

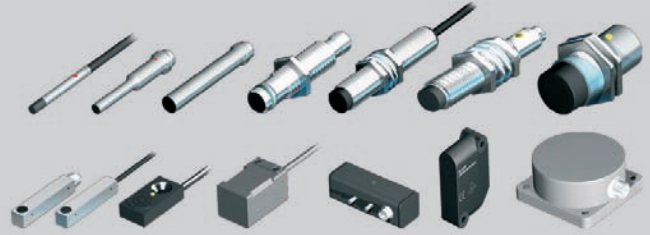
## Sensor Selection Guide

## 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.



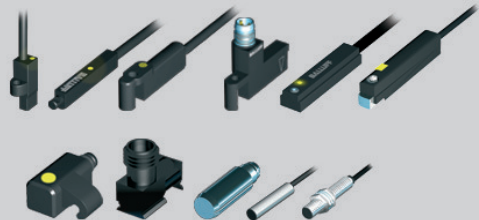
## Photoelectric Sensors

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.



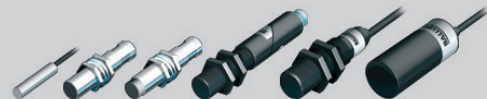
## Cylinder & Valve Sensors

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.



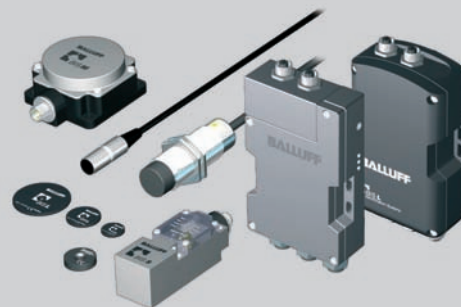
## Remote Systems

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.



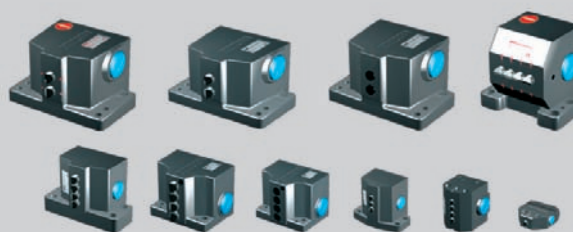
## ID Systems

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.



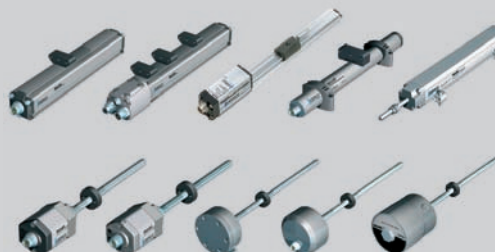
## Mechanical Switches

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 complete 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



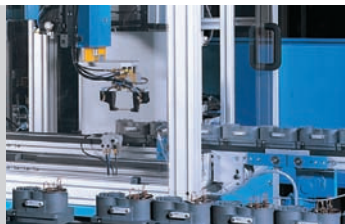
The industry standard multiple mechanical switches



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



Long-range lasers for error proofing and position feedback



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



## Wood

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



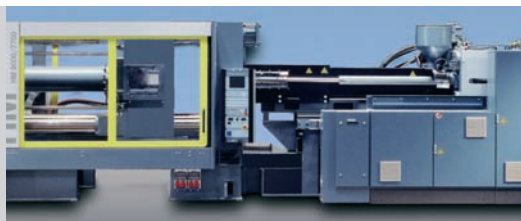
Rugged, long-range inductive proximity sensors for machine feedback



