INDUCTIVE SENSOR LVDT

Series LV

Key-Features:

- *Spring loaded or guided rod*
- *Measurement ranges 2, 5, 10 and 25 mm*
- *Linearity up to ±0.1 %*
- *Resolution up to 1 µm*
- *Output with external electronics: 0...10 V, 4...20 mA*
- *Protection class up to IP67*
- *Operating temperature: -40...+120 °C, optional -40...+200 °C*

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03.03.21

WayCon Positionsmesstechnik

TECHNICAL DATA SENSOR LV

Measurement range MR	[mm]	2	5	10	25
Linearity [1]	[%]	±0.2			
Improved linearity (optional) [1]	[%]	±0.1			
Resolution	[µm]	0.8	1		
Sensitivity	[mV/V/mm]	68	74	64	41
Calibrated at		3 V_{RMS} / 5 kHz			
Excitation voltage	[V_{RMS}]	1...10			
Excitation frequency	[kHz]	2...10			
Connection		connector output M12. axial or cable output. axial (TPE cable. standard length 2 m)			
Cable length to electronics max.	[m]	100			
Protection class		version without bellow (T / S): IP65 version with bellow (TF): IP67			
Operating temperature	[°C]	-40...+120 / optional: -40...+200 [2]			
Temperature coefficient [1]	[%/K]	±0.02			
Version [3]		spring-loaded rod with bellow (TF) or without bellow (T), guided rod (S)			
Spring force MR centre (version TF)	[N]	1.5	1.7		-
Spring force MR centre (version T)	[N]	1.4	1.5	1.6	1.5
Spring constant (version TF)	[N/mm]	0.15			-
Spring constant (version T)	[N/mm]	0.12			0.09
Motion frequency (1 mm stroke)	[Hz]	max. 100		max. 70	max. 25
Mounting	[mm]	clamping shaft: Ø 8 h6 or housing: Ø 12			
Housing		nickel-plated steel			
Weight (without cable)	[g]	50	55	60	80

[1] based on the measurement range
[2] Not available with connector output, 5 pole cable output or bellow. Changed cable output with PFA cable see „Options“ page 4.
[3] Version with guided rod (S) is protected against falling out of the rod. Version with bellow (TF) not available for measurement range 25 mm.

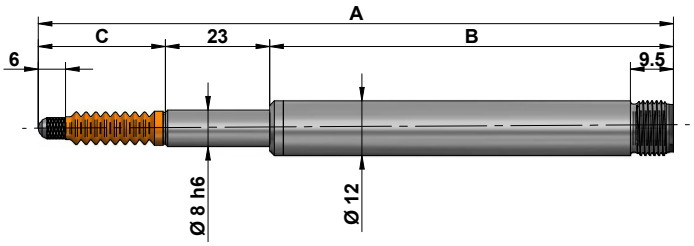
TECHNICAL DATA ELECTRONICS

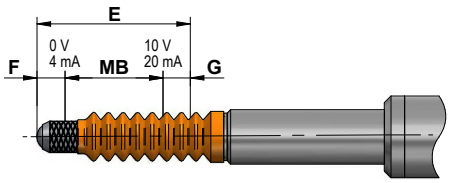
		DIN rail electronics LVA	**Cable electronics LVC**
Output		0...10 V / 4...20 mA	
Linearity [1]	[% F.S.]	<±0.01	
Noise	[mV_{RMS}]	<20	<5 (DC...20 MHz)
Supply	[VDC]	18...36	24 ±10 %
Current consumption (without load)	[mA]	<80 (at 24 V) / <100 (at 18 V)	<80 (at 24 V)
Isolation voltage	[VDC]	500	
Isolation resistance		1 GΩ at 500 VDC	
Cut-off frequency		max. 10 % of excitation frequency	
Sensor supply	[V_{RMS}]	3	4
Carrier frequency	[kHz]	5	
Protection class		IP40	
Operating temperature	[°C]	-25...+85	
Storage temperature	[°C]	-25...+85	
Temperature coefficient sensitivity	[% F.S./K]	<±0.04	<±0.02
Temperature coefficient zero point	[% F.S./K]	<±0.015	<±0.01
Mounting		DIN rail	2 x mounting holes M3
Housing		Polyamide PA6.6	Aluminium anodised

[1] To achieve an optimal measuring result, it is recommended to power up the electronics for 10 minutes before the measurement.

