Inductive proximity switches

Cylindrical inductive proximity switches for factory automation

The proven solution for safe, non-contact detection of metal objects

- Very small sensors with all integrated evaluation electronics and large sensing distance
- Sturdy, maintenance-free and durable
- Always the right sensor thanks to a wide variety of variants

	IFRM 03 external electronics	IFRM 03	IFRM 04 Thread	IFRM 04	IFRM 05
category	**Subminiatur**	**Subminiatur**	**Subminiatur**	**Subminiatur**	**Subminiatur**
dimensions	ø 3 mm	ø 3 mm	M4	ø 4 mm	M5
housing length	12 mm	from 12 mm	from 22 mm	from 15 mm	from 15 mm
nominal sensing distance Sn	0,8 mm	0,8 ... 1 mm	0,8 mm	1 ... 1,6 mm	1 ... 1,6 mm
switching frequency	3 kHz	to 4 kHz	3 kHz	to 5 kHz	to 5 kHz
output signal	PNP NPN	PNP NPN	PNP NPN	PNP NPN	PNP NPN
connection types	flylead connector M8 (electronics in connector)	cable 2 m flylead connector M8 wires	cable 2 m flylead connector M8	connector M5 connector M8 cable 2 m flylead connector M8 wires	connector M5 connector M8 cable 2 m flylead connector M8 wires
housing material	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel
operating temperature	–25 ... +75 °C	–25 ... +75 °C –10 ... +70 °C	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C
protection class	IP 67	IP 67	IP 67	IP 67	IP 67
specific features					

	IFRM 06 IR06.PxxS	IFRM 08 IR08.PxxS	IFRM 12 IR12.PxxS	IFRM 18 IR18.PxxS	IFRM 30 IR30.PxxS
	Sub-/Miniatur	Sub-/Miniatur	Compact	Compact	Compact
	ø 6,5 mm	M8	M12	M18	M30
	from 22 mm	from 18 mm	from 30 mm	from 35 mm	from 35 mm
	2 ... 6 mm	2 ... 6 mm	4 ... 10 mm	8 ... 15 mm	10 ... 24 mm
	to 5 kHz	to 5 kHz	to 2 kHz	to 500 Hz	to 500 Hz
	PNP NPN	PNP NPN	PNP NPN	PNP NPN	PNP NPN
	connector M8 cable 2 m flylead connector M8	connector M8 connector M12 cable 2 m flylead connector M8	connector M8 connector M12 cable 2 m	connector M8 connector M12 cable 2 m	connector M12 cable 2 m
	stainless steel	stainless steel	brass nickel plated	brass nickel plated	brass nickel plated
	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C 0 ... +65 °C	–25 ... +75 °C
	IP 67	IP 67	IP 67	IP 67	IP 67
			■ variants with antivalent output (NO & NC)	■ variants with antivalent output (NO & NC)	■ variants with antivalent output (NO & NC)

Inductive proximity switches

Rectangular inductive proximity switches for factory automation

The proven solution for safe, non-contact detection of metal objects

- Very small sensors with all integrated evaluation electronics and large sensing distance
- Sturdy, maintenance-free and durable
- Millions of them in use - highest precision and guaranteed reliability thanks to over 40 years of experience

	IFFM 08	IFFM 04	IFFM 06	IFFM 08
category	**Subminiatur**	**Subminiatur**	**Miniatur**	**Miniatur**
dimensions (B × T × L)	8 × 4,7 × 16 mm	4 × 4 × 22 mm	6 × 6 × 20 ... 30 mm	8 × 8 × 20 ... 60 mm
nominal sensing distance Sn	2 mm	0,8 mm	1 mm	2 mm
switching frequency	5 kHz	3 kHz	5 kHz	5 kHz
output signal	PNP NPN	PNP NPN	PNP NPN	PNP NPN
connection types	cable 2 m flylead connector M8	cable 2 m	connector M5 cable 2 m	connector M8 cable 2 m flylead connector M8
housing material	die-cast zinc nickel plated	stainless steel	brass nickel plated	brass nickel plated die-cast zinc nickel plated
operating temperature	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features	■ extra flat design (4.7 mm)			

