

LINEAR POTENTIOMETER



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Series LZW

Key-Features:

- Self-aligning rod end bearings
- Measurement ranges from 50 to 750 mm
- Linearity up to $\pm 0.05\%$
- Output: potentiometer or voltage output
- Voltage output teachable via Squeezer
- Protection class IP65 or IP67
- Operating temperature up to $-30\dots+100\text{ }^{\circ}\text{C}$
- Life cycle $>25 \times 10^6 \text{ m}$ or $>100 \times 10^6$ operations, whichever is less
- Simple apparatus according to EN 60079-11 standard

TECHNICAL DATA

		LZW-M	LZW-B	LZW-IP
Measurement range	[mm]	50 / 100 / 130 / 150 / 175 / 200 / 225 / 275 / 300 / 375 / 400 / 450 / 500 / 600 / 750		
Linearity	[%]	±0.05		
Repeatability	[mm]	0.01		
Displacement force	[N]	≤15		≤30
Displacement speed	[m/s]	≤5		≤3
Electrical isolation		>100 MΩ at 500 VDC, 1 bar, 2 s		
Dielectric strength		<100 μA at 500 VAC, 50 Hz, 1 bar, 2 s		
Protection class		IP65		IP67
Life cycle		>25 x 10 ⁶ m or >100 x 10 ⁶ operations (whichever is less)		
Connection		connector DIN43650, 4 pin	connector DIN45322, 5 pin	connector M12, 4 pin
Rod		stainless steel AISI 303		C45 steel, chromium plated 20 μm
Housing		anodised aluminium, Nylon 66 G 25		anodised aluminium
Mounting		2 self-aligning ball-joints		

ELECTRICAL DATA POTENTIOMETER OUTPUT

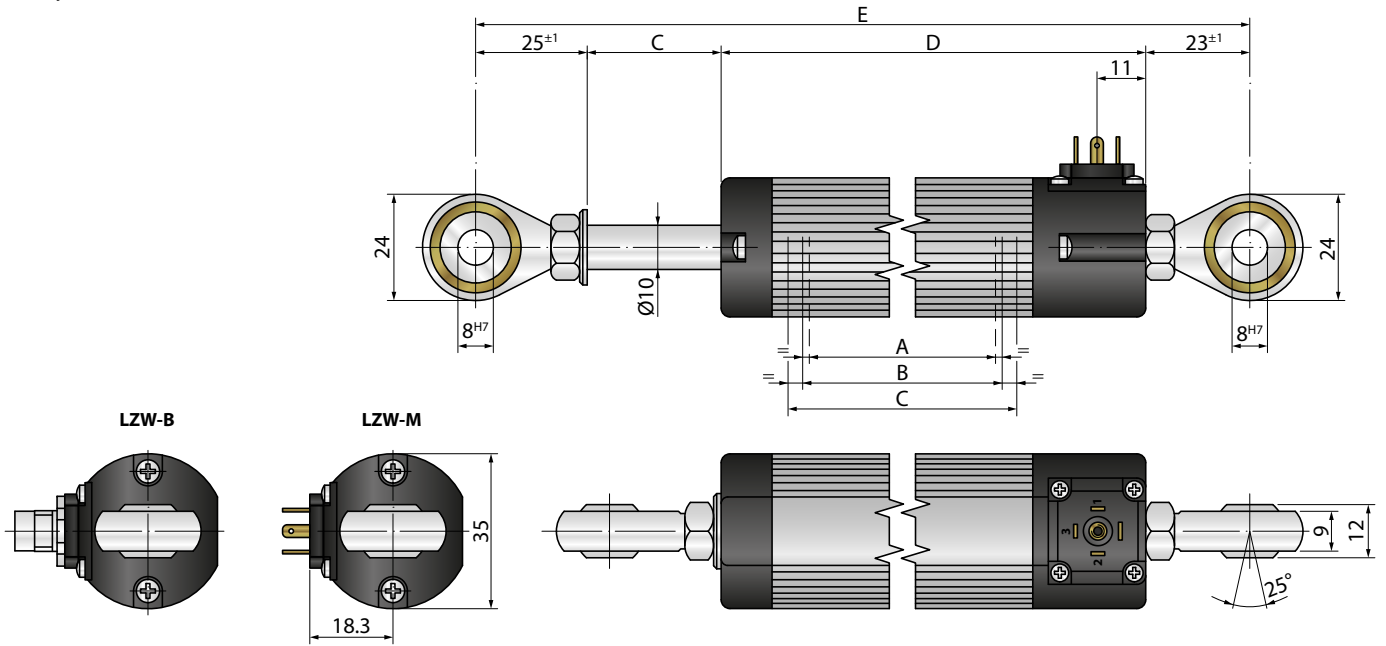
Resistance	[kΩ]	measurement ranges ≤600 mm: 5 measurement range 750 mm: 10
Tolerance on resistance	[%]	±20
Resolution		theoretical infinite, depends on the signal quality of the reference respectively supply voltage
Dissipation at 40 °C		3 W (0 W at 120 °C)
Applicable voltage max.	[V]	60
Recommended cursor current	[μA]	<0.1
Cursor current max.	[mA]	10
Operating temperature	[°C]	-30...+100
Storage temperature	[°C]	-50...+120
Temperature coefficient resistance	[ppm/°C]	±200
Temperature coefficient output voltage	[ppm/°C]	LZW-M/LZW-B: ≤1 LZW-IP: <5
Vibration resistance		5...2000 Hz, A _{max} = 0.75 mm, a _{max} = 20 g
Shock resistance		50 g, 11 ms

