

SLS 190 LINEAR DISPLACEMENT SENSOR

The SLS190 range is designed to provide maximum performance benefits within a compact package in stroke lengths from 25 to 350mm. With a choice of mounting options and accessories, this sensor is ideally suited to a wide range of general purpose industrial applications, for medium stroke linear position sensing.

PERFORMANCE

| | | | | | | | | | | | | | | | |
|----------------------------|------------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Electrical stroke E | mm | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 350 |
| Resistance $\pm 10\%$ | k Ω | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Independent linearity | | | | | | | | | | | | | | | |
| guaranteed | $\pm\%$ | 0.25 | 0.25 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| typical | $\pm\%$ | 0.15 | 0.15 | 0.15 | 0.10 | 0.10 | 0.07 | 0.07 | 0.07 | 0.07 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Power dissipation at 20°C | W | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 5.5 | 6.0 | 6.5 | 7.0 |
| Applied voltage maximum | Vdc | 22 | 44 | 67 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| Electrical output | | Minimum of 0.5% to 99.5% applied volts | | | | | | | | | | | | | |
| Resolution | | Virtually infinite | | | | | | | | | | | | | |
| Hysteresis (repeatability) | | Less than 0.01mm | | | | | | | | | | | | | |
| Operational temperature | °C | -30 to +100 | | | | | | | | | | | | | |
| Output smoothness | | To MIL-R-39023 grade C 0.1% | | | | | | | | | | | | | |
| Insulation resistance | | Greater than 100M Ω at 500Vdc | | | | | | | | | | | | | |
| Operating mode | | Voltage divider only - see Circuit Recommendation below | | | | | | | | | | | | | |
| Wiper circuit impedance | | Minimum of 100 x track resistance or 0.5M Ω (whichever is greater) | | | | | | | | | | | | | |
| Operating force maximum | | | | | | | | | | | | | | | |
| sealed | gf | 500 in horizontal plane | | | | | | | | | | | | | |
| unsealed | gf | 250 in horizontal plane | | | | | | | | | | | | | |
| Life at 250mm per second | | Typically greater than 100 million operations (50 x 10 ⁶ cycles) at 25mm stroke length | | | | | | | | | | | | | |
| Dither life | | 200 million operations (100 x 10 ⁶ cycles) at ± 0.5 mm, 60Hz | | | | | | | | | | | | | |
| Sealing | | IP50 standard - IP66 see options | | | | | | | | | | | | | |
| Shaft seal life | | 20 million operations (10 x 10 ⁶ cycles) - replaceable | | | | | | | | | | | | | |
| Shaft velocity maximum | m/s | 10 | | | | | | | | | | | | | |
| Vibration | | RTCA 160D 10Hz to 2kHz (random) @ 12.6g (rms) - all axes | | | | | | | | | | | | | |
| Shock | | Less than 0.04% output change @ 2500g - all axes | | | | | | | | | | | | | |

CIRCUIT RECOMMENDATION

Hybrid track potentiometers feature a high wiper contact resistance, therefore operational checks should be carried out only in the voltage divider mode. Hybrid track potentiometers should be used only as voltage dividers, with a minimum wiper circuit impedance of 100 x track resistance or 0.5M Ω (whichever is greater). Operation with wiper circuits of lower impedance will degrade the output smoothness and affect the linearity.

OPTIONS

| | |
|-----------------------------|---|
| Compact shaft | Compact shaft will reduce dimension D by 25mm |
| Integral shaft seal - IP 66 | Designed to accept integral shaft seal to give IP66 rating |
| Extended cable length | 10m output cable can be specified |
| Mounting | Body clamp or flange mounting kits can be supplied |
| Protective sleeve | For all stroke lengths - self aligning bearings only. See ordering code |

ACCESSORIES

Mounting kits ———— Body clamp kit - SA59019
Flange kit - SA59020

Protective sleeve - SA202986/...../.....

Shaft L = long, C = compact
Electrical stroke (select to match SLS190 sensor)

AVAILABILITY

All options can be supplied within five days from the factory.

ORDERING CODES

SLS190/...../...../...../...../.....

