

Data sheet

SONO 3500CT

Ultrasonic flow meter

Description/Application



The SONO3500CT is an ultrasonic flow meter especially designed for heating, cooling or combined heating/cooling application in local and district energy systems. In combination with INFOCAL 9 it becomes energy meter for heating or cooling.

MID examination certificate no. :
DK-0200-MI004-032

The SONO 3500CT has been approved according to MID class 2. The approved flow meter consists of a flow sensor pipe, 4 transducers with cables and a transmitter with LCD display.

Features

- Ultrasonic 2-path flow sensor secures measurement and optimum accuracy
- Galvanically isolated digital output for easy connection to energy calculator INFOCAL 9
- 115 / 230 V mains-powered with back-up battery as standard version in case of mains power failure
- Optional battery-powered version (up to 6 years lifetime)
- Fast measuring frequency 15 Hz / 0.5 Hz (230 V AC / Battery)
- Compact (standard) or remote mounting
- No pressure drop
- Long-term stability
- Easy one-button straight forward display

Ordering

The standard codes are used for ordering.
Compact flow meter SONO3500CT standard codes:

DN	Qp	Qs	Pulse values (l/p)	Operating pressure (bar)	Build up code	SONO3500 Code no.
100	120	180	2.5	16	7ME3411-1RC02-3ER2	187F3530
125	200	280	2.5	16	7ME3411-1VC02-3ER2	187F3531
150	300	420	2.5	16	7ME3411-2DC02-3ER2	187F3532
200	500	700	10	16	7ME3411-2HC02-4ER2	187F3533
250	800	1120	10	16	7ME3411-2MC02-4ER2	187F3534
300	1120	1560	10	16	7ME3411-2RC02-4ER2	187F3535
350	1500	2100	10	16	7ME3411-2VC02-4ER2	187F3536
400	1900	2660	50	16	7ME3411-3DC02-5ER2	187F3537
500	2950	4130	50	16	7ME3411-3MC02-5ER2	187F3538
600	4300	6020	100	16	7ME3411-3VC02-6ER2	187F3539
700	5800	8120	100	16	7ME3411-4HC02-6ER2	187F3540
800	7600	10640	100	16	7ME3411-4RC02-6ER2	187F3541
900	10000	14000	100	16	7ME3411-5DC02-6ER2	187F3542
1000	10000	14000	100	16	7ME3411-5MC02-6ER2	187F3543
1200	10000	14000	100	16	7ME3411-5VC02-6ER2	187F3544
100	120	240	2.5	40	7ME3411-1RE02-3ER2	187F4500
125	200	400	2.5	40	7ME3411-1VE02-3ER2	187F4501
150	300	420	2.5	40	7ME3411-2DE02-3ER2	187F4502
200	500	700	10	40	7ME3411-2HE02-4ER2	187F4503
200	500	700	10	25	7ME3411-2HD02-4ER2	187F4504
250	800	1120	10	25	7ME3411-2MD02-4ER2	187F4505
300	1120	1560	10	25	7ME3411-2RD02-4ER2	187F4506
350	1500	2100	50	25	7ME3411-2VD02-4ER2	187F4507
400	1900	2660	50	25	7ME3411-3DD02-5ER2	187F4508
500	2950	4130	100	25	7ME3411-3MD02-5ER2	187F4509
600	4300	6020	100	25	7ME3411-3VD02-6ER2	187F4510
700	5800	8120	100	25	7ME3411-4HD02-6ER2	187F4511
800	7600	10640	100	25	7ME3411-4RD02-6ER2	187F4512

The above codes are PN16 type of compact flow meters. The power supply is mains unit (115/230 V AC) with a 3.6 V back-up battery.
Two pulse output function included.
More standard codes are available regarding nominal diameter up to DN 1200, remote version and PN25.

Design and function

Compact / remote version

The unit is available in a compact or a remote version with up to 30 meter distance from flow meter to transmitter. When ordering a compact (standard) version the transducer cables are premounted and ready for installation. Compact mounting is only possible up to 120 °C. The flow sensor must be isolated to protect transmitter from heat. The transmitter is available in an IP67 enclosure.

Power supply

The standard version contains a 115 / 230 V AC mains unit including 3.6 V single battery backup in case of mains power failure. It can be retrofitted to a battery version with a dual battery pack (6 year lifetime).

Pulse output

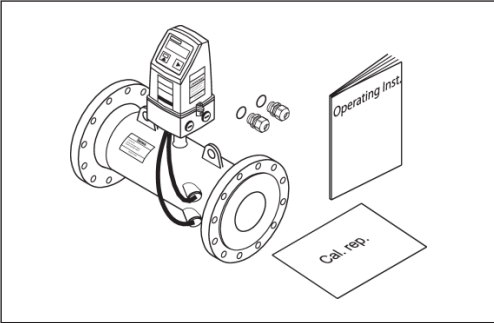
SONO3500CT has digital output functions. Output A is MID approved and used as input for energy meter INFOCAL 9, or as input for digital systems for remote reading. Output B is preset by the factory as alarm and can't be configured.

