

NEW

Smart Fiber Sensor  
E3X-HD



OMRON

Measurement Discrimination Presence

## Surprisingly Stable Detection with Your Finger tip

Exceptionally easy operation and stabilizing  
technology reduce maintenance cost.



realizing

Communications Units are available.



EtherCAT

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# Stable

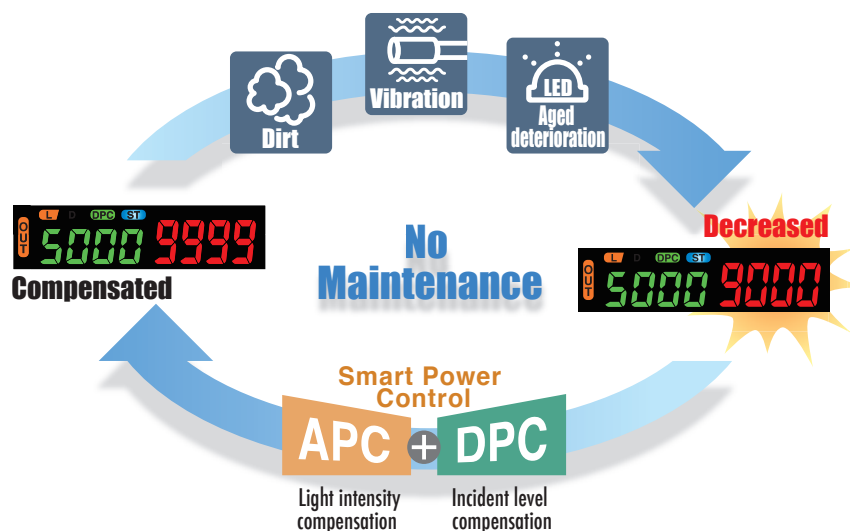
## No Maintenance

**Smart Power Control** Long-term stable detection with no maintenance

Smart Power Control function detects the decrease in light intensity due to LED aged deterioration and the decrease in incident level due to dirt, then automatically compensates the optimum detection condition. You get maintenance-free operation that withstands the ambient environments.

ONLY ONE 1

■ Maintenance-free operation by double compensation of light intensity and incident level



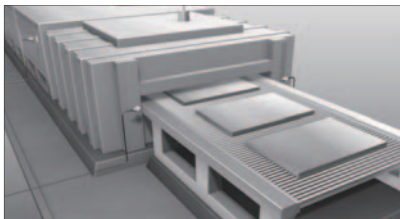
## Detect Workpieces compensation without concern for Color and Size

Lighting element GIGA RAY II is equipped that margin of detection on all scenes has been realized

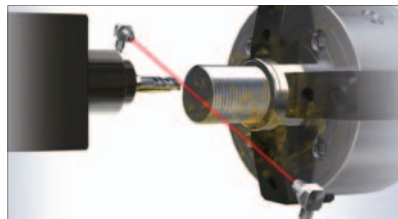


Unparalleled power of GIGA RAY II, with the highest level stably detects large workpieces and low-reflective workpieces such as black rubber whose detection was unstable before.

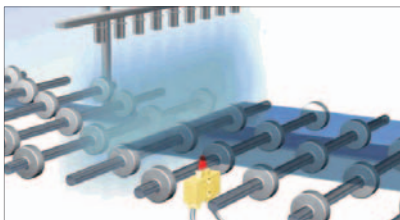
Long-distance detection for large workpieces



Detection in oily environments



Detection in water and liquid medicine environments



Detection of low-reflective workpieces such as black rubber



Use the Fiber Heads that are suitable for the application environment.

