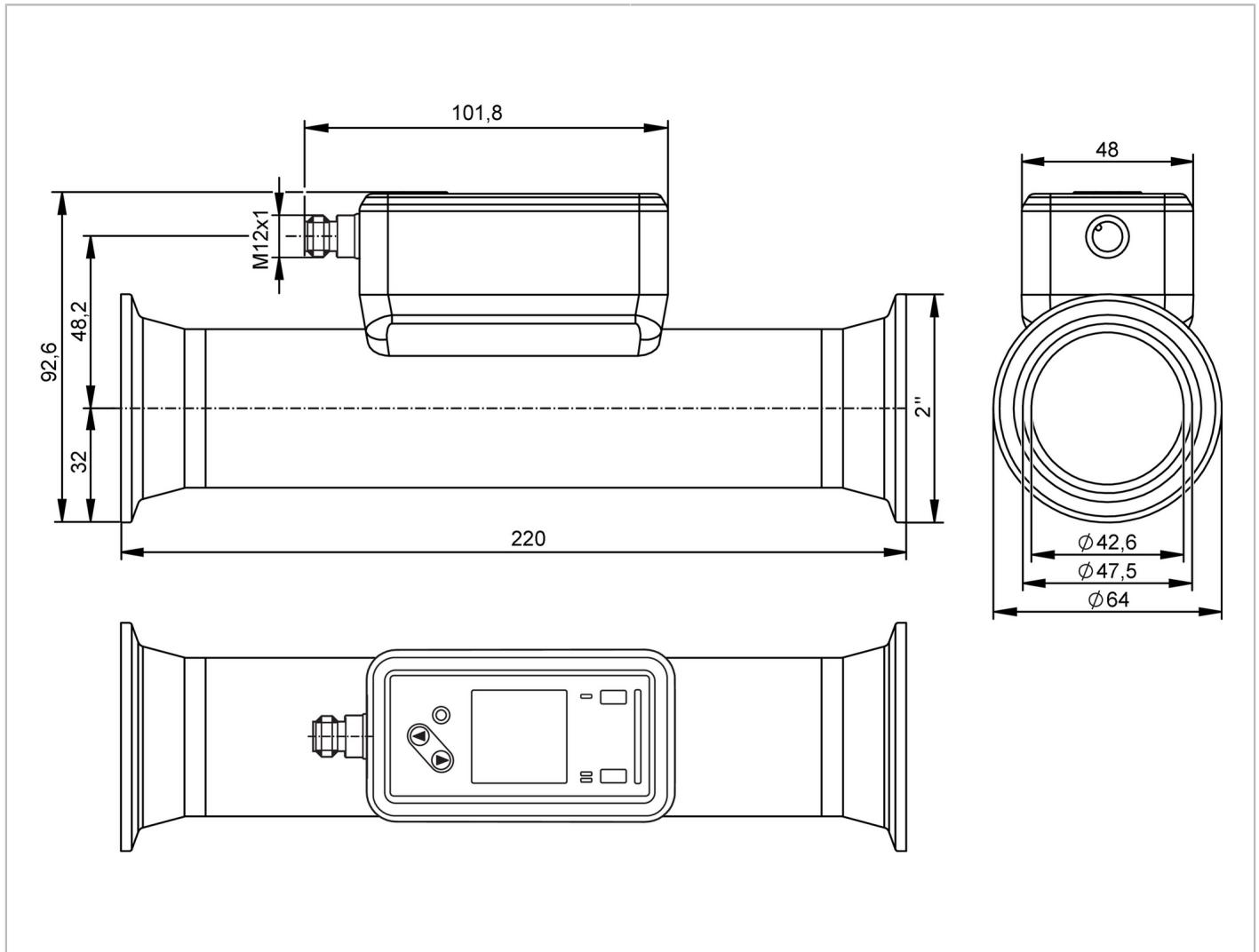


SUH401



Ultrasonic flow meter

SUC501JBFRKG/US



Product characteristics				
Measuring range	5...1000 l/min	0.3...60 m ³ /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; 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	-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			

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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			
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			
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			
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	0.3...60 m³/h	79...15850 gph	1.32...264.18 gpm
Display range		-1200...1200 l/min	-72...72 m³/h	-19020...19020 gph	-317...317 gpm
Resolution		0.1 l/min	0.001 m³/h	1 gph	0.01 gpm
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...48 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

SUH401



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SUC501JBFRKG/US

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			
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	
Analog start point	-20...76 °C		-4...168.8 °F	
Analog 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			
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	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 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]	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
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	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 < 0.4 µm (16 µin)

