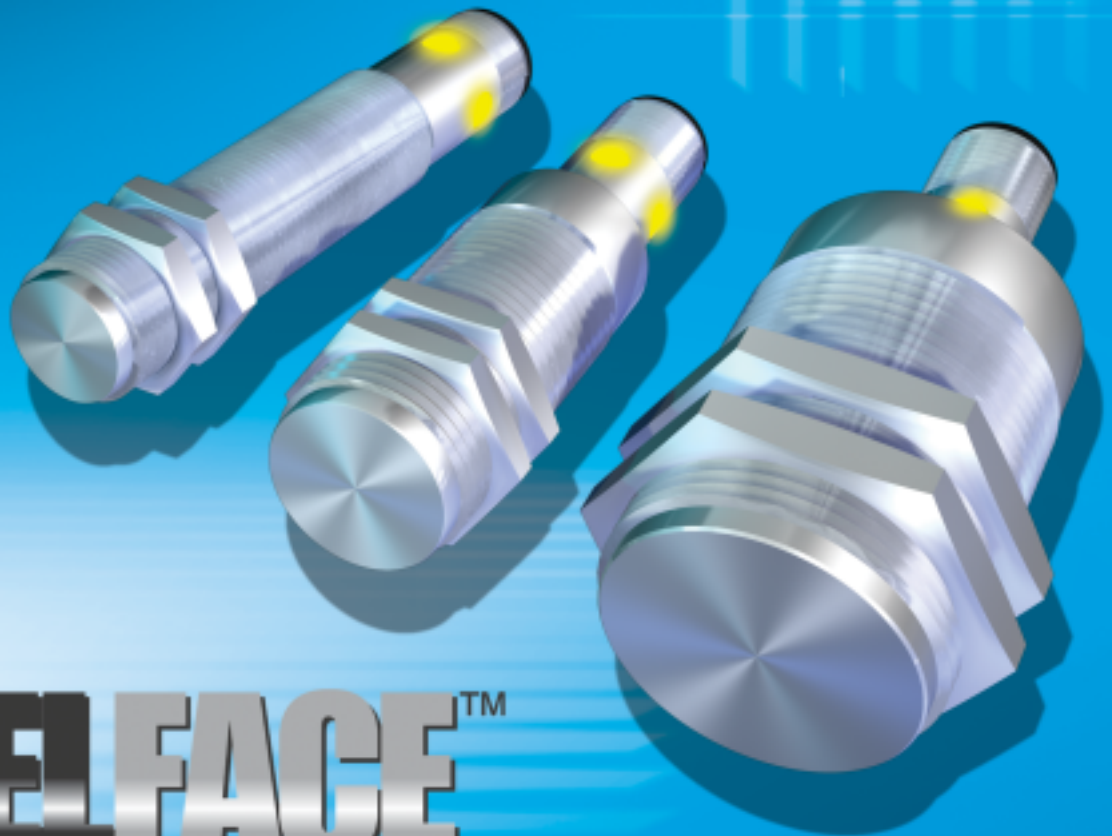


BALLUFF

STEELFACE™

The rugged one-piece
stainless steel sensor
for extreme environments

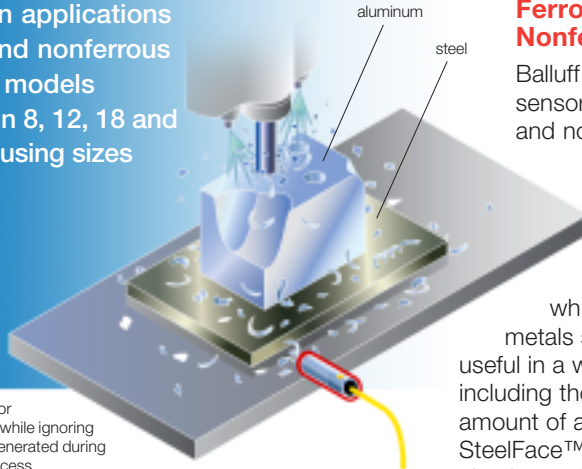


STEELFACE™

STEELFACE™

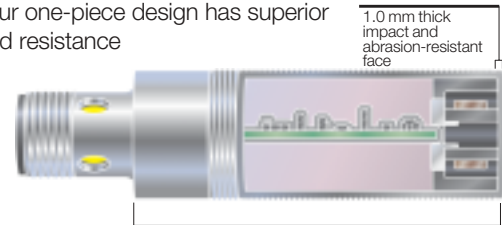
The rugged one-piece stainless steel sensor for extreme environments

- One-piece stainless steel housing withstands abusive environments
- Impact & abrasion-resistant face (1.0 mm thick)
- Superior chemical & cutting fluid resistance (IP 67)
- Sensing face withstands 500 psi dynamic pressure
- Rated to 1200 psi for washdown applications
- Ferrous and nonferrous detection models
- Available in 8, 12, 18 and 30 mm housing sizes



SteelFace™ sensor detects steel part while ignoring aluminum chips generated during the machining process.

Unlike many competitive designs, Balluff's SteelFace™ sensors are machined from a single piece of solid stainless steel. This results in a sensor with a 1.0 mm thick steel face that is extremely impact and abrasion-resistant. Additionally, our one-piece design has superior chemical and cutting fluid resistance characteristics.



One-piece solid stainless steel construction

Ferrous & Nonferrous Detection

Balluff SteelFace™ inductive sensors are available in ferrous and nonferrous detection models.

Ferrous detection

