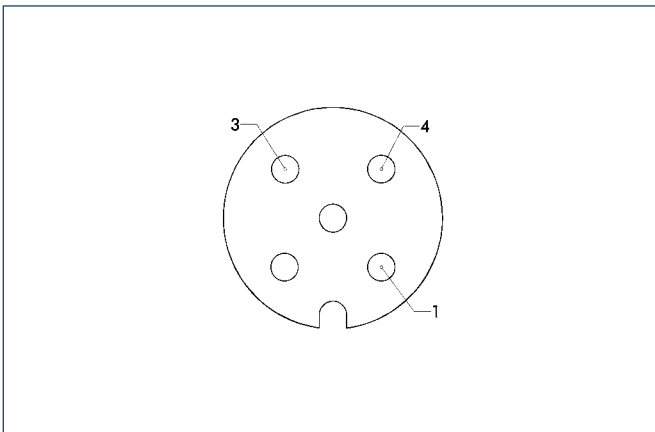
### Wiring diagram



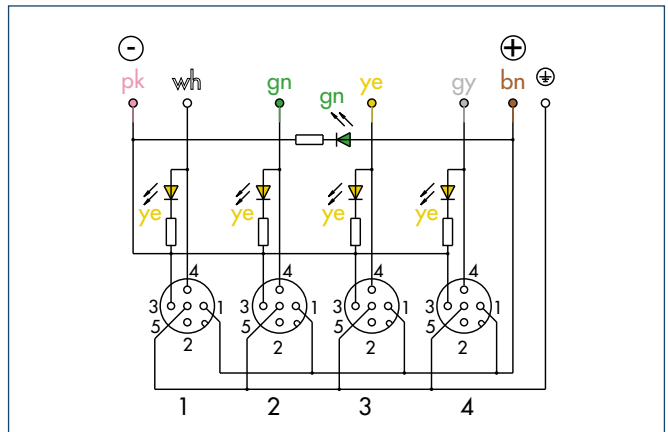
## Main views of the V 4-M12

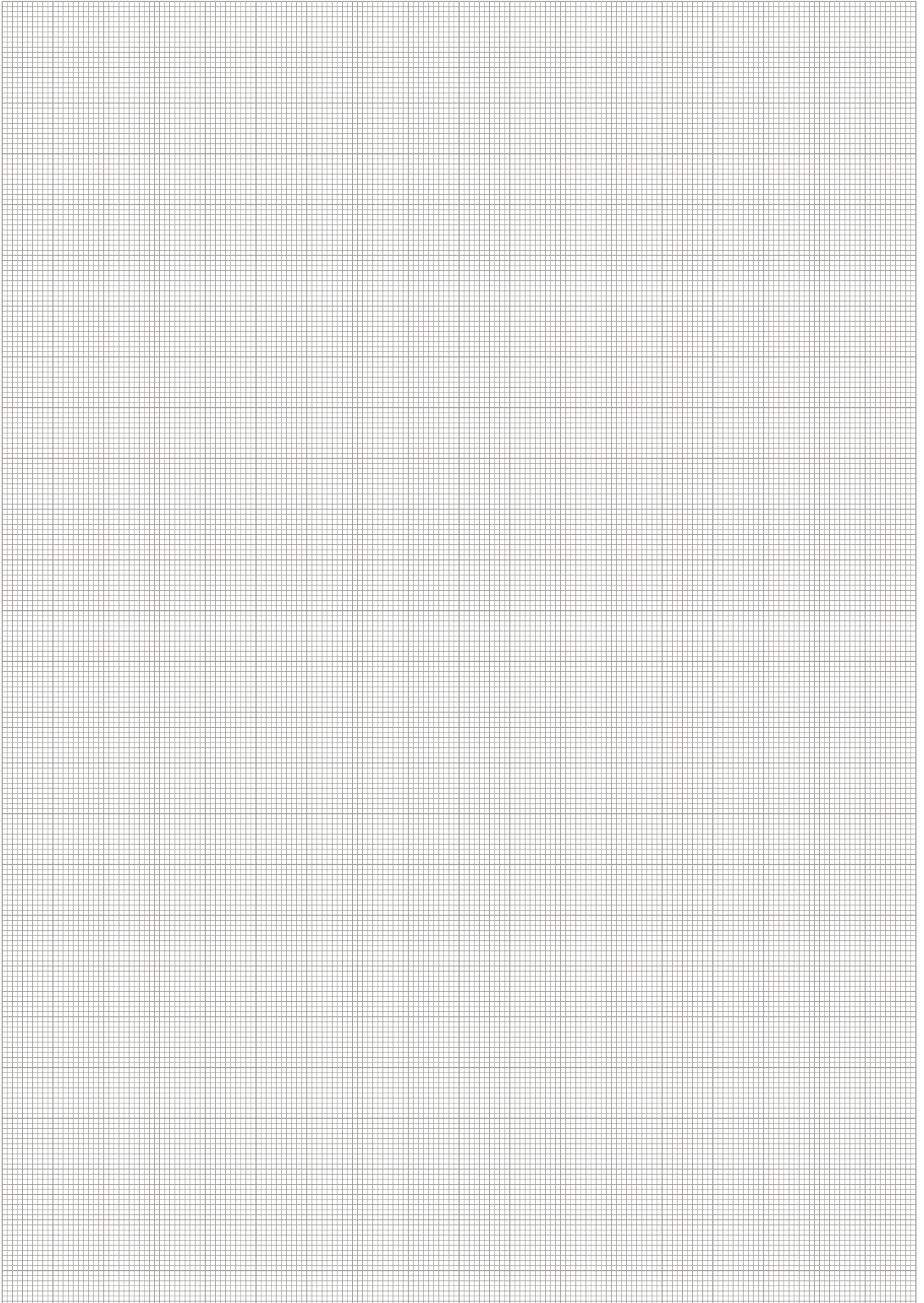


### M12 contact assignment



### Wiring diagram



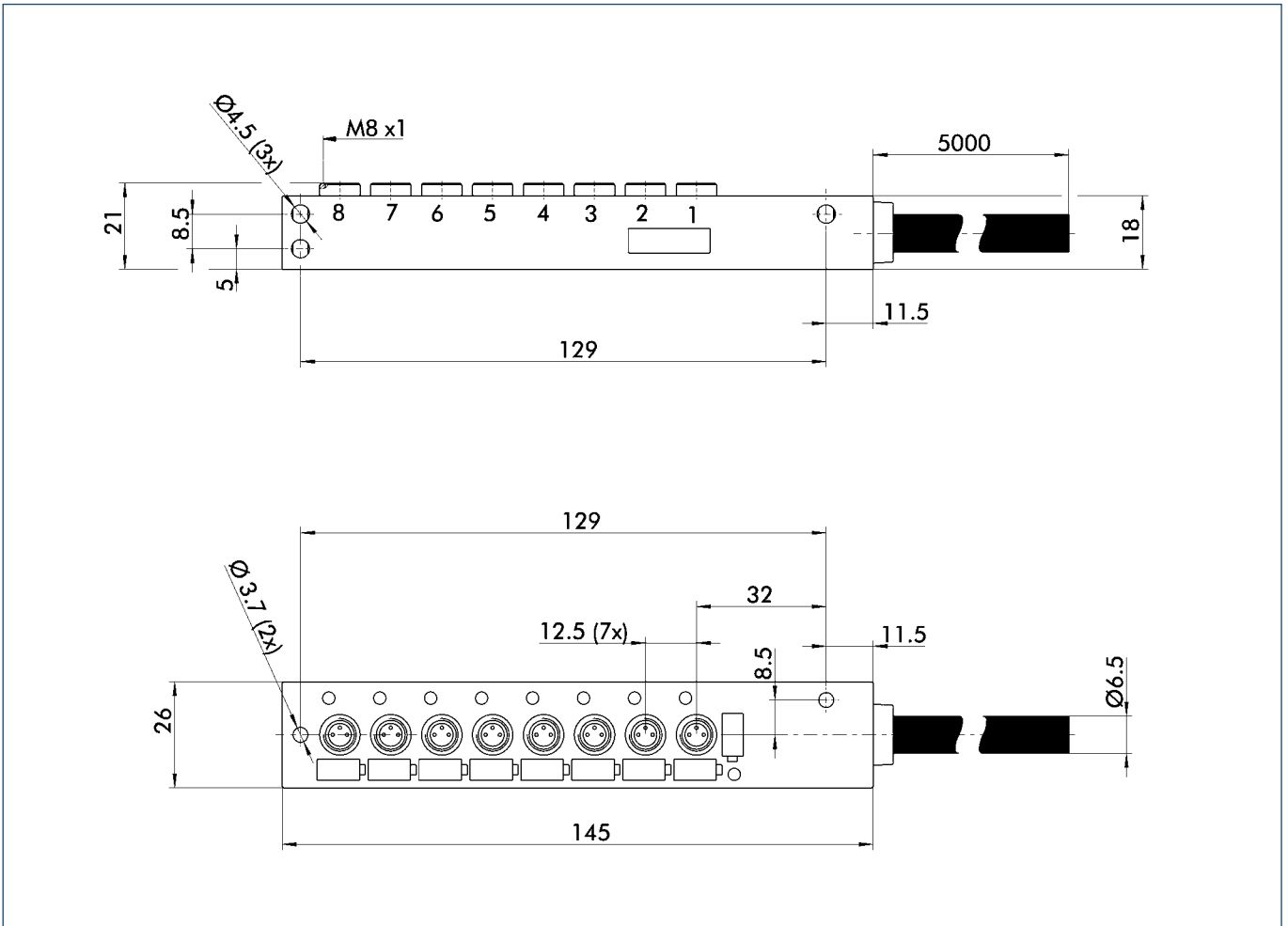




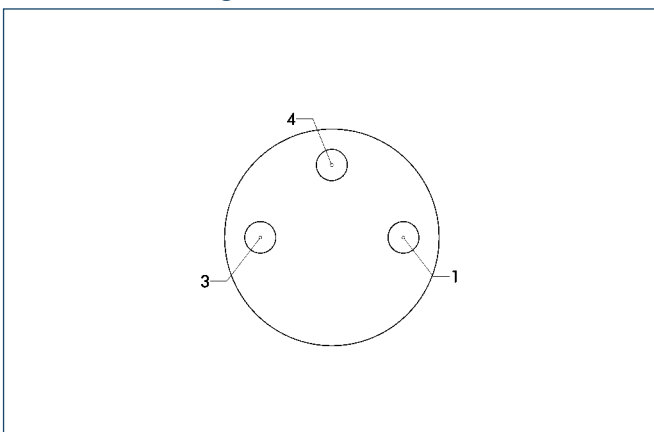
## Technical data

Description		V 8-M5	V 8-M8	V 8-M12
ID		0301662	0301906	0301590
Socket		M5*1	M8*1	M12*1
Cable length	[m]	3.0	3.0	3.0
Nominal voltage	[V]	24.0	24.0	24.0
Min. voltage	[V]	10.0	10.0	10.0
Max. voltage	[V]	30.0	30.0	30.0
Max. current per wire	[A]	2.0	2.0	2.0
Max. overall current		2.0	2.0	2.0

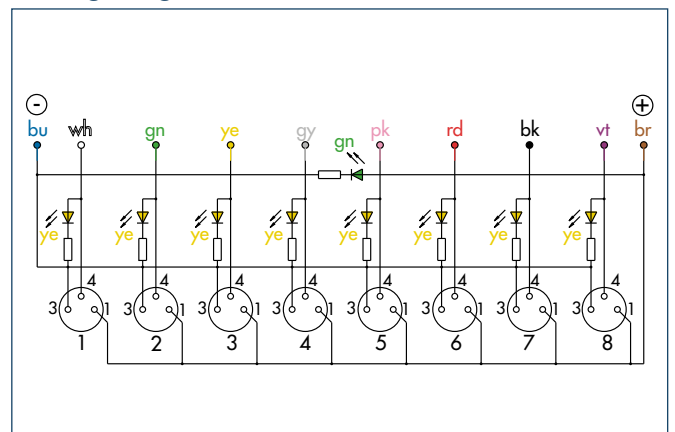
## Main views of the V 8-M8



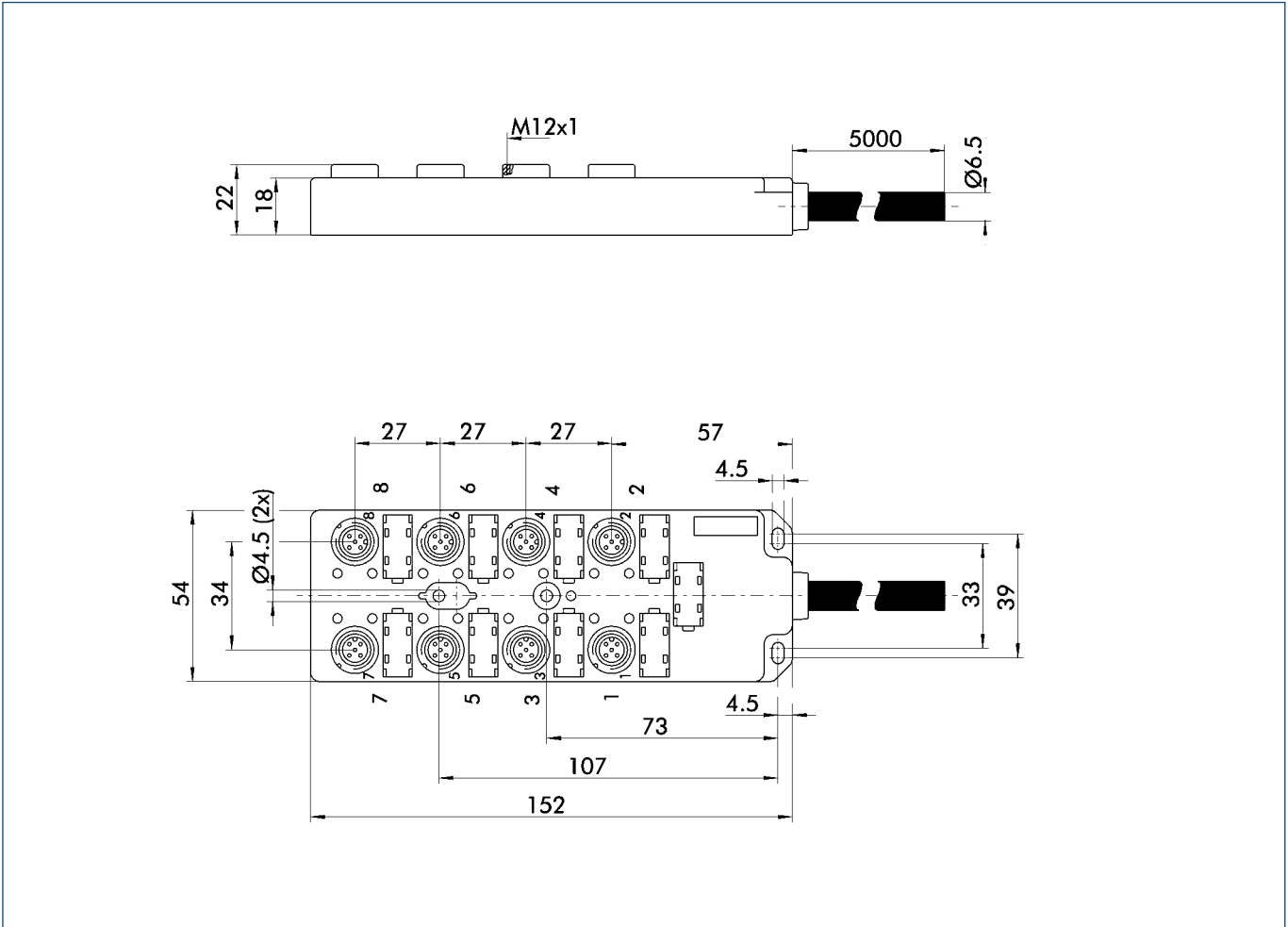
### M8 contact assignment



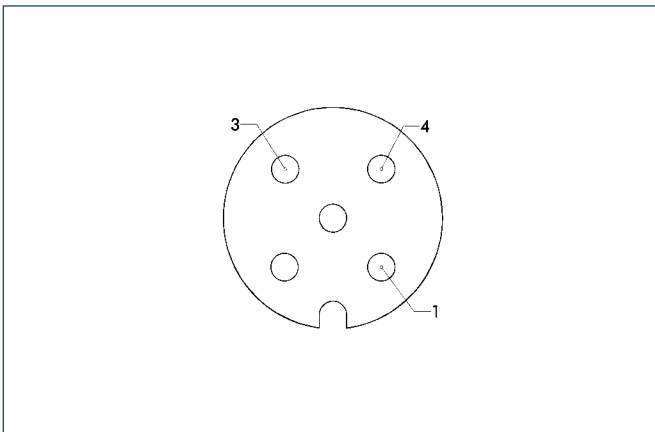
### Wiring diagram



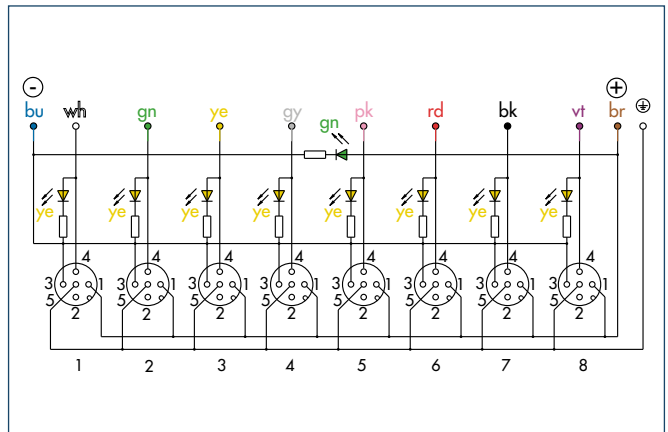
## Main views of the V 8-M12

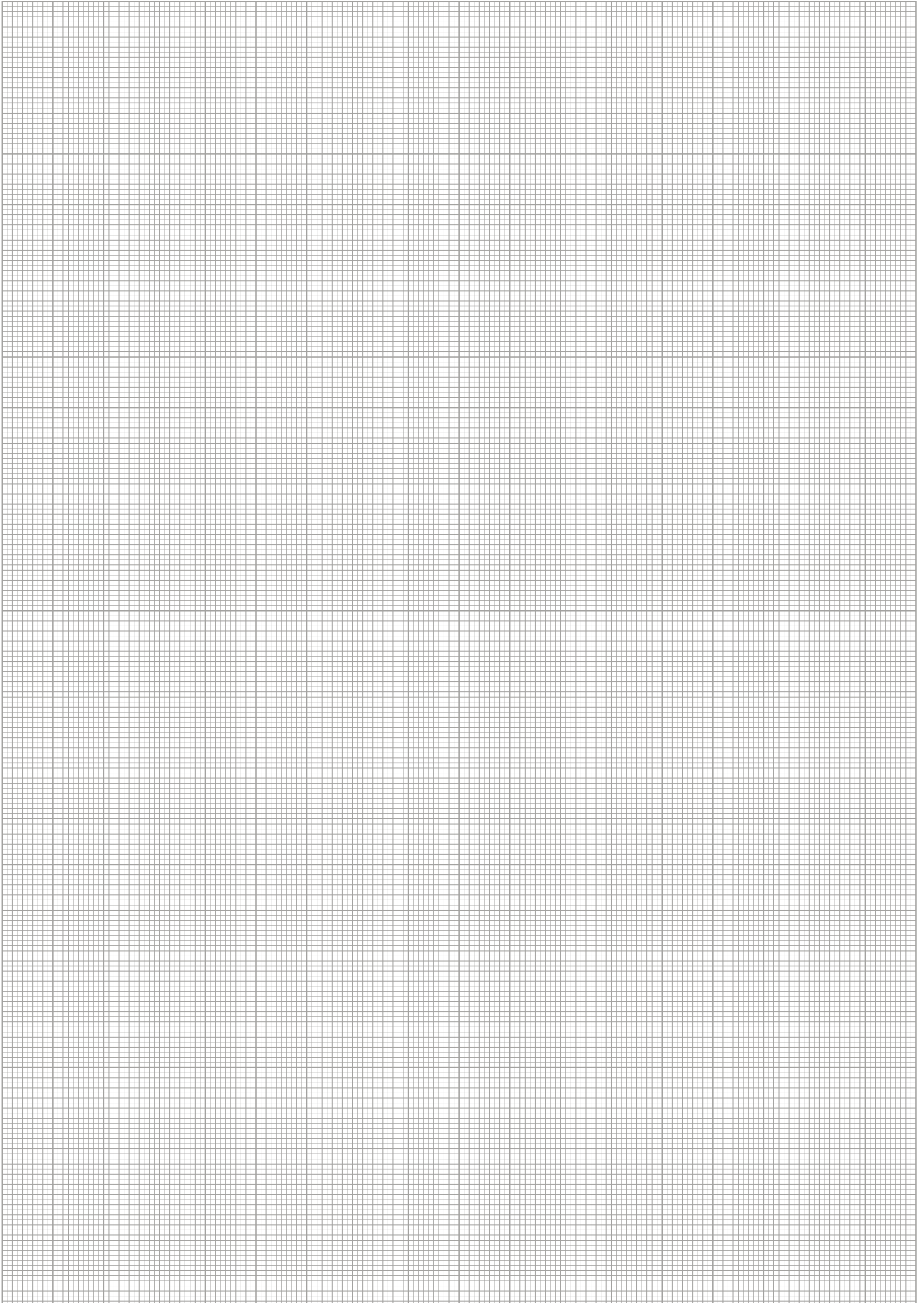


### M12 contact assignment



### Wiring diagram







## Cable and Connector

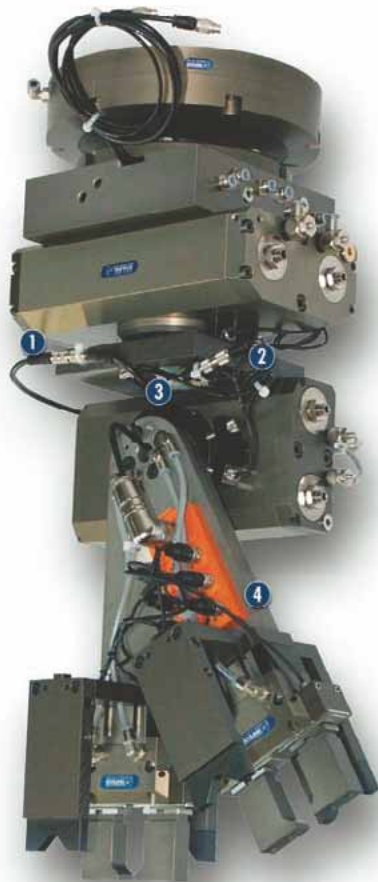
Extension cable, and customer cable connectors and sockets allowing convection, for flexible connection of SCHUNK sensor products.



### Your advantages and benefits

**Extensive accessories**  
for special installation environments

### Application example



### Area of application

variable cable installations

- 1 Cable extension KV
- 2 Inductive proximity switches IN
- 3 V 2 Sensor Distributor
- 4 V 4 Sensor Distributor

### General information

Warranty  
24 months

### Cable extensions

equipped with a cable connector and cable socket for easy extension.

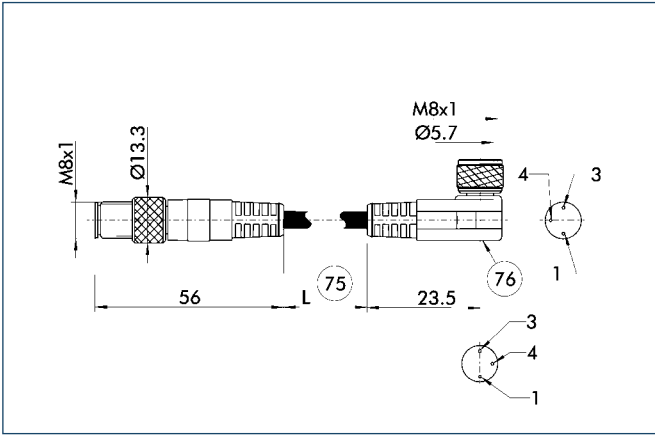
The switching state of the connected sensor is indicated on the LEDs integrated in the cable socket.



