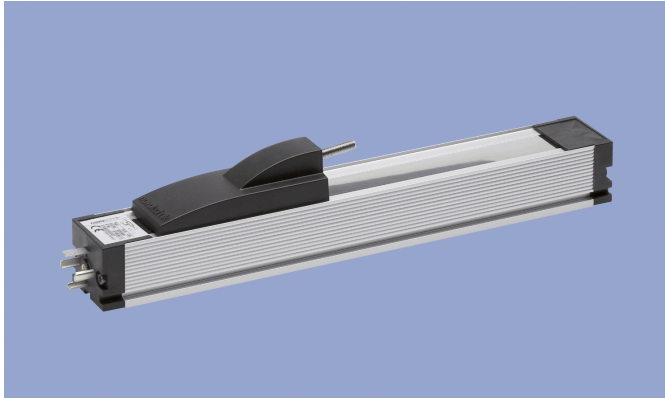
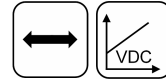


**Transducer  
Potentiometric**

**TLH**  
Up to 3000 mm



**Special Features**

- Rodless design
- Very high operating speed
- Ball coupling avoids side loads
- Long life >100 x 10<sup>6</sup> movements
- Outstanding linearity - up to  $\pm 0.02\%$
- High resolution – better than 0.01 mm
- Delay-free position measurement (real-time output)
- Connection via plug and socket to DIN EN 175301-803 (previous DIN 43650, hydraulic connector)
- Protection class IP54 - mounted actuator side down

**Applications**

- Manufacturing Engineering (plastic injection molding, textile, packaging, sheet metal and wood work machinery)
- Automation technology

TLH transducers are designed for the direct, accurate measurement of displacement or length in control, regulation and measuring applications.

The rodless design utilizes a magnetically-restrained stainless steel band to cover the opening through which the actuator operates. Thus, the actuator is driven from the side, along the unit length. This allows the transducer to be shorter, and permits stroke lengths up to 3000 mm.

A ball coupling limits parallel or angular drive forces from being transmitted to the sensor bearings.

The TLH series is designed for use with mounting clamps which simplifies installation and adjustment.

Due to the design and the selected materials the temperature coefficient of the transducer is extremely small.

Careful attention to detail and choice of materials has resulted in a transducer with an extremely low drift due to temperature.

The robust design ensures reliable operation even under harsh environmental conditions such as vibration or temperature changes.

The measuring technology is both passive and absolute. The TLH transducer is immune to external electrical interference, and retains absolute positional information in the event of power failure.

As with all potentiometers, the output is real-time.

**Description**

Material	Housing: aluminium, anodized Sliding parts: aluminium with plastic inserts
Mounting	Adjustable clamps Z-43 and cylinder screws M5x20 (included in delivery)
Ball coupling	Incorporating a hardened ball, with spring and hardened plate
Resistance element	Conductive plastic
Wiper	Precious metal multi-finger wiper, elastomer damped
Electrical connection	Plug socket to DIN EN 175301-803, 4-pin (mating plug for cable $\varnothing$ 4.7 ... 7 mm and sealing gasket included in delivery)

**Mechanical Data**

Type	TLH 100	TLH 130	TLH 150	TLH 225	TLH 300	TLH 360	TLH 450	TLH 500	TLH 600	TLH 750	TLH 900	TLH 1000	TLH 1250	TLH 1500	TLH 1750	TLH 2000	TLH 2250	TLH 2500	TLH 2750	TLH 3000
Dimensions	See dimension drawing																			
Length of housing [mm] (dim. A $\pm 2$ mm)	250	280	300	376	452	514	605	656	758	910	1062	1164	1418	1668	1918	2168	2418	2668	2918	3168
Mechanical travel [mm] (dim. B $\pm 2$ mm)	108	138	158	234	310	372	463	514	616	768	920	1022	1276	1526	1776	2026	2276	2526	2776	3026
Weight [g]	440	480	500	620	730	820	950	1020	1170	1390	1600	1750	2110	2470	2830	3200	3560	3920	4280	4650
Weight of sliding part	45 g																			
Operating force, horizontal	Typ. 0.4 N																			
Operating force, vertical	Typ. 1.1 N																			
Max. displacement of ball coupling	$\pm 1.5$ mm parallel offset, $\pm 1^\circ$ angular offset																			

