



CLS0950 Ultra-slim range

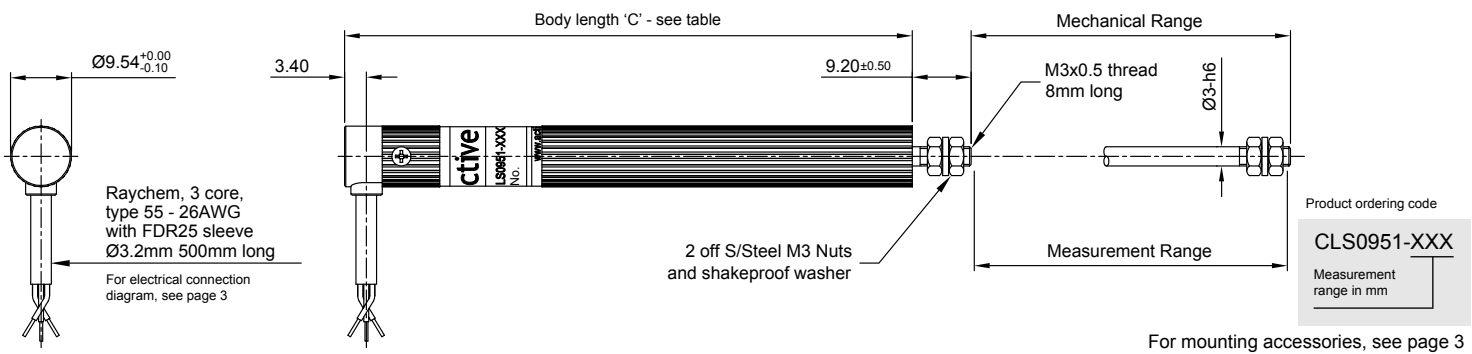


These high performance ultra slim linear potentiometers are designed for the most demanding control and measurement applications. They are constructed from aluminum alloy and stainless steel for high strength and durability, yet are lightweight in design, making them ideal for industrial, automotive and motorsport applications.

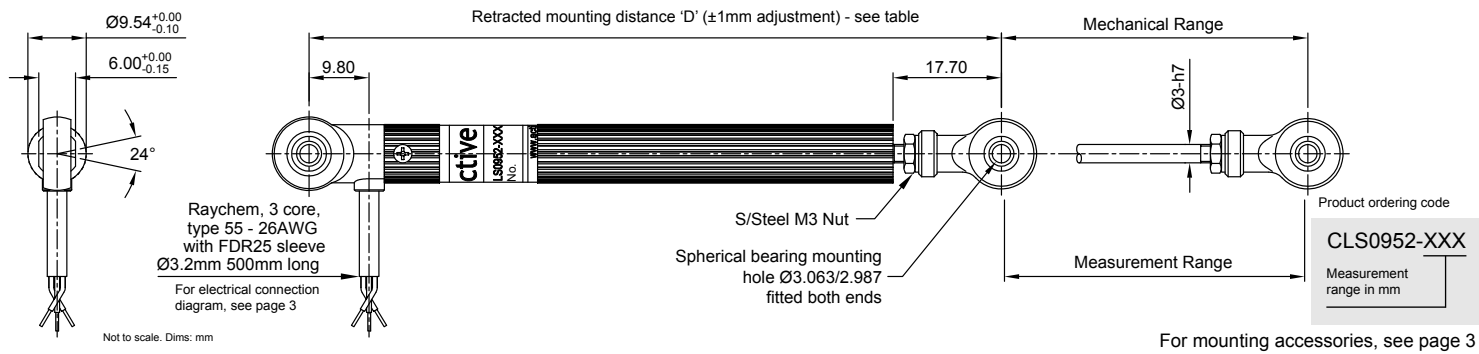
- Measurement Range: 10mm to 150mm (6")
- Ultra slim compact 9.54mm body Ø
- 3.0mm dia. operating shaft
- Sealed as standard
- Raychem cabling
- Choice of mounting
- Very long operational life
- Models available from stock

