

# Mini slide, Series MSN

- Ø 6-16 mm
- double-acting
- with magnetic piston
- Cushioning elastic
- with integrated ball rail guide
- narrow version



Working pressure min./max.	See table below
Ambient temperature min./max.	0 ... 60 °C
Medium	Compressed air
Max. particle size	5 µm
Oil content of compressed air	0 ... 1 mg/m <sup>3</sup>
Pressure for determining piston forces	6.3 bar
Weight	See table below

## Technical data

Piston Ø	6 mm	10 mm	16 mm
Stroke 5	0821406500	0821406506	0821406512
10	0821406501	0821406507	0821406513
15	0821406502	0821406508	0821406514
20	0821406503	0821406509	0821406515
25	0821406504	0821406510	0821406516
30	0821406505	0821406511	0821406517

## Technical data

Piston Ø 2x	6 mm	10 mm	16 mm
Working pressure min./max.	2,5 ... 10 bar	1 ... 10 bar	1 ... 10 bar
Retracting piston force, theoretical	13 N	42 N	95 N
Extracting piston force, theoretical	18 N	49 N	127 N
Speed max.	0,5 m/s	0,8 m/s	0,8 m/s
Cushioning energy	0,01 J	0,05 J	0,15 J

## Technical information

The pressure dew point must be at least 15 °C under ambient and medium temperature and may not exceed 3 °C .

The oil content of compressed air must remain constant during the life cycle.

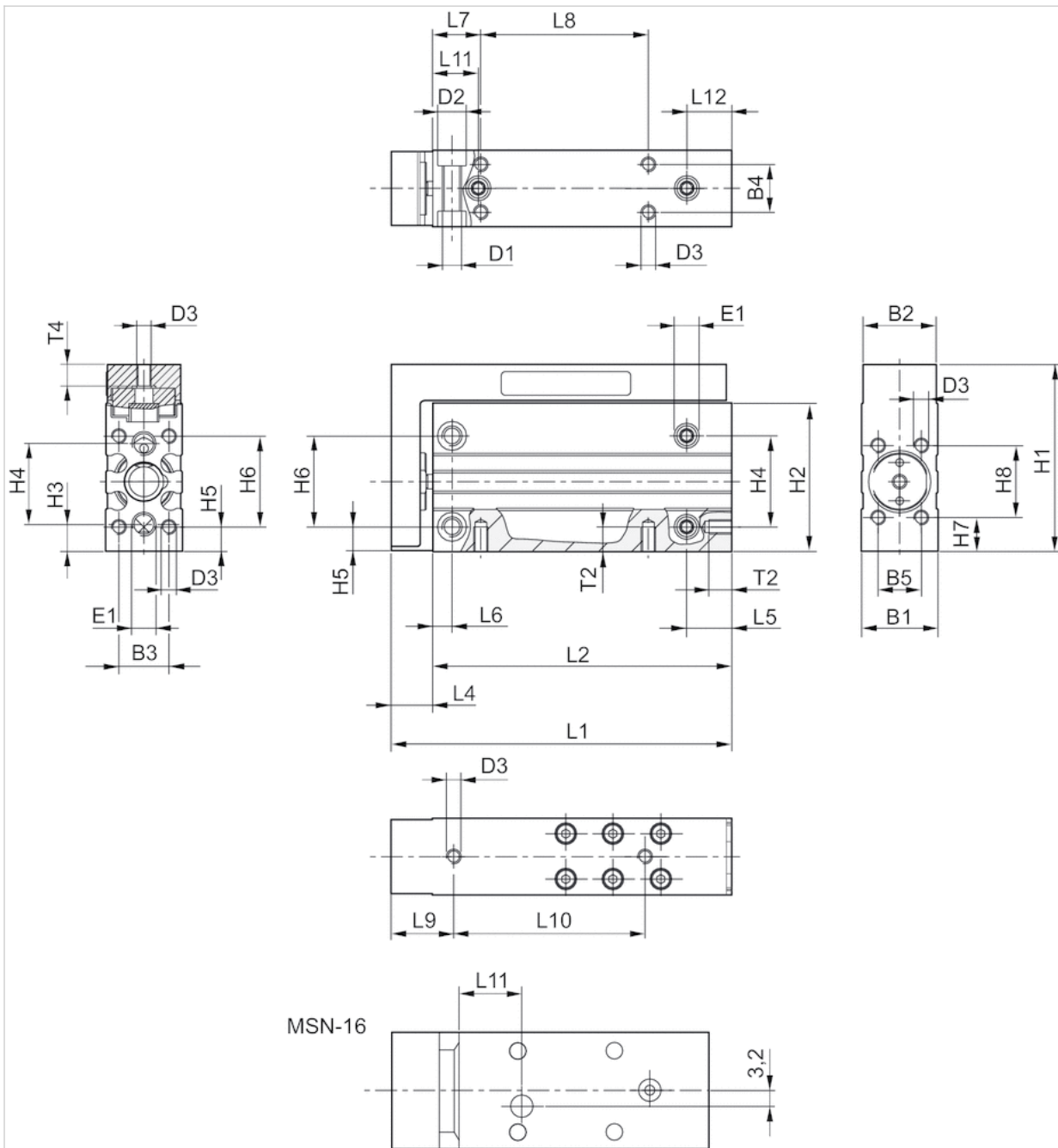
Use only the approved oils from AVENTICS. Further information can be found in the “Technical information” document (available in the MediaCentre).

## Technical information

Material	
Housing	Aluminum, anodized
Piston rod	Stainless steel
Seal	Polyurethane
Ball rail table	Aluminum, anodized
Guide rail	Steel, hardened

# Dimensions

## MSN-6/-10/-16



## MSN-6/-10/-16

Piston Ø	B1	B2	B3	B4	B5	D1	D2	D3	E1 *	H1	H2	H3	H4	H5	H6	H7	H8
6 mm	16	15.3	10.5	10	9	M4	6	M3	M5	39	31	5.5	17	5	19	7	15
10 mm	20	19.3	13	13	11	M5	7.5	M4	M5	45	36	6.5	20	5	23	7.5	18
16 mm	24	23.3	17	17	16	M5	7.5	M4	M5	51	41	6	25	5.5	27	6	26

\* Compressed air connection

MSN-6

Piston Ø	S	L1	L2	L4	L5	L6	L7	L8	L9	L10	L11	L12	T2	T4
6 mm	5	46	37.5	8.5	10	4	10	10	13	20	9.5	9.5	4.8	5
6 mm	10	51	42.5	8.5	10	4	10	15	13	20	9.5	9.5	4.8	5
6 mm	15	56	47.5	8.5	10	4	10	20	13	25	9.5	9.5	4.8	5
6 mm	20	61	52.5	8.5	10	4	10	25	13	30	9.5	9.5	4.8	5
6 mm	25	66	57.5	8.5	10	4	10	30	13	40	9.5	9.5	4.8	5
6 mm	30	71	62.5	8.5	10	4	10	35	13	40	9.5	9.5	4.8	5

