SS Pyroelectric Infrared Sensor Modules

Overview

KEMET's Pyroelectric Infrared Sensors have a low profile design and can be used without a lens to enable miniaturized designs and are ideal to detect human proximity by IR presence.

KEMET's proprietary piezoelectric ceramic material and structural development of the pyroelectric infrared sensor enables human presence detection through solid plastic materials or glass, which allows more mechanical and optical appearance design possibilities of the end product. The sensor can be used without a lens or, to extend the detection range, a proprietary KEMET lens can be used in 3 different colors.

The sensors now packaged in our module solution are even easier to install and the driving being already included in the package, makes it really just "plug and sense".

Applications

Typical applications include human presence detection sensing for energy saving functions in:

- Contact less switching
- Office automation equipment
- Home applicances
- Lighting
- Display products
- Air-conditioners
- TV
- PC monitors
- Rice cookers
- Smart toilets

Without lens module



Benefits

- Equipped with AMP circuit and comparator circuit
- Digital output
- Available with or without lens
- Flat top surface of the lens
- Microcomputer installed
- Connector mounting
- Excellent radio wave performance in high-frequency band
- Compact (15.00 x 15.00 x 5.65 mm)

Natural Lens



White Lens



Black Lens



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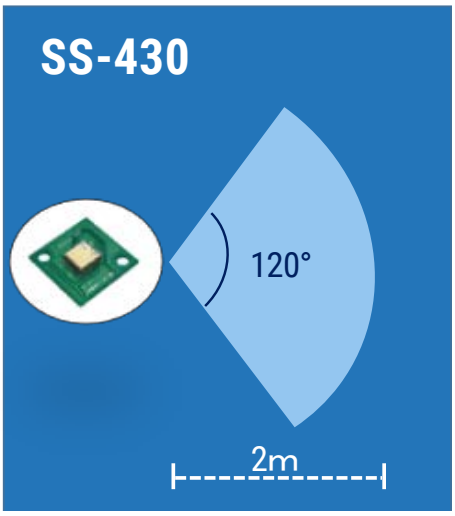
Ordering Information

SS-	430	L-N
Series	Module Type	Lens Type
SS	430	Blank = Without lens L-BK = With lens, black L-N = With lens, natural L-W = With lens, white

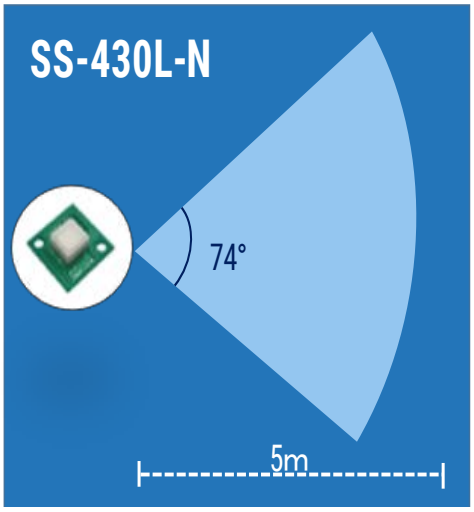
Performance Characteristics

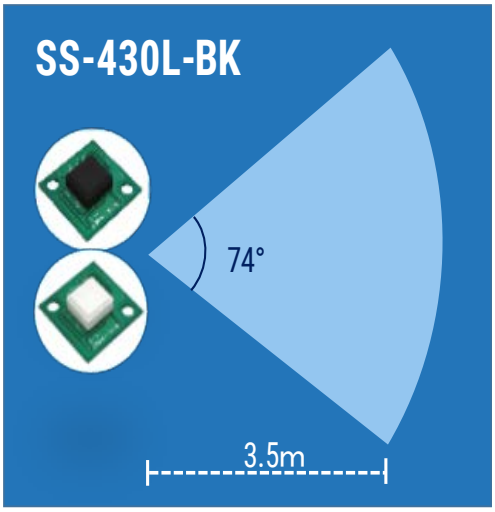
Detected Distance (m)