Ferrous sensors detect metals such as steel, iron, and nickel while ignoring nonferrous metals such as aluminum. This is useful in a wide range of applications, including those that generate a large amount of aluminum chips. SteelFace™ ferrous sensors ignore aluminum chips to allow the detection of elements such as tool pallets, cutting tools, and fixtures.

Nonferrous detection

Nonferrous sensors detect metals such as aluminum, copper, and brass while ignoring ferrous metals. Balluff's nonferrous sensors will detect the presence of aluminum objects such as engine blocks while ignoring the ferrous pallets or fixtures that hold them.



Reduced Sensor Replacement Costs

Replacing mechanically damaged sensors is a time consuming and costly process. The extra-rugged construction of Balluff SteelFace™ sensors reduces replacement costs and production downtime, contributing significantly to your bottom line.

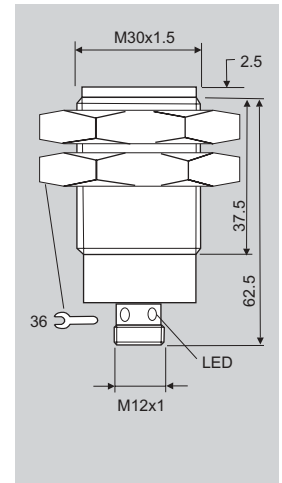
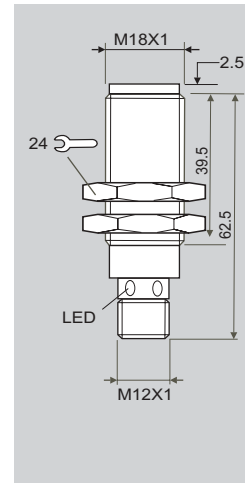
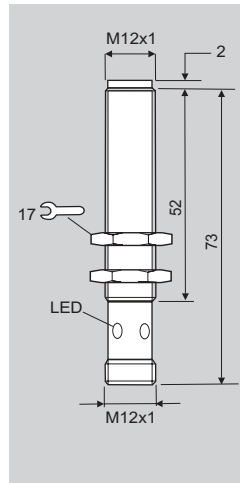
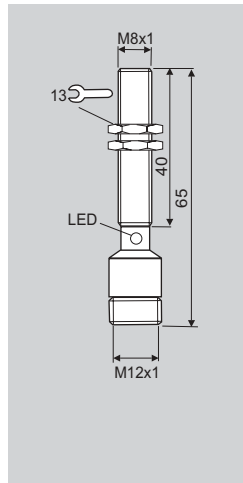
Full Range Detection

Some metal-faced sensors sacrifice sensing range for increased durability. With Balluff's SteelFace™ sensors there is no need to make this tradeoff. Our SteelFace™ sensors achieve the same sensing range as our standard proximity sensors to meet the demands of your toughest applications.

