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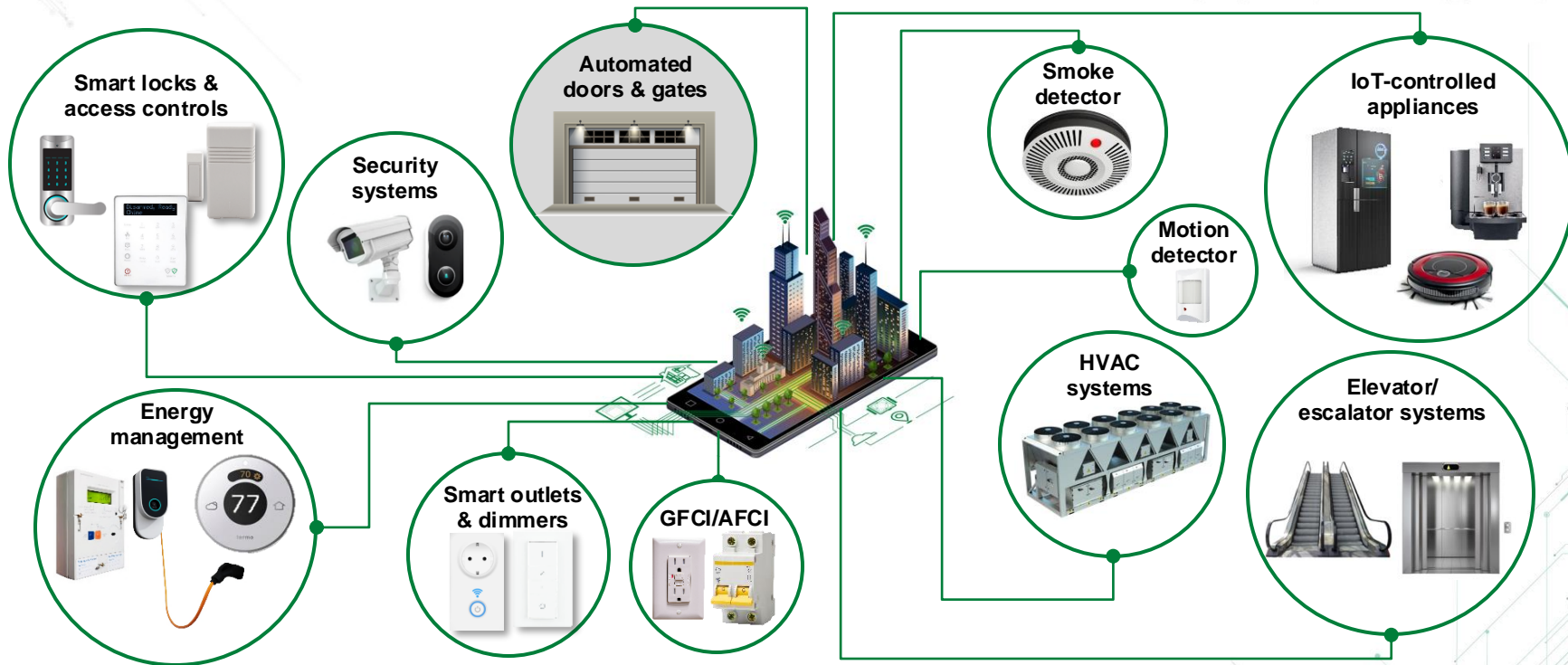
Automated Doors and Gates



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.

