



OPTISONIC 7300 Quick Start

Ultrasonic process gas flowmeter

ER 1.1.8_

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Warnings and symbols used



DANGER!

This information refers to the immediate danger when working with electricity.



DANGER!

These warnings must be observed without fail. Even partial disregard of this warning can lead to serious health problems and even death. There is also the risk of seriously damaging the device or parts of the operator's plant.



WARNING!

Disregarding this safety warning, even if only in part, poses the risk of serious health problems. There is also the risk of damaging the device or parts of the operator's plant.



CAUTION!

Disregarding these instructions can result in damage to the device or to parts of the operator's plant.



INFORMATION!

These instructions contain important information for the handling of the device.



HANDLING

- This symbol designates all instructions for actions to be carried out by the operator in the specified sequence.

➔ **RESULT**

This symbol refers to all important consequences of the previous actions.

Safety instructions for the operator



CAUTION!

Installation, assembly, start-up and maintenance may only be performed by appropriately trained personnel. The regional occupational health and safety directives must always be observed.



LEGAL NOTICE!

The responsibility as to the suitability and intended use of this device rests solely with the user. The supplier assumes no responsibility in the event of improper use by the customer. Improper installation and operation may lead to loss of warranty. In addition, the "Terms and Conditions of Sale" apply which form the basis of the purchase contract.



INFORMATION!

- *Further information can be found in the manual, on the data sheet, in special manuals, certificates and on the manufacturer's website.*
- *If you need to return the device to the manufacturer or supplier, please fill out the form contained in the manual and send it with the device. Unfortunately, the manufacturer cannot repair or inspect the device without the completed form.*

2.1 Scope of delivery



INFORMATION!

Do a check of the packing list to make sure that you have all the elements given in the order.



INFORMATION!

Inspect the packaging carefully for damages or signs of rough handling. Report damage to the carrier and to the local office of the manufacturer.



INFORMATION!

The field device will arrive in two cartons. One carton contains the converter and one carton contains the sensor.

Make sure to combine the correct devices together by comparing the serial numbers

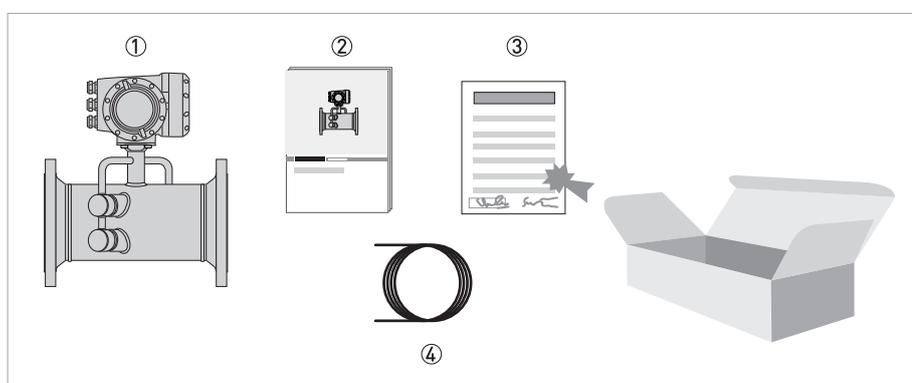


Figure 2-1: Scope of delivery

- ① Ordered flowmeter
- ② Product documentation
- ③ Factory calibration certificate
- ④ Signal cables (remote versions only)



INFORMATION!

Assembly materials and tools are not part of the delivery. Use the assembly materials and tools in compliance with the applicable occupational health and safety directives.

2.2 Device description

The ultrasonic flowmeters are designed exclusively for the continuous measurement of actual volume flow, corrected volume flow, mass flow, molar mass, flow speed, velocity of sound, gain, SNR and diagnosis value.

Your measuring device is supplied ready for operation. The factory settings for the operating data have been made in accordance with your order specifications.



INFORMATION!

Product specific information and extensive product specification is available using PICK, the Product Information Center KROHNE web-tool.

PICK can be found via the service menu button on the KROHNE.com website.



The following versions are available:

- Compact version (the signal converter is mounted directly on the flow sensor)
- Remote version (electrical connection to the flow sensor via signal cable)

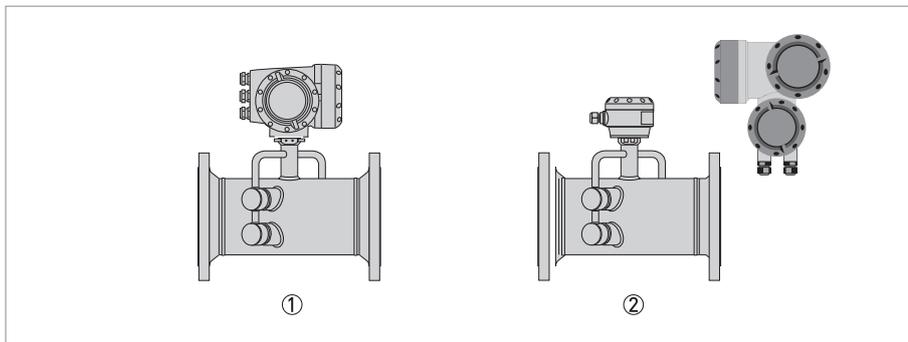


Figure 2-2: Device versions

- ① Compact version
- ② Remote version

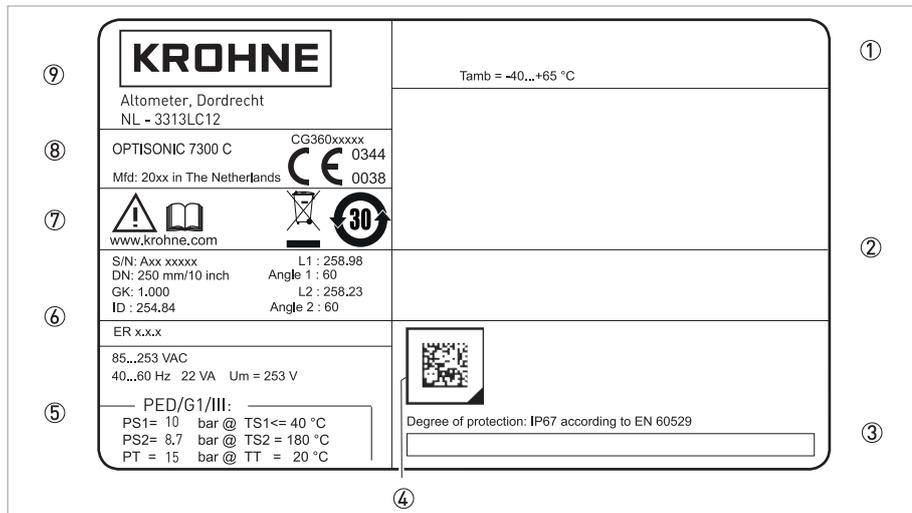
2.3 Nameplates



INFORMATION!

Look at the device nameplate to ensure that the device is delivered according to your order. Check for the correct supply voltage printed on the nameplate.

2.3.1 Example of nameplate for the compact version



- ① Ambient temperature
- ② Space for additional information
- ③ Protection class and Tag number
- ④ Data matrix
- ⑤ Main supply and PED data
- ⑥ Calibration data and electronics revision number (ER)
- ⑦ Info / web address and disposal logo
- ⑧ Type designation and manufacturer date of the flowmeter / CE sign with number(s) of notified body / bodies
- ⑨ Name and address of the manufacturer

2.3.2 Example of nameplate for the flow sensor (remote version)

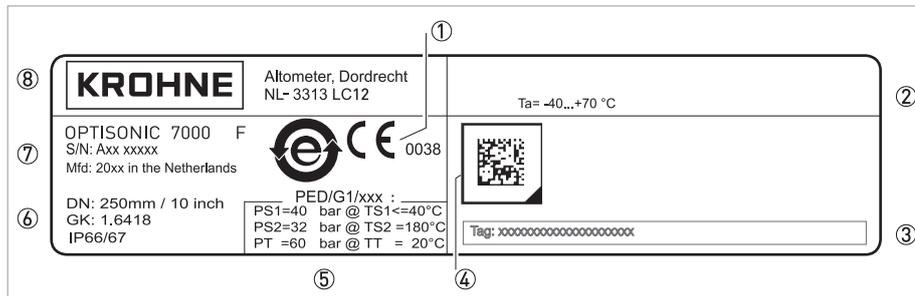


Figure 2-3: Example of nameplate

- ① CE sign with number(s) of notified body / bodies and disposal logo
- ② Ambient temperature
- ③ Tag number
- ④ Data matrix
- ⑤ PED data, Category I / II / III or SEP
- ⑥ Protection category, size and GK information
- ⑦ Type designation of the flowmeter and manufacturing date
- ⑧ Name and address of the manufacturer

