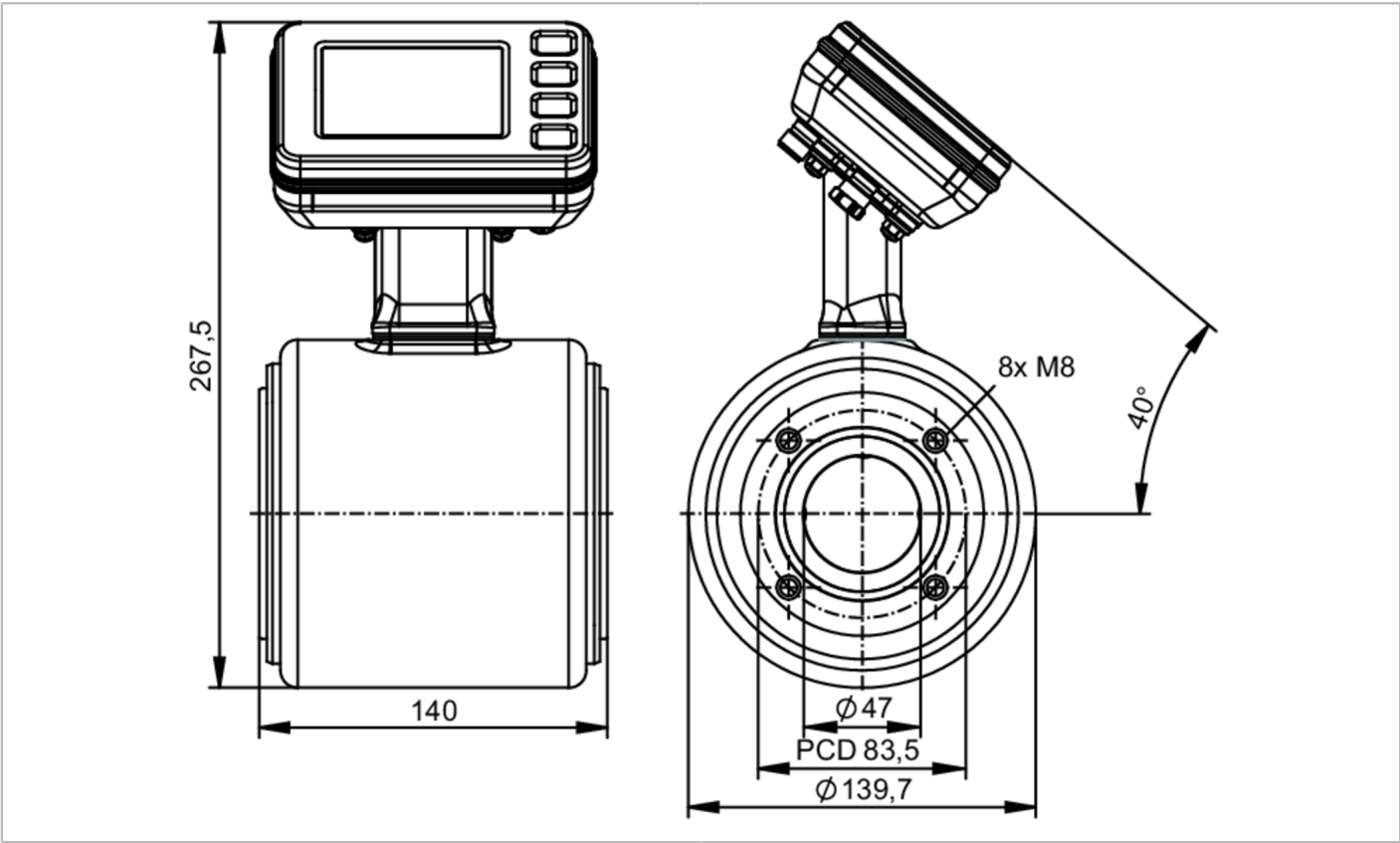


SMF421



Magnetic-inductive flow meter

SMG50KGFFRKG/USD



Product characteristics				
Measuring range	10...1200 l/min	600...72000 l/h	2.6...317 gpm	0.28...33.42 ft/s
Nominal diameter	DN50 (2")			
Process connection	ifm-specific device flange			
Application				
System	gold-plated contacts			
Application	food and beverage industry			
Media	Conductive liquids; water; water-based media			
Note on media	food products such as beer, milk, fruit juices, soft drinks, ketchup, yogurt, yogurt toppings, ice cream			
	conductivity: ≥ 5 µS/cm			
Medium temperature	-20...150 °C		-4...302 °F	
Min. bursting pressure	543.75 psi		3.75 MPa	
Pressure rating	362.5 psi		2.5 MPa	
Electrical data				
Operating voltage	[V]	18...32 DC		
Current consumption	[mA]	250; (24V)		
Protection class		III		
Reverse polarity protection		yes		
Power-on delay time	[s]	< 5		
Measuring principle		magnetic-inductive		

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Inputs / outputs				
Total number of inputs and outputs	2			
Inputs				
Inputs	OUT2		external totalizer reset	
Outputs				
Total number of outputs	2			
Output signal	OUT1		pulse signal; totalizer switching signal; diagnostic signal; IO-Link	
	OUT2		analog signal; pulse signal; totalizer switching signal; diagnostic signal	
Electrical design	PNP/NPN			
Pulse output	flow rate meter			
Short-circuit protection	yes			
Type of short-circuit protection	yes (non-latching)			
Overload protection	yes			
Analog				
Number of analog outputs	1			
Analog current output [mA]	4...20; (skalierbar)			
Max. load [Ω]	500			
Resolution of analog output	0.38 μA			
Digital				
Number of digital outputs	2			
