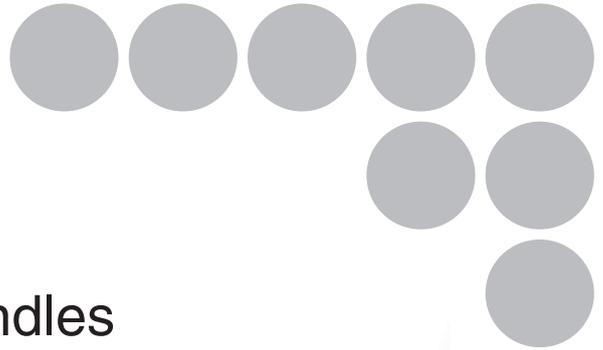


OMRON

Digital Amplifier Ultrasonic Sensor E4C-UDA Series

A Reflective Sensor That Handles
All Types of Sensing Object Colors
and Patterns



realizing

Sensor Heads

Head Variations



E4C-DS30

300-mm Model

Sensing Distance: 50 to 300 mm



E4C-DS80

800-mm Model

Sensing Distance: 70 to 800 mm



1,000-mm Model

Sensing Distance: 90 to 1,000 mm



The yellow indicator lights to show that the Ultrasonic Sensor is in sensing range.

Enables reliable detection that are difficult to detect

Compact with a Broad Selection of Side-view Heads

A wide range of Side-view Models are available in an M18 metal body - the smallest in its class. This is the first multi-detection sensor that handles all types of sensing object. The Head conforms to IP65, which means it can be used in environments exposed to dust and moisture (Sensor Head only).



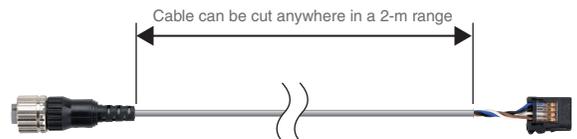
Short body

Side view

Long range

Free-cut Cable

The cable between the Sensor Head and amplifier uses clamp connectors that conform to OMRON original E-con specifications, which makes it easy to cut and adjust the cable length.



