OPTIFLEX series

New guided radar (TDR) level transmitters for liquids and solids

KROHNE

measure the facts

- Wide range of level transmitters for all industries
- Extensive choice of probes for level and interface applications up to 60 m/197 ft
- Suitable for extreme conditions up to +315 °C/+599 °F, 320 barg/4641 psig
- Quick auto-setup for easy commissioning

KROHNE – Measure the facts

Welcome to KROHNE. As a leader in process measuring technology, we're at home in a wide variety of industries worldwide. The name KROHNE has stood for **innovative and reliable solutions since 1921.** The company now offers a whole spectrum of instruments for **flow, level, temperature and pressure measurement, as well as process analysis.** Our portfolio is rounded out by comprehensive services and consulting.

We have over 20 years' experience with guided radar (TDR) technology – introduced in 1996, the BM 100 from KROHNE was the **first guided radar** (TDR) level transmitter for process tanks available **on the market.** The cost-effective 2-wire TDR-guided radar BM 102 followed in 2000. Four years later, the OPTIFLEX 1300 for process conditions up to +300 °C/+572 °F, 300 barg/4350 psig was launched. Added to the portfolio in January 2012, the OPTIFLEX 1100 targets storage applications in non-hazardous areas (non-Ex). It was closely followed by the **SIL2-compliant** OPTIFLEX 2200 featuring higher accuracy and various probe, converter and electronic versions for liquid and solid applications.

OPTIFLEX series – Measurement at the highest level

Where dust, foam, vapour, agitated surfaces, changes in pressure, temperature and density would ordinarily stand in the way of accurate level measurement, top-performance **OPTIFLEX** transmitters **get the job done.**

They use **extra stable** TDR (Time Domain Reflectometry) technology to continuously and reliably measure levels in liquids, pastes, granulates, powders and liquid interfaces in many industries and environments.

OPTIFLEX 7200/8200/3200/6200 – new 2-wire loop-powered level transmitters

The 4 new level transmitters are based on the well-known OPTIFLEX 2200 and are each designed for specific industry needs. They enhance our portfolio for **reliable and accurate level measurement of liquids and solids,** for even the most challenging applications. **OPTIFLEX 7200/8200/3200/6200** are gradually replacing the well-known OPTIFLEX 1300/2200, which will be available until the new series covers all the required options and homologations.

Highlights

- Best-in-class design – the result of over 20 years of experience with guided radar (TDR) technology
- 2-wire, 4...20 mA (HART® 7) guided radar for level and interface measurement
- Accuracy from ±2 mm/±0.08"
- High temperature (HT), high pressure (HP) up to +315 °C/+599 °F, 320 barg/4641 psig
- Single or double ceramic process seal system for demanding process conditions
- Extensive choice of probes for measuring distances up to 60 m/196.85 ft
- Dielectric constants as low as 1.3 (TBF 1.1)
- Accurate level measurement in tanks with changing gas properties, without increasing the dead zone size
- Real-time clock for event logging
- Aluminium or stainless steel, horizontal or vertical converters, available as compact or remote versions
- Weather protection for converters
- IP68 under 1.5 m/4.92 ft of water for 2 weeks
- Quick auto setup for easy commissioning

Which OPTIFLEX will suit your application best?

OPTIFLEX 1100

OPTIFLEX 7200

OPTIFLEX 8200

For liquid storage applications in **non-hazardous areas** (non-Ex), the **OPTIFLEX 1100** will be your first choice. It offers high performance and is readily available.

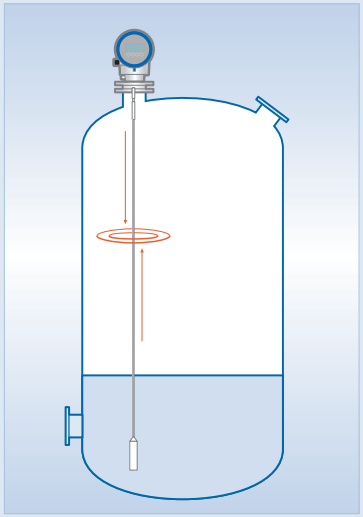
The **OPTIFLEX 7200** is ideal for level and interface measurement of liquids **in process applications up to +250 °C/+482 °F** (e.g. in the chemical, oil and gas industries). For liquids in **extreme conditions** (up to +315 °C/+599 °F, 320 barg/4641 psig) like in boiler applications, for example, the **OPTIFLEX 8200** with its ceramic process seal system is the perfect device. Both, OPTIFLEX 7200 and OPTIFLEX 8200, feature **Dynamic Gas-phase Compensation (DGC),** which allows accurate level measurement in tanks with changing gas properties without increasing the size of the dead zone.

Guided radar (TDR) – The measuring principle

The guided radar (TDR) level transmitter has been developed from a tried and tested technology called Time Domain Reflectometry (TDR).

It works like this: the device emits low-intensity electromagnetic pulses of approximately one nanosecond width which are guided along a rigid or flexible conductor. These pulses move at the speed of light. When the pulses reach the surface of the product to be measured, they are reflected with an intensity that depends on the dielectric constant (ε_r) of the product e.g. water has a high dielectric constant and the pulse is reflected back to the transmitter at 80% of its original intensity.

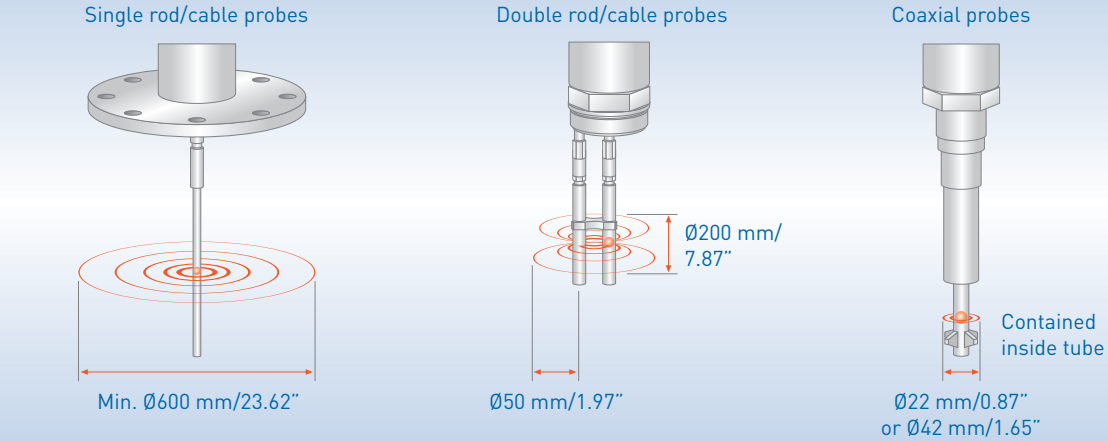
The device measures the time from when the pulse is transmitted to when it is received; half of this time is equivalent to the distance from the reference point of the device (the flange facing) to the surface of the product. The time value is converted into a current output of 4...20 mA and/or a digital signal. Dust, foam, vapour, agitated or boiling surfaces, changes in pressure, temperature and density do not have an effect on device performance.



The CIP/SIP-suitable **OPTIFLEX 3200** measures level and interface in small vessels with the **hygienic standards** required in the food, beverage and pharmaceutical industries. **Solid applications** are the domain of the **OPTIFLEX 6200.** It withstands traction loads of up to 3.6 tons and offers a specific algorithm for low-reflective media from granulates to powders.

As the driving force in safety- and non-safety-related applications of the **nuclear industry,** the **POWERFLEX 2200** conforms to nuclear standards such as ASME Section III or RCC-M and is qualified according to IEEE Std 323, IEEE Std 344 and RCC-E.

Pulse shape according to the probe type



OPTIFLEX 1100 – For basic liquid applications

This **cost-effective** guided radar (TDR) level transmitter is designed for simple storage applications in non-hazardous areas (non-Ex). The high-performance device offers **3 probe types** which can all be shortened on-site. Its converter is **removable under process conditions** and rotatable by 360° to make the display easier to read. Keypad buttons are accessible without opening the housing cover.

