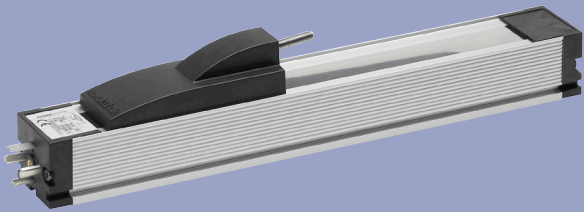


Position Transducers potentiometric up to 3000 mm

Series TLH



Special features

- rodless design
- very high operating speed
- ball coupling avoids side loads
- long life >100 x 10⁶ movements
- outstanding linearity - up to ± 0.02 %
- high resolution – better than 0.01 mm
- real-time output
- connector to DIN 43650 (hydraulic connector)
- protection class IP 54 - mounted slider-side down

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.

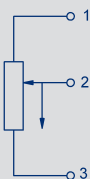
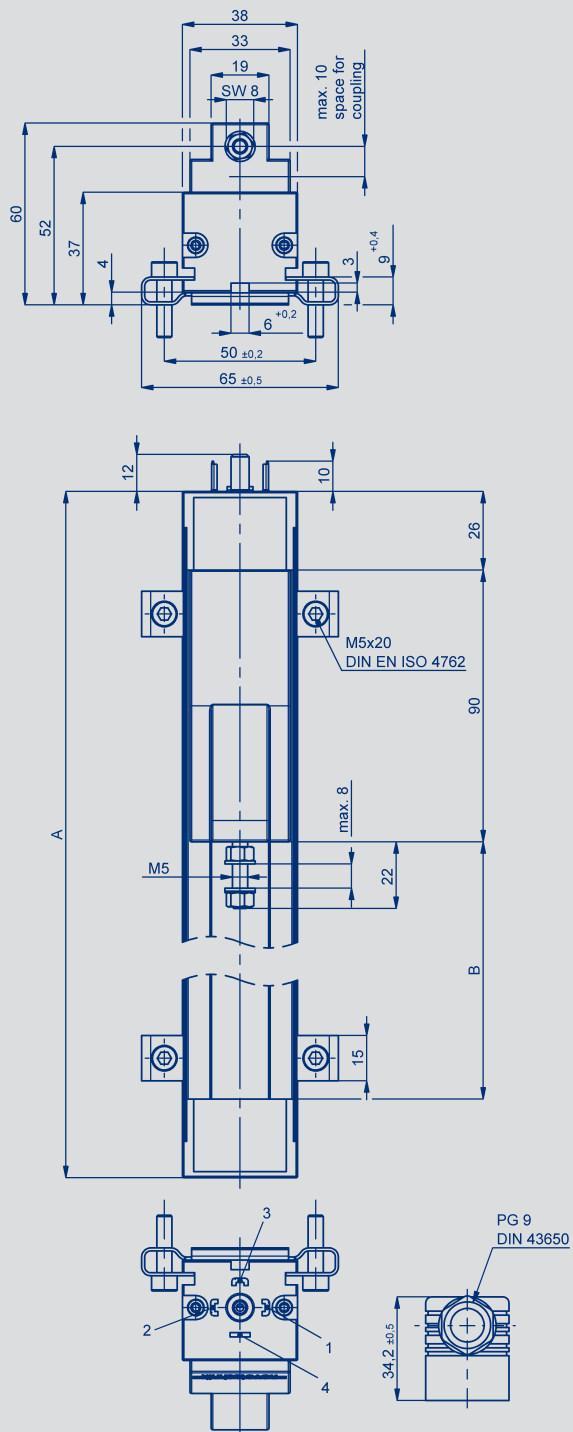
Due to the design and the selected materials the temperature coefficient of the transducer is extremely small. Careful attention to detail and choice of materials has resulted in a transducer with an extremely low drift due to temperature.

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 | |
|------------------------|---|
| Housing | aluminium, anodized |
| Fixings | adjustable clamps |
| Sliding parts | aluminium with plastic inserts |
| Coupling | ball coupling, incorporating a hardened ball, with spring and hardened plate. |
| Resistance element | conductive plastic |
| Wiper assembly | precious metal multi-finger wiper, elastomer-damped |
| Electrical connections | 4pole socket to DIN 43650 |