Electrical stroke

Shaft L = long, C = compact

Protective sleeve N=None, P=Fitted

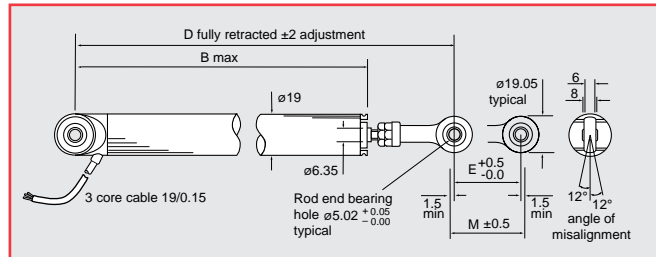
Cable 1 = 1m, 10 = 10m

Sealing 50 = IP50, 66 = IP66

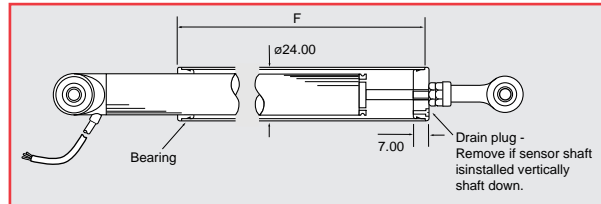
DIMENSIONS AND MOUNTING OPTIONS

Note: drawings not to scale

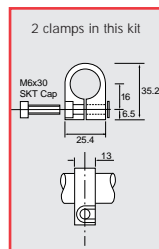
SELF ALIGNING BEARING MOUNTING



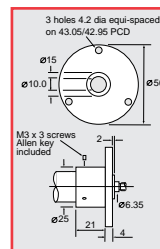
PROTECTIVE SLEEVE OPTION - P



MOUNTING OPTIONS



Body clamp
SA59019

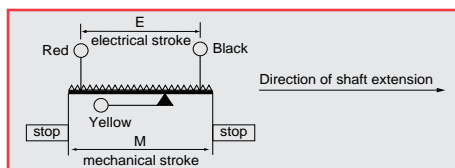


Flange mounting
SA59020

| | | | | | | | | | | | | | | | |
|--------------------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Electrical stroke E | mm | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 350 |
| Mechanical stroke M | mm | 29 | 54 | 79 | 104 | 129 | 154 | 179 | 204 | 229 | 254 | 279 | 304 | 329 | 354 |
| Body length B | mm | 110.5 | 135.5 | 160.5 | 210.5 | 235.5 | 260.5 | 285.5 | 310.5 | 333.5 | 360.5 | 385.5 | 435.5 | 460.5 | 485.5 |
| Between centres D | | | | | | | | | | | | | | | |
| standard sensor (L) | mm | 173.6 | 198.6 | 223.6 | 273.6 | 298.6 | 323.6 | 348.6 | 373.6 | 398.6 | 423.6 | 448.6 | 498.6 | 523.6 | 548.6 |
| compact shaft sensor (C) | mm | 148.6 | 173.6 | 198.6 | 248.6 | 273.6 | 298.6 | 323.6 | 348.6 | 373.6 | 398.6 | 423.6 | 473.6 | 498.6 | 523.6 |
| Sleeve length F | | | | | | | | | | | | | | | |
| standard sensor (L) | mm | 100 | 125 | 150 | 200 | 225 | 250 | 275 | 300 | 325 | 350 | 375 | 425 | 450 | 475 |
| compact shaft sensor (C) | mm | 75 | 100 | 125 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 350 | 400 | 425 | 450 |
| Weight approximate | | | | | | | | | | | | | | | |
| standard sensor (L) | g | 109 | 126 | 144 | 161 | 179 | 196 | 214 | 231 | 249 | 266 | 284 | 301 | 319 | 336 |
| compact shaft sensor (C) | g | 103 | 120 | 138 | 155 | 173 | 190 | 208 | 225 | 246 | 260 | 278 | 295 | 316 | 330 |

ELECTRICAL CONNECTIONS

3 core cable: PUR sheathed 1m long with ETFE insulated 19/0.15 cores.



