



Expertise Applied | Answers Delivered

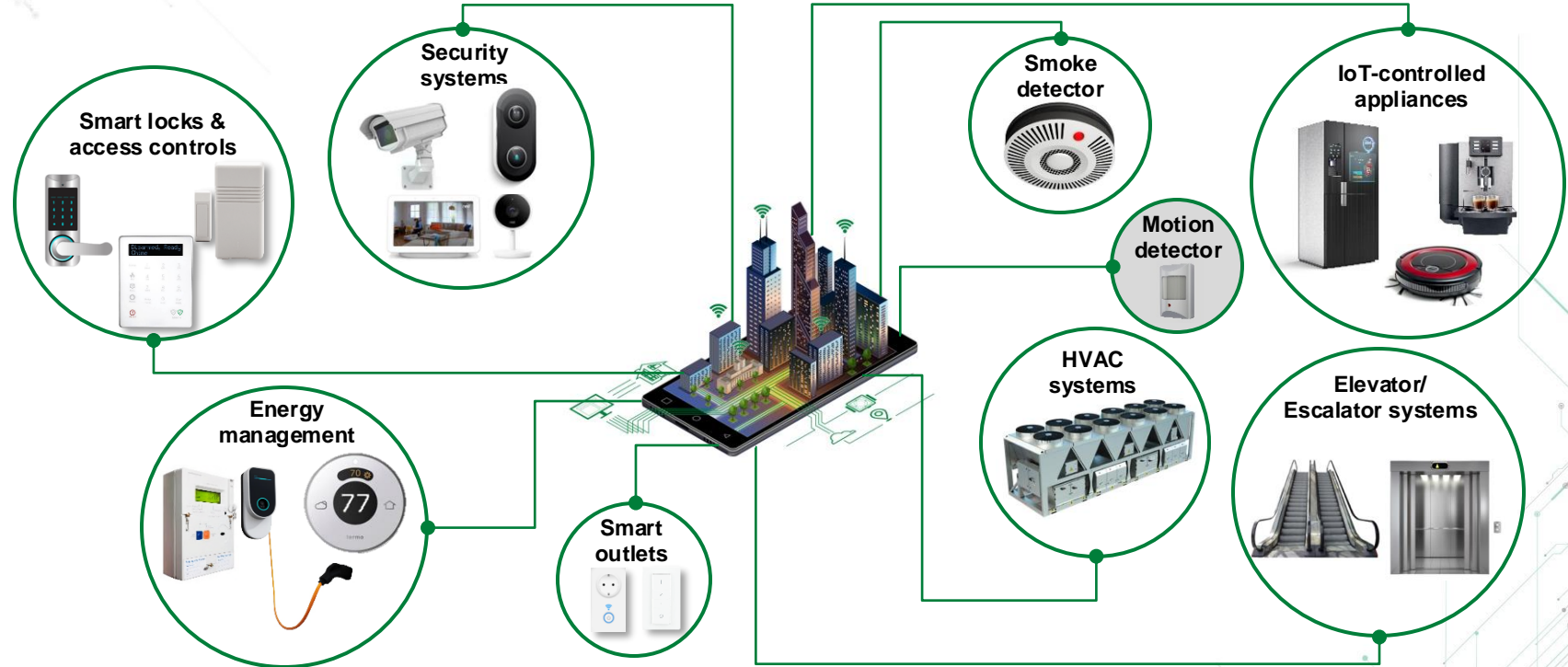
PIR motion detector



Building automation

Users must independently evaluate the suitability of and test each product selected for their own specific applications. It is the User's sole responsibility to determine fitness for a particular system or use based on their own performance criteria, conditions, specific application, compatibility with other parts, and environmental conditions. Users must independently provide appropriate design and operating safeguards to minimize any risks associated with their applications and products. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [littelfuse.com/disclaimer-electronics](https://www.littelfuse.com/disclaimer-electronics).

Smart buildings & homes are equipped with intelligent technologies that make lives more convenient and energy efficient



Littelfuse offers protect, control, and sense technologies to improve the safety, reliability, and energy efficiency of buildings.

Market trends and drivers for PIR motion detectors

Market trends and drivers

Passive Infrared is the leading technology of choice for motion sensing, as it combines performance and affordability.

