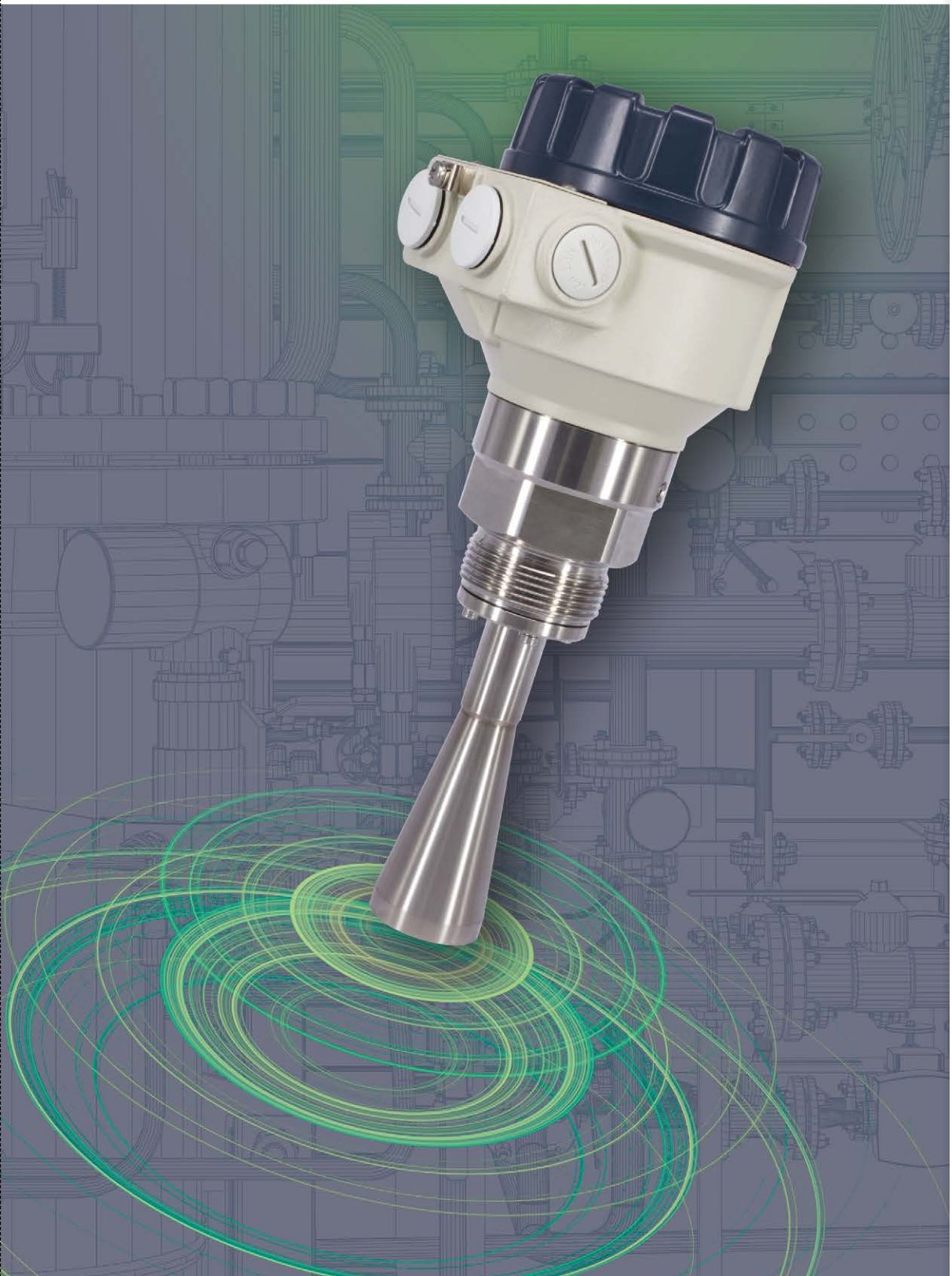
РусАвтоматизация

PiloTREK

PULSE BURST RADAR LEVEL TRANSMITTERS
K-BAND RADAR FOR LIQUIDS

5 YEARS WARRANTY



NIVELCO

LEVEL TRANSMITTERS

The new **PiloTREK WP–200** non-contact radar level transmitters use the most advanced industrial measurement technology, the 80 GHz FMCW radar. The most fundamental advantage of 80 GHz radars compared to lower frequencies *(5…12 GHz and 25 GHz)* is the smaller antenna size, better focusability, and narrow beam angle.

It uses the latest technology for measuring liquids, masses, emulsions, and other chemicals widely used in, for example, the water industry, food industry, energy industry, pharmaceutical industry, and chemical industry, which provides measurement results with millimeter accuracy. It is also excellent for measuring substances prone to vapor formation and liquids with gas blanket or large-particle bulk solids. In addition to the level, volume, and weight measurement functions, this product family also inherits the open-channel flow measurement functions and the threshold functions to eliminate false and interfering echoes. Since no medium