

Overview

The combination of the SONO 3100 sensor and the FUS060 transmitter is ideal for applications where process shut-down is impossible during service and where there is a need for extreme high/low temperatures and pressures.

Transducers can easily be changed without interrupting operation. SONO 3100 can optionally be delivered as a 4-track solution for absolute best performance and accuracy.

Benefits

- Transducers can be replaced under pressure
- Measurement of all liquids less than 350 Cst, conductive or non-conductive
- No pressure drop
- Reliable and accurate flow measurements
- Long-time stability
- On request:
 - Special sensor material, e.g. Duplex
 - High/low temperature sensor version: +250 °C (+482 °F) / -200 °C (-328 °F) sensors
 - Pressure rating 430 bar (6235 psi)
 - 4-track sensor technology

Application

The main application for SONO 3100 in combination with FUS060 ultrasonic flowmeter is to measure volume flow within:

- Petrochemical industry
- Power engineering
- Water and waste water
- Oil and liquefied gases

SITRANS FUS060 holds ATEX for hazardous areas, HART and PROFIBUS PA. SONO 3100 holds ATEX Ex approval.

Design

The SONO 3100 in combination with FUS060 consists of a SONO 3100 sensor, transducers with O-rings or flanges depending on selection - and a FUS060 transmitter.

SONO 3100 is basically supplied in a 2-track solution with and without flanges in sizes from DN 100 to DN 1200.

4-track version is available on request.

SONO 3100 is as standard available in carbon/stainless steel from DN 100 to DN 1200.

FUS060 is designed for wall mounting only.

Technical specifications

The transmitter related to this system is the SITRANS FUS060.

Technical specifications to the FUS060 see page 4/194.

2-track sensor fitted with four SONO 3200 transducers**Error in measurement**

| | |
|---|---|
| Error in measurement at reference conditions; % of measured value | $v > 0.5 \dots 10 \text{ m/s}$, $< \pm 0.5\%$ of rate (v =flow velocity) |
| Max flow velocity | 10 m/s (32 ft) |
| Nominal size | DN 100 ... 1200 (4" ... 48") |
| Media/surface temperature | <ul style="list-style-type: none"> • Standard: -10 °C ... +200 °C (14 ... 392 °F) • ATEX Ex-d version: -20 ... +180 °C (-4 ... +356 °F) • ATEX Ex-i version: -10 ... +190 °C (+14 ... +374 °F) • Specials: -200 °C (-328 °F) or up to 250 °C (482 °F) |
| Ambient temperature | -20 ... +60 °C (-4 ... +140 °F) |
| Enclosure | IP68 (NEMA 6)/IP68 (NEMA 6X) and ATEX (see below) |

Process connectionsPN designated, EN 1092-1

Pipe material carbon steel

- DN 200 ... 1200 (8" ... 48"), PN 10
- DN 100 ... 1200 (4" ... 48"), PN 16
- DN 200 ... 1000 (8" ... 40"), PN 25
- DN 100 ... 500 (4" ... 20"), PN 40

Pipe material stainless steel

- DN 200 ... 300 (8" ... 12"), PN 10 and PN 25
- DN 100 ... 300 (4" ... 12"), PN 16 and PN 40

Class designated, EN 1759-1

Pipe material carbon steel

- DN 100 ... 600 (4" ... 24") Class 150
- DN 100 ... 300 (4" ... 12") Class 300

Pipe material stainless steel

- DN 100 ... 300 (4" ... 12") Class 150 and Class 300

Without flanges, (weld-in version) only in carbon steel

- DN 100 ... 1200 (4" ... 48"), PN 16
- DN 200 ... 1000 (8" ... 40"), PN 25
- DN 100 ... 500 (4" ... 20"), PN 40

Transducer SONO 3200

O-ring or flange versions

Materials

Pipe

Steel EN 1.0345-P235GH or stainless steel EN 1.4404 - AISI 316L

Flange

EN 10025-S235JRG2, 1E1 or stainless steel EN 10222-5-1.4404, 13E0

PN

ASTM A105, 1,1 or stainless steel ASTM F316L, 2,3

Class

Stainless steel AISI 316 or similar

Transducer body

Stainless steel AISI 316 or plastic

Transducer terminal house

PA 6.6

SITRANS F flowmeters

SITRANS F US

Flowmeter SONO 3100/FUS060

Certificates and approvals

System ATEX approval for SONO 3100 together with transmitter FUS060-Ex

ATEX II 2G Ex dem [ia/ib] IIC T6/T4/T3 or ATEX II 2G EEx d IIC T3-T6 with SONO 3200 Exd transducers (for standard FUS060 transmitter, installed outside of Ex zone)
For FUS060 Ex version the transducer cable length is restricted to 3 m (9.84 ft), in order to meet requirements for electrical immunity.

