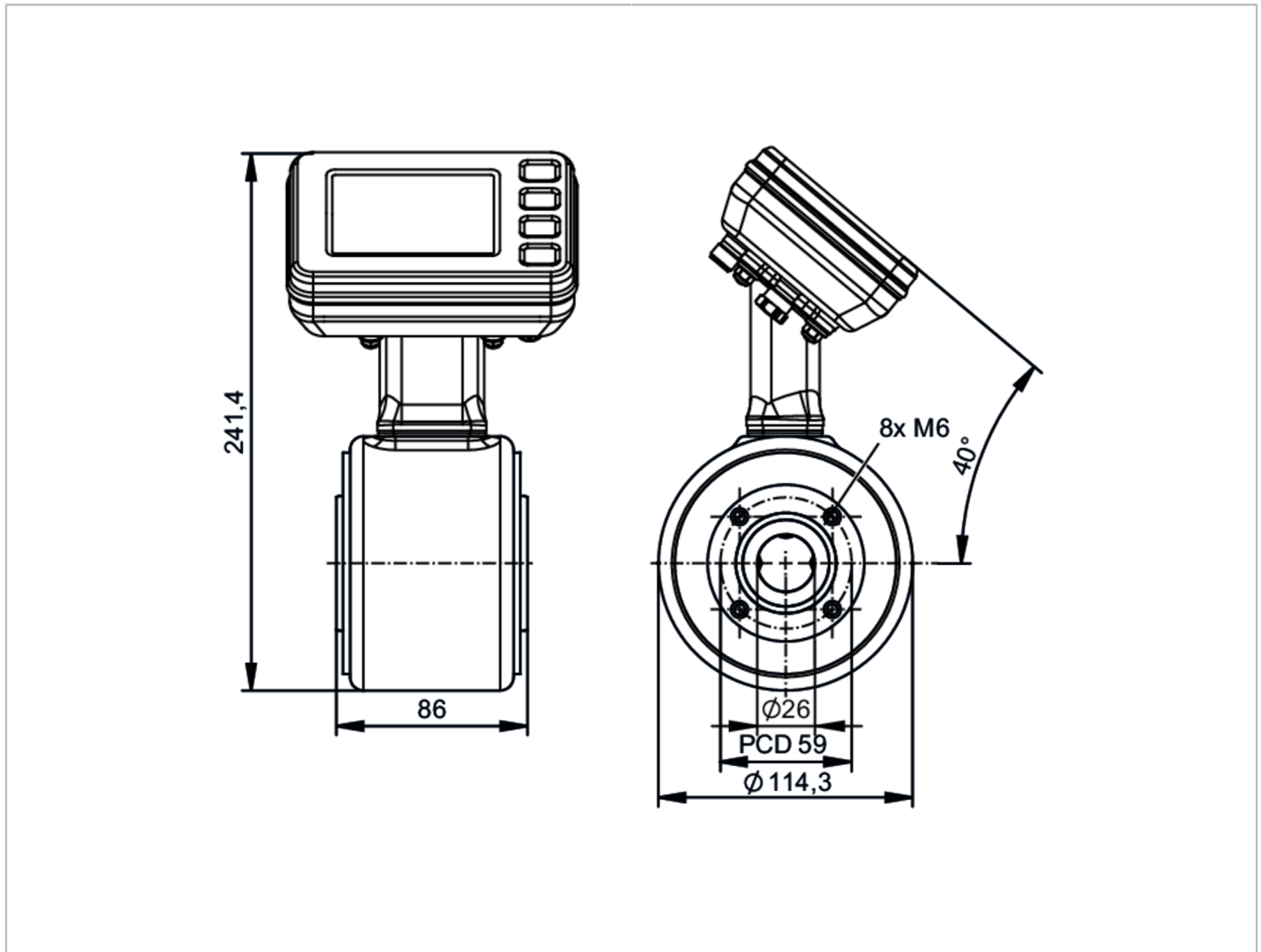


SMF221



Magnetic-inductive flow meter

SMG25KGFFRKG/USD



Product characteristics				
Measuring range	2.5...300 l/min	150...18000 l/h	0.66...79.25 gpm	0.28...33.41 ft/s
Nominal diameter	DN25 (1")			
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: $\geq 5 \mu\text{S/cm}$			
Medium temperature	-20...150 °C	-4...302 °F		
Min. burst pressure	870 psi	6 MPa		
Pressure rating	580.1 psi	4 MPa		
Electrical data				
Operating voltage	[V]	18...32 DC		

SMF221



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SMG25KGFFRKG/USD

Current consumption [mA]	250; (24 V)
Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	< 5
Measuring principle	magnetic-inductive

Inputs / outputs

Total number of inputs and outputs	2
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Inputs

Inputs	OUT2	external totalizer reset
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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 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	2.5...300 l/min	150...18000 l/h	0.66...79.25 gpm	0.28...33.41 ft/s
Display range	-360...360 l/min	-21600...21600 l/h	-95.1...95.1 gpm	-40.1...40.1 ft/s
Resolution	0.01 l/min	10 l/h	0.01 gpm	0.01 ft/s
Note on factory setting	0...20 gpm			
Analog start point ASP	-300...240 l/min	-18000...14400 l/h	-79.25...63.4 gpm	-33.41...26.73 ft/s
Analog end point AEP	-240...300 l/min	-14400...18000 l/h	-63.4...79.25 gpm	-26.73...33.41 ft/s
Low flow cut-off LFC	0...240 l/min	0...14400 l/h	0...63.4 gpm	0...26.73 ft/s
Pulse length [s]	0.00005...2			
Pulse value	0.004...99990000 l			

Temperature monitoring

Measuring range	-20...150 °C	-4...302 °F
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SMF221



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SMG25KGFFRKG/USD

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
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 (in the measuring range)	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

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

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SMG25KGFFRKG/USD

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
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	1787

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	
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
	File number UL	E174189
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]		3696
Housing		tubular
Inlet pipe length		5 x DN
Outlet pipe length		2 x DN
Dimensions [mm]		Ø 114.3 / L = 86
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		DN25 (1")

SMF221



Magnetic-inductive flow meter

SMG25KGFRRKG/USD

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" 128 x 128 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

Remarks

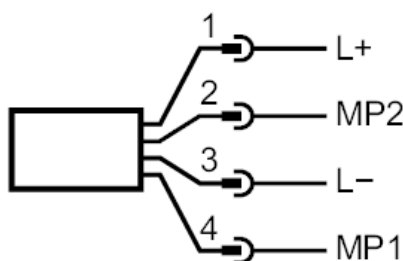
Remarks	MW = Measured value	
	MEW = Final value of the measuring range	
	pulse and totalizer signal are only available for one of the two outputs	
	reference conditions (1/2): water (free of gas bubbles), 15...35 °C, process connection: DIN32676 series A, pipe standard suitable for process connection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

Electrical connection

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



Connection



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Magnetic-inductive flow meter

SMG25KGFFRKG/USD

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