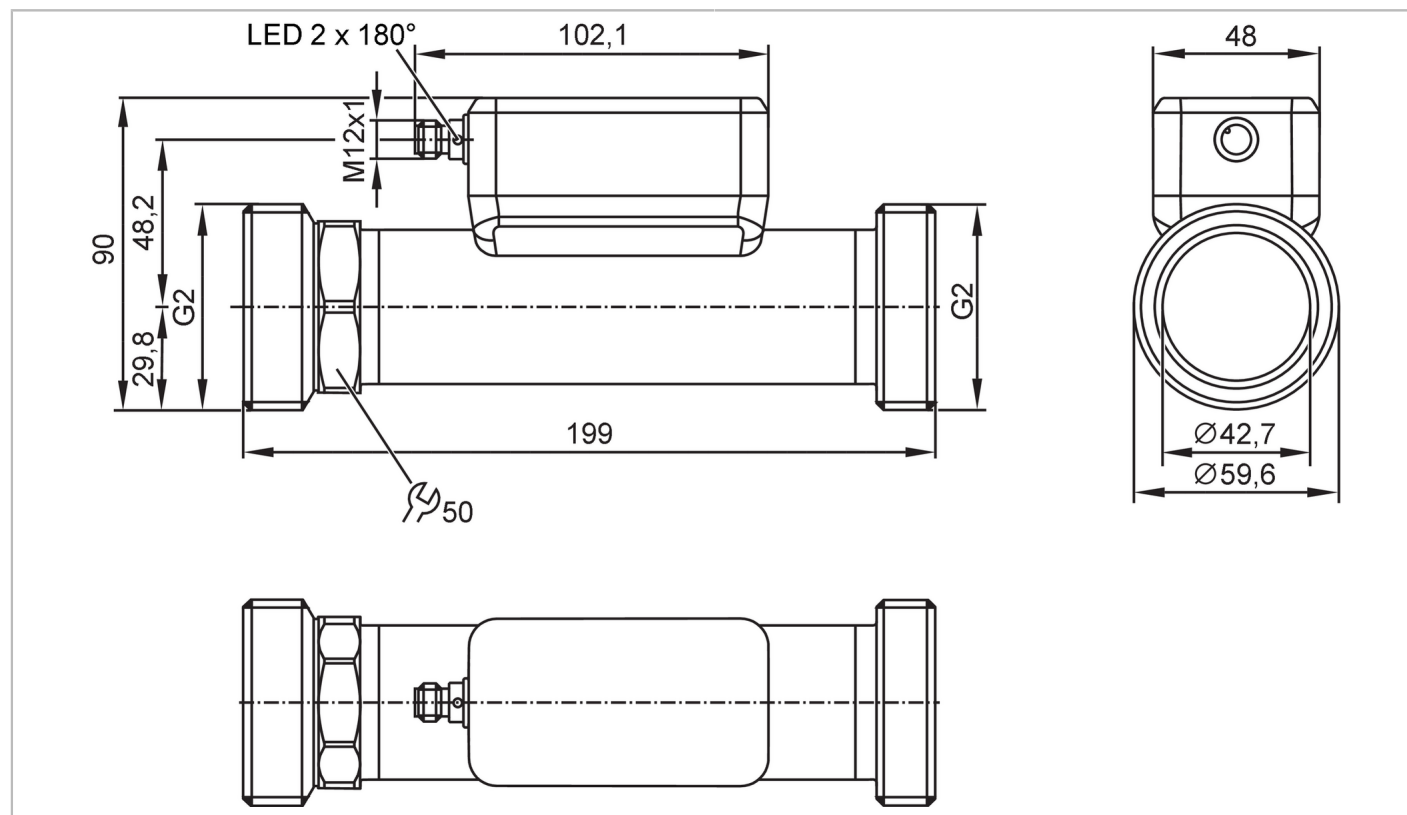


SU2050

Ultrasonic flow meter

SUR21XJBFRKG/US



ACS KTW/W270

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	5...1000 l/min	0.3...60 m³/h	79...15850 gph	1.32...264.18 gpm
Nominal diameter	DN50 (2")			
Process connection	threaded connection G 2 external thread DN50			

