



Level



Pressure



Flow



Temperature

Liquid
Analysis

Registration

Systems
Components

Services

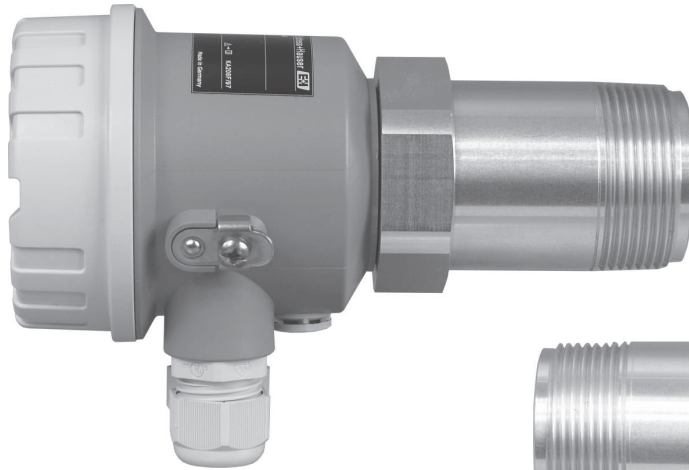


Solutions

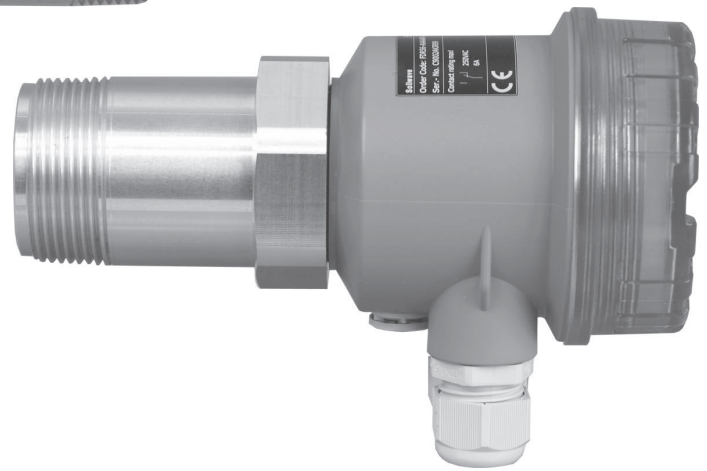
Technical Information

Soliwave FQR56/FDR56

Microwave Barrier



FQR56 emitter



FDR56 receiver

Application

The Soliwave microwave barrier uses a contact-free procedure for detection. It can be installed in containers, conduits, shafts or on free fall shafts. It is possible to take a measurement through non-metallic container materials from the outside.

Suitable as level limit switch for controlling and counting all types of bulk solids or piece goods (such as bags or boxes).

Typical bulk solids include:

- Wood chips, wood dust or flour
- Plaster, cement, ash
- Paper or cardboard shred
- Gravel, sand
- Dried powders in general

The FQR56 emitter and FDR56 receiver are compact transmitters with integrated power unit, and the receiver has an additional integrated switching amplifier, which enables easy electrical installation onsite.

The microwave barrier has an optional analog output (4–20 mA current output) for analysis of build-up, fouling etc. This allows, for example, the progress of fouling to be evaluated from "uncontaminated" to "contaminated" (the limits can be configured individually).

Your benefits

- Flush-mounted installation, non-contact installation possible
- Easy installation using R 1½ or 1½ NPT thread or suitable installation brackets
- Electronics housing can be rotated by 360°, allowing orientation into optimum position after installation
- Mechanical robustness
 - No wear
 - Process-wetted ceramic sensor diaphragm (optional)
 - Long service life
 - Maintenance-free
- Indication of the signal strength on the receiver
- Adjustable sensitivity
- Direct connection of the supply voltage (emitter and receiver separately or together)
- Mechanically compatible to FQR50/FDR50 microwave barrier, existing process connections can continue to be used; likewise, accessories such as adapter flanges, installation brackets and sight glasses can continue to be used.
- Conforms to ATEX and IECEx

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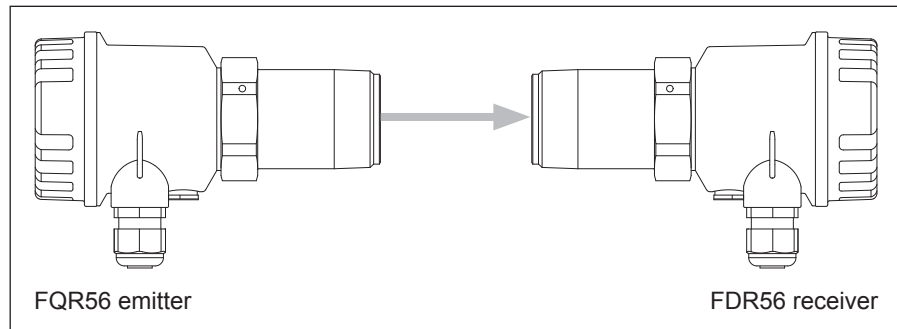
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Function and system design

Measuring principle

The FQR56 emitter puts out the microwave signal via an integrated horn antenna. The FDR56 receiver directly opposite detects this signal and generates the selected output signal (relay, solid-state relay or 4–20 mA current output).

The range of the path is influenced by the different types of materials. The attenuation of the microwaves here depends on the electric characteristics of the attenuating material. Materials with the capacity to conduct electricity, such as metals, reflect the waves, while other materials with lower conductivity only weaken them or are even penetrated. The attenuation of the microwaves is reduced as the dielectric constant of the material to be emitted through becomes lower.



The complete measuring system for limit detection consists of an FQR56 emitter and a FDR56 receiver.

Note:

- The FQR56 emitter and the FDR56 receiver are compact devices for connecting to one shared power supply or two separate power supplies.
- The FDR56 receiver has an integrated switching amplifier; therefore, no external switching amplifier such as the Nivotester FTR325 is required.
- The FQR56/FDR56 device type remains mechanically compatible to the type FQR50/FDR50; corresponding process adapters can continue to be used.
- The compact variant FQR56/FDR56 is electrically incompatible with the FQR50/FDR50 device type, as these devices have to be operated with an external switching amplifier (Nivotester FTR325).

Characteristics quantities

Measured variable

Absorption of the electromagnetic waves radiated by the FQR56 emitter

Measuring range (detection range)

With an unobstructed radiation path between the FQR56 emitter and the FDR56 receiver, the maximum range is 100 m. The range also depends on the container walls to be penetrated.

Operating frequency

24.15 GHz ± 80 MHz

Transmission power

The power produced by the FQR56 emitter is less than or equal to 100 mW e.i.r.p. (equivalent isotrope radiation performance).

- Power density directly in front of the emitter: 1 mW/cm²
- Power density at a distance of 1 m: 0.3 μW/cm²

Note:

The power density is clearly under the recommended limit values of the ICNIRP guidelines "*Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)*" and thus is completely harmless for humans.

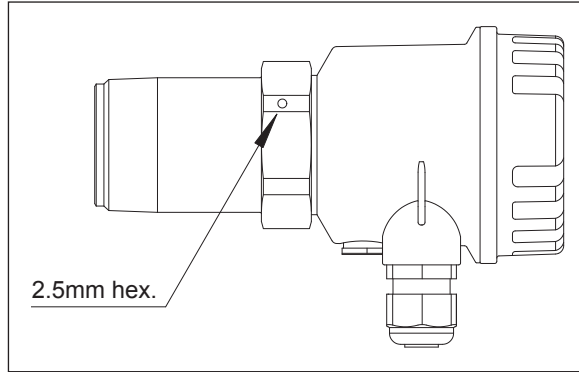
Switching frequency FDR56

max. 2 Hz

Operating conditions

Installation instructions

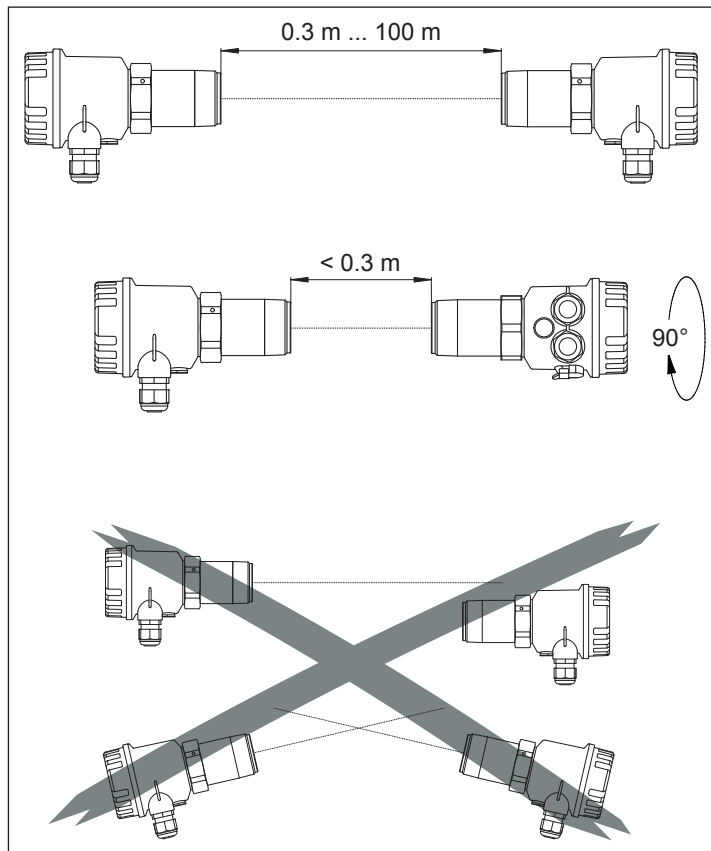
Both the FQR56 emitter and the FDR56 receiver are equipped with a standard thread (R 1½ to EN 10226 or 1½ NPT to ANSI/ASME B1.20.1) as the process connection. This enables easy installation in existing container couplings or nozzles. For optimal orientation of emitter and receiver after installation at the process, the electronics housing can be rotated as desired (by 360°).