is required for millimeter waves to propagate, it can also be used in a vacuum. The device can also be operated with HART® compliant **NIVELCO EView2**, **MultiCONT** universal process controller, and PACT*ware*™ software, or programmed via Bluetooth® communication with the new **MobileEView** app.

FEATURES

- 2-wire 80 GHz *(W-band)* radar
- Accuracy of ±2 mm
- Easy to install due to small antenna diameter
- 1", 1½" encapsulated horn antenna
- Submersible – integrated design with IP66/IP68 protection
- User-friendly threshold management
- Configuration via Bluetooth® with MobileEView app
- PACT*ware*™ compatible
- 5 years warranty
- Ex variant

APPLICATIONS

- For measuring the level of liquids, emulsions, and other media
- For free flowing solids
- Storage tanks, chemical tanks, open pits, sumps, wells
- Measurement through a plastic tank roof
- For material prone to vapor formation
- For measuring liquids with a gas blanket
- It can also be used in a vacuum
- Open-channel flow measurement

CERTIFICATES

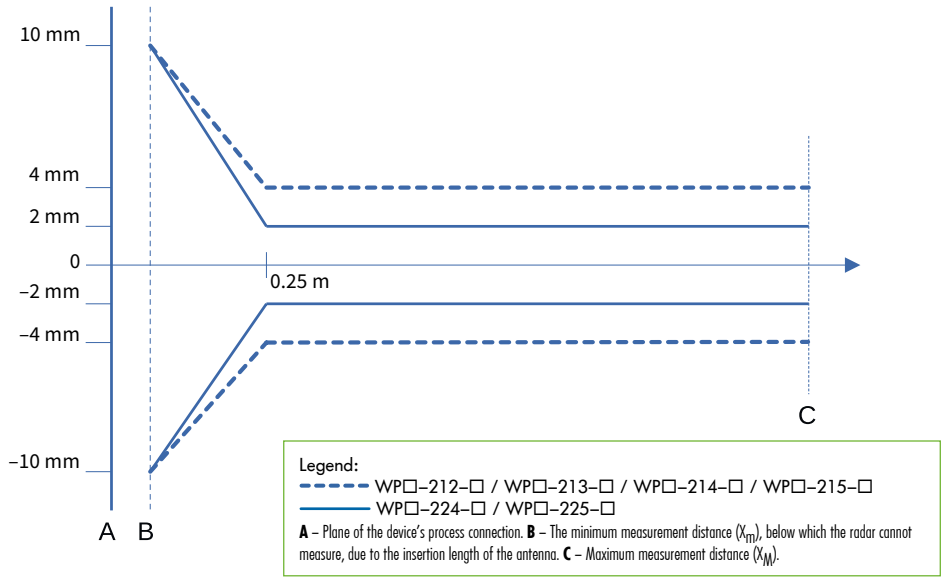
- ATEX *(Ex ia GD)*
- IECEx *(Ex ia GD) (in prep.)*
- INMETRO *(Ex ia GD)*,
- ANATEL

AREAS OF APPLICATION

- Water and wastewater industry
- Energy industry / Plant utilities
- Food & Beverage
- Pharmaceutical industry
- Chemical industry
- Marine applications
- Agriculture
- Construction materials
- Heavy industry
- Packaging industry

WP☐–2☐4–4

LINEARITY ERROR



Legend:
- – – – – WP☐–212–☐ / WP☐–213–☐ / WP☐–214–☐ / WP☐–215–☐
- ——— WP☐–224–☐ / WP☐–225–☐

A – Plane of the device's process connection. **B** – The minimum measurement distance (X_m), below which the radar cannot measure, due to the insertion length of the antenna. **C** – Maximum measurement distance (X_M).

WP☐–2☐2–4

OPERATING PRINCIPLE

The reflection of the millimeter-waves is highly dependent on the dielectric constant of the medium. Therefore, the measured medium's dielectric constant (ε_r) must be over 1.9 for millimeter-wave level measurement. The measurement principle of a level transmitter with a millimeter-waves signal is based on measuring the reflection's time of flight.

Informative ε_r values							
Butane (C_4H_{10})	1.4	Ethers	4.4	Gasoline	2.3	Methyl alcohol (CH_3OH)	33.1
LP gas	1.6…1.9	Acetic acid (CH_3COOH)	6.2	Bitumen	2.6	Glycol ($C_2H_6O_2$)	37
Kerosene	2.1	Limestone	6.1…9.1	Carbon disulfide (CS_2)		Nitrobenzene ($C_6H_5NO_2$)	40
Crude Oil		Ammonia (NH_3)	17…26	Clinker	2.7	Glycerin ($C_3H_8O_3$)	41.1
Diesel Oil		Acetone (C_3H_6O)	21	Resin	2.4…3.6	Water (H_2O)	80
Benzol (C_6H_6)	2.2	Ethyl alcohol (C_2H_5OH)	24	Cereal Grain	3…5	Sulphuric acid (H_2SO_4) (T = 20 °C)	84

The speed of propagation of millimeter-waves signals in the air, gases, and vacuum is almost constant regardless of temperature and medium pressure, so the measured distance does not depend on the physical parameters of the intermediate medium.

The **PiloTREK WP–200** level transmitter is a continuous-wave frequency modulated radar *(FMCW)* operating at 80 GHz *(W-band)*. The most obvious advantages of 80 GHz radars over lower frequency *(5…12 & 25 GHz)* radars are smaller antenna size, better focus, and smaller beam angle. A portion of the millimeter-wave continuous wave energy radiated by the level transmitter antenna is reflected from the measured surface, depending on the material to be measured. The distance of the reflecting surface is calculated with high accuracy by the electronics from the frequency shift of the reflected signal and converted into a distance, level, or volume signal by the electronics.

TECHNICAL DATA

		PVDF housing WPB, WPT–2□□–□	PP housing WPA–2□□–□
Measured values		Distance; Calculated values: level, volume, mass, flow	
Signal frequency		77…81 GHz (W-band)	
Measuring range[1]		0…30 m	
Lowest ε_r of medium		1.9	
Resolution		0.1 mm	
Supply voltage		12…36 V DC	
Output	Analog	4…20 mA (3.9…20.5 mA); $R_{Lmax} = (U_S - 12\ V) / 0.02\ A$	
	Digital	Bluetooth® LE 5.1 (optional), HART® interface (loop resistance ≥250 Ω)	
	Service interface	SAT–504–3 compatible; galvanically isolated; 3.3 V LVDS; max. 100 mA	
	Relay *(optional)*	SPDT 30 V / 1 A DC; 42 V / 0.5 A AC	
Measuring frequency		~1/s	
Antenna material[1]		Encapsulated horn antenna (PP / PVDF / PTFE)	
Process temperature		–40…+80 °C	–30…+80 °C
Ambient temperature			
Process pressure		–1…3 bar	
Seal		FPM (Viton®)	EPDM
		Optional: EPDM, FFKM Perfluoroelastomer (Kalrez® 6375)	
Process connection		1", 1½" BSP / NPT	
Ingress protection		IP66 / IP68	
Electrical connection		4× 0.5 mm² shielded Ø6 mm cable × 5 m (up to 30 m); For relay option: 7× 0.5 mm² shielded cable	
Electrical protection		Overvoltage Class 1; (Class III [SELV])	
Weight		~ 600 g	