Smart Power Control



Smart Eco Drive

Smart Fiber

**E3X-HD** Series

[Stable] and [Easy] operation

Simple Usability

# No Maintenance of a Button

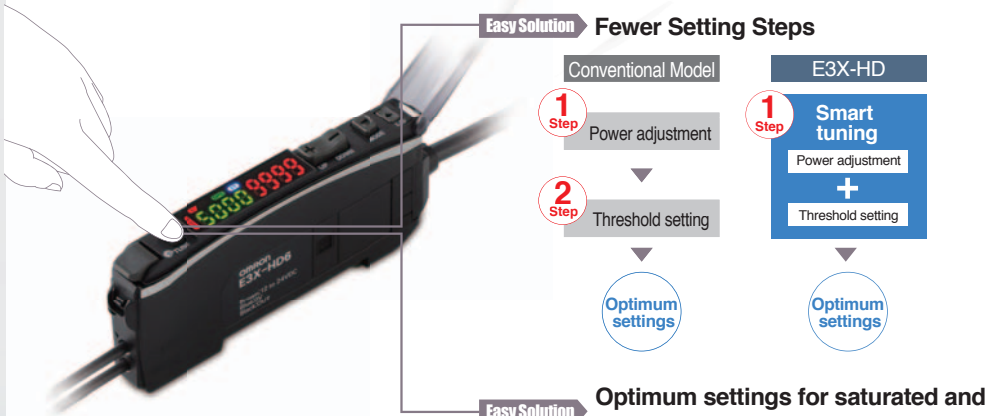
## Easy

### Consistent Settings for All Users

PAT.P

#### Smart Tuning Easy and optimum settings for anyone

Just press the **S TUNE** button once with a workpiece and once without a workpiece to automatically set the optimum incident level and threshold regardless of the workpiece. The optimum settings can be performed regardless of skills and languages. The setting dispersion of the Sensors is also eliminated to enable smoothly shifting from trial production to mass production, which contributes to the reduction of introduction cost.



Setting of Smart Tuning

With workpiece

Without workpiece

Press only twice.

9999

0

Incident level adjustment with workpiece

Incident level adjustment without workpiece

5000

Threshold setting  
(Set to intermediate value between the incident levels with and without a workpiece.)

Settings are simultaneously completed.

Saturated incident level

Low incident level

Short distance

Black rubber

With workpiece

Without workpiece

With workpiece

Without workpiece

9999

9999

600

100

Smart Tuning

8000

9999

Optimum setting

9999

1600

With workpiece

Without workpiece

With workpiece

Without workpiece

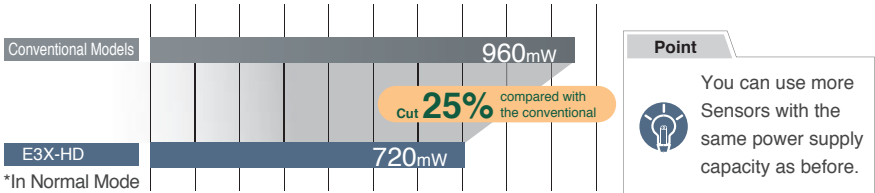
Point

Smart Tuning evolved from the popular power tuning feature of conventional Amplifiers, and yet is easier to use. It enables easily reproducing stable detection conditions by newcomers or by operators on a site of the factory overseas. The incident level is displayed without modification (0 to 9,999) to make it easier to understand and to provide operators with a sense of ease with the larger numbers.

### Let the E3X-HD Help You Save Energy

#### Smart Eco Drive Contribute to energy saving of equipment

The increased power efficiency of the newly developed GIGA RAY II and the new circuit design reduce power consumption by 25% over conventional models. This supports saving energy and power in your equipment. Power consumption of only 720 mW has been realized in operation in Normal Mode. And there are no restrictions to sensing distance and response time.



# with No Maintenance

Press of a Button

## Stable

### Smart Power Control Long-term stable detection with no maintenance

ONLY ONE 1

Even if the incident level is decreased due to dirt or mechanical vibration, Omron's proprietary Smart Power Control combines APC and DPC to automatically compensate the power so that high-precision detection with no maintenance is performed. And if compensation is not possible, the DPC indicator flashes to let you know that maintenance is required. You get reliable operation with long-term stable detection and visible abnormality.

#### Point



APC can be used always on for E3X-HD. The GIGA RAY II, which is described below, widely reduces the load with a low-power consumption LED. Furthermore comfortable long-term reliability has been realized.

