

Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic)

Series RC35



The displacement sensors RC35 are used in applications where a robust linear transducer with excellent linearity, lifetime and ball joints is recommended.

- For harsh environmental conditions up to IP67
- Free installation by double-sided ball joints
- Long lifetime and excellent linearity
- Measuring lengths from 50 mm to 750 mm

For example the IP67 version is designed for mobile hydraulics and commercial vehicles for heavy duty applications. The linear movement is detected by a push rod guided on one side.

Electrical Data

| | |
|--|--|
| Effective electrical travel (+3/-0 mm) 1.) | 50 / 100 / 130 / 150 / 175 / 200 / 225 / 275 / 300 / 360 / 375 / 400 / 450 / 500 / 600 / 750 |
| Total electrical travel (± 1 mm) 1.) | 53 / 103 / 133 / 153 / 178 / 204 / 229 / 279 / 304 / 364 / 380 / 406 / 457 / 508 / 609 / 762 |
| Total resistance 1.) | 5 kOhm (50..600 mm) / 10 kOhm (750 mm) |
| Resistance tolerance | ± 20 % |
| Independent linearity (best straight line) 1.) | ± 0.05 % |
| Theoretical resolution 1.) | Almost infinite |
| Repeatability 1.) | ≤ 0.01 mm |
| Max. / recommended wiper current 1.) | 1 mA (@40 °C, 1 min in case of failure) / < 0.1 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 (mm) 1.) | 59 / 109 / 139 / 159 / 184 / 210 / 235 / 285 / 310 / 370 / 386 / 412 / 463 / 518 / 619 / 772 |
| Lifetime (90 % effective electrical travel) 2.) | > 25 million meters or 100 million movements (the smaller value applies) |
| Max. operational speed | ≤ 5 m/s |
| Operational force @ RT 1.) 2.) | < 15 N (IP65) / < 30 N (IP67) |
| Operational temperature | -30 °C up to +100 °C |
| Storage temperature | -50 °C up to +120 °C |
| Protection grade (IEC60529) | IP65 (optional IP67) |
| 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 version IP65 (mm) | 180.5 / 230.5 / 260.5 / 280.5 / 305.5 / 331.5 / 356.5 / 406.5 / 431.5 / 497.5 / 513.5 / 539.5 / 590.5 / 665.5 / 766.5 / 919.5 |
| Housing length version IP67 (mm) | 198 / 248 / 278 / 298 / 323 / 349 / 374 / 424 / 449 / 515 / 531 / 557 / 608 / 683 / 784 / 937 |

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Mechanical Data, Environmental Conditions, Miscellaneous

| | |
|-------------------|--|
| Material housing | Aluminium, Nylon 66 G (IP65) / Aluminium (IP67) |
| Material push rod | Stainless steel AISI 303 (IP65) / C45 steel, chromed 20 µm (IP67) |
| Connection type | Connector M16 5-pole male DIN45322, cable PVC 3-pole 3 x 0.25 1 m (IP65) / Connector M12 4-pole male (IP67) |
| Mounting parts | 2 x ball joints 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

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.

