Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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Digital Amplifier Ultrasonic Sensor
E4C-UDA

CSM_E4C-UDA_DS_E_12_2

Compact, Cylindrical Reflective Ultrasonic Sensor with Easy Setting

- Stable operation for a variety of objects regardless of color, transparency, or material (metallic or non-metallic).
- Compact M18-sized cylindrical Head. Product lineup includes Side-view Heads.
- Check the sensing object distance and sensing position (i.e., threshold) on the digital display.
- Easily make settings for workpiece presence/absence and elimination of background influence by using teaching.
- Amplifiers include models with analog outputs.

⚠ Be sure to read *Safety precautions* on page 4.

Ordering Information

Sensor

Sensor Heads (Refer to Dimensions on page 5.)

Shape	Model	Measurement range	Model
M18	Straight	60 to 275 mm	**E4C-DS30**
	Side view		**E4C-DS30L**
	Straight	85 to 735 mm	**E4C-DS80**
	Side view		**E4C-DS80L**
	Straight	110 to 910 mm	**E4C-DS100**

Amplifiers (Refer to Dimensions on page 5.)

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

Accessories (Order Separately)

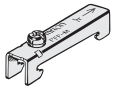
Mounting Bracket (Refer to E39-L, E39-S, and E39-R.)

A Mounting Bracket is not provided with the Amplifier Unit. Order a Mounting Bracket separately if required.

Appearance	Model	Quantity
	**E39-L143**	1

End Plate (Refer to PFP-☐.)

An End Plate is not provided with the Amplifier Unit. Order an End Plate separately if required.

Appearance	Model	Quantity
	**PFP-M**	1

Ratings and Specifications

Sensor Heads

Item \ Model	E4C-DS30	E4C-DS30L	E4C-DS80	E4C-DS80L	E4C-DS100
Measurement range	60 to 275 mm		85 to 735 mm		110 to 910 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
Ultrasonic oscillation frequency	Approx. 390 kHz		Approx. 255 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)				
Insulation resistance	50 MΩ min. (at 500 VDC)				
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min				
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude, 2 hours each in X, Y, and Z directions				
Shock resistance	500 m/s^2, 3 times each in X, Y and Z directions				
Enclosure rating	IP65				
Indicator	(Yellow) Lit: Sensor within sensing range (Green) Lit: Power indicator				(Yellow) Lit: Sensor within sensing range
Weight	Approx. 150 g				Approx. 170 g
Materials	Case: Nickel-plated brass, Oscillator surface: Glass epoxy resin and polyurethane				
Accessories	Instruction Manual, XS2F-D523-D80-A (Cable length: 2 m), XN2A-1430				

✻ This value is the average number of operations set to 256.

Amplifiers

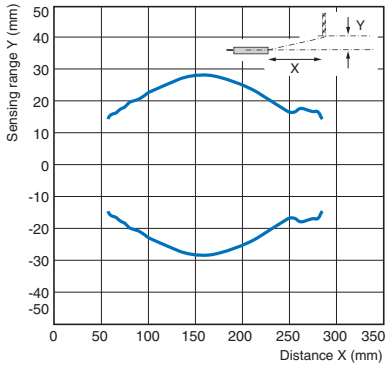
Item \ Model		E4C-UDA11	E4C-UDA41	E4C-UDA11AN	E4C-UDA41AN
Item \ Type		Twin Output Models		Analog Output Models	
Output configuration		NPN output	PNP output	NPN output	PNP output
Connection method		Pre-wired			
Supply voltage		12 to 24 VDC ±10%, ripple 10% max.			
Current consumption		80 mA max.			
Control 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	Connected load	---		Voltage output (1 to 5 VDC)	
	Output form	---		10 kΩ min.	
	Resolution	---		1.0% F.S.	
	Temperature characteristics	---		0.3% F.S./°C	
	Repeat accuracy	---		2.0% F.S. ✻	
	Linearity	---		Within ±2% F.S.	
Protective circuit		Power supply reverse polarity protection, output short-circuit protection			
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		20 MΩ min. (at 500 VDC)			
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min			
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude, 2 hours each in X, Y, and Z directions			
Shock resistance		500 m/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. 100 g			
Accessories		Instruction Manual			

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

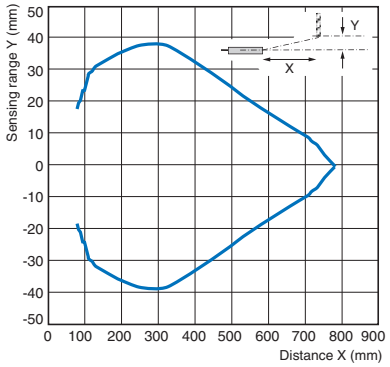
Engineering Data (Reference Values)

Operating Range

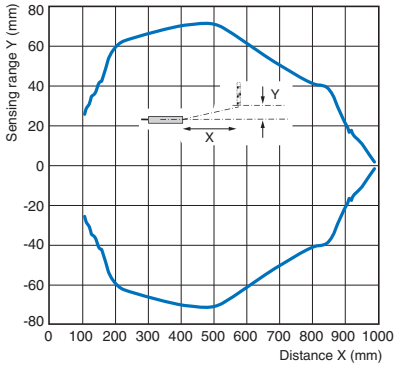
E4C-DS30(L)



