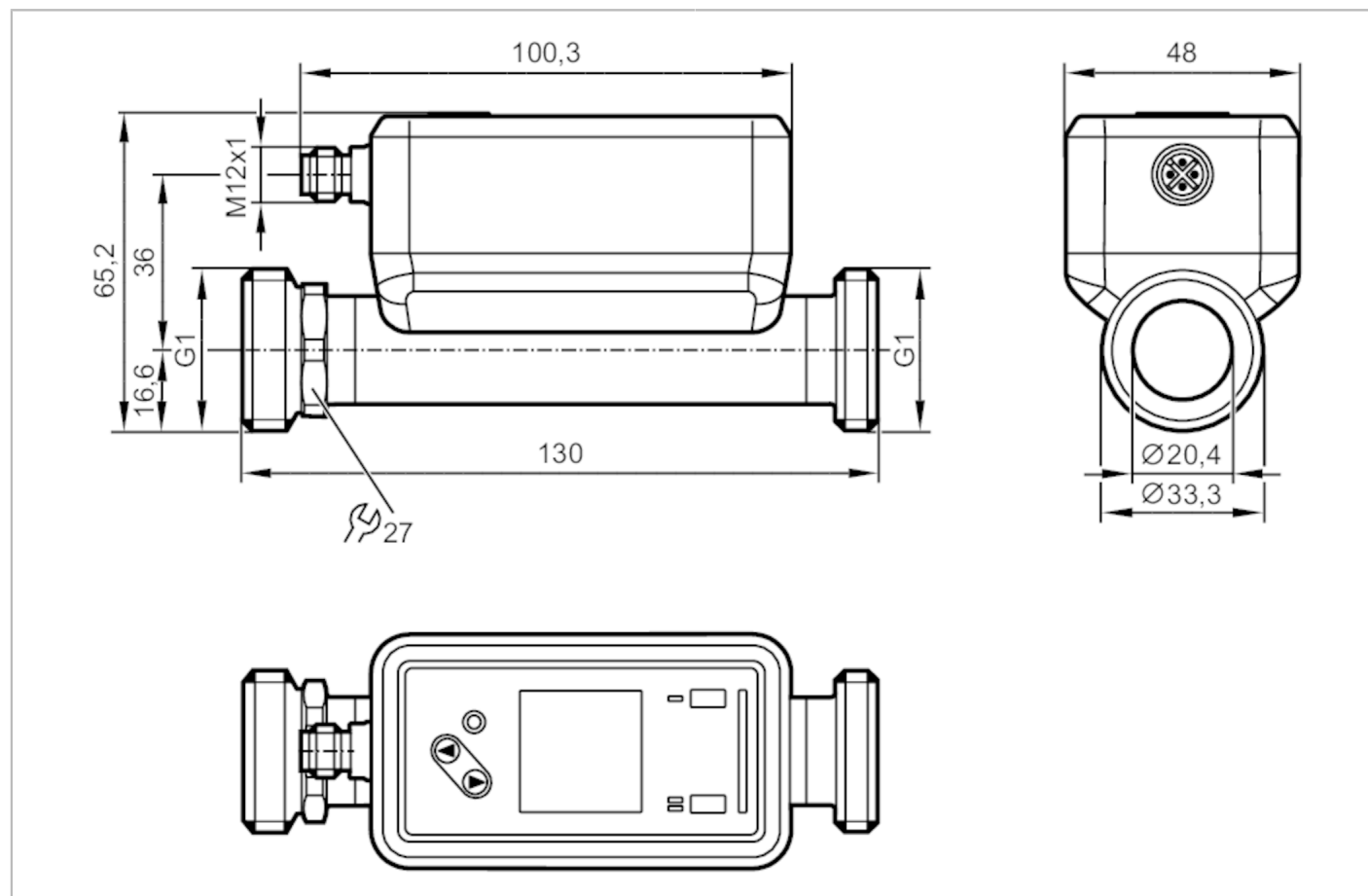


SU8020

Ultrasonic flow meter

SUR11XFBFRKG/US



ACS CE PA cUL US LISTED IO-Link KTW/W270 NSF Reg31

Product characteristics

Measuring range	1...240 l/min	60...14400 l/h	0.051...12.202 m/s	0.06...14.4 m³/h
Process connection	threaded connection G 1 external thread DN25			

