

RD Split Displacement Sensor



Technical Characteristics

- Rugged and fully enclosed design
- Non-wear, non-contact measurement method
- Linear measurement, absolute output
- Sealing grade up to IP68
- Low power consumption design effectively reduces system heating
- Ultra-high temperature sensing rod (up to + 125 °C)
- Multiple interfaces available: Analog, SSI, Profibus-DP, CANopen, Start-Stop, Profinet, EtherCAT

C Product Parameters

• Input

| | |
|------------------|---|
| Measurement data | Position Magnet ring |
| Stroke length | 25mm~5500mm, customized according to customer needs |

• Output

| | |
|-------------------------|---|
| Interface | SSI |
| Resolution | 0.1/0.5 / 1 / 2 / 5 / 10 / 20 / 40/ 50 / 100 μ m |
| Nonlinearity | $< \pm 0.01\%$ of full scale, Min. $\pm 50\mu$ m |
| Repetition accuracy | $< 0.001\%$ for full-scale taxis, Min. $\pm 1\mu$ m |
| Hysteresis | $< 10\mu$ m |
| Update time | 1KHz (range \leq 1m) 500Hz (1m<range \leq 2m) 250Hz (2m<range \leq 3m) , customizable |
| Temperature coefficient | $< 30\text{ppm}/^\circ\text{C}$ |

• Working conditions

| | |
|-----------------------|--|
| Magnet ring velocity | Arbitrary |
| Protection level | IP68 (Sensor Lever) |
| Operating temperature | Sensor rod $-40^\circ\text{C} \sim +125^\circ\text{C}$, electronic bin- $40^\circ\text{C} \sim +85^\circ\text{C}$ |
| Humidity/dew point | 100%, relative humidity |
| Shock index | GB/T2423.5 100g(6ms) |
| Vibration index | GB/T2423.10 20g/10~2000Hz |
| EMC test | GB/T17626.2/3/4/6/8, Grade 4/3/4/3/3, Class A, CE Certification |

• Electrical connection

| | |
|-------------------------|---------------------------------------|
| Input voltage | +24Vdc \pm 20% |
| operating current | $< 100\text{mA}$ (varying with range) |
| Polarity protection | Max.-30Vdc |
| Overpressure protection | Max.36Vdc |
| Insulation resistance | $> 10\text{M}\Omega$ |
| Insulation strength | 500V |

• Structure and materials

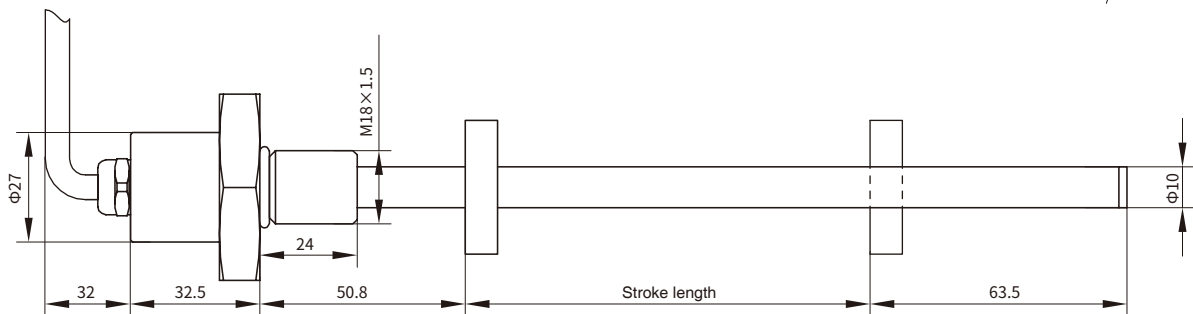
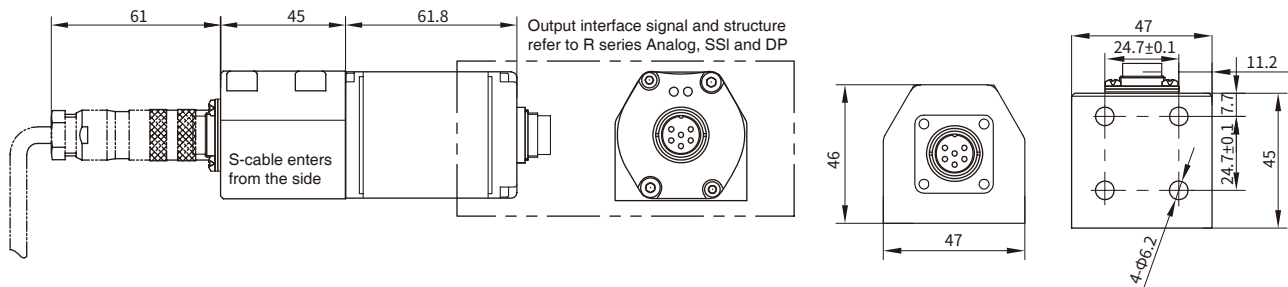
| | |
|------------------------|---|
| Fault indication | Electronic bin cover with LEDs display |
| Electronic bin | Aluminum alloy |
| Measuring rod | 304 stainless steel |
| Outer tube pressure | 35MPa (continuous)/70MPa (peak) or 350bar (continuous)/700bar (peak) |
| Position magnet | Standard Magnet ring and various magnet rings |
| Mounting thread form | M18 \times 1.5 (customizable) |
| Installation direction | Any direction |
| Cable outlet mode | Cable outlet cable or connector |