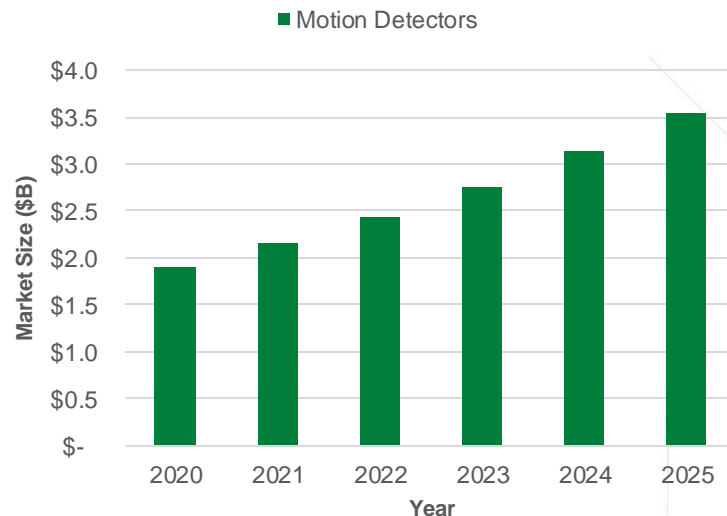
Government initiatives for energy savings are driving adoption in the public and commercial sectors.

Increased awareness of security and surveillance is driving the residential demand.

Wireless connectivity reduces installation costs and adds compatibility to smart home and IoT networks.

COVID-19 concerns require motion detectors for no-touch control, people counting, and distance measuring.

Rapid growth at ~13.3% CAGR



Source: [Occupancy Sensor Market](#) (Markets and Markets, July 2020)

Littelfuse components for PIR motion detectors

AC/DC power stage

- MOV
- TVS diode



Alarm

- Reed relay
- Solid state relay



Microcontroller unit

- ZMOTION™



Motion sensor

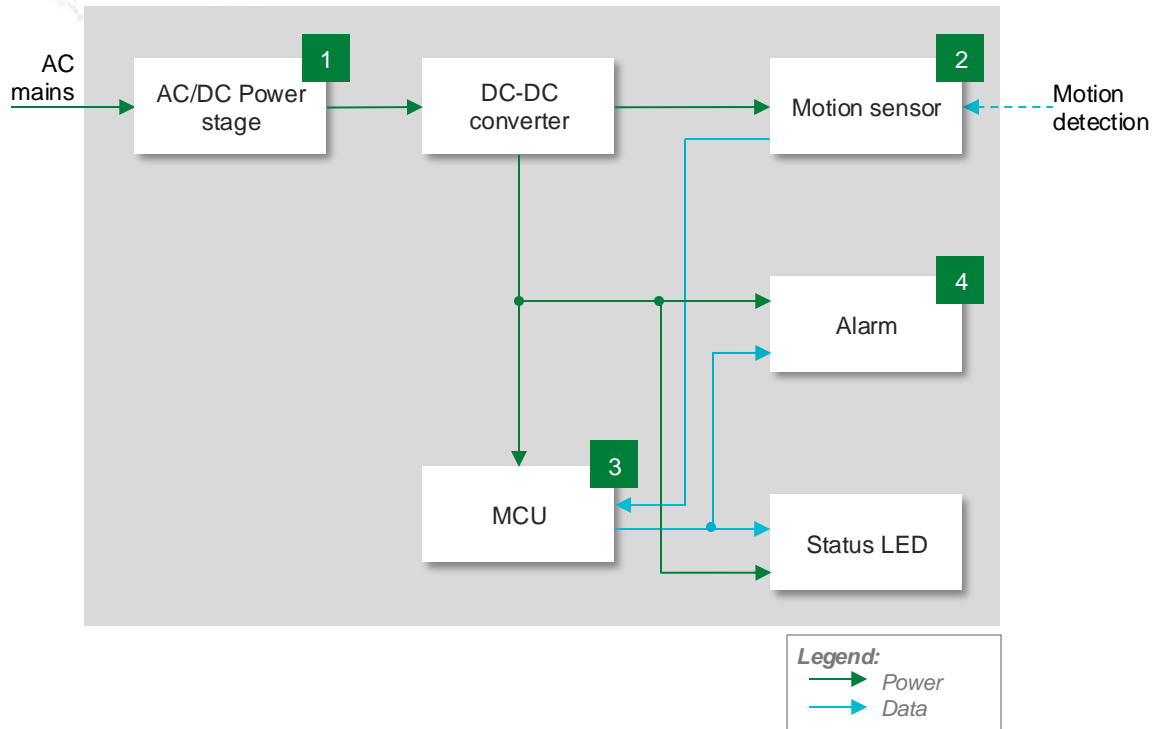
- PIR sensor





Click on the product series in the table below for more info

PIR motion detector functional block diagram



	Technology	Series
1	MOV	LV UltraMOV
	TVS diode	SMBJ
2	PIR sensor	ZSFG469711 , ZRE200GE
3	MCU	ZMOTION™
4*	Reed relay	HE3600 , HE3300
	Solid state relay	CPC1017N , CPC1008N

* Reed relay is preferred when no leakage current is at the output load (for example, battery applications). Solid State Relay offers the smallest possible form factor.