Items supplied

The device can be delivered as either a compact or a remote system.

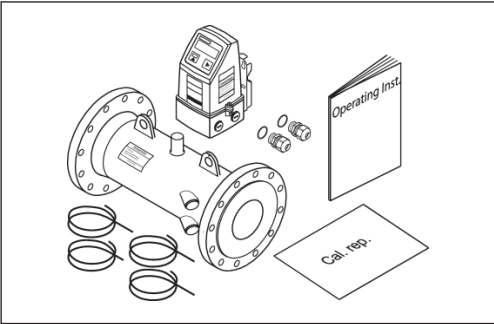
Compact system

- Sensor
- Transmitter
- Operating Instruction
- Calibration report

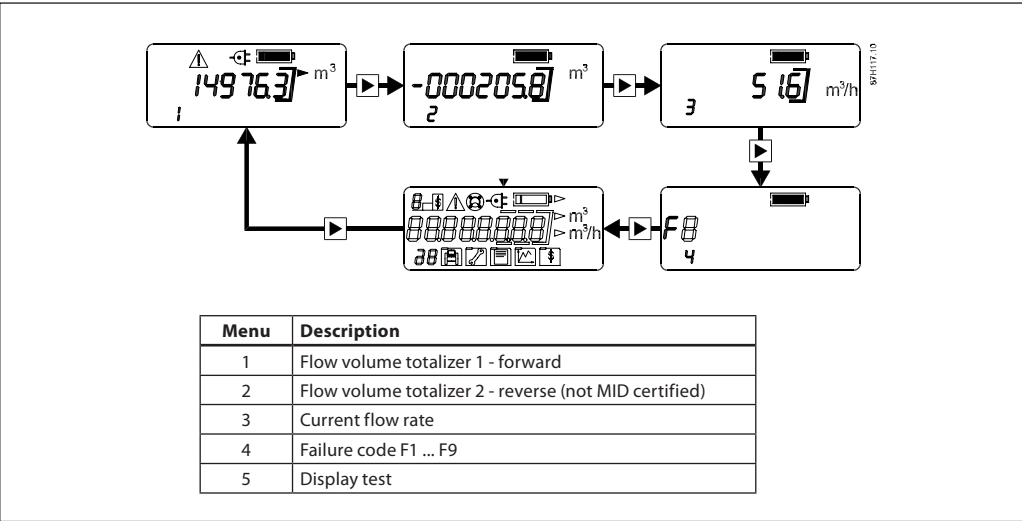


Remote system

- Sensor
- Transmitter
- Operating Instruction
- Calibration report
- Wall/pipe mounting kit with bracket and terminal box
- 4 Transducer coaxial cables

