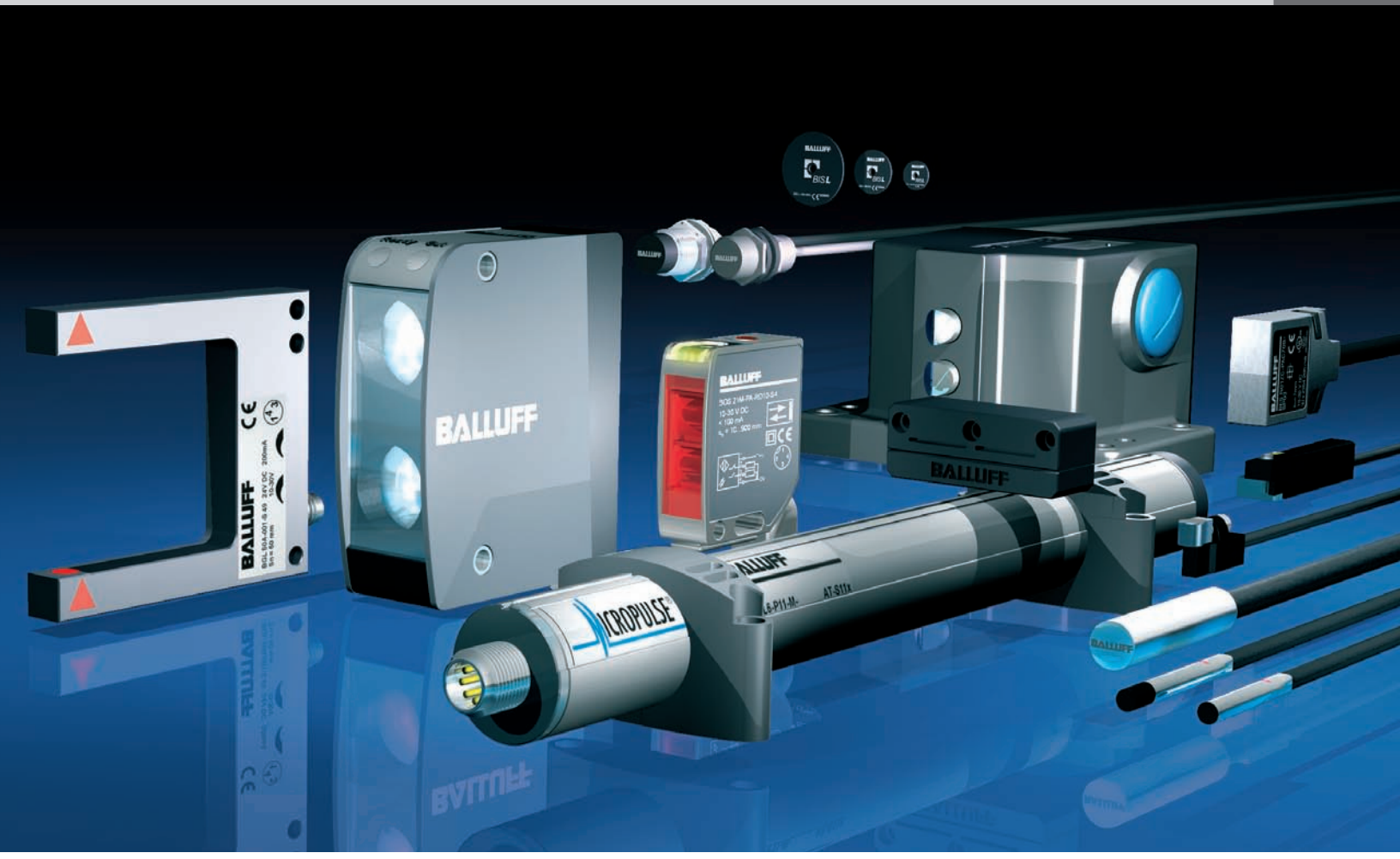
BALLUFF

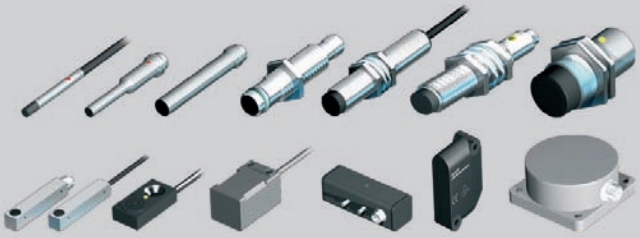
Sensor Selection Guide

Product overview brochure



Inductive Sensors

Balluff offers a variety of inductive sensor solutions: standard designs, block styles, extended range, weld field-immune, specialized sensing – whatever the need, there's a Balluff inductive sensor that will provide optimum service. Balluff sensors are found in machine tool equipment, the plastics industry, textile production machines, woodworking, automotive manufacturing – wherever there is a need to automate. From Mini to Maxi block style sensors from 5 x 5 mm to 80 x 80 mm, and tubular housings from 3 mm to 30 mm sizes, Balluff inductive sensors monitor, control, measure, and automate production sequences with high reliability and freedom from wear.

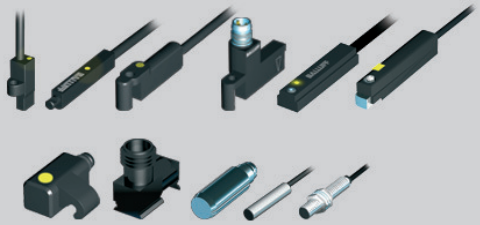


Photoelectric Sensors

Balluff photoelectric sensors are designed to provide specific process tracking, position information, and part quality solutions in all areas of the automation process. They are especially suited for applications in robotics, assembly, and material handling. Along with tubular housings both in plastic and metal sized from 5 mm to 30 mm, Balluff also offers a range of sensors in rigid, block-shaped plastic housings. From classic diffuse, retroreflective, and thru-beam types to more specialized versions, the Balluff photoelectric line will handle the toughest applications.

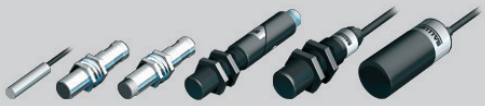