ELECTRICAL DATA ANALOG OUTPUT

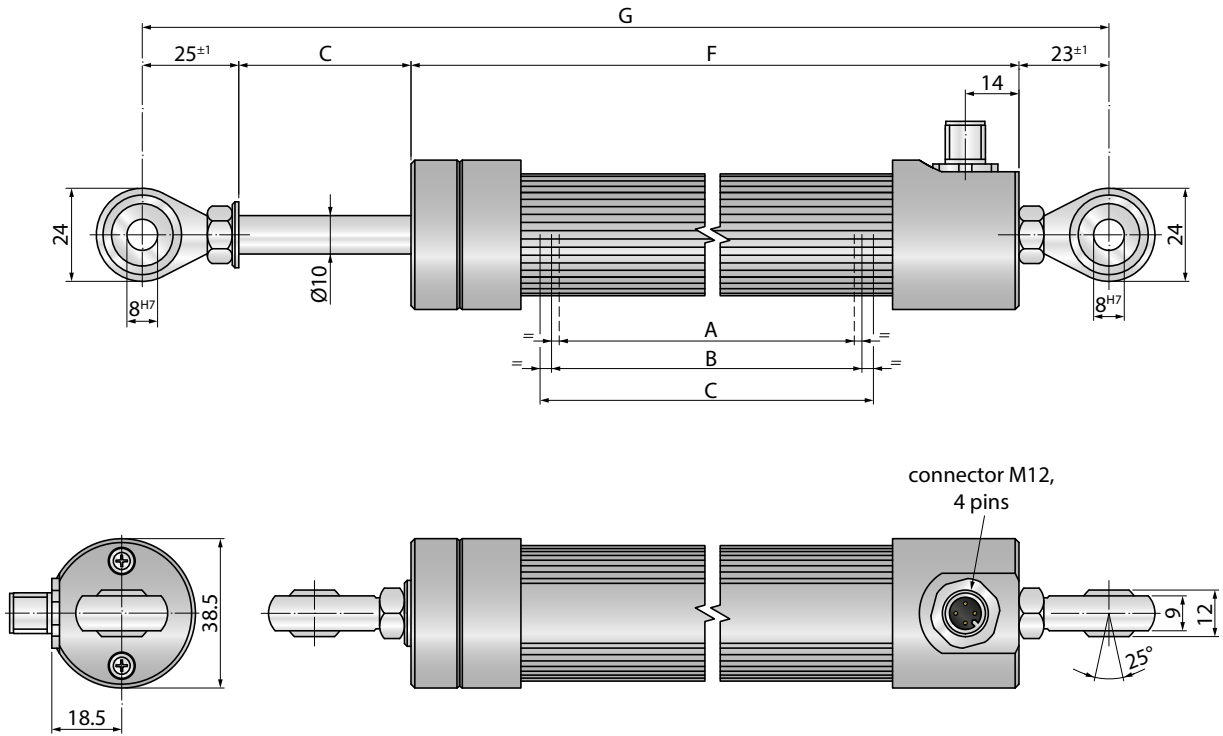
Output signal		0.5...4.5 V	0...10 V
Resolution	[mV]	1	
Supply	[VDC]	8...35	
Power consumption max.	[W]	0.15	
Output current max.	[mA]	10	
Load resistance min.	[kΩ]	1	
Dynamic	[ms]	1	
Inverse-circuit proof		yes	
Short-circuit proof		yes	
Operating temperature	[°C]	-40...+85	
Storage temperature	[°C]	-40...+85	
Temperature coefficient	[%/K]	0.0013	0.0016
EMC		EN 61326-1:2013	

