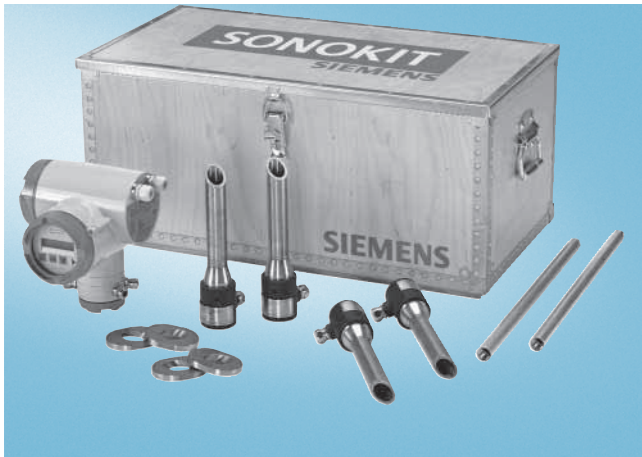


# SITRANS F flowmeters

## SITRANS F US

### SONOFLO SONOKIT

#### Overview



SONOKIT is a transit time based ultrasonic flowmeter for retrofitting on existing pipelines.

The kit includes all necessary parts and special tools to make the installation as 1- or 2-track flowmeter.

The set is made for installation on empty pipes or pipes under pressure without process shut-down (hot-tap).

Please contact Siemens for further information on hot-tap tools and instructions.

SONOKIT has wetted transducers (in contact with media) which assure superior accuracy and performance.

#### Benefits

- Cost-effective solution – contains all the necessary components for retrofitting
- SONOKIT is easy to install in pipeline sizes DN 200 to DN 4000 (8" to 160") 1-track DN 100 to DN 2400 (4" to 96") – without process shut-down or flow interruption
- No bypass installation necessary – withstands pressures up to 40 bar (580 psi) and media temperatures between -20 °C and +200 °C (-4 °F and +392 °F)
- High accuracy – the bigger the pipe, the more accurate the result
- Solid construction and no moving parts for a 100% maintenance and obstruction free flowmeter
- The SONOKIT comes with transducers in IP68 enclosure
- Available in a robust version that can be buried and withstands constant flooding
- Wetted transducers assure superior accuracy and performance
- Automatic calculation of the calibration factor when pipe geometry data are entered in the transmitter
- Transmitter versions with HART or PROFIBUS PA

#### Application

- Raw water intake for water treatment plants
- Water distribution systems
- Irrigation systems
- Water power stations
- District heating plants
- Cooling water plants within the industry and in power stations
- Systems within the oil and refinery business
- Sewage treatment plants
- Plants transporting non-conductive liquids

#### Design

The SONOKIT set contains all necessary parts to build an ultrasonic flowmeter on existing pipes depending on choices at ordering:

- Papers to wrap around pipes for alignment of sensors
- Transducer alignment tools
- Mounting plates and SITRANS FUS060 transmitter type according to ordering
- Cables
- 4 track version is available on request
- Wall mounting

#### Technical specifications

##### Accuracy

Typical, depending on accuracy of measurements of installation  $\leq \pm (0.5 \dots 1.5\%)$

Note:

Accuracy depends on the accuracy of the measurements taken at location. This means that inaccurate measurements of angles, distance between transducers, wall thickness and pipe diameter have a direct effect on the accuracy. Values measured are entered into the memory of the FUS060 transmitter.

