OMRON

Smart Fiber Sensor
E3X-HD

Smart Fiber

Measurement Discrimination Presence

# Surprisingly Stable Detection with Your Finger tip

## Exceptionally easy operation and stabilizing technology reduce maintenance cost.




realizing

**E3X-HD** Series

Measurement Discrimination **Presence**

# Long-term Stable Detection with No Maintenance

Optimum Settings with the Press of a Button

# Stable

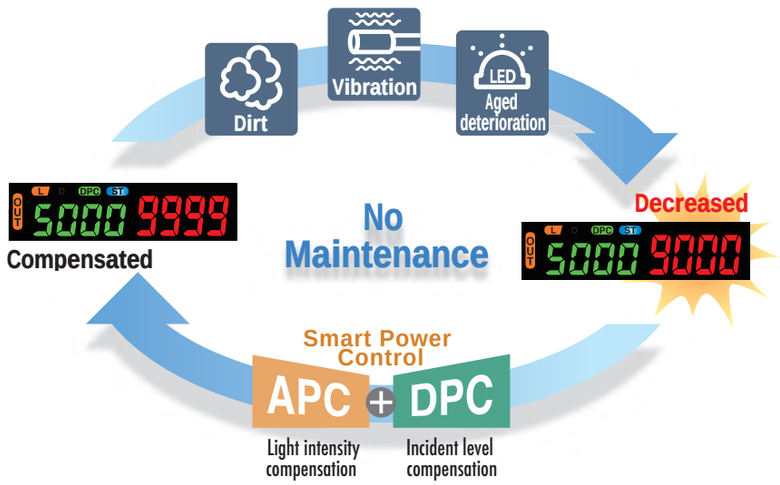
## No Maintenance

**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**



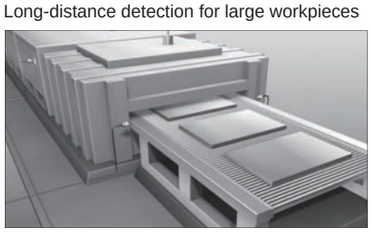

## Detect Workpieces compensation without concern for Color and Size

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

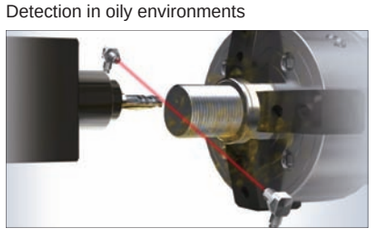
GIGA Power Lighting Element GIGA RAY Ⅱ inside!

Umparalleled 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.

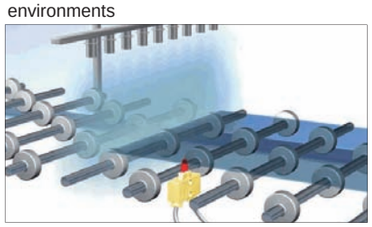
Long-distance detection for large workpieces



