

# Data Sheet for Linear Sensors

## Inductive Linear Transducer (LVDT)

## Series EVT



- Robust miniature design
- Measuring strokes from  $\pm 0.65$  to  $\pm 12.5$  mm
- In 2 designs as probe or loose core:
  - "L" version with loose core
  - Without "L" as probe

High degree of protection and pressure-tight:

- without "W" in IP64
- "W" versions IP68, pressure-tight  $\leq 3.5$  MPa
- Up to  $\pm 0.1\%$  linearity
- On request increased temperature range up to  $200$  °C

The EVT series of inductive displacement transducers are available with a loose core or as a spring return probe, both in IP64 or IP68. The IP68 versions are available in a pressure tight version up to max. 3.5 MPa (35 bar).

Electrical Data	EVT / EVT-W / EVT-L / EVT-LW						
	0,6	1	2	5	7	10	13
Effective electrical travel in mm	$\pm 0,65$ (1.3)	$\pm 1$ (2)	$\pm 2.5$ (5)	$\pm 5$ (10)	$\pm 7.5$ (15)	$\pm 10$ (20)	$\pm 12.5$ (25)
Independent linearity (best straight line 1.)	$\pm 0.5\%$ ( $\pm 0.25\%$ )			$\pm 0.5\%$ ( $\pm 0.25\%$ / $\pm 0.1\%$ )		$\pm 0.5\%$ ( $\pm 0.25\%$ )	
Sensitivity mV/V/mm <b>EVT</b> (probe IP64)	--	--	193	365	502	576	775
Sensitivity mV/V/mm <b>EVT-W</b> (probe IP68)	--	143	375	320	435	567	773
Sensitivity mV/V/mm <b>EVT-L</b> (lose core IP64)	43	--	193	365	502	576	775
Sensitivity mV/V/mm <b>EVT-LW</b> (lose core IP68)	--	143	375	320	435	567	773
Theoretical resolution 1.)	Almost infinite						
Backlash (Hysteresis) 1.)	< 0.01 mm						
Supply voltage	nom. 5 V rms, 5 kHz (0.5..7 V rms, 2..10 kHz)						
Output load	100 kOhm						
Temperature coefficient	$\pm 0.01$ % F.S./°C						

Mechanical and Environment Data	EVT / EVT-W / EVT-L / EVT-LW						
	0,6	1	2	5	7	10	13
Mechanical stroke (mm) 1.)	See drawing						
Lifetime (90% effective electrical travel) 2.)	Almost infinite						
Operational force @ RT 1.) 2.) for probe versions <b>EVT</b> and <b>EVT-W</b>	--	1.3 N @13 mm	1 N @12 mm	1.1 N @12 mm	1.1 N @15 mm	1.4 N @19 mm	1.4 N @22 mm
Spring rate <b>EVT</b> and <b>EVT-W</b>	--	1.2N/cm	0.9N/cm	0.8N/cm	0.6N/cm	0.4N/cm	0.4N/cm
Operational temperature	-20 °C up to +125 °C (higher temperature range on request)						
Storage temperature	-20 °C up to +125 °C						
Protection grade (IEC60529)	IP64 (EVT, EVT-L) / IP68 (EVT-W and EVT-LW)						

# Data Sheet for Linear Sensors

## Inductive Linear Transducer (LVDT)

Series EVT

Mechanical and Environment Data	EVT / EVT-W / EVT-L / EVT-LW						
	0,6	1	2	5	7	10	13
Housing length <b>EVT</b> in mm	--	--	61	68	88	99	121
Housing length <b>EVT-W</b> in mm	--	58	69	76	98	110	132
Housing length <b>EVT-L</b> in mm	35	--	43	45	58	63	79
Housing length <b>EVT-LW</b> in mm	--	46	53	55	70	74	90
Mass in gram ca. <b>EVT</b>	--	--	26	30	34	40	48
Mass in gram ca. <b>EVT-W</b>	--	11	30	34	38	44	52
Mass in gram ca. <b>EVT-L</b>	14	--	16	18	20	26	34
Mass in gram ca. <b>EVT-LW</b>	--	20	22	24	26	34	42
Included in delivery	Probe or nut M3 x 0.5 or loose push rod						
Material housing	Steel nickel plated						
Material push rod	Stainless steel (Mu metal)						
Electrical connection	Round cable 2 m						
Pressure tight, only for <b>EVT-W</b> and <b>EVT-LW</b>	max. 3.5 MPa Please note that it may be needed to bleed the air from inside the sensor (behind the armature) as the increased pressure may cause the armature to move as any trapped air compresses.						