E4C-DS80(L)

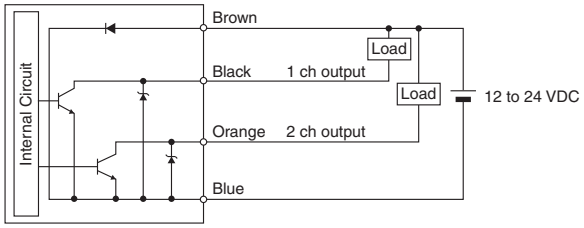


E4C-DS100

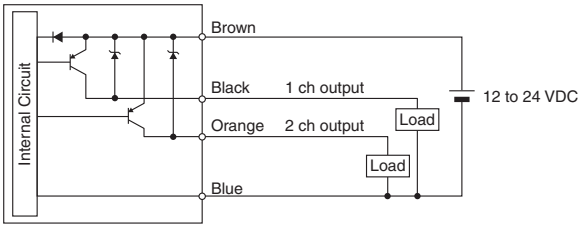


I/O Circuit Diagrams

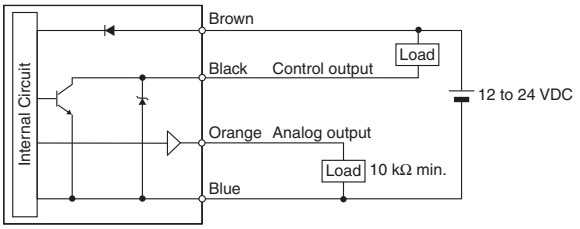
E4C-UDA11 (NPN)



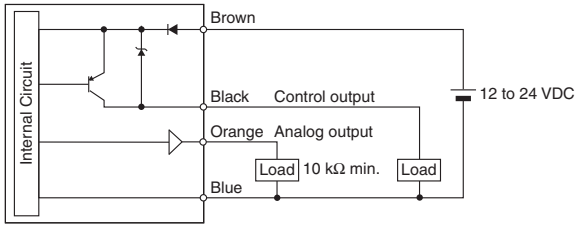
E4C-UDA41 (PNP)



E4C-UDA11AN (NPN)



E4C-UDA41AN (PNP)



Safety precautions

Refer to *Warranty and Limitations of Liability*.

⚠ WARNING

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

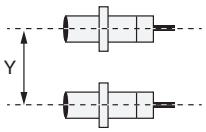
Precautions for Correct Use

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

- Separate the Sensor wiring from power supply and high-voltage lines. If Sensor wiring is placed together with or in the same duct as power supply or high-voltage lines, inductance may cause malfunction or damage to the Sensor.
- The extended cable length must be no more than 10 m. To extend the cable length, use 0.3 mm^2 cable.
- Detection will be possible 200 ms or longer after the power supply is turned ON. If separate power supplies are used for the load and the Sensor, turn ON the power supply to the Sensor first.
- Make sure that the cover to the Amplifier is in place before using the Sensor.
- If a writing error occurs (ERR/EEP will flash on the display) due to noise resulting from turning OFF the power supply, static electricity, or other cause, initialize the settings using the SET switch on the Amplifier.
- Depending on the application environment, some time may be required for the displayed distance to stabilize after turning ON the power supply.
- Output pulses may be generated when the power supply to the Amplifier is turned OFF. Turn OFF the load or the power supply to the load before turning OFF the Sensor.
- Do not use thinners, benzine, acetone, kerosene, or any other petroleum solvents to clean the Sensor or Amplifier.
- Turn OFF the power supply before connecting or disconnecting the Sensor Head.
  Use only an E4C Sensor Head. The product may be damaged if any other Sensor Head is connected.
- The distance displayed on the Amplifier may be different from values obtained with tape measures or other devices.
  To adjust the displayed distance, use the scaling function.

Mutual Interference

When installing two or more Sensor Heads side by side, ensure that the minimum distances given in the following table are maintained.



Model	Y
E4C-DS30/-DS30L	300 mm min.
E4C-DS80/-DS80L	800 mm min.
E4C-DS100	1,000 mm min.

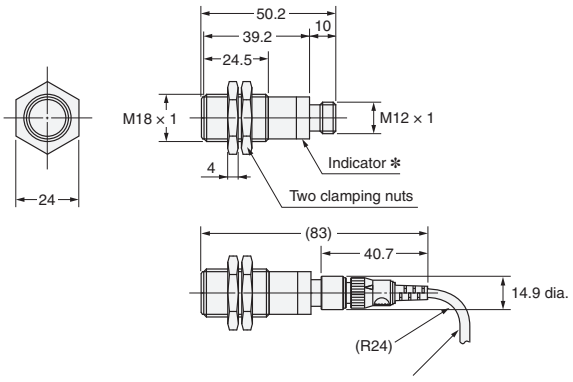
✻ These distances are the separations at the maximum measurement distances. The degree of effect depends on the equipment and surrounding conditions. Check the degree of effect after you install the Sensor Heads in your operating environment.

