

SITRANS FM (electromagnetic)

Flow transmitters

SITRANS FMT020

Design

The transmitter is housed in a IP66/67, NEMA 4X/6 enclosure made of durable polycarbonate and creates together with a flow sensor a complete measurement system providing the measured flow values via a local display, multiple signal outputs or a fieldbus interface.

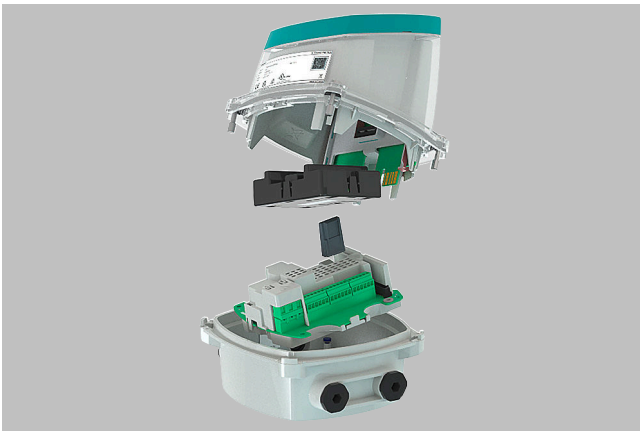
The modular design concept of the FMT020 makes it flexible to be remote connected or integral mounted with magnetic flow sensors of type SITRANS FMS500.

Integral-mount design

For devices with an integral-mount design, the transmitter and the sensor form a single mechanical unit.

Remote mount design

For devices with a remote mount design, the transmitter and sensor are mounted in separate locations. The electrical connection between the transmitter and the sensor is provided by sensor cables.

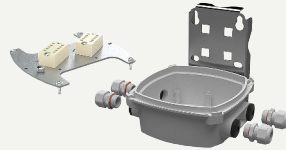

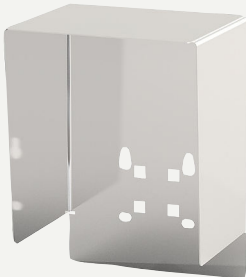


Selection and ordering data

Transmitter SITRANS FMT020	Article No. 7ME6942- 0 A A 0 0 - 0 A A ●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Power supply	
24 V DC	2
100 ... 240 V AC, 50/60 Hz	3

Additional information	Order code
Please add "-Z" to Article No. and specify Order code(s) and plain text.	
General safety	
CSA General Purpose	E06
Communication	
HART with 4...20 mA output, active or passive	F01
Modbus RTU / RS485	F04
PROFINET	F07
EtherNet/IP	F09

Accessories FMT020

Description	Article No.	
Communication add-on modules		
HART with 4...20 mA output, active or passive	7ME6940-1CM10	
PROFINET	7ME6940-1CM20	
EtherNet/IP	7ME6940-1CM30	
Modbus RTU/RS485	7ME6940-1CM40	
Wall-mounting unit (including sensor terminal board), terminal box material polycarbonate, 1 pc.		
• M20 × 1.5 cable glands (4 pcs.)	7ME6940-1WU10	
• ½ inch NPT cable glands (4 pcs.)	7ME6940-1WU15	
Sun shield for FMT020 transmitter, remote mount	A5E01209496	

Selection and ordering data (continued)

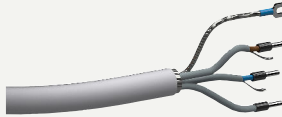
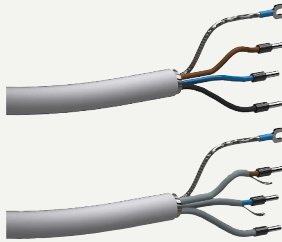

Description	Article No.	
<p>Cable glands, material polyamide 4 pcs</p> <ul style="list-style-type: none"> • M20 × 1.5 • ½ inch NPT 	<p>A5E52770729</p> <p>A5E52909970</p>	
<p>Industrial Micro-SD memory card 8 GB storage capacity</p>	<p>A5E52967303</p>	
<p>Coil / electrode cable standard type, 3 × 1.5 mm², screened, PVC jacket; Temperature range -30 ... +70 °C (-22 ... +158 °F)</p> <ul style="list-style-type: none"> • 5 m (16.5 ft) • 10 m (33 ft) • 20 m (65 ft) • 30 m (98 ft) • 40 m (131 ft) • 50 m (164 ft) • 60 m (197 ft) • 100 m (328 ft) • 150 m (492 ft) • 200 m (656 ft) • 500 m (1640 ft) 	<p>A5E02296523</p> <p>FDK:083F0121</p> <p>FDK:083F0210</p> <p>A5E02297309</p> <p>FDK:083F0211</p> <p>A5E02297317</p> <p>FDK:083F0212</p> <p>FDK:083F0213</p> <p>FDK:083F3052</p> <p>FDK:083F3053</p> <p>FDK:083F3054</p>	
<p>Electrode cable special type (empty pipe detection or low conductivity), 3 × 0.25 mm², screened single core, PVC jacket; Temperature range -30 ... +70 °C (-22 ... +158 °F)</p> <ul style="list-style-type: none"> • 10 m (33 ft) 	<p>FDK:083F3020</p>	