##### Requirements for pipes

###### Requirements for pipes

<b>Size</b>	DN 100 ... DN 4000 (4" ... 160")
Line pressure	max 40 bar (580 psi)
Liquid temperature	Standard version: -20 ... +200 °C (-4 ... +392 °F)

##### Enclosure

Standard version	IP68
Ex approval sensor	ATEX Ex i IIC T3

##### Materials

Terminal box	Standard version: PA 6.6, 100 °C (212 °F) AISI 316, 200 °C (392 °F)
Transducer element	Standard version: AISI 316, 200 °C (392 °F)

##### Materials of existing pipeline

Steel	Transducer holder: EN 10273 or EN 10216 (P235GH) Mounting plates: EN 10273 or EN 10216 (P235GH)
Concrete	Transducer holder: AISI 316 or similar Mounting plates: (not included)
Stainless steel	Transducer holder: AISI 316 or similar Mounting plates: AISI 316 or similar

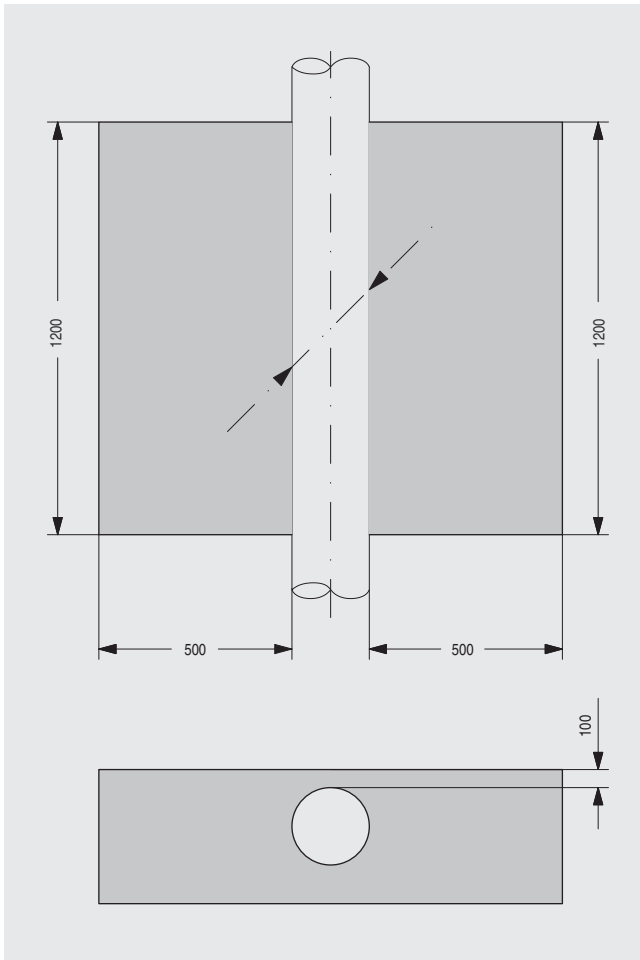
##### Pipe wall thickness

Steel pipe (AISI 316 and St. 37.2 or corresponding material)	Transducer and holder available in length L = 160, allowing a pipe wall thickness up to 20 mm (0.79")
Concrete pipe	Transducer and holder available in length L = 230, allowing a pipe wall thickness up to 200 mm (7.9")

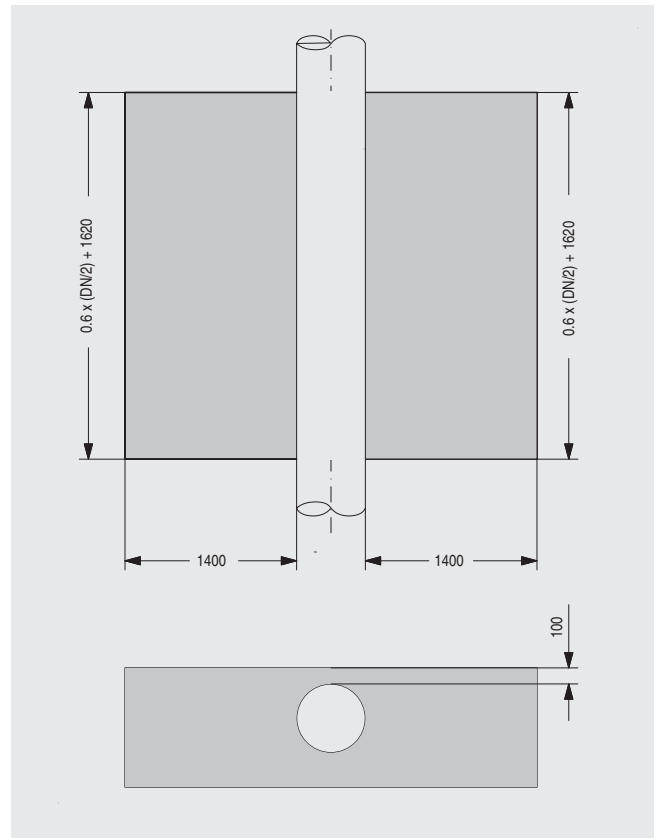
<b>Dimension on the box</b> (L x B x H)	820 x 410 x 360 mm (32.3" x 16.1" x 14.2")
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**Installation requirements**

