

AKUSENSE



ETD-0612 Series
Accuracy:1 μ m



THROUGH-BEAM EDGE SENSOR

Multi-scenario edge control/
positioning/measurement.

PRECISION & INTELLIGENCE & QUALITY

APPLICATIONS

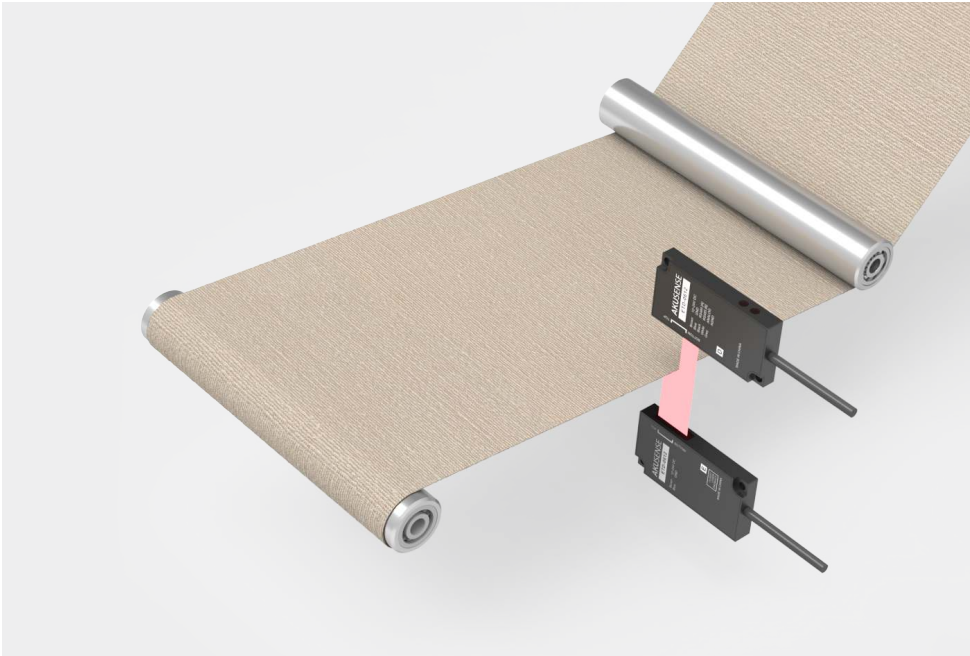
ETD-0612 Through-beam Edge Sensor uses laser measuring principle with excellent stability. It is mainly applied in such industries as Li-ion battery, 3C electronics, semiconductor, machining, and packaging for controlling the deviation of coils within a controllable range, to guarantee product quality, minimize material waste and boost manufacture efficiency.

01

Edge control / Outer diameter / Inner diameter / Gap measurement

It is used for film wrapping control in rolling equipment, outer diameter measurement for cylinders, edge defects detection of rubber plate, film bending control, roller gap measurement and chip edge measurement.

Real-time measuring and monitoring for the swinging of the edge of the plate, edge and diameter measurement

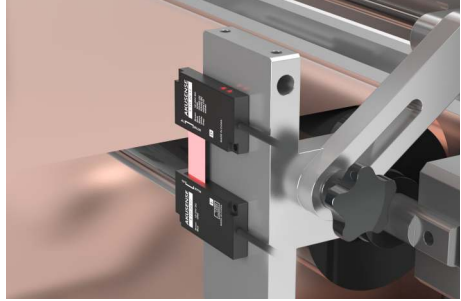


02

Lithium Battery Coating Machine

Detect the offset of the electrode position after roller coating

In the lithium battery coating machine, the edge sensor is used to detect the deviation of the electrode plate.



03

Lithium Battery Winding Machine

Detect whether the position of the electrode piece in the feeding material is deviated

In order to ensure the consistency of the product when making batteries, an edge sensor is used to detect the feeding process of the cathode/anode slice in the Li battery winding machine.

The detected result is reflected to the controller to make correction on the deviation on time.

