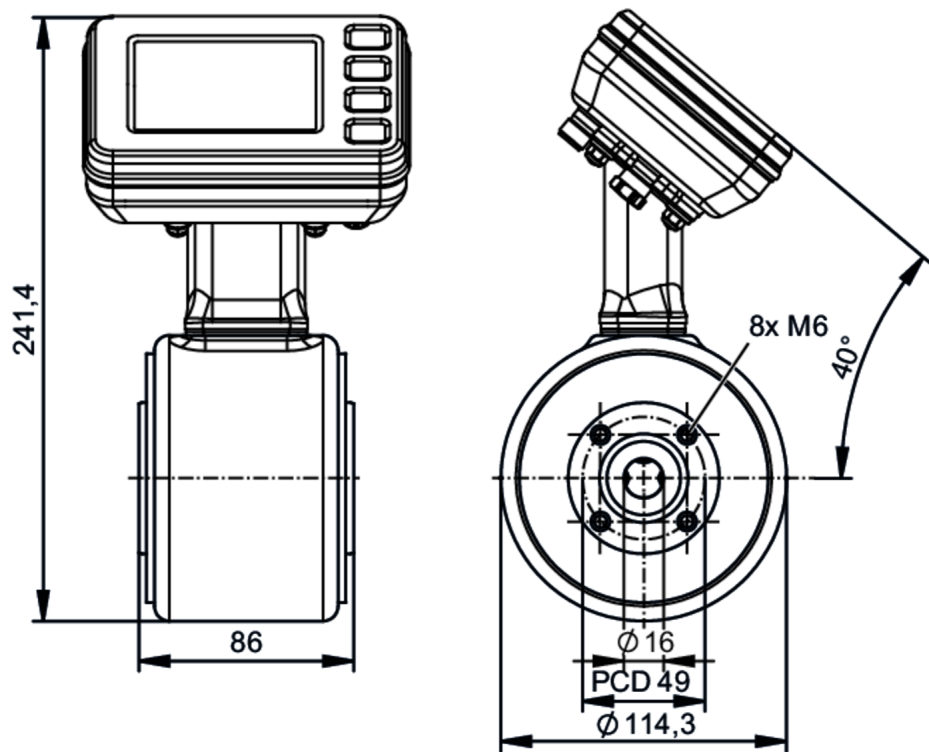


SMF120



Magnetic-inductive flow meter

SMG15KGFFRKG/USD



EC 1935/2004

FCM



Product characteristics

Measuring range	1...100 l/min	60...6000 l/h	0.09...9.43 m/s	0.06...6 m³/h
Nominal diameter	DN15 (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: $\geq 5 \mu\text{S/cm}$			
Medium temperature [°C]	-20...150			
Min. burst pressure	60 bar	6 MPa		
Pressure rating	40 bar	4 MPa		

Electrical data

Operating voltage [V]	18...32 DC
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Current consumption	[mA]	250; (24V)
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 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	1...100 l/min	60...6000 l/h	0.09...9.43 m/s	0.06...6 m³/h
Display range	-120...120 l/min	-7200...7200 l/h	-11.32...11.32 m/s	-7.2...7.2 m³/h
Resolution	0.01 l/min	1 l/h	0.01 m/s	0.001 m³/h
Note on factory setting			0...2,0 m³/h	
Analog start point ASP	-100...80 l/min	-6000...4800 l/h	-9.43...7.55 m/s	-6...4.8 m³/h
Analog end point AEP	-80...100 l/min	-4800...6000 l/h	-7.55...9.43 m/s	-4.8...6 m³/h
Low flow cut-off LFC	0...80 l/min	0...4800 l/h	0...7.55 m/s	0...4.8 m³/h
Pulse length	[s]		0.00005...2	
Pulse value			0.001...99990000 l	

Temperature monitoring

Measuring range	[°C]	-20...150
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Display range	[°C]	-20...150
Resolution	[°C]	0.01
Analog start point	[°C]	-20...116
Analog end point	[°C]	14...150
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)
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

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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	1783	
Operating conditions			
Ambient temperature	[°C]	-20...65	
Storage temperature	[°C]	-20...80	
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]	3641	
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)		

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Nominal diameter	DN15 (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" 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; °C; 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

Remarks

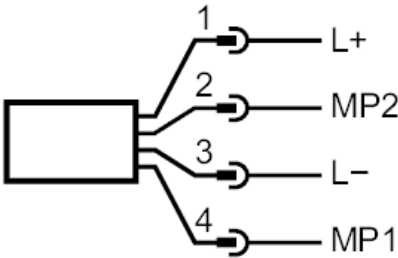
Remarks	MW = Measured value	
	MEW = Final value of the measuring range	
	pulse and totalizer signal are only available for one of the two outputs	
	reference conditions (1/2): water (free of gas bubbles), 15...35 °C, process connection: DIN32676 series A, pipe standard suitable for process connection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