

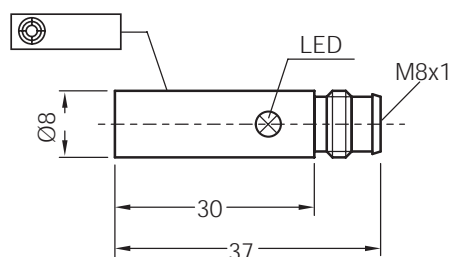
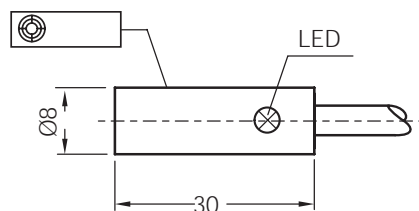


Magnetic cylinder sensors

MZ R1 series

DC 3-wire, for round-body cylinders

Dimensions in mm



Features

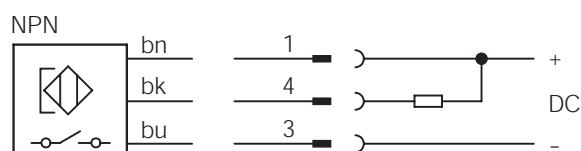
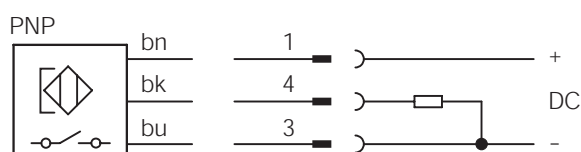


- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Mounting on round-body cylinders Ø 8 ... 63 mm using R1 mounting clamp
- ▶ High response sensitivity ≥ 3 mT
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed ≤ 5 m/s
- ▶ PNP or NPN output
- ▶ Short-circuit protection (pulsed)
- ▶ Solid aluminium housing
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

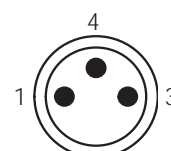
Accessories

Round connectors

Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bk black	4	NO
bu blue	3	- V DC



Electrical and mechanical data

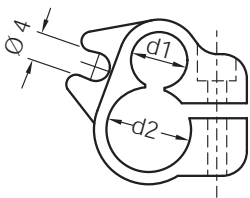
Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 1.5 V	Reverse polarity protection	yes
Power consumption (without load)	≤ 10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to EN 60529	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.0 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Aluminium, plastic
EMC	to EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²

Selection table

Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		PNP		5000	Cable 2 m	MZR1-03VPS-AU0	7900592
3		NPN		5000	Cable 2 m	MZR1-03VNS-AU0	7900593
3		PNP		5000	Connector M8 x 1 mm	MZR1-03VPS-AT0	7900594
3		NPN		5000	Connector M8 x 1 mm	MZR1-03VNS-AT0	7900595

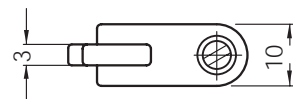
Series is available as reed switch on request.

Accessories



Mounting clamp

Plastic
for magnetic cylinder sensor R1
with d1 Ø 8 mm



For cylinders with piston diameter

For cylinders with piston diameter	Clamping range d2 in mm	Type	Order-Nr.
8 mm	9,2 ... 10,0	BEF-S-R1-08	7902337
10 mm	10,9 ... 12,0	BEF-S-R1-10	7901753
12 mm	12,9 ... 14,0	BEF-S-R1-12	7901754
16 mm	16,9 ... 18,0	BEF-S-R1-16	7901755
20 mm	21,0 ... 22,0	BEF-S-R1-20	7901756
25 mm	26,1 ... 27,2	BEF-S-R1-25	7901757
32 mm	33,0 ... 35,0	BEF-S-R1-32	7901758
40 mm	41,4 ... 42,5	BEF-S-R1-40	7901759
50 mm	52,5 ... 54,0	BEF-S-R1-50	7901760
63 mm	66,0 ... 67,0	BEF-S-R1-63	7901761

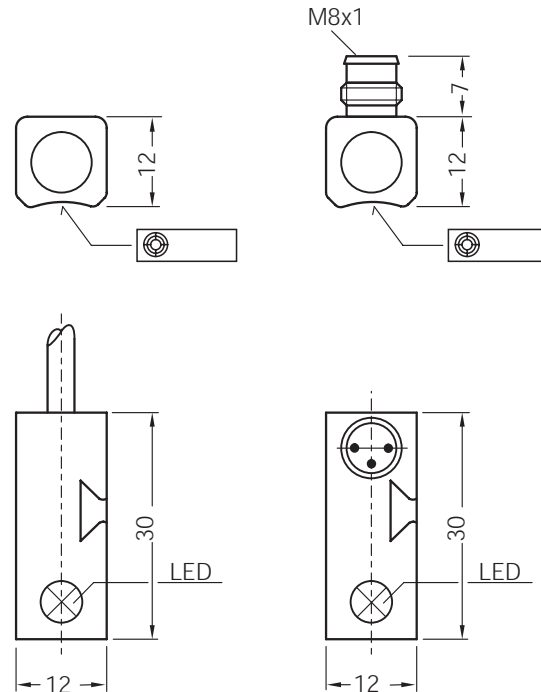


Magnetic cylinder sensors

MZ R2 series

DC 3-wire, for round-body cylinders

Dimensions in mm



Features

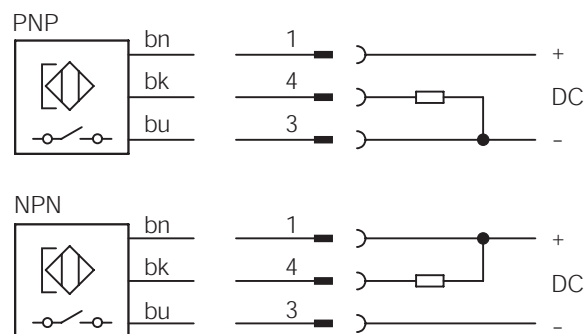


- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Universal mounting using clamping band for max. cylinder diameter of 100 mm
- ▶ High response sensitivity $\geq 3 \text{ mT}$
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed $\leq 5 \text{ m/s}$
- ▶ PNP or NPN output
- ▶ Short-circuit protection (pulsed)
- ▶ Solid aluminium housing
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

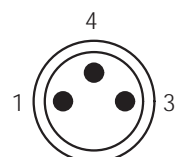
Accessories

Round connectors

Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bk black	4	NO
bu blue	3	- V DC



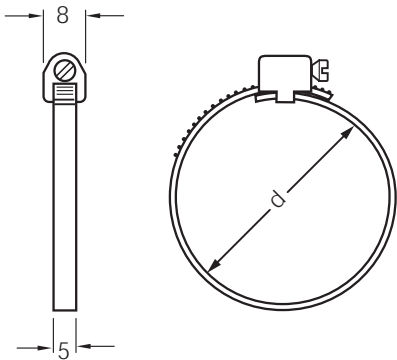
Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 1.5 V	Reverse polarity protection	yes
Power consumption (without load)	≤ 10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to EN 60529	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.0 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Aluminium, plastic
EMC	to EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²

Selection table

Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		PNP		5000	Cable 2 m	MZR2-03VPS-AU0	7900598
3		NPN		5000	Cable 2 m	MZR2-03VNS-AU0	7900599
3		PNP		5000	Connector M8 x 1 mm	MZR2-03VPS-AT0	7900600
3		NPN		5000	Connector M8 x 1 mm	MZR2-03VNS-AT0	7900601

