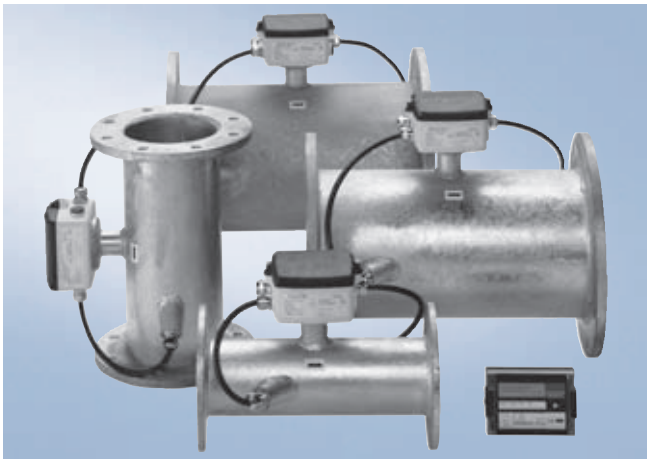
SONOFLO SONOCELL/SONO 3301 (US version)

Overview



The SITRANS F US ultrasonic flow meters type SONOCELL/SONO 3301 are designed for measurement of:

- Volume
- Flow rate
- Peak flow values

SONOFLO/SONO 3301 flow meters measure flow in standard volumetric units. Measurement is independent of changes in liquid temperature, density, pressure and conductivity.

Benefits

- High performance accuracy
- Measurements are not affected by presence of contaminating particles, chemical substances or magnetite in the water
- Static metering with no moving parts
- No pressure drop
- Battery powered
- Battery backup
- 24 months memory
- Optical data reading with INFOLOG hand-held data logger (see accessories)
- 230 V AC and 24 V AC/DC optional
- D-cell battery lifetime more than 8 years
- Instantaneous values for volume flow
- Error logging with date and time
- Pulse output
- Read-out of account date

Application

SONOCELL/SONO 3301 is designed for use on

- Irrigation water
- River water
- Raw water
- Potable water.

SONOCELL/SONO 3301 will also operate on liquids containing small amounts of air bubbles (2%) and solid particles (2%).

Design

Flanges according to EN

Flanges and joints as well as related pressure/temperature (p/t) classification have been described in EN 1092-1.

For steel group 1E1: Table 15

Standard products are made in hot dip galvanised steel (alternative for some materials: powder coated pipes with pipe in AISI 304).

Display and controls

SITRANS F US105

The SITRANS F US105 is supplied with only one control button.

In the normal state of operation the display will show the cumulative volume flow (in m^3, AcreFt, MI).

The display will always be configured in accordance with the customers application and selected settings and consequently there will be less or more display options under the individual display menus.

Mode of operation

See SONOFLO “System info and selection guide”

Function

Permanent memory/account date reading

The LOG of the calculator is updated every 10 minutes with all the cumulative values; Date, S water, date/time and info code.

SITRANS F US105 allows for account date outputs.

If the use of account date output has been selected during configuration, the above data are stored to enable output to a selected date in the year. All data are stored for a further 24 months in a record for possible subsequent study of operating conditions in the system.

Optical output

SITRANS F US105 is fitted with an optical infrared send/receive port.

A reader head with a permanent magnet in accordance with EN 1434 can be used for programming/altering of readout data, configuration date etc. The reader head can also be used to amend measuring data.

An optical, infrared transmitter/receiver is located in the bottom right corner of the front panel, in accordance with the EN 61107 standard. The data format complies with IEC 870 in start mode and can be subsequently changed to a format specified by the manufacturer. A standard optical head with a permanent magnet is used to read data and configure tariff limits.