S = stroke

MSN-10

Piston Ø	S	L1	L2	L4	L5	L6	L7	L8	L9	L10	L11	L12	T2	T4
10 mm	5	51.5	40	11.5	12.5	5	12	10	15	14	11	9.5	6	5.5
10 mm	10	56.5	45	11.5	12.5	5	12	14	15	19	11	9.5	6	5.5
10 mm	15	61.5	50	11.5	12.5	5	12	18	15	25	11	9.5	6	5.5
10 mm	20	66.5	55	11.5	12.5	5	12	24	15	30	11	9.5	6	5.5
10 mm	25	73.5	62	11.5	12.5	5	12	32	15	40	12	10.5	6	5.5
10 mm	30	78.5	67	11.5	12.5	5	12	35	15	45	12	10.5	6	5.5

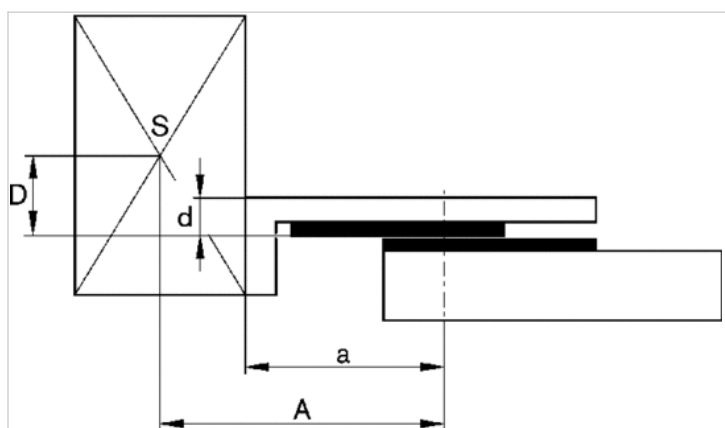
S = stroke

MSN-16

Piston Ø	S	L1	L2	L4	L5	L6	L7	L8	L9	L10	L11	L12	T2	T4
16 mm	5	66	52	14	12.5	5	12	20	18	24	13	12.5	6	6
16 mm	10	66	52	14	12.5	5	12	20	18	35	13	12.5	6	6
16 mm	15	76	62	14	12.5	5	12	30	18	45	13.5	12.5	6	6
16 mm	20	76	62	14	12.5	5	12	30	18	50	13.5	12.5	6	6
16 mm	25	86	72	14	12.5	5	12	40	18	50	17.5	12.5	6	6
16 mm	30	91	77	14	12.5	5	12	45	18	55	17.5	12.5	6	6

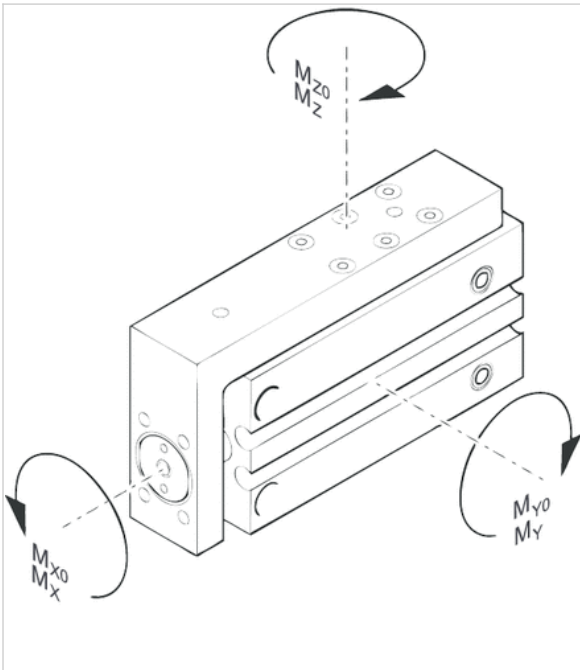
S = stroke

correction factor (a d)



## Dimensions

M = max. permissible torque



## Dimensions

Piston Ø	S	a [mm] 1)	d [mm] 2)	Mx0 3)	My0 3)	Mz0 3)	Mx 4)	My 4)	Mz 4)
6 mm	5	27	6	3	3.2	3.2	0.6	0.9	0.9
6 mm	10	32	6	3	3.2	3.2	0.6	0.9	0.9
6 mm	15	32	6	3	3.2	3.2	0.6	0.9	0.9
6 mm	20	37	6	3	3.2	3.2	0.6	0.9	0.9
6 mm	25	42	6	3	3.2	3.2	0.6	0.9	0.9
6 mm	30	47	6	3	3.2	3.2	0.6	0.9	0.9
10 mm	5	31	6.8	2.3	2.4	2.4	0.6	0.8	0.8
10 mm	10	36	6.8	2.3	2.4	2.4	0.6	0.8	0.8
10 mm	15	41	6.8	2.3	2.4	2.4	0.6	0.8	0.8
10 mm	20	41	6.8	3.2	3.3	3.3	0.7	1.2	1.2
10 mm	25	48	6.8	3.2	3.3	3.3	0.7	1.2	1.2
10 mm	30	53	6.8	3.2	3.3	3.3	0.7	1.2	1.2
16 mm	5	40	7.5	6.8	6.9	6.9	1.7	2.1	2.1
16 mm	10	40	7.5	6.8	6.9	6.9	1.7	2.1	2.1
16 mm	15	50	7.5	6.8	6.9	6.9	1.7	2.1	2.1
16 mm	20	50	7.5	6.8	6.9	6.9	1.7	2.1	2.1
16 mm	25	55	7.5	10	12.3	12.3	1.9	2.7	2.7
16 mm	30	60	7.5	10	12.3	12.3	1.9	2.7	2.7

S = stroke

1) correction factor (a)

2) correction factor (d)

3) Static moment M [Nm]

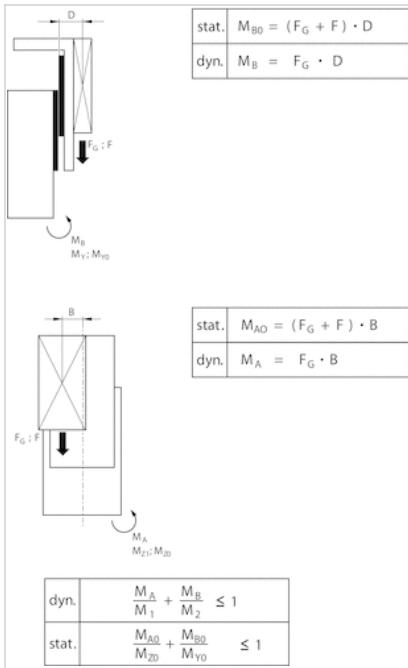
4) Dynamic moment M [Nm]

Weight [kg]

Piston Ø	S	Weight kg
6 mm	5	0,071 kg
6 mm	10	0,078 kg
6 mm	15	0,084 kg
6 mm	20	0,089 kg
6 mm	25	0,104 kg
6 mm	30	0,11 kg
10 mm	5	0,112 kg
10 mm	10	0,122 kg
10 mm	15	0,131 kg
10 mm	20	0,147 kg
10 mm	25	0,159 kg
10 mm	30	0,17 kg
16 mm	5	0,231 kg
16 mm	10	0,231 kg
16 mm	15	0,262 kg
16 mm	20	0,262 kg
16 mm	25	0,295 kg
16 mm	30	0,295 kg