## Ordering Specifications

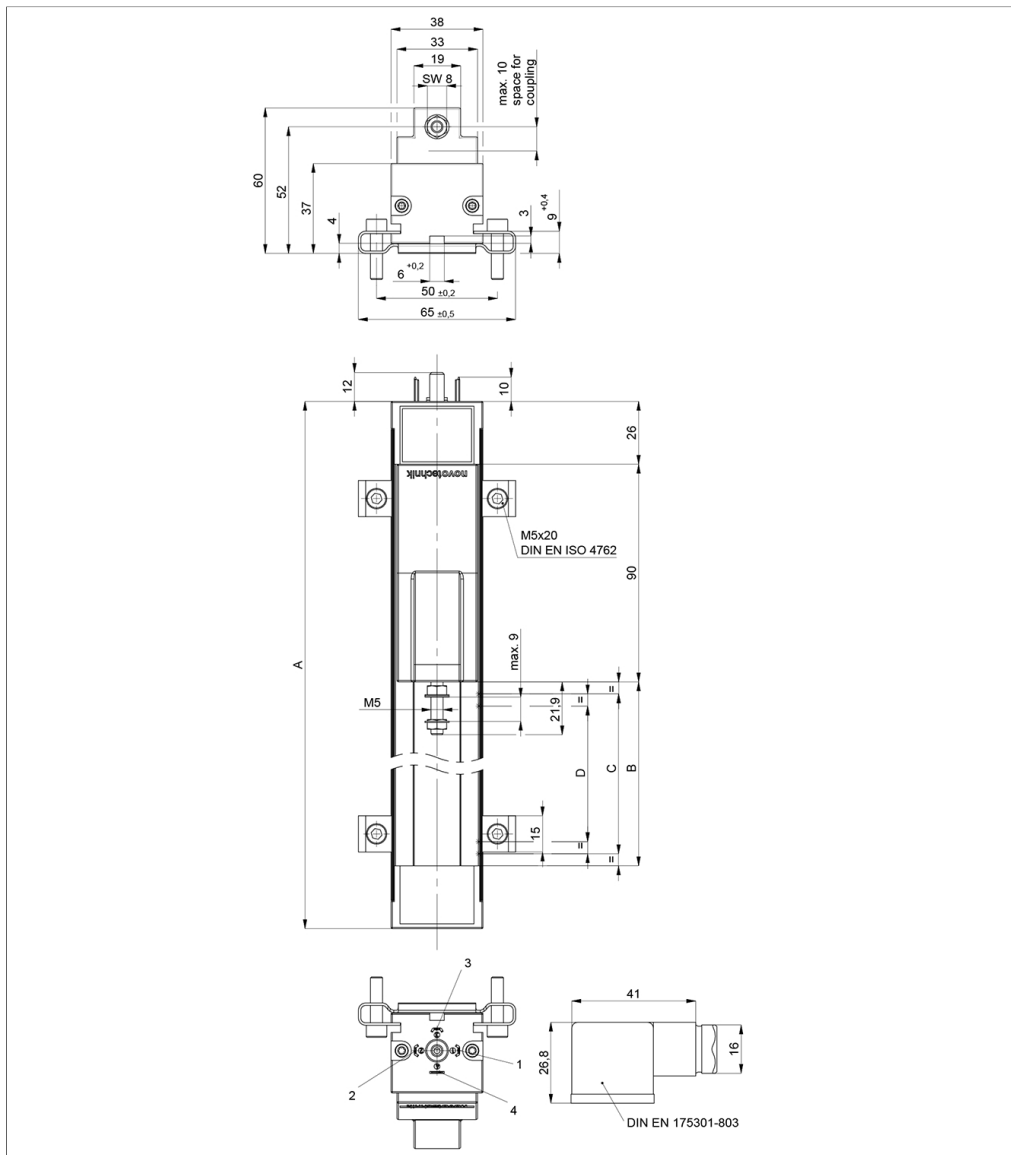
P/N	Type
400025304	TLH-0100
400025305	TLH-0130
400025306	TLH-0150
400025309	TLH-0225
400025312	TLH-0300
400025314	TLH-0360
400025318	TLH-0450
400025320	TLH-0500
400025324	TLH-0600
400025330	TLH-0750
400025336	TLH-0900
400025340	TLH-1000
400025350	TLH-1250
400025360	TLH-1500
400025370	TLH-1750
400025380	TLH-2000
400025381	TLH-2250
400025383	TLH-2500
400025384	TLH-2750
400025385	TLH-3000
-	TLH-____

