



Magnetostrictive Displacement Sensor

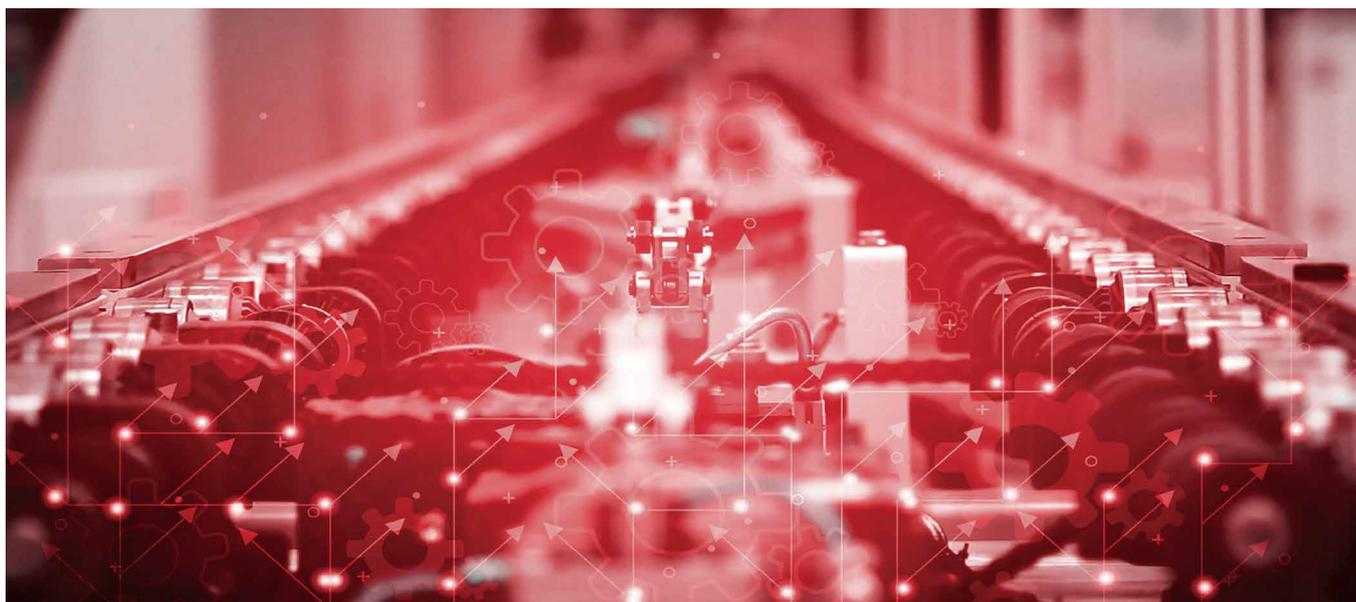
R Series Product manual



· High quality · High precision · Long service life

Company Profile

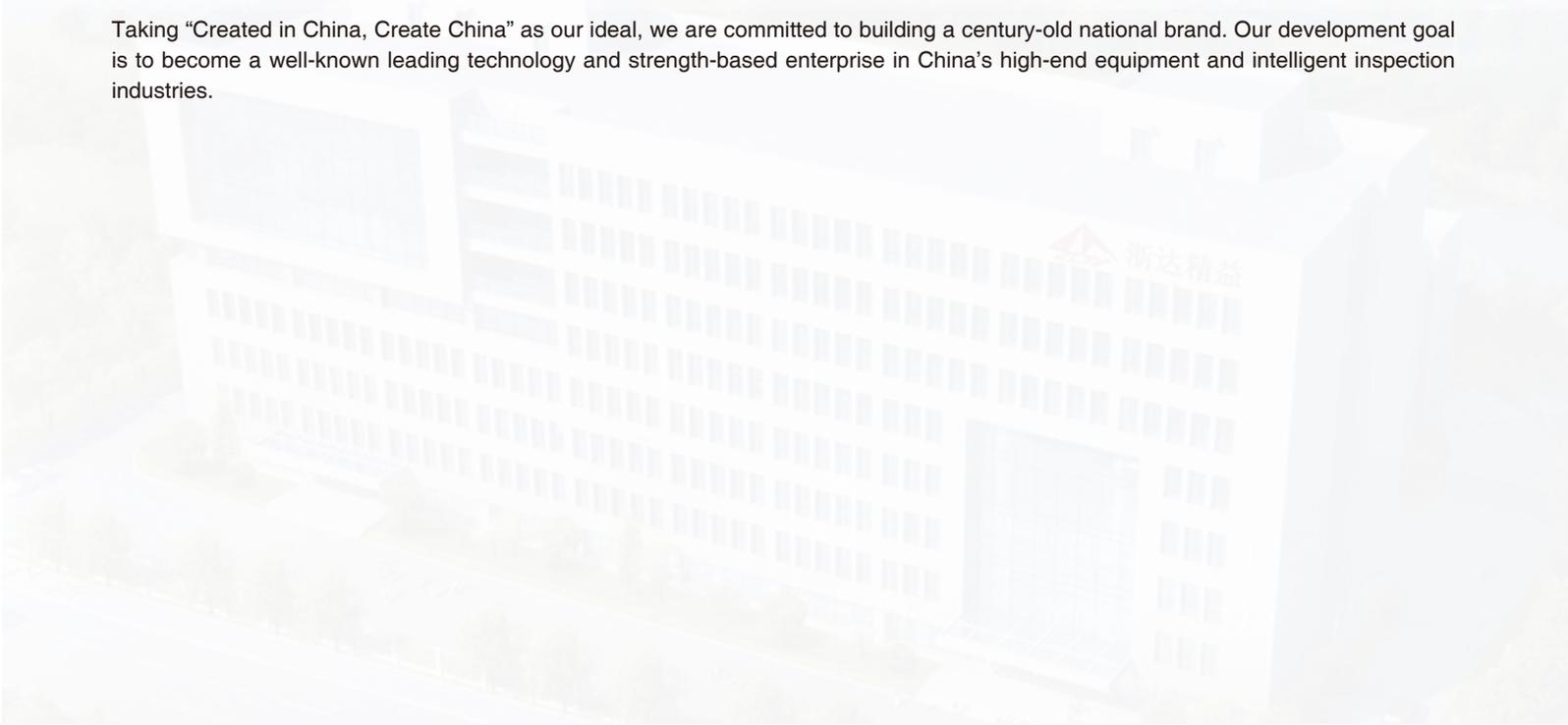
As a technological innovation enterprise born out of Zhejiang University, our company has more than 180 employees, including 4 overseas talents, 4 professors, and 2 associate professors. There are also 12 doctors, and more than 86% of employees with a bachelor degree or above.



We are committed to intelligent manufacturing, high-end equipment, intelligent sensing, intelligent detection, military industry and other fields. Most of our company's products are independently researched and developed, and the market share ranks in the forefront of the domestic industry. A variety of equipment is the first set in China, which breaks the long-term monopoly of foreign companies.

We are a national high-tech enterprise integrating scientific research, product development, engineering design, and technical consulting. Besides, the company has obtained 45 invention patents, 29 utility model patents, 10 software copyrights, and 4 registered trademarks.