Click on the product series in the table below for more info

Benefits of recommended Littelfuse solutions

	Technology	Function in application	Product series	Benefits	Features
1	MOV	Protects the power supply unit from voltage transients and lightning	LV UltraMOV	Reduces customer qualification time by complying with third-party safety standards such as UL/IEC	High peak surge current rating (up to 10 kA); high operating temperature (up to 125 °C); Wide operating voltage range $V_{M(AC)RMS}$ 11 V to 95 V
	TVS diode	Protects the power supply unit from voltage transients and lightning	SMBJ	Compact design; improves system reliability by clamping the voltage at safe levels during transients	Excellent clamping voltage; 600 W peak pulse power capability at 10/100 μs waveform; small form factor
2	PIR sensor	Motion detection	ZSFG469711 , ZRE200GE	Low power consumption; high reliability	Dual element sensor; wide-angle detection; low voltage operation; pet immunity
3	MCU	Provides control signals per PIR sensing and other inputs	ZMOTION™	Optimized for sensor application; reduces component count and saves space; allows for cheaper ceramic capacitors	Real-time control of motion sensitivity; ambient light sensing; serial or RF communication protocol
4	Reed relay	Control switch to activate alarm based on PIR sensor input	HE3600 , HE3300	Low power consumption; high isolation; immune to environmental effects	Miniature single in-line package; external magnetic shield option
	Solid state relay	Control switch to activate alarm based on the PIR sensor input	CPC1017N , CPC1008N	Compact design saves space; robust operation	1500 V_{rms} isolation; low drive reliability; no EMI/RFI generation

Select safety standards for PIR motion detectors

Standard	Title	General scope	Region
IEC 63180:2020	Methods of measurement and declaration of the detection range of detectors—passive infrared detectors for major and minor motion detection	Provides a methodology and test procedures to determine and verify the detection area for motion detectors using passive infrared technology	Global
UL 639	Standard for intrusion—detection units	Requirements cover intrusion-detection units intended to be used in burglary-protection signaling systems. These units are intended to be used in indoor or outdoor locations to automatically indicate the presence of an intruder by actuating electrical control circuits.	North America
IEC 62368-1	Audio/video, information and communication technology equipment—Part 1: safety requirements	This part of IEC 62368 is a product safety standard that classifies energy sources; prescribes safeguards against those energy sources; and provides guidance on the application of, and requirements for, those safeguards	Global

Additional information can be found on Littelfuse.com

Explore the world of Littelfuse with the Electronics eCatalogs (<http://electronicscatalogs.littelfuse.com/>)