Amplifiers

Amplifier Variations

Range Discrimination with Two Threshold Values

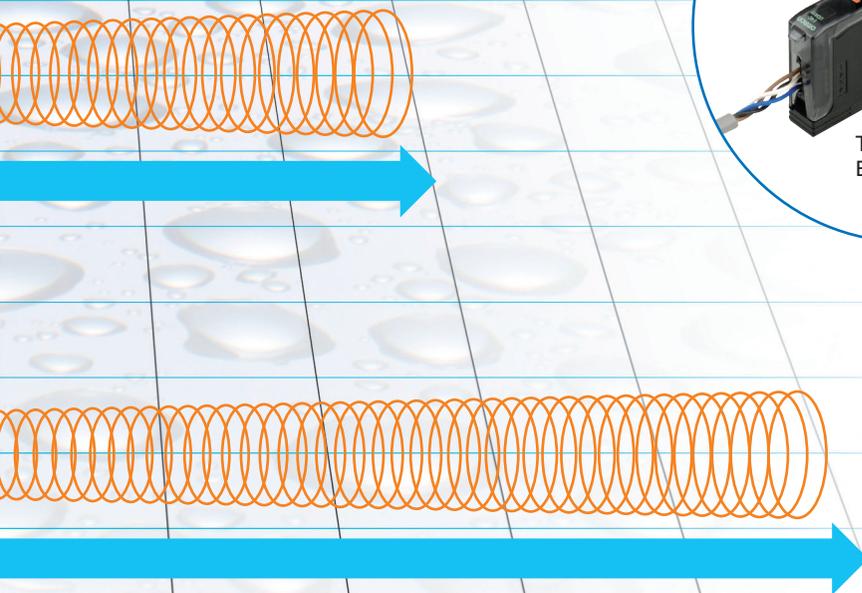


Twin Output Model
E4C-UDA□□

Analog Output for More Applications



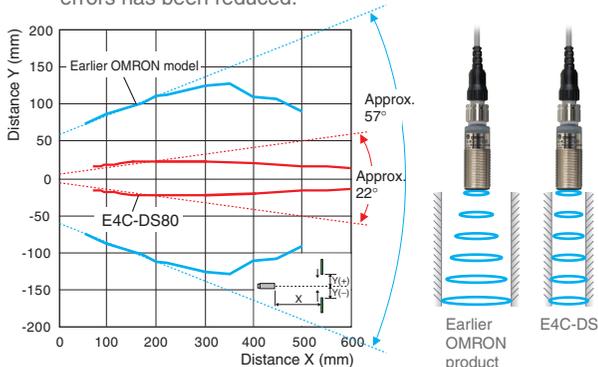
Analog Output Model
E4C-UDA□□AN



of a great variety of workpieces optically.

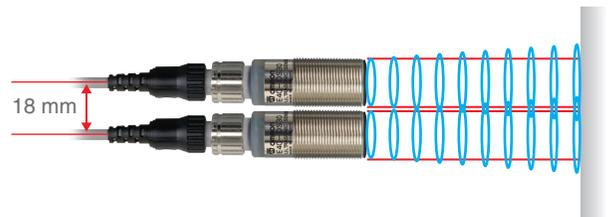
○ Detection Range Features Good Directivity

A great improvement has been made to directivity, which is traditionally a weak point of ultrasonic sensors. The influence of peripheral objects that cause detection errors has been reduced.



○ Side-by-side Mounting Possible

There is no mutual interference even with side-by-side mounting. (E4C-DS30/30L/80/80L)



*Mutual interference may occur under some conditions.

Note: The ultrasonic waves shown are an illustration only.

Slim Amplifier with Useful Functions

Multi-function Slim Amplifier

A two-output or one-output (analog output) amplifier can be selected to suit the application.

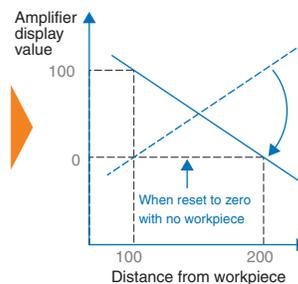
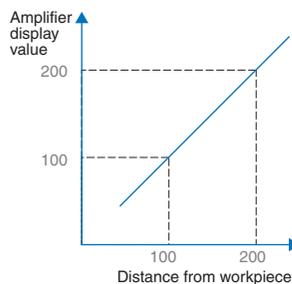
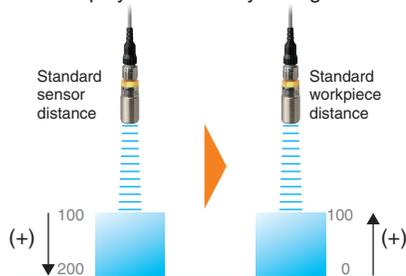


Analog Control Output

A voltage of 1 to 5 V is output depending on the detection volume (digitally displayed). This can be used for a variety of applications, such as position control and multi-level discrimination and detection.

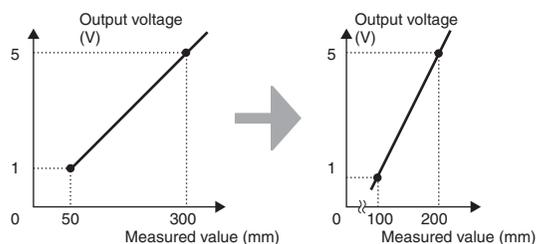
Scaling Function

The zero reset function means that the standard sensor distance display can be easily changed to a workpiece height display.



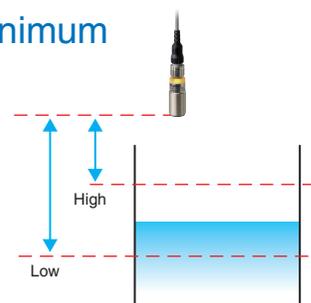
Monitor Focus Function

Analog output allocations can be changed according to the distance range to enable narrowing the range and thus achieve high-precision outputs.