1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

# Data Sheet for Linear Sensors

Inductive Linear Transducer (LVDT)

Series EVT

## Order Code

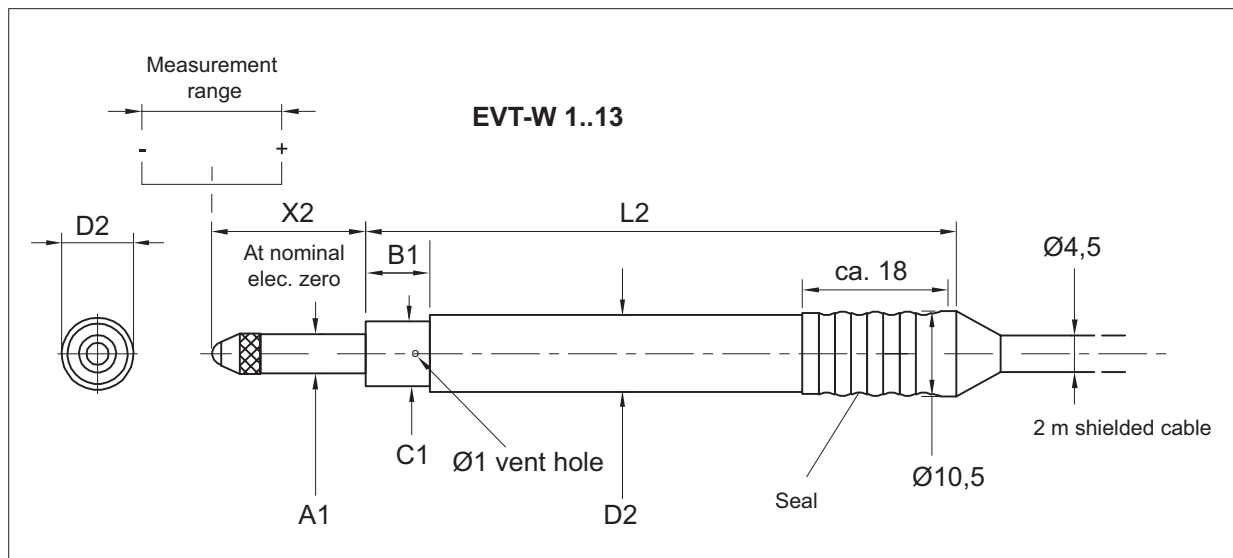
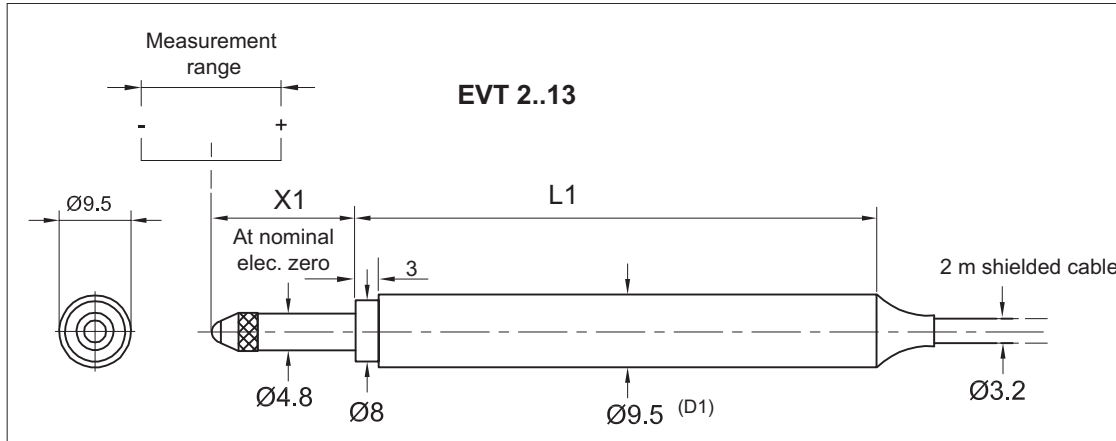
Description	Selection: <b>standard=black/bold</b> , possible <i>options=grey/italic</i>					
<b>Series:</b>	<b>EVT</b>					
<b>Design:</b> <b>Probe with spring return IP64 (EVT)</b> <b>Probe with spring return IP68 (EVT-W)</b> <b>Loose core IP64 (EVT-L)</b> <b>Loose core IP68 (EVT-LW)</b>		- <b>W</b> L <b>LW</b>				
<b>Effective electrical travel:</b> <b>±0.65 mm</b> (only EVT-L) <b>±1 mm</b> (only EVT-W and EVT-LW) <b>±2.5 mm</b> <b>±5 mm</b> <b>±7,5 mm</b> <b>±10 mm</b> <b>±12.5 mm</b>			0,6 <b>1</b> <b>2</b> <b>5</b> <b>7</b> <b>10</b> <b>13</b>			
<b>Independent linearity:</b> <b>Standard ±0.5 %</b> <i>Option ±0.25 (not for elctr. travel ±0.65 mm)</i> <i>Option ±0.1 (only for elctr. travel ±1 and ±5 and ±7.5 mm)</i>				- <i>L0,25%</i> <i>L0,1%</i>		
<b>Electrical connection:</b> <b>Cable 2 m</b> <i>Option cable length in m (max. 7 m)</i>					- <i>Kx,xx</i>	