- Quick delivery
- Intuitive, quick setup procedure
- Direct access to display keypad
- Quick coupling system: converter is rotatable and removable under process conditions
- 3 probe types:
  - Single cable Ø2 mm/0.08": 20 m/65.62 ft (liquids)
  - Single cable Ø4 mm/0.16": 10 m/32.81 ft (solids)
  - Coaxial Ø14 mm/0.55": 4.067 m/13.34 ft (liquids)
- Accuracy: ±10 mm/±0.39"
- Process temperature: -50...+100 °C/-58...+212 °F
- Process pressure: -1...16 barg/-14.5...232 psig
- Measuring range: 0.73...20 m/2.4...65.62 ft (liquids), 1...10 m/3.3...32.81 ft (solids)
- Process connections: G ¾, G 1, ¾ NPT, 1 NPT
- Housing material: aluminium
- Probe material: stainless steel cable (316), stainless steel coaxial (316L)

OPTIFLEX 1100 C on a buried sludge tank of a wastewater plant (ambient conditions)

Ø2 mm/0.08"
single cable

Ø4 mm/0.16"
single cable

Ø14 mm/
0.55"coaxial

Target industries:

- Water & Wastewater
- Machine & Skid assembly

Target applications:

- Storage or simple process applications in non-Ex areas such as:
  - Water in storage or recycling tanks, basins, ports or locks
  - Lubricants e.g. in the automotive or tank-building industry
  - Fast food industry frying oils
  - Industrial washing machine cleaning agents
  - Paint booths
  - Ink-filling machines
  - Livestock food management in breeding centres
  - Pet food production
  - Blood recovery in abattoirs
  - Cement in small silos
- Any industry where RF capacitance or conductive transmitters are used in non-Ex areas

OPTIFLEX 7200 C measuring hydrocarbons on water

Compact HT version (C)
Ø42 mm/1.65" coaxial

Remote version (F)
Ø8 mm/0.32" single rod

Sensor extension with
compact HT version (S)
Ø42 mm/1.65" coaxial

Double sensor extension
with remote version (D)
Ø4 mm/0.16" single cable

OPTIFLEX 7200 – For liquids in storage and process applications

The wide range of probes and special materials available for this TDR device makes it the **premium choice for level and interface measurement in the chemical, power, oil and gas industries.** A reversed interface probe enables measurement even in applications where the top product has a higher dielectric constant than the one below.

When saturated vapour is present above the liquid, the Dynamic Gas-phase Compensation (DGC) ensures accurate measurement without increasing the dead zone.

- Level, interface and reverse interface measurement
- ±2 mm/±0.08" accuracy
- Process conditions up to 100 barg/1450 psig and +250 °C/+482 °F
- Large variety of probes, like:
  - Ø42 mm/1.65" coaxial probe made of 316L or HC22
  - Fully TFM-T62 PTFE-coated rod
  - Special materials on request e.g. Monel®, tantalum, titanium and duplex
- SIL 2/3-certified current and relay outputs
- Patented Dynamic Gas-phase Compensation (DGC) for coaxial probes*
- Ceramic process seal system
- Measuring distances up to 60 m/196.85 ft
- Various converter and electronic versions:
  - Horizontal or vertical housings
  - Compact version (C)
  - Remote version (F) ≤100 m/328.08 ft
  - Sensor extension with compact version (S) ≤15 m/49.2 ft
  - Double sensor extension with remote version (D) ≤115 m/377.3 ft
  - Stainless steel housing
- Quick coupling system: converter is rotatable and removable under process conditions
- Diagnostic functions according to NAMUR NE 107

* Will be available later in the year.

SIL 2/3 Safety Integrity Level

HART COMMUNICATION PROTOCOL

Target industries:

- Chemical & Petrochemical
- Oil & Gas
- Power

Target applications:

Liquids in storage and process applications e.g. solvents, alcohols, acids, bases, condensates, hydrocarbons, fuels, biodiesel, benzene, hydraulic oil, slop oil, lubricant oil, ethylene, CO_2, foaming agent, butadiene, corrosion inhibitors, liquefied gas, fuel control of emergency generators and cooling water

OPTIFLEX 8200 – For liquids at high temperature and high pressure

This TDR device features a **ceramic process seal system** and patented algorithms for pressurised vessels where the gas composition can change, making it ideal for level measurement in steam boilers.

- Level and interface measurement
- Single or double ceramic process seal system
- ±2 mm/±0.08" accuracy
- Designed for steam boilers
- Process conditions up to 320 barg/4641 psig and +315 °C/+599 °F
- Patented Dynamic Gas-phase Compensation (DGC) for coaxial probes*
- SIL 2/3-certified current and relay outputs
- Various converter and electronic versions:
  - Horizontal or vertical housings
  - Compact version (C)
  - Remote version (F) ⩽100 m/328.08 ft
  - Sensor extension with compact version (S) ⩽15 m/49.2 ft
  - Stainless steel housing
- Quick coupling system: converter is rotatable and removable under process conditions
- Measuring distances up to 60 m/196.85 ft
- Diagnostic functions according to NAMUR NE 107

* Will be available later in the year.

SIL 2/3 Safety Integrity Level

HART COMMUNICATION PROTOCOL

Target industries:

- Chemical & Petrochemical
- Oil & Gas
- Power

Target applications:

Liquids at high temperature and pressure e.g. steam boilers, ethylene, fertiliser (urea), chlorine, resin, paint, ink, hydrocarbons, LPG, drum and feed water

VdTÜV 100 / EN 12952-11 / EN 12953-9 (Q2 2020)

Steam boiler

Compact version (C)
Ø42 mm/1.65" coaxial

Remote version (F)
Ø4 mm/0.16" single cable

OPTIFLEX 8200 C on the bypass chamber of a steam boiler +225 °C/+437 °F, 22 barg/319 psig

OPTIFLEX 3200 C measuring ultrapure water plus additives (+100 °C/+212 °F, 2 barg/29 psig) in a pharmaceutical company

OPTIFLEX 3200 – For liquids with hygienic requirements

Fully CIP/SIP-suitable, this guided radar is insensitive to steam, foam and condensation. It features a gap-free design as well as specific process connections and probes for level and interface measurement of liquids in hygienic applications.

- Level and interface measurement
- ±2 mm/±0.08" accuracy
- Process conditions up to 40 barg/580 psig and +150 °C/+302 °F
- Hygienic process connections and probes for measuring distances up to 4 m/13.12 ft:
  - Single rod Ø8 mm/0.32", Ra <0.76 µm
  - Fully TFM-T62 PTFE-coated rod*
- SIL 2/3-certified current and relay outputs
- Cast stainless steel or aluminium housing, compact (C) or remote converter versions (F) ≤100 m/328.08 ft
- Quick coupling system: converter is rotatable and removable under process conditions

* Will be available later in the year.

Target industries:

- Food & Beverage
- Pharmaceutical

Target applications:

Liquids in storage or process applications e.g. fruit extract, fruit juice, apple compote, yeast, beer, wine, raw milk, cheese, tomato sauce, soup, vegetable oil, palm oil, vaccines, plasma, purified water, aqueous solutions, alcohols, solvents, chlorobenzene, chloroform, slightly corrosive acids and alkalis

Compact version (C)
Ø8 mm/0.32" single rod

Remote version (F)
Ø8 mm/0.32" single rod

SIL 2/3 Safety Integrity Level

HART COMMUNICATION PROTOCOL

FDA

EHEDG EUROPEAN HYGIENIC EQUIPMENT DESIGN GROUP

OPTIFLEX 6200 – For solid applications from granulates to powders

Designed to withstand high traction loads and to remain unaffected by dust or deposits on the probe, this TDR device has everything to solve the **challenging conditions** of solid applications. A specific algorithm **for low-reflective media and uneven product surfaces** makes it ideal for measuring the level of bulk in silos.

Target industries:

- Metals, Minerals & Mining
- Chemical
- Agri-food

Target applications:

Finished and raw products e.g. plastic granulates (PPC, PVC, PE, LDPE, PP), tobacco, lime, soap powder, milk powder, coffee powder, chocolate powder, sugar, silica, gypsum, starch, fly ash, fine powders and cement

- ±2 mm/±0.08" accuracy
- Process conditions up to 40 barg/580 psig and +200 °C/+392 °F
- Probes specifically designed for measuring solids up to 40 m/131.23 ft:
  - Single cable Ø8 mm/0.32"
  - Single rod Ø16 mm/0.63"
- Designed to withstand high traction loads (<3.6 t) and electrostatic discharges (ESD)
- SIL 2/3-certified current and relay outputs
- Quick coupling system: converter is rotatable and removable under process conditions
- Stainless steel or aluminium housing, compact (C) or remote converter version (F) ⩽100 m/328.08 ft

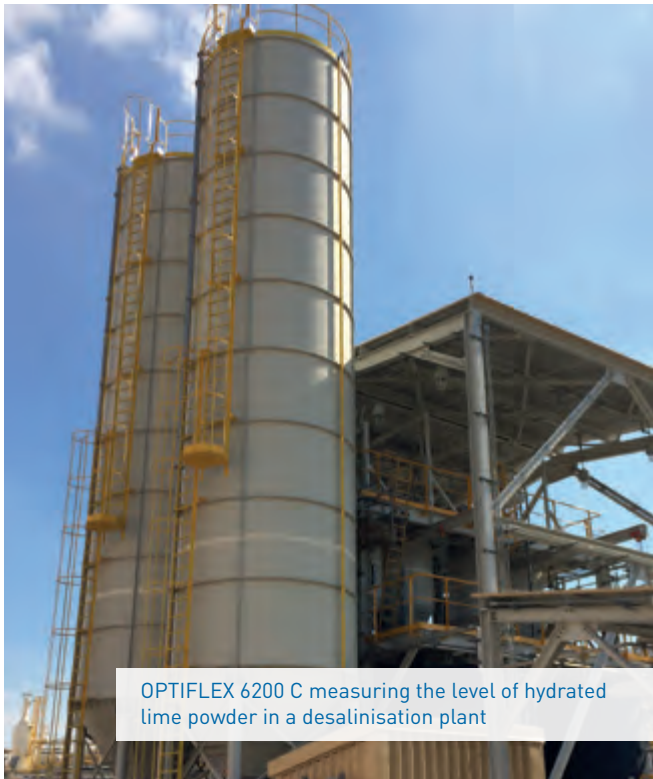
SIL 2/3 Safety Integrity Level

HART COMMUNICATION PROTOCOL

Compact version (C)
Ø8 mm/0.32" single cable

Compact version (C)
Ø16 mm/0.63" single rod

Remote version (F) Ø8 mm/
0.32" single cable



OPTIFLEX 6200 C measuring the level of hydrated lime powder in a desalinisation plant

POWERFLEX 2200 C measuring the level of borated water in a fuel transfer pool (PTR)

Compact version (C)
Ø8 mm/0.32" single rod

Remote version (F)
Ø8 mm/0.32" single rod

POWERFLEX 2200 C/F/S/D – For liquids in the nuclear industry

KROHNE has **over 15 years of experience in the nuclear industry,** and our POWERFLEX 2200 is a standout device for safety- and non-safety-related applications. It conforms to nuclear standards such as ASME Section III or RCC-M and is certified according to IEEE Std 323, IEEE Std 344 and RCC-E. **For high radiation levels,** the converter can be installed up to 450 m/1476.38 ft away from the probe (POWERFLEX 2200 D).

- Highly radiation-resistant
- Compliant with severe accident scenarios
- Seismic qualification up to 300 m/s²
- Display keypad accessible without opening the cover
- DPR (Dynamic Parasite Rejection): the software dynamically eliminates false reflections caused by environmental disturbances and product build-up
- Quick coupling system: converter is rotatable and removable under process conditions
- Measuring range up to 40 m/131.23 ft
- Designed according to IEC 61508
- Conforms to IEC 61513
- FDT1.2 DTM certified
- Thermal ageing qualification: +107 °C/+224.6 °F for 196 days

Target industries:

- Nuclear

Target applications:

- Liquid level measurement in radiation conditions up to severe accident scenarios
- Safety- and non-safety-related applications
- High-accuracy level measurement in pools (e.g. spent fuel pools), pressurised tanks and sumps
- Examples of liquids that can be measured: borated water, active wastewater and concentrate, chemicals (e.g. H_3BO_3, Na_2CO_3, NaOH, MnO_4, HNO_3, NH_4OH, N_2H_4, KOH), clean or impure condensate, oil, diesel, kerosene, spent resin and wastewater, acid and alkali decontamination solutions

Sensor extension with compact version (S) Ø22 mm/0.87" coaxial

Double sensor extension with remote version (D) Ø4 mm/0.16" single cable

Technical data

	OPTIFLEX 1100 C	OPTIFLEX 7200 C/F/S/D	OPTIFLEX 8200 C/F/S
	for basic liquid applications 	for liquids in storage and process applications 	for liquids at high temperature and pressure 
Dielectric constant ε_r	≥1.6	≥1.3 (TBF 1.1)	≥1.3 (TBF 1.1)
Measuring range	0.73...20 m/2.4...65.62 ft	0.3...60 m/0.98...196.85 ft	0.6...60 m/1.97...196.85 ft
Accuracy	±10 mm/±0.4"	±2 mm/±0.08"	±2 mm/±0.08"
Repeatability	±2 mm/±0.08"	±1 mm/±0.04"	±1 mm/±0.04"
Interface detection	No	Yes	Yes
Converter version	C (compact)	C (compact), F (remote), S (sensor extension), D (double sensor extension)	C (compact), F (remote), S (sensor extension)
Housing material	Aluminium	Aluminium, 316L	Aluminium, 316L
Ingress protection	IP66/67, NEMA 4X/6P	IP66/IP68, NEMA 4X/6P	IP66/IP68, NEMA 4X/6P
Probe type (material), size	Single cable 316: Ø2 or 4 mm/0.08 or 0.16"; Coaxial 316L: Ø14 mm/0.55"	Single cable 316/316L or HC22: Ø4 mm/0.16"; Single rod 316L or HC22: Ø8 mm/0.32", 316L PTFE-coated: Ø10 mm/0.39", 316L segmented: Ø8 mm/0.32"; Double cable 316/316L: Ø4 mm/0.16"; Double rod 316L: Ø8 mm/0.32"; Coaxial 316L or HC22: Ø22 mm/0.87", 316L segmented: Ø22 mm/0.87", 316L or HC22: Ø42 mm/1.65"; Reversed interface 316L or HC22: Ø10 mm/0.39"; other materials on request	Single cable 316/316L or HC22: Ø4 mm/0.16"; Single rod 316L or HC22: Ø8 mm/0.32", 316L segmented: Ø8 mm/0.32"; Coaxial 316L or HC22: Ø42 mm/1.65"; Other materials on request
Process connection	Thread G ¾, G 1, ¾ NPT, 1 NPT	Thread: G ¾...1½, ¾...1½ NPT Flange: DN25...150/1...8"/40...150A; others on request	Thread: G 1, G 1½, 1 NPT, 1½ NPT Flange: DN25...200/1...8"/40...100A; others on request
Gasket	EPDM	FKM/FPM, EPDM, Kalrez® 6375, Kalrez® 7075 (HT version), single process seal system (PTFE or ceramic)	FKM/FPM, EPDM, Kalrez® 7075, single or double process seal system (ceramic)
Ambient temp.	-40...+80 °C/-40...+176 °F	-40...+80 °C/-40...+176 °F	-40...+80 °C/-40...+176 °F
Process temp.	-50...+100 °C/-58...+212 °F	-50...+250 °C/-58...+482 °F	-50...+315 °C/-58...+599 °F
Process pressure	-1...16 barg/-14.5...232 psig	-1...100 barg/-14.5...1450 psig	-1...320 barg/-14.5...4641 psig
Power supply, x-wire	14...30 V DC, 2-wire	11.5...30 V DC (Exi), 13.5...34 V DC (Exd), 2-wire	11.5...30 V DC (Exi), 13.5...34 V DC (Exd), 2-wire
Output	4...20 mA	4...20 mA passive (HART® 7), 4...20 mA passive (HART® 7) plus second output (4...20 mA or relay)	4...20 mA passive (HART® 7), 4...20 mA passive (HART® 7) plus second output (4...20 mA or relay)
Options and accessories	Weather protection	Dynamic Gas-phase Compensation (DGC)*, adaptors for previous TDR models, weather protection	Dynamic Gas-phase Compensation (DGC)*, adaptors for previous TDR models, weather protection
Approvals	CE, EAC	ATEX, IECEx, cQPSus, NEPSI, INMETRO, NACE, ASME B31.3, CE, EAC*, NAMUR, SIL, steam boiler*	ATEX, IECEx, cQPSus, NEPSI, INMETRO, NACE, ASME B31.3, CE, EAC*, NAMUR, SIL, steam boiler*

