

# Mating connectors and cable sets for valves and sensors in hydraulics



## Features

- Mating connectors and cable sets for electrical connections to:
  - Valve solenoids
  - Valves with integrated electronics
  - Position and pressure sensors
- Various designs and standards
- Plastic and metal versions

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Mating connectors  
For valves with "K4" connector, 2-pole + PE, design A

Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Seal	Cable gland	Terminal area fitting	Maximum line cross-section in mm²	Conformity	Tightening torque range mounting screw M3 in Nm	Maximum tightening torque contact screw in Nm	Tightening torque cable gland in Nm
Without circuitry, standard																	
Z4	R901017010	0 ... 250		10	>+80	-30 ... +90	-	IP65	gray	NBR	M16 x 1.5	4 ... 10	1.5	CE 3; 4) VDE SEV	0.5 ... 0.6	0.5	1.5 ... 2.5
	R901017011	0 ... 250		10	>+80	-30 ... +90	-	IP65	black	NBR	M16 x 1.5	4 ... 10	1.5	CE 3; 4) VDE SEV	0.5 ... 0.6	0.5	1.5 ... 2.5
Z45	R900004823	0 ... 250		10	>+80	-30 ... +90	-	IP65	brown	NBR	NPT 1/2"	6 ... 8	1.5	CE 3; 4) VDE SEV UR	0.5 ... 0.6	0.5	1.5 ... 2.5
	R900011039	0 ... 250		10	>+80	-30 ... +90	-	IP65	black	NBR	NPT 1/2"	6 ... 8	1.5	CE 3; 4) VDE SEV UR	0.5 ... 0.6	0.5	1.5 ... 2.5
Without circuitry, with silicone seal																	
Z4	R901572528	0 ... 250		10	>+80	-40 ... +125	4	IP65	gray	VMQ	M16 x 1.5	4 ... 10	1.5	CE 3; 4) VDE SEV	0.5 ... 0.6	0.5	1.5 ... 2.5
	R901572529	0 ... 250		10	>+80	-40 ... +125	4	IP65	black	VMQ	M16 x 1.5	4 ... 10	1.5	CE 3; 4) VDE SEV	0.5 ... 0.6	0.5	1.5 ... 2.5
Z45	R901572517	0 ... 250		10	>+80	-40 ... +125	4	IP65	brown	VMQ	NPT 1/2"	6 ... 8	1.5	CE 3; 4) VDE SEV UR	0.5 ... 0.6	0.5	1.5 ... 2.5
	R901572526	0 ... 250		10	>+80	-40 ... +125	4	IP65	black	VMQ	NPT 1/2"	6 ... 8	1.5	CE 3; 4) VDE SEV UR	0.5 ... 0.6	0.5	1.5 ... 2.5

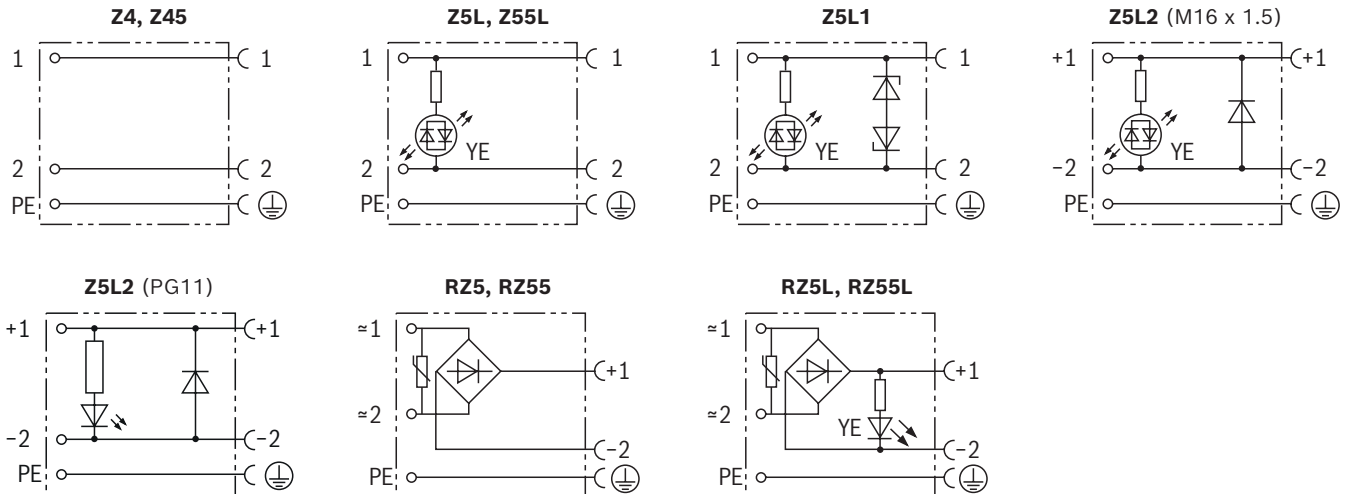
Footnotes see page 8.

 Notice: ♦ = Preferred type

## Mating connectors

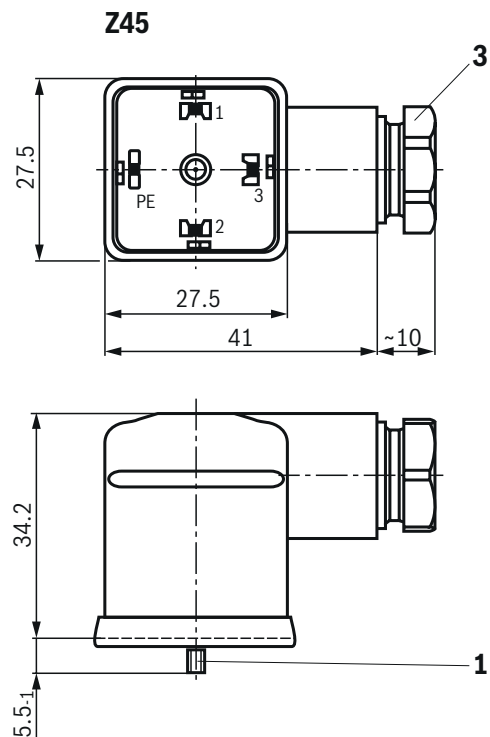
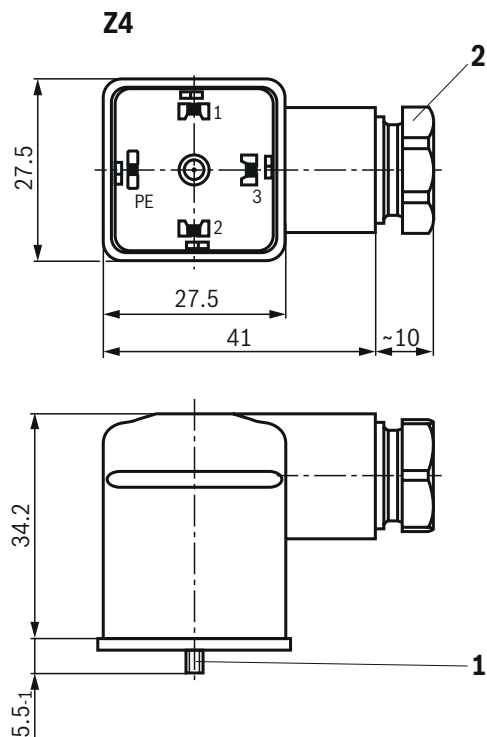
For valves with "K4" connector, 2-pole + PE, design A

### Circuit diagrams



### Dimensions

(dimensions in mm)



- 1 Mounting screw M3
- 2 Cable gland M16 x 1.5
- 3 Cable gland NPT 1/2"

Mating connectors

For valves with "K4" connector, 2-pole + PE, design A

Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Seal	Indicator light	Circuitry	Cable gland	Terminal area fitting	Maximum line cross-section in mm <sup>2</sup>	Conformity	Tightening torque range mounting screw M3 in Nm	Maximum tightening torque contact screw in Nm	Tightening torque cable gland in Nm
With indicator light, standard																			
Z5L	R901560501	12 ... 48	4	+60	-20 ... +60	0.8	IP65	black/transparent	NBR	LED yellow	Z-diode	M16 x 1.5	5 ... 10	1.5	CE <sup>4)</sup>	0.5	0.4	1.5 ... 2.5	
Z55L	R901560512	12 ... 48	4	+60	-20 ... +60	0.8	IP65	black/transparent	NBR	LED yellow	Z-diode	NPT 1/2"	5 ... 10	1.5	CE <sup>4)</sup>	0.5	0.4	2.5 ... 3.75	
With indicator light and Z-diode-suppressor																			
Z5L 1	R901017026	24 ±10 % <sup>5)</sup>	4	+60	-20 ... +60	0.8	IP65	black/transparent	NBR	LED yellow	Z-diode	M16 x 1.5	5 ... 10	1.5	CE <sup>4)</sup>	0.5	0.4	1.5 ... 2.5	
With indicator light and protective diode																			
Z5L 2	R901017027	24 ±10 % <sup>6)</sup>	–	3	+60	-20 ... +60	0.8	IP65	black/transparent	NBR	LED yellow	Free-wheeling diode"	M16 x 1.5	5 ... 10	1.5	CE <sup>4)</sup>	0.5	0.4	1.5 ... 2.5
	1834484138	20 ... 30	–	8	+60	-30 ... +80	2	IP65	transparent	NBR	LED red	Free-wheeling diode"	PG11	6 ... 9	1.5	CE <sup>4)</sup> VDE SEV	0.5 ... 0.6	0.5	2.5 ... 3.75
With rectifier																			
RZ5	R901563568	24 ... 240 <sup>7)</sup>	1	+60	-20 ... +60	2.5	IP65	black/transparent	NBR	–	Rectifier	M16 x 1.5	5 ... 10	1.5	CE <sup>3; 4)</sup>	0.5	0.4	1.5 ... 2.5	
RZ55	R901563573	24 ... 240 <sup>7)</sup>	1	+60	-20 ... +60	2.5	IP65	black/transparent	NBR	–	Rectifier	NPT 1/2"	5 ... 10	1.5	CE <sup>3; 4)</sup>	0.5	0.4	1.5 ... 2.5	
With indicator light and rectifier																			
RZ5L	R901563566	24 ... 240 <sup>7)</sup>	1	+60	-20 ... +60	2.5	IP65	black/transparent	NBR	LED yellow	Rectifier	M16 x 1.5	5 ... 10	1.5	CE <sup>3; 4)</sup>	0.5	0.4	1.5 ... 2.5	
RZ55L	R901563569	24 ... 240 <sup>7)</sup>	1	+60	-20 ... +60	2.5	IP65	black/transparent	NBR	LED yellow	Rectifier	NPT 1/2"	5 ... 10	1.5	CE <sup>3; 4)</sup>	0.5	0.4	2.5 ... 3.75	

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.  
2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.  
3) Low-Voltage Directive  
4) ROHS

5) Switch-off voltage peak limitation to 55 V  
6) Switch-off voltage peak limitation to 1 V  
7) Switch-off voltage peak limitation to 2 V


**Notice:** ◇ = Preferred type



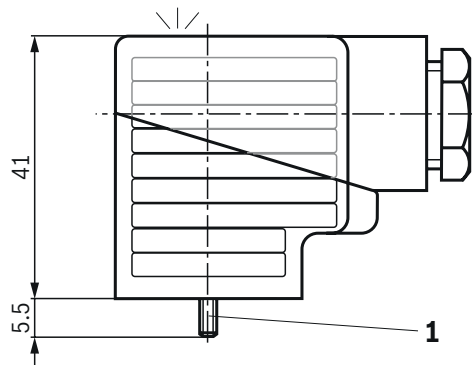
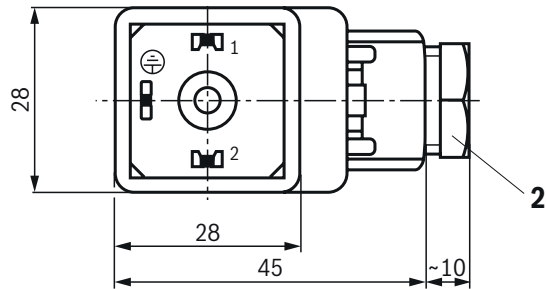
## Mating connectors