**OMRON's APC is the No.1 for long-term reliability!**

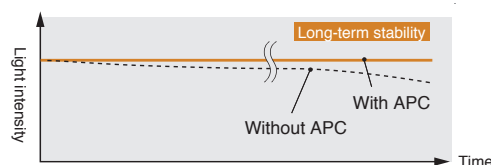
#### Smart Power Control

##### APC

Always ON

(AUTO POWER CONTROL)

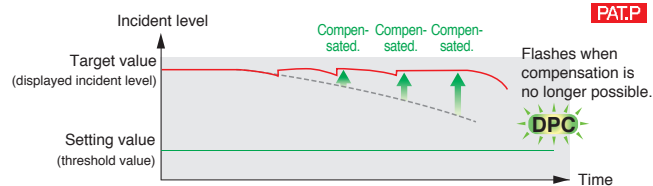
Automatically compensate light intensity



##### DPC

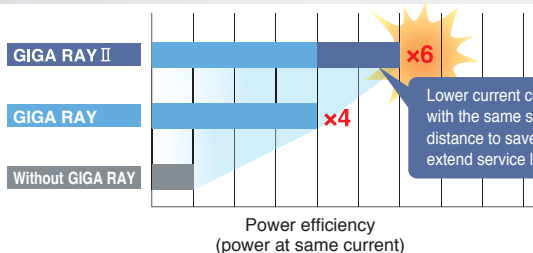
(DYNAMIC POWER CONTROL)

Automatically compensate incident level

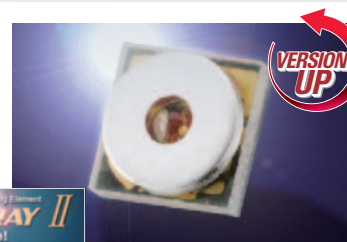


### Advanced newly-developed GIGA RAY II for long-term stability and energy savings

The GIGA RAY has evolved into the newly-developed GIGA RAY II to achieve 1.5 times the power efficiency of conventional models. This effect is utilized to enhance APC service life for long-term stability and energy-saving effect more than enhancing the sensing distance. It contributes to the reliability and energy saving of your equipment.



Lower current consumption with the same sensing distance to save energy and extend service life.



GIGA Power Lighting Element  
**GIGA RAY II**  
inside!

### Maintenance cost is furthermore reduced! Open network is supported

- Greatly reduce wiring work for Fiber Amplifiers with zero-line connection.
- You can change settings from an external device to greatly reduce setup work.
- Connection of multiple units is available. (E3X-CRT: 16 units, E3X-ECT: 30 units)



E3X-CRT



E3X-ECT

CompoNet EtherCAT

Make the following search to access information on network standards and products.

Access keyword from search engines :

Omron Field Network



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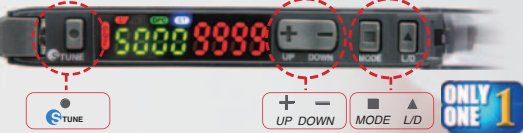
# Easy

## Greater operability and visibility are realized by a universal design

The universal design makes operation much easier and allows you to reliably communicate with operators when starting up or maintaining systems overseas.

### Operations

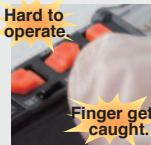
Symbolic buttons are easy to remember anywhere even for operators overseas.



Compatibility for easy operation and incorrect operation prevention.



Pleasing operation even with gloves on.



Conventional Models  
Sliding switches



E3X-HD  
Pushbutton switches  
(no sliding switches)

### Smart Tuning

Smart tuning for the optimum settings with just one button.

### Easy Fiber Insertion

Insertion performance is improved with a large insertion guide.

### Point



Instruction Manuals are included in English, Japanese, and simplified Chinese.

### Arc Design

A strong accent line gives a compact look to improve equipment design.

### Easy-to-operate Cover

Cover with an overhanging structure for easy opening that clicks securely back in place.

### Three-position Cover Stopper

Set to best of three positions: 90°, 135°, or 170°.

### Space for I/O labels

Space for attaching I/O labels to make easy check.

### Indications

Visibility is improved with digital displays and visible indicators.

### New Concept: Visible Indicators

L

D

Operation mode indicator to prevent incorrect settings.

DPC

Flashing indicator enables preventive maintenance.

ST

Indicates that the optimum settings have been made.