### Technical data

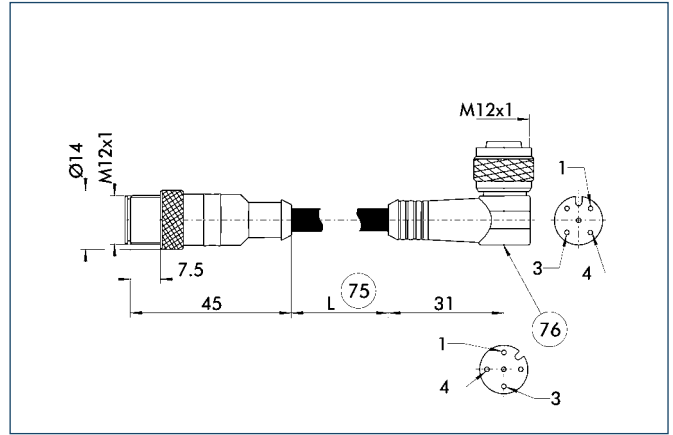
Description		KV 3-M12	KV 10-M12	KV 20-M12	KV 3-M8	KV 10-M8	KV 20-M8
	ID	0301595	0301596	0301597	0301495	0301496	0301497
Connection, sensor side		bush	bush	bush	bush	bush	bush
Threads, sensor side		M12	M12	M12	M8	M8	M8
Output angle, sensor side	[°]	90.0	90.0	90.0	90.0	90.0	90.0
Connection, control cabinet side		plug	plug	plug	plug	plug	plug
Threads, control cabinet side		M12	M12	M12	M8	M8	M8
Output angle, control cabinet side	[°]	0.0	0.0	0.0	0.0	0.0	0.0
Cable length	[m]	0.3	1.0	2.0	0.3	1.0	2.0
Number of wires		3	3	3	3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14	0.14	0.14	0.14
Cable jacket		PUR	PUR	PUR	PUR	PUR	PUR
Weight	[kg]	0.052	0.078	0.126	0.02	0.04	0.06
Max. current per wire	[A]	0.5	0.5	0.5	0.5	0.5	0.5
Max. overall current	[A]	0.5	0.5	0.5	0.5	0.5	0.5

**KV-M8**



- ⑦⑤ Cable length
- ⑦⑥ LED

**KV-M12**



- ⑦⑤ Cable length
- ⑦⑥ LED



**Supply cable**

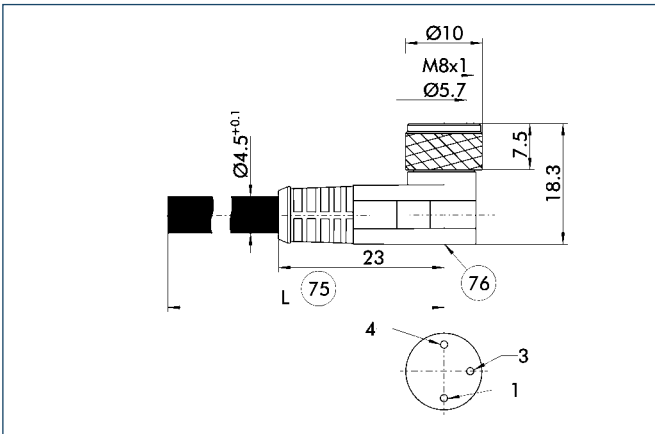
equipped with a cable socket (sensor side) and a stranded wire on the other end. The switching state of the connected sensor is indicated on the LEDs integrated in the cable socket.



**Technical data**

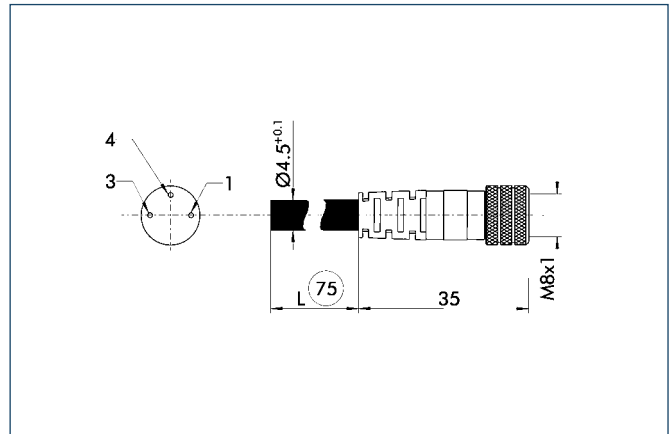
Description		WK 3-M8	WK 5-M8	WK 3-M8 NPN	WK 5-M8 NPN
	ID	0301594	0301502	0301602	9641116
Connection, sensor side		bush	bush	bush	bush
Threads, sensor side		M8	M8	M8	M8
Output angle, sensor side	[°]	90.0	90.0	90.0	90.0
Connection, control cabinet side		Open wire	Open wire	Open wire	Open wire
Threads, control cabinet side					
Output angle, control cabinet side	[°]	0.0	0.0	0.0	0.0
Cable length	[m]	3.0	5.0	3.0	5.0
Number of wires		3	3	3	3
Wire cross section	[mm <sup>2</sup> ]	0.14	0.14	0.14	0.14
Cable jacket		PUR	PUR	PUR	PUR
Weight	[kg]	0.01	0.2	0.12	0.2
Max. current per wire	[A]	0.5	0.5	0.5	0.5
Max. overall current	[A]	0.5	0.5	0.5	0.5

WK-M8



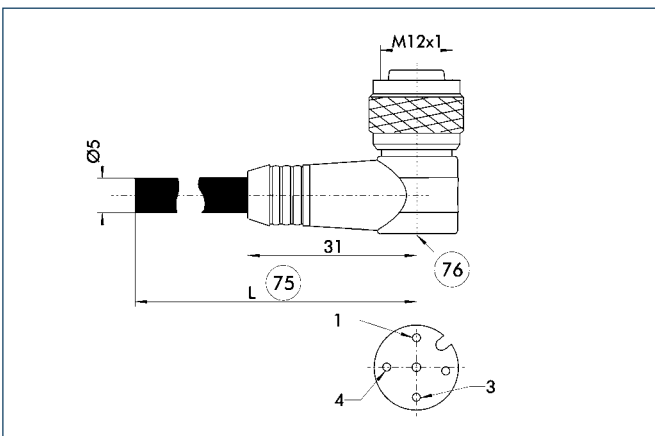
- 75 Cable length
- 76 LED

GK-M8



- 75 Cable length

W-M12



- 75 Cable length
- 76 LED



## Cable connector and socket

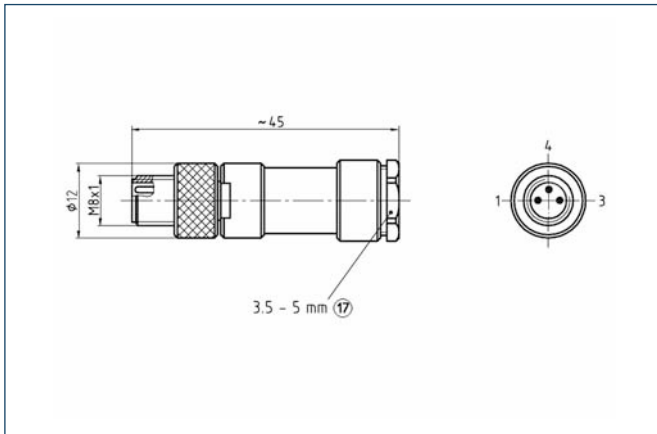
can be connected directly to cables. Cable connectors/sockets with M8 connection are soldered to the cable; cable connectors/sockets with M12 connection are connected via clamping.



## Technical data

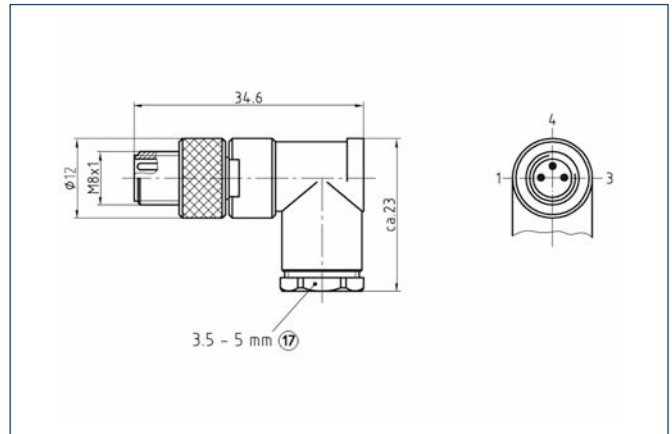
Description		KST-M8-G	KST-M8-W	KBU-M8-G	KBU-M8-W
	ID	0300050	0300051	0300052	0300053
Connection		3-pin	3-pin	3-pin	3-pin
Maximum voltage	[V]	60 AC / 75 DC	60 AC / 75 DC	60 AC / 75 DC	60 AC / 75 DC
Maximum current	[A]	4	4	4	4
Max. connection diameter	[mm <sup>2</sup> ]	0.25	0.25	0.25	0.25
Protection class		IP 67	IP 67	IP 67	IP 67
Housing material		PA	PA	PA	PA

## Connector straight M8



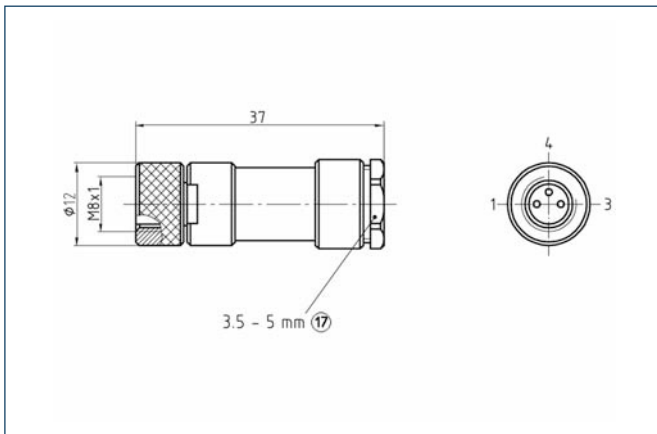
⑰ Cable outlet

## Connector angled M8



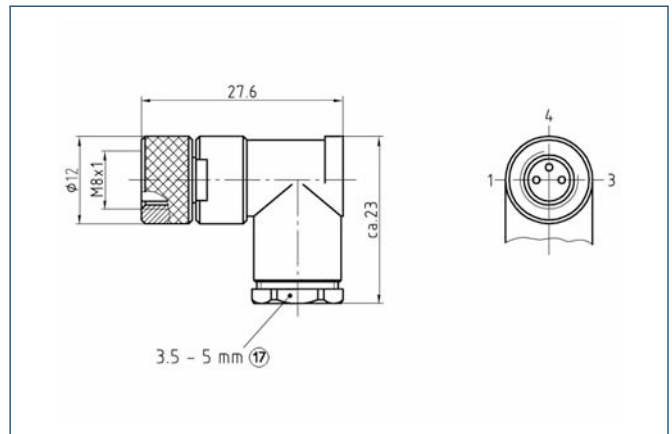
⑰ Cable outlet

## Socket straight M8



⑰ Cable outlet

## Socket angled M8



⑰ Cable outlet



## Cable connector and socket

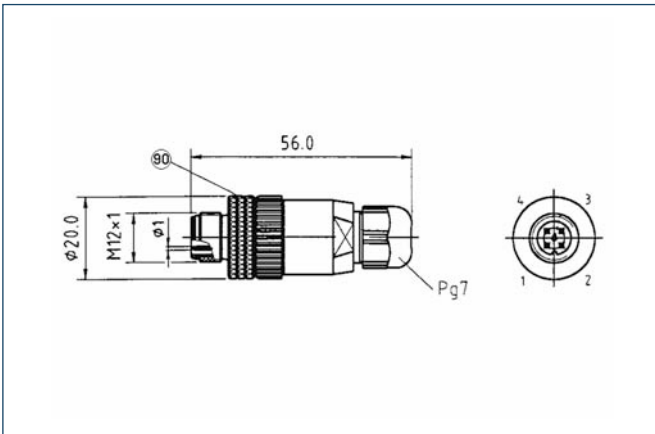
can be connected directly to cables. Cable connectors/sockets with M8 connection are soldered to the cable; cable connectors/sockets with M12 connection are connected via clamping.



## Technical data

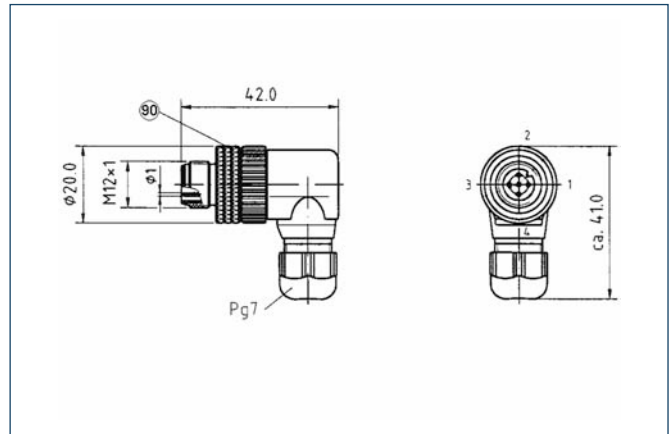
Description		KST-M12-G	KST-M12-W	KBU-M12-G	KBU-M12-W
	ID	0300060	0300061	0300062	0300063
Connection		4-pin	4-pin	4-pin	4-pin
Maximum voltage	[V]	250 AC / 300 DC	250 AC / 300 DC	250 AC / 300 DC	250 AC / 300 DC
Maximum current	[A]	4	4	4	4
Max. connection diameter	[mm <sup>2</sup> ]	0.75	0.75	0.75	0.75
Protection class		IP 68	IP 68	IP 68	IP 68
Housing material		PA	PA	PA	PA
Cable clamping range	[mm]	Ø 2.5 - 6.5	Ø 2.5 - 6.5	Ø 2.5 - 6.5	Ø 2.5 - 6.5

## Connector straight M12



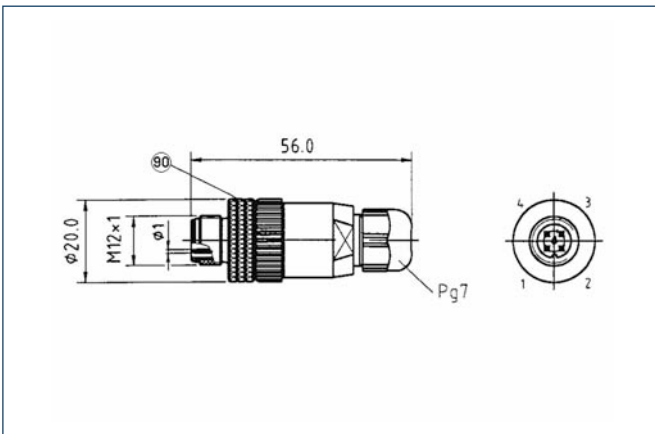
⑨ Locking ring

## Connector angled M12



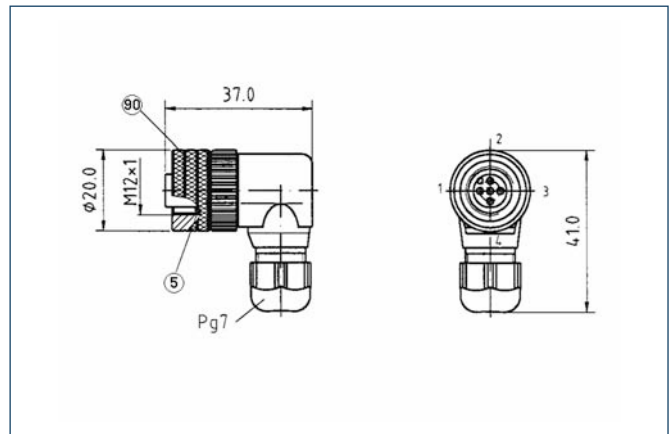
⑨ Locking ring

## Socket straight M12



⑨ Locking ring

## Socket angled M12



⑤ O-ring  
⑨ Locking ring

## Analog Position Sensor System

Mechanical, analog system comprising sensor and processor for accurately recording the position of gripper jaws.



### Function description

The high-resolution APS-M1S sensor is actuated by an inclined surface (mounting kit), which is attached to the gripper base jaw. The changes in position of the sensor are recorded, amplified, prepared and made available to an analog output by the APS-M1E processor.

### Your advantages and benefits

#### Position output

as voltage (V) or current (mA)

#### Precise measuring system

also for long strokes

#### Compact design

for space-saving installation in any control cabinet

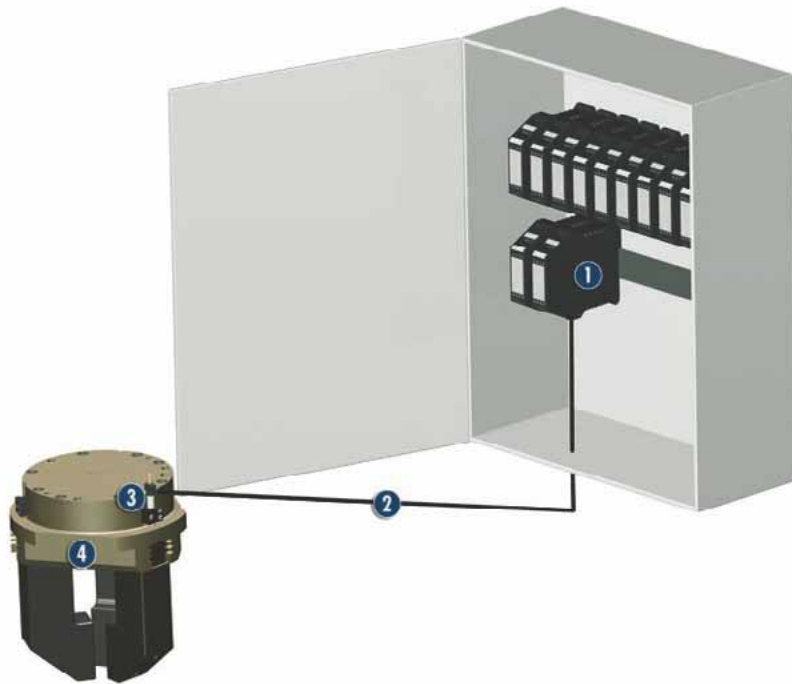
#### Conforms to CE

for absolute safety and long life during permanent operation

## Application example

### Area of application

for the precise measurement of the gripper jaw position in clean environments



1 APS-M1E Processor

2 APS-K7 Extension Cable

3 APS-M1S Sensor

4 PZN-plus 100  
3-Finger Centric Gripper

## General information

### Warranty

24 months

### Ordering

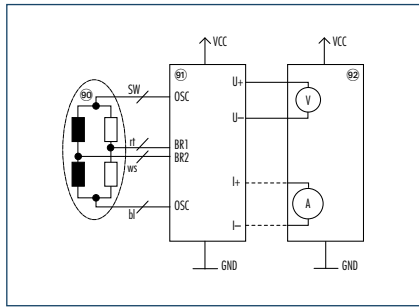
The sensor and processor must be ordered as individual items.

## Notes

The accuracy of the complete system as stated here is available from a stroke per jaw of 7 mm. The entire range of the sensor cannot be exploited with smaller strokes. The relative accuracy (ratio of repeat accuracy to jaw stroke) decreases, the absolute repeat accuracy (in mm) is the same as for a gripper with a 7 mm stroke, i.e. 0.021 mm.



## Wiring diagram



- ⑨① APS-M1S Sensor
- ⑨② APS-M1E Electronic Processor
- ⑨③ Automation device, e.g. S7-300

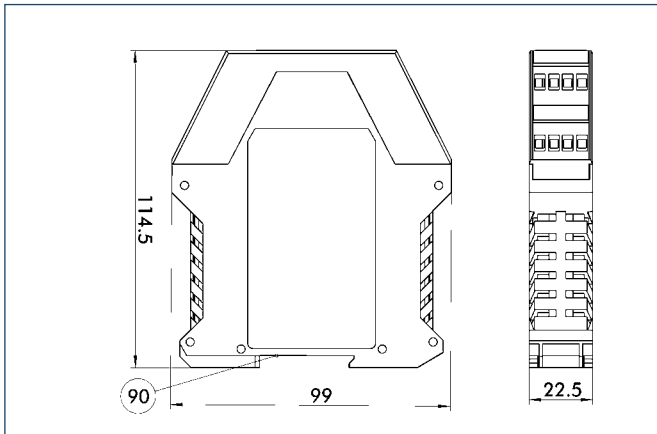
ⓘ When using an APS system, a mounting kit, APS sensor (APS-M1S) and processor (APS-M1E) are required for each gripper. The mounting kits can be found with the grippers. Mounting kits for other components/grippers are available on request. The sensor has a 3 m molded cable.

## Technical data

Description	ID	APS-M1S
Measuring stroke	[mm]	2.0
Measuring accuracy	[mm]	0.004
Nominal current input	[A]	0.023
Tightness		67
Thermal drift of zero signal	[%/10K]	0.1
Thermal drift of amplification factor	[%/10K]	0.2
Min. ambient temperature	[°C]	10.0
Max. ambient temperature	[°C]	60.0
Weight	[kg]	0.16
Sensor material		Steel
Cable sheath		PUR

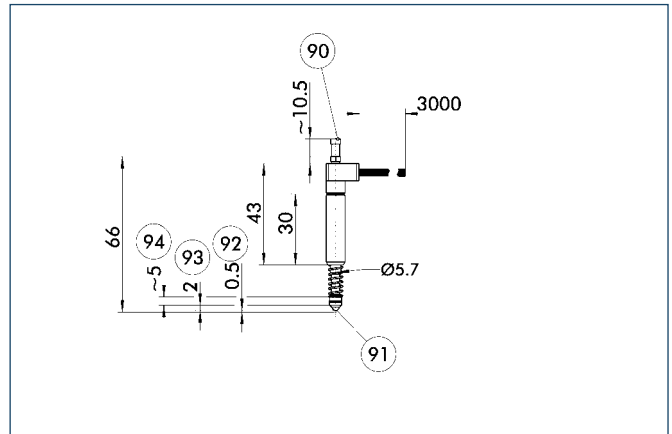
Description	ID	APS-M1E
Supply voltage		DC
Nominal voltage	[V]	24.0
Min. voltage	[V]	22.0
Max. voltage	[V]	26.0
Nominal power current	[A]	0.1
IP class		20
Min. ambient temperature	[°C]	0.0
Max. ambient temperature	[°C]	60.0
Repeat accuracy (sensor and processor)	[%]	0.3
Weight	[kg]	0.16
Housing material		PA
Output signal		0..10 V DC   4..20 mA
Fastening		Top hat rail

## APS processor



90 Groove for mounting rail

## APS sensor



- 90 Position with retracted feeler rod
- 91 Carbide ball 1/8"
- 92 Initial stroke
- 93 Range of measurement
- 94 Free stroke

## APS-K extension cable

As an option, an extension cable can be connected between the sensor and the processor. (The max. cable length between the sensor and the processor is 10 m, between the processor and its controller (SPC) max. 1 m.)

Description	ID	Length
APS-K2	0302066	2.0 m
APS-K7	0302068	7.0 m

## Mounting kits

The suitable mounting kit is specified with the gripper.

ID	Description
0302075	AS-APS-M1-64/1
0302076	AS-APS-M1-64/2
0302077	AS-APS-M1-80/1
0302078	AS-APS-M1-80/2
0302079	AS-APS-M1-100/1
0302080	AS-APS-M1-100/2
0302081	AS-APS-M1-125/1
0302082	AS-APS-M1-125/2
0302083	AS-APS-M1-160/1 and 240/2
0302084	AS-APS-M1-160/2
0302085	AS-APS-M1-200/1 and 380/2
0302086	AS-APS-M1-200/2
0302087	AS-APS-M1-240/1
0302088	AS-APS-M1-300/1
0302089	AS-APS-M1-300/2
0302090	AS-APS-M1-380/1

## FPS Flexible Position Sensor

The FPS sensor system measures the position of gripper jaws. It then indicates in which of the five freely teachable zones the jaws currently are. Additionally the jaw position can be read out via the „FPS Controller“ software.



### Function description

A permanent magnet that moves with the base jaw permeates the FPS sensor with its magnetic field. The strength of this permeation changes depends on the distance of the magnet from the sensor. This variable is recorded, evaluated and output by the FPS electronic processor.

### Your advantages and benefits

#### Simplest operation

with just two buttons, or with the machine control system using free control lines

#### Simple start-up

as the customer can set all positions during the teaching operation

#### Five digital outputs

for greater economy as compared to individual sensors

#### Small distance between two switching points, adjustable

#### Resistant to contamination

through non-ferromagnetic materials

#### Function and switching status display

via LEDs on the electronic processor

#### Conforms to CE

for safety and long life during permanent operation

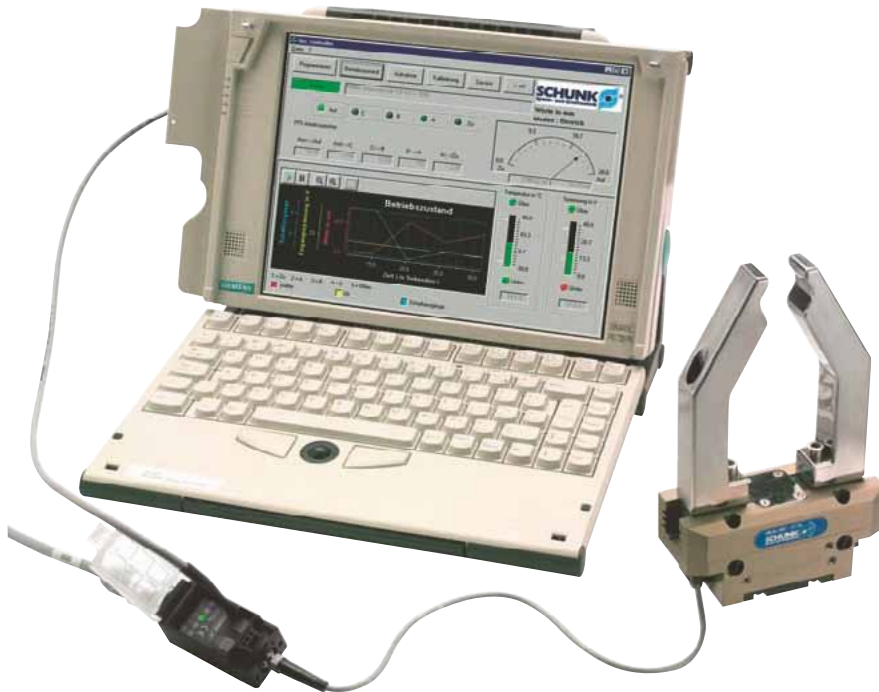
#### Digital technology

for resistance to interference

#### Additional advantages of the FPS-F5 and F5 T

- Measuring functionality
- Communication and remote maintenance via RS-232 protocol
- Position programming and readout of switching points
- Monitoring of temperature and input voltage
- Visualization via PC possible
- Data logging
- Calibration of system to gripper stroke
- Intelligent access authorization
- Adaptation to new product during the process

**Application example**



**Area of application**

Position sensing of gripper jaws up to a stroke of approx. 30 mm in environments that may be clean or dirty, but are free from steel chips.