S = stroke

vertical



$F = m \cdot aFG = m \cdot ga = 1250 \cdot V^2 / H$

F = deceleration force [N] F = force due to weight [N] m = load mass [kg] a = deceleration [m/s<sup>2</sup>] g = gravitational acceleration 9,81 [m/s<sup>2</sup>] V = velocity [m/s] H = stroke length of shock absorber [mm]

# Dimensions

## horizontal

stat.	$M_{B0} = F_G \cdot A + F \cdot D$
dyn.	$M_B = F_G \cdot A$

stat.	$M_{C0} = F_G \cdot B$
dyn.	$M_C = F_G \cdot B$

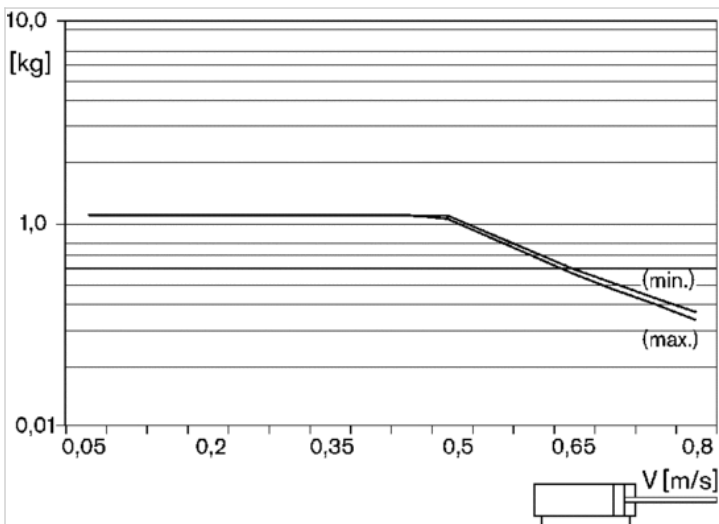
stat.	$M_{A0} = F \cdot B$
dyn.	$M_A = 0$

dyn.	$\frac{M_A}{M_1} + \frac{M_B}{M_2} + \frac{M_C}{M_3} \leq 1$
stat.	$\frac{M_{A0}}{M_{20}} + \frac{M_{B0}}{M_{10}} + \frac{M_{C0}}{M_{30}} \leq 1$

$$F = m \cdot a + F_G = m \cdot a + m \cdot g = 1250 \cdot V^2 / H$$

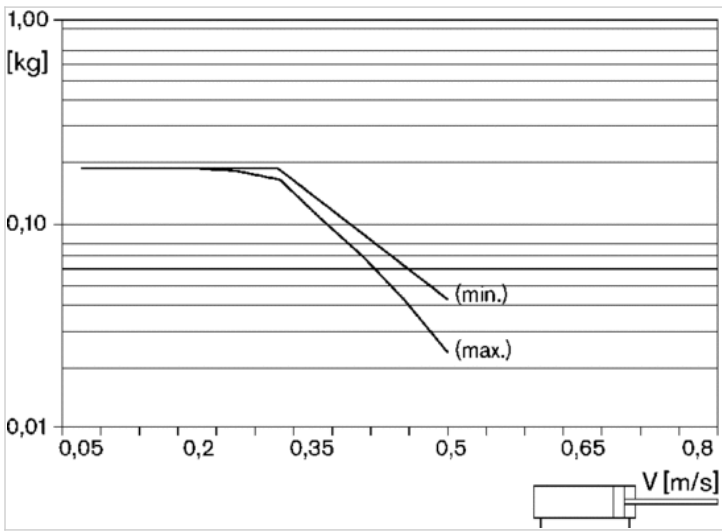
F = deceleration force [N] F<sub>G</sub> = force due to weight [N] m = load mass [kg] a = deceleration [m/s<sup>2</sup>] g = gravitational acceleration 9,81 [m/s<sup>2</sup>] V = velocity [m/s] H = stroke length of shock absorber [mm]