[1] *Depending on order code.*

TYPE-DEPENDENT DATA

	WP□–212–□ WP□–213–□	WP□–214–□ WP□–215–□	WP□–224–□ WP□–225–□
Dead zone[2]	0 m		
Maximum measuring range[3]	10 m		20 m
Accuracy[4]	±4 mm		±2 mm
Beam angle *(–3 dB)*	12°	7°	
Antenna insertion length[5]	56 mm	70 mm	
Lower process connection	1" BSP / NPT	1½" BSP / NPT	
Upper process connection	1" BSP		

[2] *Measured* from the tip of the antenna.
[3] *In* the case of an ideal reflecting surface.
[3] May be limited in the case of low dielectric constant or non-perpendicular or non-planar media.
[5] *Measured from the seal plane of the process connection.*

Ex INFORMATION

	WP□–2□□–8 Ex, WP□–2□□–E Ex	
ATEX certificate number	BKI24ATEX001 X	
Ex marking (ATEX)	⟨Ex⟩ II 1 G Ex ia IIC T5 Ga	⟨Ex⟩ II 1 D Ex ia IIIC T95°C Da
INMETRO certificate number	DNV 24.0166 X	
Ex marking (INMETRO)	Ex ia IIC T5 Ga	Ex ia IIIC T95°C Da
Ex power supply, intrinsically safety data[6]	U_i = 30 V, I_i = 100 mA, P_i = 0.75 W	U_i = 30 V, I_i = 140 mA, P_i = 1 W
	C_i ≤ 12 nF + 0.12 nF/m cable, L_i ≤ 238 µH + 0.65 µH/m cable with standard 5 m cable: C_i ≤ 12.5 nF, Li ≤ 242 µH	
Supply voltage	12…30 V DC	

[6] *In IIB applications, Ex power supply data for IIIC can be used.*

TEMPERATURE DATA FOR Ex CERTIFIED MODELS

	WP□–2□□–8 Ex, WP□–2□□–E Ex	
	Hazardous gas atmospheres	Explosive dust atmospheres
Temperature data	Ex ia IIC	Ex ia IIIC
Temperature class	**T5**	**T95°C**
Highest ambient temperature	+80 °C	
Highest surface temperature of the device[7]		

[7] *Conducted or radiated heat transferred by medium, ambient or process connection.*

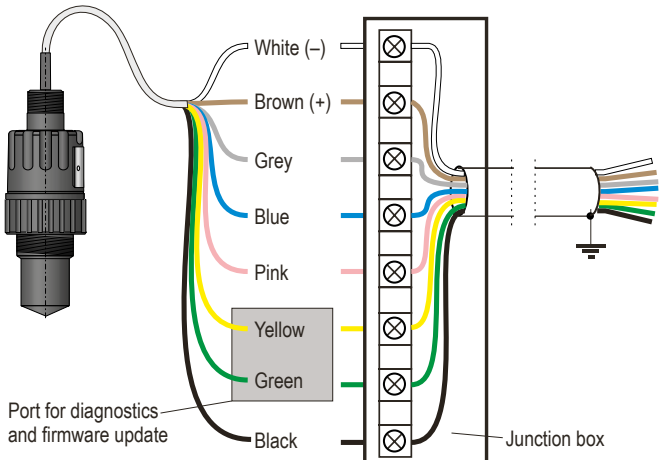
POLARIZATION

The **PiloTREK W–200** 80 GHz radar is much less sensitive to installation conditions, both in terms of polarization and clutter sensitivity, due to its narrow and nearly circular beamwidth.

BACKGROUND MAPPING

Thanks to its 80 GHz FMCW technology, it is much less sensitive to the presence of clutter than previous generation radars. It now has an easy-to-use, flexible threshold management *(EView2)* that allows echoes from clutter in the tank to be easily masked if necessary. The threshold curve is designed to mask unwanted echoes from the measurement. Echo peaks below the threshold are not included in the evaluation.

WIRING



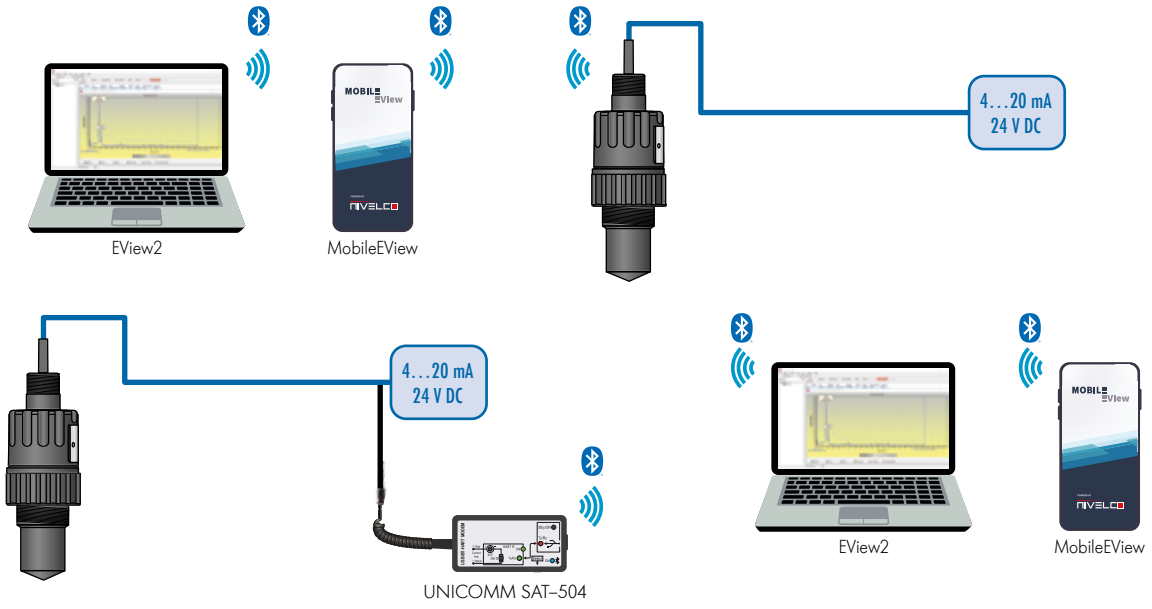
The **BROWN** (+) / **WHITE** (–) wires are the 4…20 mA output or power supply. The **GREY**, **BLUE** and **PINK** wires are for relay output and are only available in relay version. The **YELLOW** and **GREEN** wires are for servicing purposes only and are hidden by default. The **BLACK** is the cable shielding.

MOUNTING

The device must be mounted far as possible from interfering objects inside the tank and sources of interference, such as waves, vortex or strong vibrations. The antenna cover must be parallel to the measured surface within ±2…3°. In regions with extremely hot climates, we recommend protecting the device from direct sunlight to avoid exceeding the ambient temperature limits of the housing.