For valves with "K4" connector, 2-pole + PE, design A

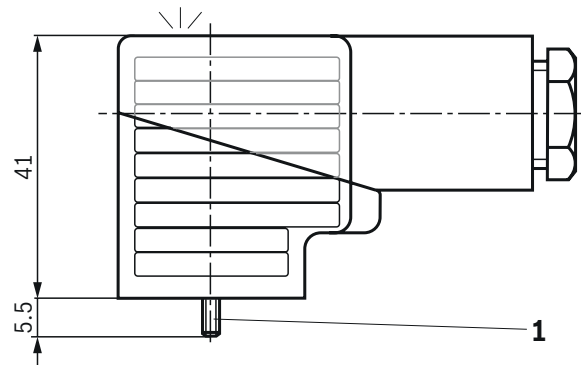
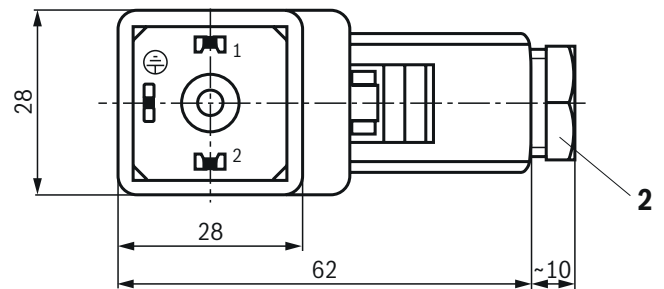
### Dimensions

(dimensions in mm)

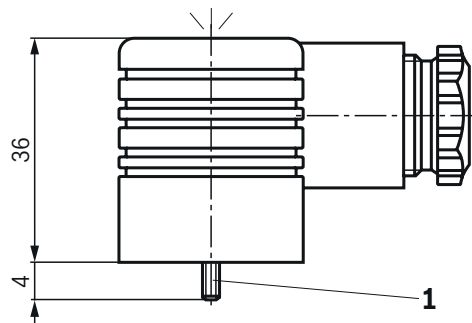
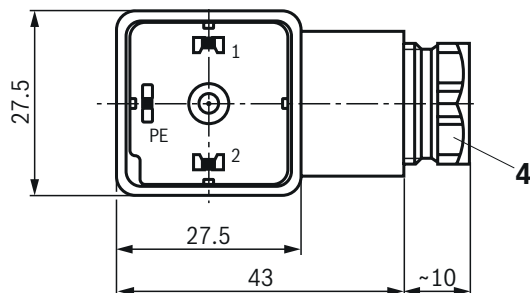
**Z5L, Z5L1, Z5L2, RZ5, RZ5L**



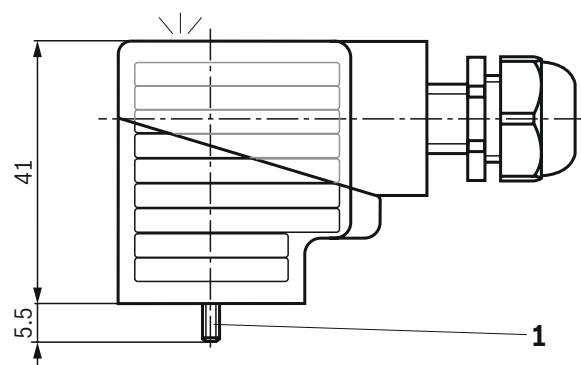
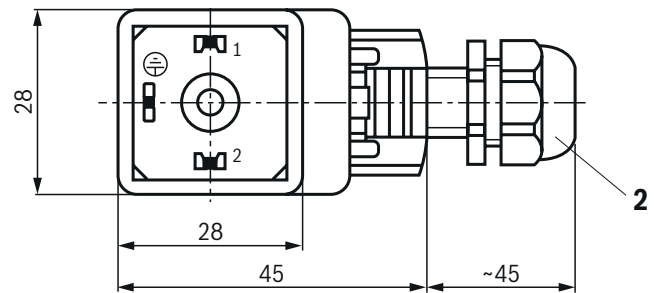
**Z55L**



**Z5L2**



**RZ55L, RZ55**



1 Mounting screw M3

2 Cable gland M16 x 1.5

3 Cable gland NPT 1/2"

4 Cable gland PG11

Cable sets  
For valves with "K4" connector, 2-pole + PE, design A

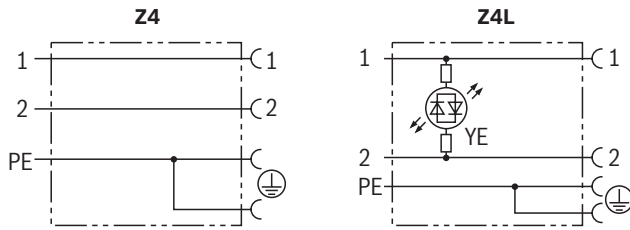
Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Indicator light	Line cross-section in mm²	Conformity	Tightening torque range mounting screw M3 in Nm	Cable diameter in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter
Without circuitry, standard																		
Z4	R900032020	3	0 ... 230		10	+85	-25 ... +85	-5 ... +85	4	IP67	black	–	3 x 1	CE 3; 4)	0.4	approx. 7,1	4 x	12.5 x
	R900032014	5	0 ... 230		10	+85	-25 ... +85	-5 ... +85	4	IP67	black	–	3 x 1	CE 3; 4)	0.4	approx. 7,1	4 x	12.5 x
	R900217134	10	0 ... 230		10	+85	-25 ... +85	-5 ... +85	4	IP67	black	–	3 x 1	CE 3; 4)	0.4	approx. 7,1	4 x	12.5 x
With indicator light																		
Z4L	R900032050	3	18 ... 30		4	+85	-25 ... +85	-5 ... +85	0.8	IP67	black	LED yellow	3x1	CE 4)	0.4	approx. 7,1	4 x	12.5 x
	R900032018	5	18 ... 30		4	+85	-25 ... +85	-5 ... +85	0.8	IP67	black	LED yellow	3x1	CE 4)	0.4	approx. 7,1	4 x	12.5 x
	R900217135	10	18 ... 30		4	+85	-25 ... +85	-5 ... +85	0.8	IP67	black	LED yellow	3x1	CE 4)	0.4	approx. 7,1	4 x	12.5 x
	R900032023	3	90 ... 130		1	+85	-25 ... +85	-5 ... +85	2.5	IP67	black	LED yellow	3x1	CE 3; 4)	0.4	approx. 7,1	4 x	12.5 x
	R900032012	5	90 ... 130		1	+85	-25 ... +85	-5 ... +85	2.5	IP67	black	LED yellow	3x1	CE 3; 4)	0.4	approx. 7,1	4 x	12.5 x
	R900217136	10	90 ... 130		1	+85	-25 ... +85	-5 ... +85	2.5	IP67	black	LED yellow	3x1	CE 3; 4)	0.4	approx. 7,1	4 x	12.5 x
	R900032024	3	230±10 %		0.5	+85	-25 ... +85	-5 ... +85	4	IP67	black	LED yellow	3x1	CE 3; 4)	0.4	approx. 7,1	4 x	12.5 x
	R900032010	5	190 ... 240		0.5	+85	-25 ... +85	-5 ... +85	4	IP67	black	LED yellow	3x1	CE 3; 4)	0.4	approx. 7,1	4 x	12.5 x

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.  
2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.  
3) Low-Voltage Directive  
4) ROHS

## Cable sets

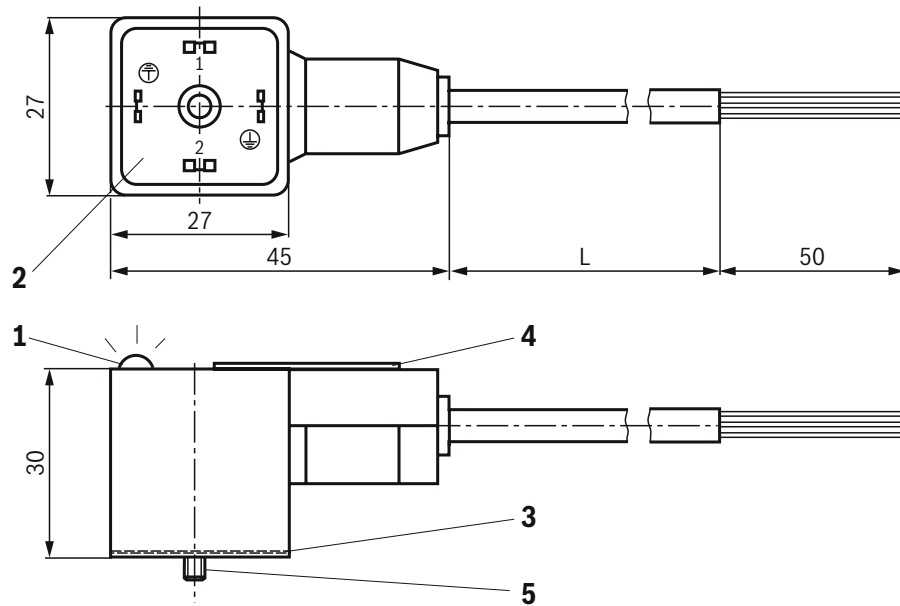
For valves with "K4" connector, 2-pole + PE, design A

## Circuit diagrams



## Dimensions

(dimensions in mm)



- 1 LED
- 2 Contacting 0 + 180° rotatable
- 3 Flat seal (not detachable)
- 4 Marking plate
- 5 Mounting screw M3 (not detachable)
- L Cable length 3, 5 or 10 m (see table page 10.)

Cable sets  
For valves with "K4" connector, 2-pole + PE, design A

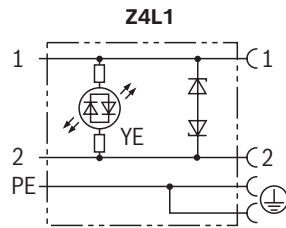
Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Indicator light	Circuitry <sup>5)</sup>	Line cross-section in mm <sup>2</sup>	Conformity	Tightening torque range mounting screw M3 in Nm	Cable diameter in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter
With indicator light and Z-diode-suppressor																			
Z4L1	R900032021	3	19.2 ... 28.8 <sup>5)</sup>	-	4	+85	-25 ... +90	-5 ... +85	0.8	IP67	black	LED yellow	Z-diode	3x1	CE <sup>4)</sup>	0.4	approx. 7.1	4 x	12.5 x
	R900032015	5	19.2 ... 28.8 <sup>5)</sup>	-	4	+85	-25 ... +85	-5 ... +85	0.8	IP67	black	LED yellow	Z-diode	3x1	CE <sup>4)</sup>	0.4	approx. 7.1	4 x	12.5 x
	R900217138	10	19.2 ... 28.8 <sup>5)</sup>	-	4	+85	-25 ... +85	-5 ... +85	0.8	IP67	black	LED yellow	Z-diode	3x1	CE <sup>4)</sup>	0.4	approx. 7.1	4 x	12.5 x

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.  
2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.  
4) ROHS  
5) Switch-off voltage peak limitation to 55 V

## Cable sets

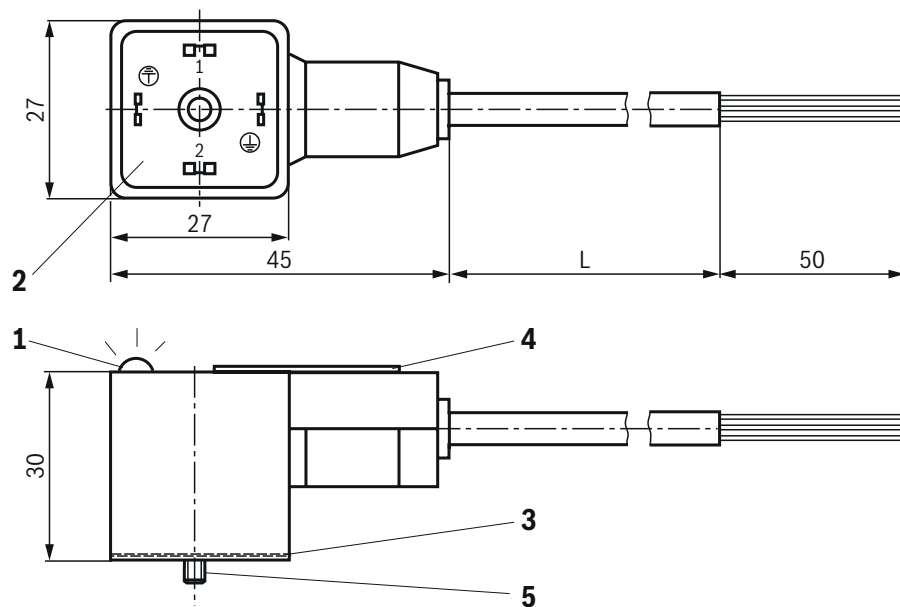
For valves with "K4" connector, 2-pole + PE, design A

## Circuit diagrams



## Dimensions

(dimensions in mm)



- 1 LED
- 2 Contacting 0 + 180° rotatable
- 3 Flat seal (not detachable)
- 4 Marking plate
- 5 Mounting screw M3 (not detachable)
- L Cable length 3, 5 or 10 m (see table page 12.)