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

Pressure certificate

Pressure test according EN 1024-2.3 optionally available

Calibration report

A standard calibration report is shipped with each flowmeter.

Optionally available

Extended accredited ISO/IEC 17025 calibration certificates

Approvals

No custody transfer approvals

The sensor SONO 3100 with transmitter FUS060 conforms to Product Family Standard EN 61326/A3 appendix A (Title: Electrical Equipment for Measurement control and laboratory use – EMC requirements).

Selection and Ordering data

Order No. Order code

SITRANS F US SONO 3100 sensor 2-track

7ME3100-

Diameter Qn setting [m³/h]

| | | |
|---------------|---------------------|-----|
| DN 100 (4") | 28 | 1 N |
| DN 100 (4") | 100 | 1 P |
| DN 100 (4") | 220 | 1 R |
| DN 125 (5") | 44 | 1 S |
| DN 125 (5") | 150 | 1 T |
| DN 125 (5") | 350 | 1 V |
| DN 150 (6") | 64 | 2 A |
| DN 150 (6") | 220 | 2 B |
| DN 150 (6") | 500 | 2 D |
| DN 200 (8") | 110 | 2 E |
| DN 200 (8") | 380 | 2 F |
| DN 200 (8") | 900 | 2 H |
| DN 250 (10") | 180 | 2 J |
| DN 250 (10") | 600 | 2 K |
| DN 250 (10") | 1300 ¹⁾ | 2 M |
| DN 300 (12") | 250 | 2 N |
| DN 300 (12") | 850 | 2 P |
| DN 300 (12") | 2000 ¹⁾ | 2 R |
| DN 350 (14") | 350 | 2 S |
| DN 350 (14") | 1000 | 2 T |
| DN 350 (14") | 2800 ¹⁾ | 2 V |
| DN 400 (16") | 450 | 3 A |
| DN 400 (16") | 1300 ¹⁾ | 3 B |
| DN 400 (16") | 3600 ¹⁾ | 3 D |
| DN 500 (20") | 1300 ¹⁾ | 3 J |
| DN 500 (20") | 2200 ¹⁾ | 3 K |
| DN 500 (20") | 4200 ¹⁾ | 3 M |
| DN 600 (24") | 1300 | 3 S |
| DN 600 (24") | 3200 | 3 T |
| DN 600 (24") | 4200 ¹⁾ | 3 V |
| DN 700 (28") | 2000 | 4 E |
| DN 700 (28") | 4200 | 4 F |
| DN 800 (32") | 4200 | 4 N |
| DN 800 (32") | 5500 ¹⁾ | 4 P |
| DN 900 (36") | 4200 | 5 A |
| DN 900 (36") | 7500 ¹⁾ | 5 B |
| DN 1000 (40") | 4200 | 5 J |
| DN 1000 (40") | 9000 ¹⁾ | 5 K |
| DN 1200 (48") | 4200 | 5 S |
| DN 1200 (48") | 13200 ¹⁾ | 5 T |

Flange norm and pressure rating

(All sizes are not available in all pressure ratings)

EN 1092-1

PN 10 (DN 200 ... DN 1200)

PN 16 (DN 100 ... DN 1200)

PN 25 (DN 200 ... DN 1000)

PN 40 (DN 100 ... DN 500)

ANSI B16.5

class 150 (DN 100 ... DN 600)

class 300 (DN 100 ... DN 300)

Pipe without flanges (weld-in version)

PN 10 (DN 200 ... DN 1200)

PN 16 (DN 100 ... DN 1200)

PN 25 (DN 200 ... DN 1200)

PN 40 (DN 100 ... DN 500)