**For higher quantities or on-going demand, additional options are available as described below on request**

For example:

- Cable assemblies with and without connector, versions with radial cable, cables up to 1000 m
- Extended temperature range up to 200 °C
- Special probe, special axis length and much more

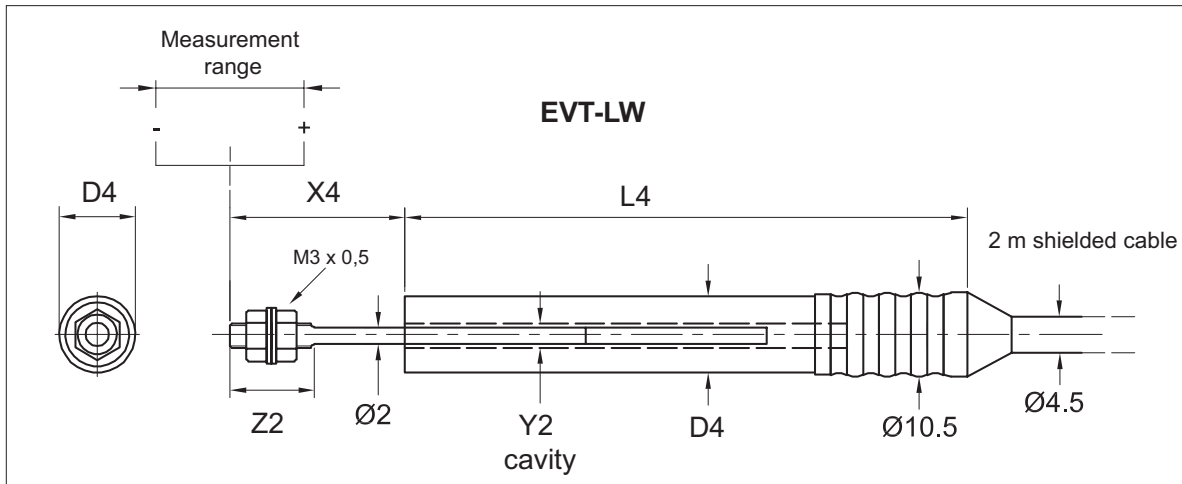
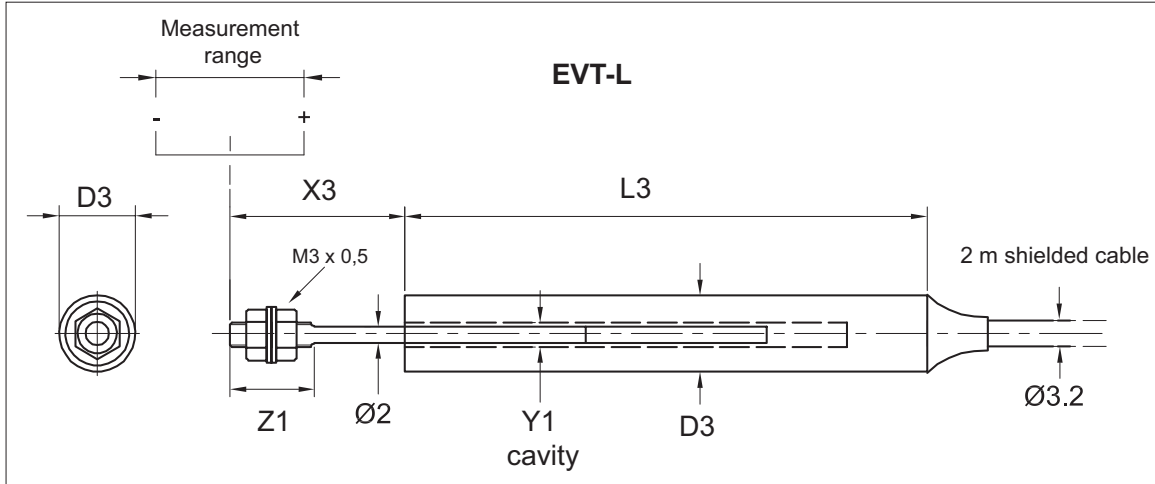
### Drawing