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



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



## 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

# Sensor Accessories

## Accessories

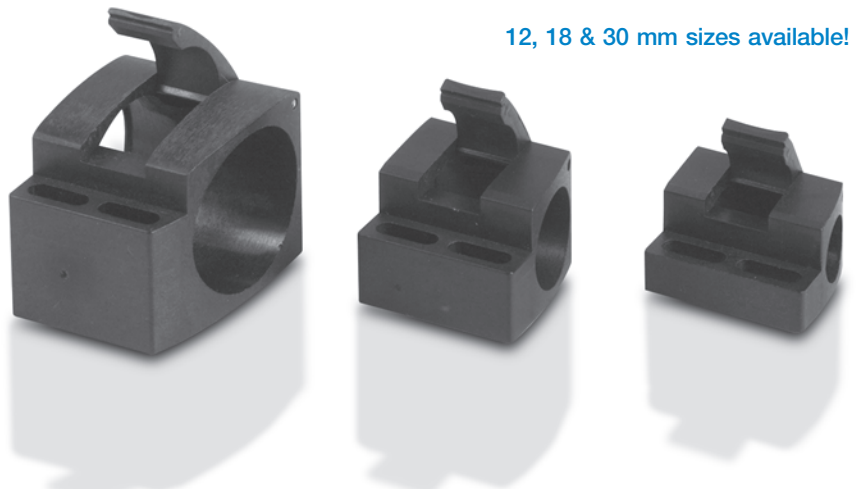







Accessory Type	Mounting Clamps & Brackets	Prox Mounts	Block Sensor Mounting Brackets	Sensor Protection Devices
<b>For Use With:</b>	<b>Inductive, Capacitive, Photoelectric</b>	<b>Inductive, Capacitive, Photoelectric</b>	<b>Inductive</b>	<b>Inductive</b>
<b>Description</b>	Easily install your tubular sensors with universal mounting brackets.	Easy to install, making sensor replacement or tooling modifications hassle-free.	Universal mounting brackets are the ideal product to mount your block sensor.	Increase the life of your sensor with a Teflon, Delrin or ceramic cap.
<b>Features &amp; Benefits</b>	<ul style="list-style-type: none"> <li>Plastic &amp; plated carbon steel versions available</li> <li>Designed with slotted holes for easy installation &amp; adjustment</li> <li>8, 12, 18 &amp; 30 mm sizes available</li> <li>Snap clamp with positive stop</li> </ul>	<ul style="list-style-type: none"> <li>Reduced downtime</li> <li>Reduced setup costs</li> <li>Secure &amp; accurate sensor fastening</li> <li>Protects sensor body from harm</li> </ul>	<ul style="list-style-type: none"> <li>Mounting plates and brackets for various housings</li> <li>Made from corrosion resistant aluminum and AL/CuZn</li> <li>Various adjustability for flexible mounting configurations</li> </ul>	<ul style="list-style-type: none"> <li>Increases the life of the sensor</li> <li>Withstands high temperatures, weld splatter &amp; abrasives</li> <li>Ideal for welding applications</li> <li>Maintains sensing distance</li> <li>Easy to install</li> </ul>
<b>Web Address:</b>	<b><a href="http://www.balluff.com/accessories">www.balluff.com/accessories</a></b>			

## Accessories make the difference!

Enhance or modify your sensor's operation with Balluff accessories. From simple mounting solutions to extending the sensor's output, Balluff's broad range of accessories will expand the possibilities surrounding your sensor's operation.

