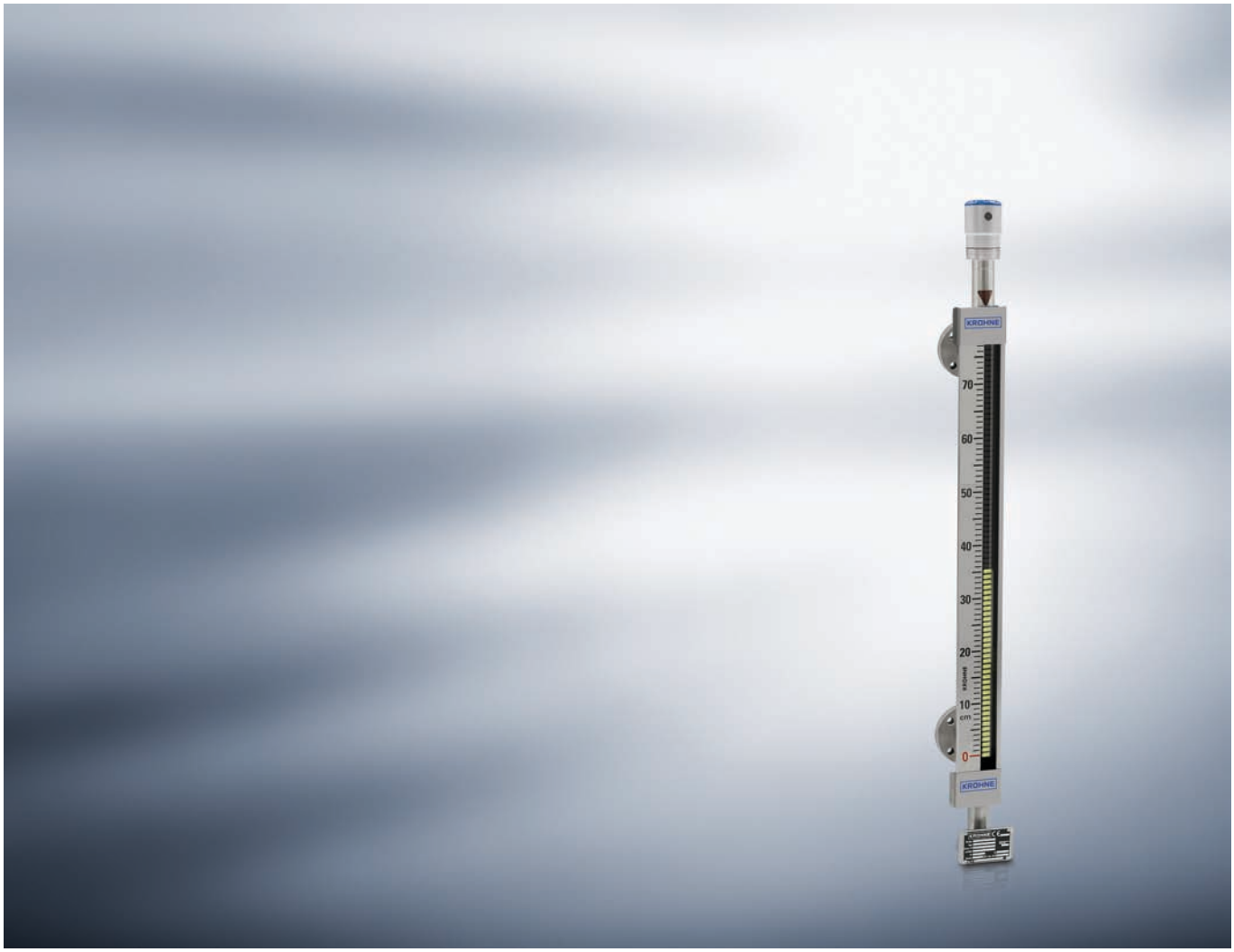

OPTIWAVE 1010 Technical Datasheet

Radar (FMCW) Level Transmitter for bypass chambers and magnetic level indicators (BM 26 Advanced)

- Device welded to a bypass chamber with an optional IP68 level indicator (BM 26 Advanced) – for the continuous measurement of clean liquids
- Device is configured and ready to use before it leaves the factory
- Measuring distance up to 8 m / 26.2 ft

1.1 The FMCW radar level transmitter for bypass chambers

The OPTIWAVE 1010 is a non-contact FMCW radar welded to a bypass chamber with an optional IP68 level indicator (BM 26 Advanced). It continuously measures the distance and level of clean liquids.

① OPTIWAVE 1010 radar level transmitter
② Welded connection (matching element)
③ BM 26 Advanced magnetic level indicator (MLI) or bypass chamber
④ Standard aluminium housing
⑤ Aluminium housing with distance piece
⑥ Stainless steel housing

Highlights

- 2-wire, loop-powered, HART®, 6 GHz Radar (FMCW) Level Transmitter for clean liquids
- Welded to a bypass chamber or BM 26 Advanced MLI
- Device is configured and ready to use before it leaves the factory
- Adjustments possible using HART® communication / DTM / DDs
- ±5 mm / 0.2¨ accuracy
- Measuring distance up to 8 m / 26.2 ft
- Metaglas® or Metapeek seal (dual process seal system)
- Max. process conditions +150°C / +302°F and 40 barg / 580 psig
- No minimum dielectric constant when using a float

Industries

- Chemical market
- Power
- Water & Wastewater
- Automotive
- HVACR (heating, ventilation, air conditioning and refrigeration)

Applications

- Raw material storage
- Water hammer arresters
- Liquefied gas
- Hydraulic oil
- Cooling water and steam condensates

1.2 Overview

Standard aluminium housing

- Max. process connection temperature: +100°C / +212°F
- Max. process pressure: 16 barg / 232 psig
- Metapeek process seal

Aluminium housing with distance piece

- Max. process connection temperature: +150°C / +302°F
- Max. process pressure: 40 barg / 580 psig
- Metaglas® process seal

Stainless steel housing

- Max. process connection temperature: +120°C / +248°F
- Max. process pressure: 40 barg / 580 psig
- Metaglas® process seal

1.3 Measuring principle

A radar signal is emitted via an antenna, reflected from the product surface and received after a time t. The radar principle used is FMCW (Frequency Modulated Continuous Wave).

The FMCW-radar transmits a high frequency signal whose frequency increases linearly during the measurement phase (called the frequency sweep). The signal is emitted, reflected on the measuring surface and received with a time delay, t. Delay time, t=2d/c, where d is the distance to the product surface and c is the speed of light in the gas above the product.

For further signal processing the difference Δf is calculated from the actual transmitted frequency and the received frequency. The difference is directly proportional to the distance. A large frequency difference corresponds to a large distance and vice versa. The frequency difference Δf is transformed via a Fourier transformation (FFT) into a frequency spectrum and then the distance is calculated from the spectrum. The level results from the difference between the maximum distance and the measured distance.

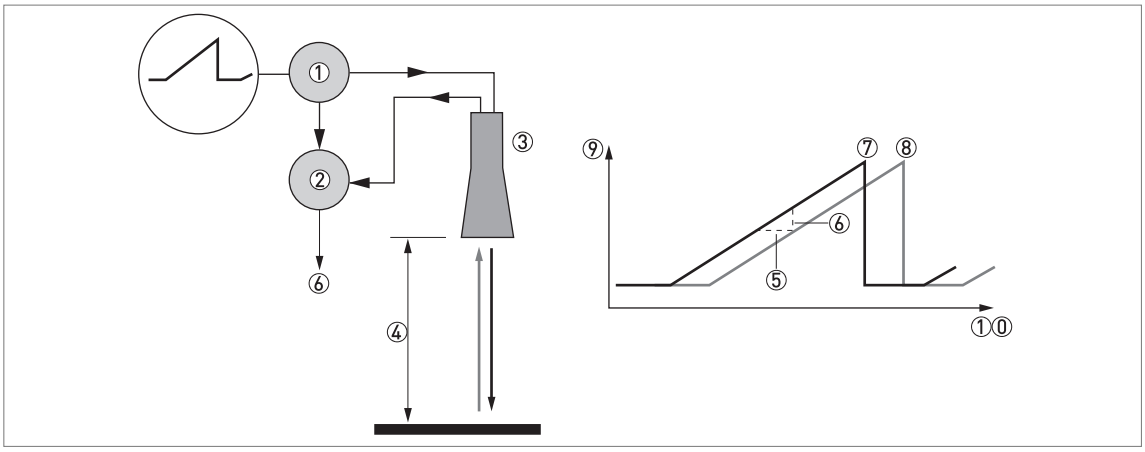

Figure 1-1: Measuring principle of FMCW radar

① Transmitter
② Mixer
③ Antenna
④ Distance to product surface, where change in frequency is proportional to distance
⑤ Differential time delay, Δt
⑥ Differential frequency, Δf
⑦ Frequency transmitted
⑧ Frequency received
⑨ Frequency
①⓪ Time