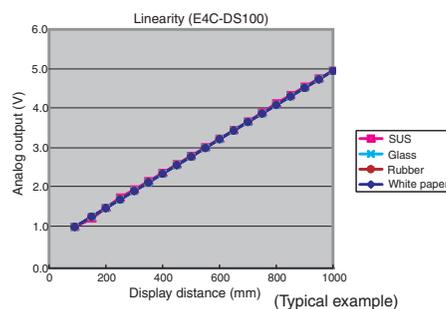
Settings for Threshold Maximum and Minimum

The threshold values can be set directly with position teaching using a workpiece. Even without a workpiece, the threshold values can be set directly using distance.



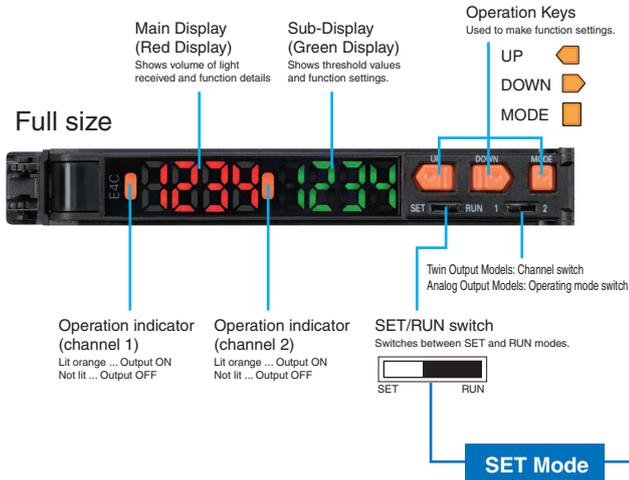
High Stability Not Influenced by Color or Material

Metal, glass, rubber - a wide variety of materials that were difficult to measure without contact can now be measured. Another feature of the E4C-UDA Series is the small error margin in the measurement values.



Easy-to-read Digital Distance Display

Distance Display (mm)



Simple Settings Using Key Operations

Switching to SET Mode

Mode Selection

0-op non

1-Ru 8

2-tF ----

3-dP

4-nd 2Pnt

5-bS ----

6-br 0

7-rv d 123

8-S5 ----

9-Sc ----

Function Selection

n-on Near distance ON

f-on Far distance ON

1 to 256

---- Timer disabled

offd OFF-delay timer

on-d ON-delay timer

1Shot One-shot timer

250 130
PERM botA
3. Display switch
Current distance and threshold value
Distance between the nearest workpiece on the Near side and the farthest workpiece on the Far side

250 PERM
250 1ch
Current distance and distance at peak
Current distance and channel No.

2Pnt Teaching with and without a workpiece

Auto Automatic-teaching

PPt Position teaching

0-rst Execute a zero reset

offst Position teaching

0 to 3

0 to 3

d 123 Normal display

E2 1P Reversed display

30 E4C-DS30

80 E4C-DS80

100 E4C-DS100

on Scaling set

off Scaling not set

For the Twin Output Model

10ot 2oUt

2oUt Output on each channel

PERA This is output only when there is a workpiece between the two threshold value distances.

2b It 2BIT output

For the Analog Output Model

10Ar 2Pnt

2Pnt Range of two preset points is output as 1 to 5 V.

rFct Near-distance side rated distance to background setting range is output as 1 to 5 V.

rFCS Range of two points preset by direct entry is output as 1 to 5 V.

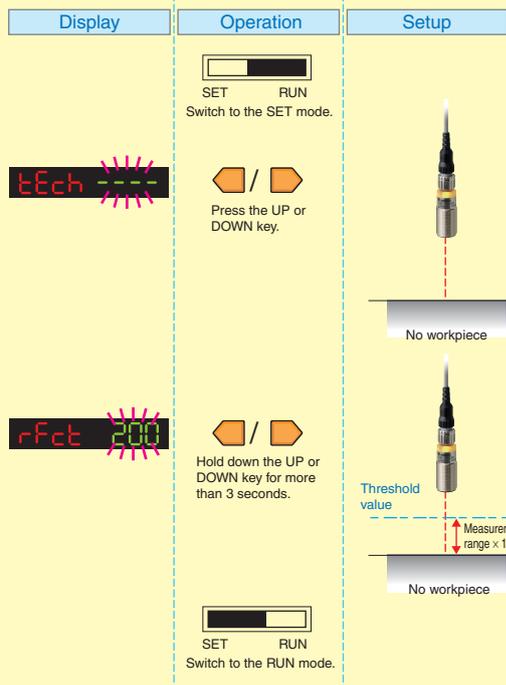
One-touch Teaching to Remove the Effect of the Background

Setting Example

Set the function to 2Pnt (teaching with and without a workpiece). (2PNT is the default setting.) Set the threshold value without a workpiece (i.e., in reference to the background).