SONOFLO SONOCELL/SONO 3301 (US version)

Technical specifications

Accuracy	
Error in measurement at reference conditions; of measured value	Pulse output ≤ ± 1 %
Dynamic range	1:25
Repeatability	≤ ± 0,4 %
SONOCELL/SONO 3301	
Sensor description	1-track sensor with flanges and integrated transducers
Input	
Nominal size	DN 80, 100, 125, 150, 200, 225, 250, 300, 350, 400 (3", 4", 5", 6", 8", 10", 12", 14",16")
Process connection	• DN 80 … DN 400 except DN 225 PN 10 and PN 16 EN 1092-1 • 3" ... 16" ANSI B16.5 Class 150 slip-on type • DN 80 ... DN 400 AS 4087, Fig. B7, Class 14
Rated operating conditions	
Ambient conditions	
Ambient temperature	
• Operation	2 ... 55 °C (35 ... 131 °F)
• Storage	-10 ... +85 °C (14 ... 185 °F)
Mechanical vibration	2 g, 1 ... 800 Hz sinusoidal in all direction to IEC 68-2-6
Flow velocity	0 ... 6 m/s (0 ... 20 ft/s)
Degree of protection (enclosure)	IP68 to IEC 529, 0.2 bar (2.9 psi), NEMA 6P and NEMA 4X
Design	
Material	
• Body	Hot-dipped galvanized steel (alternative: AISI 304)
• Transducer	Stainless steel 316SS
• Terminal box housing	Fibreglass-reinforced polyamide
Transducer	Integrated version screwed into body with ¾" pipe thread
Pulse out cable	10 m PUR 3x0.3mm (PUR 20 gauge 3 conductor cables)
Power supply	
Supply voltage	3.6 V DC
Certificates and approvals	
CE-Mark	
• EMC	Emission EN 50081-1 Immunity EN 50082-2
• Low voltage	According to EN 60730

SITRANS F US105	
Input	
Optical connection	
• Protocol	EN 60870-5
• Connection	Optical eye, 600 baud, EN 61107
Output	
Pulse output[1)]	
• ON time	> 30 ms
• ON current	≤ 10 mA
• External supply	≤ 24 V DC

Rated operating conditions	
Ambient conditions	
Ambient temperature	
• Operating	-20 ... 55 °C (-4 ... +131 °F)
• Storage	-25 ... +70 °C (-13 ... +158 °F)
Vibrations	1 g, 1 and 1000 Hz in accordance with IEC 68-2-34
Free fall	IEC 68-2-32
Generally	EN 1434
EMC	EN 1434 (EN 50081-1/ EN 50082-1)
Personal safety	EN 60730
Design	
Material	
• Top	Polycarbonate Lexan 141 R Transparent 111
• Pipe/wall	PA 6.6 GF25
• Other plastic parts	ABS Cycolac GPM500
• Gaskets	Neoprene
• Rubber bushing	EPDM 50
• Packaging	Bio-degradable cardboard
Power supply	
Internal voltage	3.6 +0.1/-0.4 V DC
Current consumption	Typically 45 µA
Battery	3.6 V lithium D-cell
Battery lifetime	Typically 8 years
Power supply optional	24 V AC/ 230 V AC

1) Pulse putput module

The pulse output module contains:

- 3 terminals for RS 232 (DATA, REQ and GND)
- 2 terminals for CE (volume pulse output)
- 2 terminals for CV (not in use)

Accessories

Selection and Ordering data	Order No.
Brackett for SITRANS F US105 wall mounting (12 pcs)	**FDK:087H0117**
Infra red optical head for data acquisition	**FDK:087H0108**
Infolog complete with cable and SW for SONOCELL/SONO 3301	**FDK:085L1960**
Flash and disc for Infolog for SONOCELL/SONO 3301	**FDK:085L1961**
3.6 V D-cell for SITRANS F US105	**FDK:087H0113**
230 V AV supply module for SITRANS F US105	**FDK:087H0114**
3.0 V battery CR2032 for Infocal 5 (back-up) (10 pcs.)	**FDK:087H0116**

SONOFLO SONOCELL/SONO 3301 (US version)

Accessories

INFOLOG hand-held terminal type PSION

- SITRANS F US105 readings via serial interface
- Parameter set-up
- Backup of readings
- Update possibilities via PC software/internet
- Up to 1500 readings

The INFOLOG system consists of the INFOLOG unit, a flash memory card with software, a zero modem data transfer cable and 3 diskettes with both data transfer program and software for updates.

INFOLOG can read out actual values, account readings or monthly readings of the SITRANS F US105 with comma separated digits and units.

In order to avoid any mistakes of use, the INFOLOG can be programmed to only carry out readings defined by the owner of the unit or the authorities.

