

# Data Sheet for Linear Sensors

## Potentiometric Linear Transducer (Conductive Plastic)

Series HEM12



Displacement sensor for hydraulic applications

- With integrated signal converter
- High degree of protection IP67 and max. 250 bar operating pressure
- With external magnetic drag - capsule of the sensor element
- Mounting via internal or external flange
- Measuring lengths from 50 mm to 1000 mm
- Long lifetime (up to 100 million movements)

The sensors are designed for operating pressures of max. 250 bar with peak values of 400 bar. The mechanical detection of linear movements is done by a magnetic drag.

### Electrical Data

|  |   |
|--|---|
| Effective electrical travel (+1/-0 mm) 1.)     | 50 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600 / 750 / 800 / 850 / 900 / 950 / 1000 |
| Total electrical travel (±1 mm) 1.)            | 50 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600 / 750 / 800 / 850 / 900 / 950 / 1000 |
| Independent linearity (best straight line) 1.) | ±0,35%  |
| Output signal                                  | 4..20 mA<br>(4 mA between 1..3% / 20 mA between 96..99% effective electrical travel)                      |
| Theoretical resolution 1.)                     | Almost infinite   |
| Repeatability 1.)                              | ≤ 0,08 mm   |
| Backlash (Hysteresis) 1.)                      | ≤ 0,25 mm   |
| Update rate                                    | ≤ 1 ms  |
| Supply voltage                                 | 10..30 V (please refer load diagram)  |
| Power consumption (no load)                    | ≤ 35 mA   |
| Output load                                    | Please refer load diagram   |
| Isolation resistance 1.)                       | 100 MOhm@45 VDC, 1bar, 2s   |

### Mechanical Data, Environmental Conditions, Miscellaneous

|  |   |
|--|---|
| Mechanical stroke (+5 mm) 1.)                  | 50 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600 / 750 / 800 / 850 / 900 / 950 / 1000 |
| Lifetime (90% effective electrical travel) 2.) | > 25 million meters or 100 million movements<br>(the smaller value applies)                               |
| Max. operational speed                         | ≤ 5 m/s   |
| Max. acceleration                              | ≤ 10 m/s <sup>2</sup>   |
| Operational force @ RT 1.) 2.)                 | < 0,5 N   |
| Operational temperature                        | -30..+80°C  |
| Storage temperature                            | -40..+100°C   |
| Protection grade (IEC60529)                    | IP67  |
| Vibration (IEC 68-2-6, Test Fc)                | 20 g (5..2000 Hz, 0,75mm)   |
| Shock (IEC 68-2-27, Test Ea)                   | 50 g, halfsine, 11 ms   |
| Housing length (+100,2 ±1 mm)                  | 50 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600 / 750 / 800 / 850 / 900 / 950 / 1000 |
| Included in delivery                           | 1 x magnetic cursor   |
| Material housing                               | Steel AISI 304  |
| Connection type                                | PUR-Cable 3-pole shielded 1 m   |

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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

| Order Code                          |   |             |          |            |             |
|-------------------------------------|---|-------------|----------|------------|-------------|
| Description                         | Selection: standard=black/bold, possible options=grey/cursive |             |          |            |             |
| <b>Series:</b>                      | <b>HEM12E</b>   |             |          |            |             |
| <b>Effective electrical travel:</b> |   |             |          |            |             |
| 50 mm                               |   | <b>50</b>   |          |            |             |
| 100 mm                              |   | <b>100</b>  |          |            |             |
| 150 mm                              |   | <b>150</b>  |          |            |             |
| 200 mm                              |   | <b>200</b>  |          |            |             |
| 250 mm                              |   | <b>250</b>  |          |            |             |
| 300 mm                              |   | <b>300</b>  |          |            |             |
| 350 mm                              |   | <b>350</b>  |          |            |             |
| 400 mm                              |   | <b>400</b>  |          |            |             |
| 450 mm                              |   | <b>450</b>  |          |            |             |
| 500 mm                              |   | <b>500</b>  |          |            |             |
| 550 mm                              |   | <b>550</b>  |          |            |             |
| 600 mm                              |   | <b>600</b>  |          |            |             |
| 750 mm                              |   | <b>750</b>  |          |            |             |
| 800 mm                              |   | <b>800</b>  |          |            |             |
| 850 mm                              |   | <b>850</b>  |          |            |             |
| 900 mm                              |   | <b>900</b>  |          |            |             |
| 950 mm                              |   | <b>950</b>  |          |            |             |
| 1000 mm                             |   | <b>1000</b> |          |            |             |
| <b>Construction:</b>                |   |             |          |            |             |
| Internal flange                     |   |             | <b>I</b> |            |             |
| External flange                     |   |             | <b>E</b> |            |             |
| <b>Electrical connection:</b>       |   |             |          |            |             |
| Standard PUR cable 3-pole 1 m       |   |             |          | <b>K</b>   |             |
| <i>Option cable length in m</i>     |   |             |          | <i>Kxx</i> |             |
| <b>Output signal:</b>               |   |             |          |            |             |
| Standard 4-20 mA                    |   |             |          |            | <b>2442</b> |