2.3.3 Examples of nameplates on the signal converter (field housing)

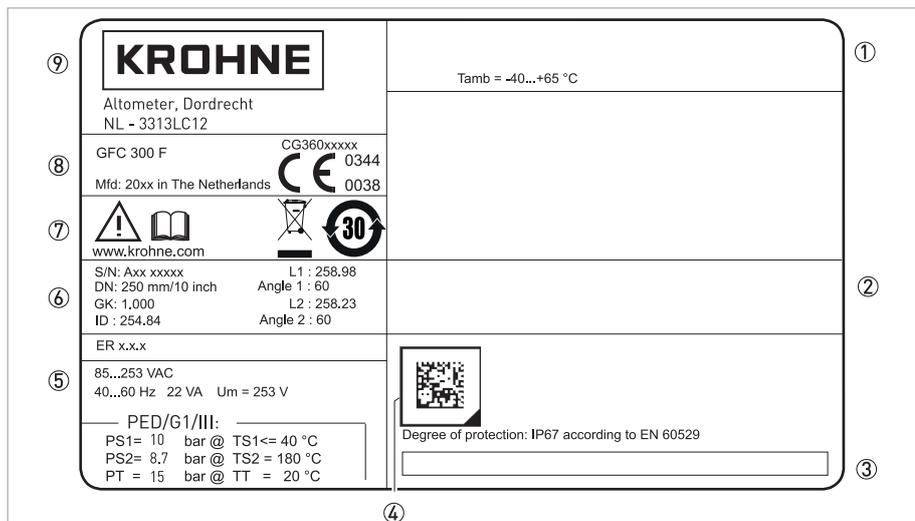


Figure 2-4: Example of nameplate

- ① Ambient temperature
- ② Space for additional information
- ③ Protection class and Tag number
- ④ Data matrix
- ⑤ Main supply and PED data
- ⑥ Calibration data and electronics revision number (ER)
- ⑦ Info / web address and disposal logo
- ⑧ Type designation and manufacturer date of the flowmeter / CE sign with number(s) of notified body / bodies
- ⑨ Name and address of the manufacturer

Electrical connection data of inputs/outputs (example of basic version)

①	POWER		CG 3x xxxxxx S/N: XXXxxxxx		
	PE (FE)				
② ③ ④ ⑤	INPUT / OUTPUT	L(L+)		A = Active P = Passive NC = Not connected	
		N(L-)			
		D -	P		PULSE OUT / STATUS OUT I _{max} = 100 mA@f<= 10 Hz; = 20 mA@f<=12 kHz V _o = 1.5 V @ 10 mA; U _{max} = 32 VDC
		D			
		C -	P		STATUS OUT I _{max} = 100 mA; V _{max} = 32 VDC
		C			
		B -	P	STATUS OUT / CONTROL IN I _{max} = 100 mA V _{on} > 19 VDC, V _{off} < 2.5 VDC; V _{max} = 32 VDC	
		B			
		A +	A	CURRENT OUT (HART) Active (Terminals A & A+); R _{Lmax} = 1 kohm	
		A -	P	Passive (Terminals A & A-); V _{max} = 32 VDC	
		A			

Figure 2-5: Example of a nameplate for electrical connection data of inputs and outputs

- ① Power supply (AC: L and N; DC: L+ and L-; PE for ≥ 24 VAC; FE for ≤ 24 VAC and DC)
- ② Connection data of connection terminal D/D-
- ③ Connection data of connection terminal C/C-
- ④ Connection data of connection terminal B/B-
- ⑤ Connection data of connection terminal A/A-; A+ only operable in the basic version

- A = active mode; the signal converter supplies the power for connection of the subsequent devices
- P = passive mode; external power supply required for operation of the subsequent devices
- N/C = connection terminals not connected



WARNING!

Do not use the terminals A+ and A- at the same time. The system will be damaged by the direct voltage of 24 VDC and a 1 A peak current.

2.4 Storage

- Store the device in a dry, dust-free location.
- Avoid continuous direct sunlight.
- Store the device in its original packaging.
- Storage temperature: -50...+70°C / -58...+158°F

2.5 Transport

Signal converter

- Do not lift the signal converter by the cable glands.

Flow sensor

- Do not lift the flow sensor by the connection box, transducers nozzles or wiring conduits.
- To transport flange devices, use lifting lugs or lift the device with suitable hoisting belts. Wrap these around both process connections.
- Lift the device in the correct mounting position only.

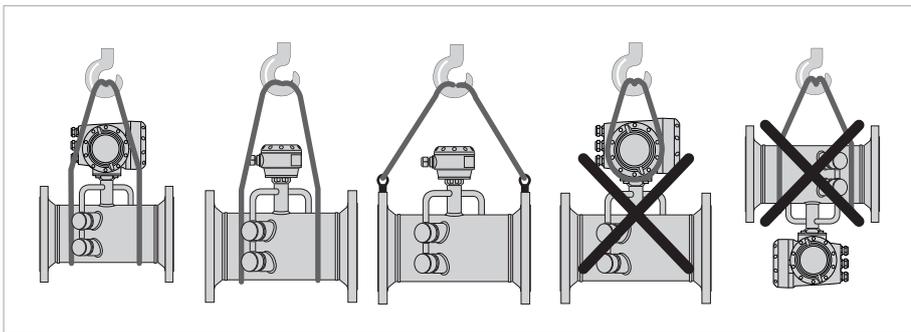


Figure 2-6: Transport

2.6 Pre-installation requirements

**INFORMATION!**

To assure a quick, safe and uncomplicated installation, we kindly request you to make provisions as stated below.

Make sure that you have all necessary tools available:

- Allen key (4 and 5 mm)
- Set of screwdrivers
- Wrench for cable glands and for pipe mounting bracket (remote version only); refer to *Pipe mounting* on page 15

2.7 General requirements

**INFORMATION!**

The following precautions must be taken to ensure a reliable installation.

- Make sure that there is adequate space on the sides.
- Protect the signal converter from direct sunlight and install a sunshade if necessary.
- Signal converters installed in control cabinets require adequate cooling, e.g. by fan or heat exchanger.
- Do not expose the signal converter to intense vibrations and mechanical shocks. in the manual and the technical documentation.

2.7.1 Vibration

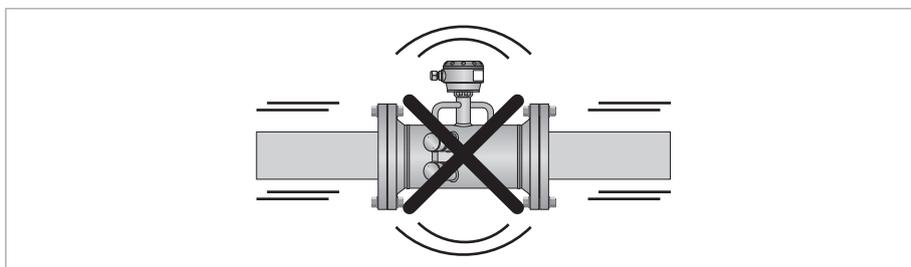


Figure 2-7: Prevent intense vibrations

**INFORMATION!**

In case of too many vibrations, please install supports on both sides of the flowmeter to minimize movement.

2.8 Installation requirements for the flow sensor

To secure the optimum functioning of the flowmeter, please note the following observations.

The OPTISONIC 7300 is designed for the measurement dry gas flow. Excess of liquids may disturb the acoustic signals and should thus be avoided.

The following guidelines should be observed in case occasional small amounts of liquids are to be expected:

- Install the flow sensor in a horizontal position in a slightly descending line.
- Orientate the flow sensor such that the path of the acoustic signal is in the horizontal plane.

For exchanging the transducers, please keep a free space of 1 m / 39" around the transducer.