Special SLS190

This specially developed SLS190 variant offers the same mounting dimensions as earlier HLP190 models, but incorporates additional shaft sealing not previously available. M5 steel rod end bearings are fitted, which has become a standard requirement in US NASCAR data acquisition systems. An optional LEMO connector can also be supplied fitted to the cable if required. These potentiometers are ideally suited for retrofit in existing suspension and throttle position applications and will provide high performance and reliability under extreme operating conditions.



PERFORMANCE

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| Electrical stroke E | mm | 25 | 50 | 75 | 100 | 125 | 150 | 200 | 250 |
| Resistance $\pm 10\%$ | k Ω | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
| Independent linearity | $\pm\%$ | 0.25 | 0.25 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| Power dissipation at 20°C | W | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 4.0 | 5.0 |
| Applied voltage maximum | Vdc | 22 | 44 | 67 | 74 | 74 | 74 | 74 | 74 |
| Electrical output | | Minimum of 0.5% to 99.5% applied volts | | | | | | | |
| Resolution | | Virtually infinite | | | | | | | |
| Hysteresis (repeatability) | mm | Less than 0.01 | | | | | | | |
| Operational temperature | °C | -30 to +100 | | | | | | | |
| Output smoothness | | To MIL-R-39023 grade C 0.1% | | | | | | | |
| Insulation resistance | | Greater than 100M Ω at 500Vdc | | | | | | | |
| Operating mode | | Voltage divider only - see Circuit Recommendation on page 10 | | | | | | | |
| Wiper circuit impedance | | Minimum of 100 x track resistance or 0.5M Ω (whichever is greater) | | | | | | | |
| Operating force maximumgf | | 500 in horizontal plane | | | | | | | |
| Life at 250mm per second | | Typically greater than 100 million operations (50 x 10 ⁶ cycles) at 25mm stroke length | | | | | | | |
| Dither life | | 200 million operations (100 x 10 ⁶ cycles) at ± 0.5 mm, 60Hz | | | | | | | |
| Shaft seal life | | 20 million operations (10 x 10 ⁶ cycles) - replaceable | | | | | | | |
| Shaft velocity maximum | m/s | 10 | | | | | | | |

OPTIONS

Connector

Can be supplied with LEMO PHGOB304 CYMD42Z connector and sleeve GMAOB035DG

AVAILABILITY

Please consult our sales office for details

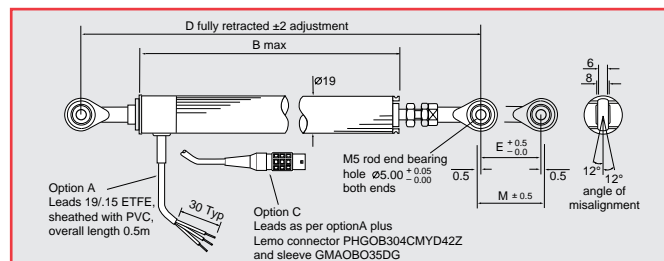
ORDERING CODES

D45190/...../.....

Electrical stroke
 A - no connector
 C - with connector

DIMENSIONS

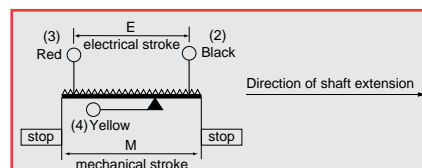
Note: drawings not to scale



| | | | | | | | | | |
|---------------------|----|-------|-------|-------|-------|-------|-------|-------|-------|
| Electrical stroke E | mm | 25 | 50 | 75 | 100 | 125 | 150 | 200 | 250 |
| Mechanical stroke M | mm | 29 | 54 | 79 | 104 | 129 | 154 | 204 | 254 |
| Body length B | mm | 107.0 | 132.0 | 157.0 | 207.0 | 232.0 | 257.0 | 307.0 | 357.0 |
| Between centres D | mm | 173.6 | 198.6 | 223.6 | 273.6 | 298.6 | 323.6 | 373.6 | 423.6 |
| Weight approximate | g | 105 | 130 | 145 | 175 | 190 | 205 | 230 | 260 |

ELECTRICAL CONNECTIONS

3 core cable: PVC sheathed 0.5m long with ETFE insulated 19/0.15 cores (Pin connections shown in brackets)





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