

# Inductive Analog Sensors

0 - 150 mm measuring range

Inductive distance measurement of metal objects





Measuring range [mm]	0 - 10	0 - 10	0 - 25	0 - 25	0 - 25	0 - 45
Type	<b>MXL 010</b>	<b>MXLT 010</b>	<b>MXL 025</b>	<b>MXLT 025</b>	<b>MXZ 475</b>	<b>MXH 045</b>
Mounting	flush	flush	non-flush	non-flush	conditionally flush	non-flush
Parameterization	software	software	software	software	software	software
Repeatability	100 µm	100 µm	125 µm	125 µm	125 µm	225 µm
Response time	6 ms	6 ms	6 ms	6 ms	6 ms	7 ms
Output	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V
Digital interface	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)
Housing [mm]	M30 / L = 80	M32 / L = 80	M30 / L = 80	M32 / L = 80	PG36 / L = 70	Ø 54 / L = 68
Housing material	PBT	PTFE	PBT	PTFE	brass, nickel plated	PBT
Protection class	IP 67	IP 68	IP 67	IP 68	IP 67	IP 67
Ambient temperature	-25 up to +70 °C	-25 up to +70 °C	-25 up to +70 °C	-25 up to +70 °C	-25 up to +70 °C	-25 up to +70 °C
<b>PROXI Heat<sup>+</sup></b>	yes	yes	yes	yes	yes	yes



Measuring range [mm]	0 - 60	0 - 80	0 - 100	0 - 110	0 - 150	Ø 4 - 18
Type	<b>MXK 060</b>	<b>MXN 080</b>	<b>MXE 100</b>	<b>MXOH 110</b>	<b>MXC 150</b>	<b>MKV 020</b>
Mounting	non-flush	non-flush	flush	non-flush	non-flush	non-flush
Parameterization	software	software	software	software	software	Taster
Repeatability	300 µm	400 µm	500 µm	550 µm	750 µm	100 µm
Response time	7 ms	7,5 ms	8 ms	10 ms	24 ms	20 ms
Output	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V	0/4 - 20 mA or 0 - 10 V
Digital interface	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)	RS-485 (MODBUS RTU)	RS-485
Housing [mm]	80 x 80 x 40	110 x 110 x 43	210 x 210 x 75	170 x 170 x 68	320 x 320 x 85	80 x 45 x 20
Housing material	PBT	PBT	aluminium	PBT / aluminium	PP / aluminium	PBT
Protection class	IP 67	IP 67	IP 67	IP 67	IP 68	IP 67
Ambient temperature	-25 up to +70 °C	-25 up to +70 °C	-25 up to +70 °C	-25 up to +70 °C	-25 up to +70 °C	-10 up to +70 °C
<b>PROXI Heat<sup>+</sup></b>	yes	yes	yes	yes	no	no

The measuring range describes the axial approaching of a square steel plate with its side length equal to three times the measuring range. (for example: measuring range 60 mm relates to a steel plate with side length of 180 x 180 mm). A smaller metal object reduces the maximum attainable measuring range.

The attainable measuring range is a function of the material of the metal object and can be calculated using the correction factor:

**max. possible measuring range = measuring range x correction factor**

material	metal foil	steel	stainless steel	brass	aluminium	copper	nickel	cast iron
correction factor	1,2	1	0,5 ... 0,8	0,45	0,4	0,3	0,7	0,93 ... 1,05

# General Information Inductive Analog Sensors

Inductive analog sensors are devices which measure the distance or a change in position of metal objects. Proxitron sensors for displacement measurement are characterized by their extremely large measuring range, high accuracy and great mechanical resistance. The sensor output provides an analog signal which is proportional to the distance of the metal object, and a warning when the desired measuring range is overrun or when sensor overheating occurs. Objects of different size, shape, or material generate different signals. Based on these properties, inductive analog sensors are the ideal device for distance measurement, positioning and angle detection. They can also control bearing clearance and radial run-out or concentricity, discriminate according to material and size, or perform thickness measurement. Compared to optical distance measurement, inductive analog sensors are resistant to any kind of contamination, and ensure their continuous and reliable operation also under vibrations, vapor, dust, and even at temperatures of up to +100 °C.

All sensors are equipped with an RS 485 interface supporting also the MODBUS RTU protocol. Calibration is simple and convenient thanks to a software allowing changes in the measuring range, linearization, and output signal setting. The software also offers a visual representation of the sensor operation for easy monitoring.

- Non-contact distance measurement of metal objects
- Rollers wear-out control in rotary kilns
- Distance control in robots for ship maintenance
- Frequency measurement of vibration feeders
- Traction force control in motorized wire pay-offs
- Web control in paper making machines
- Brake pads wear in trolley cars brake systems
- Misalignment of buckets in chain elevators or conveyors
- Adjustment of the sag during surface treatments
- Measuring range up to 150 mm
- Accuracy up to 0,5 %
- Response time from 6 ms
- Unaffected by dirt accumulation
- Analog output 0 – 10 V or 0/4 – 20 mA
- Alarm signal 10,5 V or 3/21 mA
- RS-485 interface (MODBUS RTU)
- Adjustment of measuring range, linearization and analog output possible via software
- Windows software for parameterization, display, storage and evaluation of the measured values
- Cable or plug connection
- Protection class up to IP68



## Type Code

Type (see table previous page)

e.g. MXK060

24 V DC

1

Analog output 0 – 10 V

9

Analog output 0/4 20 mA

94

High temperature version up to +100 °C

H

Fixed connection cable\*

Plug M12 x 1 with RS 485 (5 poles)

S4

Customer specific version

SA

\*Connection cables are available in standard lengths of 2, 5, 10, 15 and 20 m made of PVC, PUR, silicone and PTFE.