

Data sheet

SONO 3500CT

Ultrasonic flow meter

**Description/Application**

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

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 8 it becomes energy meter for heating or cooling.

The SONO3500CT 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 8
- 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:

SONO 3500 CT code	Build up code	DN	Qp	Qs	Pulse values
187F3530	7ME3411-1QC02-3ER2	DN100	60	180	2,5
187F3531	7ME3411-1UC02-3ER2	DN125	100	280	2,5
187F3532	7ME3411-2CC02-3ER2	DN150	150	420	2,5
187F3533	7ME3411-2GC02-4ER2	DN200	250	700	10
187F3534	7ME3411-2LC02-4ER2	DN250	400	1120	10
187F3535	7ME3411-2QC02-4ER2	DN300	560	1560	10
187F3536	7ME3411-2UC02-4ER2	DN350	750	2100	10
187F3537	7ME3411-3CC02-5ER2	DN400	950	2600	50
187F3538	7ME3411-3LC02-5ER2	DN500	1475	4130	50
187F3539	7ME3411-3UC02-6ER2	DN600	2150	6020	100
187F3540	7ME3411-4GC02-6ER2	DN700	2900	8120	100
187F3541	7ME3411-4QC02-6ER2	DN800	3800	10640	100
187F3542	7ME3411-5CC02-6ER2	DN900	5000	14000	100
187F3543	7ME3411-5LC02-6ER2	DN1000	6000	16800	100
187F3544	7ME3411-5UC02-6ER2	DN1200	9000	25200	100

The above codes are PN16 type of compact flow meters. The power supply is mains unit (115/230V AC) with a 3.6V back-up battery. Two pulse output function included.

More standard codes are available regarding nominal diameter up to DN1200, 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 pre-mounted 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 3.6V 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 two digital output functions (Output A and Output B).

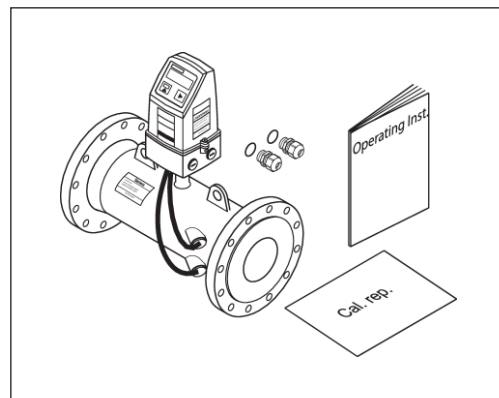
Output A is MID approved and used as input for energy meter INFOCAL 8, or as input for digital systems for remote reading. Output B is preset as alarm output if needed.