2.9 Installation conditions

2.9.1 Inlet and outlet

1 path flowmeter

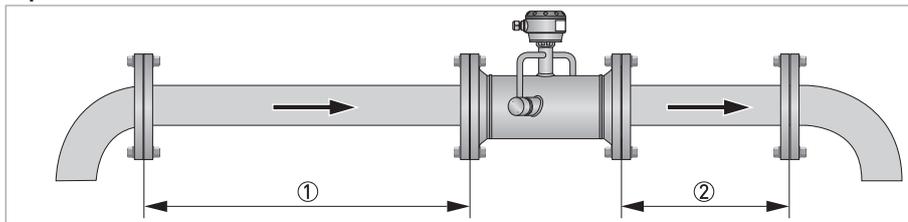


Figure 2-8: Recommended inlet and outlet for \leq DN80 / 3"

- ① \geq 20 DN
- ② \geq 3 DN

2 path flowmeter

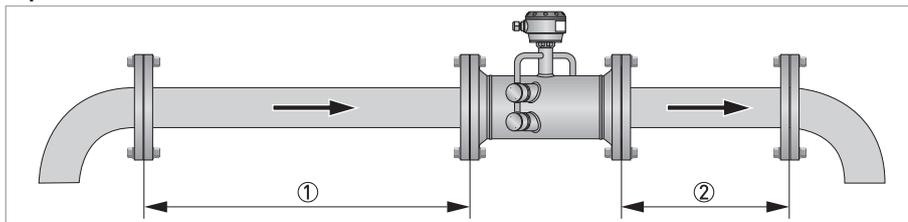


Figure 2-9: Recommended inlet and outlet for \geq DN100 / 4"

- ① \geq 10 DN
- ② \geq 3 DN

2.9.2 T-section

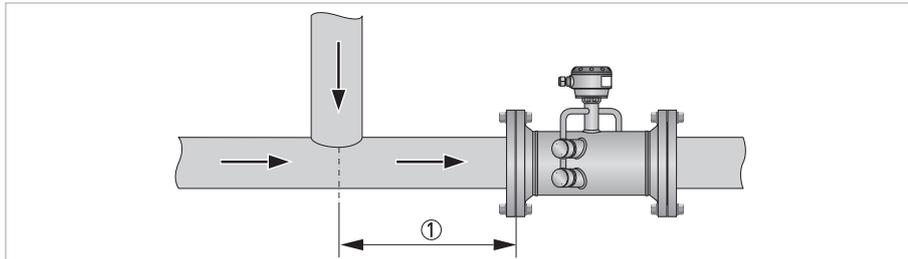


Figure 2-10: Distance behind a T-section

① 2 path ≥ 10 DN, 1 path ≥ 20 DN

2.9.3 Control valve

To prevent flow disturbances in the flowmeter a control valve is installed downstream of the flowmeter.

If a control valve is installed upstream of the flowmeter position, an extended straight inlet pipe (up to 50 DN) is recommended, depending on the process and control valve type.



CAUTION!

When a restriction (valve or reducer) is installed in the same pipeline with the flowmeter and noise is expected, please contact the manufacturer.

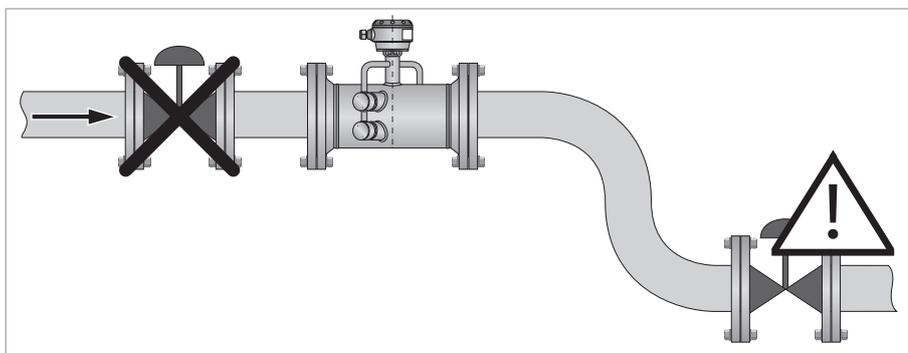


Figure 2-11: Installation of the flowmeter and a valve/reducer in the same pipeline

2.9.4 Flange deviation



CAUTION!

Max. permissible deviation of pipe flange faces:

$$L_{max} - L_{min} \leq 0.5 \text{ mm} / 0.02''$$

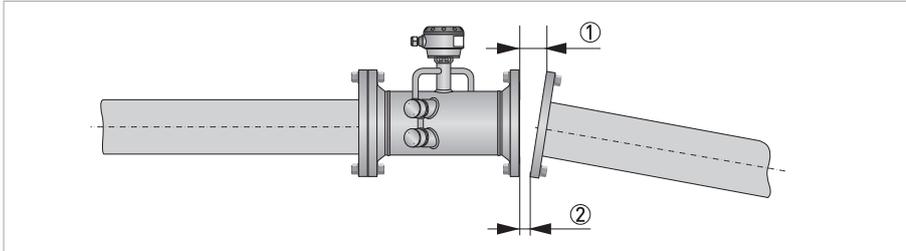


Figure 2-12: Flange deviation

① L_{max}

② L_{min}

2.9.5 Installation position

- Horizontal: install the flow sensor in a horizontal position in case of the presence of liquids.
- Vertically

$$+15^\circ < \alpha < -15^\circ$$

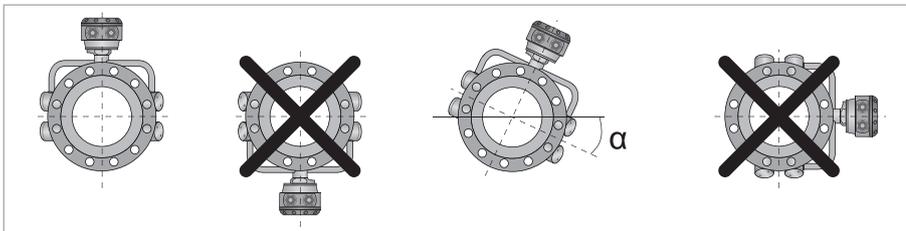


Figure 2-13: Installation position

- Horizontal or vertical: allowed installation position in case of dry gas.

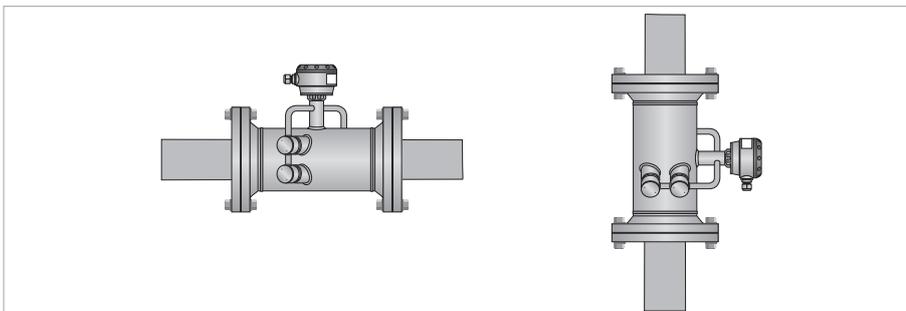


Figure 2-14: Horizontal and vertical installation

2.9.6 Thermal insulation

**CAUTION!**

The flow sensor can be insulated completely, except for the transducers ① and the connection box ② to allow cooling by free air convection.

**WARNING!**

Always leave vent holes ③ free!

**DANGER!**

For devices in hazardous area, additional maximum temperature and insulation precautions apply. Please refer to the Ex documentation.

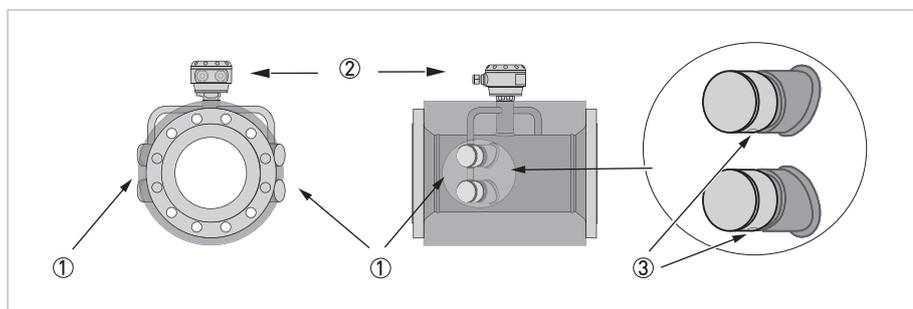


Figure 2-15: Leave vent holes free

- ① Transducers
- ② Connection box
- ③ Vent holes

2.10 Mounting the field housing, remote version



INFORMATION!

Assembly materials and tools are not part of the delivery. Use the assembly materials and tools in compliance with the applicable occupational health and safety directives.

2.10.1 Pipe mounting

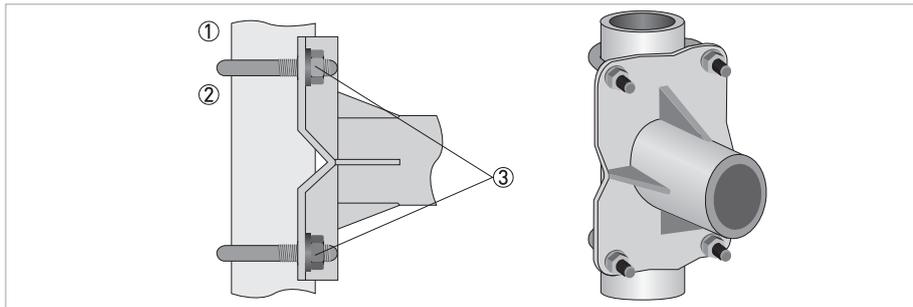


Figure 2-16: Pipe mounting of the field housing



- ① Fix the signal converter to the pipe.
- ② Fasten the signal converter using standard U-bolts and washers.
- ③ Tighten the nuts.