Cylinder & Valve Sensors

Magnetic field sensors are primarily used for monitoring the piston position on pneumatic cylinders. The magnetic field of a magnet embedded in the piston is detected by the sensor through the cylinder housing wall. Thanks to their non-contact position sensing capability, these electronic magnetic field sensors are reliable, wear-free, and are finding ever-wider use. Balluff offers perfect solutions for a variety of typical pneumatic cylinders. Balluff's universally compatible range of cylinder sensors with their engineered mounting bracket kit concept will fit virtually any cylinder shape or size.



Capacitive Sensors

Capacitive sensors detect the change in capacitance caused by the approach of an object in their electrical field. These sensors find broad use in sensing metals, plastics, or liquids and are used extensively in applications involving packaging, plastics handling, and liquid level sensing.

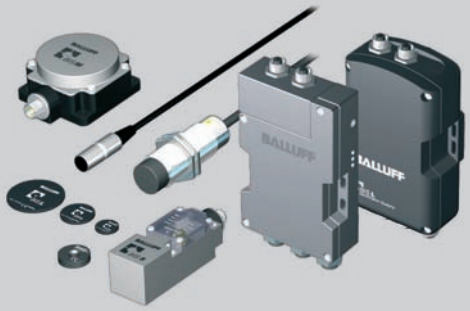


Remote Systems

Sensors are often required to rotate or follow the movement of a machine component or part being manufactured. This often results in repeated twisting and tangling of wiring, resulting in cable wear and ultimately failure. Balluff power remote systems consist of a transmitter and receiver unit that transmits power and sensor information through an air gap. They eliminate wiring failure while providing noise and contactless wear-free operation even in extreme conditions.

