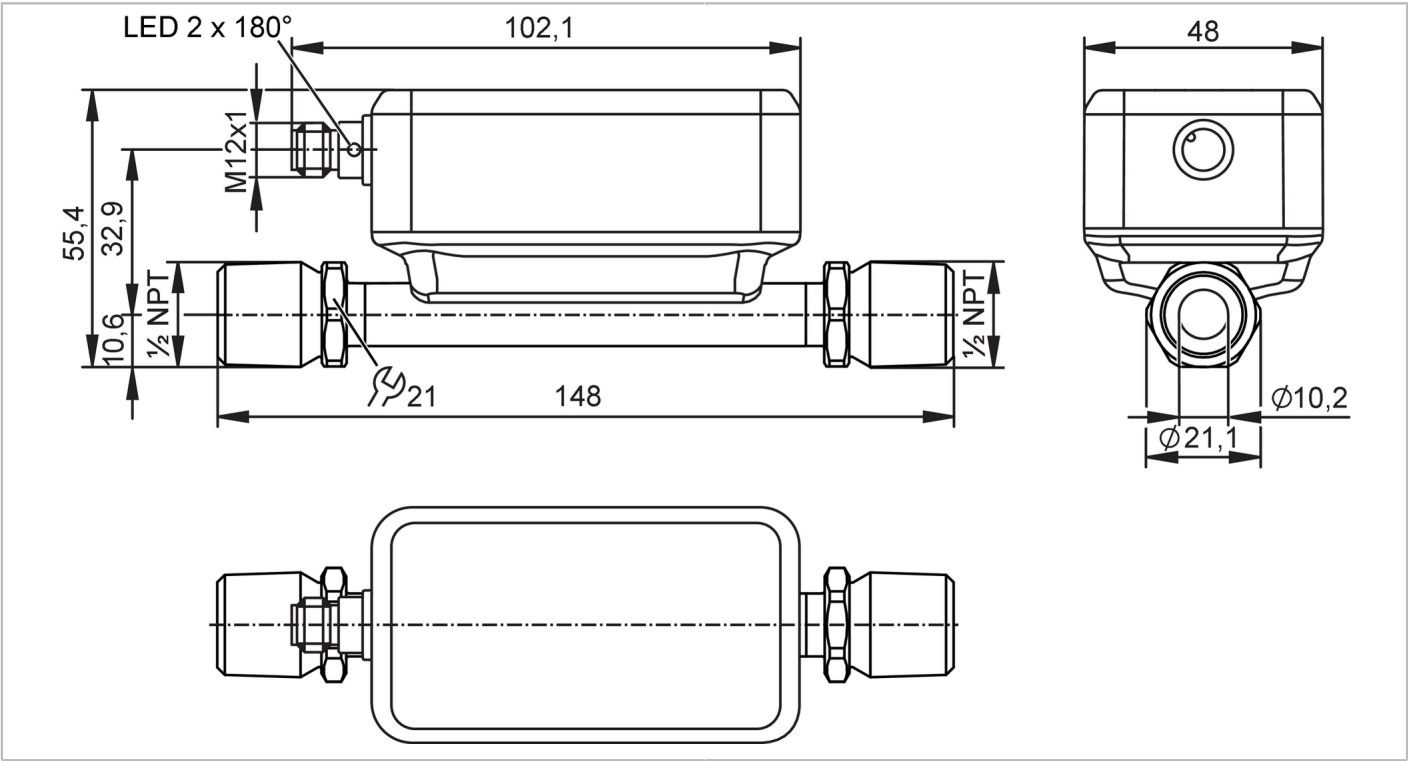


SU6651



Ultrasonic flow meter

SUN12XJBFRKG/US



ACS KTW/W270 Reg31

Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	0.5...65 l/min	0.03...3.9 m³/h	8...1030 gph	0.13...17.17 gpm
Nominal diameter	DN15 (1/2")			
Process connection	threaded connection 1/2" NPT external thread DN15			

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
Power-on delay time [s]	5

SU6651



Ultrasonic flow meter

SUN12XJBFRKG/US

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	0.5...65 l/min	0.03...3.9 m³/h	8...1030 gph	0.13...17.17 gpm
Resolution	0.1 l/min	0.002 m³/h	1 gph	0.01 gpm
Note on factory setting	gpm			
	°F			
Set point SP	0.9...65 l/min	0.052...3.9 m³/h	14...1030 gph	0.23...17.17 gpm
Reset point rP	0.5...64.7 l/min	0.032...3.88 m³/h	8...1025 gph	0.14...17.08 gpm
Analog start point ASP	-65...52 l/min	-3.9...3.12 m³/h	-1030...824 gph	-17.17...13.74 gpm
Analog end point AEP	-52...65 l/min	-3.12...3.9 m³/h	-824...1030 gph	-13.74...17.17 gpm
Low flow cut-off LFC	0.5...3.2 l/min	0.03...0.195 m³/h	8...52 gph	0.13...0.86 gpm
Frequency end point, FEP	13...65 l/min	0.782...3.9 m³/h	207...1030 gph	3.44...17.17 gpm
Frequency at the end point FRP [Hz]	1...10000			
Volumetric flow quantity monitoring				
Pulse length [s]	0.002...2			



Ultrasonic flow meter

SUN12XJBFRKG/US

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 + 1,0 % MEW)
	low-viscosity oils with viscosity 10mm2/s (40°C)	±(5,0 % MW + 1,0 % MEW)
	water	± (2,0 % 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	
Process data binary	2	
Min. process cycle time [ms]	9.6	

SU6651



Ultrasonic flow meter

SUN12XJBFRKG/US

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	1834

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]	533.8
Housing		rectangular
Inlet pipe length		5 x DN
Outlet pipe length		1 x DN
Dimensions	[mm]	148 x 48 x 55.4
Material		housing: stainless steel (1.4404 / 316L); connector: PEI FKM
Materials (wetted parts)		Pipe section: stainless steel (1.4404 / 316L)
Nominal diameter		DN15 (1/2")
Process connection		threaded connection 1/2" NPT external thread DN15
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.

SU6651



Ultrasonic flow meter

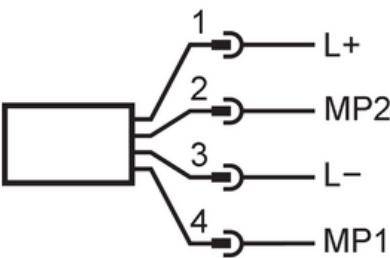
SUN12XJBFRKG/US

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

