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Overview



Magnetic flowmeter transmitter SITRANS FMT020

The new magnetic flow meter transmitter model SITRANS FMT020 is a high performance, robust and intelligent product, designed to fit perfectly for a wide area of process applications that require accurate, and reliable flow measurement of conductive fluids.

The SITRANS FMT020 is the next generation successor for the well-proven MAG 5000 and MAG 6000 transmitter series. The FMT020 retains all the unique features of this transmitter series such as the flexible installation concept with common housing for compact and remote mounting. It also maintains the modular design supporting easy exchangeability of the transmitter as well as the add-on communication modules, or the Sensorprom memory unit for fast commissioning, instant measurement, and data storage.

In addition, the FMT020 features the ability to simultaneously measure volumetric flow, flow velocity and electrical conductivity. It also offers enhanced diagnostics like empty pipe monitoring and device self-check, and comes with multi-functional input/output channels for process control, a unified operating concept and much more:

- High accuracy up to 0.2% of rate
- 3 totalizers for forward, reverse, and net flow
- Multi language, menu-guided operation
- Field bus: HART, PROFINET, EtherNet/IP, MODBUS RTU
- Integrated self-verification via SIMATIC PDM and Webserver

The transmitter can be configured locally via display and remotely over Fieldbus or Webserver. EDDs are available for SIMATIC PDM, AMS Device Manager, and AMS Trex Device Communicator, plus DTMs for FDTs (Field Device Tools).

Benefits

- Backwards compatible with older (up to 15 years) flow meter sensors (MAG 5100W)
- Fast start-up without zero-point adjustments
- Variety of functions for comprehensive device check, self-diagnosis, and onboard verification
- Verificator compatible - Independently verifies performance of sensor, transmitter, and installation (including cable) without process interruption
- Easy to use HMI display with local four-button programming, menu-driven parameters, and Wizard support for key applications
- Multi-functional outputs for process control, minimum configuration with analog, digital (pulse, frequency, status), and relay output
- SD memory card for data logging, configuration backup, and firmware update
- Seamless field device integration in host systems

Application

The SITRANS FMT020 transmitter is engineered for high performance, easy installation, commissioning, and reduced maintenance.

The device is a truly robust solution and suitable for all-around applications but is also the ideal choice for demanding applications where higher diagnostics capability and functionality are important.

The transmitter can be combined with magnetic flow sensors of type SITRANS FMS500.

SITRANS FMS500

A flow meter sensor for all water and wastewater applications. With its coned design, increased low-flow accuracy is achieved making it especially useful for leak detection. It is suitable for direct burial and constant flooding. The SITRANS FMS500 complies with drinking water approvals.

Accuracy: 0,4% of rate, option for: 0,2% of rate

Range: DN 15 ... 1200 (½ ... 48")

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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.

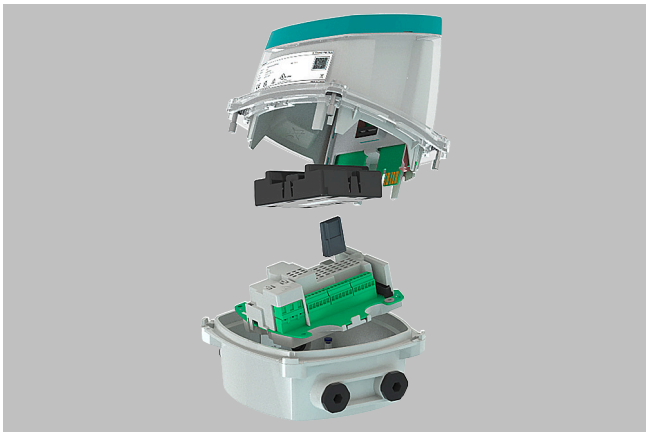
The modular design concept of the FMT020 makes it flexible to be remote connected or integral mounted with magnetic flow sensors of type SITRANS FMS500.

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.



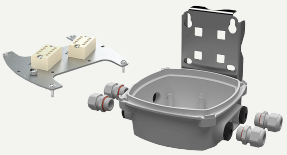
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Selection and ordering data

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

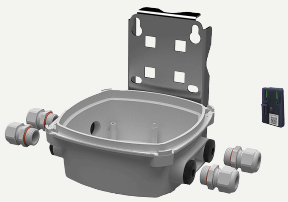
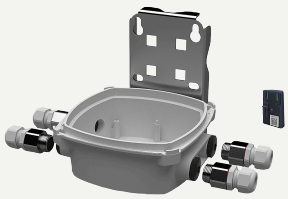
Additional information	Order code
Please add "**-Z**" to Article No. and specify Order code(s) and plain text.	
General safety	
CSA General Purpose	**E06**
Communication	
HART with 4...20 mA output, active or passive	**F01**
Modbus RTU / RS485	**F04**
PROFINET	**F07**
EtherNet/IP	**F09**

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**	

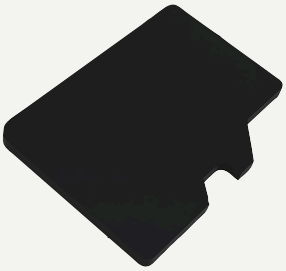
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Selection and ordering data (continued)