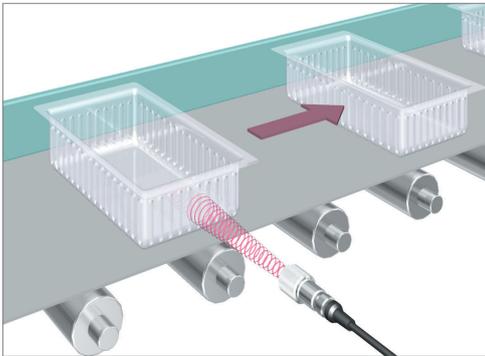
Set the threshold value at a distance 10% in front of the sensing range width in reference to the distance without a workpiece.

Example: The threshold is set 25 mm in front of the sensing range for the E4C-DS30 (sensing range: 50 to 300 mm).

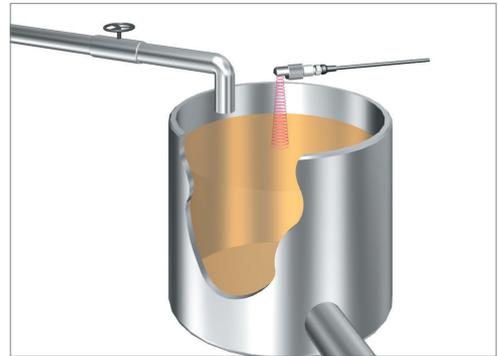


Variety of Applications

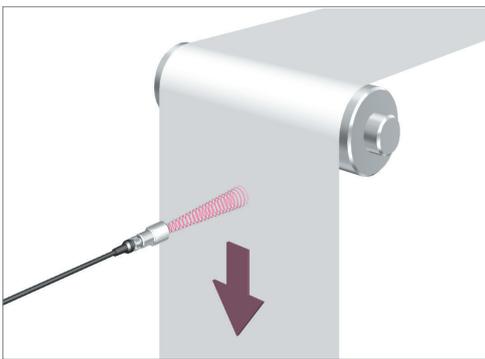
●Detection of Transparent Trays



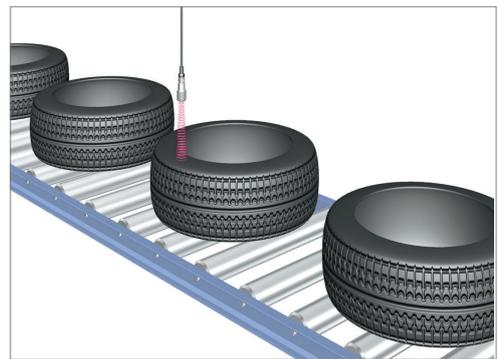
●Inspection of Solvent Tank Levels



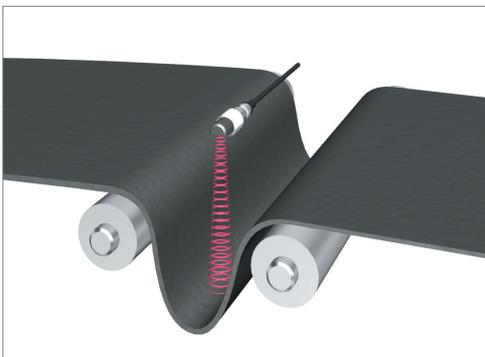
●Detection of Sheet Sag



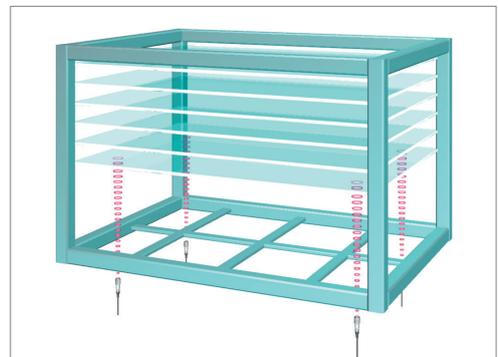
●Detection of Tires



●Control of Rubber Sheet Tension



●Detection of Position of Remaining Glass Substrates in Cassettes



Note: The E4C-UDA Series cannot be used in some circumstances, depending on the conditions.