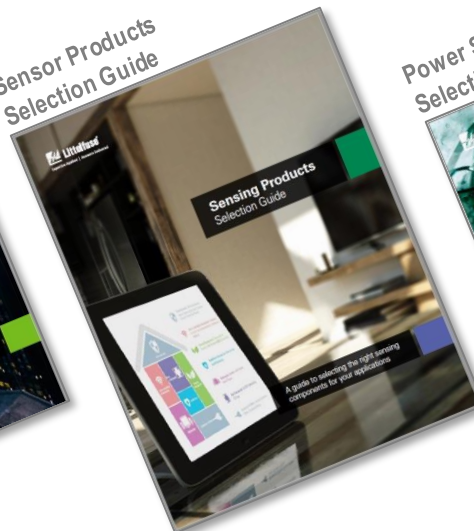
Building automation
application guide



Circuit Protection
Selection Guide



Sensor Products
Selection Guide



Power Semiconductor
Selection Guide



Click on images
to open the
catalog

Integrated Circuits
Product Catalog

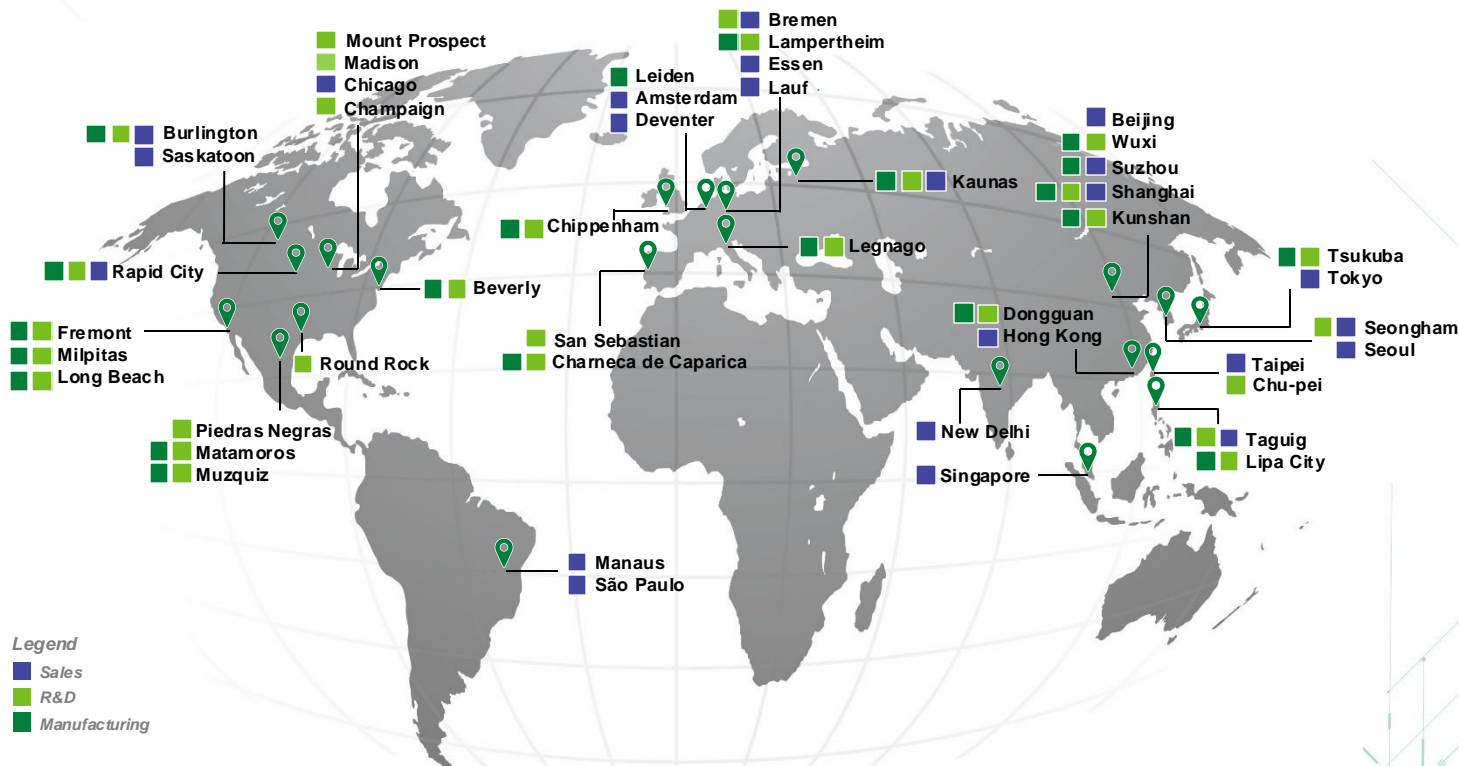


Expertise Applied | Answers Delivered

Littelfuse, Inc. © 2021

8

Local resources supporting our global customers



Partner for tomorrow's electronic systems

Broad product portfolio

A global leader with a broad product portfolio, covering every aspect of protection, sensing, and control

Application expertise

Our engineers partner directly with customers to help speed up product design and meet their unique needs

Global customer service

Our global customer service team is with you to anticipate your needs and ensure a seamless experience

Compliance & regulatory expertise

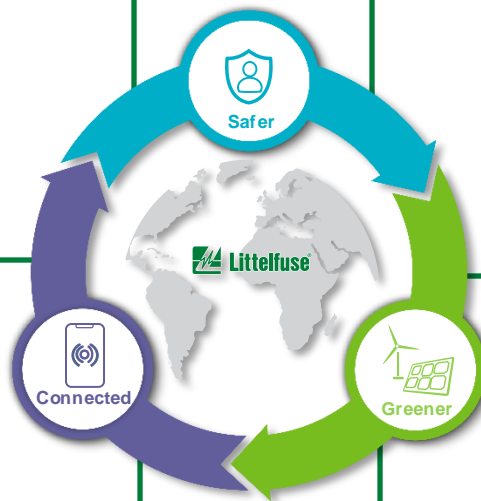
We help customers in the design process to account for requirements set by global regulatory authorities

Testing capabilities

We help customers get products to market faster, and offer certification testing to global regulatory standards

Global manufacturing

High-volume manufacturing that is committed to the highest quality standards



This document is provided by Littelfuse, Inc. ("Littelfuse") for informational and guideline purposes only. Littelfuse assumes no liability for errors or omissions in this document or for any of the information contained herein. Information is provided on an "as is" and "with all faults" basis for evaluation purposes only. Applications described are for illustrative purposes only, and Littelfuse makes no representation that such applications will be suitable for the customer's specific use without further testing or modification. Littelfuse expressly disclaims all warranties, whether express, implied or statutory, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, and non-infringement. It is the customer's sole responsibility to determine suitability for a particular system or use based on their own performance criteria, conditions, specific application, compatibility with other parts, and environmental conditions. Customers must independently provide appropriate design and operating safeguards to minimize any risks associated with their applications and products. Read complete Disclaimer Notice at littelfuse.com/disclaimer-electronics.



Littelfuse®

Expertise Applied | Answers Delivered



IXYS

A **Littelfuse** Technology

[Littelfuse.com](https://littelfuse.com)