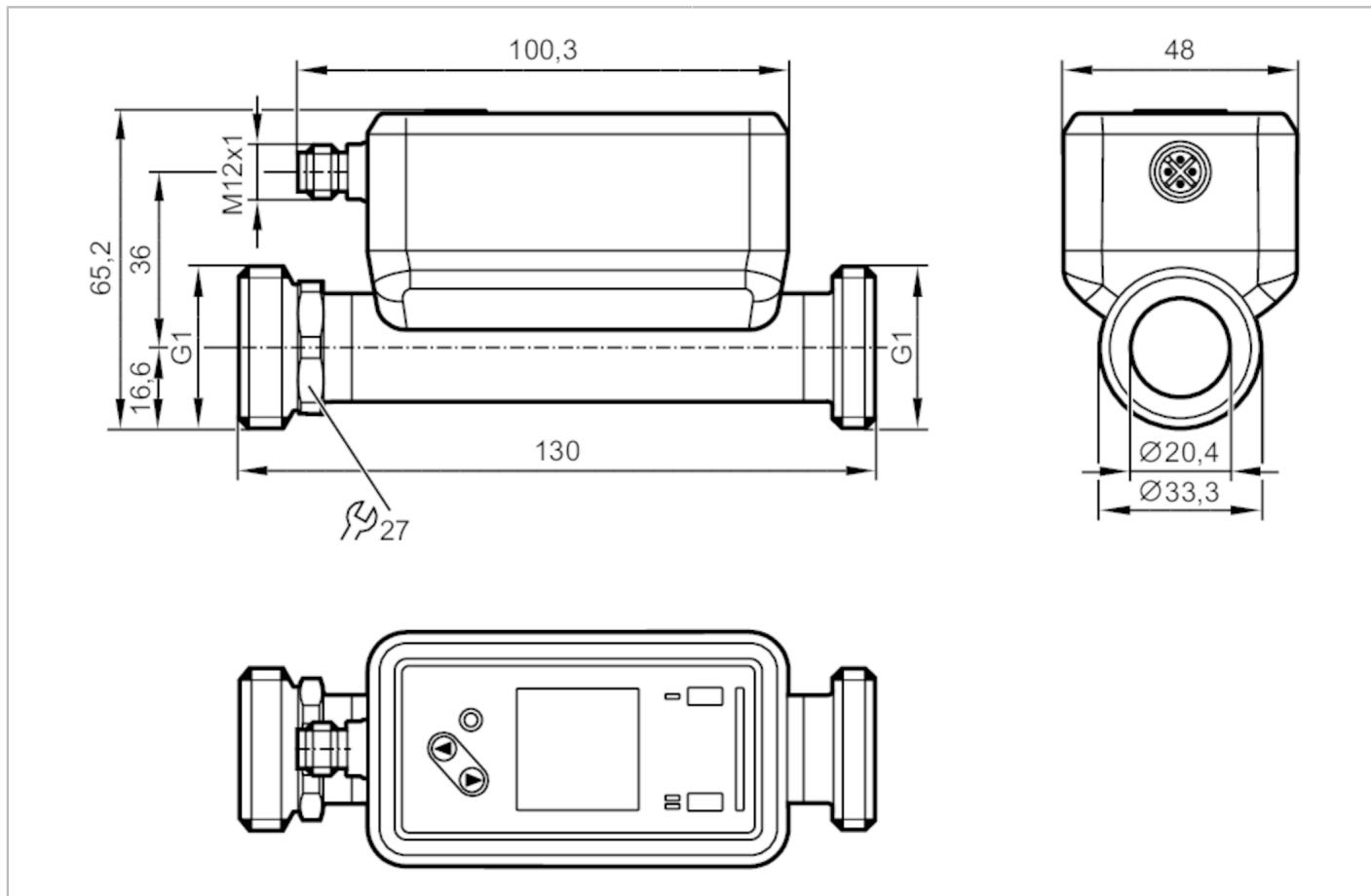


# SU8020

## Ultrasonic flow meter

SUR11XFBFRKG/US



ACS CE PA cULus IO-Link KTW/W270 Reg31

### Product characteristics

Measuring range	1...240 l/min	60...14400 l/h	0.051...12.202 m/s	0.06...14.4 m <sup>3</sup> /h
Process connection	G 1 DN25 external thread			

### Application

Special feature	Gold-plated contacts	
Media	ultra-pure water; water; hydrous media	
Note on media	hydrous media: for media with >10 % additives, the repeatability is the only available value	
Medium temperature [°C]		-20...100
Min. bursting pressure	150 bar	15 MPa
Pressure rating	100 bar	10 MPa
Vacuum resistance [mbar]		-1000
MAWP (for applications according to CRN) [bar]		100

### 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	

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Inputs				
Inputs	counter reset			
Outputs				
Total number of outputs	2			
Output signal	switching signal; pulse signal; analogue signal; IO-Link; frequency signal; diagnostic signal; totaliser switching signal			
Electrical design	PNP/NPN			
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			
Analogue current output [mA]	4...20			
Max. load [Ω]	500			
Pulse output	flow rate meter			
Short-circuit protection	yes			
Type of short-circuit protection	pulsed			
Overload protection	yes			
Measuring/setting range				
Measuring range	1...240 l/min	60...14400 l/h	0.051...12.202 m/s	0.06...14.4 m³/h
Display range	-288...288 l/min	-17280...17280 l/h	-14.642...14.642 m/s	-17.28...17.28 m³/h
Resolution	0.1 l/min	1 l/h	0.001 m/s	0.002 m³/h
Set point SP	2.3...240 l/min	139...14400 l/h	0.118...12.202 m/s	0.139...14.4 m³/h
Reset point rP	1.1...238.8 l/min	64...14325 l/h	0.055...12.139 m/s	0.064...14.325 m³/h
Analogue start point ASP	-240...192 l/min	-14400...11522 l/h	-12.202...9.763 m/s	-14.4...11.522 m³/h
Analogue end point AEP	-192...240 l/min	-11522...14400 l/h	-9.763...12.202 m/s	-11.522...14.4 m³/h
Low flow cut-off LFC	1...12 l/min	60...720 l/h	0.051...0.61 m/s	0.06...0.72 m³/h
Frequency end point, FEP	48.1...240 l/min	2889...14400 l/h	2.448...12.202 m/s	2.89...14.4 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 I			
Temperature monitoring				
Measuring range [°C]	-20...100			
Display range [°C]	-44...124			
Resolution [°C]	0.1			
Set point SP [°C]	-19.6...100			
Reset point rP [°C]	-20...99.6			
Analogue start point [°C]	-20...76			
Analogue end point [°C]	4...100			
Frequency start point, FSP [°C]	-20...76			
Frequency end point, FEP [°C]	4...100			

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## Ultrasonic flow meter

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Frequency at the end point FRP	[Hz]	1...10000														
<b>Accuracy / deviations</b>																
Flow monitoring																
Accuracy (in the measuring range)		± (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														
<b>Response times</b>																
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														
<b>Software / programming</b>																
Diagnostic functions		direction of flow detection; signal quality														
<b>Interfaces</b>																
Communication interface		IO-Link														
Transmission type		COM2 (38,4 kBaud)														
IO-Link revision		1.1.3														
SDCI standard		IEC 61131-9: 2013-07														
Profiles		Identification and Diagnosis (0x4000)														
Required master port type		A														
Process data analogue		3														
Process data binary		2														
Min. process cycle time	[ms]	9.6														
IO-Link process data (cyclical)		<table border="1"> <thead> <tr> <th>function</th><th>bit length</th></tr> </thead> <tbody> <tr> <td>totaliser</td><td>32</td></tr> <tr> <td>Flow monitoring</td><td>32</td></tr> <tr> <td>Temperature monitoring</td><td>32</td></tr> <tr> <td>status</td><td>4</td></tr> <tr> <td>Output 1</td><td>1</td></tr> <tr> <td>Output 2</td><td>1</td></tr> </tbody> </table>	function	bit length	totaliser	32	Flow monitoring	32	Temperature monitoring	32	status	4	Output 1	1	Output 2	1
function	bit length															
totaliser	32															
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Supported DeviceIDs		<table border="1"> <thead> <tr> <th>Type of operation</th><th>DeviceID</th></tr> </thead> <tbody> <tr> <td>default</td><td>1460</td></tr> </tbody> </table>	Type of operation	DeviceID	default	1460										
Type of operation	DeviceID															
default	1460															
<b>Operating conditions</b>																
Ambient temperature	[°C]	-20...60														
Storage temperature	[°C]	-25...80														
Protection		IP 67														
<b>Tests / approvals</b>																
EMC		DIN 61326-1:2021														