Taking "Created in China, Create China" as our ideal, we are committed to building a century-old national brand. Our development goal is to become a well-known leading technology and strength-based enterprise in China's high-end equipment and intelligent inspection industries.



Honorary Qualification



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 | Analog、SSI、CANopen、Profibus-DP、Start-Stop、Profinet、EtherCAT |
| Resolution | Analog: 16-bit D/A or 0.0015% of full scale (min. 1μm) Bital: 0.5 / 1 / 2 / 5 / 10 / 20 / 40 / 50 / 100 μm |
| Nonlinearity | < ± 0.01% of full scale, Min. ± 50μm |
| Repetition accuracy | < 0.001% for full-scale taxis, Min. ± 1μm |
| Hysteresis | < 10μm |
| Update time | 1KHz (range ≤ 1m) 500Hz (1m < range ≤ 2m) 250Hz (2m < range ≤ 3m) , customizable |
| Temperature coefficient | < 30ppm/°C |

• Working conditions

| | |
|-----------------------|---|
| Magnet ring velocity | Arbitrary |
| Protection level | IP68 (Sensor Lever) |
| Operating temperature | Sensor rod -40°C ~ +125°C , electronic bin -40°C ~ +85°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±20% |
| operating current | < 100mA (varying with range) |
| Polarity protection | Max.-30Vdc |
| Overpressure protection | Max.36Vdc |
| Insulation resistance | > 10MΩ |
| Insulation strength | 500V |