Cable sets

For valves with two solenoids (double mating connectors) and connector "K4", 2-pole + PE, design A – for directional valves type WE 6, type SEC and pilot-operated on/off valves

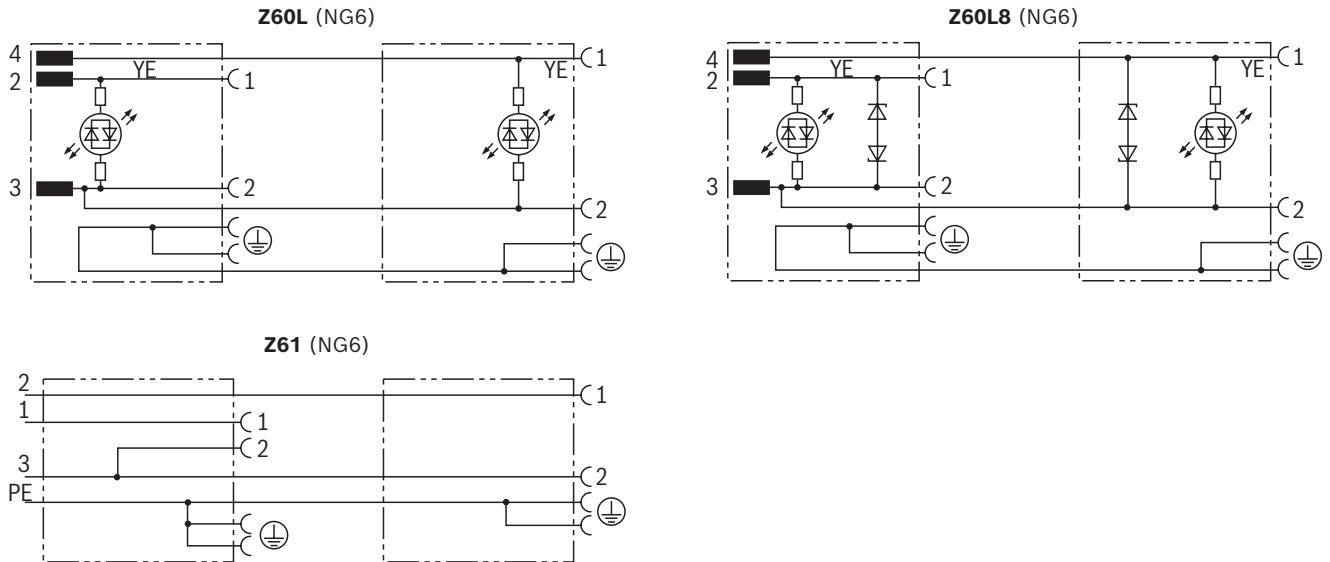
Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Seal	Indicator light	Circuitry	Line cross-section in mm²	Conformity	Tightening torque range mounting screw M3 in Nm	Cable diameter in mm	Cable diameter connection cable in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter
With indicator light; device connector M12 x 1																					
Z60L	R901207819	-	24±10 %	4	-	-40 ... +80	-25 ... +80	0.8	IP67	black	VMQ	LED yellow	-	-	0.75	CE <sup>4)</sup> CSA	0.4	-	approx. 5,9	4 x	10 x
With indicator light and Z-diode-suppressor; connector M12 x 1																					
Z60L8	R901205511	-	24±10 % <sup>8)</sup>	4	-	-40 ... +80	-25 ... +80	0.8	IP67	black	VMQ	LED yellow	Z-diode	0.75	CE <sup>4)</sup> CSA	0.4	0.4	-	approx. 5,9	4 x	10 x
With free cable end																					
Z61	R901207821	3	0 ... 250	4	+85	-40 ... +80	-25 ... +80	4	IP67	black	VMQ	-	-	-	0.75	CE <sup>3; 4)</sup>	0.4	approx. 6,5	approx. 5,9	4 x	10 x
Z61	R901207822	5	0 ... 250	4	+85	-40 ... +80	-25 ... +80	4	IP67	black	VMQ	-	-	-	0.75	CE <sup>3; 4)</sup>	0.4	approx. 6,5	approx. 5,9	4 x	10 x

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.  
 2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.  
 3) Low-Voltage Directive  
 4) ROHS  
 8) Switch-off voltage peak limitation to 50 V

## Cable sets

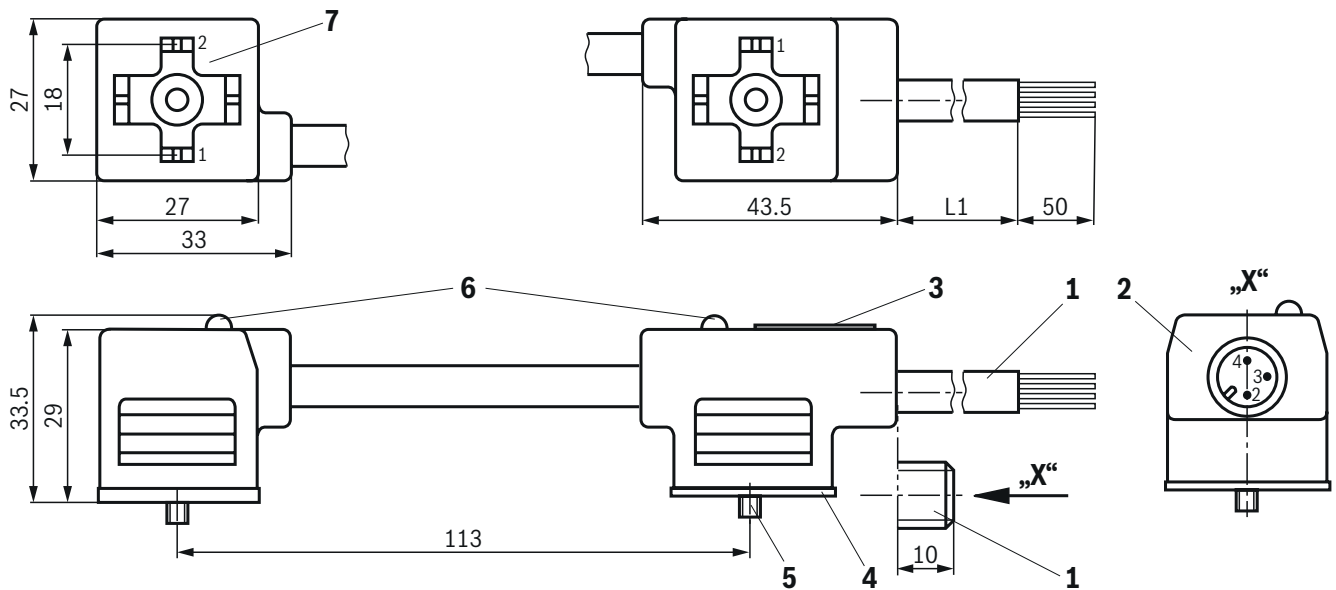
For valves with two solenoids (double mating connectors) and connector "K4", 2-pole + PE, design A – for directional valves type WE 6, type SEC and pilot-operated on/off valves

## Circuit diagrams



## Dimensions

(dimensions in mm)



- 1 Version "Z60L" and "Z60L8"
- 2 Version "Z61"
- 3 Marking plate
- 4 Flat seal (not detachable)
- 5 Mounting screw M3 (not detachable)
- 6 LED (versions "Z60L" and "Z60L8" only)
- 7 Contacting 0° (PE bridged)

L1 Cable length 3 or 5 m (see table page 14)

Cable sets

For valves with two solenoids (double mating connectors) and connector "K4", 2-pole + PE, design A – for directional valves type WE 10

Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Seal	Indicator light	Circuitry	Line cross-section in mm²	Conformity	Tightening torque range mounting screw M3 in Nm	Cable diameter in mm	Cable diameter connection cable in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter
With indicator light; device connector M12 x 1																					
Z60L	R901207824	–	24±10 %	4	4	–	–40 ... +80	–25 ... +80	0.8	IP67	black	VMQ	LED yellow	–	0.75	CE <sup>4)</sup> CSA	0.4	–	approx. 5.9	4 x	10 x
With indicator light and Z-diode-suppressor; connector M12 x1																					
Z60L8	R901207823	–	24±10 % <sup>8)</sup>	4	4	–	–40 ... +80	–25 ... +80	0.8	IP67	black	VMQ	LED yellow	Z-diode	0.75	CE <sup>4)</sup> CSA	0.4	–	approx. 5.9	4 x	10 x
With free cable end																					
Z61	R901207892	5	0 ... 250	4	4	+85	–40 ... +80	–25 ... +80	4	IP67	black	VMQ	–	–	0.75	CE <sup>3); 4)</sup>	0.4	approx. 6.5	approx. 5.9	4 x	10 x

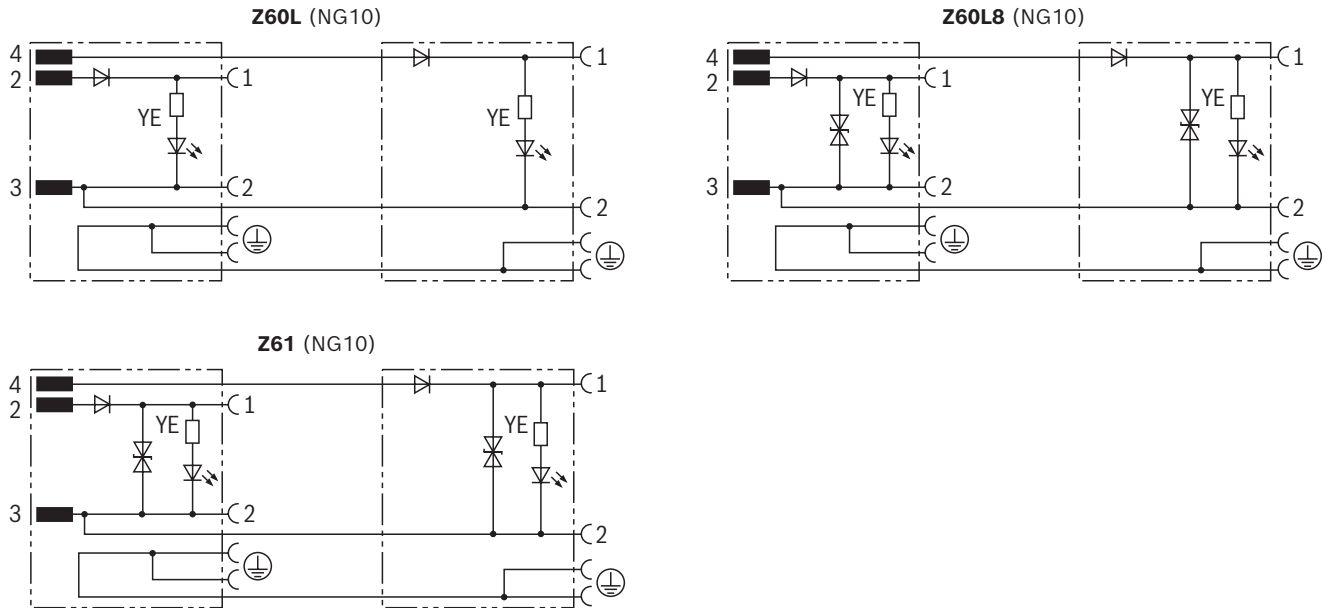
1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.  
 2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.  
 3) Low-Voltage Directive  
 4) ROHS  
 8) Switch-off voltage peak limitation to 50 V