Smart homes are equipped with intelligent technologies for convenient and energy-efficient living



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

Automated doors and gates Market overview

Market trends

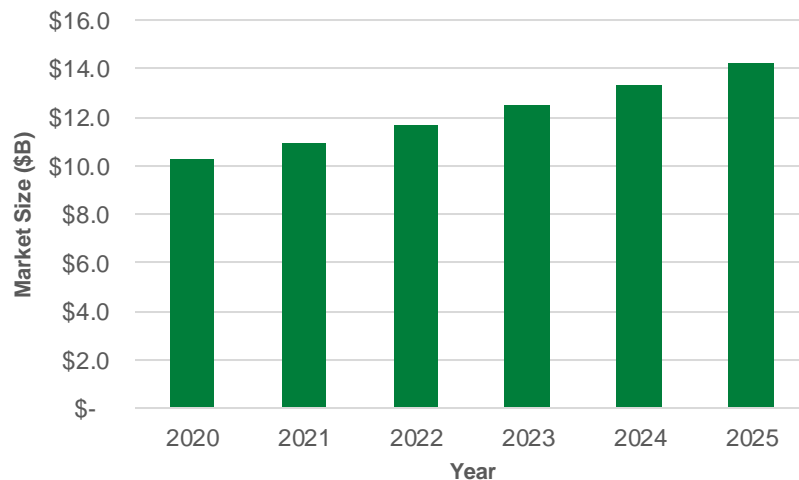
The global market for automated door and gate-opening systems was estimated to be worth \$10.3B in 2020 and is expected to grow to \$14.2B by 2025.

Consumers are choosing to install automatic gates and doors in residential areas to improve security and safety. WiFi capabilities allow them to enable the integration of these doors and gates into the smart home system.

Insulated doors can significantly reduce heating and cooling costs, especially in warehouse facilities with several doors/gates, this efficiency is driving retrofits of outdated systems.

Automated systems are cost effective and commonly used in commercial and industrial facilities such as offices, hospitals, transportation hubs, and factories.

Automated door & gate market growth 6.8% CAGR



Source: [Automated Gate and Door Opening Systems Market](#) (MRFR, June 2021)