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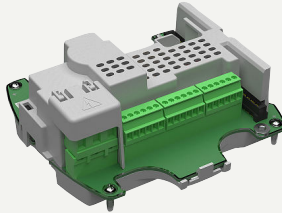
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Selection and ordering data (continued)

Description	Article No.	
<ul style="list-style-type: none"> • 20 m (65 ft) • 40 m (131 ft) • 60 m (197 ft) • 100 m (328 ft) • 150 m (492 ft) • 200 m (656 ft) • 500 m (1640 ft) 	FDK:083F3095 FDK:083F3094 FDK:083F3093 FDK:083F3092 FDK:083F3056 FDK:083F3057 FDK:083F3058	
Sensor cable kit including coil cable standard type (3 × 1.5 mm ² , screened) and electrode cable special type (3 × 0.25 mm ² , screened single core), PVC jacket, Temperature range -30 ... +70 °C (-22 ... +158 °F)		
<ul style="list-style-type: none"> • 5 m (16.5 ft) • 10 m (33 ft) • 15 m (49 ft) • 20 m (65 ft) • 25 m (82 ft) • 30 m (98 ft) • 40 m (131 ft) • 50 m (164 ft) • 60 m (197 ft) • 100 m (328 ft) • 150 m (492 ft) • 200 m (656 ft) • 500 m (1640 ft) 	A5E02296329 A5E01181647 A5E02296464 A5E01181656 A5E02296490 A5E02296494 A5E01181686 A5E02296498 A5E01181689 A5E01181691 A5E01181699 A5E01181703 A5E01181705	
Potting kit for IP68 / NEMA 6P sealing of sensor terminal box	FDK:085U0220	

¹⁾ Only SITRANS FM MAG 5100W sensors made in France are supported. Please check the sensor serial number or the country of origin specified on the nameplate.

Spare parts FMT020

Description	Article No.	
Transmitter connection board with power supply (including screws, grounding wire), 1 pc.		
<ul style="list-style-type: none"> • 100 ... 240 V AC, 50/60 Hz • 24 V DC 	7ME6940-1CB10 7ME6940-1CB20	

Selection and ordering data (continued)




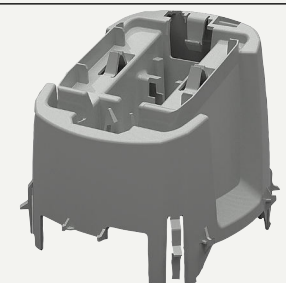
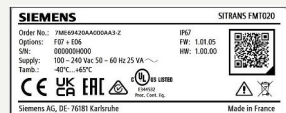
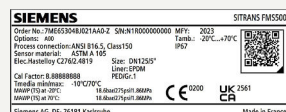
Description	Article No.	
Sensor terminal board (including screws, grounding wire), 1 pc.	A5E52775102	
Connector set for transmitter connection board (power supply, IOs and communication) including earthing clips	A5E52775452	
Local display and operating unit (incl. ribbon cable and display holder), 1 pc.	7ME6940-1DU10	
FMT020 Sensorprom memory unit (sensor order code and serial numbers must be specified when ordering) <ul style="list-style-type: none"> • Programmed 1 pc. • Not programmed 10 pcs. 	7ME6940-1SM10 A5E52771927	
Top housing (including screws, gasket and display frame), 1 pc.	A5E52784564	
Display frame 1 pc.	A5E52771997	

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Selection and ordering data (continued)

Description	Article No.	
Terminal box material polycarbonate (without cable glands and lid), 1 pc.	A5E52729542	
Terminal box lid material polycarbonate (including gasket), 1 pc.	A5E52729452	
Terminal box gasket 5 pcs.	A5E52729547	
Main board cover housing 1 pc.	A5E52784657	
Device nameplate • Transmitter	A5E52864071	
• Sensor	A5E52864088	