Easy-operation snap clamps with positive stop



				
Prox Actuators	Banking Screws	Capacitive	Mounting Brackets	Protection & Apertures
Inductive	Inductive	Capacitive	Photoelectric	Photoelectric
Isolate sensors from mechanical contact with targets and avoid sensor damage with prox actuators.	Eliminate all mechanical contact with the sensor by adding a banking screw actuator to your sensor.	Increase your capacitive sensor application with Balluff's mounting accessories. Switchwells and split mounting brackets expand your sensing capabilities.	Mounting brackets solve the most difficult applications and also replace other photoelectric sensors without drilling holes saving you both time and money.	The environment can be a problem for a photoelectric sensor from the build up of debris on the lens or mechanical abuse air blow off shields, protective covers and lens will solve these issues and many more.
<ul style="list-style-type: none"> <li>Consist of mounting clamp and detent holder</li> <li>Straight or right angle versions for 4 mm &amp; 8 mm sensors</li> <li>Detent holders available in 3 configurations:                             <ul style="list-style-type: none"> <li>M12x1 70 mm long</li> <li>M8x1 49 mm long</li> <li>M8x1 89 mm long</li> </ul> </li> <li>Detent holders have 8 mm smooth bore end for insertion into the clamp</li> <li>Any holder can be used with any clamp</li> </ul>	<ul style="list-style-type: none"> <li>Heat treated alloy steel to withstand heavy use</li> <li>Accept any standard M8, M12 or M18 shielded sensor</li> <li>Solid state output with no mechanical contact with sensor</li> <li>Isolates sensor from impact</li> </ul>	<ul style="list-style-type: none"> <li>Switchwells for M18 and M30 sensors</li> <li>PTFE and Lexan versions for various applications</li> <li>Split mounting brackets for sight glass or tubing level detection</li> <li>Split mounting brackets for M12, M18 and M30 sensors</li> </ul>	<ul style="list-style-type: none"> <li>Swivel brackets allow tubular sensors to be mounted straight or 90 degree</li> <li>Micro adjustment brackets allow for pin point adjustment of laser sensors</li> <li>Joint brackets allow for long adjustments</li> <li>EASYin snap-in mounting of the S50 body style</li> <li>Right angle allow for universal mounting to anyone's sensor</li> <li>Fixed brackets mount like other common sensors</li> </ul>	<ul style="list-style-type: none"> <li>Air blow shield prevents debris build-up on lens</li> <li>Protective end cap stops mechanical abuse</li> <li>Small Beam Apertures reduce the beam size for difficult applications</li> <li>Slit Apertures reduce beam size to a long thin slit to detect thin parts</li> </ul>
<a href="http://www.balluff.com/accessories">www.balluff.com/accessories</a>				

## Plastic prox mounts- Ideal for extended range sensors

- M8, M12 & M18 sizes available
- Positive stop for sensors in sealed installation
- PBT fiberglass enforced
- Reduced downtime & setup costs
- Secure & accurate sensor fastening

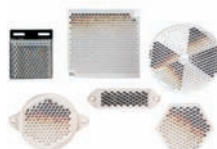
PBT fiberglass enforced!



**Metal versions  
also available for  
shielded sensors  
in extreme  
environments!**

# Sensor Accessories

## Accessories







Accessory Type	Lenses	Reflectors	BIL Mounting
For Use With:	Photoelectric	Photoelectric	Magneto-Inductive
Description	<p>The most critical component of Color Mark and Luminescence sensors can be the lens, since both types require precise sensing distances and spot sizes. Balluff offers a variety of lenses available with different focal lengths.</p>	<p>Retroreflective sensors require the use of a separate reflector or reflective tape mounted across from the sensor. The purpose of the reflector is to reflect light back to sensor when a target is not present.</p>	<p>The BIL is the compact displacement sensor for position sensing up to 160 mm. The magneto-inductive analog position sensor measures non-contact with an absolute output and passive position marker.</p>
Features & Benefits	<ul style="list-style-type: none"> <li>– Fine focusing lens detects marks as small as 1mm at 9mm sensing</li> <li>– Standard lens available: 9mm, 18mm, 28mm and 50mm sensing distances</li> </ul>	<ul style="list-style-type: none"> <li>– Standard and custom sizes available</li> <li>– Mounting holes, tabs, adhesive, snap-in</li> <li>– Standard and high efficiency factors</li> <li>– High temperature versions available</li> <li>– Laser versions</li> <li>– Reflective tapes</li> </ul>	<ul style="list-style-type: none"> <li>– Non-contact</li> <li>– Wear-free</li> <li>– Suitable for harsh environments with potted sensor and electronics</li> <li>– Processing electronics integrated, no external components</li> <li>– Housing cross-section 15x15 mm</li> </ul>
Web Address:	<a href="http://www.balluff.com/accessories">www.balluff.com/accessories</a>		



