

## Simple and Easy-to-Use Amplifiers with a Sensitivity Adjuster Provided as a Standard Feature

- Intuitive LED bar display shows light levels at a glance.
- Utilizes OMRON's innovative wire-saving connector.
- Reduced wiring and space requirements for power lines.
- Optical communications prevents mutual interference for up to 5 amplifiers
- High-speed detection, mark-detecting, and water-resistant models also available.



CE



Be sure to read *Safety Precautions* on page 10.

## Ordering Information

### Amplifier Units

#### Amplifier Units with Cables (2m)

| Item                         | Appearance | Control output | Model        |              |
|------------------------------|------------|----------------|--------------|--------------|
|                              |            |                | NPN output   | PNP output   |
| Standard models              |            | ON/OFF output  | E3X-NA11 2M  | E3X-NA41 2M  |
| With self-diagnosis function |            |                | E3X-NA21 2M  | E3X-NA51 2M  |
| High-speed detection models  |            |                | E3X-NA11F 2M | E3X-NA41F 2M |
| Mark-detecting models        |            |                | E3X-NAG11 2M | E3X-NAG41 2M |
| Water-resistant models       |            |                | E3X-NA11V 2M | E3X-NA41V 2M |

#### Amplifier Units with Connectors

| Item                                   | Appearance | Applicable Connector (order separately) |          | Control output | Model      |            |
|----------------------------------------|------------|-----------------------------------------|----------|----------------|------------|------------|
|                                        |            |                                         |          |                | NPN output | PNP output |
| Standard models                        |            | Master                                  | E3X-CN11 | ON/OFF output  | E3X-NA6    | E3X-NA8    |
|                                        |            | Slave                                   | E3X-CN12 |                |            |            |
| Water-resistant models (M8 connectors) |            | XS3F-M421-40□-A<br>XS3F-M422-40□-A      |          |                | E3X-NA14V  | E3X-NA44V  |

#### Amplifier Unit Connectors (Order Separately) Note: Stickers for Connectors are included as accessories.

| Item             | Appearance | Cable length | No. of conductors | Model    |
|------------------|------------|--------------|-------------------|----------|
| Master Connector |            | 2 m          | 3                 | E3X-CN11 |
| Slave Connector  |            |              | 1                 | E3X-CN12 |

Combining Amplifier Units and Connectors

Refer to the following tables when placing an order.

Basically, Amplifier Units and Connectors are sold separately.

| Amplifier Units              |         |         | + | Applicable Connectors (Order Separately) |                   |
|------------------------------|---------|---------|---|------------------------------------------|-------------------|
| Type                         | NPN     | PNP     |   | Master Connector                         | Slave Connector   |
| Standard models              | E3X-NA6 | E3X-NA8 |   | E3X-CN11 (3-wire)                        | E3X-CN12 (1-wire) |
| When Using 5 Amplifier Units |         |         |   |                                          |                   |
| 5 Amplifier Units            |         |         | + | 1 Master Connector + 4 Slave Connectors  |                   |

Sensor I/O Connectors (Order Separately)

| Size | Cable specifications | Appearance                                                                                           | Cable type |                      | Model           |
|------|----------------------|------------------------------------------------------------------------------------------------------|------------|----------------------|-----------------|
| M8   | Standard cable       | Straight connector  | 2 m        | Four-conductor cable | XS3F-M421-402-A |
|      |                      |                                                                                                      | 5 m        |                      | XS3F-M421-405-A |
|      |                      | L-shaped connector  | 2 m        |                      | XS3F-M422-402-A |
|      |                      |                                                                                                      | 5 m        |                      | XS3F-M422-405-A |

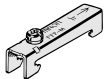
Note: Refer to *Introduction to Sensor I/O Connectors* for details.

Accessories (Order Separately)

Mounting Brackets

| Appearance                                                                        | Applicable models               | Model    | Quantity |
|-----------------------------------------------------------------------------------|---------------------------------|----------|----------|
|  | E3X-NA□<br>E3X-NA□F<br>E3X-NAG□ | E39-L143 | 1        |
|  | E3X-NA□V                        | E39-L148 |          |

End Plate

| Appearance                                                                          | Model | Quantity |
|-------------------------------------------------------------------------------------|-------|----------|
|  | PFP-M | 1        |

