

# Data Sheet for Linear Sensors

## Inductive (LVDT) linear transducer, waterproof

## Series RWC

RWCT  
with spring return



- Stroke up to 400 mm
- Contactless technology
- High IP68 protection class
- Rugged design of the cable connection
- Temperature range -40 °C up to +100 °C
- Operating pressure up to 3MPa (30 bar)
- Stainless steel housing
- Housing diameter 20.6mm
- In 3 designs
  - RWCT, with spring return as probe
  - RWCL, unguided armature
  - RWCC, guided armature with PTFE bearing, ball bearings attachable

| Electrical Data                                          | RWC                                            |           |           |           |         |                |         |
|----------------------------------------------------------|------------------------------------------------|-----------|-----------|-----------|---------|----------------|---------|
|                                                          | T / L / C                                      | T / L / C | T / L / C | T / L / C | L / C   | L / C          | L / C   |
|                                                          | 25                                             | 50        | 100       | 150       | 200     | 300            | 400     |
| Effective electrical travel<br>middle position 1.) in mm | ±12.5                                          | ±25       | ±50       | ±75       | ±100    | ±150           | ± 200   |
| Output signal                                            | 0.7 V/V                                        | 0.9 V/V   | 1.5 V/V   | 1.5 V/V   | 3.2 V/V | 2.4 V/V        | 1.5 V/V |
| Independent linearity (best<br>straight line) 1.)        | ±0.5% (±0.25%, ±0.1%)                          |           |           |           |         | ±0.5% (±0.25%) |         |
| Theoretical resolution1.)                                | Nearly 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                                  | ±0.01 % F.S./°C                                |           |           |           |         |                |         |
| Ripple                                                   | 5 kHz                                          |           |           |           |         |                |         |

| Mechanical Data, Environmental Conditions, Miscellaneous                         | RWC                 |           |           |           |       |       |       |
|----------------------------------------------------------------------------------|---------------------|-----------|-----------|-----------|-------|-------|-------|
|                                                                                  | T / L / C           | T / L / C | T / L / C | T / L / C | L / C | L / C | L / C |
|                                                                                  | 25                  | 50        | 100       | 150       | 200   | 300   | 400   |
| Lifetime (90% effective electrical travel) 2.)                                   | Nearly infinite     |           |           |           |       |       |       |
| Max. operational speed                                                           | < 2 m/s             |           |           |           |       |       |       |
| Operational force @RT 1.) 2.)<br><b>RWCT</b> (spring return) @ X middle position | < 1.3 N             | < 2 N     | < 1.8 N   | < 6 N     | -     |       |       |
| Spring rate <b>RWCT</b>                                                          | 0.2 N/cm            | 0.3 N/cm  | 0.2 N/cm  | 0.4 N/cm  | -     |       |       |
| Operational temperature with option KS05 / KSR05                                 | - 25 °C .. + 90 °C  |           |           |           |       |       |       |
| Operational temperature with integral cable KI07 / KIR07                         | - 40 °C .. + 100 °C |           |           |           |       |       |       |
| Operational temperature with extended integral cable KEXX                        | - 40 °C .. + 90 °C  |           |           |           |       |       |       |

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| Mechanical Data,<br>Environmental<br>Conditions, Miscel-<br>laneous | RWC                                        |           |           |           |       |       |       |
|---------------------------------------------------------------------|--------------------------------------------|-----------|-----------|-----------|-------|-------|-------|
|                                                                     | T / L / C                                  | T / L / C | T / L / C | T / L / C | L / C | L / C | L / C |
|                                                                     | 25                                         | 50        | 100       | 150       | 200   | 300   | 400   |
| Housing length L 3.)<br><b>RWCT</b> in mm                           | 153                                        | 181       | 304       | 420       | -     | -     | -     |
| Housing length L 3.)<br><b>RWCL / RWCC</b> in mm                    | 153                                        | 181       | 304       | 420       | 453   | 632   | 858   |
| Middle Position X 3.)                                               | 38                                         | 63        | 76        | 114       | 127   | 178   | 254   |
| Included in delivery                                                | Probe or nut M5 x 0,8 or unguided armature |           |           |           |       |       |       |
| Material housing                                                    | Stainless Steel                            |           |           |           |       |       |       |
| Material push rod                                                   | Hardened steel (Mu-Metal)                  |           |           |           |       |       |       |
| Electrical connection                                               | Round cable                                |           |           |           |       |       |       |

