

Infrared Thermosensor ES1B

CSM_ES1B_DS_E_3_2



Achieve Low-cost Measurements with an Infrared Thermosensor.

- The ES1B has an electromotive output as high as that of a thermocouple, thus connecting directly to the thermocouple input terminal of the Temperature Controller is possible.
- Four temperature ranges are available to cover a wide range of temperature measurement needs, including those in the food processing, packaging, molding, and electronics industries.
- High-accuracy temperature measurement is ensured by a high-speed response of 300 ms (for a 63% response) and an indication reproducibility of $\pm 1\%$ PV.
- Unlike thermocouples, the Thermosensor does not deteriorate. Therefore, stable, real-time temperature control can be maintained.



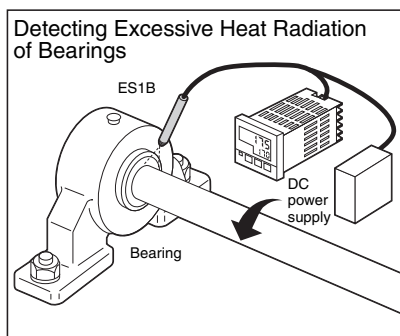
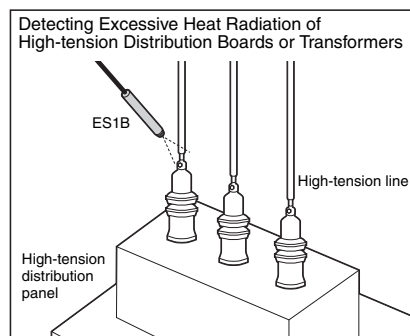
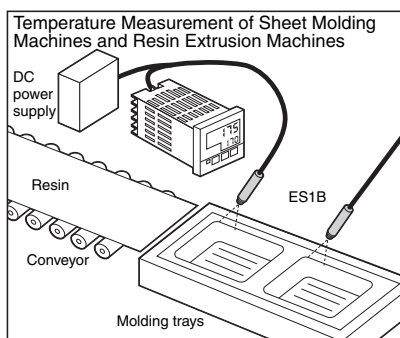
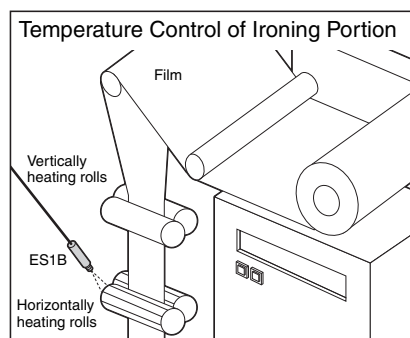
Refer to *Safety Precautions for All Temperature Controllers*.

Ordering Information

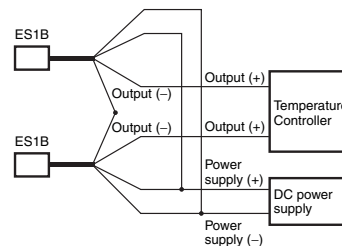
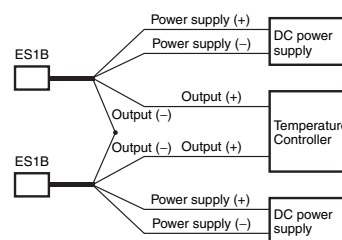
List of Models

Appearance and sensing characteristic	Specification (temperature range)	Model
	10 to 70°C	ES1B
	60 to 120°C	
	115 to 165°C	
	140 to 260°C	

Application Examples



- Note:**
1. Either a 12 VDC or 24 VDC power supply is required for the ES1B.
 2. To measure the difference in temperature between two points, use two isolated power supplies.



Do not use the Infrared Thermosensor in locations where the ambient temperature changes rapidly. To use the Infrared Thermosensor in locations subject to rapid changes in temperature due to radiant heat or movement of hot air, use a heat shield or other method to reduce rapid changes in temperature as much as possible.

Specifications

■ Ratings/Characteristics

Item	ES1B	
Power supply voltage	12/24 VDC	
Operating voltage range	90% to 110% of the power supply voltage	
Current consumption	20 mA max.	
Measuring temperature range	10 to 70°C, 60 to 120°C, 115 to 165°C, 140 to 260°C	
Accuracy (See note 1.)	±5°C (See note 2.)	±2% PV or ±2°C, whichever is larger
	±10°C (See note 2.)	±4% PV or ±4°C, whichever is larger
	±30°C (See note 2.)	±6% PV or ±6°C, whichever is larger
	±40°C (See note 2.)	±8% PV or ±8°C, whichever is larger
Reproducibility	±1% PV or ±1°C, whichever is larger	
Temperature drift	0.4°C/°C max.	
Sensing distance vs. sensing diameter	1:1 typ.	
Measurement wavelength	6.5 to 14.0 μm	
Receiver element	Thermopile	
Response speed	Approximately 300 ms at response rate of 63%	
Output impedance	1 to 4 kΩ	
Operating temperature	-25°C to 70°C (with no icing or condensation)	
Allowable ambient humidity	35% to 85%	
Vibration resistance (destruction)	98 m/s ² for 2 hours each in X, Y, and Z directions at 10 to 55 Hz	
Shock resistance (destruction)	300 m/s ² for 3 times each in X, Y, and Z directions	
Casing material	ABS resin	
Degree of protection	IP65	
Applicable safety standards	CE Marking	
Weight	Approx. 120 g	
Cable	Compensating conductor: 3 m	
	PVC-covered cable with a shield wire resisting 70°C	