TECHNICAL DRAWING SENSOR LV

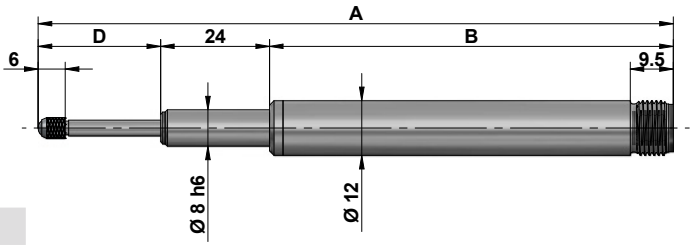
Version with bellow (TF)

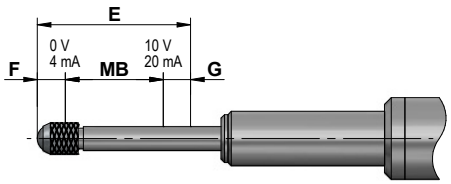




Measurement range	MB	2	5	10
Total length	A	113	126	140
Housing length	B	69	79	89
Rod outer position	C	21	24	28
Total stroke	E	5	8	12
Start stroke	F	1.5	1.5	1
End stroke	G	1.5	1.5	1

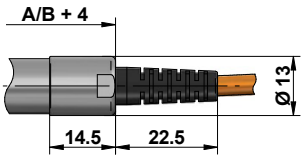
Version without bellow (T and S)



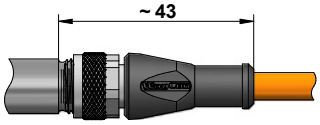


Measurement range	MB	2	5	10	25
Total length	A	113	126	140	191.5
Housing length	B	69	79	89	132.5
Rod outer position	D	20	23	27	36
Total stroke	E	5	8	12	29
Start stroke	F	1.5	1.5	1	2
End stroke	G	1.5	1.5	1	2