- To fasten the enclosure in place, the screw (Allen screw, size 2.5) must then be tightened.
- The emitter and receiver should be opposite and facing each other on an axis.
- As the microwaves are polarized, the FQR56 emitter and the FDR56 receiver must not be turned towards each other by their longitudinal axis (except by 180° or for detection distances less than 30 cm).
- Avoid interference from reflections off of metal parts.

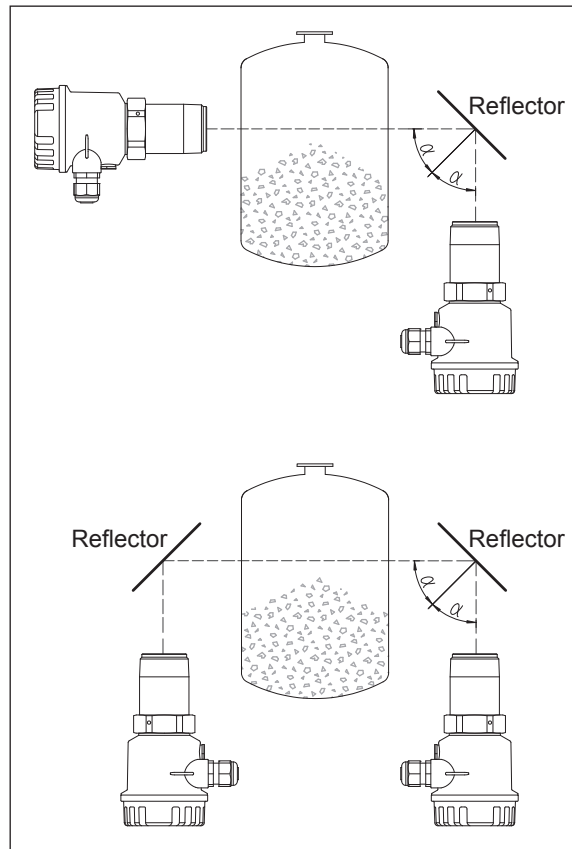
- An improvement of signal quality can be attained by installing the FQR56 emitter and FDR56 receiver so that they can be moved by ± 10 mm along their longitudinal axis.
- To avoid overranging when the detection range is under 30 cm, in this case, the FQR56 emitter and FDR56 receiver should be installed at a 90° angle to each other.
- Between the FQR56 emitter and the FDR56 receiver, a minimum clearance of 30 mm should be maintained.

Instructions for orientation



Operation with reflector(s)

If, for construction reasons, it is not possible for the FQR56 emitter and the FDR56 receiver to be directly facing each other, the microwave beam can be redirected using flat metal mirrors (reflectors). By using reflectors the range of the microwave barrier is reduced by approximately 10% per reflector.



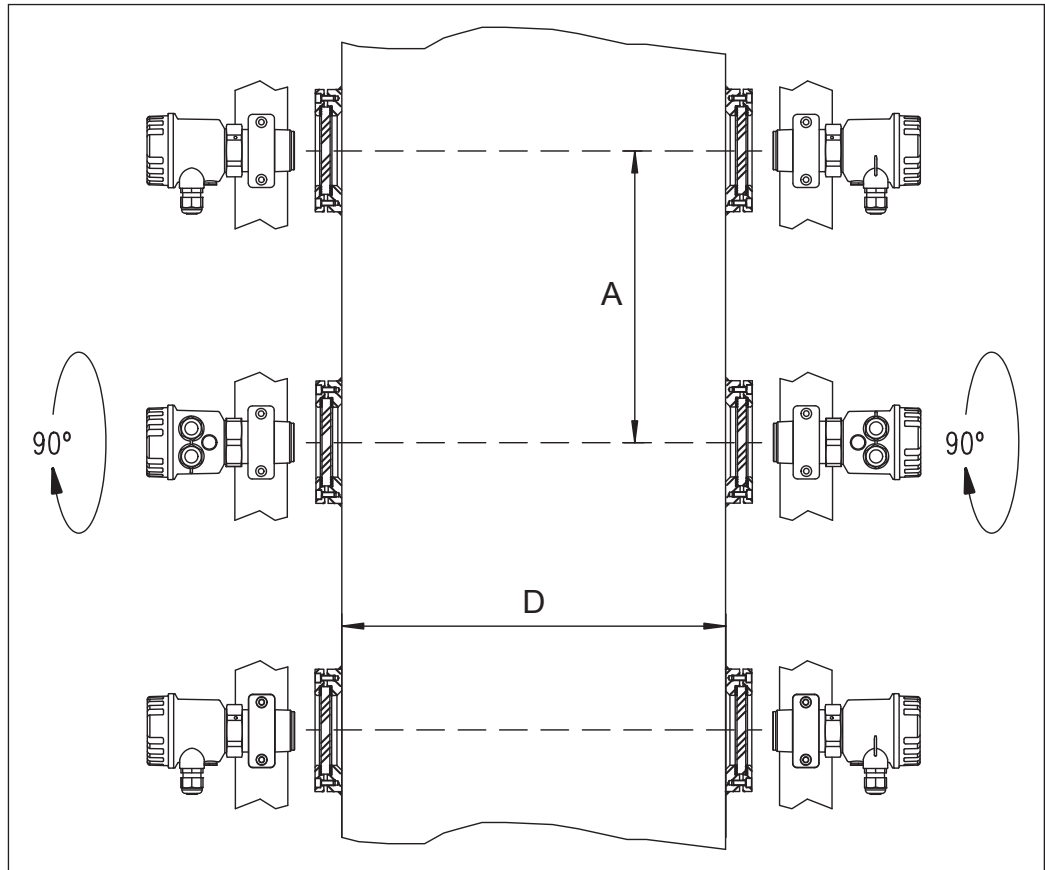
Note that the FQR56 emitter and FDR56 receiver have to be arranged symmetrically to the reflector (angle of entrance = angle of emission), as otherwise the receiver does not receive a signal that it can evaluate.

Parallel operation of multiple microwave barriers

In practice, in some instances multiple microwave barriers are to be operated in parallel at one location (e. g. for multiple limit detections in a pipe, see example). To keep the microwave barriers from influencing each other, you can operate the FQR56 emitter with three different operating frequencies. To do so, observe the following instructions:

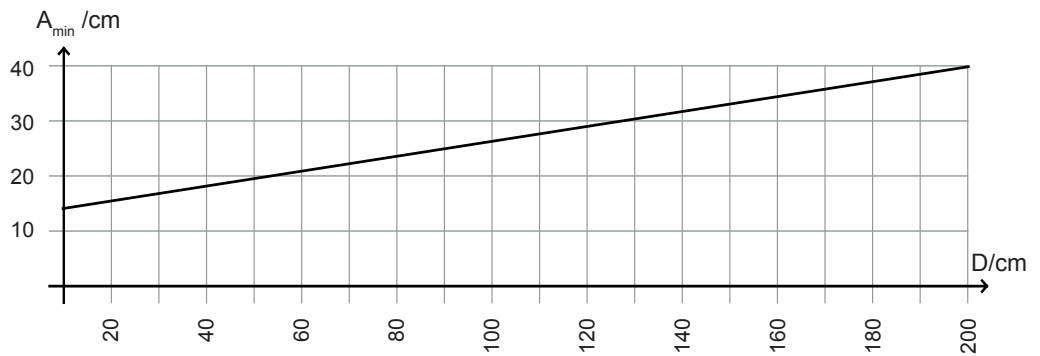
- Use the operating frequencies in series, e. g. 1, 2, 3, 1, etc.
- Observe the minimum clearance **A** depending on the detection distance **D** (see diagram).
- Rotate every other microwave barrier by 90° to prevent interference (see example, pertains to emitter *and* receiver).

For details on configuring the operating frequency, refer to the section entitled "Settings".



Dependency of detection distance to the distance of the microwave barriers

When using microwave emitters with selectable modulation frequencies and operation as shown in the example for "parallel operation", the following dependency of the detection distance D to the distance of the individual microwave barriers A applies.

