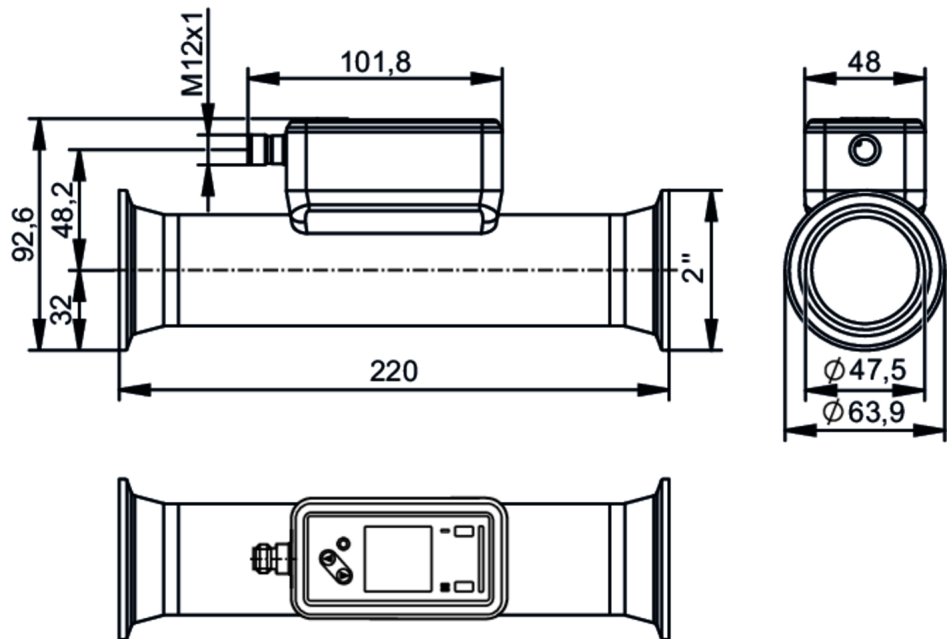


SUH400

Ultrasonic flow meter

SUC501JBFRKG/US



Product characteristics				
Measuring range	5...1000 l/min	300...60000 l/h	0.058...11.666 m/s	0.3...60 m³/h
Nominal diameter	DN50 (2")			
Process connection	Clamp 2" DIN 32676 series C (ASME BPE)			
Application				
System	gold-plated contacts			
Media	ultra-pure water; water; water-based media; edible oils			
Note on media	water-based media: for media with >10 % additives, the repeatability is the only available value			
	edible oils: palm oil, soy oil, rapeseed oil, sunflower oil, peanut oil, olive oil and others			
Medium temperature	[°C]	-20...100		
Min. bursting pressure	50 bar		5 MPa	
Pressure rating	16 bar		1.6 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			
Inputs / outputs				
Total number of inputs and outputs	2			

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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			
Short-circuit protection	yes			
Type of short-circuit protection	yes (non-latching)			
Overload protection	yes			
Analog				
Number of analog outputs	1			
Analog current output	[mA]	4...20		
Max. load	[Ω]	500		
Digital				
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		
Measuring/setting range				
Measuring range	5...1000 l/min	300...60000 l/h	0.058...11.666 m/s	0.3...60 m³/h
Display range	-1200...1200 l/min	-72000...72000 l/h	-13.999...13.999 m/s	-72...72 m³/h
Resolution	0.1 l/min	1 l/h	0.001 m/s	0.002 m³/h
Set point SP	10.5...1000 l/min	630...60000 l/h	0.122...11.666 m/s	0.63...60 m³/h
Reset point rP	5.3...994.8 l/min	318...59688 l/h	0.062...11.605 m/s	0.318...59.688 m³/h
Analog start point ASP	-1000...800 l/min	-60000...48000 l/h	-11.666...9.333 m/s	-60...48 m³/h
Analog end point AEP	-800...1000 l/min	-48000...60000 l/h	-9.333...11.666 m/s	-48...60 m³/h
Low flow cut-off LFC	5...50 l/min	300...3000 l/h	0.058...0.583 m/s	0.3...3 m³/h
Frequency end point, FEP	200.6...1000 l/min	12037...60000 l/h	2.34...11.666 m/s	12.037...60 m³/h
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		
Temperature monitoring				
Measuring range	[°C]	-20...100		
Display range	[°C]	-44...124		
Resolution	[°C]	0.1		
Set point SP	[°C]	-19.6...100		