Without lens module



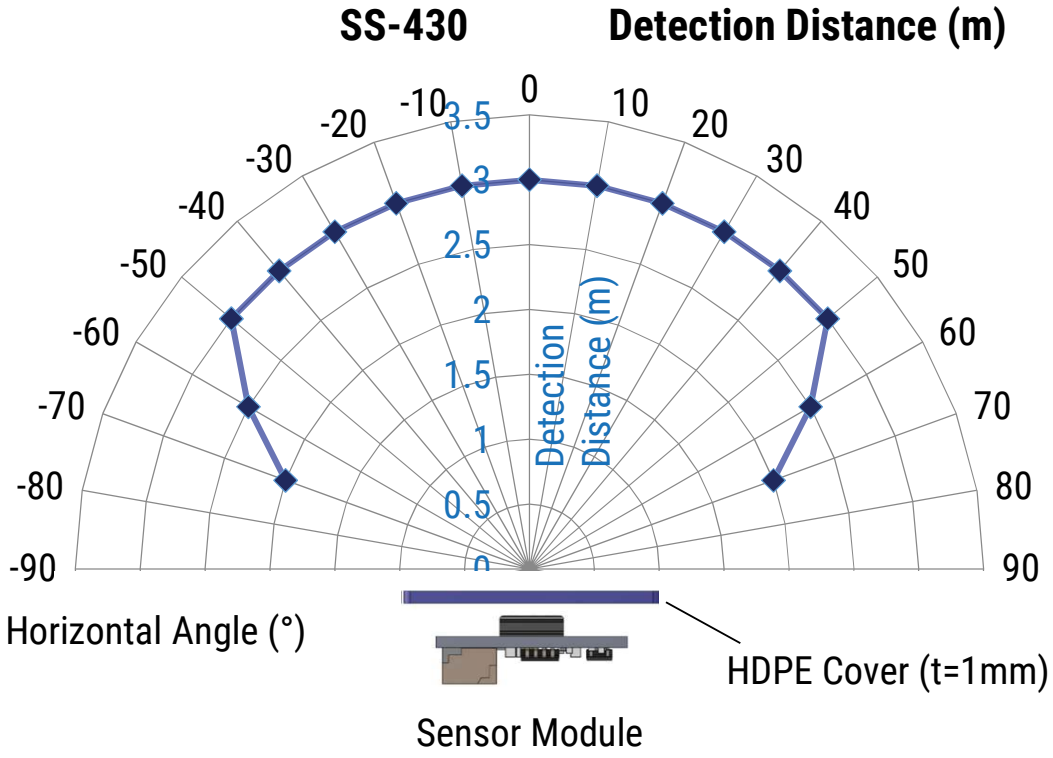
With lens module

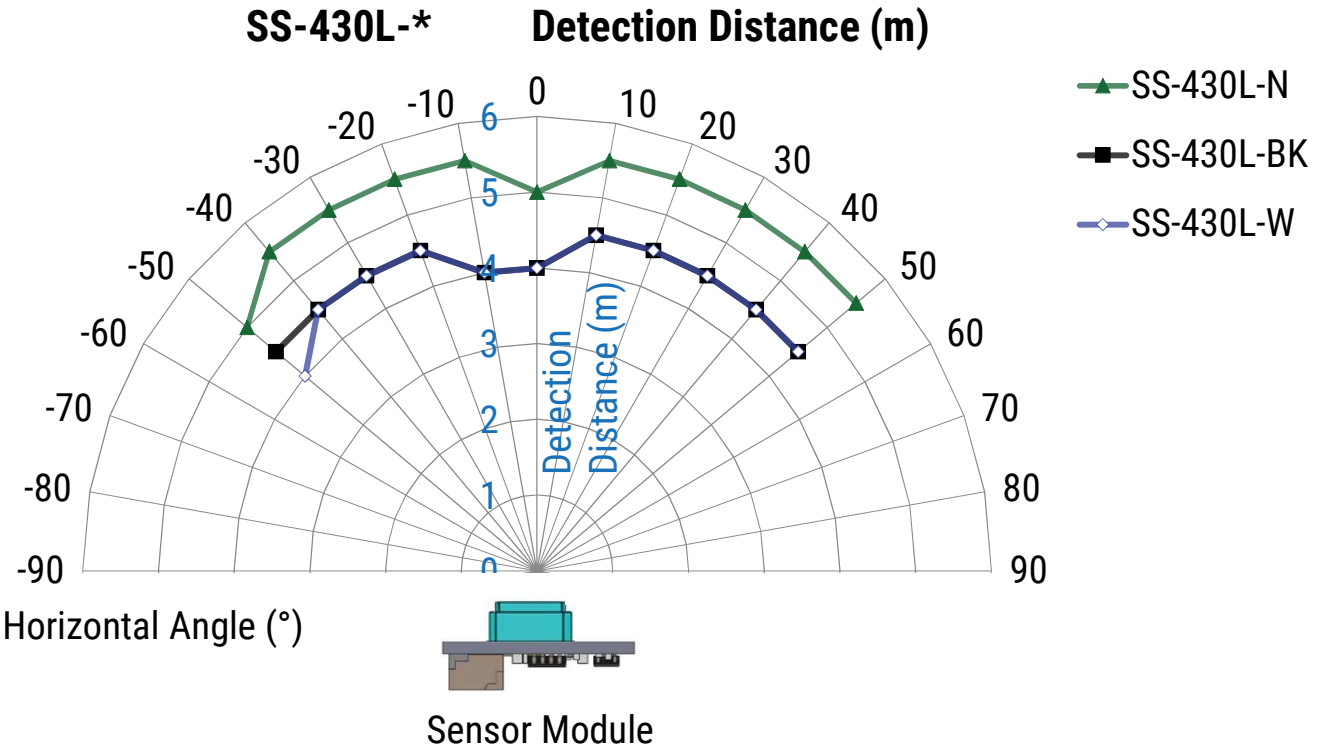




Performance Characteristics cont.