Model dimensions and mounting

CLS0951 - body clamp mounting

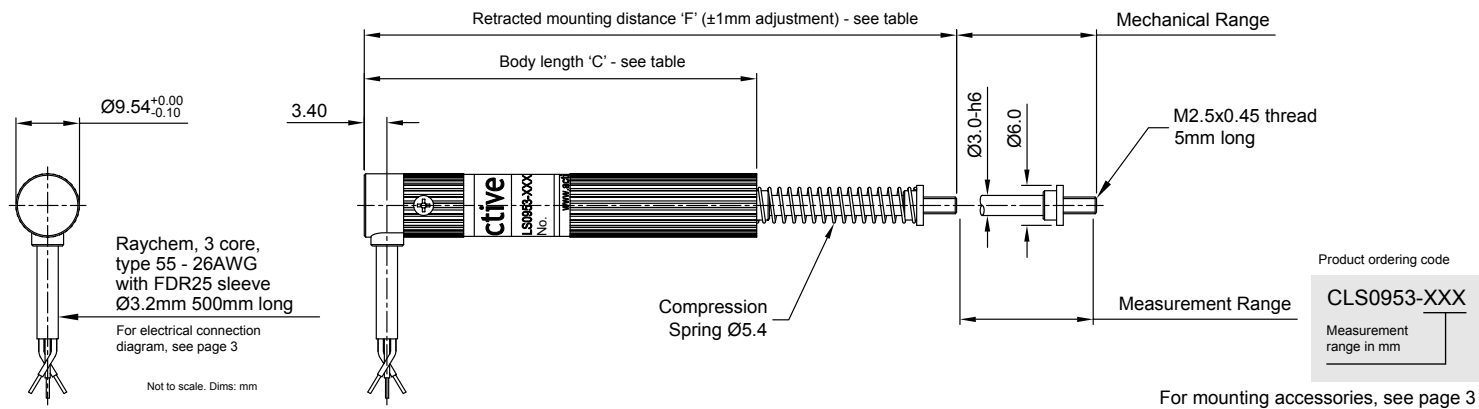


CLS0952 - rod-end mounting

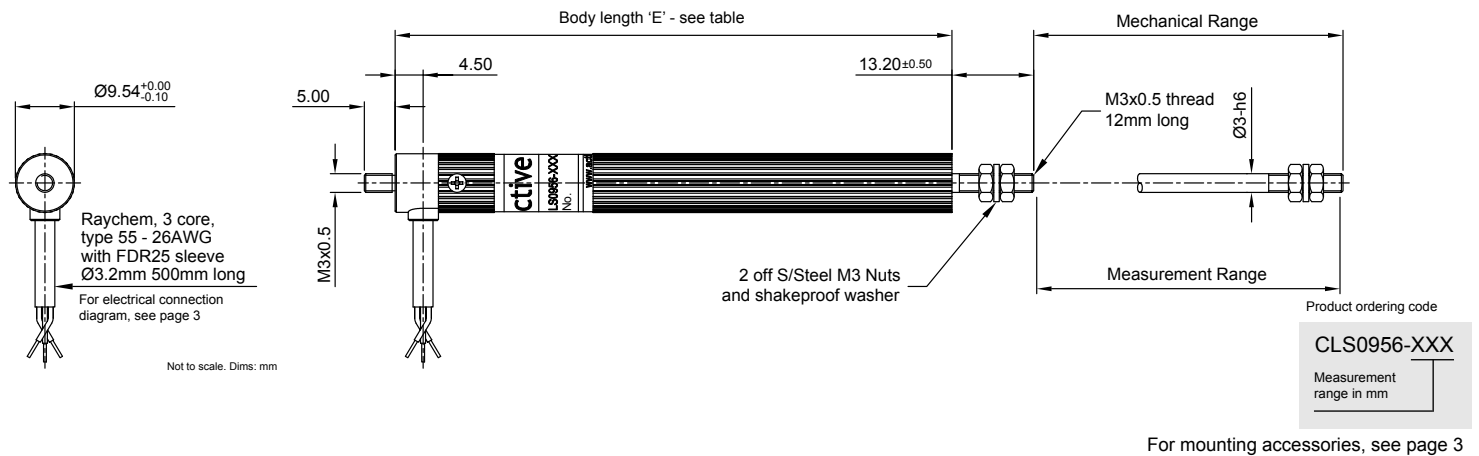


CLS0953 - sprung loaded shaft

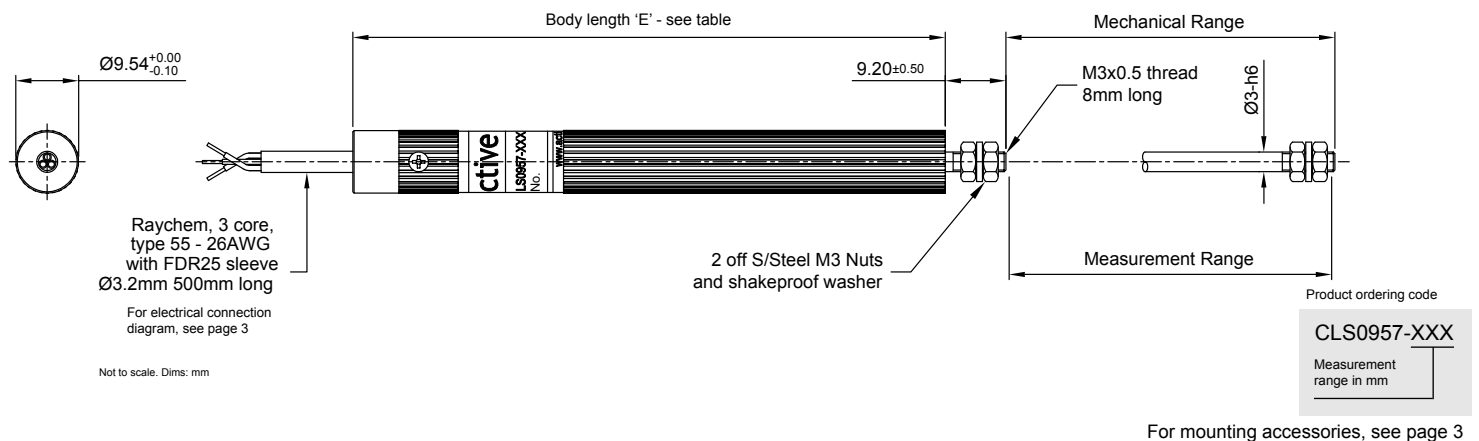
Available in measurement ranges 10, 20, 30, 40 & 50mm only



CLS0956 - M3 threaded mounting



CLS0957 - body clamp/rear cable exit

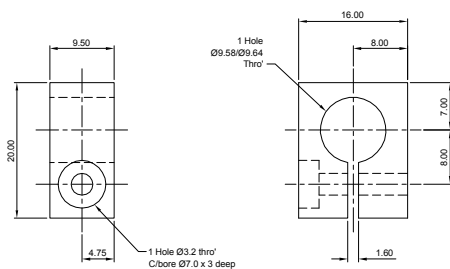


Electrical & mechanical information for CLS0950 range

Measurement range ($\pm 0.5\text{mm}$)	10	20	30	40	50	75	100	125	150	mm	
Retracted mounting distance (D)	78	83	93	103	113	138	163	188	213	mm	
Retracted mounting distance (F)	81	89	102	115	128	-	-	-	-	mm	
Body length (C)	54	59	69	79	89	114	139	164	189	mm	
Body length (E)	55	60	70	80	90	115	140	165	190	mm	
Resistance (Typical)	0.4	0.8	1.2	1.6	2	3	4	5	6	kohms	
Non-linearity	$< \pm 0.25$					$< \pm 0.15$					%
Applied voltage	< 15	< 22	< 30	< 37	< 45	< 65	< 90	< 112	< 135	Volts	
Wiper load	> 500										kohms
Mechanical range	Measurement range +1										mm
Shaft velocity	< 10										m/sec
Insulation resistance (at 500V dc.)	> 100										Mohms
Operating temp. range	-30° to $+125^\circ$										$^\circ\text{C}$
Sealing	CLS0951, 52, 56, 67 - IP66					CLS0953 - IP50					
Shaft operating force	200 (typical)										grams
Weight (approx.)	18.9	20.5	22.1	23.7	25.5	29.5	33.5	37.5	41.5	grams	
Materials	Case - Aluminium 6063 - Sulphuric acid anodised Shaft - Stainless steel - 303 series Rod end bearing - Aluminium 6262 housing & Stainless steel ball										

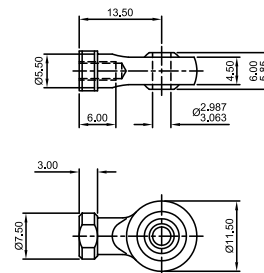
Mounting accessories

Body mounting clamps. Part no: PT0950-0109



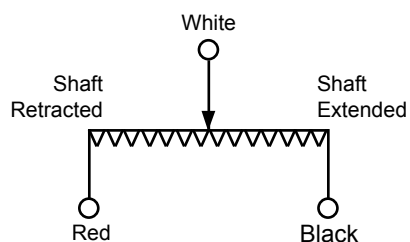
Material:
Aluminium Alloy, anodised black.