Max. voltage drop switching output DC [V]	2			
Permanent current rating of switching output DC [mA]	100			
Switching frequency DC [Hz]	0...10000			
Measuring/setting range				
Measuring range	10...1200 l/min	600...72000 l/h	2.6...317 gpm	0.28...33.42 ft/s
Display range	-1440...1440 l/min	-86400...86400 l/h	-380.41...380.41 gpm	-39.4...39.4 ft/s
Resolution	0.1 l/min	50 l/h	0.01 gpm	0.01 ft/s
Note on factory setting	0...80 gpm			
Analog start point ASP	-1200...960 l/min	-72000...57600 l/h	-317.04...253.63 gpm	-32.8...26.24 ft/s
Analog end point AEP	-960...1200 l/min	57600...72000 l/h	-253.63...317.04 gpm	-26.24...32.8 ft/s
Low flow cut-off LFC	0...960 l/min	0...57600 l/h	0...253.63 gpm	0...26.24 ft/s
Pulse length [s]	0.00005...2			
Pulse value	0.002...99990000 l			
Temperature monitoring				
Measuring range	-20...150 °C		-4...302 °F	
Display range	-20...150 °C		-4...302 °F	
Resolution	0.01 °C		0.1 °F	
Analog start point	-20...116 °C		-4...240.8 °F	
Analog end point	14...150 °C		57.2...302 °F	
Conductivity monitoring				
Measuring range [μS/cm]	100...100000			

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Display range	[μS/cm]	0...10000000
Resolution	[μS/cm]	1
Analog start point	[μS/cm]	0...80000
Analog end point	[μS/cm]	20000...100000

Accuracy / deviations

Volumetric flow monitoring

Accuracy (under reference conditions)	with optional factory calibration (available from 2025)	± (0,2 % MW + 2 mm/s)
	standard	± (0,5 % MW + 1,5 mm/s)
Repeatability		0,1% MW

Temperature monitoring

Accuracy	[K]	± 1
Repeatability	[K]	± 0,5

Conductivity monitoring

Accuracy (in the measuring range)	in the range of 100...20000 μS/cm	±10% MW
	in the range of 20000...100000 μS/cm	±20% MW
Repeatability		± 5% MW

