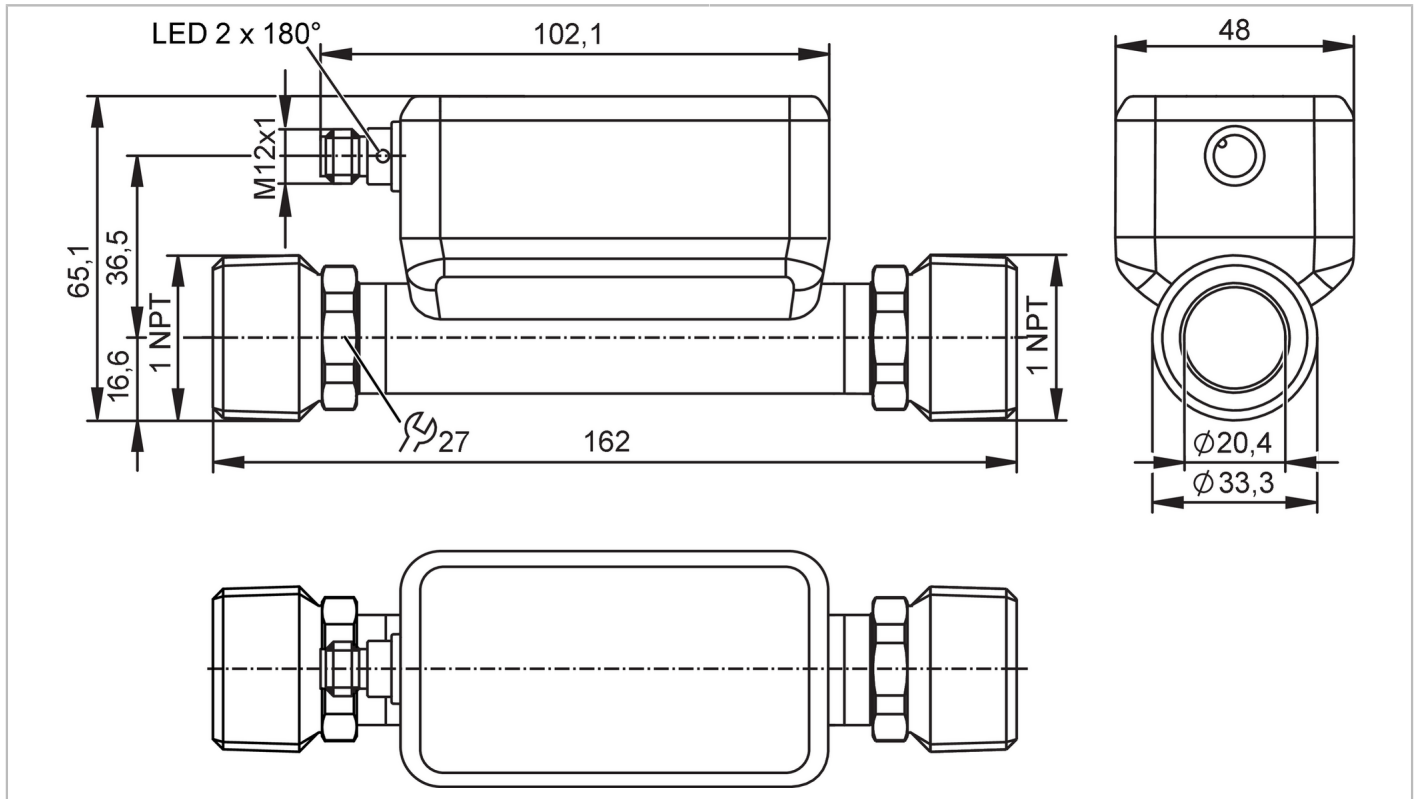


# SU8651



## Ultrasonic flow meter

SUN11XJBFRKG/US



ACS KTW/W270 Reg31

Product characteristics	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1
Measuring range	1...240 l/min    0.06...14.4 m <sup>3</sup> /h    16...3804 gph    0.26...63.4 gpm
Nominal diameter	DN25 (1")
Process connection	threaded connection 1" NPT external thread DN25
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 mm <sup>2</sup> /s (40 °C) high-viscosity oils with viscosity: 30...68 mm <sup>2</sup> /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			
<b>Inputs / outputs</b>					
Total number of inputs and outputs		2			
Number of inputs and outputs		Number of digital outputs: 2; Number of analog outputs: 1			
<b>Inputs</b>					
Inputs		OUT2	counter reset		
<b>Outputs</b>					
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			
<b>Measuring/setting range</b>					
Measuring range		1...240 l/min	0.06...14.4 m³/h	16...3804 gph	0.26...63.4 gpm
Resolution		0.1 l/min	0.001 m³/h	1 gph	0.02 gpm
Note on factory setting		gpm °F			
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		-191.9...240 l/min	-11.511...14.4 m³/h	-3041...3804 gph	-50.68...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			

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## Ultrasonic flow meter

SUN11XJBFRKG/US

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 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	