Accessories



Clamping band

stainless steel
for magnetic cylinder sensor R2

For cylinder range with piston diameter	Clamping range d in mm	Type	Order-No.
8 ... 16 mm	18 - 29	BEF-S-R2-16	7901762
20/25 mm	28 - 39	BEF-S-R2-25	7901763
32 mm	38 - 49	BEF-S-R2-30	7901764
40 mm	48 - 59	BEF-S-R2-40	7901765
50 mm	58 - 69	BEF-S-R2-50	7901766
63 mm	68 - 79	BEF-S-R2-63	7901767
80 mm	88 - 99	BEF-S-R2-80	7901768
100 mm	98 - 109	BEF-S-R2-100	7901769

Magnetic cylinder sensors

MZ Z1 series

DC 3-wire, for tie-rod cylinders

Dimensions in mm



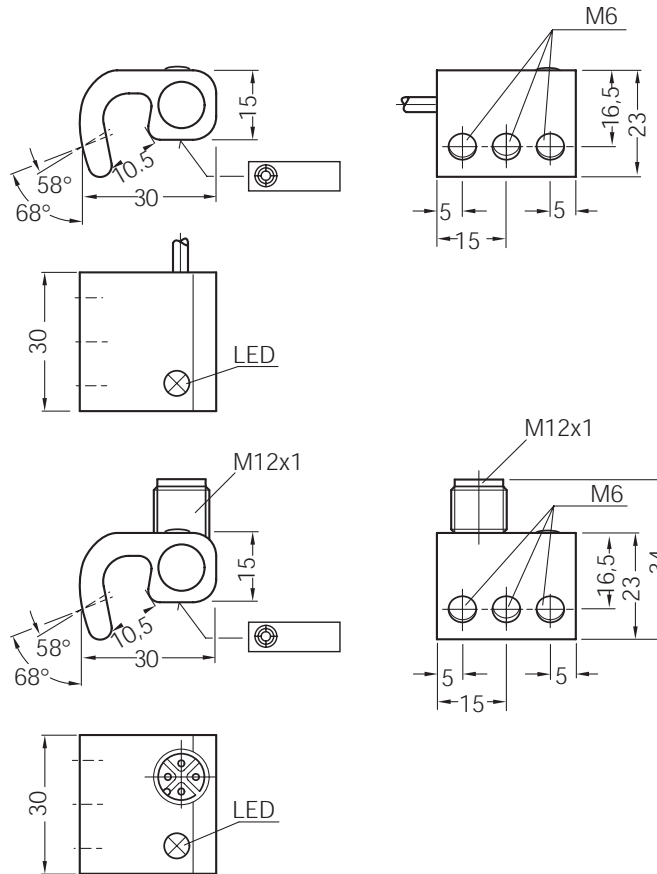
Features



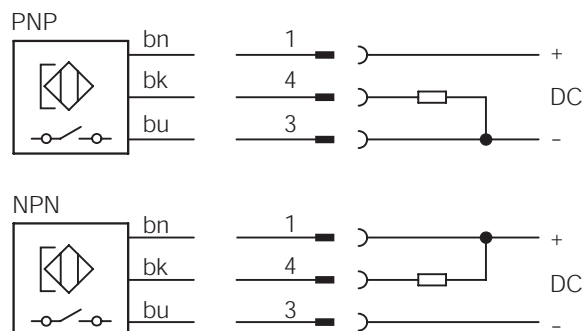
- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Tie-rod mounting for max. rod diameter of 10 mm
- ▶ High response sensitivity $\geq 3 \text{ mT}$
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed $\leq 5 \text{ m/s}$
- ▶ PNP or NPN output
- ▶ Short-circuit protection (pulsed)
- ▶ Solid aluminium housing with integrated mounting claw
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

Accessories

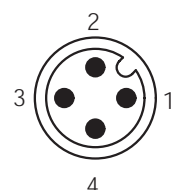
Round connectors



Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bk black	4	NO
bu blue	3	- V DC
	2	free



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 1.5 V	Reverse polarity protection	yes
Power consumption (without load)	≤ 10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to EN 60529	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.0 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Aluminium, plastic
EMC	of EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²

Selection table

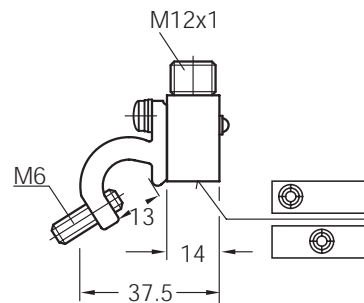
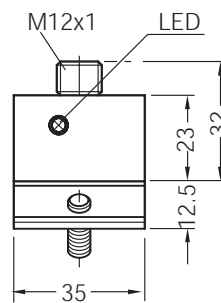
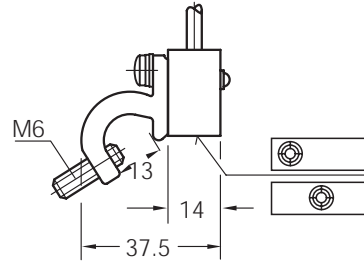
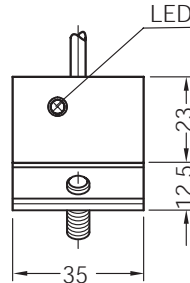
Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		PNP		5000	Cable 2 m	MZZ1-03VPS-AU0	7900606
3		PNP		5000	Connector M12 x 1 mm	MZZ1-03VPS-AC0	7900608
3		NPN		5000	Connector M12 x 1 mm	MZZ1-03VNS-AC0	7900609

Magnetic cylinder sensors

MZ Z2 series

DC 3-wire, for tie-rod cylinders

Dimensions in mm



Features

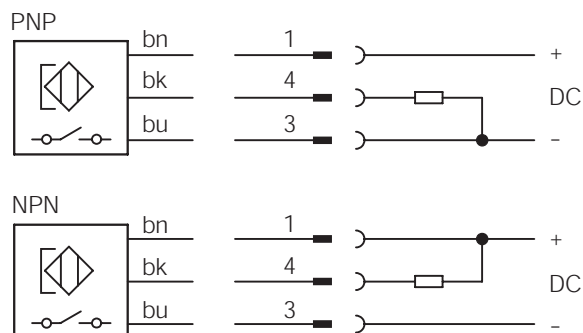


- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Mounting on tie-rods with max. rod diameter of 12.5 mm
- ▶ High response sensitivity ≥ 3 mT
- ▶ Frontal or central sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed ≤ 5 m/s
- ▶ PNP or NPN output
- ▶ Short-circuit protection (pulsed)
- ▶ Solid aluminium construction with integrated mounting and plastic housing
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

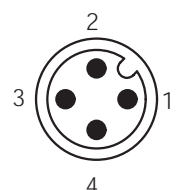
Accessories

Round connectors

Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bk black	4	NO
bu blue	3	- V DC
	2	free



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 1.5 V	Reverse polarity protection	yes
Power consumption (without load)	≤ 10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to EN 60529	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.0 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Aluminium, plastic
EMC	to EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²