Description	Article No.	
Sun shield for FMT020 transmitter, integral mount (compact design) Only suitable for FMS500 sensors DN 150 ... 1200 (6" ... 48")	A5E01209500	
Transmitter conversion kit[1] for MAG 5000/6000 units, integral mount (compact design) including SensorPROM programmed, terminal box in polyamide, cable glands (4 pcs.), sensor housing seal, grounding wire , new sensor nameplate (sensor order code and serial numbers must be specified when ordering)		
• M20 × 1.5 cable glands	7ME6940-1RF10	
• ½ inch NPT cable glands	7ME6940-1RF15	
Transmitter conversion kit[1] for MAG 5000/6000 unit, remote mount including wall-mounting unit, cable glands (4 pcs.), SensorPROM programmed (sensor order code and serial numbers must be specified when ordering)		
• M20 × 1.5 cable glands	7ME6940-1RF30	
• 1½ inch NPT cable glands	7ME6940-1RF35	

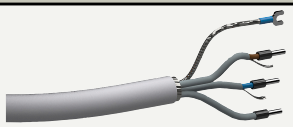
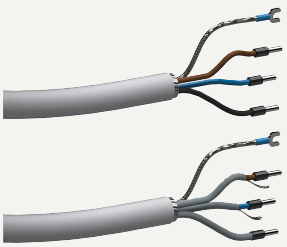
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Selection and ordering data (continued)

Description	Article No.	
Cable glands, material polyamide 4 pcs		
• M20 × 1.5	A5E52770729	
• ½ inch NPT	A5E52909970	
Industrial Micro-SD memory card 8 GB storage capacity	A5E52967303	
Coil / electrode cable standard type, 3 × 1.5 mm², screened, PVC jacket; Temperature range -30 ... +70 °C (-22 ... +158 °F)		
• 5 m (16.5 ft)	A5E02296523	
• 10 m (33 ft)	FDK:083F0121	
• 20 m (65 ft)	FDK:083F0210	
• 30 m (98 ft)	A5E02297309	
• 40 m (131 ft)	FDK:083F0211	
• 50 m (164 ft)	A5E02297317	
• 60 m (197 ft)	FDK:083F0212	
• 100 m (328 ft)	FDK:083F0213	
• 150 m (492 ft)	FDK:083F3052	
• 200 m (656 ft)	FDK:083F3053	
• 500 m (1640 ft)	FDK:083F3054	
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)		
• 10 m (33 ft)	FDK:083F3020	

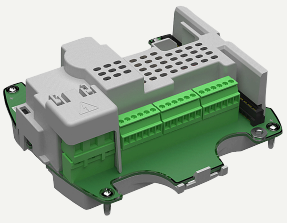
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Selection and ordering data (continued)

Description	Article No.	
• 20 m (65 ft)	FDK:083F3095	
• 40 m (131 ft)	FDK:083F3094	
• 60 m (197 ft)	FDK:083F3093	
• 100 m (328 ft)	FDK:083F3092	
• 150 m (492 ft)	FDK:083F3056	
• 200 m (656 ft)	FDK:083F3057	
• 500 m (1640 ft)	FDK:083F3058	
Sensor cable kit including coil cable standard type (3 × 1.5 mm², screened) and electrode cable special type (3 × 0.25 mm², screened single core), PVC jacket, Temperature range -30 ... +70 °C (-22 ... +158 °F)		
• 5 m (16.5 ft)	A5E02296329	
• 10 m (33 ft)	A5E01181647	
• 15 m (49 ft)	A5E02296464	
• 20 m (65 ft)	A5E01181656	
• 25 m (82 ft)	A5E02296490	
• 30 m (98 ft)	A5E02296494	
• 40 m (131 ft)	A5E01181686	
• 50 m (164 ft)	A5E02296498	
• 60 m (197 ft)	A5E01181689	
• 100 m (328 ft)	A5E01181691	
• 150 m (492 ft)	A5E01181699	
• 200 m (656 ft)	A5E01181703	
• 500 m (1640 ft)	A5E01181705	
Potting kit for IP68 / NEMA 6P sealing of sensor terminal box	FDK:085U0220	

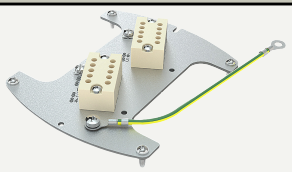
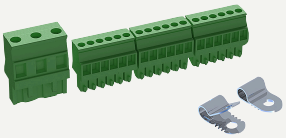
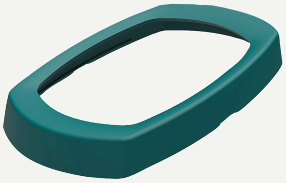
1) Only SITRANS FM MAG 5100W sensors made in France are supported. Please check the sensor serial number or the country of origin specified on the name-plate.

