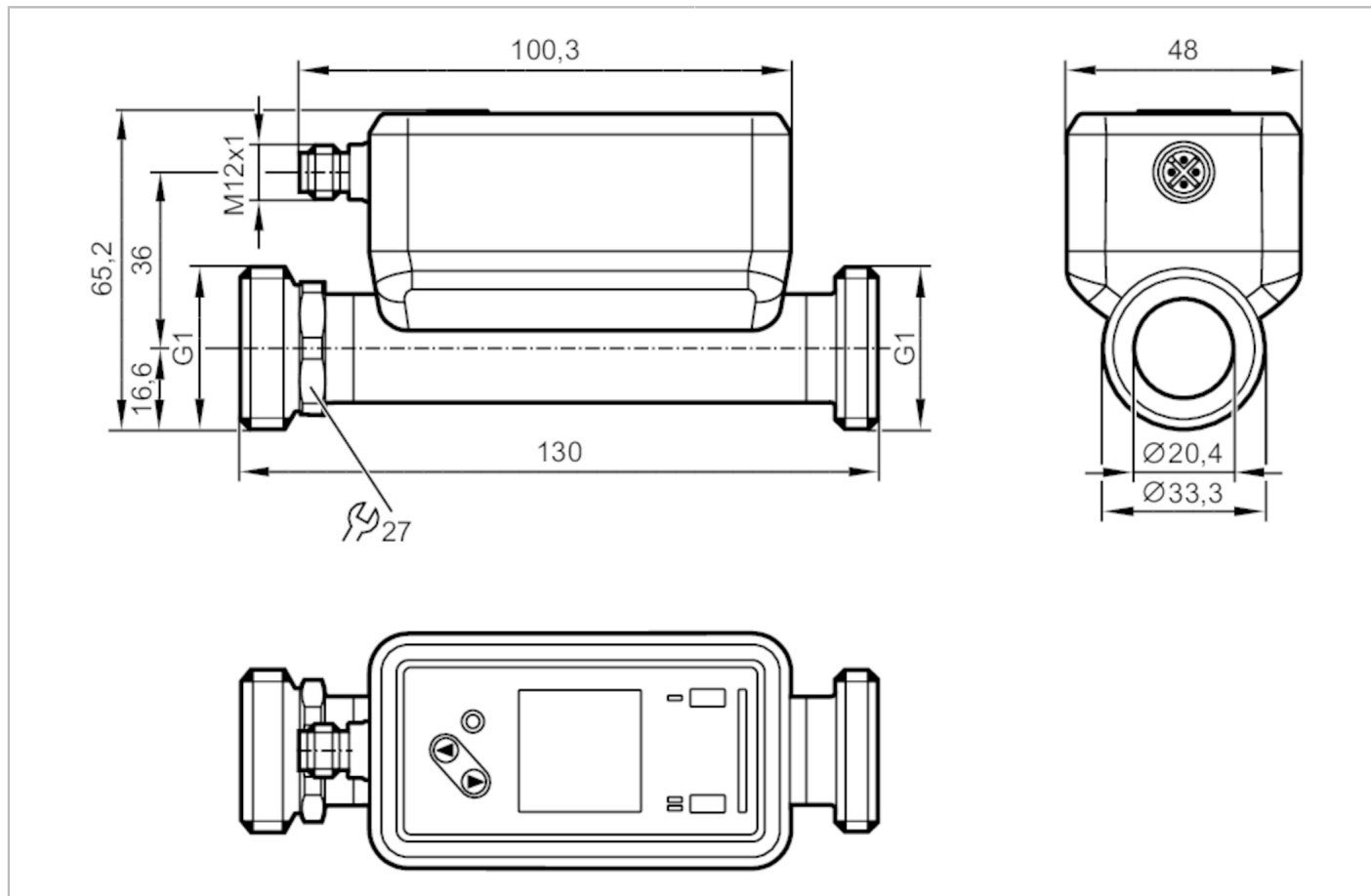


SU8021



Ultrasonic flow meter

SUR11XXBFRKG/US



ACS CE PA cULus IO-Link KTW/W270 NSF Reg31

Product characteristics

Measuring range	1...240 l/min	0.06...14.4 m³/h	16...3804 gph	0.26...63.4 gpm
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	-20...100 °C	-4...212 °F
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		analog 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	0.06...14.4 m³/h	16...3804 gph	0.26...63.4 gpm
Display range		-288...288 l/min	-17.28...17.28 m³/h	-4565...4565 gph	-76.08...76.08 gpm
Resolution		0.1 l/min	0.001 m³/h	1 gph	0.02 gpm
Set point SP		2.3...240 l/min	0.139...14.4 m³/h	37...3804 gph	0.61...63.4 gpm
Reset point rP		1.1...238.8 l/min	0.064...14.325 m³/h	17...3784 gph	0.28...63.07 gpm
Analog start point ASP		-240...192 l/min	-14.4...11.522 m³/h	-3804...3044 gph	-63.4...50.73 gpm
Analog end point AEP		-192...240 l/min	-11.522...14.4 m³/h	-3044...3804 gph	-50.73...63.4 gpm
Low flow cut-off LFC		1...12 l/min	0.06...0.72 m³/h	16...190 gph	0.26...3.17 gpm
Frequency end point, FEP		48.1...240 l/min	2.889...14.4 m³/h	763...3804 gph	12.72...63.4 gpm
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; 0.005...26414563.515 gal			
Temperature monitoring					