## Cable sets

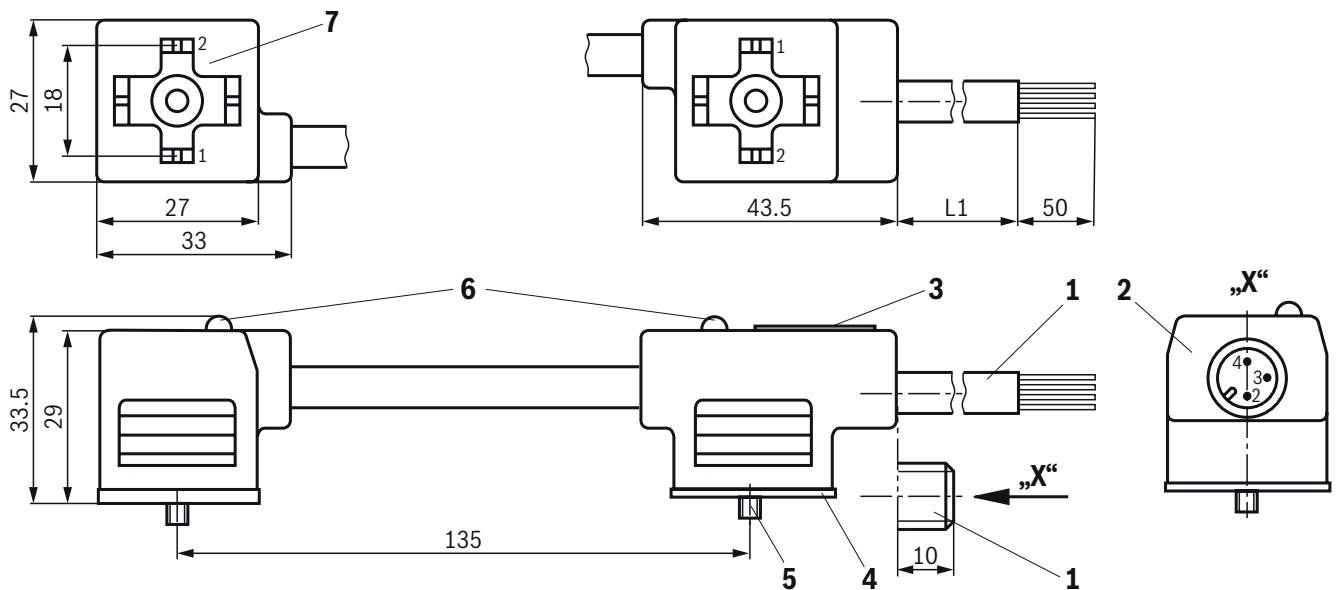
For valves with two solenoids (double mating connectors) and connector "K4", 2-pole + PE, design A – for directional valves type WE 10

## Circuit diagrams



## Dimensions

(dimensions in mm)



- 1 Version "Z60L" and "Z60L8"
- 2 Version "Z61"
- 3 Marking plate
- 4 Flat seal (not detachable)

- 5 Mounting screw M3 (not detachable)
- 6 LED (versions "Z60L" and "Z60L8" only)
- 7 Contacting 0° (PE bridged)
- L1 Cable length 3 or 5 m (see table page 16)

Mating connectors  
For valves with connector, 4-pole (small cubic connector)

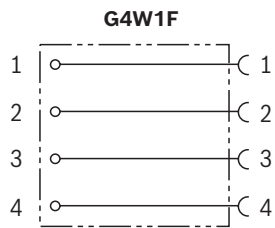
Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Seal	Cable gland	Terminal area fitting	Line cross-section in mm²	Conformity	Tightening torque range mounting screw M3 in Nm	Tightening torque cable gland in Nm
G4W1	R900023126	0 ... 50		6	+45	-25 ... +90	-	IP65	black	NBR	PG7	4 ... 7.5	0.5	VDE	0.5 ... 0.6	1.5 ... 2.5
				0	+90											
	1834484063	0 ... 50		6	+45	-25 ... +90	0.8	IP65	black	NBR	PG7	4.5 ... 6	0.5	VDE	0.5 ... 0.6	1.5 ... 2.5
				0	+90											
	1834484061	0 ... 50		6	+45	-25 ... +90	0.8	IP65	gray	NBR	PG7	4.5 ... 6	0.5	VDE	0.5 ... 0.6	1.5 ... 2.5
				0	+90											

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.  
2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.

## Mating connectors

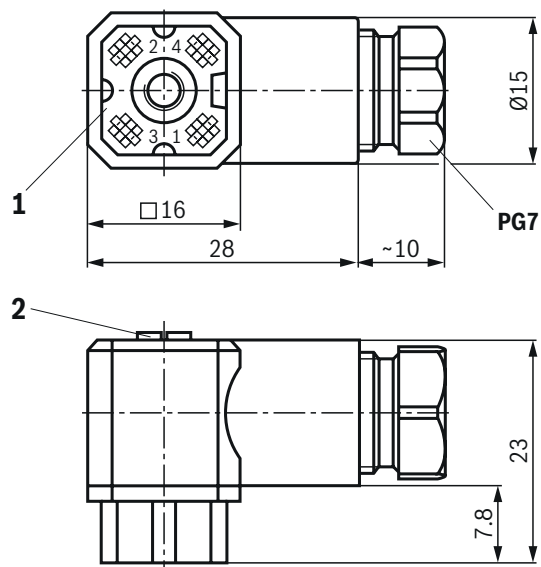
For valves with connector, 4-pole (small cubic connector)

### Circuit diagrams



### Dimensions

(dimensions in mm)




- 1 Contacting (rotatable)
- 2 Mounting screw M3

Mating connectors  
For valves with round connector, 6-pole + PE and 6-pole

Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> in °C	Protection class according to EN 60529 (when assembled)	Housing material	Cable gland	Terminal area fitting	Line cross-section area in mm²	Conformity	Tightening torque grub screw M3 in Nm
6-pole + PE; straight													
7PZ31...K	R900021267	24	–	3	+70	-40 ... +100	IP67	Plastic	PG11	6.5 ... 11	0.5 ... 1.5	DIN 43563	0.3
	1834482022	50	50	10	–	-40 ... +90	IP67	Plastic	PG11	8 ... 10	1	–	–
6-pole + PE; angled													
7PZ31...K	R900217845	75	60	12	+70	-40 ... +100	IP65	Plastic	PG11	12	0.5 ... 1.5	RoHS, UL	0.3
	1834484252	75	60	–	–	–	IP65	Plastic	PG11	7 ... 10	0.5 ... 1.5	DIN 43563	–
6-pole + PE; straight													
7PZ31...M	R900223890	24	–	3	–	-40 ... +100	IP67	Metal	PG11	9 ... 12.5	0.5 ... 1.5	DIN 43563	0.3
6-pole; connection compatible with VG 95328 (for servo valves)													
6P KPTC6	R901043330	24	–	3	–	-55 ... +125	IP65	Metal	SW16 clamping nut	4.5 ... 7	0.4 ... 0.75	RoHS	0.3

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.

2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.

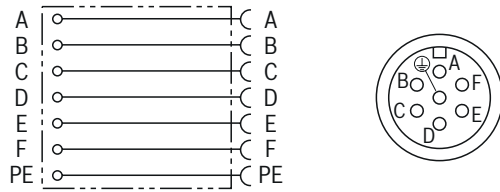
 **Notice:** ♦ = Preferred type

## Mating connectors

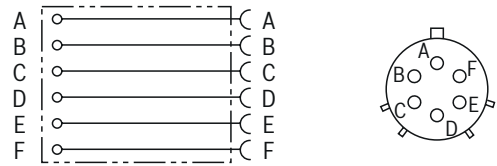
For valves with round connector, 6-pole + PE and 6-pole

## Circuit diagrams

7PZ31...K; 7PZ31...M



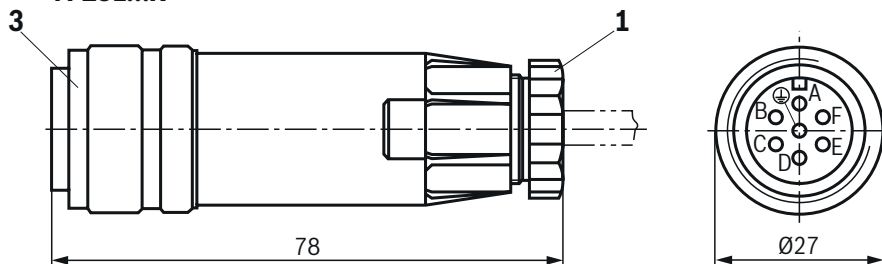
6P KPTC6



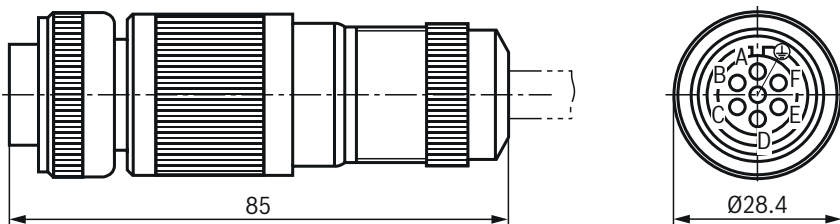
## Dimensions

(dimensions in mm)

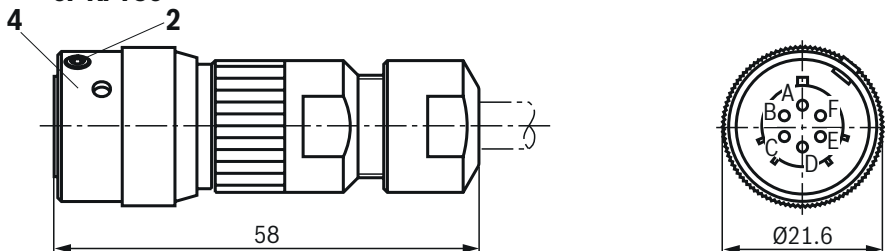
7PZ31...K



7PZ31...M



6P KPTC6



- 1 Cable gland PG11
- 2 Fuse: Grub screw M3
- 3 7/8" - 20 UNEF 2B
- 4 9/16" - 24 UNEF 2B

Accessories see page 46.

Cable sets  
For valves with round connector, 6-pole + PE

Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Protection class according to EN 60529 (when assembled)	Housing color	Housing material	Line cross-section in mm²	Conformity	Cable diameter in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter
7PZ31 BF6	R901420483	3	<50		8.5	+40	-40 ... +80	-25 ... +80	IP67	black	Plastic	7 x 0.75	RoHS, cULus (UL2238)	9±0.2	5 x	10 x
	R901420491	5	<50		8.5	+40	-40 ... +80	-25 ... +80	IP67	black	Plastic	7 x 0.75		9±0.2	5 x	10 x
	R901420496	10	<50		8.5	+40	-40 ... +80	-25 ... +80	IP67	black	Plastic	7 x 0.75		9±0.2	5 x	10 x
	R901448068	20	<50		8.5	+40	-40 ... +80	-25 ... +80	IP67	black	Plastic	7 x 0.75		9±0.2	5 x	10 x
7PZ31 BF6-948	R901530888	10	24		3	-	-40 ... +100	-25 ... +80	-	silver/black	Metal	7 x 0.75	IACS – UR E10 Rev8	9.9	5 x	10 x

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.

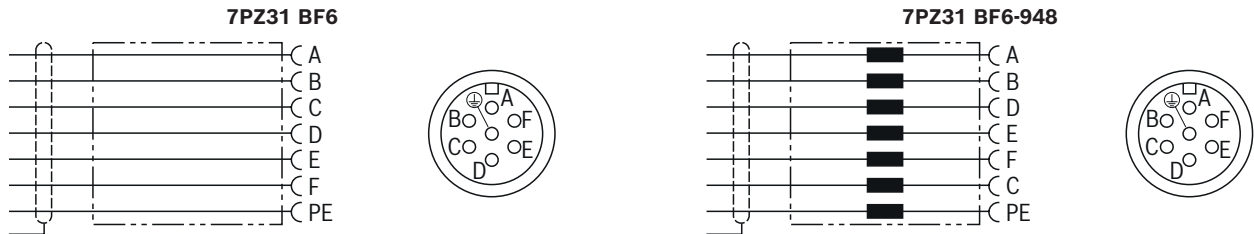
2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.