Application

System	gold-plated contacts	
Media	ultra-pure water; water; water-based media	
Note on media	water-based media: for media with >10 % additives, the repeatability is the only available value	
Medium temperature [°C]	-20...100	
Min. bursting pressure	150 bar	15 MPa
Pressure rating	100 bar	10 MPa
Vacuum resistance [mbar]	-1000	

Electrical data

Operating voltage [V]	18...32 DC; (to SELV/PELV)			
Current consumption [mA]	< 75			
Protection class	III			
Reverse polarity protection	yes			
Power-on delay time [s]	5			
Measuring principle	ultrasonic			



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Inputs				
Inputs		counter reset		
Outputs				
Total number of outputs		2		
Output signal		switching signal; pulse signal; analog signal; IO-Link; frequency signal; diagnostic signal; totalizer switching signal		
Electrical design		PNP/NPN		
Output function		normally open / closed; (configurable)		
Max. voltage drop switching output DC	[V]	2		
Permanent current rating of switching output DC	[mA]	100		
Switching frequency DC	[Hz]	0...10000		
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Pulse output		flow rate meter		
Short-circuit protection		yes		
Type of short-circuit protection		yes (non-latching)		
Overload protection		yes		
Measuring/setting range				
Measuring range		1...240 l/min	60...14400 l/h	0.051...12.202 m/s 0.06...14.4 m³/h
Display range		-288...288 l/min	-17280...17280 l/h	-14.642...14.642 m/s -17.28...17.28 m³/h
Resolution		0.1 l/min	1 l/h	0.001 m/s 0.002 m³/h
Set point SP		2.3...240 l/min	139...14400 l/h	0.118...12.202 m/s 0.139...14.4 m³/h
Reset point rP		1.1...238.8 l/min	64...14325 l/h	0.055...12.139 m/s 0.064...14.325 m³/h
Analog start point ASP		-240...192 l/min	-14400...11522 l/h	-12.202...9.763 m/s -14.4...11.522 m³/h
Analog end point AEP		-192...240 l/min	-11522...14400 l/h	-9.763...12.202 m/s -11.522...14.4 m³/h
Low flow cut-off LFC		1...12 l/min	60...720 l/h	0.051...0.61 m/s 0.06...0.72 m³/h
Frequency end point, FEP		48.1...240 l/min	2889...14400 l/h	2.448...12.202 m/s 2.89...14.4 m³/h
Frequency at the end point FRP	[Hz]	1...10000		
Volumetric flow quantity monitoring				
Pulse length	[s]	0.002...2		
Pulse value		0.02...99990000 l		
Temperature monitoring				
Measuring range	[°C]	-20...100		
Display range	[°C]	-44...124		
Resolution	[°C]	0.1		
Set point SP	[°C]	-19.6...100		
Reset point rP	[°C]	-20...99.6		
Analog start point	[°C]	-20...76		
Analog end point	[°C]	4...100		
Frequency start point, FSP	[°C]	-20...76		
Frequency end point, FEP	[°C]	4...100		



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Frequency at the end point FRP	[Hz]	1...10000
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Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)		$\pm (1,0 \% \text{ MW} + 0,5 \% \text{ MEW})$
Repeatability		$\pm 0,2 \% \text{ MEW}$
Temperature monitoring		
Accuracy	[K]	$\pm 2,5 (Q > 5 \% \text{ MEW})$
Temperature coefficient [% of the span / 10 K]		0,2

Reaction times

Flow monitoring		
Response time	[s]	$< 0,25; (dAP = 0, T09)$
Damping process value dAP	[s]	0...5
Temperature monitoring		
Dynamic response T05 / T09	[s]	5,7 / 86