2.10.2 Wall mounting

Mounting the remote version (F) on the wall

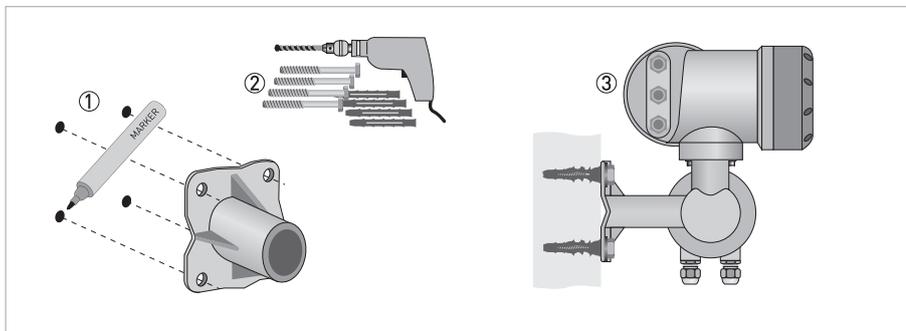


Figure 2-17: Wall mounting of the field housing



- ① Prepare the holes with the aid of the mounting plate. further information refer to *Mounting plate of field housing* on page 32.
- ② Use the mounting material and tools in compliance with the applicable occupational health and safety directives.
- ③ Fasten the housing securely to the wall.
- ④ Screw the signal converter to the mounting plate with the nuts and washers.

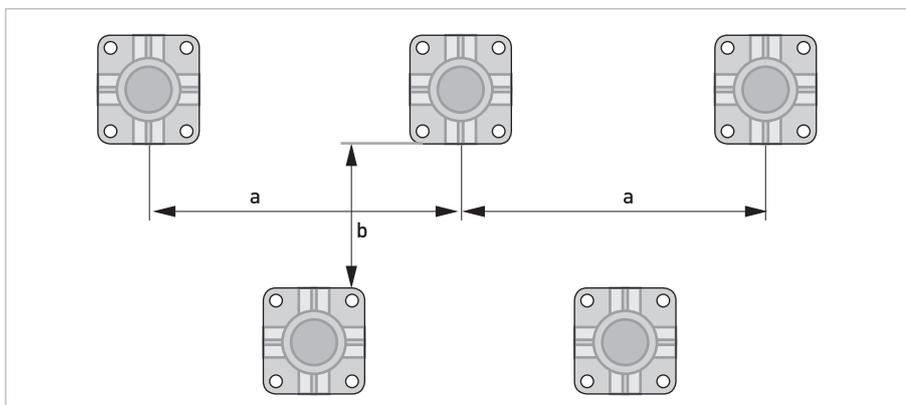


Figure 2-18: Mounting multiple devices next to each other

 $a \geq 600 \text{ mm} / 23.6''$
 $b \geq 250 \text{ mm} / 9.8''$

2.10.3 Turning the display of the field housing version

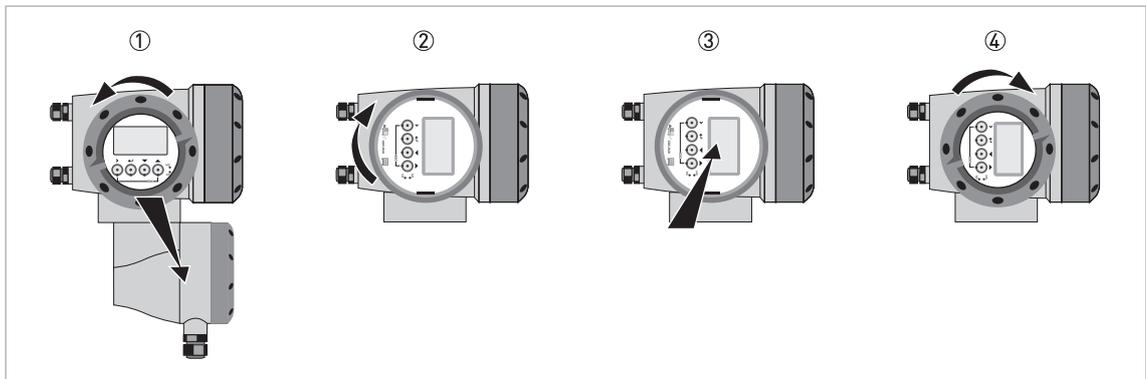


Figure 2-19: Turning the display of the field housing version



The display of the field housing version can be turned in 90° increments

- ① Unscrew the cover from the display and operation control unit.
- ② Pull out the display and rotate it to the required position.
- ③ Slide the display back into the housing.
- ④ Re-fit the cover and tighten it by hand.



CAUTION!

The ribbon cable of the display must not be folded or twisted repeatedly.



INFORMATION!

Each time a housing cover is opened, the thread should be cleaned and greased. Use only resin-free and acid-free grease. Ensure that the housing gasket is properly fitted, clean and undamaged.

3.1 Safety instructions



DANGER!

All work on the electrical connections may only be carried out with the power disconnected.
Take note of the voltage data on the nameplate!



DANGER!

Observe the national regulations for electrical installations!



DANGER!

For devices used in hazardous areas, additional safety notes apply; please refer to the Ex documentation.



WARNING!

Observe without fail the local occupational health and safety regulations.
Any work done on the electrical components of the measuring device may only be carried out by properly trained specialists.



INFORMATION!

Look at the device nameplate to ensure that the device is delivered according to your order.
Check for the correct supply voltage printed on the nameplate.

3.2 Connection of signal cable to signal converter (remote version only)

The flow sensor is connected to the signal converter via one or two signal cables, with 2 inner Triax cables for the connection of one or two acoustic path(s). A flow sensor with one acoustic path has one cable. A flow sensor with two acoustic paths has two cables.

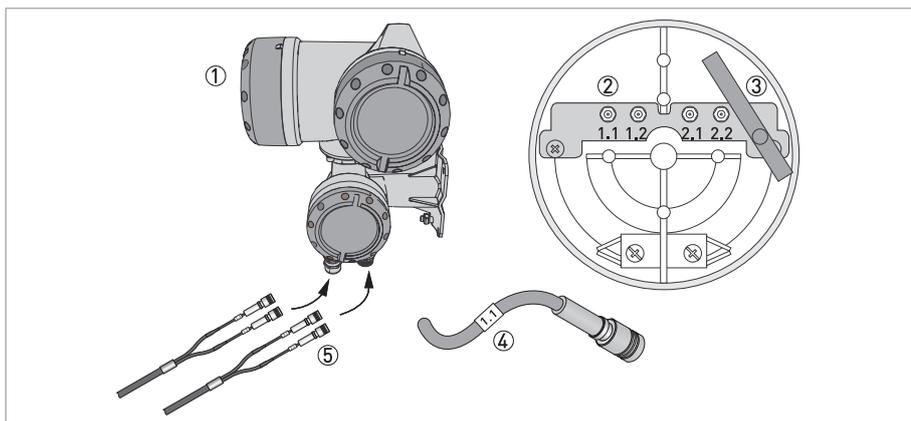


Figure 3-1: Connection of signal cable to signal converter

- ① Signal converter
- ② Open connection box
- ③ Tool for releasing connectors
- ④ Marking on cable
- ⑤ Insert cable (1 path flowmeter) or cables (2 path flowmeter) through cable glands

**CAUTION!**

To ensure smooth functioning and safe instrument usage, always use the signal cable(s) included in the delivery.

