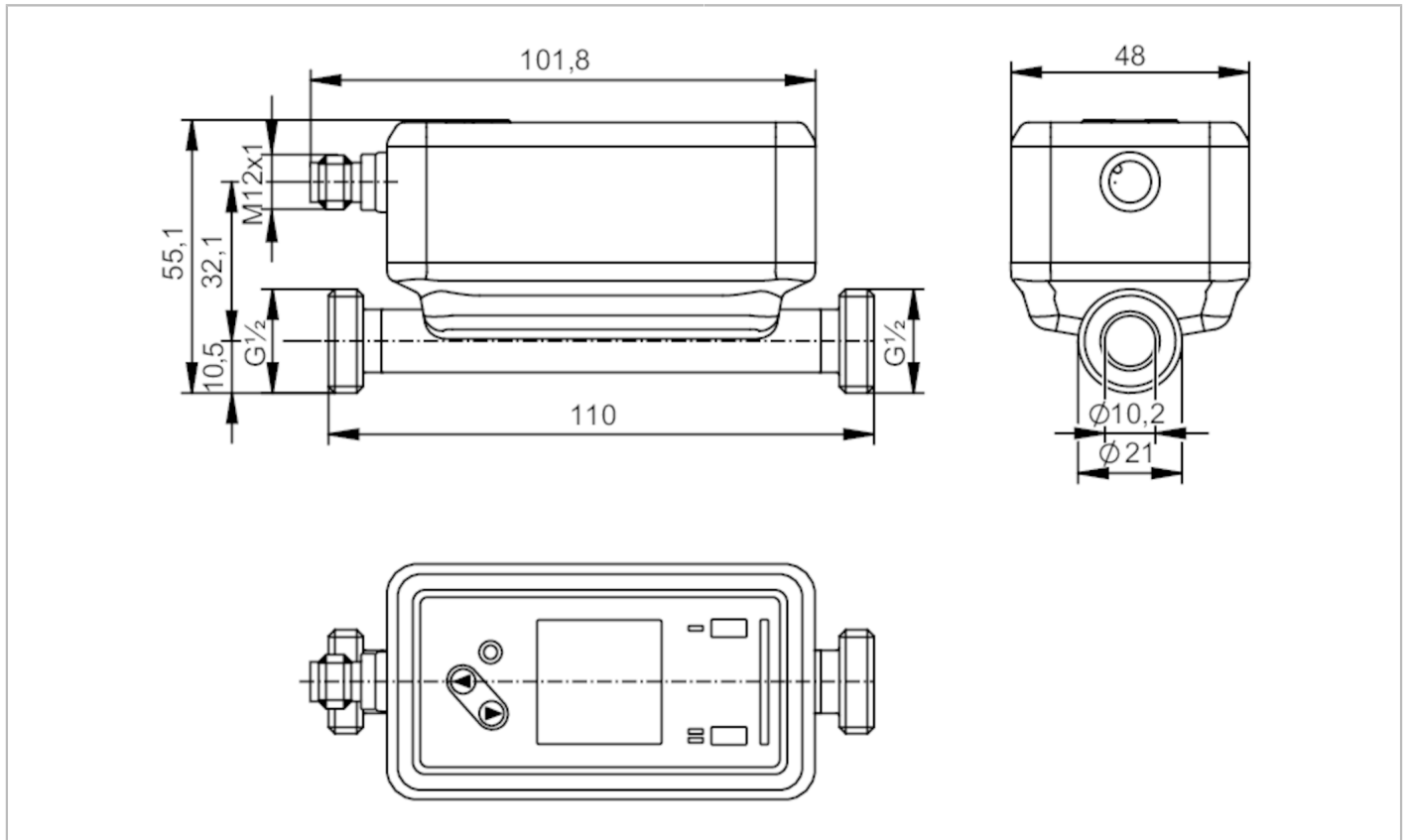# SU6020

Ultrasonic flow meter

SUR12XXBFRKG/US

ACS CE cULus LISTED KTW/W270 Reg31

Product characteristics

Measuring range	0.5...65 l/min	30...3900 l/h	0.104...13.521 m/s	0.03...3.9 m³/h
Process connection	G 1/2 DN15 external thread			

Application

System	gold-plated contacts
Media	ultra-pure water; water; water-based media
Note on media	water-based 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

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

Inputs	counter reset

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Outputs

Total number of outputs	2
Output signal	switching signal; pulse signal; analog signal; IO-Link; frequency signal; diagnostic signal; totalizer switching signal
Electrical design	PNP/NPN
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
Analog current output [mA]	4...20
Max. load [Ω]	500
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	30...3900 l/h	0.104...13.521 m/s	0.03...3.9 m³/h
Display range	-78...78 l/min	-4680...4680 l/h	-16.225...16.225 m/s	-4.68...4.68 m³/h
Resolution	0.1 l/min	2 l/h	0.001 m/s	0.002 m³/h
Set point SP	0.9...65 l/min	52...3900 l/h	0.18...13.521 m/s	0.052...3.9 m³/h
Reset point rP	0.5...64.7 l/min	32...3880 l/h	0.111...13.452 m/s	0.032...3.88 m³/h
Analog start point ASP	-65...52 l/min	-3900...3120 l/h	-13.521...10.817 m/s	-3.9...3.12 m³/h
Analog end point AEP	-52...65 l/min	-3120...3900 l/h	-10.817...13.521 m/s	-3.12...3.9 m³/h
Low flow cut-off LFC	0.5...3.2 l/min	30...195 l/h	0.104...0.676 m/s	0.03...0.195 m³/h
Frequency end point, FEP	13...65 l/min	782...3900 l/h	2.713...13.521 m/s	0.782...3.9 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
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

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Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		± (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		Identification and Diagnosis (0x4000)
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	1459

Operating conditions		
Ambient temperature	[°C]	-20...60
Storage temperature	[°C]	-25...80
Protection		IP 67

Tests / approvals		
EMC	DIN 61326-1:2021	
Shock resistance	DIN IEC 68-2-27	20 g (11ms)
Vibration resistance	DIN IEC 68-2-6	5 g (10...2000Hz)

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MTTF	[years]	160
UL approval	UL approval number	I034
Pressure equipment directive		can be used for group 2 fluids; group 1 fluids on request

Mechanical data		
Weight	[g]	477.9
Type of mounting		inlet pipe length 5xDN; outlet pipe length 1xDN
Material		housing: stainless steel (1.4404 / 316L); Display: PFA; sealing Display: FKM; connector: POKAN
Materials (wetted parts)		Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: Centellen Gasket
Process connection		G 1/2 DN15 external thread
Surface characteristics Ra/Rz of the wetted parts		1.25 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

Accessories	
Items supplied	Gasket 2, Centellen
	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.

Electrical connection

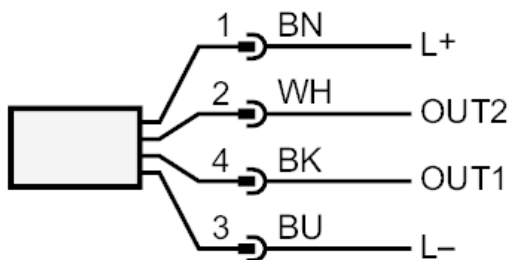Connector: 1 x M12; coding: A; Contacts: gold-plated

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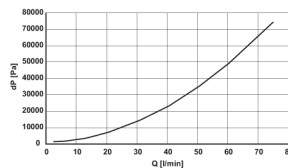
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Connection

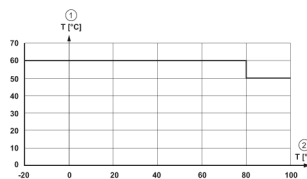|	
OUT1/IO-Link:	Switching output Volumetric flow quantity monitoring
	Switching output Temperature monitoring
	Pulse output quantity meter
	Frequency output Volumetric flow quantity monitoring
	Frequency output Temperature monitoring
	Diagnostic output direction of flow detection / signal quality
	signal output Preset counter
OUT2/InD:	Switching output Volumetric flow quantity monitoring
	Switching output Temperature monitoring
	Pulse output quantity meter
	analog output flow
	analog output temperature
	Diagnostic output direction of flow detection / signal quality
	signal output Preset counter
	Input counter reset
Colors to DIN EN 60947-5-2	
Core colors	BK= black
	BN= brown
	BU= blue
	WH= white

Diagrams and graphs

Note on pressure loss

derating ambient temperature

1   Ambient temperature

2   Medium temperature