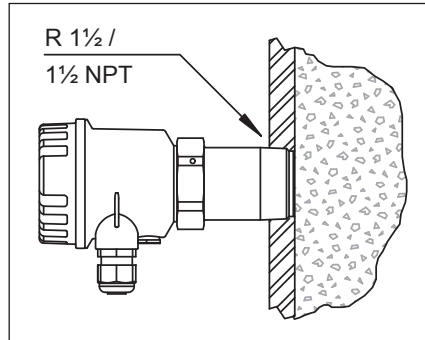


Note:

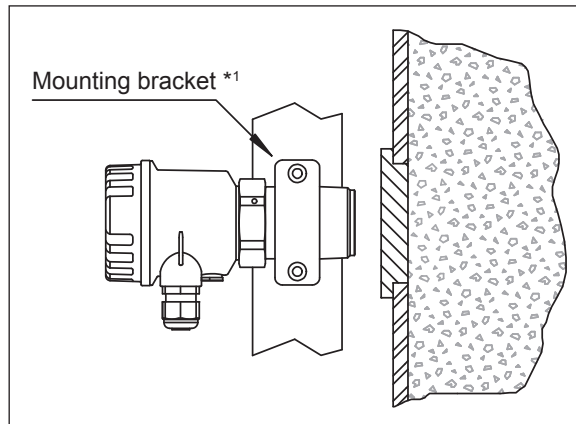
The values that appear in the diagram pertain to optimal installation conditions and can vary according to the installation position. When installed in closed metallic containers, hoppers or the like, in some instances reflections may occur that make it necessary to adjust the distances of the individual microwave barriers.

Installation

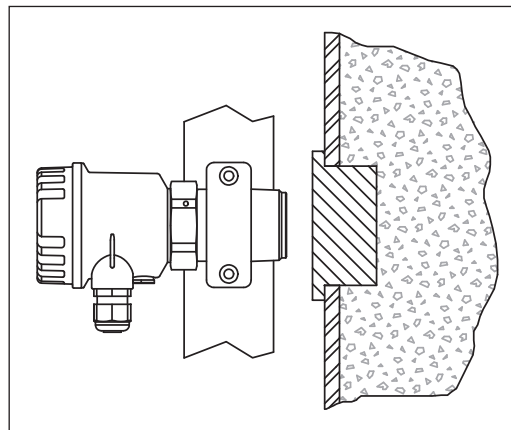
Direct installation with threaded connection



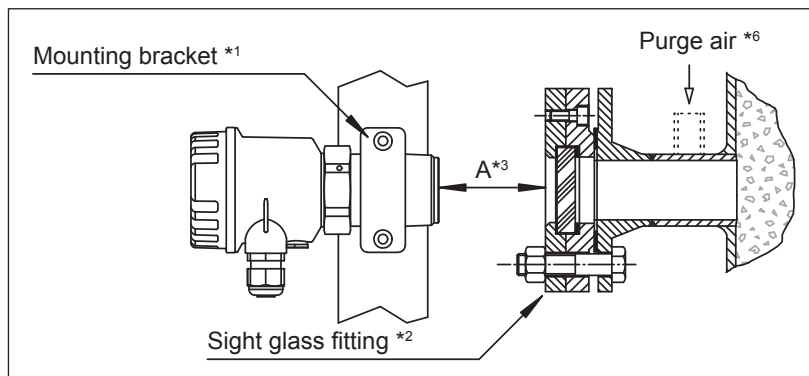
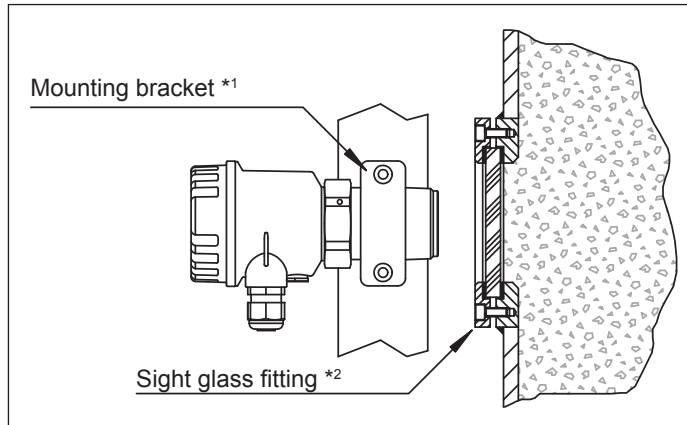
Bracket installation in front of microwave-permeable window



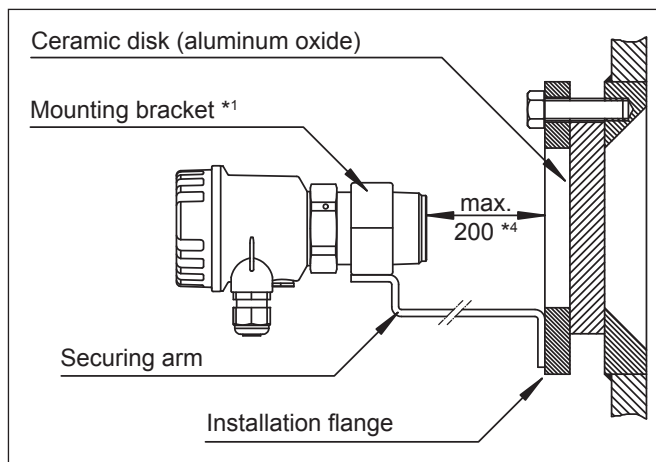
Bracket installation in front of microwave-permeable window with danger of condensation on the container's inner wall



Bracket installation in front of microwave-permeable sight glass fitting

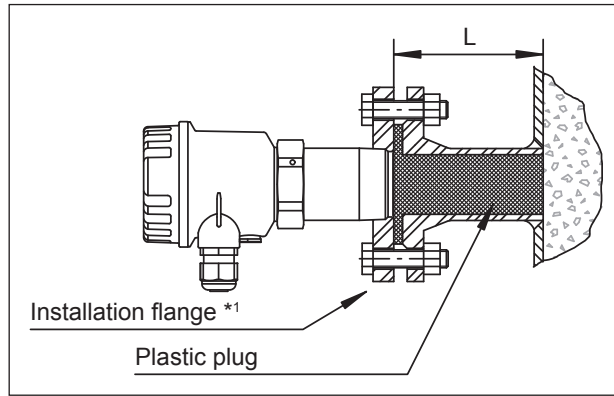


Angle installation on container *5



- *1 Suitable installation brackets are available as accessories, see "Accessories"
- *2 Suitable microwave-permeable sight glass fittings are available as accessories, see "Accessories"
- *3 The distance **A** depends on the nominal diameter of the sight glass fitting (or the diameter of the sight glass) and the temperature at the fitting. To prevent possible signal attenuation, we recommend keeping the distance as short as possible (e. g. max. 40 mm at DN50).
- *4 Distance for temperature reduction between the process temperature and max. 70°C at the microwave barrier
- *5 Various installation adapters (e. g. for angle installation) are available as special equipment packages.
- *6 We recommend using purge air to prevent fouling (material accumulation) in the nozzle that is open to the process. Alternatively, you can also close the nozzle using a plastic plug (see next page).

Flange mounting using screw-in flange

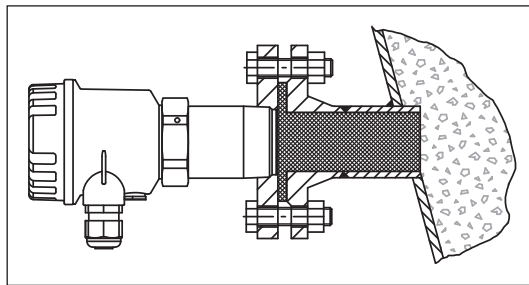


*1 Suitable installation flanges are available as accessories, see "Accessories"

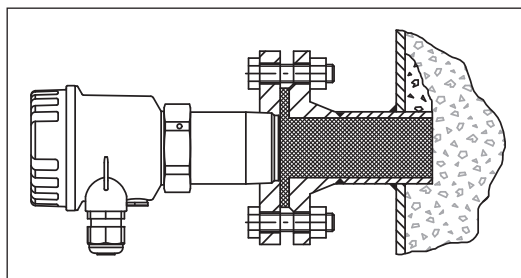
Note:

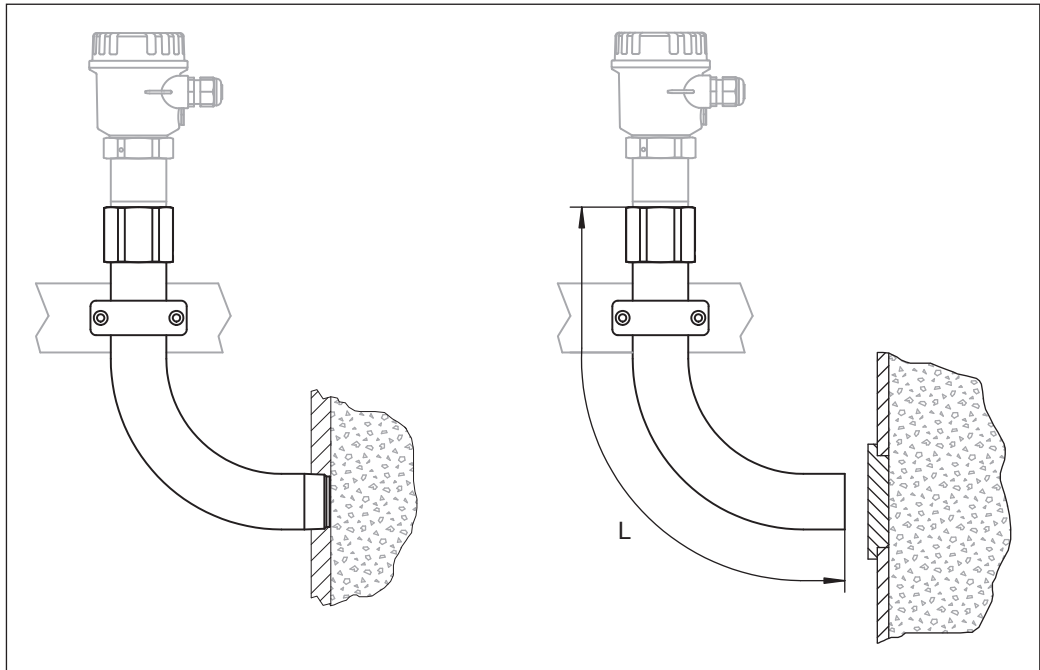
- The maximum length **L** depends on the dielectric constant and the water absorption of the plastic material. Observe the manufacturer's specifications.
- We recommend PTFE as the material, as this allows the length at the emitter and receiver to be up to 300 mm.
- For optimal orientation, the emitter and receiver should be able to be moved by ± 10 mm along their longitudinal axis.

