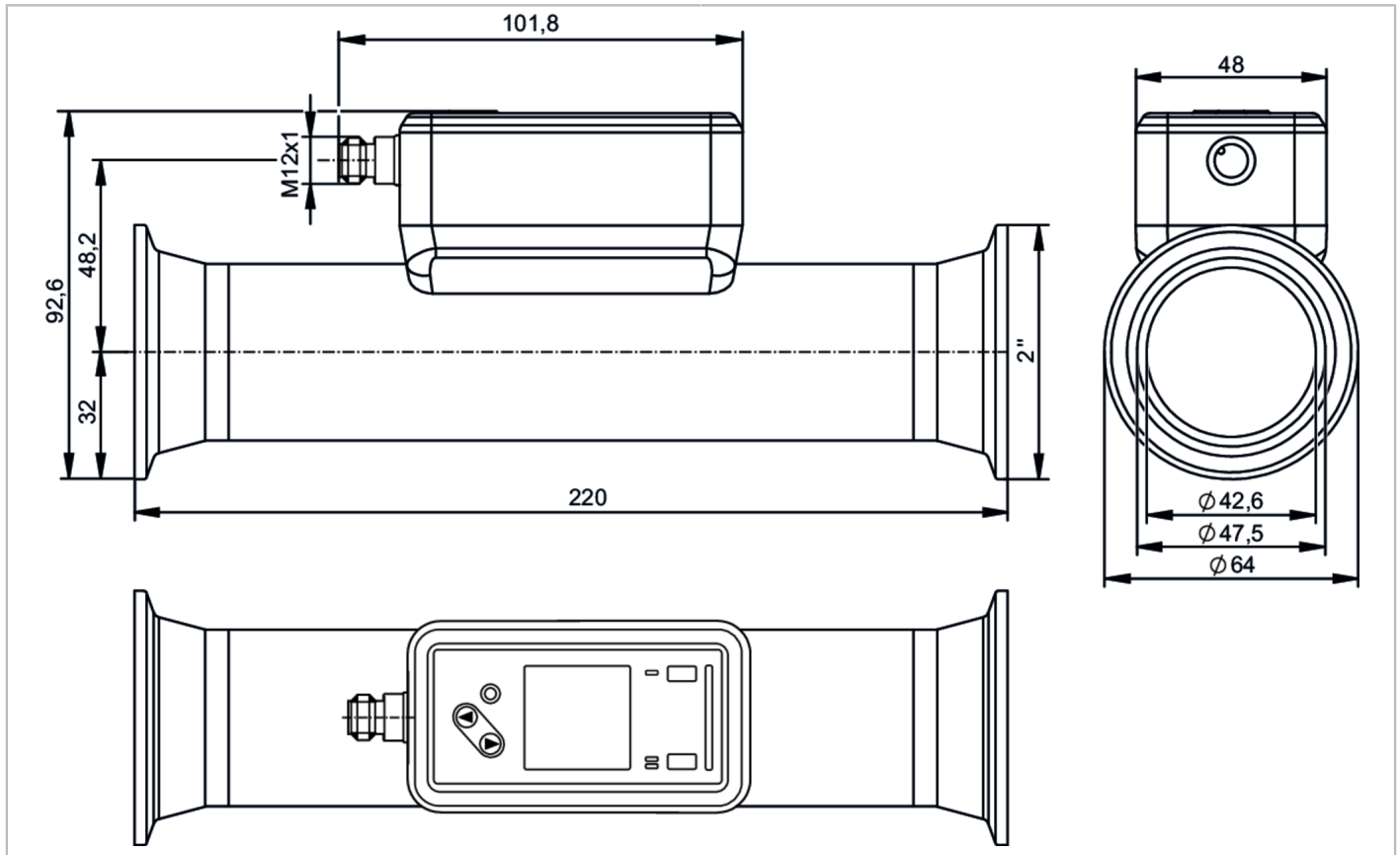


SUH401



Ultrasonic flow meter

SUC501JBFRKG/US



Product characteristics	
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	Clamp 2" DIN 32676 series C (ASME BPE)
Application	
Special feature	Gold-plated contacts
Media	ultra-pure water; water; hydrous media; edible oils
Note on media	hydrous 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	-20...100 °C -4...212 °F
Min. burst pressure	75 bar 7.5 MPa
Pressure rating	25 bar 2.5 MPa
Note on pressure rating	take into account the pressure resistance of the bracket and the seal used for clamp connection
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

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Measuring principle	ultrasonic			
Inputs / outputs				
Total number of inputs and outputs	2			
Inputs				
Inputs	OUT2	counter reset		
Outputs				
Total number of outputs	2			
Output signal	OUT1	switching signal; pulse signal; diagnostic signal; totaliser switching signal; frequency signal; IO-Link		
	OUT2	switching signal; pulse signal; diagnostic signal; totaliser switching signal; analogue signal		
Electrical design	PNP/NPN			
Min. load resistance [Ω]	2000			
Pulse output	flow rate meter			
Short-circuit protection	yes			
Type of short-circuit protection	pulsed			
Overload protection	yes			
Analogue				
Number of analogue outputs	1			
Analogue current output [mA]	4...20			
Max. load [Ω]	500			
Digital				
Number of digital outputs	2			
Output function	normally open / normally closed; (parameterisable)			
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	0.3...60 m ³ /h	79...15850 gph	1.32...264.18 gpm
Display range	-1200...1200 l/min	-72...72 m ³ /h	-19020...19020 gph	-317...317 gpm
Resolution	0.1 l/min	0.001 m ³ /h	1 gph	0.01 gpm
Set point SP	10.5...1000 l/min	0.63...60 m ³ /h	166...15850 gph	2.77...264.17 gpm
Reset point rP	5.3...994.8 l/min	0.318...59.688 m ³ /h	84...15768 gph	1.4...262.8 gpm
Analogue start point ASP	-1000...800 l/min	-60...48 m ³ /h	-15850...12680 gph	-264.17...211.34 gpm
Analogue end point AEP	-800...1000 l/min	-48...60 m ³ /h	-12680...15850 gph	-211.34...264.17 gpm
Low flow cut-off LFC	5...50 l/min	0.3...3 m ³ /h	79...793 gph	1.32...13.21 gpm
Frequency end point, FEP	200.6...1000 l/min	12.037...60 m ³ /h	3180...15850 gph	53...264.17 gpm
Frequency at the end point FRP [Hz]	1...10000			
Volumetric flow quantity monitoring				
Pulse length [s]	0.002...2			