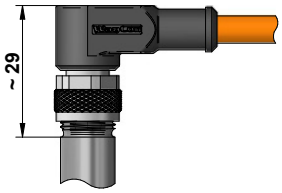
cable output



connector output with connection cable, straight connector

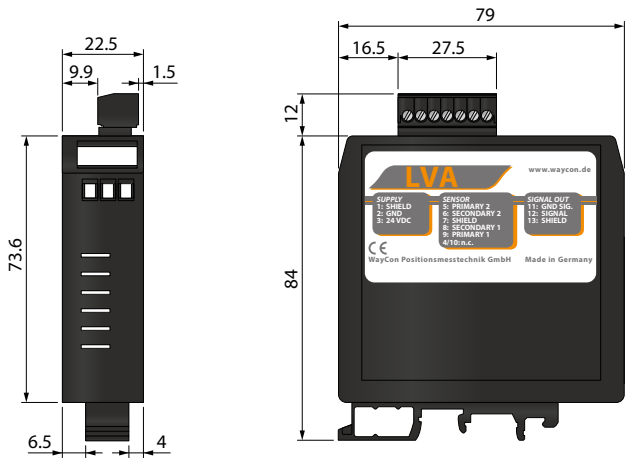


connector output with connection cable, angular connector

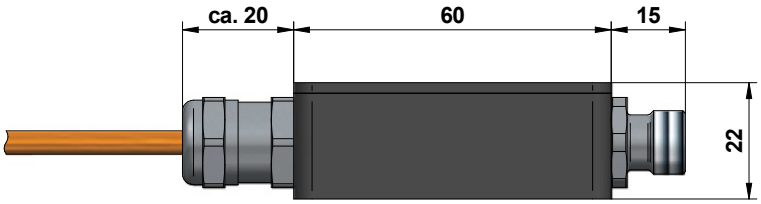


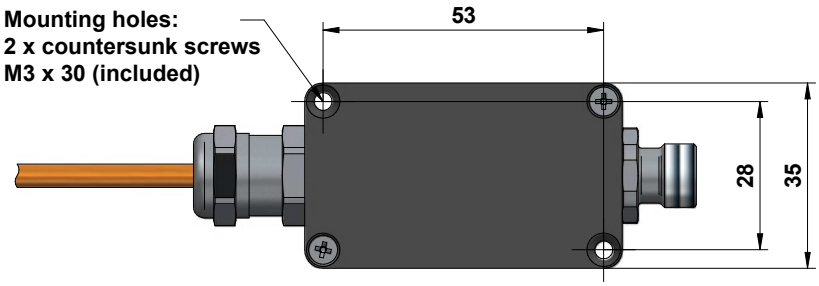
TECHNICAL DRAWING ELECTRONICS

DIN rail electronics LVA

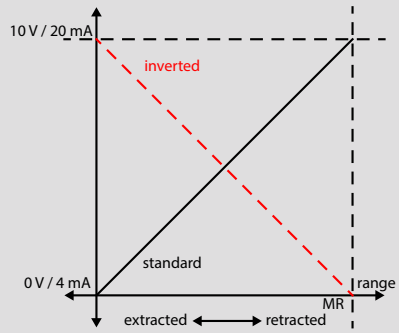
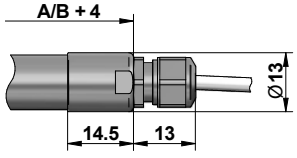


Cable electronics LVC





OPTIONS

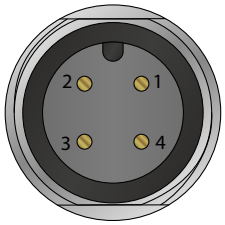
Option	Order code	Description	
Improved linearity	L10	The sensors linearity is improved to ±0.1 %.	
Inverted output signal (Only in combination with electronics LVA or LVC)	IN	By default, the analog output signal of the electronics increases as the rod retracts. With the option IN the signal is inverted, i.e. the signal drops as the rod retracts.	
Increased temperature range High (Not in combination with TF, SA or 5 pole cable)	H200	With this option, the temperature range of the sensor is increased to -40...+200 °C. (Changed cable output with PFA cable see drawing.)	

ELECTRICAL CONNECTION

Sensor LV for DIN rail electronics LVA

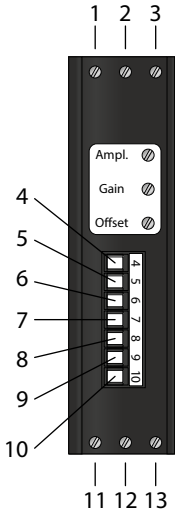
Function	Cable output	Connector output	Connection cable K4P...
Primary 1	BN	Pin 1	BN
Primary 2	WH	Pin 2	WH
Secondary 2	BU	Pin 3	BU
Secondary 1	BK	Pin 4	BK

Connector, M12 (male)



DIN rail electronics LVA

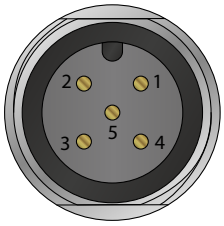
Function	Terminal
Shield	1
GND_{supply}	2
+V	3
n. c.	4
Primary 2	5
Secondary 2	6
Shield	7
Secondary 1	8
Primary 1	9
n. c.	10
GND_{signal}	11
Signal	12
Shield	13



Sensor LV for cable electronics LVC

Function	Connector output	Connection cable K5P...
Primary 1	Pin 1	BN
Primary 2	Pin 2	WH
Secondary 2	Pin 3	BU
Secondary 1	Pin 4	BK
Centre 1, 2	Pin 5	GY

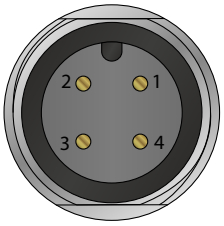
Connector, M12 (male)