INFOLOG is able to work as a service unit offering the following possibilities:

- Read/reset error codes
- Read/change customer number
- Billing date (account date)
- Date/time of SITRANS F US105

SITRANS F US105 readings can be read via the optical eye or remote by means of a data module in the SITRANS F US105.

The INFOLOG data transfer software is able to store data as a standard ASCII comma separated file to be used in billing programs or exported into e.g. an Excel spreadsheet for further data processing.

INFOLOG is easy to operate – all commands are executed by means of F1, F2, F3 and F4.

INFOLOG	
Supply	2 psc L6 1.5 V AA batteries (included)
Backup	1 pc of Lithium CR 1620 battery (included)
Protocol	IEC 1107 / RS 2032
Display	Alphanumeric display with background illumination
Capacity	1500 readings
Weight	325 g (0.72 lbs)
Dimensions	180 x 90 x 35 mm (7“ x 3.5“ x 1.38“)
Humidity	90% non-condensing
Temperature	-20 … +60 °C (-4 ... +140 °F)

Optical readout head

- Designed for use with INFOLOG hand-held terminal or PC for re-programming
- Complies with IEC 1107/EN 61107

The optical read-out head is used together with INFOLOG to read out data from the SITRANS F US105. Data transmitting used infrared light in the two-way communication. Due to low power consumption whenever communication takes place, the position of the optical head on the SITRANS F US105 must be accurate and with the cable turning downward against the cable inlet on the SITRANS F US105.

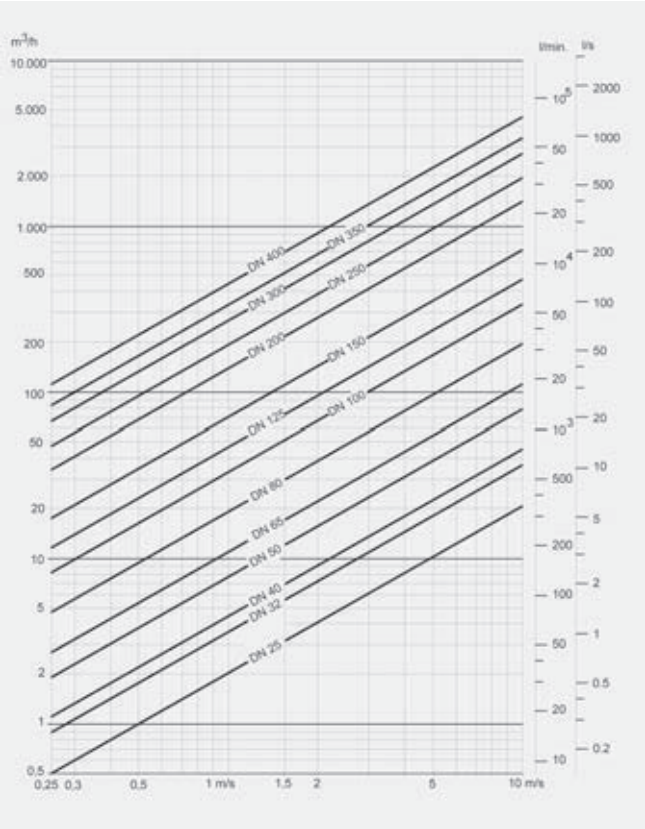
Note:

The readout head contains a strong magnet in order to keep position on the SITRANS F US105. Keep the readout head away from any diskettes or computers as it may damage data.

Optical readout head	
Baud rate	300/600 Baud/s
Ambient temperature	-10 … +55 °C (14 ... 131 °F)
Storage temperature	-20 … +70 °C (-4 ... +158 °F)
Enclosure	IP53
Cable length	1.5 m (59”)
Dimension	Diameter 32 x 25 mm (1.26” x 1”)
Weight	0.1 kg (0.22 lb)
Magnet material	Ferrite
Plug	9-pole D-sub

SONOFLO SONOCELL/SONO 3301 (US version)

