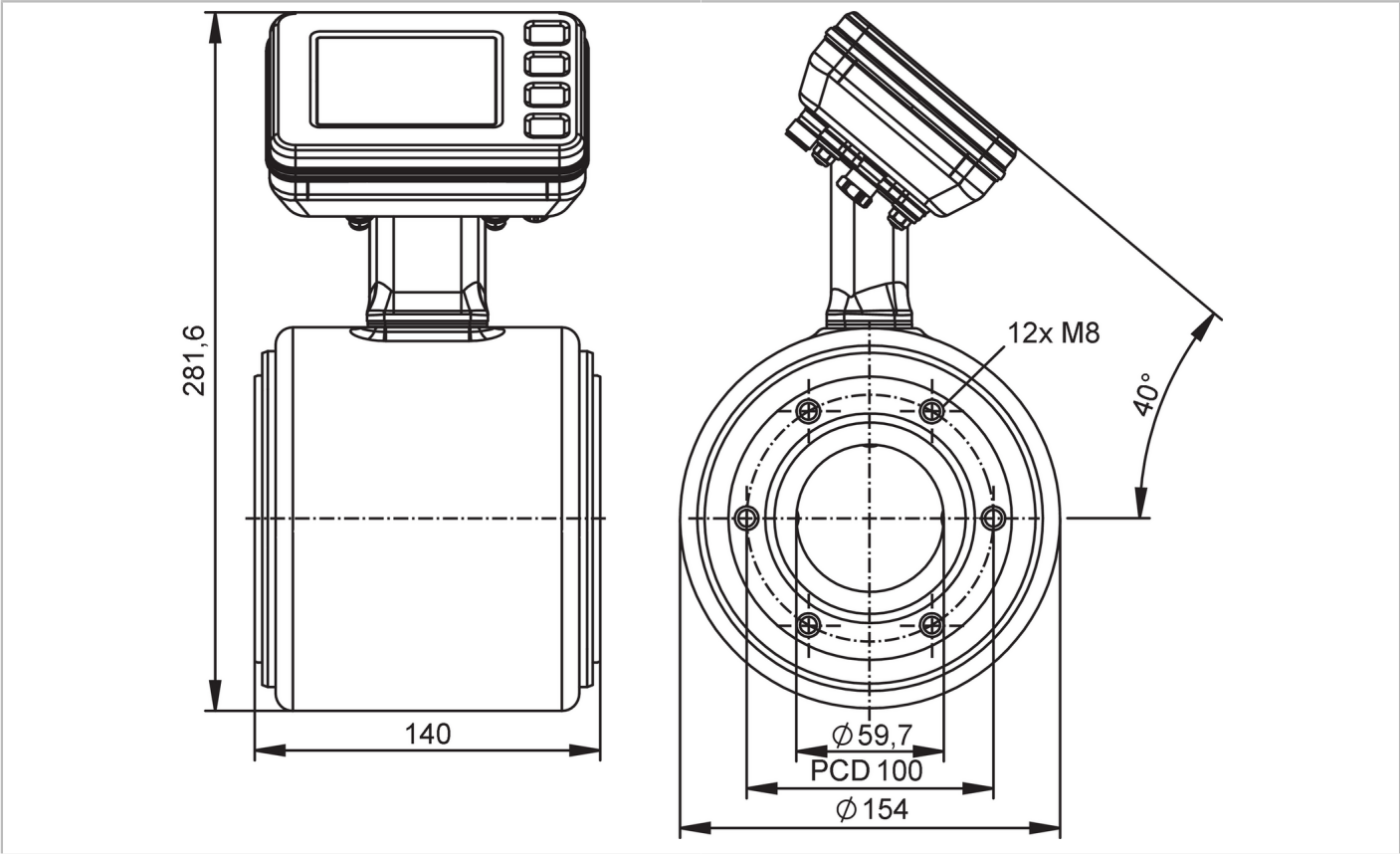


SMF521



Magnetic-inductive flow meter

SMG65KGFFRKG/USD



Product characteristics				
Measuring range	20...2000 l/min	1200...120000 l/h	5.5...528.5 gpm	0.32...32.96 ft/s
Nominal diameter	DN65 (2 1/2")			
Process connection	ifm-specific device flange			
Application				
Special feature	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. burst 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		20...2000 l/min	1200...120000 l/h	5.5...528.5 gpm 0.32...32.96 ft/s
Display range		-2400...2400 l/min	-144000...144000 l/h	-634.01...634.01 gpm -39.4...39.4 ft/s
Resolution		0.1 l/min	100 l/h	0.01 gpm 0.01 ft/s
Note on factory setting		0...130 gpm		
Analog start point ASP		-2000...1600 l/min	-120000...96000 l/h	-528.4...422.72 gpm -32.8...26.24 ft/s
Analog end point AEP		-1600...2000 l/min	-96000...120000 l/h	-422.72...528.4 gpm -26.24...32.8 ft/s
Low flow cut-off LFC		0...1600 l/min	0...96000 l/h	0...422.72 gpm 0...26.24 ft/s
Pulse length [s]		0.00005...2		
Pulse value		0.038...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 (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 (v > 0,5 m/s)
Repeatability	[K]	± 0,5 (v > 0,5 m/s)
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; (v > 0,5 m/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	Smart Sensor - SSP 4.3.4	Measuring and Switching Sensor, floating point, 4 channel
	BLOB	Binary Large Object transfer
	Common - I&D	Identification and Diagnosis
	Extension	Sensor Control Wide
	Extension	Quantity detection, switches when value exceeds the setpoint
	Function	Locator
	Function	ProductURI
SIO mode	yes	
Required master port class	A	
Process data analog	6	
Process data binary	8	

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Min. process cycle time	[ms]	1.9
