

## Miniature Inductive Prox

## E2C

Cylindrical Inductive Sensors with Separate Amplifiers Provide Variable Detecting Capabilities

- Separate amplifier allows sensor to fit in space-confined sites, providing easy access for monitoring and remote adjustments
- Detecting distance and differential travel can be adjusted to meet specific application requirements
- Adjustable differential travel to set switching trigger point available on some amplifiers



## Ordering Information

### ■ SENSORS

#### Miniature Sizes

| Sensor type                | Shielded         |                  |                  |                |                |
|----------------------------|------------------|------------------|------------------|----------------|----------------|
| Size                       | 2.0 mm dia.      | 3.5 mm dia.      | 3.8 mm dia.      | M5             | 5.4 mm dia.    |
| Nominal detecting distance | 0.5 mm (0.02 in) | 0.8 mm (0.03 in) | 0.8 mm (0.03 in) | 1 mm (0.04 in) | 1 mm (0.04 in) |
| Part number                | E2C-CR5B         | E2C-CR8A         | E2C-CR8B         | E2C-X1A        | E2C-C1A        |

#### Standard Sizes

| Sensor type                | Shielded         |                |                |                 | Unshielded      |
|----------------------------|------------------|----------------|----------------|-----------------|-----------------|
| Size                       | M8               | M12            | M18            | M30             | 40 mm dia.      |
| Nominal detecting distance | 1.5 mm (0.06 in) | 2 mm (0.08 in) | 5 mm (0.20 in) | 10 mm (0.39 in) | 20 mm (0.79 in) |
| Part number                | E2C-X1R5A        | E2C-X2A        | E2C-X5A        | E2C-X10A        | E2C-C20MA       |

### ■ AMPLIFIERS

#### Socket-Mount Types

|                    |                         |                            |                                                 |          |          |          |
|--------------------|-------------------------|----------------------------|-------------------------------------------------|----------|----------|----------|
| Size               | 1/16 DIN                |                            | Miniature                                       |          |          |          |
| Applicable sensors | All models              |                            | E2C-CR8A, E2C-CR8B, E2C-X1A, E2C-C1A, E2C-X1R5A |          | E2C-CR5B |          |
| Supply voltage     | 90 to 264 VAC, 50/60 Hz | 10 to 30 VDC               | 10 to 30 VDC                                    |          |          |          |
| Output type        | Transistor and relay    | Open collector NPN and PNP | NPN                                             | PNP      | NPN      | PNP      |
| Part number        | E2C-AK4A                | E2C-AM4A                   | E2C-GE4A                                        | E2C-GF4A | E2C-GE4B | E2C-GF4B |

## ■ AMPLIFIERS

### Track-Mount Types

|                    |                                                  |                                          |
|--------------------|--------------------------------------------------|------------------------------------------|
| Size               | Prewired                                         | Screw terminal                           |
| Applicable sensors | E2C-CR8A, E2C-X1A, E2C-C1A<br>E2C-X1R5A, E2C-X2A | E2C-CR8A, E2C-X1A,<br>E2C-C1A, E2C-X1R5A |
| Supply voltage     | 10 to 30 VDC,                                    |                                          |
| Output type        | NPN with alarm output                            | Open collector NPN and PNP               |
| Part number        | <b>E2C-JC4AP</b>                                 | <b>E2C-WH4AF</b>                         |

## ■ ACCESSORIES

| Description                                     |                     |                                                                                                                                 | Part number |
|-------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------|
| Mounting brackets for sensors                   |                     | Fits 3.5 mm and 3.8 mm dia. unthreaded sensor                                                                                   | Y92E-F3R5   |
|                                                 |                     | Fits M8 size threaded sensor                                                                                                    | Y92E-B8     |
|                                                 |                     | Fits M12 size threaded sensor                                                                                                   | Y92E-B12    |
|                                                 |                     | Fits M18 size threaded sensor                                                                                                   | Y92E-B18    |
|                                                 |                     | Fits M30 size threaded sensor                                                                                                   | Y92E-B30    |
| Sockets for amplifiers                          | E2C-AK4A amplifier  | Bottom surface or track mounting, top screw terminals                                                                           | P2CF-11     |
|                                                 |                     | Panel mounting, bottom solder terminal                                                                                          | PL11        |
|                                                 |                     | Back mounting, for use with Y92F-30 mounting adapter, bottom screw terminals                                                    | P3G-11      |
|                                                 | E2C-AM4A amplifier  | Bottom surface or track mounting, top screw terminals                                                                           | P2CF-08     |
|                                                 |                     | Panel mounting, bottom solder terminals                                                                                         | PL08        |
|                                                 |                     | Back mounting, for use with Y92F-30 mounting adapter, bottom screw terminals                                                    | P3G-08      |
|                                                 | E2C-G□4□ amplifiers | Bottom surface or track mounting, top screw terminals                                                                           | PYF08A-E    |
|                                                 |                     | Panel mounting, bottom solder terminals                                                                                         | PY08        |
|                                                 |                     | Bottom surface mounting, bottom screw terminals                                                                                 | PYF08M      |
| Panel mounting adapters for E2C-A□4A amplifiers |                     | Fits behind panel; ideal for side by side installation. Use P2CF-□□ sockets.                                                    | Y92F-30     |
|                                                 |                     | Installs through panel front; amplifier face fits bezel, rear of amplifier clips to adapter. Use P3G-□□ sockets. Charcoal gray. | Y92F-70     |
| Protective covers for E2C-A□4A amplifiers       |                     | Hard plastic cover; not for use with Y92F-70 panel adapter                                                                      | Y92A-48     |
|                                                 |                     | Soft plastic cover; not for use with Y92F-70 panel adapter                                                                      | Y92A-48D    |
| Mounting track                                  |                     | DIN rail, 50 cm (1.64 ft) length                                                                                                | PFP-50N     |
|                                                 |                     | DIN rail, 1 m (3.28 ft) length                                                                                                  | PFP-100N    |
|                                                 |                     | End plate                                                                                                                       | PFP-M       |
|                                                 |                     | Spacer                                                                                                                          | PFP-S       |

## ■ REPLACEMENT PARTS

| Description                                                   |                                                   | Part number     |
|---------------------------------------------------------------|---------------------------------------------------|-----------------|
| Mounting hardware includes one pair of metal nuts and washers | Fits M5 size sensors (supplied with each sensor)  | <b>M5-MHWS</b>  |
|                                                               | Fits M8 size sensors (supplied with each sensor)  | <b>M8-MHWS</b>  |
|                                                               | Fits M12 size sensors (supplied with each sensor) | <b>M12-MHWS</b> |
|                                                               | Fits M18 size sensors (supplied with each sensor) | <b>M18-MHWS</b> |
|                                                               | Fits M30 size sensors (supplied with each sensor) | <b>M30-MHWS</b> |