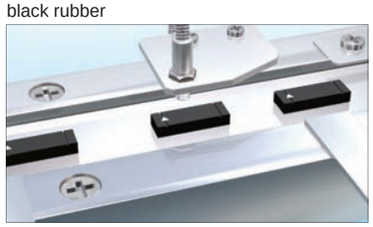
Detection in oily environments



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 Fiber

# E3X-HD Series

**[Stable]** and **[Easy]** operation realized through Ultimate Usability

# enance

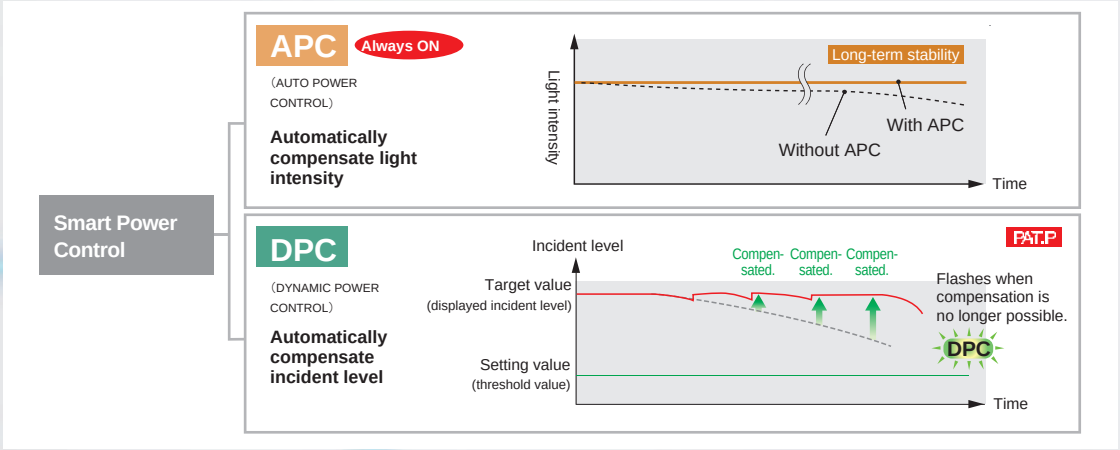
## Stable

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

Even if the incident level is decreased due to dirt or mechanical vibration, Omron's proprietory 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.

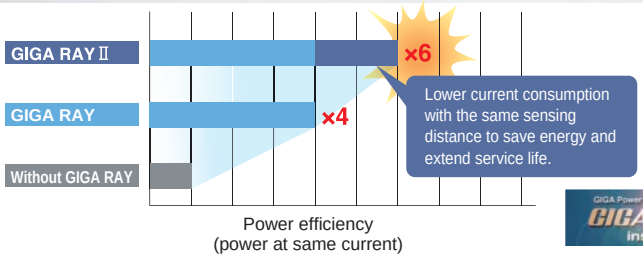
**Point**

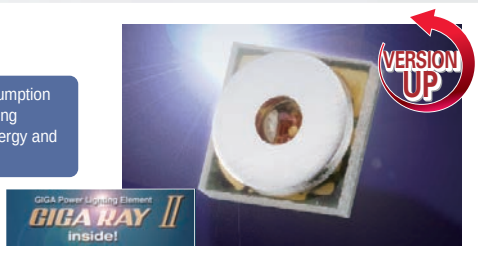
APC can be used always on for E3X-HD. The GIGA RAY Ⅱ, which is described below, widely reduces the load with a low-power consumption LED. Furthermore comfortable long-term reliability has been realized.
**OMRON's APC is the No.1 for long-term reliability!**




### 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.




### 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)

✻1. Have been discontinued at the end of October 2024.

CompoNet EtherCAT



E3X-CRT ✻1 E3X-ECT ✻1

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

**Access keyword from search engines :** Omron Field Network Search

# Easy

## Consistent Settings for All Users

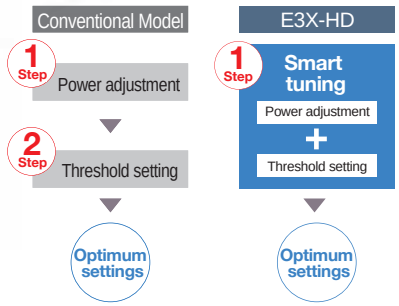
PAT.P

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

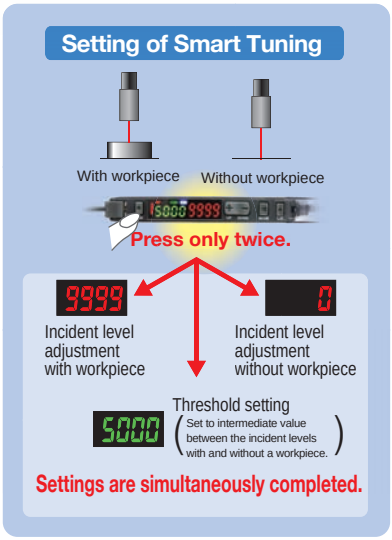
Just press the S TUNE button once with a workpiece and once without a workpiece to automatically set the optimum incident level and threshold regardless of the workpiece.
The optimum settings can be performed regardless of skills and languages.
The setting dispersion of the Sensors is also eliminated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



**Easy Solution** Fewer Setting Steps




**Easy Solution** Optimum settings for saturated and low incident level







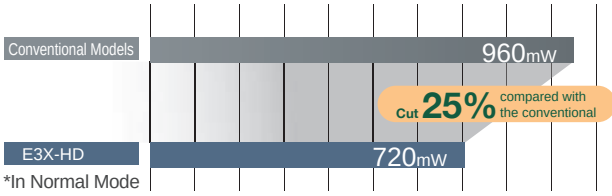
**Point**

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 RAYⅡand 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.