Further measuring lengths on request (see separate data sheet "TLH special lengths")

### Accessories included in delivery

- Adjustable clamps Z-43 and cylinder screws M5x20
- Mating plug: hydraulic connector to DIN EN 175301-803 for cable Ø 4.7 ... 7 mm, including sealing gasket

**Drawing**



CAD data see  
[www.novotechnik.de/en/download/cad-data/](http://www.novotechnik.de/en/download/cad-data/)

## Technical Data

Type	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	TLH	
	100	130	150	225	300	360	450	500	600	750	900	1000	1250	1500	1750	2000	2250	2500	2750	3000
Electrical measuring range [mm] (dim. C)	102	132	152	228	304	366	457	508	610	762	914	1016	1270	1520	1770	2020	2270	2520	2770	3020
Defined electr. range [mm] (dim. D)	100	130	150	225	300	360	450	500	600	750	900	1000	1250	1500	1750	2000	2250	2500	2750	3000
Output	Voltage divider																			
Resistance value [kΩ]	3	3	5	5	5	5	5	5	5	10	10	10	10	20	20	20	20	20	20	20
Resistance tolerance	± 20 %																			
Independent linearity [± %FS]	0.1	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.03	0.02
Repeatability	≤ ±0.01 mm																			
Recommended operating wiper current	≤ 1 μA																			
Max. wiper current in case of malfunction	10 mA																			
Max. permissible supply voltage Ub	42 VDC																			
Effective temp. coefficient of the output-to-applied voltage ratio	typ. 5 ppm/K																			
Insulation resistance (500 VDC)	≥ 10 MΩ																			
Dielectric strength (500 VAC, 50 Hz)	≤ 100 μA																			
<b>Environmental Data</b>																				
Max. operational speed	10 m/s																			
Operational acceleration	200 m/s <sup>2</sup>																			
Vibration IEC 60068-2-6	20 g, 5 ... 2000 Hz, Amax = 0.75 mm																			
Shock IEC 60068-2-27	50 g, 11 ms																			
Protection class DIN EN 60529	IP40 or IP54 mounted actuator side down																			
Operating temperature	-30 ... +100°C																			
Life	> 100 Mio. movements																			

### Mounting instructions:

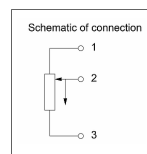
It is recommended that the transducer be mounted with slider-side down. In this orientation the design works to effectively minimize the build up of dirt on the sealing band in a dusty environment.