Flange mounting using screw-in flange for oblique conical containers



Flange mounting using screw-in flange with danger of build-up

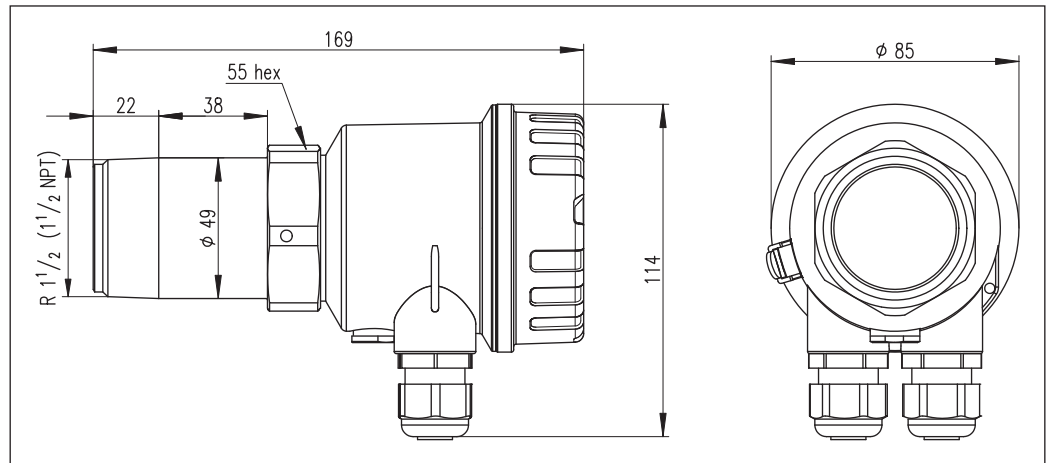


**Installation with
pipe as wave guide****Note:**

- This type of mounting is recommended if conditions at the process or in the area surrounding the process are unfavorable (such as high temperatures or heavy contamination) or if the building's situation does not permit direct installation.
- The pipe can be made of any desired metallic material, and the length **L** is unimportant due to the waveguide effect.
- Edges inside the pipe (for example at transitions) can cause signal attenuation and thus should be avoided wherever possible.

Mechanical construction

Design/dimensions of F16 housing (polyester)



Weight

- 0.6 to 1.1 kg (depending on the version)

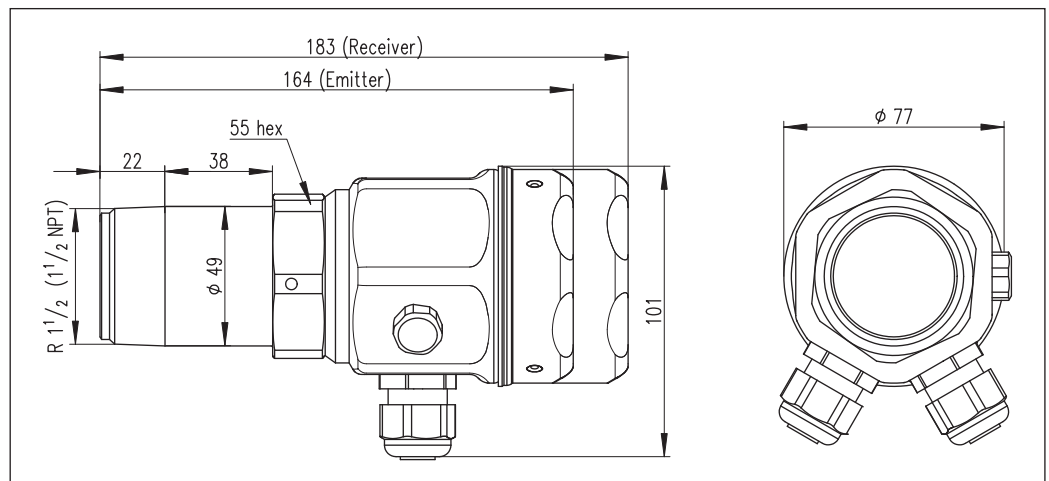
Materials

- Housing: polyester
- Process connection (fluid-wetted parts):
 - Aluminum or stainless steel 316Ti/1.4571
 - Sensor diaphragm: PTFE or ceramic
- Cable glands: PA

Process connection

- Thread R 1 1/2 (EN 10226) or
- 1 1/2 NPT (ANSI/ASME B1.20.1)

Design/dimensions of F16 housing (stainless steel hygiene)



Weight

- 1.1 to 1.4 kg (depending on the version)

Materials

- Housing: stainless steel 316L
- Process connection (fluid-wetted parts):
 - Stainless steel 316Ti/1.4571
 - Sensor diaphragm: Ceramic or PTFE (device versions with approval)
- Cable glands:
 - PA (device version without approval)
 - Brass, nickel-plated (device versions with approval)

Process connection

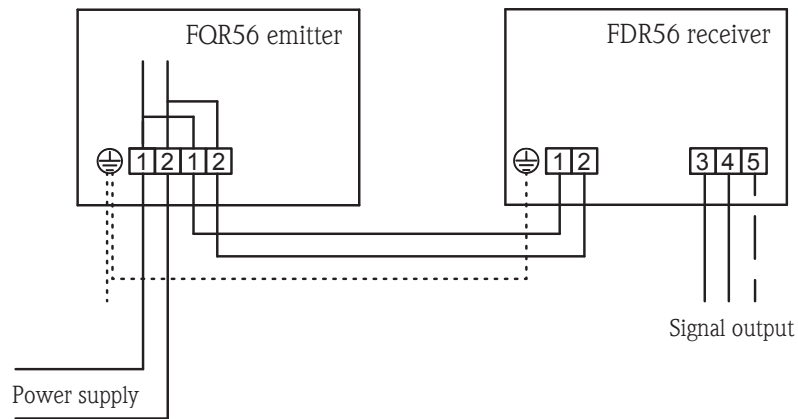
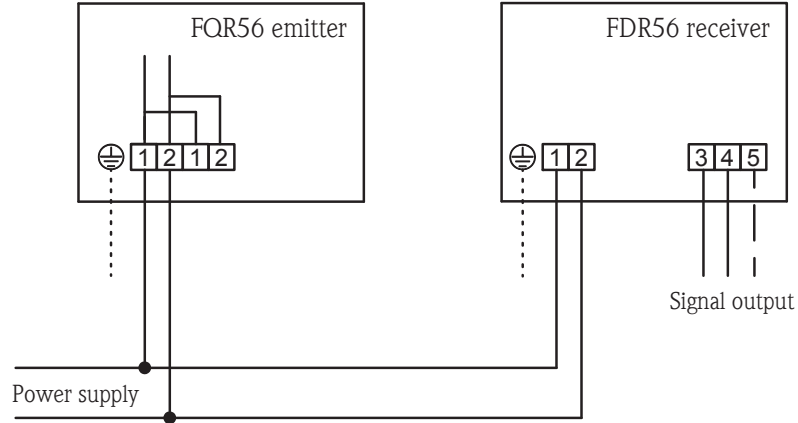
- Thread R 1 1/2 (EN 10226) or
- 1 1/2 NPT (ANSI/ASME B1.20.1)

Power supply

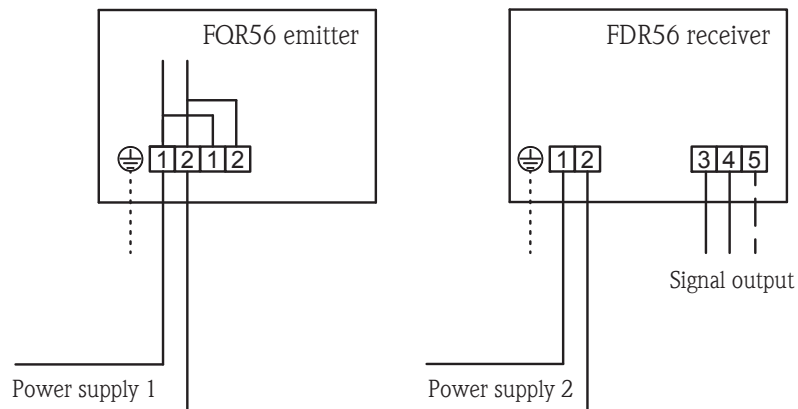
Electrical connection

A suitable wire (see "Wire specification") is used to connect the emitter and receiver of the Soliwave microwave barrier to one or two power supplies. The following wiring variants are permitted:

Wiring 1: operation with one power supply



Wiring 2: operation with two power supplies

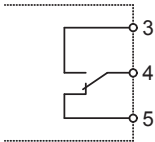


Note:

- If the emitter and receiver are to be fed by two different power supplies, these can have different voltages (versions according to the product structure).
Example:
Emitter supply voltage: 24 V (DC), receiver supply voltage: 230 V (AC)
- For the electrical characteristics of the signal outputs, refer to the section entitled "Output characteristics".

