



# OPTIFLEX 1100 C Handbook

## Guided Radar (TDR) Level Meter

Continuous level measurement of liquids and solids

© KROHNE 01/2012 - 4001721801 - HB OPTIFLEX 1100 R01 en

**KROHNE**

## 9.1 Order code

The characters of the order code highlighted in light grey describe the standard.

VF25	4	OPTIFLEX 1100 C 2-wire loop-powered 4...20 mA Guided Radar (TDR) level meter: -50...+100°C and -1...16 barg / -58...212°F and -14.5...232 psig		
		Housing material		
		1	Aluminium	
			Probe type / probe length (probe material)	
		3	Single cable Ø2 mm / 0.08"; length 20 m / 65.6 ft (St. steel 316L/1.4401)	
		6	Single cable Ø4 mm / 0.15"; length 10 m / 32.8 ft (St. steel 316L/1.4401)	
		A	Coaxial; 1 segment; length <730 mm / 29" (St. steel 316L/1.4404)	
		B	Coaxial; 2 segments; length <1397 mm / 55" (St. steel 316L/1.4404)	
		C	Coaxial; 3 segments; length <2065 mm / 81" (St. steel 316L/1.4404)	
		D	Coaxial; 4 segments; length <2732 mm / 108" (St. steel 316L/1.4404)	
		E	Coaxial; 5 segments; length <3400 mm / 134" (St. steel 316L/1.4404)	
		F	Coaxial; 6 segments; length <4067 mm / 160" (St. steel 316L/1.4404)	
			Process connection	
		2	G ¾A (ISO 228)	
		3	G 1A (ISO 228)	
		5	¾ NPT (ASME B1.20.1)	
		6	1 NPT (ASME B1.20.1)	
			Cable entry / cable gland	
		1	M20 × 1.5 / plastic	
		2	½ NPT (Brass) / without	
			Display	
		1	Blind version	
		2	With an integrated display	
			Display language (English is supplied with all devices)	
		0	Without (for the blind version of the device)	
		1	English	
		2	German	
		3	French	
		4	Italian	
		5	Spanish	
		6	Portuguese	
		7	Japanese	
		8	Chinese (Mandarin)	
		A	Russian	
VF25	4		Order code	

## 9.2 Glossary

### C

**Cable** This is a wire rope. It is used as a measurement pulse guide.

### D

**Dielectric constant** An electrical property of the product to be measured used in TDR measurement. Also known as  $\epsilon_r$ , DK and relative permittivity. This gives the strength of the measurement pulse reflected back to the device's signal converter.

**Discontinuities** These are objects or parts of objects (including the tank) that are in the tank, are possibly in the probe's empty space and can potentially influence the electromagnetic field around the probe. This can cause a measurement error.

**Distance** This is a display option. It is the distance from the thread stop to the level (1 product) or the surface of the top product (2 or more products). Refer to the diagrams at the end of this section.

### E

**Electromagnetic compatibility** Defines how much a device influences or is influenced by other devices that generate electromagnetic fields during operation. Refer to European standard EN 61326-1 and EN 61326-2-3 for further details.

**Electromagnetic field** This is a physical field that is produced by electrically-charged objects and which may affect the behaviour of other objects near to the field.

**Empty space** A minimum diameter around a probe that should have no objects in it for the device to work correctly. This depends on the probe type. Refer to Installation for more details.

### L

**Level** This is a display option. It is the height from the bottom of the tank (user-defined) to the surface of the top product (Tank height – distance). Refer to the diagrams at the end of this section.

### M

**Mass** This is a display option. It shows the total mass of tank contents. Use a mass table or a volume table to display measurement data with mass units.

**Measurement pulse** The device transmits a short, low-powered electrical pulse or wave transmitted down a guide to the process. The process (or the probe end if in TBF measurement mode) reflects the pulse back to the device.

**Measuring length** Length, L', of from the thread stop to end of the guide. If you ordered a cable probe, this does not include the counterweight. Refer to the diagram at the end of this section.

### O

**Operators** Users who can choose how to display measurements. They cannot configure the device in supervisor mode.



## P

Probe	This is either a metallic cable or rod used to guide the measurement pulse to the process.
Probe length	Ordered length of probe, L, from the thread stop to end of the guide. If you ordered a cable probe, this includes the counterweight. Refer to the diagrams at the end of this section.