	IFFM 12	IFFM 20
	Compact	**Compact**
	12 × 8 × 28 mm	20 × 10 × 41 mm
	4 mm	5 ... 8 mm
	2 kHz	to 1 kHz
	PNP NPN	PNP NPN
	connector M5	connector M8
	brass nickel plated	brass nickel plated
	–25 ... +75 °C	–25 ... +75 °C
	IP 67	IP 67

Inductive proximity switches

Application-specific inductive sensors – Outdoor / high temperature

- Rugged Outdoor and Washdown sensors
- High shock and vibration resistance
- Sensors with extended temperature range up to 180 °C

Outdoor / Washdown	IFRM 12 / 18 Outdoor	IFRR 08 / 12 / 18 Washdown
features	■ Rugged stainless steel (V4A) or all-metal housing ■ IP 69K long-term seal – *proTect+* ■ High signal quality in an extended temperature range	
dimensions	M12 / M18	M8 / M12 / M18
nominal sensing distance Sn	6 ... 12 mm	3 ... 12 mm
switching frequency	0,4 ... 2 kHz	0,5 ... 3 kHz
housing material	brass nickel plated	stainless steel 1.4404 (V4A)
operating temperature	–40 ... +80 °C	–40 ... +80 °C
protection class	IP 67	IP 68/69K & *proTect+*
specific features		■ Ecolab-tested ■ FDA-compliant ■ Vibration resistance EN 61373: 2010 (category 3) ■ Shock resistance EN 61373: 2010 (category 3)

High temperature up to +180 °C	IFRM 06 / 08 / 12 High temperature up to +100 °C	IFRD 06 / 08 / 12 / 18 High temperature up to +100 °C Full metal housing (*DuroProx*)	IFRH 06 / 08 / 12 High temperature up to +180 °C with separated electronics
features	■ Sensors with extended temperature range up to 180 °C ■ Versions with integrated and separate evaluation electronics ■ High switching frequencies		
dimensions	ø 6,5 mm / M8 / M12	ø 6,5 mm / M8 / M12 / M18	M8 / M12 / M18
nominal sensing distance Sn	2 ... 4 mm	2 ... 6 mm	1,5 ... 5 mm
switching frequency	2 ... 5 KHz	100 ... 150 Hz	1 ... 4 kHz
housing material	stainless steel brass nickel plated	stainless steel 1.4404 (V4A)	stainless steel brass nickel plated
operating temperature	–25 ... +100 °C	–25 ... +100 °C	–25 ... +180 °C
protection class	IP 67	IP 68 / IP 69K	IP 67

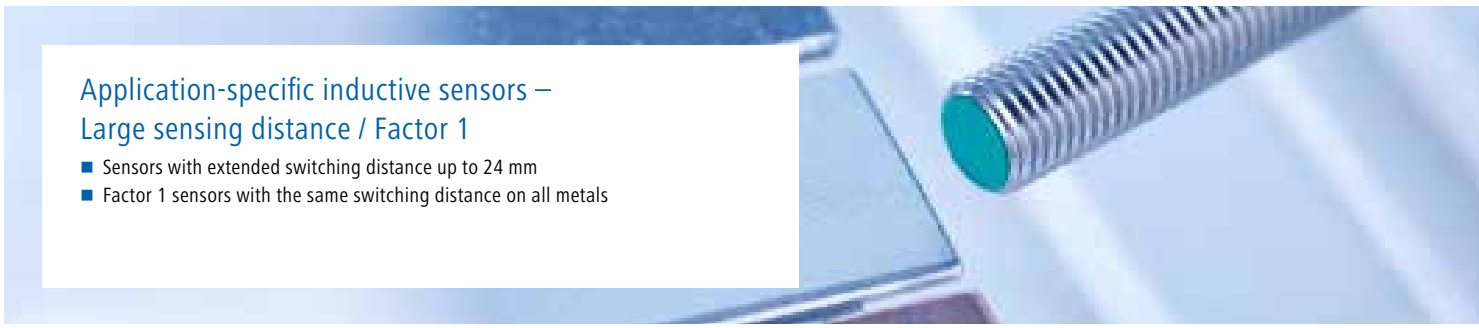
Application-specific inductive sensors – High pressure / magnetic field