Items supplied

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

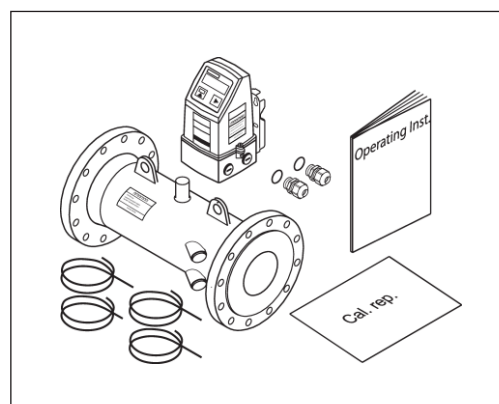
Compact system

- Sensor
- Transmitter
- Operating Instruction
- Calibration report

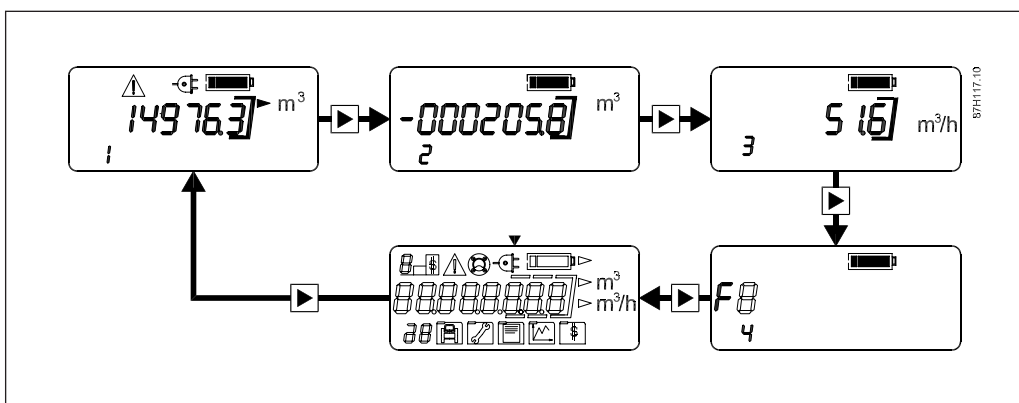


Remote system

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



Overview of display menu sequence



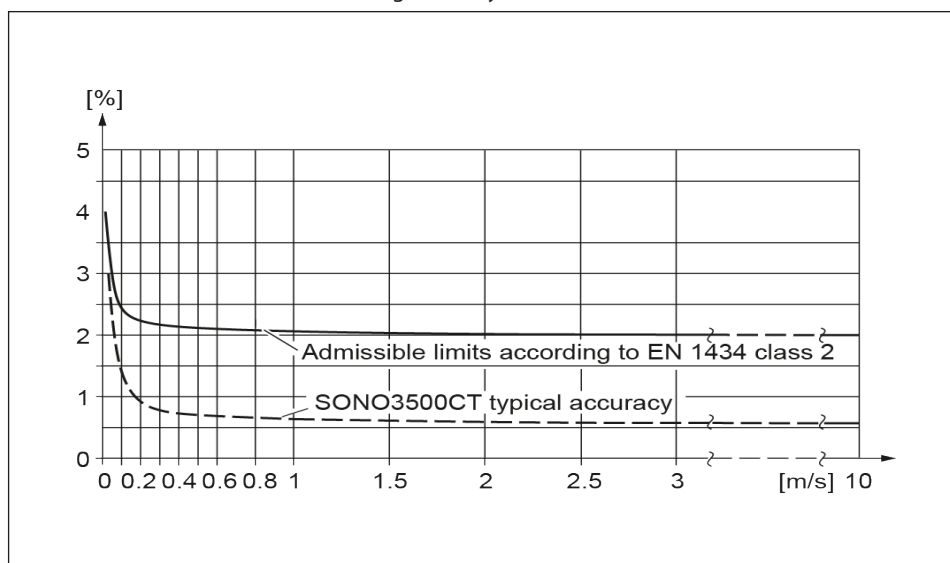
Menu	Description
1	Flow volume totalizer 1 - forward
2	Flow volume totalizer 2 - reverse (not MID certified)
3	Current flow rate
4	Failure code F1 ... F9
5	Display test

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 [m ³ /h]	60	100	150	250	400	560	750	950	1475	2150	2900	3800	5000	6000	9000
	Highest operatable	q_s [m ³ /h]	180	280	420	700	1120	1560	2100	2660	4130	6020	8120	10640	14000	16800	25200
	Maximum	q_{max} [m ³ /h]	189	294	441	735	1176	1638	2205	2793	4336.5	6321	8526	11172	14700	17640	26460
	Minimum	q_i [m ³ /h]	1,2	2	3	5	8	11.2	15	19	29.5	43	58	76	100	120	180
	Cut-off	[m ³ /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	16	16	16 / 25	16/25	16/25	16/25	16/25	16/25	16/25	16/25	16/25	16/25	16/25	16
Pulse output value		[l/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 3.6V single battery backup														
		Battery supply	3.6V 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]	2 ... 120														
	Remote	[°C]	2 ... 200														
Basic features	Enviromental 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														