**General information**

**Resolution**

The resolution is the minimum stroke difference that is required in order to reliably distinguish between two signals. Used in conjunction with most SCHUNK grippers, the FPS system achieves a resolution of 1 – 3 % of a jaw stroke. However, in some grippers a resolution of only 10 % is achieved due to the nature of the design. More precise resolutions may be reached, however, with the use of special solutions. Please contact us regarding the resolution/accuracy of the FPS system.

**Connector for the electronic processor (enclosed)**

12-pin circular connector (Binder type series 723, waterproof) suitable for connection cables with a diameter of 6 to 8 mm, recommended conductor cross-section 0.14 mm<sup>2</sup> (max. 0.25 mm<sup>2</sup>)

**Ambient conditions**

Use within the range of strong magnetic fields is not recommended. Neither the FPS sensor nor the FPS magnet may come into contact with ferromagnetic dust, chips or other substances.

**Display**

Five colored LEDs

**Range of measurement**

5 to 30 mm with SCHUNK magnet (NdFeB magnet cut to size, dimensions 6 x 25 mm x L) with various lengths L depending on the part of the range of measurement

**Material**

Processor: Plastic PA 6

Cable: PU, resistant to coolants/lubricants

**Warranty**

24 months

**Notes**

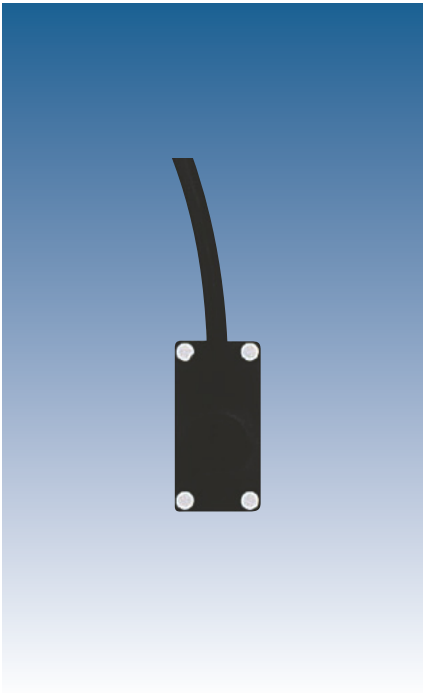
All data were determined on the basis of SCHUNK attachments and specifications. Please consult us regarding use of the sensor with modules from other manufacturers.





## FPS sensors

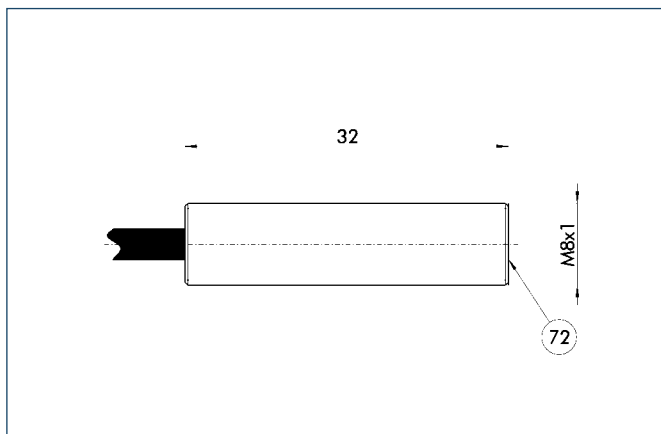
Either the FPS-S13 or the FPS-SM8 sensor is required, depending on the type of gripper. Each sensor is connected to its own FPS-F5/F5T processor.



## Technical data

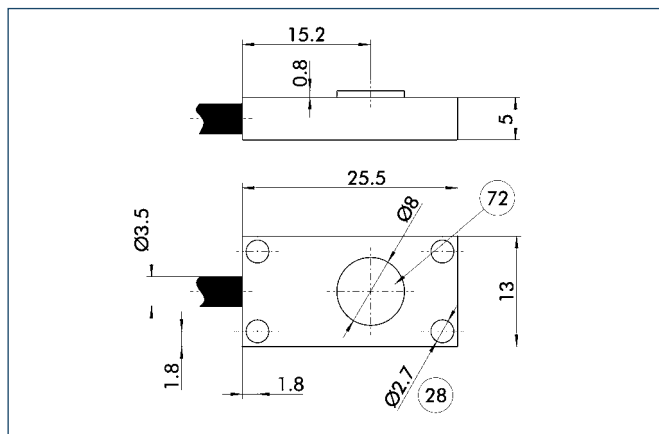
Description		FPS-S 13	FPS-S M8
	<b>ID</b>	<b>0301705</b>	<b>0301704</b>
Cable diameter	[mm]	3.5	3.5
Cable length	[cm]	30.0	30.0
Connection of FPS on processor side		M8	M8
Weight	[kg]	0,01	0,015
Min. ambient temperature	[°C]	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0
IP class (sensor)		65	65
IP class (connector, plugged in)		65	65
Min. bending radius (dynamic)	[mm]	17.5	17.5
Min. bending radius (static)	[mm]	35.0	35.0

## S-M8 sensor



72 Active sensor surface

## S13 sensor



28 Through-bore

72 Active sensor surface

## Cable extensions

Max. extension between FPS sensor and electronic processor for trouble-free operation: 1 m

Description	ID	Length
KV 05	0301598	0.5 m
KV 1	0301599	1.0 m





## FPS-F5 processor

Measurement of the gripper stroke using sensors, assignment to the positions/zones „Open“, „Intermediate position 1,2,3“ or „Closed“, and output of a position signal. A maximum of four switching points/five zones are freely programmable, RS-232 interface, remote maintenance, measuring functionality, system calibration to the millimeter, temperature and voltage monitoring.

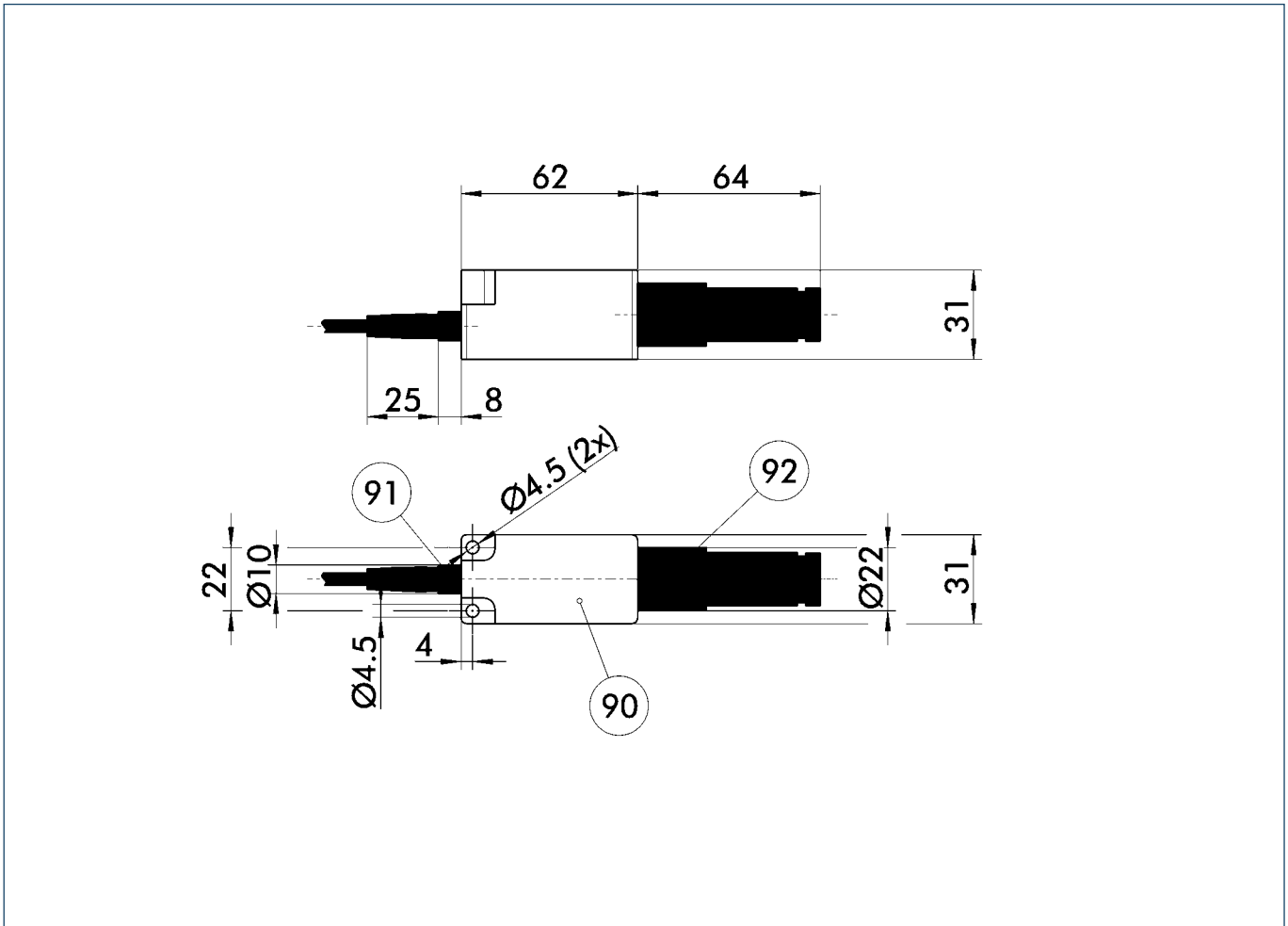
## FPS-F5T processor

Measurement of the gripper stroke using sensors, comparison with target value, output of tolerance information „Within tolerance“, „Above tolerance“ or „Below tolerance“, plus „Open“ and „Closed“. Otherwise, like the FPS-F5.

## Technical data

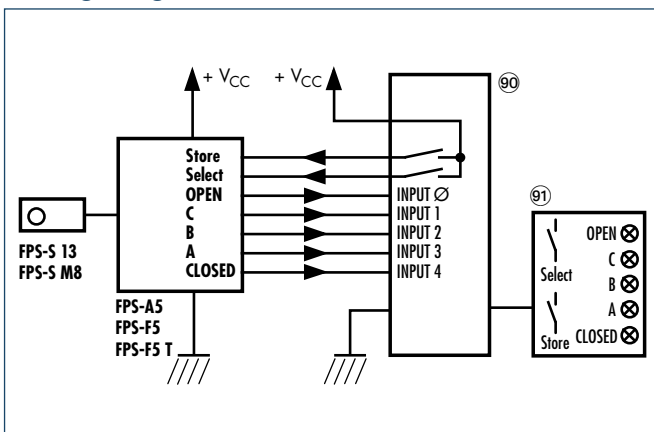
Description		FPS-F5	FPS-F5 T
	ID	0301805	0301807
Nominal voltage	[V]	24.0	24.0
Min. voltage (DC)	[V]	10.0	10.0
Max. voltage (DC)	[V]	30.0	30.0
Nominal current (DC)	[A]	0.01	0.01
Weight	[kg]	0.06	0.06
Min. ambient temperature	[°C]	-25.0	-25.0
Max. ambient temperature	[°C]	70.0	70.0
IP class		65	65

## Main views



- ⑨① Transparent plastic cover, over control and display panel
- ⑨② Connector on sensor side
- ⑨③ Connector on control cabinet side

## Wiring diagram



- ⑨① SPC/PLC
- ⑨② Machine panel (provided by customer)

For the contact assignment of the connections on the SPC side, please refer to the user's manual.

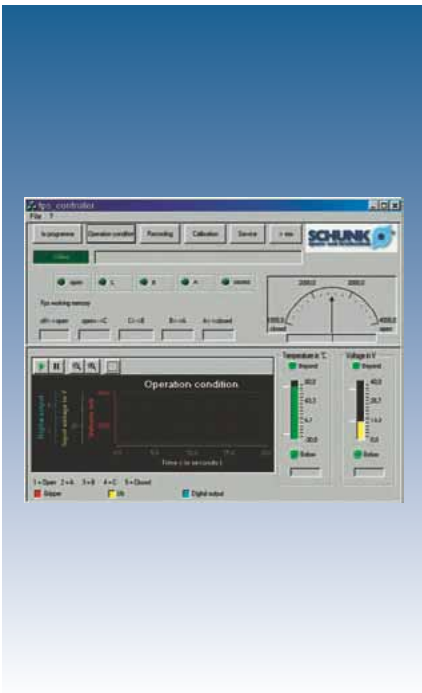
## Cable extension (open wires)

from the electronic processor to the control cabinet

Description	ID	Length
KV 10	0301801	10.0 m

## Software for FPS-F5/F5 T

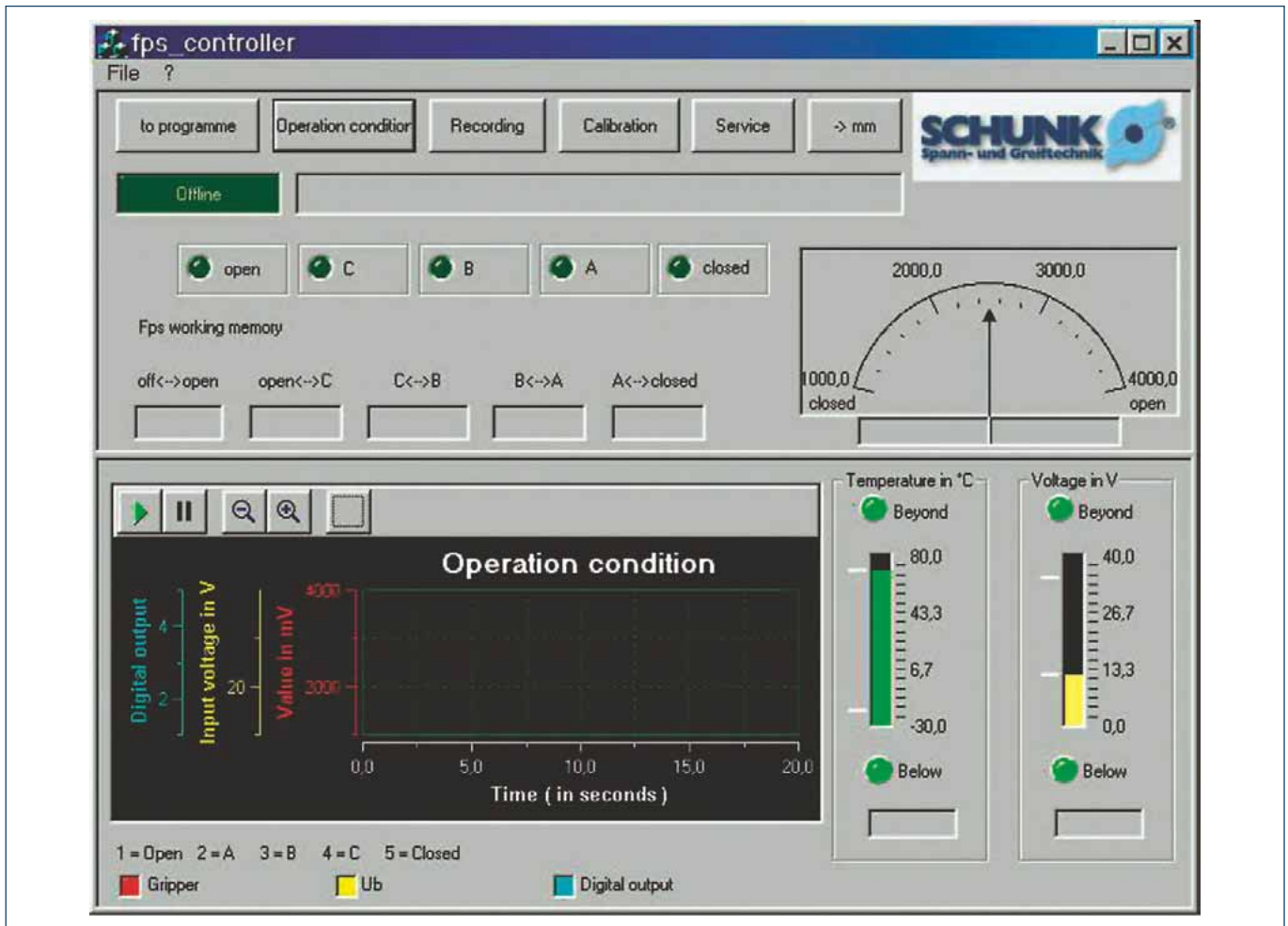
The free FPS Controller software allows the user to monitor the FPS processor via an RS-232 interface. As a result, the FPS system can be calibrated to stroke measurement, the position can be read out and the FPS processor can be programmed. The FPS software also provides access to all auxiliary functions.



## Technical data

Description	Software
ID (CD)	0301806
Download	<a href="http://www.schunk.com">www.schunk.com</a>
Operating system	MS Windows

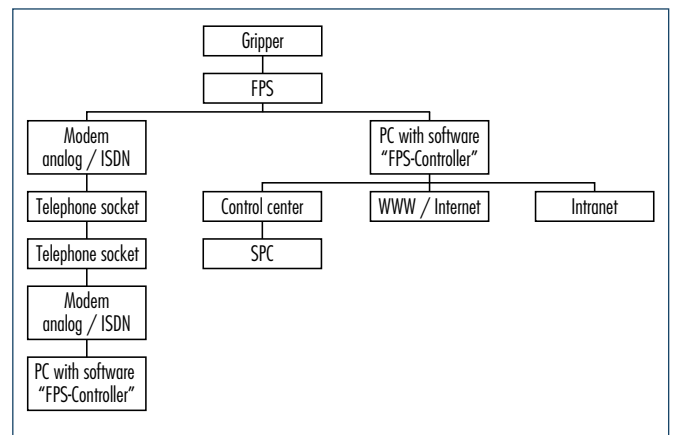
## Screenshot software



## Set-up with laptop



## Possible connection methods



## Force Measuring System

The FMS force measuring system is used for measuring the gripping forces during the gripping process. This opens up numerous new possibilities both during start-up and in the production process.



### Function description

The FMS intermediate jaws are screwed on between the gripper base jaw and the top jaw, which comes in contact with the workpiece. Gripping forces on the top jaw result in a flow of force through the FMS intermediate jaw. Intelligently arranged strain gauges inside the intermediate jaw react to the resulting deformation. The FMS processor detects the change in the strain gauges and emits an analog signal indicating the force.

### Your advantages and benefits

#### Simplest handling

via a control line that is directly connected to an SPC

#### Easy-to-perform measurement

of the actual, active gripping force

#### Result output via analog voltage value

Simple, linear relationship  
between output voltage and gripping force

#### Simple zero balancing

with button or via control line

#### Integrated LCD

for visual monitoring

#### Easy assembly

#### Dirt-proof and waterproof

also for use in extreme ambient conditions

**Application example**



**1** PGN-plus 100 AS  
2-Finger Parallel Gripper

**2** FMS-ZBA Intermediate Jaw  
with Sensor (active)

**3** FMS-ZBP Intermediate Jaw  
without Sensor (passive)

**4** Workpiece-specific Gripper Finger

**5** Electronic Processor

**Area of application**

**Gripping force control**

By sending control signals to the proportional valve that supplies the gripper, the SPC can influence the automatically measured gripping force.

**Teaching robots**

When gripping firmly fixed workpieces, the teaching of robots is simple and precise. Symmetrical gripping only takes place if the left- and right-hand gripper jaws apply the same force – thereby protecting the gripper and the robot.

**Static grip force monitoring**

Monitoring the grip force as the jaws close prevents the workpiece from being dropped when movement initiates. Overload protection by monitoring the max. permitted force, which can be triggered e.g. by an inadvertent increase in pressure, by off-center gripping or the incorrect positioning of the workpiece.

Preventive maintenance by replacing grippers in good time when there is a decline in the gripping force. This avoids unexpected manufacturing down-times.

**Dynamic grip force monitoring**

The effect of acceleration forces on the gripper jaws can be recorded and the motion sequence modified if necessary. Component monitoring during highly dynamic movements.

**Measuring and teaching processes**

Dimensional checking of the gripped component on the basis of an inserted reference component. If the component to be measured differs by more than  $\pm 0.05$  mm from the reference component, teaching can take place. If the difference is smaller, the precise dimensions can be measured accurately even to within  $\pm 0.002$  mm.

Gauging the weight of the component by measuring the force due to weight of the component on the gripper fingers.

**General information**

**For all PGN-plus and PZN-plus grippers**

and gripper with identical finger connection diagram available as a standard product, and for other grippers on request (remember to ask about the delivery time!)

**Conforms to CE**

for absolute safety and long life during permanent operation

**Warranty**

24 months

**Notes**

The FMS force measuring system allows you to measure forces that act on the base jaw in the direction of the jaw movement. Up to three active (equipped with sensors) FMS-ZBA intermediate jaws are required for this purpose, depending on the application. The remaining base jaws are equipped with FMS-ZBP passive intermediate jaws (without sensors). Each FMS-ZBA active intermediate jaw requires an FMS-A1 electronic processor for evaluation, and an FMS-AK connection cable for connecting the electronic processor to an SPC or a control cabinet.



## FMS Processor

Each FMS-ZBA active intermediate jaw requires an electronic processor.

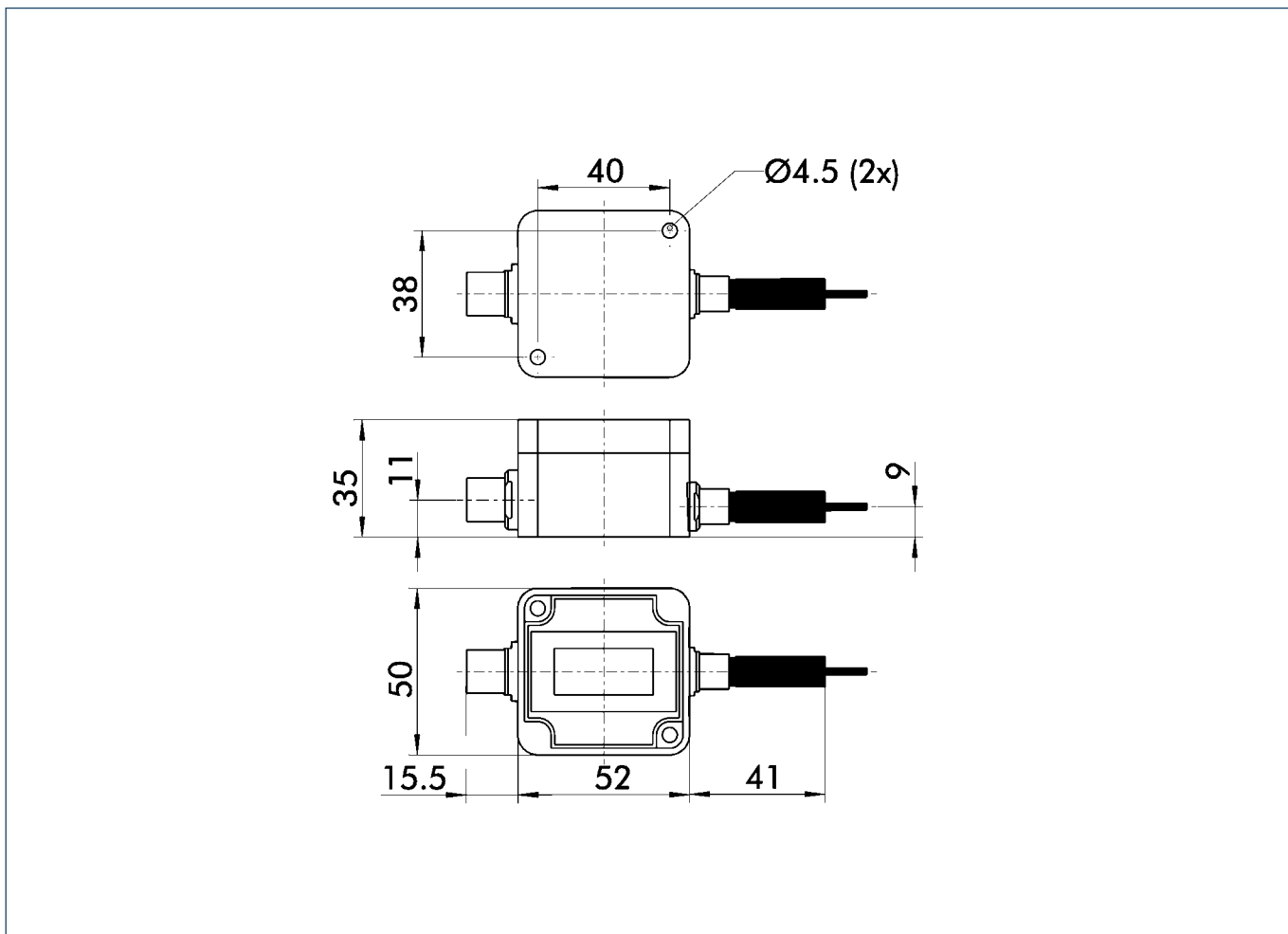
The FMS-A1 processor is required for intermediate jaw sizes up to 125, the FMS-A2 processor from size 160. The electronic processor is used to prepare, display and forward the measurement results. It is equipped with a housing connector and socket for connecting the force measuring jaw and the connection cable.



Description		FMS-A1	FMS-A2
	<b>ID</b>	<b>0301810</b>	<b>0301811</b>
Measuring accuracy	[%]	3.0	3.0
Output signal		-5 VDC .. +5 VDC	-5 VDC .. +5 VDC
Type of voltage		DC	DC
Nominal voltage	[V]	24.0	24.0
Min. voltage	[V]	18.0	18.0
Max. voltage	[V]	30.0	30.0
Nominal power current	[A]	0.0045	0.0045
IP class		67	67
Weight	[kg]	63.0	63.0

- ① The output voltage is linear to the forces occurring at the gripper fingers. The bandwidth of the output signal is not fully exploited by every active intermediate jaw. Zero balancing must be performed prior to measurement. The limit class A according to EN 61326 is complied with. The test to EN 61000-4-2, EN 61000-4-3, EN 61000-4-4 and EN 61000-4-6 was passed in conformity with EN 61326.

