

Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic)

Series RC20

With Mounting Brackets



RC20
Design M
IP60

RC20
Design M
IP67

With Ball Joints



RC20
Design G
IP60

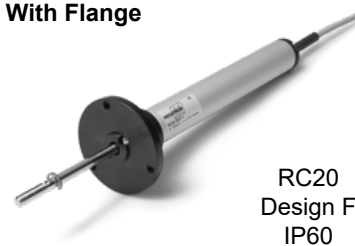
RC20
Design G
IP67

The RC20 displacement sensors are used in applications where a single push rod is recommended from 10 to 300 mm. Three designs cover a wide range of applications.

- Linear potentiometer (conductive plastic) with almost infinite resolution
- Measuring lengths from 10 mm to 300 mm
- Long life span (100 million movements)
- In IP60 with cable and IP67 with connector

The ball joint version compensates movements transversely to the push rod, so that non-linear movements can also be coupled easily and without stress. G and M versions are available with IP67 protection and are suitable for use in harsh environments, such as those often found in mobile machinery.

With Flange



RC20
Design F
IP60

Electrical Data	RC20-10	RC20-25	RC20-50	RC20-75	RC20-100	RC20-125	RC20-150	RC20-175	RC20-200	RC20-250	RC20-300
Effective electrical travel (mm +1/-0) 1.)	10	25	50	75	100	125	150	175	200	250	300
Total electrical travel (mm +1/-0) 1.)	11 ±1	26 ±1	51 ±1	76 ±1	101 ±1	126 ±1	151 ±1	176 ±1	201 ±1	251 ±1	301 ±1
Total resistance 1.)	1 kOhm	1 kOhm	2 kOhm	3 kOhm	4 kOhm	5 kOhm	6 kOhm	7 kOhm	8 kOhm	10 kOhm	12 kOhm
Resistance tolerance	±20%										
Independent linearity (best straight line) 1.)	±0.5 %	±0.2 %	±0.1 %			±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) / < 1 µA										
Power rating @40 °C (0 W @120 °C)	≤0.3W	≤0.8W	≤1.6W	≤2.6W	≤ 8 W						
Isolation voltage 1.)	< 100 µA @500 VAC, 1bar, 2s										
Isolation resistance 1.)	100 MOhm @500 VDC, 1bar, 2s										

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Mechanical Data, Environmental Conditions,	RC20-10	RC20-25	RC20-50	RC20-75	RC20-100	RC20-125	RC20-150	RC20-175	RC20-200	RC20-250	RC20-300
Mechanical stroke 1.)	10 +5	25 +5	50 +5	75 +5	100 +5	125 +5	150 +5	175 +5	200 +5	250 +5	300 +5
Lifetime (90 % effective electrical travel) 2.)	> 25 million meters or 100 million movements (the smaller value applies)										
Max. operational speed	< 10 m/s for IP60 / ≤ 3.5 m/s for IP67										
Operational force @ RT 1.) 2.)	< 0.5 N for IP60 / < 20 N for IP67										
Operational temperature	-30 °C up to +100 °C										
Storage temperature	-50 °C up to +120 °C										
Protection grade (IEC60529)	IP60 / IP67										
Vibration (IEC 68-2-6, Test Fc)	20 g (5..2000 Hz, 0.75 mm, 12h)										
Shock (IEC 68-2-27, Test Ea)	50 g, halfsine, 11 ms (18x)										
Housing length design M in IP60 (±1 mm)	-	83.5	108.5	133.5	158.5	183.5	208.5	233.5	258.5	308.5	358.5
Housing length design M in IP67 (±1 mm)	-	106.5	131.5	156.5	181.5	206.5	231.5	256.5	281.5	331.5	381.5
Housing length design G in IP60 (±1 mm)	-	110	135	160	185	210	235	260	285	335	385
Housing length design G in IP67 (±1 mm)	113.5	128.5	153.5	178.5	203.5	228.5	253.5	278.5	303.5	353.5	403.5
Housing length design F in IP60 (±1 mm)	-	83.5	108.5	133.5	158.5	183.5	208.5	233.5	258.5	308.5	358.5
Mounting parts (included in delivery)	Design M: 2 x mounting brackets / design G: 2 x ball joints										
Material housing	Aluminium, Nylon 66 G 25 IP60 / Aluminium IP67										
Material push rod	Stainless steel										
Connection type	IP60 types with round cable 1 m for designs M, G, F (Ø Leads: 3 x 0.20 mm ²) IP67 types with connector for design M: 4-pole M12 / design G: 3-pole M8										