# Specifications

## ■ MINIATURE SENSORS

|                                                              |              |                                                                                  |                                                                |             |                                          |                     |
|--------------------------------------------------------------|--------------|----------------------------------------------------------------------------------|----------------------------------------------------------------|-------------|------------------------------------------|---------------------|
| Part number                                                  |              | E2C-CR5B                                                                         | E2C-CR8A                                                       | E2C-CR8B    | E2C-X1A                                  | E2C-C1A             |
| Sensor type                                                  |              | Inductive                                                                        |                                                                |             |                                          |                     |
| Body                                                         | Size         | 2.0 mm dia.                                                                      | 3.5 mm dia.                                                    | 3.8 mm dia. | M5                                       | 5.4 mm dia.         |
|                                                              | Type         | Shielded                                                                         |                                                                |             |                                          |                     |
| Required amplifier                                           |              | E2C-AK4A, E2C-AM4A, E2C-GE4B or E2C-GF4B                                         | E2C-AK4A, E2C-AM4A, E2C-GE4A, E2C-GF4A, E2C-JC4AP or E2C-WH4AF |             |                                          |                     |
| Detectable object type                                       |              | Metallic objects                                                                 |                                                                |             |                                          |                     |
| Usable setting distance at ambient (with standard target)    |              | 0 to 0.5 mm<br>(0 to 0.02 in)                                                    | 0 to 0.8 mm<br>(0 to 0.03 in)                                  |             | 0 to 1.0 mm<br>(0 to 0.04 in)            |                     |
| Usable setting distance at 0° to 40°C (with standard target) |              | 0 to 0.7 mm<br>(0 to 0.028 in)                                                   | 0 to 1.2 mm<br>(0 to 0.047 in)                                 |             | 0 to 1.5 mm<br>(0 to 0.059 in)           |                     |
| Standard target size (mild steel, L x W x H)                 |              | 5 x 5 x 1 mm<br>(0.20 x 0.20 x 0.04 in)                                          |                                                                |             |                                          |                     |
| Differential travel                                          |              | See "Differential Travel" tables                                                 |                                                                |             |                                          |                     |
| Response frequency                                           |              | 1 kHz                                                                            |                                                                |             |                                          |                     |
| Materials                                                    | Housing      | 304 stainless steel                                                              |                                                                |             |                                          | Nickel-plated brass |
|                                                              | Sensing face | ABS                                                                              |                                                                |             |                                          |                     |
|                                                              | Cable sheath | Polyethylene                                                                     |                                                                |             |                                          |                     |
| Mounting                                                     |              | —                                                                                | Optional mounting strap<br>Y92E-F3R5, order separately         |             | Two lock washers<br>and M5 nuts included | —                   |
| Connections                                                  | Prewired     | Two-conductor cable, 3 m (9.8 ft) length                                         |                                                                |             |                                          |                     |
| Weight with cable                                            |              | 10 g (0.4 oz.)                                                                   | 40 g (1.4 oz.)                                                 |             | 45 g (1.6 oz.)                           |                     |
| Enclosure ratings                                            | UL           | —                                                                                |                                                                |             |                                          |                     |
|                                                              | NEMA         | 1,2                                                                              | 1, 3, 4, 6, 12, 13                                             |             |                                          |                     |
|                                                              | IEC 144      | IP64                                                                             | IP67                                                           |             |                                          |                     |
| Approvals                                                    | UL           | —                                                                                |                                                                |             |                                          |                     |
|                                                              | CSA          | —                                                                                |                                                                |             |                                          |                     |
| Ambient operating temperature                                |              | -25° to 70°C (-13° to 158°F)                                                     |                                                                |             |                                          |                     |
| Vibration                                                    |              | 10 to 55 Hz, 1.5 mm (0.06 in) double amplitude, 2 hours each, X and Y directions |                                                                |             |                                          |                     |
| Shock                                                        |              | 50 G's, 3 times each, X and Y directions                                         |                                                                |             |                                          |                     |

## ■ STANDARD SIZE SENSORS

|                                                           |              |                                                                                  |                                                                    |                                                                    |                                                                    |                                           |
|-----------------------------------------------------------|--------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------|
| Part number                                               |              | E2C-X1R5A                                                                        | E2C-X2A                                                            | E2C-X5A                                                            | E2C-X10A                                                           | E2C-C20MA                                 |
| Sensor type                                               |              | Inductive                                                                        |                                                                    |                                                                    |                                                                    |                                           |
| Body                                                      | Size         | M8                                                                               | M12                                                                | M18                                                                | M30                                                                | 40 mm dia.                                |
|                                                           | Type         | Shielded                                                                         |                                                                    |                                                                    |                                                                    | Unshielded                                |
| Required amplifier                                        |              | E2C-JC4AP, E2C-AK4A or E2C-AM4A                                                  |                                                                    | E2C-AK4A or E2C-AM4A                                               |                                                                    |                                           |
| Detectable object type                                    |              | Metallic objects                                                                 |                                                                    |                                                                    |                                                                    |                                           |
| Usable setting distance at ambient (with standard target) |              | 0 to 1.5 mm<br>(0 to 0.06 in)                                                    | 0 to 2 mm<br>(0 to 0.08 in)                                        | 0 to 5 mm<br>(0 to 0.20 in)                                        | 0 to 10 mm<br>(0 to 0.39 in)                                       | 0 to 20 mm<br>(0 to 0.79 in)              |
| Usable setting distance 0° to 40°C (with standard target) |              | 0 to 2 mm<br>(0 to 0.079 in)                                                     | 0 to 2.5 mm<br>(0 to 0.098 in)                                     | 0 to 7 mm<br>(0 to 0.276 in)                                       | 0 to 15 mm<br>(0 to 0.591 in)                                      | 0 to 28 mm<br>(0 to 1.102 in)             |
| Standard target size (mild steel, L x W x H)              |              | 8 x 8 x 1 mm<br>(0.32 x 0.32 x 0.04 in)                                          | 12 x 12 x 1 mm<br>(0.47 x 0.47 x 0.04 in)                          | 18 x 18 x 1 mm<br>(0.71 x 0.71 x 0.04 in)                          | 30 x 30 x 1 mm<br>(1.18 x 1.18 x 0.04 in)                          | 50 x 50 x 1 mm<br>(1.97 x 1.97 x 0.04 in) |
| Differential travel                                       |              | See "Differential Travel" tables                                                 |                                                                    |                                                                    |                                                                    |                                           |
| Response frequency                                        |              | 800 Hz                                                                           |                                                                    | 350 Hz                                                             | 100 Hz                                                             | 50 Hz                                     |
| Materials                                                 | Housing      | Nickel-plated brass                                                              |                                                                    |                                                                    |                                                                    |                                           |
|                                                           | Sensing face | ABS                                                                              |                                                                    |                                                                    |                                                                    |                                           |
|                                                           | Cable sheath | Polyethylene                                                                     |                                                                    |                                                                    |                                                                    |                                           |
| Mounting                                                  |              | Two lock washers and M8 nuts included. Bracket Y92E-B8 optional.                 | Two lock washers and M12 nuts included. Bracket Y92E-B12 optional. | Two lock washers and M18 nuts included. Bracket Y92E-B18 optional. | Two lock washers and M30 nuts included. Bracket Y92E-B30 optional. | —                                         |
| Connections                                               | Prewired     | Two-conductor cable, 3 m (9.8 ft) length                                         |                                                                    |                                                                    |                                                                    |                                           |
| Weight with cable                                         |              | 50 g (1.8 oz.)                                                                   | 60 g (2.1 oz.)                                                     | 140 g (4.9 oz.)                                                    | 270 g (9.5 oz.)                                                    | 300 g (10.6 oz.)                          |
| Enclosure ratings                                         | UL           | —                                                                                |                                                                    |                                                                    |                                                                    |                                           |
|                                                           | NEMA         | 1, 3, 4, 6, 12, 13                                                               |                                                                    |                                                                    |                                                                    |                                           |
|                                                           | IEC 144      | IP67                                                                             |                                                                    |                                                                    |                                                                    |                                           |
| Approvals                                                 | UL           | —                                                                                |                                                                    |                                                                    |                                                                    |                                           |
|                                                           | CSA          | —                                                                                |                                                                    |                                                                    |                                                                    |                                           |
| Ambient operating temperature                             |              | -25° to 70°C (-13° to 158°F)                                                     |                                                                    |                                                                    |                                                                    |                                           |
| Vibration                                                 |              | 10 to 55 Hz, 1.5 mm (0.06 in) double amplitude, 2 hours each, X and Y directions |                                                                    |                                                                    |                                                                    |                                           |
| Shock                                                     |              | 50 G's, 3 times each, X and Y directions                                         |                                                                    |                                                                    |                                                                    |                                           |