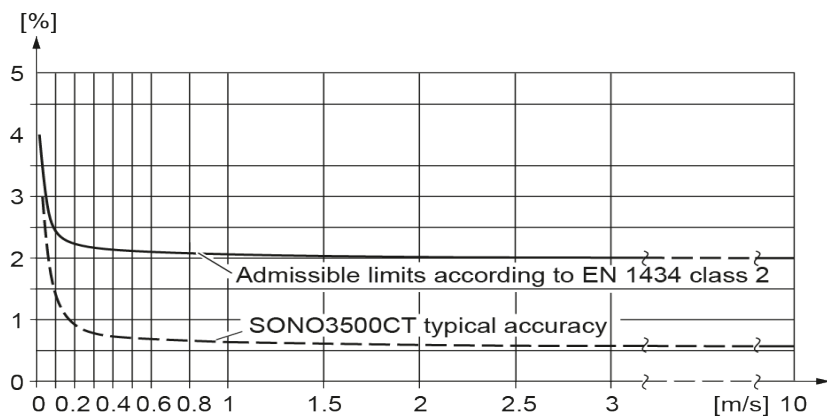


Overview of display menu sequence



Technical data

Diameter	Nominal	DN (mm)	100	125	150	200	250	300	350	400	500	600	700	800	900	1000	1200	
Flow rate ranges	Nominal	q _p (m³/h)	120	200	300	500	800	1120	1500	1900	2950	4300	5800	7600	10000	10000	10000	
	Highest operatable	q _s (m³/h)	180	280	420	700	1120	1560	2100	2660	4130	6020	8120	10640	14000	14000	14000	
	Maximum	q _{max} (m³/h)	189	294	441	735	1176	1638	2205	2793	4336.5	6321	8526	11172	14700	14700	14700	
	Minimum	q _l (m³/h)	1.2	2	3	5	8	11.2	15	19	29.5	43	58	76	100	100	200	
	Cut-off	m³/h	0.3	0.5	0.75	1.25	2	2.8	3.75	4.75	7.375	10.75	14.5	19	25	30	45	
Operating pressure	Maximum	PN (bar)	16/40			16/25/40			16/25									16
Dynamic range		q _l : q _p	1:100															1:50
Pulse output value		I/p	2.5	2.5	2.5	10	10	10	10	50	50	100	100	100	100	100	100	
Pulse width		ms	5															
Flow velocity		m/s	0.02 ... 9															
Measuring frequency		Hz	15 Hz (mains supply - standard) / 0.5 Hz (battery supply)															
Power supply		Mains supply (standard)	115 / 230 V AC, including 3.6 V single battery backup															
		Battery supply	3.6 V battery version, incl. dual battery pack															
Medium			Heating water, according to VDI-2035 (pH 8.2 - 10.5), industrial VdTÜV 1466 and AGFW FW510															
Media/ surface temperature	Compact (standard)	°C	5 ... 120															
	Remote	°C	5 ... 200															
Basic features	Environmental class		MID class E2 + M1															
	Protection class		IP 67 according to EN 60529 and DIN 40050 (NEMA 4X/6)															
	Storage temperature	°C	-40 ... 85															
	Ambient temperature	°C	-10 ... 55															
Pipe material			Carbon Steel EN 1.0345 / P235 GH, painted in light-gray															
Remote version cable length			5 m / 10 m / 20 m / Max. 30 m between transmitter and flow sensor															

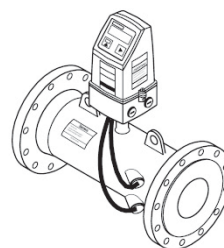
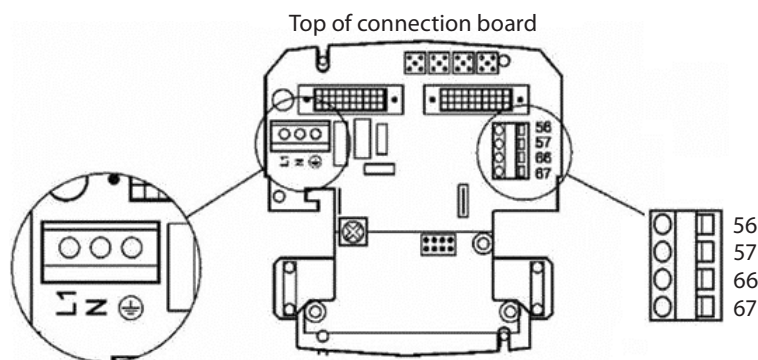


Measuring accuracy MID Class 2

**Wiring energy calculator
type INFOCAL 9**

Energy calculator is typically connected via the pulse output A (56, 57) of the transmitter.

SONO 3500 CT



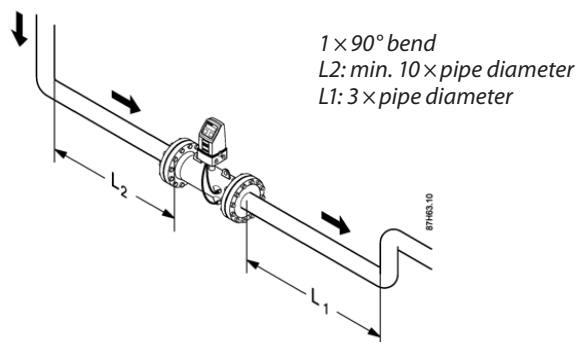
Wiring to flow meter SONO 3500 CT:

SONO 3500 CT in supply pipe	Infocal 9 terminal
56 (flow pulse)	10 (q1+)
57 (ground)	11 (q1-)

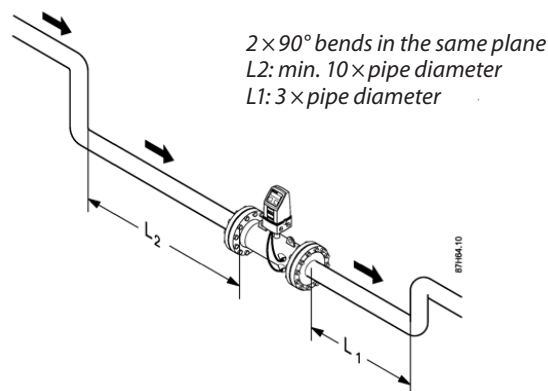
SONO 3500 CT in return pipe	Infocal 9 terminal
56 (flow pulse)	52 (q2+)
57 (ground)	11 (q2-)