Selection table

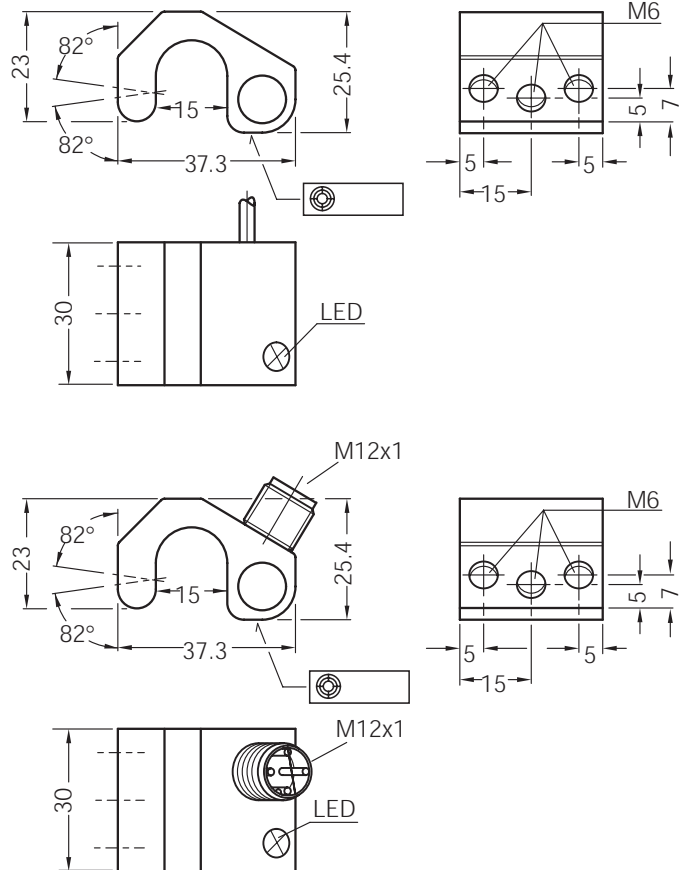
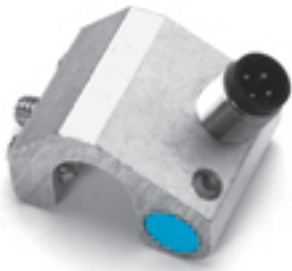
Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		PNP		5000	Cable 2 m	MZZ2-03ZPS-KU0	7900618
3		NPN		5000	Cable 2 m	MZZ2-03ZNS-KU0	7900619
3		PNP		5000	Connector M12 x 1 mm	MZZ2-03ZPS-KC0	7900620
3		PNP		5000	Cable 2 m	MZZ2-03VPS-KU0	7900622
3		PNP		5000	Connector M12 x 1 mm	MZZ2-03VPS-KC0	7900624

Magnetic cylinder sensors

MZ P3 series

DC 3-wire, for integrated profile cylinders

Dimensions in mm



Features

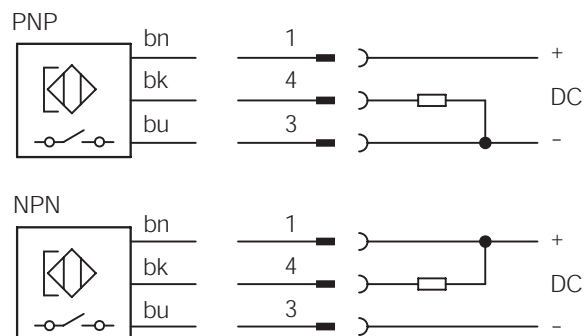


- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Mounting on integrated profile with max. width of 14 mm
- ▶ High response sensitivity ≥ 3 mT
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed ≤ 5 m/s
- ▶ PNP output
- ▶ Short-circuit protection (pulsed)
- ▶ Solid aluminium housing with integrated mounting claw
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

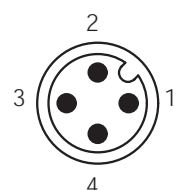
Accessories

Round connectors

Connection diagram



Wire colour	Contact	Assignment
bn	1	+ V DC
bk	4	NO
bu	3	- V DC
	2	free



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 1.5 V	Reverse polarity protection	yes
Power consumption (without load)	10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to EN 60529	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.0 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Aluminium, plastic
EMC	to EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²

Selection table

Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		PNP		5000	Cable 2 m	MZP3-03VPS-AU0	7900610
3		PNP		5000	Connector M12 x 1 mm	MZP3-03VPS-AC0	7900612

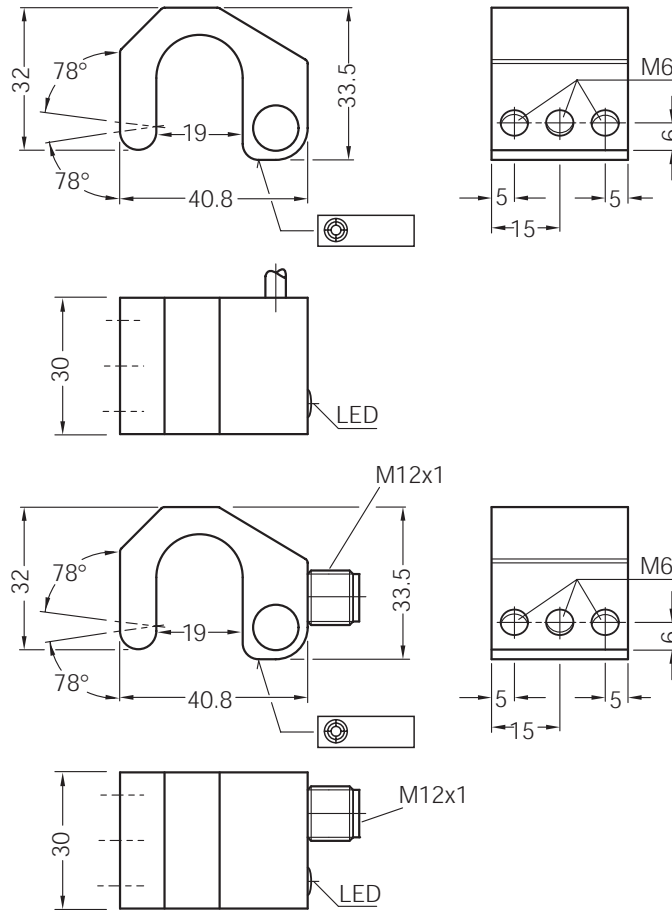


Magnetic cylinder sensors

MZ P4 series

DC 3-wire, for integrated profile cylinders

Dimensions in mm



Features

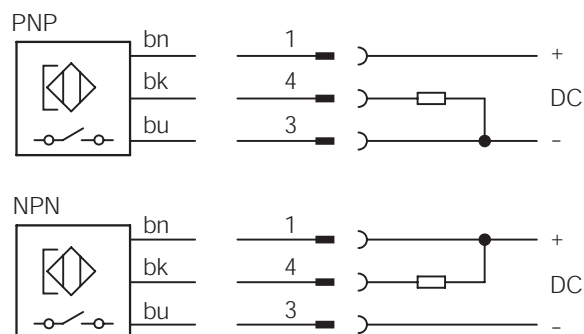


- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Mounting on integrated profile with max. width of 18 mm
- ▶ High response sensitivity $\geq 3 \text{ mT}$
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed $\leq 5 \text{ m/s}$
- ▶ PNP output
- ▶ Short-circuit protection (pulsed)
- ▶ Solid aluminium housing with integrated mounting claw
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

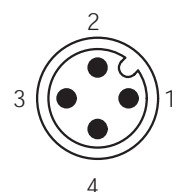
Accessories

Round connectors

Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bk black	4	NO
bu blue	3	- V DC
	2	free