## ■ AMPLIFIERS

### Socket-Mount Type

|                               |                |                            |                                                                                            |                                                                                            |                                                                                             |                                   |                                 |                                   |
|-------------------------------|----------------|----------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------|-----------------------------------|
| Part number                   |                |                            | E2C-AK4A                                                                                   | E2C-AM4A                                                                                   | E2C-GE4A                                                                                    | E2C-GF4A                          | E2C-GE4B                        | E2C-GF4B                          |
| Supply voltage                |                |                            | 90 to 264 VAC, 50/60 Hz                                                                    | 10 to 30 VDC                                                                               |                                                                                             |                                   |                                 |                                   |
| Current consumption           |                |                            | 55 mA max.                                                                                 | 25 mA max.                                                                                 |                                                                                             |                                   |                                 |                                   |
| Differential travel           |                |                            | See "Differential Travel" tables                                                           |                                                                                            |                                                                                             |                                   |                                 |                                   |
| Control output                | Relay          | Type                       | SPDT                                                                                       | —                                                                                          |                                                                                             |                                   |                                 |                                   |
|                               |                | Max. load                  | 2 A, 250 VAC (p.f. = 1)                                                                    | —                                                                                          |                                                                                             |                                   |                                 |                                   |
|                               |                | Min. load                  | 1 mA, 5 VDC                                                                                | —                                                                                          |                                                                                             |                                   |                                 |                                   |
|                               | DC solid-state | Type                       | Transistor, SPST                                                                           | One NPN open collector, one PNP open collector                                             | NPN open collector with pull-up                                                             | PNP open collector with pull-down | NPN open collector with pull-up | PNP open collector with pull-down |
|                               |                | Max. load                  | 50 mA, 40 VDC                                                                              | 200 mA                                                                                     | 100 mA                                                                                      |                                   |                                 |                                   |
|                               |                | Max. on-state voltage drop | 2 VDC                                                                                      | 1.5 VDC                                                                                    |                                                                                             |                                   |                                 |                                   |
| Indicators                    |                |                            | Output Operation (red LED) and Output Stability (red LED)                                  |                                                                                            | Output Operation (red LED)                                                                  |                                   |                                 |                                   |
| Materials                     |                | Case                       | Plastic                                                                                    |                                                                                            |                                                                                             |                                   |                                 |                                   |
| Mounting                      |                |                            | Requires P2CF-11, PL11 or P3G-11 socket (not included). Order separately from Accessories. | Requires P2CF-08, PL08 or P3G-08 socket (not included). Order separately from Accessories. | Requires PYF08A-E, PY08 or PYF08M socket (not included). Order separately from Accessories. |                                   |                                 |                                   |
| Connections                   |                |                            | Plated steel screw terminals or solder terminals, refer to sockets in Accessories section. |                                                                                            |                                                                                             |                                   |                                 |                                   |
| Weight (not including socket) |                |                            | 250 g (8.8 oz.)                                                                            | 140 g (4.9 oz.)                                                                            | 20 g (0.7 oz.)                                                                              |                                   |                                 |                                   |
| Enclosure ratings             | UL             |                            | —                                                                                          |                                                                                            |                                                                                             |                                   |                                 |                                   |
|                               | NEMA           |                            | 1                                                                                          |                                                                                            |                                                                                             |                                   |                                 |                                   |
|                               | IEC 144        |                            | IP 40                                                                                      |                                                                                            |                                                                                             |                                   |                                 |                                   |
| Approvals                     | UL             |                            | —                                                                                          |                                                                                            |                                                                                             |                                   |                                 |                                   |
|                               | CSA            |                            | —                                                                                          |                                                                                            |                                                                                             |                                   |                                 |                                   |
| Ambient operating temperature |                |                            | -10° to 55°C (14° to 131°F)                                                                |                                                                                            |                                                                                             |                                   |                                 |                                   |
| Vibration                     |                |                            | 10 to 25 Hz, 2 mm (0.08 in) double amplitude, 2 hours each, X and Y directions             |                                                                                            |                                                                                             |                                   |                                 |                                   |
| Shock                         |                |                            | 10 G's, 3 times each, X and Y directions                                                   |                                                                                            |                                                                                             |                                   |                                 |                                   |

## ■ AMPLIFIERS

### Track-Mount Type

|                               |                |                            |                                                                                |                                                                                                    |
|-------------------------------|----------------|----------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Part number                   |                |                            | E2C-JC4AP                                                                      | E2C-WH4AF                                                                                          |
| Supply voltage                |                |                            | 10 to 30 VDC                                                                   |                                                                                                    |
| Current consumption           |                |                            | 45 mA                                                                          | 25 mA                                                                                              |
| Differential travel           |                |                            | See "Differential Travel" tables                                               |                                                                                                    |
| Control output                | DC solid-state | Type                       | NPN open collector                                                             | One NPN open collector, one PNP open collector                                                     |
|                               |                | Max. load                  | 100 mA                                                                         | 200 mA                                                                                             |
|                               |                | Max. on-state voltage drop | 1 VDC                                                                          | 0.7 VDC                                                                                            |
| Alarm output                  | Type           | NPN open collector         | Not provided                                                                   |                                                                                                    |
|                               | Max. load      | 50 mA                      | —                                                                              |                                                                                                    |
| Indicators                    |                |                            | Output Operation (red LED),<br>Output Stability (green LED)                    | Output Operation (red LED)                                                                         |
| Materials                     |                | Case                       | Plastic                                                                        |                                                                                                    |
| Mounting                      |                |                            | DIN rail track, E39-L48 mounting bracket,<br>or two side through holes         | DIN rail track or bottom surface with<br>two through holes                                         |
| Connections                   |                |                            | Prewired, 4-conductor cable, 2 m (6.56 ft) length                              | Terminal screws or direct connection to S308<br>sensor controller with E99-C connector (included). |
| Weight                        |                |                            | 80 g (2.8 oz.) with cable                                                      | 80 g (2.8 oz.) with cable                                                                          |
| Enclosure ratings             | UL             | —                          |                                                                                |                                                                                                    |
|                               | NEMA           | 1                          |                                                                                |                                                                                                    |
|                               | IEC 144        | IP 40                      |                                                                                |                                                                                                    |
| Approvals                     | UL             | —                          |                                                                                |                                                                                                    |
|                               | CSA            | —                          |                                                                                |                                                                                                    |
| Ambient operating temperature |                |                            | -10° to 55°C (14° to 131°F)                                                    |                                                                                                    |
| Vibration                     |                |                            | 10 to 25 Hz, 2 mm (0.08 in) double amplitude, 2 hours each, X and Y directions |                                                                                                    |
| Shock                         |                |                            | 10 G's, 3 times each, X and Y directions                                       |                                                                                                    |

## ■ DIFFERENTIAL TRAVEL

### E2C-AK4A and E2C-AM4A amplifiers

| Amplifier part number | Sensor part number | Differential travel (% of detecting distance) |                               |
|-----------------------|--------------------|-----------------------------------------------|-------------------------------|
|                       |                    | At minimum detecting distance                 | At maximum detecting distance |
| E2C-AK4A              | E2C-CR5B           | 1 to 5%, adjustable                           | 1 to 5%, adjustable           |
|                       | E2C-CR8A           |                                               |                               |
|                       | E2C-CR8B           |                                               |                               |
|                       | E2C-X1A            |                                               |                               |
|                       | E2C-C1A            |                                               |                               |
|                       | E2C-X1R5A          |                                               |                               |
|                       | E2C-X2A            |                                               |                               |
|                       | E2C-X5A            |                                               |                               |
|                       | E2C-X10A           |                                               |                               |
|                       | E2C-C20MA          |                                               |                               |
| E2C-AM4A              | E2C-CR5B           | 1 to 5%, adjustable                           | 1 to 5%, adjustable           |
|                       | E2C-CR8A           |                                               |                               |
|                       | E2C-CR8B           |                                               |                               |
|                       | E2C-X1A            |                                               |                               |
|                       | E2C-C1A            |                                               |                               |
|                       | E2C-X1R5A          |                                               |                               |
|                       | E2C-X2A            |                                               |                               |
|                       | E2C-X5A            |                                               |                               |
|                       | E2C-X10A           |                                               |                               |
|                       | E2C-C20MA          |                                               |                               |