Measuring range		-20...100 °C		-4...212 °F	
Display range		-44...124 °C		-47.2...255.2 °F	
Resolution		0.1 °C		0.1 °F	
Set point SP		-19.6...100 °C		-3.2...212 °F	
Reset point rP		-20...99.6 °C		-4...211.2 °F	
Analog start point		-20...76 °C		-4...168.8 °F	
Analog end point		4...100 °C		39.2...212 °F	
Frequency start point, FSP		-20...76 °C		-4...168.8 °F	
Frequency end point, FEP		4...100 °C		39.2...212 °F	
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
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	1463
Operating conditions		
Ambient temperature [°C]		-20...60
Storage temperature [°C]		-25...80
Protection		IP 67
Tests / approvals		
EMC	DIN 61326-1:2021	
CPA approval	model number	002US
	accuracy class	1,5

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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]	496.8
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

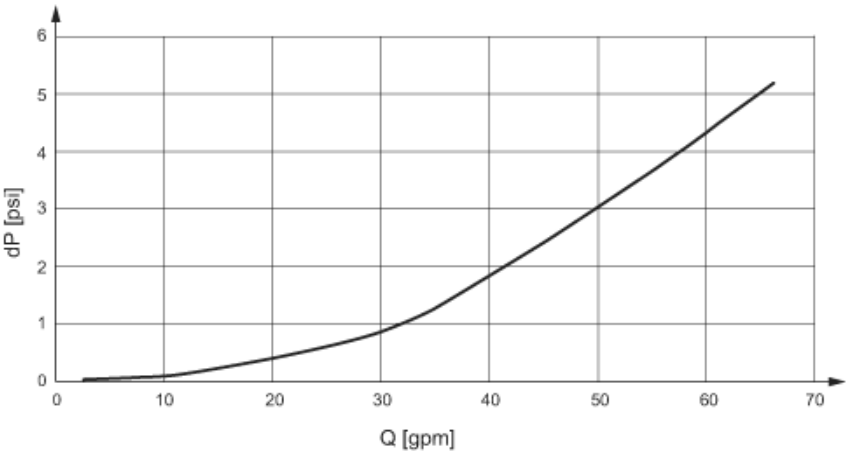
Colors to DIN EN 60947-5-2

Core colors

BK= black
BN= brown
BU= blue
WH= white

Diagrams and graphs

Note on pressure loss



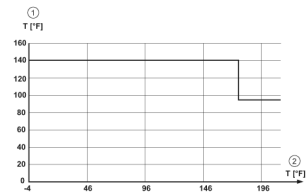
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derating ambient temperature



- 1 Ambient temperature
- 2 Medium temperature