2.1 Technical data

- *The following data is provided for general applications. If you require data that is more relevant to your specific application, please contact us or your local sales office.*
- *Additional information (certificates, special tools, software,...) and complete product documentation can be downloaded free of charge from the website (Downloadcenter).*

Measuring system

Measuring principle	2-wire loop-powered level transmitter; C-band (6 GHz) FMCW radar
Application range	Level indication of liquids in applications up to 40 barg / 580 psig
Primary measured value	Distance to the surface of the liquid (or the top of the float, if the liquid has a low dielectric constant)
Secondary measured value	Level of the liquid in the bypass chamber

Design

Construction	The measurement system consists of a bypass chamber, a signal converter and an optional float
Measuring range	0.3...5.6 m / 0.98...18.4 ft (max. 8 m / 26.2 ft)
Top dead zone	Minimum value: 300 mm / 11.8¨ from the matching element
User interface	
User interface	PACTware™

Measuring accuracy

Repeatability	±2 mm / ±0.08¨
Accuracy	Standard: ±10 mm / ±0.4¨ without calibration or with a 2-point calibration Option: ±5 mm / ±0.2¨ with a 5-point calibration¨ ①
Influence of temperature on the bypass chamber	0.01 mm/1 m of distance/°C (relative to +25°C) / 0.000216¨/1 ft of distance/°F (relative to +77°F)
Reference conditions acc. to DIN EN 61298-1	
Temperature	+18...+30°C / +64...+86°F
Pressure	860...1060 mbara / 12.5...15.4 psia
Relative air humidity	45...75%
Target	A special float with a target is installed in the bypass chamber and used to calibrate the device

Operating conditions

Temperature	
Ambient temperature	-40...+85°C / -40...+185°F Ex: see supplementary operating instructions or approval certificates
Storage temperature	-40...+85°C / -40...+185°F

Process temperature	**Standard aluminium version with Metapeek process seal:** with a Kalrez® 6375 gasket: -20...+100°C / -4...+212°F with a FKM/FPM gasket: -40...+100°C / -40...+212°F with a EPDM gasket: -40...+100°C / -40...+212°F ②
	Aluminium version with distance piece and Metaglas® process seal: with a Kalrez® 6375 gasket: -20...+150°C / -4...+302°F with a FKM/FPM gasket: -40...+150°C / -40...+302°F with a EPDM gasket: -40...+150°C / -40...+302°F ③
	Stainless steel version with Metaglas® process seal: with a Kalrez® 6375 gasket: -20...+120°C / -4...+248°F with a FKM/FPM gasket: -40...+120°C / -40...+248°F with a EPDM gasket: -40...+120°C / -40...+248°F ③
	The process connection temperature must agree with the temperature limits of the gasket material. Ex: see supplementary operating instructions or approval certificates
Pressure	
Process pressure	**Standard (with Metapeek):** -1...16 barg / -14.5...232 psig
	With Metaglas®: -1...40 barg / -14.5...580 psig
Other conditions	
Minimum dielectric constant (ε_r)	Not applicable. If ε_r <3, a float with a target is used.
Ingress protection	IEC 60529: IP66/67
Maximum rate of change	10 m/min / 32.8 ft/min
Measurement update rate	Typically 2 measurement cycles/s

Installation conditions

Dimensions and weights	For dimensions and weights data, refer to *Dimensions and weights* on page 14 and the technical data sheet for the BM 26 Basic / Advanced.

Materials

Housing	Standard: Polyester-coated aluminium
	Option: Stainless steel (1.4408 / 316)
Wetted materials	Standard: Stainless steel (1.4404 / 316L) bypass chamber / magnetic level indicator with a PEEK cone in the matching element and a FKM/FPM, EPDM or Kalrez® 6375 O-ring
Process seal	Standard Aluminium: Metapeek process seal with O-ring
	Aluminium version with distance piece: Metaglas® process seal with O-ring
	Stainless steel version: Metaglas® process seal with O-ring
Cable gland	Standard: none
	Options: Plastic (Non-Ex: black, Ex ia-approved: blue); nickel-plated brass; stainless steel
Weather protection (option)	Stainless steel (1.4404 / 316L)

Process connections

The device is welded to the top of the bypass chamber of the magnetic level indicator. For more data about the process connections of the magnetic level indicator, refer to the technical data sheet for the BM 26 Basic / Advanced.

Electrical connections

Power supply	**Non-Ex, Ex db- and Ex tb-approved devices** 14.5…32 VDC; min./max. value for an output of 22 mA at the terminals
	Ex ia-approved devices 14.5…30 VDC; min./max. value for an output of 22 mA at the terminals
Maximum current	22 mA
Current output load	R_L [Ω] ≤ ((U_{ext} -14.5 V)/22 mA). For more data, refer to *Minimum power supply voltage* on page 13.
Cable entry	Standard: M20×1.5; Option: ½ NPT
Cable gland	Standard: none
	Options: M20×1.5 (cable diameter: 6...10 mm / 0.2...0.39"); others are available on request
Cable entry capacity (terminal)	0.5…2.5 mm²

Input and output

Current output / HART®	
Output signal	4…20 mA HART® or 3.8…20.5 mA acc. to NAMUR NE 43 ④
Resolution	±3 µA
Analog temperature drift	Typically 50 ppm/K (150 ppm/K maximum)
Digital temperature drift	Typically ±5 mm / 0.2" – max. 15 mm / 0.59" for the full temperature range
Error signal	High: 22 mA; Low: 3.6 mA acc. to NAMUR NE 43

Approvals and certification

CE	The device meets the essential requirements of the EU Directives. The manufacturer certifies successful testing of the product by applying the CE marking.
	For more data about the EU Directives and European Standards related to this device, refer to the EU Declaration of Conformity. You can find this documentation on the DVD-ROM supplied with the device or it can be downloaded free of charge from the website (Download Center).
Vibration resistance	EN 60068-2-6 / IEC 61298-3 10-82.2 Hz: 0.15 mm; 82.2-1000 Hz: 20 m/s²
Explosion protection	
ATEX (Ex ia or Ex db or Ex tb) KIWA 15ATEX0022 X	II 1/2 G Ex ia IIC Tx Ga/Gb; ⑤
	II 2 D Ex ia IIIC T120°C Db (stainless steel housing only);
	II 1/2 G Ex db IIC T6...T4 Ga/Gb (stainless steel housing only);
	II 2 D Ex tb IIIC T120°C Db (stainless steel housing only)
IECEx (Ex ia or Ex db or Ex tb) IECEx KIW 15.0012 X	Ex ia IIC Tx Ga/Gb; ⑤
	Ex ia IIIC T120°C Db (stainless steel housing only);
	Ex db IIC T6...T4 Ga/Gb (stainless steel housing only);
	Ex tb IIIC T120°C Db (stainless steel housing only)

Other standards and approvals	
EMC	Electromagnetic Compatibility (EMC) directive
Radio approvals	**EU** Radio Equipment directive
	FCC Rules Part 15
	Industry Canada License-exempt RSS-210
LVD	Essential requirements of Low-Voltage (LVD) directive
NAMUR	NAMUR NE 43 Standardization of the Signal Level for the Failure Information of Digital Transmitters
	NAMUR NE 53 Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
	NAMUR NE 107 Self-Monitoring and Diagnosis of Field Devices
Construction code	Option: NACE MR0175 / ISO 15156; NACE MR0103

① For more data, refer to the "Measuring accuracy" section in this chapter

② Kalrez® is a registered trademark of DuPont Performance Elastomers L.L.C. The process connection temperature must agree with the temperature limits of the gasket material.