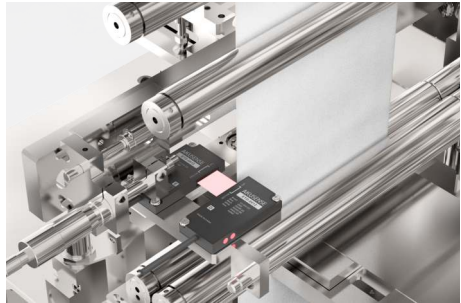


04

Lithium Battery stacking machine

Deviation control during diaphragm transmission

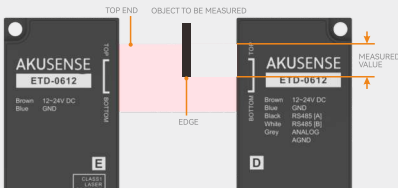
Pre-positioning of cathode will be committed inside the stacking machine. In the course of diaphragm transmission, the measuring results of film edges will be upheld to system to minimize the diaphragm deviation.



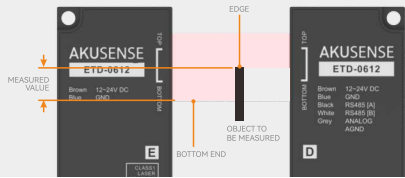
Four Detection Modes: Automatic Edge Detection, Edge Detection, Outer Diameter/Width, Inner Diameter/Gap

01 Automatic Edge Detection

When entering the measuring object from the TOP side: using TOP side as the reference, measure the distance 'from the TOP side to the edge of the measuring object' as the measurement value.

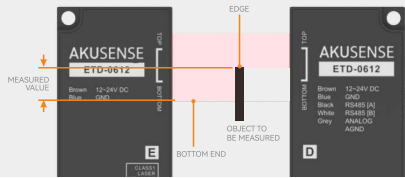
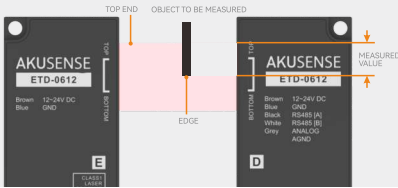


When entering the measuring object from the BOTTOM side: using the BOTTOM side as a reference, measure the distance 'from the BOTTOM side to the edge of the measuring object' as the measurement value.

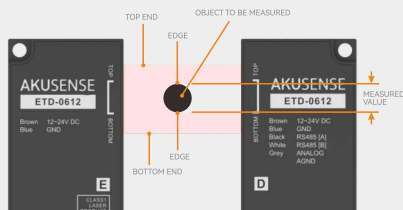


02 Edge Detection

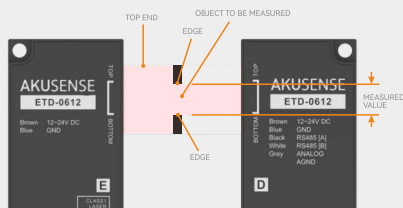
When the measuring direction is set to TOP the object must enter the detection range from the TOP side. If the object enters from the BOTTOM side, the measurement value will not be detected.