Cable electronics LVC

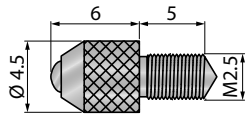
Function	Connector output	Connection cable K4P...
+V	Pin 1	BN
Signal	Pin 2	WH
GND_{supply}	Pin 3	BU
GND_{signal}	Pin 4	BK

Connector, M12 (male)

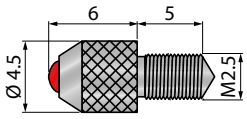


ACCESSORIES PROBE TIPS

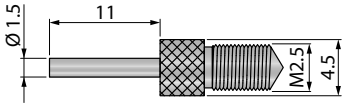
Standard: ball probe tip, steel



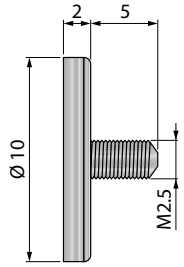
TP-K-6-R: ball probe tip, ruby



TP-S-11-S: probe pin, steel

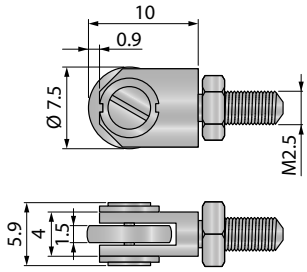


TP-T-10-S: probe plate, steel



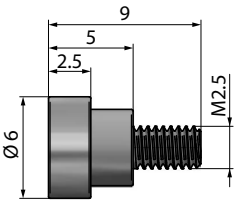
TP-R-7.5-S: probe roller, steel

Suitable for surface roughness with max. edge height (90°): 1 mm



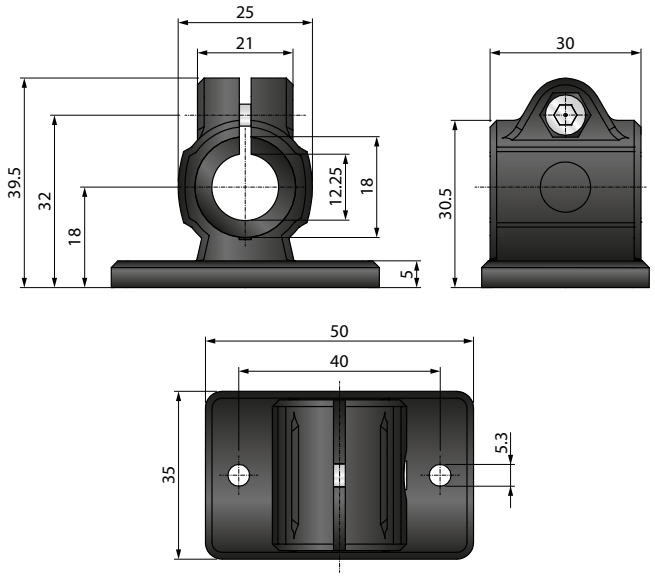
TP-T-6-M: magnetic probe tip

Magnetic holding force: approx. 560 g
Temperature range: up to 120 °C

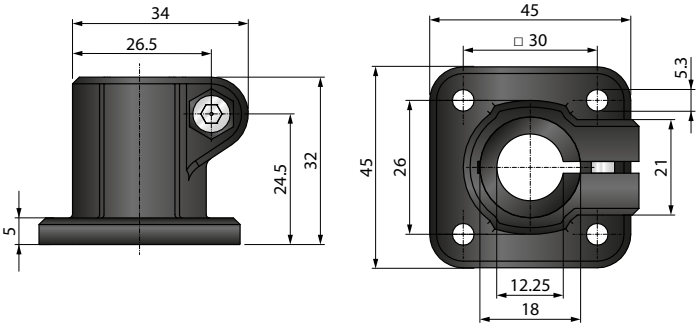


ACCESSORIES CLAMPING PIECES

Flange clamping piece FKPA-1218, polyamide



Foot clamping piece FSKPA-1218, polyamide



ORDER CODE SENSOR LV

LV – □ – □ – □ – □ – □

Version	
Spring loaded with bellow, IP67 [1]	TF
Spring loaded without bellow, IP65	T
Guided rod without bellow, IP65	S