A a Installation and Use Instructions

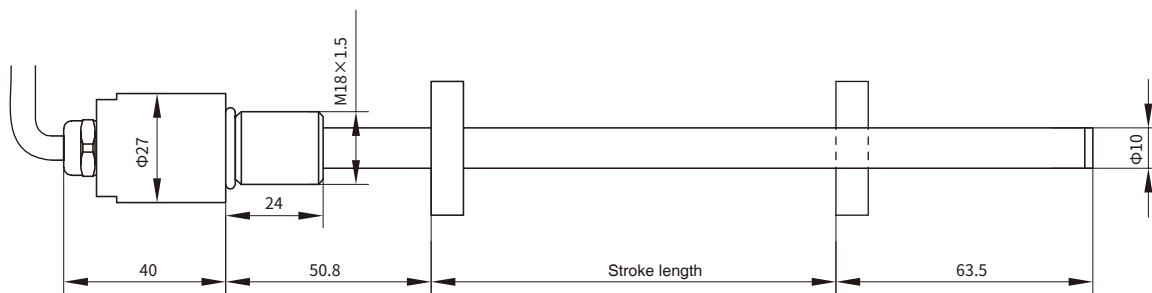
• Output characteristic

RD Series sensors are designed in a split form and are suitable for installation in cylinder, especially for cylinder applications in confined spaces. The sensor consists of two parts: a sensing rod and an electronic bin. The sensor rod is a pressure-resistant stainless round pipe with threads or flanges to provide protection for the sensing elements, and the whole sensor rod is installed in the cylinder through pistons. The temperature resistance of the sensing rod up to + 125 °C, and the protection level reaches IP68, which is very suitable for harsh occasions such as high temperature, high humidity and water vapor; The electronic bin encapsulates the sensor signal processing part and the external interface together, reaching IP67 protection level, and can be connected with the sensor rod through the side or bottom of the connector plate.