Application

Special feature	gold-plated contacts	
Application	use in mobile and industrial applications	
Media	ultra-pure water; water; water-based media; glycol solutions; oils (of high and low viscosity); 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	-40...120 °C	-40...248 °F
Min. burst pressure	150 bar	15 MPa
Pressure rating	100 bar	10 MPa
Vacuum resistance [mbar]	-1000	

Electrical data

Operating voltage [V]	8...32 DC; (to SELV/PELV)
Current consumption [mA]	< 175
Protection class	III
Reverse polarity protection	yes

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Power-on delay time	[s]	5			
Measuring principle		ultrasonic			
Inputs / outputs					
Total number of inputs and outputs		2			
Number of inputs and outputs		Number of digital outputs: 2; Number of analog outputs: 1			
Inputs					
Inputs		OUT2	counter reset		
Outputs					
Total number of outputs		2			
Output signal		OUT1	switching signal; pulse signal; diagnostic signal; totalizer switching signal; frequency signal; IO-Link		
		OUT2	switching signal; pulse signal; diagnostic signal; totalizer switching signal; analog signal		
Electrical design		PNP/NPN			
Number of digital outputs		2			
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			
Number of analog outputs		1			
Analog current output	[mA]	4...20; (scalable)			
Max. load	[Ω]	500			
Analog voltage output	[V]	0...10 / 0.5...4.5; (scalable)			
Min. load resistance	[Ω]	2000			
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	0.3...60 m³/h	79...15850 gph	1.32...264.18 gpm
Resolution		0.1 l/min	0.001 m³/h	1 gph	0.01 gpm
Note on factory setting		l/min			
		°C			
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
Analog start point ASP		-1000...800 l/min	-60...48000 m³/h	-15850...12680 gph	-264.17...211.34 gpm
Analog 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			



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Volumetric flow quantity monitoring		
Pulse length	[s]	0.002...2
Pulse value		0.1...99990000 l; 0.03...26414563.515 gal
Temperature monitoring		
Measuring range		-40...120 °C -40...248 °F
Resolution		0.1 °C 0.1 °F
Set point SP		-40...119.4 °C -40...247 °F
Reset point rP		-40...88 °C -40...190.4 °F
Analog start point		-8...120 °C 17.6...248 °F
Analog end point		-40...88 °C -40...190.4 °F
Frequency start point, FSP		-8...120 °C 17.6...248 °F
Frequency end point, FEP		-40...119.4 °C -40...247 °F
Frequency at the end point FRP	[Hz]	1...10000
Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		only up to 100 °C; at higher temperatures, only the repeatability is within the specification.
Accuracy (in the measuring range)	glycol solutions (35%)	±(5,0 % MW + 0,5 % MEW)
	high-viscosity oils with viscosity 46mm2/s (40°C)	±(5,0 % MW + 0,5 % MEW)
	low-viscosity oils with viscosity 10mm2/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
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



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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	1841

Operating conditions

Ambient temperature [°C]	-25...60
Storage temperature [°C]	-40...80
Protection	IP 67; IP 69K

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]	136	
UL approval	UL approval number	I036
	File number UL	E174189
Pressure equipment directive	can be used for group 2 fluids; group 1 fluids on request	

Mechanical data

Weight [g]	1180
Housing	rectangular
Inlet pipe length	5 x DN
Outlet pipe length	1 x DN
Dimensions [mm]	199 x 59.6 x 90
Material	housing: stainless steel (1.4404 / 316L); connector: PEI, FKM
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced
Nominal diameter	DN50 (2")
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	operating status	1 x LED, green
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Accessories

Items supplied	Gasket 2, NBR fiber-reinforced 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
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Pack quantity

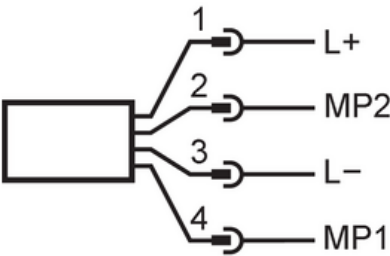
1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: 4, gold-plated



Connection



1 (L+)	L+	
2 (OUT2)	MP2	DO, AO, Reset
3 (L-)	L-	
4 (OUT1)	MP1	DO, IO-Link

Electrical connection - plug

Diagrams and graphs

Note on pressure loss