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

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Series RC20

Order Code

Description	Selection: standard=black/bold , possible <i>options=grey/italic</i>						
Series:	RC20						
Effective electrical travel:							
<i>Option 10 mm (only design G in IP67 with connector)</i>	<i>10</i>				<i>R1K</i>		<i>L0,5%</i>
25 mm	25				R1K		L0,2%
50 mm	50				R2K		L0,1%
75 mm	75				R3K		L0,1%
100 mm	100				R4K		L0,1%
125 mm	125				R5K		L0,05%
150 mm	150				R6K		L0,05%
175 mm	175				R7K		L0,05%
200 mm	200				R8K		L0,05%
250 mm	250				R10K		L0,05%
300 mm	300				R12K		L0,05%
Construction:							
Mounting Brackets				M			
Ball Joints				G			
Flange (only in IP60 with cable)				F			
Electrical connection:							
Round cable 1 m (IP60 version, design M,G,F)					-		
<i>Option cable length in m (IP60 version)</i>					<i>Kxx</i>		
Connector (IP67 version, design M,G)					S		
Design M: 4-pol. M12							
Design G: 3-pol. M8							
Total resistance depends on electrical travel (e.g. R3K means 3 kOhm)						see above	
Resistance tolerance: ±20%						W20%	
Independent linearity depends on electrical travel (e.g. L0,2 means ±0.2%)							see above
Protection class:							
IP60 for design M, G, F with cable							-
IP67 for design M, G with connector							IP67

Accessory (not included in delivery):

Construction M: Mating connector (STEM12) #125301: M12 thread, 4-pole, IP67, straight, shielded (STE M12 4POL IP67 G S)
 Construction G: Mating connector with cable (STKM8) #125303: M8 thread, 3-pole, IP67, straight, not shielded, 2 m (STK M8 3POL IP67 G NS 2M AWG22)

More connectors with and without cable on request. Take a look at data sheet 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

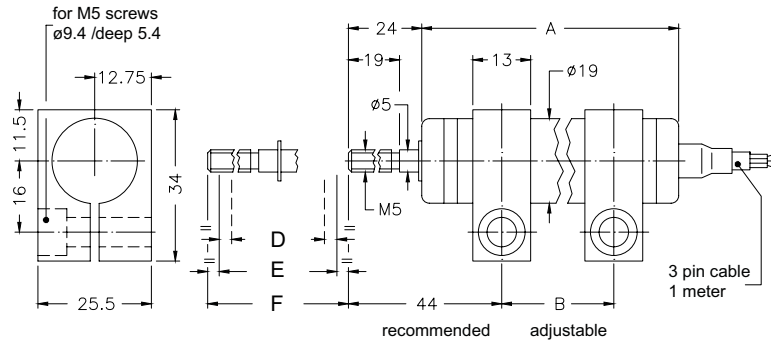
For example:

- Assembled leads and cables with / without connector
- Probe, special axis length and much more

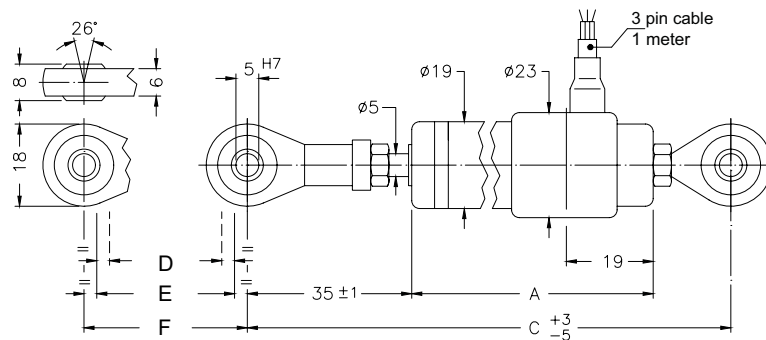
Note: When calibrating the linear transducer, be careful to set the stroke so that the output does not drop below 1 % or rise beyond 99 % of the supply voltage.