3mm rod-end. Part no: PT0952-0104-19



Material:
Housing - Aluminium Alloy, anodised black.
Ball - Steel BS970 230M07, electroless nickel plated
Race - Gr nylon

Electrical connections (all models)



Note 1

Incorrect wiring may cause internal damage to the sensor.

Note 2

Circuit recommendation: Due to the presence of a high contact resistance, these potentiometers should be used as voltage dividers only. Operation with wiper circuits of low impedance will degrade the output signal.

Other CLS linear position sensor models available

CLS3200

- Robust housing
- Up to 1100mm (44") stroke
- Choice of mounting
- 32mm body Ø



CLS1300

- Robust housing
- Up to 350mm (14") stroke
- Choice of mounting
- 13mm body Ø



CLS1900

- Robust housing
- Up to 500mm (20") stroke
- Choice of mounting
- 19mm body Ø



Contact details

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Doc. Ref: WS-CLS0950-1



CLS1300 slim bodied range

These high performance, high temperature linear potentiometers are designed for the most demanding control and measurement applications. They are constructed from aluminum alloy and stainless steel for high strength and durability, yet are lightweight in design, making them ideal for industrial, automotive and motor racing measurement applications. The sensors are sealed to IP66 as standard and feature fire and chemical resistant high temperature Raychem FDR-type 55-24 signal cabling ensuring total system reliability. The physical design of these slim body linear potentiometers enables their survival in the severest of environmental conditions.

- Measurement range: 10mm (0.4") to 350mm (14")
- Ultra compact 13mm (1/2") body Ø
- Low noise output signal
- Sealed as standard
- Raychem cabling
- Choice of mounting
- Very long operational life
- Models available from stock

CLS1310 ultra compact series

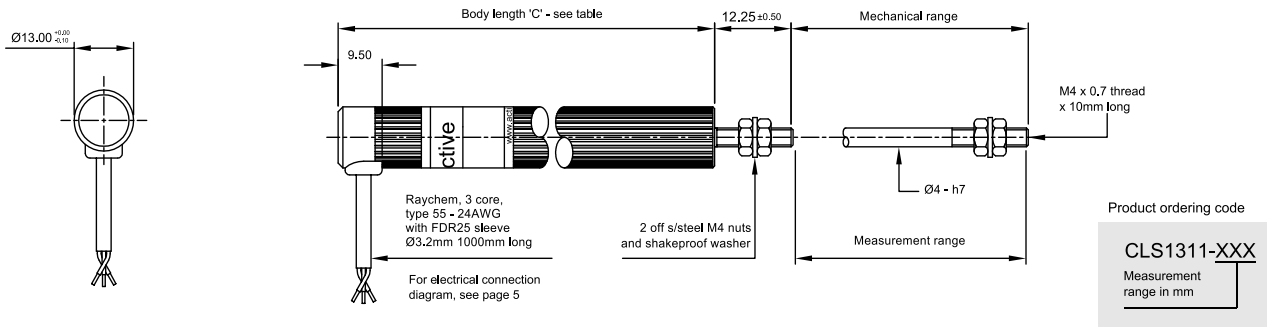
Model features

- Measurement range: 10mm (0.4") to 75mm (3")
- Ultra compact 13mm (1/2") body Ø
- Low noise output signal
- Sealed as standard
- Raychem cabling
- Choice of mounting