Ordering Information

Sensors

Sensor Heads

| Shape | Model | Measurement range | Model |
|-------|-----------|-------------------|-----------|
| M18 | Straight | 50 to 300 mm | E4C-DS30 |
| | Side view | | E4C-DS30L |
| | Straight | 70 to 800 mm | E4C-DS80 |
| | Side view | | E4C-DS80L |
| | Straight | 90 to 1000 mm | E4C-DS100 |

Note: Refer to the definition of resolution in the *Ratings and Specifications* tables for information on conditions required to achieve this resolution.

Amplifiers

| Shape | Power supply | Output specifications | Model |
|-----------------------------------------------------------------------------------|--------------|-----------------------|-------------|
|  | DC | NPN output | E4C-UDA11 |
| | | | E4C-UDA11AN |
| | | PNP output | E4C-UDA41 |
| | | | E4C-UDA41AN |

Ratings and Specifications

Sensor Heads

| Item | Model | E4C-DS30 | E4C-DS30L | E4C-DS80 | E4C-DS80L | E4C-DS100 |
|---------------------------|-------|------------------------------------------------------------------------------|-----------|-----------------|-----------|----------------|
| Measurement range | | 50 to 300 mm | | 70 to 800 mm | | 90 to 1,000 mm |
| Standard sensing object | | 100 × 100 mm SUS flat plate | | | | |
| Near distance dead band | | 0 to 50 mm | | 0 to 70 mm | | 0 to 90 mm |
| Transmission frequency | | Approx. 390 kHz | | Approx. 205 kHz | | |
| Response speed | | 30 ms | | 100 ms | | 125 ms |
| Ambient temperature range | | Operating: -25 to 70°C, Storage: -40 to 85°C (with no icing or condensation) | | | | |
| Ambient humidity range | | Operating and storage: 35% to 85% (with no condensation) | | | | |
| Enclosure rating | | IP65 | | | | |
| Indicator | | (Yellow) Lit: Sensor within sensing range | | | | |
| Weight | | Approx. 150 g | | | | Approx. 170 g |

Amplifiers

| Model | Twin Output Models | | Analog Output Models | |
|---------------------------|---------------------------------------------------------------------------------------------|------------|----------------------|------------------------------|
| Model number | E4C-UDA11 | E4C-UDA41 | E4C-UDA11AN | E4C-UDA41AN |
| Output configuration | NPN output | PNP output | NPN output | PNP output |
| Connection method | Pre-wired | | | |
| Supply voltage | 12 to 24 VDC ± 10%, ripple 10% max. | | | |
| Current consumption | 80 mA max. | | | |
| Control output | NPN open collector (26.4 VDC max.), Load current: 50 mA max., Residual voltage: 1 V max. | | | |
| Timer | OFF/OFF-delay/ON-delay/one-shot | | | |
| Timer time | 1 ms to 5 s | | | |
| Analog output | Output form | --- | | Voltage output (1 to 5 V DC) |
| | Connected load | --- | | 10 kΩ min. |
| | Temperature characteristics | --- | | 0.3% F.S./°C |
| | Resolution | --- | | 2.0% F.S. (See note.) |
| | Linearity | --- | | ±2% F.S. |
| Ambient temperature range | Operating: -25 to 55°C, Storage: -30 to 70°C (with no icing or condensation) | | | |
| Ambient humidity range | Operating and storage: 35% to 85% (with no condensation) | | | |
| Insulation resistance | 50 MΩ min. (at 500 VDC) | | | |
| Dialectic strength | 1,000 VAC, 50/60 Hz for 1 min | | | |
| Vibration resistance | 10 to 150 Hz, 0.75-mm double amplitude, 80 min each in X, Y, and Z directions | | | |
| Shock resistance | 500 mm/s ² , 3 times each in X, Y and Z directions | | | |
| Enclosure rating | IP 50 | | | |
| Materials | Case: PBT (polybutylene terephthalate), Cover: Polycarbonate | | | |
| Weight (packed state) | Approx. 150 g | | | |
| Accessories | Instruction Manual | | | |

