



# DENKI SEIGYO

## Inductive Proximity Sensor

### Round Full-Metal Inductive Proximity Sensor – M12 Diameter

## 1. PRODUCT OVERVIEW

The **Denki Seigyo DPRF12-3DP-PC/ DPRF12-3DN-PC** is a compact inductive proximity sensor designed for reliable detection of metallic objects in industrial automation systems. The sensor features a **full-metal stainless-steel housing**, high noise immunity, and stable switching performance.

It is ideal for machine automation, packaging systems, robotics, and conveyor monitoring applications.

Key advantages include:

- Full metal body for durability
- High switching reliability
- Compact **M12 cylindrical design**
- LED switching indication
- Protection against reverse polarity and short circuit

## 2. MODEL CODE STRUCTURE

| Code  | Description            |
|-------|------------------------|
| D     | Denki Seigyo           |
| PR    | Round Proximity Sensor |
| F     | Full Metal Body        |
| 12    | M12 Diameter           |
| 3     | 3 mm sensing distance  |
| D     | DC type                |
| P     | PNP/NPN output         |
| PC    | Pig tail cable         |
| C     | Connector type         |
| Blank | Cable type             |



## Ordering Information

| Model         | Output Type | Sensing Distance | Housing        | Connection Type |
|---------------|-------------|------------------|----------------|-----------------|
| DPRF12-3DP-PC | PNP NO      | 3 mm             | Full Metal M12 | Pig tail cable  |
| DPRF12-3DN-PC | NPN NO      | 3 mm             | Full Metal M12 | Pig tail cable  |
| DPRF12-3DP-C  | PNP NO      | 3 mm             | Full Metal M12 | M12 Connector   |
| DPRF12-3DN-C  | NPN NO      | 3 mm             | Full Metal M12 | M12 Connector   |
| DPRF12-3DP    | PNP NO      | 3 mm             | Full Metal M12 | Cable Type      |
| DPRF12-3DN    | NPN NO      | 3 mm             | Full Metal M12 | Cable Type      |

## 3. KEY FEATURES

- Compact M12 cylindrical sensor
- Full metal stainless steel body
- 3 mm sensing distance
- PNP/NPN normally open output
- Reverse polarity protection
- Short-circuit protection
- High switching frequency
- LED switching indicator
- IP67 protection

## 4. TECHNICAL SPECIFICATIONS

### General Specifications

| Parameter                   | Specification      |
|-----------------------------|--------------------|
| Switching Function          | Normally Open (NO) |
| Output Type                 | PNP/NPN            |
| Rated Sensing Distance (Sn) | 3 mm               |
| Installation                | Quasi flush        |
| Output Type                 | 3-wire DC          |
| Assured Operating Distance  | 0 – 3 mm           |

Reduction factors for different metals:

| Material        | Reduction Factor |
|-----------------|------------------|
| Aluminum        | 0.25             |
| Copper          | 0.22             |
| Stainless Steel | 0.65             |

These values correspond to the sensor’s detection capability depending on the target material.



## 5. ELECTRICAL SPECIFICATIONS

| Parameter           | Specification |
|---------------------|---------------|
| Operating Voltage   | 10 – 30 V DC  |
| Switching Frequency | 0 – 500 Hz    |
| Voltage Drop        | ≤ 2 V         |
| Load Current        | 0 – 200 mA    |
| Off-State Current   | ≤ 0.1 mA      |
| No-Load Current     | ≤ 10 mA       |

Protection features include:

- Reverse polarity protection
- Short-circuit protection (pulsing)

These electrical ratings ensure reliable operation in industrial environments.

## 6. INDICATOR

| Indicator  | Function                   |
|------------|----------------------------|
| Yellow LED | Output switching indicator |

## 7. MECHANICAL SPECIFICATIONS

| Parameter        | Specification   |
|------------------|-----------------|
| Housing Material | Stainless steel |
| Sensing Face     | Stainless steel |
| Diameter         | 12 mm           |
| Length           | 46 mm           |
| Protection Class | IP67            |

The compact body allows easy installation in limited spaces.

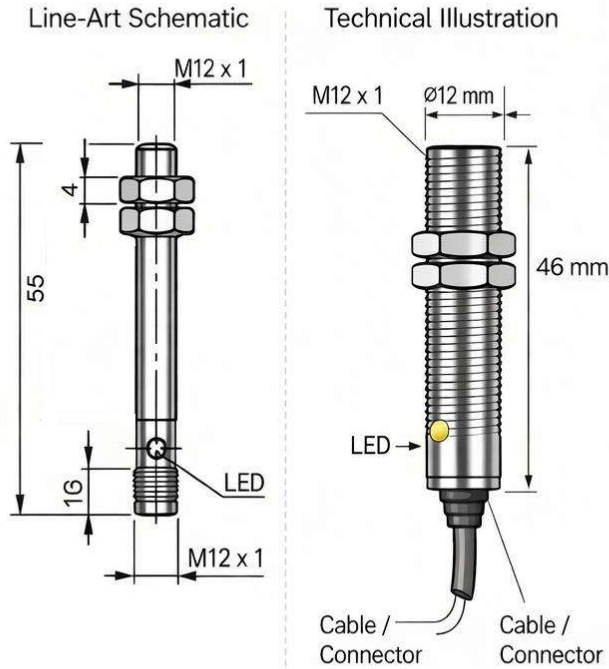
## 8. ENVIRONMENTAL CONDITIONS

| Parameter             | Specification    |
|-----------------------|------------------|
| Operating Temperature | –25 °C to +70 °C |
| Protection Degree     | IP67             |

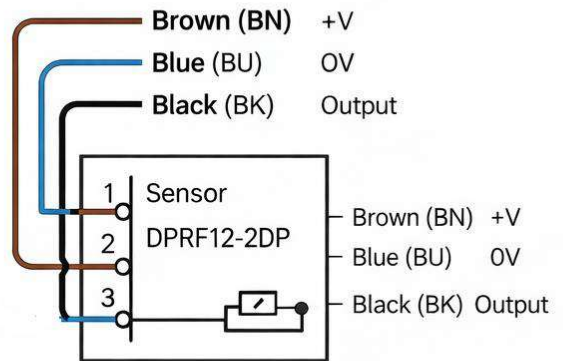
## 9. DIMENSIONS & ELECTRICAL CONNECTION

### M12 Sensor Specifications

#### Dimension Drawing



#### Wiring Diagram



#### Wiring Diagram:

- 1 Brown (BN) +V
- 2 Blue (BU) 0V
- 3 Black (BK) Output
- 4 Not Connected

Wire colors follow **EN 60947-5-2 standard**.

## 10. APPLICATIONS

- Industrial automation
- Conveyor systems
- Packaging machines
- Robotics
- Position detection
- Assembly lines