## Maximum additionally moving mass (min. stroke max. stroke) MSN-16

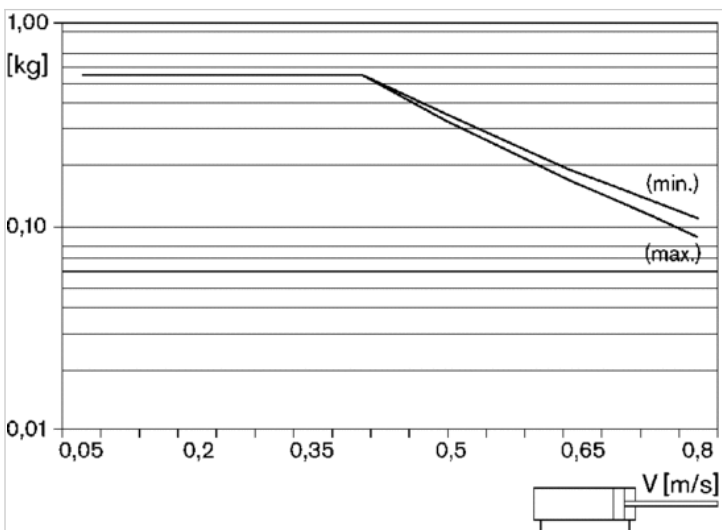


## Diagrams

Maximum additionally moving mass (min. stroke max. stroke) MSN - 6



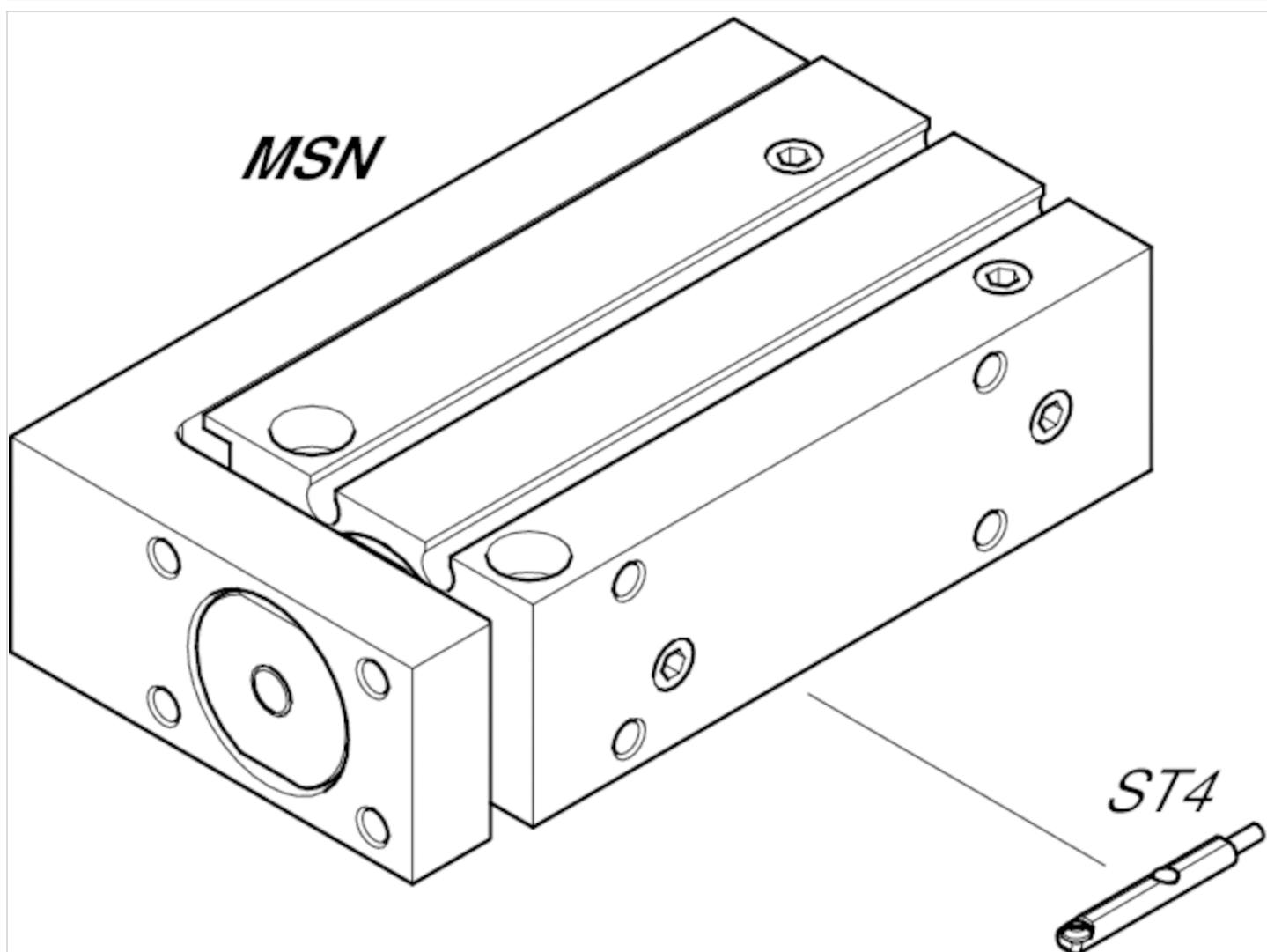
Maximum additionally moving mass (min. stroke max. stroke) MSN - 10





## Accessories overview

## Overview drawing



NOTE: This overview drawing is only for orientation to indicate where the various accessory parts can be fastened to the cylinder. The illustration has been simplified for this purpose. It is thus not possible to derive the dimensions from this overview.

# Sensor, Series ST4

- 4 mm C-slot
- with cable
- Plug, M8, 3-pin, with knurled screw
- UL certification
- Reed, electronic PNP
- Direct mounting for series PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
- Indirect mounting for series MNI, CSL-RD, ICM



Certificates	UL (Underwriters Laboratories), cULus, RoHS
Ambient temperature min./max.	-30 ... 80 °C
Protection class	IP65, IP67
Switching point precision	±0,1 mT
Min./max. DC operating voltage	See table below
Switching logic	NO (make contact)
Display	LED
LED status display	Yellow
Vibration resistance	10 - 55 Hz, 1 mm
Shock resistance	30 g / 11 ms
Mounting screw	Combination: slotted and hexagon socket

## Technical data

Part No.		for
R412019490		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
R412019686		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
R412019493		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
R412019687		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI

Part No.	Type of contact	Cable length L	Min./max. DC operating voltage
R412019490	Reed	0,3 m	5 ... 30 V DC
R412019686	Reed	0,5 m	5 ... 30 V DC
R412019493	electronic PNP	0,3 m	10 ... 30 V DC
R412019687	electronic PNP	0,5 m	10 ... 30 V DC

Part No.	Voltage drop U at I <sub>max</sub>	DC switching current, max.
R412019490	≤ 0,5 V	0,13 A
R412019686	≤ 0,5 V	0,13 A
R412019493	≤ 2,5 V	0,1 A
R412019687	≤ 2,5 V	0,1 A

Part No.	AC switching current, max.	Switching capacity
R412019490	0,13 A	3 W / 3 VA

Part No.	AC switching current, max.	Switching capacity
R412019686	0,13 A	3 W / 3 VA
R412019493	-	-
R412019687	-	-

Part No.	Version
R412019490	Protected against polarity reversal
R412019686	Protected against polarity reversal
R412019493	short circuit resistant, Protected against polarity reversal
R412019687	short circuit resistant, Protected against polarity reversal

## Technical information

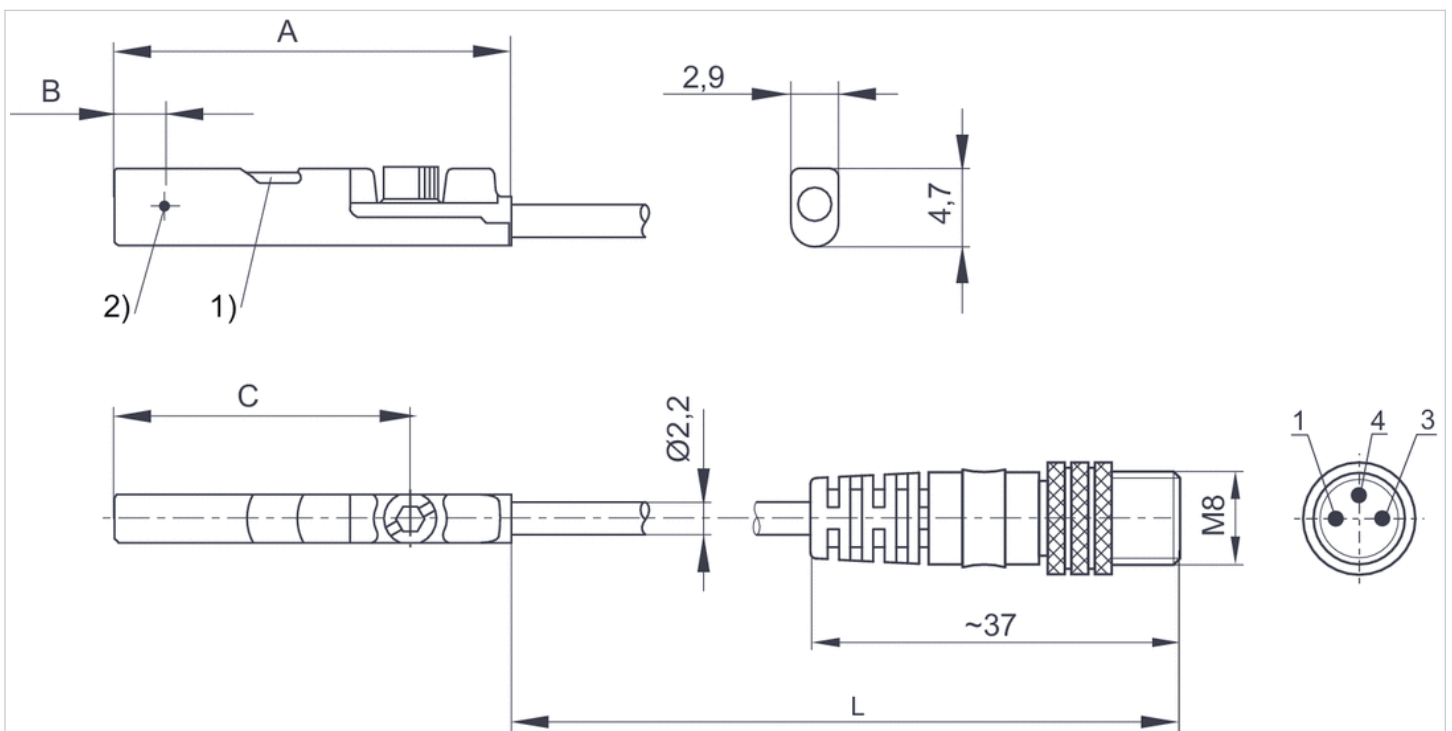
The max. switching capacity must not be exceeded.