The space requirements around the pipe for retrofitting a SONOFLO ultrasonic flowmeter type SONOKIT are given below:



Empty pipe installation



Hot-tap installation

# SITRANS F flowmeters

## SITRANS F US

### SONOFLO SONOKIT

Selection and Ordering data		Order-No.
<b>SITRANS F US SONOKIT</b> 1-track sensor		7ME3210 -
<b>Diameter</b>	<b>Qn [m<sup>3</sup>/h]</b>	
DN 100 / 4"	100	1 P
DN 125 / 5"	150	1 T
DN 150 / 6"	220	2 B
DN 200 / 8"	380	2 F
DN 250 / 10"	600	2 K
DN 300 / 12"	850	2 P
DN 350 / 14"	1000	2 T
DN 400 / 16"	1300	3 B
DN 450 / 18"	1700	3 F
DN 500 / 20"	2200	3 K
DN 550 / 22"	2600	3 P
DN 600 / 24"	3200	3 T
DN 650 / 26"	3600	4 B
DN 700 / 28"	4200	4 F
DN 750 / 30"	4800	4 K
DN 800 / 32"	5500	4 P
DN 900 / 36"	7500	5 B
DN 1000 / 40"	9000	5 K
DN 1100 / 44"	10000	5 P
DN 1200 / 48"	13200	5 T
DN 1300 / 52"	14000	6 A
DN 1400 / 56"	16800	6 C
DN 1500 / 60"	19000	6 E
DN 1600 / 64"	22800	6 G
DN 1700 / 68"	25000	6 J
DN 1800 / 72"	27600	6 L
DN 1900 / 76"	31000	6 N
DN 2000 / 80"	36000	6 Q
DN 2100 / 84"	37000	6 S
DN 2200 / 88"	42000	6 U
DN 2300 / 92"	45000	6 W
DN 2400 / 96"	51000	7 A
<b>Installation method</b>		
Empty pipe		A
Hot tap, mounting under pressure		B
Tapping band (to be ordered separately)		C
<b>Transducer holder</b>		
None (for tapping band)		0
Carbon steel, length = 160 mm, mounting plates in carbon steel		1
Stainless steel, length = 160 mm, mounting plates in stainless steel		2
Stainless steel, length = 230 mm, for concrete pipe		3
<b>Transducer type and approval</b>		
IP67 (NEMA 4X/6) PA housing, PN 40, SS, O-ring, 100 °C (212 °F), no approval		1
IP68 PA housing, Sylgard potting kit, PN 40, SS, O-ring, 100 °C (212 °F), no approval		3
IP68 SS housing, Sylgard potting kit, PN 40, SS, O-ring, 200 °C (392 °F), no approval		4
IP68 SS housing, PN 40, SS, O-ring, 190 °C (374 °F), EEx i IIC T3, M20 gland, ATEX approval		5
<b>Cable gland entires</b>		
Cable glands M20 in transducers and in transmitter M25/20/16 x 1.5		1
Cable glands ½" NPT in transducers and in transmitter		2

