

MAG-FLUX® M1

Magnetic inductive measuring transducer



The mag-flux® M1 is a powerful measuring transducer for precise and reliable measurements. It impresses with high long-term stability, a robust design and minimal maintenance requirements. The simple commissioning is done via an intuitive, menu-driven interface with a two-line alphanumeric display.

A 16-bit microcontroller ensures fast signal processing, while digital and analogue outputs provide extensive connection options, including pulses, device status, limit values or flow direction. Two counters for forward and reverse flow, the display of flow rate and relative values, as well as an integrated test field display, enable comprehensive system monitoring.

ADVANTAGES

- » Minimal maintenance requirements
- » Reliability (long-term stability, service life)
- » High-speed signal processing by 16-bit microcontroller
- » Self-monitoring system

With internal simulation function, password protection against unauthorised access, and multilingual user guidance, the mag-flux® M1 meets the highest demands for user comfort, safety and efficiency – for reliable measurement results in continuous operation.



TECHNICAL DATA

System		Output configuration Digital output 2	
Measuring principle	Magnetic inductive, pulsed constant field (DC)	Status output	Forward flow, reverse flow, MIN, MAX, alarm (selectable)
Magnetic field excitation	Internal clock with DC supply 1.56 Hz / 3.125 Hz / 6.25 Hz / 12.5 Hz / 25 Hz	Reference conditions	
Measuring accuracy and repeatability	Refer to data sheet of the connected sensor	Temperature	T = 20 °C (68 °F)
Output		Relative humidity	rH = 65 %
Electrical isolation	outputs electrically isolated from each other and from the power supply	Air pressure	p = 101.3 kPa
Current output		Measuring accuracy (under reference conditions)	
Operating range	4 ... 20 mA	Pulse output	Basic accuracy: Refer to data sheet of the connected sensor ± 0.05 % per 10 K
Failure	> 22 mA or < 3.8 mA, can be switched	Current output	Basic accuracy: Refer to data sheet of the connected sensor ± 0.1 % per 10 K
Output	< 600 Ω For HART® communication: ≥ 250 Ω	Reproducibility	Refer to data sheet of the connected sensor
Communication	Via analog output with PC coupling module or HART® communicator	Operational conditions	
Protocol	HART®, version 7.0	Ambient temperature	-20 ... 60 °C (-4 ... 140 °F) unter 0 °C ist die Ablesbarkeit der LCD-Anzeige eingeschränkt
Digital output		Influence of the ambient temperature	For the pulse output: ± 0.05 % per 10 K For the current output: ± 0.1 % per 10 K
Design	Optocoupler, passive	Storage	-20 ... 60 °C (-4 ... 140 °F)
Rated values	Max. 1.8 W, max. 30 V, 60 mA	Protection class	IP 67 / NEMA 4X
Output configuration Digital output 1		Electromagnetic compatibility (EMC)	Emitted interference acc. to EN 61000-6-3 (Home) Noise immunity acc. to EN 61000-6-2 (Industry) NAMUR NE21
Pulse significance	≤ 1 000 pulses/s		
Pulse width	≥ 0.1 ms (max. 2 s), selectable		
Frequency signal range	0 ... 1 kHz		



Constructive design

Weight	Compact design: 2.4 kg (5.3 lb)
	Separate design: 3.1 kg (6.8 lb)
Compact design	Transducer permanently mounted on measuring tube (sensor)
Separate design	Transducer connected to the sensor by a shielded cable
Max. line length	200 m (656 ft) Line length depends on the conductivity of the media
Housing material	Die-cast aluminium, painted

Control unit

General display	LCD, background illumination, two rows of 16 characters
Multi-display for	Flow, volume, flow velocity, counter
Keypad	6 keys for input

Process connection

	Directly connected to the sensor or connected separately via cable
AC voltage	230 V, $\pm 10\%$, 50/60 Hz 115 V, $\pm 10\%$, 50/60 Hz
DC voltage	24 V, $\pm 15\%$
Power consumption	10 VA
Circuit breaker	5 x 20 mm (0.20 x 0.79 in) (acc. to DIN 41571-3) Rated voltage: 250 V AC Breaking capacity: 80 A @ 250 V AC
	AC voltage: 100 mA (T)
	DC voltage: 1 A (T)

Cable specifications

If the transmitter is mounted separately from the sensor, the following cables must be used:

Electrode cable and field coil cable
shielded twisted pair. In order to protect the cable from external interference, the twisted-pair wires are covered by an additional, overall shield.

Cable length	Wire cross section
≤ 10 m	≥ 0.25 mm ²
> 10 m	≥ 0.75 mm ²

The outer shield is grounded by means of special EMC-compliant cable glands at both ends of the cable.

Current output

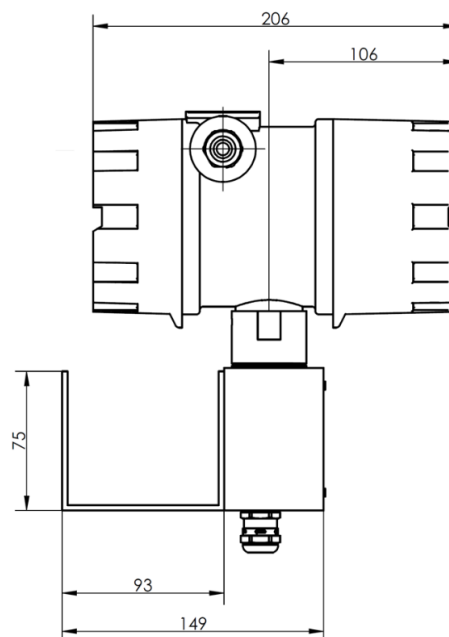
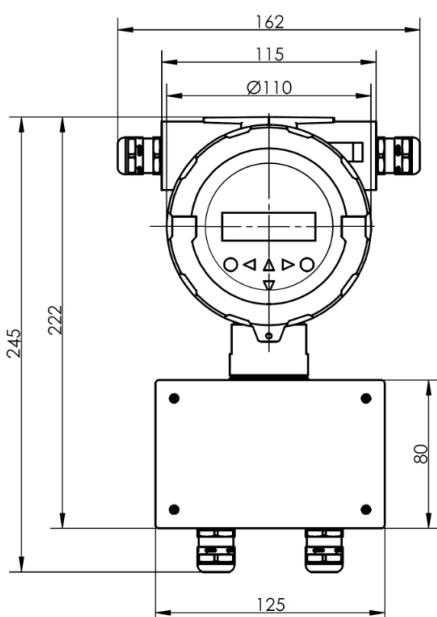


Fig. 1: Measuring transducer mag-flux® M1 in separated design (with wall mounting)



PRODUCT UND ACCESSORIES

Description code

The description code is made up as follows:

MAG5040- A 0- OAA0

① ② ③ ④ ⑤

① Power supply

1	AC 230 V, 50/60 Hz
2	AC 115 V, 50/60 Hz
3	DC 18-36 V

② Output / Communication

A	4 – 20 mA
B	4 – 20 mA with HART®-Protokoll

③ Operator display and keypad

A	With
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④ Cable glands

1	M20/M16 x 1.5
2	½" ... 14" NPT

⑤ Design

1	Remote version
2	Compact version

Further designs / Options

Y01	Measuring range specify in plain text
Y04	Silicone-free materials
Y15	Measuring point number (max. 16 characters) specify in plain text
Y16	Measuring point description (max. 27 characters) specify in plain text
Y17	Stainless steel TAG plate (70 x 30 mm / 2.76 x 1.18 in)
Y28	With signal booster