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 1.5 V	Reverse polarity protection	yes
Power consumption (without load)	≤ 10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to EN 60529	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.0 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Aluminium, plastic
EMC	to EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²

Selection table

Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		PNP		5000	Cable 2 m	MZP4-03VPS-AU0	7900614
3		PNP		5000	Connector M12 x 1 mm	MZP4-03VPS-AC0	7900616

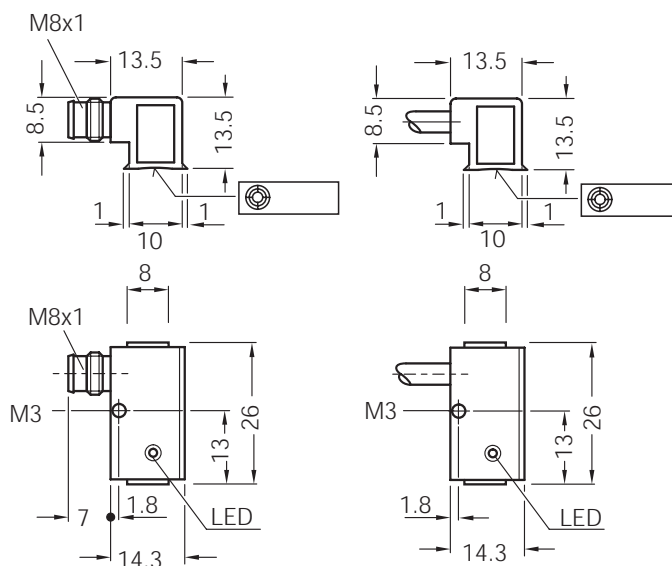


Magnetic cylinder sensors

MZ K1 series

DC 3-wire, for short-stroke cylinders

Dimensions in mm



Features

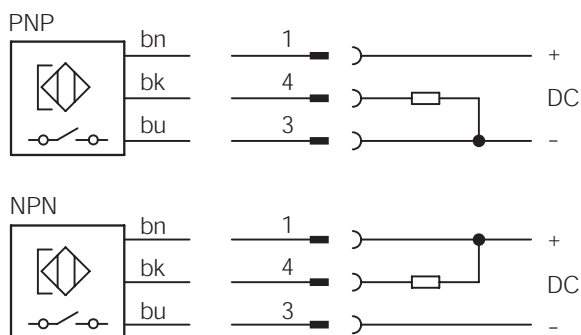


- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Simple mounting on short-stroke cylinders
- ▶ High response sensitivity ≥ 2 mT
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed ≤ 5 m/s
- ▶ PNP output
- ▶ Short-circuit protection (pulsed)
- ▶ Solid aluminium housing with special profile and clamping screw
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

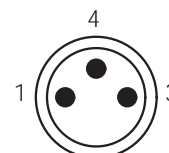
Accessories

Round connectors

Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bk black	4	NO
bu blue	3	- V DC



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 1.5 V	Reverse polarity protection	yes
Power consumption (without load)	≤ 10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to EN 60529	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.0 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Aluminium, plastic
EMC	to EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²

Selection table

Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
2		PNP		5000	Cable 2 m	MZK1-02VPS-AU0	7900602
2		PNP		5000	Connector M8 x 1 mm	MZK1-02VPS-AT0	7900604

Magnetic cylinder sensors

MZ K3 series

DC 3-wire, for short-stroke cylinders

Dimensions in mm



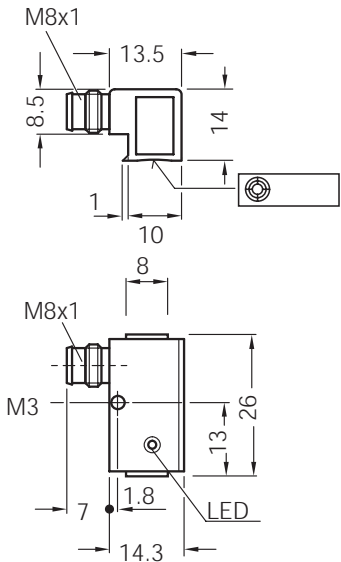
Features



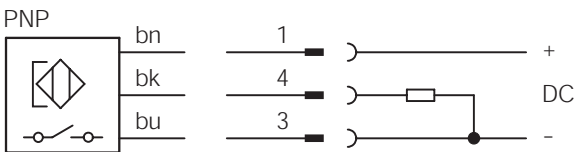
- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ **Mountable from the top**
- ▶ Simple mounting on short-stroke cylinders
- ▶ High response sensitivity $\geq 2 \text{ mT}$
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed $\leq 5 \text{ m/s}$
- ▶ PNP or NPN output
- ▶ Short-circuit protection (pulsed)
- ▶ Solid aluminium housing with special profile and clamping screw
- ▶ Cable
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

Accessories

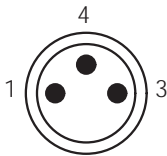
Round connectors



Connection diagram



Wire colour		Contact	Assignment
bn	brown	1	+ V DC
bk	black	4	NO
bu	blue	3	- V DC



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 1.5 V	Reverse polarity protection	yes
Power consumption (without load)	≤ 10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to EN 60529	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.0 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Aluminium, plastic
EMC	to EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²

Selection table

Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
2		PNP		5000	Connector M8 x 1 mm	MZK3-02VPS-AT0	7901952

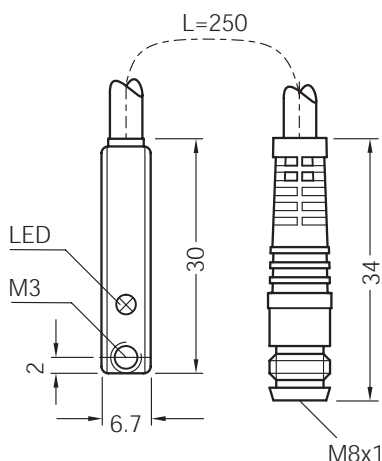
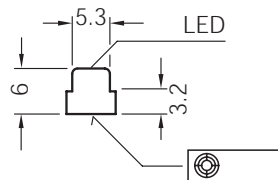


Magnetic cylinder sensors

MZ F1 series

DC 3-wire, for T-slot

Dimensions in mm



Features

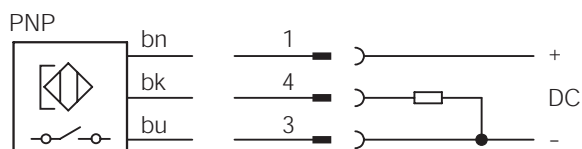


- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ For T-slot
- ▶ High response sensitivity $\geq 3 \text{ mT}$
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed $\leq 5 \text{ m/s}$
- ▶ PNP output
- ▶ Short-circuit protection (pulsed)
- ▶ Plastic housing with T-profile and clamping screw
- ▶ Connection cable or connector on cable
- ▶ Enclosure rating IP 67
- ▶ LED status indicator
- ▶ Magneto-resistive element

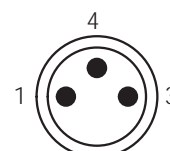
Accessories

Round connectors

Connection diagram



Wire colour	Wire colour	Contact	Assignment
bn	brown	1	+ V DC
bk	black	4	NO
bu	blue	3	- V DC



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 2 V	Reverse polarity protection	yes
Power consumption (without load)	≤ 10 mA	Power-up pulse suppression	yes
Continuous current I_a	≤ 150 mA	Enclosure rating to DIN 40050	IP 67
Time delay before availability t_v	≤ 2 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.5 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.2 mm	Housing material	Plastic
EMC	to EN 60 947-5-2	Connection cable	PUR-PVC, 3 x 0.25 mm ²
		Connection cable w. M8x1 mm	PUR

Selection table

Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		PNP		5000	Cable 2 m	MZF1-03VPS-KU0	7900596
3		PNP		5000	Cable 5 m	MZF1-03VPS-KUB	7903147
3		PNP		5000	Cable with M8 x 1 mm	MZF1-03VPS-KP0	7900597

Series is available as reed switch on request.