## S

Supervisors	Users who can configure the device in supervisor mode. They cannot configure the device in service mode.
-------------	--

## T

TDR	Time domain reflectometry (TDR). The principle used by the device to measure level.
Top dead zone	The distance from the thread stop to the top limit of the measuring range. Also refer to <i>Measurement limits</i> on page 64.
Threshold	A number of limits set either manually or automatically by the signal converter to identify the reflected measurement pulses from the level and the probe end.

## U

Ullage mass	This is a display option. It shows empty mass or mass of the product that can be put into the tank. Refer to the diagrams at the end of this section.
Ullage volume	This is a display option. It shows the unfilled volume. Refer to the diagrams at the end of this section.

## V

Volume	Total volume of tank contents. Calculated with a volume table.
--------	--

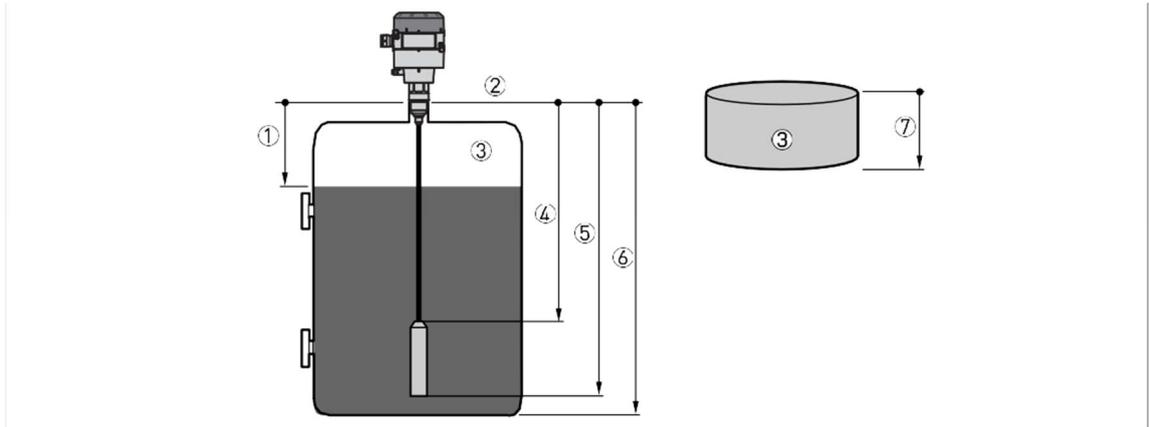


Figure 9-1: Measurement definitions 1

- ① Distance
- ② Thread stop (process connection)
- ③ Gas (Air)
- ④ Measuring length,  $L'$
- ⑤ Probe length,  $L$
- ⑥ Tank height
- ⑦ Ullage volume or mass

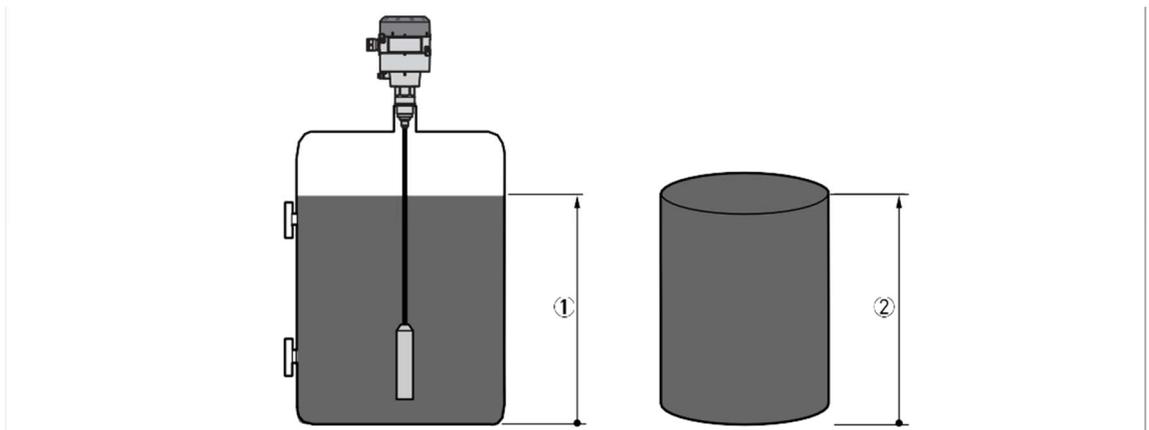


Figure 9-2: Measurement definitions 2

- ① Level
- ② Volume or mass