Spare parts FMT020

Description	Article No.	
Transmitter connection board with power supply (including screws, grounding wire), 1 pc.		
• 100 ... 240 V AC, 50/60 Hz	7ME6940-1CB10	
• 24 V DC	7ME6940-1CB20	

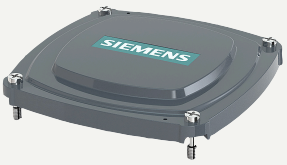
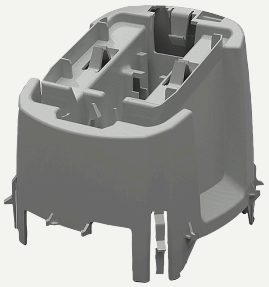
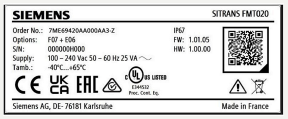
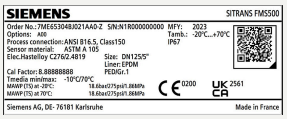
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Selection and ordering data (continued)

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)		
• Programmed 1 pc.	7ME6940-1SM10	
• Not programmed 10 pcs.	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**	

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Technical specifications

SITRANS FMT020 transmitter	
Measurement of	
	• Volume flow • Flow velocity • Electrical conductivity
Mode of operation	
Measuring principle	Electromagnetic with pulsed constant field
Empty pipe	Detection of empty pipe (electrode cable special type required in remote mounted installation)
Excitation frequency	Depends on the sensor size, please refer to "Technical specifications" for SITRANS FM sensors
Electrode input impedance	> 1 × 1014 Ω
Current output (active/passive)	
Signal range	0 ... 20 mA or 4 ... 20 mA Signal levels compliant with NAMUR NE 43 (3.8 to 20.5 mA)
Load	< 470 Ω
Resolution	< 1 µA
Accuracy	±20 µA
Temperature coefficient	< 50 ppm/K
Time constant	0.1 ... 100 s, adjustable
Digital output (active/passive)	
Frequency	0 ... 10 kHz, 50 % duty cycle (uni/bidirectional)
Pulse	40 µs ... 5 s pulse duration
Rating	
• Active operation mode	24 V DC, 30 mA, 1 kΩ ≤Ri ≤10 kΩ, short-circuit protected (powered from transmitter)
• Passive operation mode	3 ... 30 V DC, max. 110 mA, 200 Ω ≤Ri ≤10 kΩ (powered from connected supply)
Time constant	0.1 ... 100 s, adjustable
Relay output (passive)	
Type	SPDT Form C relay, potential-free change-over contacts, resistive load
Rating	2 A at 42 V AC, 1 A at 24 V DC
Durability	50 000 operations min. per relay
Galvanic isolation	All inputs and outputs are galvanically isolated, isolation voltage 500 V
Rated operating conditions	
Installation environment	
• Location	Indoor/outdoor (altitude up to 2000 m)
• Installation (overvoltage) category	II
• Pollution degree	2
Ambient temperature	
• Transmitter	-40 ... +65 °C (-40 ... +149 °F) (max. humidity 98% RH)
• Display	-20 ... +60 °C (-4 ... +140 °F)
Storage temperature	
• Transmitter	-40 ... +80 °C (-58 ... +158 °F) (max. humidity 98% RH)
• Display	-40 ... +80 °C (-40 ... +176 °F)
Design	
Enclosure	
• Material	Polycarbonate

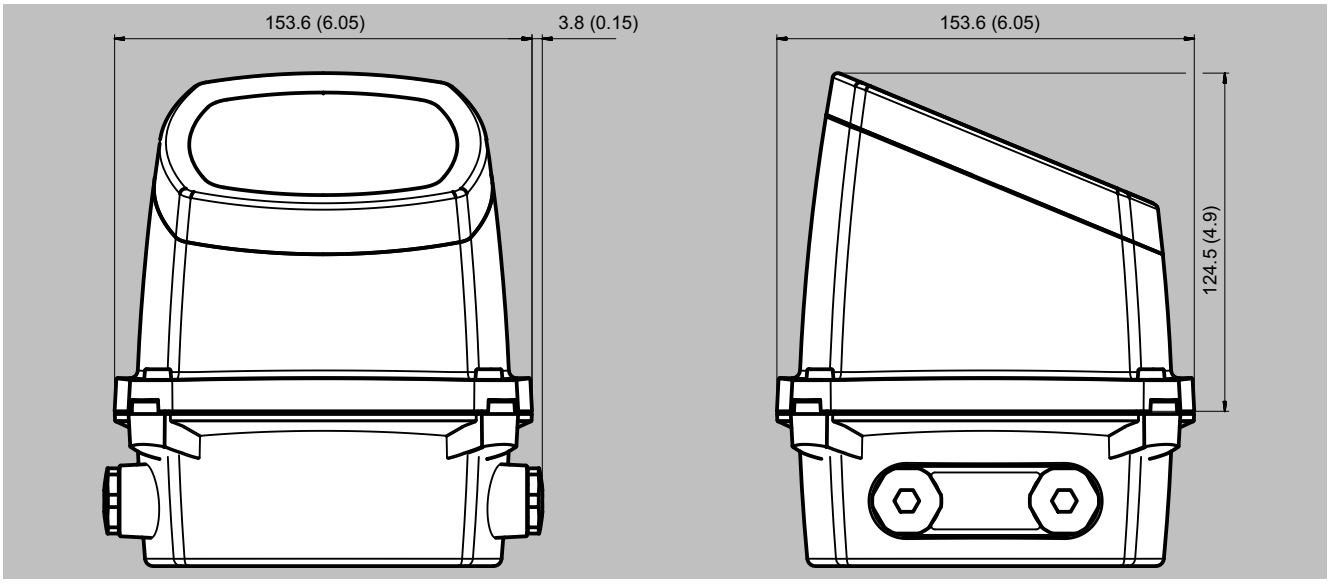
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Technical specifications (continued)