## Ratings and Specifications

### Amplifier Units

| Item                                 | Type  |                                  | Standard models                                                                                                                                                                                                | High-speed detection models             | Mark-detecting models                    | Water-resistant models                          |
|--------------------------------------|-------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------|-------------------------------------------------|
|                                      | Model | NPN output                       | E3X-NA□                                                                                                                                                                                                        | E3X-NA□F                                | E3X-NAG□                                 | E3X-NA□V                                        |
|                                      |       | PNP output                       |                                                                                                                                                                                                                |                                         |                                          |                                                 |
| Light source (wavelength)            |       |                                  | Red LED (680 nm)                                                                                                                                                                                               |                                         | Green LED (520 nm)                       | Red LED (680 nm)                                |
| Power supply voltage                 |       |                                  | 12 to 24 VDC ±10%, ripple (p-p): 10% max.                                                                                                                                                                      |                                         |                                          |                                                 |
| Current consumption                  |       |                                  | 35 mA max.                                                                                                                                                                                                     | 35 mA max.<br>(for 24-VDC power supply) | 35 mA max.                               |                                                 |
| Control output                       |       |                                  | Load current: 50 mA max.; residual voltage: 1 V max.; NPN/PNP (depends on model) open collector; Light-ON/Dark-ON mode selector                                                                                |                                         |                                          |                                                 |
| Self-diagnosis output                |       |                                  | None                                                                                                                                                                                                           | Yes                                     | None                                     |                                                 |
| Response time                        |       |                                  | Operate or reset: 200 μs max. *1                                                                                                                                                                               |                                         | Operate: 20 μs max.<br>Reset: 30 μs max. | Operate or reset: 200 μs max. *1                |
| Sensitivity adjustment               |       |                                  | 8-turn sensitivity adjuster (with indicator)                                                                                                                                                                   |                                         |                                          |                                                 |
| Protection circuits                  |       |                                  | Reverse polarity, output short-circuit, mutual interference prevention (optically synchronized) *2                                                                                                             |                                         |                                          |                                                 |
| Timer function                       |       |                                  | OFF-delay timer: 40 ms (fixed)                                                                                                                                                                                 |                                         |                                          |                                                 |
| Ambient illumination (Receiver side) |       |                                  | Incandescent lamp: 10,000 lux max.<br>Sunlight: 20,000 lux max.                                                                                                                                                |                                         |                                          |                                                 |
| Ambient temperature range            |       |                                  | Operating: Groups of 1 to 3 Amplifiers: -25°C to 55°C<br>Groups of 4 to 11 Amplifiers: -25°C to 50°C<br>Groups of 12 to 16 Amplifiers: -25°C to 45°C<br>Storage: -30°C to 70°C (with no icing or condensation) |                                         |                                          |                                                 |
| Ambient humidity range               |       |                                  | Operating and storage: 35% to 85% (with no condensation)                                                                                                                                                       |                                         |                                          |                                                 |
| Insulation resistance                |       |                                  | 20 MΩ min. (at 500 VDC)                                                                                                                                                                                        |                                         |                                          |                                                 |
| Dielectric strength                  |       |                                  | 1,000 VAC at 50/60 Hz for 1 minute *3                                                                                                                                                                          |                                         |                                          |                                                 |
| Vibration resistance                 |       |                                  | Destruction: 10 to 55 Hz with a 1.5-mm double amplitude for 2 hrs each in X, Y and Z directions                                                                                                                |                                         |                                          |                                                 |
| Shock resistance                     |       |                                  | Destruction: 500 m/s <sup>2</sup> , for 3 times each in X, Y and Z directions                                                                                                                                  |                                         |                                          |                                                 |
| Degree of protection                 |       |                                  | IEC 60529 IP50 (with Protective Cover attached)                                                                                                                                                                |                                         |                                          | IEC 60529 IP66 (with Protective Cover attached) |
| Connection method                    |       |                                  | Pre-wired (standard cable length: 2 m) or connector                                                                                                                                                            |                                         |                                          |                                                 |
| Weight (packed state)                |       |                                  | Pre-wired models: approx. 100 g, Connector models: approx. 55 g (See note 4.) *4                                                                                                                               |                                         |                                          |                                                 |
| Material                             | Case  | Polybutylene terephthalate (PBT) |                                                                                                                                                                                                                |                                         |                                          |                                                 |
|                                      | Cover | Polycarbonate                    |                                                                                                                                                                                                                |                                         |                                          | Polyethersulfone (PES)                          |
| Accessories                          |       |                                  | Instruction manual                                                                                                                                                                                             |                                         |                                          |                                                 |

\*1. When there are 8 or more Units mounted side-by-side, the response time will be 350 μs max.

\*2. High-speed detection models do not have the mutual interference prevention function.

\*3. The dielectric strength for water-resistant models with M8 connectors is 500 VAC.

\*4. Add 10 g to the weight for water-resistant models.

### Amplifier Unit Connectors

| Item                  | Model   | E3X-CN11                                                                                                                                                                                    | E3X-CN12     |
|-----------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Rated current         |         | 2.5 A                                                                                                                                                                                       |              |
| Rated voltage         |         | 50 V                                                                                                                                                                                        |              |
| Contact resistance    |         | 20 mΩ max. (20 mVDC max., 100 mA max.)<br>(The above figure is for connection to the Amplifier Unit and the adjacent Connector. It does not include the conductor resistance of the cable.) |              |
| Number of insertions  |         | Destruction: 50 times (for connection to the Amplifier Unit and the adjacent Connector)                                                                                                     |              |
| Material              | Housing | Polybutylene terephthalate (PBT)                                                                                                                                                            |              |
|                       | Contact | Phosphor bronze/gold-plated nickel                                                                                                                                                          |              |
| Weight (packed state) |         | Approx. 55 g                                                                                                                                                                                | Approx. 25 g |

**Sensing Distance  
Through-beam Models**

(Unit: mm)