Recommended Littelfuse components for automated doors and gates

1 AC input protection

- Fuse
- MOV
- SIDACTor® + MOV

2 AC/DC conversion

- MOSFET

3 Inverter

- IGBT

4 Speed/position sensing

- Hall Effect Sensor

5 Temperature sensing

- NTC

6 Door position sensing

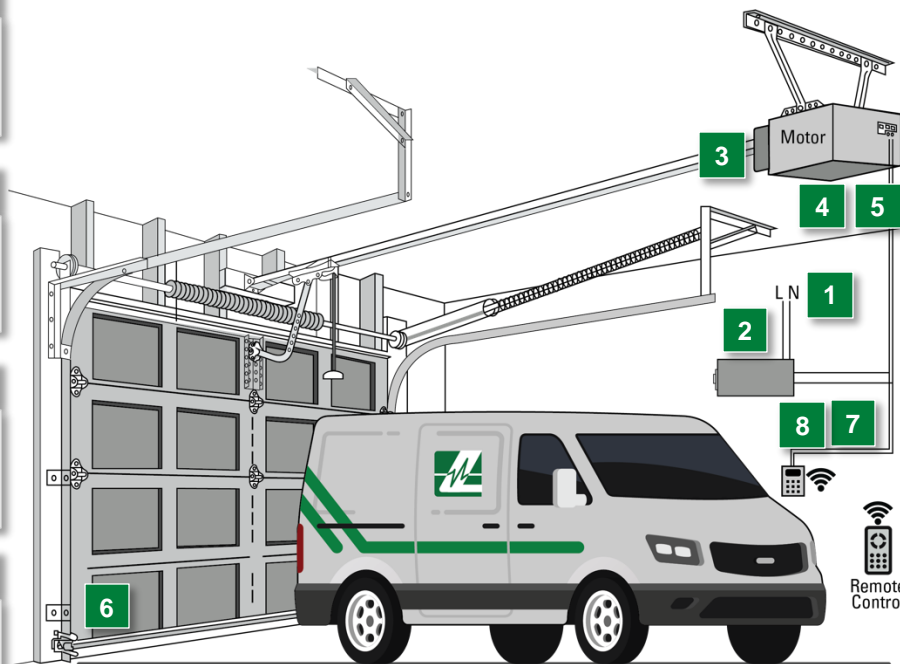
- Reed Switch

7 Wireless interface

- TVS Diode Array
- Polymer ESD

8 User interface/display

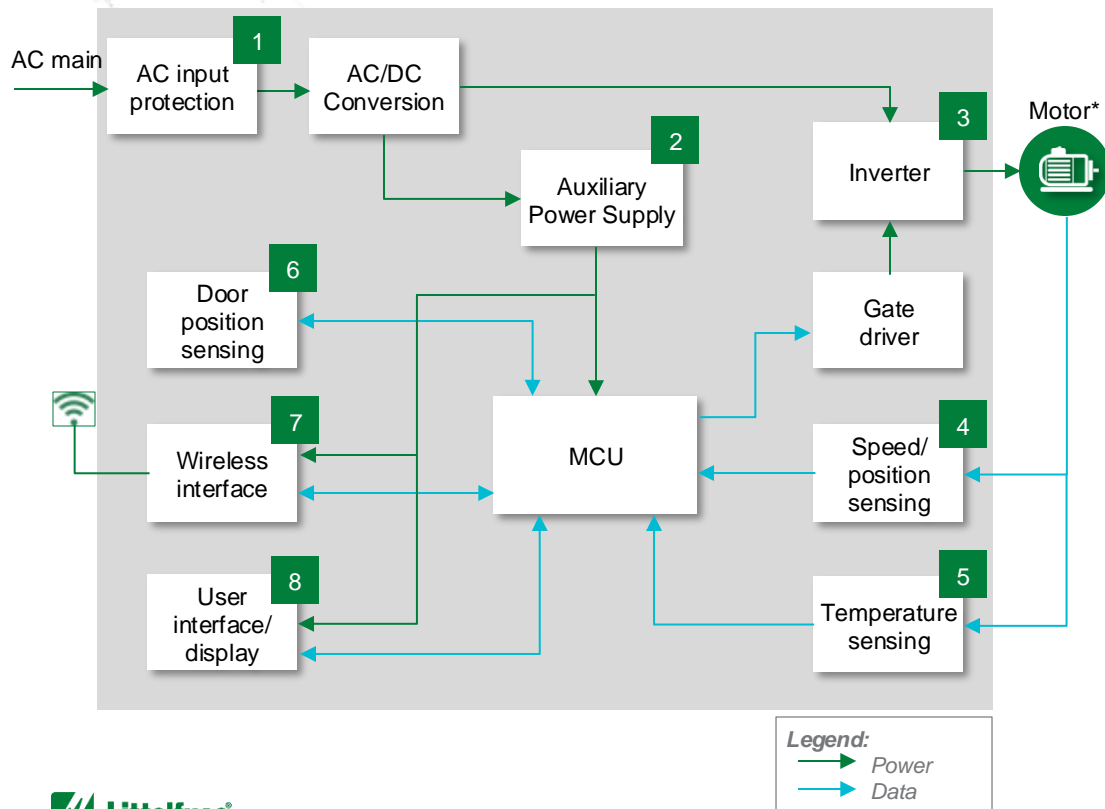
- TVS Diode Array
- MLV





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

Automated doors and gates block diagram



	Technology	Product series
1	Fuse	835, 215
	MOV	UltraMOV, TMOV
	SIDACtor + MOV	Pxxx0ME, Pxxx0FNL + UltraMOV
2	MOSFET	X2 Class
3	IGBT	Planar
4	Hall Effect Sensor	55140, 55100
5	NTC	USUR1000, SM
6	Reed Switch	59166, MDSM-4, MDSM-10
7	TVS Diode Array	SP3213, SP3401
8	Polymer ESD	XGD
	TVS Diode Array	SP1305, SP1003, SP1006
	MLV	MLA

* Types of Door Motor include universal AC induction motor, three-phase BLDC motor or Lower voltage DC motor. The topology & architecture will vary for different motor types.