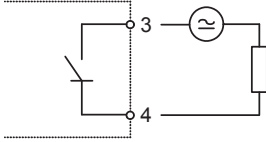
Supply voltage	<ul style="list-style-type: none"> ■ AC version: 85–253 V (AC), 50/60 Hz ■ DC version: 20–60 V (DC) or 20–30 V (AC), 50/60 Hz
Power consumption	<ul style="list-style-type: none"> ■ FQR56: max. 2.5 VA (AC version) and max. 1 W (DC version) ■ FDR56: max. 4 VA (AC version) and max. 1.5 W (DC version)
Cable entry	<ul style="list-style-type: none"> ■ M20 x 1.5 or ■ ½ NPT
Cable gland	<p>M20 x 1.5:</p> <ul style="list-style-type: none"> ■ Degree of protection IP66 ■ Scope of supply: 2
Wire specification	<ul style="list-style-type: none"> ■ Usual commercial installation wire ■ Conductor cross-section: max. 1.5 mm

Output

Relay	<ul style="list-style-type: none"> ■ Potential-free change-over contact ■ Switching capacity: <ul style="list-style-type: none"> - AC: 250 V/6 A - DC: 125 V/0.4 A or 30 V/5 A ■ Contact material: AgCdO (gold-flashed) 	
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Note:

The contact material is also suitable for switching small signal circuits. However, this is possible only if no inductive loads or higher currents have been switched previously.

Solid-state relay	<ul style="list-style-type: none"> ■ Switching contact of a semiconductor relay ■ Switching capacity: <ul style="list-style-type: none"> - AC: 30 V/0.4 A - DC: 40 V/0.4 A 	
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Note:

Unlike the switching contact of the relay output, this can be used to evaluate higher switching frequencies (e.g. for piece goods counting).

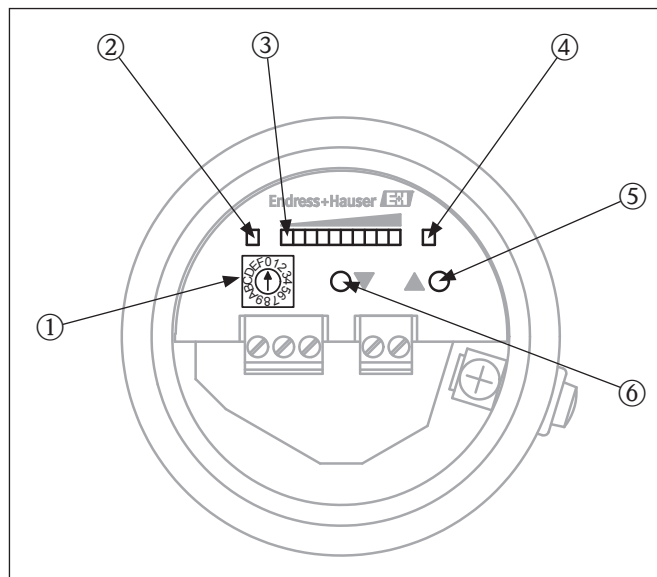
Current	<ul style="list-style-type: none"> ■ Current output 4–20 mA ■ Active ■ Max. load: 600 Ω 	
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Settings

By using frequencies in the 24 GHz range, products with low attenuation can be detected, even if the product quantity between the emitter and receiver is low. Accordingly, the calibration options of the devices provide the necessary flexibility for adapting the barrier to the specific application without any problems:

- Adjustable sensitivity
- Switchable signal function:
 - Switch point exceeded = Max. safety (e.g. overflow protection) or
 - Switch point undershot = Min. safety (e.g. dry running protection)
- Adjustable switching hysteresis (not with current output)
- Switching delay (not with current output):
 - 100 ms to 20 s
 - with response and drop-out delay, can be selected separately
- LED field strength display as an adjustment and positioning aid

Operating the receiver



The Soliwave microwave barrier FQR56/FDR56 is configured using the function selection ① and the two operating keys ⑤ and ⑥. For this purpose, a calibration to a sensitivity necessary for clear and unambiguous identification of the products is carried out. If the attenuation or interruption of the microwaves by the product is sufficient, the receiver unit responds with a corresponding output signal.

The parameter configuration is stored internally and is retained even after the supply voltage is disconnected. No other operator intervention is necessary during operation. The adaptation to the application is required during initial installation only. However, subsequent changes can be made and stored at any time.

Display

The attenuation of the product and the configured values (in the function selection) are displayed locally using a bar graph display ③. In addition, a green LED ② indicates that the device is ready to operate (supply voltage is present) and a yellow LED ④ displays the status of the switch output (LED off: relay in rest position, solid-state relay high-impedance).


Note:

- Toggling the encoding switch for the function selection (<> 0) puts the FDR56 receiver into parameter configuration mode. The microwave barrier continues working in the background, and changed settings are taken into account immediately.
- Remember to set the function selection to **0 = operation** when you are done configuring settings.
- For current output, the yellow LED ④ has no function and remains off.

Parameter configuration

The parameter configuration is carried out as follows:

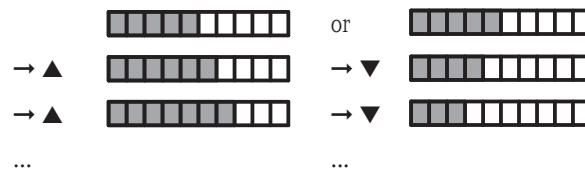
1. Select any desired function (for the functions that are available, refer to the section "Programming functions")
 - Encoding switch ① = 1 to F
 - The display shows the selected function for two seconds.

Example of function 3: 

2. Setting the selected function


































Example: function 3 (upper limit of sensitivity)

- Using the ⑥ ▼ and ⑤ ▲ keys, the upper level of sensitivity can be increased or reduced in 10% increments.

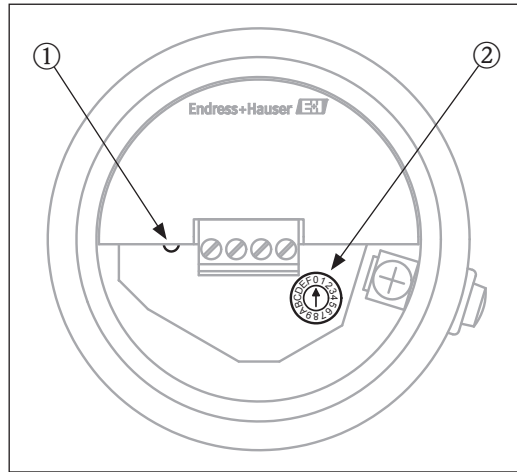


3. The configured value is stored as soon as the function is switched. The value can be displayed again at any time by selecting the corresponding programming function and changed if necessary.
4. After finishing the parameter configuration (i.e. after adapting the microwave barrier to the specific application), the encoding switch must be returned to the "0" position; the barrier is now ready for operation.

Configuration functions

Function/meaning	Value range
1 =  Automatic adjustment of the sensitivity with uncovered radiation path	—
2 =  Automatic adjustment of the sensitivity with covered radiation path	—
3 =  Manual adjustment of the sensitivity (upper limit, 10% increment/LED)	 →  minimum (upper limit from ... function 1)  maximum
4 =  Manual adjustment of the sensitivity (lower limit, 10% increment/LED)	 →  minimum (lower limit from ... function 1)  maximum
5 =  Hysteresis setting	 ...  
6 =  Selection of the limit signal function (Min./Max. safety, relay output only)	 Relay switches when microwave barrier is covered  Relay switches when microwave barrier is uncovered
7 =  Switching delay setting (response delay)	 Off (no delay)  100 ms ... (200/300/500 ms, 1/2/3/5/10 s)  20 s
8 =  Switching delay setting (drop-out delay)	 Off (no delay)  100 ms ... (200/300/500 ms, 1/2/3/5/10 s)  20 s
9 =  Enable simulation mode	 Radiation path covered ...  Radiation path uncovered
A =  Attenuation setting	 Off (no attenuation)  100 ms ... (200/300/500 ms, 1/2/3/5/10 s)  20 s
F =  Reset to factory settings	—

Display on emitter



The FQR56 emitter has a green LED ① that signals the operating status (supply voltage present).