| Type                         |                                 | Model                                                  | E3X-NA□                | E3X-NA□F          |
|------------------------------|---------------------------------|--------------------------------------------------------|------------------------|-------------------|
|                              |                                 |                                                        | General-purpose models | High-speed models |
| Standard models              | Flexible (new standard)         | E32-T11R/E32-T12R/E32-T15XR/E32-TC200BR(B4R)           | 280                    | 80                |
|                              |                                 | E32-T14LR/E32-T15YR/E32-T15ZR                          | 110                    | 33                |
|                              |                                 | E32-T21R/E32-T22R/E32-T222R/E32-T25XR/E32-TC200FR(F4R) | 60                     | 18                |
|                              |                                 | E32-T24R/E32-T25YR/E32-T25ZR                           | 30                     | 9                 |
|                              | Standard                        | E32-TC200/E32-T12/E32-T15X/E32-TC200B(B4)              | 400                    | 120               |
|                              |                                 | E32-T14L/E32-T15Y/E32-T15Z                             | 240                    | 70                |
|                              |                                 | E32-TC200A                                             | 360                    | 100               |
|                              |                                 | E32-TC200E/E32-T22/E32-T222/E32-T25X/E32-TC200F(F4)    | 100                    | 30                |
|                              |                                 | E32-T24/E32-T25Y/E32-T25Z                              | 90                     | 27                |
|                              | Break resistant                 | E32-T11/E32-T12B/E32-T15XB                             | 360                    | 100               |
|                              |                                 | E32-T21/E32-T221B/E32-T22B                             | 100                    | 30                |
|                              |                                 | E32-T25XB                                              | 75                     | 20                |
|                              | Fluorine coating                | E32-T11U                                               | 360                    | 100               |
| Special-beam models          | Long distance, high power       | E32-T17L                                               | 14000                  | 4200              |
|                              |                                 | E32-TC200 + E39-F1                                     | 3000                   | 900               |
|                              |                                 | E32-T11R + E39-F1                                      | 2100                   | 630               |
|                              |                                 | E32-T11 + E39-F1                                       | 2000                   | 600               |
|                              |                                 | E32-T14                                                | 1800                   | 540               |
|                              |                                 | E32-T11L/E32-T12L                                      | 700                    | 210               |
|                              |                                 | E32-T11L + E39-F2                                      | 500                    | 150               |
|                              |                                 | E32-T11R + E39-F2                                      | 220                    | 65                |
|                              |                                 | E32-T11 + E39-F2                                       | 360                    | 100               |
|                              |                                 | E32-T21L/E32-T22L                                      | 200                    | 60                |
|                              | Ultracompact, ultrafine sleeve  | E32-T223R                                              | 60                     | 18                |
|                              |                                 | E32-T33-S5                                             | 20                     | 6                 |
|                              |                                 | E32-T333-S5                                            | 5                      | 1.5               |
|                              |                                 | E32-T334-S5                                            | 2.5                    | 0.8               |
|                              | Fine beam (narrow vision field) | E32-T22S                                               | 1000                   | 300               |
|                              |                                 | E32-T24S                                               | 700                    | 210               |
|                              | Area sensing                    | E32-T16PR                                              | 450                    | 130               |
|                              |                                 | E32-T16P                                               | 600                    | 180               |
|                              |                                 | E32-T16JR                                              | 390                    | 110               |
|                              |                                 | E32-T16J                                               | 520                    | 150               |
|                              |                                 | E32-T16WR                                              | 690                    | 200               |
|                              |                                 | E32-T16W                                               | 920                    | 270               |
|                              |                                 | E32-T16                                                | 1500                   | 450               |
|                              |                                 | E32-M21                                                | 300                    | 90                |
|                              |                                 | E32-T51                                                | 400                    | 120               |
| Environment-resistant models | Heat resistant                  | E32-T54                                                | 130                    | 35                |
|                              |                                 | E32-T81R-S                                             | 180                    | 50                |
|                              |                                 | E32-T61-S + E39-F2                                     | 390                    | 130               |
|                              |                                 | E32-T61-S + E39-F1                                     | 3000                   | 900               |
|                              |                                 | E32-T84S-S                                             | 700                    | 210               |
|                              |                                 | E32-T61-S                                              | 300                    | 90                |
|                              |                                 | E32-T11F                                               | 1050                   | 380               |
|                              | Chemical resistant              | E32-T12F                                               | 1600                   | 480               |
|                              |                                 | E32-T14F                                               | 200                    | 60                |
|                              |                                 | E32-T51F                                               | 700                    | 200               |
|                              |                                 | E32-T81F-S                                             | 350                    | 100               |
|                              |                                 | E32-T51V                                               | 100                    | ---               |
|                              | Vacuum resistant                | E32-T51V + E39-F1V                                     | 600                    | ---               |
|                              |                                 | E32-T54V                                               | 65                     | ---               |
|                              |                                 | E32-T54V + E39-F1V                                     | 390                    | ---               |
|                              |                                 | E32-T84SV                                              | 250                    | ---               |

## Reflective Models

(Unit: mm)

| Type                         |                                | Model                                                  | E3X-NA□                                       | E3X-NA□F          |
|------------------------------|--------------------------------|--------------------------------------------------------|-----------------------------------------------|-------------------|
|                              |                                |                                                        | General-purpose models                        | High-speed models |
| Standard models              | Flexible (new standard)        | E32-D11R/E32-D12R/E32-D15XR/E32-DC200BR(B4R)           | 90                                            | 30                |
|                              |                                | E32-D14LR                                              | 16                                            | 5                 |
|                              |                                | E32-D15YR/E32-D15ZR                                    | 20                                            | 5                 |
|                              |                                | E32-D211R/E32-D21R/E32-D22R/E32-D25XR/E32-DC200FR(F4R) | 15                                            | 5                 |
|                              |                                | E32-D24R                                               | 7                                             | 2.3               |
|                              |                                | E32-D25YR/E32-D25ZR                                    | 4                                             | 1.2               |
|                              | Standard                       | E32-DC200/E32-D15X/E32-DC200B(B4)                      | 150                                           | 50                |
|                              |                                | E32-D12                                                | 120                                           | 40                |
|                              |                                | E32-D14L                                               | 40                                            | 13                |
|                              |                                | E32-D15Y/E32-D15Z                                      | 50                                            | 15                |
|                              |                                | E32-D211/E32-DC200E/E32-D22/E32-D25X/E32-DC200F(F4)    | 36                                            | 12                |
|                              |                                | E32-D24                                                | 15                                            | 5                 |
|                              |                                | E32-D25Y/E32-D25Z                                      | 10                                            | 3.3               |
|                              | Break resistant                | E32-D11/E32-D15XB                                      | 90                                            | 30                |
|                              |                                | E32-D21B/E32-D221B                                     | 35                                            | 10                |
|                              |                                | E32-D21/E32-D22B                                       | 15                                            | 5                 |
|                              |                                | E32-D25XB                                              | 25                                            | 8                 |
|                              | Fluorine coating               | E32-D11U                                               | 90                                            | 30                |
| Special-beam models          | Long distance, high power      | E32-D16                                                | 40 to 400                                     | 55 to 70          |
|                              |                                | E32-D11L                                               | 200                                           | 65                |
|                              |                                | E32-D21L/E32-D22L                                      | 50                                            | 17                |
|                              | Ultracompact, ultrafine sleeve | E32-D33                                                | 10                                            | 3.3               |
|                              |                                | E32-D331                                               | 1.5                                           | 0.5               |
|                              | Coaxial, small spot            | E32-CC200R                                             | 75                                            | 25                |
|                              |                                | E32-CC200                                              | 150                                           | 50                |
|                              |                                | E32-D32L                                               | 80                                            | 25                |
|                              |                                | E32-C31/E32-D32                                        | 40                                            | 13                |
|                              |                                | E32-C42 + E39-F3A                                      | Spot diameter of 0.1 to 0.6 mm at 6 to 15 mm. |                   |
|                              |                                | E32-D32 + E39-F3A                                      | Spot diameter of 0.5 to 1 mm at 6 to 15 mm.   |                   |
|                              |                                | E32-C41 + E39-F3A-5                                    | Spot diameter of 0.1 mm at 7 mm               |                   |
|                              |                                | E32-C31 + E39-F3A-5                                    | Spot diameter of 0.5 mm at 7 mm.              |                   |
|                              |                                | E32-C41 + E39-F3B                                      | Spot diameter of 0.2 mm at 17 mm.             |                   |
|                              |                                | E32-C31 + E39-F3B                                      | Spot diameter of 0.5 mm at 17 mm.             |                   |
|                              |                                | E32-C31 + E39-F3C                                      | Spot diameter of 4 mm max. at 0 to 20 mm.     |                   |
|                              | Area sensing                   | E32-D36P1                                              | 75                                            | 25                |
|                              | Retro-reflective               | E32-R21 + E39-R3 (provided)                            | 10 to 250                                     |                   |
|                              |                                | E32-R16 + E39-R1 (provided)                            | 150 to 1500                                   | 150 to 1000       |
|                              | Convergent-reflective          | E32-L25/E32-L25A                                       | 3.3                                           |                   |
|                              |                                | E32-L24S                                               | 0 to 4                                        |                   |
|                              |                                | E32-L24L                                               | 2 to 6 (center 4)                             |                   |
|                              |                                | E32-L25L                                               | 5.4 to 9 (center 7.2)                         |                   |
|                              |                                | E32-L86                                                | 4 to 10                                       |                   |
|                              |                                | E32-L16                                                | 0 to 15                                       | 0 to 13           |
| Environment-resistant models | Heat resistant                 | E32-D51                                                | 120                                           | 40                |
|                              |                                | E32-D81R/E32-D61                                       | 45                                            | 15                |
|                              |                                | E32-D73                                                | 30                                            | 10                |
|                              | Chemical resistant             | E32-D12F                                               | 50                                            | 16                |
|                              |                                | E32-D14F                                               | 20                                            | 6.5               |