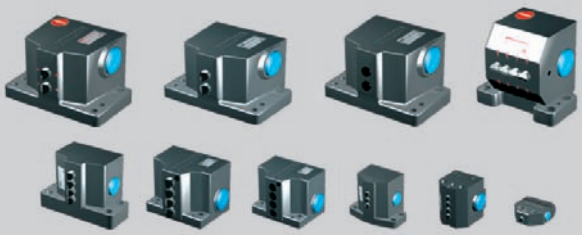
ID Systems

Balluff provides a range of RFID systems to track work in progress and provide feedback on in-process testing. Computer-assisted manufacturing, modern warehouse systems, flexible assembly lines, plus logistics and distribution systems benefit from Balluff BIS RFID systems. BIS components are available in plastic or metal housings and plug-in versions to meet any application requirement. Balluff has developed a complete line of easy to use read-only systems that interface directly into a PLC through discrete inputs or an RS-232 interface. These systems offer data reliability and environmental ruggedness not found in bar code systems. Read-only systems are ideal when product data are stored centrally in a control system and referenced by a code contained on RFID tags located on products, parts, or pallets.



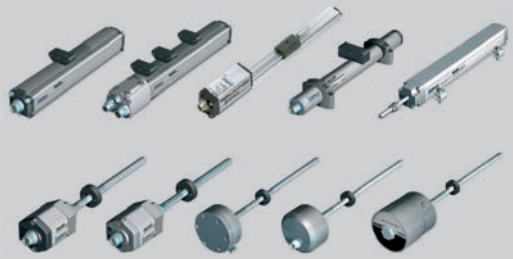
Mechanical Switches

Engineered for the most demanding switching requirements and harsh environmental conditions, Balluff cam switch systems are still the preferred solution of automatic machinery builders around the world. Key applications include control of automatic machine tools, overtravel limiting, and robot dynamic zone control.



Transducers

Balluff Micropulse linear position transducers provide highly accurate and reliable position control signals. Balluff's non-contact magnetostrictive technology means performance does not degrade over time, as with linear potentiometers. Micropulse transducers are available with a variety of housing styles and electrical outputs to fit a wide range of applications and are very popular in the lumber industry, plastic injection and blow molding, tire and rubber manufacturing, stamping presses, die casting, and all types of automated machinery where a continuous, absolute position signal is required.



Accessories

A compete range of accessories helps save costs and provides optimum sensor integration in any environment. In addition to protecting Balluff sensors, our accessory line is designed to permit precise, lasting sensor location positioning while permitting quick sensor change out at any time.

Connectivity Products

A comprehensive line of cables, cordsets, and connection blocks complement our product line, facilitating sensor use in every area of automation. Balluff offers custom application expertise on request.

Balluff Means Industry Expertise

Automotive

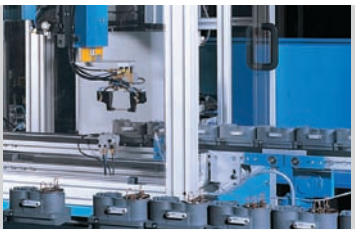
From stamping, to powertrain, to final assembly, Balluff's rugged products have proven themselves up to the task.

Rugged, long-range inductive proximity sensors

The industry standard multiple mechanical switches

Accurate and reliable photoelectric sensors

Ultra-reliable RFID systems



Automated Assembly

Machines are getting smaller, faster, and smarter. Fortunately, so are Balluff's sensing and ID products.

Miniature, long-range inductive proximity sensors

A new level of reliability and performance from pneumatic cylinder position sensors

Specialized photoelectric sensors

Ultra-reliable RFID systems with the latest in connection options

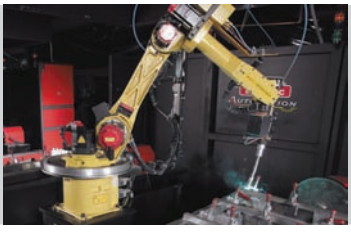
Manual Assembly

Here, error proofing is the name of the game. It takes a sensor company with the products and the know-how to solve real-world issues.

