



Overview



The combination of SONO 3300 sensor and FUS060 transmitter is ideal for applications within the general industry. Measurements are independent of liquid temperature, density, pressure and conductivity. Transducers cannot be replaced.

Benefits

- Robust remote transmitter FUS060
- Robust design for industrial applications
- Measures all liquids less than 350 cSt, conductive or non-conductive
- No pressure drop
- Reliable and accurate flow measurements
- Long-time stability
- ATEX approval

Application

The main application for SONO 3300/FUS060 ultrasonic flowmeter is measurement of volume.

SONO 3300/FUS060 can be used for water and treated waste water, oil and liquefied gases, hot water / cooling systems.

Design

The SONO 3300/FUS060 consists of a casted sensor (DN 50 to 150 (2" to 6")), welded pipes (DN 200 to 300 (8" to 12")) and a transmitter FUS060.

The transmitter can only be mounted separately.

The internal signal cables from transducers to sensor connection box are protected from an aggressive environment by stainless steel pipes.

Sensor installation

See system information.

Technical specifications

The transmitter related to this system is the SITRANS FUS060.

Technical specifications to the FUS060 see page 4/214.

2-track sensor with flanges and integrated transducers

Error in measurement

Error in measurement at reference conditions; % of measured value	$v > 0.5 \dots 10$ m/s, $< \pm 0.5\%$ of rate (v =flow speed) SONO 3300 DN 50 and DN 65: For Reynolds numbers $1000 < R_e < 5000: \pm 1.5\%$
Max. flow velocity	10 m/s (32 ft/s)
Nominal size	DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300 (2" ... 12")
Media/surface temperature	Separate version: $-10 \dots +160$ °C (14 ... 320 °F)
Ambient temperature (sensor)	Separate version: $-20 \dots +60$ °C (-4 ... +140 °F) Storage: $-40 \dots +85$ °C (-40 ... +185 °F)
Enclosure	Standard version: IP67 (NEMA 4X/NEMA 6) ATEX version: As standard, but with ATEX approval (see below)

Process connections

PN designated EN 1092-1	<ul style="list-style-type: none"> • DN 50 ... 300 (2" ... 12"), PN 40 • DN 100 ... 300 (4" ... 12"), PN 16 • DN 200 ... 300 (8" ... 12"), PN 10
Class designated EN 1759-1	<ul style="list-style-type: none"> • DN 50 ... 300 (2" ... 12"), class 150 • DN 50 ... 300 (2" ... 12"), class 300
Transducer	Integrated version welded into pipe

Materials

Pipe	<ul style="list-style-type: none"> • DN 50 ... 150 (2" ... 6"): Steel EN 1.113145-16Mn5 • DN 200 ... 300 (8" ... 12"): Steel EN 1.0345-P235GH
Flange	<ul style="list-style-type: none"> • DN 50 ... 300 (2" ... 12"): EN 1.0025-S235JRG2
Class	ASTM A105
Transducer	Stainless steel AISI 316 or similar



Flowmeter SONO 3300/FUS060

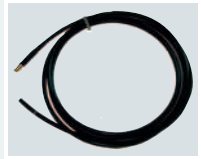
Certificates and approvals

Conformity certificate	The devices are supplied as standard with a Siemens Certificate of Conformity on CD
Material certificate	Material certificate according to EN 10204-3.1 is optionally available
NDT examination report	Extended material certificate is optionally available
Calibration report	A standard calibration report is shipped with each flowmeter.
Extended accredited ISO/IEC 17025 calibration certificates	Optionally available
Approvals	No custody transfer approvals
Ex approval	System ATEX approval for SONO 3300 with remote transmitter FUS060-Ex (ATEX II 2G Ex dem [Ia/Ib] IIC T6/T4/T3) For Ex version the transducer cable length is restricted to 3 m (9.84 ft), in order to meet requirements for electrical immunity.

The sensors are approved according to EU directive 97/23/EC dated 29 May 1997 regarding fluid group 1, classified in category III. Design according to EN 13480 (PED Directive).

