

SONOCAL 3000 CT

Ultrasonic flow sensor
DN 100 to 400



Main Features

- Two direct operating ultrasonic measuring circuits for optimum measuring accuracy
- German national pattern approval acc. to PTB-A.22 class C, further national pattern approvals available on request
- No headloss
- Outstanding longterm stability and excellent performance data
- Measures in all district heating systems independent of water quality and conductivity
- Matched pair calibration of the complete system
- Outputs: each one analog, pulse and relay output

Application

SONOCAL 3000 CT is used as a flow sensor for the electronic heat calculator PolluWatt Duo (see Sensus leaflet LH 6200) for the measurement of heating and cooling energy.

SONOCAL 3000 CT provides high resolution pulses as an equivalent to the flown volume of the heating or cooling medium. Concurrent the momentary flowrate can be transmitted with a standard 20 mA output.

Design

SONOCAL 3000 CT consists of a flow sensor SONO 3300 CT, a converter SONO 3000 CT without display*), a wall mounting inclosure and a set of 4 coaxial cables each 10 m long for the connection of sensor and converter.

*) converter with display available on request

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Technical data

Flow sensor SONOCAL 3000 CT	
Maximum flow velocity	10 m/s
Medium temperature	-10 ... +200°C
Ambient temperature	-10 ... +160°C
Body	IP67
Drilling scheme	EN 1092
Materials:	
Pipe	DN 100 ... DN 150: steel GS-16 Mn5, Mat.-Code. 1.1131 DN 200 ... DN 400: steel EN 1.0345
Flange	DN 100 ... DN 400: steel EN 1.0025-S235JRG2
Transducers	Stainless steel AISI 316 or similar
Coaxial cable	
First 0.5 m of the cable Diameter	5.3 mm
Length	0.5 m
Material	PTFE
Ambient temperature	-20 ... +200 °C
Coaxial cable > 0.5 m Diameter	5.8 mm
Length	9.5 m; overall length max. 10 m
Material	PE
Ambient temperature	-40 ... +70 °C

Converter SONO 3000 CT without display	
Supply voltage and power consumption	115 ... 230 V +10%/-15%, 50 ... 60 Hz, 10 ... 20 VA
Low flow cut-off	0.8% of full scale
Housing material	Fibre glass reinforced polyamide
Analog output	Individually galvanically isolated, isolation voltage 500 V
• Current	4 ... 20 mA
• Load	< 800 Ω
• Time constant	5 s
Pulse output	Individually galvanically isolated, isolation voltage 500 V
• Pulse width	5 ms
• Passive	5 ... 30 V DC / 200 mA
Relay output	
• Time constant / hysteresis	5 s / 0.5% of full scale
• Change-over relay	Error indication
• Load	42 V, 0.5 A
Operating conditions	
Ambient temperature	-40 ... +85 °C (storage)
Mechanical vibration	2 g, 1 ... 800 Hz, sinusoidal in all directions acc. to IEC 68-2-6
Protection class (housing)	• IP67 acc. to EN 60529 and DIN 40050
EMC	Emission EN 61000-6-4 Immunity EN 61000-6-2

Recommendation for connecting cable SonoCal – PolluWatt Duo

(cable is not included in the delivery)

Cable specification

LiYY 2x 0,25 / 23; outside diameter 4mm

SONOCAL 3000 CT

Performance Data SONOCAL 3000 CT

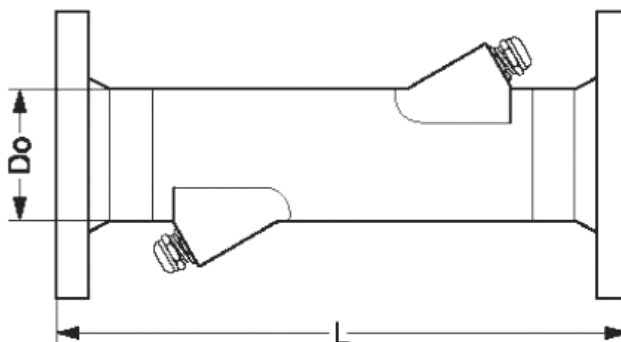
Flow sensor diameter		DN	100	125	150	200	250	300	350	400
Maximum flow	Q_{max}	m ³ /h	216	300	432	720	1200	1800	2400	3000
Nominal flow	Q_n	m ³ /h	180	250	360	600	1000	1500	2000	2500
Minimum flow	Q_{min}	m ³ /h	1.2	1.9	2.7	4.8	7.6	11	13	17
Flowrate at 20mA	Q_{20mA}	m ³ /h	180	250	360	600	1000	1500	2000	2500
Pulse value		l/lulse	2.5	2.5	10	10	10	50	50	50