 **Notice:** ♦ = Preferred type

## Cable sets

For valves with round connector, 6-pole + PE

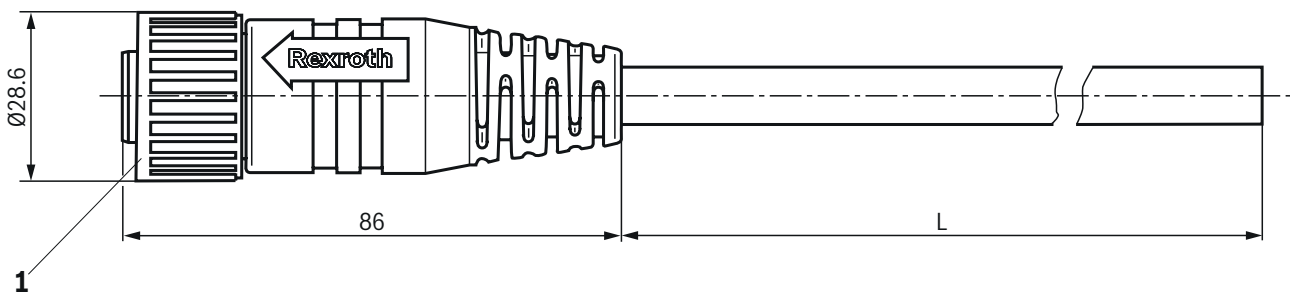
## Circuit diagrams



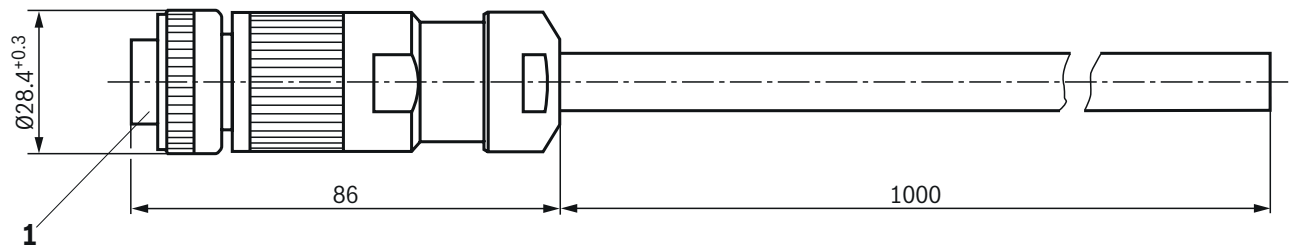
## Dimensions

(dimensions in mm)

### 7PZ31 BF3



### 7PZ31 BF6-948



1 Coupling nut, tightening torque  $M_A = 1 \dots 1.5$  Nm


L Cable length 3, 5 or 10 m (see table page 22)

Mating connectors

For valves with round connector, 11-pole + PE

Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> in °C	Protection class according to EN 60529 (when assembled)	Housing material	Cable gland	Terminal area fitting	Line cross-section area in mm <sup>2</sup>
11-pole + PE; two cable outlets										
12PN11...2XD8	R900884671	24	–	3	-40 ... +90	IP65	Plastic	PG16	2 x 6 ... 8	9 x 0.14 ... 0.5
11-pole + PE; shielded										
12PN11... EMC	R901268000	24	–	3	-40 ... +90	IP65	Metal	PG13.5	12 ... 15	0.5
	1834484142	24	–	3	-40 ... +90	IP65	Metal	PG16	12 ... 15	0.5 ... 1.5

- 1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.
- 2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.

 **Notice:** ♦ = Preferred type

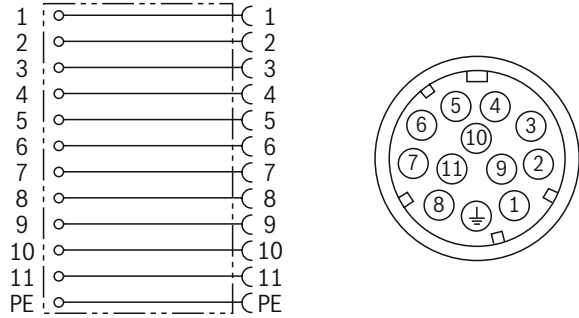


## Mating connectors

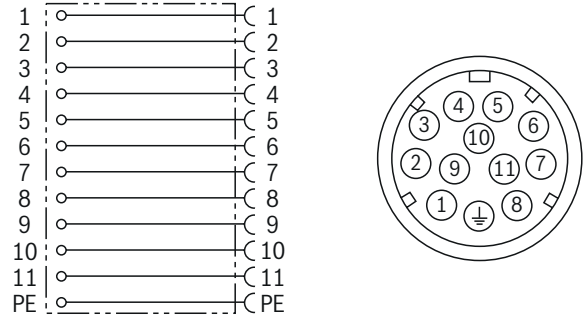
For valves with round connector, 11-pole + PE

## Circuit diagrams

12PN11...2XD8; 12PN11... EMC (PG13.5)



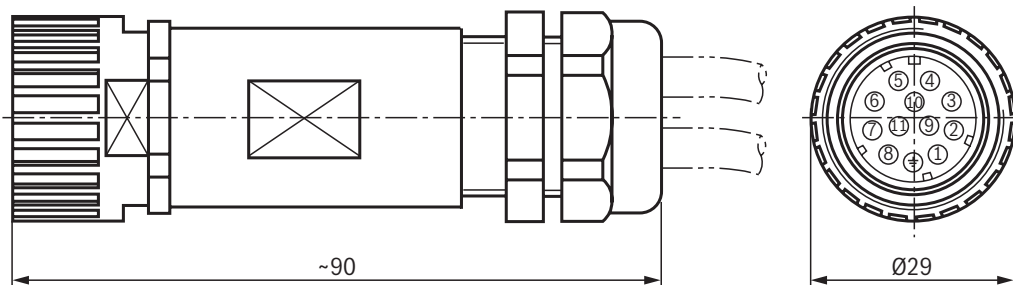
12PN11... EMC (PG16)



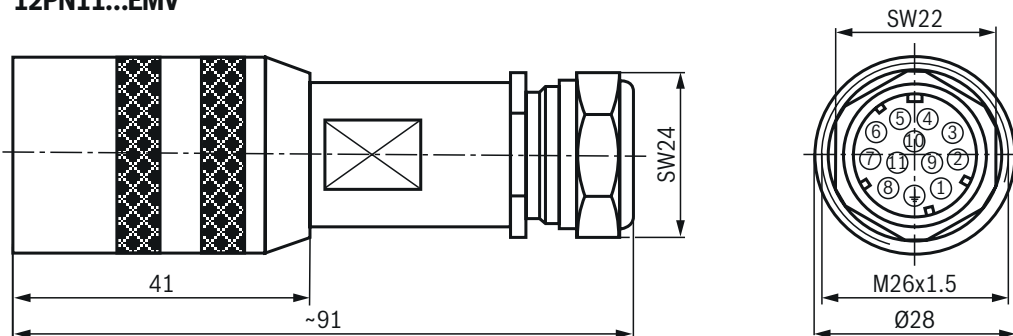
## Dimensions

(dimensions in mm)

12PN11...2XD8



12PN11...EMV



**Accessories** see page 46.

Cable sets  
For valves with round connector, 11-pole + PE

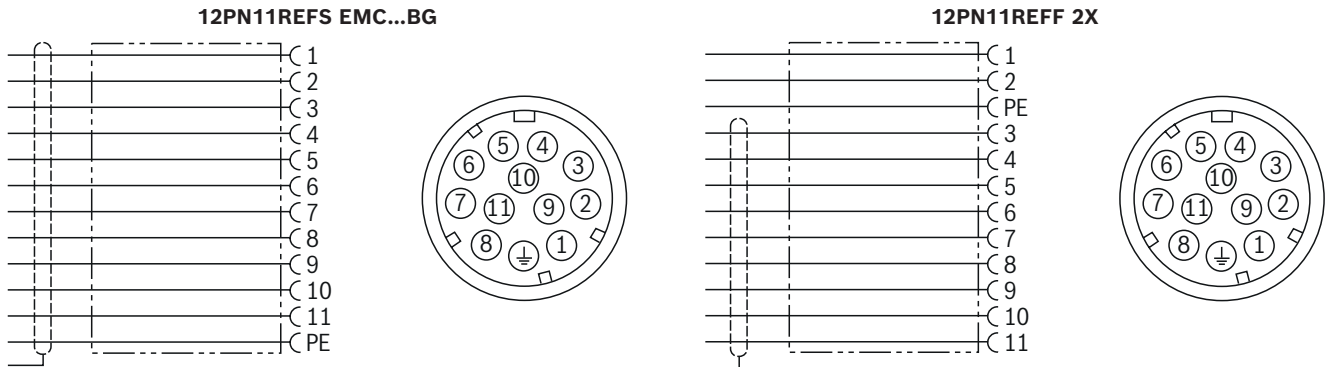
Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Protection class according to EN 60529 (when assembled)	Housing color	Housing material	Line cross-section in mm²	Conformity	Cable diameter in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter
11-pole + PE; shielded	12PN11REFS EMC...BG	5	50	25	5	-40 ... +80	-5 ... +80	IP65	gray	Metal	12 x 0.75	RoHS	10.5	5 x	10 x
		20	50	25	5	-40 ... +80	-5 ... +80	IP65	gray	Metal	12 x 0.75	RoHS	10.5	5 x	10 x
12PN11REF 2X	R900032356	5	<50	-	5	-40 ... +80	-5 ... +70	IP65	black	Plastic	10 x 0.14	-	6.1	6 x	15 x
	R900860399	20	<50	-	5	-40 ... +80	-5 ... +70	IP65	black	Plastic	10 x 0.14	-	6.1	6 x	15 x

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.  
2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.

## Cable sets

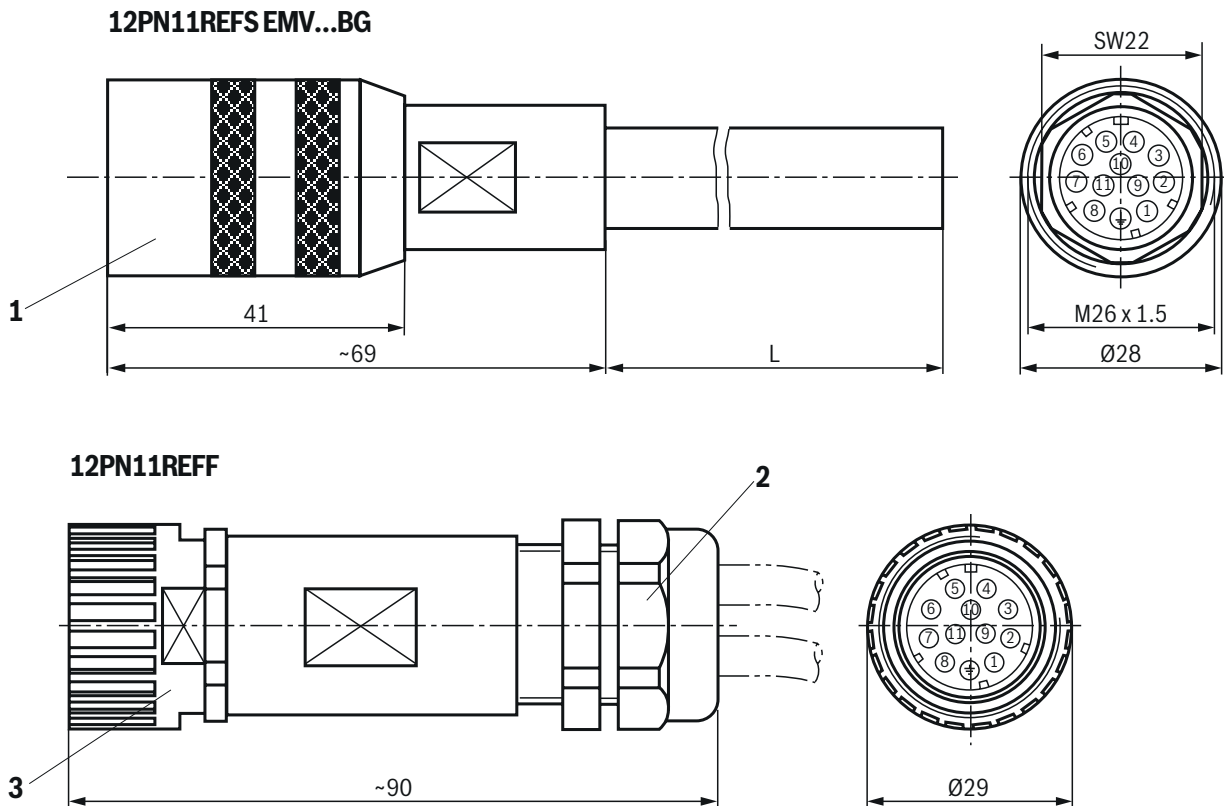
For valves with round connector, 11-pole + PE