Dimensions in mm

Dimensions	1	2	5	7	10	13
L1 housing length <b>EVT</b> [mm]	--	61	68	88	99	121
L2 housing length <b>EVT-W</b> [mm]	58	69	76	98	110	132
D1 housing <b>EVT</b> Ø [mm]	--	9,5	9,5	9,5	9,5	9,5
D2 housing <b>EVT-W</b> Ø [mm]	8	9,5	9,5	9,5	9,5	9,5
A1 rod Ø <b>EVT-W</b> [mm]	3,96	4,75	4,75	4,75	4,75	4,75
B1 length <b>EVT-W</b> [mm]	7,2	8	8	8	8	8
C1 Ø <b>EVT-W</b> [mm]	7	8	8	8	8	8
Effective electrical travel middle position [mm]	±1	±2,5	±5	±7,5	±10	±12,5
X1 middle position <b>EVT</b> [mm]	13	12	12	15	19	22
X2 middle position <b>EVT-W</b> [mm]	11,5	12,5	13,7	15,3	19	21,6
<b>EVT</b> inward over travel [mm]	0,9	1,9	0,8	1,1	2,5	2,5
<b>EVT-W</b> inward over travel [mm]	1	1,1	1,4	1,4	1,3	1,9
<b>EVT</b> outward over travel [mm]	1,5	1,5	1,6	1,6	1,3	1,3
<b>EVT-W</b> outward over travel [mm]	1,5	1,1	0,3	1,3	1,3	1,3

### Drawing

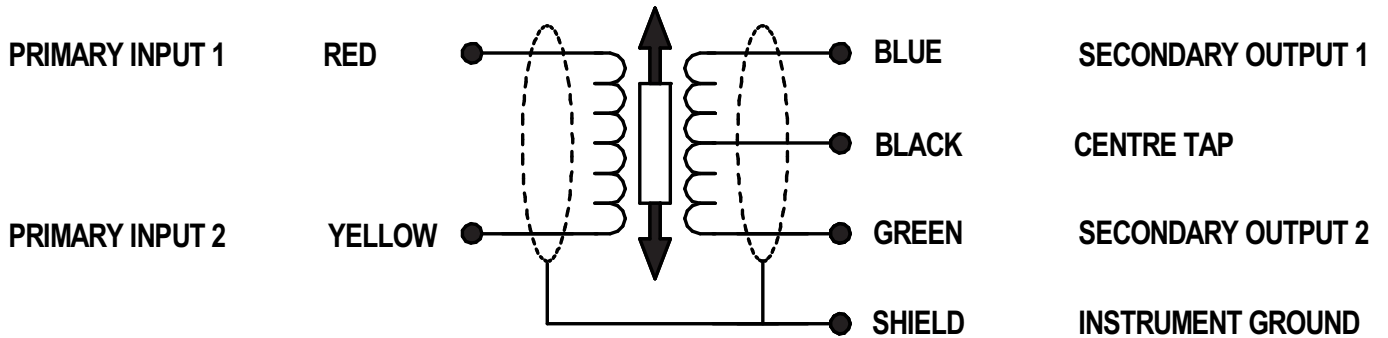


Dimensions in mm

Dimensions	0,6	1	2	5	7	10	13
L3 housing length <b>EVT-L</b> [mm]	35	--	43	45	58	63	79
L4 housing length <b>EVT-LW</b> [mm]	--	46	53	55	70	74	90
D3 housing <b>EVT-L</b> Ø [mm]	9,5	--	9,5	9,5	9,5	9,5	9,5
D4 housing <b>EVT-LW</b> Ø [mm]	--	8	9,5	9,5	9,5	9,5	9,5
Z1 thread <b>EVT-L</b> [mm]	19	--	15	18	18	18	18
Z2 thread <b>EVT-LW</b> [mm]	--	13	14	19	19	19	19
Y1 cavity Ø <b>EVT-L</b> [mm]	3,17	--	2,9	2,9	2,54	2,54	2,54
Y2 cavity Ø <b>EVT-LW</b> [mm]	--	2,3	2,29	2,29	2,54	2,54	2,54
<b>EVT-L</b> effective elec. travel middle position [mm]	±0,65	--	±2,5	±5	±7,5	±10	±12,5
<b>EVT-LW</b> effective elec. travel middle position [mm]	--	±1	±2,5	±5	±7,5	±10	±12,5
X3 middle position <b>EVT-L</b> [±1 mm]	28	--	19	25	30	33	35
X4 middle position <b>EVT-LW</b> [±1 mm]	--	15,7	19,5	26,3	30	32,5	35
<b>EVT-L</b> inward over travel [mm]	7,9	--	1,3	1,5	3,9	4,4	4,3
<b>EVT-LW</b> inward over travel [mm]	--	2,0	1,5	2,9	4	3,9	3,9

Electrical connection

### CONNECTION DETAILS



**NOTE :** If not used the BLACK wire should be insulated from any other wires or connections including the cable shield.