## Application-specific Models

(Unit: mm)

| Type                        |                        | Model         | E3X-NA□                                                                                                            | E3X-NA□F          |
|-----------------------------|------------------------|---------------|--------------------------------------------------------------------------------------------------------------------|-------------------|
|                             |                        |               | General-purpose models                                                                                             | High-speed models |
| Application-specific Models | Label detection        | E32-G14       | 10                                                                                                                 |                   |
|                             |                        | E32-T14       | 1800                                                                                                               | 540               |
|                             | Liquid-level detection | E32-L25T      | Applicable tube: Transparent tube with a diameter in the range 8 to 10 mm and a recommended wall thickness of 1 mm |                   |
|                             |                        | E32-D36T      | Applicable tube: Transparent tube (no diameter restrictions )                                                      |                   |
|                             |                        | E32-D82F1(F2) | Liquid-contact model                                                                                               |                   |

## Green Light Source Models

(Unit: mm)

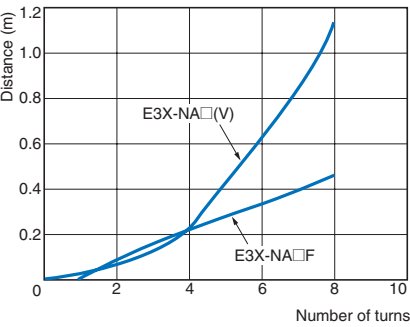
| Type                 |                 | Model                                        | E3X-NAG□              |
|----------------------|-----------------|----------------------------------------------|-----------------------|
|                      |                 |                                              | Mark-detecting Models |
| Through-beam models  | Standard        | E32-T11R/E32-T12R/E32-T15XR/E32-TC200BR(B4R) | 50                    |
|                      |                 | E32-T14LR/E32-T15YR/E32-T15ZR                | 20                    |
|                      |                 | E32-TC200/E32-T12/E32-T15X/E32-TC200B(B4)    | 75                    |
|                      |                 | E32-T14L/E32-T15Y/E32-T15Z                   | 45                    |
|                      | Special beam    | E32-T11L/E32-T12L                            | 130                   |
| Reflective           | Standard        | E32-D11R/E32-D12R/E32-D15XR/E32-DC200BR(B4R) | 15                    |
|                      |                 | E32-D14LR                                    | 3.5                   |
|                      |                 | E32-D15YR/E32-D15ZR                          | 3.3                   |
|                      |                 | E32-DC200/E32-D15X/E32-DC200B(B4)            | 25                    |
|                      |                 | E32-D14L                                     | 10                    |
|                      |                 | E32-D15Y/E32-D15Z                            | 8                     |
|                      | Special beam    | E32-D11L                                     | 35                    |
|                      |                 | E32-CC200R                                   | 12                    |
|                      |                 | E32-CC200                                    | 25                    |
|                      |                 | E32-D32L                                     | 12                    |
|                      |                 | E32-C31/E32-D32                              | 6                     |
| Application specific | Label detection | E32-T14                                      | 330                   |
|                      |                 | E32-G14                                      | 10                    |

Refer to *E32 Series* for details on Fiber Units.

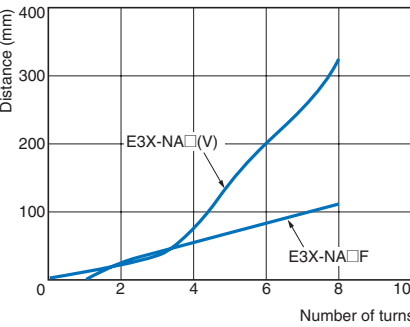
Engineering Data (Typical)