**Point**

You can use more Sensors with the same power supply capacity as before.

# 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 operaters when starting up or maintaining systems overseas.

### Operations

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

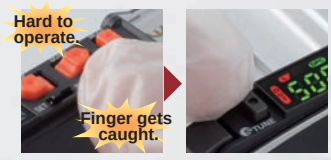



Compatibility for easy operation and incorrect operation prevention.



Buttons are arranged in a straight line.

Pleasing operation even with gloves on.




Conventional Models
Sliding switches



E3X-HD
Pushbutton switches (no sliding switches)

### 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.




### 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.

ONLY ONE 1

### 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.



# Ordering Information

## E3X-HD Series

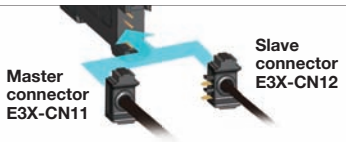
### Amplifier Units

| Type | Appearance | Connection method | Model | |
|---|---|---|---|---|
| | | | NPN output | PNP output |
| Standard models |  | Pre-wired (2 m) | **E3X-HD11 2M** | **E3X-HD41 2M** |
| |  | Wire-saving connector | **E3X-HD6** | **E3X-HD8** |
| |  | M8 connector | **E3X-HD14** | **E3X-HD44** |
| For Communications Unit connection |  | Communications Unit | **E3X-HD0 ✻1** | |

### Wire-saving Connectors (Order Separately) (An Amplipier 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 | **E3X-CN11** |
| Slave connector |  | | 1 | **E3X-CN12** |




There is no master/slave distinction for the Amplifiers. Along with the Amplifier, purchase the Connectors that are required for applications.

### Sensor I/O Connectors (Order Separately) (An Amplipier Unit with a M8 connector is required.)

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

| Appearance | Cable length | Number of conductors | Model |
|---|---|---|---|
| Straight  | 2 m | 4 | **XS3F-M421-402-A** |
| Right-angle  | | | **XS3F-M422-402-A** |

### Communications Units

| Communications method | Appearance | Applicable Fiber Amplifier Units | Model |
|---|---|---|---|
| CompoNet |  | **E3X-HD0 ✻1**<br>**E3X-MDA0 ✻2** | **E3X-CRT ✻1** |
| EtherCAT |  | | **E3X-ECT ✻1** |

✻1. Have been discontinued at the end of October 2024.
✻2. Have been discontinued at the end of August 2021.

# Ratings and Specifications

| | Type | Standard models | | | For Communications Unit |
|---|---|---|---|---|---|
| | NPN output | **E3X-HD11** | **E3X-HD6** | **E3X-HD14** | **E3X-HD0** |
| | PNP output | **E3X-HD41** | **E3X-HD8** | **E3X-HD44** | |
| Item | Connection method | Pre-wired | Wire-saving connector | M8 connector | Communications Unit connector |
| Light source (wavelength) | | Red, 4-element LED (625 nm) | | | |
| Power supply voltage | | 12 to 24 VDC ±10%, ripple (p-p)10% max. | | | Supplied from the connector through the Communications Unit |
| Power consumption | Nomal Mode | 720mW max. (Current consumption: 30 mA max. at 24 VDC, 60 mA max. at 12 VDC) | | | |
| | Eco ON | 530 mW max. (Current consumption: 22 mA max. at 24 VDC, 44 mA max. at 12 VDC) | | | |
| | Eco LO | 640 mW max. (Current consumption 26 mA max. at 24 VDC, 53 mA max. at 12 VDC) | | | —— |
| Control output | | Load power supply voltage: 26.4 VDC max., open-collector output<br>Load current: Groups of 1 to 3 Amplifier Units: 100 mA max.,<br>Groups of 4 to 16 Amplifier Units: 20 mA max.<br>Residual voltage: At load current of less than 10 mA: 1 V max.,<br>At load current of 10 to 100 mA: 2 V max.<br>OFF current: 0.1 mA max. | | | —— |
| Protective circuits | | Reverse power supply connection protection, output short-circuit protection, and reverse output connection protection | | | |
| Response time | Super-high-speed Mode (SHS) | NPN output: Operate or reset: 50 μs<br>PNP output: Operate or reset: 55 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 |

**Note: Do not use this document to operate the Unit.**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