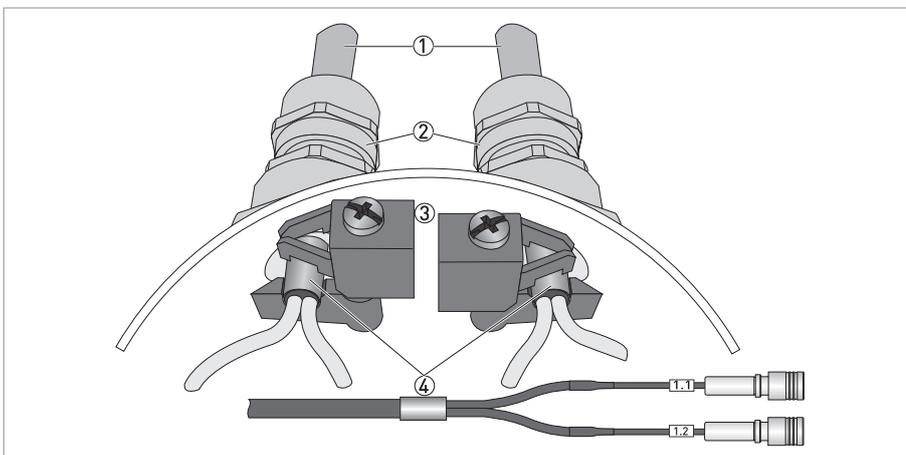


Figure 3-2: Clamp the cables on the shielding bush

- ① Cables
- ② Cable glands
- ③ Grounding clamps
- ④ Cable with metal shielding bush

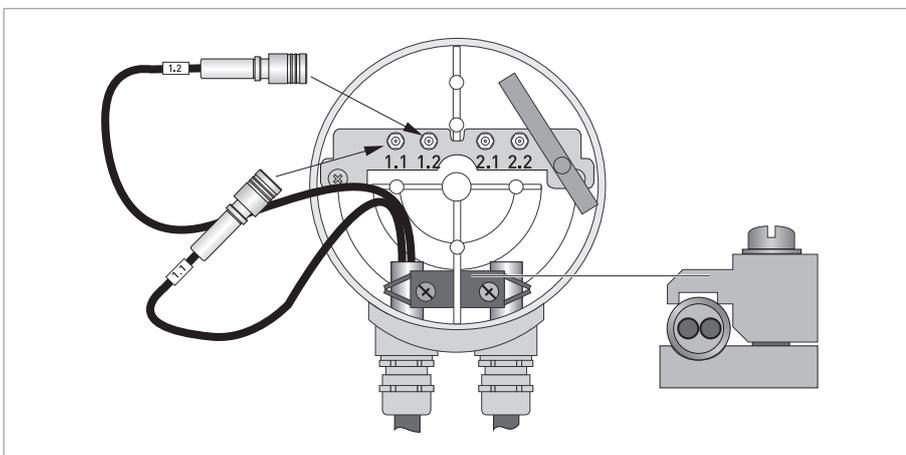


Figure 3-3: Connect the cables in the connection box of the sensor

**INFORMATION!**

Connect the cable on connector with similar numeral marking

3.3 Power supply connection



WARNING!

When this device is intended for permanent connection to the mains. It is required (for example for service) to mount an external switch or circuit breaker near the device for disconnection from the mains. It shall be easily reachable by the operator and marked as the disconnecting the device for this equipment. The switch or circuit breaker and wiring has to be suitable for the application and shall also be in accordance with the local (safety) requirements of the (building) installation (e.g. IEC 60947-1/-3)



DANGER!

For devices used in hazardous areas, additional safety notes apply; please refer to the Ex documentation.



INFORMATION!

The power terminals in the terminal compartments are equipped with additional hinged lids to prevent accidental contact.

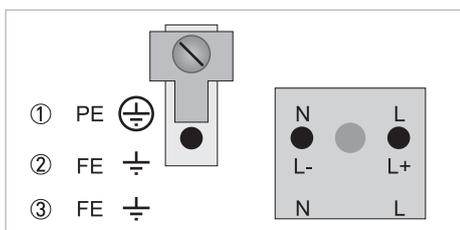


Figure 3-4: Power supply connection

① 100...230 VAC (-15% / +10%), 22 VA



DANGER!

The device must be grounded in accordance with regulations in order to protect personnel against electric shocks.

100...230 VAC (tolerance range for 100 VAC: -15% / +10%)

- Note the power supply voltage and frequency (50...60 Hz) on the nameplate.
- The protective ground terminal **PE** of the power supply must be connected to the separate U-clamp terminal in the terminal compartment of the signal converter



INFORMATION!

240 VAC + 5% is included in the tolerance range.

24 VDC (tolerance range: -55% / +30%)

24 VAC/DC (tolerance range: AC: -15% / +10%; DC: -25% / +30%)

- Note the data on the nameplate!
- For measurement process reasons, a functional ground **FE** must be connected to the separate U-clamp terminal in the terminal compartment of the signal converter.
- When connecting to functional extra-low voltages, provide a facility for protective separation (PELV) (according to VDE 0100 / VDE 0106 and/or IEC 60364 / IEC 61140 or relevant national regulations)

3.4 Laying electrical cables correctly

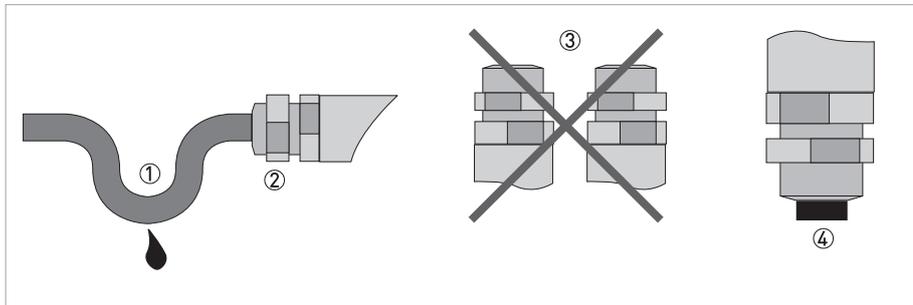


Figure 3-5: Protect housing from dust and water



- ① Lay the cable in a loop just before the housing.
- ② Tighten the screw connection of the cable entry securely.
- ③ Never mount the housing with the cable entries facing upwards.
- ④ Seal cable entries that are not needed with a plug.

3.5 Inputs and outputs, overview

3.5.1 Combinations of the inputs/outputs (I/Os)

This signal converter is available with various input/output combinations.

Basic version

- Has 1 current output, 1 pulse output and 2 status outputs/limit switches.
- The pulse output can be set as status output/limit switch and one of the status outputs as a control input.

Ex i version

- Depending on the task, the device can be configured with various output modules.
- Current outputs can be active or passive.
- Optionally available also with Foundation Fieldbus.

Modular version

- Depending on the task, the device can be configured with various output modules.

Bus systems

- The device allows intrinsically safe and non intrinsically safe bus interfaces in combination with additional modules.
- For connection and operation of bus systems, please note the supplementary documentation.

Ex option

- For hazardous areas, all of the input/output variants for the housing designs with a terminal compartment in the Ex d (pressure-resistant casing) or Ex e (increased safety) versions can be delivered.
- For connection and operation of Ex devices, note the supplementary instructions.

3.5.2 Description of the CG number

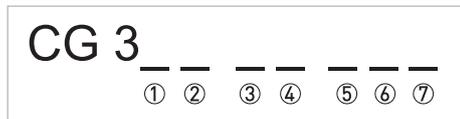


Figure 3-6: Marking (CG number) of the electronics module and input/output variants

- ① ID number: 6
- ② ID number: 0 = standard
- ③ Power supply option
- ④ Display (language versions)
- ⑤ Input/output version (I/O)
- ⑥ 1st optional module for connection terminal A
- ⑦ 2nd optional module for connection terminal B

The last 3 digits of the CG number (⑤, ⑥ and ⑦) indicate the assignment of the terminal connections. Please see the following examples.

Examples for CG number

CG 360 11 100	100...230 VAC & standard display; basic I/O: I_a or I_p & S_p/C_p & S_p & P_p/S_p
CG 360 11 7FK	100...230 VAC & standard display; modular I/O: I_a & P_N/S_N and optional module P_N/S_N & C_N
CG 360 81 4EB	24 VDC & standard display; modular I/O: I_a & P_a/S_a and optional module P_p/S_p & I_p

Abbreviation	Identifier for CG no.	Description
I_a	A	Active current output
I_p	B	Passive current output
P_a/S_a	C	Active pulse output, frequency output, status output or limit switch (changeable)
P_p/S_p	E	Passive pulse output, frequency output, status output or limit switch (changeable)
P_N/S_N	F	Passive pulse output, frequency output, status output or limit switch according to NAMUR (changeable)
C_a	G	Active control input
C_p	K	Passive control input
C_N	H	Active control input to NAMUR Signal converter monitors cable breaks and short circuits according to EN 60947-5-6. Errors indicated on LC display. Error messages possible via status output.
II_n_a	P	Active current input (for Modular I/O)
II_n_p	R	Passive current input (for Modular I/O)
$2 \times II_n_a$	5	Two active current inputs (for Ex i I/O)
-	8	No additional module installed
-	0	No further module possible

Table 3-1: Description of abbreviations and CG identifier for possible optional modules on terminals A and B

3.5.3 Fixed, non-alterable input/output versions

This signal converter is available with various input/output combinations.

- The grey boxes in the tables denote unassigned or unused connection terminals.
- In the table, only the final digits of the CG no. are depicted.
- Connection terminal A+ is only operable in the basic input/output version.