• Structure and materials

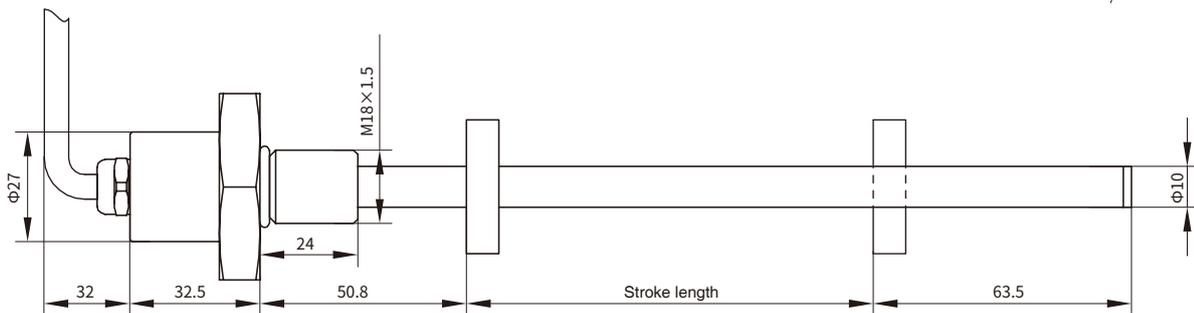
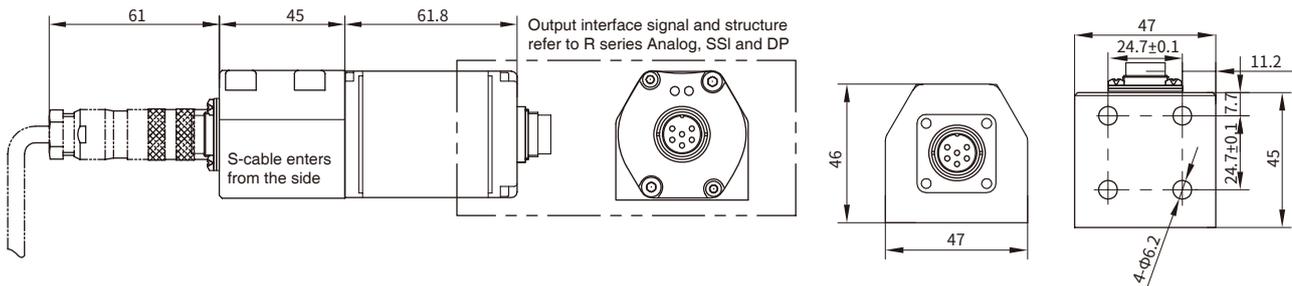
| | |
|------------------------|--|
| Fault indication | Electronic bin cover with LEDs display |
| Electronic bin | Aluminum alloy |
| Measuring rod | 304 stainless steel |
| Outer tube pressure | 35MPa (continuous)/70MPa (peak) or 350bar (continuous)/700bar (peak) |
| Position magnet | Standard Magnet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

A a Installation and Use Instructions

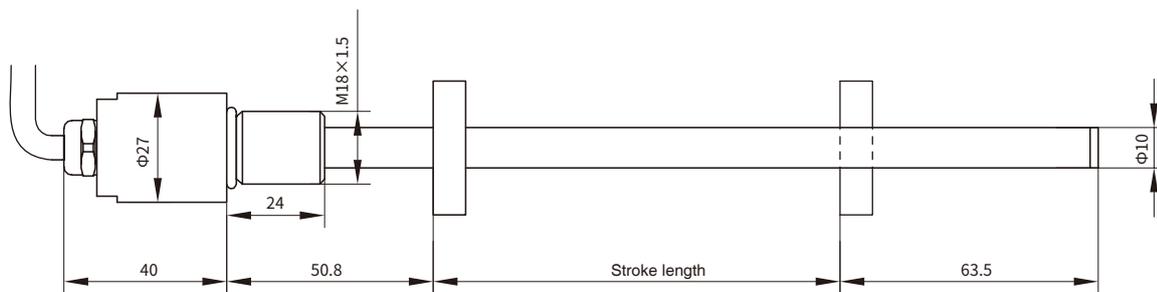
• Output characteristic

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.