Benefits of Littelfuse products for automated doors and gates



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

	Technology	Function in application	Product series	Benefits	Features
1	Fuse	Protects power stage from overcurrent events	835 , 215	Reduces customer qualification time by complying with third-party safety standards such as UL/IEC	Third-party compliance (UL/IEC); low internal resistance; shock safe; vibration resistant
	MOV	Protects power supply from line voltage surges and meets regulatory requirements	UltraMOV , TMOV	Reduces customer qualification time by complying with third-party safety standards such as UL/IEC	High energy absorption capability: 40–530 J (2 ms)
	SIDACtor + MOV	Protects AC line located in high exposure environments from severe overvoltage transients	Pxxx0ME , Pxxx0FNL + UltraMOV	Increases system reliability and lifetime of AC to DC application in series with Varistor	Low leakage and low damping
2	MOSFET	Provides high-frequency load switching	X2 Class	Robust switching operation; high power density; extremely low thermal dissipation	Ultra-low on-resistance $R_{DS(ON)}$ and gate charge Q_g ; dv/dt ruggedness; low package inductance
3	IGBT	Used as switching devices for motor drive systems	Planar	Hard-switching capability; high power density; low gate drive requirements	Optimized for mid- and high-switching frequencies; square RBSOA; short circuit capability; ultra-fast anti-parallel diodes
4	Hall Effect Sensor	Position and speed sensing of the motor	55140 , 55100	High switching speed up to 10 kHz; long life up to 20 billion operations; unaffected by harsh environments	Digital or programmable analog types available; Integral reverse/over-voltage protection; medium, high, or programmable sensitivity options available
5	NTC	Temperature sensing of the door motor	USUR1000 , SM	Rapid thermal response and long-time reliability	UL recognized with ring lug mounting; SM NTCs are in hermetically sealed MELF package suitable for operation up to 220 °C
6	Reed Switch	Proximity detection of the door to verify whether it is fully open or closed	59166 , MDSM-4 , MDSM-10	Compact design; lowest power consumption for longest battery life	Hermetically sealed; magnetically operated contacts
7	TVS Diode Array	Protects wireless chipsets from ESD events	SP3213 , SP3401	Allows for space savings; retains signal integrity of high-speed communication lines	Space efficient with 0201 form factor; third-party compliance; ultra-low capacitance
	Polymer ESD		XGD	Protection without signal distortion	Extremely low capacitance and small size
8	TVS Diode Array	Protects against user-induced ESD events	SP1305 , SP1003 , SP1006	Small form factor for compact designs	High ESD withstanding capability
	MLV		MLA	Increased reliability	Operating temperature range of -40 to 125 °C

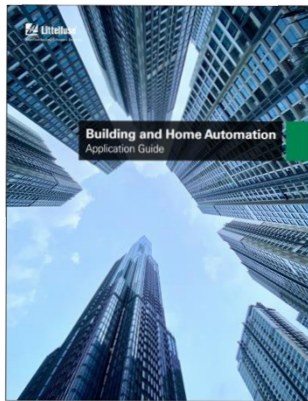
Select standards for automated doors and gates

Standard	Title	General scope	Littelfuse technology	Region
UL 325	Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems	Various parts of the standard cover the general requirements for opening and closing appliances rated 600 V or less	Fuse, TVS Diode Arrays, NTC	North America
UL/CSA/IEC 60335-1	Safety of Household and Similar Appliances: General Requirements	Safety standard for household electrical appliances	Fuse, TVS Diode Arrays, NTC	Global

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Building Automation Application Guide



