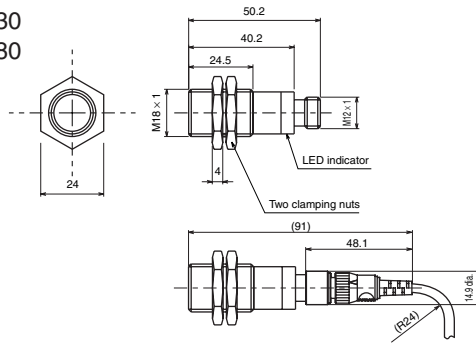


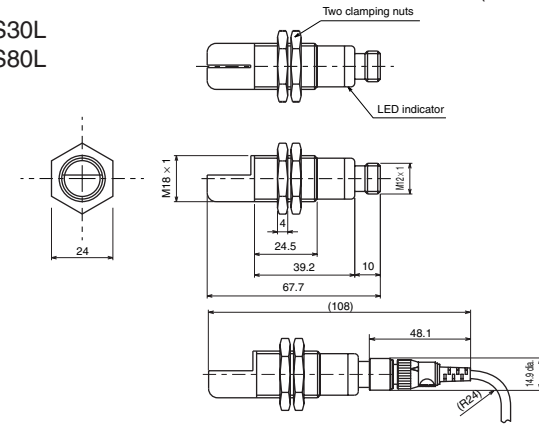
External Dimensions

(Unit: mm)

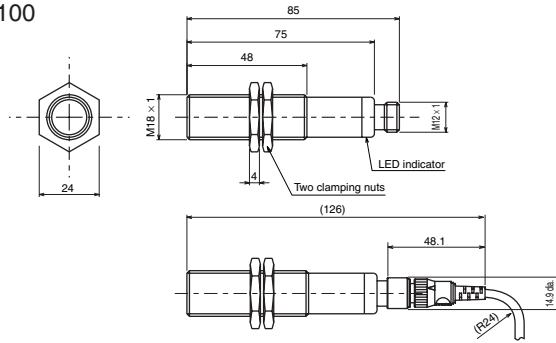
Sensor Heads
E4C-DS30
E4C-DS80



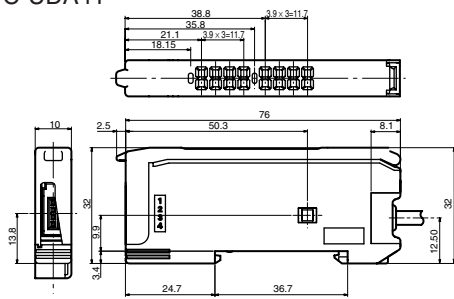
E4C-DS30L
E4C-DS80L



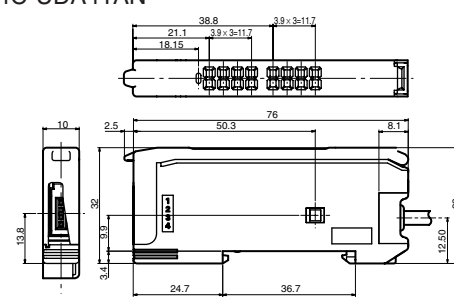
E4C-DS100



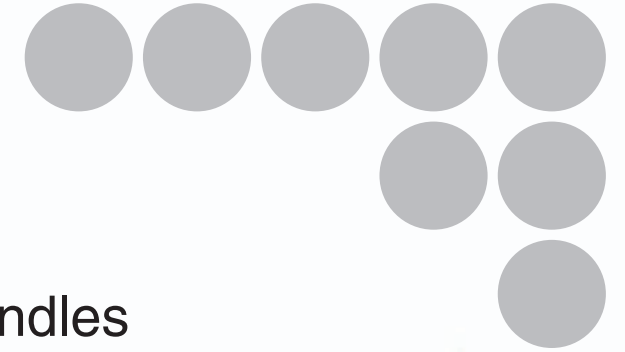
Amplifiers
E4C-UDA11
E4C-UDA41



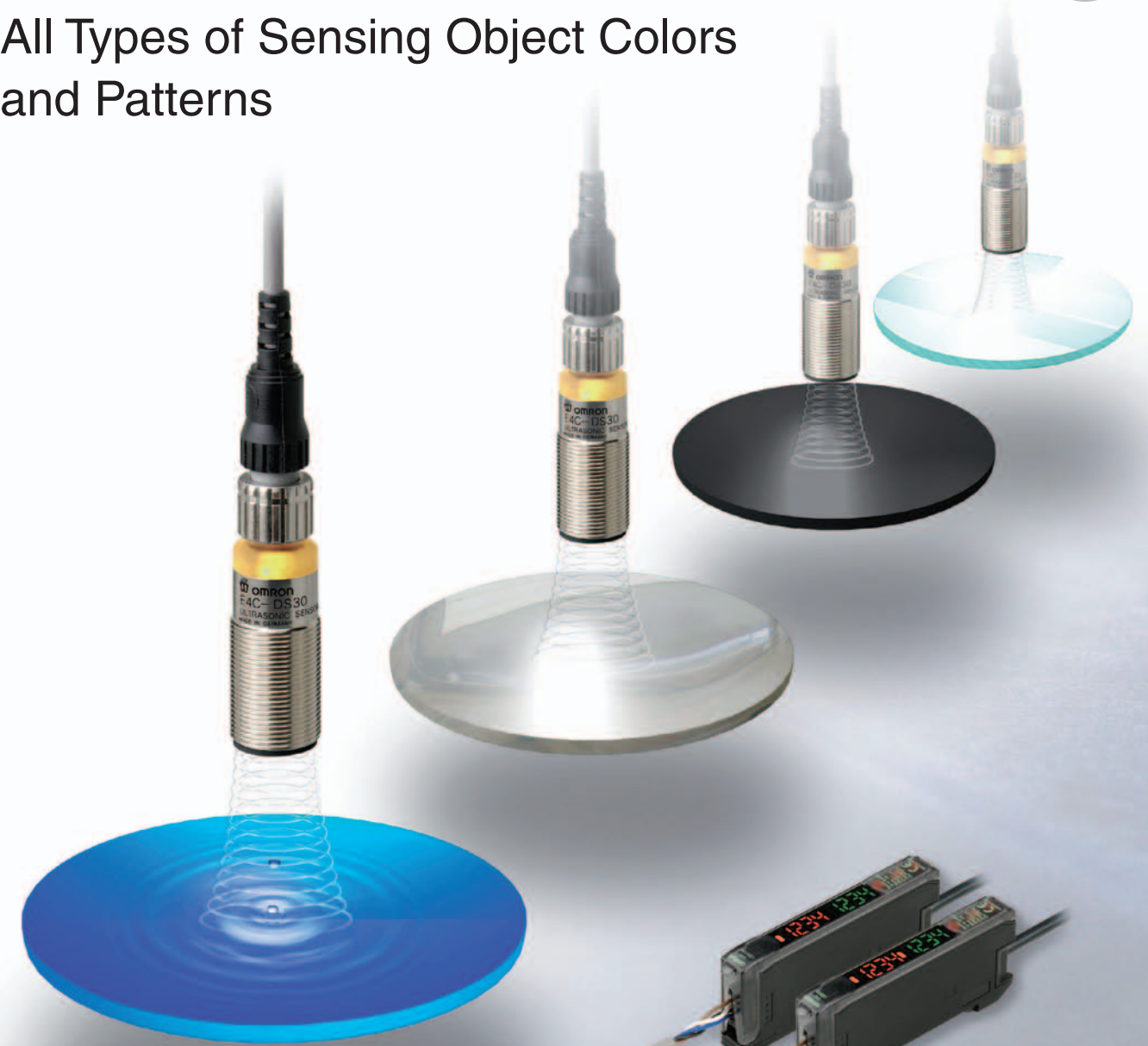
E4C-UDA11AN
E4C-UDA41AN



Digital Amplifier Ultrasonic Sensor E4C-UDA Series



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



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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Authorized Distributor:



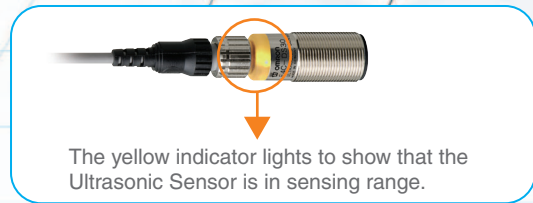
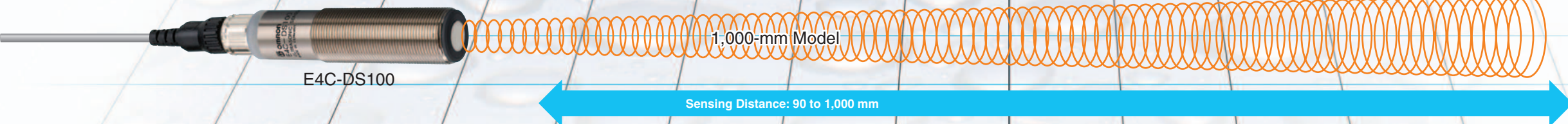
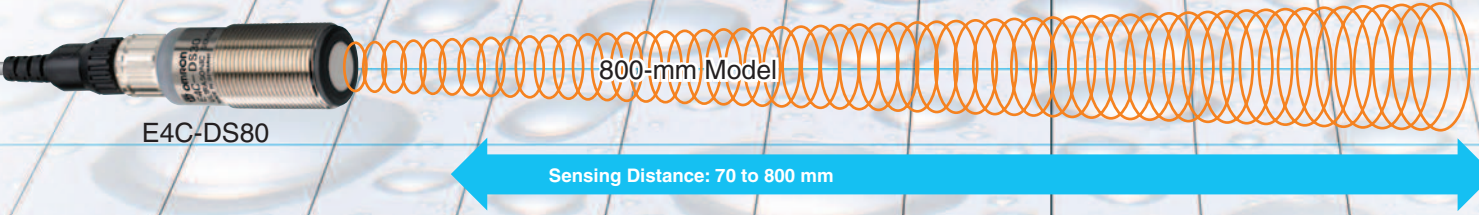
Note: Specifications subject to change without notice.

Cat. No. F077-E1-01
Printed in Japan
1005-0.5M (1005) (C)



Sensor Heads

Head Variations



Enables reliable detection of a great variety of workpieces that are difficult to detect optically.

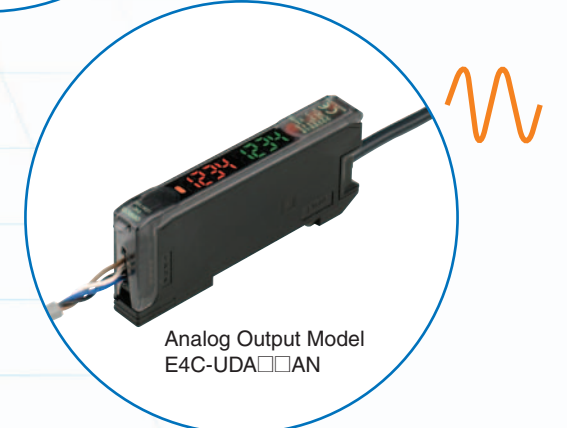
Amplifiers

Amplifier Variations

Range Discrimination with Two Threshold Values



Analog Output for More Applications



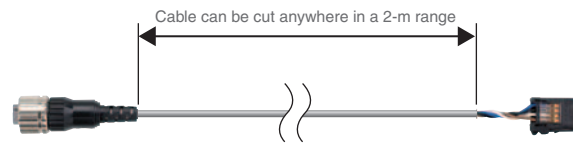
Compact with a Broad Selection of Side-view Heads

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).



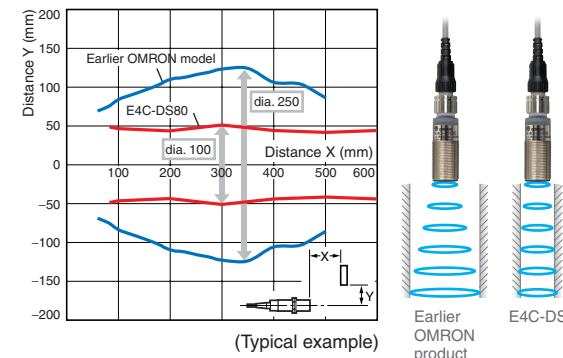
Free-cut Cable

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.



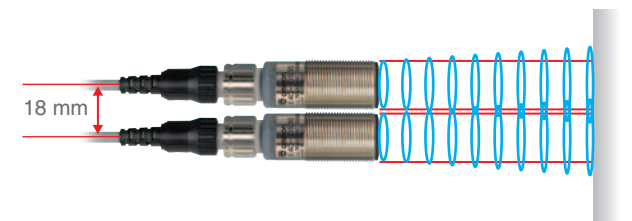
Detection Range Features Good Directivity

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

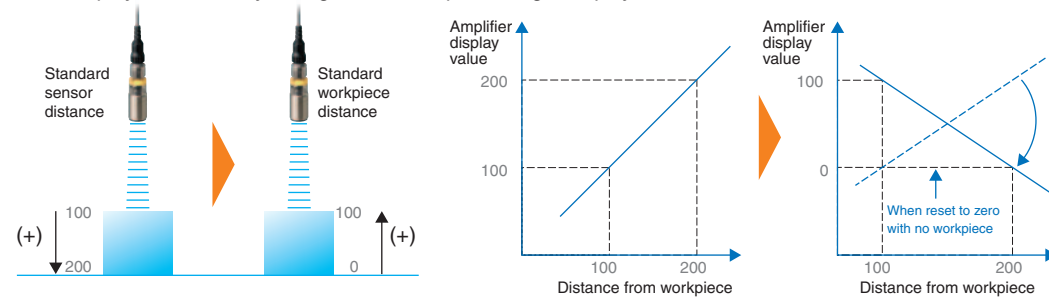
A two-output or one-output (analog output) amplifier can be selected to suit the application.



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.

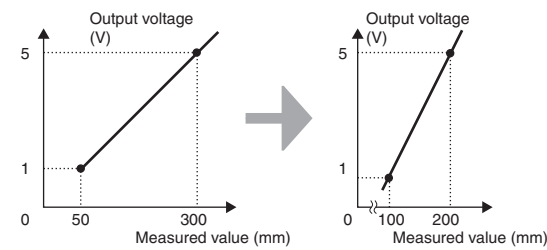
Scaling Function

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



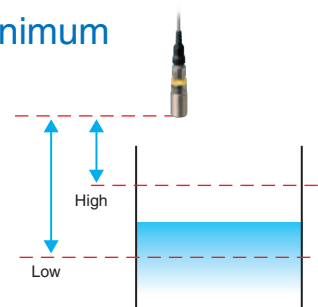
Monitor Focus Function

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



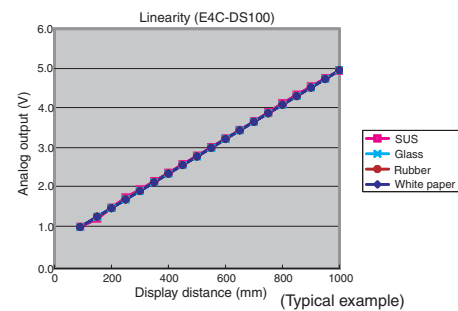
Settings for Threshold Maximum and Minimum

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.



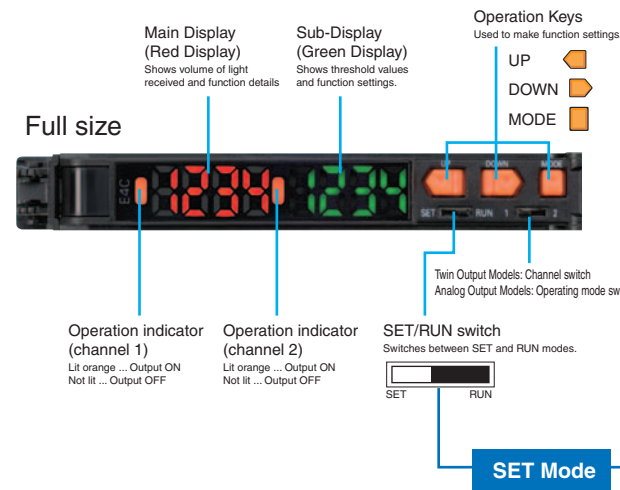
High Stability Not Influenced by Color or Material

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 ← **Function Selection**

0-OP non	0. Operation mode	n-on	Near distance ON
1-Ru 8	1. Number of samples to average	F-on	Far distance ON
2-tF ----	2. Timer	----	Timer disabled
		offd	OFF-delay timer
		on-d	ON-delay timer
		1Sh	One-shot timer
3-dP	3. Display switch	250 180	Current distance and threshold value
		PERP both	Distance between the nearest workpiece on the Near side and the farthest workpiece on the Far side
		250 PERP	Current distance and distance at peak
		250 1ch	Current distance and channel No.
4-nd 2Pnt	4. MODE key setting	2Pnt	Teaching with and without a workpiece
		Auto	Automatic-teaching
		PPt	Position teaching
		OrSt	Execute a zero reset
		offSt	Position teaching
5-bS ----	5. Bank selection	0 to 3	
6-br 0	6. Bank registration	0 to 3	
7-ru d 123	7. Display orientation	d 123	Normal display
		E2 1P	Reversed display
8-S5 ----	8. Sensor model selection	30	E4C-DS30
		80	E4C-DS80
		100	E4C-DS100
9-Sc ----	9. Scaling set	on	Scaling set
		off	Scaling not set