Messbereich MB [mm]	
2 / 5 / 10 / 25	e. g. 5

Electronics code number	
Sensor without external electronics	000
For LVA with output 4...20 mA	300
For LVA with output 0...10 V	310
For LVC with output 4...20 mA	100
For LVC with output 0...10 V	110

	Options (can be combined)
-	Standard without options
L10	Improved linearity ±0,1 %
IN	Inverted output signal [2]
H200	Temperaturbereich -40...+200 °C [3]

	Connection for electronics LVA
SA12	Connector output M12, axial, 4 poles
KA02	Cable output 2 m, axial, 4 poles
KA05	Cable output 5 m, axial, 4 poles
KA10	Cable output 10 m, axial, 4 poles
	Connection for electronics LVC
SA512	Connector output M12, axial, 5 poles
KA502	Cable output 2 m, axial, 5 poles
KA505	Cable output 5 m, axial, 5 poles
KA510	Cable output 10 m, axial, 5 poles

[1] not combinable with measurement range 25 mm
[2] only if used with electronics LVA or LVC
[3] only in combination with T, S and cable, 4 poles

ORDER CODE ELECTRONICS LVA

LVA – □ – □ – □ □ – □

Supply	
24 VDC	24

Output signal	
Voltage 0...10 V	10V
Current 4...20 mA	420A

Sensor supply	
3 V	3

	Sensitivity
2	200 mV (for range 2 mm)
5	500 mV (for range 5 mm)
10	1000 mV (for range 10 mm)
15	1500 mV (for range 25 mm)

	Carrier frequency
5	5 kHz

ORDER CODE ELECTRONICS LVC

LVC – □ – □ – □ □ – □ – □ □

Supply	
24 VDC	24

Output signal	
Voltage 0...10 V	10V
Current 4...20 mA	420A

Sensor supply	
4 V	4

Carrier frequency	
5 kHz	5

	Connection to supply [1]
S	Connector M12, 4 poles

	Connection to sensor
K	Sensor cable, permanently connected [2]
BK02	Cable 2 m with connect. M12, female [3]
BK05	Cable 5 m with connect. M12, female [3]
BK10	Cable 10 m with connect. M12, female [3]

	Sensitivity
2	250 mV (for range 2 mm)
6	650 mV (for range 5 mm)
13	1350 mV (for range 10 mm)
20	2000 mV (for range 25 mm)

[1] further on request.
[2] for sensor with cable output. Please specify the cable length in the sensor order code.
[3] for sensor with connector output. Please note that the connector at the end of the cable has a temperature range of -25...+85 °C.

ACCESSORIES

Probe tips	
TP-K-6-R	Ball probe tip, ruby
TP-T-10-S	Probe plate, steel
TP-S-11-S	Probe pin, steel
TP-R-7.5-S	Probe roller, steel
TP-T-6-M	Magnetic probe tip

Mounting accessories	
FKPA-1218	Flange clamping piece, polyamide
FSKPA-1218	Foot clamping piece, polyamide

Cable with connector (female) M12, 4 poles, shielded	
K4P2M-S-M12	2 m, straight connector
K4P5M-S-M12	5 m, straight connector
K4P10M-S-M12	10 m, straight connector
K4P2M-SW-M12	2 m, angular connector
K4P5M-SW-M12	5 m, angular connector
K4P10M-SW-M12	10 m, angular connector

Cable with connector (female) M12, 5 poles, shielded	
K5P2M-S-M12	2 m, straight connector
K5P5M-S-M12	5 m, straight connector
K5P10M-S-M12	10 m, straight connector
K5P2M-SW-M12	2 m, angular connector
K5P5M-SW-M12	5 m, angular connector
K5P10M-SW-M12	10 m, angular connector

Digital displays for sensors with analog output, 2 channel	
WAY-AX-S	Touch screen, supply: 18...30 VDC
WAY-AX-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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