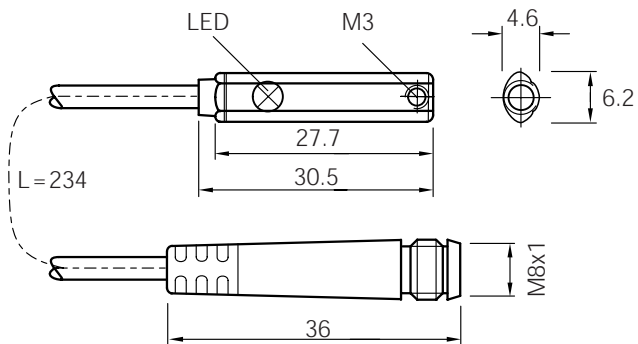


Magnetic cylinder sensors

MZT1 series

DC 3-wire, for T-slot cylinder

Dimensions in mm



Features

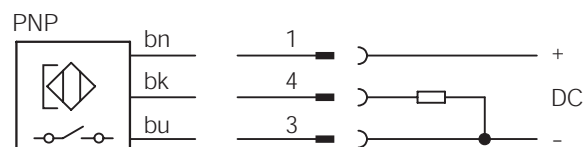


- ▶ Non-contact detection of piston position in pneumatic cylinders
- ▶ **Mountable from the top**
- ▶ For all common used T-slot cylinder e.g. Festo, SMC
- ▶ Response sensitivity $\geq 3 \text{ mT}$
- ▶ Plastic housing with clamping screw
- ▶ Connection cable or connector on cable
- ▶ Enclosure rating IP 67
- ▶ LED status indicator
- ▶ Magneto-resistive element

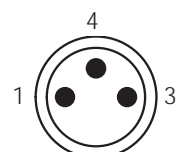
Accessories

Round connector

Connection diagram



Wire colour		Contact	Assignment
bn	brown	1	+ V DC
bk	black	4	NO
bu	blue	3	- V DC



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{ss}	$\leq 10\%$ of U_b	Short-circuit protection	yes
Voltage drop U_d	≤ 2 V	(pulsed)	
Power consumption (without load)	≤ 10 mA	Reverse polarity protection	yes
Continuous current I_a	≤ 100 mA	Power-up pulse suppression	yes
Time delay before availability t_v	≤ 2 ms	Enclosure rating to EN 60529	IP 67
Hysteresis H	$\leq 1,5$ mm	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Repeatability R (U_b and T_a constant)	$\leq 0,2$ mm	Ambient temperature T_a	- 25 ... + 75 °C
EMC	to EN 60 947-5-2	Housing material	Plastic PA12
		Connection cable 2 m	PVC, 3 x 0,14 mm ²
		Connection cable with M8x1 mm	PUR

Selection table

Response sensitivity in mT	Sensing face	Switching-output	Output function	Switching frequency in Hz	Connection	Type	Order number
3		PNP		5000	Cable 2 m	MZT1-03VPS-KW0	1016809
3		PNP		5000	Cable w. M8 x 1 mm	MZT1-03VPS-KP0	1016910

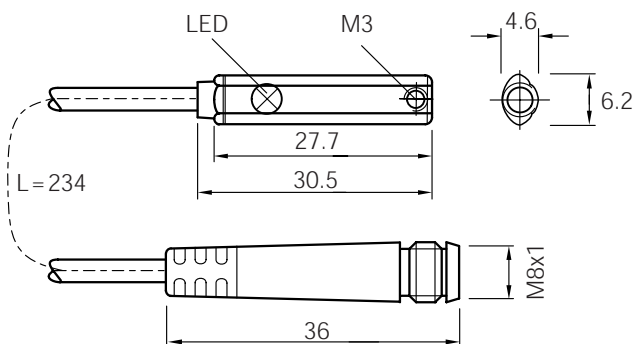


Magnetic cylinder sensors

RZT1 series

Reed AC/DC 3-wire, for T-slot

Dimensions in mm



Features

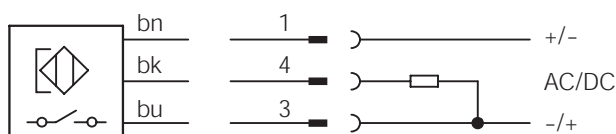


- Non-contact detection of piston position in pneumatic cylinders
- **Mountable from the top**
- For all common used T-slot cylinder e.g. Festo, SMC
- Response sensitivity ≥ 3 mT
- Plastic housing with clamping screw
- Connection cable or connector on cable
- Enclosure rating IP 67
- LED status indicator

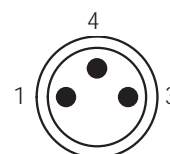
Accessories

Round connector

Connection diagramm



Wire colour		Contact	Assignment
bn	brown	1	+ (-)
bk	black	4	NO
bu	blue	3	- (+)



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V AC/DC	Enclosure rating to EN 60529	IP 67
Max. switching power	6 W / VA	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Continuous current I_a	≤ 500 mA	Ambient temperature T_a	- 25 ... + 75 °C
Switching delay	ON app. 1,5 ms OUT app. 0,5 ms	Housing material	Plastic PA12
Hysteresis H typ.	$\leq 1,5$ mm	Connection cable 2 m	PVC, 3 x 0,14 mm ²
Repeatability R (U_b und T_a constant)	$\leq 0,2$ mm	Connection cable with M8x1 mm connector	PUR
EMC	to EN 60 947-5-2		

Selection table

Response sensitivity in mT	Sensing face	Version	Output-function	Switching frequency in Hz	Connection	Type	Order number
3		Reed		400	Cable 2 m	RZT1-03ZRS-KW0	1016911
3		Reed		400	Cable w. M8 x 1 mm	RZT1-03ZRS-KP0	1016912

