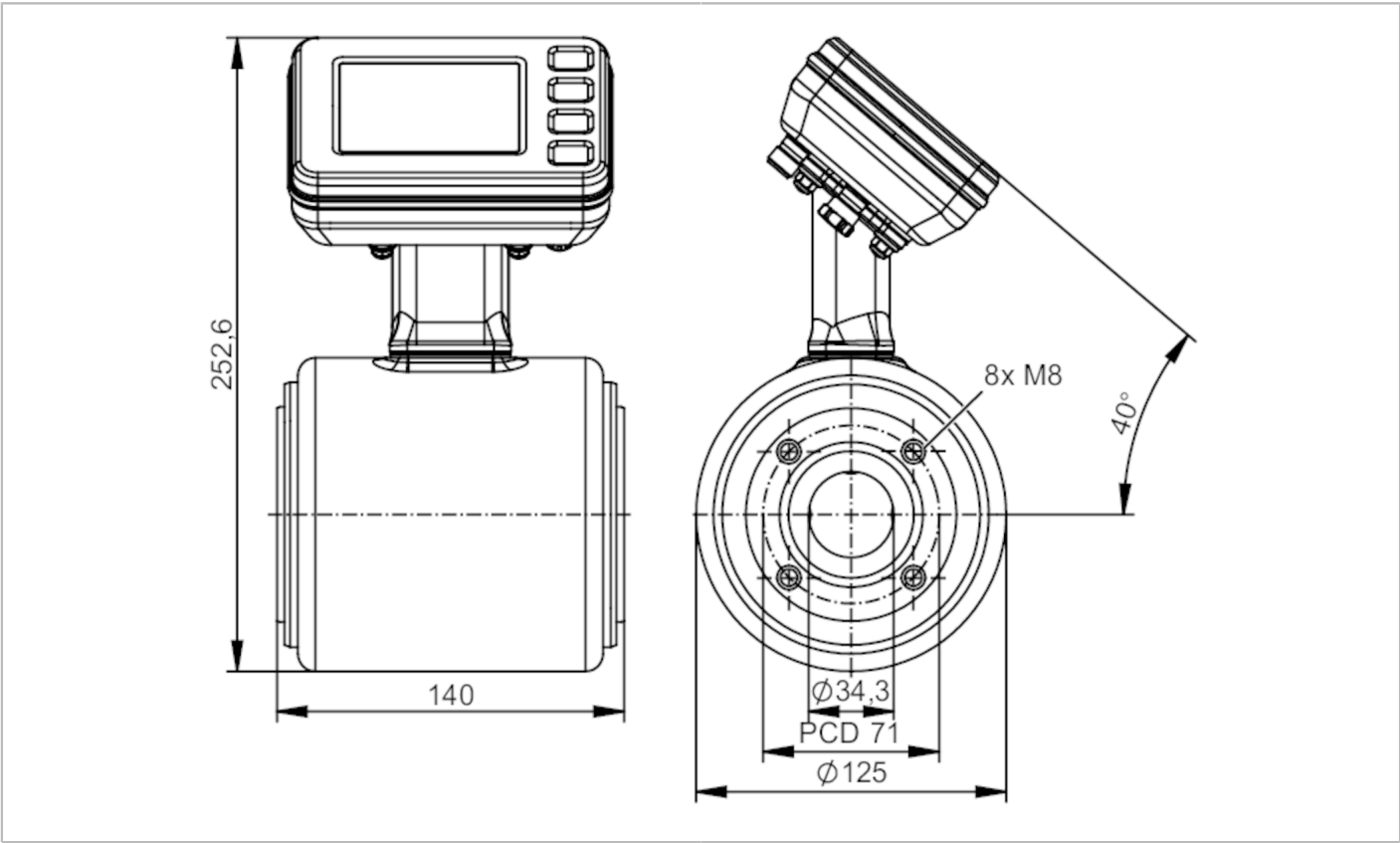


SMF321



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	-20...150 °C	-4...302 °F		
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 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		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...50 gpm			
Analogue start point ASP		-750...600 l/min	-45000...36000 l/h	-198.15...158.52 gpm	-32.8...26.24 ft/s
Analogue end point AEP		-600...750 l/min	-36000...45000 l/h	-158.52...198.15 gpm	-26.24...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]		0.00005...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	
Analogue start point		-20...116 °C		-4...240.8 °F	
Analogue end point		14...150 °C		57.2...302 °F	

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Conductivity monitoring		
Measuring range	[μS/cm]	100...100000
Display range	[μS/cm]	0...10000000
Resolution	[μS/cm]	1
Analogue start point	[μS/cm]	0...80000
Analogue end point	[μS/cm]	20000...100000
Accuracy / deviations		
Volumetric flow monitoring		
Accuracy (under reference conditions)	with optional factory calibration (availability is being planned)	± (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
Interfaces		
Communication interface		IO-Link
Transmission type		COM3 (230,4 kBaud)
IO-Link revision		1.1.3
SDCI standard		IEC 61131-9
Profiles	Common - I&D	Identification and Diagnosis
	Smart Sensor - SSP 4.3.4	Measuring and Switching Sensor, floating point, 4 channel
SIO mode		yes
Required master port type		A
Process data analogue		6
Process data binary		8
Min. process cycle time	[ms]	1.9

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IO-Link process data (cyclical)	function	bit length
	totaliser	32
	flow	32
	temperature	32
	conductivity	32
	status	4
	binary switching information	8
IO-Link functions (acyclical)	direction of flow detection; totaliser; memory; 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 no.	I031
Pressure Equipment Directive	Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]	5324.8	
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: polysulfone; 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		
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	
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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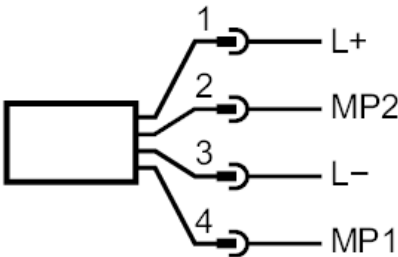
Remarks	
Remarks	MW = measured value
	MEW = Final value of the measuring range
	pulse and totaliser signal are only available for one of the two outputs
	reference conditions (1/2): water (free of gas bubbles), 15...35 °C, process connection: DIN32676 series A, pipe standard suitable for process connection
	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



Electrical connection - plug

1	L+	
2	OUT2	MP2, DO, AO, reset
3	L-	
4	OUT1	MP1, DO, IO-Link

AO: analogue output; DO: digital output; MP: multi-function connection