Designed for your industry's challenges.

- Machine tool
- Automotive
- Metal forming
- Food & beverage
- General automation

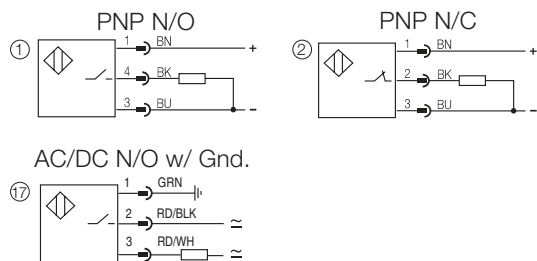
Housing Size	M8 x 1	M12 x 1	M18 x 1	M30 x 1
Mounting	Flush	Flush	Flush	Flush
Rated operating distance S_n	1.5 mm	2 mm	5 mm	8 mm
Assured operating distance S_a	0...1.2 mm	0...1.6 mm	0...4.1 mm	0...6.4 mm



PNP Ferrous Normally-open ①	BES M08EG1-PSC15S-S04G-S	BES M12E1-PSC20S-S04G-S	BES M18EG1-PSC50S-S04G-S	BES M30EG1-PSC80S-S04G-S
PNP Ferrous Normally-closed ②		BES M12E1-POC20S-S04G-S	BES M18EG1-POC50S-S04G-S	
PNP Nonferrous Normally-open ①		BES M12E1-PSC20N-S04G-S	BES M18EG1-PSC50N-S04G-S	BES M30EG1-PSC80N-S04G-S

Rated operational voltage U_e	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Supply voltage U_B	10...30 Vdc	10...30 Vdc	10...30 Vdc	10...30 Vdc
Voltage drop U_d at I_e	≤ 2.0 Vdc	≤ 2.0 Vdc	≤ 2.0 Vdc	≤ 2.0 Vdc
Load current capacity	100 mA	200 mA	200 mA	200 mA
Current consumption	≤10 mA	≤10 mA	≤10 mA	≤10 mA
Off-state current I_r	≤10 uA	≤10 uA	≤10 uA	≤10 uA
Protected against polarity reversal	yes	yes	yes	yes
Short circuit protected	yes	yes	yes	yes
Repeat accuracy R	≤ 2%	≤ 2%	≤ 2%	≤ 2%
Ambient temperature range T_a	-25°C...+70°C	-25°C...+70°C	-25°C...+70°C	-25°C...+70°C
Operating frequency f	20 Hz Ferrous	100 Hz Ferrous/ 15 Hz Nonferrous	15 Hz Ferrous/ 30 Hz Nonferrous	10 Hz Ferrous/ 10 Hz Nonferrous
Function indication	yes	yes	yes	yes
Degree of protection per IEC 529	IP 67/ 1200 psi washdown	IP 67/ 1200 psi washdown	IP 67/ 1200 psi washdown	IP 67/ 1200 psi washdown
Housing material	stainless steel 303	stainless steel 303	stainless steel 303	stainless steel 303
Material of sensing face	stainless steel 303	stainless steel 303	stainless steel 303	stainless steel 303
Connection	connector	connector	connector	connector
Approvals	cULus	cULus	cULus	cULus
Recommended connector	C04 AEL-00-VY-050M	C04 AEL-00-VY-050M	C04 AEL-00-VY-050M	C04 AEL-00-VY-050M

