

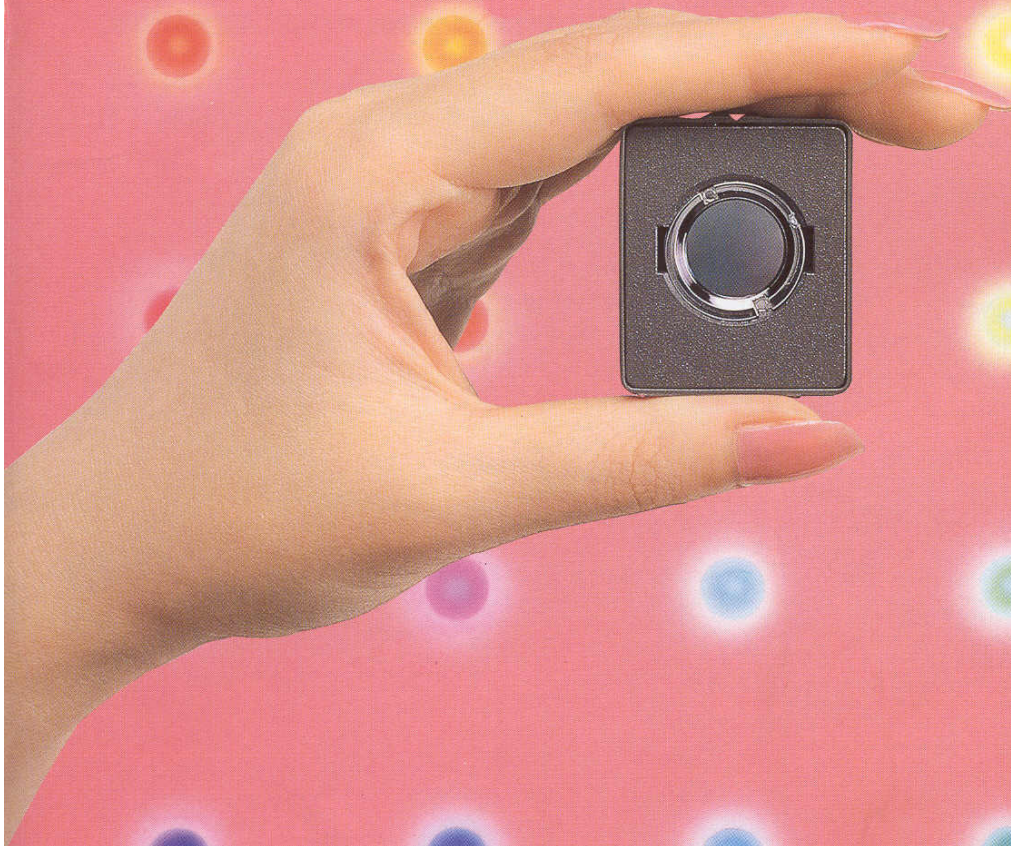
# ES1-LP3/ES1-LP10

## Infrared Thermosensors

*Only 1/3 the Size of Previous Models*

*Spot Sizes Reduced to 3- and 8-mm Diameters*

*The Super-miniature Sensors for Modern Temperature Monitoring and Control*

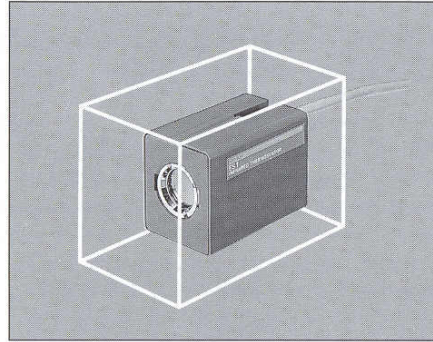


**SUPER-MINIATURE**

# ES1-LP3/ES1-LP10 *Infrared Thermosensors*

## Super-miniature: Only 1/3 the Size of Previous Models

These Thermosensors combine sensor and converter into a Super-miniature package only 32 x 53 x 38-mm large (WxDxH) to enable easy installation and mounting in a wide variety of assembly lines. These sensors are also light enough for installation almost anywhere.