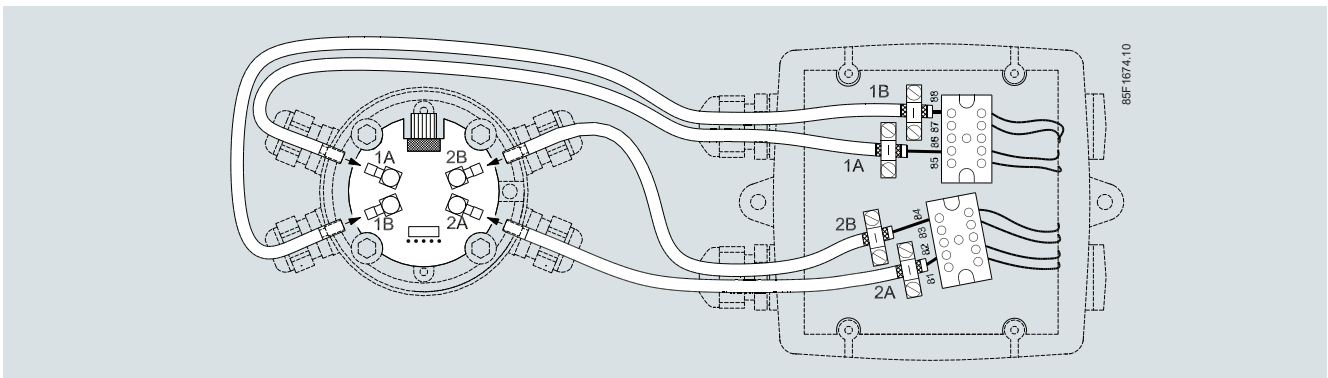
Coaxial cable between sensor SONO 3300 and transmitter FUS060

Standard Coaxial cable (75 Ω)	Coaxial cable with SMB straight plug on one end for the FUS060 connector
Outside diameter	Ø 5.8 mm
Length	3, 15, 30, 60, 90, 120 m (9.84, 49.21, 98.43, 196.85, 295.28, 393.70 ft) between sensor and transmitter
Material (outside jacket)	black PE
Ambient temperature	-10 ... +70 °C (14 ... 158 °F)
High temperature Coaxial cable (75 Ω)	Coaxial cable with SMB straight plug on one end for the FUS060 connector
Outside diameter	Ø 5.13 mm (first 0.3 m (0.98 ft) part to the transducer), Ø 5.8 mm (for remaining cable to the transmitter - with SMB plug at the end) and between these is a black hot melt junction Ø 16 mm (length 70 mm)
Length	3, 15, 30, 60, 90, 120 m (9.84, 49.21, 98.43, 196.85, 295.28, 393.70 ft) between sensor and transmitter (max. 3 m (9.84 ft)) transducer cable length for Ex area mounted transmitters)
Material (outside jacket)	Brown PTFE (0.3 m (0.98 ft) part) and black PE (for remaining cable)
Ambient temperature	-200 ... +200 °C (-328 ... +392 °F) (brown PTFE transducer part) and -10 ... +70 °C (14 ... 158 °F) (black PE for remaining transmitter cable part)