Model dimensions and mounting

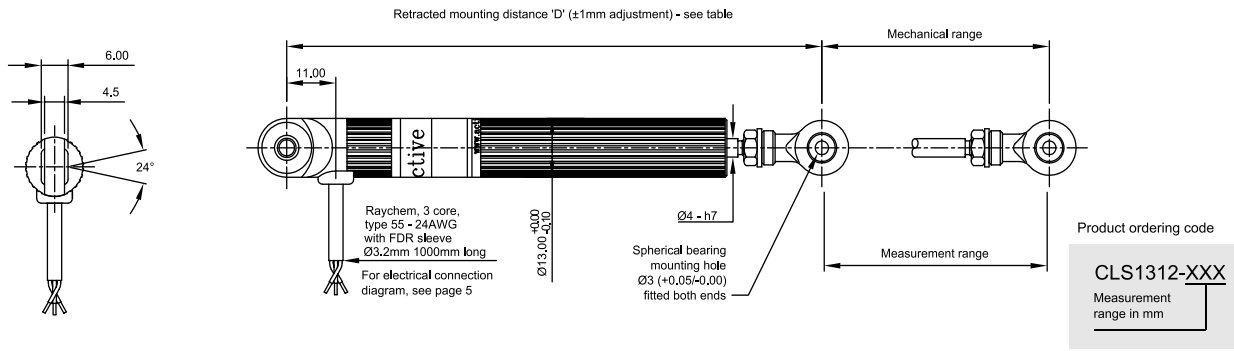
CLS1311 - body clamp mounting



Not to Scale, Dims: mm

For mounting accessories, see page 4

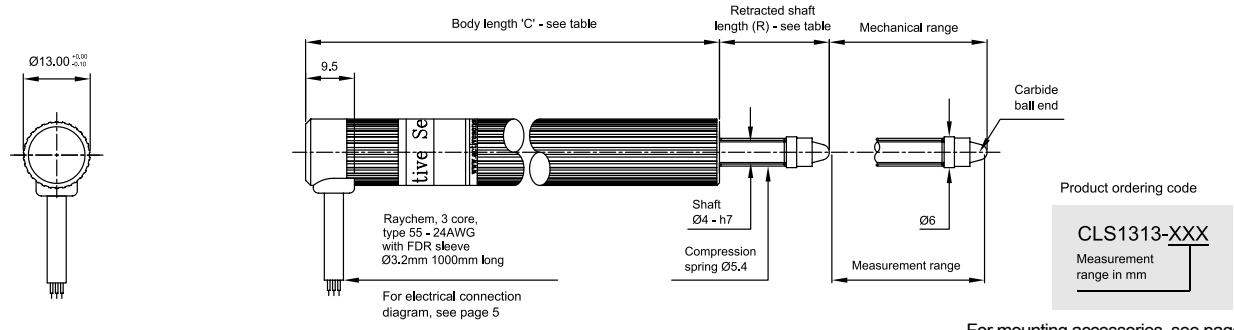
CLS1312 - rod-end mounting



Not to Scale, Dims: mm

For mounting accessories, see page 4

CLS1313 - sprung loaded shaft



Not to Scale, Dims: mm

For mounting accessories, see page 4

Electrical & mechanical information for CLS1310 range

Measurement range (±0.5mm)	10	25	30	50	75	mm
Retracted mounting distance (D)	-	95	100	120	145	mm
Retracted shaft length (R)	16.4	21.5	22.5	38.5	-	mm
Body length (C)	53	68	73	93	118	mm
Resistance (Typical)	0.4	1	1.2	2	3	kohms
Non-linearity			<±0.25			%
Applied voltage	<12	<22	<27	<45	<67	Volts
Wiper load			>500			kohms
Mechanical range	Measurement range + 1					mm
Shaft velocity	<10					m/sec
Insulation resistance (at 500V dc.)	>100					Mohms
Operating temp. range	-30° to +125°					°C
Sealing	CLS1311, 12 - IP66		CLS1313 - IP50			
Shaft operating force	200 (typical)					grams
Shaft operating force (CLS1313)	150 - 350 (typical)					
Weight (approx.)	52	60	61	66	72	grams
Materials	Case - Aluminium 6063 - Sulphuric acid anodised Shaft - Stainless steel - 303 series Rod end bearing - Aluminium 6262 housing & Stainless steel ball					

Note: 10mm measurement range only available with CLS1313

CLS1320 compact series

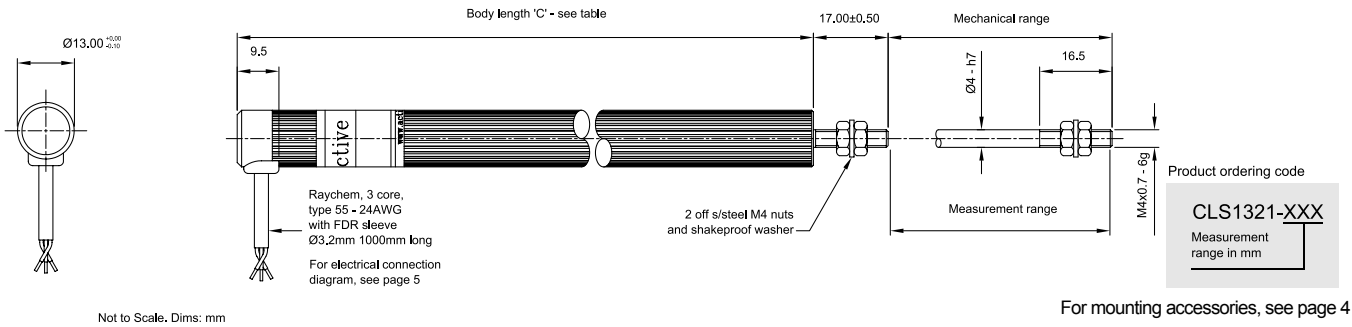
Model features

- Measurement range: 25mm (1") to 350mm (14")
- Slim 13mm (1/2") body Ø
- Compact design
- Sealed as standard
- Raychem cabling
- Choice of mounting