③ Metaglas® is a registered trademark of Herberts Industrieglas, GMBH & Co., KG. The process connection temperature must agree with the temperature limits of the gasket material.

④ HART® is a registered trademark of the HART Communication Foundation

⑤ Tx = T6...T4 (without a distance piece) or T6...T3 (with a distance piece)

2.2 Measuring accuracy

Use these graphs to find the measuring accuracy for a given distance from the transmitter.

Measuring accuracy without calibration or after 2-point calibration (with a 2-point calibration certificate)

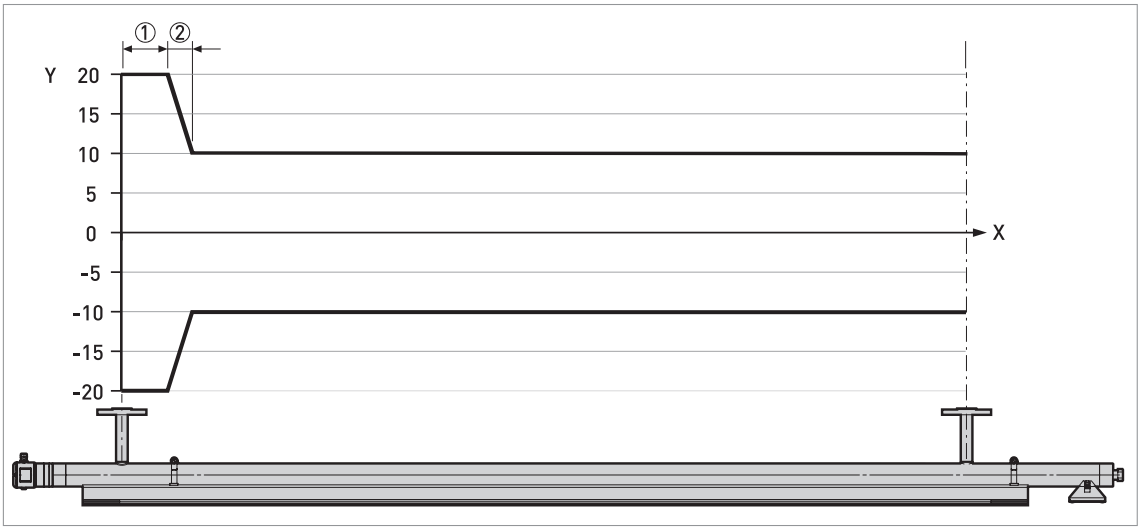

Figure 2-1: Measuring accuracy / distance from the process connections of the bypass chamber, in mm

X: Distance from the top process connection [mm]
Y: Accuracy [+yy mm / -yy mm]
①: 200 mm
②: Float offset. Refer to the "Basic parameters" menu in the DTM for the float offset value.

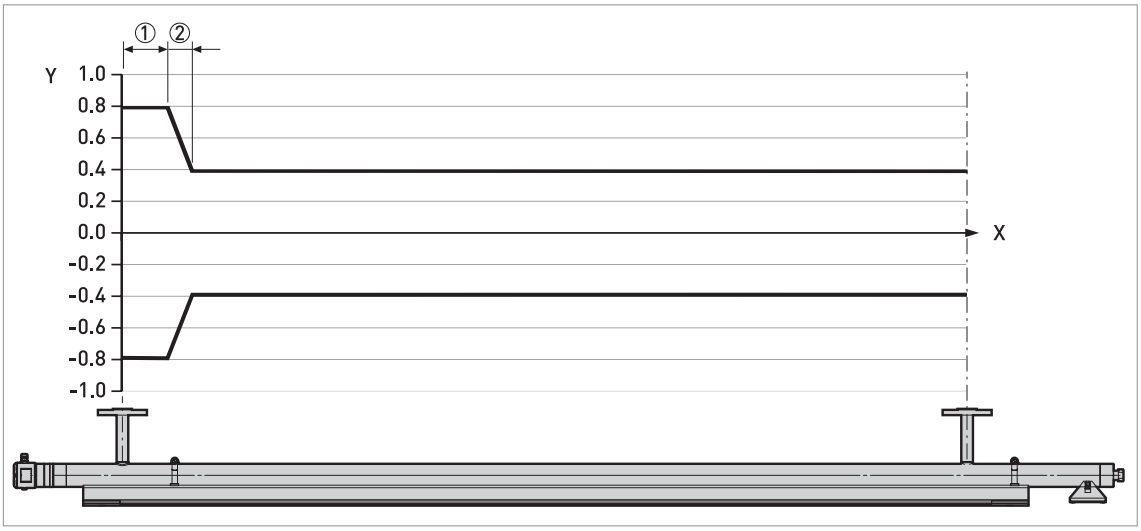

Figure 2-2: Measuring accuracy / distance from the process connections of the bypass chamber, in inches

X: Distance from the top process connection [inches]
Y: Accuracy [+yy¨ / -yy¨]
①: 7.9¨
②: Float offset. Refer to the "Basic parameters" menu in the DTM for the float offset value.

Measuring accuracy after 5-point calibration (with a 5-point calibration certificate)

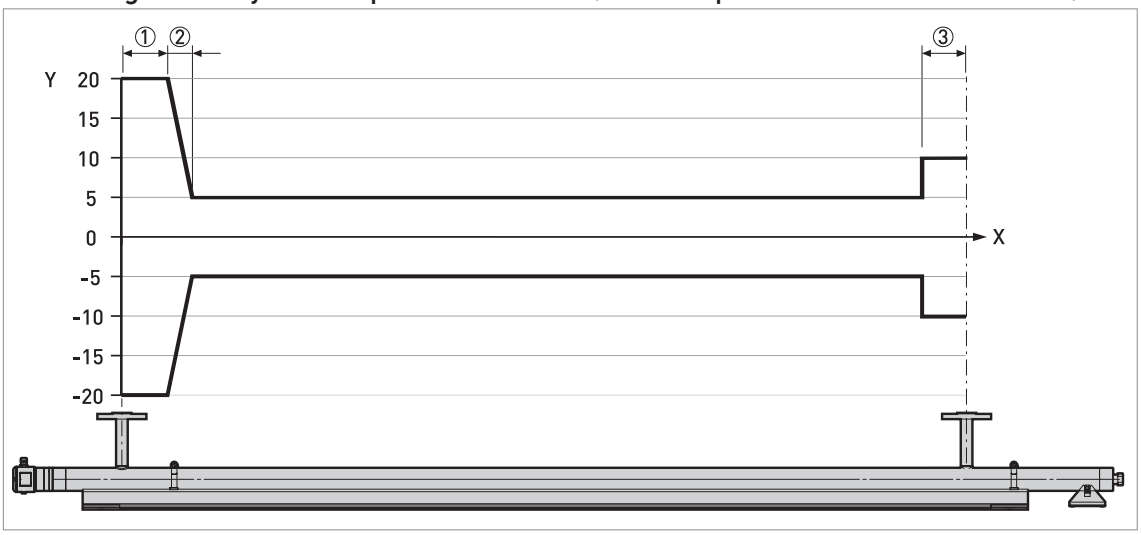

Figure 2-3: Measuring accuracy / distance from the process connections of the bypass chamber, in mm

X: Distance from the top process connection [mm]
Y: Accuracy [+yy mm / -yy mm]
①: 200 mm
②: Float offset. Refer to the "Basic parameters" menu in the DTM for the float offset value.
③: 200 mm