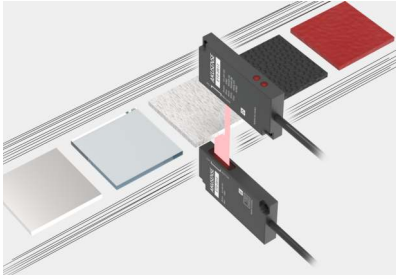


03 Outer Diameter/Width Detection



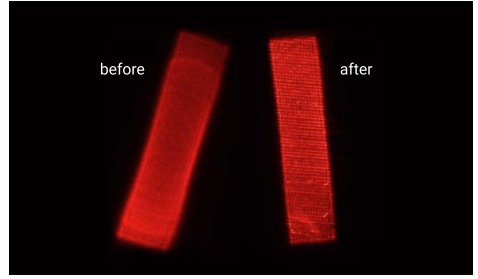
04 Inner Diameter/Gap Detection





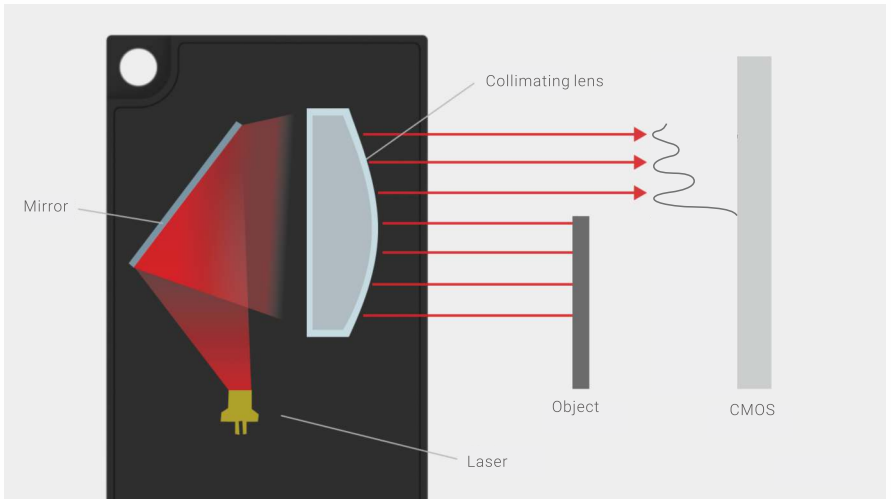
1ms ultra-fast response time

Measurements can be taken at any position within the area, unaffected by object color or material: Equipped with a high-performance ultra-fast processor combined with unique algorithms, it enables high-speed detection requirements.



Stable laser image data processing mode

Clearer images; reducing interference factors to achieve higher resolution.



Independently developed lens achieves ultra-flat light technology with a repeatability of 1 μm

By using AKUSENSE ultra-flat light technology, near-ideal parallel light is achieved, suppressing errors within the measurement area and enabling high precision detection at long distance, high-precision testing.



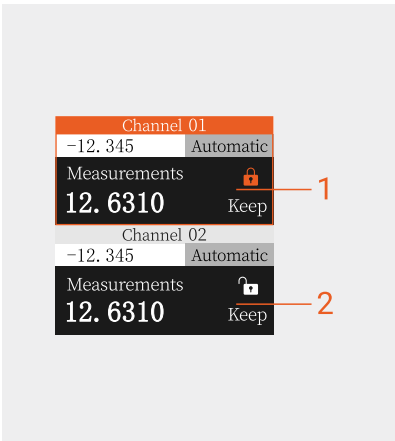
HD Color Screen

TFT IPS LCD screen, high contrast true color display



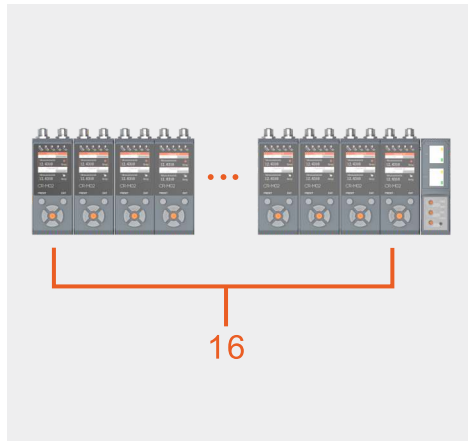
Image and angle automaticlly switchable

With a built-in gyroscope and the content displayed on the screen can be automatically rotated based on the orientation of the device. The content will be presented correctly no matter which direction the device is installed.



Dual-channel data display

The output interface supports dual-sensor connection; dual-channel display, supports two sets of sensors to work together and show different measured values (measured) and decision values (calculated).



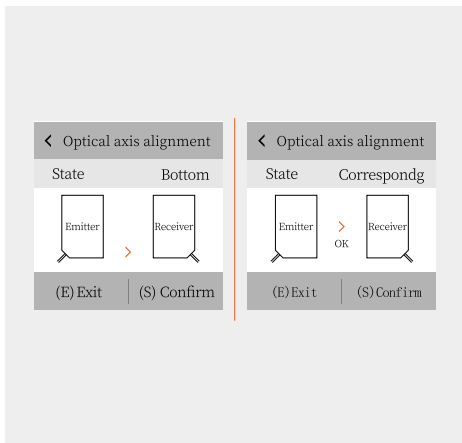
Supports cascading multiple controllers

Supports up to 16 cascading and bulk parameter tuning.