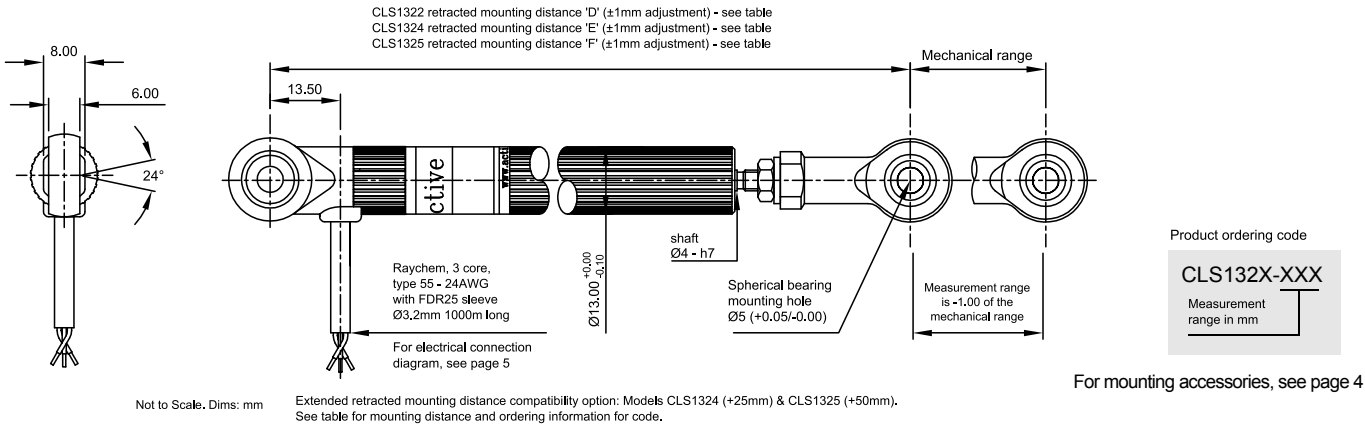


Model dimensions and mounting

CLS1321 - body clamp mounting

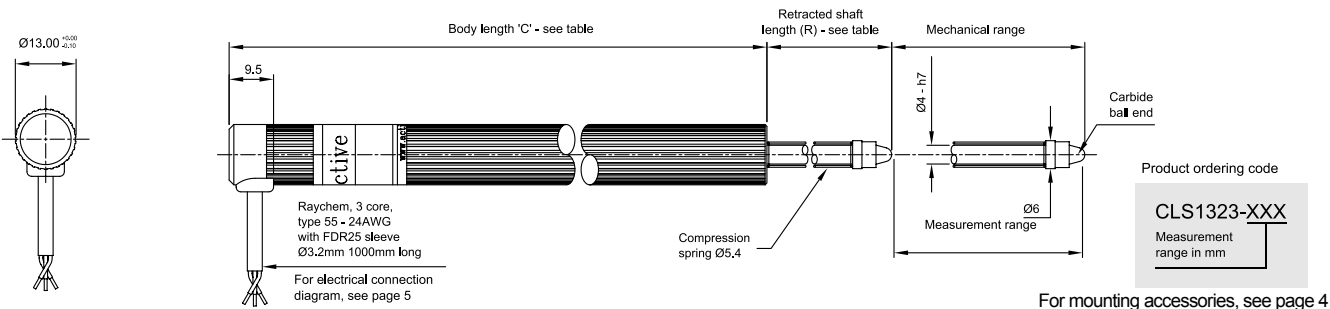


CLS1322 - rod-end mounting

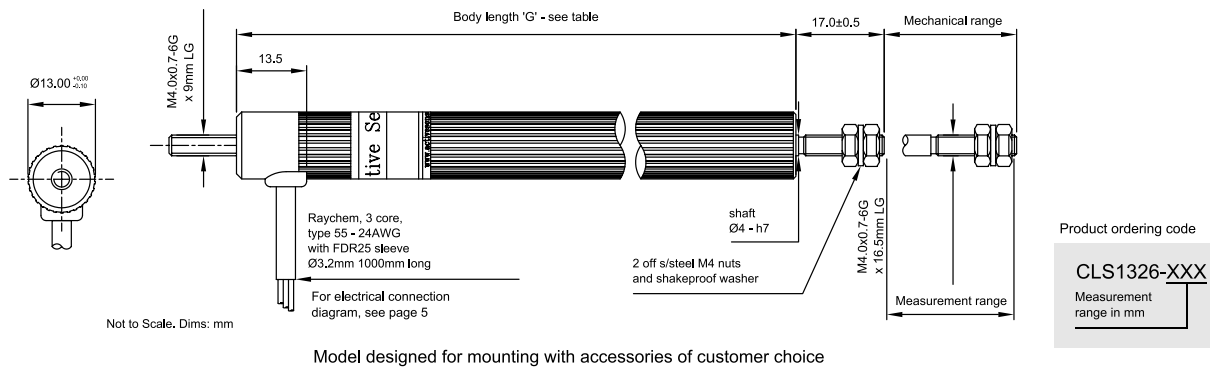


CLS1323 - sprung loaded shaft

Available in measurement ranges 50, 75, 100 & 150mm only



CLS1326 - threaded mounting

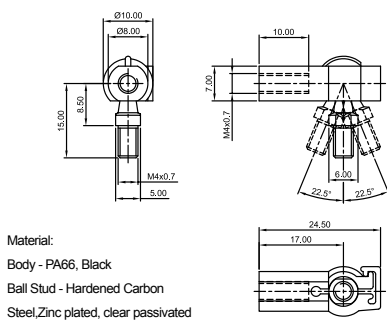


Electrical & mechanical information for CLS1320 range

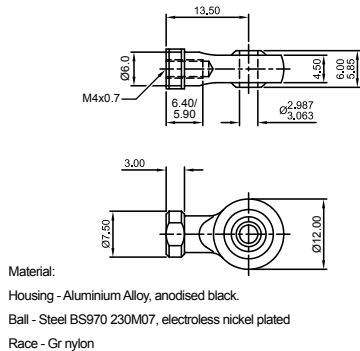
Measurement range (± 0.5 mm)	25	50	75	100	125	150	175	200	225	250	300	350	mm	
Retracted mounting distance (D)	123	148	173	198	223	248	273	298	323	348	398	448	mm	
Retracted mounting distance (E)	148	173	198	223	248	273	298	323	348	373	-	-	mm	
Retracted mounting distance (F)	173	198	223	248	273	298	323	348	373	398	-	-	mm	
Retracted shaft length (R)	-	38.5	53.5	58.5	-	88.5	-	-	-	-	-	-	mm	
Body length (C)	81	106	131	156	181	206	231	256	281	306	356	406	mm	
Body length (G)	85	110	135	160	185	210	235	260	285	310	360	410	mm	
Resistance (Typical)	1	2	3	4	5	6	7	8	9	10	12	14	kohms	
Non-linearity	< ± 0.25			< ± 0.15										%
Applied voltage	<22	<45	<65	<90	<110	<130	<130	<130	<130	<130	<130	<130	Volts	
Wiper load	>500	>500	>500	>500	>500	>600	>700	>800	>900	>1000	>1100	>1200	kohms	
Mechanical range	Measurement range +1												mm	
Shaft velocity	<10												m/sec	
Insulation resistance (at 500V dc.)	>100												Mohms	
Operating temp. range	-30° to +125°												°C	
Sealing	CLS1321, 22, 24, 25, 26 - IP66.						CLS1323 - IP50							
Shaft operating force	200 (typical)												grams	
Shaft operating force (CLS1323)	150 - 350 (typical)													
Weight (approx.)	60	66	73	78	85	90	96	102	108	114	120	126	grams	
Materials	Case - Aluminium 6063 - Sulphuric acid anodised Shaft - Stainless steel - 303 series Rod end bearing - Aluminium 6262 housing & Stainless steel ball													

Mounting accessories

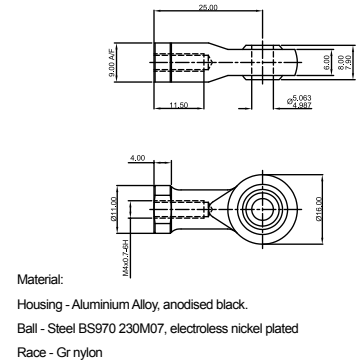
Quick release ball joints. Part no: JN029-003



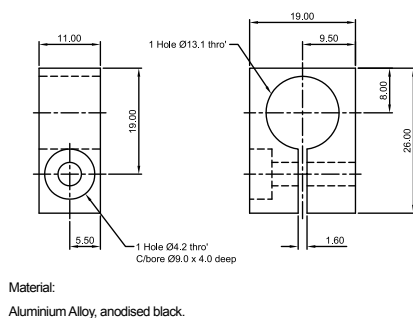
3mm rod-end. Part no: PT1312-0104-19



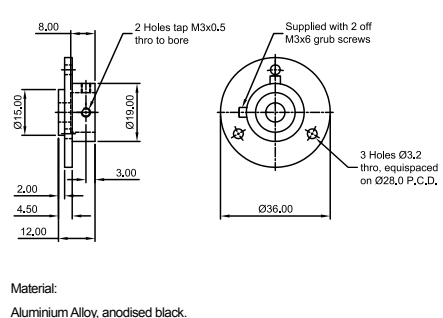
5mm rod-end. Part no: PT1322-0104-19



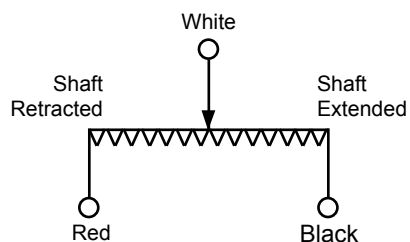
Body mounting clamps. Part no: PT1300-0109



Mounting flange. Part no: PT1300-0110



Electrical connections (all models)



Note 1

Incorrect wiring may cause internal damage to the sensor.