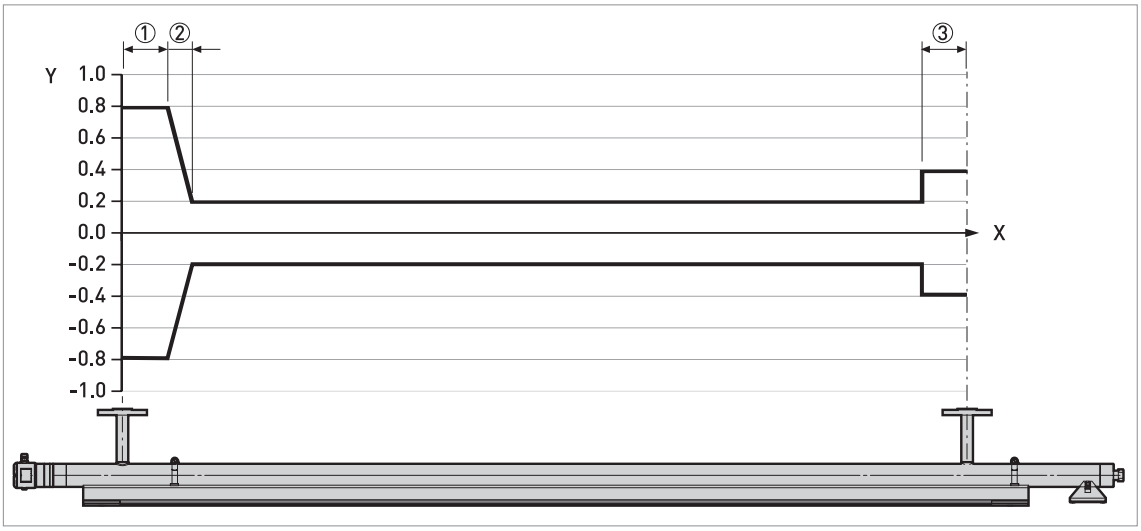

Figure 2-4: Measuring accuracy / distance from the process connections of the bypass chamber, in inches

X: Distance from the top process connection [inches]
Y: Accuracy [+yy¨ / -yy¨]
①: 7.9¨
②: Float offset. Refer to the "Basic parameters" menu in the DTM for the float offset value.
③: 7.9¨

2.3 Minimum power supply voltage

Use these graphs to find the minimum power supply voltage for a given current output load.

Non-Ex devices or devices with a Hazardous Location approval (Ex db / Ex tb)

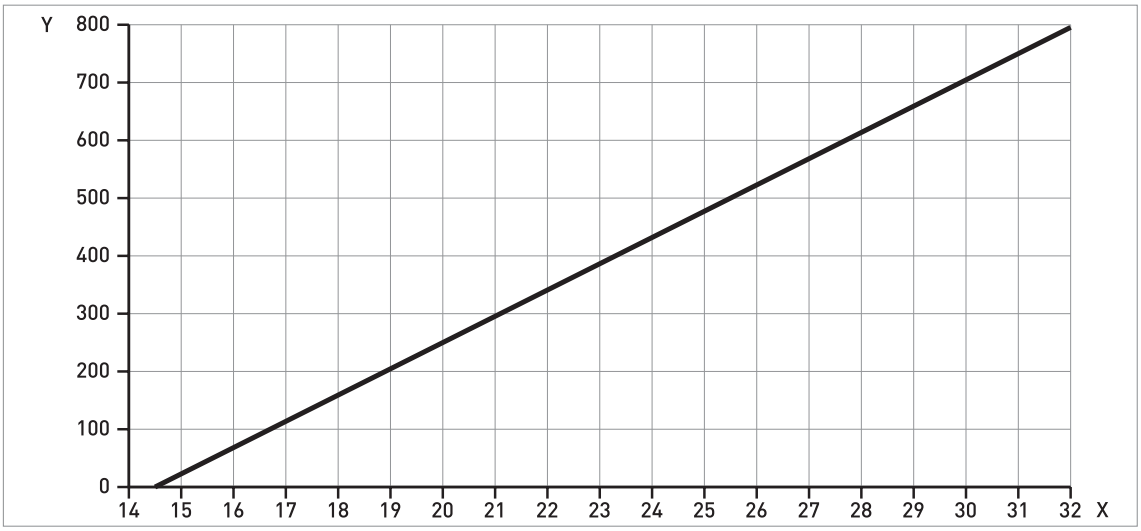

Figure 2-5: Minimum power supply voltage for an output of 22 mA at the terminal (Non-Ex devices or devices with a Hazardous Location approval (Ex db / Ex tb))

X: Power supply U [VDC]
Y: Current output load R_L [Ω]

Devices with a Hazardous Location approval (Ex ia)

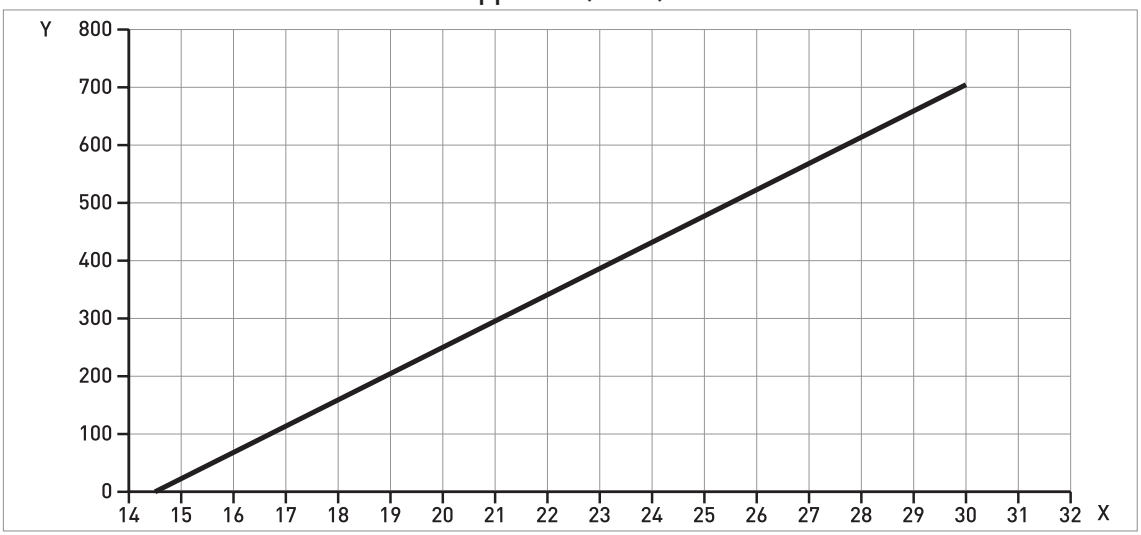

Figure 2-6: Minimum power supply voltage for an output of 22 mA at the terminal (devices with a Hazardous Location approval (Ex ia))

X: Power supply U [VDC]
Y: Current output load R_L [Ω]

2.4 Dimensions and weights

Device versions

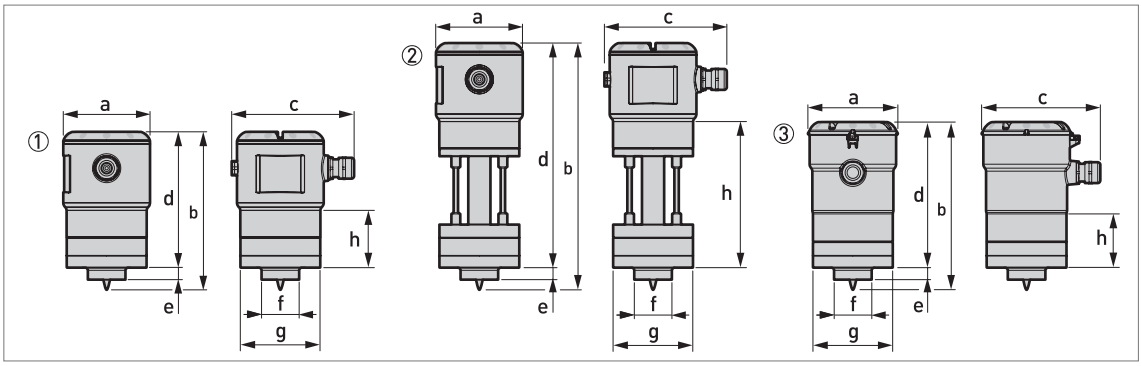

Figure 2-7: Device versions

① Non-Ex or Ex ia-approved device (aluminium housing – standard version)
② Non-Ex or Ex ia-approved device (aluminium housing – with distance piece)
③ Non-Ex, Ex ia- Ex db- or Ex tb-approved device (stainless steel housing)