OUT indicator

8888

8888

Threshold (green)

Incident level (red)

## Ordering Information

### E3X-HD Series

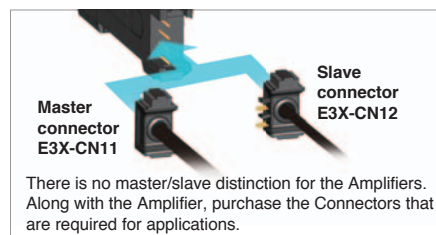
#### Amplifier Units

| Type                               | Appearance                                                                        | Connection method     | Model              |                    |
|------------------------------------|-----------------------------------------------------------------------------------|-----------------------|--------------------|--------------------|
|                                    |                                                                                   |                       | NPN output         | PNP output         |
| Standard models                    |  | Pre-wired (2 m)       | <b>E3X-HD11 2M</b> | <b>E3X-HD41 2M</b> |
|                                    |  | Wire-saving connector | <b>E3X-HD6</b>     | <b>E3X-HD8</b>     |
| For Communications Unit connection |  | Communications Unit   | <b>E3X-HD0</b>     |                    |

**Wire-saving Connectors** (Order Separately) (An Amplifier Unit with a wire-saving connector is required.)

**Connectors are not provided with the Amplifier Units.**

| Type             | Appearance                                                                        | Cable length | Number of conductors | Model           |
|------------------|-----------------------------------------------------------------------------------|--------------|----------------------|-----------------|
| Master connector |  | 2 m          | 3                    | <b>E3X-CN11</b> |
| Slave connector  |  |              | 1                    | <b>E3X-CN12</b> |



#### Communications Units

| Communications method | Appearance                                                                        | Applicable Fiber Amplifier Units                      | Model          |
|-----------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------|----------------|
| CompoNet              |  | <b>E3X-HD0</b><br><b>E3X-MDA0</b><br><b>E3X-DA0-S</b> | <b>E3X-CRT</b> |
| EtherCAT              |  |                                                       | <b>E3X-ECT</b> |

#### Accessories (Order Separately)

##### Mounting Bracket

| Appearance                                                                          | Model           | Quantity |
|-------------------------------------------------------------------------------------|-----------------|----------|
|  | <b>E39-L143</b> | 1        |

##### End Plate

| Appearance                                                                          | Model        | Quantity |
|-------------------------------------------------------------------------------------|--------------|----------|
|  | <b>PFP-M</b> | 1        |

## Ratings and Specifications



| Type Model                     |                             | Standard models                                                                                                                                                                                           |                         |                         |                         | For Communications Unit                          |
|--------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|--------------------------------------------------|
|                                | Connection method           | E3X-HD11                                                                                                                                                                                                  | E3X-HD41                | E3X-HD6                 | E3X-HD8                 | E3X-HD0                                          |
| Item                           | Control output              | NPN output                                                                                                                                                                                                | PNP output              | NPN output              | PNP output              | ——                                               |
| Light source (wavelength)      |                             | Red, 4-element LED (625 nm)                                                                                                                                                                               |                         |                         |                         |                                                  |
| Power supply voltage           |                             | 12 to 24 VDC ±10%, ripple (p-p)10% max.                                                                                                                                                                   |                         |                         |                         |                                                  |
| Power consumption              |                             | Normal Mode: 720 mW max. (Current consumption: 30 mA max. at 24 VDC, 60 mA max. at 12 VDC.)<br>Power Saving Eco Mode: 530 mW max. (Current consumption: 22 mA max. at 24 VDC, 44 mA max. at 12 VDC.)      |                         |                         |                         |                                                  |
| Control output                 |                             | Load power supply voltage: 26.4 VDC max., open-collector output (Varies with the model depending on output is PNP or NPN.)Load current: 50 mA max. (residual voltage: 2 V max.), OFF current: 0.5 mA max. |                         |                         |                         | ——                                               |
| Response time                  | Super-high-speed Mode (SHS) | Operate or reset: 50 μs                                                                                                                                                                                   | Operate or reset: 55 μs | Operate or reset: 50 μs | Operate or reset: 55 μs | Operate or reset: 50 μs                          |
|                                | High-speed Mode (HS)        | Operate or reset: 250 μs                                                                                                                                                                                  |                         |                         |                         |                                                  |
|                                | Standard Mode (STND)        | Operate or reset: 1 ms                                                                                                                                                                                    |                         |                         |                         |                                                  |
|                                | Giga-power Mode (GIGA)      | Operate or reset: 16 ms                                                                                                                                                                                   |                         |                         |                         |                                                  |
| Mutual interference prevention |                             | Possible for up to 10 units                                                                                                                                                                               |                         |                         |                         |                                                  |
| Maximum connectable Units      |                             | 16 units                                                                                                                                                                                                  |                         |                         |                         | with E3X-CRT: 16 units<br>with E3X-ECT: 30 units |