### E2C-G□4A, E2C-G□4B and E2C-WH4AF amplifiers

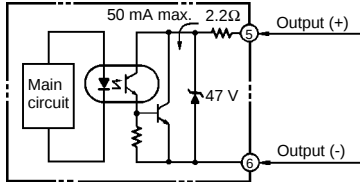
| Amplifier part number | Sensor part number | Differential travel (% of detecting distance) |                               |
|-----------------------|--------------------|-----------------------------------------------|-------------------------------|
|                       |                    | At minimum detecting distance                 | At maximum detecting distance |
| E2C-G□4A              | E2C-CR8A,8B        | 2.0 to 4.7%, fixed                            | 3.8 to 6.0%, fixed            |
|                       | E2C-X1A            | 0.9 to 1.9%, fixed                            | 0.4 to 3.8%, fixed            |
|                       | E2C-C1A            | 0.5 to 2.6%, fixed                            | 0.1 to 4.3%, fixed            |
|                       | E2C-X1R5A          | 1.7 to 4.2%, fixed                            | 2.7 to 6.0%, fixed            |
| E2C-G□4B              | E2C-CR5B           | 1.6 to 17.6%, fixed                           | 4.4 to 19.2%, fixed           |
| E2C-JC4AP, E2C-WH4AF  | E2C-CR8A           | 2.0 to 4.7%, fixed                            | 3.8 to 6.0%, fixed            |
|                       | E2C-X1A            | 0.9 to 1.9%, fixed                            | 0.4 to 3.8%, fixed            |
|                       | E2C-C1A            | 0.5 to 2.6%, fixed                            | 0.1 to 4.3%, fixed            |
|                       | E2C-X1R5A          | 1.7 to 4.2%, fixed                            | 2.7 to 6.0%, fixed            |

# Operation

## ■ OUTPUT CIRCUIT DIAGRAMS

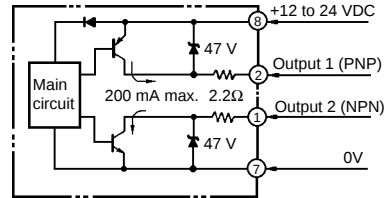
### E2C-AK4A Amplifier

AC input, transistor and relay outputs



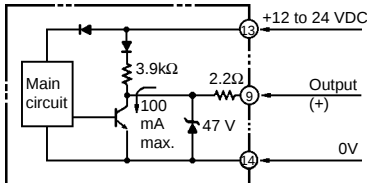
### E2C-AM4A Amplifier

DC input, open collector NPN and PNP outputs



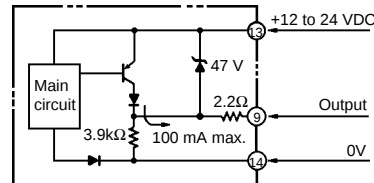
### E2C-GE4 Amplifiers

DC input, NPN or PNP outputs



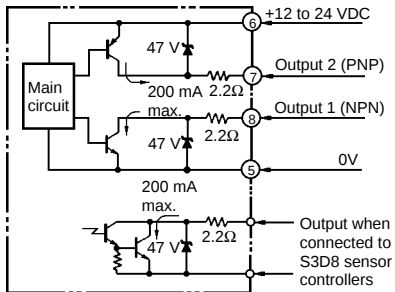
### E2C-GF4 Amplifiers

DC input, NPN and PNP outputs



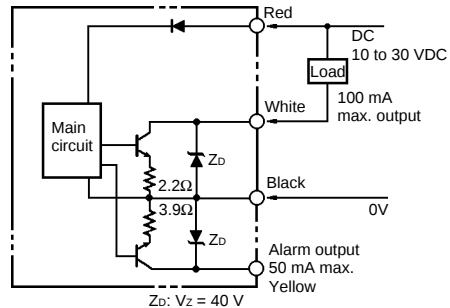
### E2C-WH4AF Amplifier

DC input, open collector NPN and PNP outputs



### E2C-JC4AP Amplifier

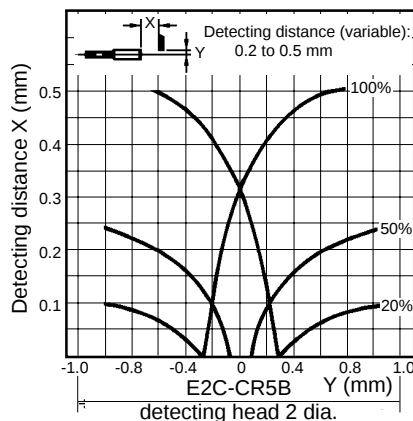
DC input, open collector NPN output with alarm



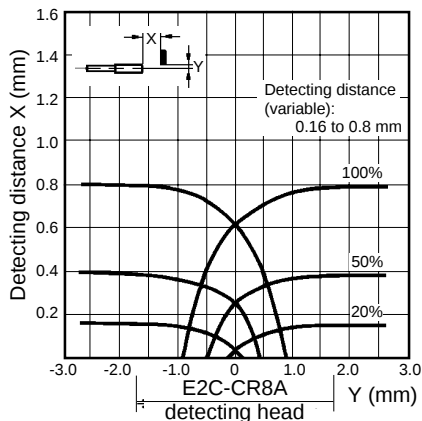
# Engineering Data

## ■ OPERATING RANGE

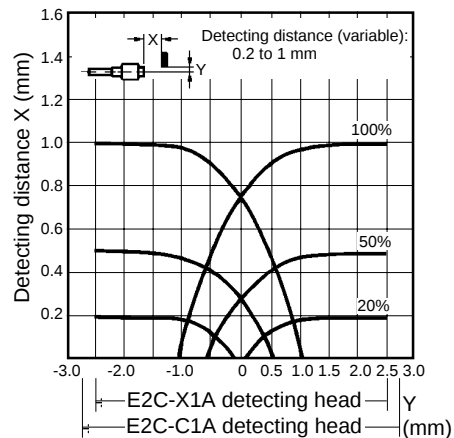
Shielded 2 mm dia. sensor  
E2C-CR5B



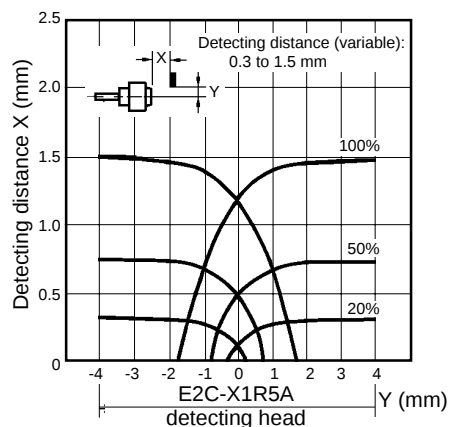
Shielded 3.5 mm & 3.8 mm dia. sensor  
E2C-CR8A, E2C-CR8B