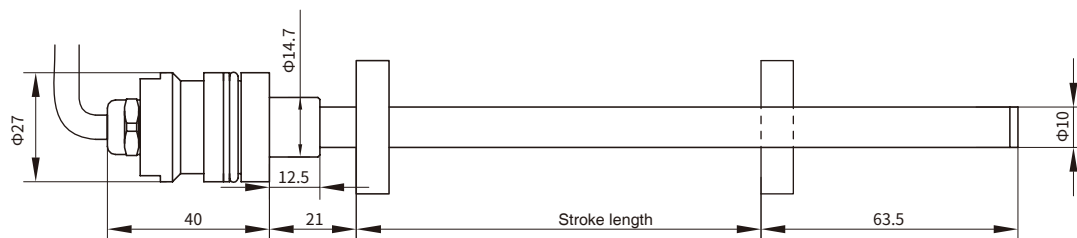
• RD Split Sensor Installing Dimensions



• Flange A metric thread M18×1.5 hexagon flange 46



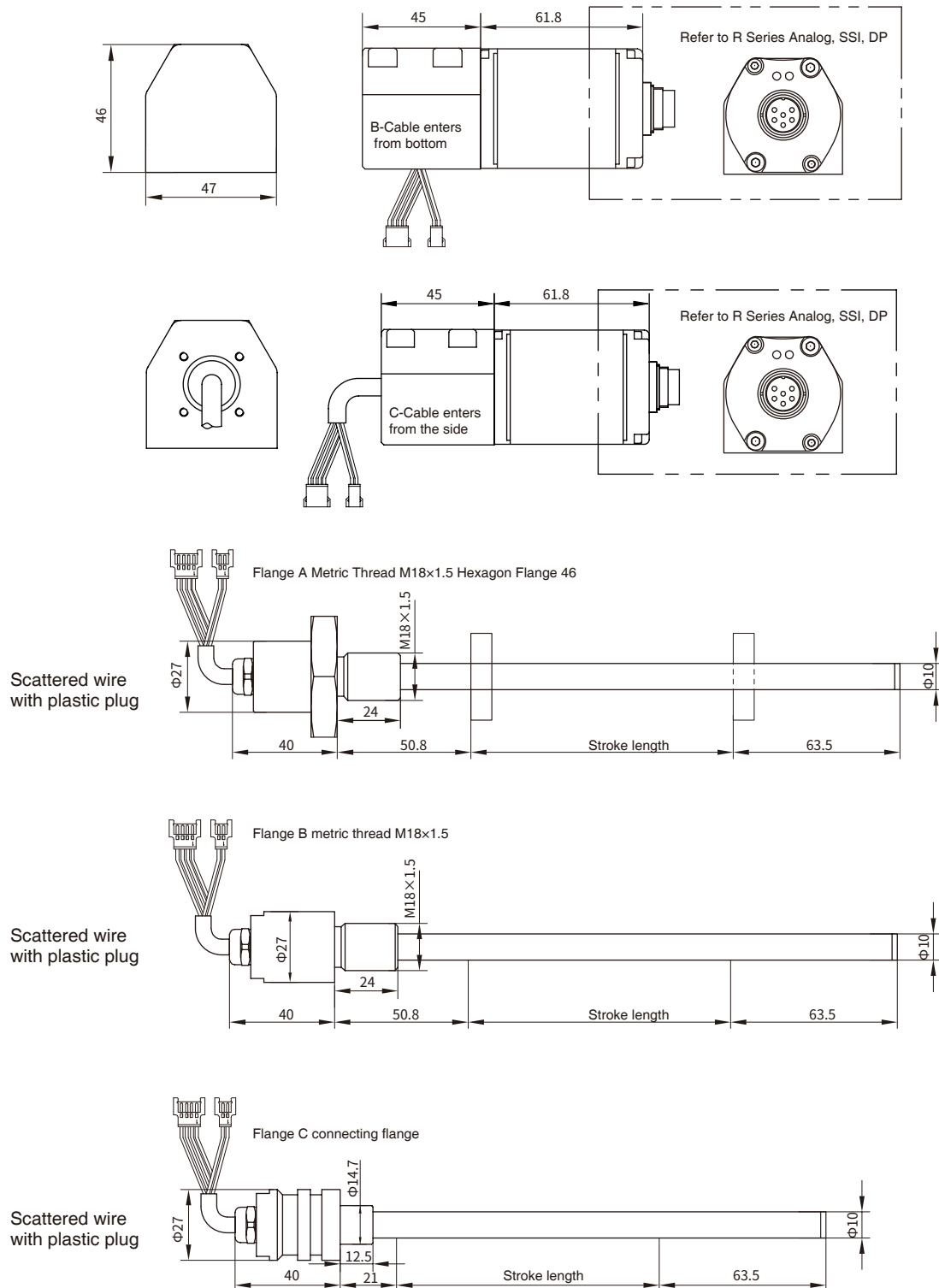
• Flange B metric thread M18×1.5



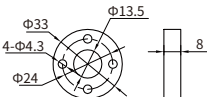
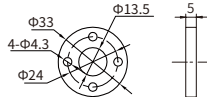
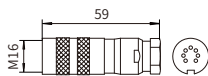
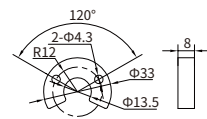
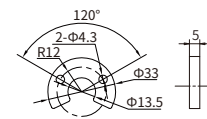
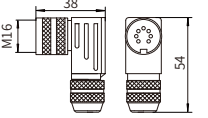
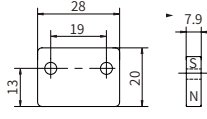
• Flange C connecting flange