## Circuit diagrams



## Dimensions

(dimensions in mm)




- 1 Coupling nut, tightening torque  $M_A = 1 \dots 1.5 \text{ Nm}$
- 2 Cable gland, tightening torque  $M_A = 1 \dots 1.5 \text{ Nm}$
- 3 Coupling nut, tightening torque  $M_A = 0.8 \dots 1.0 \text{ Nm}$
- L Cable length 5 or 20 m (see table page 26)

Mating connectors

For mechanical pressure switches with "K14" connector, 3-pole + PE, design A

Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Seal	Indicator light	Cable gland	Terminal area fitting	Maximum line cross-section in mm <sup>2</sup>	Conformity	Tightening torque range mounting screw M3 in Nm	Maximum tightening torque contact screw in Nm	Tightening torque cable gland in Nm
Without circuitry, standard																		
Z14	R901017012	0 ... 250	10	>+80	-30 ... +90	4	IP65	black	NBR	–	M16 x 1.5	4 ... 10	1.5	CE <sup>3; 4)</sup> VDE SEV	0.5 ... 0.6	0.5	1.5 ... 2.5	
Without circuitry; with silicone seal																		
Z14	R901572530	0 ... 250	10	>+80	-40 ... +125	4	IP65	black	VMQ	–	M16 x 1.5	4 ... 9	1.5	CE <sup>3; 4)</sup> VDE SEV	0.5 ... 0.6	0.5	1.5 ... 2.5	
With indicator light																		
Z15L	R901017030	6 ... 14	4	–	-20 ... +60	–	IP65	black/transparent	NBR	LED yellow+green	M16 x 1.5	5 ... 10	1.5	CE <sup>4)</sup>	0.5	0.4	1.5 ... 2.5	
	R901017048	16 ... 36	4	–	-20 ... +60	–	IP65	black/transparent	NBR	LED yellow+green	M16 x 1.5	5 ... 10	1.5	CE <sup>4)</sup>	0.5	0.4	1.5 ... 2.5	
	R901017032	36 ... 60	4	–	-20 ... +60	–	IP65	black/transparent	NBR	LED yellow+green	M16 x 1.5	5 ... 10	1.5	CE <sup>4)</sup>	0.5	0.4	1.5 ... 2.5	
Z15L6	R901017040	16 ... 36	4	–	-20 ... +60	0.8	–	black/transparent	NBR	LED yellow+green	M16 x 1.5	5 ... 10	1.5	CE <sup>4)</sup>	0.5	0.4	1.5 ... 2.5	

 **Notice:**  $\diamond$  = Preferred type

1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.

2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.

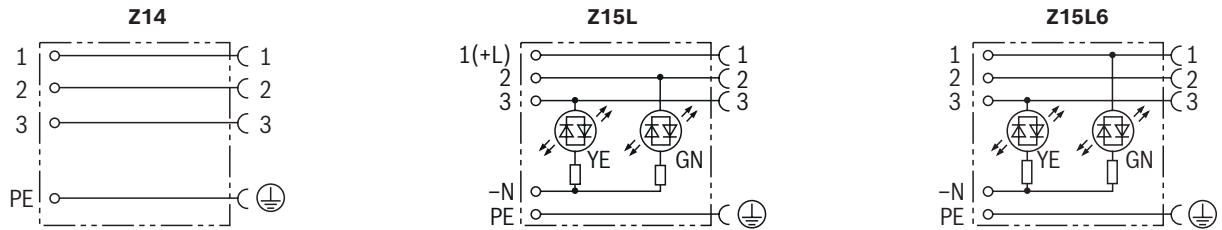
3) Low-Voltage Directive

4) ROHS

## Mating connectors

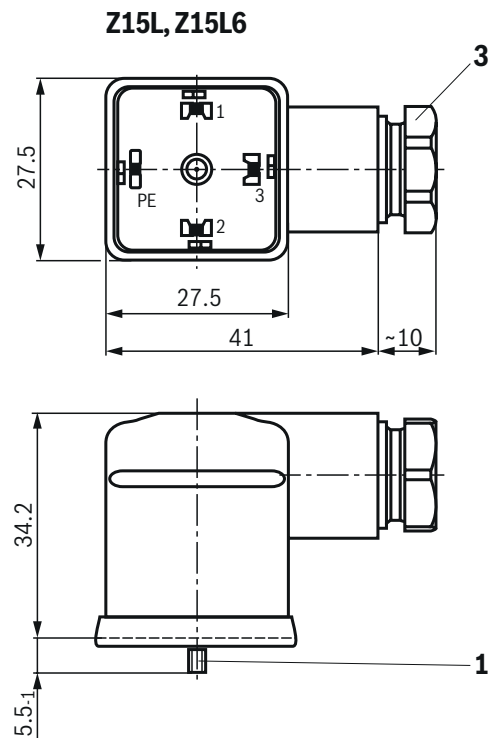
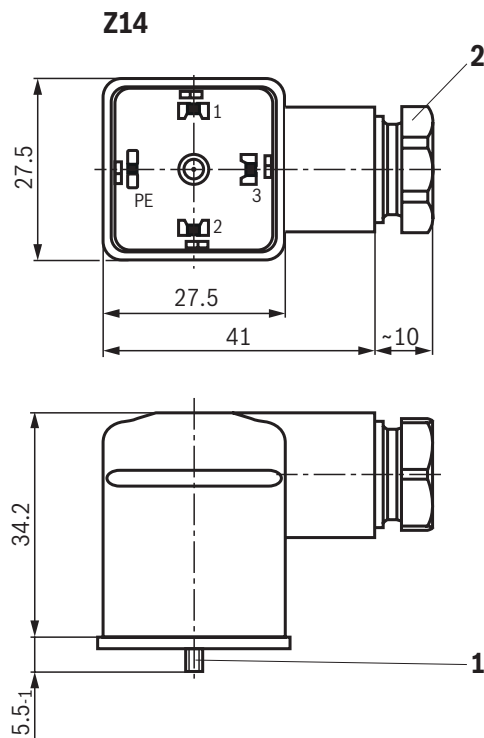
For mechanical pressure switches with "K14" connector, 3-pole + PE, design A

### Circuit diagrams



### Dimensions

(dimensions in mm)



- 1 Mounting screw M3
- 2 Cable gland M16 x 1.5

Cable sets

For mechanical pressure switches with "K14" connector, 3-pole + PE, design A

Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Indicator light	Line cross-section in mm <sup>2</sup>	Conformity	Tightening torque range mounting screw M3 in Nm	Cable diameter in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter
Without circuitry, standard																	
Z14	R900058528	5	0 ... 230		10	-25 ... +70	-5 ... +70	4	IP67	black	-	4 x 0.75	CE <sup>3)</sup> ; <sup>4)</sup>	0.4	approx. 7	15 x	20 x
Z14	R900217139	10	0 ... 230		10	-25 ... +70	-5 ... +70	4	IP67	black	-	4 x 0.75	CE <sup>3)</sup> ; <sup>4)</sup>	0.4	approx. 7	15 x	20 x
With indicator light																	
Z14L	R900210635	5	18 ... 30		4	-25 ... +70	-5 ... +70	0.8	IP67	black	LED green+yellow	5 x 0.5	CE <sup>4)</sup>	0.4	approx. 7.3	12.5 x	17.5 x
Z14L	R900217140	10	18 ... 30		4	-25 ... +70	-5 ... +70	0.8	IP67	black	LED green+yellow	5 x 0.5	CE <sup>4)</sup>	0.4	approx. 7.3	12.5 x	17.5 x

2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.

3) Low-Voltage Directive

4) ROHS

## Cable sets

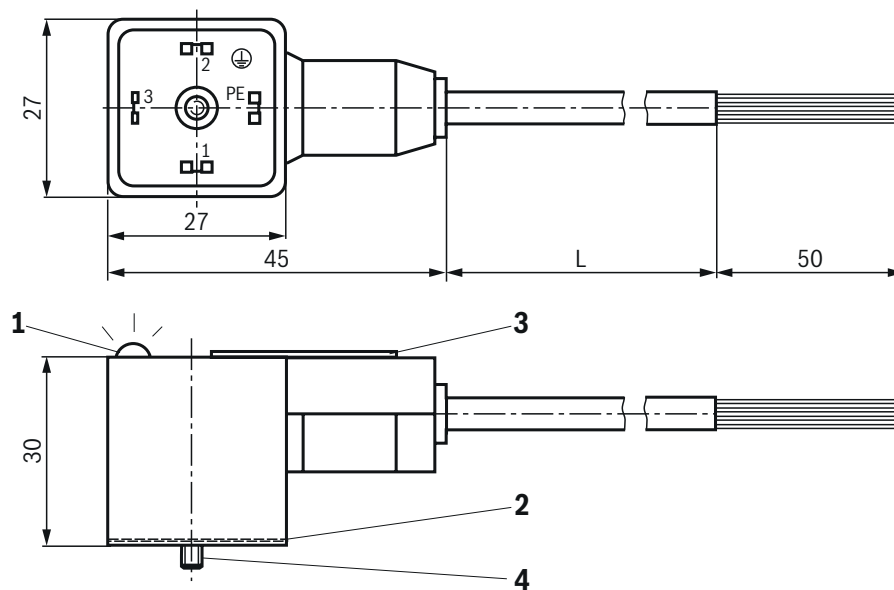
For mechanical pressure switches with "K14" connector, 3-pole + PE, design A

## Circuit diagrams



## Dimensions

(dimensions in mm)



- 1 LED
- 2 Flat seal (not detachable)
- 3 Name plate
- 4 Mounting screw M3 (not detachable)
- L Cable length 5 or 10 m (see table page 30)

Cable sets  
For sensors and valves with IO link interface, 5-pole

Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Line cross-section in mm²	Conformity	Tightening torque range mounting screw M3 in Nm	Cable diameter in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter
M12IO	R901508849	1.5	0 ... 125 <sup>9)</sup>		4	-40 ... +80	-25 ... +80	1.5	IP65 IP66K IP67	black/ green	0.34	CE 3; 4) CSA UL UR (cable)	0.6	approx. 4.8	5 x	10 x
M12IO	R901554223	3	0 ... 125 <sup>9)</sup>		4	-40 ... +80	-25 ... +80	1.5	IP65 IP66K IP67	black/ green	0.34	CE 3; 4) CSA UL UR (cable)	0.6	approx. 4.8	5 x	10 x
M12IO	R901415747	5	0 ... 125 <sup>9)</sup>		4	-40 ... +80	-25 ... +80	1.5	IP65 IP66K IP67	black/ green	0.34	CE 3; 4) CSA UL UR (cable)	0.6	approx. 4.8	5 x	10 x
M12IO	R901554225	10	0 ... 125 <sup>9)</sup>		4	-40 ... +80	-25 ... +80	1.5	IP65 IP66K IP67	black/ green	0.34	CE 3; 4) CSA UL UR (cable)	0.6	approx. 4.8	5 x	10 x

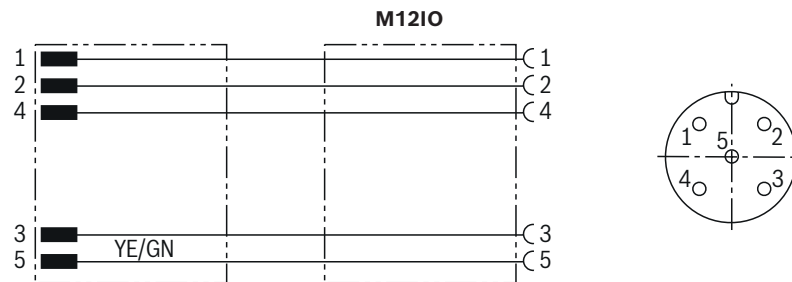
1) In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.  
2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.  
3) Low-Voltage Directive  
4) ROHS  
9) UL certification 0 ... 30 V.