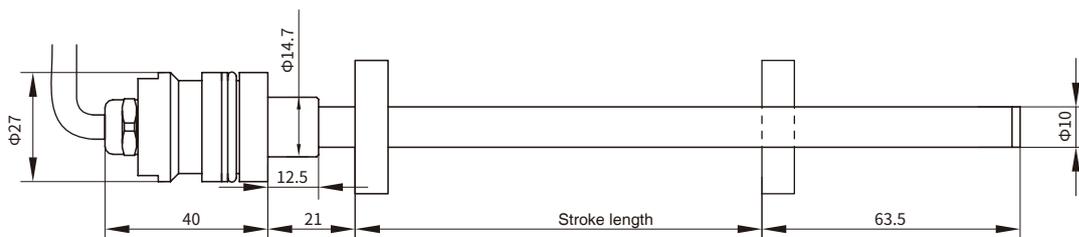
• RD Split Sensor Installing Dimensions



• Flange A metric thread M18x1.5 hexagon flange 46



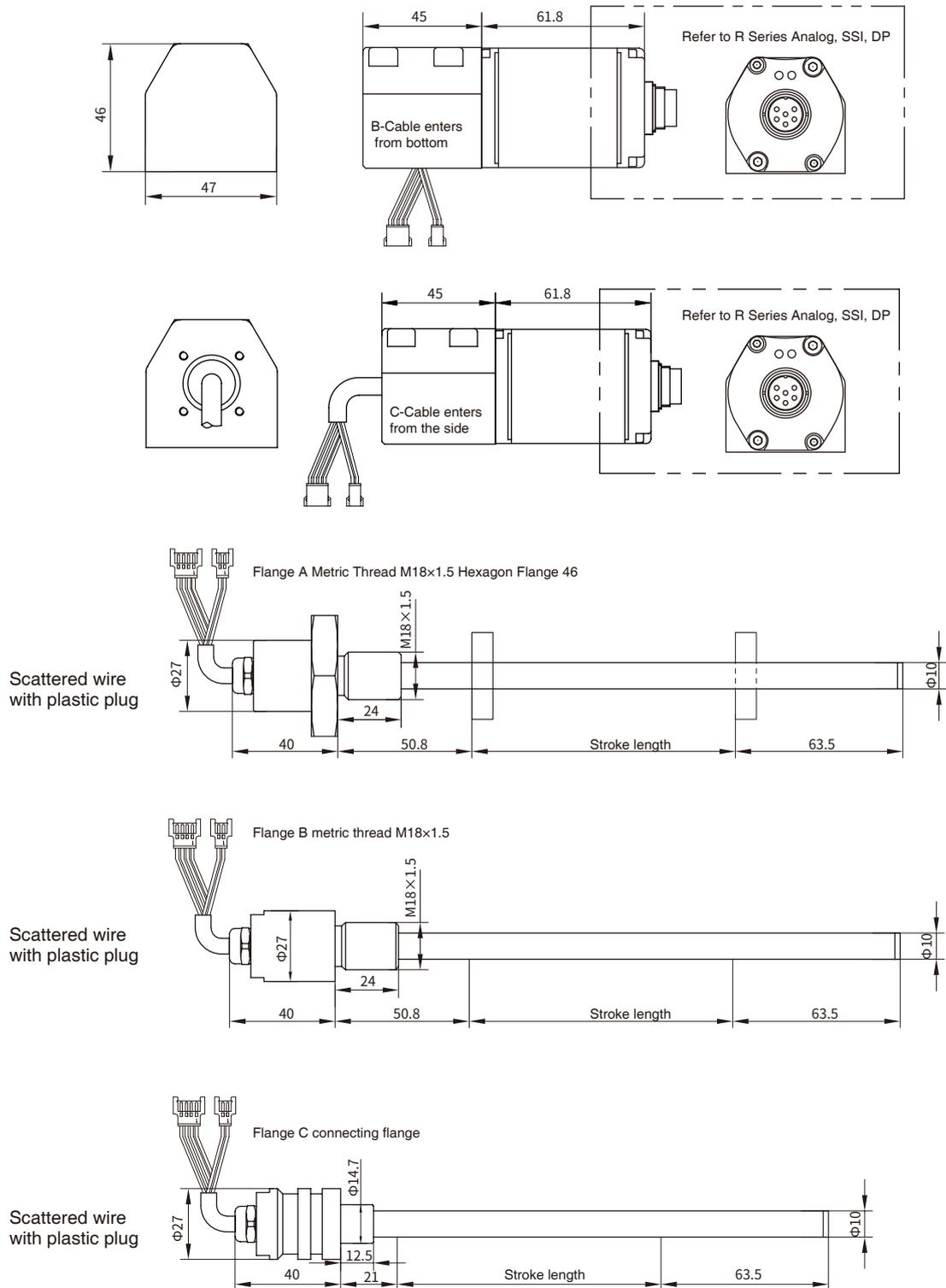
• Flange B metric thread M18x1.5



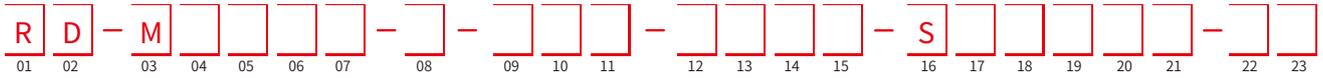
• Flange C connecting flange

A a Installation and Use Instructions

- RDSplit Sensor Installing Dimensions



X Selection Guide-SSI



| | |
|----------------|--------------------------|
| 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 C, end scattered, cable color 1 |
| D U | PVC sheath, orange,-20~105 C, end scattered, cable color 2 |
| D B | PVC sheath, orange,-20~105 C, end scattered, cable color 3 |
| D I | PUR sheath, orange,-20~90 C, end 7-pin connector |
| D V | PVC sheath, orange,-20~105 C, end 7-pin connector |
| D C | PVC sheath, orange,-20~105 C, 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 |
|-----------|-------------|