Dimensions

(Unit: mm)
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

Sensor Heads

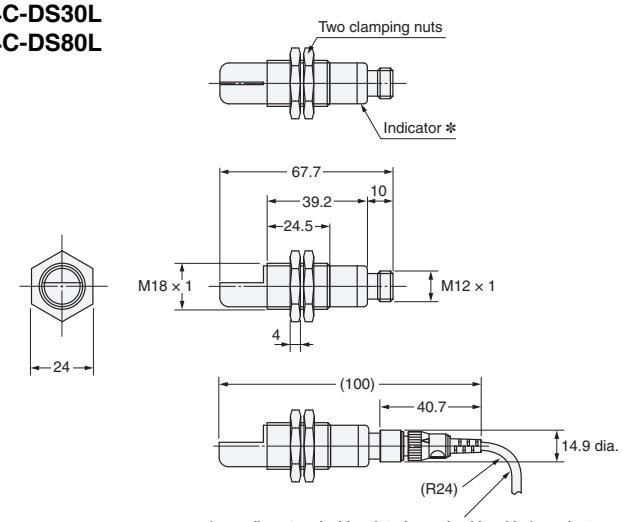
E4C-DS30
E4C-DS80



4-mm diameter vinyl-insulated round cable with 4 conductors
(cross-sectional of conductors: 0.2 mm², insulation system: 1.1-mm diameter), Standard length: 2 m

✻ Sensor within sensing range (yellow), Power indicator (green)

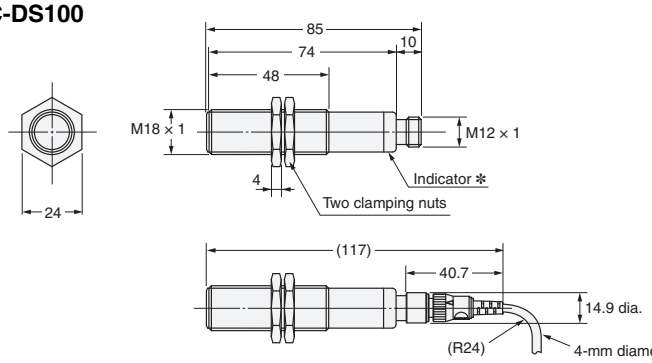
E4C-DS30L
E4C-DS80L



4-mm diameter vinyl-insulated round cable with 4 conductors
(cross-sectional of conductors: 0.2 mm², insulation system: 1.1-mm diameter), Standard length: 2 m

✻ Sensor within sensing range (yellow), Power indicator (green)

E4C-DS100

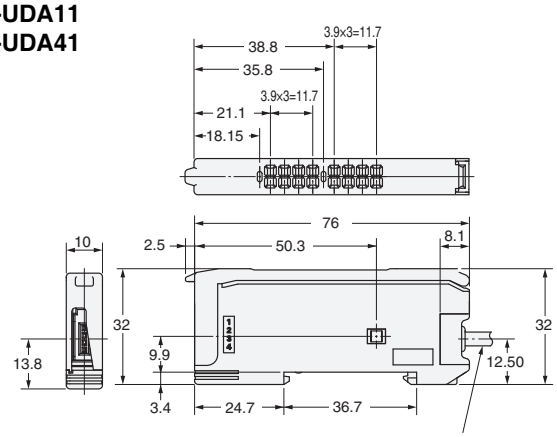


4-mm diameter vinyl-insulated round cable with 4 conductors
(cross-sectional of conductors: 0.2 mm², insulation system: 1.1-mm diameter), Standard length: 2 m

✻ Sensor within sensing range (yellow)

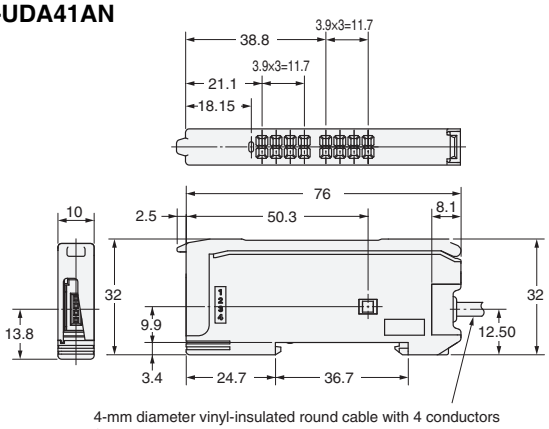
Amplifiers

E4C-UDA11
E4C-UDA41



4-mm diameter vinyl-insulated round cable with 4 conductors
(cross-sectional of conductors: 0.2 mm², insulation system: 1.1-mm diameter), Standard length: 2 m

E4C-UDA11AN
E4C-UDA41AN



4-mm diameter vinyl-insulated round cable with 4 conductors
(cross-sectional of conductors: 0.2 mm², insulation system: 1.1-mm diameter), Standard length: 2 m

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