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| Order Code | | | | | | |
|---|---|--|------------|------------------|-------------|---------------|
| Description | Selection: standard=black/bold , possible <i>options=grey/italic</i> | | | | | |
| Series: | RC35 | | | | | |
| Effective electrical travel: | | | | | | |
| 50 mm | 50 | | | R5K | | |
| 100 mm | 100 | | | R5K | | |
| 130 mm | 130 | | | R5K | | |
| 150 mm | 150 | | | R5K | | |
| 175 mm | 175 | | | R5K | | |
| 200 mm | 200 | | | R5K | | |
| 225 mm | 225 | | | R5K | | |
| 275 mm | 275 | | | R5K | | |
| 300 mm | 300 | | | R5K | | |
| 360 mm | 360 | | | R5K | | |
| 375 mm | 375 | | | R5K | | |
| 400 mm | 400 | | | R5K | | |
| 450 mm | 450 | | | R5K | | |
| 500 mm | 500 | | | R5K | | |
| 600 mm | 600 | | | R5K | | |
| 750 mm | 750 | | | R10K | | |
| Electrical connection: | | | | | | |
| Standard 5-pole M16 connector (IP65) | | | S | | | |
| <i>Option 4-pole M12 connector (IP67)</i> | | | <i>S</i> | | | |
| Cable 3-pole length 1 m (IP65) | | | K | | | |
| <i>Option cable length in m (IP65)</i> | | | <i>Kxx</i> | | | |
| Total resistance: | | | | | | |
| Standard depends on electrical travel | | | | see above | | |
| Resistance tolerance: | | | | | | |
| ±20 % | | | | | W20% | |
| Independent linearity: | | | | | | |
| Standard ±0.05 % | | | | | | L0,05% |
| Protection class: | | | | | | |
| Standard IP65 (with 5-pole M16 or cable) | | | | | | - |
| <i>Option IP67 (only with 4-pole M12)</i> | | | | | | <i>IP67</i> |

Accessory (not included in delivery):

For IP65 versions:

- Mating connector (STEM16) #110906: M16 thread, 5-pole, IP67, straight, shielded (STE M16 5POL IP67 G S)
- Mating connector (STEM16) #114462: M16 thread, 5-pole, IP67, angled, shielded (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)

For IP67 versions:

- Mating connector (STEM12) #125301: M12 thread, 4-pole, IP67, straight, shielded (STE M12 4POL IP67 G S)
- Mating connector with cable (STKM12) #125740: M12 thread, 4-pole, IP67, angled, shielded, 2 m (STK M12 4POL IP67 W GS 2M AWG22)
- Mating connector with cable (STKM12) #127286: M12 thread, 4-pole, IP67, straight, shielded, 2 m (STK M12 4POL IP67 G GS 2M AWG22)

More connectors with and without cable on request. Take a look at data sheet STEM16 for connector without cable or STKM16 for connector with cable and series STEM12 for connector without cable or STKM12 for connector with cable.

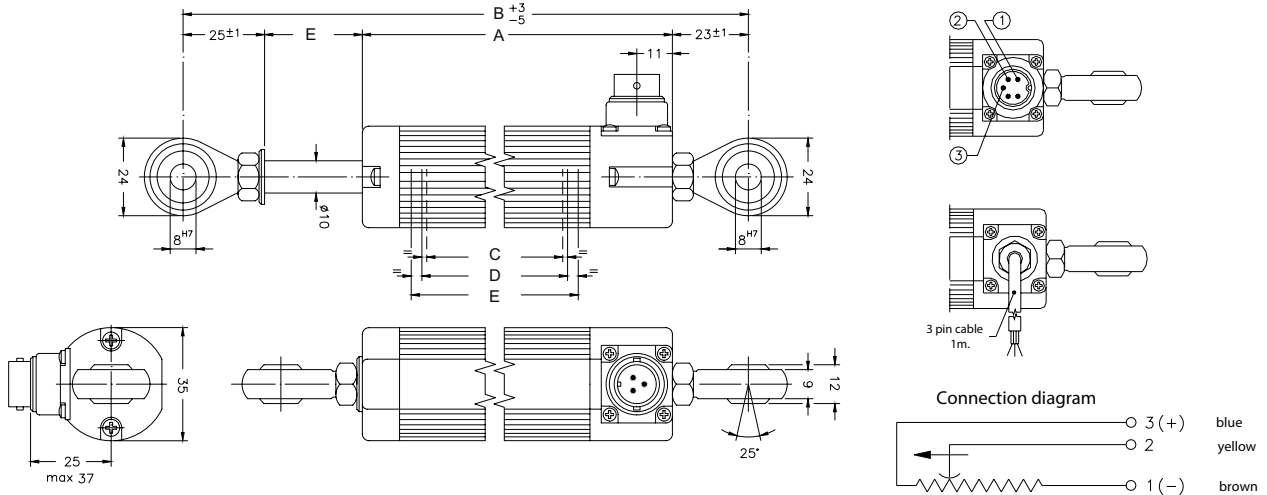
For higher quantities or on-going demand, additional options are available as described below on request