Inlet/Outlet conditions

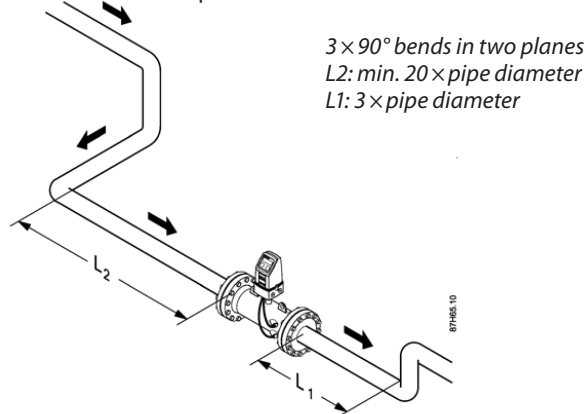
Single bend



Dual bend



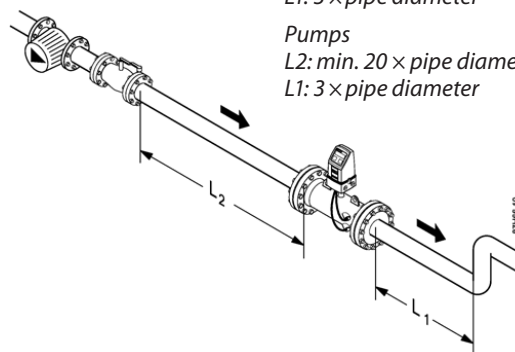
Triple bend



Valves and pumps

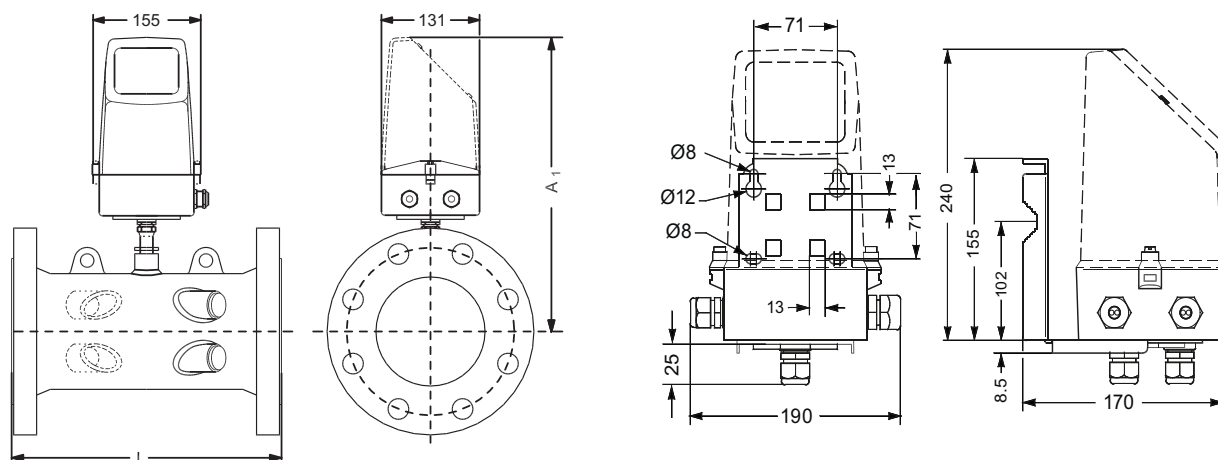
Valves
L2: min. 10 × pipe diameter,
fully open valve
L1: 3 × pipe diameter

Pumps
L2: min. 20 × pipe diameter
L1: 3 × pipe diameter



Dimensions

Transmitter IP67, wall mounting



Diameter DN (mm)		100	125	150	200	250	300	350	400	500	600	700	800	900	1000	1200
PN 16	Length L (mm)	350	350	500	500	600	500	550	600	625	750	875	1000	1230	1300	1360
	Compact version approx. weight (kg) ¹⁾	15	18	28	38	60	66	94	124	194	303	361	494	475	594	732
PN 25	Length L (mm)	—	—	—	500	600	500	550	600	625	750	875	1000	1300	1370	—
	Compact version approx. weight (kg) ¹⁾	—	—	—	47	76	81	121	153	231	365	565	770	835	1000	—
A ₁ (mm)		375	380	390	414	440	466	495	507	558	609	660	710	810	910	1110
Lift hug		No					Yes									

¹⁾ Weight including transmitter/electronics 1.5 kg (compact version). Weight of remote version is additional approx. 3.5 kg (remote version including 10 m cable set).

Note:

1. All weights are approximate.
2. For flange values, see norm EN 1092-1.



Danfoss A/S

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