## Technical information

Material	
Housing	Polyamide, fiber-glass reinforced
Cable sheath	Polyurethane

## Dimensions

### Dimensions



1) LED 2) Switching point  
L = cable length

Pin assignment: 1 = (+) 3 = (-) 4 = (OUT)

## Dimensions

Part No.	A	B	C
R412019490	26.3	6.3	20.3
R412019686	26.3	6.3	20.3
R412019493	23.7	2.8	17.7
R412019687	23.7	2.8	17.7

# Sensor, Series ST4

- 4 mm C-slot
- with cable
- Plug, M8, 3-pin
- UL certification
- Reed, electronic PNP, electronic NPN
- Direct mounting for series PRA, SSI, GSU, RTC, CKP, GSP, MSC, MSN, RCM, CVI
- Indirect mounting for series MNI, CSL-RD, ICM



## Certificates

UL (Underwriters Laboratories), cULus, RoHS

Ambient temperature min./max.

-30 ... 80 °C

Protection class

IP65, IP67

Switching point precision

±0,1 mT

Min./max. DC operating voltage

See table below

Switching logic

NO (make contact)

Display

LED

LED status display

Yellow

Vibration resistance

10 - 55 Hz, 1 mm

Shock resistance

30 g / 11 ms

Mounting screw

Combination: slotted and hexagon socket

## Technical data

Part No.		for
R412019682		PRA, SSI, GSU, RTC, CKP, GSP, MSC, MSN, RCM, CVI
R412019683		PRA, SSI, GSU, RTC, CKP, GSP, MSC, MSN, RCM, CVI
R412019694		PRA, SSI, GSU, RTC, CKP, GSP, MSC, MSN, RCM, CVI

Part No.	Type of contact	Cable length L	Min./max. DC operating voltage
R412019682	Reed	0,3 m	5 ... 30 V DC
R412019683	electronic PNP	0,3 m	10 ... 30 V DC
R412019694	electronic NPN	0,3 m	10 ... 30 V DC

Part No.	Voltage drop U at I <sub>max</sub>	DC switching current, max.
R412019682	≤ 0,5 V	0,13 A
R412019683	≤ 2,5 V	0,1 A
R412019694	≤ 2,5 V	0,1 A

Part No.	AC switching current, max.	Switching capacity
R412019682	0,13 A	3 W / 3 VA
R412019683	-	-
R412019694	-	-

Part No.	Version
R412019682	Protected against polarity reversal
R412019683	short circuit resistant, Protected against polarity reversal
R412019694	short circuit resistant, Protected against polarity reversal

## Technical information

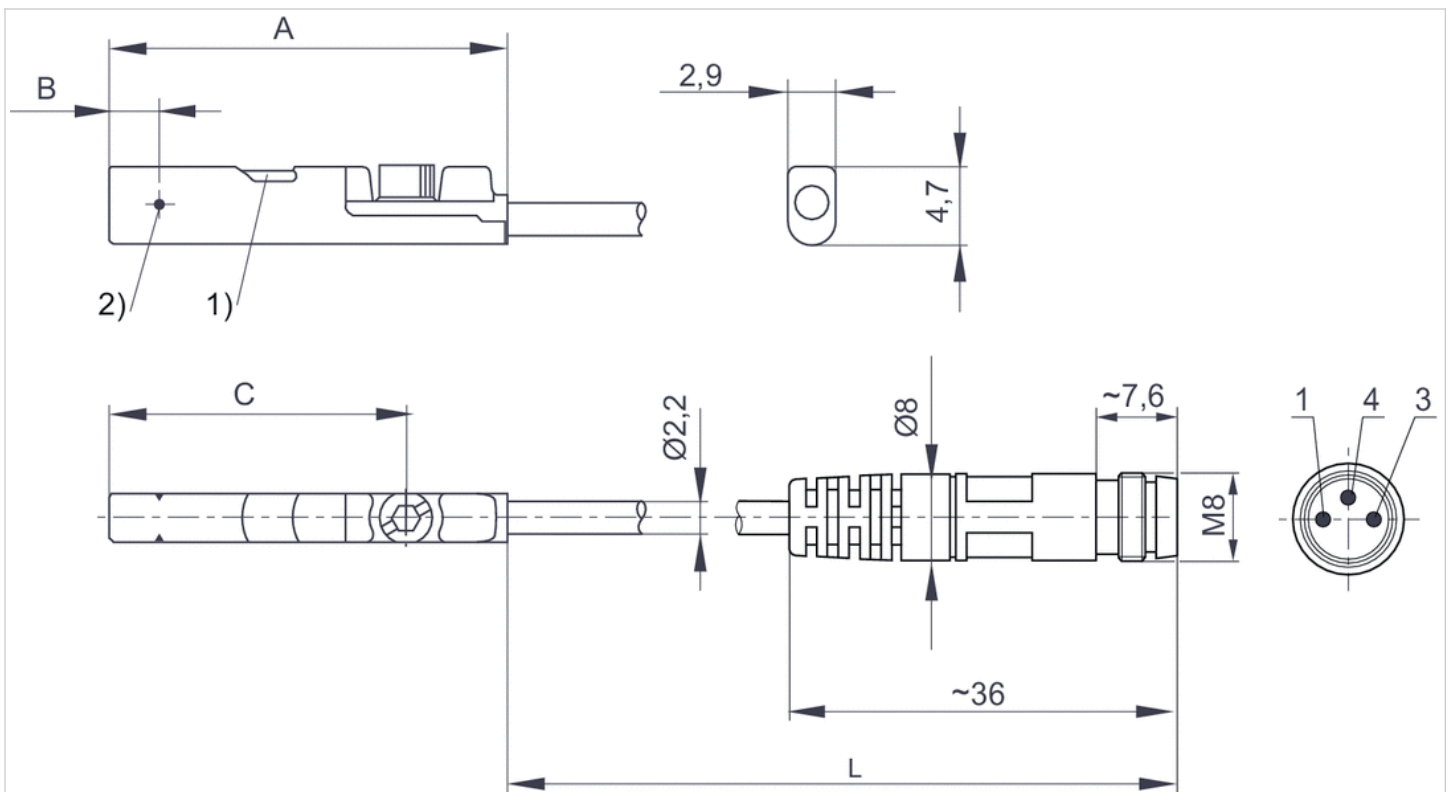
The max. switching capacity must not be exceeded.