For example:

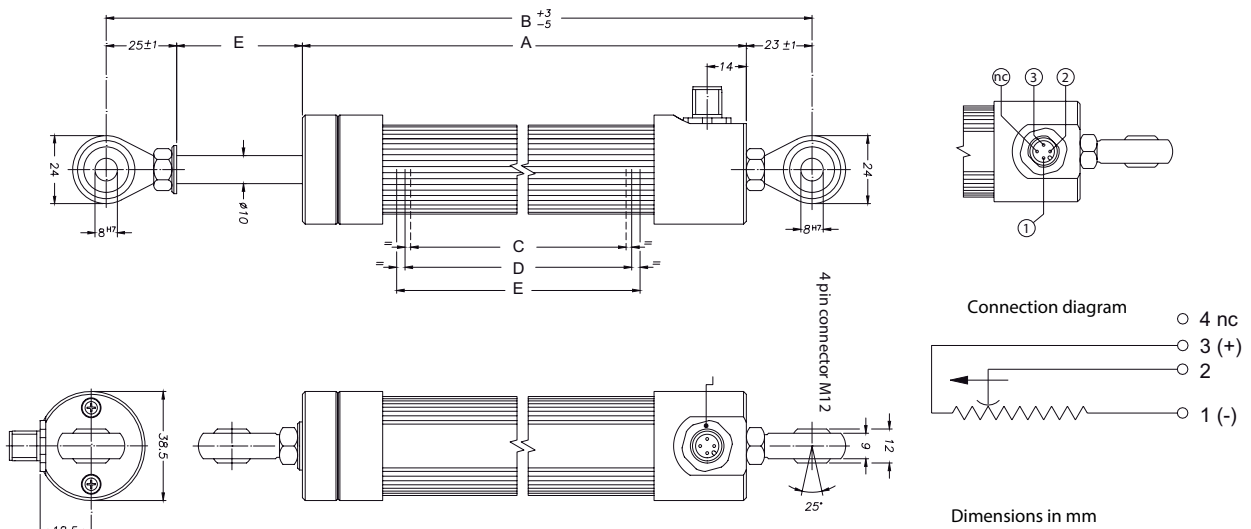
- Special connectors, assembled cables with / without connector
- Special axis length and much more

Drawing

Construction RC35 IP65



Construction RC35 IP67



Dimensions

| | | | | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C: Effective electrical travel (+3/-0 mm) | 50 | 100 | 130 | 150 | 175 | 200 | 225 | 275 | 300 | 360 | 375 | 400 | 450 | 500 | 600 | 750 |
| D: Total electrical travel (± 1 mm) | 53 | 103 | 133 | 153 | 178 | 204 | 229 | 279 | 304 | 364 | 380 | 406 | 457 | 508 | 609 | 762 |
| E: Mechanical stroke (mm) | 59 | 109 | 139 | 159 | 184 | 210 | 235 | 285 | 310 | 370 | 386 | 412 | 463 | 518 | 619 | 772 |
| A: Housing length version IP65 (mm) | 180.5 | 230.5 | 260.5 | 280.5 | 305.5 | 331.5 | 356.5 | 406.5 | 431.5 | 497.5 | 513.5 | 539.5 | 590.5 | 665.5 | 766.5 | 919.5 |
| A: Housing length version IP67 (mm) | 198 | 248 | 278 | 298 | 323 | 349 | 374 | 424 | 449 | 515 | 531 | 557 | 608 | 683 | 784 | 937 |
| B: Min. distance ball joints IP65 (mm) | 227 | 277 | 307 | 327 | 352 | 378 | 403 | 453 | 478 | 554 | 560 | 586 | 637 | 712 | 813 | 966 |
| B: Min. distance ball joints IP67 (mm) | 246 | 296 | 326 | 346 | 371 | 397 | 422 | 472 | 497 | 563 | 579 | 605 | 656 | 731 | 832 | 985 |