Ultrasonic Flowmeter

ULTRASONIC FLOWMETER

- Accurate flow measurement of pure and ultrapure water.

- A robust, component-free measuring pipe made of stainless steel offers high media resistance and permanent ingress resistance.

- Operating status LED signals the sensor status and allows conclusions about process quality

- Convenient operation via buttons or parameter setting via IO-Link

- This flowmeter is ACS (Attestation de Conformité Sanitaire) certified and complies with sanitary standards.

TECHNICALS SPECIFICATIONS

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				
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			
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			

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	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
Analogue start point ASP	-65...52 l/min	-3900...3120 l/h	-13.521...10.817 m/s	-3.9...3.12 m³/h
Analogue 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
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
Frequency at the end point FRP [Hz]	1...10000

ULTRASONIC FLOWMETER

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

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	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)	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	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)

UL approval	UL Approval no.	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	
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 1/2 DN15 external thread	
Surface characteristics Ra/Rz of the wetted parts	1.25 µm	

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

Accessories	
Items supplied	Flat seal 2, Centellen
	package insert

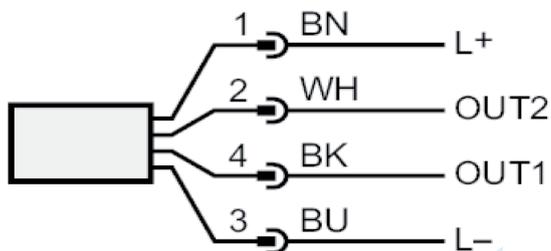| **Remarks**	
Remarks	MW = measured value
	MEW = Final value of the measuring range
	pulse and totaliser signal are only available for one of the two outputs
	the accuracy indications are adhered to over the entire application area
Pack quantity	1 pcs.

Electrical connection

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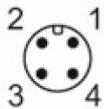
CONNECTION

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
analogue output flow
analogue output temperature
Diagnostic output direction of flow detection / signal quality
signal output Preset counter
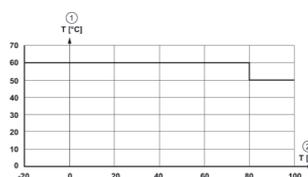input counter reset

colours to DIN EN 60947-5-2

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

DIAGRAMS AND GRAPHS

Note on pressure loss
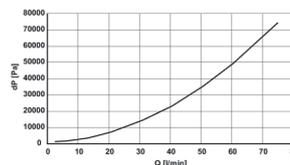
derating ambient temperature

1   Ambient temperature

2   Medium temperature

ULTRASONIC FLOWMETER

DISPLAY MODES

Flow Rate Display

Flow Display
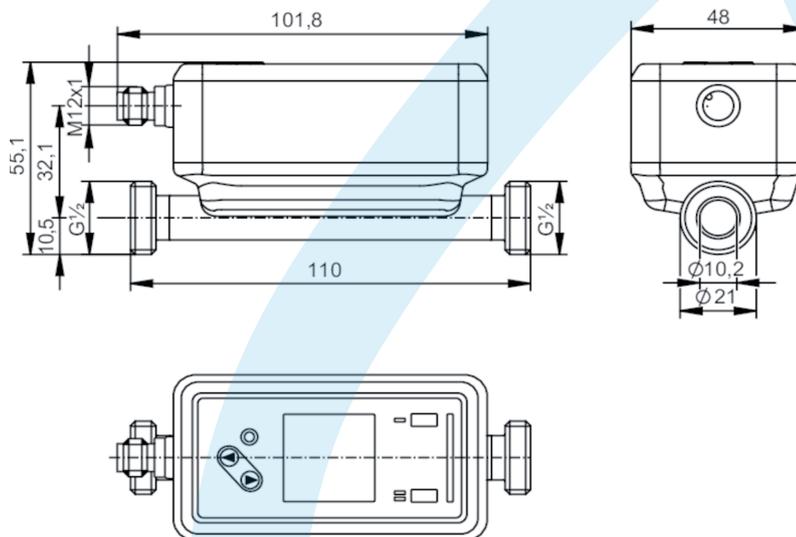+ Temperature

Flow Display
+ Totalizer

Flow Display
+ Temperature
+ Totalizer

Flow Display
+ Temperature
+ Signal Quality

DIMENSIONS

REFERENCES

Reference	Designation	Outputs	Operating range	ND
SU6020	Ultrasonic Flowmeter ACS	1 digital output + 1 analog output + IO link	0,03 à 3,9m3/h	15
SU7020	Ultrasonic Flowmeter ACS	1 digital output + 1 analog output + IO link	0,03 à 4,5m3/h	20
SU8020	Ultrasonic Flowmeter ACS	1 digital output + 1 analog output + IO link	0,06 à 14,4m3/h	25
SU9020	Ultrasonic Flowmeter ACS	1 digital output + 1 analog output + IO link	0,06 à 16,5m3/h	32
SU2020	Ultrasonic Flowmeter ACS	1 digital output + 1 analog output + IO link	0,3 à 60m3/h	50