For the Twin Output Model

10-ot 2oUt	10. Output method setting	2oUt	Output on each channel
		Ar-ER	This is output only when there is a workpiece between the two threshold value distances.
		2b 1t	2BIT output

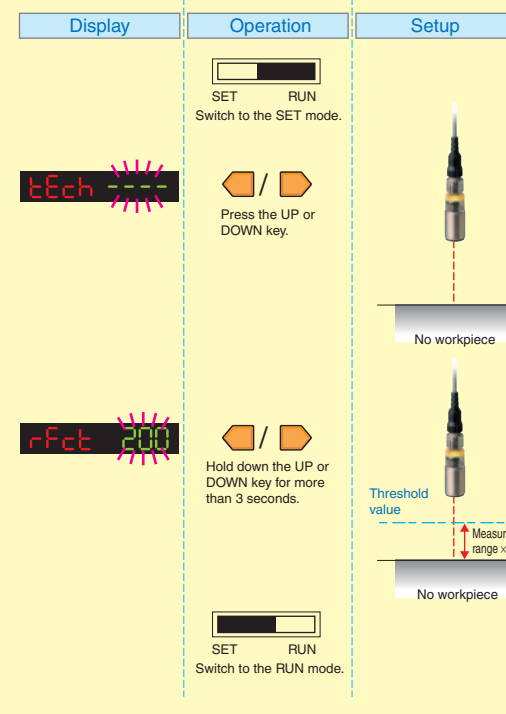
For the Analog Output Model

10Ar 2Pnt	10. Output method setting	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.
		rFctS	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

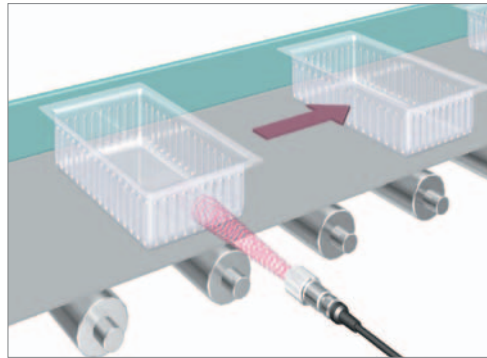
Setting Example

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



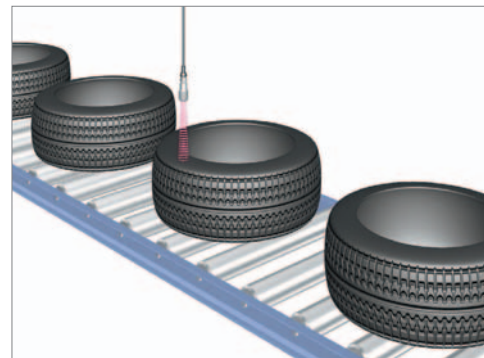
●Inspection of Solvent Tank Levels



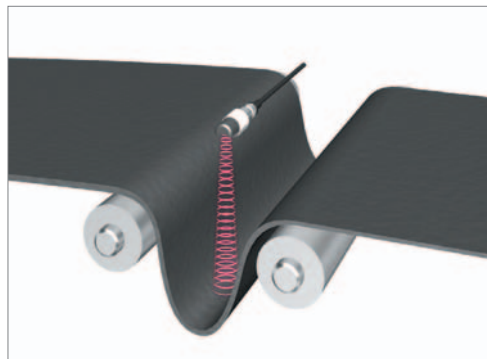
●Detection of Sheet Sag



●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.

Products

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-UDA11AN
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.	
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.
Timer	OFF/OFF-delay/ON-delay/one-shot	
Timer time	1 ms to 5 s	
Linearity	±2% F.S.	
Resolution (See note.)	1% F.S. max.	
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/s², 3 times each in X, Y and Z directions	
Materials	Case: PBT (polybutylene terephthalate), Cover: Polycarbonate	
Weight	Approx. 150 g	
Accessories	Instruction Manual	

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