Rugged, long-range inductive proximity sensors

Ultra-reliable RFID systems with the latest in connection options

All types of lasers, true color, and UV sensors



Welding

Monitoring the position of parts and clamps in welding environments requires specialized products for sensor longevity. Our products and accessories enable maximum uptime.

Special coatings provide weld-field immunity with Balluff's weld-specific proximity sensors

Dynamic zone restriction using Balluff multiple mechanical switches

A new level of reliability and weld-field immunity with pneumatic clamp sensors

Eliminate troublesome connection problems with Balluff's power remotes

Metal Forming

Balluff has the in-die sensing critical to protect dies from damage, allow more strokes, and provide error proofing during the forming process.

Miniature tubular and block style sensors are easily bunkered within the die

Long range lasers and self-contained thru-beams for slug-out and part-out detection

Machine Tool

Balluff has the rugged, reliable sensors and ID solutions to meet the requirements of this industry. Tool ID has proven itself as an effective method for error proofing setup.

Steel face and long-range inductive proximity sensors

Ultra reliable RFID systems track tool data such as tool type, presetter offsets and usage history

Tire and Rubber

Given the amount of motion involved, Balluff position feedback products are preferred worldwide.

Rugged, long-range inductive proximity sensors for machine feedback

Reliable position feedback on hydraulic sensors with Micropulse® magnetoresistive linear transducers

Long-range lasers for error proofing and position feedback

Wood

You need heavy duty sensors to meet the position and handling equirements of this rugged industry.

Rugged, long-range inductive proximity sensors for machine feedback

Reliable position feedback of saw blades with Micropulse® magnetoresistive linear transducers

Long-range lasers for positioning and UV sensors for wood grading

Plastics

Balluff's line of feedback devices effectively handle the position feedback requirements of injection and blow molding equipment.

Reliable detection of plastic parts and pellets with Balluff's capacitive sensors

Reliable position feedback with Micropulse® magnetoresistive linear transducers

Rugged, long-range inductive proximity sensors for machine feedback

Capacitive Sensors





Housing Size	10,12 mm	18 mm	30, 34 mm	50 mm Flat	Accessories
Sensing Distance: Flush 	1...4 mm		1...10 mm		
Sensing Distance: Non-flush 	1...8 mm	0...8 mm 1...15 mm	0.5...30 mm 2...20 mm 3...40 mm	2...25 mm	
Housing Material	Stainless steel Nickel-plated brass PVC	PBT Teflon (PTFE)	PBT Teflon (PTFE)	POM	
Sensing Face Material	PVC Teflon (PTFE)	PBT Teflon (PTFE)	PBT Teflon (PTFE)	POM	
DC 3-Wire	✓	✓	✓	✓	
DC 3-Wire Analog					
AC 2-Wire		✓	✓		
Connection Options	PUR Cable M12 DC Micro Connector	PVC Cable PTFE Jacketed Cable M12 DC Micro Connector 1/2" UNF Two-key AC Micro Connector	PUR or PVC Cable PTFE Jacketed Cable M12 DC Micro Connector 1/2" UNF Two-key AC Micro Connector	PUR Cable M8 DC Nano Connector	
Web Address:	**www.balluff.com/capacitive**				

Protective switchwells are perfect for attaching capacitive sensors to containers for level detection.

Sight glass bracket for mounting to tubing.

Clamping cuff included with all 34 mm versions.

Capacitive Sensors

- Non-contact detection of non-metallic materials
- Long-range detection of small metallic parts
- Detects objects through many other non-metallic barriers
- Adjustable sensitivity potentiometer allows differentation between materials, ability to "tune out" mounting hardware or intermediate barrier materials
- LED function display
- DC and AC units available

Capacitive sensors detect the change in capacitance caused by the approach of an object. Their advantage lies in the ability to detect virtually any material, from metals to oils.