	OPTIFLEX 3200 C/F	OPTIFLEX 6200 C/F	POWERFLEX 2200 C/F/S/D
	for liquids with hygienic requirements 	for solids from granulates to powders 	for liquids in the nuclear industry 
Dielectric constant ε_r	≥1.6 (TBF 1.1)	≥1.6 (TBF 1.1)	≥1.4
Measuring range	0.6...4 m/1.97...13.12 ft	0.6...40 m/1.97...131.23 ft	0.6...40 m/1.97...131.23 ft
Accuracy	±2 mm/±0.08"	±2 mm/±0.08"	±3 mm/±0.12"
Repeatability	±1 mm/±0.04"	±1 mm/±0.04"	±1 mm/±0.04"
Interface detection	Yes	No	No
Converter version	C (compact), F (remote)	C (compact), F (remote)	C (compact), F (remote), S (sensor extension), D (double sensor extension)
Housing material	Aluminium, 316L	Aluminium, 316L	316L
Ingress protection	IP66/IP68, NEMA 4X/6P	IP66/IP68; NEMA 4X/6P	IP66/67, NEMA 4X/6P
Probe type (material), size	Single rod 316L polished Ra <0.76 µm: Ø8 mm/0.32", 316L fully PTFE-coated*: Ø10mm/0.39"	Single cable 316/316L: Ø8 mm/0.32"; Single rod 316L: Ø16 mm/0.63"	Single cable 316/316L: Ø4 mm/0.16"; Single rod 316L: Ø8 mm/0.32"; Double cable 316/316L: Ø4 mm/0.16"; Double rod 316L: Ø8 mm/0.32"; Coaxial 316L: Ø22 mm/0.87"
Process connection	1" Tri-Clamp ISO 2852 DN25; 1"1/2 Tri-Clamp ISO 2852 DN38; 2" Tri-Clamp ISO 2852 DN51; DN25 DIN 11851, DN40 DIN 11851, DN50 DIN 11851, DN38 SMS 1145, DN51 SMS 1145	Thread: G 1½, 1½ NPT Flange: DN40...150/1½...8"/ 50...100A; others on request	Thread: G 1½, 1½ NPT Flange: DN40...200/1½...8"/40...200A
Gasket	FKM/FPM, EPDM, Kalrez® 6221, single process seal system (PTFE)	FKM/FPM, EPDM, Kalrez® 6375, single process seal system (PTFE)	EPDM
Ambient temp.	-40...+80 °C/-40...+176 °F	-40...+80 °C/-40...+176 °F	-40...+80 °C/-40...+176 °F
Process temp.	-50...+150 °C/-58...+302 °F	-50...+200 °C/-58...+392 °F	-50...+150 °C/-58...+302 °F
Process pressure	-1...40 barg/-14.5...580 psig	-1...40 barg/-14.5...580 psig	-1...100 barg/-14.5...1450 psig (higher on request)
Power supply, x-wire	11.5...30 V DC (Exi), 13.5...34 V DC (Exd), 2-wire	11.5...30 V DC (Exi), 13.5...34 V DC (Exd), 2-wire	11.5...30 V DC, 2-wire
Output	4...20 mA passive (HART® 7), 4...20 mA passive (HART® 7) plus second output (4...20 mA or relay)	4...20 mA passive (HART® 7), 4...20 mA passive (HART® 7) plus second output (4...20 mA or relay)	4...20 mA HART®
Options and accessories	Weather protection	Adaptors for previous TDR models, weather protection	Weather protection
Approvals	ATEX, IECEx, cQPSus, NEPSI, INMETRO, CE, EAC*, FDA, EC, EHEDG, SIL	ATEX, IECEx, cQPSus, NEPSI, INMETRO, NACE, ASME B31.3, CE, EAC*, NAMUR, SIL	RCC-E, IEEE, OPB, IEC, RCC-M, ASME, CODAP, EMC, MIL-STD, UL, NFC

* Will be available later in the year.

KROHNE – Products, Solutions, Services

- Complete process instrumentation portfolio for all industries: flow, level, temperature, pressure, analytics
- Engineered and in-house manufactured turnkey metering, monitoring, remote and application-specific solutions
- Environmental qualification, project management, consulting, maintenance and service concepts for any plant size

KROHNE Messtechnik GmbH
Ludwig-Krohne-Str. 5
47058 Duisburg
Germany

Tel.: +49 203 301 0
Fax: +49 203 301 103 89
info@krohne.com
www.krohne.com

KROHNE