Selection and Ordering data		Order-No.
<b>SITRANS F US SONOKIT</b> 1-track sensor		7ME3210 -
<b>Transmitter SITRANS FUS060</b>		
IP65 (NEMA 4), 120/230 V AC		N
IP65 (NEMA 4), 24 V AC/DC		P
IP65 (NEMA 4), 24 V AC/DC ATEX Ex-d		Q
<b>Module (FUS060 only)</b>		
HART, 1 pulse output, 1 relay		B
HART EEx e, 1 pulse output, 1 relay		C
PROFIBUS PA, 1 pulse/frequency		D
PROFIBUS PA, EEx [ia], 1 pulse/frequency		E
<b>Transducer coax cable</b>		
2 x 3 meter, 70 °C (158 °F)		0
2 x 15 meter, 70 °C (158 °F)		1
2 x 3 meter, high temperature 200 °C (392 °F)		7
2 x 15 meter, high temperature 200 °C (392 °F)		8

Selection and Ordering data		Order code
<b>Additional information</b>		
Please add „-Z“ to Order No. and specify Order code(s) and plain text.		
<u>Material certificate</u>		
EN 10204-3.1.B, transducer body material		<b>F30</b>
EN 10204-3.1.B, transducer holder material		<b>F31</b>
EN 10204-3.1.B, mounting plate material		<b>F32</b>
<u>Tag name plate</u>		
Stainless steel tag with 12 mm characters (max. 15 characters) (add plain text)		<b>Y17</b>
Self-adhesive plastic tag with 8 mm characters (max. 15 characters) (add plain text)		<b>Y18</b>
Please also see <a href="http://www.siemens.com/SITRANSOrdering">www.siemens.com/SITRANSOrdering</a> for practical examples of ordering		

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Selection and Ordering data		Order-No.
<b>SITRANS F US SONOKIT</b> 2-track sensor		<b>7ME3220-</b>
<b>Diameter</b>	<b>Qn [m<sup>3</sup>/h]</b>	
DN 200 / 8"	380	2 F
DN 250 / 10"	600	2 K
DN 300 / 12"	850	2 P
DN 350 / 14"	1000	2 T
DN 400 / 16"	1300	3 B
DN 450 / 18"	1700	3 F
DN 500 / 20"	2200	3 K
DN 550 / 22"	2600	3 P
DN 600 / 24"	3200	3 T
DN 650 / 26"	3600	4 B
DN 700 / 28"	4200	4 F
DN 750 / 30"	4800	4 K
DN 800 / 32"	5500	4 P
DN 900 / 36"	7500	5 B
DN 1000 / 40"	9000	5 K
DN 1100 / 44"	10000	5 P
DN 1200 / 48"	13200	5 T
DN 1300 / 52"	14000	6 A
DN 1400 / 56"	16800	6 C
DN 1500 / 60"	19000	6 E
DN 1600 / 64"	22800	6 G
DN 1700 / 68"	25000	6 J
DN 1800 / 72"	27600	6 L
DN 1900 / 76"	31000	6 N
DN 2000 / 80"	36000	6 Q
DN 2100 / 84"	37000	6 S
DN 2200 / 88"	42000	6 U
DN 2300 / 92"	45000	6 W
DN 2400 / 96"	51000	7 A
DN 2500 / 100"	53000	7 C
DN 2600 / 104"	60000	7 E
DN 2700 / 108"	62000	7 G
DN 2800 / 112"	72000	7 J
DN 2900 / 116"	71000	7 L
DN 3000 / 120"	78000	7 N
DN 3100 / 124"	82000	7 Q
DN 3200 / 128"	85000	7 S
DN 3300 / 132"	92000	7 U
DN 3400 / 136"	100000	7 W
DN 3500 / 140"	100000	8 A
DN 3600 / 144"	110000	8 C
DN 3700 / 148"	120000	8 E
DN 3800 / 152"	130000	8 G
DN 3900 / 156"	130000	8 J
DN 4000 / 160"	144000	8 L
<b>Installation method</b>		
Empty pipe		A
Hot tap, mounting under pressure		B
Tapping band (to be ordered separately)		C
<b>Transducer holder</b>		
None (for tapping band)		0
Carbon steel, length = 160 mm, mounting plates in carbon steel		1
Stainless steel, length = 160 mm, mounting plates in stainless steel		2
Stainless steel, length = 230 mm, for concrete pipe		3

