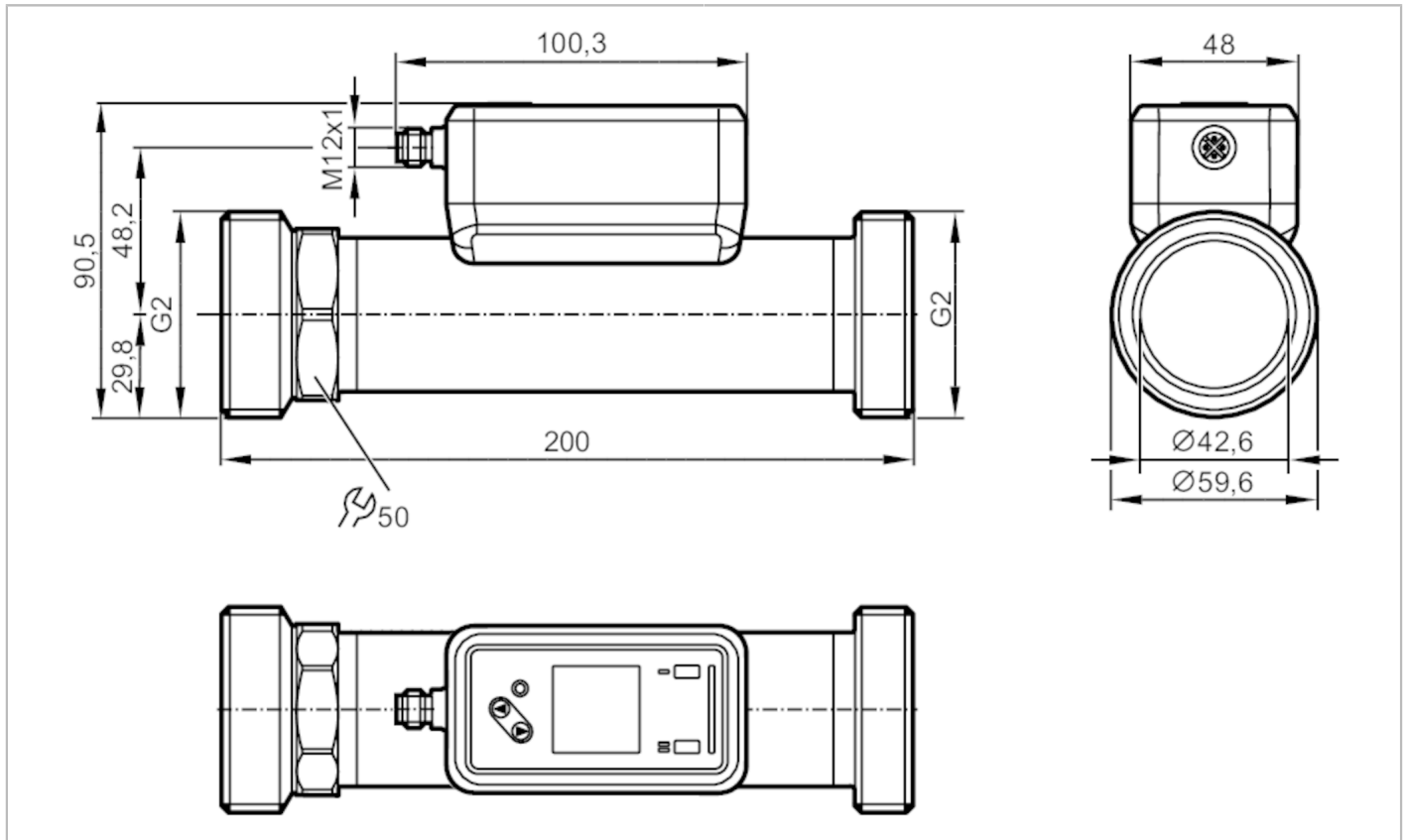


# SU2031



## Ultrasonic flow meter

SUR21XFBRKG/US



Product characteristics	
Measuring range	5...1000 l/min    0.3...60 m <sup>3</sup> /h    79...15850 gph    1.32...264.18 gpm
Process connection	threaded connection G 2 external thread DN50
Application	
Special feature	Gold-plated contacts
Media	ultra-pure water; water; hydrous media; glycol solutions; oils; coolants
Note on media	hydrous media: for media with >10 % additives, the repeatability is the only available value low-viscosity oils with viscosity: 7...40 mm <sup>2</sup> /s (40 °C) high-viscosity oils with viscosity: 30...68 mm <sup>2</sup> /s (40 °C)
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	switching signal; pulse signal; analogue signal; IO-Link; frequency signal; diagnostic signal; totaliser switching signal			
Electrical design	PNP/NPN			
Output function	normally open / normally closed; (parameterisable)			
Max. voltage drop switching output DC [V]	2			
Permanent current rating of switching output DC [mA]	100			
Switching frequency DC [Hz]	0...10000			
Analogue current output [mA]	4...20			
Max. load [Ω]	500			
Pulse output	flow rate meter			
Short-circuit protection	yes			
Type of short-circuit protection	pulsed			
Overload protection	yes			
Measuring/setting range				
Measuring range	5...1000 l/min	0.3...60 m³/h	79...15850 gph	1.32...264.18 gpm
Display range	-1200...1200 l/min	-72...72 m³/h	-19020...19020 gph	-317...317 gpm
Resolution	0.1 l/min	0.001 m³/h	1 gph	0.01 gpm
Set point SP	10.5...1000 l/min	0.63...60 m³/h	166...15850 gph	2.77...264.17 gpm
Reset point rP	5.3...994.8 l/min	0.318...59.688 m³/h	84...15768 gph	1.4...262.8 gpm
Analogue start point ASP	-1000...800 l/min	-60...48000 m³/h	-15850...12680 gph	-264.17...211.34 gpm
Analogue end point AEP	-800...1000 l/min	-48...60 m³/h	-12680...15850 gph	-211.34...264.17 gpm
Low flow cut-off LFC	5...50 l/min	0.3...3 m³/h	79...793 gph	1.32...13.21 gpm
Frequency end point, FEP	200.6...1000 l/min	12.037...60 m³/h	3180...15850 gph	53...264.17 gpm
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; 0.026...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	
Analogue start point	-20...76 °C		-4...168.8 °F	
Analogue 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)	glycol solutions (35%)	±(5,0 % MW + 0,5 % MEW)
	high-viscosity oils with viscosity 46mm <sup>2</sup> /s (40°C)	±(5,0 % MW + 0,5 % MEW)
	low-viscosity oils with viscosity 10mm <sup>2</sup> /s (40°C)	±(5,0 % MW + 0,5 % MEW)
	water	± (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	