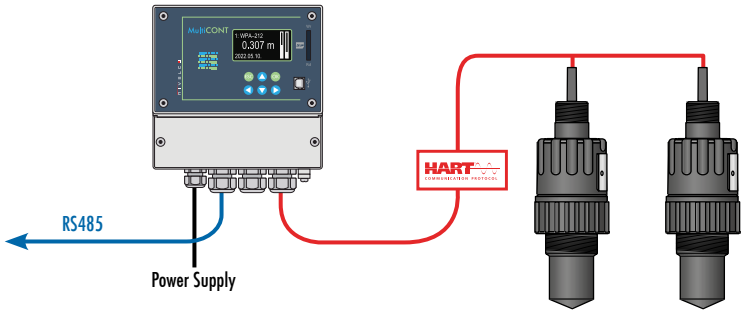
Bluetooth® CONNECTIVITY

The Bluetooth® option on the **PiloTREK W–200** Series allows for convenient device setup and diagnostics via the NIVELCO **MobileEView** app for Android or iOS or the free **EView2** software download for laptops.

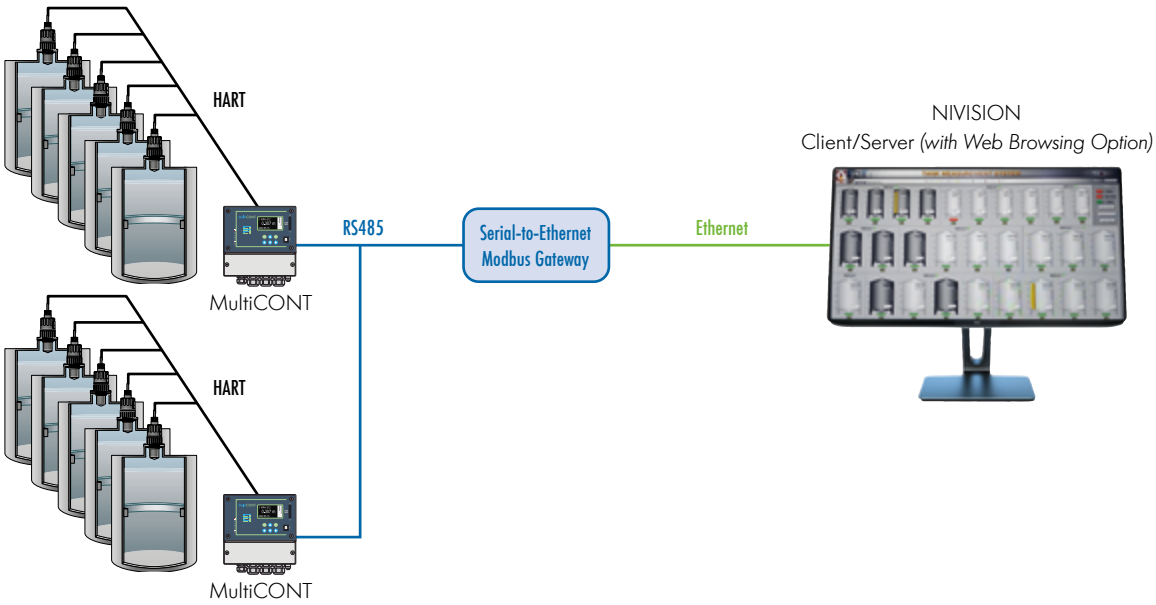


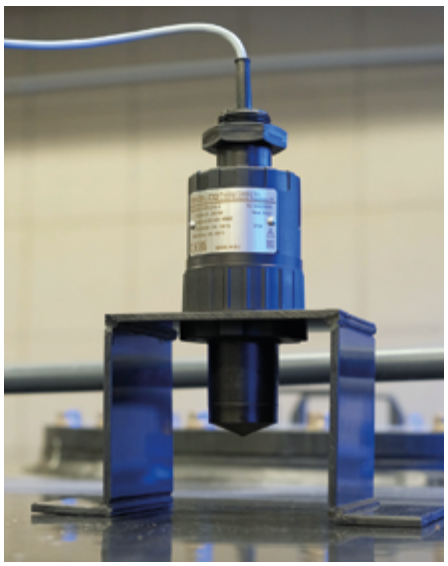
PiloTREK TRANSMITTERS IN HART® MULTIDROP LOOP

MultiCONT multi-channel remote controllers process, display, and transmit data from NIVELCO's HART®-equipped transmitters in a multidrop loop. Up to 15 of these connected transmitters can be programmed and maintained from MultiCONT, which supports data-logging tasks. MultiCONT provides programmable relay outputs, while 4…20 mA outputs are available through remote I/O modules.



