



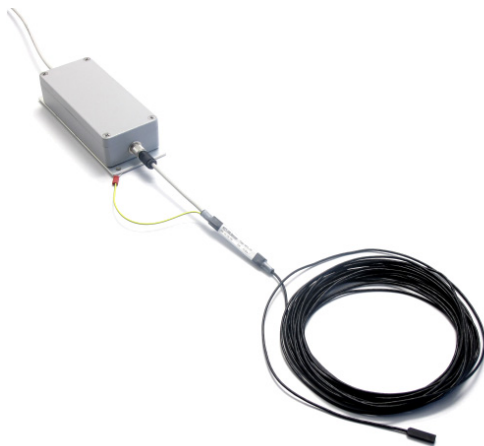
Magnetic Field Transducer

MFT-100

The MFT-100 is a single-axis magnetic field transducer combining high accuracy, linearity and long-term stability. Its thin Hall-effect sensor head mounts directly in the air gap of generators and delivers an isolated 4–20 mA output proportional to fields up to ± 2 Tesla.

KEY FEATURES

- Single-axis magnetic field measurement system
- Measuring range up to ± 2 Tesla
- Easy to install on the stator wall without removing the rotor poles
- Immune to deposits and vibrations
- Small size and flat design for air-gap installation in electrical machines
- Interchangeability of the sensor head
- Single +24 V_{DC} power supply



MONITORING SOLUTIONS



Magnetic flux

TYPICAL APPLICATIONS



Hydrogenerators



Wind turbines



Gearless millsdrives



Turbogenerators



DESCRIPTION

The MFT-100 is a single-axis high accuracy, linearity and stability magnetic field to analogue current transducer. It is particularly appropriate for mapping the magnetic field in the range up to ± 2 Tesla. The sensor's head contains a high quality Hall element. The very thin sensor's head design allows mounting

in the air gap of generators and electrical motors.

A novel sensor chip in the probe entirely eliminates influences from DC magnetic field components other than the one measured (Y-axis), so that even for strong non-uniform fields no planar Hall effect leads to errors in the output voltage.

The transducer consists of a sensor's head with an integral flexible cable of 10 meters connected to a conditioning unit.

A dedicated installation kit, containing the epoxy adhesive and silicone sealant required to mount the sensor, is available separately.

PROTECTIVE SHOE

An optional protective shoe is available to mechanically protect the MFS-100 sensor head together with an adjacent section of its cable. It can be supplied either separately or factory-mounted on the sensor.

The protective shoe is not fitted by default. Because it adds to the overall envelope of the sensor head, it may interfere with installation in narrow or confined air gaps, and should therefore be selected only where mechanical protection is genuinely required.

GLOBAL SPECIFICATIONS

OPERATION

Linear magnetic field range	$\pm 2\text{T}$ (full scale)
Current output signal	4 to 20 mA $\triangleq$ -2T to $+2\text{T}$
Output bias current	12 mA ($\pm 5\text{ }\mu\text{A}$)
Sensitivity to magnetic field	4 mA/T
Tolerance of sensitivity (B = 1T d.c.)	< 1%
Linearity error of output	< 0.1%
Long term instability of sensitivity	< 1% over 10 years
Probe temp. coefficient of sensitivity (T = 25°C to 125°C)	$\leq -0.06\%/^{\circ}\text{C}$
Conditioning unit temp. coefficient of sensitivity (T = 25°C to 80°C)	$\leq \pm 100\text{ ppm}/^{\circ}\text{C}$
Temp. coefficient of offset	Not available yet
Output noise and ripple (RMS)	15 mT
Load resistor	Max 500 Ω
Frequency range of the magnetic field	DC to 1 kHz @ -3 dB
Power supply	
• Voltage	+24 V nominal (18 to 36 V)
• Current consumption	60 mA typ. (current output not connected)

ENVIRONMENTAL

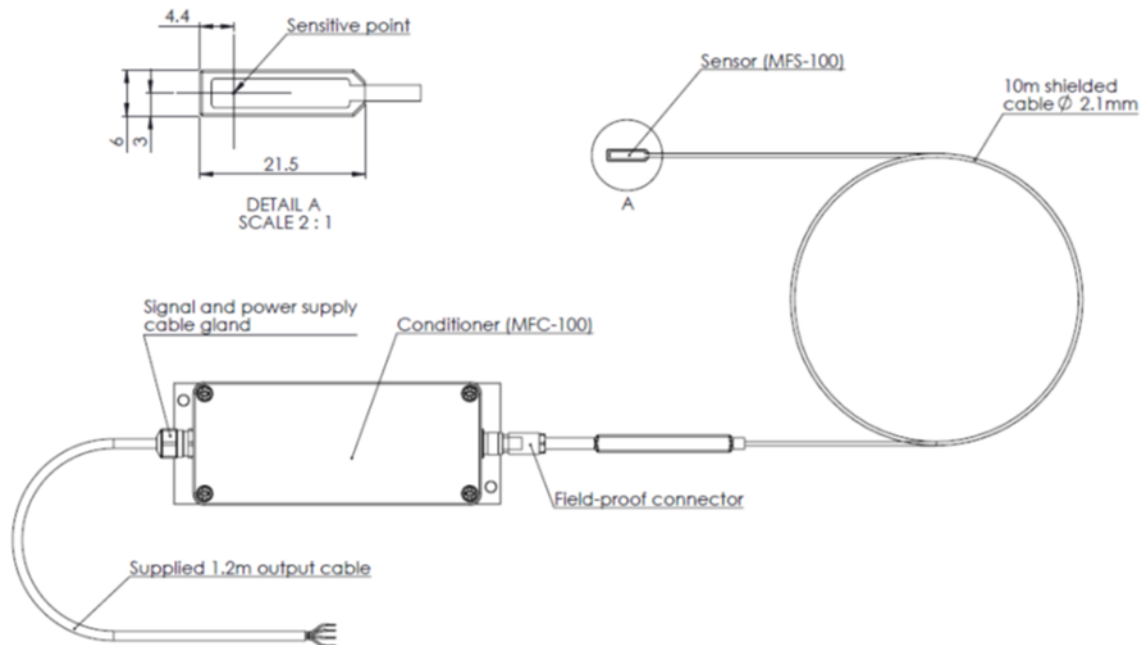
Temperature range	Operation	Storage
MFS-100 probe – head only	-25°C to +125°C	-25°C to +125°C
MFS-100 probe – cable	-25°C to +155°C	-25°C to +155°C
MFC-100 conditioning unit	-25°C to +80°C	-25°C to +100°C