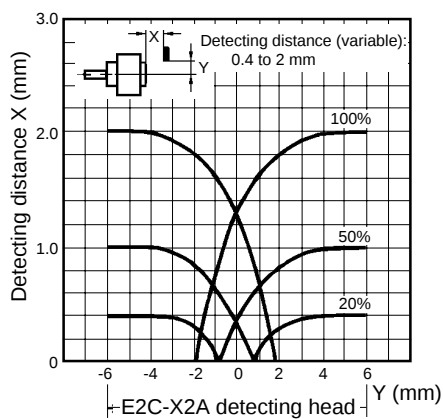
Shielded M5 and 5.4 mm dia. sensors  
E2C-X1A, E2C-C1A



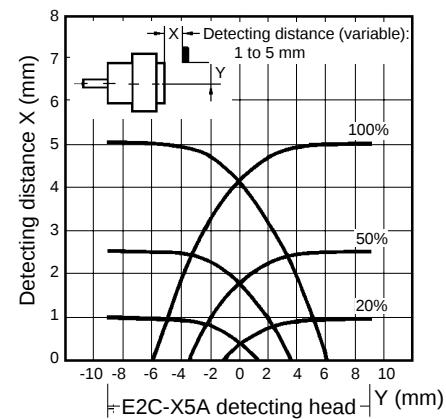
Shielded M8 sensor  
E2C-X1R5A



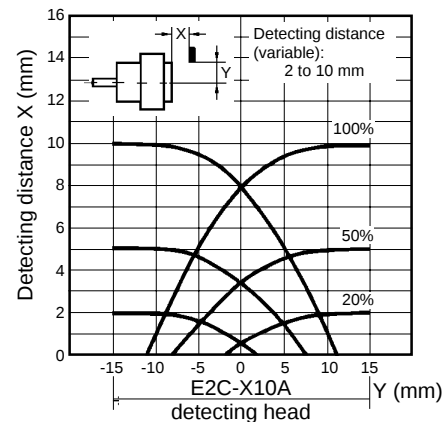
Shielded M12 sensor  
E2C-X2A



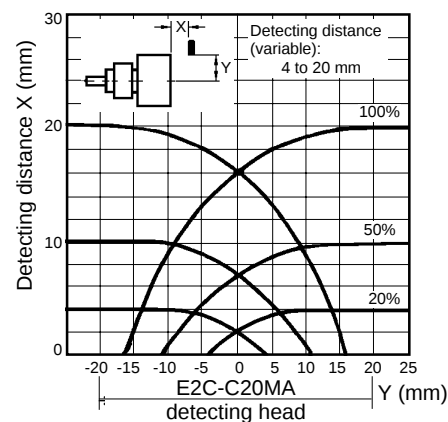
Shielded M18 sensor  
E2C-X5A



Shielded M30 sensor  
E2C-X10A

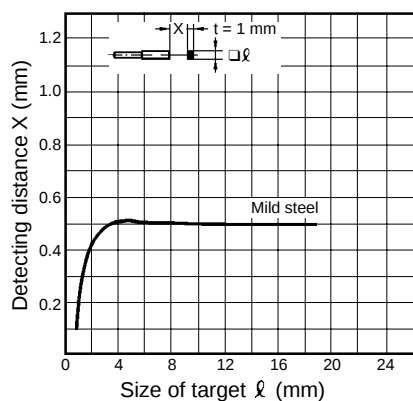


Unshielded 40 mm dia. sensor  
E2C-C20MA

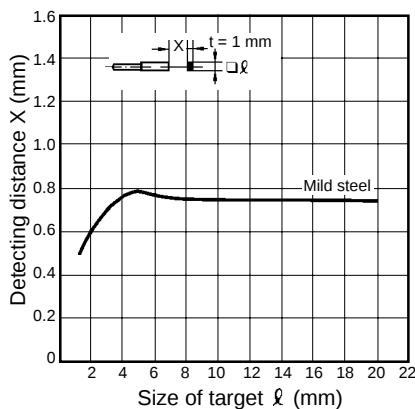


## ■ DETECTING DISTANCE vs. SIZE AND MATERIAL OF TARGET

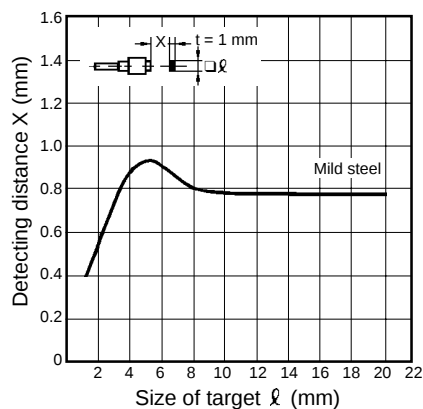
Shielded 2 mm dia. sensor  
E2C-CR5B



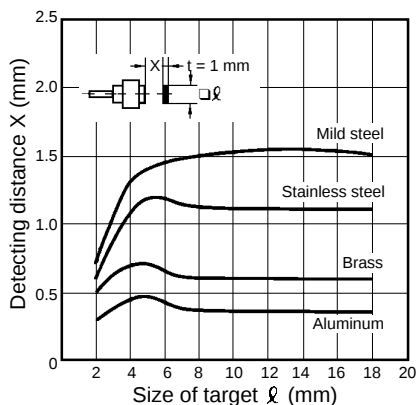
Shielded 3.5 mm & 3.8 mm dia. sensor  
E2C-CR8A, E2C-CR8B



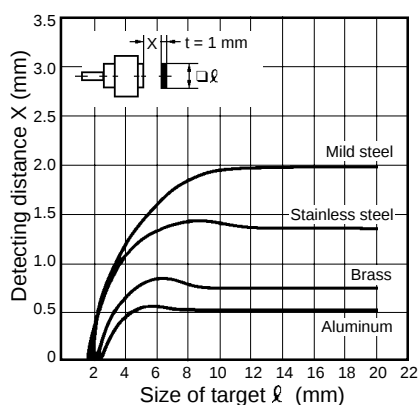
Shielded M5 and 5.4 mm dia. sensors  
E2C-X1A, E2C-C1A



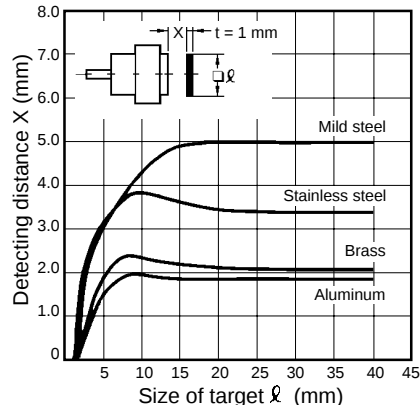
Shielded M8 sensor  
E2C-X1R5A



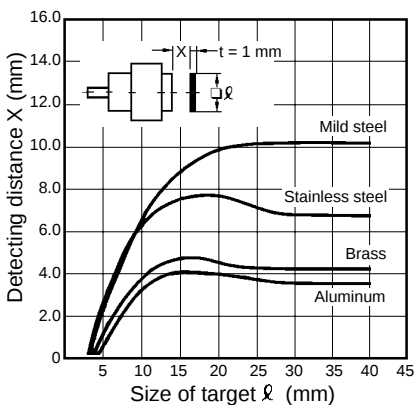
Shielded M12 sensor  
E2C-X2A



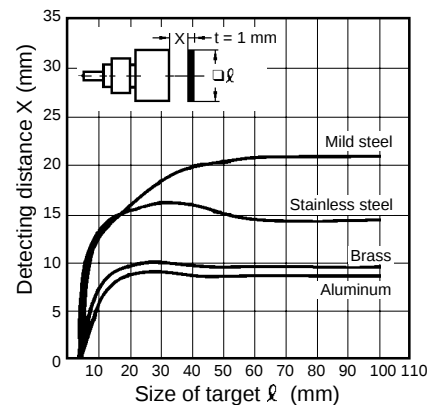
Shielded M18 sensor  
E2C-X5A



Shielded M30 sensor  
E2C-X10A



Unshielded 40 mm dia. sensor  
E2C-C20MA



Note: If the target is a nonferrous metal, the operating distance of the proximity sensor decreases. However, with a piece of foil measuring about 0.01 mm (0.0004 inch) in thickness, the detecting distance is equivalent to that with a ferrous metal. Note that the proximity sensor cannot detect extremely thin evaporated films and non-conductive targets.