Note 2

Circuit recommendation: Due to the presence of a high contact resistance, these potentiometers should be used as voltage dividers only. Operation with wiper circuits of low impedance will degrade the output signal.

Other CLS linear position sensor models available

CLS0950

- Ultra-slim housing
- Up to 150mm (6") stroke
- Choice of mounting
- 9.54mm body Ø



CLS1900

- Robust housing
- Up to 500mm (20") stroke
- Choice of mounting
- 19mm body Ø



CLS3200

- Robust housing
- Up to 1100mm (44") stroke
- Choice of mounting
- 32mm body Ø



Contact details

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CLS1900 medium stroke range

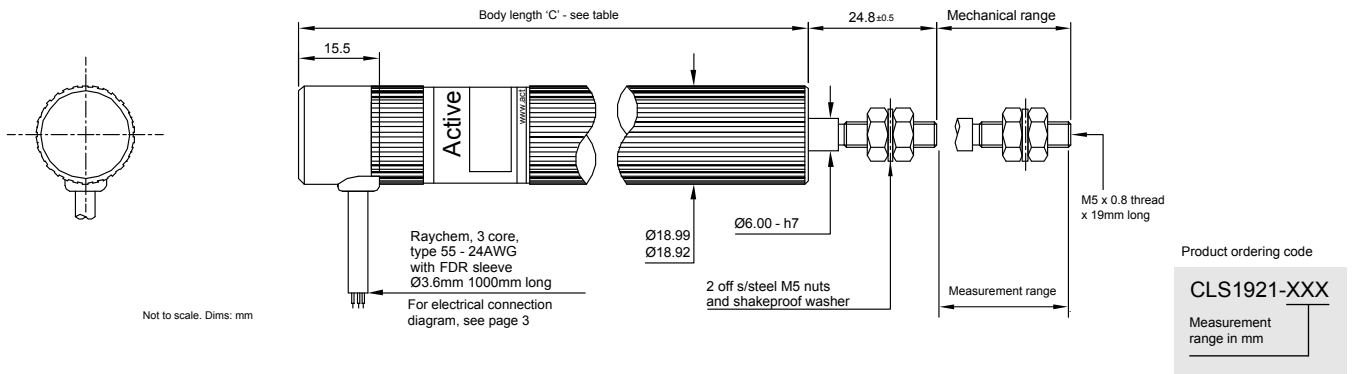


- Measurement range: 25mm to 500mm (20")
- Robust 19mm Ø compact design
- 6.0mm dia. operating shaft
- Sealed as standard
- Raychem cabling
- Choice of mounting
- Very long operational life
- Models available from stock

The robust, general-purpose medium stroke CLS1920 sensor is used extensively in industrial monitoring and process control applications. They are also used in racing car and off road vehicles for monitoring suspension movement and steering angles. The housing is manufactured from aluminium alloy and the operating shaft is stainless steel. The spherical mounting bearings and body clamps are machined from aluminium alloy for strength and durability.