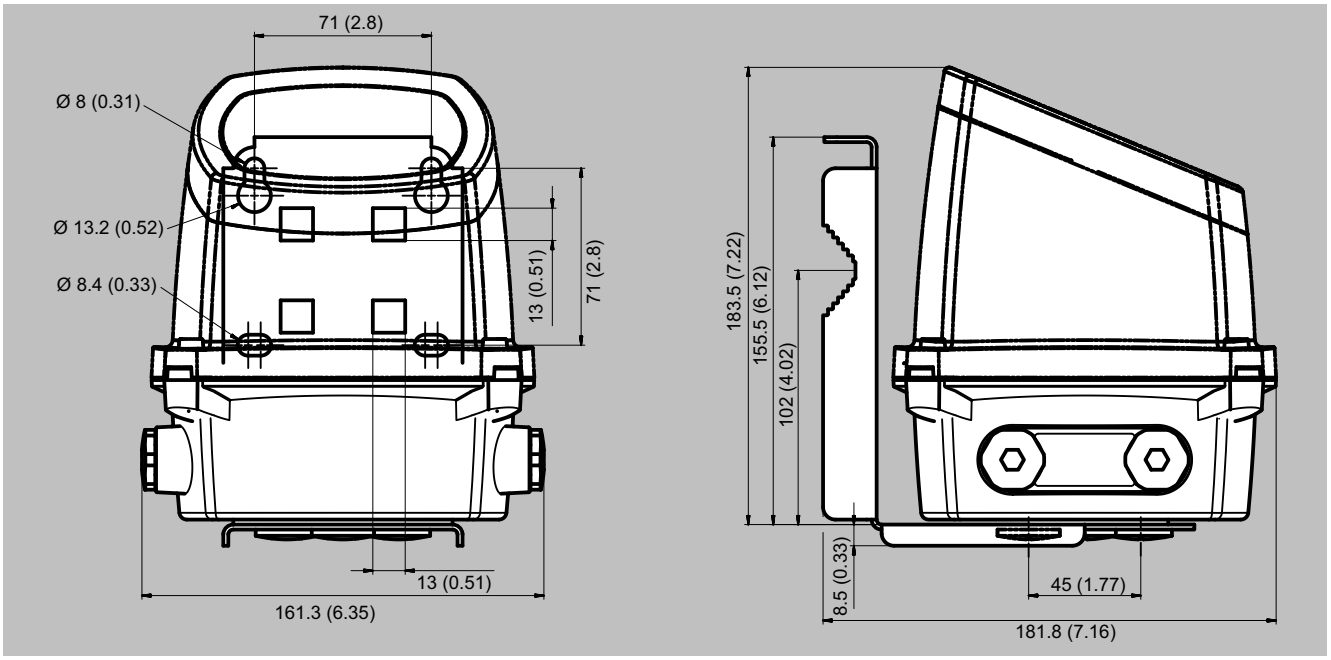
SITRANS FMT020 transmitter	
• Degree of protection	IP66/67, NEMA 4X/6
Mechanical load	
Integral mount / compact version	Vibration, sinusoidal according to IEC 60068-2-6 • 2 ... 8.4 Hz, 3.5 mm peak • 8.4 ... 500 Hz, 1.0 g peak Vibration broad-band random, according to IEC 60068-2-64 • 10 ... 200 Hz, 0.003 g2/Hz • 200 ... 500 Hz, 0.001 g2/Hz • Total: 1.54 g rms
Remote version	Vibration, sinusoidal according to IEC 60068-2-6 • 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 • 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	• HART 7 • PROFINET • EtherNet/IP • MODBUS RTU
Remote configuration	• 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)

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Dimensional drawings



FMT020 transmitter integral mounted, dimensions in mm (inch)



FMT020 transmitter remote mounted, dimensions in mm (inch)

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Overview



The SITRANS FMS500 is a magnetic flow meter sensor suitable for volume flow measurement of liquids (conductive) and is the ideal product for applications in water abstraction, wastewater treatment, water distribution networks, and irrigation.

The rugged, fully welded design supports direct burial, constant flooding and to stand up a wide range of harsh chemicals found in water-based applications in many different industries.

Designed for highly accurate measurement in low-flow conditions, these meters can measure from very low velocities up to 10 m/s, giving it a very wide measurement range.

Combined with a flow meter transmitter it is a traditional externally powered electromagnetic flow meter system

Benefits

- Zero Up and Zero Down installation capabilities
- NBR rubber liner for all water and wastewater applications
- EPDM liner specifically for drinking water applications requiring special approvals
- Soft elastomer facing provides high abrasion resistance
- Increased low flow accuracy for water leak detection
- Rugged construction with no moving parts for maintenance-free operation over many years.
- Simple on-site upgrade to IP68 of a standard sensor allowing underground installation, permanent immersion or underwater installation
- Integrated grounding electrodes – no grounding rings required for many applications
- Short delivery time
- Built-in length according to ISO 20456 (up to DN 400 mm)
- SENSORPROM™ Technology provides an automatic upload of start-up settings and calibration data for easy commissioning
- Designed to allow in-situ verification for easy performance check
- In conformity with ISO 4064, OIML R49 and EN 14154

Application

The SITRANS FMS500 with its NBR or EPDM soft rubber lining is a flow meter sensor for all kinds of water applications such as ground water, potable water, cooling water, wastewater, sewage, or sludge applications.