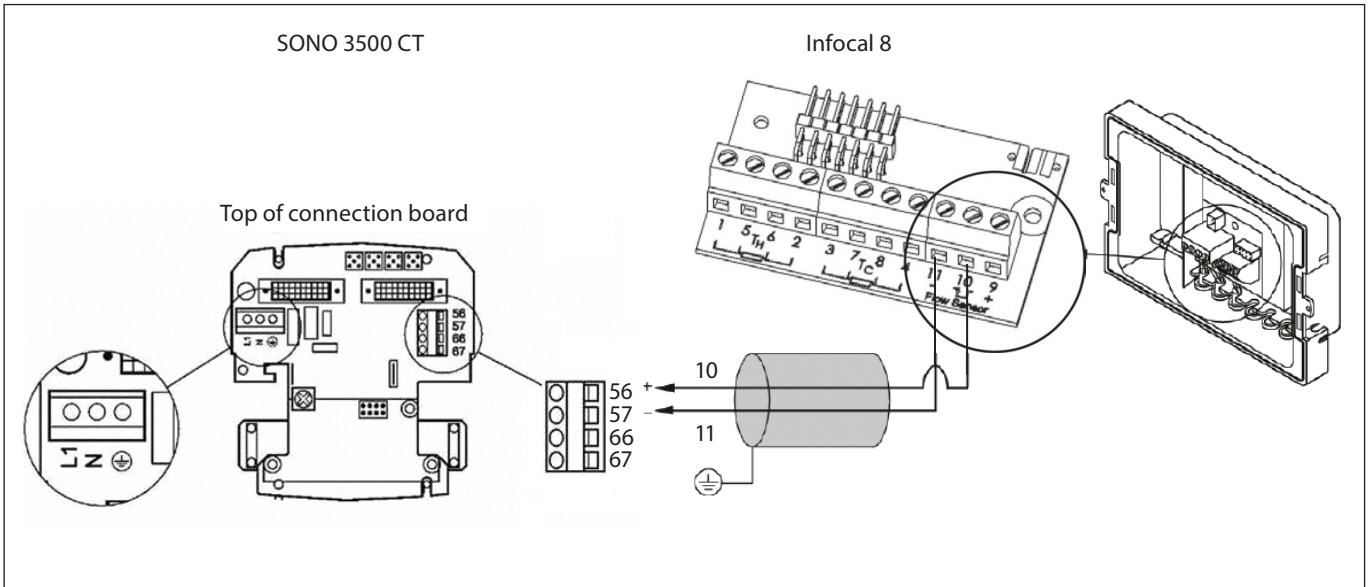
Dynamic range $q_s:q_p$: better than 1:50 according to MID EN 1434 class 2.