CG no.	Connection terminals								
	A+	A	A-	B	B-	C	C-	D	D-

Basic I/Os (standard)

1 0 0		I _p + HART® passive ①	S _p / C _p passive ②	S _p passive	P _p / S _p passive ②
	I _a + HART® active ①				

Ex i I/Os (option)

2 0 0				I _a + HART® active	P _N / S _N NAMUR ②
3 0 0				I _p + HART® passive	P _N / S _N NAMUR ②
2 1 0		I _a active	P _N / S _N NAMUR C _p passive ②	I _a + HART® active	P _N / S _N NAMUR ②
3 1 0		I _a active	P _N / S _N NAMUR C _p passive ②	I _p + HART® passive	P _N / S _N NAMUR ②
2 2 0		I _p passive	P _N / S _N NAMUR C _p passive ②	I _a + HART® active	P _N / S _N NAMUR ②
3 2 0		I _p passive	P _N / S _N NAMUR C _p passive ②	I _p + HART® passive	P _N / S _N NAMUR ②
2 3 0		IIn _a active	P _N / S _N NAMUR C _p passive ②	I _a + HART® active	P _N / S _N NAMUR ②
3 3 0		IIn _a active	P _N / S _N NAMUR C _p passive ②	I _p + HART® passive	P _N / S _N NAMUR ②
2 4 0		IIn _p passive	P _N / S _N NAMUR C _p passive ②	I _a + HART® active	P _N / S _N NAMUR ②
3 4 0		IIn _p passive	P _N / S _N NAMUR C _p passive ②	I _p + HART® passive	P _N / S _N NAMUR ②
2 5 0		IIn _a active	IIn _a active		

① Function changed by reconnecting

② Changeable

3.5.4 Alterable input/output versions

This signal converter is available with various input/output combinations.

- The grey boxes in the tables denote unassigned or unused connection terminals.
- In the table, only the final digits of the CG no. are depicted.
- Term. = (connection) terminal

CG no.	Connection terminals								
	A+	A	A-	B	B-	C	C-	D	D-

Modular IOs (option)

4 __		max. 2 optional modules for term. A + B	I _a + HART® active	P _a / S _a active ①
8 __		max. 2 optional modules for term. A + B	I _p + HART® passive	P _a / S _a active ①
6 __		max. 2 optional modules for term. A + B	I _a + HART® active	P _p / S _p passive ①
B __		max. 2 optional modules for term. A + B	I _p + HART® passive	P _p / S _p passive ①
7 __		max. 2 optional modules for term. A + B	I _a + HART® active	P _N / S _N NAMUR ①
C __		max. 2 optional modules for term. A + B	I _p + HART® passive	P _N / S _N NAMUR ①

FOUNDATION Fieldbus (option)

E __		max. 2 optional modules for term. A + B	V/D+ (2)	V/D- (2)	V/D+ (1)	V/D- (1)
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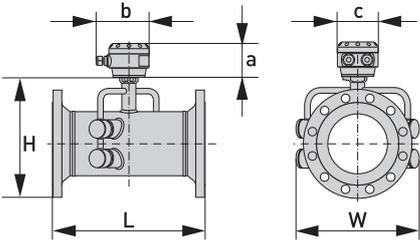
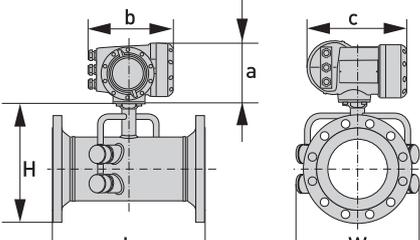
Modbus (option)

G __ ②		max. 2 optional modules for term. A + B		Common	Sign. B (D1)	Sign. A (D0)
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① Changeable

② Not activated bus terminator

4.1 Dimensions and weight

<p>Remote version</p>		<p>a = 88 mm / 3.5" b = 139 mm / 5.5" ① c = 106 mm / 4.2" Total height = H + a</p>
<p>Compact version</p>		<p>a = 155 mm / 6.1" b = 230 mm / 9.1" ① c = 260 mm / 10.2" Total height = H + a</p>

① The value may vary depending on the used cable glands.

4.1.1 Flow sensor in carbon steel

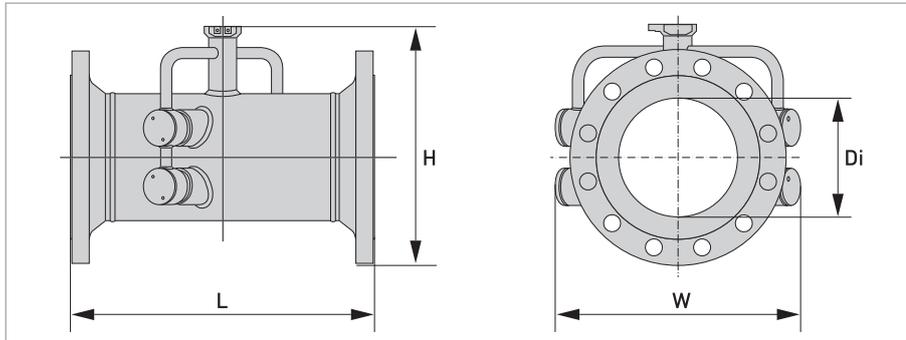


Figure 4-1: Dimensions of flow sensor

EN 1092-1

Nominal size		Dimensions [mm]				Approx. weight [kg]
DN	PN [bar]	L	H	W	Di ①	
200	PN 10	460	368	429	207	46
250	PN 10	530	423	474	261	66
300	PN 10	580	473	517	310	81
350	PN 10	610	519	542	341	109
400	PN 10	640	575	583	392	141
450	PN 10	620	625	623	442	170
500	PN 10	670	678	670	493	202
600	PN 10	790	784	780	593	278

Table 4-1: Dimensions and weight in mm and kg

① Di = inner diameter at flange face. Inner tube diameter may be smaller.

PN 16

Nominal size		Dimensions [mm]				Approx. weight [kg]
DN	PN [bar]	L	H	W	Di ①	
100	PN 16	490	254	337	107	24
125	PN 16	520	283	359	133	32
150	PN 16	540	315	387	159	35

Table 4-2: Dimensions and weight in mm and kg

① Di = inner diameter at flange face. Inner tube diameter may be smaller.

PN 40

Nominal size		Dimensions [mm]				Approx. weight [kg]
DN	PN [bar]	L	H	W	Di ^①	
50	PN 40	320	196	300	54.5	11
65	PN 40	350	216	313	70.3	14
80	PN 40	480	230	324	82.5	19

Table 4-3: Dimensions and weight in mm and kg

① Di = inner diameter at flange face. Inner tube diameter may be smaller.

ASME 150 lb

Nominal size	Dimensions								Approx. weight	
	L		H		W		Di ^①		[lb]	[kg]
	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]		
2"	14.2	360	7.5	190	11.8	300	2.1	53	22	10
2½"	15.0	380	8.3	210	12.2	310	2.5	63	33	15
3"	20.5	520	8.9	226	12.8	324	3.1	78	44	20
4"	21.7	550	10.1	258	13.3	337	4.0	102	64	29
5"	23.2	590	11.2	285	14.1	364	5.1	128	84	38
6"	24.4	620	12.2	312	15.2	387	6.1	154	90	41
8"	21.2	540	14.5	369	16.9	429	8.1	206	130	59
10"	24.0	610	16.9	428	18.7	474	10.3	260	185	84
12"	26.4	670	19.4	492	20.4	512	12.2	311	266	121
14"	28.7	730	21.0	534	21.3	540	13.4	340	352	160
16"	30.3	770	23.3	591	23.5	597	15.4	391	462	210
18"	30.7	780	25.0	635	25.0	635	17.5	441	570	259
20"	32.7	830	27.3	693	27.5	699	19.3	489	607	304
24"	35.8	910	31.5	801	32.0	813	23.3	591	904	411

Table 4-4: Dimensions and weight in inch / mm and lb / kg

① Di = inner diameter at flange face. Inner tube diameter may be smaller.

ASME 300 lb

Nominal size	Dimensions								Approx. weight	
	L		H		W		Di ^①			
	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[lb]	[kg]
2"	15.0	380	7.7	196	11.8	300	2.1	53	27	12
2.5"	15.4	390	8.5	217	12.2	310	2.5	63	38	17
3"	21.3	540	9.3	235	12.8	324	3.1	78	53	24
4"	22.4	570	10.7	271	13.3	337	4.0	102	86	39
5"	24.0	610	11.7	298	14.1	364	5.1	128	115	52
6"	25.2	640	13.0	331	15.0	387	6.1	154	146	66
8"	22.0	560	15.3	388	16.6	429	8.0	203	207	94
10"	25.2	640	17.6	448	18.3	474	10.0	255	309	140
12"	28.0	710	20.1	511	20.5	521	11.9	303	452	205
14"	29.9	760	22.0	559	23.0	584	13.1	333	609	276
16"	31.9	810	24.3	616	25.5	648	15.0	381	785	356
18"	33.1	840	26.5	673	28.0	711	16.9	428	926	420
20"	36.6	930	28.8	731	30.5	775	18.8	478	1237	561
24"	38.2	970	33.5	851	36.0	914	22.6	575	1715	778

Table 4-5: Dimensions and weight in inch / mm and lb / kg

① Di = inner diameter at flange face. Inner tube diameter may be smaller.