- Pressure resistant up to 500 bar
- Immune to welding and magnetic fields up to 90 mT

High pressure resistant sensors	IFRP 12	IFRP 16	IFRP 18
features	■ Pressure resistant up to 500 bar ■ Sensor surface made of zirconium oxide (ZrO2/ceramics) ■ High switching frequencies		
dimensions	M12	M16	M18
nominal sensing distance Sn	2 mm	2 mm	2 mm
switching frequency	5 kHz	3 kHz	3 kHz
housing material	stainless steel	stainless steel	stainless steel
sensing face	ZrO2 / ceramic	ZrO2 / ceramic	ZrO2 / ceramic
operating temperature	–25 ... +80 °C	–25 ... +80 °C	–25 ... +80 °C
protection class	IP 68/67	IP 68/67	IP 68/67

Sensors immune to welding and magnetic fields	IFRW 12	IFRW 18
features	■ For magnetic fields up to 90 mT ■ PTFE-coated front ■ Chrome-plated brass housing ■ Resistant to welding sparks	
dimensions	M12	M18
nominal sensing distance Sn	2 mm	5 mm
switching frequency	1 kHz	500 Hz
housing material	brass chromium plated	brass chromium plated
sensing face	PTFE-coated	PTFE-coated
operating temperature	–25 ... +75 °C	–25 ... +75 °C
protection class	IP 67	IP 67

Inductive proximity switches



Application-specific inductive sensors – Large sensing distance / Factor 1

- Sensors with extended switching distance up to 24 mm
- Factor 1 sensors with the same switching distance on all metals

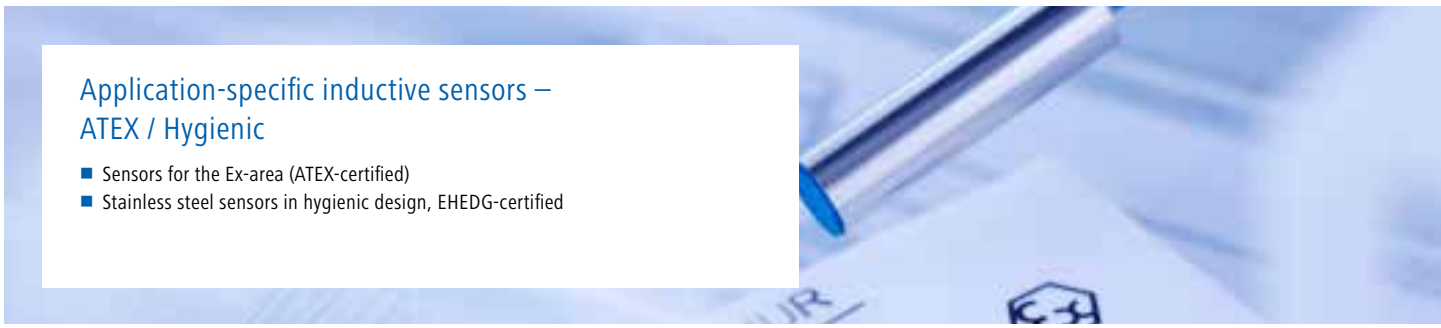




Large sensing distance	IR06.P03S IR06.P06S	IR08.P03S IR08.P06S	IR12.P06S IR12.P10S	IR18.P12S IR18.P15S	IR30.P18S IR30.P24S
category	**Miniatur**	**Miniatur**	**Compact**	**Compact**	**Compact**
features	■ Large installation tolerances ■ Enhanced protection against mechanical damage ■ Cylindrical designs from Ø6.5 mm to M30 ■ Flush and non-flush variants				
dimensions	ø 6,5 mm	M8	M12	M18	M30
nominal sensing distance Sn	3 / 6 mm	3 / 6 mm	6 / 10 mm	15 / 18 mm	18 / 24 mm
switching frequency	2 kHz	2 kHz	1 kHz	400 Hz	500 Hz
housing material	stainless steel	stainless steel	brass nickel plated	brass nickel plated	brass nickel plated
operating temperature	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C 0 ... +65 °C	–25 ... +75 °C
protection class	IP 67	IP 67	IP 67	IP 67	IP 67