Measuring accuracy MID Class 2

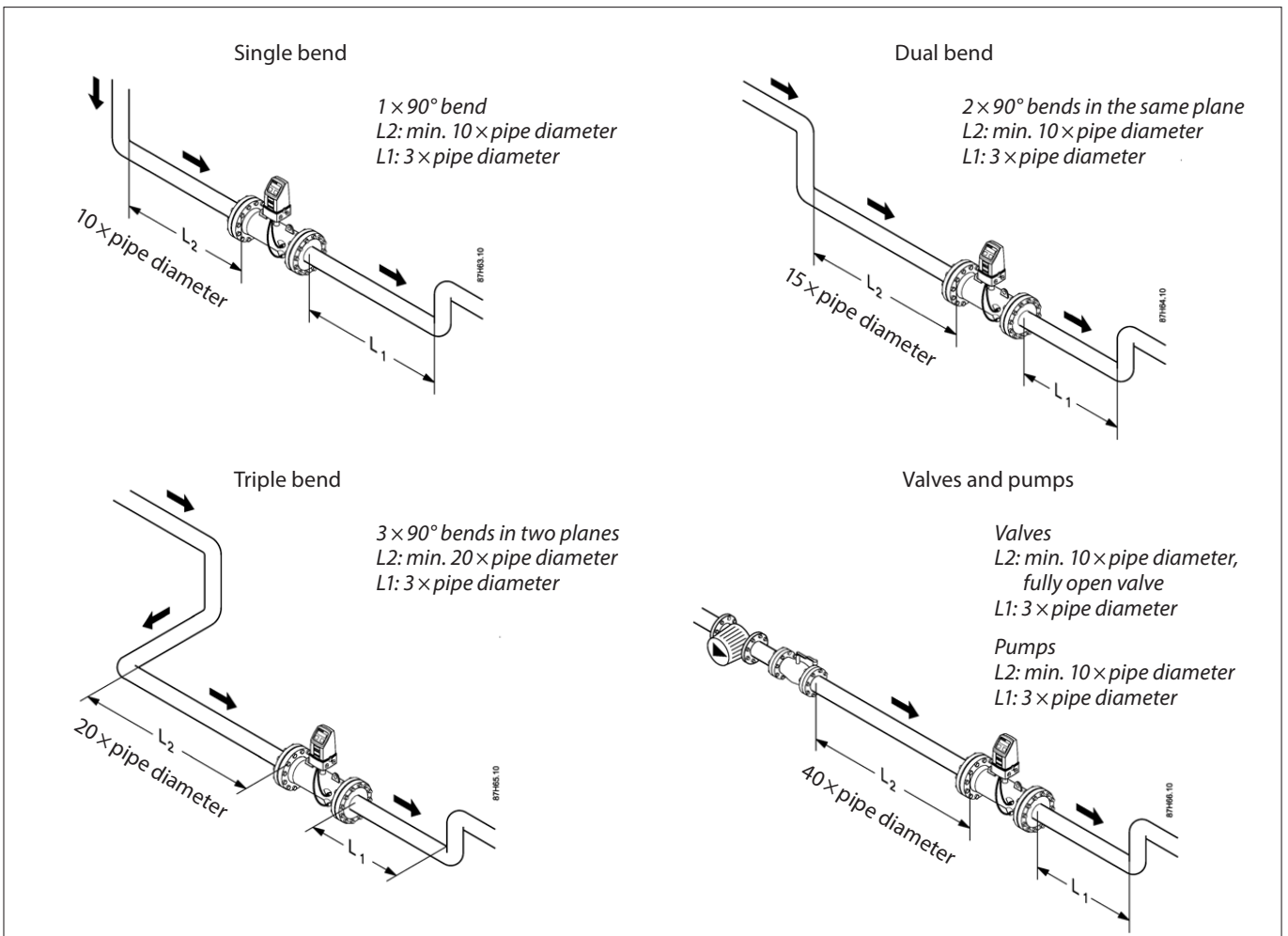


Wiring energy calculator type INFOCAL 8

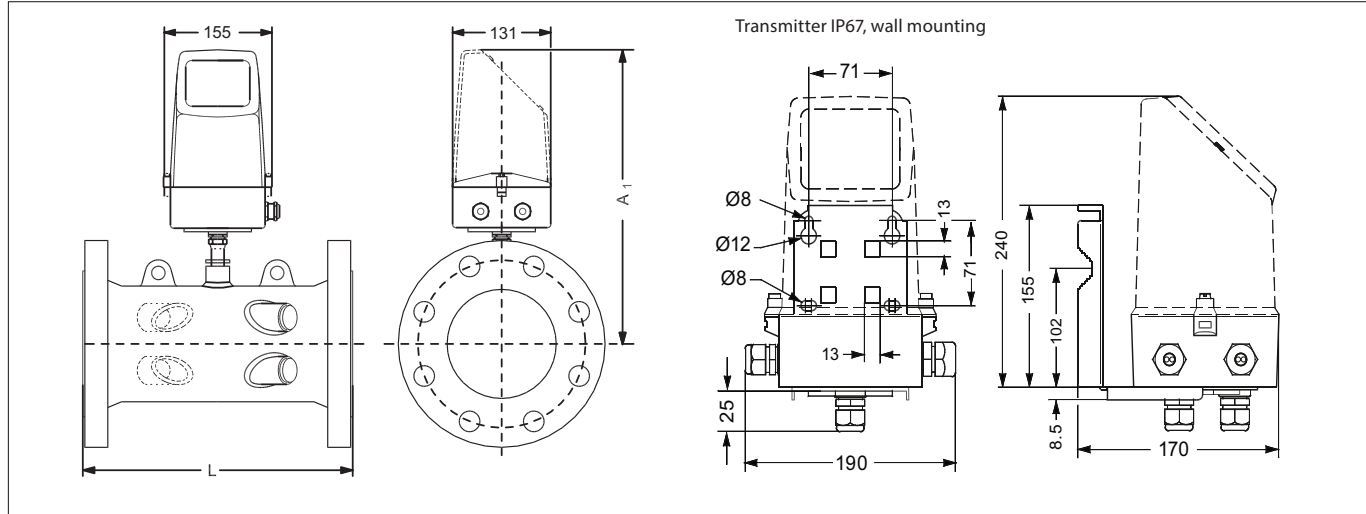
Energy calculator is typically connected via the pulse output A (56, 57) of the transmitter.



Installation conditions (inlet and outlet pipe requirements)



Dimensions



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).

²⁾ All weights are approximate.

³⁾ For flange values, see norm EN 1092-1.