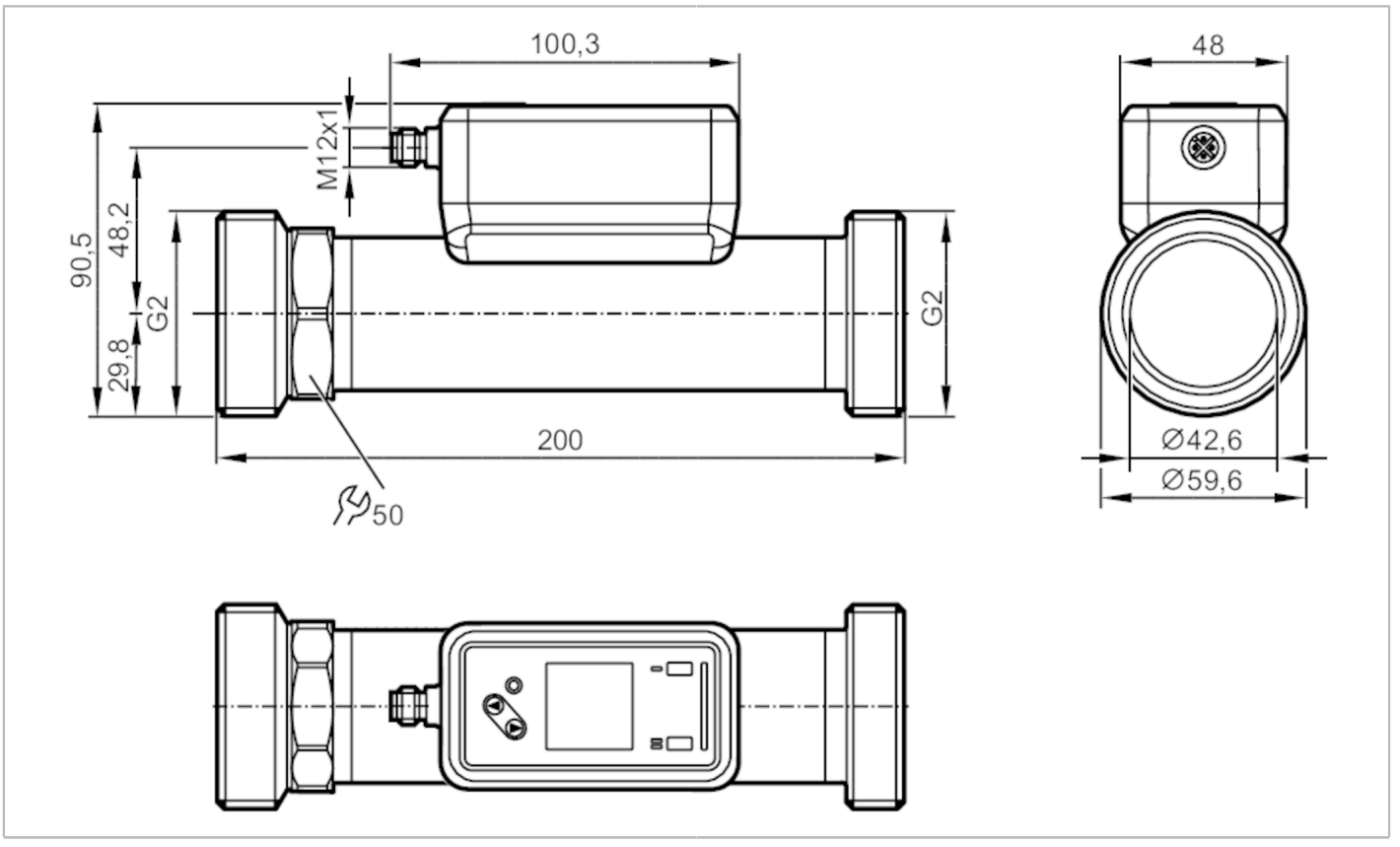
SU2020

Ultrasonic flow meter

SUR21XFBFRKG/US



ACS CE PA c UL us LISTED IO-Link KTW/W270 Reg31

Product characteristics					
Measuring range		5...1000 l/min	300...60000 l/h	0.058...11.666 m/s	0.3...60 m³/h
Process connection		G 2 DN50 external thread			
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			
MAWP (for applications according to CRN)	[bar]	100			
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		5...1000 l/min	300...60000 l/h	0.058...11.666 m/s	0.3...60 m³/h
Display range		-1200...1200 l/min	-72000...72000 l/h	-13.999...13.999 m/s	-72...72 m³/h
Resolution		0.1 l/min	1 l/h	0.001 m/s	0.002 m³/h
Set point SP		10.5...1000 l/min	630...60000 l/h	0.122...11.666 m/s	0.63...60 m³/h
Reset point rP		5.3...994.8 l/min	318...59688 l/h	0.062...11.605 m/s	0.318...59.688 m³/h
Analog start point ASP		-1000...800 l/min	-60000...48000 l/h	-11.666...9.333 m/s	-60...48 m³/h
Analog end point AEP		-800...1000 l/min	-48000...60000 l/h	-9.333...11.666 m/s	-48...60 m³/h
Low flow cut-off LFC		5...50 l/min	300...3000 l/h	0.058...0.583 m/s	0.3...3 m³/h
Frequency end point, FEP		200.6...1000 l/min	12037...60000 l/h	2.34...11.666 m/s	12.037...60 m³/h
Frequency at the end point FRP	[Hz]	1...10000			
Volumetric flow quantity monitoring					
Pulse length	[s]	0.002...2			
Pulse value		0.1...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	