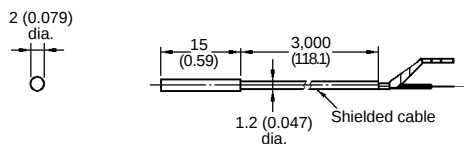
# Dimensions

Unit: mm (inch)

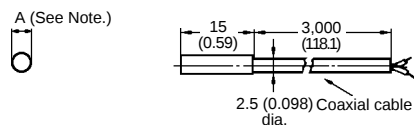
## ■ SENSORS

### Miniature Sizes

#### E2C-CR5B

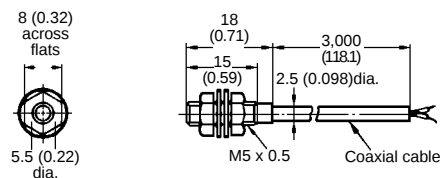


#### E2C-CR8A, E2C-CR8B

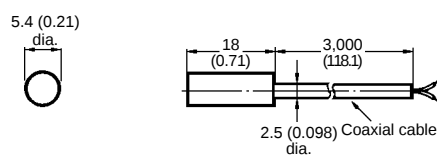


Note: For E2C-CR8A, A= 3.5 mm (0.14 in)  
For E2C-CR8B, A=3.8 mm (0.15 in)

