



DENKI SEIGYO

DSP40 SERIES



Square Inductive Proximity Sensor

40 × 40 mm Heavy-Duty Square Proximity Sensor | 20 mm / 40 mm Sensing | PNP / NPN | M12

Product Overview

The **DSP40 Series** is a heavy-duty square inductive proximity sensor designed for reliable, non-contact detection of metallic objects in demanding industrial environments.

With a compact **40 × 40 mm housing**, long **20 mm and 40 mm sensing distances**, PNP and NPN output options, a **rotatable sensing head**, 360° LED indication and **IP68/IP69K protection**, the DSP40 Series provides reliable detection for conveyors, material handling, machine tools, packaging equipment, automotive machinery and factory automation.

Key Features

- **40 × 40 mm** square industrial housing
- **20 mm / 40 mm** sensing-distance options
- Inductive non-contact metal detection
- PNP and NPN output versions
- DC 4-wire configuration
- Non-flush installation
- Rotatable sensing head
- **360° LED indication with four LEDs**
- M12 × 1 connector
- Quick mounting bracket
- Reverse-polarity protection
- Pulsing short-circuit protection
- High switching reliability
- Excellent vibration resistance
- **IP68 / IP69K** protection
- Heavy-duty industrial construction

Product Series

Model	Output	Sensing Distance	Connection
DSP40-20DP-C	PNP	20 mm	M12
DSP40-40DP-C	PNP	40 mm	M12
DSP40-20DN-C	NPN	20 mm	M12
DSP40-40DN-C	NPN	40 mm	M12

The four variants allow selection according to required sensing distance and PLC/control-system interface.



Model Code Structure

Example: DSP40-40DP-C

Code	Description
D	Denki Seigyo
SP	Square Proximity Sensor
40	40 × 40 mm Housing
20 / 40	Sensing Distance in mm
D	DC Supply
P	PNP Output
N	NPN Output
C	M12 Connector

Technical Specifications

General Specifications

Parameter	Specification
Sensor Type	Inductive Proximity Sensor
Sensing Principle	Inductive
Housing Type	Square
Housing Size	40 × 40 mm
Sensing Distance	20 mm / 40 mm
Installation	Non-flush
Standard Target	Iron (Fe)
Connection	M12 Connector
Output Variants	PNP / NPN
Configuration	4-Wire DC

Electrical Specifications

Parameter	Specification
Supply Voltage	10–30 VDC
Output Type	PNP / NPN
Output Configuration	4-Wire DC
Switching Function	Complementary
Switching Frequency	180 Hz*
Operating Current	200 mA max.*
No-Load Current	≤20 mA*
Voltage Drop	≤2 V*
Leakage Current	≤0.5 mA*
Reverse Polarity Protection	Yes
Short-Circuit Protection	Pulsing

LED Status Indication

The DSP40 incorporates **four LED indicators positioned for 360° visibility**.

Indicator	Function
Green LED	Power ON
Yellow LED	Output Status
LED Arrangement	4-sided / 360° visibility

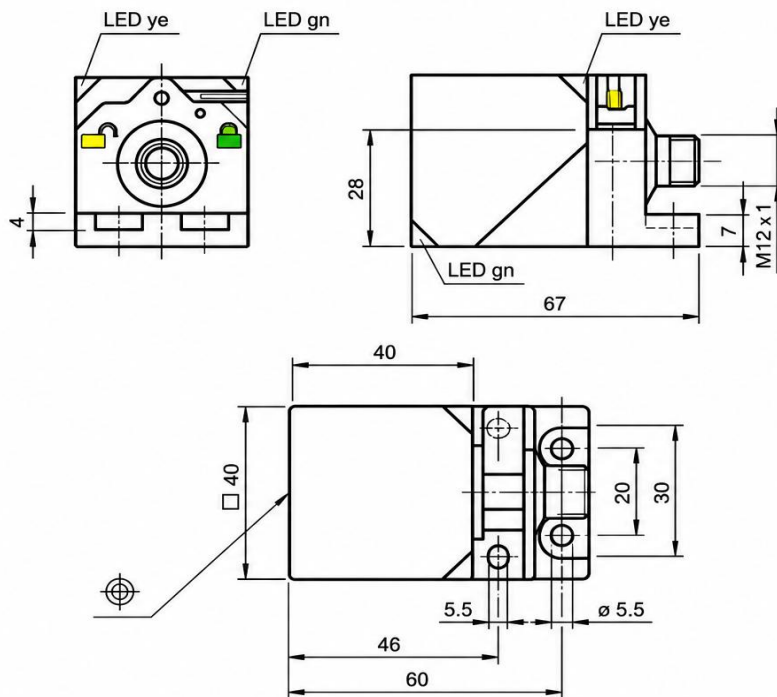


Environmental Specifications

Parameter	Specification
Operating Temperature	-25°C to +85°C
Storage Temperature	-40°C to +85°C
Protection Rating	IP68 / IP69K
Shock Resistance	Industrial Grade
Vibration Resistance	High