Device versions: Dimensions in mm and inches

Dimensions	Device versions					
	Aluminium: non-Ex or Ex ia-approved (standard)		Aluminium: non-Ex or Ex ia-approved (with distance piece)		Stainless steel: non-Ex, Ex ia, Ex db or Ex tb-approved	
	[mm]	[inches]	[mm]	[inches]	[mm]	[inches]
a	98	3.86	98	3.86	99.5	3.92
b	178	7.01	278	10.94	189	7.44
c	138	5.43	138	5.43	133	5.24
d	153	6.02	253	9.96	164	6.46
e	14	0.55	14	0.55	14	0.55
f	42.4	1.67	42.4	1.67	42.4	1.67
g	90	3.54	90	3.54	90	3.54
h	64.5	2.54	164	6.47	60	2.36

Weather protection

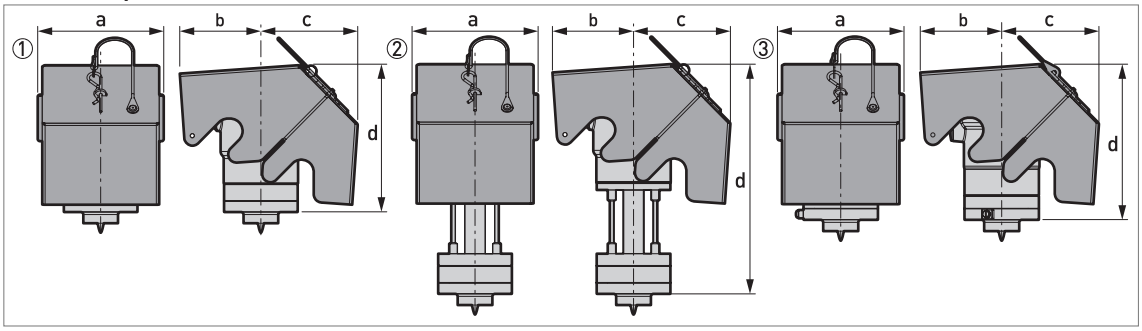

Figure 2-8: Device versions with the weather protection option

① Non-Ex or Ex ia-approved device (aluminium housing – standard version)
② Non-Ex or Ex ia-approved device (aluminium housing – with distance piece)
③ Non-Ex, Ex ia- Ex db- or Ex tb-approved device (stainless steel housing)

Devices with weather protection: Dimensions in mm and inches

Dimensions	Devices with weather protection					
	Aluminium: non-Ex or Ex ia-approved (standard)		Aluminium: non-Ex or Ex ia-approved (with distance piece)		Stainless steel: non-Ex, Ex ia, Ex db or Ex tb-approved	
	[mm]	[inches]	[mm]	[inches]	[mm]	[inches]
a	154	6.06	154	6.06	154	6.06
b	119	4.69	119	4.69	98	3.86
c	136	5.35	136	5.35	118	4.65
d	183	7.20	272	10.71	186	7.32

Weights

Type of device	Weights							
	Aluminium				Stainless steel			
	without weather protection		with weather protection		without weather protection		with weather protection	
	[kg]	[lb]	[kg]	[lb]	[kg]	[lb]	[kg]	[lb]
Non-Ex / intrinsically-safe (Ex ia)								
Standard	2.54	5.61	3.87	8.53	—	—	—	—
With distance piece	3.52	7.76	4.85	10.69	—	—	—	—
Non-Ex / intrinsically-safe (Ex ia) / Explosion proof (Ex db) / Protected by enclosure (Ex tb)								
Standard	—	—	—	—	3.85	8.49	5.18	11.42

3.1 Pre-installation requirements

Obey the precautions that follow to make sure that the device is correctly installed.

- Make sure that there is sufficient space on all sides.
- Protect the signal converter from direct sunlight.
- Do not subject the signal converter to heavy vibrations.

3.2 Pressure and temperature ranges

If the ambient temperature is more than +70°C / +158°F, there is a risk of injury if you touch the device. Use a protective cover or metallic grid to prevent injury.

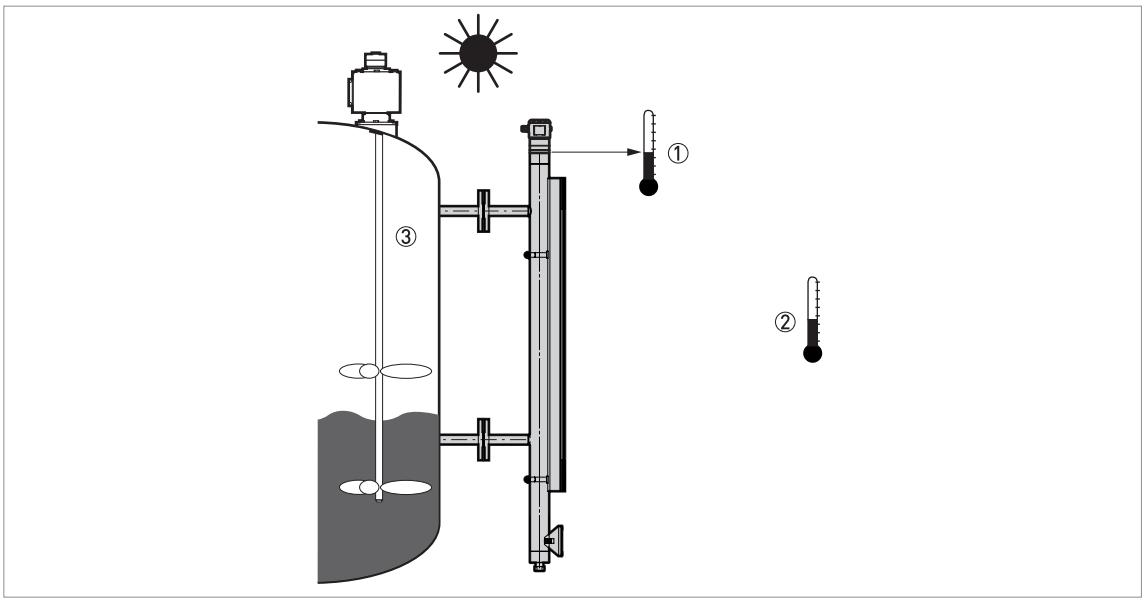

Figure 3-1: Pressure and temperature ranges

① Bypass chamber temperature
Non-Ex devices: Depends on the device versions and the seal material. Refer to the table that follows.
Ex devices: see supplementary operating instructions
② Ambient temperature
Non-Ex devices: -40...+85°C / -40...+185°F
Ex devices: see supplementary operating instructions
③ Process pressure
Depends on the type of seal and process connection. Refer to the table that follows.

Aluminium housing for non-Ex and Ex ia-approved devices

Version	Seal	Distance piece	Bypass chamber temperature		Process pressure	
			[°C]	[°F]	[barg]	[psig]
Metapeek	FKM/FPM with Metapeek	without	-40...+100	-40...+212	-1...16	-14.5...232
	Kalrez® 6375 with Metapeek	without	-20...+100	-4...+212		
	EPDM with Metapeek	without	-40...+100	-40...+212		
Metaglas® and distance piece	FKM/FPM with Metaglas®	with	-40...+150	-40...+302	-1...40	-14.5...580
	Kalrez® 6375 with Metaglas®	with	-20...+150	-4...+302		
	EPDM with Metaglas®	with	-40...+150	-40...+302		

Stainless steel housing for non-Ex , Ex ia-, Ex db- and Ex tb-approved devices

Version	Seal	Distance piece	Bypass chamber temperature		Process pressure	
			[°C]	[°F]	[barg]	[psig]
Metaglas®	FKM/FPM with Metaglas®	without	-40...+120	-40...+248	-1...40	-14.5...580
	Kalrez® 6375 with Metaglas®	without	-20...+120	-4...+248		
	EPDM with Metaglas®	without	-40...+120	-40...+248		

Ambient temperature / process temperature, in °C

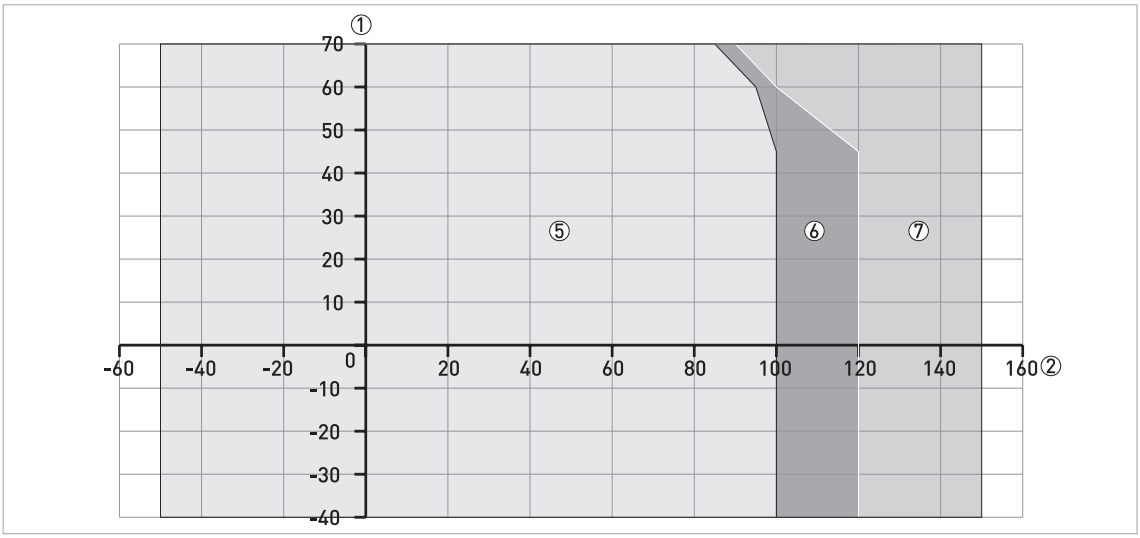

Figure 3-2: Ambient temperature / process temperature, in °C

Ambient temperature / process temperature, in °F

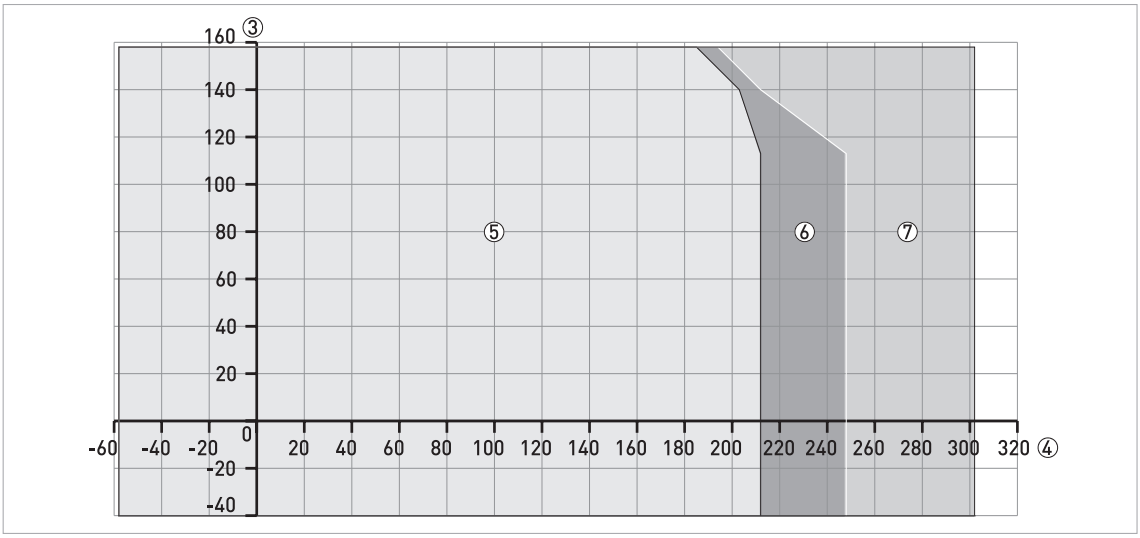

Figure 3-3: Ambient temperature / process temperature, in °F

① Maximum ambient temperature, °C
② Maximum process temperature, °C
③ Maximum ambient temperature, °F
④ Maximum process temperature, °F
⑤ Device with aluminium housing
⑥ Device with stainless steel housing
⑦ Device with aluminium housing and distance piece

The maximum ambient temperature for non-Ex devices is +85°C / +185°F. The process connection temperature must agree with the temperature limits of the gasket material.

3.3 Recommended mounting position

Follow these recommendations to make sure that the device measures correctly. They have an effect on the performance of the device.

Make sure that the cable glands are aligned with the process connections of the bypass chamber.

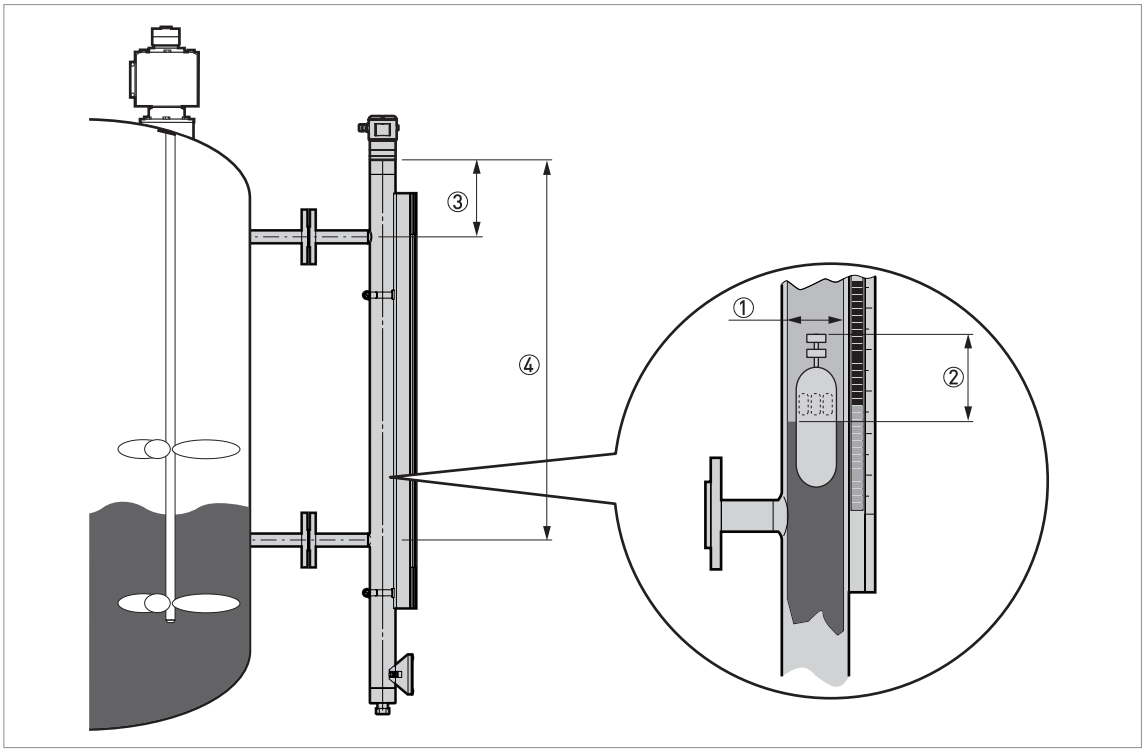

Figure 3-4: Recommended mounting position

① Internal tube diameter. Min. ... Max.: 38...56 mm / 1.50...2.20"
② Float offset (the distance between the surface of the liquid and the radar target on top of the float). Min. ... Max.: 0...200 mm / 0...7.87".
③ Distance to top process connection (bypass chamber) = minimum distance (refer to the "basic parameters" menu in the DTM)
④ Distance to bottom process connection (bypass chamber) = maximum distance (refer to the "basic parameters" menu in the DTM)

3.4 Mounting restrictions

Follow these recommendations to make sure that the device measures correctly. They have an effect on the performance of the device.

If the device uses a float to measure the level of the liquid, slowly pressurize the bypass chamber. A float can damage the PEEK cone of the radar level transmitter at the top of the bypass chamber.

If there are parasitic signals, the device will not measure correctly. Parasitic signals are caused by sudden changes in bypass chamber diameter in the path of the radar beam.