Number of Turns of Sensitivity Adjuster vs. Sensing Distance

E32-T11L

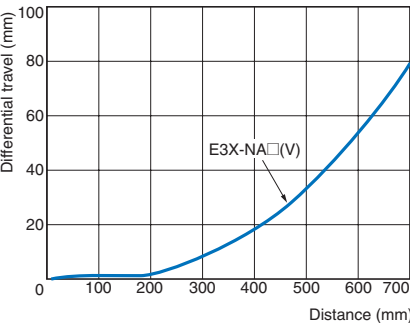


E32-D11L

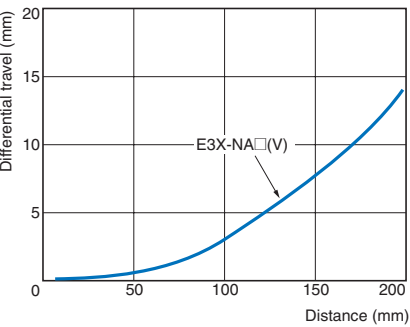


Sensing Distance vs. Differential Travel

E32-T11L

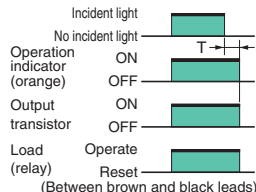
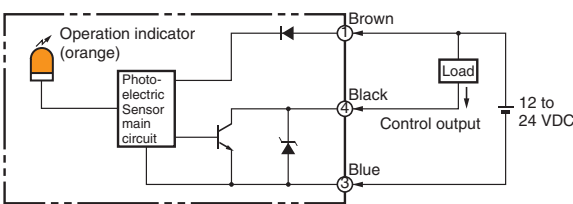
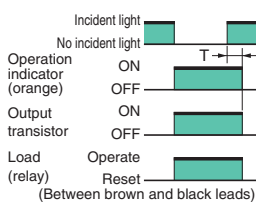
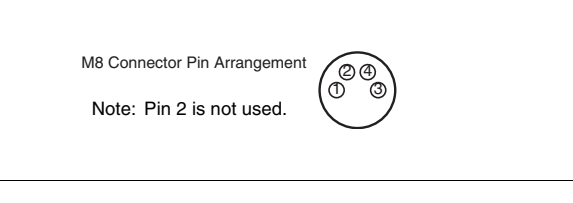
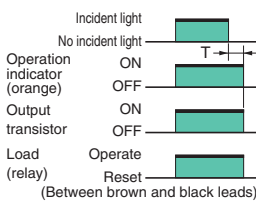
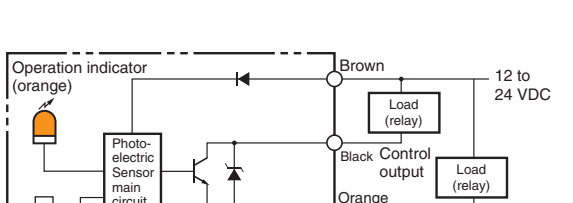
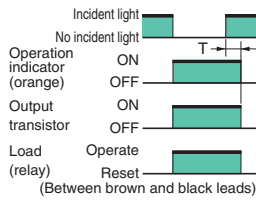
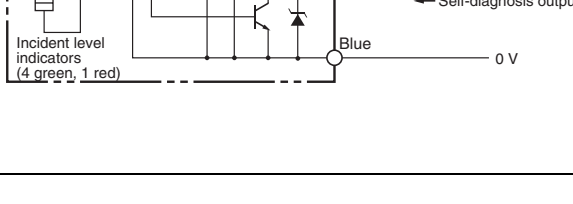


E32-D11L



I/O Circuit Diagrams

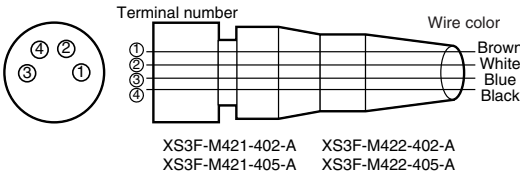
NPN Output

| Model                                                                   | Operation mode | Timing charts                                                                      | Operation selector | Output circuit                                                                      |
|-------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------|
| E3X-NA11<br>E3X-NA6<br>E3X-NAG11<br>E3X-NA11F<br>E3X-NA11V<br>E3X-NA14V | Light-ON       |   | LIGHT ON (L-ON)    |   |
|                                                                         | Dark-ON        |   | DARK ON (D-ON)     |   |
| E3X-NA21                                                                | Light-ON       |   | LIGHT ON (L-ON)    |   |
|                                                                         | Dark-ON        |  | DARK ON (D-ON)     |  |

PNP Output

| Model                                                                   | Operation mode | Timing charts | Operation selector | Output circuit                                           |
|-------------------------------------------------------------------------|----------------|---------------|--------------------|----------------------------------------------------------|
| E3X-NA41<br>E3X-NA8<br>E3X-NAG41<br>E3X-NA41F<br>E3X-NA41V<br>E3X-NA44V | Light-ON       |               | LIGHT ON (L-ON)    |                                                          |
|                                                                         | Dark-ON        |               | DARK ON (D-ON)     | M8 Connector Pin Arrangement<br>Note: Pin 2 is not used. |
| E3X-NA51                                                                | Light-ON       |               | LIGHT ON (L-ON)    |                                                          |
|                                                                         | Dark-ON        |               | DARK ON (D-ON)     |                                                          |

Plug (Sensor I/O Connector)

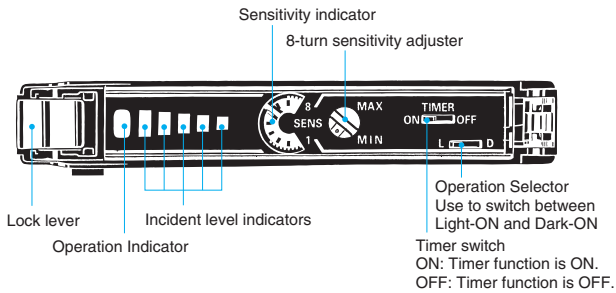


| Classification | Wire color | Connection pin | Application        |
|----------------|------------|----------------|--------------------|
| DC             | Brown      | 1              | Power supply (+V)  |
|                | White      | 2              | ---                |
|                | Blue       | 3              | Power supply (0 V) |
|                | Black      | 4              | Output             |

Note: Pin 2 is not used.

Nomenclature

Amplifier Units



## Safety Precautions

Refer to *Warranty and Limitations of Liability*.

### WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.



### Precautions for Correct Use

Do not use the product in atmospheres or environments that exceed product ratings.

## Amplifier Units

### ● Designing

#### Communications Hole

The hole on the side of the Amplifier Unit is a communications hole for preventing mutual interference when Amplifier Units are mounted side-by-side. The E3X-MC11 Mobile Console (order separately) cannot be used.