B
C
D
E

H
J

P
Q
R
S

SITRANS F flowmeters

SITRANS F US

Flowmeter SONO 3100/FUS060

| Selection and Ordering data | Order No. | Order code |
|---|-----------------|------------|
| SITRANS F US SONO 3100 sensor 2-track | 7ME3100- | |
| Pipe and flange material | | |
| Carbon steel (DN 100 ... 1200) | 1 | |
| Stainless steel (DN 100 ... 300) | 2 | |
| Transducer type and approval | | |
| IP67 (NEMA 4X/6) PA housing, PN 40, O-ring, 50 mm, 100 °C (212 °F) (DN 100 ... 1200; SS and CS sensors) | 1 | |
| IP68 SS housing, PN 40, O-ring, 50 mm, 200 °C (392 °F) (DN 100 ... 1200; SS and CS sensors) | 2 | |
| IP68 SS housing, PN 40, O-ring, 50 mm, 180 °C (356 °F), Ex d ATEX approval (only with standard FUS060) (DN 100 ... 1200; SS and CS sensors) | 3 | |
| IP67 (NEMA 4X/6) PA housing, PN 40, flange, 88 mm, 100 °C (212 °F) (DN 100 ... 300; SS sensors) | 4 | |
| IP68 SS housing, PN 40, flange, 88 mm, 200 °C (392 °F) (DN 100 ... 300; SS sensors) | 5 | |
| IP68 SS housing, PN 40, flange, 88 mm, 180 °C (356 °F), Ex d ATEX approval (only with standard FUS060) (DN 100 ... 300; SS sensors) | 6 | |
| IP67 SS housing, PN 40, O-ring, 50 mm, 190 °C (374 °F), Ex i ATEX approval (only with FUS060 Ex-version) (DN 100 ... 1200; SS and CS sensors) | 7 | |
| IP67 SS housing, PN 40, flange, 88 mm, 190 °C (374 °F), Ex i ATEX approval (only with FUS060 Ex-version) (DN 100 ... 300; SS sensors) | 8 | |
| Cable gland entries | | |
| 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 | |
| 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 ATEX Ex version | Q | |
| Module | | |
| HART, 1 pulse output, 1 relay | B | |
| HART Ex, 1 pulse output, 1 relay | C | |
| PROFIBUS PA, 1 pulse/frequency | D | |
| PROFIBUS PA, Ex, 1 pulse/frequency | E | |
| Transducer coax 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 | |

This device is shipped with a Quick Start guide and the SITRANS F manual CD containing the complete manual library. Printed Operating Instructions are available for purchase via PMD.

1) Reduced Q value during calibration (Qn setting unchanged)

Please also see www.siemens.com/SITRANSFordering for practical examples of ordering

| Selection and Ordering data | Order code |
|--|-----------------|
| Additional information | |
| Please add „-Z“ to Order No. and specify Order code(s) and plain text. | |
| Calibration | |
| Production calibration DN 100 ... DN 1200 (with certificate) | Included |
| Theoretical calibration DN 500 ... DN 1200 | D03 |
| Accredited Siemens ISO/IEC 17025 calibration for DN100 to DN500/600 with Qn as selected in diameter. Verification certificate: 2 x 3 points in 10%, 25% and 100% Qn (max. flow 1235/1300 m ³ /h). | D21 |
| Accredited Siemens ISO/IEC 17025 calibration for DN300 to DN700 with Qn as selected in diameter. Verification certificate: 2 x 3 points in 10%, 25% and 100% Qn (max. flow 4200 m ³ /h). | D22 |
| Accredited Siemens ISO/IEC 17025 calibration for DN1200 to DN1200 with Qn as selected in diameter. Verification certificate: 2 x 3 points in 10%, 25% and 100% Qn (max. flow 4200 m ³ /h). | D23 |
| Accredited - Third Party ISO/IEC 17025 calibration for DN100 to DN600 with Qn as selected in diameter. Verification certificate: 2 x 3 points in 10%, 25% and 100% Qn (max. flow 1300 m ³ /h). | D31 |
| Accredited - Third Party ISO/IEC 17025 calibration for DN300 to DN700 with Qn as selected in diameter. Verification certificate: 2 x 3 points in 10%, 25% and 100% Qn (max. flow 4200 m ³ /h). | D32 |
| Accredited - Third Party ISO/IEC 17025 calibration for DN800 to DN1200 with Qn as selected in diameter. Verification certificate: 2 x 3 points in 10%, 25% and 100% Qn (max. flow 7000 m ³ /h). | D33 |
| Material certificate | |
| EN 10204-3.1 | F10 |
| EN 10204-3.1 and 100% NDT on weldings, DN 100 ... DN 400 | F11 |
| EN 10204-3.1 and 100% NDT on weldings, DN 500 ... DN 700 | F12 |
| EN 10204-3.1 and 100% NDT on weldings, DN 800 ... DN 1200 | F13 |
| Pressure certificate | |
| EN 10204-2.3 | F21 |
| Tag name plate | |
| 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 |

Please also see www.siemens.com/SITRANSFordering for practical examples of ordering



Please use online Product selector to get latest updates. Product selector link:

www.pia-selector.automation.siemens.com

SITRANS F flowmeters

SITRANS F US

Flowmeter SONO 3100/FUS060

Sensor SONO 3100 accessories and spare parts

SONO 3200 spare parts, complete units

| Type | Material | Gasket | Press. rating | Terminal housing | Approv. | Temp. range [°C (°F)] | Length mm (inch) | Order No. |
|-------------|----------|-------------|---------------|-----------------------------------|--------------------|-------------------------------|------------------|---------------------------------|
| O-ring | 316 SS | O-ring | PN 40 | Plastic, PA 6.6 M20 | | -20 ... +100 (-4 ... +212) | 50 (1.97) | FDK:085B5453 |
| O-ring | 316 SS | O-ring | PN 40 | 316 SS M20 | | -20 ... +200 (-4 ... +392) | 50 (1.97) | FDK:085B5450 |
| O-ring | 316 SS | O-ring | PN 40 | 316 SS M20 | Ex-d ¹⁾ | -20 ... +180 (-4 ... +356) | 50 (1.97) | FDK:085B5451 |
| O-ring | 316 SS | O-ring | PN 40 | 316 SS M20 | Ex-i ²⁾ | -10 ... +190 (+14 ... +374) | 50 (1.97) | A5E00836448 |
| O-ring | 316 SS | O-ring | PN 40 | Plastic, PA 6.6 ½" NPT | | -20 ... +100 (-4 ... +212) | 50 (1.97) | A5E00839472 |
| O-ring | 316 SS | O-ring | PN 40 | 316 SS ½" NPT | | -20 ... +200 (-4 ... +392) | 50 (1.97) | A5E00839431^{F)} |
| Flange | 316 SS | Graphite | PN 40 | Plastic, PA 6.6 M20 | | -20 ... +100 (-4 ... +212) | 88 (3.47) | FDK:085B5461 |
| Flange | 316 SS | Graphite | PN 40 | 316 SS M20 | | -20 ... +200 (-4 ... +392) | 88 (3.47) | FDK:085B5462 |
| Flange | 316 SS | Graphite | PN 40 | 316 SS M20 | Ex-d ¹⁾ | -20 ... +180 (-4 ... +356) | 88 (3.47) | FDK:085B5463 |
| Flange | 316 SS | Graphite | PN 40 | 316 SS M20 | Ex-i ²⁾ | -10 ... +190 (+14 ... +374) | 88 (3.47) | A5E00836465 |
| Flange | 316 SS | Graphite | PN 40 | Plastic, PA 6.6 ½" NPT | | -20 ... +100 (-4 ... +212) | 88 (3.47) | A5E00839479 |
| Flange | 316 SS | Graphite | PN 40 | 316 SS ½" NPT | | -20 ... +200 (-4 ... +392) | 88 (3.47) | A5E00839440^{F)} |
| Flange | 316 SS | Copper ring | PN 40 | 316 SS PG13,5 (cryogenic version) | | -200 ... +100 (-328 ... +212) | 88 (3.47) | FDK:085B5416 |
| Flange | 316 SS | Copper ring | PN 40 | 316 SS M20 (cryogenic version) | | -200 ... +100 (-328 ... +212) | 88 (3.47) | FDK:085B5471 |
| Flat flange | 316 SS | Flat gasket | PN 40 | 316 SS M20 (cryogenic version) | | -200 ... +100 (-328 ... +212) | 88 (3.47) | A5E02593524 |



Terminal housing

| Type | Pressure rating | Material | Temp. range [°C (°F)] | Order No. |
|---|-----------------|-----------------|-----------------------------|---------------------------------|
| Terminal housing (M20 cable gland) | N/A | PA 6.6 | -20 ... +100 (-4 ... +212) | FDK:085B5501 |
| Terminal housing (M20 cable gland) | N/A | ASTM 316 | -20 ... +200 (-4 ... +392) | FDK:085B5504 |
| Terminal housing (½" NPT cable gland) | N/A | PA 6.6 | -20 ... +100 (-4 ... +212) | A5E00839460 |
| Terminal housing (½" NPT cable gland) | N/A | ASTM 316 | -20 ... +200 (-4 ... +392) | A5E00839427 |
| Ex-d ¹⁾ terminal housing (M20 cable gland) | N/A | ASTM 316 | -20 ... +180 (-4 ... +356) | FDK:085B5505 |
| Ex-i ²⁾ terminal housing (M20 cable gland) | N/A | ASTM 316 | -10 ... +190 (+14 ... +374) | A5E00835255^{F)} |
| Gaskets for O-ring transducer | PN 40 | 70 FFKM | -20 ... +200 (-4 ... +392) | FDK:085B1098 |
| Gasket and 12 mm bolts and nuts for flange transducer | PN 40 | Graphite 316 SS | -20 ... +200 (-4 ... +392) | FDK:085B1083 |



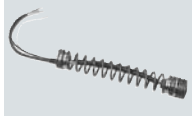
SONO 3200 spare parts, transducer body without terminal housing, including insert

| Type | Material | Gasket | Pressure rating | Temp. range [°C (°F)] | Length mm (inch) | Order No. |
|--------|----------|----------|-----------------|----------------------------|------------------|---------------------|
| O-ring | 316 SS | O-ring | PN 40 | -20 ... +200 (-4 ... +392) | 50 (1.97) | FDK:085B1405 |
| Flange | 316 SS | Graphite | PN 40 | -20 ... +200 (-4 ... +392) | 88 (3.47) | FDK:085B1464 |



F) Subject to export regulations AL: 91999, ECCN: N.