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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## Ultrasonic flow meter

SUN11XJBFKRG/US

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	1828

### 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	I037
	File number UL	E174189
Pressure equipment directive	can be used for group 2 fluids; group 1 fluids on request	

### Mechanical data

Weight [g]	631.5
Housing	rectangular
Inlet pipe length	5 x DN
Outlet pipe length	1 x DN
Dimensions [mm]	162 x 48 x 65.1
Material	housing: stainless steel (1.4404 / 316L); connector: PEI FKM
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L)
Nominal diameter	DN25 (1")
Process connection	threaded connection 1" NPT external thread DN25
Surface characteristics Ra/Rz of the wetted parts	49.21 µin

### Displays / operating elements

Display	operating status	1 x LED, green
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### Accessories

Items supplied	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.

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## Ultrasonic flow meter

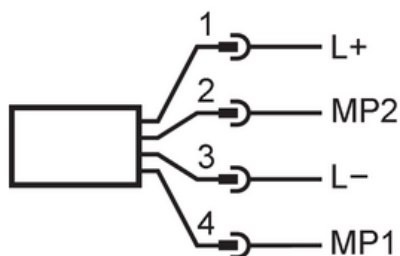
SUN11XJBFRKG/US

### Electrical connection

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



### Connection

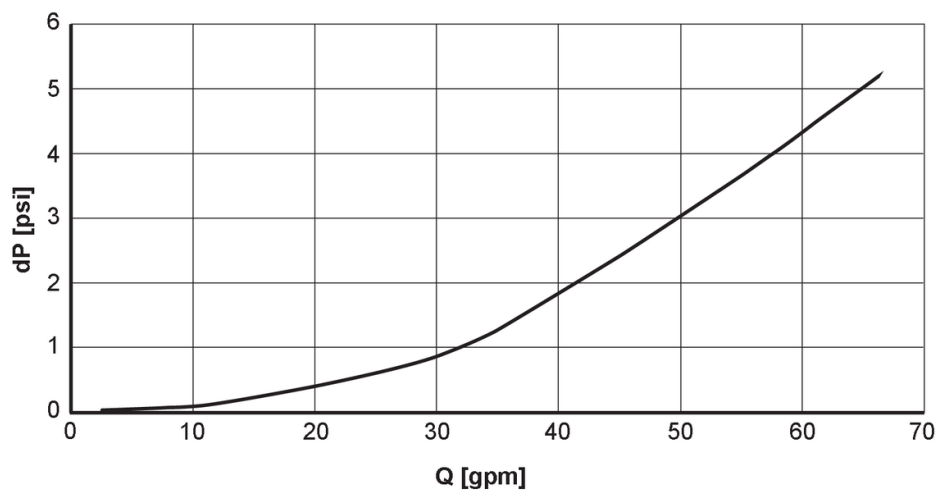


1 (L+)	L+	
2 (OUT2)	MP2	DO, AO, Reset
3 (L-)	L-	
4 (OUT1)	MP1	DO, IO-Link

### Electrical connection - plug

### Diagrams and graphs

Note on pressure loss



dP Pressure loss  
[psi]  
Q volumetric flow quantity  
[gpm]