**Main views**



**FMS-AK connection cable**

The FMS-AK connection cable is used for connecting the electronic processor to a control cabinet or an SPC. A cable bushing is fitted on the side of the electronic processor, the other side is open.

Description	ID	Length
FMS-AK5	0301821	5.0 m
FMS-AK10	0301822	10.0 m
FMS-AK20	0301823	20.0 m



## Force measuring jaws

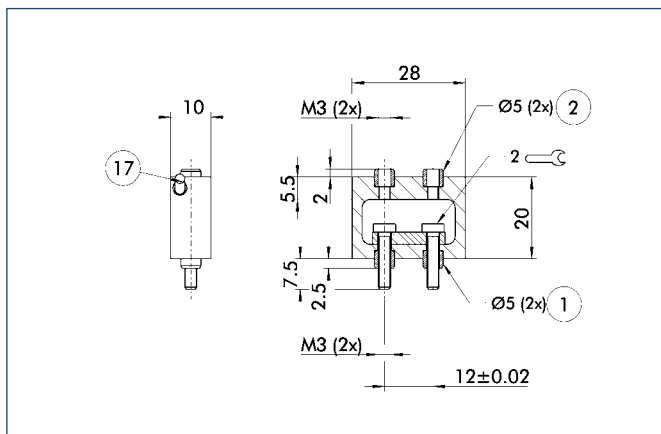
The force measuring jaw is situated between the gripper base jaw and the top jaw. The gripping force is conducted through it. Active intermediate jaws measure these forces and transfer the measured value to the electronic processor. Active intermediate jaws are equipped with a 30 cm cable and a cable connector. Passive intermediate jaws act solely as a bridge for the forces.

## Definitions

- ① The range of measurement is the range in which the overall system has an accuracy of < 3 %. The overload range is the range in which the overall system has an accuracy of > 3 %. At the end of the overload range there is a risk of mechanical destruction of the intermediate jaw.

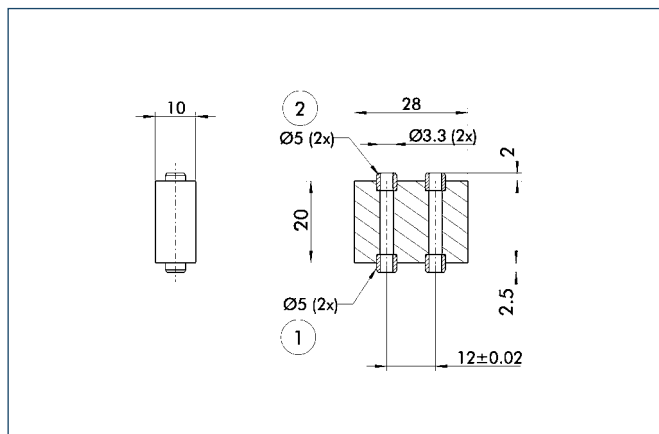
Description	ID	Start of range of measurement [N]	End of range of measurement [N]	End of overload range [N]	Weight [kg]	Min. ambient temperature [°C]	Max. ambient temperature [°C]
FMS-ZBA 50	0301830	0.0	145.0	290.0	0.03	-10.0	70.0
FMS-ZBP 50	0301831				0.02		
FMS-ZBA 64	0301832	0.0	260.0	520.0	0.04	-10.0	70.0
FMS-ZBP 64	0301833				0.025		
FMS-ZBA 80	0301834	0.0	430.0	860.0	0.056	-10.0	70.0
FMS-ZBP 80	0301835				0.035		
FMS-ZBA 100	0301836	0.0	685.0	1370.0	0.082	-10.0	70.0
FMS-ZBP 100	0301837				0.055		
FMS-ZBA 125	0301838	0.0	1120.0	2240.0	0.128	-10.0	70.0
FMS-ZBP 125	0301839				0.105		
FMS-ZBA 160	0301840	0.0	1600.0	3200.0	0.24	-10.0	70.0
FMS-ZBP 160	0301841				0.185		
FMS-ZBA 200	0301842	0.0	2325.0	4650.0	0.403	-10.0	70.0
FMS-ZBP 200	0301843				0.34		
FMS-ZBA 240	0301844	0.0	3700.0	7400.0	0.69	-10.0	70.0
FMS-ZBP 240	0301845				0.59		
FMS-ZBA 300	0301846	0.0	5150.0	10300.0	0.907	-10.0	70.0
FMS-ZBP 300	0301847				0.78		
FMS-ZBA 380	0301848	0.0	7100.0	14200.0	1.84	-10.0	70.0
FMS-ZBP 380	0301849				1.6		

### FMS-ZBA 50



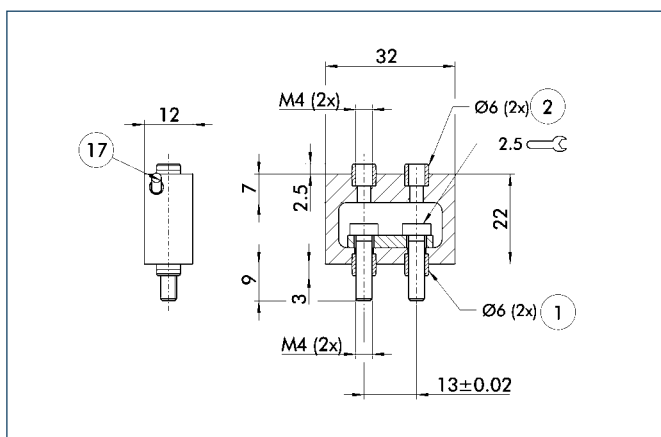
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

### FMS-ZBP 50



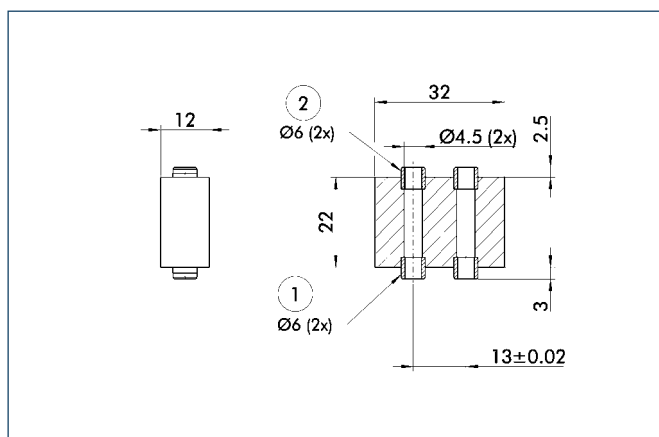
- ① Gripper connection
- ② Finger connection

### FMS-ZBA 64



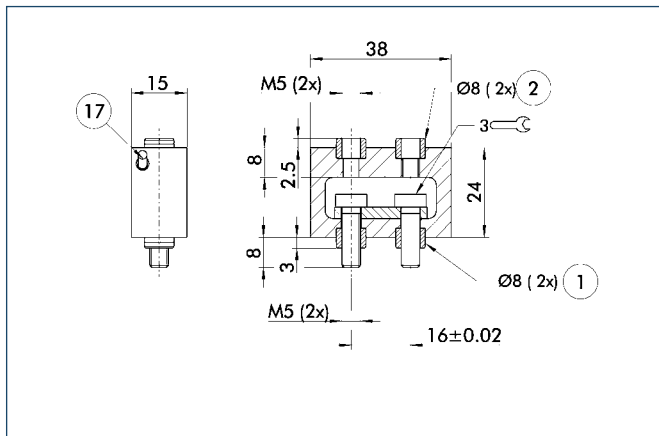
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

### FMS-ZBP 64



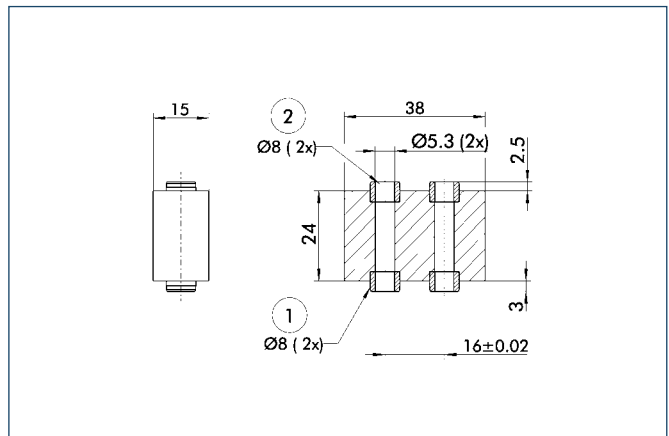
- ① Gripper connection
- ② Finger connection

## FMS-ZBA 80



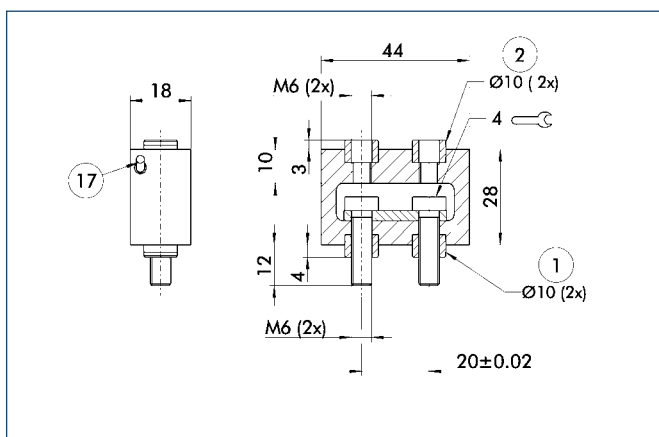
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

## FMS-ZBP 80



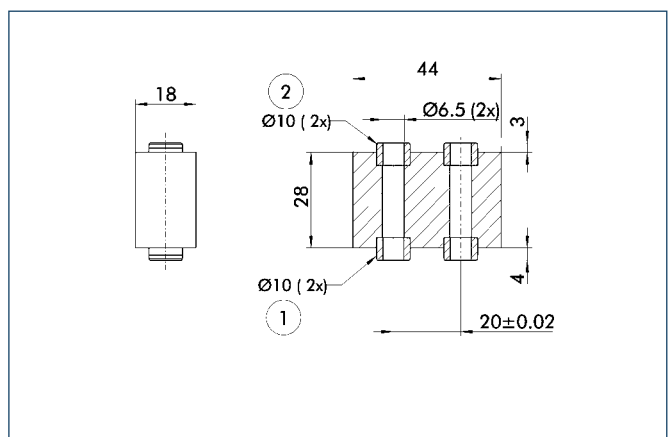
- ① Gripper connection
- ② Attachment connection

## FMS-ZBA 100



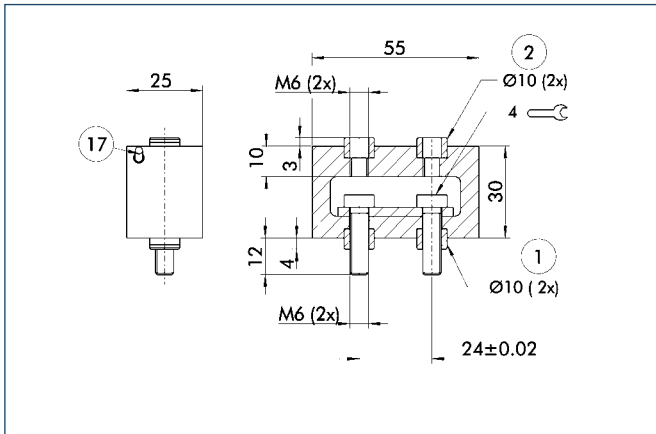
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

## FMS-ZBP 100



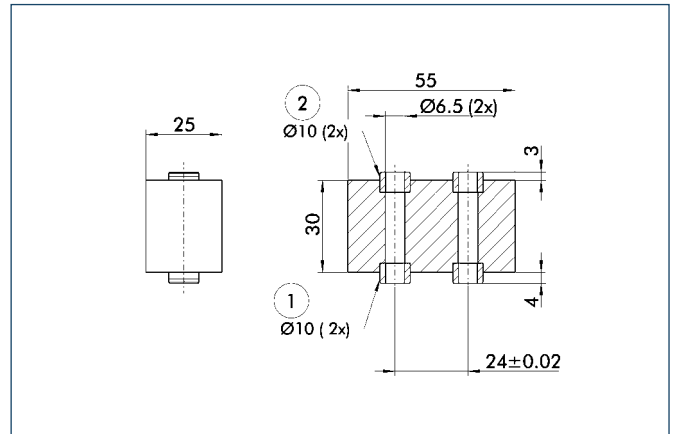
- ① Gripper connection
- ② Finger connection

### FMS-ZBA 125



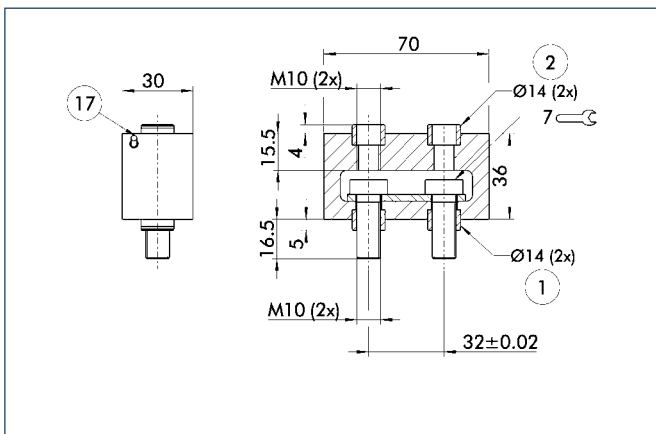
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

### FMS-ZBP 125



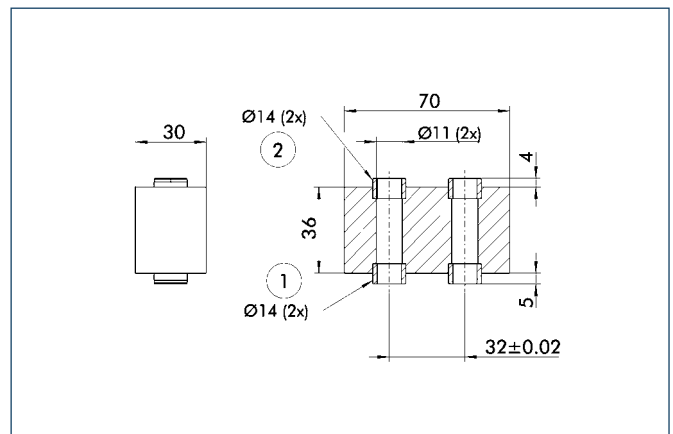
- ① Gripper connection
- ② Finger connection

### FMS-ZBA 160



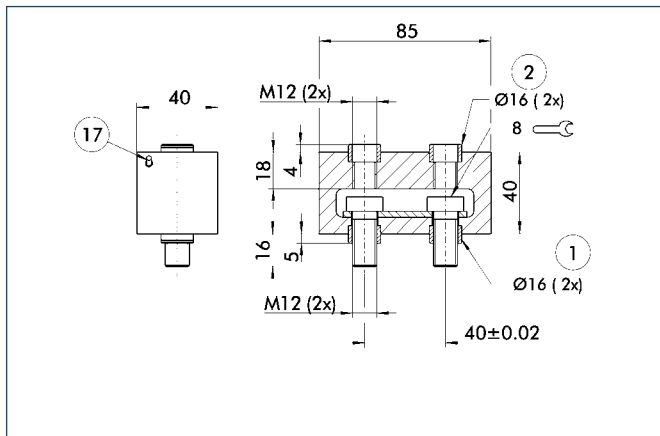
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

### FMS-ZBP 160



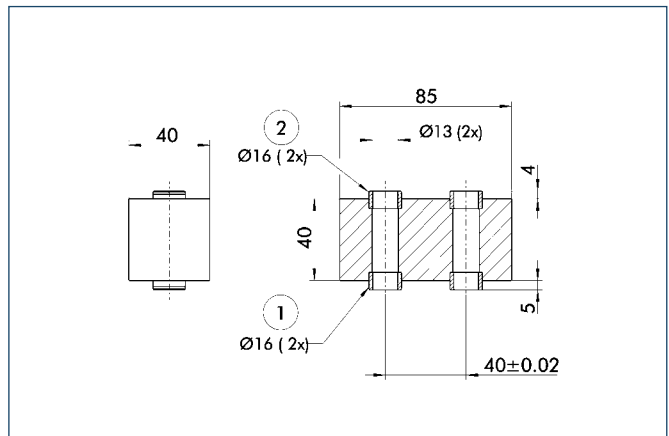
- ① Gripper connection
- ② Finger connection

## FMS-ZBA 200



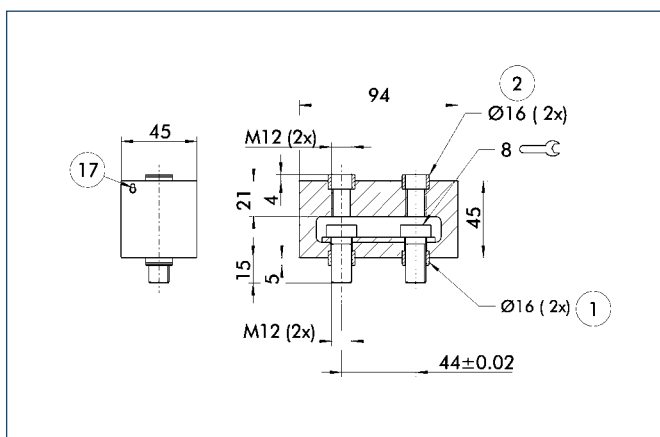
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

## FMS-ZBP 200



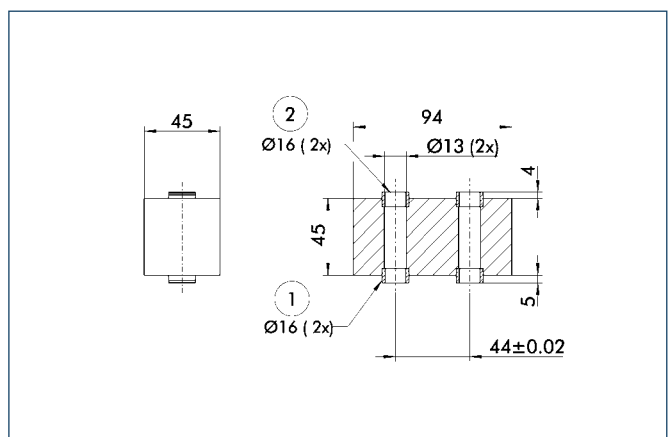
- ① Gripper connection
- ② Finger connection

## FMS-ZBA 240



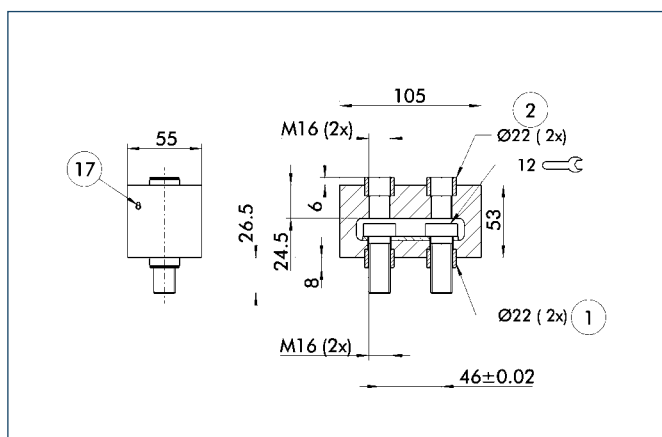
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

## FMS-ZBP 240



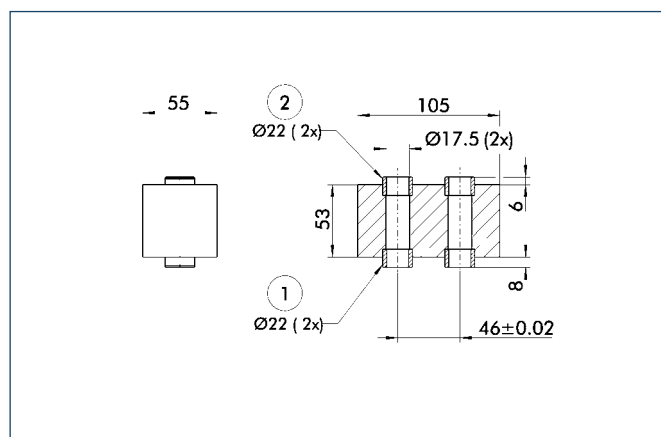
- ① Gripper connection
- ② Finger connection

### FMS-ZBA 300



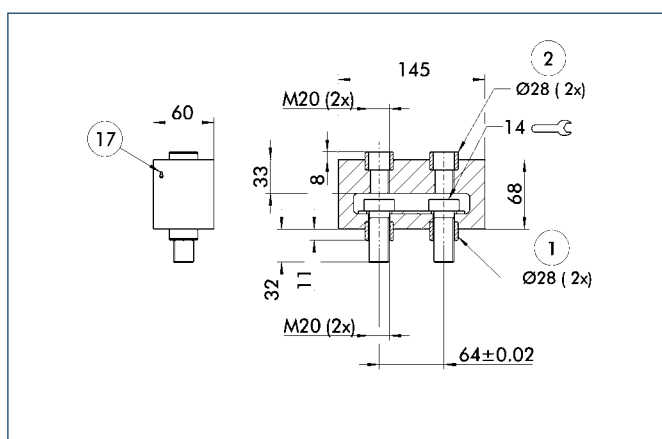
- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

### FMS-ZBP 300



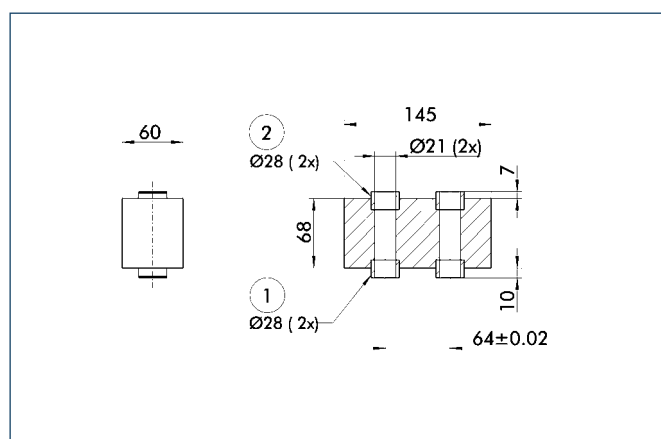
- ① Gripper connection
- ② Finger connection

### FMS-ZBA 380



- ① Gripper connection
- ② Finger connection
- ⑰ Cable outlet

### FMS-ZBP 380

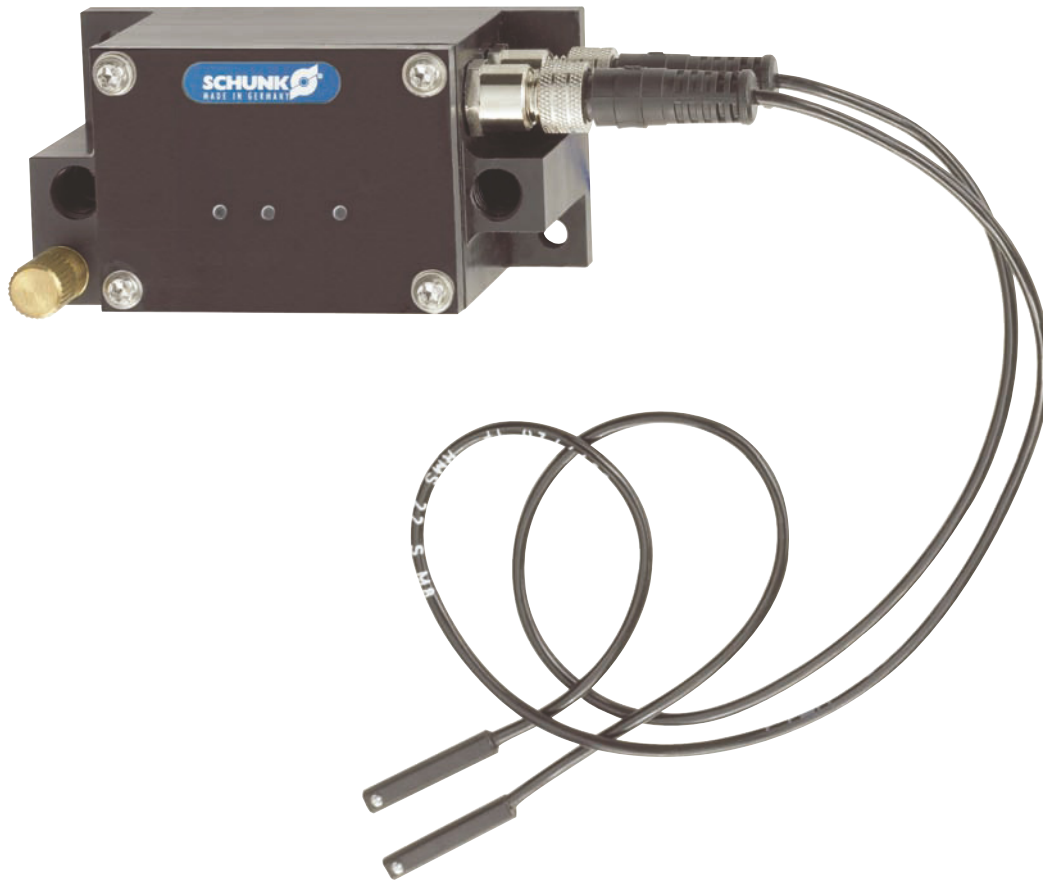


- ① Gripper connection
- ② Finger connection



## Wireless Sensors

Modular and expandable sensor system with no cable breakage, for end position monitoring of gripping modules.



