



The series MSL38 is used in industrial applications, which require a robust displacement sensor without push rod.

- Mechanical connection with link ball for compensation of angle offset
- Space saving cursor construction - no push rod
- Independent linearity $\pm 0.05\%$
- Conductive plastic element with almost infinite resolution
- Measuring length from 100 mm to 2000 mm
- Long life span (100 million movements)

The robust aluminium housing allows use in harsh industrial applications.

Electrical Data

| | |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Effective electrical travel (+3/-0 mm) 1.) | 100 / 130 / 150 / 175 / 200 / 225 / 250 / 300 / 350 / 360 / 400 / 450 / 500 / 600 / 700 / 750 / 850 / 900 / 1000 / 1250 / 1500 / 1750 / 2000 |
| Total electrical travel (± 1 mm) 1.) | 103 / 133 / 153 / 178 / 204 / 229 / 254 / 305 / 355 / 365 / 406 / 458 / 509 / 611 / 713 / 763 / 865 / 915 / 1017 / 1271 / 1521 / 1771 / 2021 |
| Total resistance 1.) | 5 kOhm (100..300 mm) / 10 kOhm (350...1000 mm) / 20 kOhm (1250..2000 mm) |
| Resistance tolerance | $\pm 20\%$ |
| Independent linearity (best straight line) 1.) | $\pm 0.05\%$ |
| Theoretical resolution 1.) | Almost infinite |
| Repeatability 1.) | ≤ 0.01 mm |
| Max. / recommended wiper current 1.) | 10 mA (@40 °C, 1 min in case of failure) / < 1 μ A |
| Power rating @40 °C (0 W @120 °C) | ≤ 3 W |
| Isolation voltage 1.) | < 100 μ A@500 VAC, 1bar, 2s |
| Isolation resistance 1.) | 100 MOhm@500 VDC, 1bar, 2s |

Mechanical Data, Environmental Conditions, Miscellaneous

| | |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mechanical stroke (+10 mm) 1.) | 103 / 133 / 153 / 178 / 204 / 229 / 254 / 305 / 355 / 365 / 406 / 458 / 509 / 611 / 713 / 763 / 865 / 915 / 1017 / 1271 / 1521 / 1771 / 2021 |
| Lifetime (90 % effective electrical travel) 2.) | > 25 million meters or 100 million movements (the smaller value applies) |
| Max. operational speed | ≤ 10 m/s |
| Operational force @ RT 1.) 2.) | < 1.2 N |
| Operational temperature | -30..+100 °C |
| Storage temperature | -50..+120 °C |
| Protection grade (IEC60529) | IP40 |
| Vibration (IEC 68-2-6, Test Fc) | 20 g (5..2000 Hz, 0.75 mm) |
| Shock (IEC 68-2-27, Test Ea) | 50 g, halfsine, 11 ms |
| Housing length (mm) | 253 / 283 / 303 / 328 / 354 / 379 / 404 / 455 / 505 / 515 / 556 / 608 / 659 / 761 / 863 / 913 / 1015 / 1065 / 1167 / 1421 / 1671 / 1921 / 2171 |
| Mounting parts (included in delivery) | Mounting clamps, screws, spring washer (100..900 mm: 2 x clamps + 4 x screws + 4 x spring washer, 1000..2000 mm: 3 x clamps + 6 x screws + 6 x spring washer) |
| Cursor | Included in delivery |

Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic)

Series MSL38

Mechanical Data, Environmental Conditions, Miscellaneous

| | |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Material housing | Aluminium, Nylon 66 G 25 |
| Material cursor | Nylon 66 GF 40, Latilub 73/13 |
| Connection type | Valve connector 4-pole DIN43650 (optional 5-pole connector DIN43322) |
| Sensor mounting method | Mounting clamps, screws, spring washer (included in delivery) and for screw M6 ISO4017 DIN933 (screw not included in delivery) |

1.) According IEC 60393

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

Please note: Max. permissible supply voltage <75 VDC respectively <50 VAC in addition the max. power rating must be observed

Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic)

Series MSL38

Order Code

| Description | Selection: standard=black/bold, possible options=grey/cursive | | | | |
|-------------------------------------------------------|---------------------------------------------------------------|--|--|------------------|---------------|
| Series: | MSL38 | | | | |
| Effective electrical travel: | | | | | |
| 100 mm | 100 | | | R5K | |
| 130 mm | 130 | | | R5K | |
| 150 mm | 150 | | | R5K | |
| 175 mm | 175 | | | R5K | |
| 200 mm | 200 | | | R5K | |
| 225 mm | 225 | | | R5K | |
| 250 mm | 250 | | | R5K | |
| 300 mm | 300 | | | R5K | |
| 350 mm | 350 | | | R10K | |
| 360 mm | 360 | | | R10K | |
| 400 mm | 400 | | | R10K | |
| 450 mm | 450 | | | R10K | |
| 500 mm | 500 | | | R10K | |
| 600 mm | 600 | | | R10K | |
| 700 mm | 700 | | | R10K | |
| 750 mm | 750 | | | R10K | |
| 850 mm | 850 | | | R10K | |
| 900 mm | 900 | | | R10K | |
| 1000 mm | 1000 | | | R10K | |
| 1250 mm | 1250 | | | R20K | |
| 1500 mm | 1500 | | | R20K | |
| 1750 mm | 1750 | | | R20K | |
| 2000 mm | 2000 | | | R20K | |
| Electrical connection: | | | | | |
| 4-pole valve connector (3+PE) DIN43650-ISO4400 | | | | - | |
| <i>Option 5-pole connector DIN43322</i> | | | | A | |
| Total resistance: | | | | | |
| Standard depends on electrical travel | | | | see above | |
| Resistance tolerance: | | | | | |
| ±20 % | | | | | W20% |
| Independent linearity: | | | | | |
| Standard 0.05 % | | | | | L0,05% |