Drawing RC20 - IP60

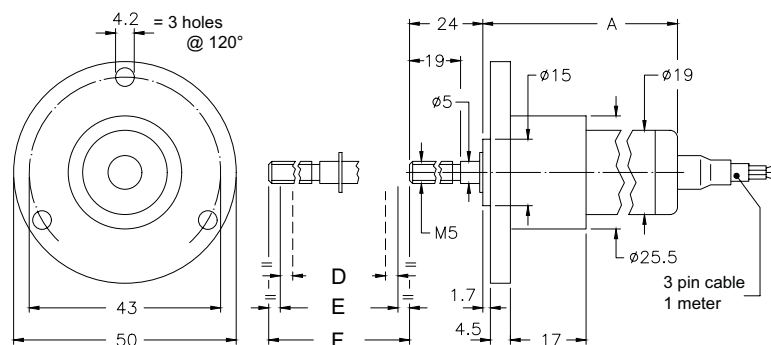
Construction M - Mounting Brackets



Construction G - Ball Joints



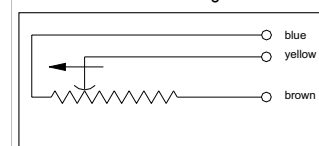
Construction F - Flange



Dimensions in mm

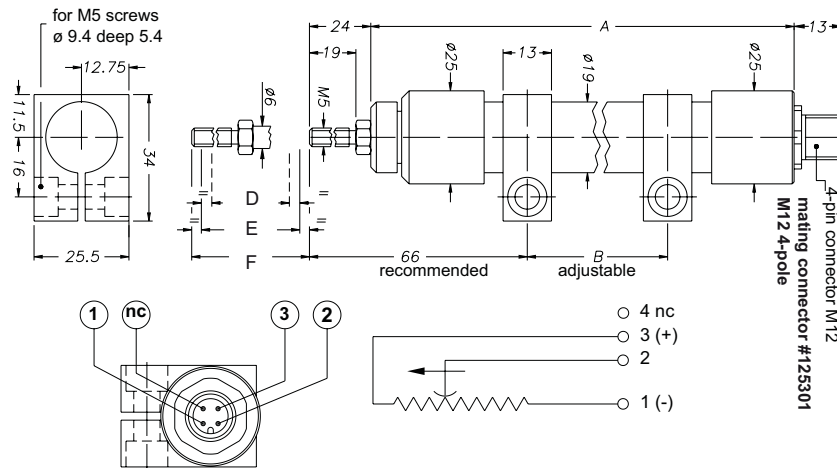
Dimensions	RC20-25	RC20-50	RC20-75	RC20-100	RC20-125	RC20-150	RC20-175	RC20-200	RC20-250	RC20-300
A [mm] construction M	83.5	108.5	133.5	158.5	183.5	208.5	233.5	258.5	308.5	358.5
A [mm] construction G	110	135	160	185	210	235	260	285	335	385
A [mm] construction F	83.5	108.5	133.5	158.5	183.5	208.5	233.5	258.5	308.5	358.5
B [mm] mounting brackets	47	72	97	122	147	172	197	222	272	322
C [mm] ball joints	163	188	213	238	263	288	313	338	388	438
D [+1-0 mm] effective el. travel	25	50	75	100	125	150	175	200	250	300
E [±1 mm] total el. travel	26	51	76	101	126	151	176	201	251	301
F [+5 mm] mech. travel	25	50	75	100	125	150	175	200	250	300

Connection diagram

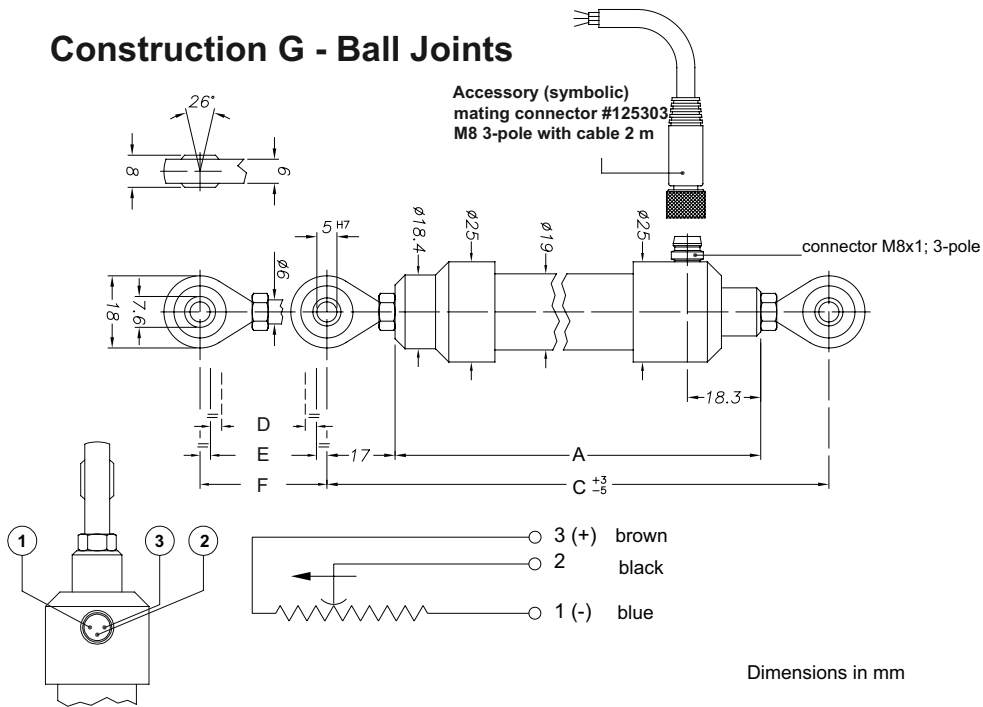


Drawing RC20 - IP67

Construction M - Mounting Brackets



Construction G - Ball Joints



Dimensions	RC20-10	RC20-25	RC20-50	RC20-75	RC20-100	RC20-125	RC20-150	RC20-175	RC20-200	RC20-250	RC20-300
A [± 1 mm] construction M	-	106.5	131.5	156.5	181.5	206.5	231.5	256.5	281.5	331.5	381.5
A [± 1 mm] construction G	113.5	128.5	153.5	178.5	203.5	228.5	253.5	278.5	303.5	353.5	403.5
B [mm] construction M	-	21	46	71	96	121	146	171	196	246	296
C [mm] construction G	148	163	188	213	238	263	288	313	338	388	438
D [+1/-0 mm] effective el. travel	10*	25	50	75	100	125	150	175	200	250	300
E [± 1 mm] total el. travel	11*	26	51	76	101	126	151	176	201	251	301
F [+5 mm] total mech. travel	15*	30	55	80	105	130	155	180	205	255	305

*only for construction G