SONO 3200 spare parts, transducer insert

| Type | Temp. range [°C (°F)] | Length mm (inch) | Order No. | |
|--------|----------------------------|------------------|--------------|---|
| Insert | -20 ... +200 (-4 ... +392) | 50 (1.97) | FDK:085B1411 |  |
| Insert | -20 ... +200 (-4 ... +392) | 88 (3.47) | FDK:085B1459 | |

1) ATEX (Ex) IIC 2G EEx d IIC T3 ... T6





2) For systems with FUS060 ATEX IIC 2G Ex dem [ia/ib] T6/T4/T3


Transducer SONO 3200 gaskets

| Type | Pressure rating | Material | Temperature range [°C (°F)] | Order No. | |
|--|-----------------|-------------------------|-------------------------------|--------------|---|
| Gasket O-ring (3 pcs. for o-ring transducers) | PN 40 | FFKM ¹⁾ /FKM | -20 ... +200 (-4 ... +392) | FDK:085B1089 |  |
| Gasket flange | PN 40/160 | Graphite | -20 ... +200 (-4 ... +392) | FDK:085B1080 |  |
| Gasket and 12 mm (0.47") bolts and nuts for flange transducers | PN 40 | Flat ring type | -20 ... +200 (-4 ... +392) | FDK:085B1083 |  |
| Gasket and 16 mm (0.63") bolts and nuts for flange transducers | PN 160 | Graphite, 316 SS | -20 ... +200 (-4 ... +392) | FDK:085B1084 |  |
| Gasket for cryogenics transducer with flat flange (2 pcs.) | PN 40 | Graphite/metal | -200 ... +100 (-328 ... +212) | A5E02593522 |  |
| Gasket cryogenics (2 pcs.) | PN 40 | Copper, O-ring | -200 ... +100 (-328 ... +212) | A5E02593512 |  |


1) Chemical resistant O-ring

SONO 3200 cable glands


| Type/description | Temperature range [°C (°F)] | Appr. | Order No. | |
|--|-----------------------------|-------|-------------|---|
| black PA plastic, cable Ø 5 ... 13 mm | -20 ... 100 (-4 ... +212) | | A5E02246304 |  |
| ½" NPT gray PA plastic, cable Ø 5 ... 9 mm | -20 ... 100 (-4 ... +212) | | A5E02246309 |  |
| ½" NPT chrome-plated brass, cable Ø 5 ... 9 mm | -40 ... 100 (-40 ... +212) | | A5E02246258 |  |
| M20 stainless steel, cable Ø 4 ... 6 mm | -25 ... 200 (-13 ... +392) | Ex-i | A5E02246194 |  |

| Type/description | Temperature range [°C (°F)] | Appr. | Order No. | |
|---|-----------------------------|-------|-------------|---|
| M20 Stainless steel, cable Ø 5 ... 8 mm | -60 ... 180 (-76 ... +356) | Ex-d | A5E02246311 |  |

Accessories and spare parts

| Type/description | Order No. | |
|---|--------------|---|
| Submersible kit for transducers SONO 3200, IP68 10 m (32.81 ft) w.g. rating | FDK:085L2403 |  |

Tools for transducer SONO 3200

| Type/description | Transducer length | Order No. | |
|--|---------------------------|--------------|---|
| Extraction tool for replacement of SONO 3200 O-ring transducers under pressure (hot-tap) | 50 mm (1.97") transducers | FDK:085B5331 |  |

SITRANS F flowmeters

SITRANS F US

Flowmeter SONO 3100/FUS060

Cables for SONO 3100 with FUS060

| Type/description | Length m (ft) | Order No. |
|---|------------------|---------------------------------|
| Coaxial cable for FUS060, (75 Ω, max. 70 °C (158 °F), black PVC) (2 pcs.) | 3 (9.84) | A5E00875101 |
| | 15 (49.21) | A5E00861432 |
| | 30 (98.43) | A5E01278662 |
| | 60 (196.85) | A5E01278682 |
| | 90 (295.28) | A5E01278687 |
| | 120 (393.7) | A5E01278698 |
| High temp. coaxial cable for FUS060; with 0.3 m brown PTFE high temp. transducer part, max. 200 °C (392 °F) and black PVC for remaining transmitter part with SMB plug, max. 70 °C (158 °F); (impedance 75 Ω) (2 pcs.) | 3 (9.84) | A5E00875105^{F)} |
| | 15 (49.21) | A5E00861435 |
| | 30 (98.43) | A5E01196952^{F)} |



F) Subject to export regulations AL: 91999, ECCN: N.