Configuring an operating frequency

To prevent intermodulation interference from microwave barriers located close to each other, slightly different operating frequencies for parallel operation (see mounting instructions in the corresponding section) can be configured:

Switch position	Operating frequency
	1 (factory setting)
	2
	3

Note:

- In individual operation, the switch position is irrelevant and can be any desired position.
- For additional information about settings and parameter configuration, refer to the Operating Instructions KA00291F/97

Ordering information

Ordering information for FDR56 Soliwave receiver

10	Approval:		
	AA	Non-hazardous areas	
	BA	ATEX II 1/2D Ex ta/tb IIIC T102°C Da/Db IP66 ATEX II 2D Ex tb IIIC T102°C Db IP66	
	IA	IECEX Ex ta/tb IIIC T102°C Da/Db IP66 IECEX Ex tb IIIC T102°C Db IP66	
	99	Special version, to be specified	
20	Output:		
	1	Relay SPDT	
	2	Analog 4–20 mA	
	3	Solid-state relay	
	9	Special version, to be specified	
30	Power supply:		
	A	85–253 VAC, 50/60 Hz	
	E	20–60 VDC 20–30 VAC, 50/60 Hz	
	Y	Special version, to be specified	
	40	Housing:	
A		F16 polyester, IP66	
B		F15 stainless steel hygiene, IP66	
C		F15 stainless steel hygiene, IP66 + sight glass	
Y		Special version, to be specified	
50	Electrical connection:		
	A	Gland M20	
	D	Thread ½ NPT	
	Y	Special version, to be specified	
	60	Process connection:	
XFA		Thread EN 10226 R 1½, aluminum	
VEA		Thread ANSI 1½ NPT, aluminum	
XF2		Thread EN 10226 R 1½, 316Ti	
VE2		Thread ANSI 1½ NPT, 316Ti	
YYY		Special version, to be specified	
70	Window transmission:		
	1	PTFE	
	2	Ceramic	
	9	Special version, to be specified	

FDR56 -

Notes on product structure

For the device version FDR56-BA*****, the following limitations apply:

- **Housing (40):** (A) not permitted
- **Electrical connection (50):** only (A) permitted
- **Process connection (60):** (XFA) and (VEA) not permitted
- **Window transmission (70):** only (1) permitted

For the device version FDR56-IA*****, the following limitations apply:

- **Housing (40):** (A) not permitted
- **Process connection (60):** (XFA) and (VEA) not permitted
- **Window transmission (70):** only (1) permitted

For device versions FDR56-***B*** and FDR56-***C***, the following limitations apply:

- **Process connection (60):** (XFA) and (VEA) not permitted

Ordering information for
FQR56 Soliwave emitter

10	Approval:			
	AA	Non-hazardous areas		
	BA	ATEX II 1/2D Ex ta/tb IIIC T102°C Da/Db IP66 ATEX II 2D Ex tb IIIC T102°C Db IP66		
	IA	IECEX Ex ta/tb IIIC T102°C Da/Db IP66 IECEX Ex tb IIIC T102°C Db IP66		
	99	Special version, to be specified		
20	Power supply:			
	A	85–253 VAC, 50/60 Hz		
	E	20–60 VDC 20–30 VAC, 50/60 Hz		
	Y	Special version, to be specified		
30	Housing:			
	A	F16 polyester, IP66		
	B	F15 stainless steel hygiene, IP66		
	Y	Special version, to be specified		
40	Electrical connection:			
	A	Gland M20		
	D	Thread ½ NPT		
	Y	Special version, to be specified		
50	Process connection:			
	XFA	Thread EN 10226 R 1½, aluminum		
	VEA	Thread ANSI 1½ NPT, aluminum		
	XF2	Thread EN 10226 R 1½, 316Ti		
	VE2	Thread ANSI 1½ NPT, 316Ti		
	YYY	Special version, to be specified		
60	Window transmission:			
	1	PTFE		
	2	Ceramic		
	9	Special version, to be specified		

FQR56 -

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Notes on product structure

For the device version FQR56-BA***** the following limitations apply:

- **Housing (30):** (A) not permitted
- **Electrical connection (40):** only (A) permitted
- **Process connection (50):** (XFA) and (VEA) not permitted
- **Window transmission (60):** only (1) permitted

For the device version FQR56-IA*****, the following limitations apply:

- **Housing (30):** (A) not permitted
- **Process connection (50):** (XFA) and (VEA) not permitted
- **Window transmission (60):** only (1) permitted

For the device version FQR56-**B****, the following limitations apply:

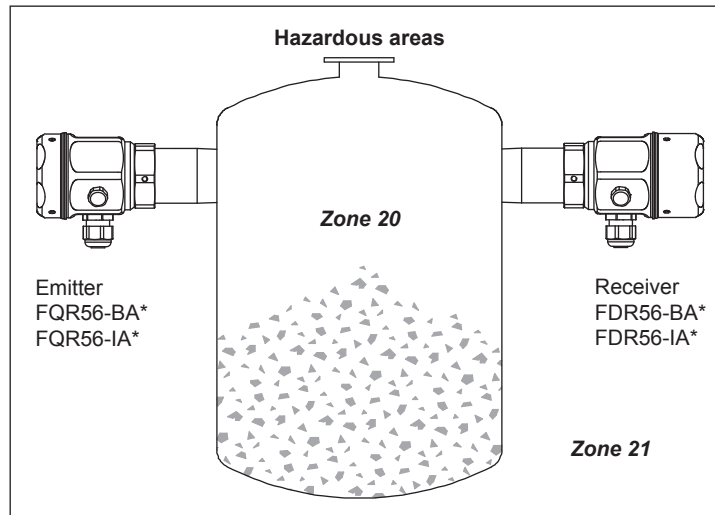
- **Process connection (50):** (XFA) and (VEA) not permitted

Safety instructions

General safety instructions for electrical equipment for hazardous areas

- Install it according to manufacturer's specifications and the standards and regulations applicable in your area.
- Installation, electrical connection, commissioning, operation and, if necessary, maintenance may be carried out only by trained specialists authorized to do so by the facility's owner-operator.
- Do not operate the devices of the microwave barrier outside of the electrical, thermal or mechanical characteristic quantities.
- For additional safety instructions, refer to the XA00509F/97/a3 (ATEX) or XA00543F/97/en (IECEX)

Zone classification



Environment

- | | |
|--|---|
| Ambient temperature | ■ -40°C to +70°C |
| Storage temperature | ■ -40°C to +80°C |
| Degree of protection | <ul style="list-style-type: none"> ■ With closed housing: IP 66 ■ With open housing: IP 20 |
| Electromagnetic compatibility (EMC) | <ul style="list-style-type: none"> ■ Interference Emission to EN 61326, Electrical Equipment Class B ■ Interference Immunity to EN 61326, Appendix A (Industrial) |

Process conditions

- | | |
|----------------------------|--|
| Process temperature | <ul style="list-style-type: none"> ■ -40°C to +70°C (without optional adapter for temperature reduction) ■ -40°C to +450°C (with optional adapter for temperature reduction, see "Accessories") |
| Process pressure | <ul style="list-style-type: none"> ■ 50 to 680 kPa absolute (0.5 to 6.8 bar absolute)
(Applies only when FQR56 emitter or FDR56 receiver is installed directly in the process.) ■ 80 to 510 kPa absolute (0.8 to 5.1 bar absolute)
(Applies only when using the optional adapter for temperature reduction.) |

Accessories

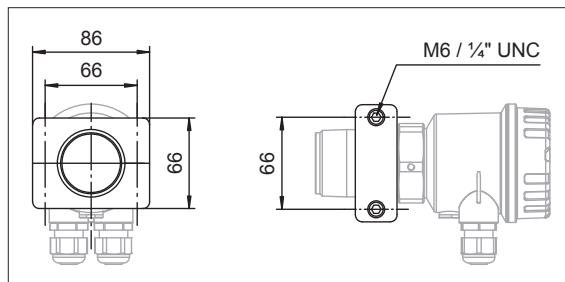
Mounting bracket

The FQR56 emitter and FDR56 receiver can be easily installed on existing frames using a mounting bracket.

