



DENKI SEIGYO

CAPACITIVE PROXIMITY SENSOR

1. GENERAL DESCRIPTION

The **Denki Seigyo DSCP Series** capacitive proximity sensors are high-performance industrial sensors designed for reliable detection of metallic and non-metallic materials including:

- Liquids
- Powders
- Granular materials
- Plastics
- Glass
- Wood
- Paper
- Chemical substances

The DSCP series is engineered for stable operation in harsh industrial environments and incorporates:

- IP67 protection rating
- Reverse polarity protection
- Short-circuit protection
- Overload protection (220mA)
- Adjustable sensitivity potentiometer
- LED output status indication

Compliant with:
IEC 60947-5-2

2. MODEL RANGE

This datasheet covers:

- **M18 Cylindrical Type**
- **M30 Cylindrical Type**

Power Supply:
10–30VDC

Output Options:

- NPN Normally Open (NO)
- NPN Normally Closed (NC)
- PNP Normally Open (NO)
- PNP Normally Closed (NC)



3. ORDERING INFORMATION

Format: DSCP – MXX – YY – D – P/N – O/C

Code	Description
DSCP	Denki Seigyo Capacitive Proximity
M18	18mm diameter
M30	30mm diameter
YY	Sensing distance (mm)
D	DC 10–30V
N	NPN
P	PNP
O	Normally Open
C	Normally Closed

Example:

DSCP-M3020DPO

= M30, 20mm sensing, DC, PNP, Normally Open

4. TECHNICAL SPECIFICATIONS

Electrical Specifications

Item	M18 Model	M30 Model
Operating Voltage	10–30 VDC	10–30 VDC
Current Consumption	≤15mA	≤15mA
Control Output	NPN / PNP (NO/NC)	NPN / PNP (NO/NC)
Max Load Current	200mA	200mA
Residual Voltage	≤2.0V	≤2.0V
Leakage Current	<10mA	<10mA
Response Frequency	100Hz	100Hz
Hysteresis	<15% of Sn	<15% of Sn
Repeat Accuracy	<5%	<5%
Temperature Drift	<10%	<10%



Mechanical Specifications

Item	M18	M30
Thread Size	M18 × 1	M30 × 1.5
Overall Length	80mm	80mm
Thread Length	55mm	60mm
Spanner Size	SW24	SW36
Cable Type	Ø5mm, 3-wire	Ø5mm, 3-wire
Cable Length	2m PVC	2m PVC

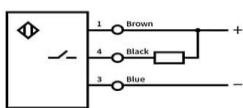
Environmental Specifications

Parameter	Specification
Ambient Temperature	-25°C to +70°C
Storage Temperature	-30°C to +80°C
Humidity	35–95% RH
Protection Rating	IP67
Insulation Resistance	>50MΩ (500VDC)
Dielectric Strength	1500VAC, 1 min
Vibration	10–55Hz, 1mm amplitude
Shock	30g / 11ms

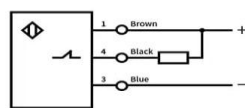
Materials

Component	Material
Housing	Nickel plated brass / PBT
Sensing Face	PC
Washer	Nickel plated steel

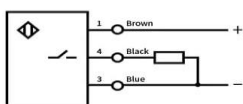
5. CONNECTION DIAGRAM (DC 3-WIRE TYPE)



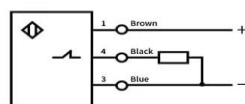
DC 3-Wire NPN NO



DC 3-Wire NPN NC



DC 3-Wire PNP NO



DC 3-Wire PNP NC



6. SENSITIVITY ADJUSTMENT

Procedure:

1. Remove target from sensing area.
2. Rotate potentiometer clockwise until output turns ON.
3. Place target at required detection distance.
4. Rotate potentiometer counterclockwise until output turns OFF.
5. Set the midpoint between ON and OFF positions.

Recommended difference between ON/OFF positions:
 ≥ 1.5 turns for stable operation.

7. INSTALLATION GUIDELINES

Mutual Interference

When installing multiple sensors:

Mounting Type	Minimum Distance
Face-to-Face	$\geq 3 \times S_n$
Parallel	$\geq 2 \times S_n$

Influence by Surrounding Metal

Maintain clearance around sensing face:

Model	Side Clearance	Rear Clearance
M18	$\geq 1 \times \text{diameter}$	$\geq 1 \times \text{diameter}$
M30	$\geq 1 \times \text{diameter}$	$\geq 1 \times \text{diameter}$

Tightening Torque

Model	Front Torque	Rear Torque
M18	25 N·m	35 N·m
M30	50 N·m	78 N·m



8. SAFETY CONSIDERATIONS

WARNING:

- Install fail-safe system when used in critical machinery.
- Do not disassemble or modify.
- Disconnect power before wiring.
- Use insulated Class 2 / SELV power supply.
- Do not use in explosive or corrosive environments.

CAUTION:

- Do not connect capacitive load directly.
- Avoid high-frequency noise sources.
- Use product after 0.8 seconds of power ON.
- Do not pull cable beyond rated tensile strength.

9. APPLICATIONS

- Liquid level sensing
- Powder level detection
- Packaging automation
- Chemical processing plants
- Food & beverage industry
- Plastic & glass detection
- Bulk material monitoring
- Conveyor control systems

10. COMPLIANCE

- IEC 60947-5-2
- CE (Applicable models)
- RoHS compliant