Reaction times

Volumetric flow monitoring

Response time	[s]	< 0.3
Damping process value dAP	[s]	0...5

Temperature monitoring

Response time	[s]	< 3; (Flow velocity: ≥ 0,5m/s)
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Conductivity monitoring

Response time	[s]	< 2
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Software / programming

Diagnostic functions	direction of flow detection; liquid detection
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Interfaces

Communication interface	IO-Link	
Transmission type	COM3 (230,4 kBaud)	
IO-Link revision	1.1.3	
SDCI standard	IEC 61131-9	
Profiles	Function class	Description
	0x4000	Identification and Diagnosis
	0x001B	Measuring and Switching Sensor, floating point, 4 channel
SIO mode	yes	
Required master port class	A	
Process data analog	6	
Process data binary	8	
Min. process cycle time	[ms]	1.9

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IO-Link process data (cyclical)	Function	bit length
	totalizer	32
	flow	32
	temperature	32
	conductivity	32
	status	4
	binary switching information	8
IO-Link functions (acyclical)	direction of flow detection; totalizer; Speicher; operating hours counter; internal temperature; simulation function	

Operating conditions		
Ambient temperature	-20...65 °C	-4...149 °F
Storage temperature	-20...80 °C	-4...176 °F
Protection	IP 67; IP 69	

Tests / approvals		
EMC	DIN 61326-1	
Shock resistance	DIN IEC 68-2-27	20 g (18ms)
Vibration resistance	DIN IEC 68-2-6	5 g (10...2000Hz)
MTTF [years]		81
UL approval	UL approval number	I031
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]	5815.1	
Inlet pipe length	5 x DN	
Outlet pipe length	2 x DN	
Material	housing: stainless steel (1.4404 / 316L); flange: stainless steel (1.4301 / 304); electronics fixture: stainless steel (1.4301 / 304); electronics: stainless steel (1.4404 / 316L); Display: polysulfane; Display-sealing: FKM; LED ring: PP	
Materials (wetted parts)	Pipe section: PFA; electrodes: stainless steel (1.4435 / 316L)	
Nominal diameter	DN50 (2")	
Process connection	ifm-specific device flange	
Surface characteristics Ra/Rz of the wetted parts	≤ 0.4 µm	

Displays / operating elements		
Display	process value	full graphics TFT display, multi-color 3,5" 320 x 240 Pixel
		display layouts: 4
		display rotation: 4 x 90°
	operating status	LED ring, three-color
Display unit	l/min; l/h; hl/min; hl/h; m³/min; m³/h; m/s; gpm; gph; ft/s; °C; °F; µS/cm; S/m; ms/cm	
Factory setting	gpm; °F; µS/cm	
Language	German; English; Spanish; French; Italian; Japanese; Korean; Portuguese; Chinese	
Operating elements	4	capacitive pushbuttons

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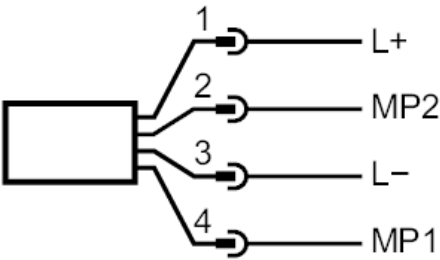
Remarks	
Remarks	MW = Measured value
	MEW = Final value of the measuring range
	pulse and totalizer signal are only available for one of the two outputs
	reference conditions (1/2): water (free of gas bubbles), 15...35 °C, process connection: DIN32676 series A, pipe standard suitable for process connection
	reference conditions (2/2): inlet pipe length 10xDN, outlet pipe length 5xDN, device settling time: 30 minutes, device orientation: horizontal, display orientation: up
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated



Connection



1:	L+
2:	OUT MP2, DO, AO, Reset
3:	L-
4:	OUT1 MP1, DO, IO-Link