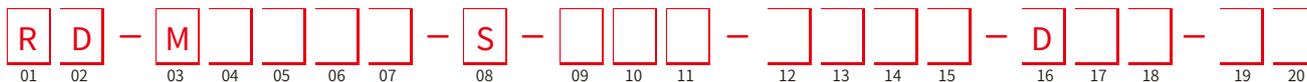
| | | | | | |
|---|---------|---|-----------------|---|------------------|
| 0 | Regular | 1 | Synchronization | 2 | High update rate |
|---|---------|---|-----------------|---|------------------|

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

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

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

X x Selection Guide-Profibus-DP Bus



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 A | Single cable outlet, PUR sheath, cyan,-20-80℃, end scattered |
| D B | Double cable outlet, PUR sheath, cyan,-20-80℃, end scattered |
| D C | Double cable outlet, PUR sheath, cyan,-20-80℃, end M16, 6-pin, one male connector, one female connector |

14 - 15 Cable outlet mode: cable length, 01-99m

12 - 15 Connector mode

| | | | | |
|---|---|---|---|--|
| P | D | 5 | 3 | One set of 5-pin male connector (M12), one set of 5-pin female connector (M12), one set of 4-pin male connector (M8) |
|---|---|---|---|--|

| | | | | |
|---|---|---|---|---|
| P | D | 6 | 3 | A set of 6-pin male connector M16 and a set of 6-pin female connector M16 |
|---|---|---|---|---|

Note: Please refer to Profibus-DP cable fitting selection for supporting cables

16 - 18 Signal output mode

| | |
|----|--|
| 16 | Profibus Protocol |
| 17 | Number of Magnet rings (1~9 optional) |
| 18 | 0-single magnet B-single/multiple Magnet rings |

19 - 20 Non-usable area at head and end, customizable

| | | |
|---|---|---------------|
| S | 0 | 50.8mm+63.5mm |
| B | 0 | 30mm+60mm |

X x Selection Guide-Start/Stop Output



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 - 09 Magnet ring type/mounting thread form

| | | |
|---|---|---------------------------|
| C | 1 | Without flange |
| C | 2 | With flange M18×1.5 |
| C | 3 | With flange M20×1.5 |
| C | 4 | With flange 3/4"-16UNF-3A |

10 - 13 Connection form

10 - 11 Cable outlet mode

| | | |
|---|---|--|
| D | H | PUR sheath, orange,-20~90 C, end scattered, cable color 1 |
| D | U | PVC sheath, orange,-20~105 C, end scattered, cable color 2 |
| D | B | PVC sheath, orange,-20~105 C, end scattered, cable color 3 |
| D | I | PUR sheath, orange,-20~90 C, end 6-pin connector |
| D | V | PVC sheath, orange,-20~105 C, end 6-pin connector |
| D | C | PVC sheath, orange,-20~105 C, end 8-pin connector |

12 - 13 Cable length, 0199 units: meters (Cable outlet mode)

10 - 13 Cable outlet mode

| | | | | |
|---------|---|---|---|---|
| 10 - 13 | 0 | D | R | cable outlet first and end with plastic connector |
|---------|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 0 | D | R | 2 | Scattered wire with plastic connector 65mm |
| 0 | D | R | 3 | Scattered wire with plastic connector 170mm |
| 0 | D | R | 4 | Scattered wire with plastic connector 230mm |
| 0 | D | R | 5 | Scattered wire with plastic connector 350mm |

10 - 13 Connector mode

| | | | | |
|---|---|---|---|-----------------------------|
| P | H | 6 | 0 | M16 male connector (6 pins) |
|---|---|---|---|-----------------------------|

Note: For supporting cables, please refer to the Guide for Selection of Cable Accessories

14 - 17 Signal output mode

15 Input voltage

| | |
|---|---------------------------|
| 1 | + 24Vdc (- 20% ~ + 20%) |
| 2 | + 9 ~ 28.8Vdc |

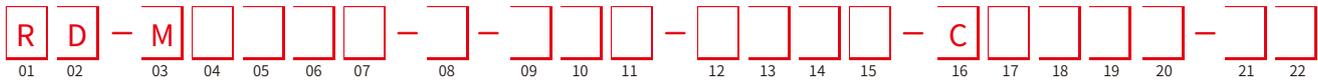
16 - 17 Output signal

| | | |
|---|---|-------------------------------|
| 0 | 1 | Start/Stop, multi-Magnet ring |
|---|---|-------------------------------|

18 - 19 Non-usable area at head and end, customizable

| | | |
|---|---|---------------|
| S | 0 | 50.8mm+63.5mm |
| S | 9 | 50.8mm+107mm |

X x Selection Guide-CAN Bus



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 | A | PVC sheath, purple, 4 cores, -40 C ~ 75 C, end scattered |
|---|---|--|

14 - 15 Cable outlet mode: cable length, 01-99m

| | | | | |
|---|---|---|---|--|
| 0 | D | R | 1 | PVC sheath, length 150mm, end 5-pin male connector |
|---|---|---|---|--|