Wiring Diagrams

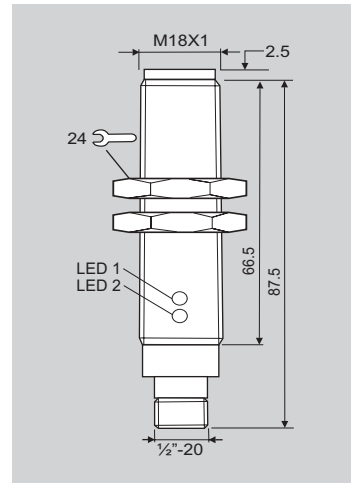
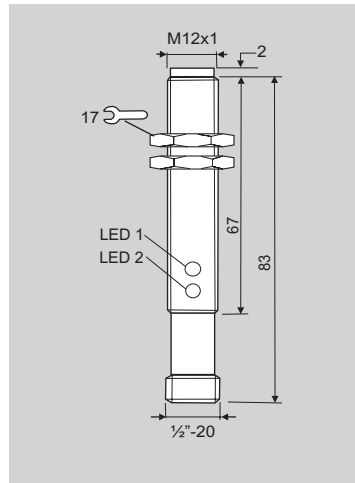


Correction Factor

Model	Mild Steel	Stainless Steel 303/304	Stainless Steel 316	Aluminum	Copper	Brass
DC						
M8 Ferrous	1	0.45	0.1	0	0	0
M12 Ferrous	1	0.25	0.1	0	0	0
M12 Nonferrous	0	0	0	1	1.1	0.9
M18 Ferrous	1	0.5	0.2	0	0	0
M18 Nonferrous	0	0	0	1	1.1	0.9
M30 Ferrous	1	0.7	0.2	0	0	0
M30 Nonferrous	0	0	0	1	1.1	0.9
AC/DC						
M12 Ferrous	1	0.25	0.1	0	0	0
M12 Nonferrous	0	0	0	1	1.1	0.9
M18 Ferrous	1	0.5	0.2	0	0	0
M18 Nonferrous	0	0	0	1	1.1	0.9

Actual sensing range = rated operating distance (S_n) x correction factor

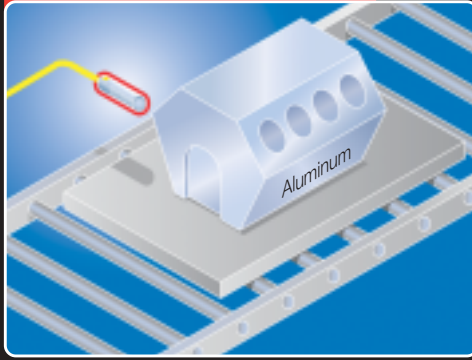
Housing Size	M12 x 1	M18 x 1
Mounting	Flush	Flush
Rated operating distance S_n	2 mm	5 mm
Assured operating distance S_a	0...1.6 mm	0...4.1 mm



AC/DC Ferrous Normally-open ^⑰	BES M12EN1-USU20S-S21G-S	BES M18EP1-USU50S-S21G-S
AC/DC Nonferrous Normally-open ^⑰	BES M12EN1-USU20N-S21G-S	BES M18EP1-USU50N-S21G-S
Rated operational voltage U_e	110 Vac	110 Vac
Supply voltage U_B	20...250 Vac/ 300 Vdc	20...250 Vac/ 300 Vdc
Voltage drop U_d at I_e	≤ 7.0 V	≤ 7.0 V
Rated operational current I_e	200 mA	200 mA
Minimum operational current I_m	8 mA	8 mA
Off-state current I_r	≤ 1.3 mA at 110 Vac	≤ 1.3 mA at 110 Vac
Inrush current I_k t = 20 ms	≤ 1.7 A	≤ 1.7 A
Protected against polarity reversal	yes	yes
Short circuit protected	yes	yes
Repeat accuracy R	≤ 2%	≤ 2%
Ambient temperature range T_a	-25°C...+70°C	-25°C...+70°C
Operating frequency f	30 Hz Ferrous/ 15 Hz Nonferrous	15 Hz Ferrous/ 30 Hz Nonferrous
Function indication	yes	yes
Degree of protection per IEC 529	IP 67/1200 psi washdown	IP 67/1200 psi washdown
Housing material	stainless steel 303	stainless steel 303
Material of sensing face	stainless steel 303	stainless steel 303
Connection	connector	connector
Approvals	cULus	cULus
Recommended connector	C21 AE3-00-VY-150F	C21 AE3-00-VY-150F