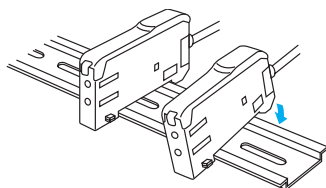
If an excessive amount of light is received via the Sensor, the mutual interference prevention function may not work. In this case, make the appropriate adjustments using the sensitivity adjuster. The mutual interference prevention function will not operate when the E3X-NA is used side-by-side with E3X-DA-N models.

### ● Mounting

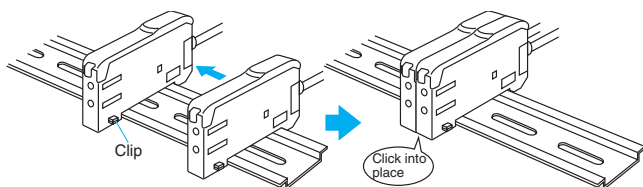
#### DIN Track Mounting/Removal

##### Mounting Amplifier Units

1. Mount the Amplifier Units one at a time onto the DIN track.



2. Slide the Amplifier Units together, line up the clips, and press the Amplifier Units together until they click into place.



##### Removing Amplifier Units

Slide Amplifier Units away from each other, and remove from the DIN track one at a time. (Do not attempt to remove Amplifier Units from the DIN track without separating them first.)

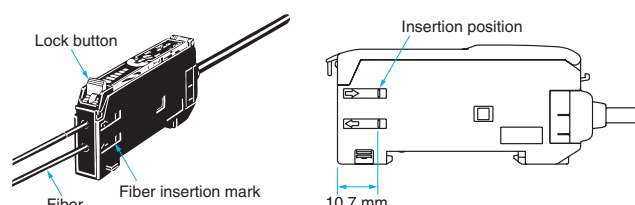
Note: 1. The specifications for ambient temperature will vary according to the number of Amplifier Units used together. For details, refer to *Ratings and Specifications*.  
2. Always turn OFF the power supply before mounting or removing Amplifier Units.

## Fiber Connection and Disconnection

The E3X Amplifier Unit has a lock lever. Connect or disconnect the fibers to or from the E3X Amplifier Unit using the following procedures:

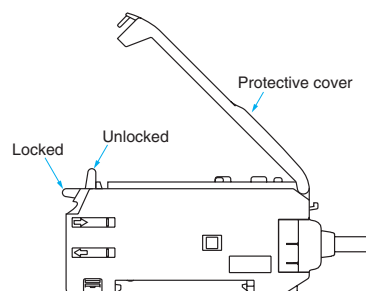
### 1. Connection

Open the Protective Cover, insert the fibers according to the fiber insertion marks on the side of the Amplifier Unit, and lower the lock lever.



### 2. Disconnection

Remove the Protective Cover and raise the lock lever to pull out the fiber.



Note: To maintain the fiber properties, confirm that the lock is released before removing the fiber.

### 3. Precautions for Fiber Connection/Disconnection

Be sure to lock or unlock the lock lever within an ambient temperature range between  $-10^{\circ}\text{C}$  and  $40^{\circ}\text{C}$ .

### ● Operating Environment

#### Ambient Conditions

If dust or dirt adhere to the hole for optical communications, it may prevent normal communications. Be sure to remove any dust or dirt before using the Units.

### ● Other

#### Protective Cover

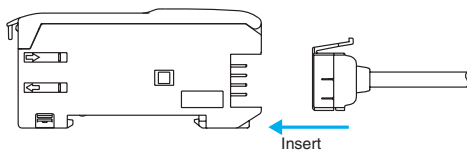
Be sure to mount the Protective Cover before use.

## Amplifier Units with Connectors

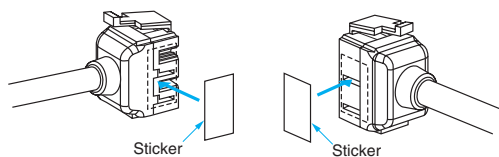
### ● Mounting

#### Mounting Connectors

1. Insert the Master or Slave Connector into the Amplifier Unit until it clicks into place.



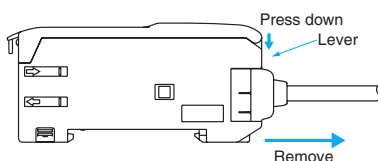
2. Join Amplifier Units together as required after all the Master and Slave Connectors have been inserted.
3. Attach the seals (provided as accessories) to the sides of Master and Slave Connectors that are not connected to other Connectors.



Note: Attach the stickers to the sides with grooves.

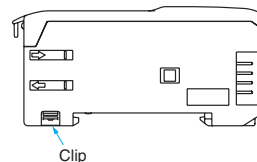
#### Removing Connectors

1. Slide the slave Amplifier Unit for which the Connector is to be removed away from the rest of the group.
2. After the Amplifier Unit has been separated, press down on the lever on the Connector and remove it. (Do not attempt to remove Connectors without separating them from other Amplifier Units first.)



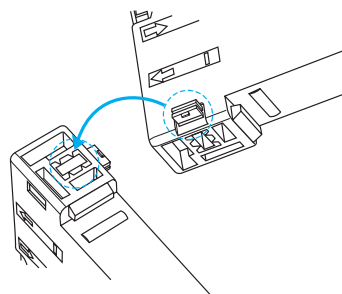
#### Mounting End Plate (PFP-M)

Depending on how it is mounted, an Amplifier Unit may move during operation. In this case, use an End Plate. Before mounting an End Plate, remove the clip from the master Amplifier Unit using a nipper or similar tool.

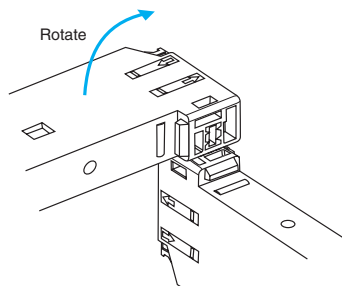


The clip can also be removed using the following mechanism, which is incorporated in the construction of the section underneath the clip.

1. Insert the clip to be removed into the slit underneath the clip on another Amplifier Unit.



2. Remove the clip by rotating the Amplifier Unit.



#### Pull Strengths for Connectors (Including Cables)

E3X-CN11: 30 N max.