12 - 15 Connector mode

| | | | | |
|---|---|---|---|---|
| P | D | 6 | 0 | 6-pin male connector (M16) |
| P | D | 6 | 2 | Two sets of 6-pin male connector (M16) |
| P | D | 5 | 0 | 5-pin male connector (M12) |
| P | D | 5 | 2 | 5-pin male connector (M12) and 5-pin female connector (M12) |
| P | D | 5 | 4 | 5-pin male connector (M12), 5-pin female connector (M12), 4-pin male connector (M8) |

Note: For supporting cables, please refer to CAN bus cable Accessories selection

16 - 20 Signal output mode

16 Interface

| | |
|---|---------|
| C | CAN bus |
|---|---------|

17 Protocol type

| | | | |
|---|---------|---|----------|
| 1 | CANopen | 2 | CANBasic |
|---|---------|---|----------|

18 Baud

| | | | |
|---|------------|---|-----------|
| 1 | 1000kBit/s | 2 | 800kBit/s |
| 3 | 500kBit/s | 4 | 250kBit/s |
| 5 | 125kBit/s | 6 | 100kBit/s |
| 7 | 50kBit/s | 8 | 20kBit/s |

19 Resolution

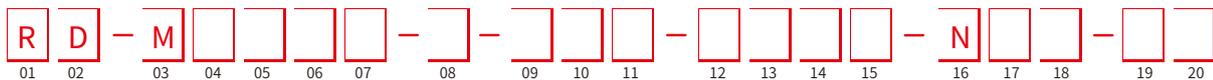
| | | | |
|---|---------|---|---------|
| 1 | 0.1mm | 2 | 0.05mm |
| 3 | 0.02mm | 4 | 0.01mm |
| 5 | 0.005mm | 6 | 0.002mm |
| 7 | 0.001mm | | |

20 Number of Magnet rings (1~9 optional)

21 - 22 Non-usable area at head and end, customizable

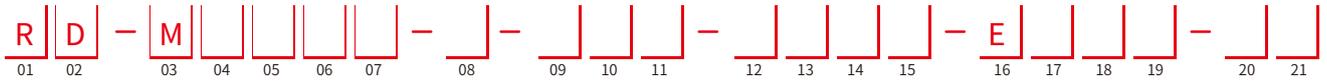
| | | |
|---|---|---------------|
| S | 0 | 50.8mm+63.5mm |
| B | 0 | 30mm+60mm |

X x Selection Guide-Profinet Output



| | | | |
|--|---|-----------------|-------|
| 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 4 | 1.5m | D 1 | 250mm |
| D 3 | 600mm | R 2 | 65mm |
| R 5 | 230mm | R 6 | 350mm |
| M 3 | 3m | D 2 | 400mm |
| | | R 4 | 170mm |
| 12 - 15 | Connection form | | |
| D A * * | Single cable outlet, light green, PUR sheath (6 cores),-40℃~85℃ (** indicating cable length, unit: meter) | | |
| D B * * | Double cable outlet, light green, PUR sheath (one set of 6 cores,-40℃~85℃; one set of 4 cores,-40℃~70℃) (** denotes cable length, unit: meters) | | |
| P D 5 6 | 2 sets of 4-pin M12 female connector, 1 set of 4-pin M8 male connector | | |
| Note: For supporting cables, please refer to the Guide for Selection of Industrial Ethernet Cable Accessories | | | |
| 16 - 18 | Communication interface | | |
| 16 N | Profinet communication interface | | |
| 17 | Number of Magnet rings (1~9 optional) | | |
| 18 | 0-General, customizable | | |
| 19 - 20 | Non-usable area at head and end, customizable | | |
| S 0 | 50.8mm+63.5mm | | |
| S 9 | 50.8mm+107mm | | |

X x Selection Guide-EtherCAT Output



| | |
|----------------|--------------------------|
| 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 |
|----------------|------------------------|

| | |
|---------|---|
| D A * * | Single cable outlet, light green, PUR sheath (6 cores),-40°C~85°C (** indicating cable length, unit: meter) |
| D B * * | Double cable outlet, light green, PUR sheath (one set of 6 cores,-40°C~85°C; one set of 4 cores,-40°C~70°C) (** denotes cable length, unit: meters) |
| P D 5 6 | 2 sets of 4-pin M12 female connector, 1 set of 4-pin M8 male connector |

| | |
|----------------|--------------------------------|
| 16 - 19 | Communication interface |
|----------------|--------------------------------|

| | |
|----------------|--------------------|
| 16 - 17 | Sensor form |
|----------------|--------------------|

| | |
|-----|---|
| E 1 | EtherCAT, 1-9 magnets, position and speed, distributed clock optional |
|-----|---|