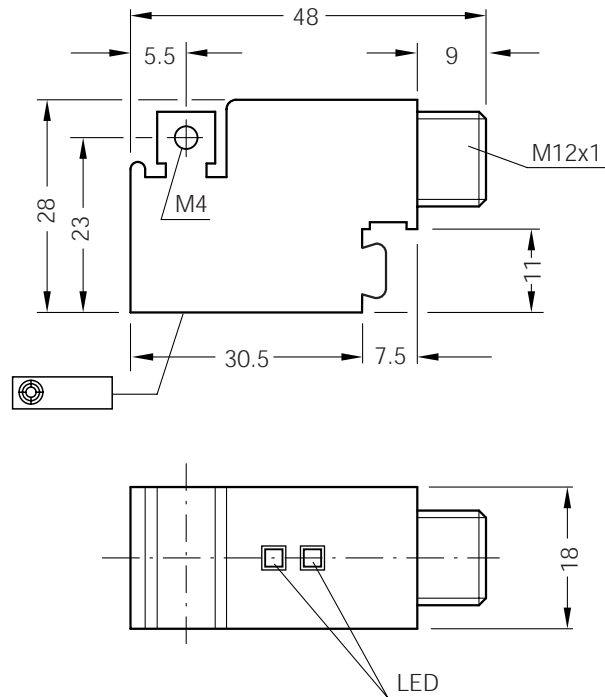


Magnetic cylinder sensors

MZ U2 series

DC 3-wire, weld immune version

Dimensions in mm



Features

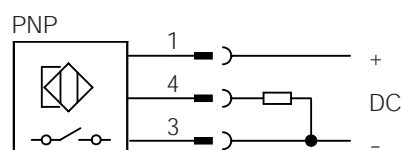


- ▶ Non-contact detection of piston position in pneumatic cylinders in weld field environments
- ▶ Weld immune in all welding applications (AC, DC and medium frequency)
- ▶ Response sensitivity of interference field detector ≥ 2 mT
- ▶ The sensors locks the output during the welding process. When the welding process stops, the sensor updates the output accordingly
- ▶ Flexible mounting technique for different cylinder styles
- ▶ Solid metal housing in die-cast zinc, optional with teflon coating
- ▶ Actuating speed < 1 m/s
- ▶ 2 LED's
Status indicator: yellow
Function indicator: green

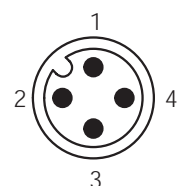
Accessories

Round connector
Round connector welding
splatter resistant

Connection diagram



Contact	Assignment
1	+ V DC
4	NO
3	- V DC
2	free



Electrical and mechanical data

Operating voltage U_b	10 ... 30 V DC	Wire-break protection	yes
Ripple U_{pp}	$\leq 10\%$ of U_b	Short-circuit protection (pulsed)	yes
Voltage drop U_d (at I_a max.)	≤ 2.0 V	Reverse polarity protection	yes
Power consumption	≤ 18 mA (unattenuated) ≤ 32 mA (attenuated)	Power-up pulse suppression	yes
Continuous current I_a	≤ 300 mA	Enclosure rating to DIN 60529	IP 67
Time delay before availability t_v	≤ 20 ms	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Hysteresis H	≤ 1.5 mm	Ambient temperature T_a	- 25 ... + 75 °C
Repeatability R (U_b and T_a constant)	≤ 0.1 mm	Housing material	Die-cast zinc, optional with teflon coating
EMC	to EN 60 947-5-2		

Selection table

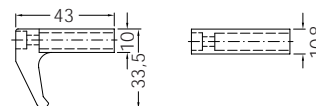
Response sensitivity in mT	Sensing face	Switching output	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		PNP		40	Connector M12x1 mm	MZU2-03VPS-DCM	1017450
3		PNP		40	Connector M12x1 mm	MZU2-03VPS-TCM*	1017451

* with teflon coating

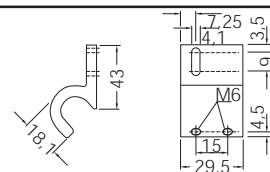
Accessories

Mounting clamp for pneumatic cylinder sensor MZU2

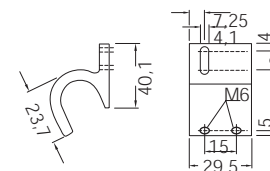
Mounting clamp:	BEF-KS-U2-S1
Material:	die-cast zinc
Order-No.:	4030922
Mounting clamp:	BEF-KS-U2-S1T
Material:	die-cast zinc with teflon coating
Order-No.:	4031632
Tie-rod cylinder $\varnothing 4 \dots 20$ mm	



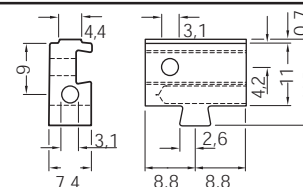
Mounting clamp:	BEF-KS-U2-P1
Material:	aluminium
Order-No.:	2019824
Integrated profile cylinder with max. rod diameter of 13 mm	



Mounting clamp:	BEF-KS-U2-P2
Material:	aluminium
Order-No.:	2019823
Integrated profile cylinder with max. rod diameter of 18 mm	



Mounting clamp:	BEF-KS-U2-T1
Material:	Aluminium
Order-No.:	2019822
Cylinder with T-slot	





Magnetic cylinder sensors

MZ R2 series

NAMUR 2-wire, for round-body cylinders

Dimensions in mm

Features



- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Universal mounting with clamping band for max. cylinder diameter of 100 mm
- ▶ High response sensitivity $\geq 3 \text{ mT}$
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed $\leq 5 \text{ m/s}$
- ▶ NAMUR to EN 50 227
- ▶ Short-circuit protection
- ▶ Solid aluminium housing
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

Classification

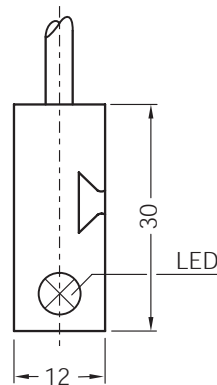
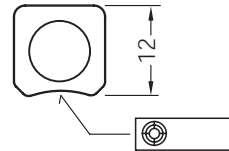
TÜV 99 ATEX 1398

Ex EExibII CT6

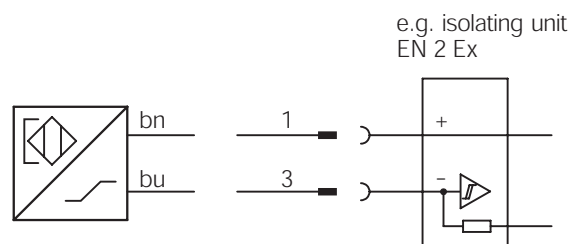
Accessories

Round connectors

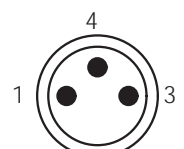
Isolating unit EN 2 Ex



Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bu blue	3	- V DC
	4	free



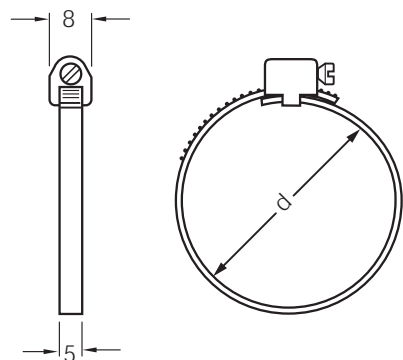
Electrical and mechanical data

Operating voltage U_b	5 ... 25 V DC	Short-circuit protection	yes
Rated voltage U_n	8.2 V DC	Reverse polarity protection	yes
Ripple U_{pp}	$\leq 5\%$ of U_b	Enclosure rating to EN 60529	IP 67
Power consumption, attenuated	≥ 2.5 mA	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Power consumption, unattenuated	≤ 1.0 mA	Ambient temperature T_a	- 25 ... + 70 °C
Internal capacitance	≤ 45 nF	Housing material	Aluminium, plastic
Internal inductance	≤ 30 μ H	Connection cable	PVC, 2 x 0.34 mm ² , blue
Cable resistance	≤ 50 Ω		
Time delay before availability t_v	≤ 2 ms		
Hysteresis H	≤ 1.0 mm		
Repeatability R (U_b and T_a constant)	≤ 0.1 mm		
Temperature drift	± 0.005 mm / °C		
EMC	to EN 60 947-5-2		