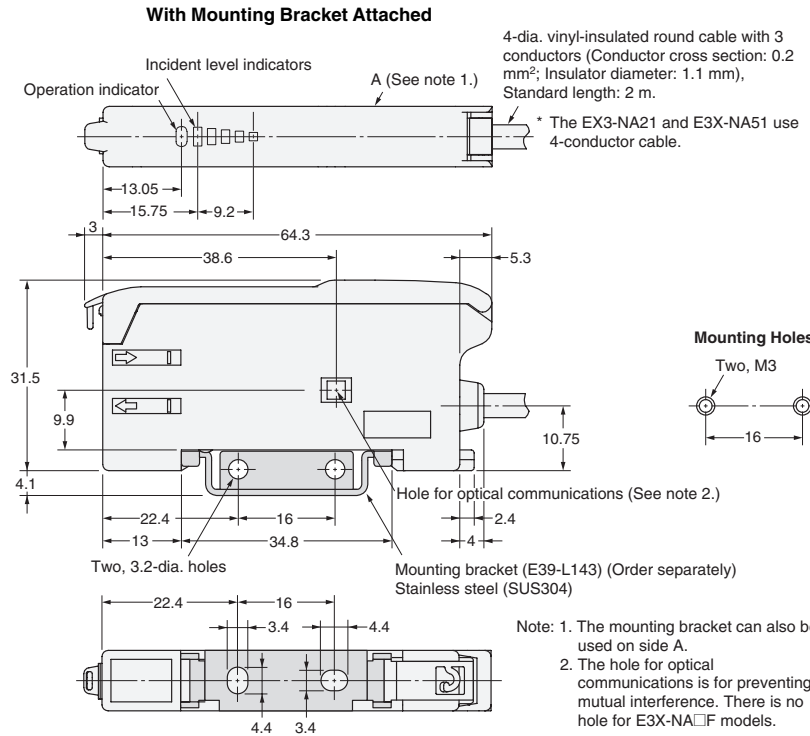
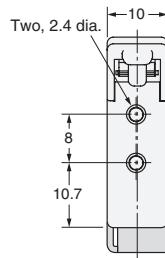
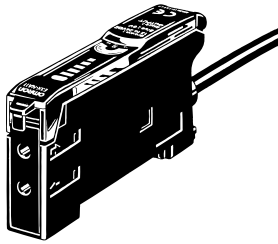
E3X-CN12: 12 N max.

## Dimensions

### Amplifier Units

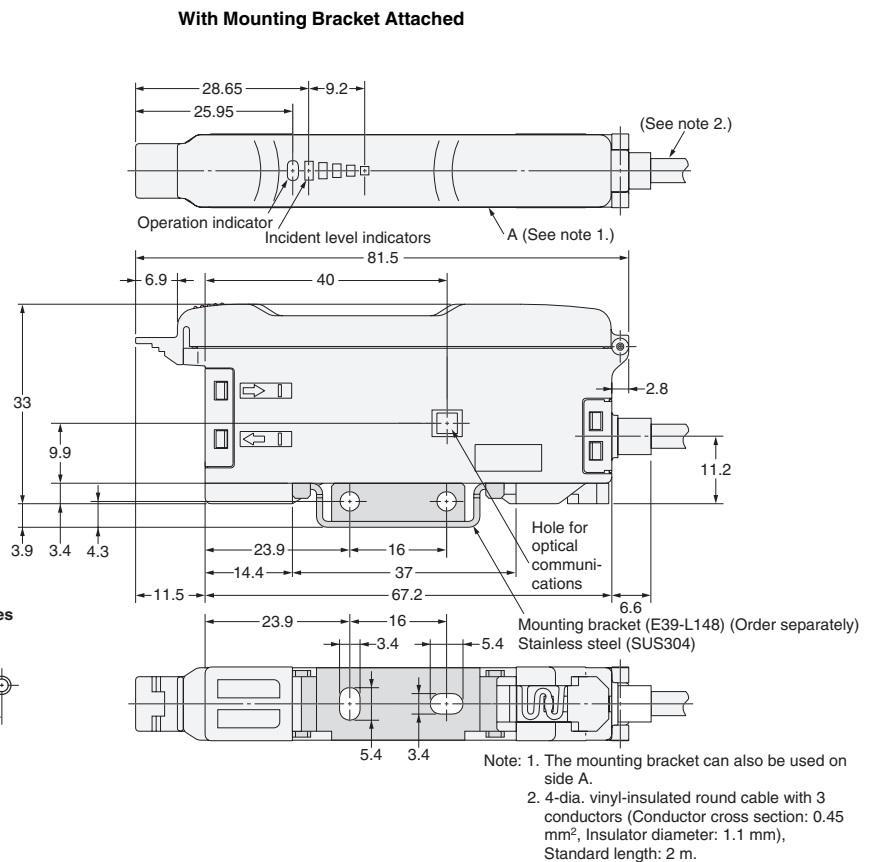
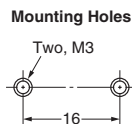
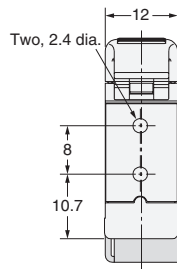
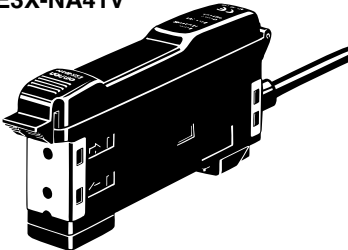
#### Amplifier Units with Cables