### Important:

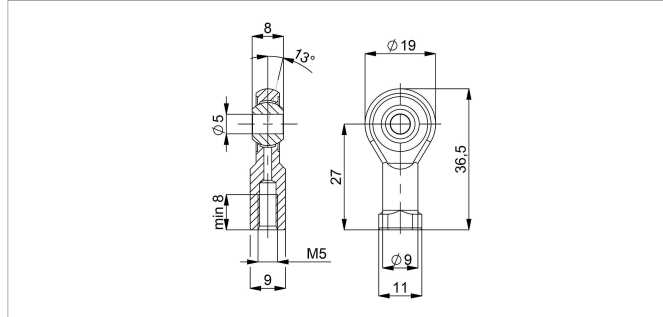
All values specified in this data sheet for linearity, lifetime and temperature coefficient are only valid for a sensor used as a voltage divider with virtually no load applied to the wiper ( $I_e \leq 1 \mu A$ ).

### Connection Assignment

Signal	Connector
Connection 1	Pin 1
Connection 2 Signal output	Pin 2
Connection 3	Pin 3
Connection 4 Housing	Pin 4
The signal output slope on pin 2 is rising while moving the slider away from the connector outlet with "+" of the power supply at pin 3 and falling with power supply "+" at pin 1.	



## Sensor Mounting

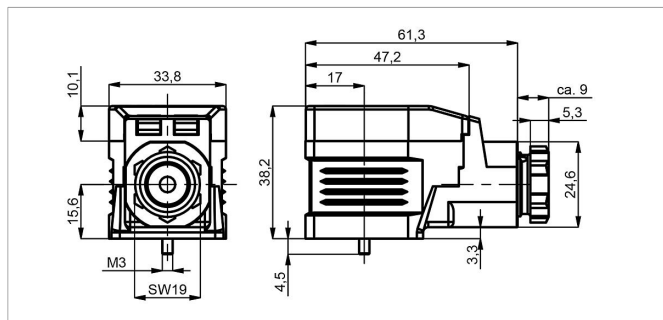
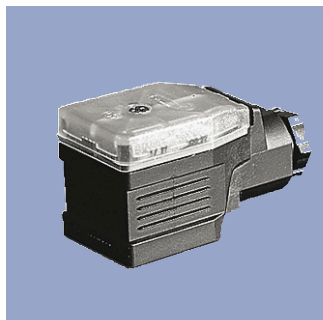


### Z-G01

Pivot head with internal thread M5. Tilt angle max. 13°.

P/N	Pack. unit [pcs]
400056014	1

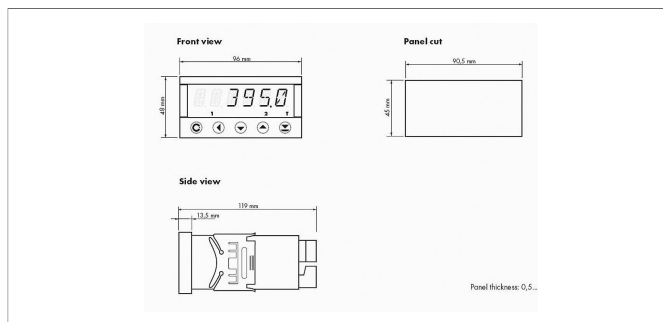
## Signal Processing



### MUW

Signal conditioner integrated in mating plug connector with 24 V and standard output signals.  
 MUW-200: range and zero point not adjustable  
 MUW-250: range and zero point adjustable  
 Detailed data see separate data sheet.

P/N	Type	Output
400054101	MUW-200-0	0 ... 20 mA
400054102	MUW-200-1	0 ... 10 V
400054103	MUW-200-4	4 ... 20 mA
400054151	MUW-250-0	0 ... 20 mA
400054152	MUW-250-1	0 ... 10 V
400054153	MUW-250-4	4 ... 20 mA



### MAP-4000

Multifunctional measuring device with digital display for direct connection of potentiometric and normalized signals.

- Supply voltage 10...30 VDC, 80...250 VDC or AC
- High accuracy up to 0.1%
- Adjustable supply voltage for sensors 5...24 V
- Temperature coefficient 100 ppm/K
- Optional RS 232, RS 485, analog output, limited switch
- Complete data see separate data sheet

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