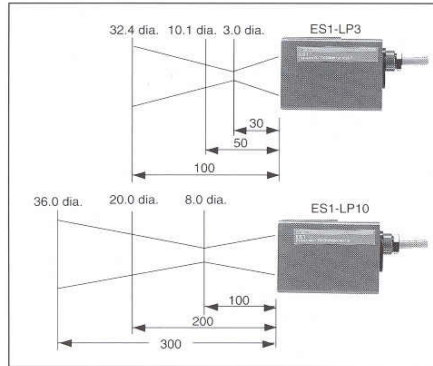


## Analog Output (4 to 20 mA) for Better Control with Temperature Controllers

The Thermosensors can be combined with OMRON Temperature Controllers, Intelligent Signal Processors, Digital Controllers, and many other devices to easily construct complete temperature control systems.

## Two Spot Diameters Available: 3 mm and 8 mm

Select from a 3-mm spot at 30 mm or a 8-mm spot at 100 mm. Either way, you get a narrow visual field that lets you dependably measure electronic components and other small workpieces that previously were nearly impossible to deal with.



## Wide Measurement Range: 0 to 500 °C

This temperature range provides what is needed for a wide range of temperature measurement applications: food products, electrical devices, electronics, plastics, machine conveyors, textiles, and much more.

## Speed and Accuracy for Real-time Use

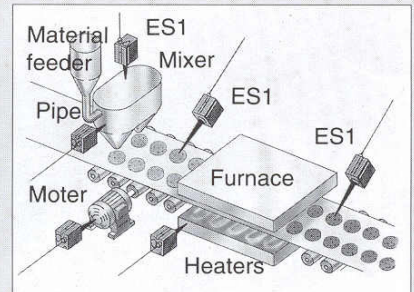
High accuracy (repeatability:  $\pm 0.5^\circ\text{C}$ ) and speed (response time: 0.4 s at 95%) provide real-time speed to meet modern production line needs.

## Application Examples



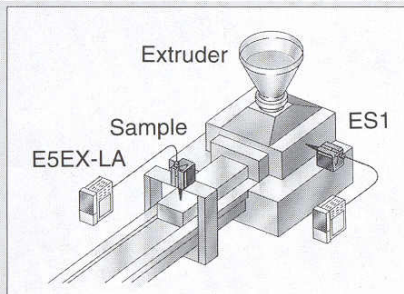
### Cookies/Bisques

Monitor temperature from the low-temperature roller stage to the high-temperature furnace stage without damaging the product, ensuring efficiency and cleanliness.



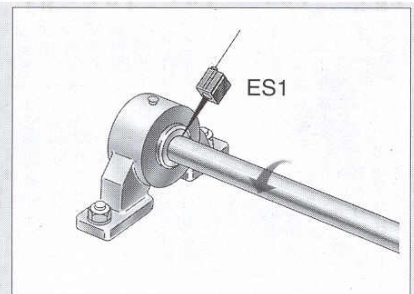
### Forming Machines

Measure extruded resin and resin nozzle temperatures and monitor cooling temperatures in forming machines and extruders.



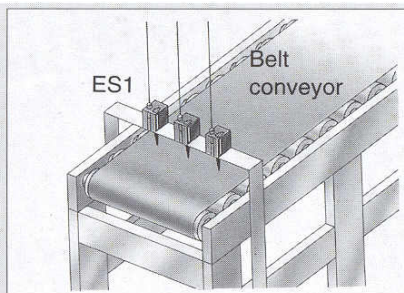
### Ball Bearings

Prevent accidents caused by dry bearings or bearing damage by monitoring bearing temperatures for abnormal increases.



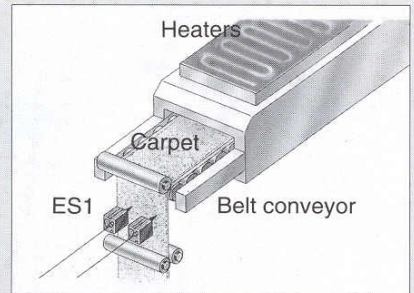
### Rubber and Resin Production

Monitor conveyor temperatures to control heating and detect abnormal temperatures.



### Carpet Production

Monitor heat processing temperature during carpet production.



# Select from A Range of Options

## ES1-PRO Programmer

Used to display process temperature values and to change settings (emissivity, upper-limit and lower-limit output scale, moving average data) and to test current output (zero and full scale).



68 x 21 x 90 (WxDxH)  
Display resolution: 1 °C  
Display range: -50 to 500 °C  
Display refresh: Twice/s  
2-m cable

## ES1-T Black Tape

Used to measure objects with low reflectivity or objects with unknown reflectivity and to set the emissivity.