## Technical information

Material	
Housing	Polyamide, fiber-glass reinforced
Cable sheath	Polyurethane

## Dimensions

### Dimensions



1) LED 2) Switching point

L = cable length

Pin assignment: 1 = (+) 3 = (-) 4 = (OUT)

## Dimensions

Part No.	A	B	C
R412019682	26.3	6.3	20.3
R412019683	23.7	2.8	17.7
R412019694	23.7	2.8	17.7

# Sensor, Series ST4

- 4 mm C-slot
- with cable
- open cable ends, 3-pin
- UL certification
- Reed, electronic PNP, electronic NPN
- Direct mounting for series PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
- Indirect mounting for series MNI, CSL-RD, ICM



Certificates	UL (Underwriters Laboratories), cULus, RoHS
Ambient temperature min./max.	-30 ... 80 °C
Protection class	IP65, IP67
Switching point precision	±0,1 mT
Min./max. DC operating voltage	See table below
Switching logic	NO (make contact)
Display	LED
LED status display	Yellow
Vibration resistance	10 - 55 Hz, 1 mm
Shock resistance	30 g / 11 ms
Mounting screw	Combination: slotted and hexagon socket

## Technical data

Part No.		for
R412019488		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
R412019489		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
R412019680		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
R412019681		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
R412019684		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI
R412019685		PRA, SSI, GSU, RTC, CKP, GPC, MSC, MSN, RCM, CVI

Part No.	Type of contact	Cable length L	Min./max. DC operating voltage
R412019488	Reed	3 m	5 ... 30 V DC
R412019489	Reed	5 m	5 ... 30 V DC
R412019680	electronic PNP	3 m	10 ... 30 V DC
R412019681	electronic PNP	5 m	10 ... 30 V DC
R412019684	electronic NPN	3 m	10 ... 30 V DC
R412019685	electronic NPN	5 m	10 ... 30 V DC

Part No.	Voltage drop U at I <sub>max</sub>	DC switching current, max.
R412019488	≤ 0,5 V	0,13 A
R412019489	≤ 0,5 V	0,13 A
R412019680	≤ 2,5 V	0,1 A
R412019681	≤ 2,5 V	0,1 A



Part No.	Voltage drop U at I <sub>max</sub>	DC switching current, max.
R412019684	≤ 2,5 V	0,1 A
R412019685	≤ 2,5 V	0,1 A

Part No.	AC switching current, max.	Switching capacity
R412019488	0,13 A	3 W / 3 VA
R412019489	0,13 A	3 W / 3 VA
R412019680	-	-
R412019681	-	-
R412019684	-	-
R412019685	-	-

Part No.	Version
R412019488	Protected against polarity reversal
R412019489	Protected against polarity reversal
R412019680	short circuit resistant, Protected against polarity reversal
R412019681	short circuit resistant, Protected against polarity reversal
R412019684	short circuit resistant, Protected against polarity reversal
R412019685	short circuit resistant, Protected against polarity reversal

## Technical information

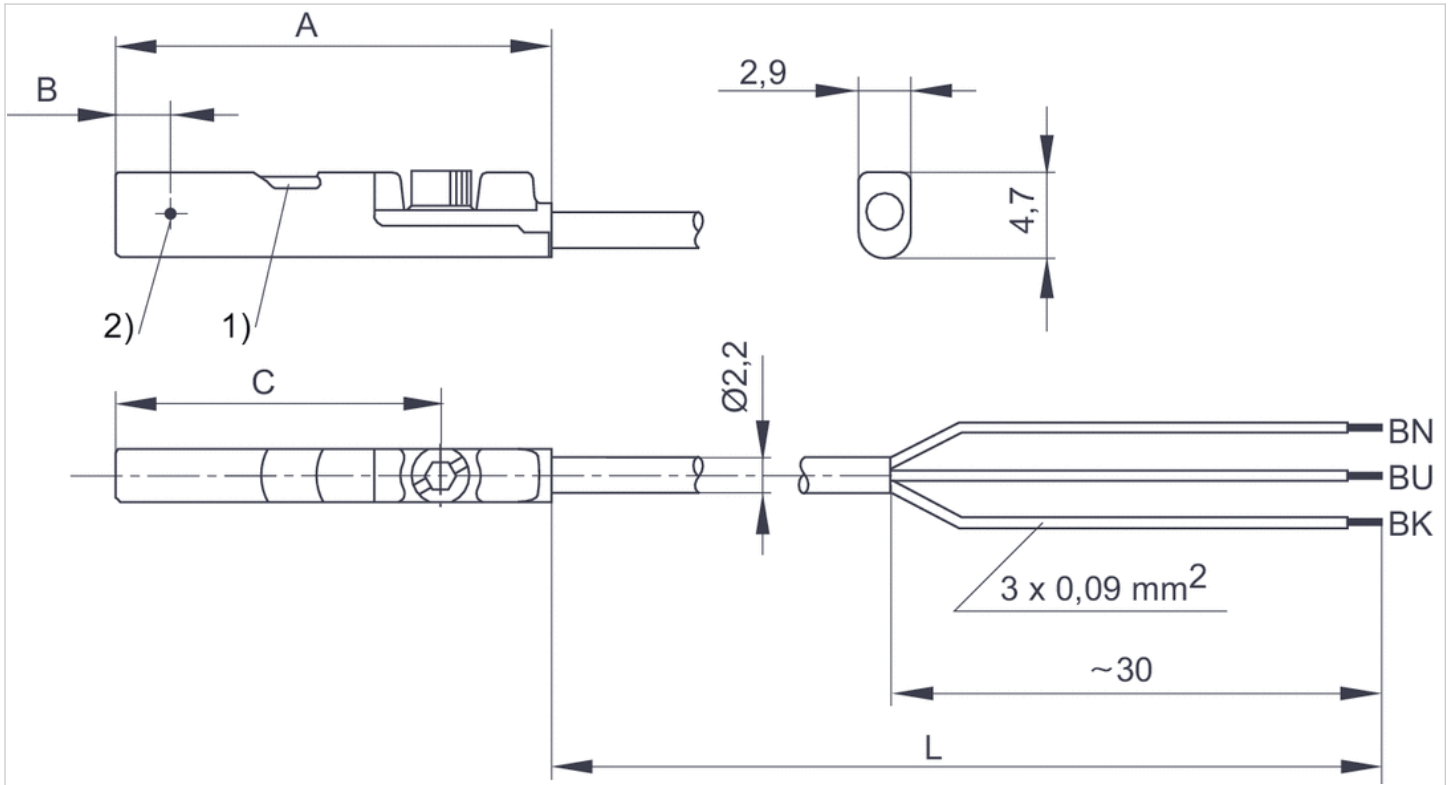
The max. switching capacity must not be exceeded.