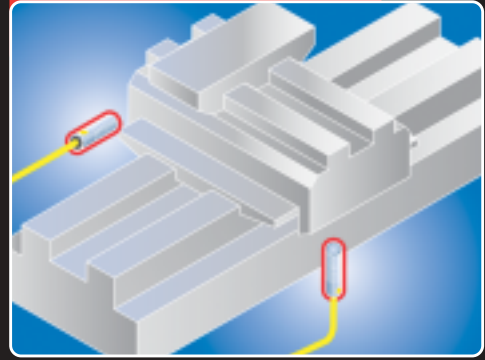


Nonferrous Detection



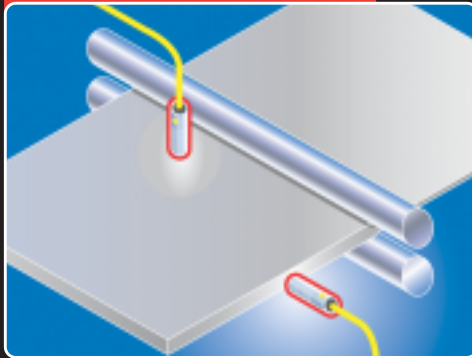
Unlike standard inductive sensors, SteelFace™ nonferrous sensors detect aluminum targets at 100% of their rated sensing distance.

End of Travel Detection



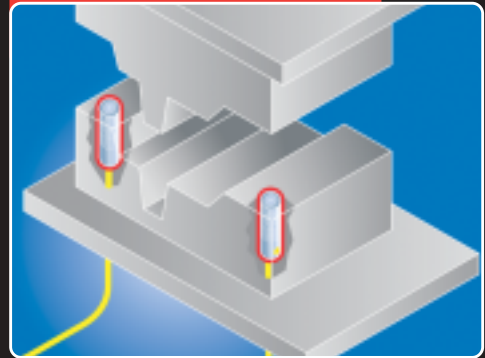
SteelFace™ ferrous sensors detect steel targets while ignoring aluminum chips generated during the machining process.

Presence/Edge Detection



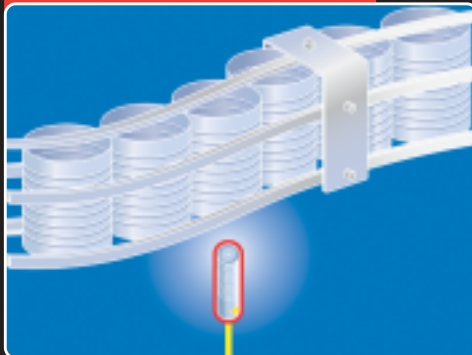
Our rugged SteelFace™ sensor is the ideal choice when contact with a sensor is unavoidable.

In-Die Sensing



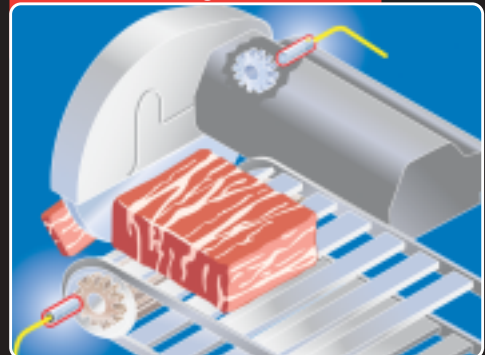
Designed to withstand extremely abusive environments, SteelFace™ sensors can be used in-die for error proofing and die protection.