RF conducted disturbances	IEC 801-6
EMC	acc. to EN 61326-2-3:2006
Electrical fast transient burst	IEC 1000-4-4, EN 61000-4-4
Surge	IEC 1000-4-5

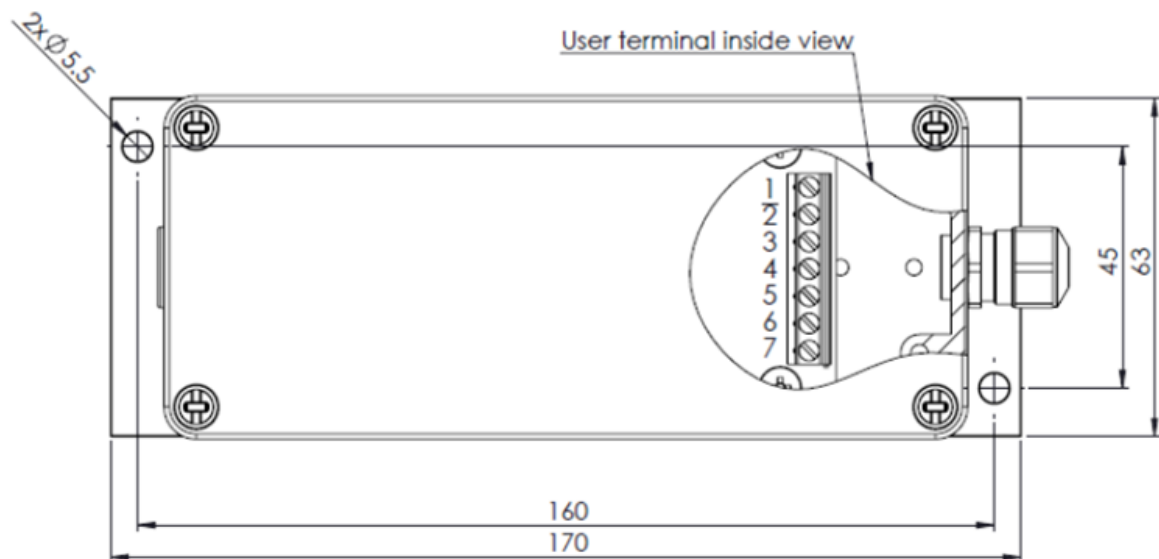
PHYSICAL

Sensitive surface [mm]	Ø 0.3
Angular accuracy of the axes	±0.5° to the reference surface
Probe only outside dimensions [mm]	6 × 3 (+0.5/−0) × 21.5
Probe-to-conditioning unit cable	Connected through a 4-pole connector; 10 m length
Conditioning electronics	High mechanical strength, electrically shielded
• Aluminium case dimensions [mm]	63 × 149 × 35 (W×L×H)
• With mounting plate dimensions [mm]	63 × 170 × 38 (W×L×H)

MECHANICAL DRAWING



ELECTRICAL WIRING



Terminal number	Wire colour	Description
1	Brown	+24 V power supply
2	White	0 V power supply
3	–	0 V (internally connected)
4	–	n.c.
5	–	n.c.
6	Green	Iout+, isolated 4–20 mA output +
7	Yellow	Iout–, isolated 4–20 mA output –
–	Clear	Output cable shield (not internally connected)

ORDERING INFORMATION

Part type	Ordering code	Description
MFT-100	03.100.000	Magnetic Field Transmitter, including sensor MFS-100 and conditioner MFC-100
MFT-100 with protective shoe (not mounted)	03.100.010	Magnetic Field Transmitter, including sensor MFS-100 and conditioner MFC-100. Protective shoe included - not mounted
MFT-100 with protective shoe (mounted)	03.100.020	Magnetic Field Transmitter, including sensor MFS-100 and conditioner MFC-100. Protective shoe included - mounted
MFS-100	03.100.100	Magnetic Field Sensor with 10 m shielded cable. Factory calibrated.
MFS-100 with protection shoe (mounted)	03.100.100 var. WS	Magnetic Field Sensor with 10 m shielded cable. Factory calibrated. With protection shoe
MFC-100	03.100.200	Magnetic Field Conditioner with 4–20 mA output
Protective tube 10m	03.100.900	Protective tube for MFS installation, ID = 5.6 mm, OD = 10 mm, material PA-6, temperature range –40°C to +120°C. Made of two parts for easy in-line assembly. Total length 10 m, to be adjusted by the user.
MFT-100 protective shoe	03.100.901	Isolating and protective shoe for the MFS-100 sensor, temperature range –40°C to +120°C, external dimensions 110 × 6 × 3 mm.
AGS/MFS installation kit – Starter	44.906.002	
AGS/MFS installation kit – Refill	44.906.003	

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Quality certification



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