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; memory; operating hours counter; internal temperature; simulation function	
Supported DeviceIDs	Type of operation	DeviceID
	default	1796
Operating conditions		
Ambient temperature	-20...65 °C	-4...149 °F
Storage temperature	-20...80 °C	-4...176 °F
Protection	IP 67; IP 69; (to DIN EN 60529)	
Tests / approvals		
EMC	DIN 61326-1	
CPA approval	model number	SMF
	accuracy class	0,5
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]	6897
Housing	tubular	
Inlet pipe length	5 x DN	
Outlet pipe length	2 x DN	
Dimensions	[mm]	Ø 154 / L = 140
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: polysulfone; Display-sealing: FKM; LED ring: PP	
Materials (wetted parts)	Pipe section: PFA; electrodes: stainless steel (1.4435 / 316L)	
Nominal diameter	DN65 (2 1/2")	
Process connection	ifm-specific device flange	
Surface characteristics Ra/Rz of the wetted parts	Ra < 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	

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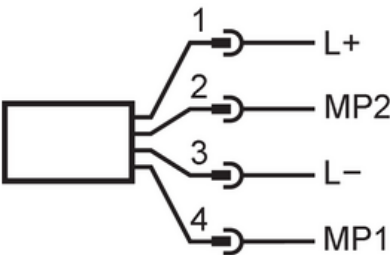
Language	German; English; Spanish; French; Italian; Japanese; Korean; Portuguese; Chinese	
Operating elements	4	capacitive pushbuttons
Remarks		
Remarks	MW = Measured value	
	MEW = Final value of the measuring range	
	pulse and totalizer signal are only available for one of the two outputs	
	reference 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	accuracy specifications according to factory certificate on delivery	
	1 pcs.	

Electrical connection

Connector: 1 x M12; coding: A; Contacts: 4, gold-plated



Connection



Electrical connection - plug

1	L+	
2	MP2	DO2, AO, Reset
3	L-	
4	MP1	DO1, IO-Link

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