Aluminum Can Detection



SteelFace™ nonferrous sensors will detect the presence of aluminum cans at the sensor's fully rated sensing distance.

Food Processing

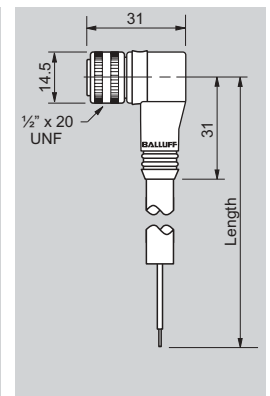
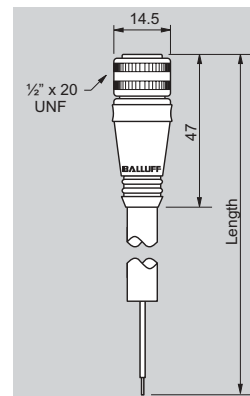
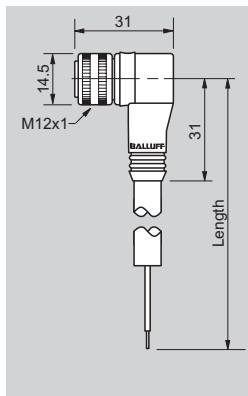
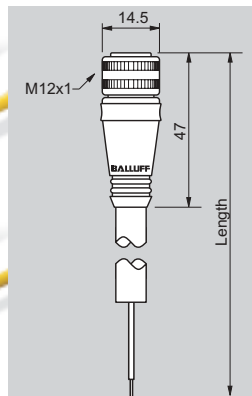


SteelFace™ sensors are designed for high-pressure washdown applications up to 1200 psi.

Target Your **TOUGHEST** Applications

STEELFACE™

Connector	Micro	Micro	Micro AC 1/2" X 20 UNF	Micro AC 1/2" X 20 UNF
Style	M12 DC Single Keyway	M12 DC Single Keyway	3 Pin Dual Keyway	3 Pin Dual Keyway
Configuration	Straight Female	Right Angle Female	Straight Female	Right Angle Female



3 Wire DC				
3 Wire Normally-open	C04 AEC-00-*Y-050M	C04 BEC-00-*Y-050M		
3 Wire Normally-closed	C04 AED-00-*Y-050M	C04 BED-00-*Y-050M		
4 Wire DC (NO/NC)				
4 Wire (Universal)	C04 AEL-00-*Y-050M	C04 BEL-00-*Y-050M		
3 Wire AC/DC				
3 pin			C21 AE3-00-*Y-150F	C21 BE3-00-*Y-150F
Voltage rating	250 Vac/Vdc	250 Vac/Vdc	250 Vac/Vdc	250 Vac/Vdc
Amperage	4 A	4 A	4 A	4 A
Wire gauge	22 AWG	22 AWG	22 AWG	22 AWG
Jacket	Yellow PVC or TPE	Yellow PVC or TPE	Yellow PVC or TPE	Yellow PVC or TPE
Coupling nut	Black epoxy coated zinc	Black epoxy coated zinc	Black epoxy coated zinc	Black epoxy coated zinc
Cable O.D.-3 wire versions (mm)	4.6 (V) / 5.0 (T)	4.6 (V) / 5.0 (T)	4.6 (V) / 6.0 (T)	4.6 (V) / 6.0 (T)
Protection	IP 68 / NEMA 6P	IP 68 / NEMA 6P	IP 68 / NEMA 6P	IP 68 / NEMA 6P
Ambient operating temp.	-4 to 221° F	-4 to 221° F	-4 to 221° F	-4 to 221° F

* Insert **V**= PVC cable
T= TPE cable

For more information on Balluff inductive sensors or our full line of sensor solutions, visit our product center online at <http://www.balluff.com/products>



Sensors



Linear Transducers



Mechanical Switches



ID Systems

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