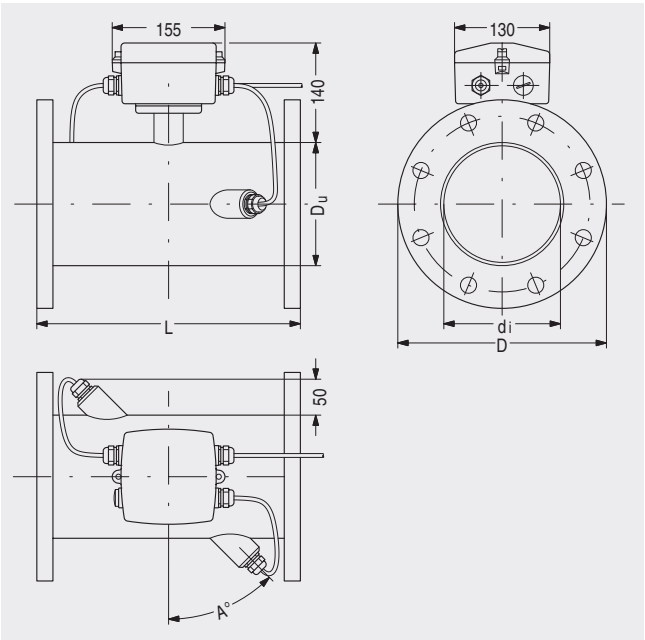
Characteristic curves



Sizing table

This table is a general sizing table for ultrasonic flowmeters. SONOCELL/SONO 3301 is available in sizes from DN 80 (3") to DN 400 (16").

Dimensional drawings



SONOFLO SONOCELL/SONO 3301 (US version)

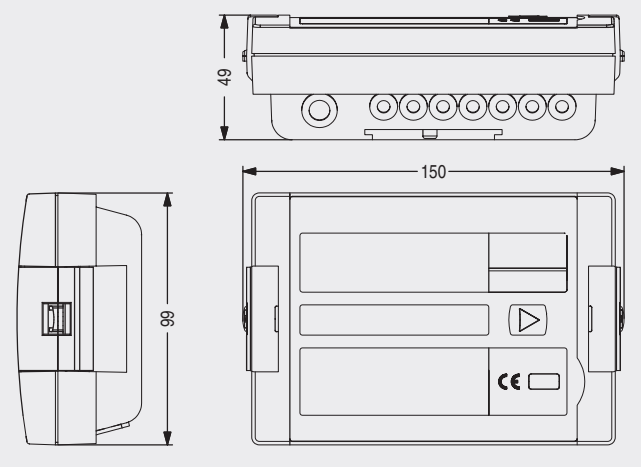
SONOCELL

DN	D [mm]								
	DIN 2501 PN 10	DIN 2501 PN 16	AS 4087 Fig. B7 Class 14	ANSI B 16.5 Class 150	D_u [mm]	d_i [mm]	L [mm]	A [°]	Weight [kg]
80		200	185	190.5	88.9	82.9	400	45	18
100		220	215	228.6	114.3	107.1	374	45	25
125		250		254.0	141.3	128.1	395	45	29
150		285	280	279.4	168.3	158.3	395	45	35
200	340	340	335	342.9	219.1	206.5	350	60	54
225			370		244.5	231.9	450	60	70
250	395	405	405	406.4	273.0	260.4	450	60	73
300	445	460	455	482.6	324.0	311.4	500	60	83
350	505	520	525	533.4	356.7	340.9	550	60	98
400	565	580	580	596.9	407.0	391.2	600	60	119

SONO 3301

Size [Inch]	ANSI B 16.5 Class 150	D_u [inch]	d_i [inch]	L [inch]	A [°]	Weight [lb]
3	7.5	3.5	3.3	15.7	45	40
4	9	4.5	4.2	14.7	45	55
5	10	5.56	5.0	15.6	45	64
6	11	6.6	6.2	15.6	45	77
8	13.5	8.6	8.1	13.8	60	119
10	16	10.75	10.3	17.7	60	161
12	19	12.75	12.3	19.7	60	183
14	21	14	13.4	21.7	60	216
16	23.5	16	15.4	23.6	60	262

SITRANS F US105



More information

All SONOCELL/SONO 3301 flowmeters are wet calibrated with volumetric reference on Siemens Flow Laboratories.