### Function description

The wireless sensor system consists of a transmitter (RSS-T2) with two mechanical switches and one receiver (RSS-R1) with an external antenna. The sensors monitor the stroke of the gripper jaw and report this to the transmitter. The latter transmits the information to the receiver, which is connected to the controller.

### Your advantages and benefits

#### Wireless signal transmission

for monitoring with no cable breakage and for use in applications where no cables can be installed

#### Connection monitoring (watchdog), connection quality monitoring and battery monitoring

for maximum controlled production and optimum system monitoring

#### Space-saving installation of the Reed switches in sensor groove

for fast and easy mounting, also as a replacement for inductive proximity switches on request

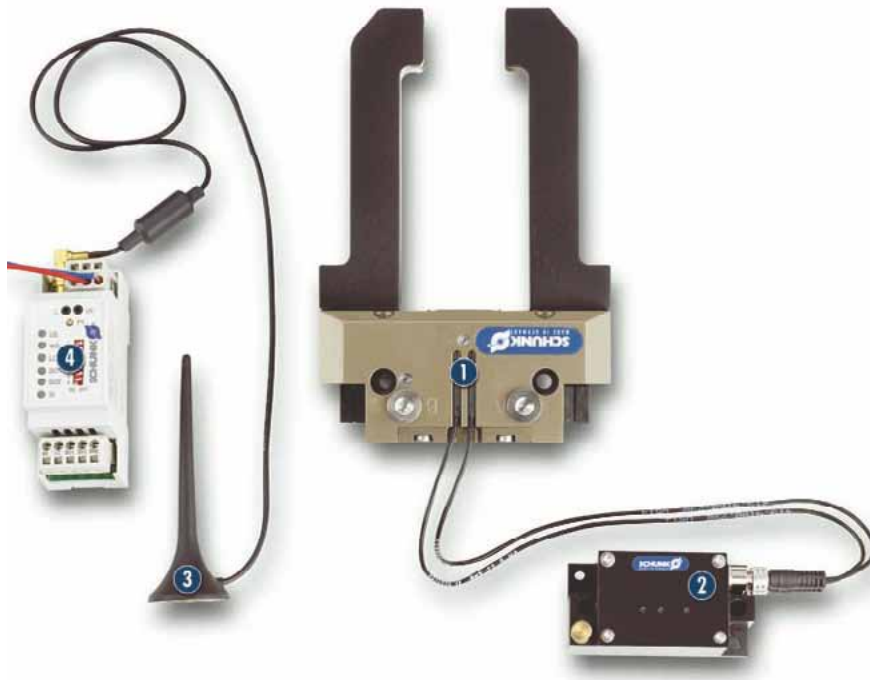
#### Life of battery in transmitter module

enables maintenance-free operation for typically more than six years

#### Simple teach function

for fast and easy functional commissioning

## Application example



## Area of application

The new wireless RSS sensor system can be used anywhere where no cable feed is possible. For example in milling or grinding machines, machining centers, or in rotating or close applications which are unsuitable for cable ducts. However, the RSS is also ideal for use in adverse ambient conditions and explosive areas.

- 1 Reed Switch RMS 22 in sensor groove of the 2-finger parallel gripper PGN-plus
- 2 Transmitter Module RSS-T2
- 3 Magnetic Base Antenna RSS-R-A
- 4 Receiver RSS-R1

## General information

### Typical transmission ranges

approx. 10 meters in workshops  
approx. 30 meters in the open

### Protection class according to DIN 40050

IP 67 in connected condition for use in clean or dusty environments or in the event of contact with water. Contact with other media (cooling lubricants, acidic or caustic substances, etc.) frequently does not impair the function, but this cannot be guaranteed by SCHUNK.

### Service life of transmitter battery:

Min. 6 years at 2 transmissions/second  
Min. 8 years at 1 transmission/second  
Up to 10 years at lower cycles

### Power supply, receiver

24 V DC,  
500 mA output

### Life of transmitter battery

Min. 6 years at 2 transmissions/second  
Min. 8 years at 1 transmission/second

### Warranty

24 months

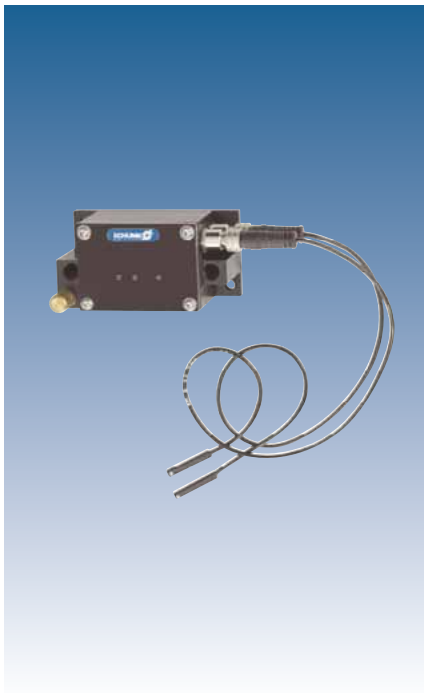
## Notes

Sheet steel prevents propagation of radio waves.

The radio energy transmitted by the RSS is a factor of 70,000 below that of DECT telephones and a factor of 30,000 below that of GSM mobile phones.

## RSS-T2 transmitter

The RSS-T2 transmitter can transmit the signals from 2 switches. We recommend the use of RMS 22 or RMS 80. Alternative switches can also be used. However, they must not require energy supply.

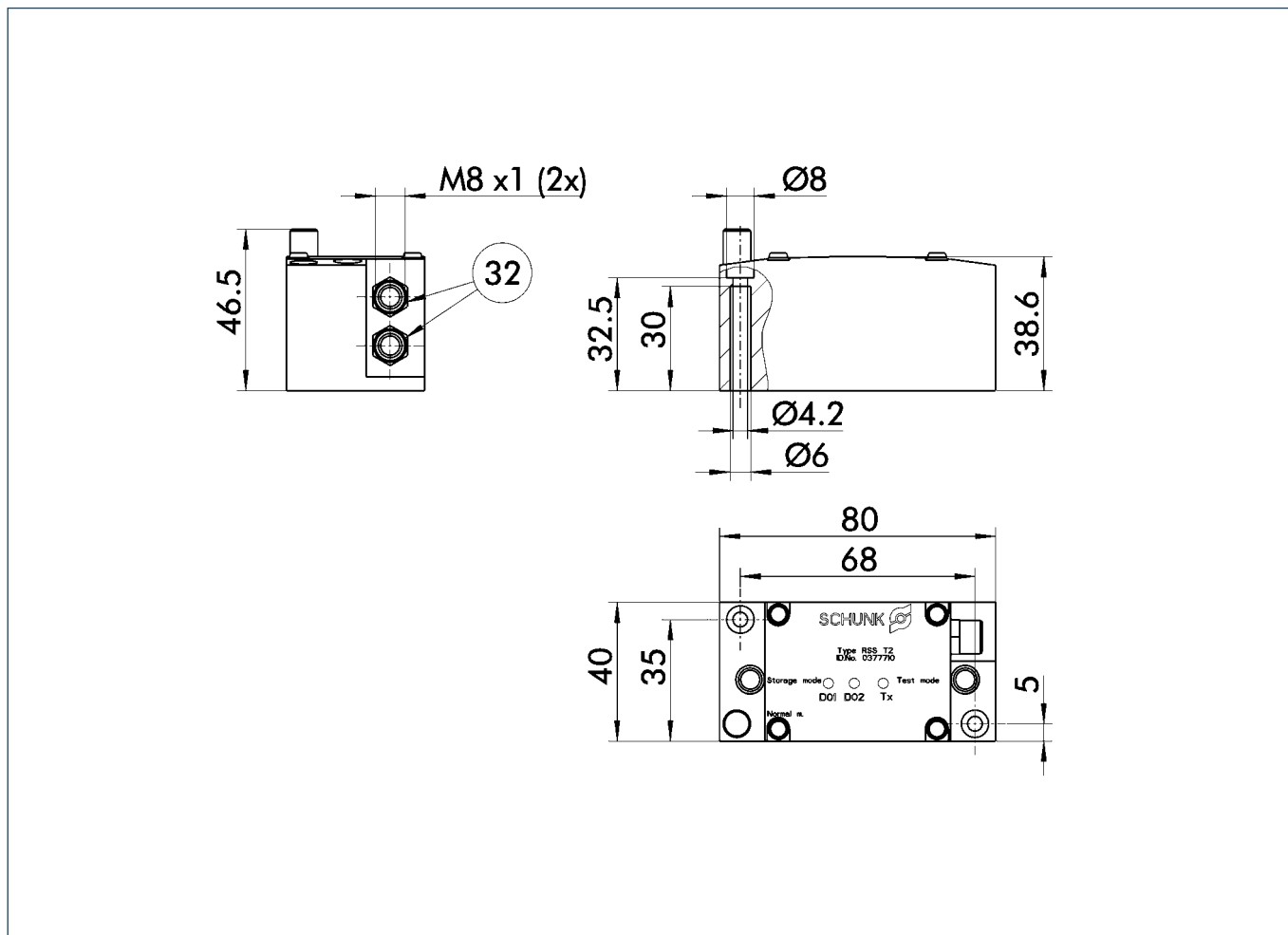


## Technical data

### Transmitter module

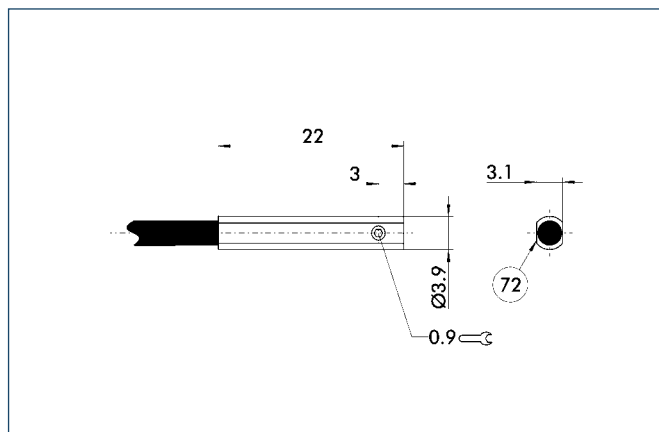
Description		RSS-T2
	ID	0377710
Transmitting frequency	[MHz]	868.3
Transmitter connection		2x M8
Integrated power supply		Lithium battery
Typical life of the battery	[Years]	8
Housing material		PUR
Log		Enocean standard
Tightness		IP 67
Min. ambient temperature	[°C]	0
Max. ambient temperature	[°C]	50
Weight	[g]	0.16

## Main views



③ Flange socket for sensor feed-through

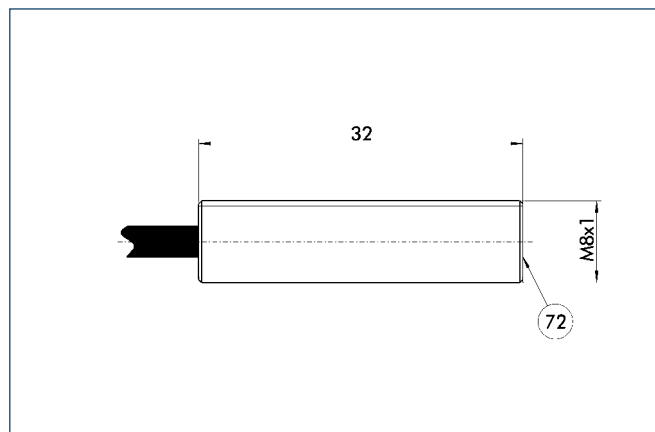
## RMS 22 sensor



⑦ Active sensor surface

Further information on the RMS sensor can be found in the chapter on „Reed Switches“

## RMS 80 sensor



⑦ Active sensor surface

Further information on the RMS sensor can be found in the chapter on „Reed Switches“

## RSS-R1 receiver

The RSS-R1 receiver can receive the signals of the RSS-T2 transmitter. One receiver and one antenna are needed for each transmitter.



## Technical data

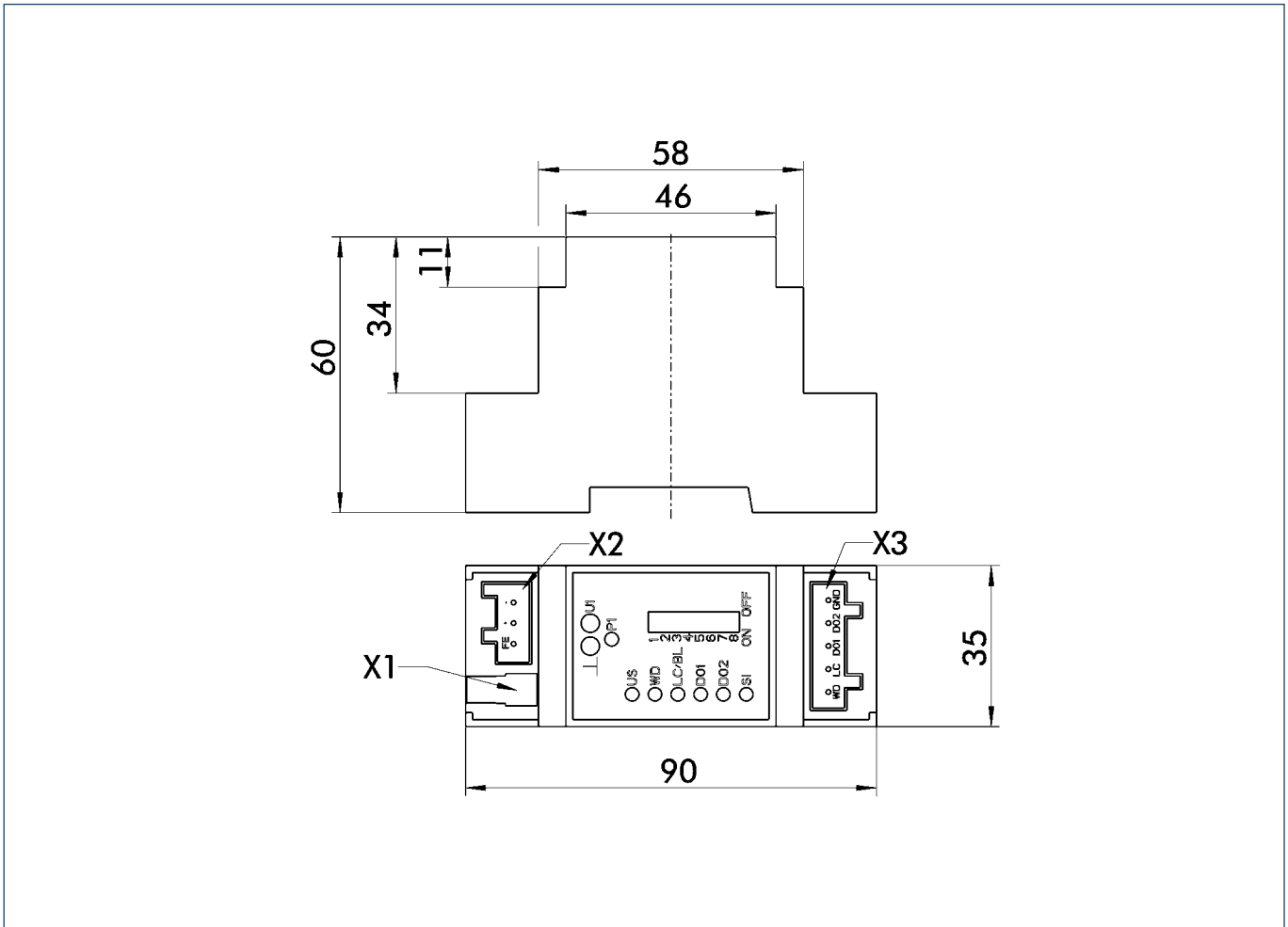
### Receiver

Description		RSS-R1
	ID	0377700
Receiving frequency	[MHz]	868.3
Power supply		DC
Nominal voltage	[V]	24
Min. voltage	[V]	10
Max. voltage	[V]	30
Max. current on contact per channel	[mA]	500
Housing material		PUR
Log		Enocean standard
Short-circuit-proof		Yes
Tightness		IP 20
Fastening		Top hat rail
Min. ambient temperature	[°C]	0
Max. ambient temperature	[°C]	50

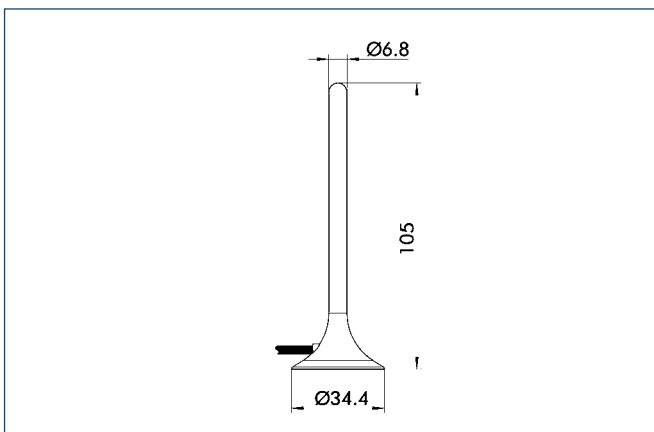
### Antenna

Description		RSS-R-A
	ID	0377730
Assembly		Magnetic base
Cable length	[m]	2
Connection to cable end		SMA Mini
Utilization		Connection to receiver RSS-R1

## Main views



## RSS-R-A antenna



## Fluidic Monitoring System

Pneumatic monitoring for three positions. For systems that can be monitored by means of conventional sensors.



### Function description

The PA3 returns the information „open“, „gripped“ or „closed“ to the controller via a single, additional pneumatic line. The pneumatic actuator only has to be modified with two pneumatic connections for this purpose. The PA3 is started up via a push button switch and a potentiometer. The unit is automatically taught during a set-up cycle.

### Your advantages and benefits

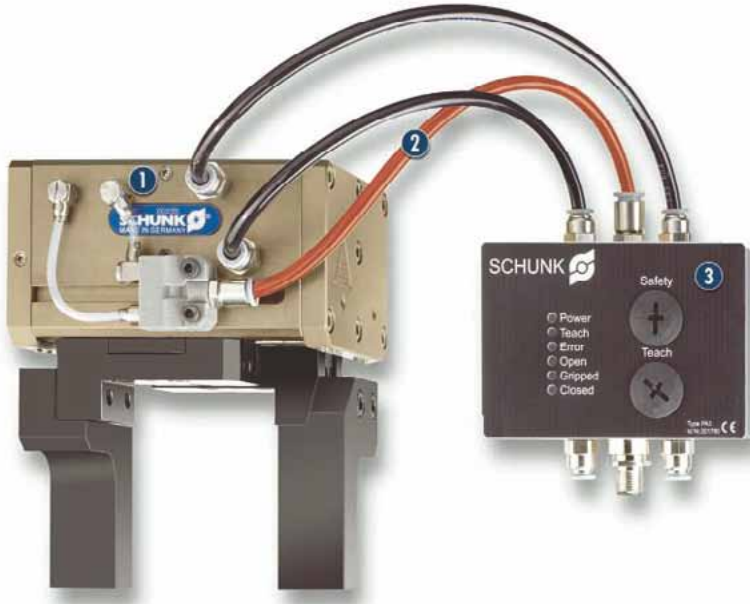
**Position scan without electric sensors**  
for diverse applications in new environments

**An additional pneumatic line as an information hose**  
therefore only slight modification of the gripper necessary, also possible as retrofitting of existing components

**Simple start-up**  
via button and potentiometer

**self teach-in function**  
for automatic teaching of the monitoring system during the set-up cycle

## Application example



## Area of application

The applications range from pneumatic gripper modules to pneumatic actuators, such as cylinders or rotary actuators. For example, when gripper modules must be monitored in places that are not accessible by electric sensors or where electric sensors are not allowed.

**1** 2-Finger Long-stroke Gripper  
PFH 30  
with special bores for the PA 3

**2** Additional Information Source

**3** PA 3-Electronic System

## General information

**Power supply for electronics**  
24 V DC

**Warranty**  
24 months

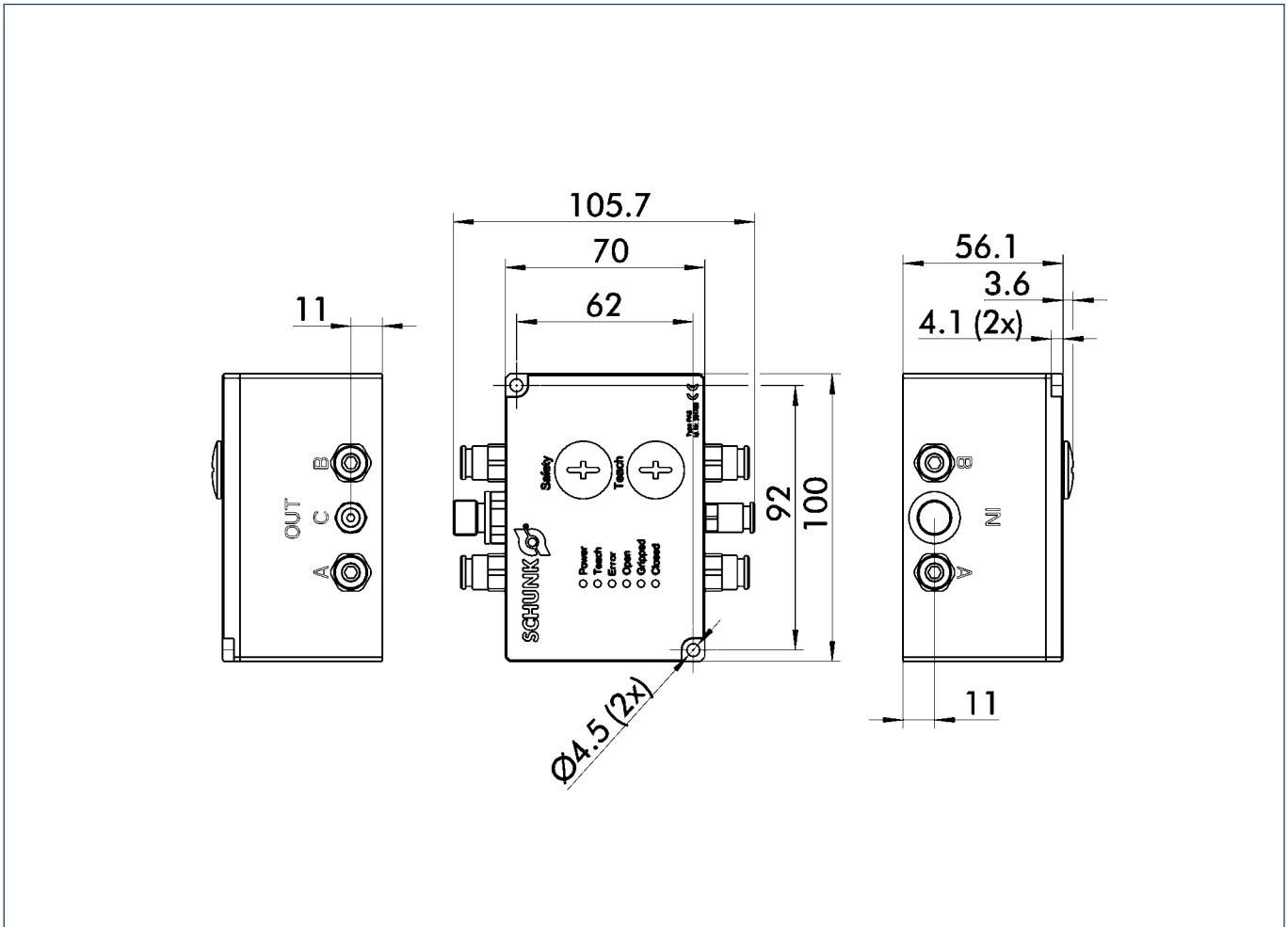




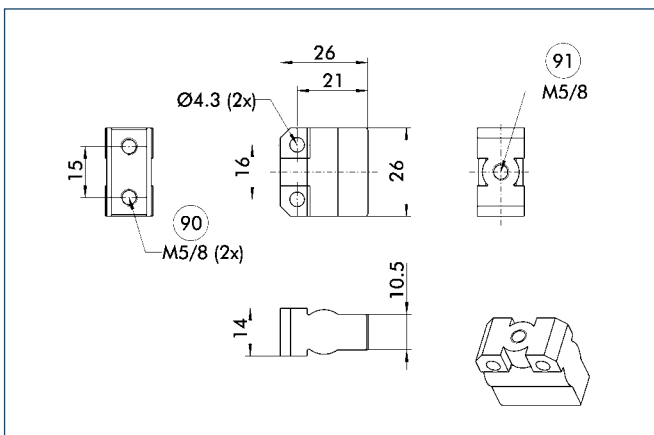
## Technical data

Description	PA3
ID	0301780
IP class	67
Type of voltage	DC
Nominal voltage [V]	24
Min. voltage [V]	21.6
Max. voltage [V]	26.4
Nominal power current [mA]	30
Maximum current [mA]	130
Weight [kg]	1.13
Hose connection [mm]	6
Min. nominal pressure [bar]	3
Max. pressure [bar]	10
Permissible media	Compressed air
Typical switching time [s]	1

Main views



AND valve



90 Input

91 Output

Two additional bore holes in the piston chamber of the monitored components are connected with the AND valve. The resulting pressure signal is sent to the PA3.

### Centering sleeves

Centering sleeves are used for centering between two elements. With SCHUNK grippers, this frequently occurs between the mounting plate and gripper and between the gripper and gripper fingers.



### Function description

The centering sleeves are inserted coaxially to the screws.