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)	± (1,0 % MW + 0,5 % MEW)	
Repeatability	± 0,2 % MEW	
Temperature monitoring		
Accuracy [K]	± 2,5 (Q > 5 % 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	
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	Identification and Diagnosis (0x4000)	
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	1461
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	I033
		File number UL	E174189
Pressure equipment directive		can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight	[g]	1180	
Type of mounting		inlet pipe length 5xDN; outlet pipe length 1xDN	
Material		housing: stainless steel (1.4404 / 316L); Display: PFA; sealing Display: FKM; connector: POKAN	
Materials (wetted parts)		Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: Centellen Gasket	
Process connection		G 2 DN50 external thread	
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
Display unit		l/min; l/h; m³/h; m/s	

Accessories

Items supplied	Gasket 2, Centellen
	package insert

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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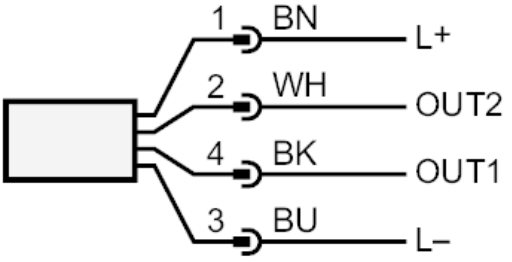
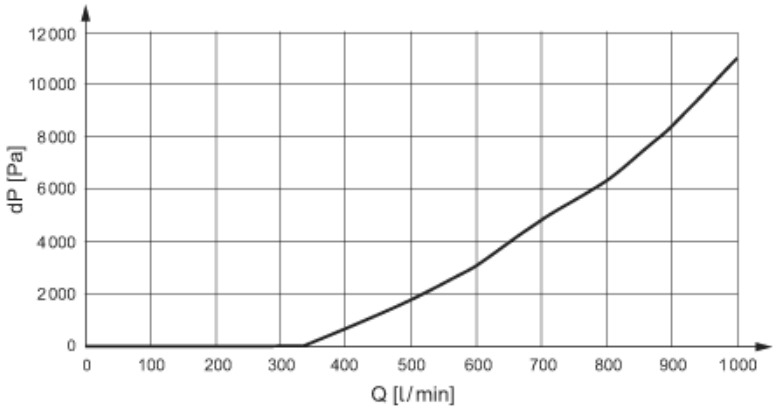
Connection



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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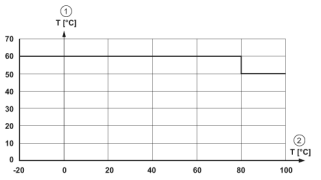
derating ambient temperature



1 Ambient temperature

2 Medium temperature