4.1 Electrical installation: 2-wire, loop-powered

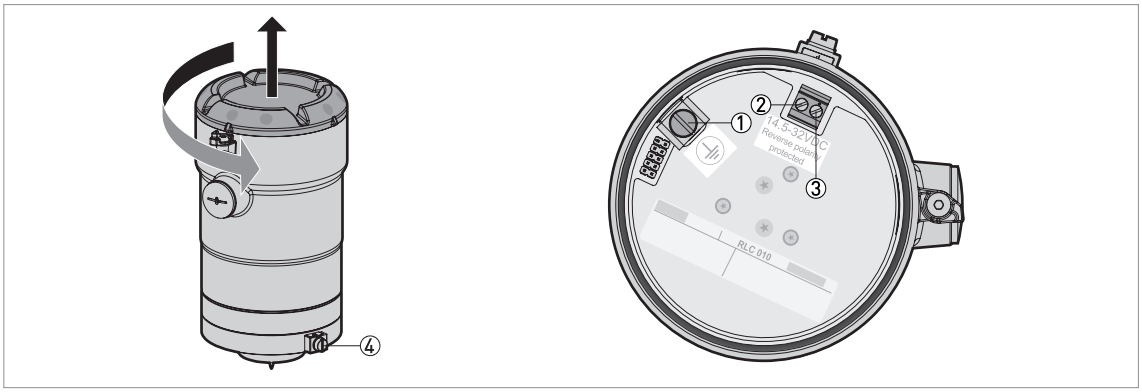

Figure 4-1: Terminals for electrical installation

① Grounding terminal in the housing (if the electrical cable is shielded)
② Current output terminal – polarity insensitive
③ Current output terminal – polarity insensitive
④ External ground connection

Electrical power to the output terminal energizes the device. The output terminal is also used for HART® communication.

4.2 Electrical connection for current output

4.2.1 Non-Ex devices

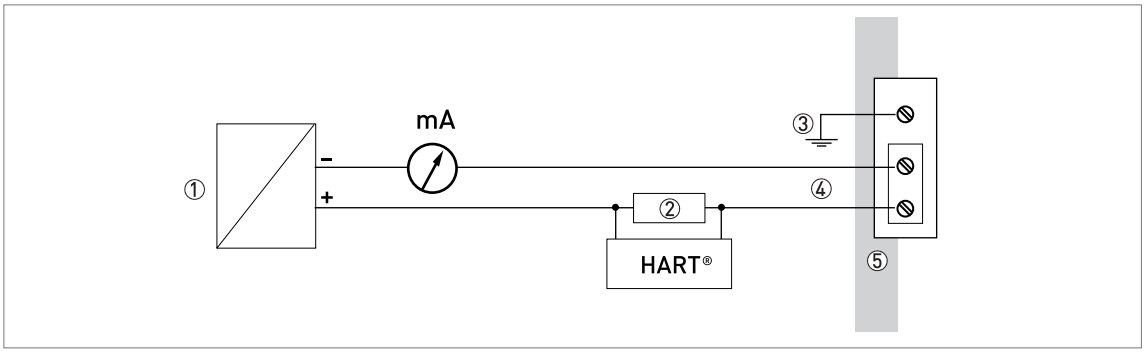

Figure 4-2: Electrical connections for non-Ex devices

① Power supply
② Resistor for HART® communication
③ Optional connection to the grounding terminal
④ Output: 14.5...32 VDC for an output of 22 mA at the terminal
⑤ Device

Electrical polarity has no effect on device operation.

4.2.2 Devices for hazardous locations

For electrical data for device operation in hazardous locations, refer to the related certificates of compliance and supplementary instructions (ATEX, IECEx etc.). You can find this documentation on the DVD-ROM delivered with the device or it can be downloaded free of charge from the website (Download Center).

4.3 Networks

4.3.1 General information

The device uses the HART® communication protocol. This protocol agrees with the HART® Communication Foundation standard. The device can be connected point-to-point. It can also operate in a network with a device address from 1 to 63.

The device output is factory-set to communicate point-to-point. To change the communication mode from **point-to-point** to **multi-drop**, refer to "HART" in the handbook.

4.3.2 Point-to-point connection

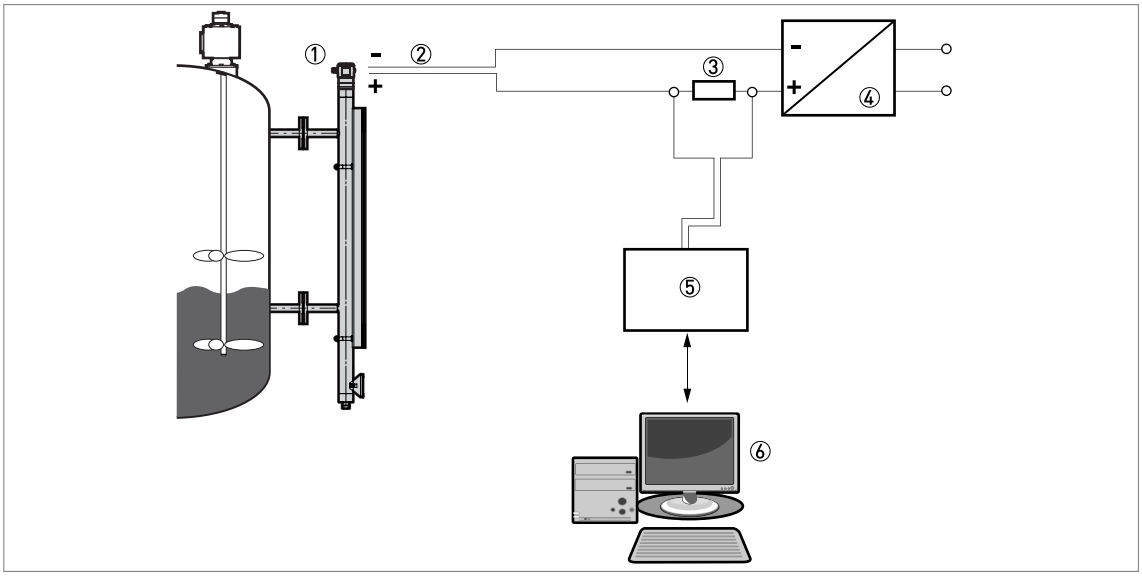

Figure 4-3: Point-to-point connection (non-Ex)

① Address of the device (0 for point-to-point connection)
② 4...20 mA + HART®
③ Resistor for HART® communication
④ Power supply
⑤ HART® converter
⑥ HART® communication software

4.3.3 Multi-drop networks

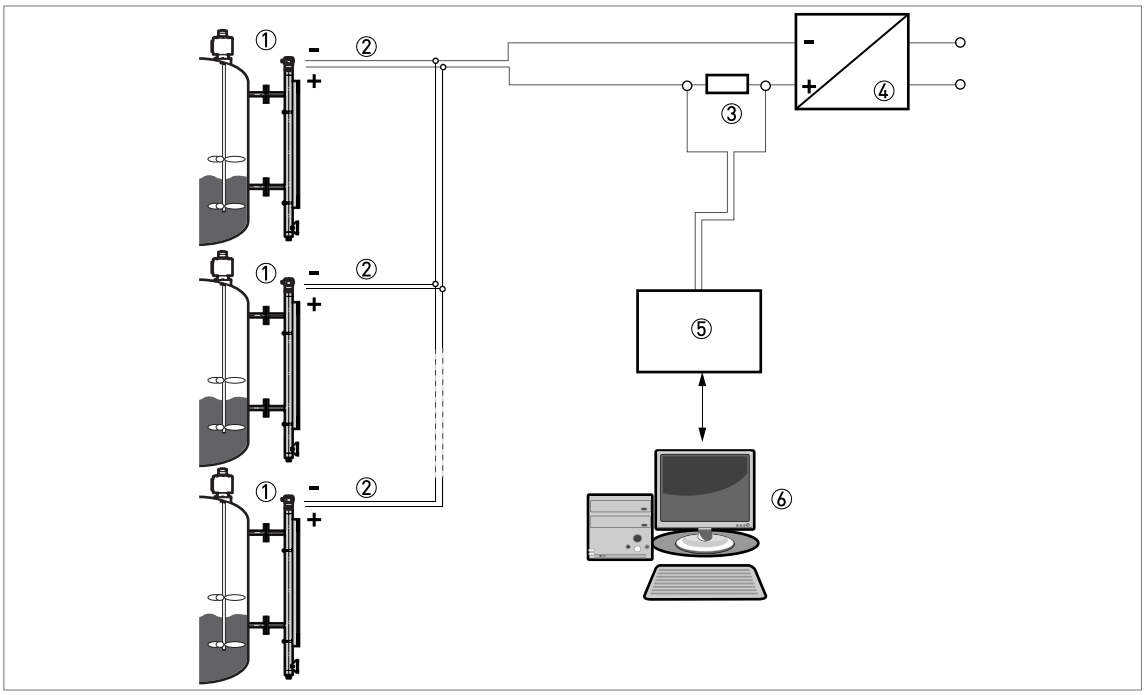

Figure 4-4: Multi-drop network (non-Ex)