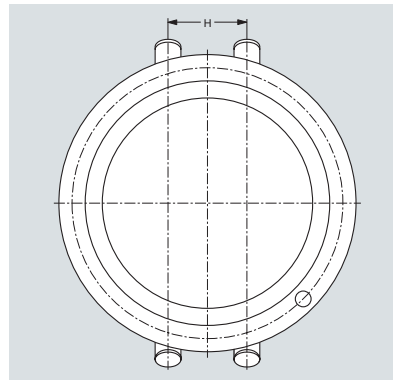
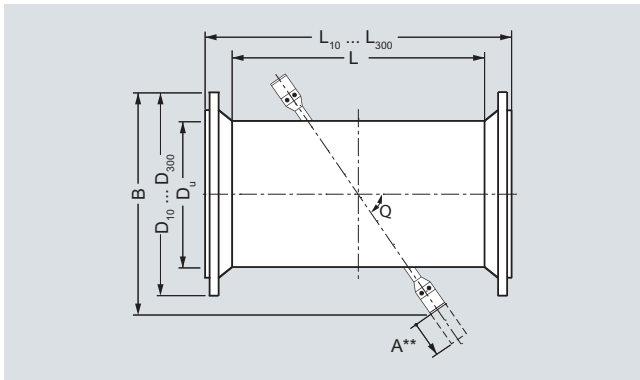
Cable connection boxes

(For the connection of individually transducer cables with the FUS060 transducer cables)

| Type/description | Order No. |
|--|---------------------|
| Junction box for coax cable | |
| • IP68 metal box for 4 coax cables | FDK:085B1361 |
| • IP68 EEx e plastic box for 4 coax cables, no ATEX approval | FDK:085B1363 |



Dimensional drawings of sensor SONO 3100



Sensor SONO 3100 with EN norm

| DN | Du | L ^{1) 4)} | B | θ | H | PN 10 | | | PN 16 | | | PN 25 | | | PN 40 | | | |
|------|--------|--------------------|------|------------------|-------|-------------------------------|-----------------|-------------------------------|-------------------------------|-----------------|-------------------------------|-------------------------------|-----------------|-------------------------------|-------------------------------|-----------------|-------------------------------|------|
| | | | | | | W ₁₀ ²⁾ | D ₁₀ | L ₁₀ ¹⁾ | W ₁₆ ²⁾ | D ₁₆ | L ₁₆ ¹⁾ | W ₂₅ ²⁾ | D ₂₅ | L ₂₅ ¹⁾ | W ₄₀ ²⁾ | D ₄₀ | L ₄₀ ¹⁾ | |
| | [mm] | [mm] | [mm] | [°] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 100 | 114.3 | 860 | 305 | 45 ³⁾ | 42.8 | - | - | - | 3.6 | 220 | 960 | - | - | - | 3.6 | 235 | 990 | |
| 125 | 139.7 | 862 | 325 | 45 ³⁾ | 64.5 | - | - | - | 4.0 | 250 | 970 | - | - | - | 4.0 | 270 | 990 | |
| 150 | 168.3 | 862 | 350 | 45 ³⁾ | 78.1 | - | - | - | 4.5 | 285 | 970 | - | - | - | 4.5 | 300 | 1010 | |
| 200 | 219.1 | 668 | 430 | 45 ³⁾ | 102.1 | 6.3 | 340 | 790 | 6.3 | 340 | 790 | 6.3 | 360 | 820 | 6.3 | 375 | 840 | |
| 250 | 273.0 | 714 | 480 | 45 ³⁾ | 127.6 | 6.3 | 395 | 850 | 6.3 | 405 | 850 | 7.1 | 425 | 890 | 7.1 | 450 | 920 | |
| 300 | 323.9 | 607 | 525 | 45 ³⁾ | 151.8 | 7.1 | 445 | 740 | 7.1 | 460 | 760 | 8.0 | 485 | 790 | 8.0 | 515 | 830 | |
| 350 | 355.6 | 639 | 550 | 45 ³⁾ | 166.4 | 8.0 | 405 | 770 | 8.0 | 520 | 800 | 8.0 | 555 | 840 | 8.8 | 580 | 880 | |
| 400 | 406.4 | 703 | 600 | 45 ³⁾ | 191.3 | 8.0 | 565 | 850 | 8.0 | 580 | 875 | 8.8 | 620 | 925 | 11.1 | 660 | 975 | |
| 500 | 508.0 | 797 | 690 | 45 ³⁾ | 241.1 | 7.1 | 670 | 950 | 8.0 | 715 | 980 | 10.0 | 730 | 1050 | 14.2 | 755 | 1080 | |
| 600 | 610.0 | 912 | 705 | 60 | 294.8 | 7.1 | 780 | 1075 | 8.8 | 840 | 1105 | 11.0 | 845 | 1165 | - | - | - | |
| 700 | 711.0 | 937 | 895 | 60 | 340.6 | 8.0 | 895 | 1100 | 8.8 | 910 | 1140 | 12.5 | 960 | 1190 | - | - | - | |
| 800 | 813.0 | 967 | 985 | 60 | 390.4 | 8.0 | 1015 | 1150 | 10.0 | 1025 | 1180 | 14.2 | 1085 | 1240 | - | - | - | |
| 900 | 914.0 | 1007 | 1070 | 60 | 445.9 | 10.0 | 1115 | 1200 | 10.0 | 1125 | 1230 | 16.0 | 1185 | 1300 | - | - | - | |
| 1000 | 1016.0 | 1060 | 1160 | 60 | 490.0 | 10.0 | 1230 | 1250 | 10.0 | 1255 | 1300 | 17.5 | 1320 | 1370 | - | - | - | |
| 1200 | 1220.0 | 1100 | 1350 | 60 | 588.0 | 8.0 | 1340 | 1280 | 11.0 | 1455 | 1360 | - | - | - | - | - | - | |