Accessories (not included in delivery):

For 4 pole valve connector:

- Mating connector (STV) #110767: angled, without cable, 3-pole + PE, IP65, not shielded (STV E 3POLPE IP65 NS)
- Mating connector with cable (STV): angled, with cable 3 meters, 3-pole + PE, IP67, not shielded (STV K3M 3POLPE IP67 NS)

For 5 pole connector M16:

- Mating connector (STEM16) #130964: M16 thread, 5-pole, IP40, angled, not shielded (STE M16 5POL IP40 W NS)
- Mating connector (STEM16) #110906: M16 thread, 5-pole, IP67, straight, shieldable (STE M16 5POL IP67 G S)
- Mating connector (STEM16) #114462: M16 thread, 5-pole, IP67, angled, shieldable (STE M16 5POL IP67 W S)
- Mating connector with cable (STKM16) #127664: M16 thread, 5-pole, IP67, straight, shielded, 2 m (STK M16 5POL IP67 G GS 2M AWG24)
- Mating connector with cable (STKM16) #127665: M16 thread, 5-pole, IP67, angled, shielded, 2 m (STK M16 5POL IP67 W GS 2M AWG24)

More connectors with cable on request. Take a look at data sheet STEM for connector without cable, STKM for connector with cable.

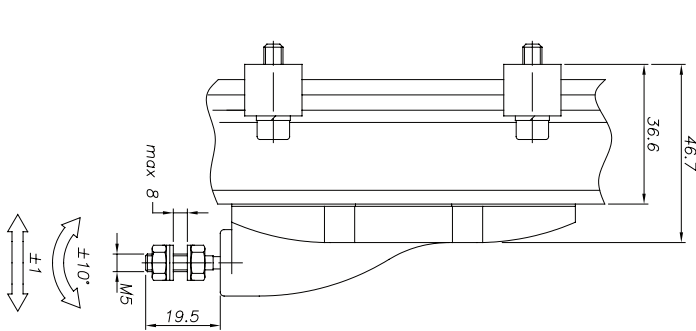
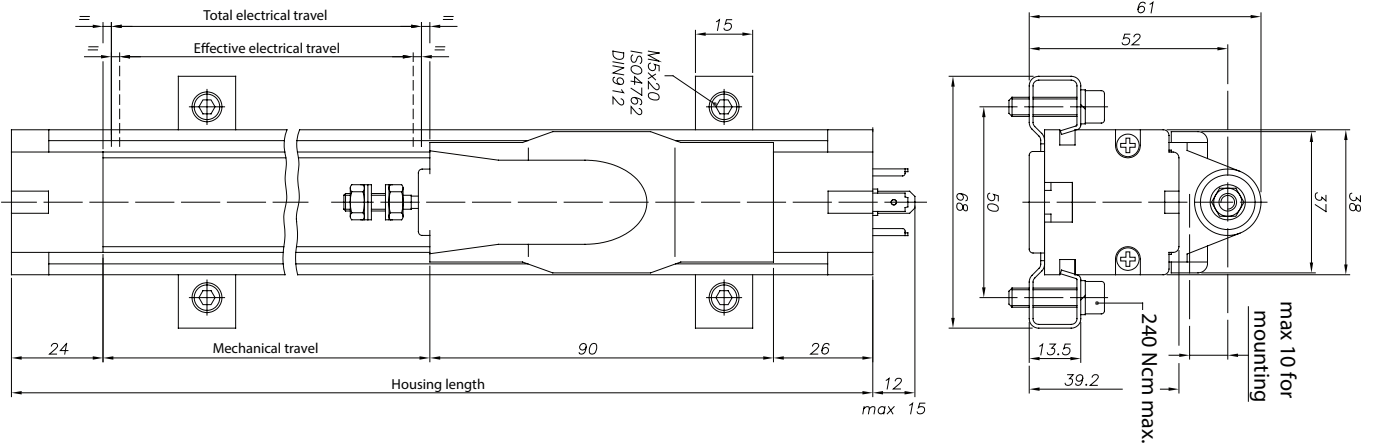
Note: When calibrating the linear transducer, be careful to set the stroke so that the output does not drop below 1 % or rise beyond 99 % of the supply voltage.

Data Sheet for Linear Sensors

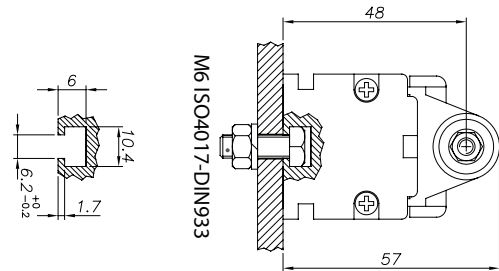
Potentiometric Linear Transducer (Conductive Plastic)

Series MSL38

Drawing

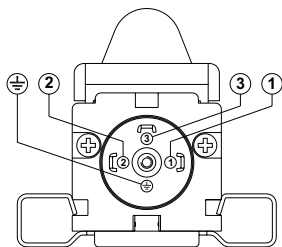


Dimensions for nut and screw head

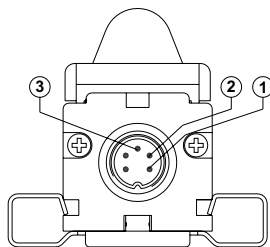


Dimensions in mm

4 pin connector



5 pin connector



Connection diagram