### Your advantages and benefits

**Space-saving**  
for small, compact grippers

**Precise**  
for high repeat accuracy

**Economical**  
for low costs

**Easy to install**  
for fast assembly

**Area of application**

variable centering tasks for gripper and rotary modules, as well as linear modules.

**General information**

**Material**  
Steel

**Warranty**  
24 months

**Notes**

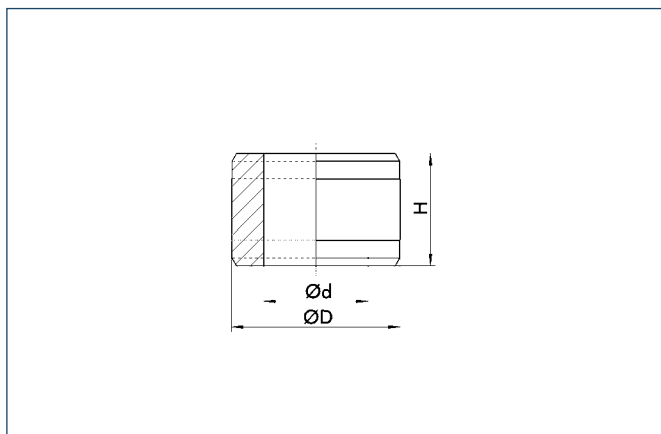
SCHUNK grippers include all necessary centering sleeves.



## Technical data

Description	ID	Material	Ø D [mm]	Ø d [mm]	H [mm]
ZHU 2	9941547	Steel	2.0 h6	1.3	1.95-0.05
ZHU 2,5	9941628	Steel	2.5 h6	1.7	1.95-0.05
ZHU 3	9941629	Steel	3.0 h6	2.1	1.95-0.05
ZHU 3,5	9939947	Steel	3.5 h6	2.1	2.95-0.05
ZHU 4	9939376	Steel	4.0 h6	2.6	3.95-0.05
ZHU 5	9939377	Steel	5.0 h6	3.1	4.35-0.05
ZHU 6	9939384	Steel	6.0 h6	4.1	5.35-0.05
ZHU 8	9939378	Steel	8.0 h6	5.1	5.35-0.05
ZHU 10	9939379	Steel	10.0 h6	6.2	6.65-0.05
ZHU 12	9939380	Steel	12.0 h6	8.2	6.65-0.05
ZHU 14	9939381	Steel	14.0 h6	10.2	8.6-0.1
ZHU 16	9939382	Steel	16.0 h6	12.2	8.6-0.1
ZHU 22	9939383	Steel	22.0 h6	16.2	13.6-0.1
ZHU 28	9941220	Steel	28.0 h6	21.0	17.6-0.1

## Main views



## Connecting Elements for PowerCube

Standard elements and adapters for the accurately repeatable connections of PowerCube modules



### Function description

The dimensions of the connecting elements are matched to the cube shape of the PowerCube modules. The accurately repeatable connection is made easily and quickly by means of four hexagon socket screws.

### Your advantages and benefits

**Standard elements**  
for high availability

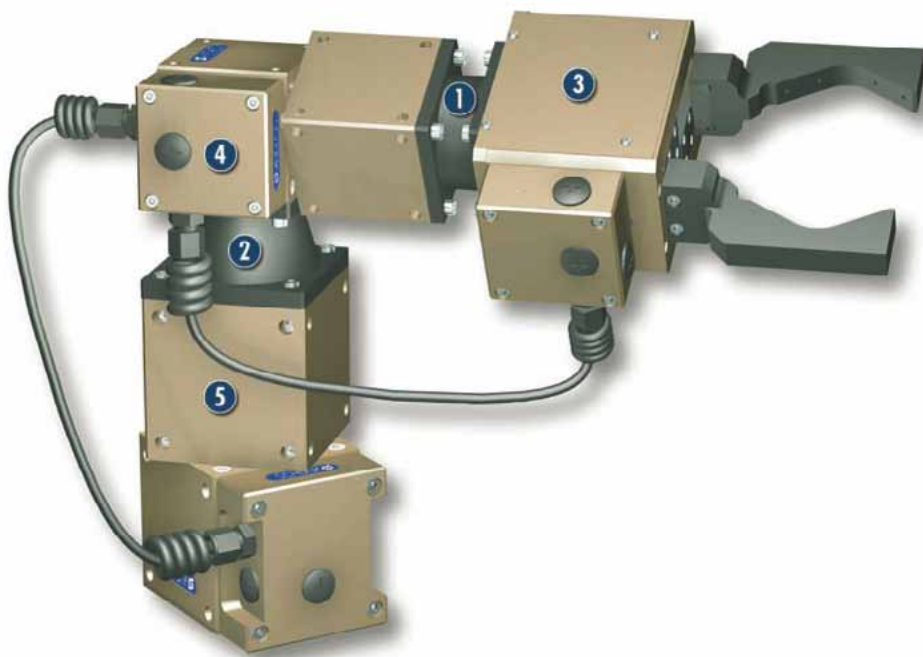
**Geometry designs „straight“, „conical“ and „angular“**  
for maximum combinations

**Suitable for all grippers, rotary units, drives and linear modules of the PowerCube series.**

**Application example**

**Area of application**

For easy and accurately repeatable connection of all PowerCube modules



- 1** Connecting element – straight PAM 100
- 2** Connecting element – conical PAM 110
- 3** Servo-electric 2-Finger Parallel Gripper PG 70

- 4** Servo-electric Rotary Actuator PR 70
- 5** Servo-electric Rotary Actuator PR 90

**General information**

**Warranty**  
24 months

**Material**  
Aluminum alloy, hard-anodized

**Notes**

Special lengths are available on request.

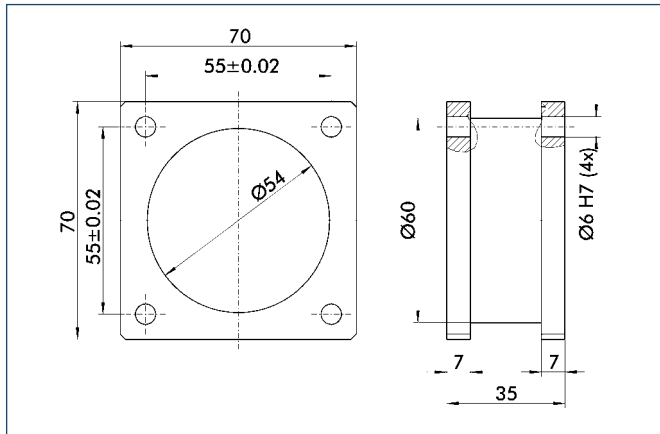




# PAM – Straight

Accessories · Mounting Elements · Connecting Elements for PowerCube

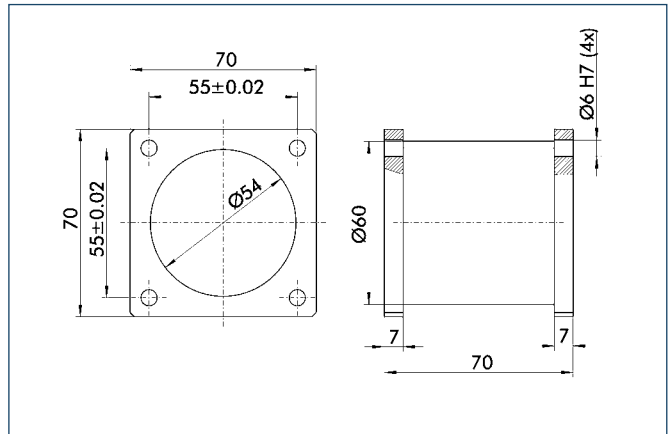
## PAM 100 – straight



suitable for PowerCube-Modules of size 70

Description	ID
PAM 100	0307800

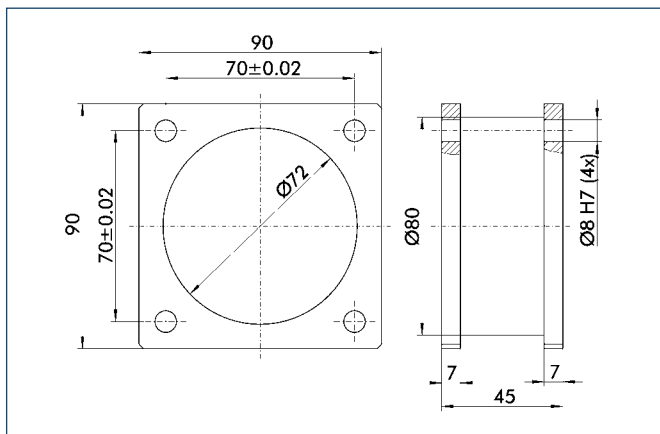
## PAM 101 – straight



suitable for PowerCube-Modules of size 70

Description	ID
PAM 101	0307801

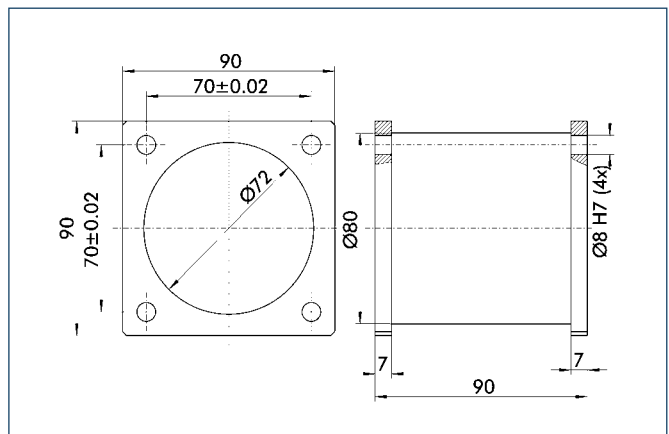
## PAM 102 – straight



suitable for PowerCube-Modules of size 90

Description	ID
PAM 102	0307802

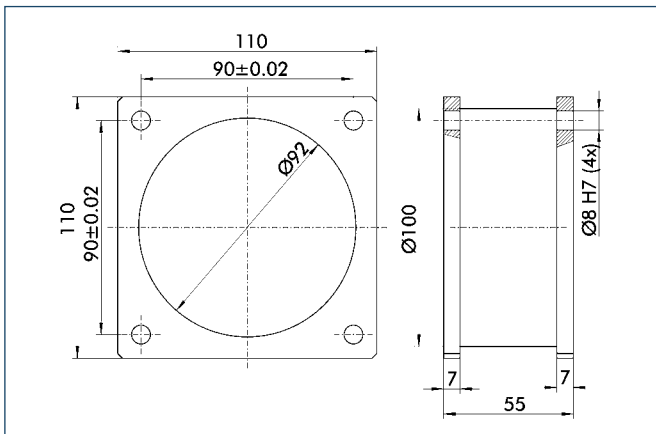
## PAM 103 – straight



suitable for PowerCube-Modules of size 90

Description	ID
PAM 103	0307803

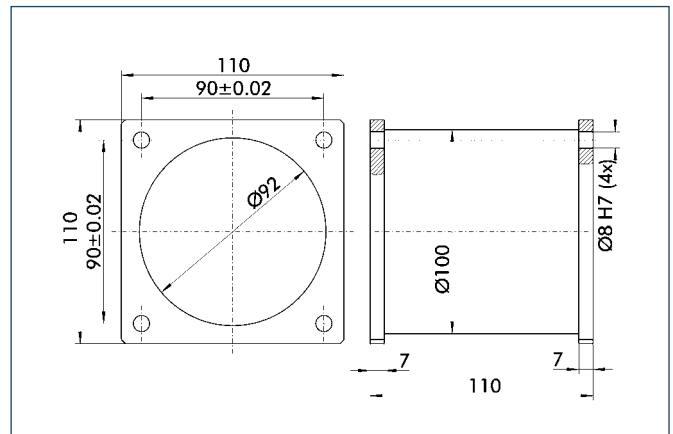
## PAM 104 – straight



suitable for PowerCube-Modules of size 110

Description	ID
PAM 104	0307804

## PAM 105 – straight



suitable for PowerCube-Modules of size 110

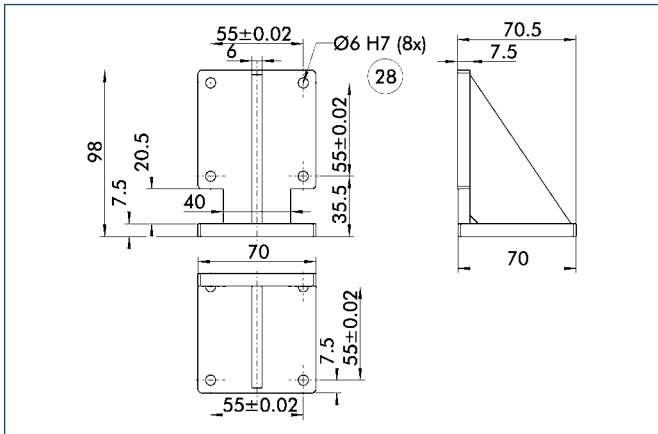
Description	ID
PAM 105	0307805



# PAM – Angled

## Accessories · Mounting Elements · Connecting Elements for PowerCube

### PAM 120 – angled

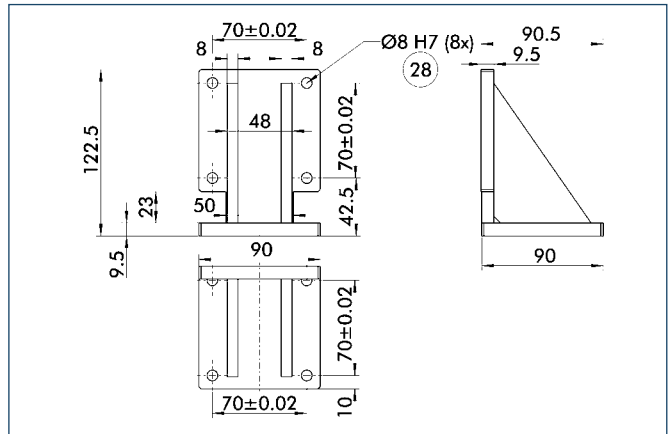


⊘ Through-bore

suitable for PowerCube-Modules of size 70

Description	ID
PAM 120	0307820

### PAM 121 – angled

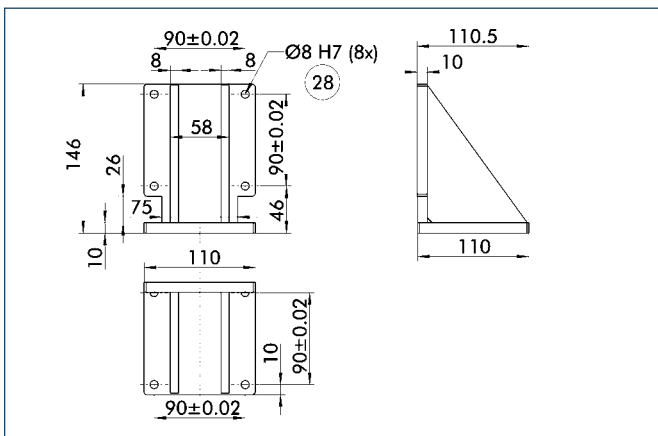


⊘ Through-bore

suitable for PowerCube-Modules of size 90

Description	ID
PAM 121	0307821

### PAM 122 – angled

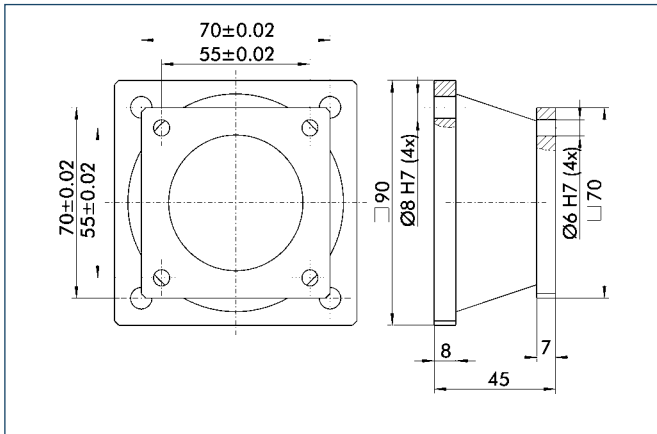


⊘ Through-bore

suitable for PowerCube-Modules of size 110

Description	ID
PAM 122	0307822

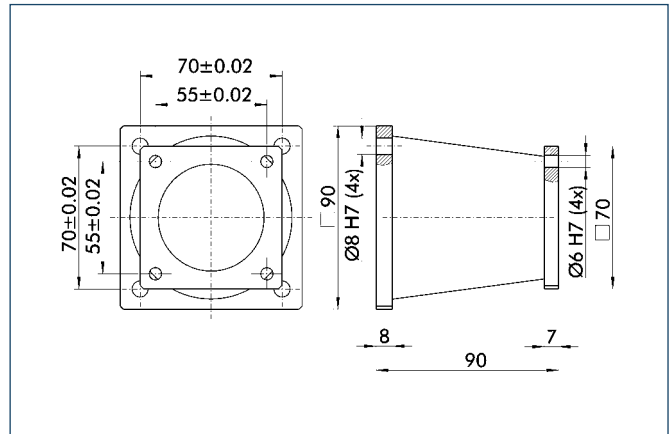
## PAM 110 – conical



suitable for PowerCube-Modules of size 70/90

Description	ID
PAM 110	0307810

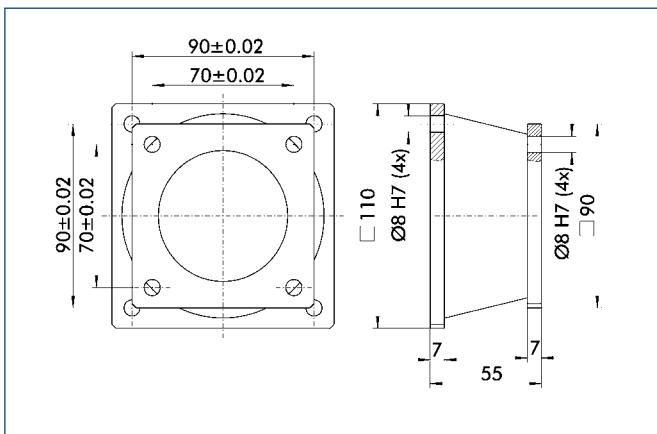
## PAM 111 – conical



suitable for PowerCube-Modules of size 70/90

Description	ID
PAM 111	0307811

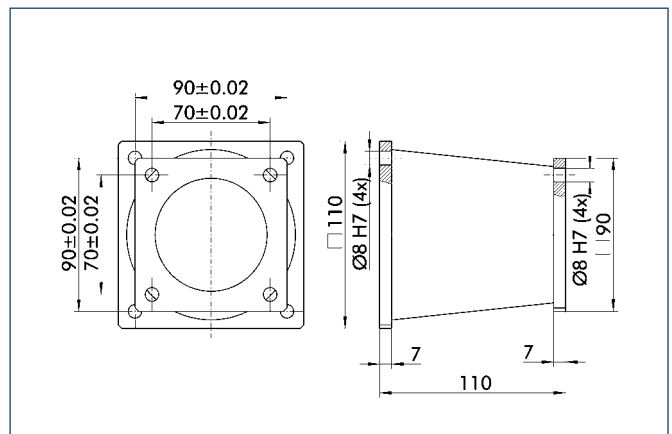
## PAM 112 – conical



suitable for PowerCube-Modules of size 90/110

Description	ID
PAM 112	0307812

## PAM 113 – conical



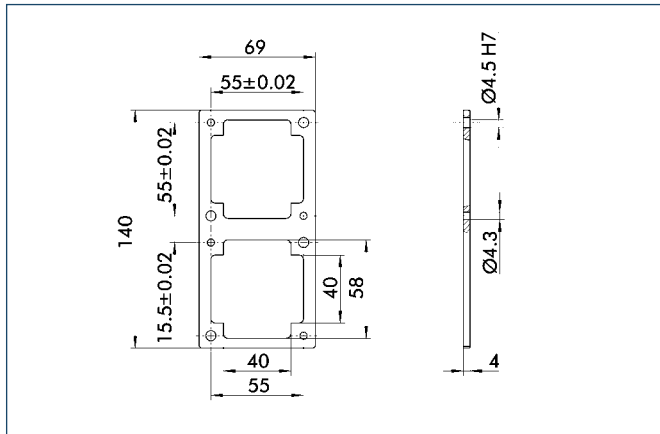
suitable for PowerCube-Modules of size 90/110

Description	ID
PAM 113	0307813

# PAM – Adapter Plates

Accessories · Mounting Elements · **Connecting Elements for PowerCube**

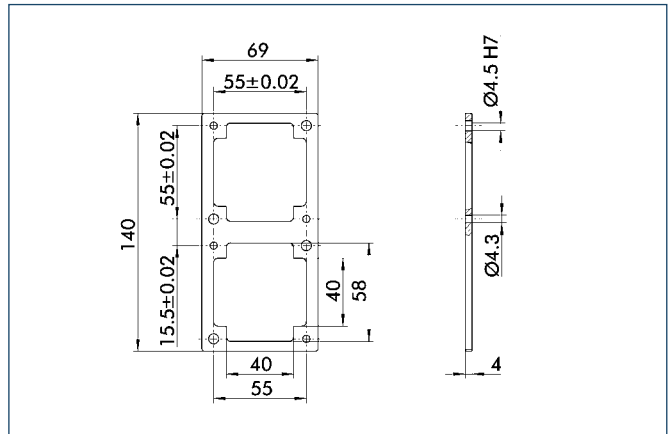
## PAM 164



suitable for PowerCube-Modules of size 70

Description	ID
PAM 164	0307864

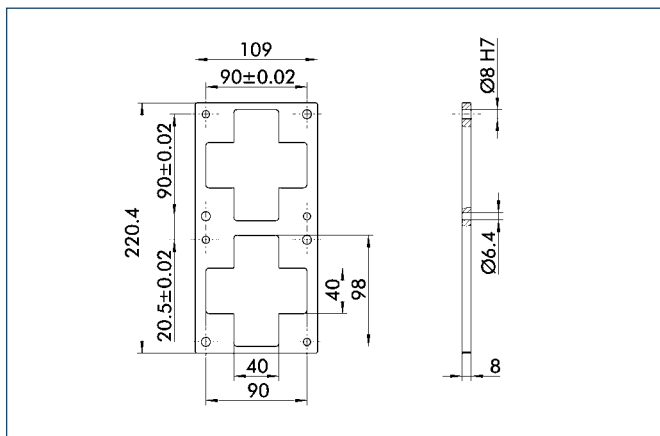
## PAM 165



suitable for PowerCube-Modules of size 90

Description	ID
PAM 165	0307865

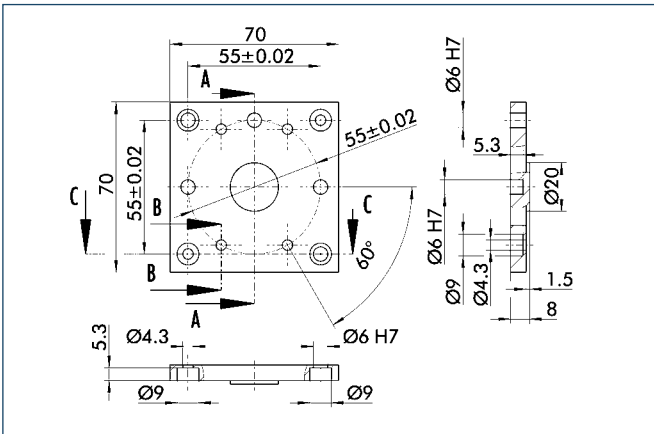
## PAM 166



suitable for PowerCube-Modules of size 110

Description	ID
PAM 166	0307866

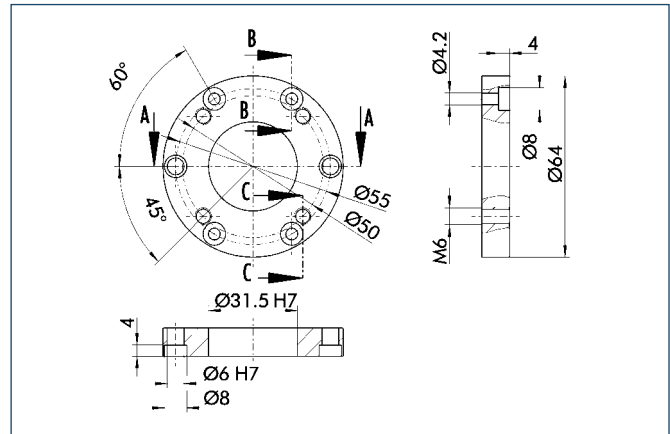
## PAM 147 – PG to PW



suitable for accurately repeatable connection of the 2-finger parallel gripper PG 70 with the rotary pan-tilt actuator PW 70

Description	ID
PAM 147	0307847

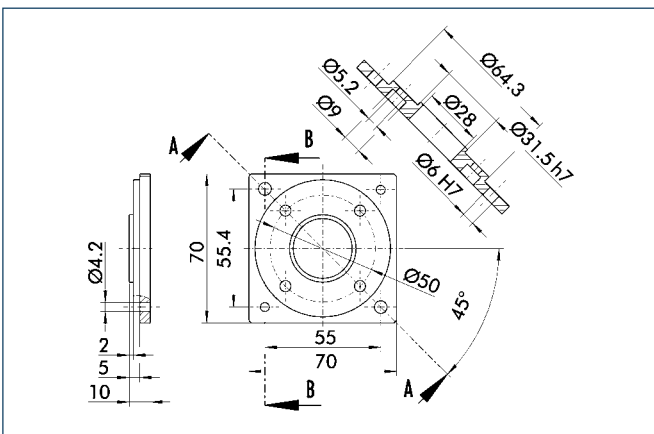
## PAM 160 – PW to FTCL



suitable for accurately repeatable connection of the rotary pan-tilt actuator PW 70 with the force sensor FTCL-050

Description	ID
PAM 160	0307860

## PAM 161 – FTCL to PG



suitable for accurately repeatable connection of the force sensor FTCL-050 with the 2-finger parallel gripper PG 70

Description	ID
PAM 161	0307861

## Pressure Maintenance Valves and Fittings

for connection and mounting of pneumatic hoses



### Your advantages and benefits

#### Suitable

for all SCHUNK gripper, rotary and linear modules, in addition to robot accessories

#### Flexible utilization

for use on pneumatic hoses from various manufacturers

#### Fittings as plug-in connections

for fast hose attachment

#### SDV-P pressure maintenance valve

prevents loss of pressure

## Application example



## Area of application

for secure hose connections in automation solutions

1 SDV-P Pressure Maintenance Valve

2 SWV Banjo Fitting

3 PGN-plus 2-Finger Parallel Gripper  
with workpiece-specific gripper  
fingers

## General information

Warranty  
24 months





## Pressure maintenance valve

In case of pressure loss, the pressure maintenance valve prevents air from escaping from the gripper. This prevents loss of clamping force, and the workpieces remain securely clamped in the gripper jaws. Especially suitable for grippers that cannot be equipped with a mechanical safety device.