1.) According IEC 60393

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

3.) see drawing page 3

| Order Code                                                                                                                                                                                                                                                                |                                                                             |                                  |                                                                                              |                                                                            |  |                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--|----------------------------------|
| <b>Description</b>                                                                                                                                                                                                                                                        | Selection: <b>standard=black/bold</b> , possible <i>options=grey/italic</i> |                                  |                                                                                              |                                                                            |  |                                  |
| <b>Series:</b>                                                                                                                                                                                                                                                            | <b>RWC</b>                                                                  |                                  |                                                                                              |                                                                            |  |                                  |
| <b>With guided armature</b><br><b>With spring return (measuring probe)</b><br><b>Unguided armature</b>                                                                                                                                                                    |                                                                             | <b>C</b><br><b>T</b><br><b>L</b> |                                                                                              |                                                                            |  |                                  |
| <b>Effective electrical travel:</b><br><b>±12,5 mm</b><br><b>±25 mm</b><br><b>±50 mm</b><br><b>±75 mm</b><br><b>±100 mm (not version T)</b><br><b>±150 mm (not version T)</b><br><b>±200 mm (not version T)</b>                                                           |                                                                             |                                  | <b>25</b><br><b>50</b><br><b>100</b><br><b>150</b><br><b>200</b><br><b>300</b><br><b>400</b> |                                                                            |  |                                  |
| <b>Electrical connection:</b><br><b>Connector with 5 m cable</b><br><b>Connector with 5 m cable, radial exit</b><br><b>Integrated with 7 m sheathed cable</b><br><b>Integrated with 7 m sheathed cable, radial exit</b><br><i>Extended sheathed cable (1 up to 100 m)</i> |                                                                             |                                  |                                                                                              | <b>KS05</b><br><b>KSR05</b><br><b>KI07</b><br><b>KIR07</b><br><i>KExxx</i> |  |                                  |
| <b>Independent linearity:</b><br><b>Standard ±0,5 %</b><br><i>Option ±0,25% (±12.5...±200 mm el. travel)</i><br><i>Option ±0,1% (±12.5...±100 mm el. travel)</i>                                                                                                          |                                                                             |                                  |                                                                                              |                                                                            |  | -<br><i>L0,25</i><br><i>L0,1</i> |

## Recommended accessories for RWCC (please order separately):

#136790, Ball Joint female thread M5x0.8, INOX

#136791, Ball Joint, male thread, M5x0.8, INOX

(for attaching RWCC on both ends, male an female version is needed)

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

For example:

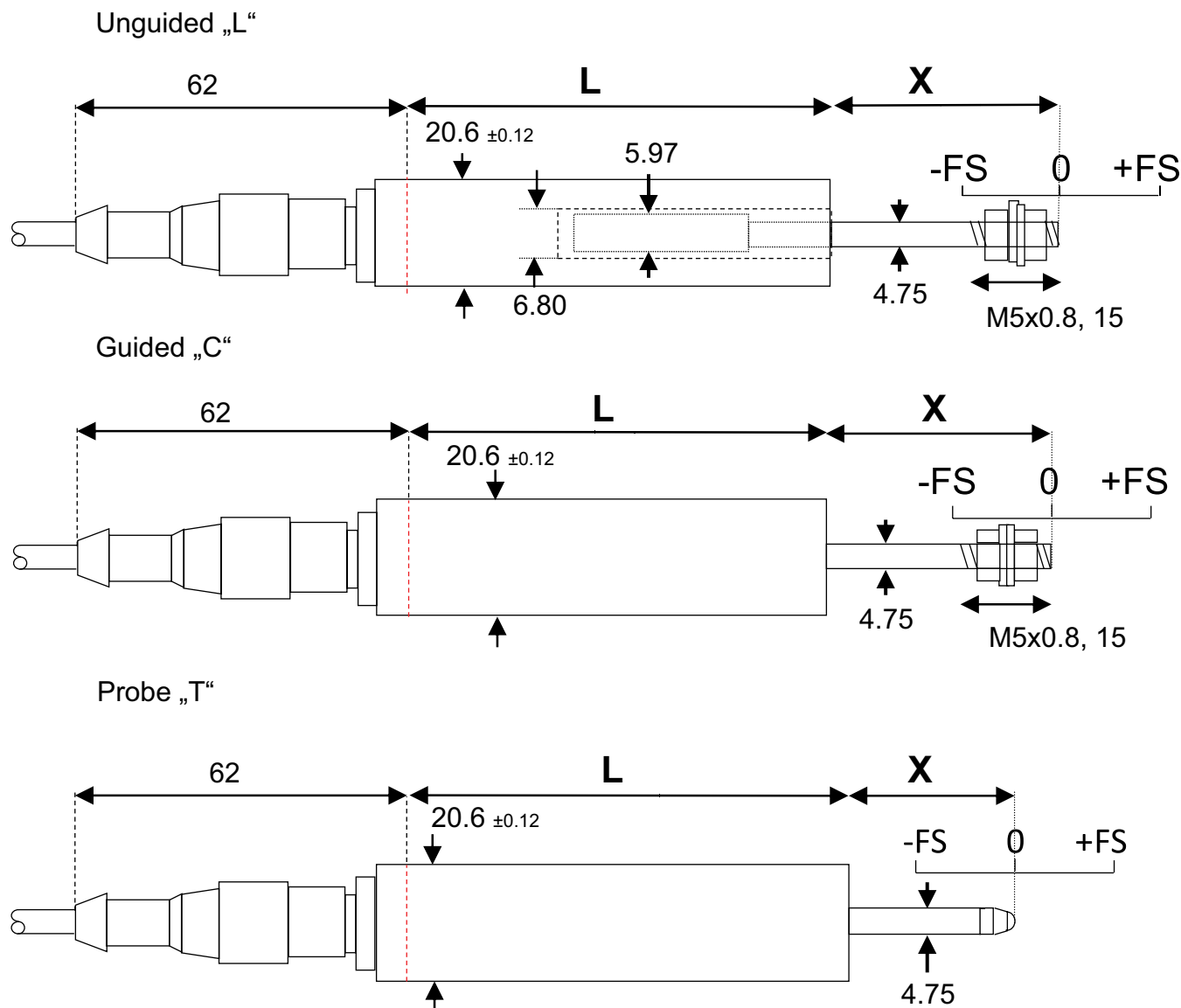
- Cable assemblies with and without connector
- Extended temperature range up to 200 °C with special cable
- Special probe, special axis length and much more

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## Drawing



| RWC       |                                       | 25    | 50  | 100 | 150 | 200  | 300  | 400  |
|-----------|---------------------------------------|-------|-----|-----|-----|------|------|------|
| T / L / C | -FS / +FS Effective electrical travel | ±12.5 | ±25 | ±50 | ±75 | ±100 | ±150 | ±200 |
| T / L / C | X Middle Position (± 0.2 mm)          | 38    | 63  | 76  | 114 | 127  | 178  | 254  |
| T         | L Housing length                      | 153   | 181 | 304 | 420 | -    | -    | -    |
| L / C     | L Housing length                      | 153   | 181 | 304 | 420 | 453  | 632  | 858  |
| T         | Inward over-travel                    | 6     | 4   | 6   | 15  | -    | -    | -    |
| T         | Outward over-travel                   | 28    | 25  | 28  | 28  | -    | -    | -    |
| L         | Inward over-travel                    | 10    | 23  | 10  | 23  | 10   | 10   | 36   |
| C         | Inward over-travel                    | 10    | 17  | 10  | 23  | 10   | 10   | 36   |
| C         | Outward over-travel                   | 28    | 25  | 28  | 28  | 28   | 35   | 41   |