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Pulse value 0.1...99990000 l; 0.026...26414563.515 gal

Temperature monitoring		
Measuring range	-20...100 °C	-4...212 °F
Display range	-44...124 °C	-47.2...255.2 °F
Resolution	0.1 °C	0.1 °F
Set point SP	-19.6...100 °C	-3.2...212 °F
Reset point rP	-20...99.6 °C	-4...211.2 °F
Analogue start point	-20...76 °C	-4...168.8 °F
Analogue end point	4...100 °C	39.2...212 °F
Frequency start point, FSP	-20...76 °C	4...168.8 °F
Frequency end point, FEP	4...100 °C	39.2...212 °F
Frequency at the end point FRP [Hz]	1...10000	

Accuracy / deviations

Flow monitoring		
Accuracy (in the measuring range)	edible oils	± (5,0 % MW + 1,0 % 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	

Response 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 type	A	
Process data analogue	3	
Process data binary	2	
Min. process cycle time [ms]	9.6	

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IO-Link process data (cyclical)	function	bit length
	totaliser	32
	Flow monitoring	32
	Temperature monitoring	32
	status	4
	Output 1	1
	Output 2	1
Supported DeviceIDs	Type of operation	DeviceID
	default	1753

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	20 g (10...2000Hz)
MTTF	[years]	160
UL approval	UL approval no.	I033
	File number UL	E174189
Pressure Equipment Directive	can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight	[g]	936.1
Housing		rectangular
Inlet pipe length		5 x DN
Outlet pipe length		1 x DN
Dimensions	[mm]	220 x 63.9 x 92.6
Materials	housing: stainless steel (316L/1.4404); Display: PFA; Sealing Display: FKM; connector: PBT	
Materials (wetted parts)	Pipe section: stainless steel (316L/1.4404)	
Nominal diameter	DN50 (2")	
Process connection	Clamp 2" DIN 32676 series C (ASME BPE)	
Process connection suitable for pipe standard	2" / Ø 50,8 mm x 1,65 mm (DIN 11866 series C); (DIN EN 10357 Series D)	
Surface characteristics Ra/Rz of the wetted parts	Ra < 0.8 µm (32 µin)	

Displays / operating elements		
Display		colour display 1,44", 128 x 128 pixels
	Switching function	2 x LED, yellow
	diagnosis	1 x LED, three-colour

Remarks		
Remarks	MW = measured value	
	MEW = Final value of the measuring range	
	pulse and totaliser 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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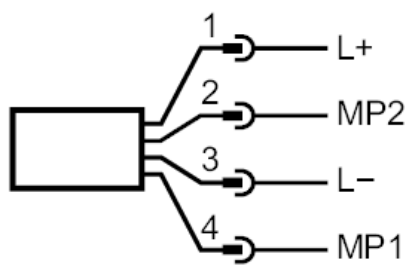
Electrical connection

Connector: 1 x M12; Contacts: gold-plated

Electrical connection - plug



Connection

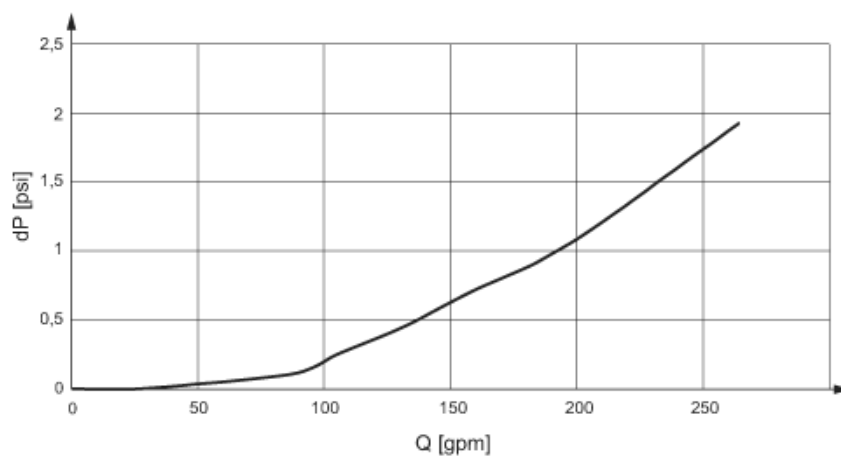


1 (L+)	L+	
2 (OUT2)	MP2	DO2, AO, DI
3 (L-)	L-	
4 (OUT1)	MP1	DO1, FO, IO-Link

AO: analogue output; DI: digital input; DO: digital output; FO: frequency output; MP: multi-function connection

Diagrams and graphs

Note on pressure loss



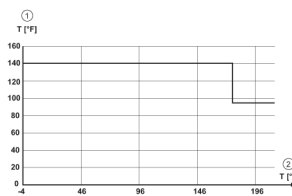
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derating ambient temperature



- 1 Ambient temperature
- 2 Medium temperature