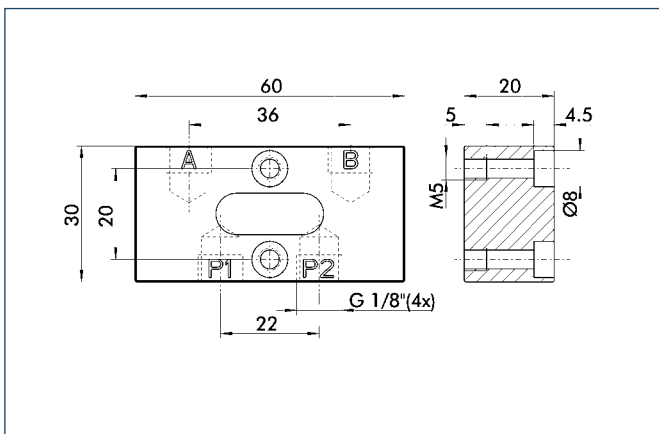
## Function

Two parallel switched check valves, which when pressurized, automatically open the return flow direction and close the pressure line.

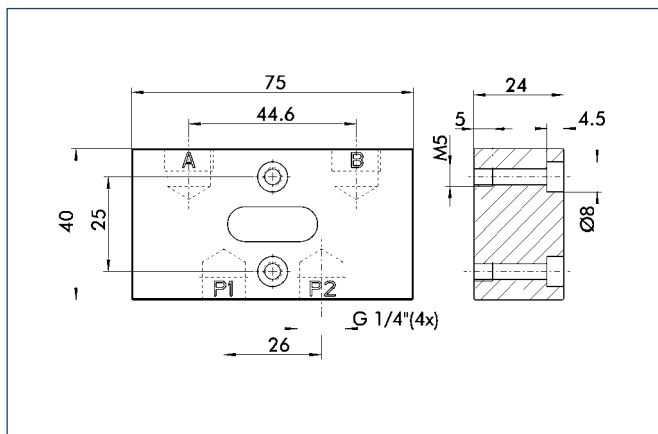
## Technical data

Description		SDV-P 04	SDV-P 07
	ID	0403130	0403131
Connection	["]	G1/8	G1/4
Max. throughput	[l/min]		
Min. ambient temperature	[°C]	-10.0	-10.0
Max. ambient temperature	[°C]	80.0	80.0
Weight	[kg]	0.1	0.18

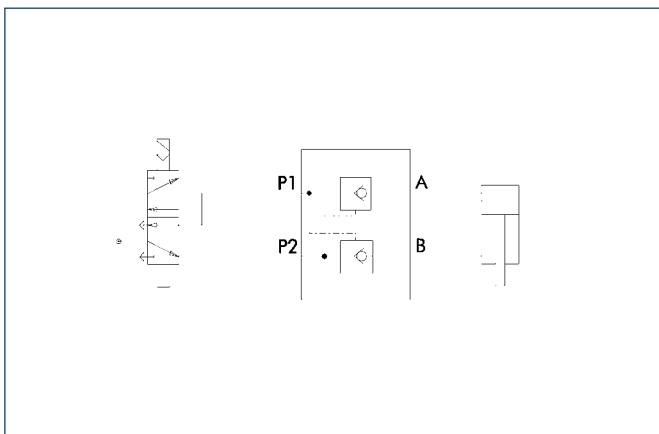
### SDV-P 04



### SDV-P 07



### Circuit diagram



## WV elbow fitting

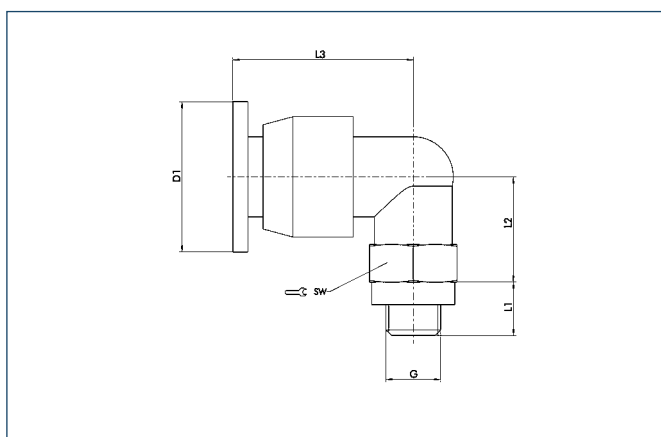
Version as plug-in connection for fast and easy connection to the pneumatic energy supplies



## Technical data

Description		WV-G1/8-6	WV-G1/8-8	WV-G1/4-6
	ID	9937129	9936730	9937170
For hose diameter	[mm]	6.0	8.0	6.0
Threaded connection	["]	G1/8	G1/8	G1/4
Max. pressure	[bar]	20.0	20.0	20.0
Min. ambient temperature	[°C]	-10.0	-10.0	-10.0
Max. ambient temperature	[°C]	60.0	60.0	60.0

### Main view WV



Variable	WV-G 1-8-6	WV-G 1-8-8	WV-G 1-4-6
G	1/8"	1/8"	1/4"
L <sub>1</sub>	5	5	7
L <sub>2</sub>	13.5	16	15.5
L <sub>3</sub>	22	25.5	23.5
D <sub>1</sub>	12	14	12
SW	13	13	17
S <sub>4</sub>	10	12	10



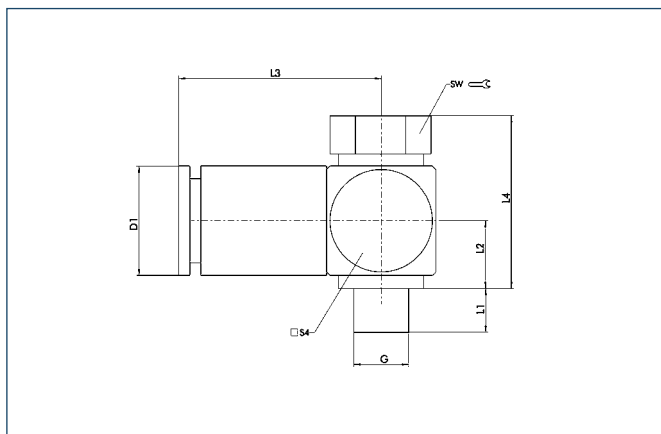
## SWV banjo fitting

Version as plug-in connection for fast and easy connection to the pneumatic energy supplies



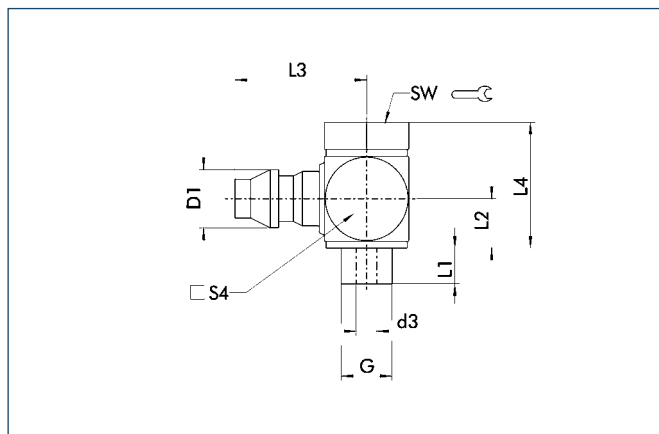
Description		SWV-M3-4	SWV-M5-6	SWV-G4-6	SWV-G8-6	SWV-G4-8
	ID	9210505	9936171	9937128	9937152	9936728
For hose diameter	[mm]	4.0	6.0	6.0	6.0	8.0
Threaded connection	["]	M 3	M 5	G1/4	G1/8	G1/4
Max. pressure	[bar]	20.0	20.0	20.0	20.0	20.0
Min. ambient temperature	[°C]	-10.0	-10.0	-10.0	-10.0	-10.0
Max. ambient temperature	[°C]	60.0	60.0	60.0	60.0	60.0

**Main view SWV**



Variable	SWV-M5-6	SWV-G8-6	SWV-G4-6	SWV-G4-8
G	M5	G1/8"	G1/4"	G1/4"
d <sub>3</sub>	2	5	7	7
L <sub>1</sub>	4	6.5	8	8
L <sub>2</sub>	6.2	8.25	8.4	15.3
L <sub>3</sub>	18.5	22.5	24.5	25
L <sub>4</sub>	15.8	20.5	21.6	21.6
D <sub>1</sub>	10	12	12	13.5
SW	8	14	17	17
S4	10	15	19	19

**Main view SWV-M3**



Variable	SWV-M3-4
G	M3
d <sub>3</sub>	1.1
L <sub>1</sub>	2
L <sub>2</sub>	2.5
L <sub>3</sub>	7.3
L <sub>4</sub>	7.3
D <sub>1</sub>	3.4
SW	5
S4	5



## DSV banjo fitting with one-way flow control valve

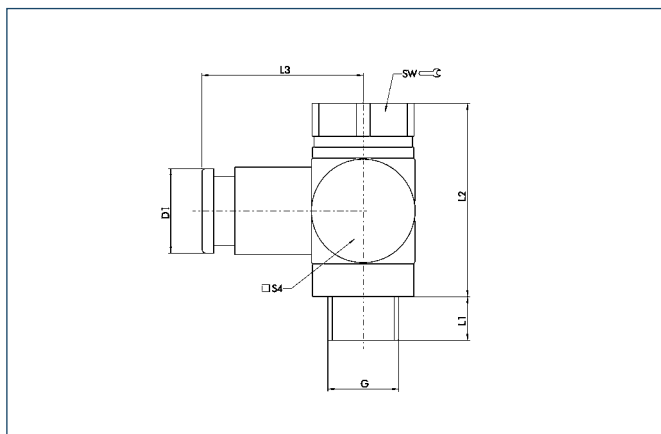
Version as plug-in connection for fast and easy connection to the pneumatic energy supplies



### Technical data

Description		DSV-M3-4	DSV-M5-6	DSV-G8-6	DSV-G4-6	DSV-G4-8
	ID	9720005	9936160	9936159	9936161	9936162
Hose	[mm]	3.0	6.0	6.0	6.0	8.0
Min. operating temperature	[°C]	-10.0	-10.0	-10.0	-10.0	-10.0
Max. operating temperature	[°C]	60.0	60.0	60.0	60.0	60.0
Max. operating pressure	[bar]	20.0	20.0	20.0	20.0	20.0

**Main view DSV**



Variable	DSV-M3-4	DSV-M5-6	DSV-G8-6	DSV-G4-6	DSV-G8-8
G	M3	M5	G1/8"	G1/4"	G1/8"
L <sub>1</sub>	2.5	4	5	6.5	5
L <sub>2 max.</sub>	29	21.5	30	32	30
L <sub>3</sub>	11	21	22.5	24.5	23
D <sub>1</sub>	4.8	10.4	12	12	14
SW	knurl	8	14	17	14





### Grease

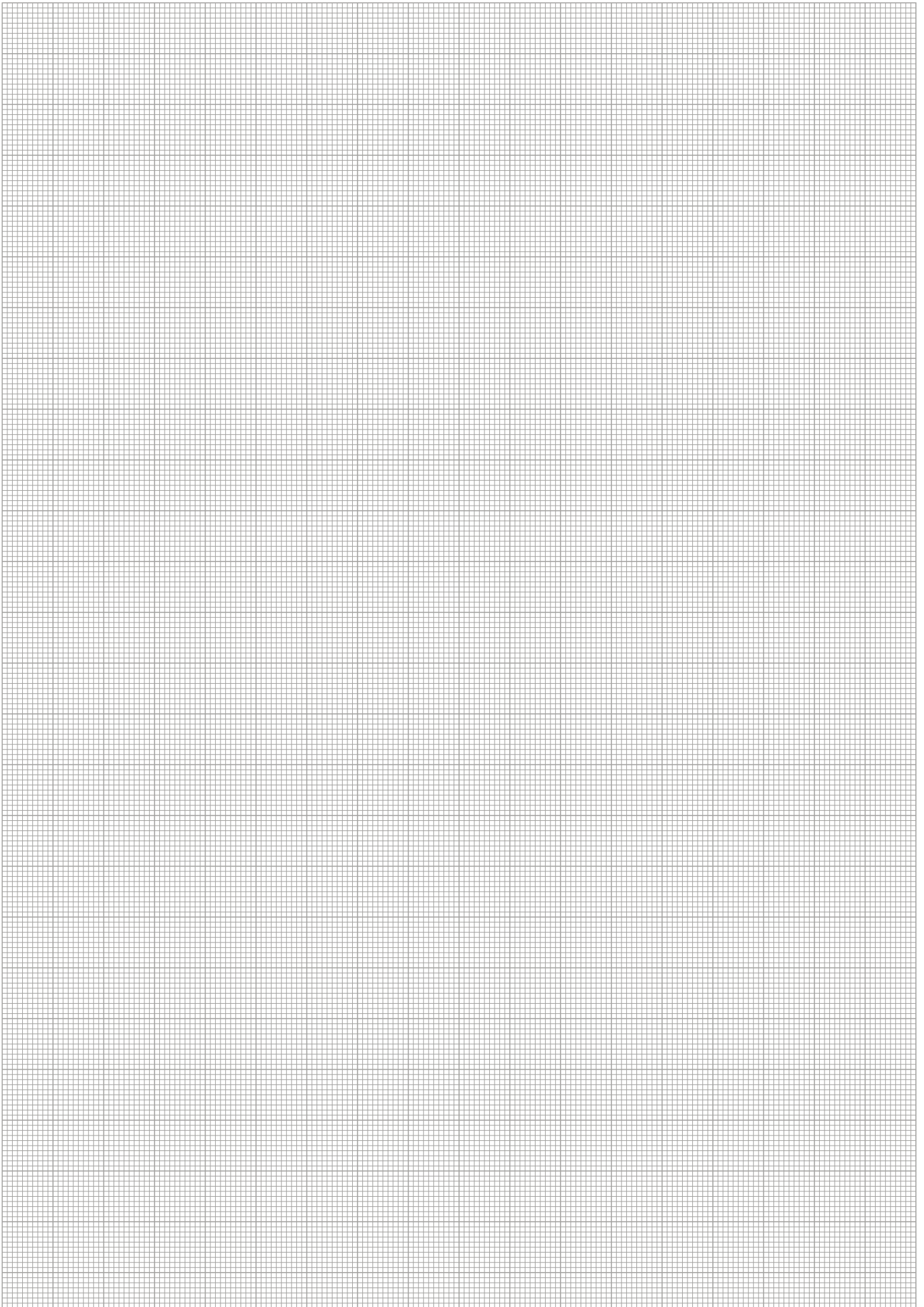
Grease for re-lubrication of SCHUNK products in small containers.



### Technical data

Description		HLT 2	BR 2 plus	LINO MAX
	ID	9948131	9948301	0184210
Area of application		Seals	Internal sliding surface between metal friction pairs	External sliding surface between metal friction pairs
Package form		Cartridge	Can	Cartridge
Quantity	[kg]	0.4	1.0	0.5

① Exact information on which grease is to be used where can be found in the operating manual for your SCHUNK module.



## Cable and Connector

Connecting cable for the flexible connection of electric gripper modules and modules of the PowerCube series.



### **Your advantages and benefits**

#### **High flexibility and tensile strength**

for a long service life

#### **Excellent EMC properties**

through various shielding methods and the use of special materials

#### **Special shell and insulation materials**

for high safety in the application

## Application example



## Area of application

for cabling of automation modules with each other and to external controllers

- 1 Hybrid Cable PAE 003 coiled
- 2 Hybrid Cable PAE 001 straight
- 3 Servo-electric Rotary Actuator PR 70
- 4 Servo-electric Linear Axis with ball-screw spindle drive PLS
- 5 PG 70 2-Finger Parallel Gripper

## General information

Warranty  
24 months



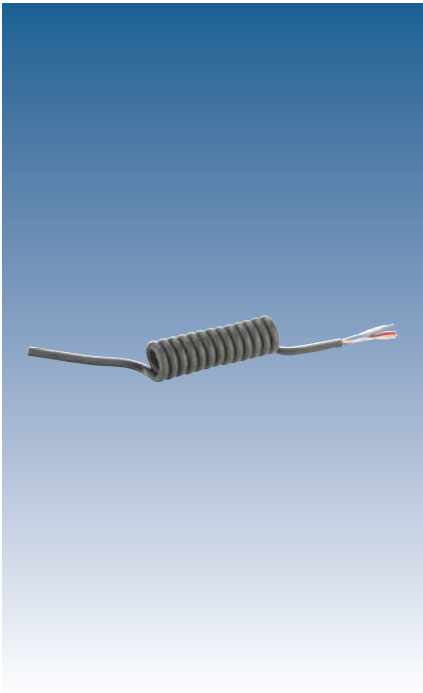
# Hybrid Cable PAE

Accessories • For Electric Modules • **Cable/Connector**

## Hybrid cable for PowerCube modules

**POWER**  **CUBE**

for combined information and energy transmission.  
Coiled version with high restoring forces and extension length to a multiple of the closed block length.

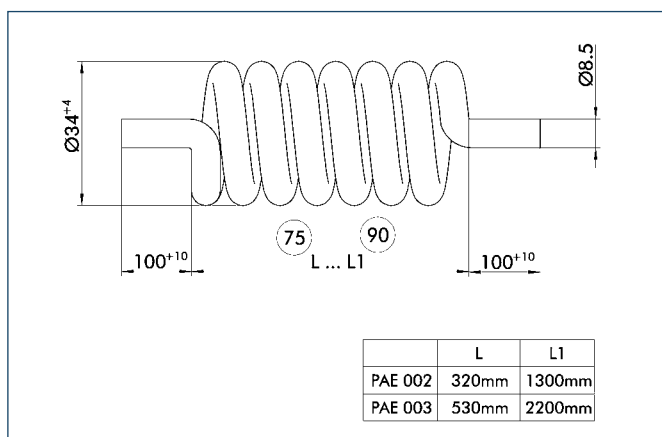


## Technical data

Description		PAE 001	PAE 002	PAE 003
	ID	9941120	0307753	0307754
Version		straight	coiled	coiled
Basic length	[m]		0.3	0.46
Length of path	[m]		0.8	1.5
Operating voltage, drive	[V]	600	600	600
Operating voltage, communication/logic	[V]	450	450	450
Cable diameter	[mm]	8.5	8.5	8.5
Minimum bending radius	[mm]	42.5	42.5	42.5
Optimum bending radius	[mm]	85	85	85
Number of conductors, drive		2	2	2
Wire size, drive	[mm <sup>2</sup> ]	2.5	2.5	2.5
Number of conductors, communication/logic		4	4	4
Wire size, communication/logic	[mm <sup>2</sup> ]	0.15	0.15	0.15

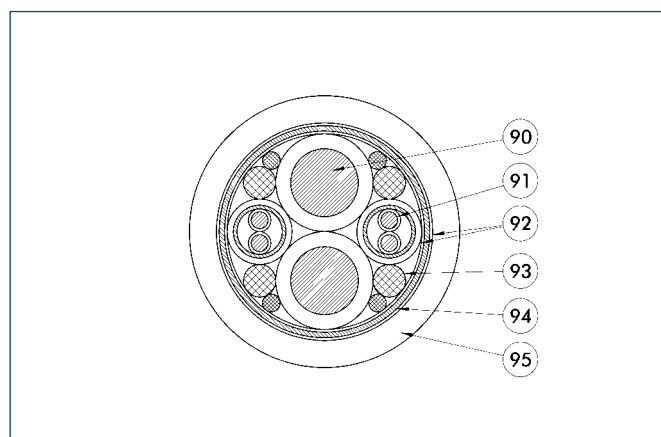
① The basic dimensions and wire size of the PAE 001 cable correspond to the cable versions PAE 002 and PAE 003.

## PAE 002/PAE 003



- 75 Cable length
- 90 Extended cable lengths

## Wire size, PAE



- 90 2 wires with 2.5 mm<sup>2</sup>
- 91 2 wires with 0.15 mm<sup>2</sup>
- 92 Wrapping
- 93 Filler
- 94 Screen
- 95 Outer covering

The drawing shows the hybrid cable PAE in cross section.

# Connecting Cable for MEG

Accessories · For Electric Modules · **Cable/Connector**

## Interconnecting cable

Interconnecting cable for the electrical connection of the 2-finger parallel gripper MEG. The cables have straight or right-angle cable sockets and a stranded wire on the other end.

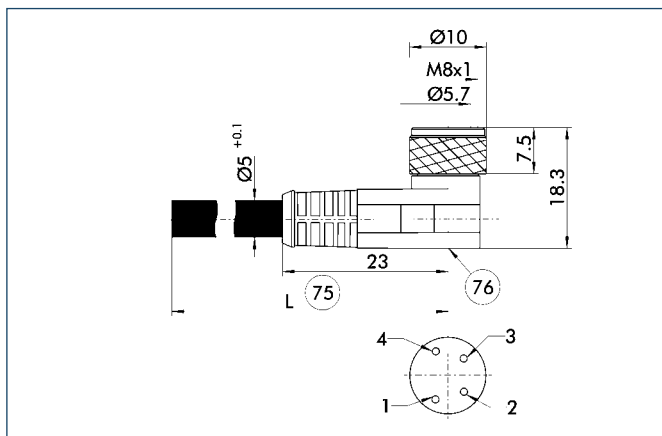


## Technical data

Description		MEG-EC-K5-W	MEG-EC-K10-W	MEG-EC-K5-G	MEG-EC-K10-G	MEG-IC-K5-W	MEG-IC-K10-W
	ID	0307765	0307766	0307767	0307768	0307760	0307761
Design of connector		angle	angle	straight	straight	angle	angle
Basic length	[m]	5.0	10.0	5.0	10.0	5.0	10.0
Max. operating voltage	[V]	300	300	300	300	300	300
Cable diameter	[mm]	4.8	4.8	4.8	4.8	4.8	4.8
Number of conductors		14	14	14	14	14	14
Wire cross section	[mm <sup>2</sup> ]	0.25	0.25	0.25	0.25	0.25	0.25

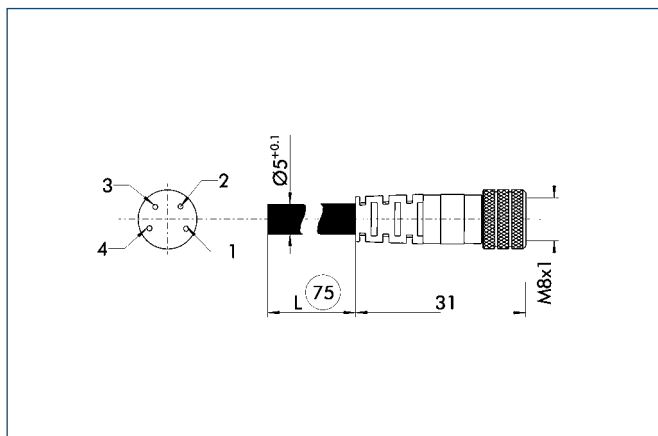
① The designations -W and -G stand for the design of the connector plug (right-angle and straight)

## MEG-EC-K5/K10-W



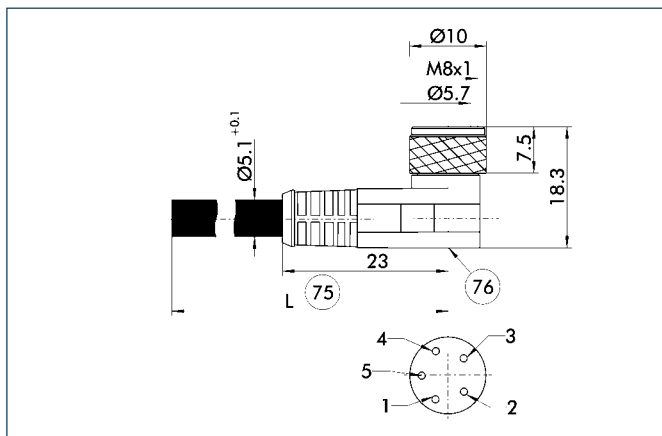
- 75 Cable length
- 76 LED

## MEG-EC-K5/K10-G



- 75 Cable length

## MEG-IC-K5/K10-W



- 75 Cable length
- 76 LED





## Hose release pliers



### Function description

The hose release pliers SLZ are used for fast, easy and finger-friendly removal of pneumatic hoses from connectors. With the pliers, you can simultaneously press the release ring and pull the hose from the connector – all with only one hand.