Schematic

| Type designations | TLH 0100 | TLH 0130 | TLH 0150 | TLH 0225 | TLH 0300 | TLH 0360 | TLH 0450 | TLH 0500 | TLH 0600 | TLH 0750 | TLH 0900 | TLH 1000 | TLH 1250 | TLH 1500 | TLH 1750 | TLH 2000 | TLH 2250 | TLH 2500 | TLH 2750 | TLH 3000 | |
|--|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------------|
| Electrical Data | | | | | | | | | | | | | | | | | | | | | |
| Defined electrical range | 100 | 130 | 150 | 225 | 300 | 360 | 450 | 500 | 600 | 750 | 900 | 1000 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 | 2750 | 3000 | mm |
| Electrical stroke | 102 | 132 | 152 | 228 | 304 | 366 | 457 | 508 | 610 | 762 | 914 | 1016 | 1270 | 1520 | 1770 | 2020 | 2270 | 2520 | 2770 | 3020 | mm |
| Nominal resistance | 3 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 10 | 10 | 10 | 10 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | kΩ |
| Resistance tolerance | 20 | | | | | | | | | | | | | | | | | | | | ±% |
| Independent linearity | 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 | 0.02 | 0.02 | ±% |
| Repeatability | 0.01 | | | | | | | | | | | | | | | | | | | | mm |
| Recommended operating wiper current | ≤ 1 | | | | | | | | | | | | | | | | | | | | μA |
| Maximum wiper current (due to system malfunction) | 10 | | | | | | | | | | | | | | | | | | | | mA |
| Maximum permissible applied voltage | 42 | | | | | | | | | | | | | | | | | | | | V |
| Effective temperature coefficient of the output-to-applied voltage ratio | typical 5 | | | | | | | | | | | | | | | | | | | | ppm/K |
| Insulation resistance (500 VDC) | ≥ 10 | | | | | | | | | | | | | | | | | | | | MΩ |
| Dielectric strength (500 VAC, 50 Hz) | ≤ 100 | | | | | | | | | | | | | | | | | | | | μA |
| Mechanical Data | | | | | | | | | | | | | | | | | | | | | |
| Body length (dimension A) | 250 | 280 | 300 | 376 | 452 | 514 | 605 | 656 | 758 | 910 | 1062 | 1164 | 1418 | 1668 | 1918 | 2168 | 2418 | 2668 | 2918 | 3168 | ±2 mm |
| Mechanical stroke (dimension B) | 108 | 138 | 158 | 234 | 310 | 372 | 463 | 514 | 616 | 768 | 920 | 1022 | 1276 | 1526 | 1776 | 2026 | 2276 | 2526 | 2776 | 3026 | ±2 mm |
| Total weight | 440 | 480 | 500 | 620 | 730 | 820 | 950 | 1020 | 1170 | 1390 | 1600 | 1750 | 2110 | 2470 | 2830 | 3200 | 3560 | 3920 | 4280 | 4650 | g |
| Weight of sliding part | 45 | | | | | | | | | | | | | | | | | | | | g |
| Permitted movement of ball coupling | ±1° angular offset, ±1.5 mm parallel offset | | | | | | | | | | | | | | | | | | | | |
| Operating force horizontal | ≤ 0.4 | | | | | | | | | | | | | | | | | | | | N |
| vertical | ≤ 1.1 | | | | | | | | | | | | | | | | | | | | N |
| Environmental Data | | | | | | | | | | | | | | | | | | | | | |
| Temperature range | -30 ... +100 | | | | | | | | | | | | | | | | | | | | °C |
| Vibration | 5...2000 Amax = 0.75 amax = 20 | | | | | | | | | | | | | | | | | | | | Hz mm g |
| Shock | 50 11 | | | | | | | | | | | | | | | | | | | | g ms |
| Life | > 100 x 10 ⁶ | | | | | | | | | | | | | | | | | | | | movem. |
| Operating speed | 10 | | | | | | | | | | | | | | | | | | | | m/s max. |
| Operational acceleration | 200 (20 g) | | | | | | | | | | | | | | | | | | | | m/s ² max. |
| Protection class | IP40 (DIN EN 60529) IP54 (DIN EN 60529) mounted actuator side down | | | | | | | | | | | | | | | | | | | | |

| Order designations | |
|--------------------|--------|
| Type | P/N |
| TLH-0100 | 025304 |
| TLH-0130 | 025305 |
| TLH-0150 | 025306 |
| TLH-0225 | 025309 |
| TLH-0300 | 025312 |
| TLH-0360 | 025314 |
| TLH-0450 | 025318 |
| TLH-0500 | 025320 |
| TLH-0600 | 025324 |
| TLH-0750 | 025330 |
| TLH-0900 | 025336 |
| TLH-1000 | 025340 |
| TLH-1250 | 025350 |
| TLH-1500 | 025360 |
| TLH-1750 | 025370 |
| TLH-2000 | 025380 |
| TLH-2250 | 025381 |
| TLH-2500 | 025383 |
| TLH-2750 | 025384 |
| TLH-3000 | 025385 |

Other lengths on request.
(see data sheet TLH Special Length)

Included in delivery

Fixing clamps Z-43 with 4 screws
1 plug connector GDM 3009 (Ø 4.5 mm - 7 mm)
1 sealing gasket GDM 3-16

Recommended accessories

MAP - process control indicator with display
MUW signal conditioner - 24V supply with standard voltage and current outputs. (integrated in connector).

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 $\leq 1 \mu\text{A}$.

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.

