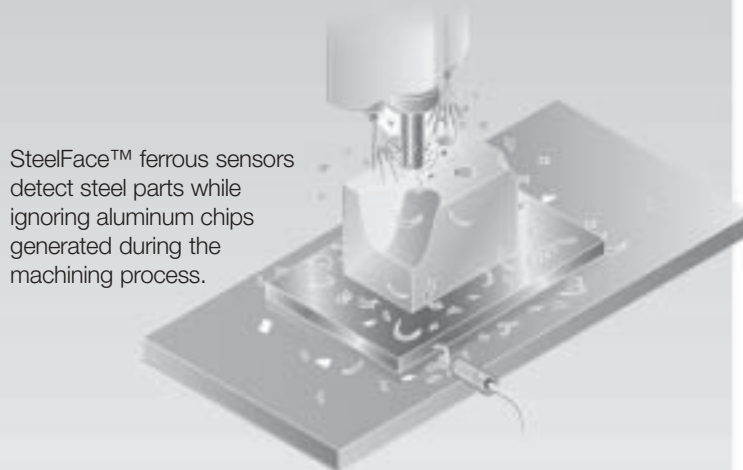




SteelFace™ nonferrous sensors will detect the presence of aluminum objects such as an engine block while ignoring the ferrous pallets or fixtures that hold them.



SteelFace™ ferrous sensors detect steel parts 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 thick steel face that is extremely impact and abrasion resistant. Additionally, our one-piece design has superior chemical and cutting fluid resistance characteristics.

Ferrous & Nonferrous Detection

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

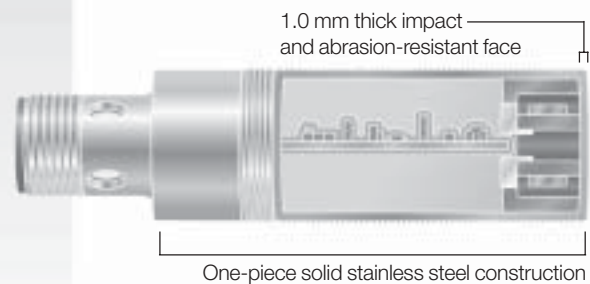
Ferrous detection

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.

Nonferrous detection

Nonferrous sensors detect metals such as aluminum, copper, and brass while ignoring ferrous.

- One-piece stainless steel housing withstands abusive environments
- Impact and abrasion resistant face (1.0 mm thick)
- Superior chemical and 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

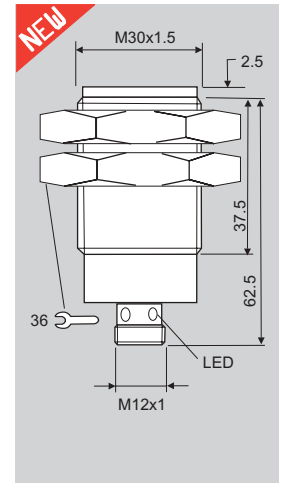
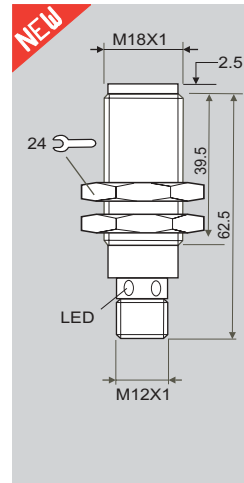
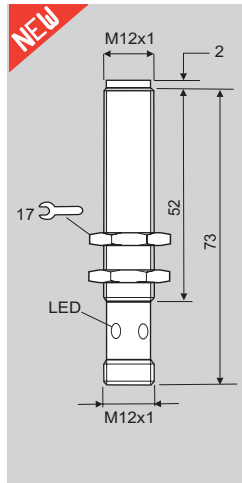
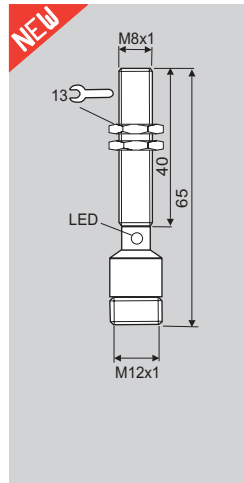