Detection Distance in Measured Value (m)

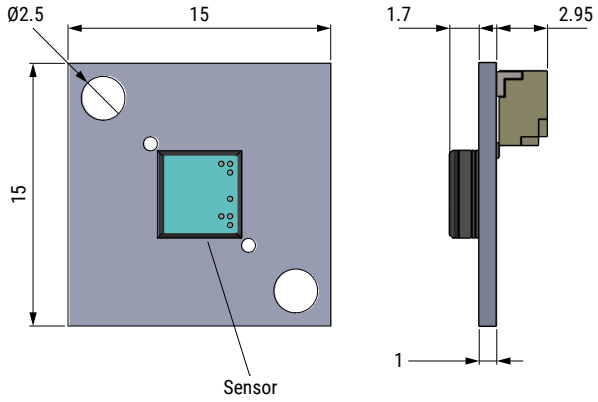




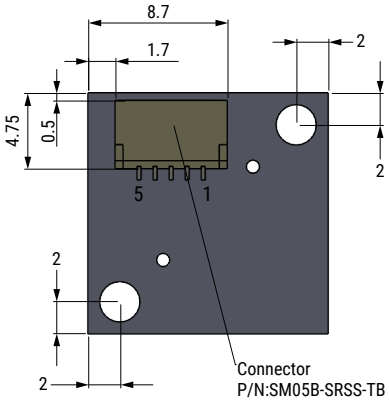
Dimensions

Without lens module

Dimensions in mm



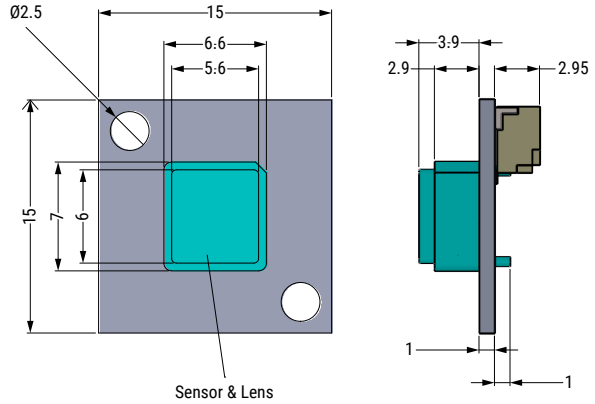
Pin Assignment



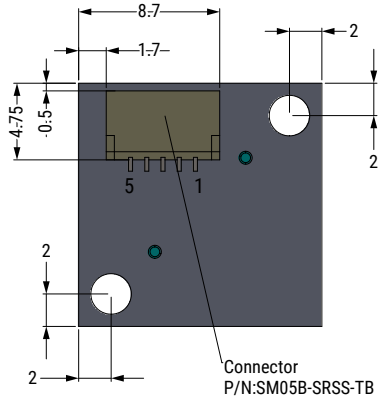
Pin No.	Pin Name	Remarks
1	V_{in}	3.5 ~ 5.5 VDC
2	TX	NC
3	RX	NC
4	V_{out}	Comparator output
5	GND	Ground

With lens module

Dimensions in mm



Pin Assignment



Pin No.	Pin Name	Remarks
1	V_{in}	3.5 ~ 5.5 VDC
2	TX	NC
3	RX	NC
4	V_{out}	Comparator output
5	GND	Ground

Environmental Compliance

All KEMET Pyroelectric Infrared Sensors are RoHS and REACH Compliant.



Article 33(1) of the REACH Regulation states that manufacturers and importers of articles (products) are required to notify their customers of the presence of any Substances of Very High Concern (SVHC) in their products exceeding 0.1% by weight and provide instructions on safe use of the product.

KEMET Corporation reports regarding the Article 33(1) of REACH Regulation as follows:

1. Applicable Product: Pyroelectric Infrared Sensors (SS series)

2. Report for the content of REACH SVHC list:
The product(s) above contains a substance by more than 0.1wt% per product weight that was published in the 8th update of the REACH SVHC substances (December 19, 2012).

3. Regarding the safety of the pyroelectric infrared sensors (Piezoceramic products):
The Piezoceramic that is used in this product becomes ceramic by sintering powder containing PZT as the main ingredient. It is chemically stable, with minimum risks toward the human body or environment within the intended use of the product. Please note that risks could occur in the case of inhalation or accidental oral uptake of powder ceramics.