## Cable sets

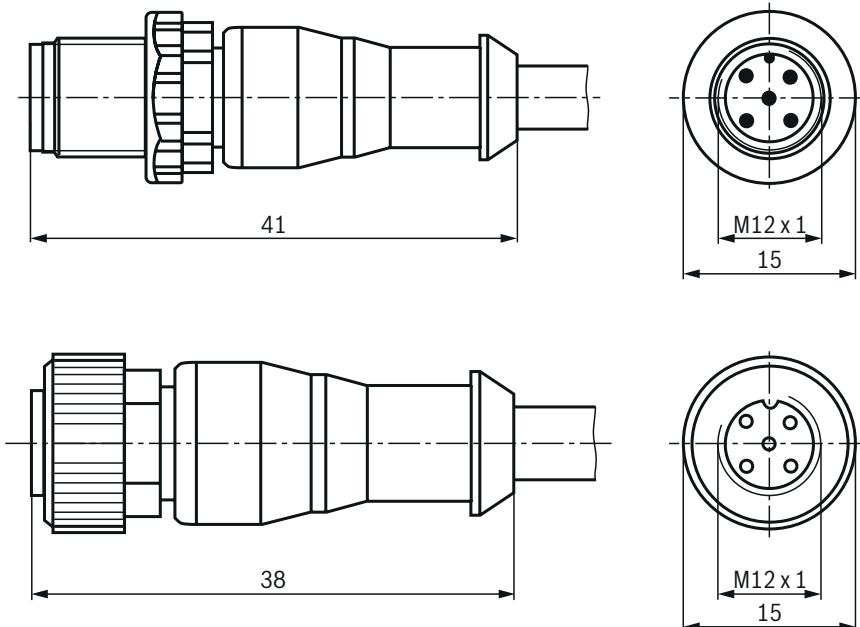
For sensors and valves with IO link interface, 5-pole

## Circuit diagrams



## Dimensions

(dimensions in mm)




Mating connectors

For sensors and valves with "K24", "K35", "K72" and "K73" connectors, 4-pole

Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> in °C	Protection class according to EN 60529 (when assembled)	Housing color	Cable gland	Terminal area fitting	Maximum line cross-section in mm <sup>2</sup>	Conformity	Tightening torque range mounting nut M12 in Nm
Straight												
4PZ24	R900773042	0 ... 50	4	-25 ... +85	IP67	black	PG7	4 ... 6	0.75	cURus, CSA	0.6	◇
4PZ24	R900031155	0 ... 50	3	-40 ... +85	IP67	black	PG9	6 ... 8	0.75	–	0.6	
Angled												
4PZ24	R900779509	0 ... 50	4	-25 ... +85	IP67	black	PG7	4 ... 6	0.75	cURus CSA	0.6	◇
4PZ24	R900082899	0 ... 50	3	-40 ... +85	IP67	black	PG9	6 ... 8	0.75	–	0.6	

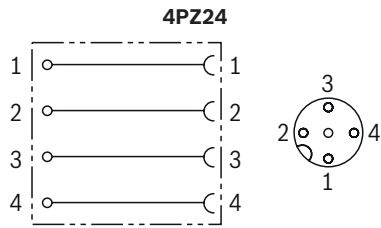
<sup>2)</sup> Take into account the temperature increase caused by the self-heating of the connected operating equipment.

 **Notice:** ◇ = Preferred type

## Mating connectors

For sensors and valves with "K24", "K35", "K72" and "K73" connectors, 4-pole

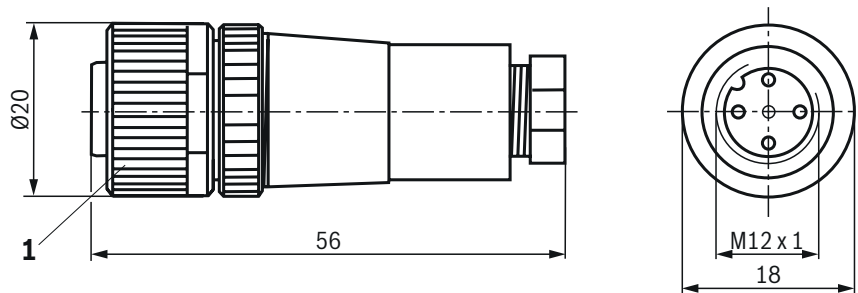
## Circuit diagrams



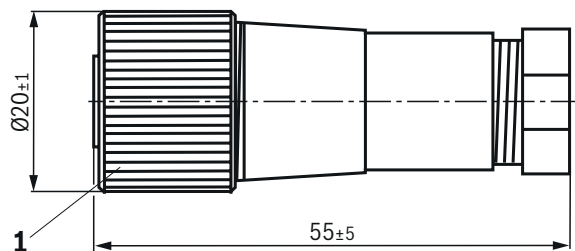
## Dimensions

(dimensions in mm)

### 4PZ24 (PG7)

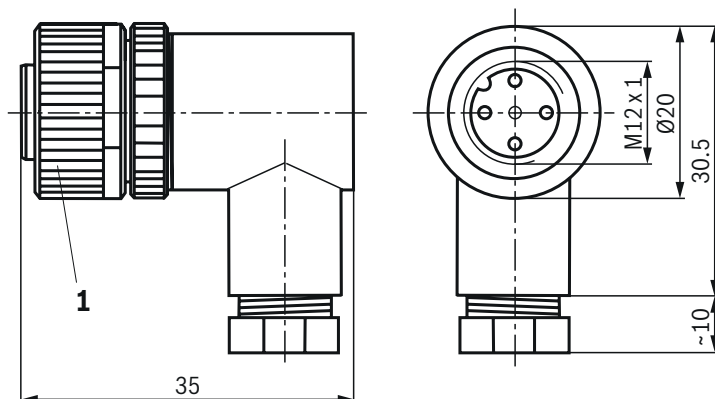


### 4PZ24 (PG9)

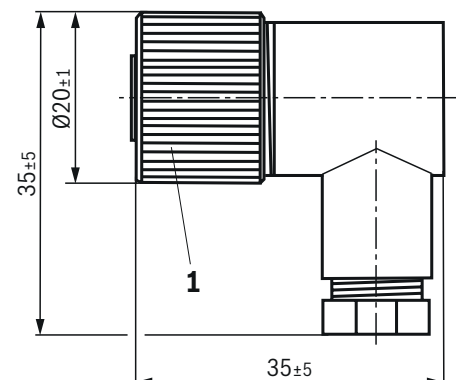


1 Coupling nut, tightening torque  $M_A = 0.6 \text{ Nm}$

### 4PZ24 (PG7)



### 4PZ24 (PG9)



Cable sets

For sensors and valves with "K24", "K35", "K72" and "K73" connectors, 4-pole

Short designation	Material number	Cable length in m	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Line cross-section in mm²	Conformity	Tightening torque range mounting screw M3 in Nm	Cable diameter in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter	Shield
Straight																	
4PZ24	R900064381	3	0 ... 50 <sup>9)</sup>	3	-25 ... +80	-20 ...+80	-	IP67	black	0.34	CSA UL	0.6	approx. 5.7	10 x	15 x	-	
4PM12	R900779498	5	0 ... 50	4	-25 ... +80	-20 ...+80	2.5	IP65 IP66K IP67	black	0.34	CSA UL CE <sup>3; 4)</sup>	0.6	approx. 5.9	10 x	15 x	✓	
4PZ24	R913005668	10	0 ... 50 <sup>9)</sup>	4	-25 ... +80	-20 ...+80	-	IP67	black	0.34	CSA UL CE <sup>3; 4)</sup>	0.6	approx. 5.2	10 x	15 x	-	
Angled																	
4PM12	R900779503	5	0 ... 50	4	-25 ... +80	-20 ...+80	2.5	IP65 IP66K IP67	black	0.34	CSA UL CE <sup>3; 4)</sup>	0.6	approx. 5.9	10 x	15 x	✓	
4PZ24	R913011722	10	0 ... 50 <sup>9)</sup>	4	-25 ... +80	-20 ...+80	-	IP67	black	0.34	CSA UL	0.6	approx. 5.2	10 x	15 x	-	

2) Take into account the temperature increase caused by the self-heating of the connected operating equipment.

3) Low-Voltage Directive

4) ROHS

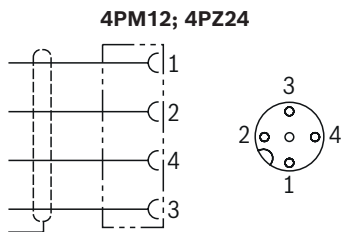
9) UL certification 0 ... 30 V.

 Notice: ◇ = Preferred type

## Cable sets

For sensors and valves with "K24", "K35", "K72" and "K73" connectors, 4-pole

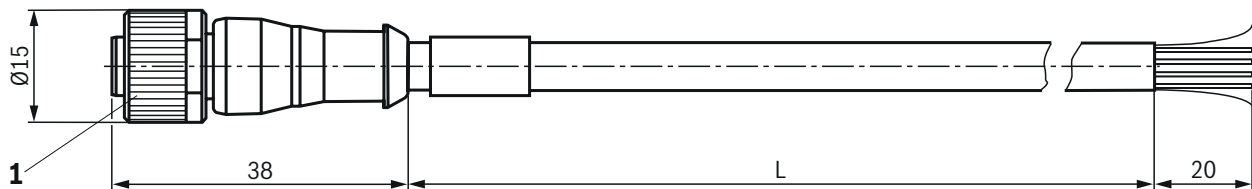
## Circuit diagrams



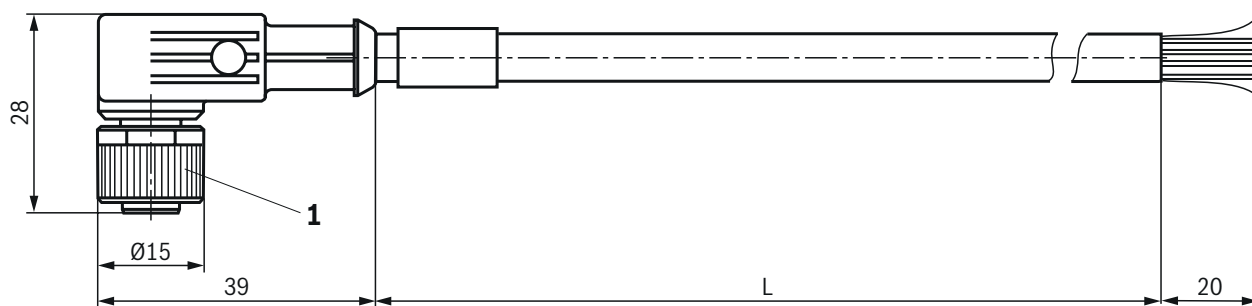
## Dimensions

(dimensions in mm)

4PM12; 4PZ24



4PM12; 4PZ24



1 Coupling nut, tightening torque  $M_A = 0.6 \text{ Nm}$

Cable sets

For sensors and valves with "K24", "K35", "K72" and "K73" connectors, 4-pole

Short designation	Material number	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> (fixed cable) in °C	Ambient temperature range <sup>2)</sup> (flexible cable) in °C	Protection class according to EN 60529 (when assembled)	Housing color	Line cross-section in mm <sup>2</sup>	Conformity	Cable diameter in mm	Bending radius (fixed cable) in x cable diameter	Bending radius (flexible cable) in x cable diameter	Shield
Straight													
CABLE SET VT-SSPA1- 1X/M12/1/V00	R901241656	60	4	-25 ... +80	-5 ... +80	IP67	black	4 x 0.75	CSA RoHS	7±5 %	5 x	10 x	Cable and mating connector
Angled													
CABLE SET VT-SSPA1- 1X/M12/2/V00	R901241651	60	4	-25 ... +80	-5 ... +80	IP67	black	4 x 0.75	CSA RoHS	7±5 %	5 x	10 x	Cable and mating connector

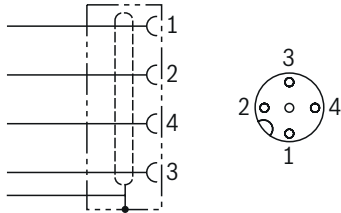
<sup>2)</sup> Take into account the temperature increase caused by the self-heating of the connected operating equipment.