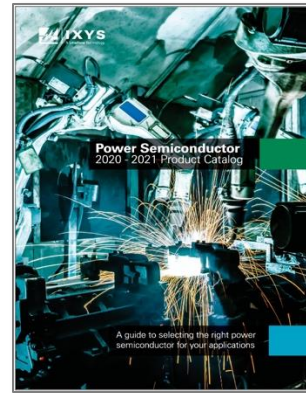
Circuit Protection Selection Guide



Sensor Selection Guide



Power Semiconductor Selection Guide

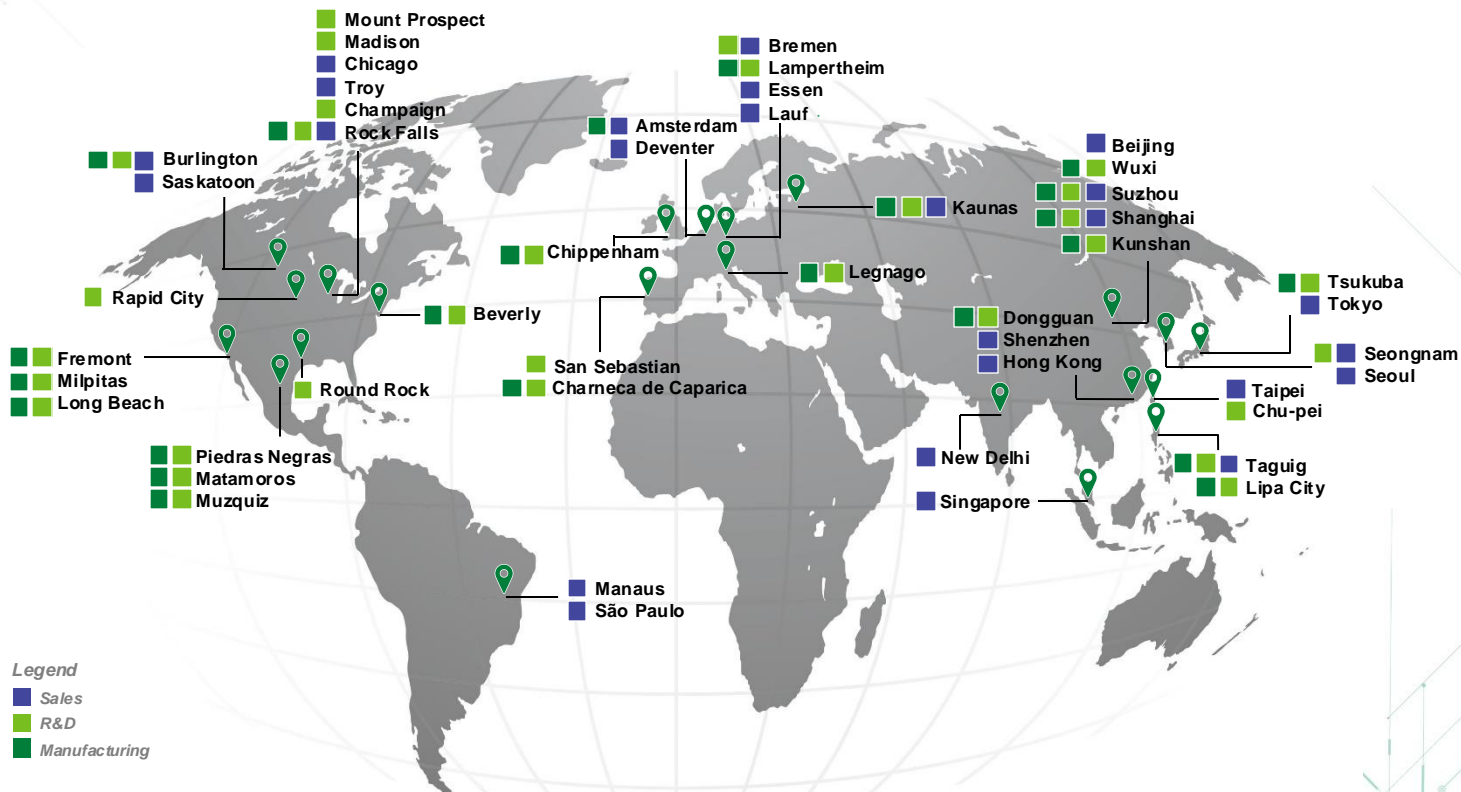


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Integrated Circuits Catalog



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Littelfuse: A partner for tomorrow's electronic systems

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An industrial technology manufacturing company empowering a sustainable, connected, and safer world

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 will anticipate your needs and ensure a seamless experience

COMPLIANCE AND REGULATORY EXPERTISE

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

TESTING CAPABILITIES

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

GLOBAL MANUFACTURING

Our high-volume manufacturing is committed to the highest quality standards



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