Performance data SONOCAL 3000 CT (DN 125 ... DN 250) with $Q_n(Q_p)$ settings acc. to EN 1434

Flow sensor diameter		DN	125	150	200	250
Maximum flow	Q_{max}	m ³ /h	125	188	313	500
Nominal flow	Q_n	m ³ /h	100	150	250	400
Minimum flow	Q_{min}	m ³ /h	1.9	2.7	4.8	7.6
Flowrate at 20mA	Q_{20mA}	m ³ /h	100	150	250	400
Pulse value		l/Impuls	2.5	2.5	2.5	10
Analog output			4 ... 20 mA (bi directional)			
Relay output			Error indication of the flow sensor			
Headloss			No headloss, the sensor consists of a free, straight pipe			
Inlet pipe			Typical max. 10x DN straight inlet pipe			

Dimensions

Flow sensor SONO 3300 CT



Diameter	Overall length				Do	Pipe wall thickness for ¹⁾			
	PN 10	PN 16	PN 25	PN 40		PN 10	PN 16	PN 25	PN 40
DN	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
100	-	375 ±3	-	400 ±3	116.4	-	7.0	-	7.0
125	-	375 ±3	-	400 ±3	143.2	-	7.0	-	7.0
150	-	360 ±3	-	400 ±3	170.4	-	8.0	-	8.0
200	-	450 ±4	490 ±4	-	219.1	-	3.7	4.8	-
250	-	600 ±5	575 ±5	-	273.0	-	4.0	5.3	-
300	-	600 ±5	560 ±5	-	323.9	-	4.4	5.5	-
350	-	800 ±5	840 ±5	-	355.6	-	4.6	6.1	-
400	-	875 ±5	925 ±5	-	406.4	-	4.9	6.6	-

1) The mentioned wall thickness DN 200 ... DN 400 are minimum values acc. to EC Directive 97/23/EC (PED).

