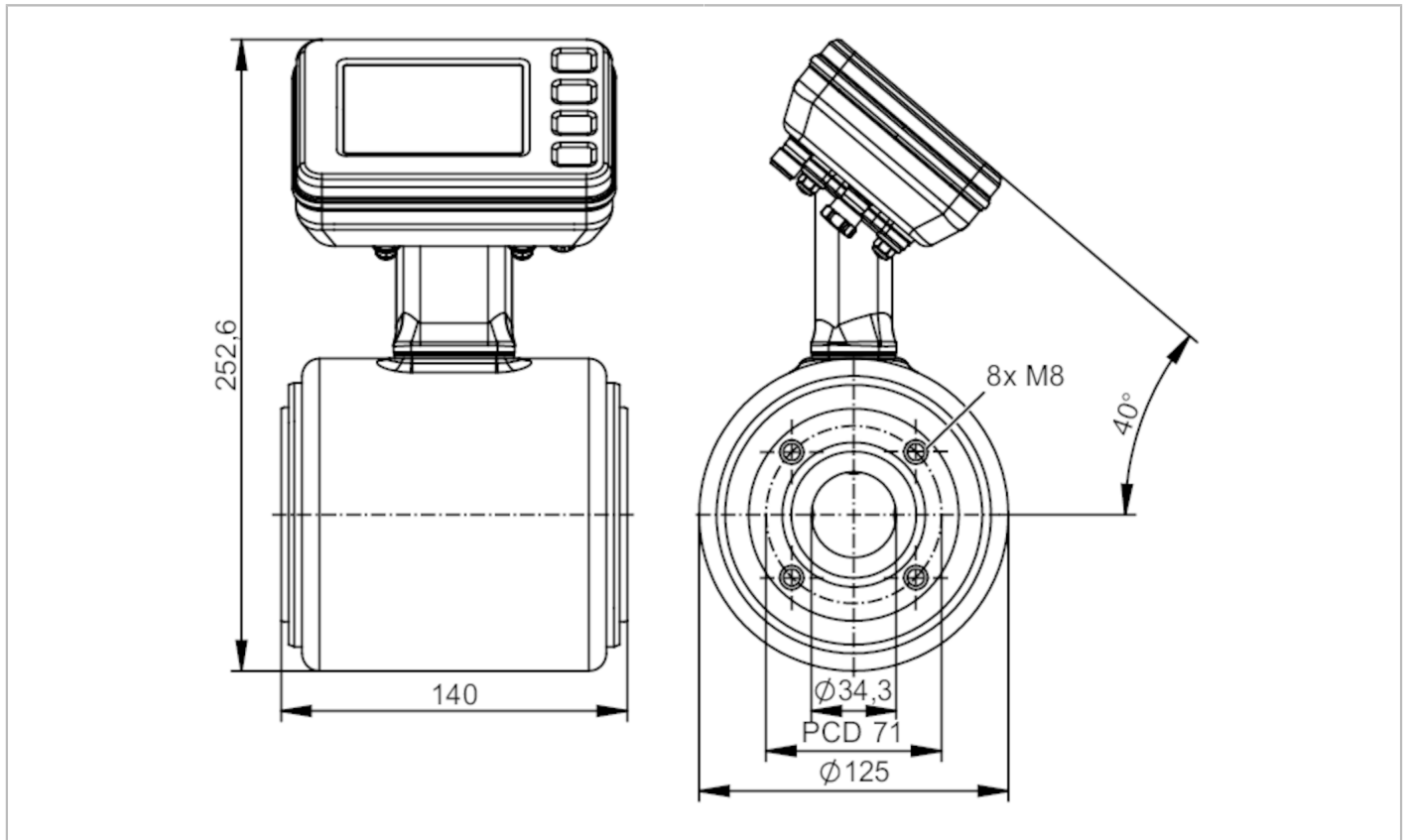


SMF321



Magnetic-inductive flow meter

SMG40KGFFRKG/USD



Product characteristics	
Measuring range	5...750 l/min 300...45000 l/h 1.4...198.2 gpm 0.22...32.42 ft/s
Nominal diameter	DN40 (1 1/2")
Process connection	ifm-specific device flange
Application	
Special feature	Gold-plated contacts
Application	food and beverage industry
Media	conductive liquids; water; hydrous media
Note on media	food products such as beer, milk, fruit juices, soft drinks, ketchup, yoghurt, yoghurt toppings, ice cream conductivity: $\geq 5 \mu\text{S/cm}$
Medium temperature [°C]	-20...150
Medium temperature [°F]	-4...302
Min. bursting pressure	870 psi 6 MPa
Pressure rating	580.1 psi 4 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 totaliser reset		
Outputs				
Total number of outputs	2			
Output signal	OUT1	pulse signal; totaliser switching signal; diagnostic signal; IO-Link		
	OUT2	analogue signal; pulse signal; totaliser switching signal; diagnostic signal		
Electrical design	PNP/NPN			
Pulse output	flow rate meter			
Short-circuit protection	yes			
Type of short-circuit protection	pulsed			
Overload protection	yes			
Analogue				
Number of analogue outputs	1			
Analogue current output [mA]	4...20; (skalierbar)			
Max. load [Ω]	500			
Resolution of analogue output	0.38 μ A			
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	5...750 l/min	300...45000 l/h	1.4...198.2 gpm	0.22...32.42 ft/s
Display range	-900...900 l/min	-54000...54000 l/h	-237.75...237.75 gpm	-39.4...39.4 ft/s
Resolution	0.01 l/min	50 l/h	0.01 gpm	0.01 ft/s
Note on factory setting	0...48,44 gpm			
Analogue start point ASP	0...600 l/min	0...36000 l/h	0...158.52 gpm	0...26.24 ft/s
Analogue end point AEP	150...750 l/min	9000...45000 l/h	39.63...198.15 gpm	6.56...32.8 ft/s
Low flow cut-off LFC	0...600 l/min	0...36000 l/h	0...158.52 gpm	0...26.24 ft/s
Pulse length [s]	0.002...2			
Pulse value	0.002...99990000 l			
Temperature monitoring				
Measuring range [$^{\circ}$ C]	-20...150			
Measuring range [$^{\circ}$ F]	-4...302			
Display range [$^{\circ}$ C]	-20...150			
Display range [$^{\circ}$ F]	-4...302			
Resolution [$^{\circ}$ C]	0.01			
Resolution [$^{\circ}$ F]	0.1			

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Analogue start point	[°C]	-20...116
Analogue start point	[°F]	-4...240.8
Analogue end point	[°C]	14...150
Analogue end point	[°F]	57.2...302
Conductivity monitoring		
Measuring range	[μS/cm]	100...100000
Display range	[μS/cm]	0...100000
Resolution	[μS/cm]	1
Analogue start point	[μS/cm]	0...80000
Analogue end point	[μS/cm]	20000...100000

Accuracy / deviations

Volumetric flow monitoring		