Selection table

Response sensitivity in mT	Sensing face	Version	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		NAMUR		5000	Cable 2 m	MZR2-03V-N-AW0	7901321

Accessories



Clamping band

stainless steel
for magnetic cylinder sensor R2

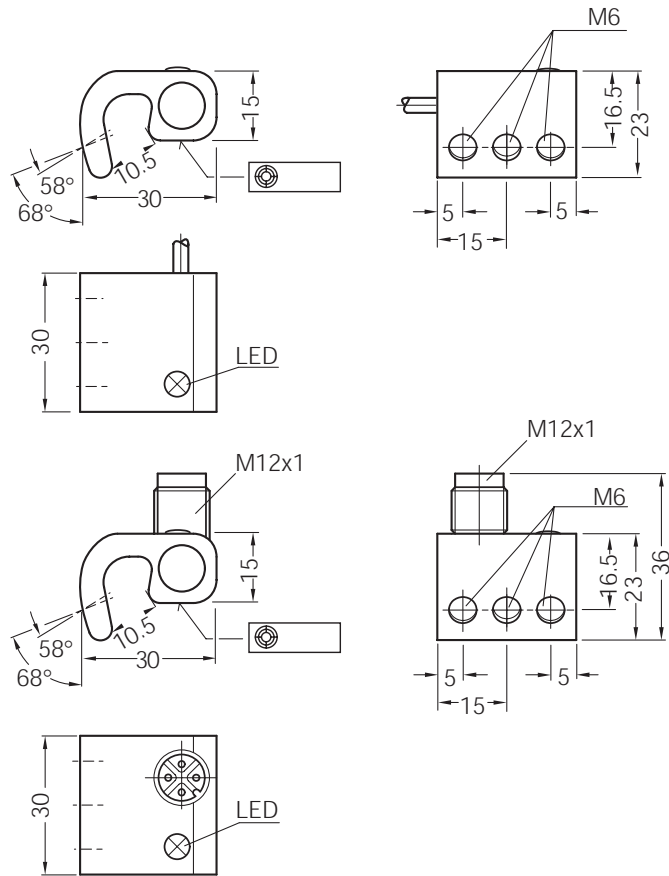
For cylinder range with piston diameter	Clamping range d in mm	Type	Order-No.
8 ... 16 mm	18 - 29	BEF-S-R2-16	7901762
20/25 mm	28 - 39	BEF-S-R2-25	7901763
32 mm	38 - 49	BEF-S-R2-30	7901764
40 mm	48 - 59	BEF-S-R2-40	7901765
50 mm	58 - 69	BEF-S-R2-50	7901766
63 mm	68 - 79	BEF-S-R2-63	7901767
80 mm	88 - 99	BEF-S-R2-80	7901768
100 mm	98 - 109	BEF-S-R2-100	7901769

Magnetic cylinder sensors

MZ Z1 series

NAMUR 2-wire, for tie-rod cylinders

Dimensions in mm



Features

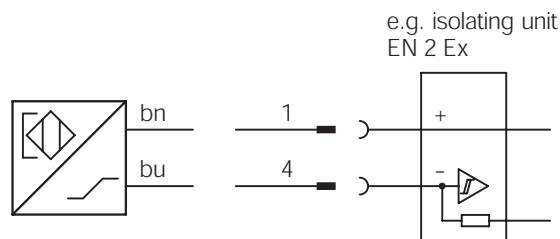


- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Mounting of tie-rods with max. rod diameter of 10 mm
- ▶ High response sensitivity ≥ 3 mT
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed ≤ 5 m/s
- ▶ NAMUR to EN50 227
- ▶ Solid aluminium construction with integrated mounting claw
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator
- ▶ **Classification**
TÜV 99 ATEX 1398
Ex EExibII CT6

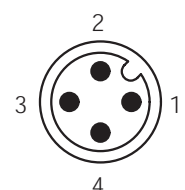
Accessories

Round connectors

Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bu blue	4	- V DC
	2	free
	3	free



Electrical and mechanical data

Operating voltage U_b	5 ... 25 V DC	Short-circuit protected	yes
Rated voltage U_n	8.2 V DC	Reverse polarity protected	yes
Ripple U_{pp}	$\leq 5\%$ of U_b	Enclosure rating to EN 60529	IP 67
Power consumption, attenuated	≥ 2.5 mA	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Power consumption, unattenuated	≤ 1.0 mA	Ambient temperature T_a	- 25 ... + 70 °C
Internal capacitance	≤ 45 nF	Housing material	Aluminium, plastic
Internal inductance	≤ 30 μ H	Connection cable	PVC, 2 x 0.34 mm ² , blue
Cable resistance	≤ 50 Ω		
Time delay before availability t_v	≤ 2 ms		
Hysteresis H	≤ 1.0 mm		
Repeatability R (U_b and T_a constant)	≤ 0.1 mm		
Temperature drift	± 0.005 mm / °C		
EMC	to EN 60 947-5-2		

Selection table

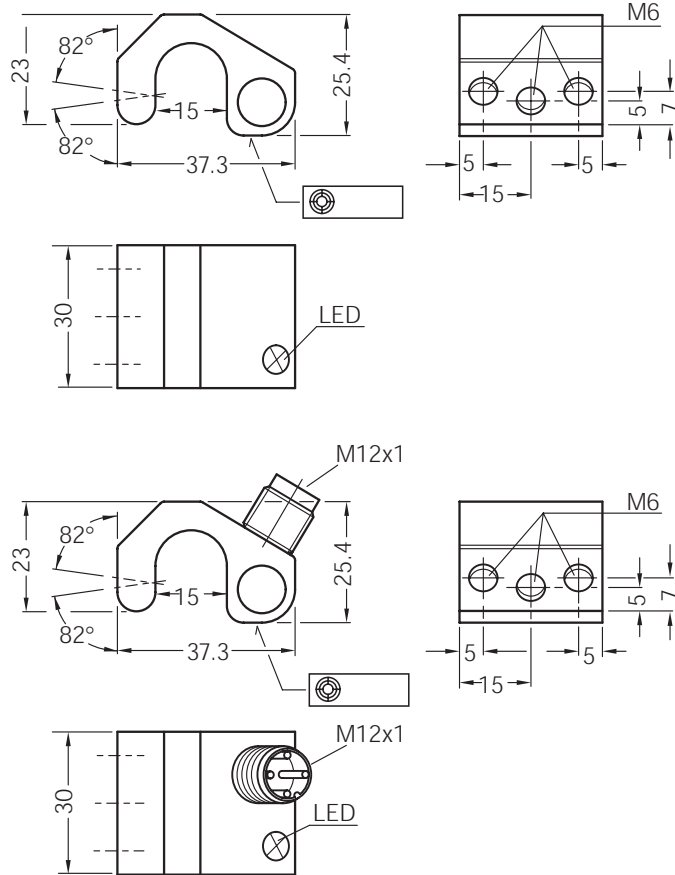
Response sensitivity in mT	Sensing face	Version	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		NAMUR		5000	Cable 2 m	MZZ1-03V-N-AW0	7901323
3		NAMUR		5000	Connector M12 x 1 mm	MZZ1-03V-N-AC0	7901324