TECHNICAL DRAWING

LZW-M, LZW-B

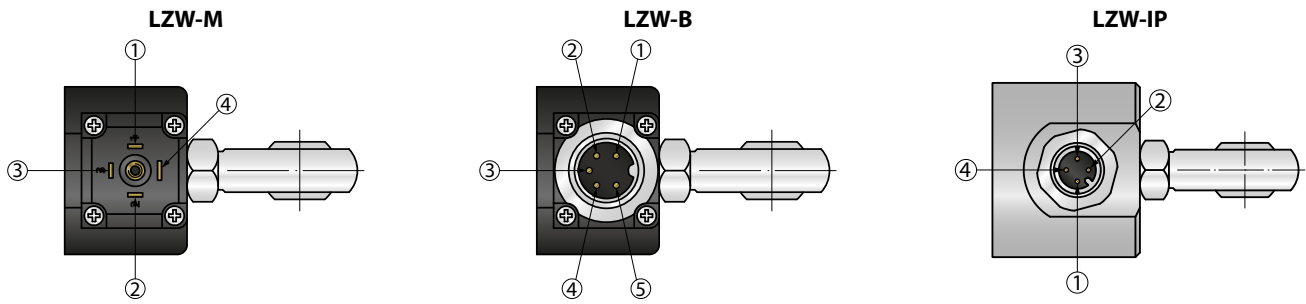


LZW-IP



Useful electrical stroke +3/-0	A	50	100	130	150	175	200	225	275	300	360	375	400	450	500	600	750
Theoretical electrical stroke ±1	B	53	103	133	153	178	204	229	279	304	364	380	406	457	508	609	762
Mechanical stroke	C	59	109	139	159	184	210	235	285	310	370	386	412	463	518	619	772
Housing length LZW-M, LZW-B	D	179	229	259	279	304	330	355	405	430	496	512	538	589	664	765	918
Min. distance ball-joint LZW-M, LZW-B	E	227	277	307	327	352	378	403	453	478	544	560	586	637	712	813	966
Housing length LZW-IP	F	198	248	278	298	323	349	374	424	449	515	531	557	608	683	784	937
Min. distance ball-joint LZW-IP	G	246	296	326	346	371	397	422	472	497	563	579	605	656	731	832	985

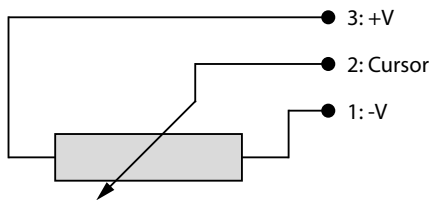
ELECTRICAL CONNECTION



Pin	LZW-M Potentiometer output	LZW-M Analog Output	LZW-B	LZW-IP
1	-V	GND	-V	-V
2	Cursor	Signal	Cursor	Cursor
3	+V	+V	+V	+V
4	n. c.	MFL ¹⁾	n. c.	n. c.
5	-	-	n. c.	-

¹⁾ multi-functional line: connect only when using the functions of a Squeezer

Circuit diagram potentiometer output



Installation notes:

- Do **NOT** use the sensor as a variable resistor!
- While calibrating the sensor set the stroke so that the output signal does not drop below 1 % or exceed 99 % of the supply voltage.

ACCESSORIES

Teach accessory Squeezer for LZW-M with analog output 4,5VT or 10VT

LZW-M sensors with the analog output versions 4,5VT and 10VT are equipped with a teachable, internal electronics, called VT-Electronics. The signals provided by the sensor's potentiometer are digitized by the VT-Electronics. This digital information is first processed by the electronics, then transformed back and given out as an analog output signal 0.5 to 4.5 V or 0 to 10 V.

The digitization offers two possibilities of adjustment, by which the sensor can be configured individually using the Squeezer:

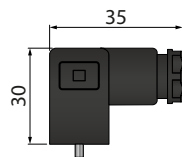
1. Teaching of the measurement range. After a successful teaching process the Squeezer can be pulled off the sensor and be replaced by a standard cable or connector.
2. Setting an individual switching point. The Squeezer allows the setting of an individual switching point open collector. The switching signal is emitted through the multi-functional line MFL.



A detailed description of the functions can be found in a separate [manual](#).