## Cable sets

For sensors and valves with "K24", "K35", "K72" and "K73" connectors, 4-pole

## Circuit diagrams

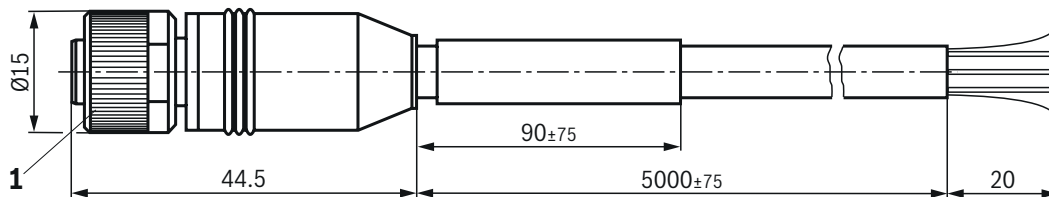
CABLE SET VT-SSPA1-1X/M12/1/V00  
CABLE SET VT-SSPA1-1X/M12/2/V00



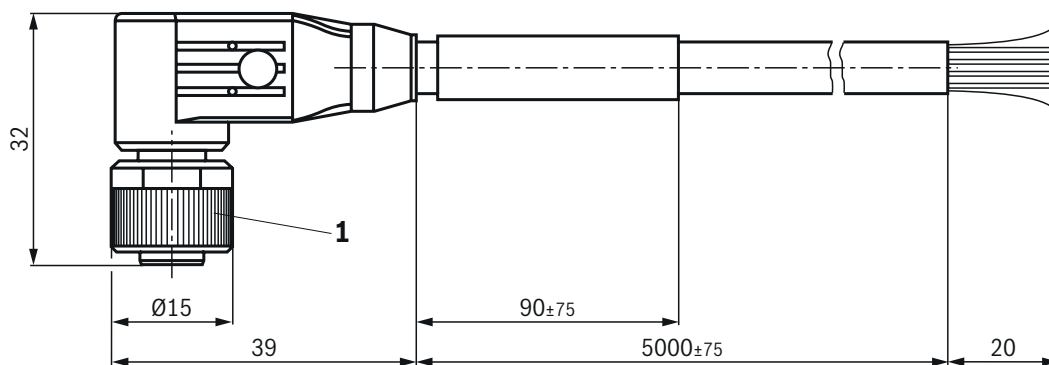
## Dimensions

(dimensions in mm)

KABELSATZ VT-SSPA1-1X/M12/1/V00



KABELSATZ VT-SSPA1-1X/M12/2/V00



1 Coupling nut, tightening torque  $M_A = 0.6 \text{ Nm}$

Mating connectors

For mechanical position switches, mechanical pressure switches and valves with central connection with "K6" and "DK6L" connectors

Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Derating <sup>1)</sup> in °C	Ambient temperature range <sup>2)</sup> in °C	Rated surge voltage in V	Protection class according to EN 60529 (when assembled)	Housing color	Cable gland	Terminal area fitting	Line cross-section in mm <sup>2</sup>	Tightening torque range mounting screw M3 in Nm	Tightening torque cable gland in Nm
7PZ6	R900002803	0 ... 250		10	+40	-40 ... +90	4	IP65	gray	PG11	7 ... 9	1.5	0.5 ... 0.6	2.5 ... 3.75
				4	+65									
				0	+90									

<sup>1)</sup> In the event of an overshoot, the current carrying capacity dependent on the temperature is reduced.

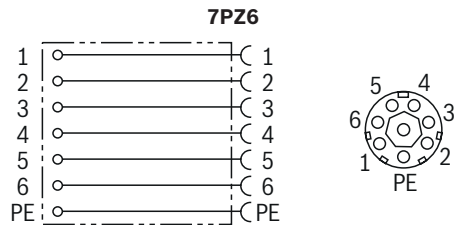
<sup>2)</sup> Take into account the temperature increase caused by the self-heating of the connected operating equipment.



## Mating connectors

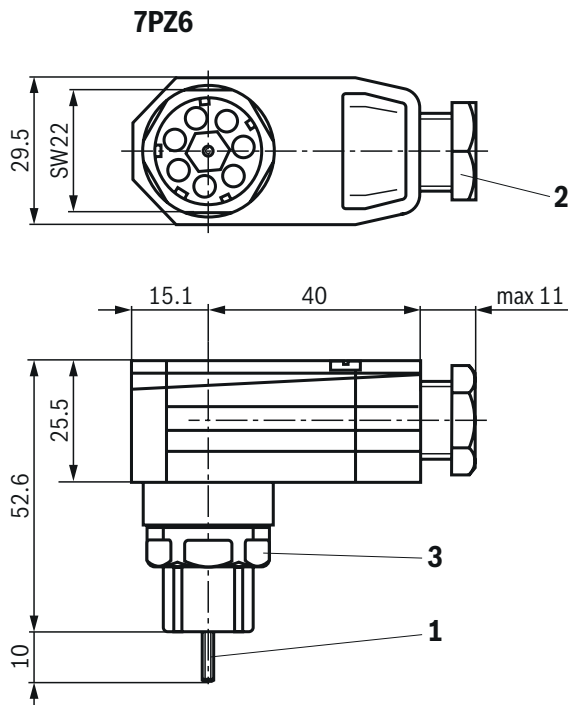
For mechanical position switches, mechanical pressure switches and valves with central connection with "K6" and "DK6L" connectors

## Circuit diagrams



## Dimensions

(dimensions in mm)



- 1 Mounting screw M3
- 2 Cable gland PG11
- 3 Coupling nut SW22,  
tightening torque  $M_A = 1.0 \dots 1.5 \text{ Nm}$

**Accessories** see page 46.

Mating connectors

For directional valves with connector "C4" and "C4Z" (AMP Junior-Timer)

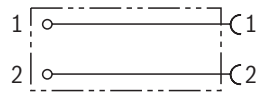
Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> in °C	Protection class according to EN 60529 (when assembled)	Housing color	Terminal area fitting	Line cross-section area in mm²	External diameter in mm
2P JUNIOR D2 2	R901022127	10 ... 32		5	-20 ... +125	IP66A	black	5.2 ... 7	0.5 ... 1	2.2 ... 3.0
2P D1.2 JUNIOR	R900313533	10 ... 32		5	-20 ... +125	IP66A	black	5.2 ... 7	0.5 ... 1	1.2 ... 2.1

<sup>2)</sup> Take into account the temperature increase caused by the self-heating of the connected operating equipment.

## Mating connectors

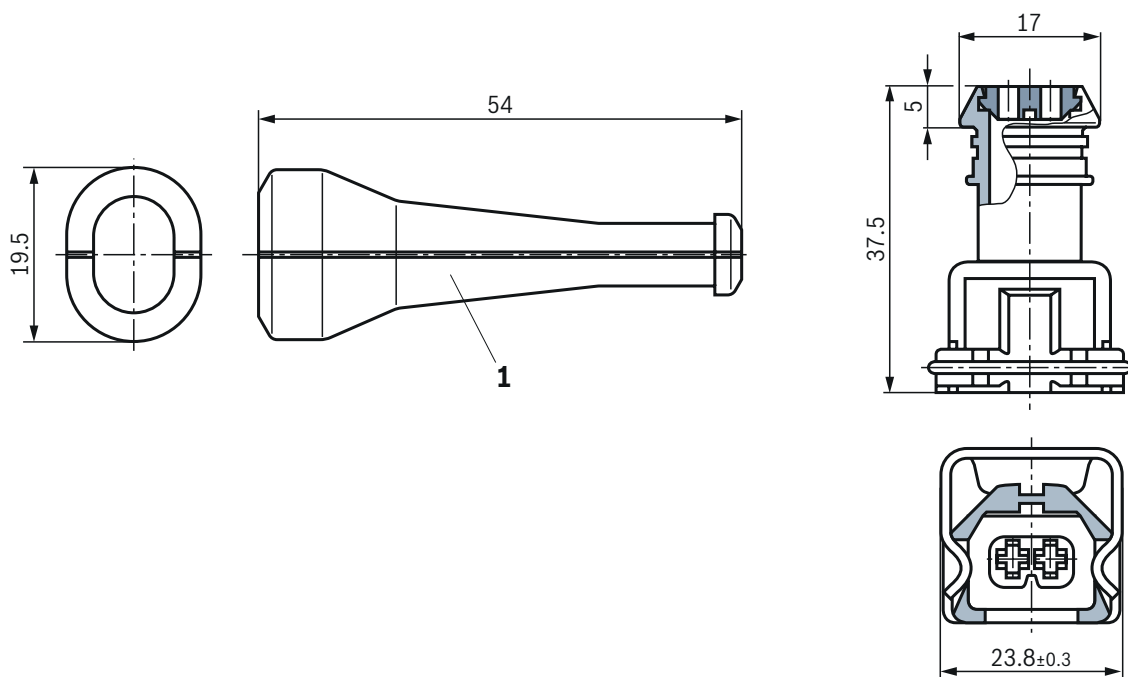
For directional valves with connector "C4" and "C4Z" (AMP Junior-Timer)

### Circuit diagrams



### Dimensions

(dimensions in mm)



1 Housing AMP; type 282189-1

**Accessories** see page 46.

Mating connectors

For directional valves with "K40" connector (Deutsch plug)

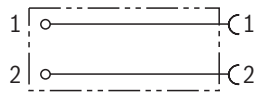
Short designation	Material number	Supply voltage range (DC) in V	Supply voltage range (AC) in V	Maximum current in A	Ambient temperature range <sup>2)</sup> in °C	Protection class according to EN 60529 (when assembled)	Housing color	Terminal area for line diameter	Line cross-section area in mm <sup>2</sup>
2P DT06 K40AWG14	R900733451	10 ... 32		5	-20 ... +125	IP69K	gray	1.35 ... 3.05	1.3 ... 2.08
2P DT06 K40AWG16	R901017847	10 ... 32		5	-20 ... +125	IP69K	gray	1.35 ... 3.05	0.83 ... 1.3

<sup>2)</sup> Take into account the temperature increase caused by the self-heating of the connected operating equipment.

## Mating connectors

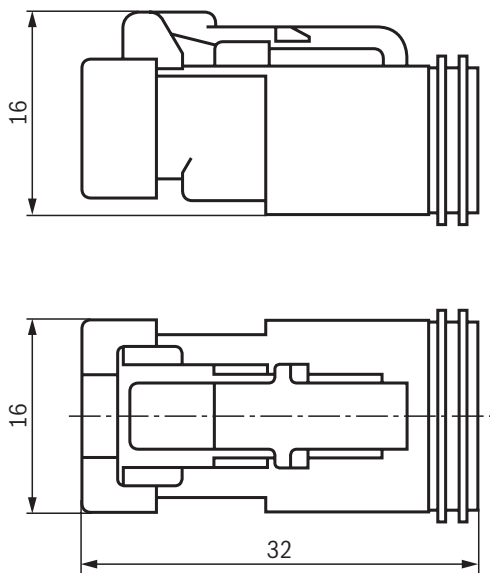
For directional valves with "K40" connector (Deutsch plug)

## Circuit diagrams



## Dimensions

(dimensions in mm)




**Accessories** see page 46.

**Accessories** (separate order)

Mating connectors	Company	Designation	Order number
For valves with round connector, 6-pole + PE and 6-pole "6P KPTC6"	ITT Cannon	Crimping pliers	M22520/1-01
		Crimping insert	M22520/1-02
		Installation tool	CiTG-20A
		Installation pliers	CIT-KPTC-20
For valves with round connector, 11-pole + PE	Hirschmann	Crimping pliers	XCZ 0701
		Ejection tool	XWA 164
		Installation tool	CiTG-20A
		Installation pliers	CIT-KPTC-20
For mechanical position switches, mechanical pressure switches and valves with central connection with "K6" and "DK6L" connectors	Hirschmann	Crimping pliers	XCZ 0701
		Ejection tool	XWA 164
For directional valves with connector "C4" and "C4Z" (AMP Junior-Timer)	TYCO	Basic pliers	Type 539635-1
		Die	Type 539737-2
For directional valves with "K40" connector (Deutsch plug)	Deutsch	Crimping tool	TE information 114-151004

**Plug-in switching amplifier**

With pulse width modulation (PWM) for control of on/off valves type VT-SSBA1	Switching amplifier for fast switching, energy saving and coil temperature reduction:		Data sheet 30362
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**Project planning information**

Plug-in connectors must not be disconnected or connected under load.

**Further information**

- Electronics for industrial applications
- Information on available spare parts

Operating instructions 07602-B  
[www.boschrexroth.com/spc](http://www.boschrexroth.com/spc)

## Notes

## Notes

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