### Your advantages and benefits

#### Finger-friendly

for long, pleasant work periods

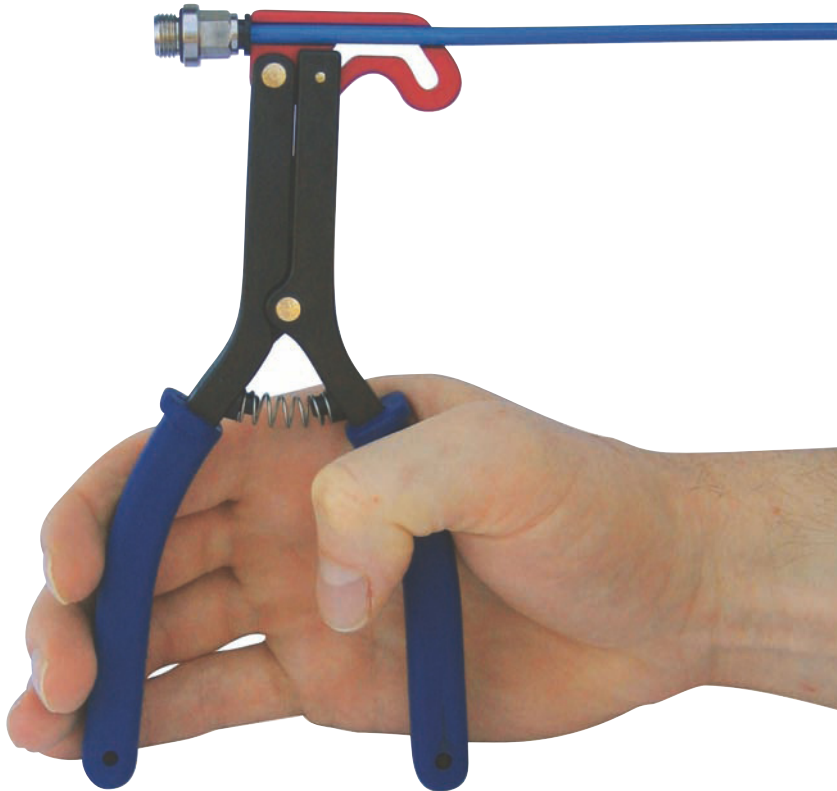
#### Flexible utilization

for use on plug-in connections from various manufacturers

#### Color marking of the SLZ size

for quickly finding the SLZ sizes in the toolbox for the correct hose diameter

## Application example



## Area of application

tool for the fitter, for connecting and removing pneumatic hoses at plug-in connections

## General information

### Material

Plastic

### Sizes

Versions for standard hose sizes 4 mm, 6 mm and 8 mm

### Warranty

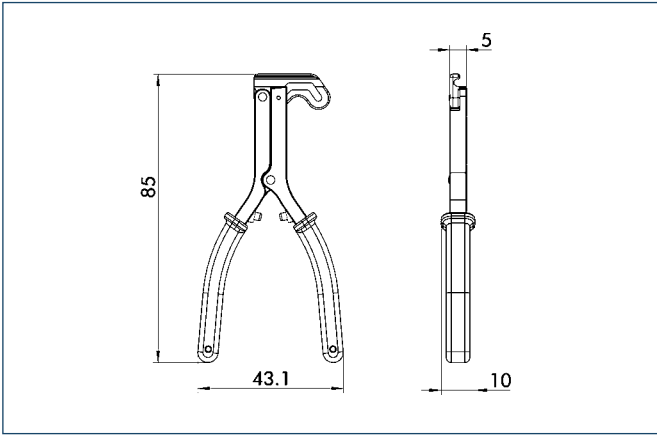
24 months



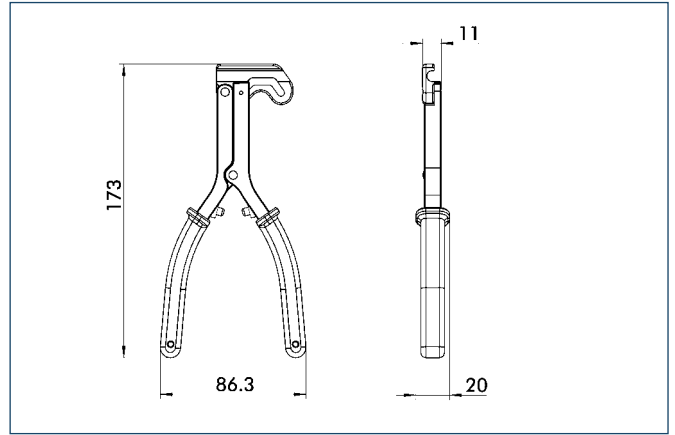
## Technical data

Description		SLZ 4	SLZ 6	SLZ 8
	ID	0301020	0301021	0301022
For hose diameter		4 mm	6 mm	8 mm
Material		Plastic	Plastic	Plastic

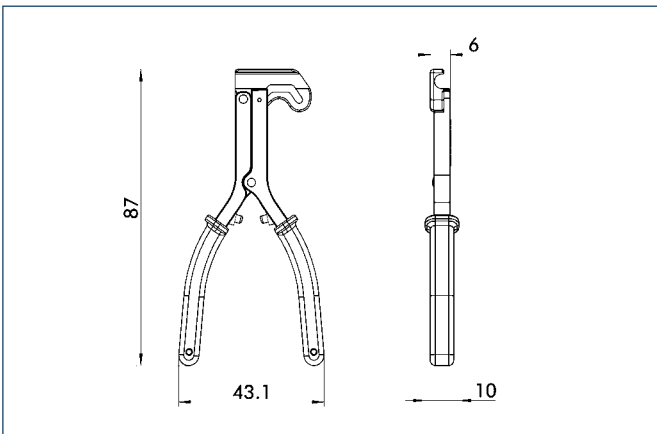
SLZ 4

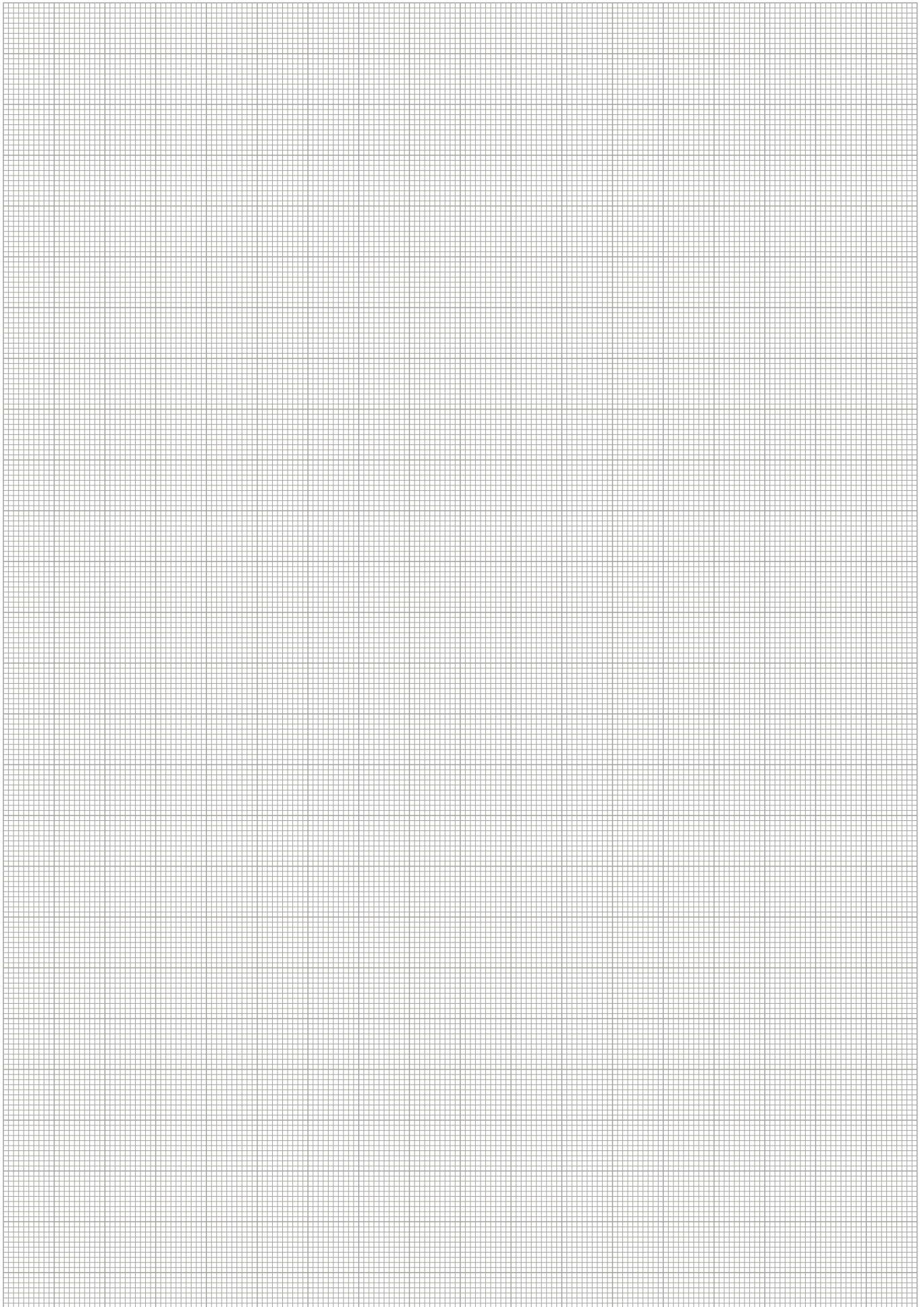


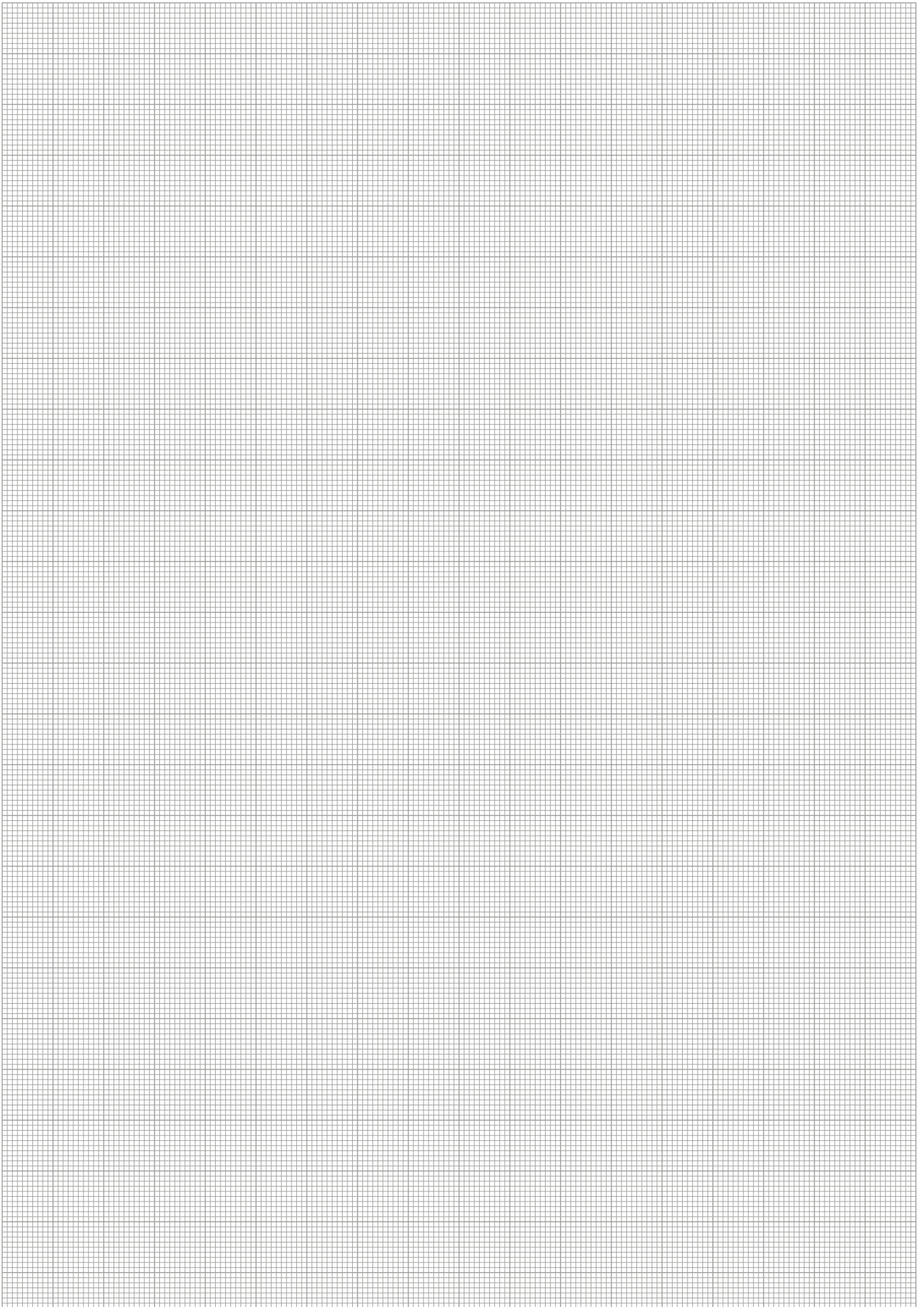
SLZ 6

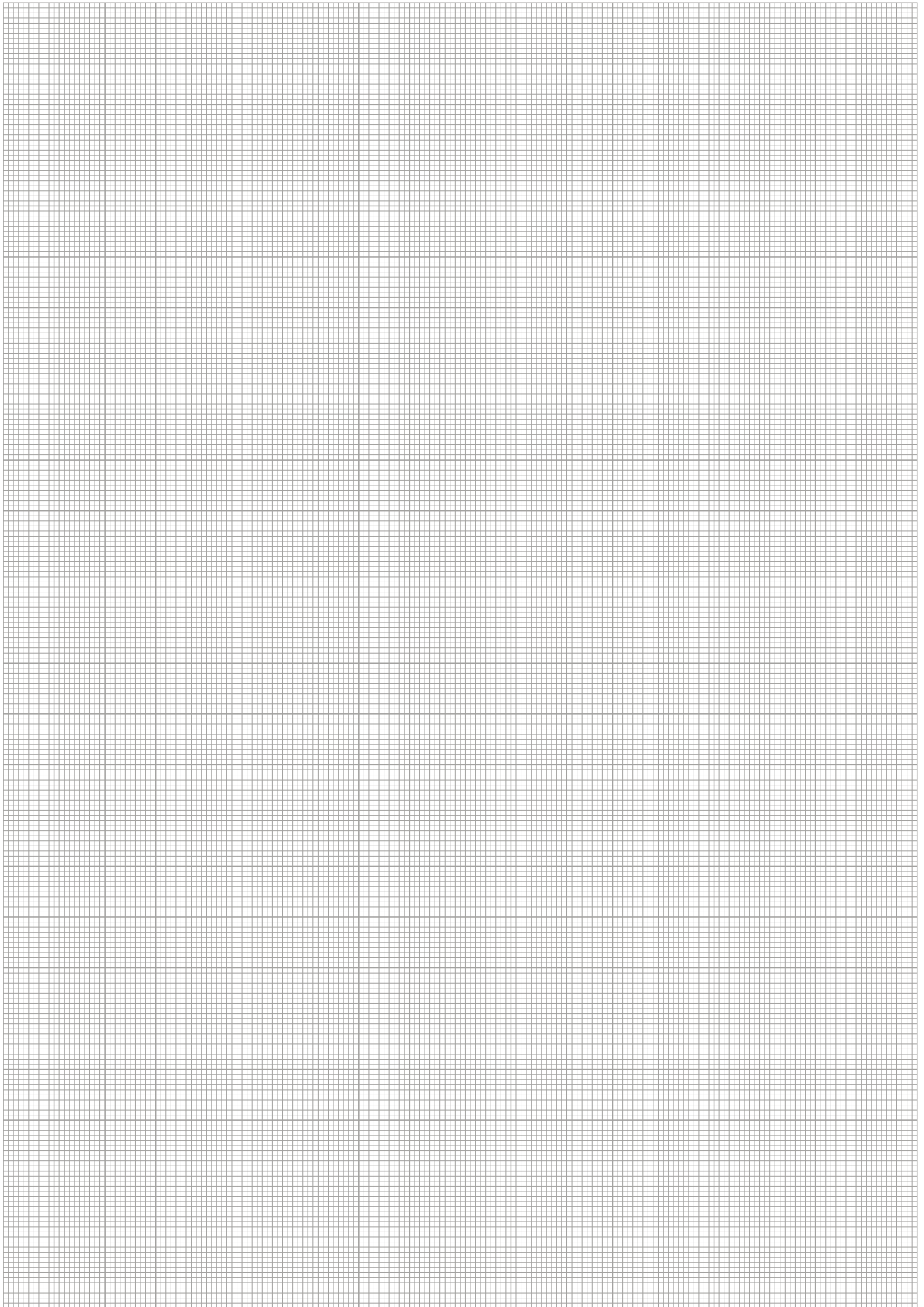


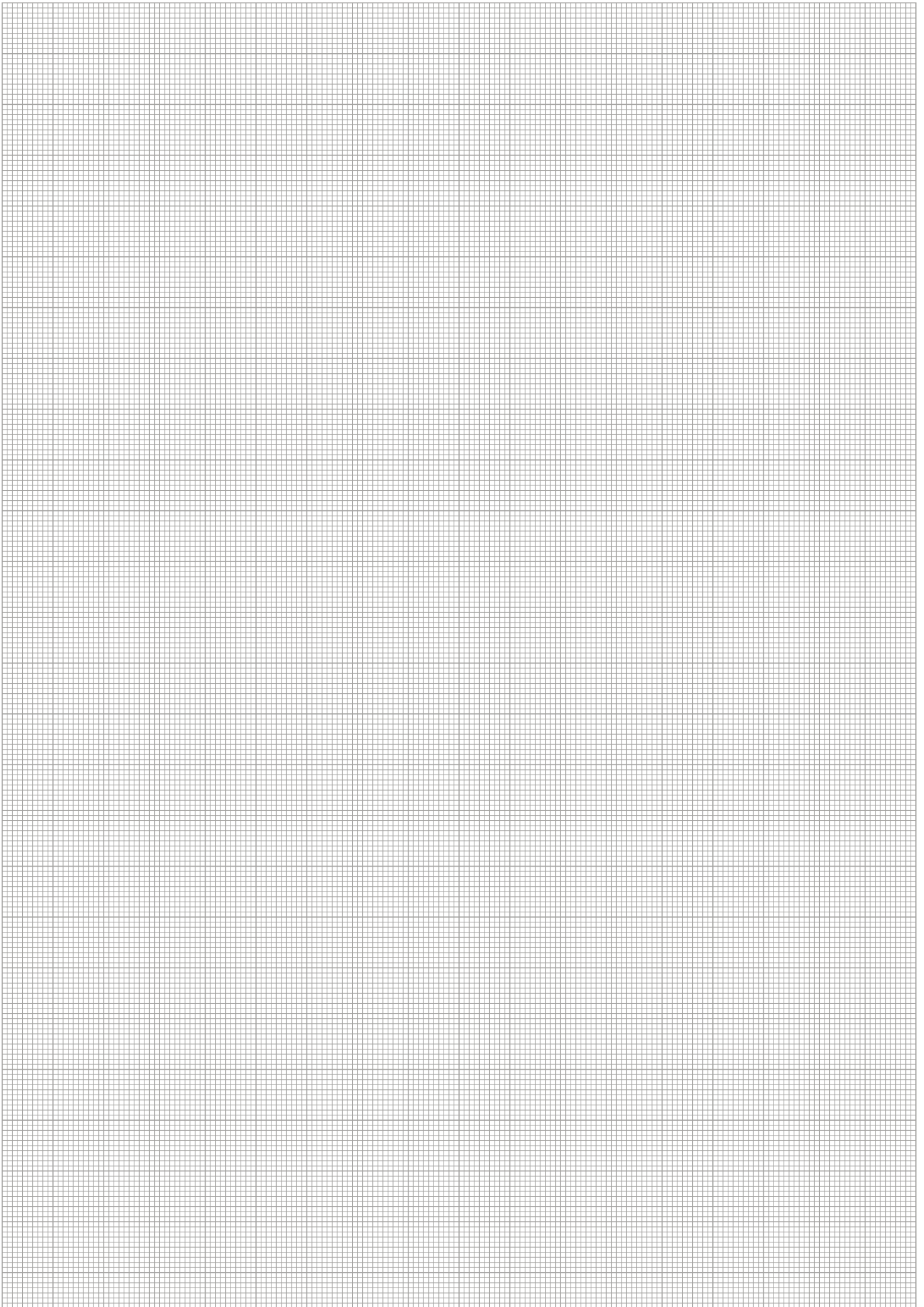
SLZ 8



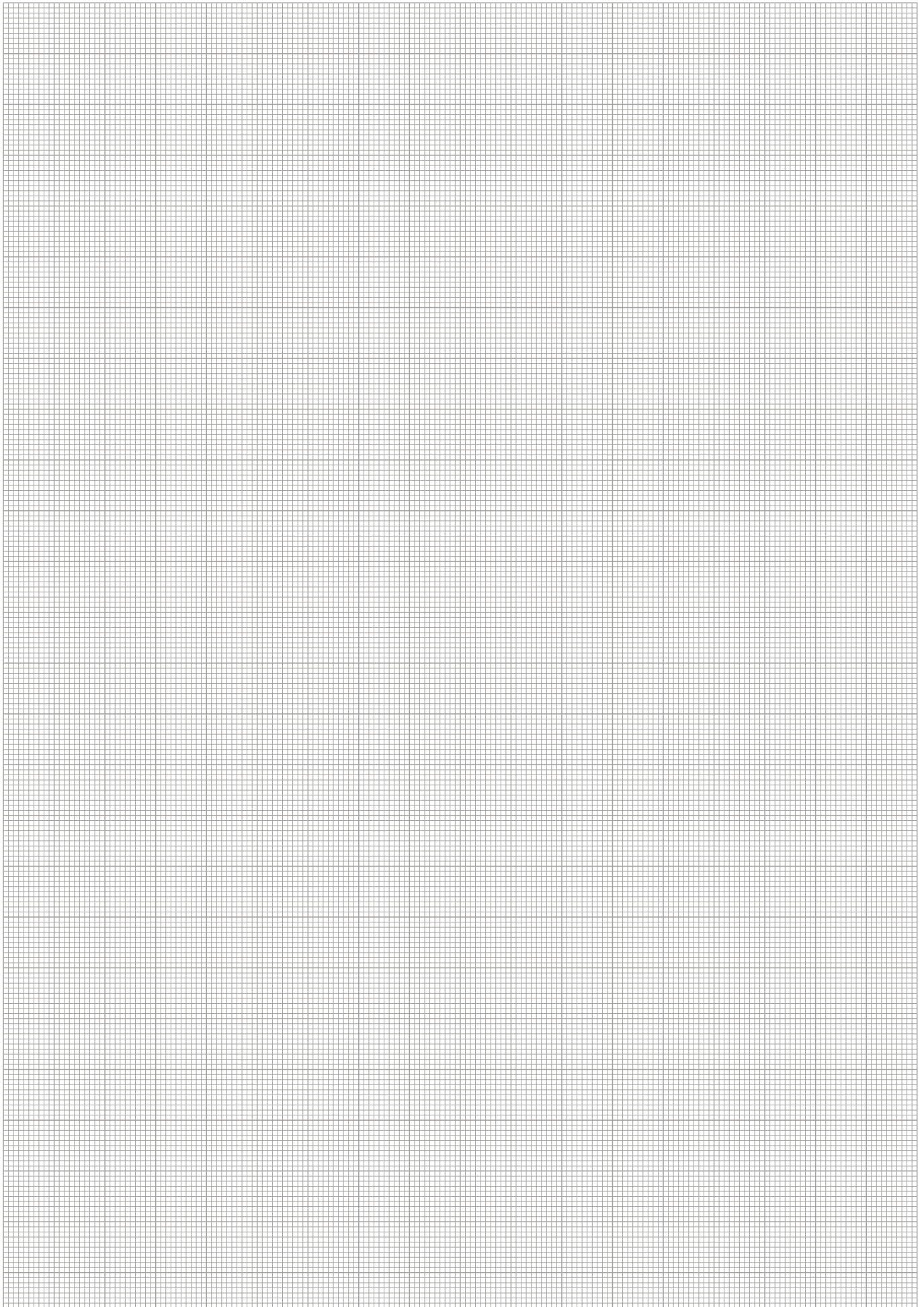












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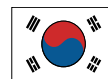
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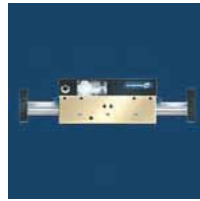
## Automation



Gripping Modules



Rotary Modules



Linear Modules



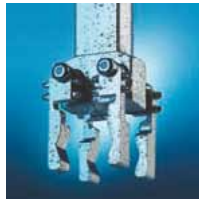
Robot Accessories



Machine Vision



Product Overview



Industry Solutions  
Food Industry



Industry Solutions  
Packaging Industry



Highlights  
New Products



Modular Robotics



System GEMOTEC  
Modular Assembly Technology



System GEMOTEC  
Linear Modules with direct drives



System GEMOTEC  
Product Overview



CD-ROM Automation

## Toolholding and Workholding



Toolholding Systems



Stationary Workholding



Lathe Chucks



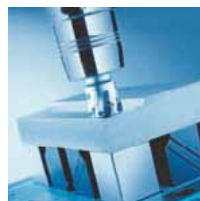
Chuck Jaws



Product Overview



Hydraulic Expansion Technology  
Special Solutions



Highlights  
New Products

Complete program Toolholding and Workholding

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inspiration for solutions that help you succeed. //

Heinz-Dieter Schunk





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