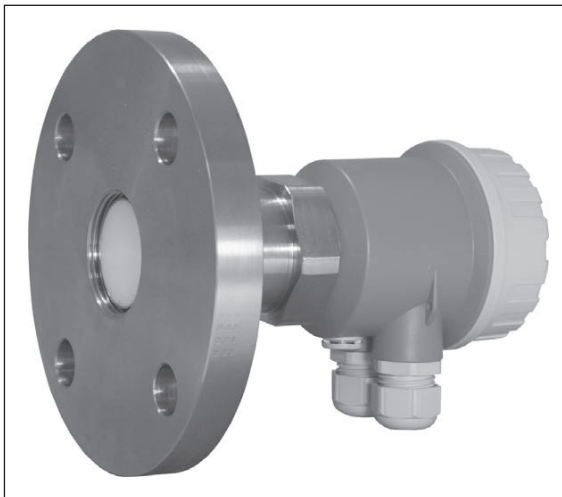


Mounting bracket for frame mounting

- Aluminum material: Part number 52017501
- Plastic material: Part number 52017502

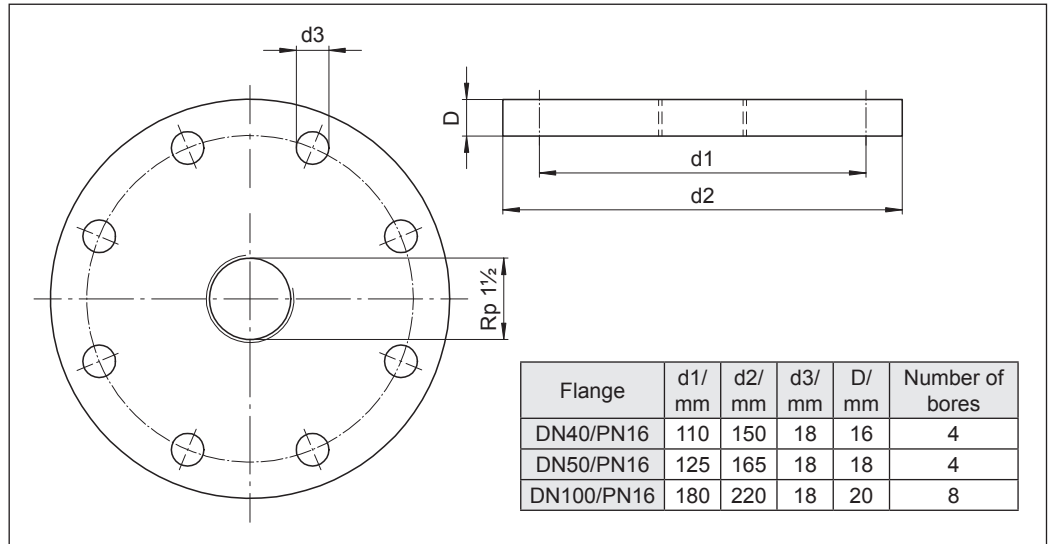


Installation flanges, material: 316Ti (stainless steel)



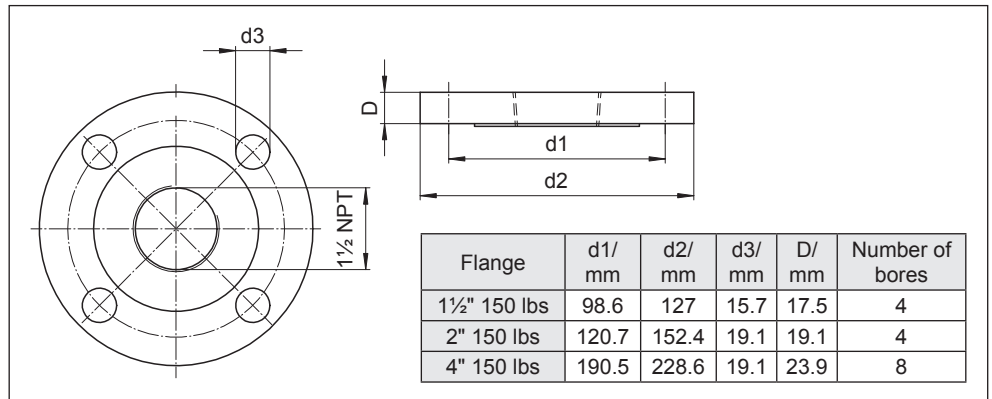
Connection dimensions to DIN EN 1092-1, with Rp 1½ internal thread:

- | | |
|---|----------------------|
| ■ DN40 PN16 | Part number 71006348 |
| with inspection certificate to EN 10204-3.1 | Part number 71108383 |
| ■ DN50 PN16 | Part number 71006350 |
| with inspection certificate to EN 10204-3.1 | Part number 71108388 |
| ■ DN100 PN16 | Part number 71006352 |
| with inspection certificate to EN 10204-3.1 | Part number 71108390 |



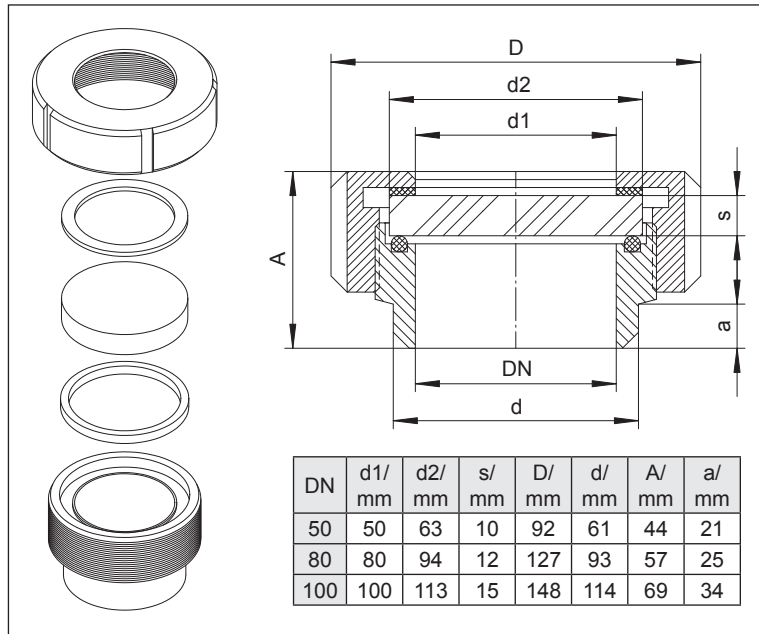
Connection dimensions to ANSI/ASME B16.5, with 1½ NPT internal thread:

- 1½" 150 lbs
with inspection certificate to EN 10204-3.1
Part number 71006349
Part number 71108387
- 2" 150 lbs
with inspection certificate to EN 10204-3.1
Part number 71006351
Part number 71108389
- 4" 150 lbs
with inspection certificate to EN 10204-3.1
Part number 71006353
Part number 71108391



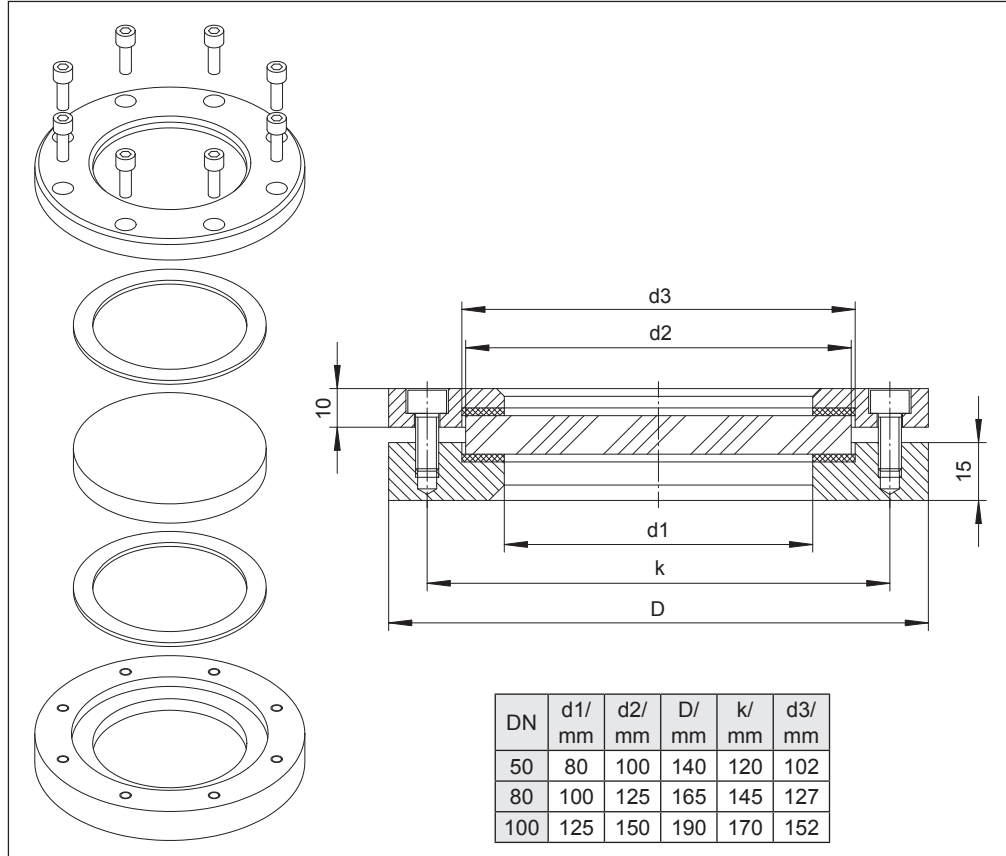
Sight glass fitting

Screw-type fitting similar to DIN 11851, materials: stainless steel 304, silicone and C4400, Pmax = 600 kPa (6 bar), Tmax = 200°C, borosilicate glass, screw-on installation, thread adapter nut