| | |
|----------------|-------------------------------|
| 18 - 19 | Number of Magnet rings |
|----------------|-------------------------------|

| | |
|--|----------------|
| | 01~09 optional |
|--|----------------|

| | |
|----------------|--|
| 20 - 21 | Non-usable area at head and end, customizable |
|----------------|--|

| | |
|-----|---------------|
| S 0 | 50.8mm+63.5mm |
| B 0 | 30mm+60mm |

J J Wiring Mode

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

Analog



• Pin arrangement of six-pin male connector (facing the sensor head)

| Pin | Cable color 1* | Cable color 2* | Pin/wire function definition |
|-----|----------------|----------------|-----------------------------------|
| 1 | Blue | Grey | No.1 Magnet position signal(+) |
| 2 | Green | Pink | Position signal of No.1 Magnet(-) |
| 3 | Yellow | Yellow | Reservation |
| 4 | White | Green | Reservation |
| 5 | Red | Brown | +24Vdc power supply (-20%~+20%) |
| 6 | Black | White | 0 Vdc (power supply circuit) |

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

Analog



• Pin arrangement of eight-pin male connector (facing the sensor head direction)

| Pin | Cable color3* | Pin/wire function definition |
|-----|---------------|---------------------------------|
| 1 | Yellow | Current output |
| 2 | Grey | 0Vdc(Current/Voltage Loop) |
| 3 | Pink | Reservation |
| 4 | - | Reservation |
| 5 | Green | 0...10V |
| 6 | Blue | 0 Vdc (power supply circuit) |
| 7 | Brown | +24Vdc power supply (-20%~+20%) |
| 8 | White | Reservation |

SSI



• Pin arrangement of seven-pin male connector (facing the sensor head)

| Pin | Cable color 1* | Cable 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 |

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

SSI



• Pin arrangement of eight-pin male connector (facing the sensor head direction)

| Pin | Cable color3* | 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 |

Start/Stop Output



• 6-pin male connector arrangement (facing the sensor head)

| Pin | Line color 1* | Line color 2* | Pin/wire function definition |
|-----|---------------|---------------|---------------------------------|
| 1 | Blue | Grey | Stop (-) |
| 2 | Green | Pink | Stop (+) |
| 3 | Yellow | Yellow | Start (+) |
| 4 | White | Green | Start (-) |
| 5 | Red | Brown | +24Vdc power supply (-20%~+20%) |
| 6 | Black | White | 0 Vdc(power supply circuit) |

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

Start/Stop Output

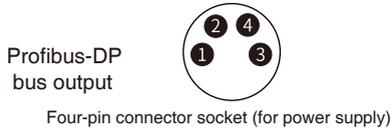


• Pin arrangement of eight-pin male connector (facing the sensor head direction)

| Pin | Line color 1* | Pin/wire function definition |
|-----|---------------|---------------------------------|
| 1 | Yellow | Start (+) |
| 2 | Grey | Stop (+) |
| 3 | Pink | Start (-) |
| 4 | - | Reservation |
| 5 | Green | Stop (-) |
| 6 | Blue | 0 Vdc(power supply circuit) |
| 7 | Brown | +24Vdc power supply (-20%~+20%) |
| 8 | White | Reservation |

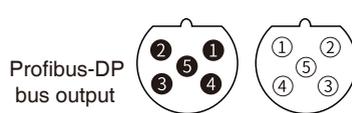
J J Wiring Mode

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



• Pin arrangement of four-pin male connector (facing the sensor head)

| Pin | Cable color | Pin/wire function definition |
|-----|-------------|---------------------------------|
| 1 | Brown | +24Vdc power supply (-20%~+20%) |
| 2 | White | Do not connect |
| 3 | Blue | 0Vdc(power supply circuit) |
| 4 | Black | Do not connect |



• Five-pin male connector and female connector pin arrangement (facing the sensor head direction)

| Pin | Cable color | Pin/wire function definition |
|-----|---------------|------------------------------------|
| 1 | - | VP+5N (for end connections only) * |
| 2 | Green | RxD/TxD-N(bus) |
| 3 | - | DGnd (for end connections only) * |
| 4 | Red | RxD/TxD-P(bus) |
| 5 | Shielded wire | for end connections only |

Note: * Only applicable to signal connection of sensor female connector



• The pins of the six-pin male connector and female connector are arranged in the direction of the sensor head

| Pin | Cable color | Pin/wire function definition |
|-----|-------------|------------------------------------|
| 1 | Green | RxD/TxD-N(bus) |
| 2 | Red | RxD/TxD-P(bus) |
| 3 | - | DGnd (for end connections only) * |
| 4 | - | VP+5N (for end connections only) * |
| 5 | Black | +24Vdc power supply (-20%~+20%) |
| 6 | Blue | 0 Vdc (power supply circuit) |

