Advanced reflective photoelectric sensors for flexible manufacturing
Long distance sensing and time of flight (TOF) technology

Distance-settable
Time of flight
Photoelectric Sensors

E3AS Series

INTEGRATED | INTELLIGENT | INTERACTIVE
Use reflective photoelectric sensors in flexible applications

Conventional reflective photoelectric sensors have limited sensing ranges and are prone to false detection with changes in the size, color, or reflectivity of the target. The E3AS-F Series uses the time-of-flight (TOF) technology to resolve these issues. E3AS-F sensors can be used in high-mix conveyor lines that transport products of varying colors, as well as assembly lines with restricted installation space.

Exceptionally long sensing range of 50 to 1,500 mm
Enables flexibility when addressing applications with variable sensing requirements

Stable detection for variable targets
Reduces setup and adjustment time

Compact body
Overcomes space limitations
TOF detects varying targets and measures distance

TOF method
In the time-of-flight method, the output distance is calculated based on the time elapsed between the light emission and its reception by the sensor once it is reflected off the target.

Why TOF method enables stable detection without adjustment
In the TOF method, the distance is measured based on the elapsed time instead of the amount of incident light received. Measurements therefore are not affected by changes in the color or material of the target, meaning targets with low reflectivity, such as black rubber, can be detected from longer distances.

Why triangulation method requires adjustment
The distance is measured from the light receiving position in the triangulation method. The position varies due to changes in the received light waveform, which is affected by the reflectance properties (regular or diffuse) of the target color or material. Workpieces with low reflectivity, such as black rubber, can only deliver a small amount of light, and can only be detected by reducing the distance between the target and the sensor.

Common applications for the E3AS-F sensors

Conveyor lines
Engine assembly
Design diverging and converging conveyor lines with a single model

E3AS-F Sensors can detect targets based on only their distance, eliminating the need to optimize sensor positioning for different targets.
Wide sensing range for various conveyor line widths

E3AS-F Sensors have a wide sensing range (50 to 1,500 mm), allowing users to standardize on one sensor.

TOF method enables detection of various targets on conveyor lines

E3AS-F sensors detect targets with varying color or material by detecting the distance of the object.

Compact enough for confined spaces

E3AS-F Sensors can be installed in challenging locations.
Reduce selection/commissioning time

Two sensing distance models

Offered in two types of material options:

![Image of sensors](image)

**E3AS Series**

- **E3AS-F1500**
  - Sensing range: 50 to 1,500 mm
- **E3AS-F1000**
  - Sensing range: 50 to 1,000 mm

- **Note:** Light source is infrared light. Spot diameter is 95 mm (at a distance of 1,000 mm).

**Short-distance sensing models also available**

- **E3AS-L Series**
  - Equipped with OMRON’s unique light emitting element for stable detection of targets with low reflectivity. Ideal for detecting small, thin workpieces.

  - Sensing range: 10 to 80 mm
  - Sensing range: 10 to 200 mm

- **Teaching without a target**
  - Set the threshold at approx. 85% of the distance between the sensor and the background (reference surface).

- **Two-point teaching**
  - Set the threshold at a value halfway between when a target is present and when one is not. Settings can be done with the workpiece present first or with the target absent first.

  - Place target in position and press the teach button.
  - Press the teach button without the target in place.

- **Actual size:** W 11.4 x D 22 x H 37.9 mm

- **316L SUS**

- **PBT**

- **Large and easy to press teach button**
Reduce sensor cleaning frequency and replacement

Anti-fouling coating prevents contamination of the sensing surface  

A dirty sensing surface can cause false detection. The E3AS Series has an anti-fouling coating on the sensing surface which prevents water droplets, oil, and dust from sticking to the sensing surface and keeps the lens from fogging as well.

Laser welded construction increases environmental resistance

OMRON’s two unique laser welding technologies, for mixed materials and for homogeneous metals, enhances the sealing and adhesion between the stainless steel and resin.

Laser welding technology for mixed materials

Small holes are bored into the metal case, then the resin part is melted in by a laser for secure sealing and adhesion.

Laser welding technology for metals

The metal case and cover are welded by a laser to seal gaps ensuring higher airtightness compared to adhesives.

IO-Link reduces commissioning time

IO-Link enables batch-writing of sensor setup information, effectively reducing commissioning time and inconsistent settings. It also enables users to check sensor IDs, allowing them to efficiently perform I/O checks on the thousands of sensors installed on a line.

**Setup** Setting all sensors from a single host device

Sensor setting information can be batch-written, eliminating the need to setup a large number of sensors individually.

- Batch sensor status check
- Monitor output of the detection and incident levels
- Batch write specified threshold levels from host devices
- Less commissioning time and inconsistent settings

**I/O check** ID check prevents installation mistakes

Sensor IDs can be batch checked, making it easy for users to check installation mistakes or disconnected sensors.

Note: Screen is a conceptual illustration.

Note: Setting of the IO-Link master or programming for the PLC is required.

An incorrect sensor is installed for No.5!

Note: Setting of the IO-Link master or programming for the PLC is required.

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ES87I-E3-01  Note: Specifications are subject to change.