

# 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 heavy-duty commercial vehicles. Linear movement is detected by a single guided push rod.

### 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 ( $\pm 1$ 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	$\pm 20$ %
Independent linearity (best straight line) 1.)	$\pm 0.05$ %
Theoretical resolution 1.)	Almost infinite
Repeatability 1.)	$\leq 0.01$ mm
Max. / recommended wiper current 1.)	1 mA (@40 °C, 1 min in case of failure) / < 0.1 $\mu$ A
Power rating @40 °C (0 W @120 °C)	$\leq 3$ W
Isolation voltage 1.)	< 100 $\mu$ 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	$\leq 5$ 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: <b>standard=black/bold</b> , possible <i>options=grey/italic</i>					
<b>Series:</b>	<b>RC35</b>					
<b>Effective electrical travel:</b>						
50 mm	<b>50</b>			<b>R5K</b>		
100 mm	<b>100</b>			<b>R5K</b>		
130 mm	<b>130</b>			<b>R5K</b>		
150 mm	<b>150</b>			<b>R5K</b>		
175 mm	<b>175</b>			<b>R5K</b>		
200 mm	<b>200</b>			<b>R5K</b>		
225 mm	<b>225</b>			<b>R5K</b>		
275 mm	<b>275</b>			<b>R5K</b>		
300 mm	<b>300</b>			<b>R5K</b>		
360 mm	<b>360</b>			<b>R5K</b>		
375 mm	<b>375</b>			<b>R5K</b>		
400 mm	<b>400</b>			<b>R5K</b>		
450 mm	<b>450</b>			<b>R5K</b>		
500 mm	<b>500</b>			<b>R5K</b>		
600 mm	<b>600</b>			<b>R5K</b>		
750 mm	<b>750</b>			<b>R10K</b>		
<b>Electrical connection:</b>						
<b>Standard 5-pole M16 connector (IP65)</b>			<b>S</b>			
<i>Option 4-pole M12 connector (IP67)</i>			<i>S</i>			
<b>Cable 3-pole length 1 m (IP65)</b>			<b>K</b>			
<i>Option cable length in m (IP65)</i>			<i>Kxx</i>			
<b>Total resistance depends on electrical travel</b> (e.g. R5K means 5 kOhm)				<b>see above</b>		
<b>Resistance tolerance:</b> <b>±20 %</b>					<b>W20%</b>	
<b>Independent linearity:</b> <b>Standard ±0.05 %</b>						<b>L0,05%</b>
<b>Protection class:</b> <b>Standard IP65 (with 5-pole M16 or cable)</b>						<b>-</b>
<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.

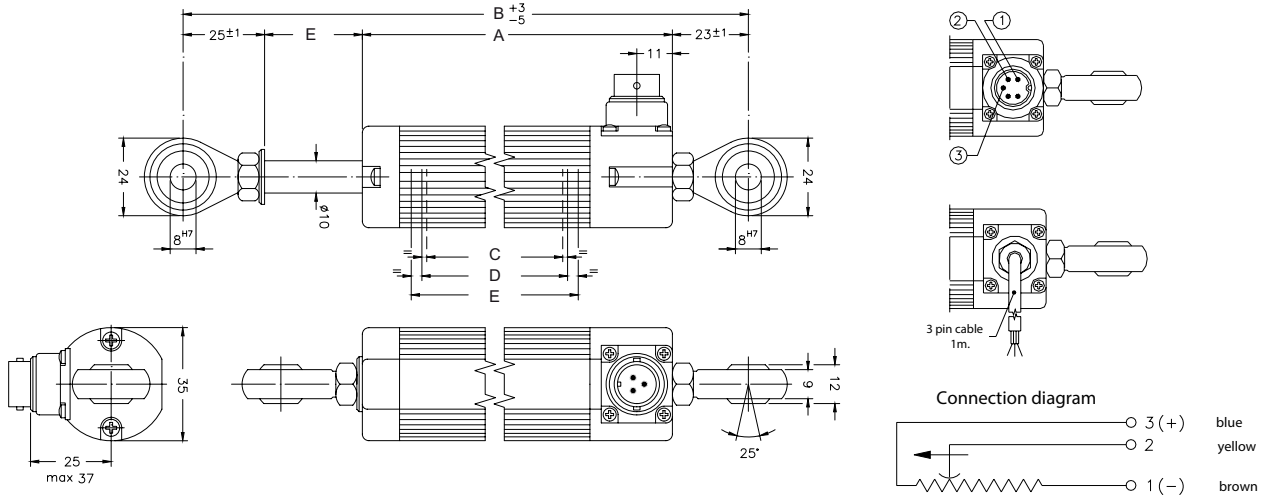
### For higher quantities or on-going demand, additional options are available as described below on request

For example:

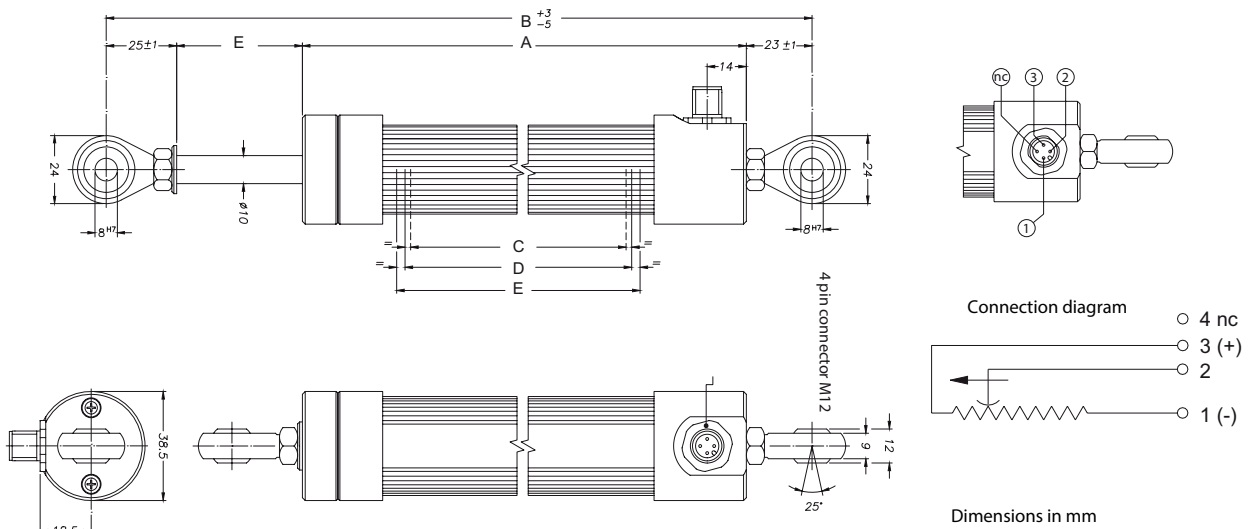
- Special connectors, assembled cables with / without connector
- Special axis length and much more

### 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 ( $\pm 1$ 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