Connected to the compatible transmitter SITRANS FMT020, either mounted remotely or as a compact unit, it forms the magnetic flow meter system SITRANS FM520 which can be used in almost all general-purpose water applications.

SITRANS FM520

Perfect match for a cost-effective solution for all water and wastewater applications. Measuring accuracy ±0.4% of flow rate, optional ± 0.2% of flow rate available.

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Selection and ordering data

Sensor SITRANS FMS500	Article No. 7ME653-												
	•	-	•	•	•	•	•	-	2	•	A	•	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.													
Transmitter variant													
No transmitter (sensor only)	0												
Transmitter SITRANS FMT020	2												
Diameter													
DN 15, 1/2 inch			1	V									
DN 25, 1 inch			2	D									
DN 40, 1 1/2 inch			2	R									
DN 50, 2 inch			2	Y									
DN 65, 2 1/2 inch			3	F									
DN 80, 3 inch			3	M									
DN 100, 4 inch			3	T									
DN 125, 5 inch			4	B									
DN 150, 6 inch			4	H									
DN 200, 8 inch			4	P									
DN 250, 10 inch			4	V									
DN 300, 12 inch			5	B									
DN 350, 14 inch			5	D									
DN 400, 16 inch			5	H									
DN 450, 18 inch			5	K									
DN 500, 20 inch			5	R									
DN 600, 24 inch			5	Y									
DN 700, 28 inch			6	B									
DN 750, 30 inch			6	D									
DN 800, 32 inch			6	H									
DN 900, 36 inch			6	K									
DN 1000, 40 inch			6	R									
DN 1050, 42 inch			6	Y									
DN 1100, 44 inch			7	D									
DN 1200, 48 inch			7	H									
Process connection													
EN 1092-1 PN 10 flanges					B								
EN 1092-1 PN 16 flanges					C								
EN 1092-1 PN16 flanges, non-PED version					D								
ANSI B16.5 Class 150 flanges					J								
AWWA C-207 Class D flanges					M								
AS 4087 PN 16 flanges					S								
Process connection material													
Carbon steel ASTM A 105 with corrosion-resistant coating acc. to EN ISO 12944 grade C4						0							
Carbon steel ASTM A 105 with corrosion-resistant coating acc. to EN ISO 12944 grade C5 (300 µm)						1							
Liner material													
EPDM (soft rubber)							2						
NBR (soft rubber)							3						
Electrode material													
Hastelloy C276 / 2.4819									2				
Transmitter mounting & enclosure type													
No transmitter (sensor only)										A			
Compact design (integral mount), plastic enclosure										G			
Remote design, plastic enclosure (wall-mounting unit and sensor terminal board included)										J			
Power supply													
None (sensor only)												0	
24 V DC												2	
100 ... 240 V AC, 50/60 Hz												3	

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Selection and ordering data (continued)

Additional information	Order code
Please add "**-Z**" to Article No. and specify Order code(s) and plain text.	
Cable glands	
Without cable glands (blind plugs)	A00
M20x1.5 cable glands, material polyamide	A02
1/2 inch NPT cable glands, material polyamide	A05
Certificates	
Declaration of compliance with the order 2.1 (EN 10204)	C00
Inspection certificate 3.1 (EN 10204) - Material of pressure-containing and wetted parts	C12
Test report 2.2 (EN 10204)	C14
Inspection certificate 3.1(EN 10204) - Pressure test	C18
High accuracy calibration	
High accuracy factory calibration 0.2%, DN ≤ 200, ≤ 8 inch	D01
High accuracy factory calibration 0.2%, DN 250 ... 600, 10 ... 24 inch	D02
High accuracy factory calibration 0.2%, DN 700 ... 1200, 28 ... 48 inch	D03
5-point calibration	
5-point factory calibration, DN ≤200, ≤ 8 inch	D10
5-point factory calibration, DN 250 ... 600, 10 ... 24 inch	D11
5-point factory calibration, DN 700 ... 1200, 28 ... 48 inch	D12
10-point calibration	
10-point factory calibration, DN ≤ 200, ≤ 8 inch	D15
10-point factory calibration, DN 250 ... 600, 10 ... 24 inch	D16
10-point factory calibration, DN 700 ... 1200, 28 ... 48 inch	D17
Default matched-pair calibration	
Default matched-pair factory calibration, DN ≤ 200, ≤ 8 inch	D20
Default matched-pair factory calibration, DN 250 ... 600, 10 ... 24 inch	D21
Default matched-pair factory calibration, DN 700 ... 1200, 28 ...48 inch	D22
5-point matched-pair calibration	
5-point, matched-pair factory calibration, DN ≤ 200, ≤ 8 inch	D25
5-point, matched-pair factory calibration, DN 250 ... 600, 10 ... 24 inch	D26
5-point, matched-pair factory calibration, DN 700 ... 1200, 28 ... 48 inch	D27
10-point matched-pair calibration	
10-point, matched-pair factory calibration, DN ≤ 200, ≤ 8 inch	D30
10-point, matched-pair factory calibration, DN 250 ... 600, 10 ... 24 inch	D31
10-point, matched-pair factory calibration, DN 700 ... 1200, 28 ...48 inch	D32
Accredited ISO/IEC 17025 calibration	
ISO/IEC 17025 accredited, 5-point, matched-pair factory calibration, DN ≤ 200, ≤ 8 inch	D35
ISO/IEC 17025 accredited, 5-point, matched-pair factory calibration, DN 250 ... 600, 10 ...24 inch	D36
ISO/IEC 17025 accredited, 5-point, matched-pair factory calibration, DN 700 ... 1200, 28 ... 48 inch	D37
General safety	
CSA General Purpose	E06