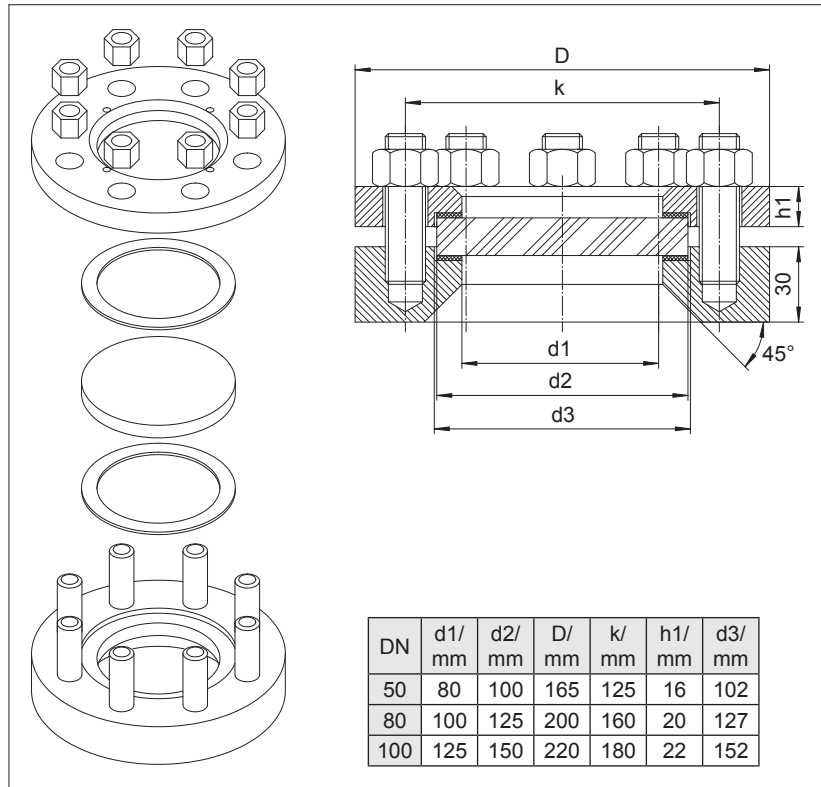
- DN 50, part number 71026440
- DN 80, part number 71026441
- DN 100, part number 71026442

Weld-in fitting for unpressurized containers, materials: stainless steel 316Ti and silicone, Tmax = 200°C, borosilicate glass, screw-on installation



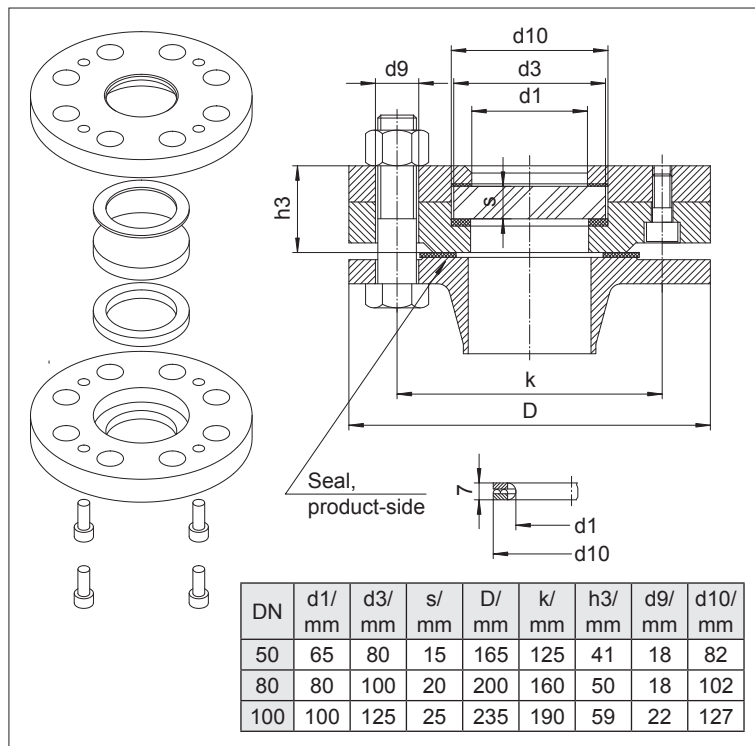
- DN 50, part number 71026443
- DN 80, part number 71026444
- DN 100, part number 71026445

Weld-in fitting to DIN 28120, materials: stainless steel 316Ti/321 and silicone, Pmax = 1 MPa (10 bar), Tmax = 200°C, borosilicate glass, screw-on installation



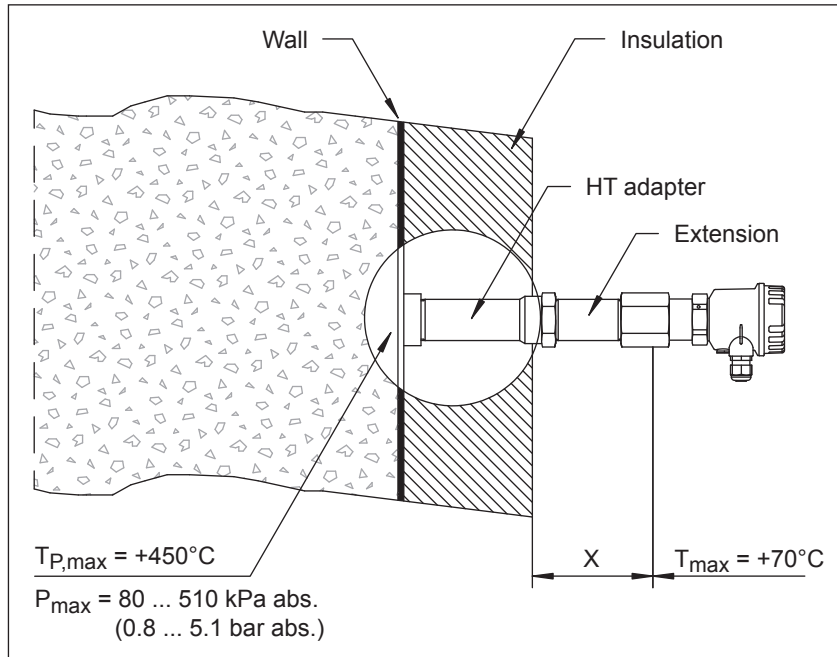
- DN 50, part number 71026446
- DN 80, part number 71026447
- DN 100, part number 71026448

Flange fitting to DIN 28121 for screwing onto existing counterflanges, materials: stainless steel 316Ti, PTFE and C4400, Pmax = 2.5 MPa (25 bar), Tmax = 200°C, borosilicate glass



- DN 50, part number 71026449
- DN 80, part number 71026450
- DN 100, part number 71026451

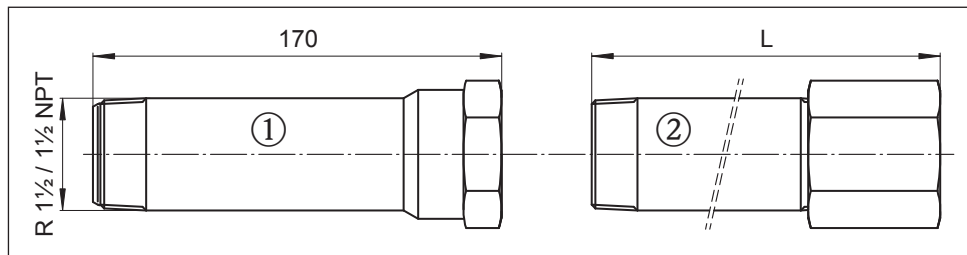
High-temperature application For applications with process temperatures up to +450°C, the temperature reduction to max. +70°C takes place on the microwave barrier with a corresponding high-temperature adapter (with extension where necessary). The length of the adapter is based on the insulation thickness to be penetrated (if present) and the ambient conditions at the measuring point.



Note:

- To maintain the maximum temperature of +70°C at the FQR56/FDR56, we recommend a minimum difference (**X**) of 200 mm between the process or the insulation and the devices.
- The individual extensions can also be combined in any way desired.
- Each high-temperature adapter results in a reduction of the range.

High-temperature adapter and extension



HT adapter ① with flush-mounted ceramic disk:

- Thread R 1½ or Rp 1½, 55mm hex, 316Ti/1.4571
Part number 71113441
- Thread 1½ NPT, 55mm hex, 316Ti/1.4571
Part number 71113449

Extension for HT adapter ②:

- Thread R 1½ or Rp 1½, 55mm hex, 316Ti/1.4571
L = 225 mm Part number 71113450
L = 325 mm Part number 71113451
L = 525 mm Part number 71113452
- Thread 1½ NPT, 55mm hex, 316Ti/1.4571
L = 225 mm Part number 71113453
L = 325 mm Part number 71113454
L = 525 mm Part number 71113455

Certificates and approvals

CE mark	The Soliwave microwave barrier is in conformity with the statutory requirements of the EC Directives. The manufacturer confirms successful testing of the device by affixing to it the CE mark.
Radio approval	R&TTE to EN 300440-2
Ex approval	ATEX II 1/2D or IECEx
Other standards and guidelines	Directive 1999/05/EC Article 3.1 (a) and 3.1 (b) and the included Directives 73/23/EEC and 89/336/EEC

Supplementary Documentation

Operating Instructions (KA)	Soliwave FQR56/FDR56 KA00291F/97/a6
Safety instructions	Soliwave FQR56/FDR56-BA* XA00509F/97/a3 Soliwave FQR56/FDR56-IA* XA00543F/97/en

Subject to modifications and amendments

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