## Technical information

Material	
Housing	Polyamide, fiber-glass reinforced
Cable sheath	Polyurethane

## Dimensions

### Dimensions



1) LED 2) Switching point

L = cable length BN = brown, BK = black, BU = blue

## Dimensions

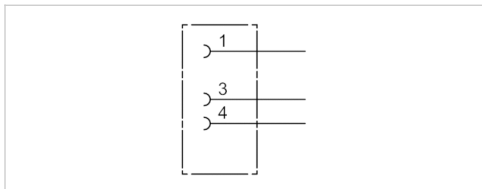
Part No.	A	B	C
R412019488	26.3	6.3	20.3
R412019489	26.3	6.3	20.3
R412019680	23.7	2.8	17.7
R412019681	23.7	2.8	17.7
R412019684	23.7	2.8	17.7
R412019685	23.7	2.8	17.7

# Round plug connector, Series CON-RD

- Socket, M8x1, 3-pin, A-coded, straight, 180°
- UL (Underwriters Laboratories)
- unshielded



Connection type	Soldering
Ambient temperature min./max.	-25 ... 80 °C
Operational voltage	48 V, AC/DC
Protection class	IP67
Weight	0,009 kg



## Technical data

Part No.	Max. current	suitable cable-Ø min./max
1834484173	4 A	3,5 mm

## Technical information

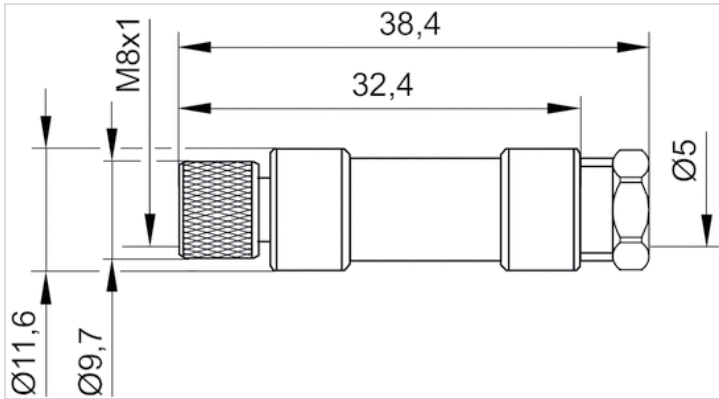
The specified protection class is only valid in assembled and tested state.

## Technical information

Material	
Housing	Polyamide

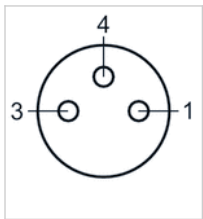
## Dimensions

### Dimensions



## Pin assignments

### Pin assignment socket

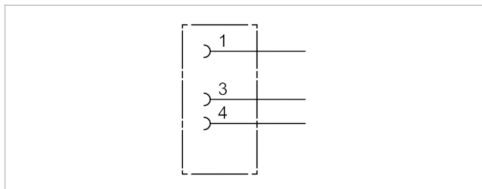


# Round plug connector, Series CON-RD

- Socket, M8x1, 3-pin, A-coded, angled, 90°
- UL (Underwriters Laboratories)
- unshielded



Connection type	Soldering
Ambient temperature min./max.	-40 ... 85 °C
Operational voltage	48 V, AC/DC
Protection class	IP67
Weight	0,01 kg



## Technical data

Part No.	Max. current	Contact assignment	suitable cable-Ø min./max
1834484174	4 A	3	3,5 / 5 mm

## Technical information

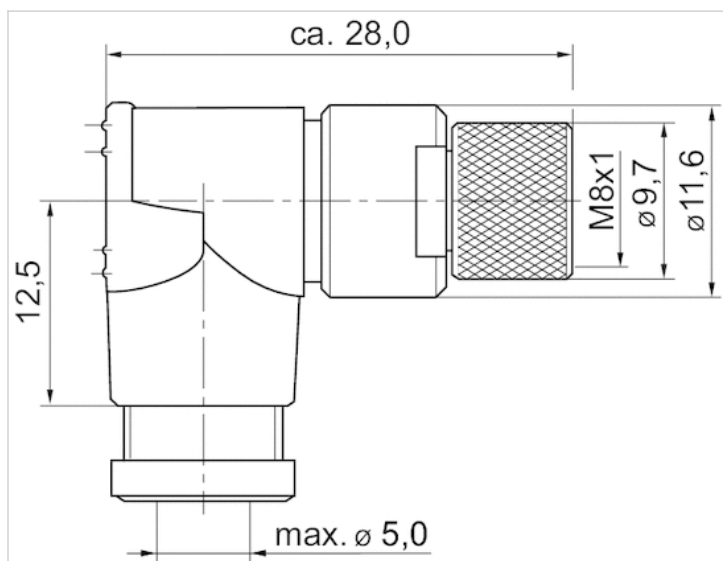
The specified protection class is only valid in assembled and tested state.

## Technical information

Material	
Housing	Polyamide

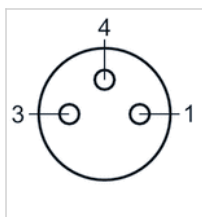
## Dimensions

### Dimensions



## Pin assignments

### Pin assignment socket



# Round plug connector, Series CON-RD

- Socket, M8x1, 3-pin, A-coded, straight, 180°
- open cable ends
- with cable
- UL (Underwriters Laboratories)
- unshielded



Ambient temperature min./max.	-25 ... 85 °C
Operational voltage	48 V, AC/DC
Protection class	IP67
Wire cross-section	0,24 mm <sup>2</sup>
Weight	See table below

## Technical data

Part No.	Max. current	Number of wires	Cable-Ø	Cable length	Certification	Weight
1834484166	4 A	3	4,5 mm	3 m	UL (Underwriters Laboratories)	0,087 kg
1834484168	4 A	3	4,5 mm	5 m	UL (Underwriters Laboratories)	0,141 kg
1834484247	4 A	3	4,5 mm	10 m	UL (Underwriters Laboratories)	0,277 kg