#### E2C-X1A

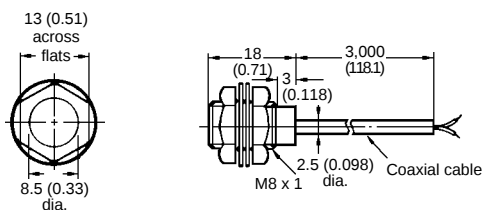


#### E2C-C1A

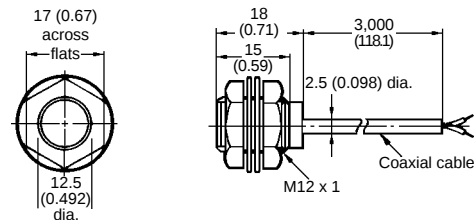


## Standard Sizes

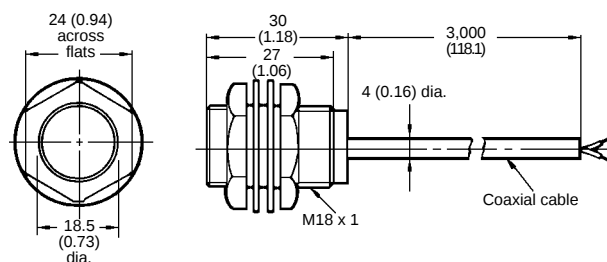
#### E2C-X1R5A



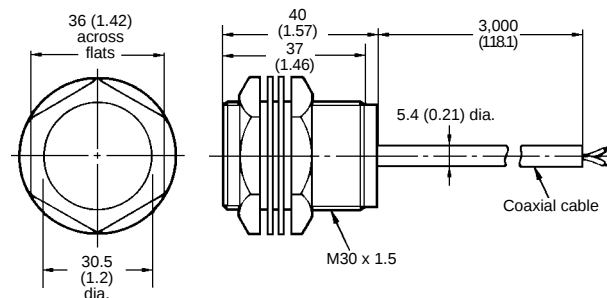
#### E2C-X2A



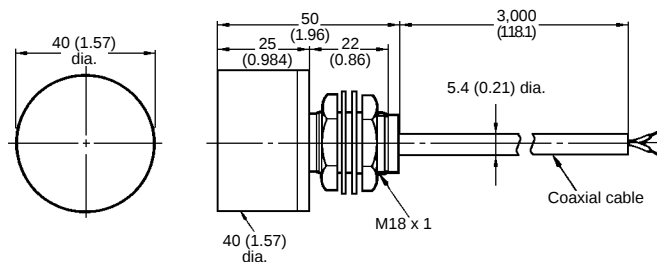
#### E2C-X5A



#### E2C-X10A



#### E2C-C20MA

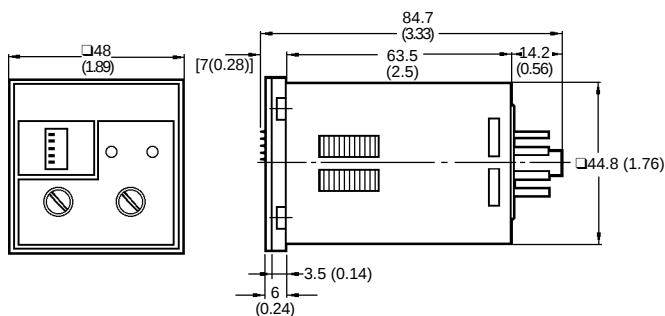


## ■ SOCKET-MOUNT AMPLIFIERS

### 1/16 DIN Size

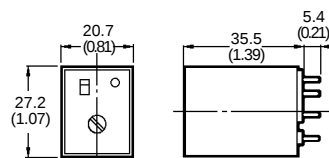
E2C-AK4A AC type, fits 11-pin sockets

E2C-AM4A DC type, fits 8-pin sockets



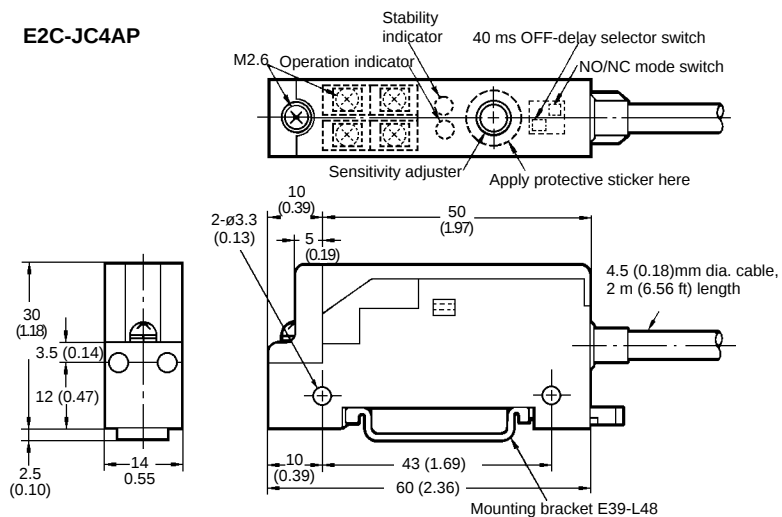
### Miniature

E2C-G□4□

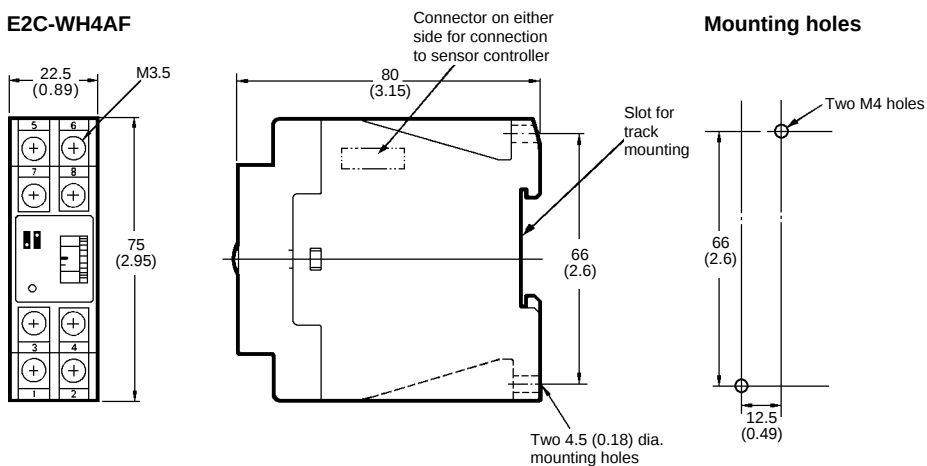


## ■ TRACK-MOUNT AMPLIFIERS

### E2C-JC4AP

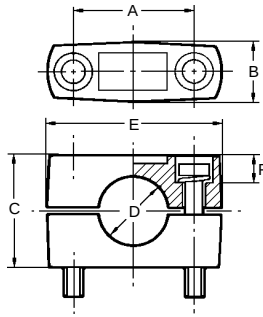


### E2C-WH4AF



Note: When E2C-WH4AF amplifier is connected to S3D8 sensor controller, using the E99-C connector supplied, the amplifier is powered by the controller and the output is connected to the sensor controller.

## OPTIONAL MOUNTING BRACKETS FOR STANDARD SIZE THREADED SENSORS

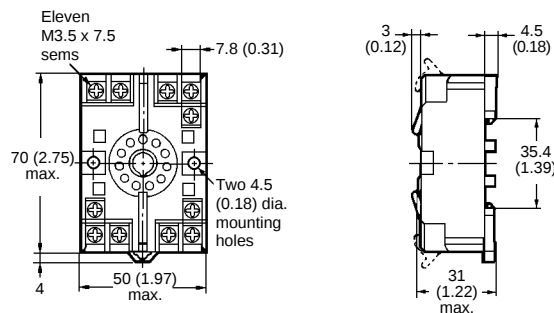


| Part number | Drawing dimensions |                  |           |                |                |              | Applicable sensor models |
|-------------|--------------------|------------------|-----------|----------------|----------------|--------------|--------------------------|
|             | A                  | B                | C         | D              | E              | F            |                          |
| Y92E-B8     | 18 (0.71) ± 0.2    | 10 (0.39) max.   | 18 (0.71) | 8 (0.31) dia.  | 28 (1.10) max. | M4 x 20 bolt | E2C-X1R5A                |
| Y92E-B12    | 24 (0.94) ± 0.2    | 12.5 (0.49) max. | 20 (0.79) | 12 (0.47) dia. | 37 (1.46) max. | M4 x 25 bolt | E2C-X2A                  |
| Y92E-B18    | 32 (1.26) ± 0.2    | 17 (0.67) max.   | 30 (1.18) | 18 (0.71) dia. | 47 (1.85) max. | M5 x 32 bolt | E2C-X5A                  |
| Y92E-B30    | 45 (1.77) ± 0.2    | 17 (0.67) max.   | 50 (1.97) | 30 (1.18) dia. | 60 (2.36) max. | M5 x 50 bolt | E2C-X10A                 |

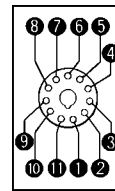
## SOCKETS FOR AMPLIFIERS

### 11-Pin Sockets for E2C-AK4A Amplifier

#### P2CF-11 Bottom surface or track mounting socket

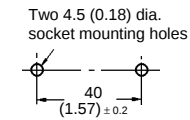


#### Terminal arrangement

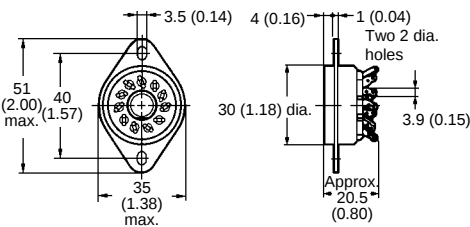


(Top view)

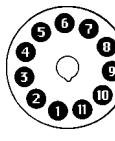
#### Mounting holes



#### PL11 Panel mounting socket

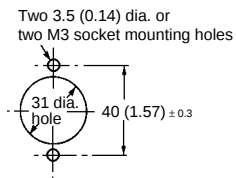


#### Terminal arrangement

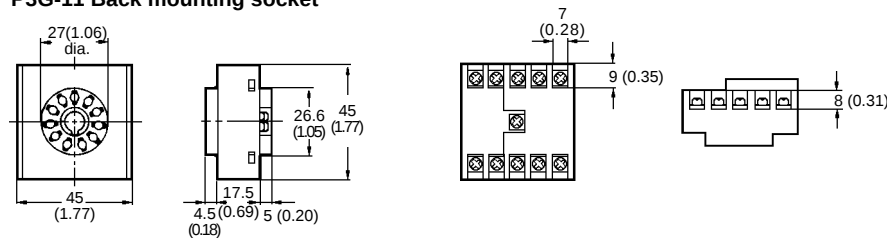


(Bottom view)

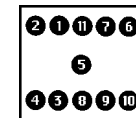
#### Mounting holes



#### P3G-11 Back mounting socket



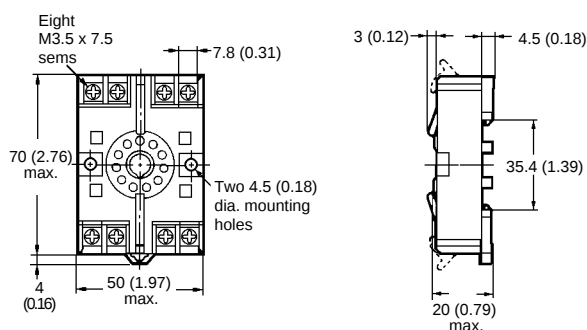
#### Terminal arrangement



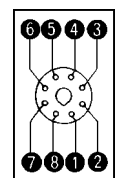
(Bottom view)

### 8-Pin Sockets for E2C-AM4A Amplifier

#### P2CF-08 Bottom surface or track mounting socket

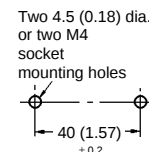


#### Terminal arrangement



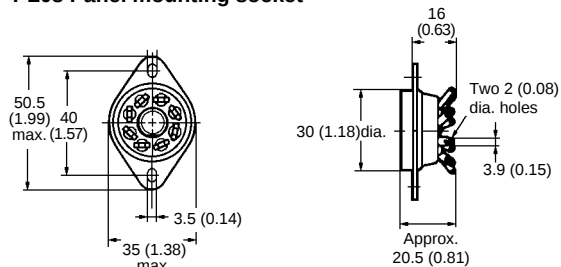
(Top view)

#### Mounting holes

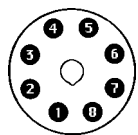


## 8-Pin Sockets for E2C-AM4A Amplifier (continued)

### PL08 Panel mounting socket



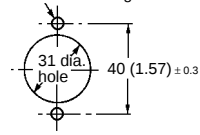
### Terminal arrangement



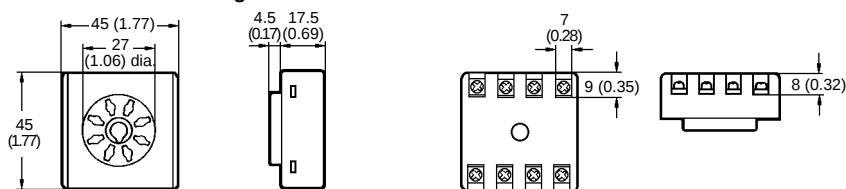
(Bottom view)