ASME 600 lb

Nominal size	Dimensions								Approx. weight	
	L		H		W		Di ^①			
	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[lb]	[kg]
2"	15.7	400	7.7	196	11.5	300	1.9	49	33	15
2.5"	16.1	410	8.5	217	12.0	310	2.3	59	44	20
3"	22.0	560	9.3	235	12.5	324	2.9	74	66	30
4"	24.4	620	11.1	281	13.1	337	3.8	97	119	54
5"	26.0	660	12.7	323	14.1	359	4.8	122	183	83
6"	27.2	690	13.8	350	15.0	374	5.8	146	223	101
8"	24.4	620	16.1	408	16.5	421	7.6	194	333	151
10"	27.2	690	18.3	479	20.0	508	9.6	243	531	241
12"	28.3	720	20.9	530	22.0	559	11.4	289	655	297
14"	29.9	760	22.4	568	23.7	603	12.5	317	798	362
16"	32.7	830	25.0	635	27.0	686	14.3	364	1105	501
18"	34.6	880	27.1	689	29.3	743	16.1	409	1389	630
20"	35.4	900	29.5	750	32.0	813	17.9	456	1695	769
24"	38.2	970	34.0	864	37.0	640	21.6	548	2438	1106

Table 4-6: Dimensions and weight in inch / mm and lb / kg

① Di = inner diameter at flange face. Inner tube diameter may be smaller.

ASME 900 lb

Nominal size	Dimensions								Approx. weight	
	L		H		W		Di ^①			
	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[lb]	[kg]
2"	17.7	450	8.7	222	11.5	300	1.7	43	64	29
2.5"	18.1	460	9.6	244	12.0	310	2.3	59	86	39
3"	23.6	600	9.9	251	12.5	324	2.6	67	119	54
4"	26.8	640	11.4	290	13.0	337	3.4	87	157	71
5"	26.8	680	12.6	333	13.7	359	4.6	116	240	109
6"	28.7	730	14.3	363	15.0	381	5.5	140	335	152
8"	26.8	680	17.0	433	18.5	470	7.2	183	545	247
10"	29.9	760	19.6	498	21.5	546	9.1	230	838	380
12"	31.9	810	21.9	556	24.0	610	10.7	273	1168	530
14"	33.9	860	23.1	588	25.2	641	11.8	300	1382	627

Table 4-7: Dimensions and weight in inch / mm and lb / kg

① Di = inner diameter at flange face. Inner tube diameter may be smaller.

4.1.2 Signal converter housing

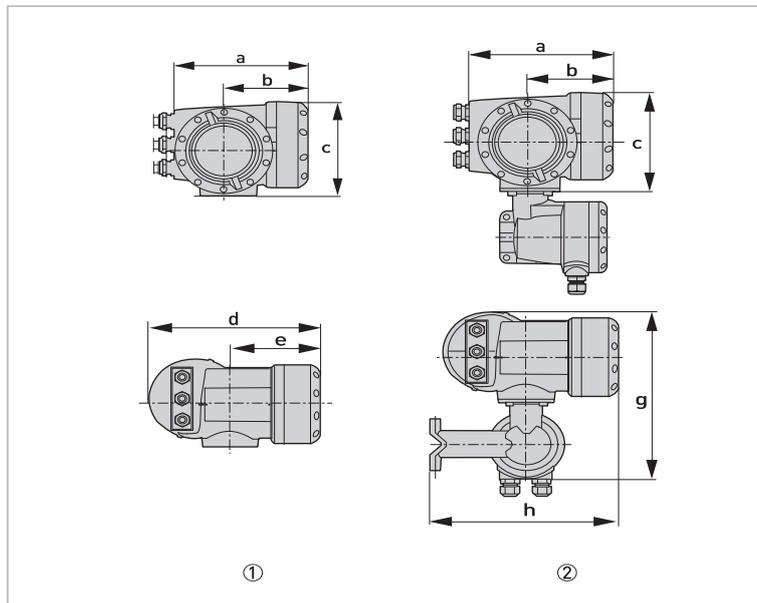


Figure 4-2: Dimensions of signal converter housing

- ① Compact version (C)
 ② Field housing (F) - remote version

Version	Dimensions [mm]							Weight [kg]
	a	b	c	d	e	g	h	
C	202	120	155	260	137	-	-	4.2
F	202	120	155	-	-	295.8	277	5.7

Table 4-8: Dimensions and weight in mm and kg

Version	Dimensions [inch]							Weight [lb]
	a	b	c	d	e	g	h	
C	7.75	4.75	6.10	10.20	5.40	-	-	9.30
F	7.75	4.75	6.10	-	-	11.60	10.90	12.60