Factor 1	IR06.P02F	IR08.P02F	IR12.P04F	IR18.P06F IR18.P08F
category	**Miniatur**	**Miniatur**	**Compact**	**Compact**
features	■ Detection of stainless steel, aluminum and non-ferrous metals with the same sensing distance ■ High switching frequencies up to 3 kHz			
dimensions	ø 6,5 mm	M8	M12	M18
housing length	40 / 46 mm	40 / 46 mm	40 / 50 mm	50 / 60 mm
nominal sensing distance Sn	2 mm	2 mm	4 mm	6 / 8 mm
switching frequency	3 kHz	3 kHz	2 kHz	500 Hz
housing material	stainless steel	stainless steel	brass nickel plated	brass nickel plated
operating temperature	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C	–25 ... +75 °C
protection class	IP 67	IP 67	IP 67	IP 67



Application-specific inductive sensors – ATEX / Hygienic

- Sensors for the Ex-area (ATEX-certified)
- Stainless steel sensors in hygienic design, EHEDG-certified

ATEX	IFRM 06X IFRM 08X	IFRM 12	IFRM 12X IFRM 18X
category	Miniatur	Compact	Compact
features	■ For environments with flammable gas or dust ■ ATEX certified ■ High repeat accuracy < 0.01 mm ■ Compact design		
dimensions	ø 6,5 mm / M8	M12	M12 / M18
nominal sensing distance Sn	1,5 mm	4 mm	2 ... 8 mm
switching frequency	5 kHz	2 kHz	to 2 kHz
output circuit	NAMUR	PNP / NPN	NAMUR
operating temperature	–20 ... +60 °C	–25 ... +65 °C	–20 ... +60 °C
protection class	IP 67	IP 67	IP 67
approvals/certificates	ATEX 1G	ATEX 3D	ATEX 1G

Hygienic design	IFBR 06	IFBR 11	IFBR 17
category	Miniatur	Compact	Compact
features	■ FDA compliant materials – EHEDG certified ■ High chemical resistance – Ecolab tested and LCP front cap ■ IP 68K long-term seal – *proTect+* ■ Flush and non-flush housings		
dimensions	ø 6,5 mm	ø 11 mm	ø 17 mm
nominal sensing distance Sn	3 mm	4 mm (flush) 6 mm (non-flush)	8 mm (flush) 12 mm (non-flush)
switching frequency	3 kHz	1 kHz	500 Hz
housing material	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)
operating temperature	–40 ... +80 °C, cleaning temperature to +100 °C	–40 ... +80 °C, cleaning temperature to +100 °C	–40 ... +80 °C, cleaning temperature to +100 °C
protection class	IP 68/69K & *proTect+*	IP 68/69K & *proTect+*	IP 68/69K & *proTect+*

Inductive proximity switches

Application-specific inductive sensors – Marine / for off-highway-machinery

- Inductive proximity switches for off-highway machinery – designed for reliability
- DNV-GL certified marine sensors

For off-highway-machines	IR12V.04S	IR18V.08S
category	**compact**	**compact**
features	■ Designed for Reliability ■ Versions with flylead connector German ■ EN 13309, EN ISO 14982:2009, ISO 13766:2006	
dimensions	M12	M18
nominal sensing distance Sn	4 mm	8 mm
switching frequency	2 kHz	450 kHz
housing material	brass nickel plated	brass nickel plated
operating temperature	–40 ... +85 °C	–40 ... +85 °C
protection class	IP 68 / IP 69K (face)	IP 68 / IP 69K (face)

Marine	IR12.P04S	IR18.P10S
category	**compact**	**compact**
features	■ Versions with diagnostic input ■ Marine type approval (according to DNVGL-CG-0339)	
dimensions	M12	M18
nominal sensing distance Sn	4 mm	10 mm
switching frequency	1 kHz	800 kHz
housing material	stainless steel 1.4404 (V4A)	brass nickel plated, chromium plated
operating temperature	–40 ... +75 °C	–40 ... +75 °C
protection class	IP 67	IP 67
specific features		■ Ecolab-tested ■ FDA-compliant ■ Vibration resistance EN 61373: 2010 (category 3) ■ Shock resistance EN 61373: 2010 (category 3)