Dimensions in mm

# Data Sheet for Linear Sensors

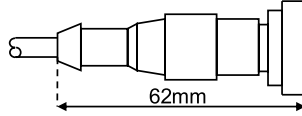
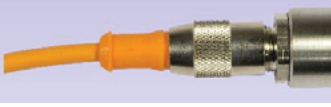


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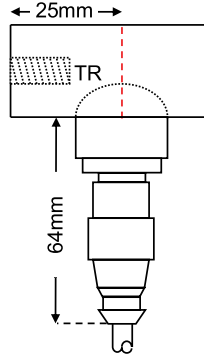
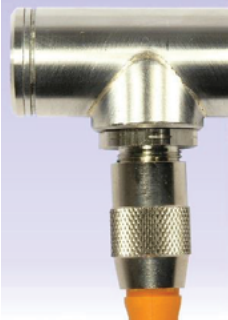
## Cables

**KS05 connector with cable fitted, axial exit**



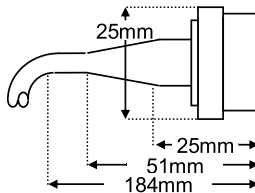
Cable length = 5m  
Operating temperature range = -25°C to 90°C  
Maximum static pressure = 1000kPa

**KSR05 connector with cable fitted, radial exit**



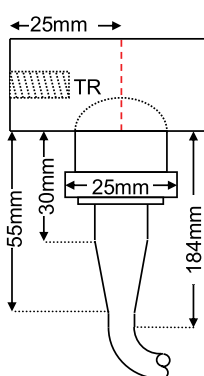
Cable length = 5m  
Operating temperature range = -25°C to 90°C  
Maximum static pressure = 1000kPa  
TR = M5x0.8, 11mm

**KI integrated sheathed cable**



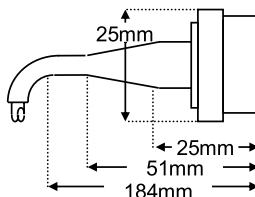
Cable length = 600mm to 7m  
Operating temperature range = -40°C to 100°C  
Maximum static pressure = 3MPa

**KIR integrated sheathed cable, radial exit**



Cable length = 600mm to 7m  
Operating temperature range = -40°C to 100°C  
Maximum static pressure = 3MPa  
TR = M5x0.8, 11mm

**KE extended sheathed cable**



Cable length = 1m to 100m  
Cable sleeve length = 600mm  
Operating temperature range\* = -40°C to 90°C  
Maximum static pressure\* = 2MPa

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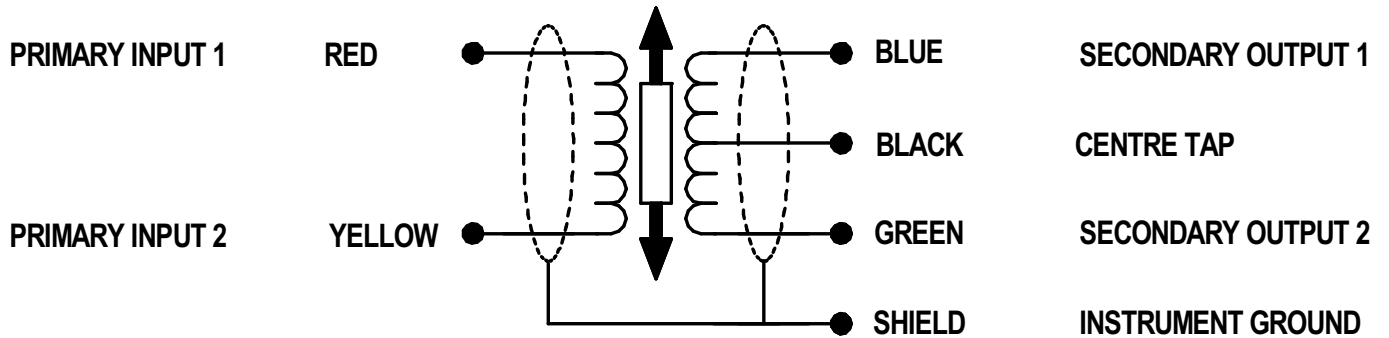


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## Electrical connection

### CONNECTION DETAILS



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