

Compact Ultrasonic Sensor E4E2


CSM_E4E2_DS_E_2_3

Compact, Through-beam, Ultrasonic Sensor

CE

- Provides stable detection of transparent films, transparent bottles, PET bottles, and other similar workpieces.
- Compact design with built-in amplifier allows easy mounting on small conveyor lines.
- Detects as far as 500 mm away.
- Equipped with stability indicator.



 Refer to *Safety Precautions* on page 3.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information

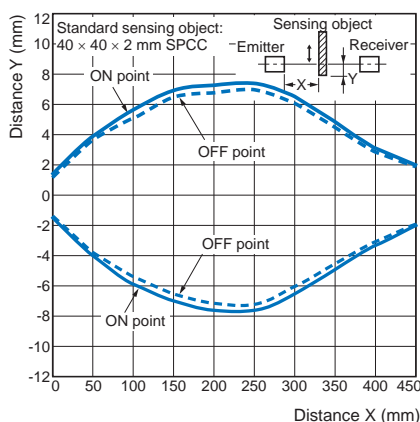
Sensing method	Sensing distance	Output configuration	Model
Through-beam	500 mm	NPN open collector NO (normally open)	E4E2-TS50C1 2M
		NPN open collector NC (normally closed)	E4E2-TS50C2 2M

Ratings and Specifications

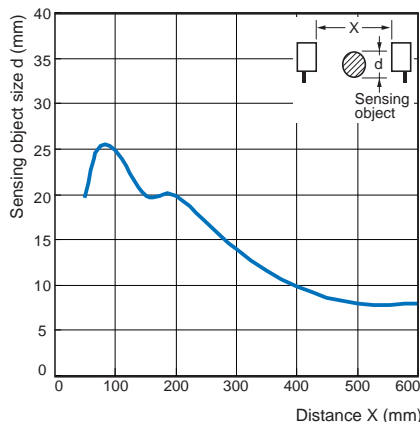
Item	Model	E4E2-TS50C□
Sensing distance		500 mm
Standard sensing object		40 × 40 × 2 mm SPCC plate
Response frequency		20 Hz max.
Power supply voltage (operating voltage range)		24 VDC (21.6 to 26.4 V) with a max. ripple (p-p) 10%
Current consumption		E4E2-TS50TC1 Emitter: 25 mA max. at 24 VDC E4E2-TS50RC1 Receiver: 15 mA max. at 24 VDC
Control output		NPN open collector, Load voltage: 26.4 VDC max., Load current: 100 mA max. (Residual voltage: 1 V max.)
Indicators		Emitter: Power indicator (red) Receiver: Operation indicator (red), Stability indicator (green)
Ambient temperature		Operating: 0 to 50°C, Storage: -10 to 55°C (with no icing or condensation)
Ambient humidity		Operating and storage: 35% to 85% (with no condensation)
Insulation resistance		100 MΩ min. (at 500 VDC) between current-carrying parts and case
Dielectric strength		1,500 VAC (50/60 Hz) for 1 min between current-carrying parts and case
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance		Destruction: 500 m/s ² three times each in X, Y, and Z directions
Degree of protection		IP64 (IEC)
Connection method		Pre-wired (Standard cable length: 2 m)
Weight (packed state)		Approx. 160 g (Emitter and Receiver)
Materials		Case: ABS resin, Oscillator surface: Epoxy resin
Accessories		Mounting Bracket (with screws), adjustment screwdriver, instruction sheet

Engineering Data (Reference Value)

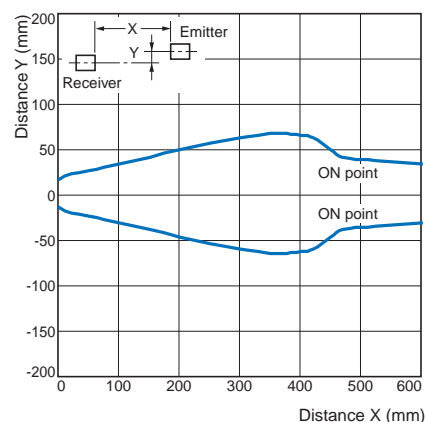
Sensing Range Diagram



Sensing Distance and Sensing Object Size



Parallel Movement



I/O Circuit Diagram

Output configuration	Model	Operating mode	Timing chart	Output circuit
NPN output	E4E2-TS50C1	No-incident ON	Incident sound: ON No incident sound: OFF Control output (NPN open collector): OFF Operation indicator (red): ON	
	E4E2-TS50C2	Incident ON	Incident sound: ON No incident sound: OFF Control output (NPN open collector): ON Operation indicator (red): OFF	

Safety Precautions

Refer to the *Technical Guide*.