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Reset point rP	[°C]	-20...99.6
Analog start point	[°C]	-20...76
Analog end point	[°C]	4...100
Frequency start point, FSP	[°C]	-20...76
Frequency end point, FEP	[°C]	4...100
Frequency at the end point FRP	[Hz]	1...10000

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)	edible oils	$\pm (5,0 \% \text{ MW} + 1,0 \% \text{ MEW})$
	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
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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	Function class	Description
	0x0030	BLOB transfer
	0x4000	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)	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	1752

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Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection		IP 69K
Tests / approvals		
EMC	DIN 61326-1:2021	
CPA approval	model number	003US
	accuracy class	1,5
Shock resistance	DIN IEC 68-2-27	20 g (11ms)
Vibration resistance	DIN IEC 68-2-6	5 g (10...2000Hz)
MTTF	[years]	160
UL approval	UL approval number	I033
	File number UL	E174189
Pressure equipment directive	can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight	[g]	933
Housing		rectangular
Inlet pipe length		5 x DN
Outlet pipe length		1 x DN
Dimensions	[mm]	220 x 63.9 x 92.6
Material	housing: stainless steel (1.4404 / 316L); Display: PFA; sealing Display: FKM; connector: PBT	
Materials (wetted parts)	Pipe section: stainless steel (1.4404 / 316L)	
Nominal diameter	DN50 (2")	
Process connection	Clamp 2" DIN 32676 series C (ASME BPE)	
Process connection suitable for pipe standard	1" / Ø 25,4 mm x 1,65 mm (DIN 11866 series C); (DIN EN 10357 series C)	
Surface characteristics Ra/Rz of the wetted parts	≤ 0.8 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
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; Contacts: gold-plated		

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Ultrasonic flow meter

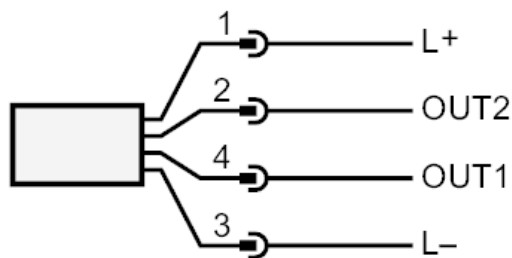
SUC501JBFRKG/US



Electrical connection - plug



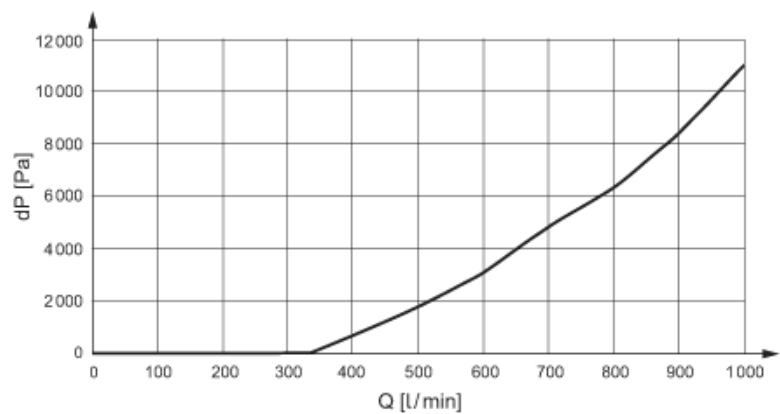
Connection



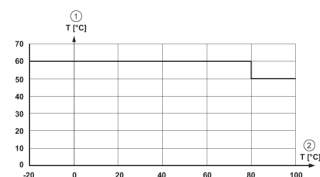
- | | |
|----|---------------------------|
| 1: | L+ |
| 2: | MP2 DO2 / DI2 / AO2 |
| 3: | L- |
| 4: | DATA1 IO-Link / DO1 / FO1 |

Diagrams and graphs

Note on pressure loss



derating ambient temperature



- | | |
|---|---------------------|
| 1 | Ambient temperature |
| 2 | Medium temperature |