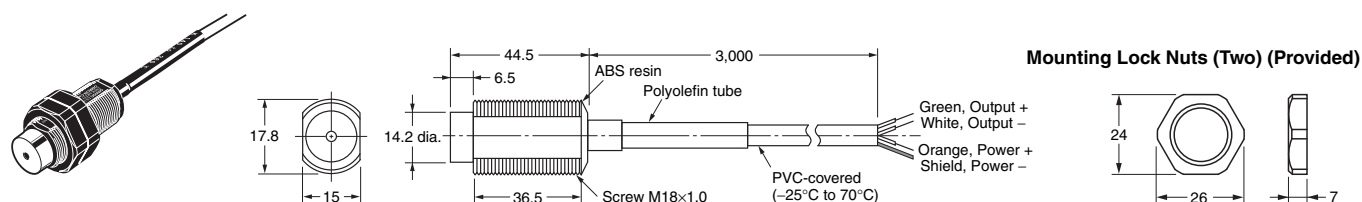
Note: 1. Based on characteristics of K-type thermocouple and radiation rate of 0.98.

2. The accuracy is given as the change in temperature from any reference temperature of the sensing object. For example, if the reference temperature is 50°C, the accuracy at 55°C would be ±2% PV or ±2°C, whichever is larger and the accuracy at 60°C would be ±4% PV or ±4°C, whichever is larger.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

ES1B

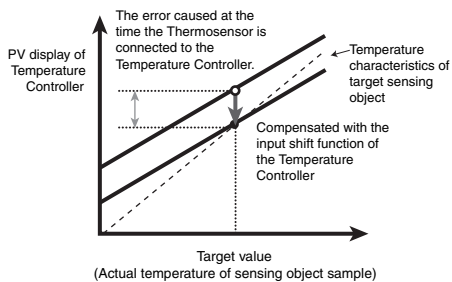
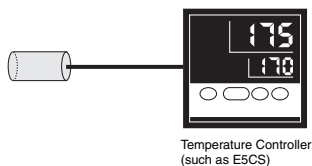


Adjustment Methods

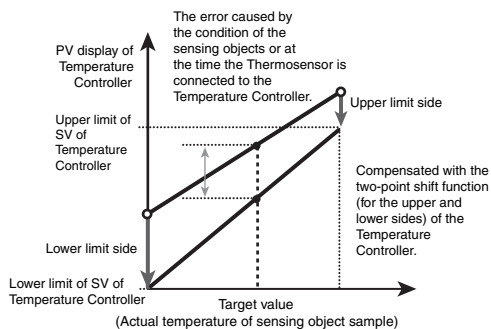
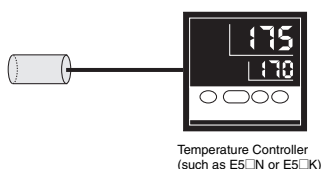
Adjust the Thermosensor as described below before using it.

Adjust the Thermosensor according to the conditions of the sensing object and characteristics of the Temperature Controller.

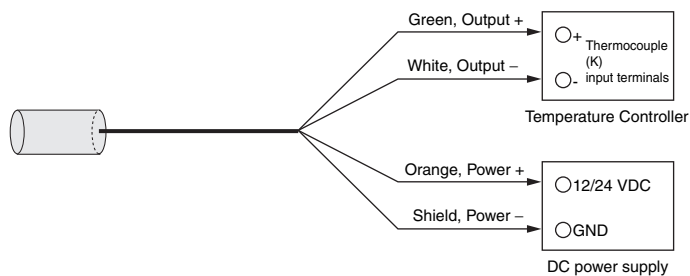
Offset Compensation for Target Value with Input Shift Function



Gain and Offset Compensation with Two-point Shift Function



Connections



Safety Precautions

Refer to the *ES1B Infrared Thermosensor datasheet* (Cat. No. H127) for application precautions.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

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.

2014.4

In the interest of product improvement, specifications are subject to change without notice.

OMRON Corporation
Industrial Automation Company

<http://www.ia.omron.com/>

(c)Copyright OMRON Corporation 2014 All Right Reserved.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Omron:](#)

[ES1B 115-165C](#) [ES1B 140-260C](#) [ES1B 60-120C](#)

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9