DENKI SEIGYO

Fork Photoelectric Sensor

Models

DUP-30S – NPN Output
DUP-30S-P – PNP Output

Product Overview

The **Denki Seigyo DUP30S Series Fork Photoelectric Sensors** are high-precision sensors designed for **reliable object detection within a fixed fork gap**. These sensors integrate the **emitter and receiver inside a U-shaped housing**, eliminating alignment issues and ensuring stable detection performance.

With a **30 mm fork gap**, the DUP30S series is ideal for applications requiring accurate detection of small objects, labels, edges, or components in automation processes. The built-in **sensitivity adjustment** allows easy tuning for different materials and environmental conditions.

The sensors provide **NPN or PNP output options**, enabling easy integration with PLCs and industrial control systems. Their robust industrial design ensures reliable performance in demanding factory environments.

Working Principle

The **Denki Seigyo DUP30S series fork sensors** operate using a **through-beam photoelectric detection method**. The **emitter and receiver are integrated inside the U-shaped housing**, creating a fixed optical path across the fork gap.

1. **Emitter**
   The emitter continuously transmits an **infrared light beam** across the fork gap.
2. **Receiver**
   The receiver detects the incoming light beam when no object is present.
3. **Object Detection**
   When an object enters the **30 mm gap**, it interrupts the light beam.
4. **Signal Output**
   The interruption is detected by the receiver and the sensor **switches the output signal (NPN or PNP)** to indicate object presence.

Detection State

Condition	Beam Status	Output
No object in gap	Light reaches receiver	OFF
Object present	Beam blocked	ON

Model Configuration

Model	Output Type	Fork Gap	Sensitivity Adjustment
DUP30S	NPN	30 mm	Yes
DUP30S-P	PNP	30 mm	Yes

Key Features

- Integrated **U-type fork design**
- **30 mm detection gap**
- Built-in **sensitivity adjustment**
- **Fast response time**
- Stable detection performance
- **NPN / PNP output options**
- **LED operation indicator**
- Easy installation and alignment
- Suitable for **high-speed automation systems**

Applications

Denki Seigyo fork sensors are widely used in:

- Label detection machines
- Packaging equipment
- Sheet counting systems
- Edge detection systems
- Bottle detection
- PCB detection
- Conveyor automation systems
- High-speed production lines

Technical Specifications

Parameter	Specification
Sensor Type	Fork Photoelectric Sensor
Detection Method	Through Beam (Emitter & Receiver integrated)
Fork Gap	30 mm
Light Source	Infrared LED
Supply Voltage	12 – 24 V DC
Output Type	NPN / PNP
Output Mode	Normally Open
Load Current	Max. 200 mA
Response Time	≤ 1 ms
Sensitivity Adjustment	Potentiometer
Protection Circuit	Reverse polarity, short circuit protection
Protection Rating	IP67
Housing Material	Industrial ABS
Indicator	LED status indicator
Operating Temperature	−10°C to +60°C
Storage Temperature	−20°C to +70°C
Connection	Cable type (2 m)

Ordering Information

Model	Output Type	Gap	Sensitivity Adjust
DUP-30S	NPN	30 mm	Yes
DUP-30S-P	PNP	30 mm	Yes

Model Code Explanation

DUP-30S

Code	Meaning
D	Denki Seigyo
U	U-type (Fork sensor)
P	Photoelectric sensor
30	30 mm fork gap
S	Sensitivity adjustment
Blank	NPN Output
P	PNP Output

Wiring Diagram

NPN Output – DUP-30S

Wire	Connection
Brown	+12-24 V DC
Blue	0V
Black	Output

When object is detected, the output switches **to 0V**.

PNP Output – DUP-30S-P

Wire	Connection
Brown	+12-24 V DC
Blue	0V
Black	Output

When object is detected, the output switches **+V to the load**.

Advantages of Fork Sensors

- No alignment required
- Reliable detection of thin objects
- Fast response for high-speed machines
- Compact and easy installation
- Stable detection performance