Accuracy (in the measuring range)	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

Response 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)
Conductivity monitoring		
Response time	[s]	< 2

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	Designation
	0x4000	Identification and Diagnosis
	0x001B	Measuring and Switching Sensor, floating point, 4 channel
SIO mode	yes	
Required master port type	A	

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Process data analogue		6
Process data binary		8
Min. process cycle time	[ms]	1.9
IO-Link process data (cyclical)	function	bit length
	totaliser	32
	flow	32
	temperature	32
	conductivity	32
	status	4
IO-Link functions (acyclical)	binary switching information	8
	direction of flow detection; totaliser; Speicher; operating hours counter; internal temperature; simulation function	

Operating conditions

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

Tests / approvals

EMC		DIN 61326-1
Shock resistance		DIN IEC 68-2-27
Vibration resistance		DIN IEC 68-2-6
MTTF	[years]	81
Pressure Equipment Directive		Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request

Mechanical data

Weight	[g]	4600
Inlet pipe length		5 x DN
Outlet pipe length		2 x DN
Materials		housing: stainless steel (316L/1.4404); flange: stainless steel (304/1.4301); electronics fixture: stainless steel (304/1.4301); electronics: stainless steel (316L/1.4404); Display: polysulfane; Display-Sealing: FKM; LED ring: PP
Materials (wetted parts)		Pipe section: PFA; electrodes: stainless steel (316L/1.4435)
Nominal diameter		DN40 (1 1/2")
Process connection		ifm-specific device flange
Surface characteristics Ra/Rz of the wetted parts		≤ 0.4 µm

Displays / operating elements

Factory setting		gpm; °F; µS/cm
Display	process value	full graphics TFT display, multi-colour 3,5" 320 x 240 Pixel
		display layouts: 4
		display rotation: 4 x 90°
	operating status	LED ring, three-colour
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
Language		German; English; Spanish; French; Italian; Japanese; Korean; Portuguese; Chinese
Operating elements	4	capacitive pushbuttons

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Remarks

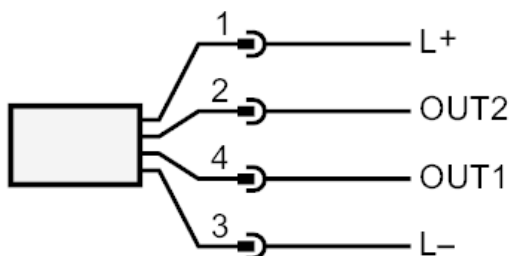
Remarks	MW = measured value
	MEW = Final value of the measuring range
	pulse and totaliser signal are only available for one of the two outputs
	reference conditions : water , 15...35 °C, inlet pipe length: 10 x DN, outlet pipe length: 5 x DN
Pack quantity	1 pcs.

Electrical connection

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



Connection



- 1: L+
- 2: OUT2 DO, AO, reset
- 3: L-
- 4: OUT1 DO, IO-Link