Remote Systems

Power Remotes

Transmits 12 Vdc power and signals to/from any input device.

– Can interface to any 12 Vdc input sensor
– Connects to inductive, capacitive, optical, magnetic or mechanical sensors
– Up to 15 signal transmission
– M18, M30, 80x40x22, and 90x90 housings

G-Power Remotes

Transmits power and signals to/from input and output sensors. 12 Vdc & 24 Vdc models are available.

– Interfaces to any 12 Vdc or 24 Vdc input or output sensor
– Provides up to 300 mA of drive current
– Transmits 8 signals
– M30, 40x40 and 90x90 housings

Analog Remotes

Transmits operating power and 0-10 Vdc analog signal from a single BAW analog sensor.

– Common 18 mm tubular housing
– Transmission of 0-10 Vdc analog signal between remote units
– Compatible with most Balluff BAW series isensors in M8 to M30 housings

Thermal Remotes

Interfaces to standard PT100 resistance sensors and K thermo-couples. All signals are transmitted through the air gap and converted to a 4-20 mA output signal.

– Connects to standard PT100 resistance sensors or K thermocouples
– Outputs 4-20 mA signal to external controller
– M18 housings

Radial Remotes

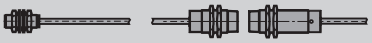
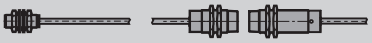
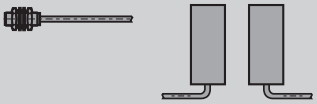
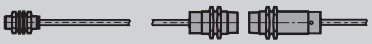
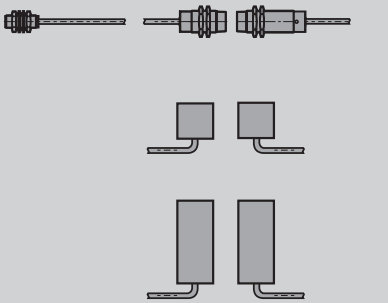
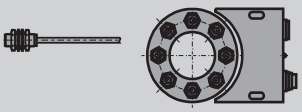
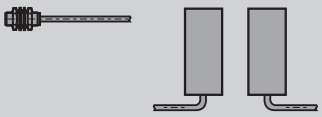
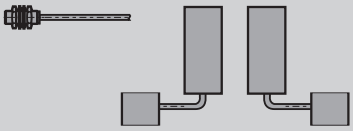
Designed specifically for rotating shafts or indexing tables. Contains stationary base unit and rotating sensor unit, transmitting up to 8 signals between the two devices. Ideal for turntables or indexing tables.

– Eliminates slip rings or "cable twist" problems
– Can turn in same direction continuously or in back and forth motion
– Ideal for rotating shafts or indexing tables
– Transmits up to 8 independent discrete signals

High Power Remote

Transmits power and signals to/from 24 Vdc input and output sensors. Load capacity is up to 1A.

– Utilizes any 24 Vdc input or output sensor
– Provides up to 1A of drive current
– 4 in/4 out & 8 in/8 out models available
– 8 in/8 out model provides up to 1 amp of drive current

Signals		Series & Drive Current
Remote Sensor System		
X1		**Power Remote** 30 mA
X4		**Power Remote** 40 mA 50 mA
X8		**Power Remote** 100 mA
X15		**Power Remote** 6.5 mA/Signal
X8		**G-Power Remote** 150 mA 200 mA 300 mA 24 Vdc
X1		**Analog Remote**
X1		**Thermal Remote**
X8		**Radial Remote** 160 mA 24 Vdc
Remote Coupler System		
4x4		**High Power Remote** 300 mA 24 Vdc
8x8		1A 24 Vdc

Web Address: