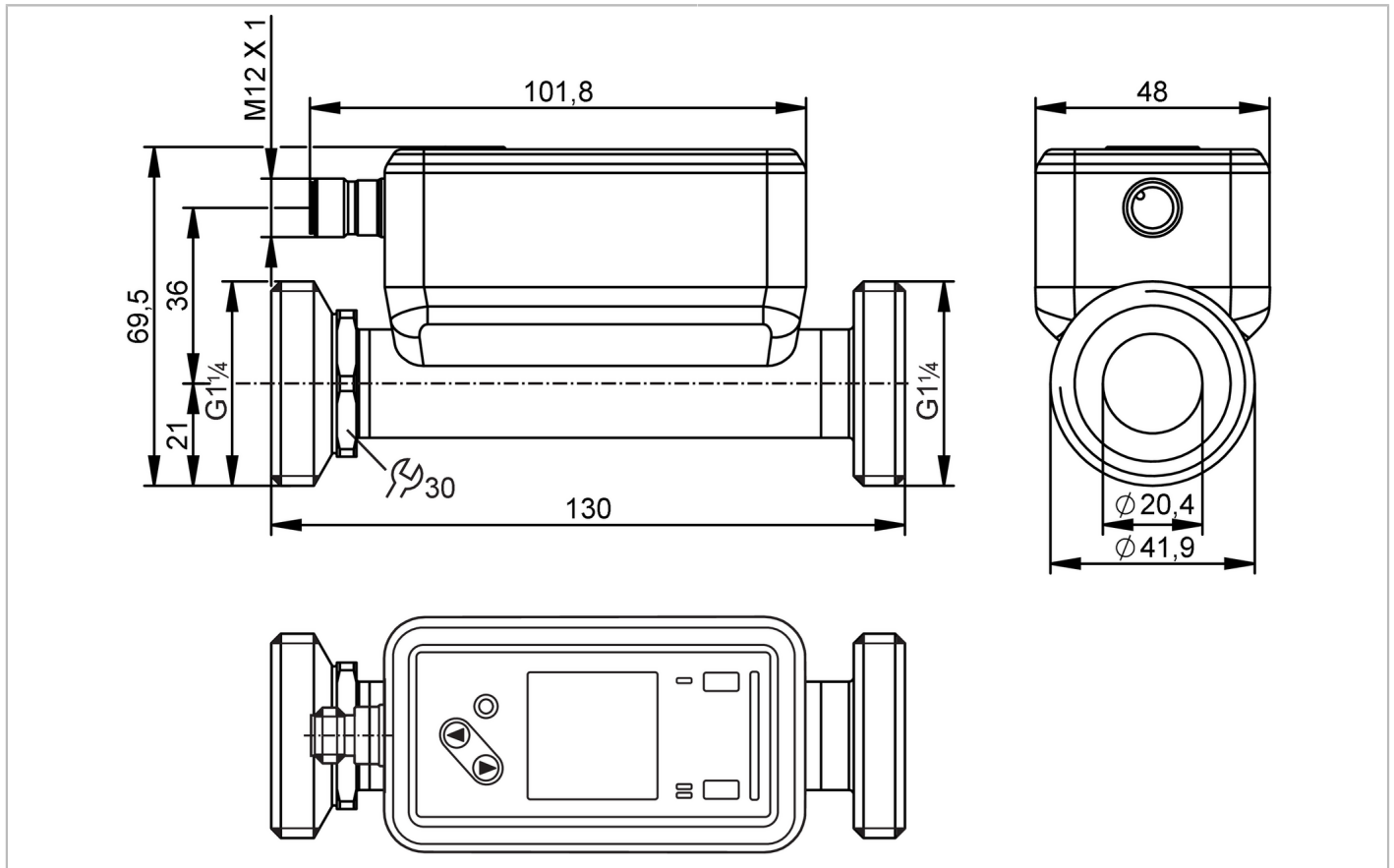


# SU9031



## Ultrasonic flow meter

SUR54XFBFRKG/US



ACS KTW/W270 Reg31

Product characteristics	
Measuring range	1...275 l/min    0.06...16.5 m³/h    16...4359 gph    0.26...72.64 gpm
Process connection	threaded connection G 1 1/4 external thread DN32
Application	
Special feature	gold-plated contacts
Media	ultra-pure water; water; water-based media; glycol solutions; oils; Coolants
Note on media	water-based media: for media with >10 % additives, the repeatability is the only available value low-viscosity oils with viscosity: 7...40 mm²/s (40 °C) high-viscosity oils with viscosity: 30...68 mm²/s (40 °C)
Medium temperature	-20...100 °C    -4...212 °F
Min. burst 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...275 l/min	0.06...16.5 m <sup>3</sup> /h	16...4359 gph	0.26...72.64 gpm
Display range	-330...330 l/min	-19.8...19.8 m <sup>3</sup> /h	-5231...5231 gph	-87.18...87.18 gpm
Resolution	0.1 l/min	0.001 m <sup>3</sup> /h	1 gph	0.01 gpm
Set point SP	2.5...275 l/min	0.151...16.5 m <sup>3</sup> /h	40...4359 gph	0.66...72.65 gpm
Reset point rP	1.1...273.6 l/min	0.065...16.414 m <sup>3</sup> /h	17...4336 gph	0.29...72.27 gpm
Analog start point ASP	-275...220 l/min	-16.5...13.2 m <sup>3</sup> /h	-4359...3487 gph	-72.65...58.12 gpm
Analog end point AEP	-220...275 l/min	-13.2...16.5 m <sup>3</sup> /h	-3487...4359 gph	-58.12...72.65 gpm
Low flow cut-off LFC	1...13.8 l/min	0.06...0.825 m <sup>3</sup> /h	16...218 gph	0.26...3.63 gpm
Frequency end point, FEP	55.2...275 l/min	3.31...16.5 m <sup>3</sup> /h	874...4359 gph	14.75...72.65 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; 0.026...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	
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)	glycol solutions (35%)	$\pm(5,0 \% \text{ MW} + 0,5 \% \text{ MEW})$
	high-viscosity oils with viscosity 46mm <sup>2</sup> /s (40°C)	$\pm(5,0 \% \text{ MW} + 0,5 \% \text{ MEW})$
	low-viscosity oils with viscosity 10mm <sup>2</sup> /s (40°C)	$\pm(5,0 \% \text{ MW} + 0,5 \% \text{ MEW})$
	water	$\pm (1,0 \% \text{ MW} + 0,5 \% \text{ MEW})$
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	BLOB	Binary Large Object transfer
	Common - I&D	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)	<b>Function</b>	<b>bit length</b>
	totalizer	32
	Flow monitoring	32
	Temperature monitoring	32
	status	4
	Output 1	1
	Output 2	1
Supported DeviceIDs	<b>Type of operation</b>	<b>DeviceID</b>
	default	1761
Operating conditions		
Ambient temperature [°C]	-20...60	
Storage temperature [°C]	-25...80	
Protection	IP 65; 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 number	I034
Pressure equipment directive	can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight [g]	608.1	
Housing	rectangular	
Type of mounting	inlet pipe length 5xDN; outlet pipe length 1xDN	
Dimensions [mm]	130 x 48 x 69.5	
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: NBR fiber-reinforced Gasket	
Process connection	threaded connection G 1 1/4 external thread DN32	
Surface characteristics Ra/Rz of the wetted parts	Ra < 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; gpm; gph; ft/s; oz/min	
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  
Diagnostic output direction of flow detection  
Diagnostic output signal quality  
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  
Diagnostic output direction of flow detection  
Diagnostic output signal quality  
signal output Preset counter  
Input counter reset

Colors to DIN EN  
60947-5-2

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

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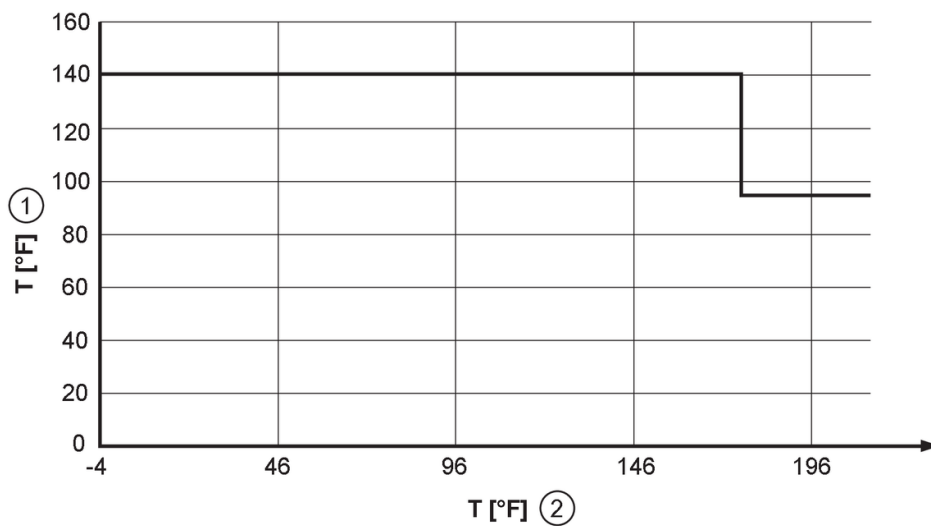


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### Diagrams and graphs

derating ambient temperature



- 1 Ambient temperature
- 2 Medium temperature

Pressure loss