## Reflectors

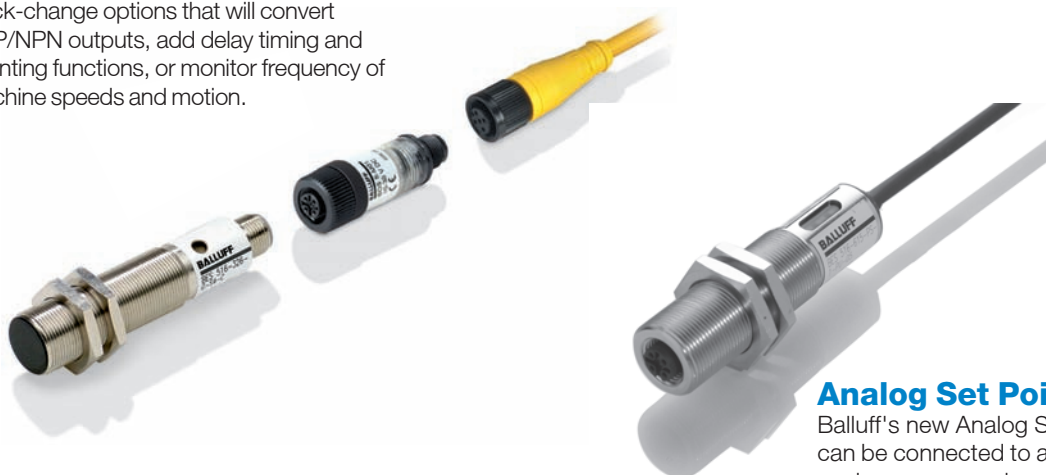
Balluff offers a wide range of reflectors to solve the most difficult applications.



 <p>Universal</p>	 <p>Universal</p>	 <p>Universal</p>	 <p>Universal</p>
Signal Adapter	Analog Set Point Controller	Pulse Width Stretching Device	Sensor Testers & Controller
Inductive, Capacitive, Photoelectric	Inductive, Photoelectric, Magneto-Inductive	Inductive, Capacitive, Photoelectric	Inductive, Capacitive, Photoelectric
<p>Replace your expensive signal converters and other control elements with a signal adapter. Ideal for areas that must be retrofitted without change to the controller.</p>	<p>This device can be connected to any Balluff 0...10V analog sensor (Inductive, Photoelectric, BIL) and provide an analog output plus 3 integrated switching outputs.</p>	<p>Insure that your machine knows when switching has occurred by extending your sensor's output with a pulse stretching device.</p>	<p>Sensor testers are the quick &amp; easy way to test and calibrate sensors in the field.</p>
<ul style="list-style-type: none"> <li>Convert any sensor into a teach-in sensor and modify its output in various ways.</li> <li>Four versions available:                             <ul style="list-style-type: none"> <li>Timer</li> <li>PNP/NPN Converter</li> <li>Frequency</li> <li>Counter</li> </ul> </li> <li>Eliminate relay timers</li> </ul>	<ul style="list-style-type: none"> <li>Continuous 0-10V Analog signal</li> <li>Three teachable digital outputs</li> <li>Easily programmable teach function</li> <li>LEDs provided for each digital signal</li> <li>Analog and digital signals from one controller</li> </ul>	<ul style="list-style-type: none"> <li>Protected against overload (through PTC) and against polarity reversal</li> <li>On the input, a PNP NO or NC sensor may be used</li> <li>Both or only one of the outputs can be installed</li> <li>Adjustable from 2 milliseconds to 1 second</li> </ul>	<ul style="list-style-type: none"> <li>Tests 3-wire &amp; 2-wire DC sensors</li> <li>PNP or NPN output</li> <li>Audible sound</li> <li>Convenient size</li> <li>Higher current &amp; voltage version available</li> <li>Operate two 24Vdc sensors from one portable source</li> </ul>
<a href="http://www.balluff.com/accessories">www.balluff.com/accessories</a>			

## Signal Adapters

Balluff's BOS S Signal Adapters provide quick-change options that will convert PNP/NPN outputs, add delay timing and counting functions, or monitor frequency of machine speeds and motion.



## Analog Set Point Controller

Balluff's new Analog Set Point Controller can be connected to any Balluff 0...10V analog sensor and provide an analog output plus 3 digital switching outputs.