### Mounting holes

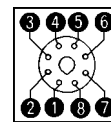
Two 3.5 (0.14) dia. or two M3 socket mounting holes



### P3G-08 Back mounting socket



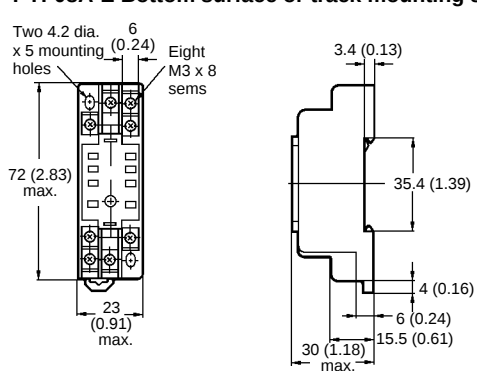
### Terminal arrangement



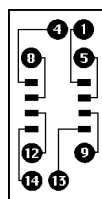
(Bottom view)

## Sockets for E2C-G□4□ Amplifiers

### PYF08A-E Bottom surface or track mounting socket



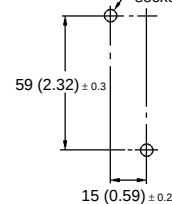
### Terminal arrangement



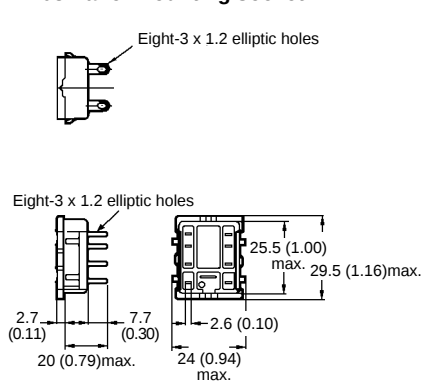
(Bottom view)

### Mounting holes

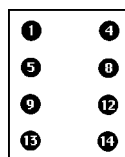
Two M3 or M4 or 4.5 (0.18) dia. socket mounting holes



### PY08 Panel mounting socket

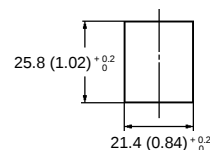


### Terminal arrangement

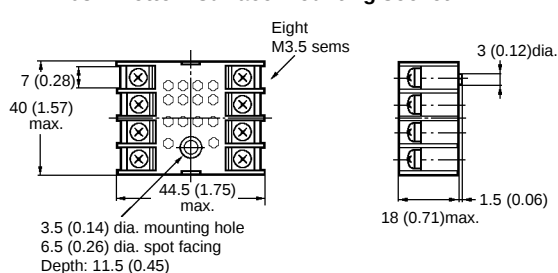


(Bottom view)

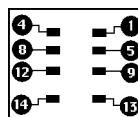
### Panel cutout



### PYF08M Bottom surface mounting socket

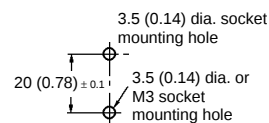


### Terminal arrangement



(Top view)

### Mounting holes

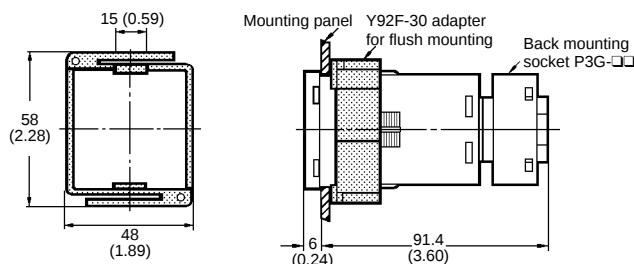


## ■ PANEL MOUNTING ADAPTERS

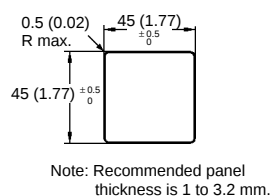
### For E2C-A□4A Amplifiers

#### Y92F-30 Mounting adapter

Adapter installs behind the panel. It is ideal for side by side installation. Use P2CF-□□ sockets

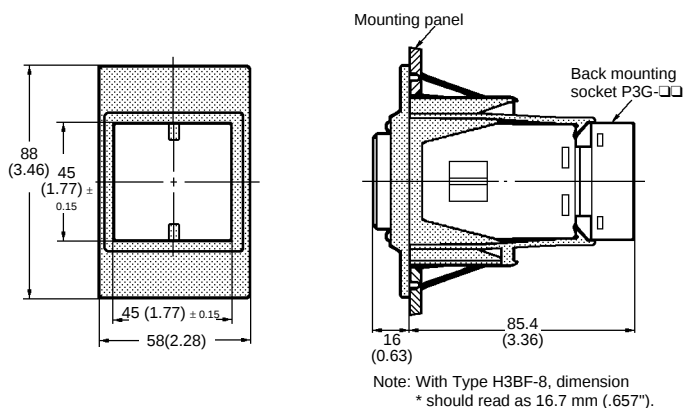


#### Panel cutout

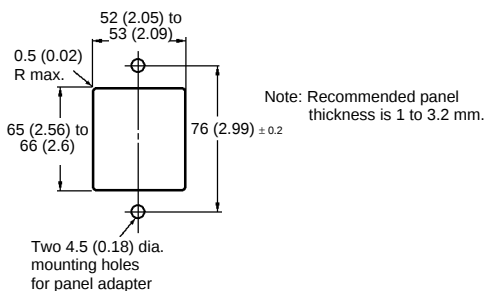


#### Y92F-70 Mounting adapter

Charcoal gray panel adapter installs through panel front. Amplifier face fits bezel, rear of amplifier clips to adapter. Use P3G-□□ sockets.



#### Panel cutout



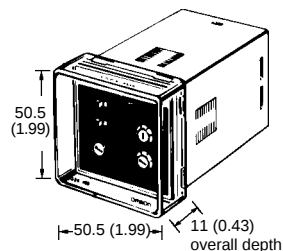
## ■ PROTECTIVE COVERS

### For E2C-A□4A Amplifiers

#### Y92A-48 Hard plastic cover, Y92A-48D Soft plastic cover

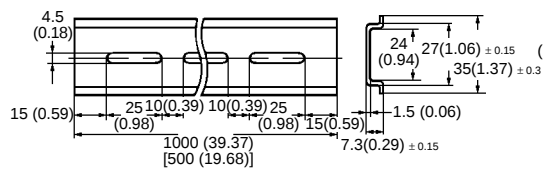
Hard plastic cover Y92A-48 and soft plastic cover Y92A-48D snap onto the front of the amplifier to protect it from dust, dirt and water drip. The Y92A-48

hard plastic cover projects 4 mm from the front of the amplifier. Y92A-48D soft plastic cover fits snugly over the front.

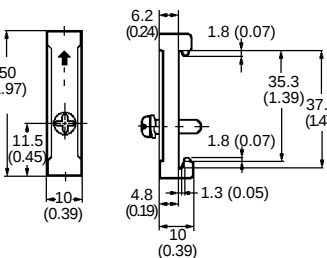


## ■ MOUNTING TRACK AND ACCESSORIES

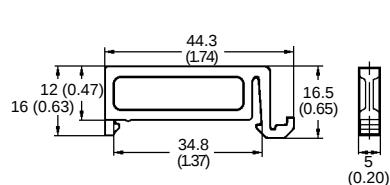
#### PFP-100N/PFP-50N DIN Rail



#### PFP-M End Plate



#### PFP-S Spacer





**OMRON ELECTRONICS LLC**  
One East Commerce Drive  
Schaumburg, IL 60173  
**1-800-55-OMRON**

Cat. No. CEDSAX4

11/01

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885 Milner Avenue  
Scarborough, Ontario M1B 5V8  
**416-286-6465**

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