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## Ultrasonic flow meter

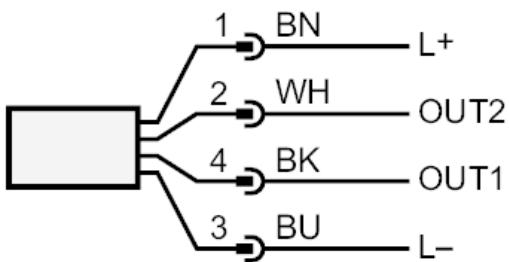
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CPA approval	model number	002US
	accuracy class	1,5
Shock resistance	DIN IEC 68-2-27	20 g (11ms)
Vibration resistance	DIN IEC 68-2-6	5 g (10...2000Hz)
MTTF [years]		160
UL approval	UL Approval no.	I034
	File number UL	E174189
Pressure Equipment Directive	can be used for group 2 fluids; group 1 fluids on request	
<b>Mechanical data</b>		
Weight [g]	542.95	
Type of mounting	inlet pipe length 5xDN; outlet pipe length 1xDN	
Materials	housing: stainless steel (316L/1.4404); Display: PFA; Sealing Display: FKM; connector: POKAN	
Materials (wetted parts)	Pipe section: stainless steel (316L/1.4404); Process connection sealing: Centellen Flat seal	
Process connection	G 1 DN25 external thread	
Surface characteristics Ra/Rz of the wetted parts	1.25 µm	
<b>Displays / operating elements</b>		
Display	colour display 1,44", 128 x 128 pixels	
	Switching function	2 x LED, yellow
	diagnosis	1 x LED, three-colour
<b>Accessories</b>		
Items supplied	Flat seal 2, Centellen package insert	
<b>Remarks</b>		
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.	
<b>Electrical connection</b>		
Connector: 1 x M12; coding: A; Contacts: gold-plated		

## Ultrasonic flow meter

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### Connection



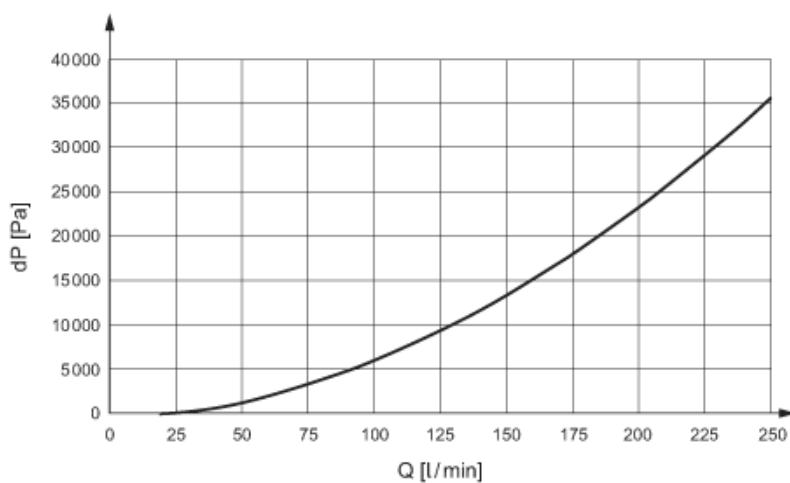
- OUT1/IO-Link:  
switching output volumetric flow quantity monitoring  
switching output Temperature monitoring  
Pulse output quantity meter  
frequency output volumetric flow quantity monitoring  
frequency output Temperature monitoring  
signal output Preset counter
- OUT2/InD:  
switching output volumetric flow quantity monitoring  
switching output Temperature monitoring  
Pulse output quantity meter  
analogue output flow  
analogue output temperature  
signal output Preset counter  
input counter reset

colours to DIN EN  
60947-5-2

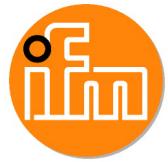
Core colours  
BK= black  
BN= brown  
BU= blue  
WH= white

### Diagrams and graphs

Note on pressure loss



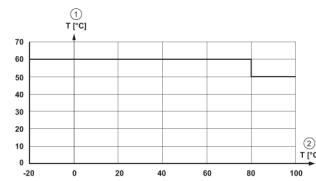
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## Ultrasonic flow meter

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Operating ambient temperature



- 1 Ambient temperature
- 2 Medium temperature