① Address of the device (each device must have a different address in multidrop networks)
② 4 mA + HART®
③ Resistor for HART® communication
④ Power supply
⑤ HART® converter
⑥ HART® communication software

5.1 Order code

The measuring system has 2 parts:

- The OPTIWAVE 1010 radar (FMCW) level transmitter. Give the order code – refer to the table that follows.
- The BM26 Advanced (magnetic level indicator (MLI) or bypass chamber). Give the order code – refer to the table for the **Advanced version (with OPTIWAVE 1010)** in the BM26 Basic/Advanced technical data sheet

Make a selection from each column to get the full order code. The characters of the order code highlighted in light grey describe the standard.

VF01	4	**OPTIWAVE 1010 6 GHz Radar (FMCW) Level Transmitter for bypass chambers and magnetic level indicators (BM 26 ADVANCED)**			
		Converter version (Housing material – protection class)			
		1	OPTIWAVE 1010: Compact version (Aluminium – IP66 / IP67)		
		2	OPTIWAVE 1010: Compact version (Stainless steel – IP66 / IP67)		
		3	OPTIWAVE 1010: Compact version (Aluminium – IP66/67) with distance piece for electronic spare parts only		
			Approval ①		
			0	Without	
			1	ATEX II 1/2 G Ex ia IIC Tx Ga/Gb + II 2 D Ex ia IIIC T120°C ②	
			2	ATEX II 1/2 G Ex db IIC T6…T4 Ga/Gb + II 2 D Ex tb IIIC T120°C Db ③	
			6	IECEx Ex ia IIC Tx Ga/Gb + Ex ia IIIC T120°C Db ④	
			7	IECEx Ex db IIC T6…T4 Ga/Gb + Ex tb IIIC T120°C Db ⑤	
				Other approval	
				0	Without
				B	EAC Russia ⑥
				C	EAC Belarus ⑥
				K	EAC Kazakhstan ⑥
VF01	4				**Order code (complete this code on the pages that follow)**

					Process seal – Temperature / Pressure / Material / Remarks (material to be checked by the customer)																	
					0	Without																
					1	-40°C...+100°C (-40°F...+212°F) / -1...16 barg (-14.5...232 psig) / FKM/FPM / aluminium housing and Metapeek process seal																	
					2	-40°C...+100°C (-40°F...+212°F) / -1...16 barg (-14.5...232 psig) / EPDM / aluminium housing and Metapeek process seal																	
					3	-20°C...+100°C (-4°F...+212°F) / -1...16 barg (-14.5...232 psig) / Kalrez® 6375 / aluminium housing and Metapeek process seal																	
					5	-40°C...+150°C (-40°F...+302°F) / -1...40 barg (-14.5...580 psig) / FKM/FPM / aluminium housing, Metaglas® process seal and distance piece																	
					6	-40°C...+150°C (-40°F...+302°F) / -1...40 barg (-14.5...580 psig) / EPDM / aluminium housing, Metaglas® process seal and distance piece																	
					7	-20°C...+150°C (-4°F...+302°F) / -1...40 barg (-14.5...580 psig) / Kalrez® 6375 / aluminium housing, Metaglas® process seal and distance piece																	
					A	-40°C...+120°C (-40°F...+248°F) / -1...40 barg (-14.5...580 psig) / FKM/FPM / stainless steel housing and Metaglas® process seal																	
					B	-40°C...+120°C (-40°F...+248°F) / -1...40 barg (-14.5...580 psig) / EPDM / stainless steel housing and Metaglas® process seal																	
					C	-20°C...+120°C (-4°F...+248°F) / -1...40 barg (-14.5...580 psig) / Kalrez® 6375 / stainless steel housing and Metaglas® process seal																	
						Antenna: Matching element / Material																	
						0	Without																
						1	Metallic Horn for tube Ø42.4 × 2 / 316L																
							0	0	0	0	**Output**												
											1	2-wire / 4...20mA passive HART											
												Cable entry / Cable gland											
												1	M20×1.5 / Without										
												2	M20×1.5 / Plastic										
												3	M20×1.5 / Nickel-plated brass										
												4	M20×1.5 / Stainless steel										
												A	½ NPT (nickel-plated brass) / Without										
												B	½ NPT (stainless steel) / Without										
													Housing (Orientation / Display / Weather protection)										
													A	Vertical / Without / Without									
													D	Vertical / Without / With									
														0	**Version**								
															0	KROHNE (RAL 9006 / RAL 5005)							
															6	KROHNE USA (FCC)							
															A	KMIC L (for liquid applications)							
																0	0	0	**Calibration certificate**				
																			0	Without			
																			1	Calibration certificate 2 factory default points			
																			2	Calibration certificate 5 factory default points for accuracy ±5 mm (±0.2")			
VF01	4						0	0	0	0	1			0		0	0	0		**Order code (complete this code on the pages that follow)**			

																			TAG Number		
																			0	Without	
																			2	Tag No. on stainless steel plate (18 characters max.)	
																				Other constructions	
																			0	Without	
																			1	NACE design (MR 0175 / MR 0103 / ISO 15156)	
VF01	4						0	0	0	0	1			0		0	0	0			**Order code**

① For more data, refer to the Technical data section (Approvals and certification)
② The dust approval is only applicable to the stainless steel housing. The bypass chamber or BM 26 Advanced must be approved for ATEX applications.
③ For the stainless steel housing only. The bypass chamber or BM 26 Advanced must be approved for ATEX applications.
④ The dust approval is only applicable to the stainless steel housing.
⑤ For the stainless steel housing only
⑥ Pending

5.2 Accessories

We supply accessories for this device. When you send an order for accessories, please give the reference numbers that follow:

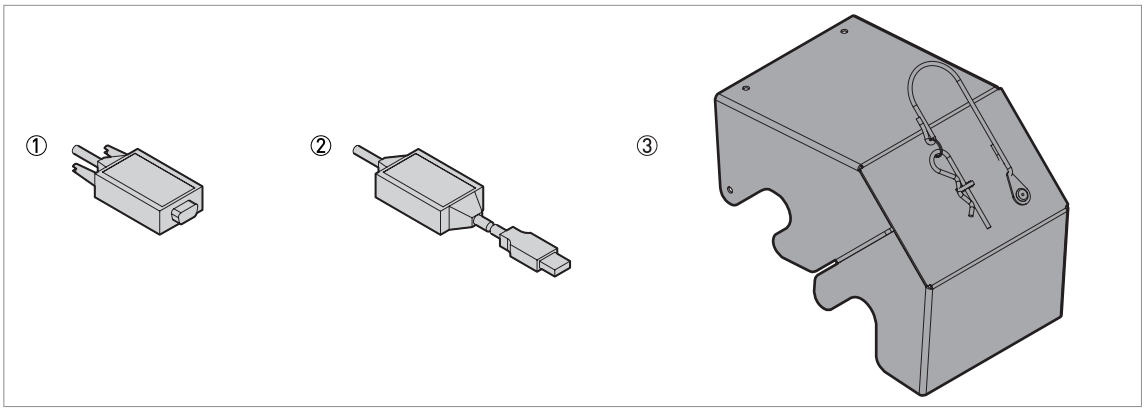

Figure 5-1: Accessories

① Viator RS232 / HART converter
② Viator USB / HART converter
③ 316L stainless steel weather protection

Item	Description	Quantity	Part reference
①	Viator RS232 / HART converter	1	XF50020600
②	Viator USB / HART converter	1	XF50020700
③	316L stainless steel weather protection	1	XF50050800

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