## Technical information

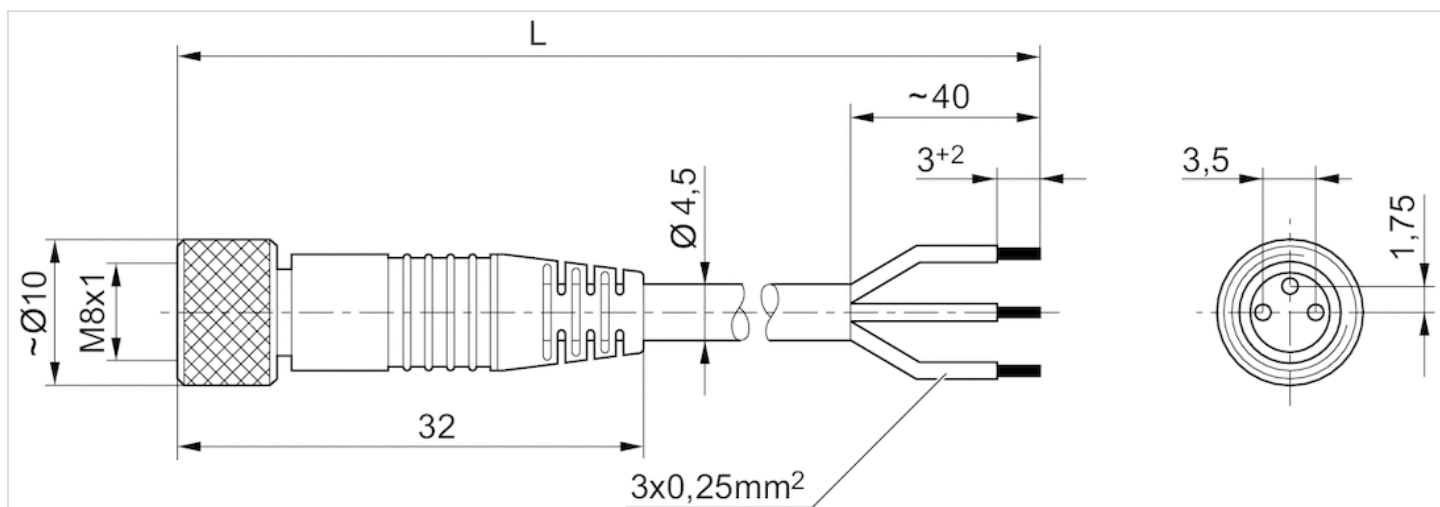
The specified protection class is only valid in assembled and tested state.

## Technical information

Material	
Housing	Polyurethane
Cable sheath	Polyurethane

## Dimensions

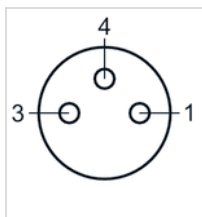
### Dimensions



L = length

## Pin assignments

### Pin assignment socket



(1) BN=brown(3) BU=blue(4) BK=black

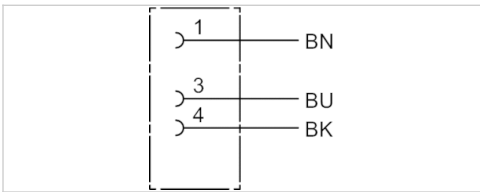


# Round plug connector, Series CON-RD

- Socket, M8x1, 3-pin, A-coded, angled, 90°
- open cable ends
- with cable
- unshielded



Ambient temperature min./max.	-40 ... 85 °C
Operational voltage	48 V, AC/DC
Protection class	IP67
Wire cross-section	0,24 mm <sup>2</sup>
Weight	See table below



## Technical data

Part No.	Max. current	Number of wires	Cable-Ø	Cable length	Weight
1834484167	4 A	3	4,5 mm	3 m	0,087 kg
1834484169	4 A	3	4,5 mm	5 m	0,139 kg
1834484248	4 A	3	4,5 mm	10 m	0,279 kg

## Technical information

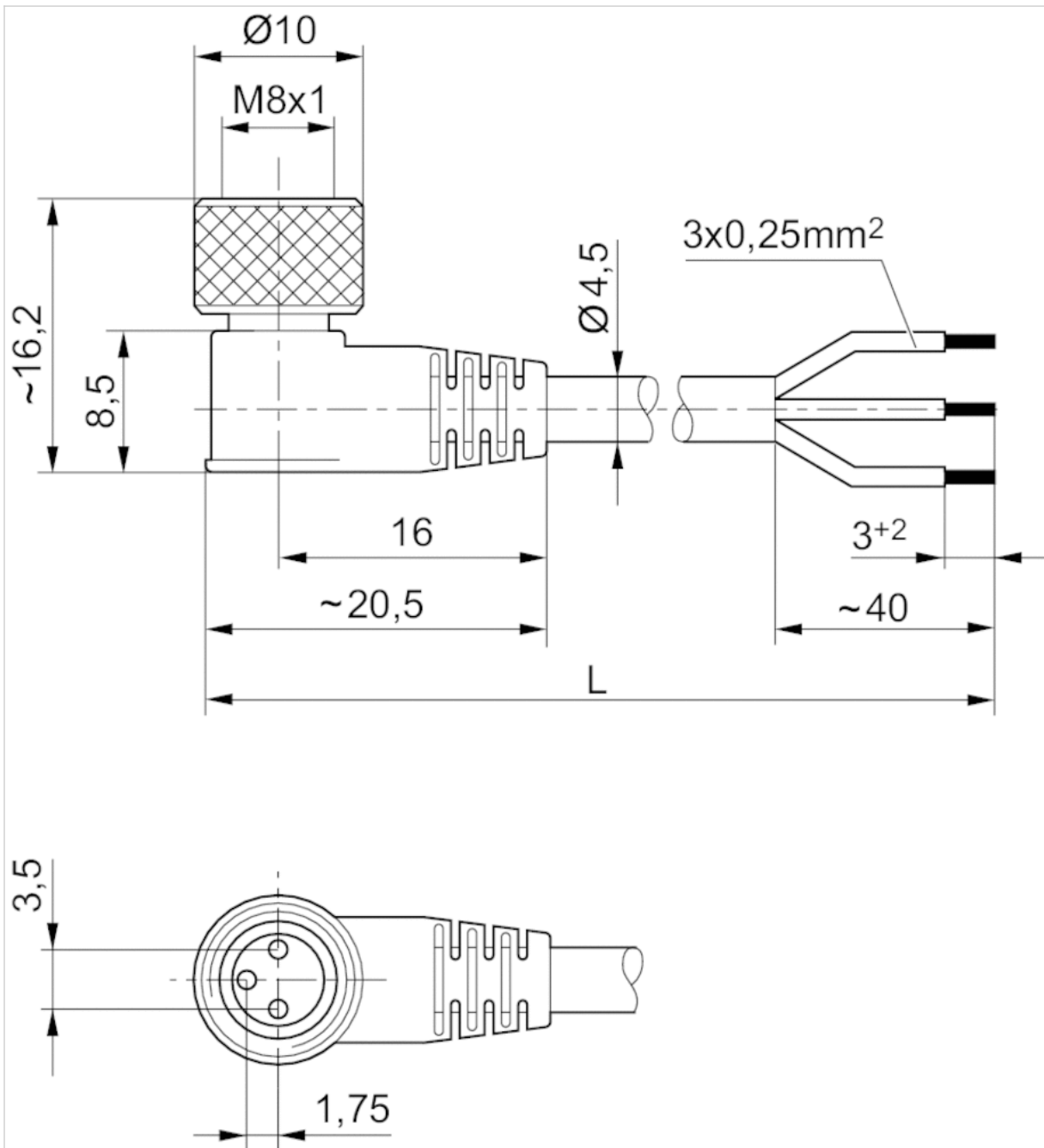
The specified protection class is only valid in assembled and tested state.

## Technical information

Material	
Housing	Polyurethane
Cable sheath	Polyurethane

## Dimensions

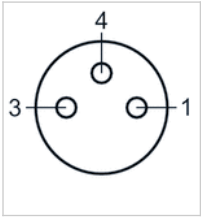
### Dimensions



L = length

## Pin assignments

### Pin assignment socket



(1) BN=brown(3) BU=blue(4) BK=black