HF.JENSEN
Robust sensors crafted in Denmark

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Analog proximity sensor with integrated electronics, HFJ-1883058

DESCRIPTION

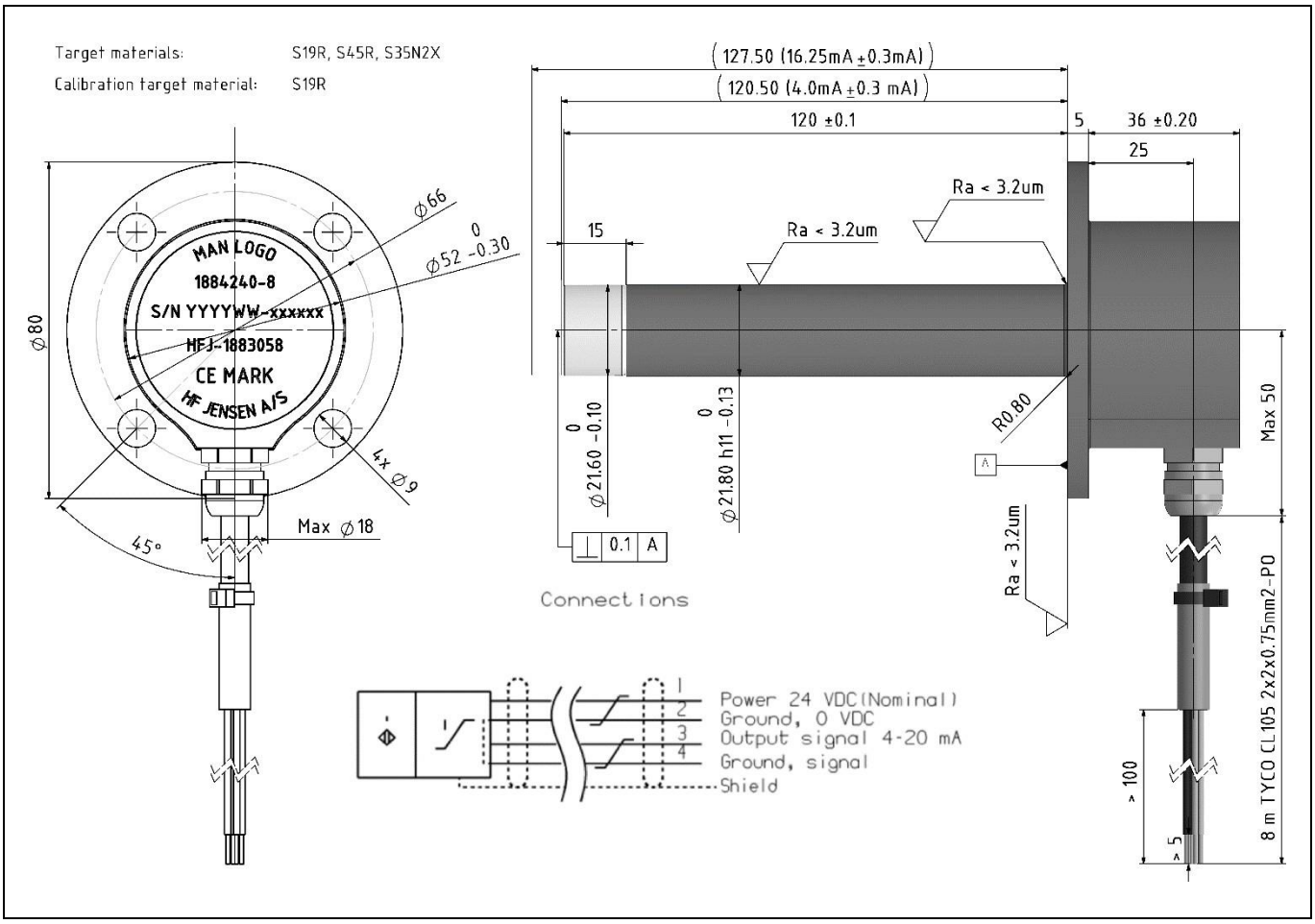
HFJ-1883058 is an analog proximity sensor with integrated electronics. The sensor uses an Eddy Current measurement principle to detect displacement of a magnetic target in proximity of the sensor front. Contactless measurement principle reduces wear and ensure longer lifetime. Factory calibration of the sensor ensures current output in the range of 4-16.25 mA representing 7 mm physical displacement of the magnetic target material. The calibration is performed using magnetic material S19R, but the sensor is also applicable to use with other magnetic materials such as S45R and S35N2X. Changing the magnetic target material will affect the output current range representing the 7 mm displacement, but not the Non-linearity.

INSTALLATION

Install the sensor using the 4 x Ø9mm holes.

MAINTENANCE

The sensor is sealed to ensure optimum performance in the environment and cannot be repaired on-site. In case of malfunction, replace the sensor.



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SPECIFICATIONS

General specifications	
- **Output type**	Analog output current
- **Magnetic target materials**	S19R, S45R, S35N2X
- **Mechanical linear measurement range**	7 mm (see drawing for calibrated linear range)
- **Output polarity**	Direct Current- DC
- **Operating voltage range**	16.8 – 31.2 V_{DC}
- **Complete output range (current)**	3.5 – 20.5 mA_{DC}
- **Maximum current consumption**	50 mA_{DC}
Nominal ratings	
- **Calibration target material**	S19R
- **Operating voltage**	24 V_{DC}
- **Linear output range (analog current output)**	4 – 16.25 mA_{DC} (RL ≤ 400 Ω , C_L < 1µF)
- **Temperature drift**	< ± 0.3mA within linear output range
- **Non-linearity**	< ± 0.3mA within linear output range
- **Output ripple**	PSRR < 1 µA/V up to 1 kHz
- **No-supply current**	< 50 mA_{DC}
- **Dynamic Characteristics (Response time)**	Increasing distance: 400µs to 700µs Decreasing distance: 300µs to 500µs
Reliability (Operating temperature 90°C with upper confidence level 90%)	
MTTF	> 1900000 hours
Expected lifetime	> 200000 hours
Environmental conditions	
- **Storage temperature**	-25 °C to 85 °C
- **Ambient temperature**	0 °C to 110 °C
- **Electronics temperature**	0 °C to 110 °C (operating temperature)
- **Sensor front temperature (sensing element)**	0 °C to 150 °C (operating temperature)
- **Vibration (test specification MAN 3090801-4_1)**	2-2000 Hz / 20g / 150 minutes per axis
- **Working pressure sensor front (sensing element)**	< 50 bar
Mechanical specifications	
- **Cable type**	CL 105-2x2x0.75 – PO (flame retardent, halogen free)
- **Housing material**	Stainless steel (DIN 1.4305)
- **Sensor front material (sensing element)**	PEEK (Thermoplastic polymer)
- **Degree of protection**	IP67 with reference to IEC 60529
- **Mass**	1.5 kg
Standards and directives	
- **Marine type approval test**	IACS UR E10 rev 6, Oct. 2014
- **Electrical and electronic installation in ships- EMC**	IEC 60533:2015
- **Generic standards- immunity**	IEC 61000-6-2 + amendments
- **Generic standards- emisson**	IEC 61000-6-4 + amendments
- **Electromagnetic compatibility**	EMC Directive 2004/108/EC
- **Extended vibration test (product related)**	MAN 3090801-4_1 (engine mounted equipment)
- **Degrees of protection provided by enclosures (IP)**	IEC 60529 + amendment
Approvals and certificates	
- **Marine approval certificate**	TA 62894/A0 EU-MR BV

ORDERING INFORMATION

HFJ-1883058