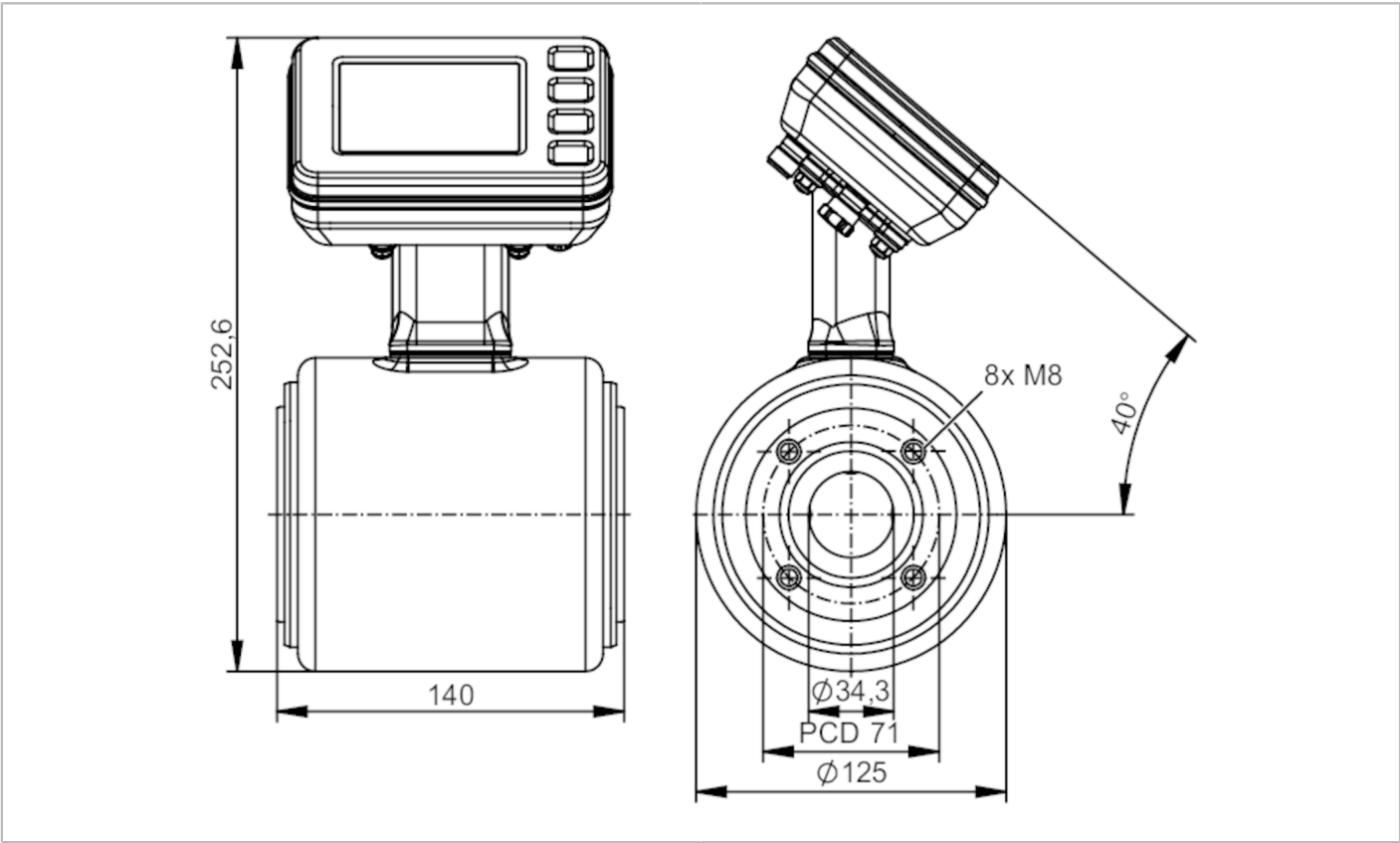


SMF320



Magnetic-inductive flow meter

SMG40KGFFRKG/USD



Product characteristics

Measuring range	5...750 l/min	300...45000 l/h	0.07...10 m/s	0.3...45 m³/h
Nominal diameter	DN40 (1 1/2")			
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 [°C]	-20...150			
Min. bursting pressure	60 bar	6 MPa		
Pressure rating	40 bar	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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SMG40KGFFRKG/USD

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		5...750 l/min	300...45000 l/h	0.07...10 m/s	0.3...45 m³/h
Display range		-900...900 l/min	-54000...54000 l/h	-12...12 m/s	-54...54 m³/h
Resolution		0.01 l/min	50 l/h	0.01 m/s	0.05 m³/h
Note on factory setting		0...11,0 m³/h			
Analog start point ASP		-750...600 l/min	-45000...36000 l/h	-9.95...7.95 m/s	-45...36 m³/h
Analog end point AEP		-600...750 l/min	-36000...45000 l/h	-7.95...9.95 m/s	-36...45 m³/h
Low flow cut-off LFC		0...600 l/min	0...36000 l/h	0...7.95 m/s	0...36 m³/h
Pulse length [s]		0.00005...2			
Pulse value		0.002...99990000 l			
Temperature monitoring					
Measuring range [°C]		-20...150			
Display range [°C]		-20...150			
Resolution [°C]		0.01			
Analog start point [°C]		-20...116			
Analog end point [°C]		14...150			

SMF320



Magnetic-inductive flow meter

SMG40KGFFRKG/USD

Conductivity monitoring		
Measuring range	[μS/cm]	100...100000
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)
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	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

SMF320



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SMG40KGFFRKG/USD

IO-Link process data (cyclical)	Function	bit length
	totalizer	32
	flow	32
	temperature	32
	conductivity	32
	status	4
IO-Link functions (acyclical)	binary switching information	
	direction of flow detection; totalizer; Speicher; operating hours counter; internal temperature; simulation function	
Supported DeviceIDs	Type of operation	DeviceID
	default	1789

Operating conditions		
Ambient temperature	[°C]	-20...65
Storage temperature	[°C]	-25...80
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]	5316.8
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		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-color 3,5" 320 x 240 Pixel
		display layouts: 4
		display rotation: 4 x 90°
	operating status	LED ring, three-color
	totalizer Display range	-999990...999990 m³
	totalizer Resolution	0,00001 m³
Display unit	l/min; l/h; hl/min; hl/h; m³/min; m³/h; m/s; µS/cm; S/m; ms/cm	
Factory setting	m³/h; °C; µS/cm	
Language	German; English; Spanish; French; Italian; Japanese; Korean; Portuguese; Chinese	
Operating elements	4	capacitive pushbuttons

SMF320



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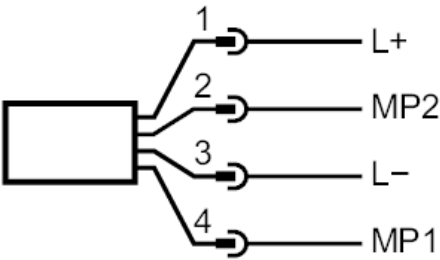
Remarks	
Remarks	MW = Measured value
	MEW = Final value of the measuring range
	pulse and totalizer signal are only available for one of the two outputs
	reference conditions (1/2): water (free of gas bubbles), 15...35 °C, process connection: DIN32676 series A, pipe standard suitable for process connection
	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