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

For example:

- Cables with / without connector
- Special axis length and much more

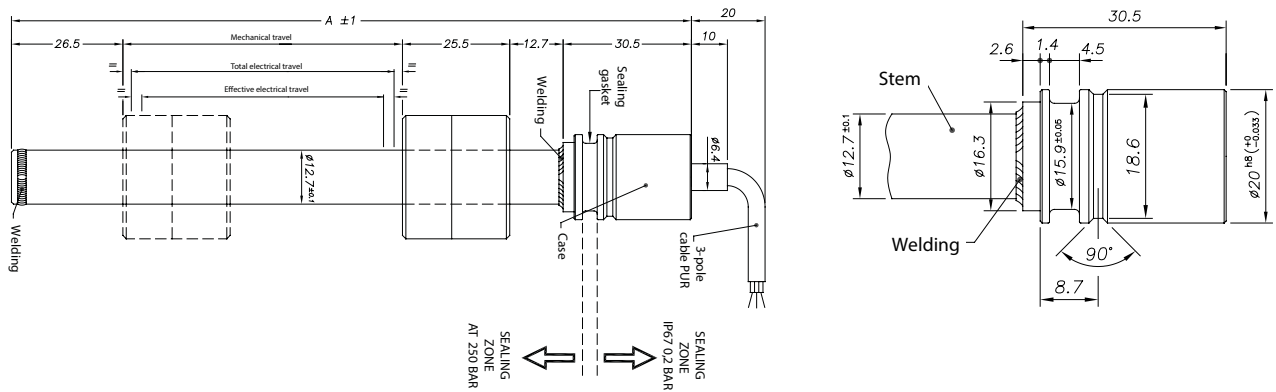
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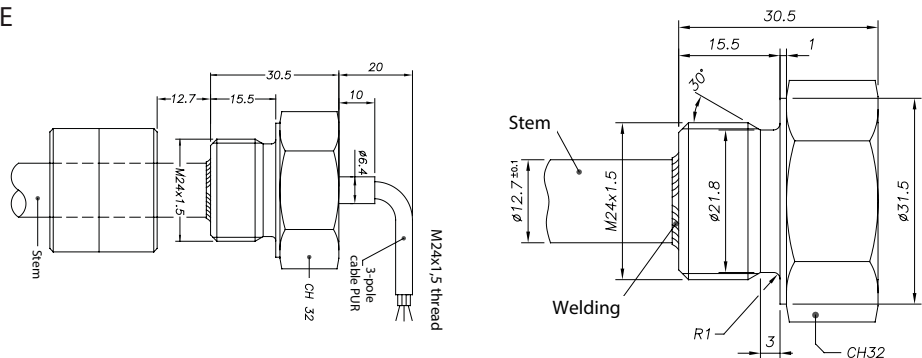
Series HEM12