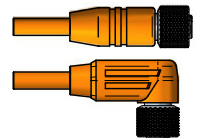
CON008: Mating connector for LZW-M

- for self assembly
- 4 poles
- protection class IP65
- cable diameter Ø 6...8 mm



K4P: cable with mating connector for LZW-IP

- connector M12 straight or angular
- 4 poles
- protection class IP67



Pin	1	2	3	4
Cable colour	BN	WH	BU	BK

CON011: Mating connector for LZW-B

- for self assembly
- 5 poles
- protection class IP40
- cable diameter Ø 4...6 mm



Signal conditioner PMX-24

- Converts potentiometer signals into analog output signals: 4...20 mA, 0...10 V, 0...5 V, ±10 V, ±5 V
- Input: potentiometer 1...20 kΩ
- Configurable output
- DIN-rail-mounting with face-side connector
- For more information please refer to the [PMX-24 data sheet](#).

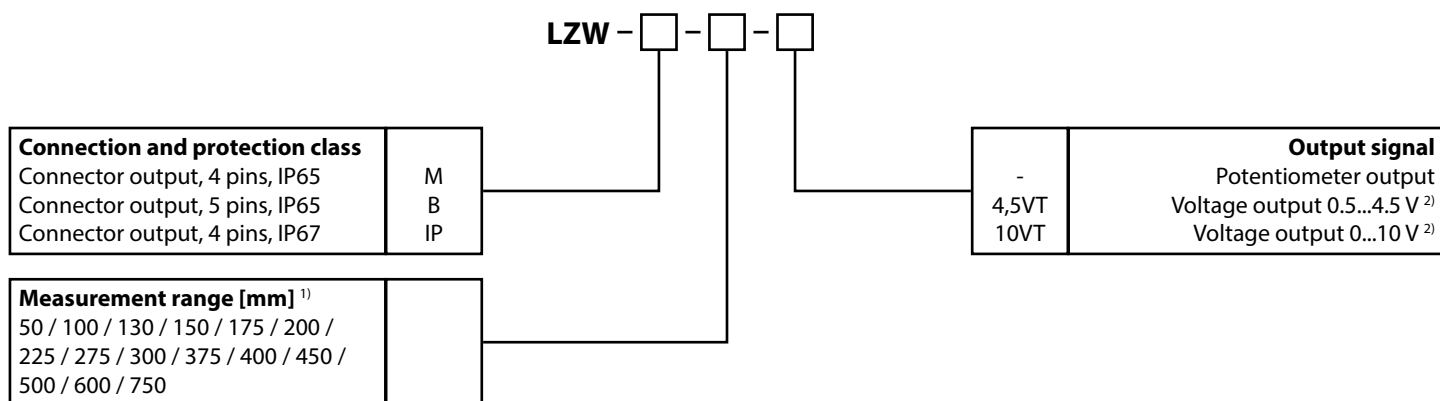


D4: Mating connector for LZW-IP

- for self assembly
- connector M12 straight or angular
- 4 poles
- protection class IP67
- cable diameter Ø 4...8 mm



ORDER CODE



¹⁾ custom lengths available for quantities larger 10 units

²⁾ only available for version LZW-M

ACCESSORIES

Cable with mating connector M12 (female) for LZW-IP, 4 poles, IP67

K4P2M-S-M12	2 m, connector straight, shielded
K4P5M-S-M12	5 m, connector straight, shielded
K4P10M-S-M12	10 m, connector straight, shielded
K4P2M-SW-M12	2 m, connector angular, shielded
K4P5M-SW-M12	5 m, connector angular, shielded
K4P10M-SW-M12	10 m, connector angular, shielded

Teach accessory for LZW-M with voltage outputs 4,5VT / 10VT

SQUEEZER2M	Teach accessory, 2 m cable
SQUEEZER5M	Teach accessory, 5 m cable
SQUEEZER10M	Teach accessory, 10 m cable

Signal conditioner

PMX-24 Output signals: 4...20 mA, 0...10 V, 0...5 V, ±10 V, ±5 V

For more information and options please refer to the [PMX-24 data sheet](#).

Mating connector for self assembly

CON008	4 poles, IP65, for LZW-M
CON011	5 poles, IP40, for LZW-B
D4-G-M12-S	connector M12 straight, 4 poles, IP67, for LZW-IP
D4-W-M12-S	connector M12 angular, 4 poles, IP67, for LZW-IP

Digital displays for sensors with analog output, 2 channel

WAY-AX-S	touch screen, supply: 18...30 VDC
WAY-AX-S-AC	touch screen, supply: 115...230 VAC

For more information and options please refer to the [WAY-AX data sheet](#).

Subject to change without prior notice.

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