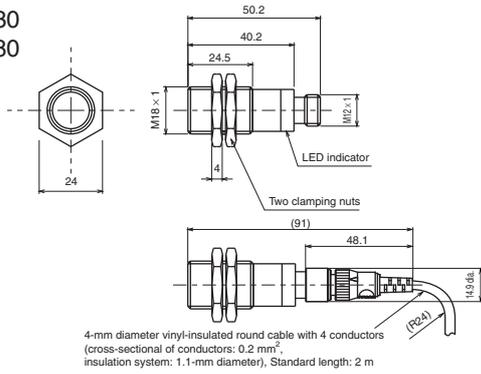
Note: Value one hour after the product is turned ON. External disturbances, however, sometimes cause minute outputs.

External Dimensions

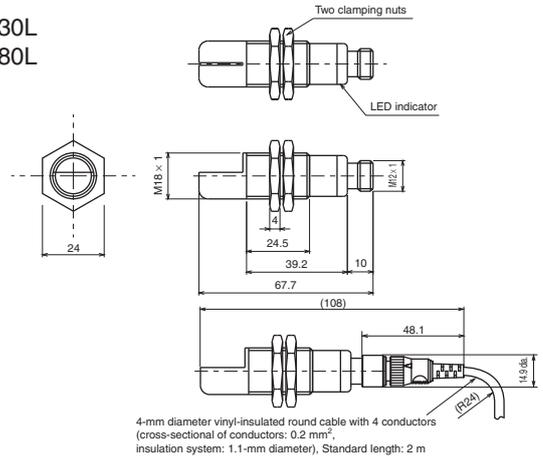
(Unit: mm)

Sensor Heads

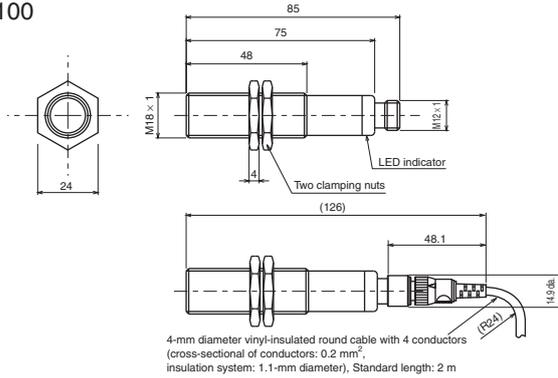
E4C-DS30
E4C-DS80



E4C-DS30L
E4C-DS80L

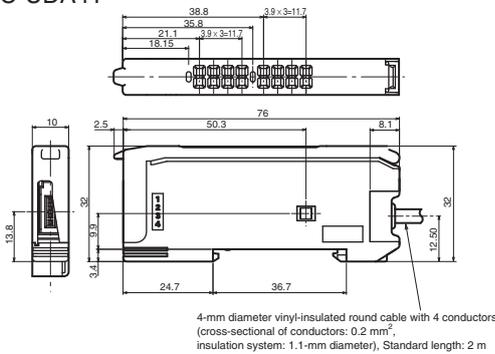


E4C-DS100

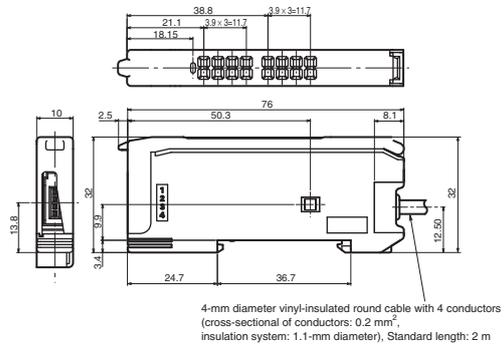


Amplifiers

E4C-UDA11
E4C-UDA41



E4C-UDA11AN
E4C-UDA41AN



This document provides information mainly for selecting suitable models. Please read the Instruction Sheet carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.

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

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