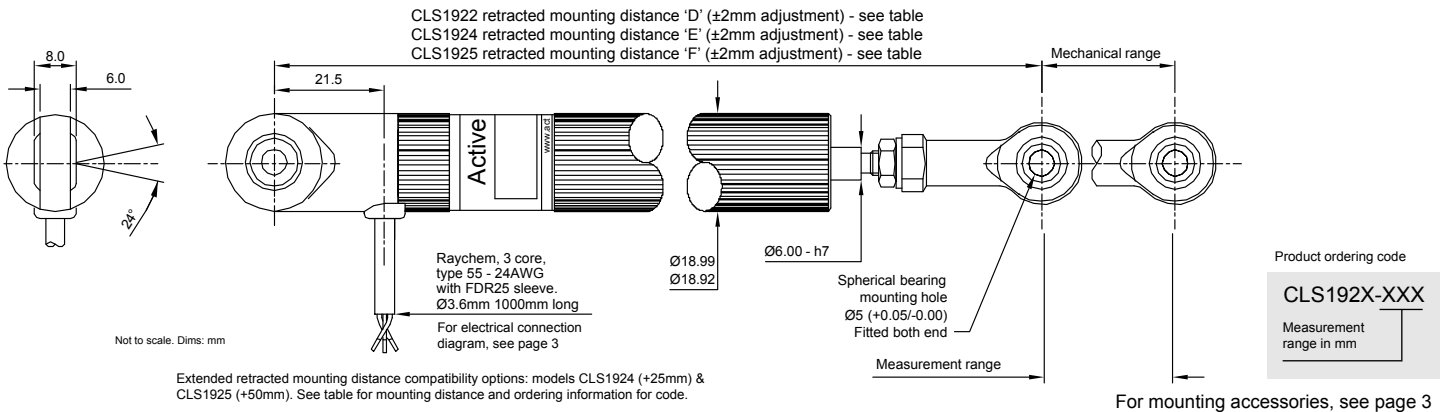
Model dimensions and mounting

CLS1921 - body clamp mounting



For mounting accessories, see page 3

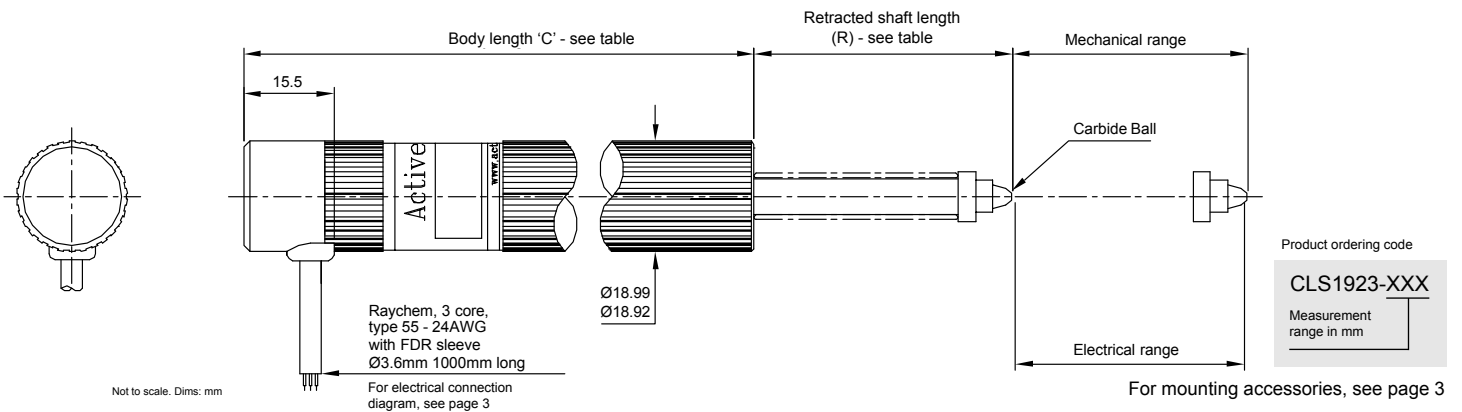
CLS1922 - rod-end mounting



For mounting accessories, see page 3

CLS1923 - sprung loaded shaft

Available in measurement ranges 75, 100 & 150mm only



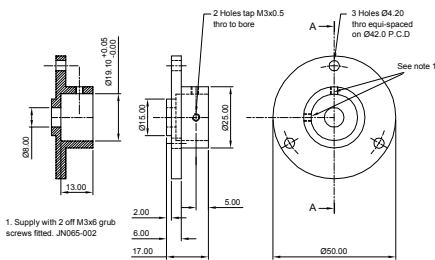
For mounting accessories, see page 3

Electrical & mechanical information for CLS1900 range

Measurement range ($\pm 0.5\text{mm}$)	25	50	75	100	125	150	175	200	225	250	275	300	325	350	400	500	mm
Retracted mounting distance (D)	-	-	199	224	249	274	299	324	349	374	399	424	449	474	-	-	mm
Retracted mounting distance (E)	149	174	199	249	274	299	324	349	374	399	424	449	474	499	-	-	mm
Retracted mounting distance (F)	174	199	224	274	299	324	349	374	399	424	449	474	499	524	-	-	mm
Retracted shaft length (R)	-	-	44	54	-	223	-	-	-	-	-	-	-	-	-	-	mm
Body length (C)	98	123	148	173	198	223	248	273	298	323	348	378	403	428	478	578	mm
Resistance (Typical)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	20	kohms
Non-linearity	< ± 0.25			< ± 0.15													%
Applied voltage	<22	<45	<65	<90	<110	<130	<130	<130	<130	<130	<130	<130	<130	<130	<130	<130	Volts
Wiper load	>500	>500	>500	>500	>500	>600	>700	>800	>900	>1000	>1100	>1200	>1300	>1400	>1600	>2000	kohms
Mechanical range	Measurement range +1																mm
Shaft velocity	<10																m/sec
Insulation resistance (at 500V dc.)	>100																Mohms
Operating temp. range	-30° to +100°																°C
Sealing	CLS1921, 22 - IP66								CLS1923 - IP50								
Shaft operating force	200 (typical)																grams
Weight (approx.)	79	91	109	139	154	170	184	205	220	233	254	275	301	322	369	463	grams
Materials	Case - Aluminium 6063 - Sulphuric acid anodised Shaft - Stainless steel - 303 series Rod end bearing - Aluminium 6262 housing & Stainless steel ball																

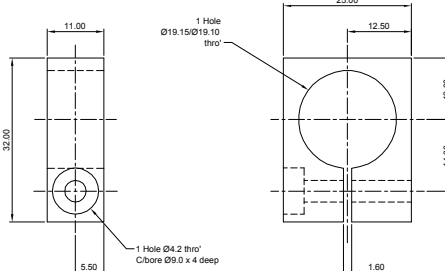
Mounting accessories

Mounting flange. Part no: PT1900-0110



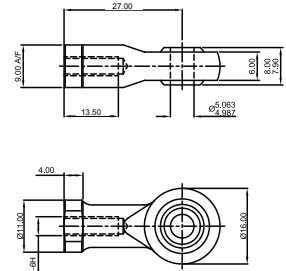
Material:
Aluminium Alloy, anodised black.

Body mounting clamps. Part no: PT1900-0109



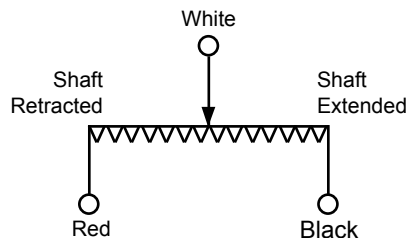
Material:
Aluminium Alloy, anodised black.

5mm rod-end. Part no: PT1922-0104-19



Material:
Housing - Aluminium Alloy, anodised black.
Ball - Steel BS970 230M07, electroless nickel plated
Race - Gr nylon

Electrical connections (all models)



Note 1

Incorrect wiring may cause internal damage to the sensor.

Note 2

Circuit recommendation: Due to the presence of a high contact resistance, these potentiometers should be used as voltage dividers only. Operation with wiper circuits of low impedance will degrade the output signal.

Other CLS linear position sensor models available

CLS0950

- Ultra-slim housing
- Up to 150mm (6") stroke
- Choice of mounting
- 9.54mm body Ø