## Drawing

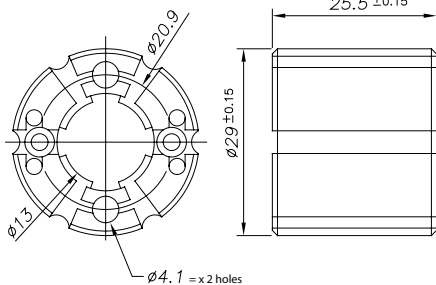
### Construction - intern flange: I



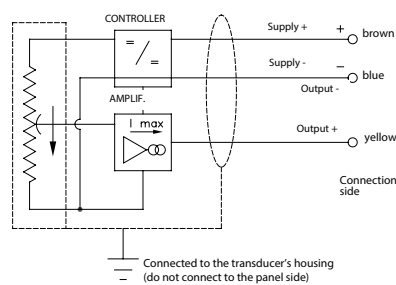
### Construction - extern flange: E



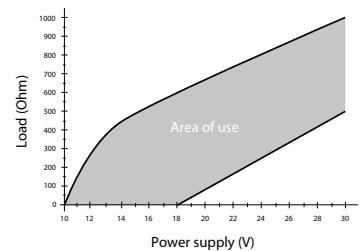
### Cursor



### Connection diagram



### Load diagram

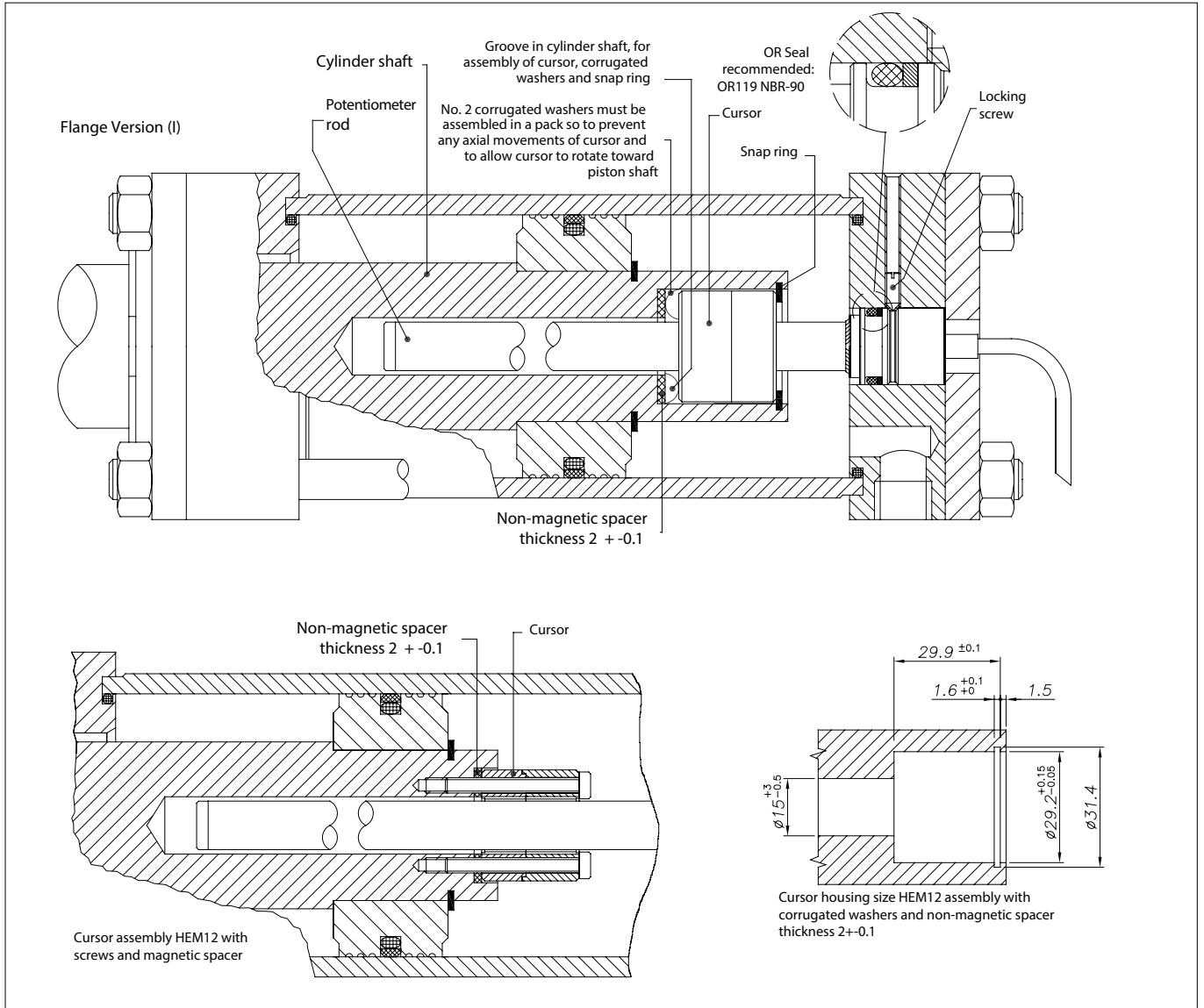


### Dimensions in mm

A [+102,2 mm] 50 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600 / 750 / 800 / 850 / 900 / 950 / 1000

### Installation in cylinder

#### Installation inside cylinder with intern flange: I



Installation in cylinder

Installation inside cylinder with extern flange: E

