

# Cylindrical Inductive Long-Distance / Long-Distance Spatter-Resistant Proximity Sensors



## PRD / PRDA Series (DC 3-wire) CATALOG

**For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.**

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

### Major Features

- Excellent long-distance sensing and noise immunity with specialized sensor IC
- Built-in surge protection circuit, Output short over current protection circuit, reverse polarity protection
- Simple operation, reliable performance, and high durability
- Spatter-resistant type: PTFE coated for high heat resistance (prevent malfunction from welding spatter)
- Cable connector type / Connector type: easy maintenance and wiring
- Operation indicator (red LED)
- IP67 Protection structure (IEC standards)
- Durable and reliable alternative to micro switches and limit switches
- Strain relief cables  
: improved flexural strength of cable connecting component  
(except DIA. of sensing side Ø 8 mm )

### Ordering Information

This is only for reference.

For selecting the specific model, follow the Autonics web site.

**PRD** **1** **2** **3** **4** - **5** **D** **6** - **7**

#### ① Characteristic

No mark: General type  
A: Spatter-resistant type

#### ⑤ Sensing distance

Number: Sensing distance (unit: mm)

#### ② Connection

No mark: Cable type  
W: Cable connector type  
CM: Connector type

#### ⑥ Control output

N: NPN Normally open  
N2: NPN Normally closed  
P: PNP Normally open  
P2: PNP Normally closed

#### ③ Body length

No mark: Normal  
L: Long

#### ⑦ Cable

No mark: Standard type  
V: Oil resistant cable type

#### ④ DIA. of sensing side

Number: DIA. of sensing side (unit: mm)

### Sold Separately

- Connector cable,  
connector connection cable
- Spatter protection cover
- Transmission coupler
- Fixed bracket

## Specifications

| Installation                      | Flush type                                                                                            |                            |                |                |
|-----------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------|----------------|----------------|
| General                           | PRD□08-2D□                                                                                            | PRD□12-4D□                 | PRD□18-7D□     | PRD□30-15D□    |
| Spatter-resistant                 | -                                                                                                     | PRDACM12-4D□               | PRDACM18-7D□   | PRDACM30-15D□  |
| DIA. of sensing side              | Ø 8 mm                                                                                                | Ø 12 mm                    | Ø 18 mm        | Ø 30 mm        |
| Sensing distance                  | 2 mm                                                                                                  | 4 mm                       | 7 mm           | 15 mm          |
| Setting distance                  | 0 to 1.4 mm                                                                                           | 0 to 2.8 mm                | 0 to 4.9 mm    | 0 to 10.5 mm   |
| Hysteresis                        | ≤ 15 % of sensing distance                                                                            | ≤ 10 % of sensing distance |                |                |
| Standard sensing target: iron     | 8 × 8 × 1 mm                                                                                          | 12 × 12 × 1 mm             | 20 × 20 × 1 mm | 45 × 45 × 1 mm |
| Response frequency <sup>01)</sup> | 1 kHz                                                                                                 | 500 Hz                     | 300 Hz         | 100 Hz         |
| Affection by temperature          | ≤ ± 10 % for sensing distance at ambient temperature 20 °C<br>(DIA. of sensing side Ø 8 mm: ≤ ± 15 %) |                            |                |                |
| Indicator                         | Operation indicator (red)                                                                             |                            |                |                |
| Approval                          | CE ENEC                                                                                               | CE ENEC                    | CE ENEC        | CE ENEC        |

| Installation                      | Non-flush type                                                                                        |                            |                |                |
|-----------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------|----------------|----------------|
| General                           | PRD□08-4D□                                                                                            | PRD□12-8D□                 | PRD□18-14D□    | PRD□30-25D□    |
| DIA. of sensing side              | Ø 8 mm                                                                                                | Ø 12 mm                    | Ø 18 mm        | Ø 30 mm        |
| Setting distance                  | 0 to 2.8 mm                                                                                           | 0 to 5.6 mm                | 0 to 9.8 mm    | 0 to 17.5 mm   |
| Sensing distance                  | 4 mm                                                                                                  | 8 mm                       | 14 mm          | 25 mm          |
| Hysteresis                        | ≤ 15 % of sensing distance                                                                            | ≤ 10 % of sensing distance |                |                |
| Standard sensing target: iron     | 12 × 12 × 1 mm                                                                                        | 25 × 25 × 1 mm             | 40 × 40 × 1 mm | 75 × 75 × 1 mm |
| Response frequency <sup>01)</sup> | 800 Hz                                                                                                | 400 Hz                     | 200 Hz         | 100 Hz         |
| Affection by temperature          | ≤ ± 10 % for sensing distance at ambient temperature 20 °C<br>(DIA. of sensing side Ø 8 mm: ≤ ± 15 %) |                            |                |                |
| Indicator                         | Operation indicator (red)                                                                             |                            |                |                |
| Approval                          | CE ENEC                                                                                               | CE ENEC                    | CE ENEC        | CE ENEC        |

01) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

| Unit weight (package) |        | Ø 8 mm          | Ø 12 mm         | Ø 18 mm           | Ø 30 mm           |
|-----------------------|--------|-----------------|-----------------|-------------------|-------------------|
| Cable                 | Normal | ≈ 43 g (≈ 63 g) | ≈ 62 g (≈ 74 g) | ≈ 97 g (≈ 115 g)  | ≈ 143 g (≈ 180 g) |
|                       | Long   | -               | ≈ 82 g (≈ 94 g) | ≈ 127 g (≈ 145 g) | ≈ 183 g (≈ 220 g) |
| Cable connector       | Normal | ≈ 25 g (≈ 45 g) | ≈ 37 g (≈ 67 g) | ≈ 62 g (≈ 80 g)   | ≈ 108 g (≈ 145 g) |
|                       | Long   | -               | ≈ 32 g (≈ 55 g) | ≈ 92 g (≈ 110 g)  | ≈ 130 g (≈ 203 g) |
| Connector             | Normal | ≈ 12 g (≈ 32 g) | ≈ 20g (≈ 49 g)  | ≈ 41 g (≈ 81 g)   | ≈ 138 g (≈ 197 g) |
|                       | Long   | -               | ≈ 24 g (≈ 54 g) | ≈ 60 g (≈ 78 g)   | ≈ 193 g (≈ 252 g) |

| Power supply               | 12-24 VDC≡ (ripple P-P: ≤ 10 %), operating voltage: 10-30 VDC≡                                                                                                                                                                                                                                           |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Current consumption        | ≤ 10 mA                                                                                                                                                                                                                                                                                                  |
| Control output             | ≤ 200 mA                                                                                                                                                                                                                                                                                                 |
| Residual voltage           | DIA. of sensing side Ø 8mm: ≤ 2 V<br>DIA. of sensing side Ø 12 mm, Ø 18 mm, Ø 30 mm: ≤ 1.5 V                                                                                                                                                                                                             |
| Protection circuit         | Surge protection circuit, output short over current protection circuit, reverse polarity protection                                                                                                                                                                                                      |
| Insulation resistance      | ≥ 50 MΩ (500 VDC≡ megger)                                                                                                                                                                                                                                                                                |
| Dielectric strength        | DIA. of sensing side Ø 8mm<br>: 1,000 VAC~ 50/60 Hz for 1 min (between all terminals and case)<br>(connector type: 1,500 VAC~ 50/60 Hz for 1 min (between all terminals and case))<br>DIA. of sensing side Ø 12 mm, Ø 18 mm, Ø 30 mm<br>: 1,500 VAC~ 50/60 Hz for 1 min (between all terminals and case) |
| Vibration                  | 1 mm amplitude at frequency 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours                                                                                                                                                                                                                |
| Shock                      | 500 m/s <sup>2</sup> (≈ 50 G) in each X, Y, Z direction for 3 times                                                                                                                                                                                                                                      |
| Ambient temperature        | -25 to 70 °C, storage: -30 to 80 °C (non-freezing or non-condensation)                                                                                                                                                                                                                                   |
| Ambient humidity           | 35 to 95 %RH, storage: 35 to 95 %RH (non-freezing or non-condensation)                                                                                                                                                                                                                                   |
| Protection structure       | IP67 (IEC standards)                                                                                                                                                                                                                                                                                     |
| Connection                 | Cable type <sup>01)</sup> / Cable connector type <sup>01)</sup> / Connector type model                                                                                                                                                                                                                   |
| Cable spec. <sup>02)</sup> | DIA. of sensing side Ø 8 mm: Ø 3.5 mm, 3-wire<br>DIA. of sensing side Ø 12 mm: Ø 4 mm, 3-wire<br>DIA. of sensing side Ø 18 mm, Ø 30 mm: Ø 5 mm, 3-wire                                                                                                                                                   |
| Wire spec.                 | Ø 3.5 mm cable: AWG 24 (0.08 mm, 40-wire), insulator diameter: Ø 1 mm<br>Ø 4 mm, Ø 5 mm cable<br>: AWG 22 (0.08 mm, 60-wire), insulator diameter: Ø 1.25 mm                                                                                                                                              |
| Connector spec.            | M12 connector                                                                                                                                                                                                                                                                                            |
| Material                   | Standard type cable (black): polyvinyl chloride (PVC)<br>Oil resistant cable (gray): polyvinyl chloride (oil resistant PVC)                                                                                                                                                                              |
| General                    | Case/Nut: nickel plated brass (DIA. of sensing side Ø 8 mm connector type case: SUS303), washer: nickel plated iron, sensing side: PBT                                                                                                                                                                   |
| Spatter-resistant          | Case/Nut: PTFE coated brass, washer: PTFE coated iron, sensing side: PTFE                                                                                                                                                                                                                                |

01) Except spatter-resistant type

02) Cable type: 2 m, Cable connector type: 300 mm