Note: * Only applicable to signal connection of sensor female connector



• Connector Connection Mode (Interface 1, 2)

| Pin | Line color | Pin/wire function definition |
|-----|------------|------------------------------|
| 1 | Yellow | Tx + |
| 2 | White | Rx + |
| 3 | Orange | Tx - |
| 4 | Blue | Rx - |

• Single cable outlet connection mode

| Pin | Line color 1* | Pin/wire function definition |
|-----|---------------|------------------------------|
| 1 | Yellow | Tx + |
| 2 | White | Rx + |
| 3 | Orange | Tx - |
| 4 | Blue | Rx - |
| 5 | Red | 24Vdc |
| 6 | Black | COM |

Note: * Line color 1: light green, PUR sheath, 6 cores,-40C~85 C



• Connector Connection Mode (Interface 3)

| Pin | Line color | Pin/wire function definition |
|-----|------------|------------------------------|
| 1 | Brown | +24Vdc (-20%~+20%) |
| 2 | White | Do not connect |
| 3 | Blue | COM |
| 4 | Black | Do not connect |

• Double cable outlet connection mode

| Pin | Line color1* | Line color2* | Pin/wire function definition |
|-----|--------------|--------------|------------------------------|
| 1 | Yellow | Yellow | Tx + |
| 2 | White | White | Rx + |
| 3 | Orange | Orange | Tx - |
| 4 | Blue | Blue | Rx - |
| 5 | Red | - | 24Vdc |
| 6 | Black | - | COM |

Note: * Line color 2: light green, PUR sheath, 4 cores,-40C~70 C

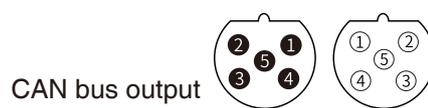
J Wiring Mode

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



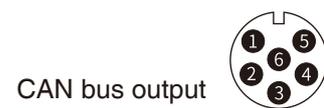
• Pin arrangement of four-pin male connector (facing the sensor head)

| Pin | Cable color | Pin/wire function definition |
|-----|-------------|---------------------------------|
| 1 | Brown | +24Vdc power supply (-20%~+20%) |
| 2 | White | Do not connect |
| 3 | Blue | 0Vdc(power supply circuit) |
| 4 | Black | Do not connect |



• Five-pin male connector and female connector pin arrangement (facing the sensor head direction)

| Pin | Cable color | Pin/wire function definition |
|-----|-------------|---------------------------------|
| 1 | - | Do not connect |
| 2 | Brown | +24Vdc power supply (-20%~+20%) |
| 3 | White | 0Vdc (power supply circuit) |
| 4 | Yellow | CAN (+) |
| 5 | Green | CAN (-) |



• Pin arrangement of six-pin male connector (facing the sensor head)

| Pin | Cable color | Pin/wire function definition |
|-----|-------------|---------------------------------|
| 1 | Green | CAN (-) |
| 2 | Yellow | CAN (+) |
| 3 | - | Do not connect |
| 4 | - | Do not connect |
| 5 | Brown | +24Vdc power supply (-20%~+20%) |
| 6 | White | 0 Vdc (power supply circuit) |



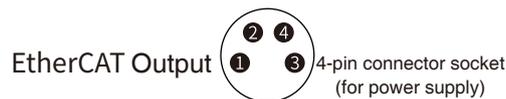
• Connector Connection Mode (Interface 1, 2)

| Pin | Line color | Pin/wire function definition |
|-----|------------|------------------------------|
| 1 | Yellow | Tx + |
| 2 | White | Rx + |
| 3 | Orange | Tx - |
| 4 | Blue | Rx - |

• Single cable outlet connection mode

| Line color 1* | Pin/wire function definition |
|---------------|------------------------------|
| Yellow | Tx + |
| White | Rx + |
| Orange | Tx - |
| Blue | Rx - |
| Red | 24Vdc |
| Black | COM |

Note: * Line color 1: light green, PUR sheath, 6 cores, -40C~85 C



• Connector Connection Mode (Interface 3)

| Pin | Line color | Pin/wire function definition |
|-----|------------|------------------------------|
| 1 | Brown | +24Vdc (-20%~+20%) |
| 2 | White | Do not connect |
| 3 | Blue | COM |
| 4 | Black | Do not connect |

• Double cable outlet connection mode

| Line color1* | Line color2* | Pin/wire function definition |
|--------------|--------------|------------------------------|
| Yellow | Yellow | Tx + |
| White | White | Rx + |
| Orange | Orange | Tx - |
| Blue | Blue | Rx - |
| Red | - | 24Vdc |
| Black | - | COM |

Note: * Line color 2: light green, PUR sheath, 4 cores, -40C~70 C