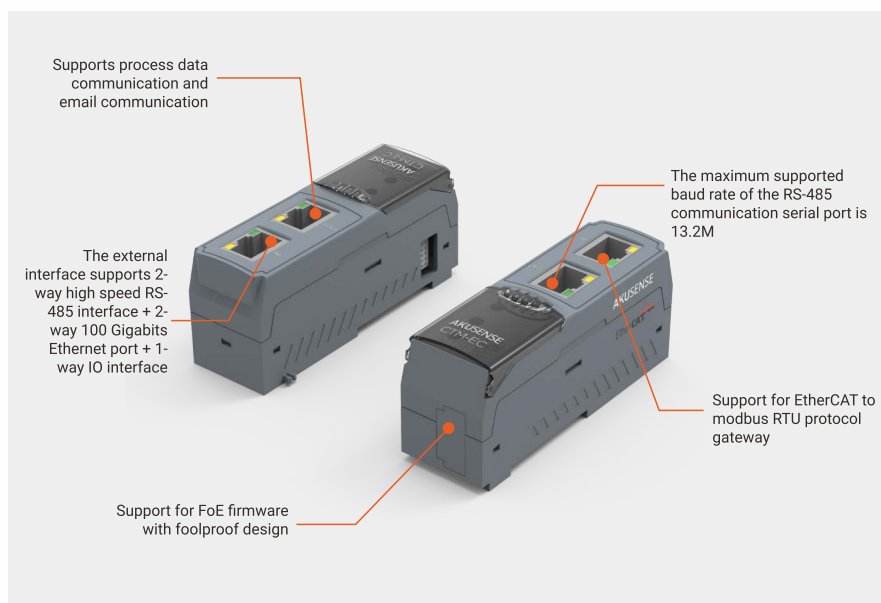
Support high-speed EtherCAT communication

Highly accurate data can be obtained directly through the controllers with RJ45 communication port



Optical axis alignment function

The optical axis of the emitter and receiver can be aligned by the [Optical Axis Alignment] function on the controller, which makes debugging more convenient.



SPECIFICATION

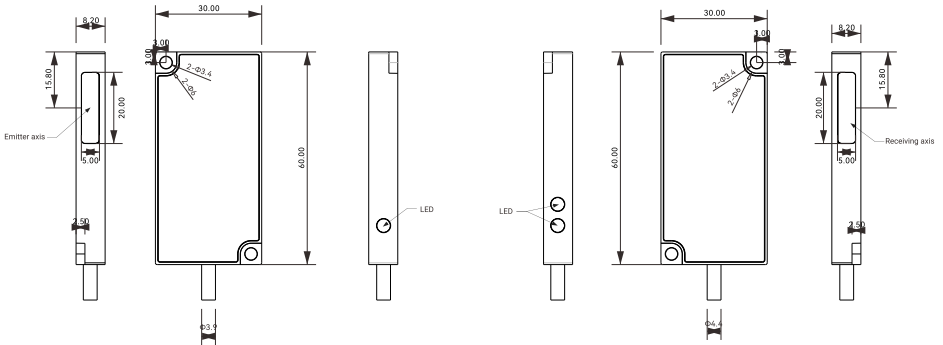
Model	ETD-0612	
Detection method	Through-beam laser measuring (CMOS mode)	
Detection range	Edge detection mode $\pm 6\text{mm}$, Diameter detection mode 12mm	
Setting distance	0~500mm	
Light source	Red semiconductor laser	
Laser class	Class 1	
Minimum detectable object	$\phi 0.5\text{mm}$ at 500mm	
Repeatability	1 μm at 20mm, 3 μm at 100mm, 5 μm at 500mm	
Linear accuracy	$\pm 0.12\%$ F.S. at 20mm $\pm 0.4\%$ F.S. at 100mm	
Response time	1ms	
Analog output	Voltage	Output: 0V~5V, output impedance: 100 Ω
	Current	Output: 4mA~20mA, load: less than 300 Ω
Communication	RS485 communication hexadecimal	
Measurement mode	Auto Edge Mode, Edge Mode, Inner Diameter/Gap Mode, Width/Diameter Mode	
Operation temperature	-10°C~+45°C (No freezing; No condensation)	
Storage temperature	-20~+60°C	
Operation humidity	35~85%RH	
Storage humidity	35~85%RH	
Voltage	DC12~24V $\pm 10\%$	
Current consumption	Emitter: 10mA or less(DC24V) Receiver: 70mA or less(DC24V)	
Insulation	Insulation resistance >20M Ω at DC500V between all terminals and housing	
Pulse resistance	Durable 500m/s ² , 3 times each in X,Y,Z three directions.	
Anti-vibration	Durable 10~55Hz complex amplitude 1.5mm, 2 hours each in X,Y,Z three directions	
Ambient illumination	Incandescent lamp: the illuminance of the light-receiving surface is below 3,000lux	
Indicator	Emitter (laser emission indicator green) Receiver (optical axis adjustment light green, judgment output light red)	
Protection degree	IP50	
Housing	Aluminum alloy metal Housing	
Connector	Receiver: 2m 5 core cable Emitter: 2m 2 core cable	