Table 4-9: Dimensions and weight in inch and lb

**INFORMATION!**

The weight of a field stainless steel converter housing is 14 kg / 30.9 lb

4.1.3 Mounting plate of field housing

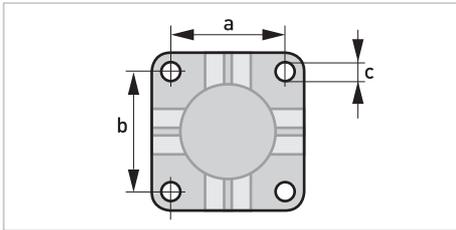
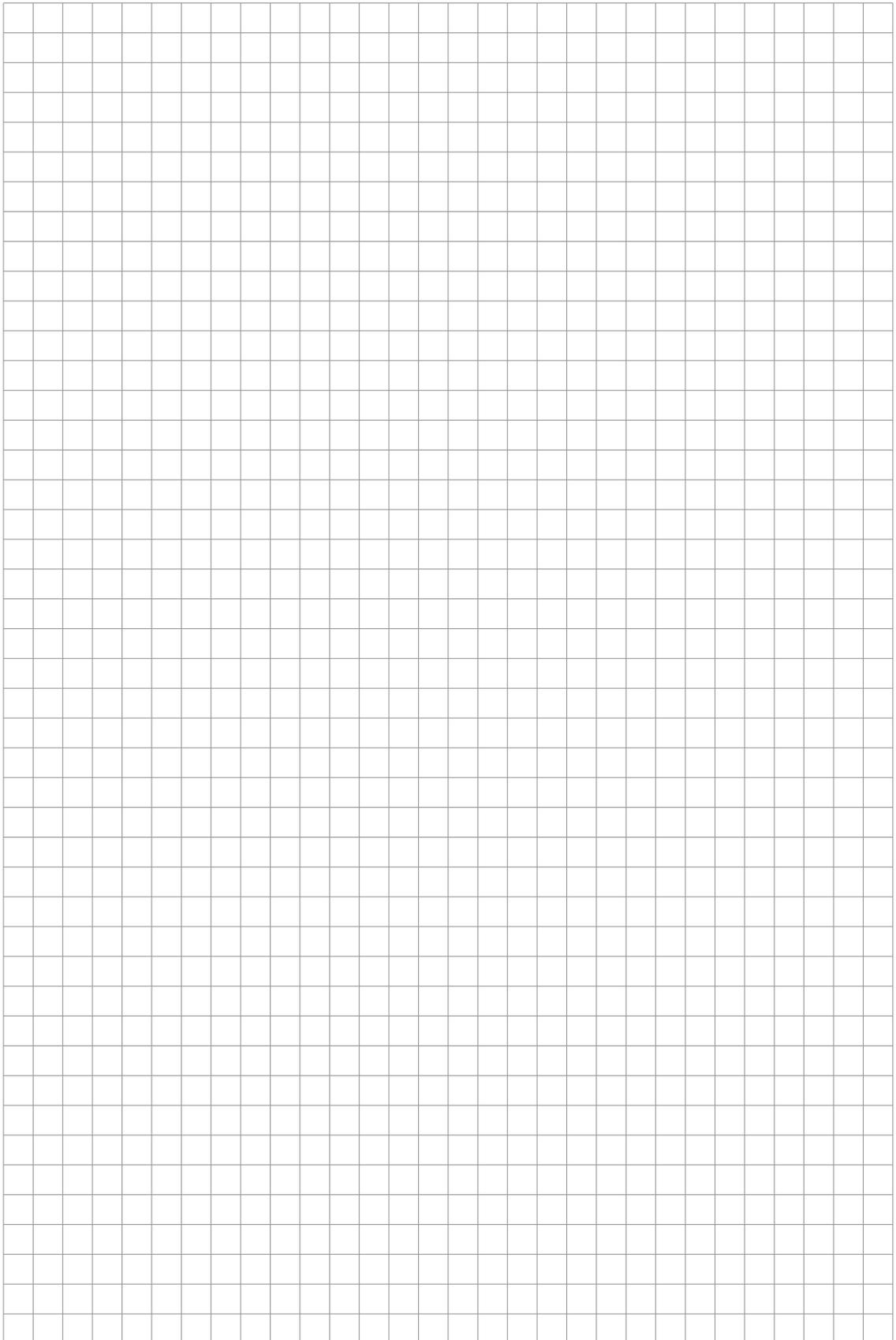
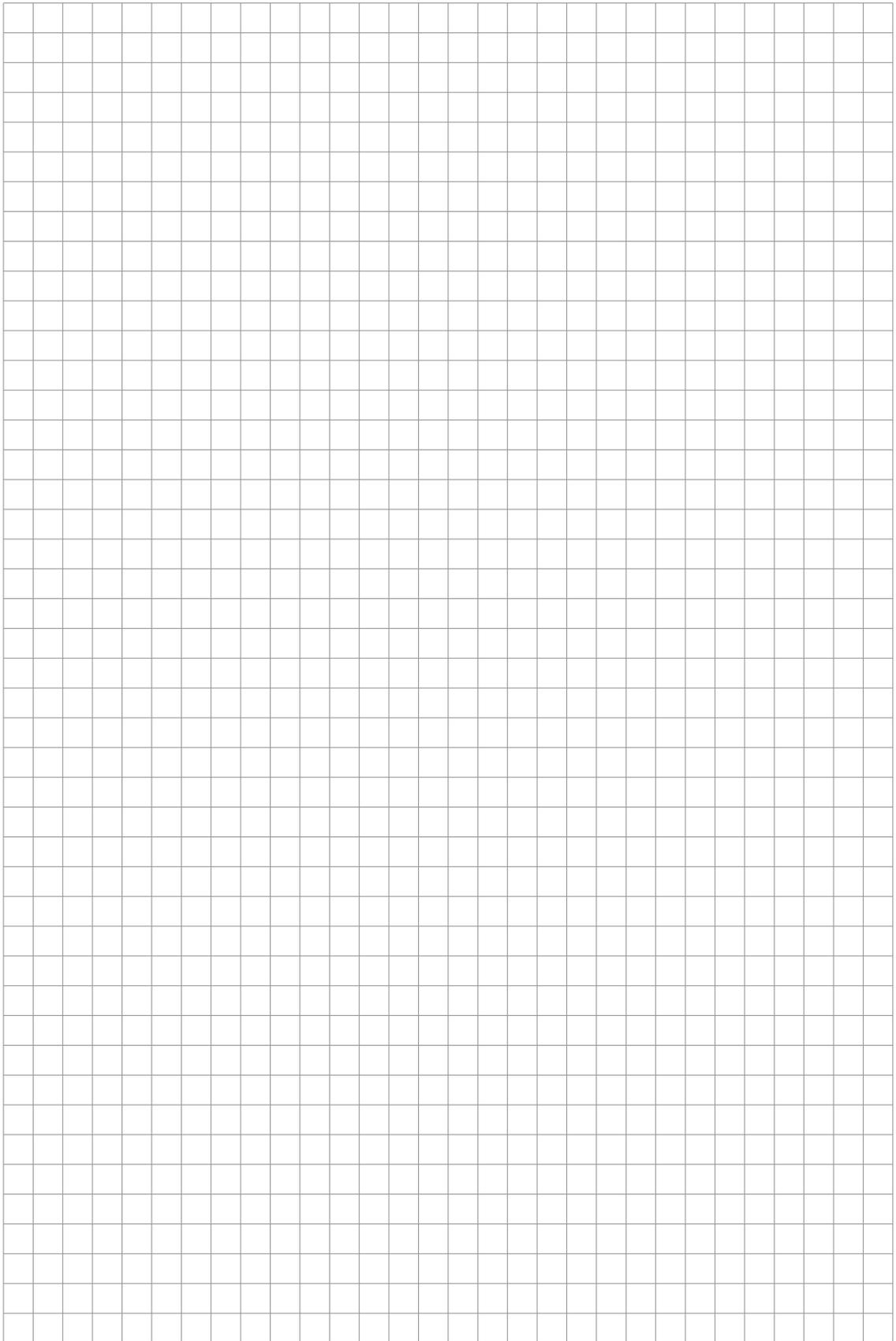


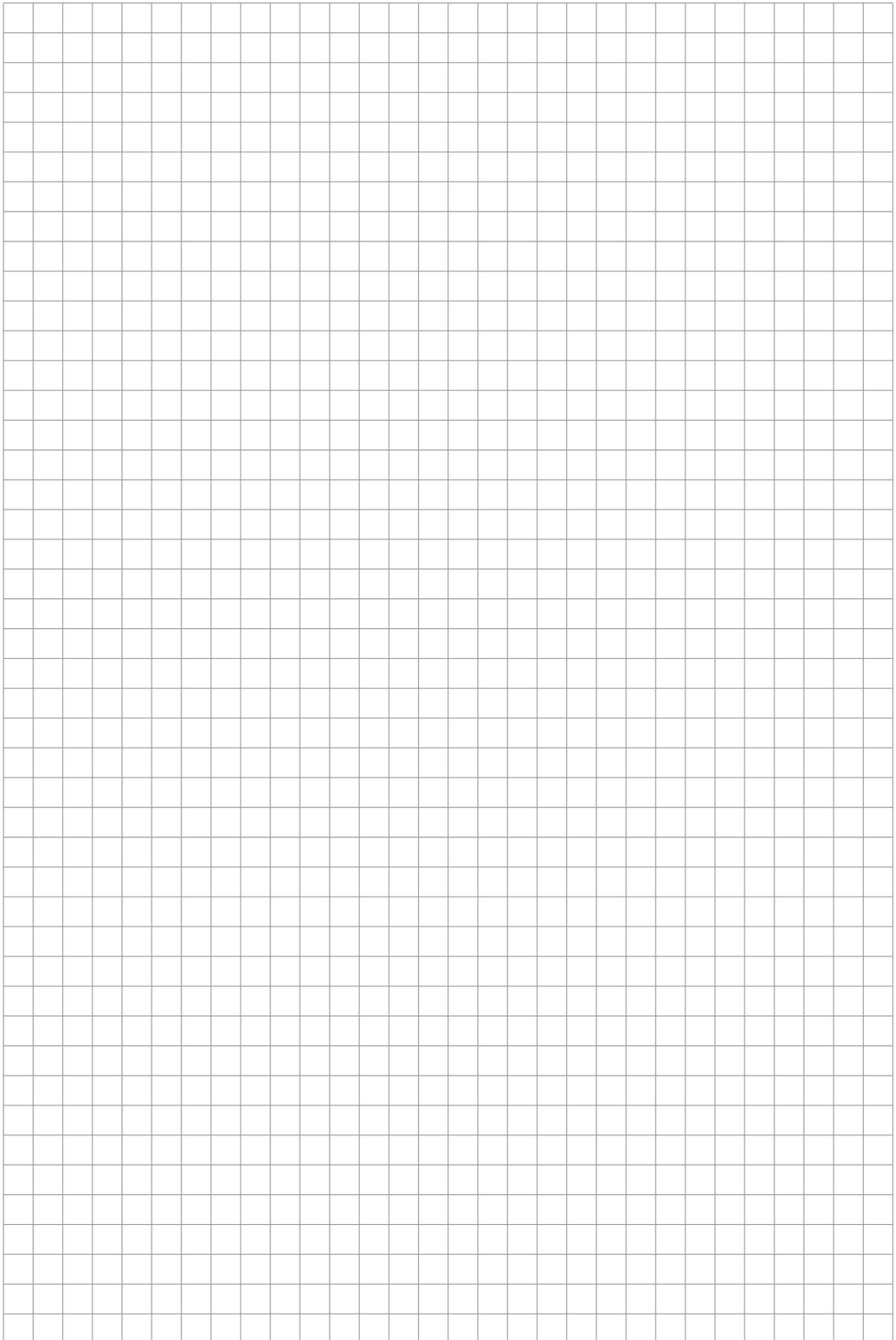
Figure 4-3: Dimensions for mounting plate of field housing

	[mm]	[inch]
a	72	2.8
b	72	2.8
c	Ø9	Ø0.4

Table 4-10: Dimensions in mm and inch







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