WARNING

This product is not designed or rated for ensuring safety of persons. Do not use it for such purpose.



Precautions for Correct Use

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

• Designing the System

Power ON

The E4E2 needs a maximum of 100 ms to be ready to operate after the E4E2 is turned ON. If power is supplied to the E4E2 and the load independently, be sure to turn ON the E4E2 first.

• Installation

Mounting

Mount the Emitter and Receiver so that they face each other in a straight line, and so that they are within the specified sensing distance.

Mutual Interference

If more than one Sensor is closely mounted together or used in a narrow space, mutual interference of the Sensors will result.

• Adjustment

Sensitivity Adjuster

- Check the power indicator (red) of the Emitter, then turn the sensitivity adjuster (ADJ) clockwise as far as it will go.
- Be sure not to turn the sensitivity adjuster excessively. If the sensitivity adjuster is turned beyond the permissible range, no sensitivity adjustment will be possible.

Indicators

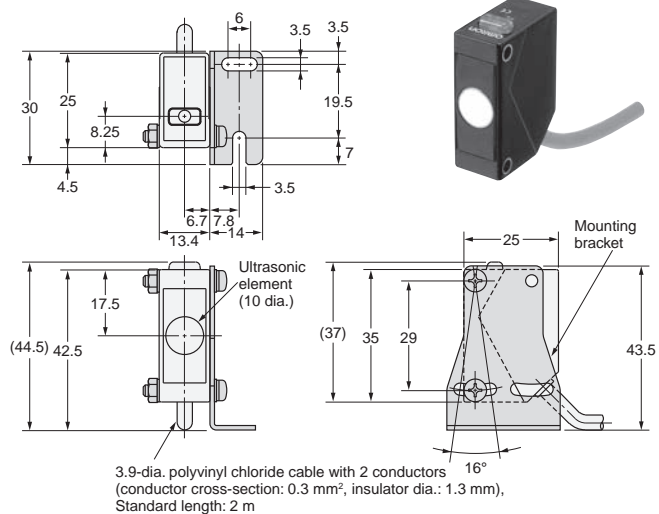
- The green indicator on the Receiver shows stability during sound input. Adjust the mounting shaft so that this indicator light brightly when there is no sensing object present.
- While passing a sensing object through the path, adjust the operation indicator (red) on the Receiver so that it light and goes out correctly.

Dimensions

Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

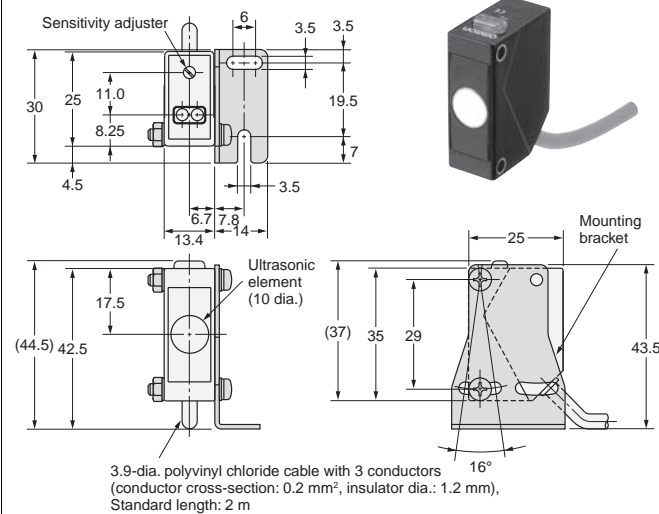
Emitter

E4E2-TS50TC1



Receiver

E4E2-TS50RC1



Terms and Conditions Agreement

Read and understand this catalog.

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranties.

(a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

(b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See <http://www.omron.com/global/> or contact your Omron representative for published information.

Limitation on Liability: Etc.

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.