Siemens Flow Laboratories are accredited by the United Kingdom Accreditation Service (UKAS Accredited Calibration Laboratory No. 0301) and DANAK (DANsk AKkreditering). The accreditation is carried out according to the same standard – ISO/IEC 17025 “General requirements for the competence of testing and calibration laboratories”.

SONOFLO SONOCELL/SONO 3301 (US version)

Selection and Ordering data — Order No.

SITRANS F US SONOFLO SONOCELL SONO 3301

Flange type EN 1092-1, Readouts: flow (m^3/h), volume (m^3)

DN	PN	Qnom (m^3/h)	hot dip galvanised
80	16	55	**7ME3250-1KC10-0AA0**
100	16	100	**7ME3250-1PC10-0AA0**
125	16	150	**7ME3250-1TC10-0AA0**
150	16	220	**7ME3250-2BC10-0AA0**
200	10	380	**7ME3250-2FB10-0AA0**
	16	380	**7ME3250-2FC10-0AA0**
250	10	550	**7ME3250-2FH10-0AA0**
	16	550	**7ME3250-2KC10-0AA0**
300	10	850	**7ME3250-2PB10-0AA0**
	16	850	**7ME3250-2PC10-0AA0**
350	10	1000	**7ME3250-2TB10-0AA0**
	16	1000	**7ME3250-2TC10-0AA0**
400	10	1400	**7ME3250-3BB10-0AA0**
	16	1400	**7ME3250-3BC10-0AA0**

Flange type AS 4087, Readouts: flow (m^3/h), volume (MI)

DN	PN	Qnom (m^3/h)	hot dip galvanised	AISI 304/carbon steel flange
80	Class14	55	**7ME3250-1KN10-0DA0**	**7ME3250-1KN30-0DA0**
100	Class14	100	**7ME3250-1PH10-0DA0**	**7ME3250-1PH30-0DA0**
150	Class14	220	**7ME3250-2BN10-0DA0**	**7ME3250-2BN30-0DA0**
200	Class14	380	**7ME3250-2FN10-0DA0**	**7ME3250-2FN30-0DA0**
225	Class14	450	**7ME3250-8WN10-0DA0**	**7ME3250-8WN30-0DA0**
250	Class14	550	**7ME3250-2KN10-0DA0**	**7ME3250-2KN30-0DA0**
300	Class14	850	**7ME3250-2PN10-0DA0**	**7ME3250-2PN30-0DA0**
350	Class14	1000	**7ME3250-2TN10-0DA0**	**7ME3250-2TN30-0DA0**
400	Class14	1400	**7ME3250-3BN10-0DA0**	**7ME3250-3BN30-0DA0**

Flange type ANSI B.16.5, Readouts: flow (GPM), volume (0.001MG)

DN	PN	Qnom (m3/h)	hot dip galvanised
3“	Class 150	55	**7ME3250-1KH10-0BA0**
4“	Class 150	100	**7ME3250-1PH10-0BA0**
5“	Class 150	150	**7ME3250-1TH10-0BA0**
6“	Class 150	220	**7ME3250-2BH10-0BA0**
8“	Class 150	380	**7ME3250-2FH10-0BA0**
10“	Class 150	550	**7ME3250-2KH10-0BA0**
12“	Class 150	850	**7ME3250-2PH10-0BA0**
14“	Class 150	1000	**7ME3250-2TH10-0BA0**
16“	Class 150	1400	**7ME3250-3BH10-0BA0**

Flange type ANSI B.16.5, Readouts: flow (CFS), volume (AcreFt)

DN	PN	Qnom (m3/h)	hot dip galvanised
3“	Class 150	55	**7ME3250-1KH10-0CA0**
4“	Class 150	100	**7ME3250-1PH10-0CA0**
5“	Class 150	150	**7ME3250-1TH10-0CA0**
6“	Class 150	220	**7ME3250-2BH10-0CA0**
8“	Class 150	380	**7ME3250-2FH10-0CA0**
10“	Class 150	550	**7ME3250-2KH10-0CA0**
12“	Class 150	850	**7ME3250-2PH10-0CA0**
14“	Class 150	1000	**7ME3250-2TH10-0CA0**
16“	Class 150	1400	**7ME3250-3BH10-0CA0**