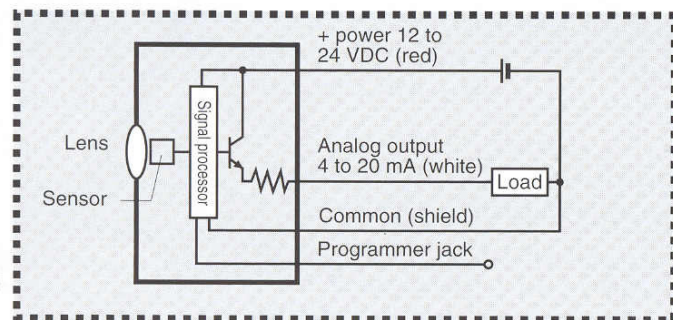
Black tape:  $\epsilon = 0.95$   
Width: 50 mm; Length: 10 m  
Heat resistance: 180 °C

## ES1-BAF2 (BaF2 Lens)

For use with food conveyors or with furnace/vacuum device windows.

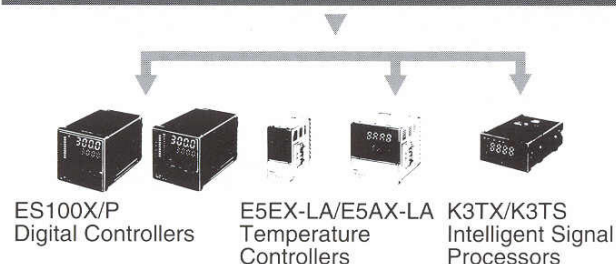
40 mm-dia. x 4t = 0.91  
(t = transmissivity factor)  
Heat resistance: 500 °C

## I/O Circuits



## Total Temperature Control Systems

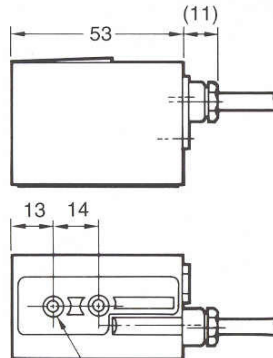
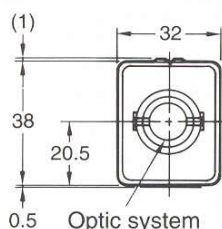
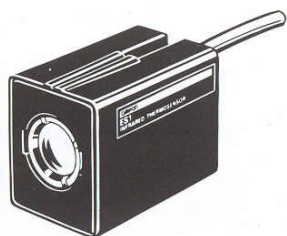
### ES1-LP3/ES1-LP10 Infrared Thermosensor



## Specifications

Item	ES1-LP3	ES1-LP10
Measurement temperature range	0 to 500 °C	
Visual field	3-mm diameter/30 mm (14-mm diameter opening)	8-mm diameter/100 mm (14-mm diameter opening)
Applied wavelength range	8 to 16 $\mu$ m	
Measurement accuracy	$\pm(3 + 0.1\%$ of output range) °C max., (measured temperature: 0 to 300 °C) $\pm\{(2\%$ of rdg -3) + 0.1% of output range}, (measured temperature: 300 to 500 °C) "rdg" is temperature conversion value of the current output. Ambient temperature/humidity: 23 °C, 55% Emissivity: 1.00	
Repeatability	$\pm 0.5$ °C max	
Temperature drift	$\pm(0.2$ °C in units of °C+0.01% of output range in units of °C) max.	
Analog output	Normal output: 4 to 20 mA/0 to 500 °C Error output: 2.4 mA max. Load impedance: 300 $\Omega$ max. (Output range, 0 to 500 °C can be set via optional Programmer)	
Response time	0.40 s max. (95% response)	
Supply voltage	12 to 24 VDC	
Current consumption	40 mA max. (without Programmer connected)	
Operating environment	Temperature: 0 to 55 °C; Humidity: 35% to 85%	
Water resistance	IP-X2	
Cable length	2 m $\pm$ 10 cm	
Accessories	Mounting Bracket, Instruction Manual, Installation Gauge	
Case material	ABS	
Emissivity	Set at 0.95 (Can be set between 0.10 and 1.00 at 0.01 interval via optional Programmer.)	
Weight	120 g max.	

## Dimensions (Unit: mm)



An Installation Gauge used to confirm the visual field has been provided as an accessory.