PACKING LIST

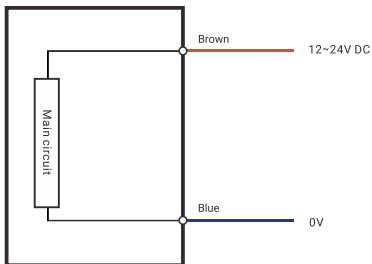
Sensor/1 pc User manual/1 pc Mounting brackets/2 pcs Upper computer software

DIMENSIONS

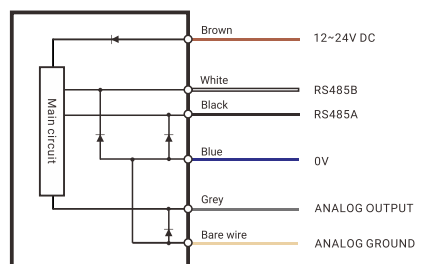
Unit: mm



CIRCUIT DIAGRAM



Emitter



Receiver

CONTROLLER CR-M02 SPECIFICATION

Model	CR-M02
Installation	DIN mounting guide
Operation voltage	+24VDC±10%
Power consumption per controller	Below 100mA (when connecting sensors)
Number of sensors connected	Two sets of sensors
Communication method with the sensor	RS485
Display screen	240*240TFT screen
Number of controllers connected in parallel	Up to 16 controllers can be connected
Indicator light	Output 1-3 and functional indicator lights in red
Analog output	Analog output current can be switched between 4-20mA and voltage between 0-5V
Digital output	3 channels of output, NO, NC, PO, PC can be switched
External input	3 channels of input, NPN and PNP selectable
Display resolution	1μm
Display range	-99.999mm-99.999mm
Protection structure	IP40
Operating temperature	-10°C~+50°C
Operating humidity	35%RH-85%RH
Insulation resistance	All connection terminals and casing resistance are above 20MΩ
Voltage resistance	All connection terminals are voltage resistant up to AC 1000V
Vibration resistance	Frequency of 10-55Hz, double amplitude of 1.5m, in X, Y, and Z directions, for two hours each
Impact resistant	98m/s ² (APPROX. 10G) 5 times each in the x, y, and z directions

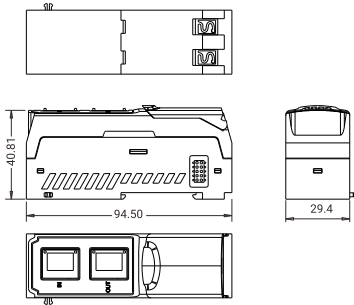
COMMUNICATOR CTM01-EC SPECIFICATION

Model	CTM01-EC
Installation	DIN rail installation
Operation voltage	24V DC(10~30V DC)
Indicator light	PWR: Power Indicator Light / Green RUN: Running Indicator Light / Green ERR: Error Indicator Light / Red Sensor Communication Indicator Light: Red Light (RTU Communication Exception) Ethernet Port: (Green) D-BUS: RTU Communication Normal / Green Light Part of RTU Communication Exception / Alternating Red and Green Lights No RTU Communication Activity / Off Ethernet Port (Green): Ethernet Port has Established Effective Network Connection / On Ethernet port is in network activity status/flashing Ethernet port has not established a network connection or port is abnormal/off.
100 megabit Ethernet port	10/100Base-T(X), RJ45, automatic flow control, full/half duplex mode, MDI/MDI-X auto-detection
Programming port	Software programming port uses 8-bit wiring terminals with a spacing of 2.0mm, occupying 2-5 positions from the left
Console port	CLI command management port uses 8-bit wiring terminals with a spacing of 2.0mm, occupying 6 to 8 positions from the left
RS-485 Serial	Supports 2 RS-485 serial ports, with one reserved, using 10-bit wiring terminals with a 2.0mm spacing. The serial ports occupy 4 bits
Reset button	Reset button
Standby Power Consumption at Normal Temperature	The wiring terminal has 10 spots with a spacing of 2.0mm, and the power takes up 2 spots. 0.7w@10VDC 0.7w@20VDC 0.7w@30VDC
Full Load Power Consumption at Normal Temperature	0.7w@10VDC 0.7w@20VDC 0.7w@30VDC
Full Load Power Consumption at High Temperature	0.8w@10VDC 0.8w@20VDC 0.8w@30VDC
Operating temperature	-40°C~75°C
Storage temperature	-40°C~85°C
Operating humidity	5%~95% (No condensation)

