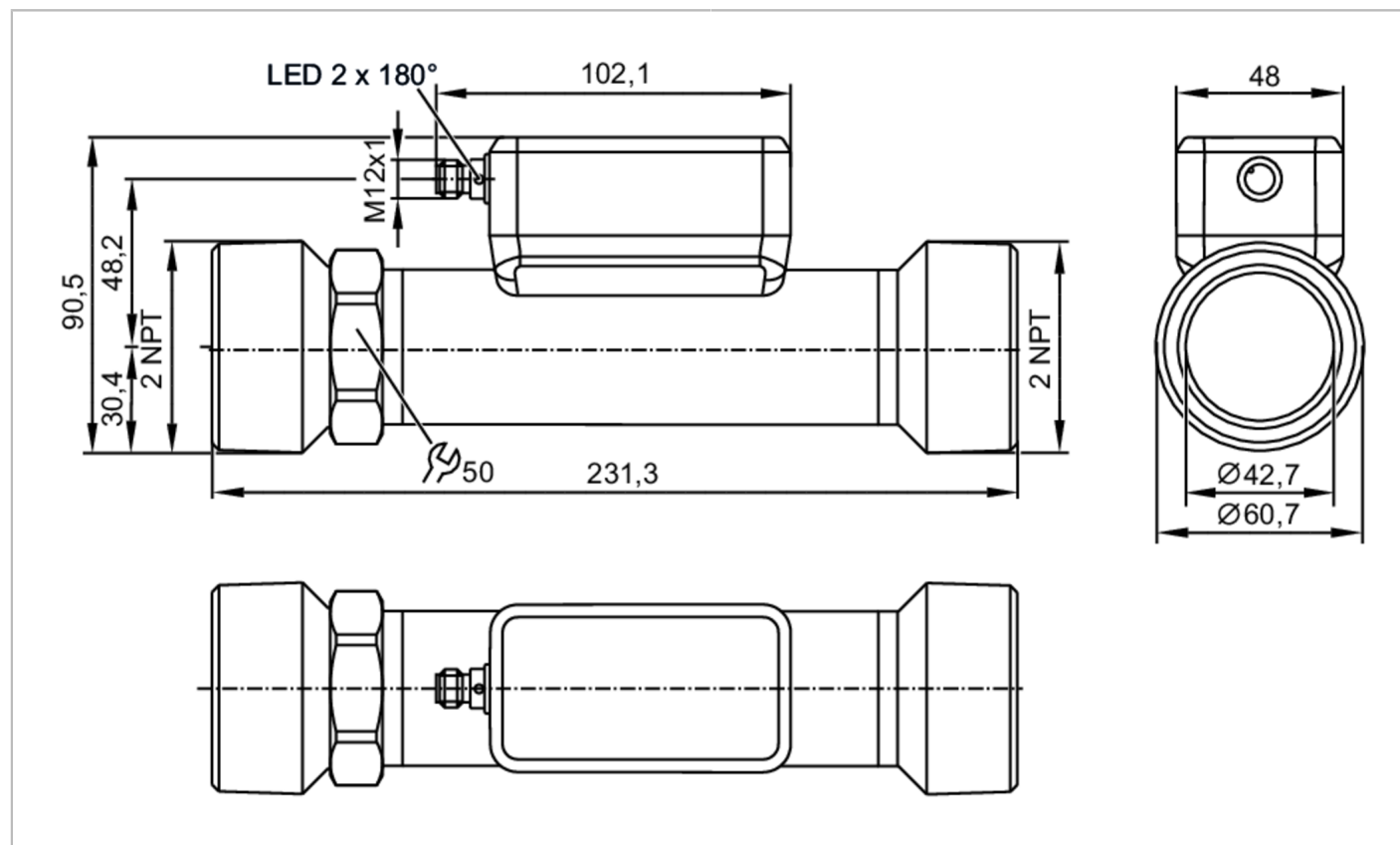


SU2651

Ultrasonic flow meter

SUN21XJBFRKG/US



ACS KTW/W270 Reg31

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 2" NPT external thread DN50			

Application

System	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		

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Reverse polarity protection	yes
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
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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	gpm			
	°F			
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	1840

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]		160
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]		1384.5
Housing		rectangular
Inlet pipe length		5 x DN
Outlet pipe length		1 x DN
Dimensions [mm]		231.3 x 60.7 x 90.5
Material	housing: stainless steel (1.4404 / 316L); connector: PEI, FKM	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L)	
Nominal diameter		DN50 (2")
Process connection	threaded connection 2" NPT external thread DN50	
Surface characteristics Ra/Rz of the wetted parts		49.21 µin

Displays / operating elements		
Display	operating status	1 x LED, green

Accessories		
Items supplied		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.

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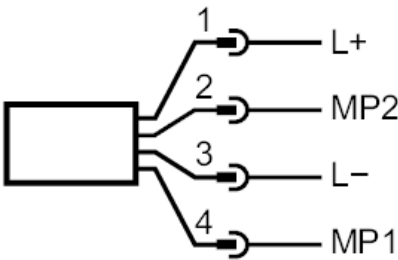
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Electrical connection

Connector: 1 x M12; coding: A; Contacts: 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

