

# 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 ( $\pm 1$ 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..+100 °C
Storage temperature	-50..+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 options=grey/cursive					
<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:</b>						
<b>Standard depends on electrical travel</b>				<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.

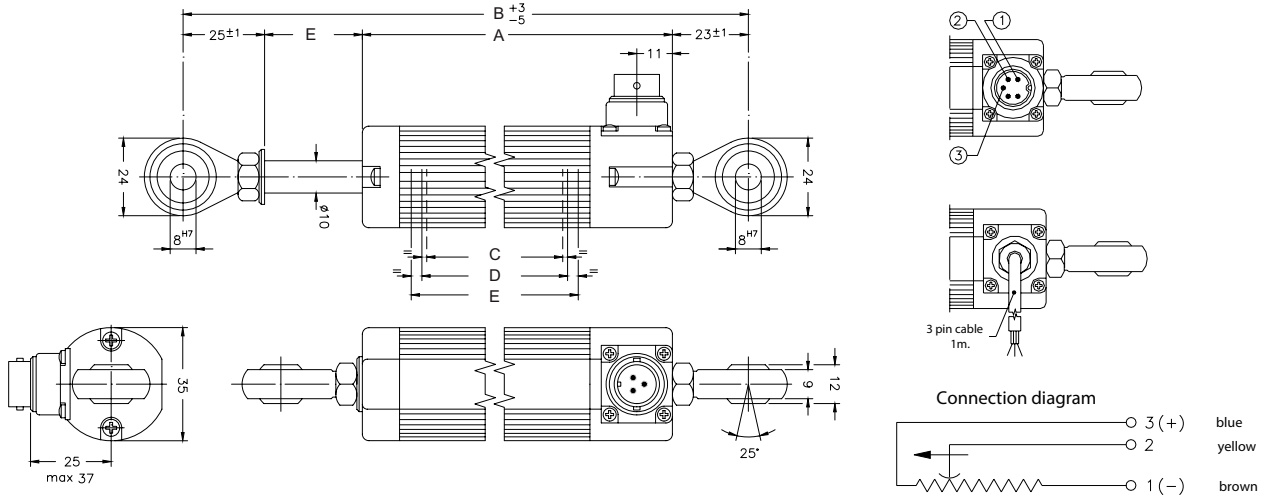
### For higher quantities or on-going demand, additional options are available as described below on request

For example:

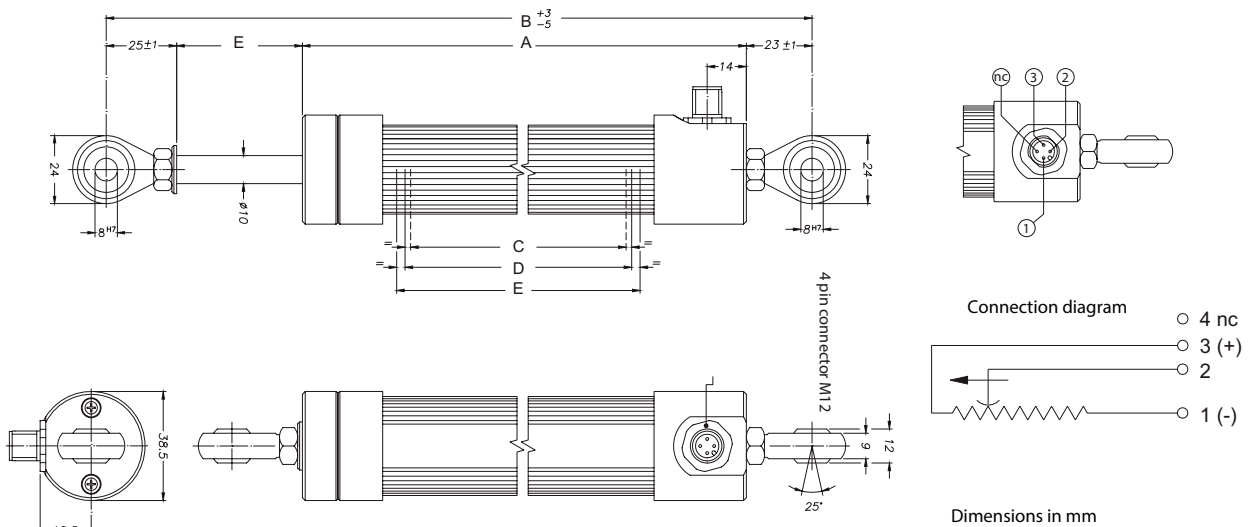
- Special connectors, assembled cables with / without connector
- Special axis length and much more

### 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