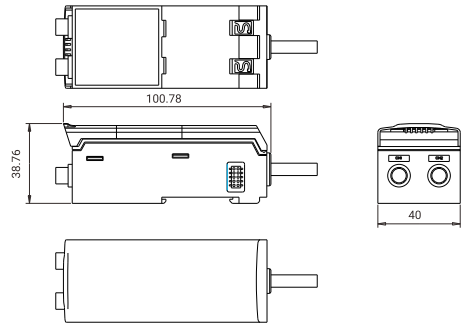
DIMENSION

Unit: mm

Communicator

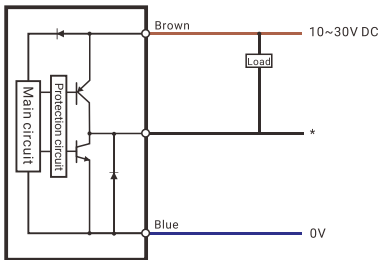


Controller

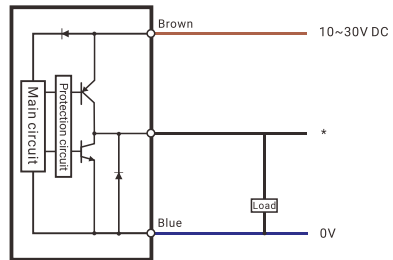


INPUT CIRCUIT DIAGRAM

NPN Output



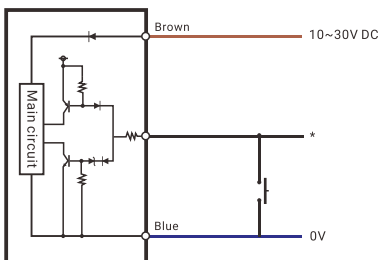
PNP Output



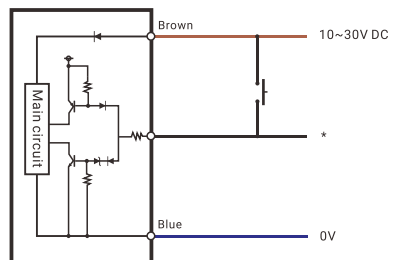
* Black (HIGH detection output) / White (LOW detection output) / Grey (GO detection output) / Green (Verification input)

OUTPUT CIRCUIT DIAGRAM

NPN Output



PNP Output



* Pink (External Input 1) / Yellow (External Input 2) / Pink Purple (External Input 3) / Purple (External Input 4)

TO SUPPORT CUSTOMERS TO BE INDUSTRY LEADERS

AKUSENSE GROUP is an innovation company specializing in industrial photoelectric sensors and deep learning technology, majorly focusing on manufacturing high precision positioning, deep learning, precision measurement, and obstacle avoidance sensors and providing related solutions. We provide precision intelligence and AI sensing technology for such industries as 3C electronics, new energy, semiconductor manufacturing process, medical electronics and service robotics.

18000⁺

Users

260⁺

Agent Cities

240⁺

Distributors

6million⁺

Production Capacity

120⁺

Core Patents

70⁺

Countries & Regions

* Above statistics are as of October 2023

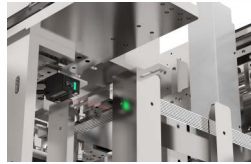


4000+ SKU

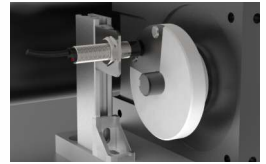
Wide range of products to choose from



Fiber Optic Sensors



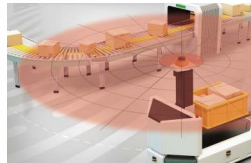
Photoelectric Sensors



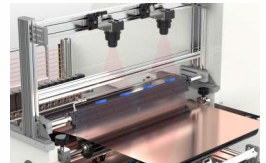
Inductive/Capacitive Sensors



Magnetic Sensors



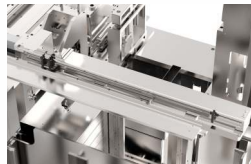
Safety Obstacle Avoidance Sensors



AI Image Recognition



Vibration Inclinometer Sensors



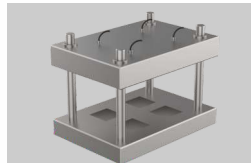
Fork Sensors



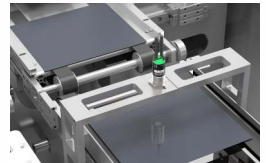
Laser Sensors



Measurement Displacement Sensors



Contact Sensors



Ultrasonic Sensors



Intelligent Code Readers



Temperature Sensors



Accessories



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