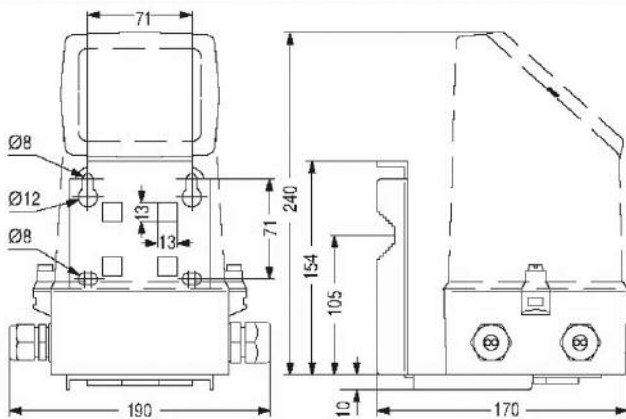
Weights

Flow sensor SONO 3300 CT

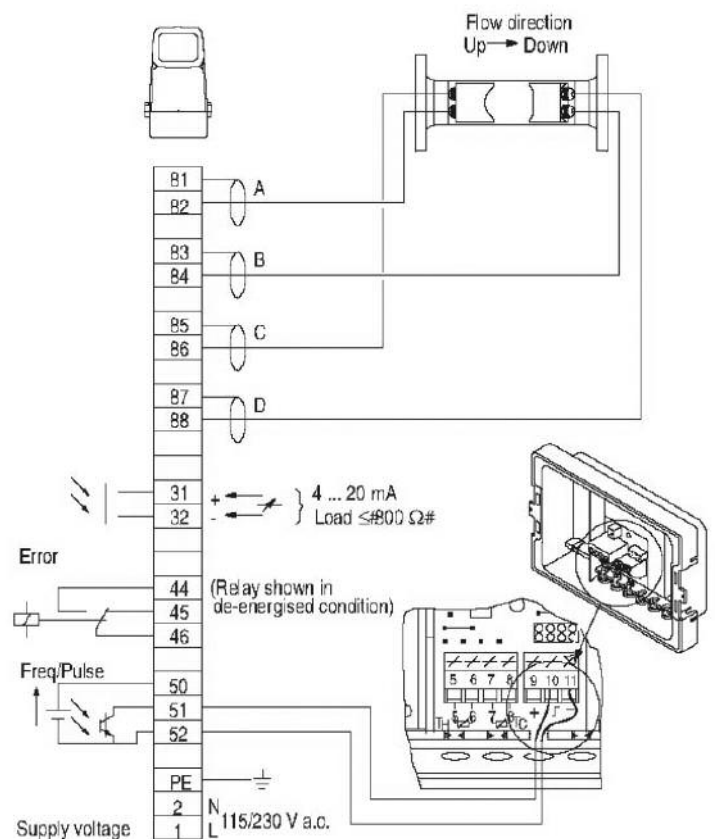
Diameter	Weight			
	PN 10	PN 16	PN 25	PN 40
DN	kg	kg	kg	kg
100	-	32	-	35
125	-	38	-	44
150	-	45	-	52
200	-	58	70	-
250	-	75	96	-
300	-	92	114	-
350	-	113	145	-
400	-	141	191	-

Wall mounting of the converter

Electrical connection



Add approximately 30 mm on each side for cabling.
Weight of the wall mounting enclosure approx. 2 kg.



Ordering Information

Description	Qn	PN	Pulse value	Order No.	
	m ³ /h	bar	l/Imp.		
SonoCal 3000 CT DN 100	180	16	2.5	88 51 00 81	
SonoCal 3000 CT DN 125	100			88 51 00 82	
SonoCal 3000 CT DN 125	250			88 51 00 83	
SonoCal 3000 CT DN 150	150			88 51 00 84	
SonoCal 3000 CT DN 150	360		10	88 51 00 85	
SonoCal 3000 CT DN 200	250		2.5	88 51 00 86	
SonoCal 3000 CT DN 200	600		10	88 51 00 87	
SonoCal 3000 CT DN 250	400			88 51 00 88	
SonoCal 3000 CT DN 250	1000			88 51 00 89	
SonoCal 3000 CT DN 300	1500		50	88 51 00 90	
SonoCal 3000 CT DN 350	2000			88 51 00 91	
SonoCal 3000 CT DN 400	2500			88 51 00 92	
SonoCal 3000 CT DN 100	180			40	2.5
SonoCal 3000 CT DN 125	100		88 51 01 01		
SonoCal 3000 CT DN 125	250	88 51 01 02			
SonoCal 3000 CT DN 150	150	88 51 01 03			
SonoCal 3000 CT DN 150	360	10	88 51 01 04		
SonoCal 3000 CT DN 200	250	2.5	88 51 00 93		
SonoCal 3000 CT DN 200	600	25	10	88 51 00 94	
SonoCal 3000 CT DN 250	400			88 51 00 95	
SonoCal 3000 CT DN 250	1000		50	88 51 00 96	
SonoCal 3000 CT DN 300	1500			88 51 00 97	
SonoCal 3000 CT DN 350	2000	88 51 00 98			
SonoCal 3000 CT DN 400	2500			88 51 00 99	

Larger sizes and deviating specifications on request

Please note!

The connection cable between converter and heat calculator is not included in the delivery. It has to be provided by customers. We recommend a 2 wire cable with a minimum cross section of 0.25 mm² (Li YY 2x 0,25 /23).



Qualitätsmanagementsystem ÖQS-zertifiziert
nach ISO 9001, Reg.-Nr. 3496/0

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