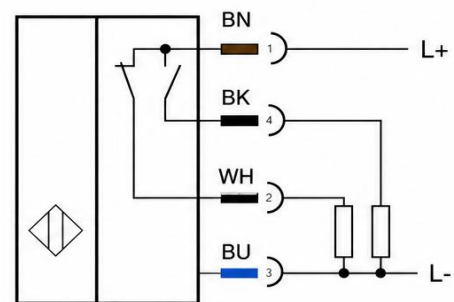
The IP68/IP69K rating makes the series suitable for applications exposed to dust, moisture and washdown conditions.

DIMENSIONS



All dimensions are in mm

WIRING DIAGRAM



- BN (1) Brown - L+
- BK (4) Black - Output
- WH (2) White - Output
- BU (3) Blue - L-

Sensing Performance

Rated Sensing Distance

The DSP40 Series is available in: 20 & 40mm Sensing Distance

Target Material

The standard reference target is **Iron (Fe)**.



Approximate correction factors published for different target materials are:

Target Material	Correction Factor
Iron	1.00
Stainless Steel	0.74
Brass	0.39
Aluminium	0.31
Copper	0.30

Actual detection distance depends on target size, material, geometry and installation conditions.

Rotatable Sensing Head

The sensing head can be **rotated to simplify installation and alignment**.

This provides additional flexibility when:

- Sensor access is restricted
- Cable routing needs adjustment
- Mounting space is limited
- The target approach direction varies
- Multiple sensors are installed close together

Installation

The DSP40 Series uses **flush and non-flush installation** and a quick mounting-bracket arrangement.

The M12 connector provides a secure industrial connection while simplifying installation and replacement during maintenance.

Protection & Reliability

The DSP40 is designed for harsh industrial environments with:

IP68 / IP69K protection



High vibration resistance



Reverse-polarity protection



Pulsing short-circuit protection



Heavy-duty square housing

These features make the series suitable for continuous operation in demanding automation environments.



Typical Applications

Conveyor Systems

Robotics

Material Handling

Warehouse Automation

Machine Tools

Steel Industry

Packaging Machinery

Production Machinery

Automotive Manufacturing

Factory Automation

Why Choose DSP40 Series?

Long Sensing Distance

20 mm and 40 mm options provide greater detection range for applications requiring increased sensing clearance.

Flexible Model Selection

PNP and NPN variants allow compatibility with different PLC and control architectures.

Rotatable Sensing Head

Makes sensor alignment and installation easier.

360° Status Visibility

Four LEDs provide clear indication from different viewing directions.

Industrial Protection

IP68/IP69K protection supports demanding dust, moisture and washdown environments.

Easy Connectivity

M12 connection simplifies installation and maintenance.

Reliable Metal Detection

Inductive non-contact detection eliminates mechanical contact with the target.



Product Summary

Feature	DSP40 Series
Product Type	Square Inductive Proximity Sensor
Housing	40 × 40 mm
Sensing Distance	20 / 40 mm
Sensing Principle	Inductive
Installation	Flush/Non-flush
Output	PNP / NPN
Configuration	4-Wire DC
Supply Voltage	10–30 VDC
Switching Frequency	180 Hz*
Load Current	200 mA max.*
Connector	M12 × 1, 4-pin
Sensing Head	Rotatable
LED	4 × 360° indication
Housing Material	PA Engineering Plastic
Protection	IP68 / IP69K
Operating Temperature	–25°C to +85°C
Storage Temperature	–40°C to +85°C
Mounting	Quick Mount Bracket
Weight	Approx. 155 g*

Short Description

The DSP40 Series combines long-range inductive detection, flexible PNP/NPN output options, a rotatable sensing head, 360° status indication and IP68/IP69K protection in a compact 40 × 40 mm industrial housing—providing a reliable sensing solution for demanding automation, machine-tool and material-handling applications.

DENKI SEIGYO — Reliable Sensing. Smarter Automation.