E3X-NA11  
E3X-NA11F  
E3X-NA41  
E3X-NA41F  
E3X-NAG11  
E3X-NAG41  
E3X-NA21  
E3X-NA51

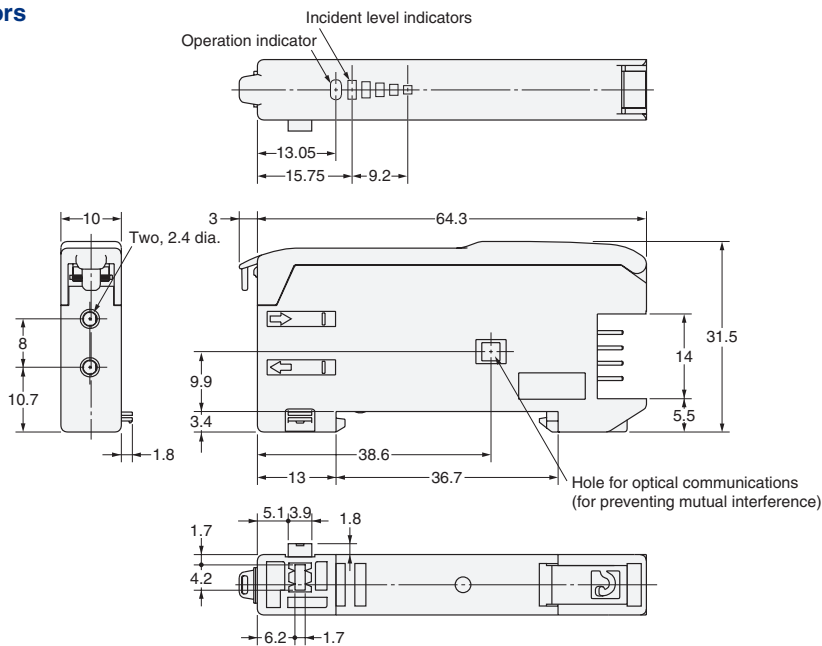
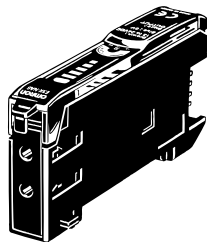


#### Amplifier Units with Cables, Water-resistant Models

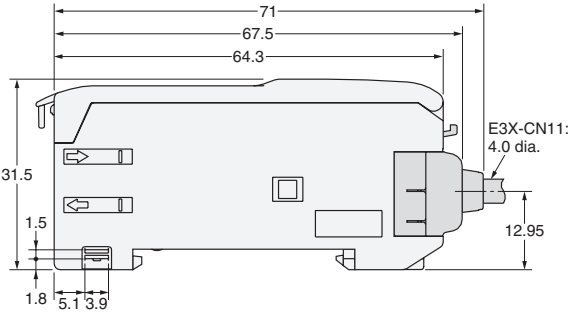
E3X-NA11V  
E3X-NA41V



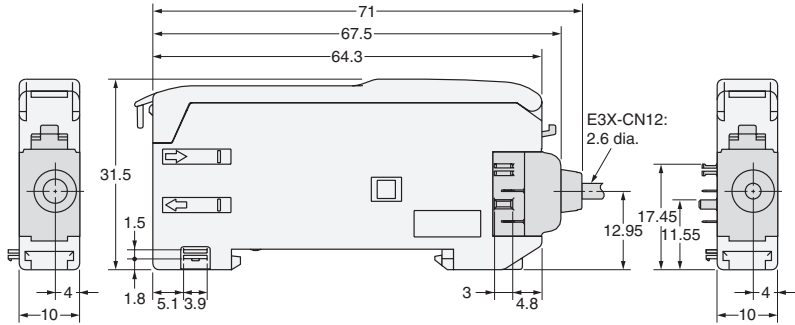
Amplifier Units with Connectors  
E3X-NA6  
E3X-NA8



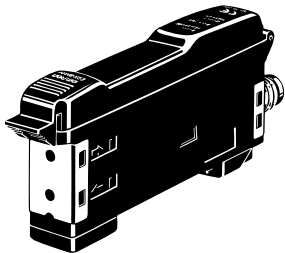
Dimensions with Master Connector Connected



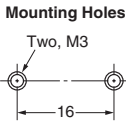
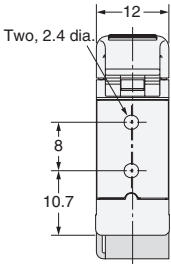
Dimensions with Slave Connector Connected



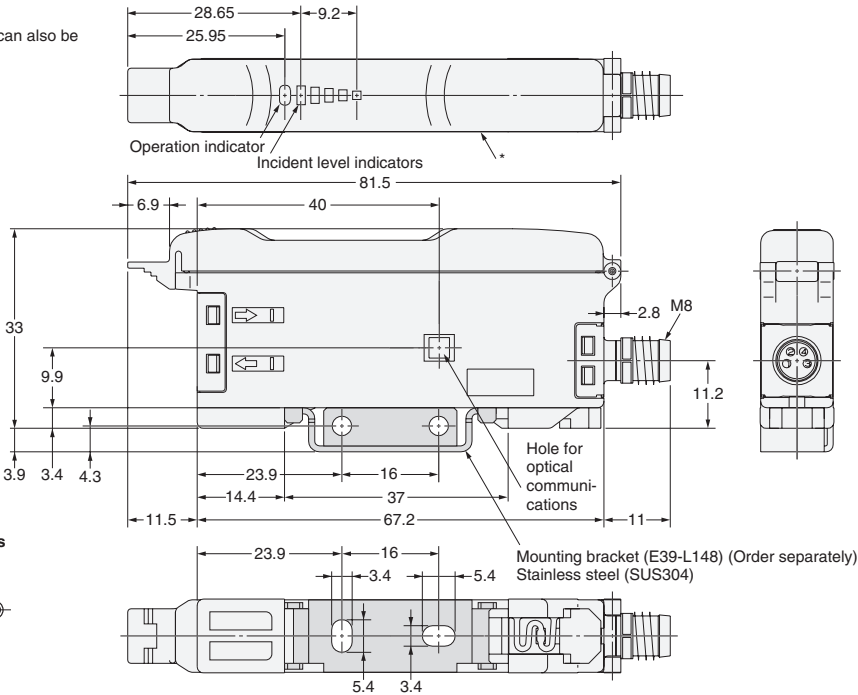
Amplifier Units with Connectors, Water-resistant  
Models  
E3X-NA14V  
E3X-NA44V



\* The mounting bracket can also be used on this side.



With Mounting Bracket Attached



- Amplifier Unit Connectors
- Sensor I/O Connectors
- Accessories (Order Separately)
  - Mounting Brackets
  - End Plates

Refer to E32 Series for details on Fiber Units.