A a Installation and Use Instructions

• RDSplit Sensor Installing Dimensions



C Common Accessories - SSI Output

| Accessory name/ model | Dimensions | Accessory name/ model | Dimensions | Accessory name/ model | Dimensions |
|---|---|----------------------------------|---|--|---|
| Standard Magnet ring Order No.: 211501 |  | Magnetic isolation gasket |  | 7-pin Female Connector Order No.: 312703 |  |
| Sector magnet Order No.: 211502 |  | Sector magnetic isolation gasket |  | 7-pin 90 Female Connector Order No.: 312704 |  |
| Square magnet Order No.: 211508 |  | | | | |

Note: Please refer to "Magnet ring Selection" for details of magnet ring kit and other models.

• Wiring mode

When the sensor is connector output, refer to the pin definition in the following table for wiring mode; when the sensor is cable outlet output, refer to the wire color definition in the following table for connection mode



| • 7-pin male connector arrangement (facing the sensor head) | | | |
|---|---------------|---------------|---------------------------------|
| Pin | Wire color 1* | Wire color 2* | Pin/wire function definition |
| 1 | White | Grey | Data (-) |
| 2 | Yellow | Pink | Data (+) |
| 3 | Blue | Yellow | Clock (+) |
| 4 | Green | Green | Clock (-) |
| 5 | Red | Brown | +24Vdc power supply (-20%~+20%) |
| 6 | Black | White | 0 Vdc |
| 7 | - | - | Do not connect |



| • 8-pin male connector arrangement (facing the sensor head) | | |
|---|---------------|---------------------------------|
| Pin | Wire color 3* | Pin/wire function definition |
| 1 | Yellow | Clock (+) |
| 2 | Grey | Data (+) |
| 3 | Pink | Clock (-) |
| 4 | - | Reservation |
| 5 | Green | Data (-) |
| 6 | Blue | 0 Vdc (power supply circuit) |
| 7 | Brown | +24Vdc power supply (-20%~+20%) |
| 8 | White | Reservation |

Note: * Wire color 1: cable PUR sheath, orange, -20~90 °C
 * Wire color 2/3: Cable PVC sheath, orange, -20~105 °C

X Selection Guide-SSI

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

| 01 - 02 | Sensor shell form |
|---------|-------------------|
| R D | Split structure |

| 03 - 07 | Measuring range |
|---------|---|
| | Four digits, less than four digits are preceded by zero, M means metric system, unit mm |

| 08 | Outer tube flange |
|----|-------------------|
| A | M18X1.5 SW46 |
| B | M18X1.5 SW24 |
| C | Connecting flange |

| 09 - 11 | Connection mode of outer tube |
|---------|--|
| 09 | Cable outlet mode |
| S | Cable enters from the side, PUR cable |
| B | Cable entry from bottom, independent cable with flat plastic connector |
| C | Cable entry from side, independent cable with flat plastic connector |

| 10 - 11 | | | Cable length | | | | | | | |
|---------|---|-------|--------------|---|---|-------|--|---|---|-------|
| M | 1 | 1m | | M | 2 | 2m | | M | 3 | 3m |
| M | 4 | 1.5m | | D | 1 | 250mm | | D | 2 | 400mm |
| D | 3 | 600mm | | R | 2 | 65mm | | R | 4 | 170mm |
| R | 5 | 230mm | | R | 6 | 350mm | | | | |

| 12 - 15 | Connection form |
|---------|---|
| 12 - 13 | Cable outlet mode |
| D H | PUR sheath, orange,-20~90℃, end scattered, cable color 1 |
| D U | PVC sheath, orange,-20~105℃, end scattered, cable color 2 |
| D B | PVC sheath, orange,-20~105℃, end scattered, cable color 3 |
| D I | PUR sheath, orange,-20~90℃, end 7-pin connector |
| D V | PVC sheath, orange,-20~105℃, end 7-pin connector |
| D C | PVC sheath, orange,-20~105℃, end 8-pin connector |