CLS1300

- Robust housing
- Up to 350mm (14") stroke
- Choice of mounting
- 13mm body Ø



CLS3200

- Robust housing
- Up to 1100mm (44") stroke
- Choice of mounting
- 32mm body Ø



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CLS3200 medium stroke range

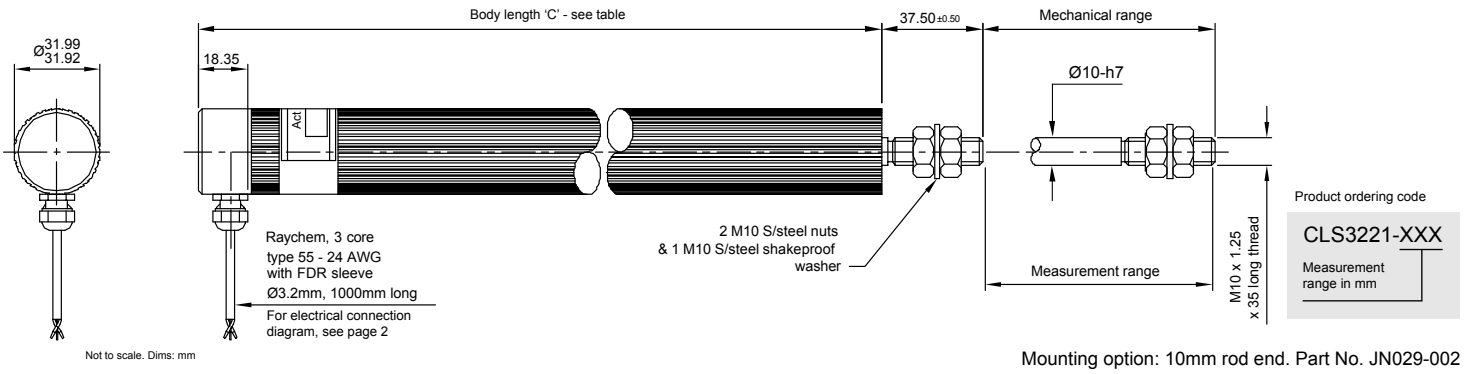


- Measurement Range: 250mm (10") to 1100mm (44")
- Robust design
- Long stroke model
- Sealed as standard
- Raychem cabling
- Choice of mounting
- Very long operational life
- Models available from stock

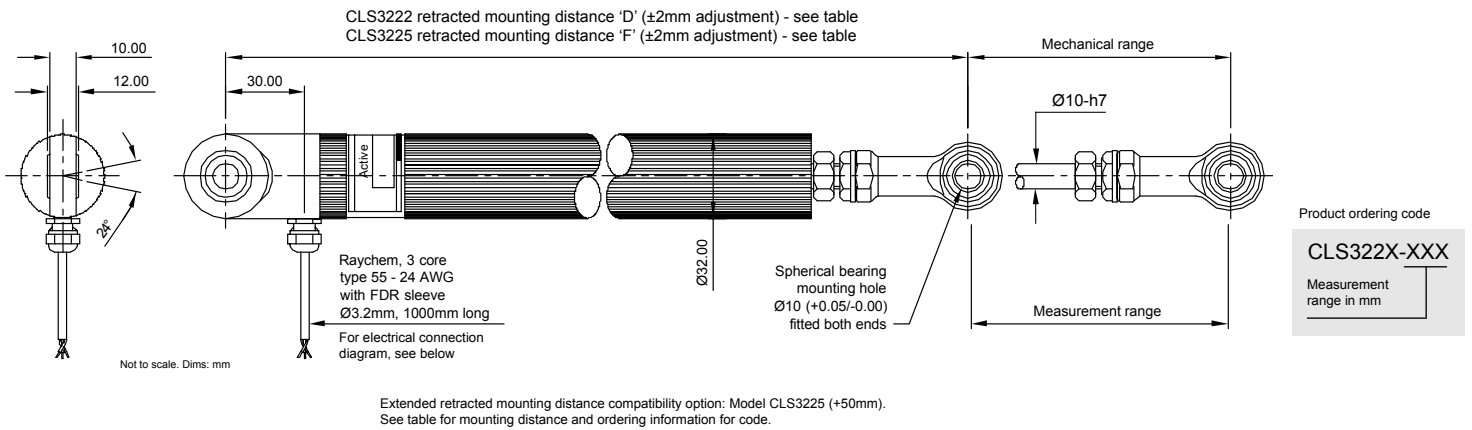
The robust, long stroke CLS3220 sensor is used extensively in industrial monitoring and process control applications. It is also used in flight simulator control systems and similar motion control platforms. The housing is manufactured from aluminium alloy and the operating shaft is stainless steel. The spherical mounting bearings and body clamps are machined from aluminium alloy for strength and durability.

Model dimensions and mounting

CLS3221 - body clamp mounting



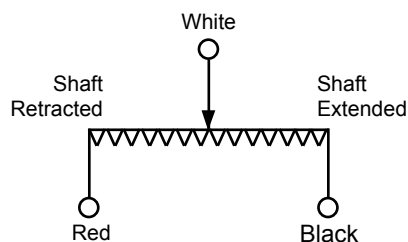
CLS3222 - rod-end mounting



Electrical & mechanical information for CLS3200 range

Measurement range (±0.5mm)	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	mm
Retracted mounting distance (D)	430	480	530	580	630	680	730	780	830	880	930	980	1030	1080	1130	1180	1230	mm
Retracted mounting distance (F)	480	530	580	630	680	730	780	830	880	930	980	-	-	1130	-	-	-	mm
Body length (C)	351	401	451	501	551	601	651	701	751	801	851	901	951	1001	1051	1101	1201	mm
Resistance (Typical)	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	44	kohms
Non-linearity	<±0.15																	%
Applied voltage	<130																	Volts
Wiper load	>1.0	>1.2	>1.4	>1.6	>1.8	>2.0	>2.2	>2.4	>2.6	>2.8	>3.0	>3.2	>3.4	>3.6	>3.8	>4.0	>4.4	Mohms
Mechanical range	Measurement range 0 to +5																	mm
Shaft velocity	<10																	m/sec
Insulation resistance (at 500V dc.)	>50																	Mohms
Operating temp. range	-30° to +85°																	°C
Sealing	Shaft seal																	
Shaft operating force	<100 (typical)																	grams
Weight (approx.)	875	1010	1095	1180	1300	1420	1505	1595	1795	1970	2045	2105	2145	2180	2265	2355	2530	grams
Materials	Case - Aluminium 6063 - Sulphuric acid anodised Shaft - Stainless steel - 303 series Rod end bearing - Aluminium 6262 housing & Stainless steel ball																	

Electrical connections (all models)



Note 1

Incorrect wiring may cause internal damage to the sensor.

Note 2

Circuit recommendation: Due to the presence of a high contact resistance, these potentiometers should be used as voltage dividers only. Operation with wiper circuits of low impedance will degrade the output signal.

Other CLS linear position sensor models available

CLS0950

- Ultra-slim housing
- Up to 150mm (6") stroke
- Choice of mounting
- 9.54mm body Ø



CLS1300

- Robust housing
- Up to 350mm (14") stroke
- Choice of mounting
- 13mm body Ø



CLS1900

- Robust housing
- Up to 500mm (20") stroke
- Choice of mounting
- 19mm body Ø



Contact details

Europe

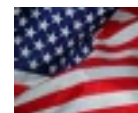
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Additional product information

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