Selection and Ordering data		Order-No.
<b>SITRANS F US SONOKIT</b> 2-track sensor		<b>7ME3220-</b>
<b>Transducer type and approval</b>		
IP67 (NEMA 4X/6) PA housing, PN 40, SS, O-ring, 100 °C (212 °F), no approval		1
IP68 PA housing, Sylgard potting kit, PN 40, SS, O-ring, 100 °C (212 °F), no approval		3
IP68 SS housing, Sylgard potting kit, PN 40, SS, O-ring, 200 °C (392 °F), no approval		4
IP68 SS housing, PN 40, SS, O-ring, 190 °C (374 °F), EEx i IIC T3, M20 gland, ATEX approval		5
<b>Cable gland entires</b>		
Cable glands M20 in transducers and in transmitter M25/20/16 x 1.5		1
Cable glands ½" NPT in transducers and in transmitter		2
<b>Transmitter SITRANS FUS060</b>		
IP65 (NEMA 4), 120/230 V AC		N
IP65 (NEMA 4), 24 V AC/DC		P
IP65 (NEMA 4), 24 V AC/DC ATEX Ex-d		Q
<b>Module (FUS060 only)</b>		
HART, 1 pulse output, 1 relay		B
HART EEx e, 1 pulse output, 1 relay		C
PROFIBUS PA, 1 pulse/frequency		D
PROFIBUS PA, EEx [ia], 1 pulse/frequency		E
<b>Transducer coax cable</b>		
4 x 3 meter, 70 °C (158 °F)		0
4 x 15 meter, 70 °C (158 °F)		1
4 x 3 meter, high temperature 200 °C (392 °F)		7
4 x 15 meter, high temperature 200 °C (392 °F)		8

Selection and Ordering data		Order code
<b>Additional information</b>		
Please add „-Z“ to Order No. and specify Order code(s) and plain text.		
<b>Material certificate</b>		
EN 10204-3.1.B, transducer body material		F30
EN 10204-3.1.B, transducer holder material		F31
EN 10204-3.1.B, mounting plate material		F32
<b>Tag name plate</b>		
Stainless steel tag with 12 mm characters (max. 15 characters) (add plain text)		Y17
Self-adhesive plastic tag with 8 mm characters (max. 15 characters) (add plain text)		Y18
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# SITRANS F flowmeters

## SITRANS F US

### SONOFLO SONOKIT

#### Accessories

##### Tapping band



SONOKIT tapping band is made specially for SONOKIT 1- or 2-track in order to be mounted outside on existing pipe-lines.

SONOKIT tapping bands are particularly designed to be mounted on non-weldable pipes, casted pipes, plastic pipes or concrete pipes.

Retrofitting of tapping band can be done on pressure raised and empty pipes

##### Design

SONOKIT tapping bands are made of stainless steel AISI 316.

A complete tapping band for SONOKIT contains, depending on size, 2–8 segments, sealing material, bolts and pre-mounted transducer holders

##### Ordering

Tapping band for SONOKIT is ordered according to numbers of tracks, outer diameter of pipe and wall thickness. SONOKIT tapping band is not available ex stock.

For further information regarding installation methods and special installation without pressure shut-down (Hot-tapping) please see product manuals for SONOKIT or call the Siemens sales office.

##### **Ordering:**

**For ordering tapping bands - please contact Siemens Flow Instruments marketing department.**