Technical specifications

SITRANS FMT020 transmitter	
Measurement of	<ul style="list-style-type: none"> • Volume flow • Flow velocity • Electrical conductivity
Mode of operation Measuring principle Empty pipe Excitation frequency Electrode input impedance	Electromagnetic with pulsed constant field Detection of empty pipe (electrode cable special type required in remote mounted installation) Depends on the sensor size, please refer to "Technical specifications" for SITRANS FM sensors $> 1 \times 10^{14} \Omega$
Current output (active/passive) Signal range Load Resolution Accuracy Temperature coefficient Time constant	0 ... 20 mA or 4 ... 20 mA Signal levels compliant with NAMUR NE 43 (3.8 to 20.5 mA) $< 470 \Omega$ $< 1 \mu\text{A}$ $\pm 20 \mu\text{A}$ $< 50 \text{ ppm/K}$ 0.1 ... 100 s, adjustable
Digital output (active/passive) Frequency Pulse Rating <ul style="list-style-type: none"> • Active operation mode • Passive operation mode Time constant	0 ... 10 kHz, 50 % duty cycle (uni/bidirectional) 40 μs ... 5 s pulse duration 24 V DC, 30 mA, $1 \text{ k}\Omega \leq R_i \leq 10 \text{ k}\Omega$, short-circuit protected (powered from transmitter) 3 ... 30 V DC, max. 110 mA, $200 \Omega \leq R_i \leq 10 \text{ k}\Omega$ (powered from connected supply) 0.1 ... 100 s, adjustable
Relay output (passive) Type Rating Durability	SPDT Form C relay, potential-free change-over contacts, resistive load 2 A at 42 V AC, 1 A at 24 V DC 50 000 operations min. per relay
Galvanic isolation	All inputs and outputs are galvanically isolated, isolation voltage 500 V
Rated operating conditions Installation environment <ul style="list-style-type: none"> • Location • Installation (overvoltage) category • Pollution degree Ambient temperature <ul style="list-style-type: none"> • Transmitter • Display Storage temperature <ul style="list-style-type: none"> • Transmitter • Display 	Indoor/outdoor (altitude up to 2000 m) II 2 -40 ... +65 °C (-40 ... +149 °F) (max. humidity 98% RH) -20 ... +60 °C (-4 ... +140 °F) -40 ... +80 °C (-58 ... +158 °F) (max. humidity 98% RH) -40 ... +80 °C (-40 ... +176 °F)
Design Enclosure <ul style="list-style-type: none"> • Material 	Polycarbonate

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Technical specifications (continued)

SITRANS FMT020 transmitter	
<ul style="list-style-type: none"> Degree of protection 	IP66/67, NEMA 4X/6
Mechanical load Integral mount / compact version	Vibration, sinusoidal according to IEC 60068-2-6 <ul style="list-style-type: none"> 2 ... 8.4 Hz, 3.5 mm peak 8.4 ... 500 Hz, 1.0 g peak Vibration broad-band random, according to IEC 60068-2-64 <ul style="list-style-type: none"> 10 ... 200 Hz, 0.003 g²/Hz 200 ... 500 Hz, 0.001 g²/Hz Total: 1.54 g rms
Remote version	Vibration, sinusoidal according to IEC 60068-2-6 <ul style="list-style-type: none"> 2 ... 8.4 Hz, 1.5 mm peak 8.4 ... 500 Hz, 0.7 g peak Vibration broad-band random, according to IEC 60068-2-64 <ul style="list-style-type: none"> 10 ... 200 Hz, 0.003 g²/Hz 200 ... 500 Hz, 0.001 g²/Hz Total: 1.54 g rms
EMC performance	IEC/EN 61326-1, EN 55011 (Class A)
Dimensions	See dimensional drawings
Weight	See dimensional drawings
Display and control	
LCD display	60 × 40 mm (2.36 × 1.57 inch) LCD, 240 × 160 pixels resolution
Menu navigation	4 capacitive touch keys
Update time	Less than 1 second
Totalizers	3 × 14-digit counters for forward, net, or reverse flow
Memory card	Integrated Micro-SD interface supporting memory cards up to 32 GB storage capacity
Power supply	
AC version	100 ... 240 V AC, 50/60 Hz, 25 VA
DC version	24 V DC ±20%, 12 W
Power consumption	
AC version	6.24 W
DC version	6.45 W
Communication	
Webserver	Web-based interface for local programming via web browser (only with PROFINET, EtherNet/IP communication)
Fieldbus	<ul style="list-style-type: none"> HART 7 PROFINET EtherNet/IP MODBUS RTU
Remote configuration	<ul style="list-style-type: none"> EDD via SIMATIC PDM SITRANS DTM via PACTware EDS-AOP file
Certificates and approvals	
General purpose	CE (LVD, EMC, RoHS), UKCA UL, CSA certified per standard EN / IEC 61010-1
Others	Environmental Product Declaration (EPD) EAC (Kazakhstan)