Additional information	Order code
Country of origin	
France	E90
Communication	
HART with 4 ... 20 mA output, active or passive	F01
Modbus RTU / RS485	F04
PROFINET	F07
EtherNet/IP	F09
Device options	
Sensor terminal board factory mounted	J00
Sensor cables factory mounted	J01
Factory preconfigured for transmitter mounting in compact design (integral mount)	J02
Type of protection (IP)	
IP68 (NEMA 6P) protection class for sensor in remote design, without potting (to 2 m depth, 10 days)	L50
IP68 (NEMA 6P) protection class for sensor in remote design, factory potted (to 10 m depth, continuously)	L51
Sensor cables	
Cable kit with coil and electrode cable, standard type (3 × 1.5 mm²), PVC-jacket	
• 5 m (16 ft)	T00
• 10 m (33 ft)	T01
• 20 m (65 ft)	T03
• 30 m (98 ft)	T05
• 40 m (131 ft)	T06
• 50 m (164 ft)	T07
• 60 m (197 ft)	T08
• 100 m (328 ft)	T11
• 150 m (492 ft)	T14
• 200 m (656 ft)	T16
• 500 m (1640 ft)	T18
Cable kit with coil cable standard type (3 × 1.5 mm²) and electrode cable special type (3 × 0.25 mm²), PVC-jacket	
• 5 m (16 ft)	T50
• 10 m (33 ft)	T51
• 15 m (49 ft)	T52
• 20 m (65 ft)	T53
• 25 m (82 ft)	T54
• 30 m (98 ft)	T55
• 40 m (131 ft)	T56
• 50 m (164 ft)	T57
• 60 m (197 ft)	T58
• 100 m (328 ft)	T61
• 150 m (492 ft)	T64
• 200 m (656 ft)	T66
• 500 m (1640 ft)	T68
Device settings	
Measuring range: Upper range value (Q_{max}), unit	Y01
Current output damping	Y02
Current output signal range	Y03
Low flow cut off	Y04
Flow direction (Default setting: Positive)	Y05

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Selection and ordering data (continued)

Additional information	Order code
Empty pipe detection (Default setting: On)	Y06
Mains frequency (Default setting: 50 Hz)	Y07
Operation language display (default setting English)	Y24
Device identification	
Location designation (TAG), device parameter and stainless-steel plate for transmitter (max. 32 characters)	Y11
Measuring point description, device parameter and stainless-steel plate for transmitter (max. 32 characters)	Y12
Location designation (TAG), device parameter and adhesive label for transmitter (max. 32 characters)	Y13
Measuring point description, device parameter and adhesive label for transmitter (max. 32 characters)	Y14
Location designation (TAG), device parameter and stainless-steel plate (max. 32 characters)	Y15
Measuring point description, device parameter and stainless-steel plate (max. 32 characters)	Y16
Location designation (TAG), device parameter and adhesive label (max. 32 characters)	Y18
Measuring point description, device parameter and adhesive label (max. 32 characters)	Y19

Additional information	Order code
Totalizer 1 settings	
Preset value	Y30
Unit	Y31
Direction	Y32
Failure mode	Y33
Decimal point	Y34
Totalizer 2 settings	
Preset value	Y35
Unit	Y36
Direction	Y37
Failure mode	Y38
Decimal point	Y39
Totalizer 3 settings	
Preset value	Y40
Unit	Y41
Direction	Y42
Failure mode	Y43
Decimal point	Y44
Pulse output settings	
Volume per pulse	Y50
Pulse width	Y51