¹⁾ Length tolerance (mm): DN100 +2/-3, DN 125 ... 200 +3/-4, DN 250 ... 400 +4/-5, DN 500 ... 1200 +5/-6

²⁾ Wall thickness for pressure rates PN 6 ... 40

³⁾ For all sensors with flange transducers track angle are 60°

⁴⁾ L is the length of sensor versions without flanges (weld-in version)

A**) Space required for replacement of transducer min. 230 mm (9.1 inch). For replacement with special tool (extraction tool) see more information on page 4/208.

SONO 3100, 2-track

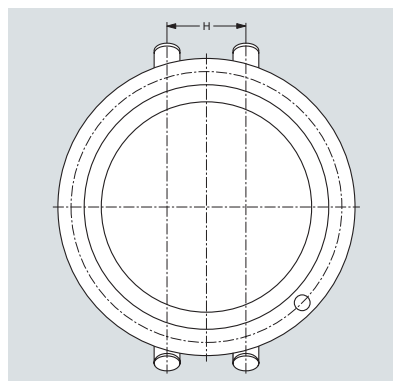
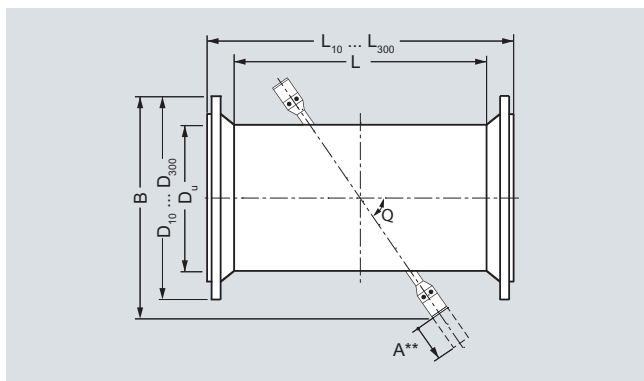
| Nominal diam. DN | Flange type - Weight [kg] ([lbs]) | | | |
|---------------------|-----------------------------------|-------------|-------------|-------------|
| | PN 10 | PN 16 | PN 25 | PN 40 |
| 100 (4") | - | 32 (70.5) | - | 35 (77.2) |
| 125 (5") | - | 38 (83.8) | - | 44 (97.0) |
| 150 (6") | - | 45 (99.2) | - | 52 (114.6) |
| 200 (8") | 59 (130.0) | 58 (127.9) | 70 (154.3) | 79 (174.2) |
| 250 (10") | 73 (161.0) | 75 (163.3) | 96 (211.6) | 117 (257.9) |
| 300 (12") | 83 (183.0) | 92 (202.8) | 114 (251.3) | 151 (332.9) |
| 350 (14") | 98 (216.0) | 113 (249.1) | 145 (322.9) | 191 (421.1) |
| 400 (16") | 119 (262.4) | 141 (310.9) | 191 (421.1) | 275 (606.3) |
| 500 (20") | 153 (337.3) | 207 (456.4) | 284 (626.0) | 379 (836.0) |
| 600 (24") | 193 (425.5) | 276 (608.5) | 363 (800.3) | - |
| 700 (28") | 262 (577.6) | 303 (668.0) | 480 (1058) | - |
| 800 (32") | 329 (725.3) | 400 (881.8) | 650 (1433) | - |
| 900 (36") | 428 (943.6) | 475 (1047) | 835 (1841) | - |
| 1000 (40") | 500 (1102) | 594 (1010) | 1078 (2377) | - |
| 1200 (48") | 680 (1496) | 860 (1892) | - | - |

Weight of system incl. process flanges and standard O-ring transducers. For sensors with flange transducer please add approx. 10 kg (22.05 lbs). For SS terminal housings instead of the standard PA housing add approx. 5 kg (11.03 lbs).