Response 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	BLOB	Binary Large Object transfer
	Common - I&D	Identification and Diagnosis
Required master port type	A	
Process data analogue	3	
Process data binary	2	
Min. process cycle time [ms]	9.6	
IO-Link process data (cyclical)	<b>function</b>	<b>bit length</b>
	totaliser	32
	Flow monitoring	32
	Temperature monitoring	32
	status	4
	Output 1	1
	Output 2	1
	Supported DeviceIDs	<b>Type of operation</b> default
Operating conditions		
Ambient temperature [°C]	-20...60	
Storage temperature [°C]	-25...80	
Protection	IP 67	

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Tests / approvals	
EMC	DIN 61326-1:2021
Shock resistance	DIN IEC 68-2-27 20 g (11ms)
Vibration resistance	DIN IEC 68-2-6 20 g (10...2000Hz)
MTTF [years]	160
UL approval	UL approval no. I033
Pressure Equipment Directive	can be used for group 2 fluids; group 1 fluids on request
Mechanical data	
Weight [g]	1140.6
Housing	rectangular
Type of mounting	inlet pipe length 5xDN; outlet pipe length 1xDN
Dimensions [mm]	200 x 59.6 x 90.5
Materials	housing: stainless steel (316L/1.4404); Display: PFA; Sealing Display: FKM; connector: PBT
Materials (wetted parts)	Pipe section: stainless steel (316L/1.4404); Process connection sealing: NBR reinforced fibre Flat seal
Process connection	threaded connection G 2 external thread DN50
Surface characteristics Ra/Rz of the wetted parts	Ra < 1.25 µm
Displays / operating elements	
Display	colour display 1,44", 128 x 128 pixels
	Switching function 2 x LED, yellow
	diagnosis 1 x LED, three-colour
Display unit	l/min; l/h; m³/h; m/s; gpm; gph; ft/s; oz/min
Accessories	
Items supplied	Flat seal 2, Centellen package insert
Remarks	
Remarks	MW = measured value
	MEW = Final value of the measuring range
	pulse and totaliser 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

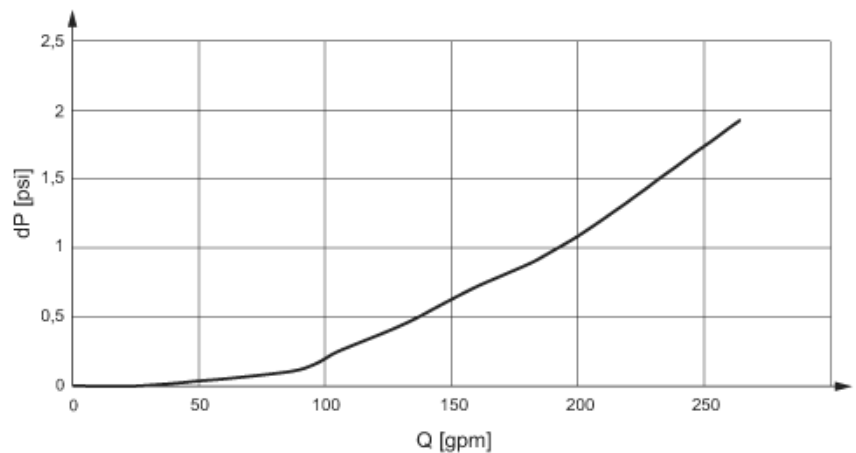
OUT2/InD: switching output volumetric flow quantity monitoring  
 switching output Temperature monitoring  
 Pulse output quantity meter  
 analogue output flow  
 analogue output temperature  
 signal output Preset counter  
 input counter reset

colours to DIN EN  
 60947-5-2

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

### Diagrams and graphs

Note on pressure loss



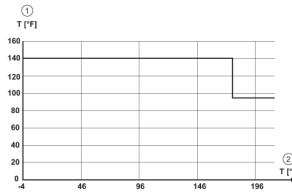
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## Ultrasonic flow meter

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derating ambient temperature



- 1 Ambient temperature
- 2 Medium temperature