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Technical specifications

SITRANS FMS500 flowmeter sensor	
Product characteristic	For demanding applications in the water & wastewater industry
Measurement of	Volume flow, flow velocity, electrical conductivity
Nominal diameter	• Coned sensor (octagon liner): DN 15 ... 40 (½" ... 1½") • Coned sensor: DN 50 ... 300 (2" ... 12") • Full bore sensor: DN 350 ... 1200 (14" ... 48")
Mode of operation	
Measuring principle	Electromagnetic induction
Medium conductivity	Liquids with an electrical conductivity ≥ 5 µS/cm.
Excitation frequency (mains supply: 50 Hz / 60 Hz)	• DN 15 ... 65 (1/2" ... 2 1/2"): 12.5 Hz / 15 Hz • DN 80 ... 150 (3" ... 6"): 6.25 Hz / 7.5 Hz • DN 200 ... 300 (8" ... 12"): 3.125 Hz / 3.75 Hz • DN 350 ... 1200 (14" ... 48"): 1.5625 Hz / 1.875 Hz
Process connection	
Flanges [1]	
• EN 1092-1	PN 10 (145 psi) Flat face DN 200 ... 300 (8" ... 12") PN 10 (145 psi) Raised face DN 350 ... 1200 (14" ... 48") PN 16 (232 psi) Flat face DN 50 ... 300 (2" ... 12") PN 16 (232 psi) Raised face DN 350 ... 1200 (14" ... 48") PN 40 (580 psi) Flat face DN 15 ... 40 (½" ... 1½")
• ANSI B16.5	Class 150 Flat face ½" ... 12" Class 150 Raised face 14" ... 24"
• AWWA C-207	Class D Flat face 28 ... 48"
• AS/NZS 4087	PN 16 (232 psi) Flat Face DN 50 ... 300 (2" ... 12") PN 16 (232 psi) Raised face DN 350 ... 1200 (14" ... 48")
• JIS B 2220:2004	10K DN 15 ... 600 (1" ... 24")
Rated operating conditions	
Ambient temperature	
• Sensor	-20 ... +70 °C (-40 ... +158 °F)
• Compact with transmitter	-20 ... +65 °C (-40 ... +149 °F)
Operating pressure (abs) (maximum operating pressure depending on flange type)	DN 15 ... 40 (1/2" ... 1 1/2"): 0.01 ... 40 bar (0.15 ... 580 psi) DN 50 ... 300 (2" ... 12"): 0.03 ... 20 bar (0.44 ... 290 psi) DN 350 ... 1200 (14" ... 48"): 0.01 ... 16 bar (0.15 ... 232 psi)
Protection class	
• Standard	IP66/67, NEMA 4X/6
• Optional	IP68 and NEMA 6P (2m, 10 days) for sensor in remote design IP68 and NEMA 6P (10m, continuously) for sensor in remote design
Mechanical load (vibration)	
• Integral mount / compact version	Vibration, sinusoidal according to IEC 60068-2-6 • 2 ... 4 Hz, 3.5 mm peak • 8.4 ... 500 Hz, 1 g peak Vibration broad-band random, according to IEC 60068-2-64 • 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 Sensor: • 2 ... 8.4 Hz, 7.5 mm peak; • 8.4 ... 500 Hz, 2 g peak Transmitter: • 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 Sensor: • 10 ... 200 Hz, 0.01 g2/Hz; • 200 ... 500 Hz, 0.003 g2/Hz; • Total: 1.54 g rms Transmitter: • 10 ... 200 Hz, 0.003 g2/Hz; • 200 ... 500 Hz, 0.001 g2/Hz; • Total: 1.54 g rms
Process temperature	

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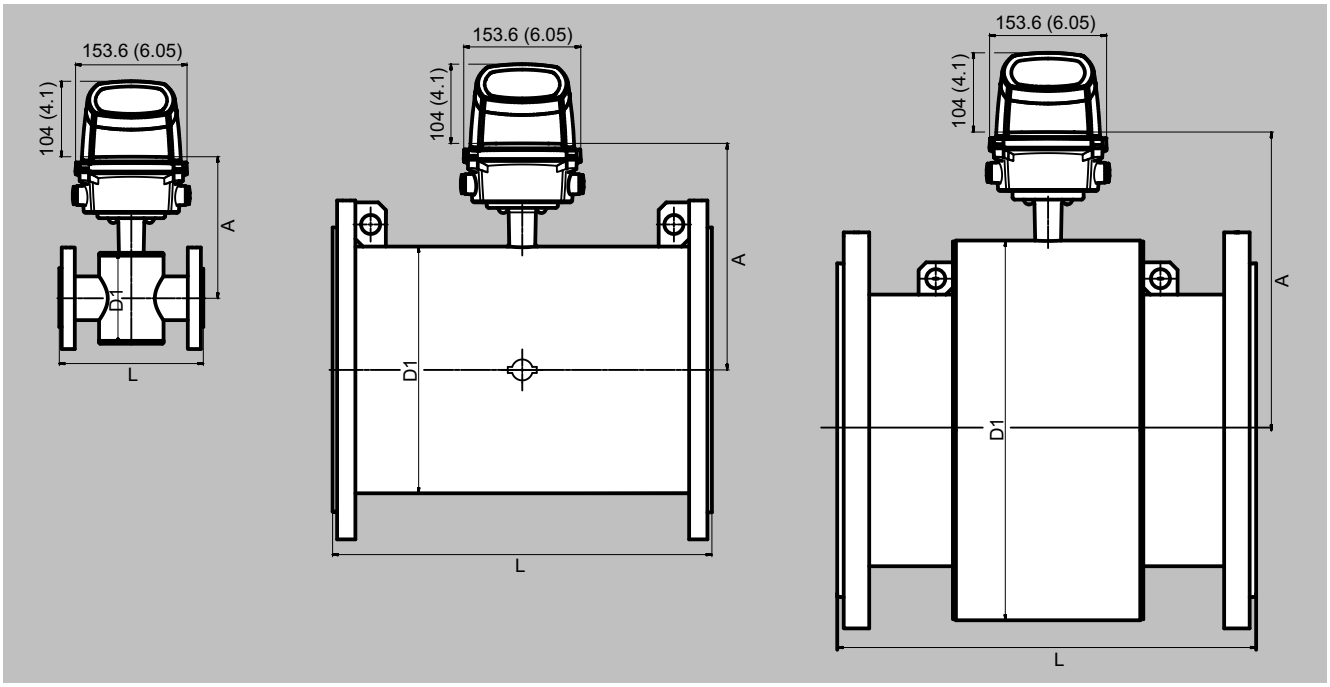
Technical specifications (continued)