Flowmeter SONO 3300/FUS060

Schematics



Electrical connection of SITRANS FUS060 and SONO 3300



Flowmeter SONO 3300/FUS060

Selection and Ordering data		Order No.	Order code
Sensor SONO 3300 with transmitter FUS060		7ME3300-	
		0 -	
Diameter	Qn setting [m³/h]		
DN 50 (2")	10	1A	
DN 50 (2")	26	1B	
DN 50 (2")	60	1D	
DN 65 (2½")	15	1E	
DN 65 (2½")	42	1F	
DN 65 (2½")	100	1H	
DN 80 (3")	20	1J	
DN 80 (3")	60	1K	
DN 80 (3")	150	1M	
DN 100 (4")	36	1N	
DN 100 (4")	100	1P	
DN 100 (4")	230	1R	
DN 125 (5")	50	1S	
DN 125 (5")	150	1T	
DN 125 (5")	360	1V	
DN 150 (6")	80	2A	
DN 150 (6")	220	2B	
DN 150 (6")	500	2D	
DN 200 (8")	120	2E	
DN 200 (8")	380	2F	
DN 200 (8")	900	2H	
DN 250 (10")	200	2J	
DN 250 (10")	600	2K	
DN 250 (10")	1400	2M	
DN 300 (12")	300	2N	
DN 300 (12")	850	2P	
DN 300 (12")	2200	2R	
Flange norm and pressure rating (All sizes are not available in all pressure ratings)			
<u>EN 1092-1</u>			
PN 10 (DN 200 ... 300 (8" ... 12"))		B	
PN 16 (DN 80 ... 300 (3" ... 12"))		C	
PN 40 (DN 50 ... 300 (2" ... 12"))		E	
<u>ANSI B16.5</u>			
class 150 (DN 50 ... 300 (2" ... 12"))		H	
class 300 (DN 50 ... 300 (2" ... 12"))		J	
Sensor type (approval) and transmitter mounting			
IP67 standard, remote transmitter		1	
IP67 Ex-version (ATEX), remote transmitter (Ex-version)		3	
Cable gland entries in FUS060 and SONO 3300			
Cable glands M20 in sensor and in transmitter M25/20/16 x 1.5		1	
Transmitter SITRANS FUS060			
IP65 (NEMA 4), 120/230 V AC		N	
IP65 (NEMA 4), 24 V AC/DC		P	
IP65 (NEMA 4), 24 V AC/DC, Ex-version (ATEX)		Q	

Selection and Ordering data		Order No.	Order code
Sensor SONO 3300 with transmitter FUS060		7ME3300-	
		0 -	
FUS060 output module			
HART, 4 ... 20 mA, 1 pulse output, 1 relay		B	
HART, Ex version, 4 ... 20 mA, 1 pulse output, 1 relay		C	
PROFIBUS PA, 1 pulse/frequency		D	
PROFIBUS PA, Ex version, 1 pulse/frequency		E	
Transducer coaxial cable			
4 x 3 m, max. 70 °C (158 °F), the only option for Ex i		0	
4 x 15 m, max. 70 °C (158 °F)		1	
4 x 30 m, high temp. max.200 °C (392 °F)		2	
4 x 30 m, max. 70 °C (158 °F)		3	
4 x 60 m, max. 70 °C (158 °F)		4	
4 x 90 m, max. 70 °C (158 °F)		5	
4 x 120 m, max. 70 °C (158 °F)		6	
4 x 3 m, high temp. max. 200 °C (392 °F), the only option for Ex i		7	
4 x 15 m, high temp. max. 200 °C (392 °F)		8	

Selection and Ordering data	Order code
Additional information	
Please add „-Z“ to Order No. and specify Order code(s) and plain text.	
<u>Calibration</u>	
Sensor prepared for older SONO 3000 transmitters	A30 ^{1) 2)}
Production calibration DN 50 ... DN 300 (with certificate)	Included
Accredited Siemens ISO/IEC 17025 calibration for DN50 to DN150 with Qn as selected in Diameter. Verification certificate: 2 x 3 points in 10%, 25% and 100% Qn (max. flow 325 m ³ /h).	D20
Accredited Siemens ISO/IEC 17025 calibration for DN125 to DN300 with Qn as selected in Diameter. Verification certificate: 2 x 3 points in 10%, 25% and 100% Qn (max. flow 1300 m ³ /h).	D21
<u>Material certificate</u>	
EN 10204-3.1	F10
EN 10204-3.1 with 100% NDT on weldings	F11 ²⁾
<u>Pressure certificate</u>	
EN 10204-2.3	F21
<u>Tag name plate</u>	
Stainless steel tag name plate, text length depends on font size: 8 mm up to 10 characters, 4 mm up to 20 characters, or 3 mm up to 30 characters (add plain text)	Y17

1) In preparation
2) On request