Software / programming

Diagnostic functions	direction of flow detection; signal quality
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Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1.3	
SDCI standard	IEC 61131-9: 2013-07	
Profiles	Function class	Description
	0x4000	Identification and Diagnosis
Required master port class	A	
Process data analog	3	
Process data binary	2	
Min. process cycle time	[ms]	9,6
IO-Link process data (cyclical)	Function	bit length
	totalizer	32
	Flow monitoring	32
	Temperature monitoring	32
	status	4
	Output 1	1
	Output 2	1
Supported DeviceIDs	Type of operation	DeviceID
	default	1460

Operating conditions

Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals

EMC	DIN 61326-1:2021	
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CPA approval	model number	002US
	accuracy class	1,5
Shock resistance	DIN IEC 68-2-27	20 g (11ms)
Vibration resistance	DIN IEC 68-2-6	5 g (10...2000Hz)
MTTF [years]		160
UL approval	UL approval number	I034
	File number UL	E174189
Pressure equipment directive	can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	542.95
Housing	rectangular
Type of mounting	inlet pipe length 5xDN; outlet pipe length 1xDN
Dimensions [mm]	130 x 48 x 65.2
Material	housing: stainless steel (1.4404 / 316L); Display: PFA; sealing Display: FKM; connector: PBT
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: Centellen Gasket
Process connection	threaded connection G 1 external thread DN25
Surface characteristics Ra/Rz of the wetted parts	1.25 µm

Displays / operating elements

Display	Color display 1,44", 128 x 128 pixels
Switching function	2 x LED, yellow
diagnosis	1 x LED, three-color

Accessories

Items supplied	Gasket 2, Centellen package insert
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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 the accuracy indications are adhered to over the entire application area
Pack quantity	1 pcs.

Electrical connection

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



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Connection



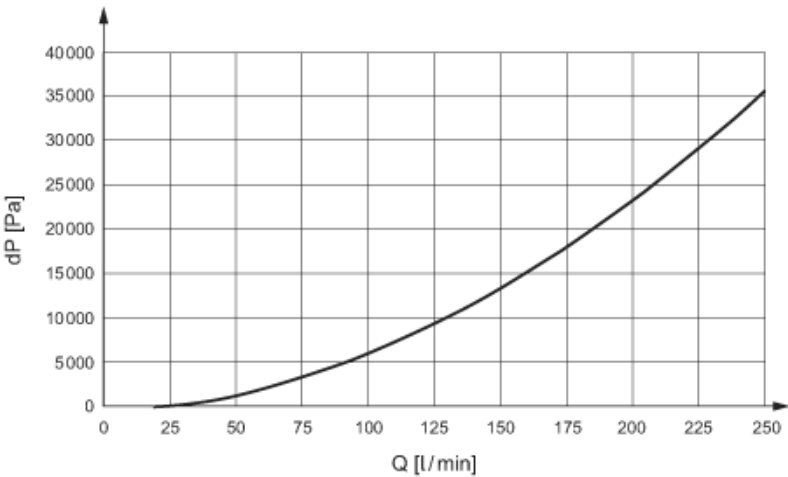
- OUT1/IO-Link:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - Pulse output quantity meter
 - Frequency output Volumetric flow quantity monitoring
 - Frequency output Temperature monitoring
 - signal output Preset counter
- OUT2/InD:
- Switching output Volumetric flow quantity monitoring
 - Switching output Temperature monitoring
 - Pulse output quantity meter
 - analog output flow
 - analog output temperature
 - signal output Preset counter
 - Input counter reset

Colors to DIN EN 60947-5-2

- Core colors
- BK= black
 - BN= brown
 - BU= blue
 - WH= white

Diagrams and graphs

Note on pressure loss



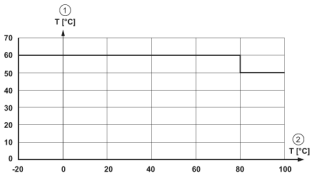
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derating ambient temperature



- 1 Ambient temperature
- 2 Medium temperature