Magnetic cylinder sensors

MZ P3 series

NAMUR 2-wire, for integrated profile cylinders

Dimensions in mm



Features



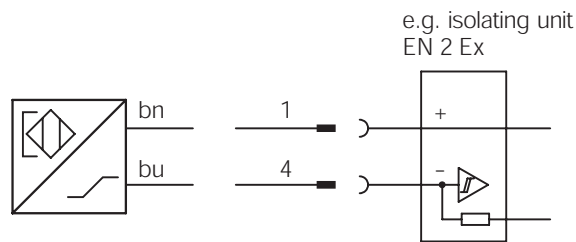
- ▶ Non-contact determination of piston position in pneumatic cylinders
- ▶ Mounting on integrated profile with max. width of 14 mm
- ▶ High response sensitivity $\geq 3 \text{ mT}$
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed $\leq 5 \text{ m/s}$
- ▶ NAMUR to EN 50 227
- ▶ Solid aluminium housing with integrated mounting claw
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

▶ **Classification**
TÜV 99 ATEX 1398
Ex EExibII CT6

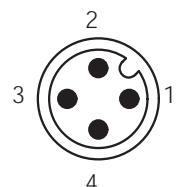
Accessories

Round connectors
 Isolating unit EN 2 Ex

Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bu blue	4	- V DC
	2	free
	3	free



Electrical and mechanical data

Operating voltage U_b	5 ... 25 V DC	Short-circuit protected	yes
Rated voltage U_n	8.2 V DC	Reverse polarity protected	yes
Ripple U_{pp}	$\leq 5\%$ of U_b	Enclosure rating to EN 60529	IP 67
Power consumption, attenuated	≥ 2.5 mA	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Power consumption, unattenuated	≤ 1.0 mA	Ambient temperature T_a	- 25 ... + 70 °C
Internal capacitance	≤ 45 nF	Housing material	Aluminium, plastic
Internal inductance	≤ 30 μ H	Connection cable	PVC, 2 x 0.34 mm ² , blue
Cable resistance	≤ 50 Ω		
Time delay before availability t_v	≤ 2 ms		
Hysteresis H	≤ 1.0 mm		
Repeatability R (U_b and T_a constant)	≤ 0.1 mm		
Temperature drift	± 0.005 mm / °C		
EMC	to EN 60 947-5-2		

Selection table

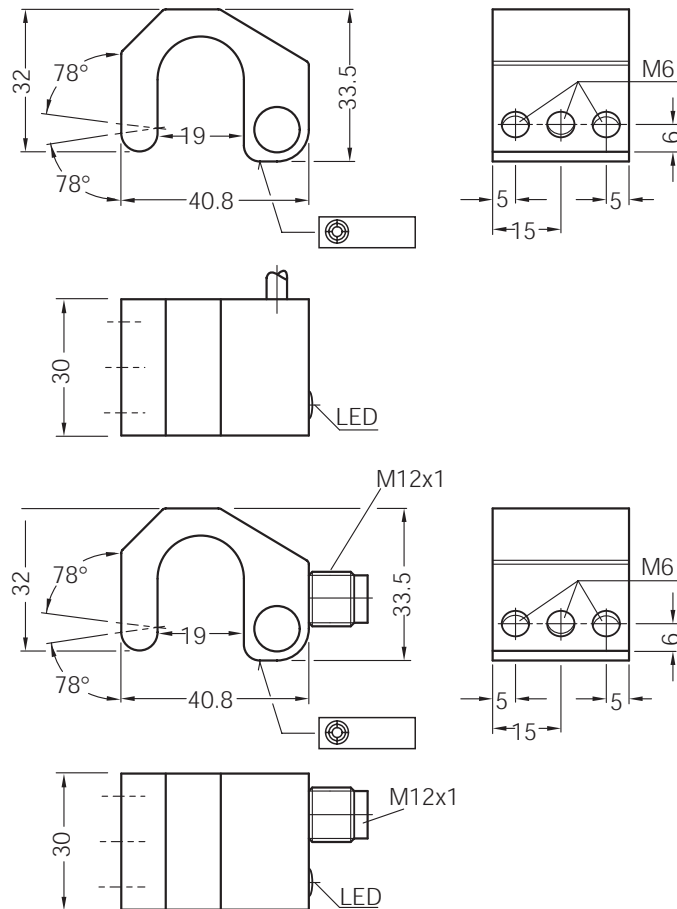
Response sensitivity in mT	Sensing face	Version	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		NAMUR		5000	Cable 2 m	MZP3-03V-N-AW0	7901440
3		NAMUR		5000	Connector M12 x 1 mm	MZP3-03V-N-AC0	7901441

Magnetic cylinder sensors

MZ P4 series

NAMUR 2-wire, for integrated profile cylinders

Dimensions in mm



Features



- ▶ Non-contact determination of piston condition in pneumatic cylinders
- ▶ Mounting on integrated profile with max. width of 18 mm
- ▶ High response sensitivity ≥ 3 mT
- ▶ Frontal sensing face
- ▶ No secondary switching ranges
- ▶ High repeat accuracy
- ▶ Actuating speed ≤ 5 m/s
- ▶ NAMUR to DIN19234
- ▶ Solid aluminium housing with integrated mounting claw
- ▶ Cable or connector
- ▶ Enclosure rating IP 67
- ▶ LED status indicator

Classification

TÜV 99 ATEX 1398

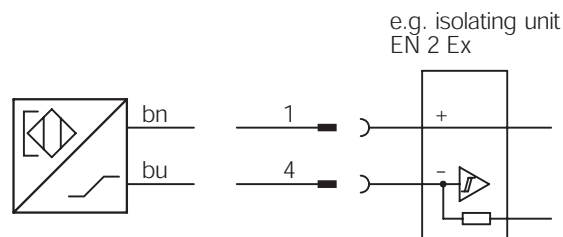
Ex EExibII CT6

Accessories

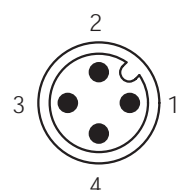
Round connectors

Isolating unit EN 2 Ex

Connection diagram



Wire colour	Contact	Assignment
bn brown	1	+ V DC
bu blue	4	- V DC
	2	free
	3	free



Electrical and mechanical data

Operating voltage U_b	5 ... 25 V DC	Short-circuit protected	yes
Rated voltage U_n	8.2 V DC	Reverse polarity protected	yes
Ripple U_{pp}	$\leq 5\%$ of U_b	Enclosure rating to EN 60529	IP 67
Power consumption, attenuated	≥ 2.5 mA	Shock and vibration stress	30 g, 11 ms 10 to 55 Hz, 1 mm
Power consumption, unattenuated	≤ 1.0 mA	Ambient temperature T_a	- 25 ... + 70 °C
Internal capacitance	≤ 45 nF	Housing material	Aluminium, plastic
Internal inductance	≤ 30 μ H	Connection cable	PVC, 2 x 0.34 mm ² , blue
Cable resistance	≤ 50 Ω		
Time delay before availability t_v	≤ 2 ms		
Hysteresis H	≤ 1.0 mm		
Repeatability R (U_b and T_a constant)	≤ 0.1 mm		
Temperature drift	± 0.005 mm / °C		
EMC	to EN 60 947-5-2		

Selection table

Response sensitivity in mT	Sensing face	Version	Output function	Switching frequency f in Hz	Connection	Type	Order number
3		NAMUR		5000	Cable 2 m	MZP4-03V-N-AW0	7901329
3		NAMUR		5000	Connector M12 x 1 mm	MZP4-03V-N-AC0	7901330