4. Technical product information on the multilayer piezoelectric actuators (Piezoceramic products):
The manufacturing technique of the "piezoceramic products" whose main ingredient is Lead Titanium Zirconium Oxide (PZT) has been established, and there is no alternative material that can exhibit superior performance than PZT at this moment. Please note that the piezoceramic is listed as an exempt on RoHS (2011/65/EU) AnnexIII (7c.1).

5. The responsibility of piezoceramic manufacturers:
Piezoceramic manufacturers report information regarding PZT containment in their products to the customers to obey the article 33 of the REACH regulation

Table 1 – Ratings & Part Number Reference

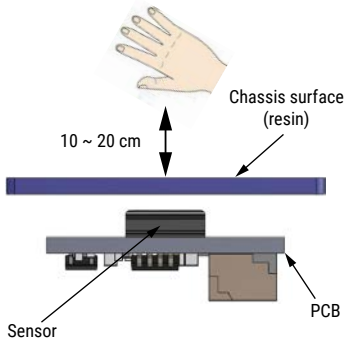
Part Number	Supply Voltage (VDC)	Output Voltage (VDC)	Consumption Current (µA) Maximum	Detection Output Voltage on Time (secs)	Warm up Time[1] (secondss) Maximum	Threshold Level (LSB)
SS–430	3.5 ~ 5.5	Detection : 3.0 Non-Detection : 0.0	800	0.2	30	±180
SS–430L–N	3.5 ~ 5.5	Detection : 3.0 Non-Detection : 0.0	800	0.2	30	±180
SS–430L–BK	3.5 ~ 5.5	Detection : 3.0 Non-Detection : 0.0	800	0.2	30	±180
SS–430L–W	3.5 ~ 5.5	Detection : 3.0 Non-Detection : 0.0	800	0.2	30	±180

Part Number	Field of View (°)	Lens Color	Detection Distance[2] (m)	Operating Temperature (°C)	Storage Temperature (°C)	Weight (g)
SS–430	Horizontal: ±60° Vertical : ±60°	-	2.0	–20°C to +60°C	–20°C to +70°C	0.7
SS–430L–N	Horizontal: ±37° Vertical : ±28°	Natural	5.0	–20°C to +60°C	–20°C to +70°C	0.8
SS–430L–BK	Horizontal: ±37° Vertical : ±28°	Black	3.5	–20°C to +60°C	–20°C to +70°C	0.8
SS–430L–W	Horizontal: ±37° Vertical : ±28°	White	3.5	–20°C to +60°C	–20°C to +70°C	0.8

[1] The warm up time is defined by the time needed for the source voltage to reach a rated value after the sensor's power supply has been turned on.
[2] Detection distance measurement conditions: ΔT = 4°C, moving speed = 1 m/s.

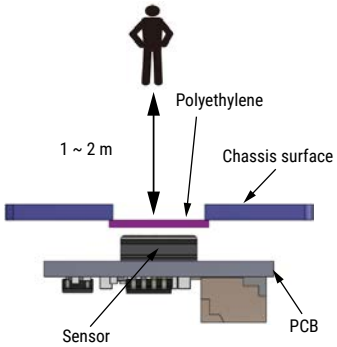
Applications

Non-contact Switch



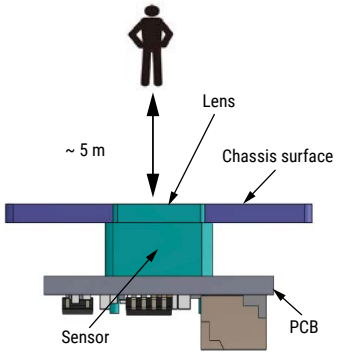
Detecting distance will vary by the chassis material used.

Common Application



Detecting distance increased to a few meters by using a polyethylene plate.

Use of Lens for up to 5 m Detection



A lens is required to detect up to 5 m.
Detecting range variations will depend on the usage environment.

Tape & Reel Packaging Information

Series	Packaging Type	Pieces per Tray	Pieces per Box
SS	Tray	50	200

Handling Precautions

Pyroelectric Infrared Sensors should be kept away from indirect and direct sunlight, the headlights of cars, wind, and exposure to strong vibration and strong shock. Do not use in water, alcohol ETA, corrosive gas or undersea breeze. Do not drop or apply any mechanical stress.

Pyroelectric Infrared Sensors should be stored in normal working environments. Do not expose to high temperatures, high humidity, corrosive atmospheres, and avoid long-term storage. KEMET recommends that maximum storage temperature not exceed 25°C and maximum storage humidity not exceed 50% relative humidity. Atmospheres should be free of chlorine and sulfur-bearing compounds.

Temperature fluctuations should be minimized to avoid condensation on the parts. The stock of sensors should be used promptly, preferably within six months of receipt.

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