| 14 - 15 | Cable outlet mode: cable length, 01~99 meters |
|---------|---|
|---------|---|

| 12 - 15 | Connector mode |
|---------|----------------|
|---------|----------------|

| | |
|---------|-----------------------------|
| P H 7 0 | M16 male connector (7 pins) |
|---------|-----------------------------|

| | |
|---------|-----------------------------|
| P B 8 0 | M16 male connector (8 pins) |
|---------|-----------------------------|

Note: For supporting cables, please refer to SSI cable accessories selection guide

| 16 - 21 | Signal output mode |
|---------|--------------------|
|---------|--------------------|

| 17 | Data length |
|----|-------------|
|----|-------------|

| | | | | | |
|---|-------|---|-------|---|--------|
| 1 | 24bit | 2 | 25bit | 3 | 26bit* |
| * 26-bit are parity bits and 25-bit are status bits | | | | | |

| 18 | Data format |
|----|-------------|
|----|-------------|

| | | | |
|---|--------|---|-----------|
| B | Binary | G | Gray code |
|---|--------|---|-----------|

| 19 | Resolution |
|----|------------|
|----|------------|

| | | | |
|---|----------|---|----------|
| 1 | 0.1mm | 2 | 0.05mm |
| 3 | 0.02mm | 4 | 0.01mm |
| 5 | 0.005mm | 6 | 0.002mm |
| 7 | 0.001mm | 8 | 0.04mm |
| 9 | 0.0005mm | 0 | 0.0001mm |

| 20 | Direction |
|----|-----------|
|----|-----------|

| | | | |
|---|---------|---|---------|
| 0 | Forward | 1 | Reverse |
|---|---------|---|---------|

| 21 | Mode |
|----|------|
|----|------|

| | | | | | |
|---|---------|---|-----------------|---|------------------|
| 0 | Regular | 1 | Synchronization | 2 | High update rate |
|---|---------|---|-----------------|---|------------------|

| 22 - 23 | Non-usable area at head and end, customizable |
|---------|---|
|---------|---|

| | |
|-----|---------------|
| S 0 | 50.8mm+63.5mm |
|-----|---------------|

| | |
|-----|-----------|
| B 0 | 30mm+60mm |
|-----|-----------|

| 24-25 | Country |
|-------|---------|
|-------|---------|

| | |
|--|---------------------------|
| | Refer to the country list |
|--|---------------------------|

SSI Cable accessories selection Guide

SSI - M -
 01 02 03 04 05 06 07 08 09 10

| 01 - 03 | Type |
|---------|--|
| S S I | SSI interface |
| 04 - 07 | Cable length |
| M * * * | Less than 3 digits are preceded by zeros, and M means metric system, unit m |
| 08 - 10 | Cable type, outlet mode |
| H 0 1 | One end of 7-pin (M16) is female connector, and one end scattered, wire color1 |
| H 0 3 | One end of 7-pin (M16) right angle female connector, and one end scattered, wire color 1 |
| U 0 1 | One end of 7-pin (M16) is female connector, and one end scattered, wire color 2 |
| U 0 2 | One end of 8-pin (M16) is female connector, and one end scattered, wire color 3 |
| U 0 3 | One end of 7-pin (M16) right angle female connector, and one end scattered, wire color 2 |
| U 0 4 | One end of 8-pin (M16) right angle female connector, and one end scattered, wire color 3 |
| Note | H: Cable type, PURsheath, orange, -20~90℃ U: Cable type, PVC sheath, orange, -20~105℃ |

- Selection example: SSI-M005-H01

Indicates: SSI interface cable, cable length 5 meters, PURsheath, orange, -20~90℃, one end of the cable is 7-pin (M16) female connector, and one end scattered.

- Selection example: SSI-M010-U04

Indicates: SSI interface cable, cable length 10 meters, PVC sheath, orange, -20~105℃, one end of the cable is an 8-pin (M16) right angle female connector, and one end scattered.