SITRANS F flowmeters

SITRANS F US

Flowmeter SONO 3100/FUS060



4

Sensor SONO 3100 with ANSI norm

| Size (DN) | D _U | L ^{1) 4)} | B | θ | H | Class 150 | | | Class 300 | | |
|-----------|----------------|--------------------|--------|------------------|--------|--------------------------------|------------------|--------------------------------|--------------------------------|------------------|--------------------------------|
| | | | | | | W ₁₅₀ ²⁾ | D ₁₅₀ | L ₁₅₀ ¹⁾ | W ₃₀₀ ²⁾ | D ₃₀₀ | L ₃₀₀ ¹⁾ |
| inch (mm) | [inch] | [inch] | [inch] | [°] | [inch] | [inch] | [inch] | [inch] | [inch] | [inch] | [inch] |
| 4" (100) | 4.50 | 33.86 | 12.01 | 45 ³⁾ | 1.69 | 0.14 | 9.00 | 39.86 | 0.25 | 10.00 | 40.62 |
| 5" (125) | 5.50 | 33.94 | 12.80 | 45 ³⁾ | 2.54 | 0.15 | 10.00 | 40.94 | 0.27 | 11.00 | 41.70 |
| 6" (150) | 6.63 | 33.94 | 13.78 | 45 ³⁾ | 3.07 | 0.16 | 11.00 | 40.94 | 0.30 | 12.50 | 41.70 |
| 8" (200) | 8.63 | 26.30 | 16.93 | 45 ³⁾ | 4.02 | 0.16 | 13.50 | 34.30 | 0.29 | 15.00 | 35.06 |
| 10" (250) | 10.75 | 28.11 | 18.90 | 45 ³⁾ | 5.02 | 0.18 | 16.00 | 36.11 | 0.34 | 17.50 | 37.35 |
| 12" (300) | 12.75 | 23.90 | 20.67 | 45 ³⁾ | 5.98 | 0.20 | 19.00 | 32.90 | 0.39 | 20.50 | 34.14 |
| 14" (350) | 14.00 | 25.16 | 21.65 | 45 ³⁾ | 6.55 | 0.21 | 21.00 | 35.16 | - | - | - |
| 16" (400) | 16.00 | 27.68 | 23.62 | 45 ³⁾ | 7.53 | 0.22 | 23.50 | 33.74 | - | - | - |
| 20" (500) | 20.00 | 31.38 | 27.17 | 45 ³⁾ | 9.49 | 0.26 | 27.50 | 42.76 | - | - | - |
| 24" (600) | 24.00 | 35.91 | 27.76 | 60 | 11.61 | 0.30 | 32.00 | 47.91 | - | - | - |

¹⁾ Length tolerance (mm): 4" +0.08"/-0.12" (+2/-3mm), 5" to 8" +0.12"/-0.16" (+3/-4mm), 10" to 16" +0.16"/-0.20" (+4/-5mm), 20" to 24" +0.20"/-0.24" (+5/-6mm)

²⁾ Minimum wall thickness for pressure rates CL150 or CL300

³⁾ For all sensors with flange transducers track angle are 60°

⁴⁾ L is the length of sensor versions without flanges (weld-in version)

A**) Space required for replacement of transducer min. 230 mm (9.1 inch).
For replacement with special tool (extraction tool) see more information in „Sensor SONO 3100 accessories and spare parts“ on page 4/208.

Approximate weights for SONO 3100 sensor with ANSI B16.5 flanges

| Nominal diameter | | Weight [kg] ([lbs]) ¹⁾ | | | |
|------------------|------|-----------------------------------|-------|-------|-------|
| DN | DN | CL150 | | CL300 | |
| [inch] | [mm] | [kg] | [lbs] | [kg] | [lbs] |
| 4" | 100 | 32 | 70.5 | 35 | 77.2 |
| 5" | 125 | 38 | 83.8 | 44 | 97.0 |
| 6" | 150 | 45 | 99.2 | 52 | 114.6 |
| 8" | 200 | 58 | 127.9 | 79 | 174.2 |
| 10" | 250 | 75 | 165.3 | 117 | 257.9 |
| 12" | 300 | 92 | 202.8 | 151 | 332.9 |
| 14" | 350 | 113 | 249.1 | - | - |
| 16" | 400 | 141 | 310.9 | - | - |
| 20" | 500 | 207 | 456.4 | - | - |
| 24" | 600 | 276 | 608.5 | - | - |

¹⁾ Weight of system incl. process flanges and standard O-ring transducers. For sensors with flange transducer please add approx. 10 kg (22.05 lbs). For SS terminal housings instead of the standard PA housing add approx. 5 kg (11.03 lbs).