SITRANS FMS500 flowmeter sensor	
• NBR liner	-10 ... +70 °C (14 ... 158 °F)
• EPDM liner	-10 ... +70 °C (14 ... 158 °F)
Pressure drop	DN 15 and 25 (½" and 1"): Max. 20 mbar (0.29 psi) at 1 m/s (3 ft/s) DN 40 ... 300 (1½" ... 12"): Max. 25 mbar (0.36 psi) at 3 m/s (10 ft/s) DN 350 ... 1200 (14" ... 48"): Insignificant
Test pressure	1.5 × PN (where applicable)
Design	
Dimensions	See dimensional drawings
Weight	See dimensional drawings
Material	
• Housing and flanges	Carbon steel ASTM A 105 with corrosion resistant coating of class C4 or C5 (durability up to 15 years) EN ISO 12944
• Measuring electrode	Hastelloy C276 / 2.4819
• Grounding electrode	Hastelloy C276 / 2.4819
• Measuring pipe [2]	Stainless steel AISI 304 / 1.4301
• Terminal box	Polycarbonate
Cable entries	4 x metric thread (size M20 x 1.5)
Pressure equipment	Conforming with 97/23 EC
Electromagnetic compatibility	Conforming with 2004/108/EC
Calibration	
Standard	Zero-point, 2 × 25 % and 2 × 90 %
Optional	• 5-point calibration: 20 %, 40 %, 60 %, 80 %, 100 % of factory Qmax • 10-point calibration: ascending and descending at 20 %, 40 %, 60 %, 80 %, 100 % of factory Qmax • Matched pair calibration: default, 5-point or 10-point • ISO/IEC 17025 accredited, 5-point, matched-pair calibration
Certificates and approvals	
General purpose	CE (LVD, PED, EMC, RoHS), UKCA
Drinking water	• WRAS (WRc, BS 6920 material approval for cold water, GB) • NSF/ANSI Standard 61 (Cold water, US) • ACS listed (France) • DVGW W270 (Germany) • Belgaqua (Belgium) • AS/NZS 4020 (Australia/New Zealand) • GB/T 5750 (China)
Others	• Environmental Product Declaration (EPD) • EAC (Kazakhstan)

[1] DN 750, DN 1050 and DN 1100 (30", 42" and 44") not available with EN 1092-1 (PN 10 and PN 16) and AS 4087 flanges
[2] DN > 300 (12")

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Dimensional drawings



SITRANS FMS500 Sensor: version 7ME6530 DN 15 ... 40 (½" ... 1½") (left), version 7ME6530 DN 50 ... 300 (2" ... 12") (middle) and version 7ME6530 DN 350 ... 1200 (14" ... 48") (right)

Sensor SITRANS FMS500 (7ME653)									
Nominal diameter		A		D1		L1)		Weight 2)	
[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[kg]	[lbs]
15	½	170	6.7	77	3.0	200	7.9	5	11
25	1	180	7.1	96	3.8	200	7.9	6	13
40	1½	195	7.7	127	5.0	200	7.9	9	20
50	2	181	7.1	76	3.0	200	7.9	10	22
65	2½	187	7.4	89	3.5	200	7.9	12	26
80	3	193	7.6	102	4.0	200	7.9	13	29
100	4	200	7.9	114	4.5	250	9.8	17	37
125	5	210	8.3	140	5.5	250	9.8	20	44
150	6	225	8.9	168	6.6	300	11.8	27	60
200	8	250	9.8	219	8.6	350	13.8	39	86
250	10	277	10.9	273	10.8	450	17.7	56	123
300	12	303	11.9	324	12.8	500	19.7	72	159
350	14	375	14.8	451	17.8	550	21.7	115	254
400	16	400	15.7	502	19.8	600	23.6	143	315
450	18	431	17.0	563	22.2	600	23.6	177	390
500	20	456	18.0	614	24.2	600	23.6	222	489
600	24	507	20.0	715	28.2	600	23.6	321	708
700	28	557	21.9	816	32.1	700	27.6	331	730
750	30	584	23.0	869	34.2	750	29.5	-	-
800	32	609	24.0	927	36.5	800	31.5	386	851
900	36	656	25.8	1032	40.6	900	35.4	482	1063
1000	40	707	27.8	1136	44.7	1000	39.4	672	1482
1050	42	707	27.8	1136	44.7	1000	39.4	-	-
1100	44	758	29.8	1238	48.7	1100	43.3	-	-
1200	48	813	32.0	1348	53.1	1200	47.2	1116	2460

1) Tolerances on built-in length: DN 15 ... 200 (½" ... 8"): +0/-3 mm (+0/-0.12"), DN 250 ... 400 (10" ... 16"): +0/-5 mm (+0/-0.20"), DN 450 ... 600 (18" ... 24"): +5/-5 mm (+0.20/-0.20"), DN 700 ... 1200 (28" ... 48"): +10/-10 mm (+0.39/-0.39")

2) Weights in kg/lbs are for PN 40 DN ≤40, PN 16 DN >40 without transmitter. With transmitter FMT020 installed, weight is increased by approximately 1.0 kg (2.2 lb).