Inductive Sensors

DC 3-/4-Wire
M8, M12, M18, M30
Sn 1.5, 2, 5, 8 mm

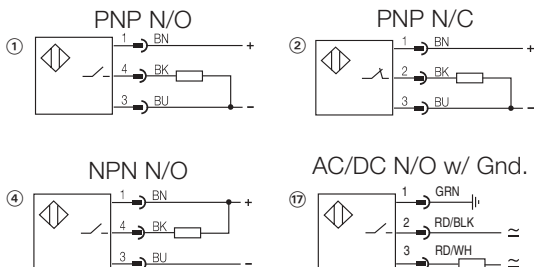
STEELFACE™

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 M12E11-PSC20S-S04G-S	BES M18EG1-PSC50S-S04G-S	BES M30EG1-PSC80S-S04G-S
PNP Ferrous Normally-closed ②		BES M12E11-POC20S-S04G-S	BES M18EG1-POC50S-S04G-S	
PNP Nonferrous Normally-open ③		BES M12E11-PSC20N-S04G-S	BES M18EG1-PSC50N-S04G-S	BES M30EG1-PSC80N-S04G-S
NPN Ferrous Normally-open ④	BES M08EG1-NSC15S-S04G-S	BES M12E11-NSC20S-S04G-S	BES M18EG1-NSC50S-S04G-S	BES M30EG1-NSC80S-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 Factors

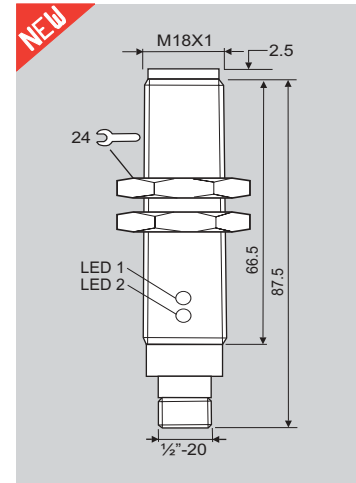
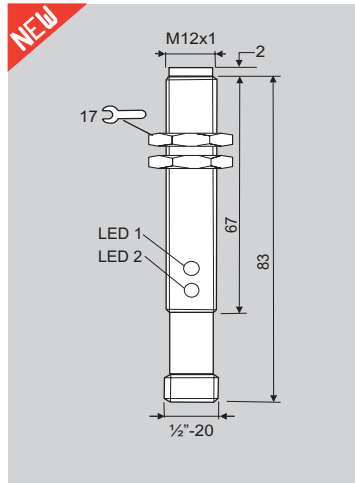
Model	Mild Steel	Stainless Steel 303/304	Stainless Steel 316	Aluminum	Copper	Brass
DC						
M8 Ferrous	1	0.45	0.1	0	0	0
M12 Ferrous	1	0.25	0.1	0	0	0
M12 Nonferrous	0	0	0	1	1.1	0.9
M18 Ferrous	1	0.5	0.2	0	0	0
M18 Nonferrous	0	0	0	1	1.1	0.9
M30 Ferrous	1	0.7	0.2	0	0	0
M30 Nonferrous	0	0	0	1	1.1	0.9
AC/DC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

Housing Size
Mounting
Rated operating distance S_n
Assured operating distance S_a

M12 x 1
Flush
2 mm
0...1.6 mm

M18 x 1
Flush
5 mm
0...4.1 mm



AC/DC Ferrous Normally-open $\text{\textcircled{r}}$
AC/DC Nonferrous Normally-open $\text{\textcircled{r}}$

BES M12EN1-USU20S-S21G-S
BES M12EN1-USU20N-S21G-S

BES M18EP1-USU50S-S21G-S
BES M18EP1-USU50N-S21G-S

Rated operational voltage U_e
Supply voltage U_B
Voltage drop U_d at I_e
Rated operational current I_e
Minimum operational current I_m
Off-state current I_r
Inrush current I_k , $t = 20$ ms
Protected against polarity reversal
Short circuit protected
Repeat accuracy R
Ambient temperature range T_a
Operating frequency f
Function indication
Degree of protection per IEC 529
Housing material
Material of sensing face
Connection
Approvals
Recommended connector

110 Vac
20...250 Vac/ 300 Vdc
≤ 7.0 V
200 mA
8 mA
≤ 1.3 mA at 110 Vac
≤ 1.7 A
yes
yes
$\leq 2\%$
-25°C...+70°C
30 Hz Ferrous/ 15 Hz Nonferrous
yes
IP 67/1200 psi washdown
stainless steel 303
stainless steel 303
connector
cULus
C21 AE3-00-VY-150F

110 Vac
20...250 Vac/ 300 Vdc
≤ 7.0 V
200 mA
8 mA
≤ 1.3 mA at 110 Vac
≤ 1.7 A
yes
yes
$\leq 2\%$
-25°C...+70°C
15 Hz Ferrous/ 30 Hz Nonferrous
yes
IP 67/1200 psi washdown
stainless steel 303
stainless steel 303
connector
cULus
C21 AE3-00-VY-150F