Displays / operating elements

Display		Color display 1,44", 128 x 128 pixels
	Switching function	2 x LED, yellow
	diagnosis	1 x LED, three-color

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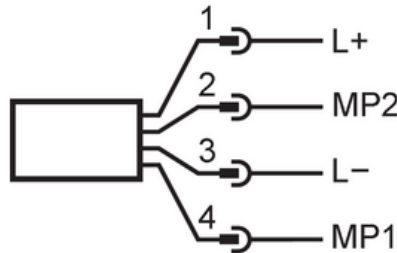
Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range pulse and totalizer signal are only available for one of the two outputs the accuracy indications are adhered to over the entire application area the specified Ra surface characteristics of the wetted surfaces do not apply to the weld seam.
Pack quantity	1 pcs.

Electrical connection - plug

Connector: 1 x M12; coding: A; Contacts: 4, gold-plated



Connection

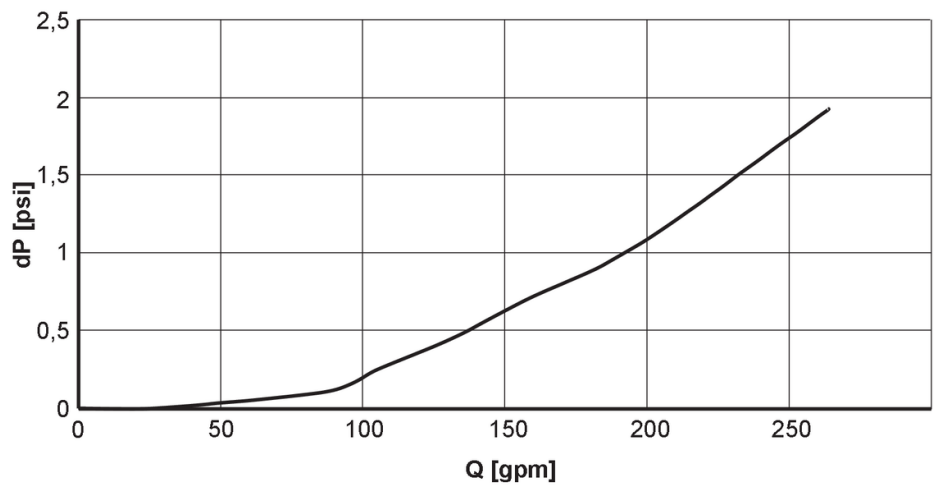


1 (L+)	L+	
2 (OUT2)	MP2	DO2, AO, DI
3 (L-)	L-	
4 (OUT1)	MP1	DO1, FO, IO-Link

AO: analog output; DI: digital input; DO: digital output; FO: Frequency output; MP: multi-function connection

Diagrams and graphs

Note on pressure loss



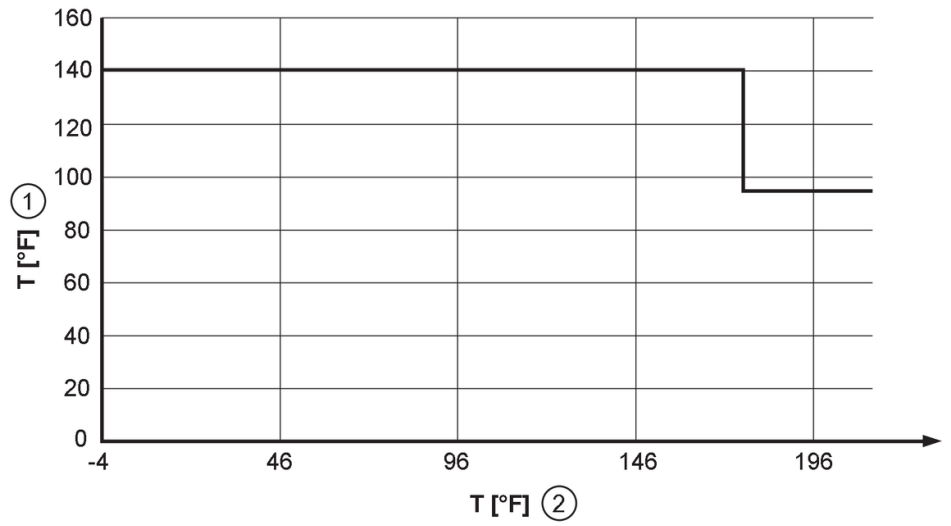
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derating ambient temperature



- 1 Ambient temperature
- 2 Medium temperature