MultiCONT can send measurement data via RS485 to PLCs, computers running third-party SCADA systems, or the NIVELCO **NIVISON** inventory monitoring system.





PiloTREK WP–200 80 GHz Integrated — 5 years

2-wire integrated pulse burst radar level transmitter with PP or PVDF sensor, ingress protection: IP68

Version

W ☐ ■ – 2 ■ ■ – ■

P		Integrated transmitter

Antenna / Housing

W P ☐ – 2 ■ ■ – ■

A		PP / PP
B		PVDF / PVDF
T		PTFE / PVDF

Measurement range

W P ■ – 2 ☐ ■ – ■

1		10 m
2		20 m
3	*	30 m

Process connection – lower / upper

W P ■ – 2 ■ ☐ – ■

2		1" BSP / 1" BSP (only for 10 m measuring range)
3		1" NPT / 1" BSP (only for 10 m measuring range)
4		1½" BSP / 1" BSP (only for 10 m or 20 m measuring range)
5		1½" NPT / 1" BSP (only for 10 m or 20 m measuring range)
6	*	2" BSP / 1" BSP (only for 20 m measuring range)
7	*	2" NPT / 1" BSP (only for 20 m measuring range)
8	*	Ø75 mm (2½") / 1" BSP (only for 30 m measuring range)

Output / Certificates

W P ■ – 2 ■ ■ – ☐

4	4...20 mA + HART®
8	4...20 mA + HART® / Ex ia GD
H	4...20 mA + HART® + relay
B	4...20 mA + HART® + Bluetooth®
E	4...20 mA + HART® + Bluetooth® / Ex ia GD
R	4...20 mA + HART® + relay + Bluetooth®

* Under development

Cable

Maximum length 30 m; sold by the meter over the standard 5 m

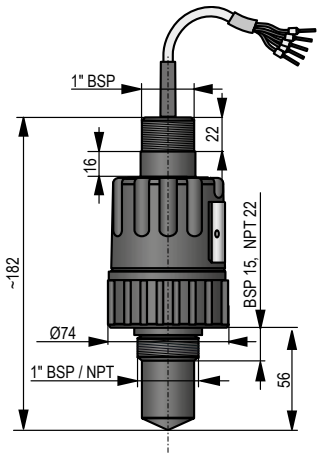
Accessories sold separately; see relevant page for details

S F A – 3 ■ ■ – 0	Flanges
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A A – 1 0 ■ – ■	Mounting brackets
P ■ F – ■ 1 ■ – ■	Smart Field Display and Data Logger
P ■ F – ■ 0 1 – ■	Loop Display
S A A – 1 0 2 – 0	Aiming device, 500 mm, aluminum, Pg9, drilled as DN50 PN16

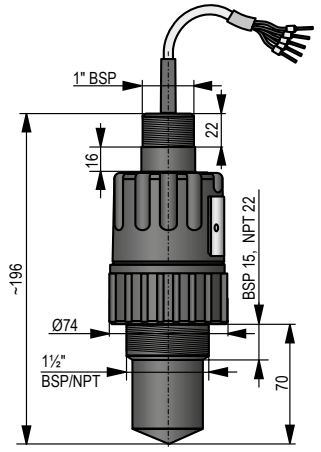
Process seal material

- Factory default: EPDM for PP housing, FPM for PVDF and PTFE housing
- Optional: EPDM, FPM, FFKM available for all types

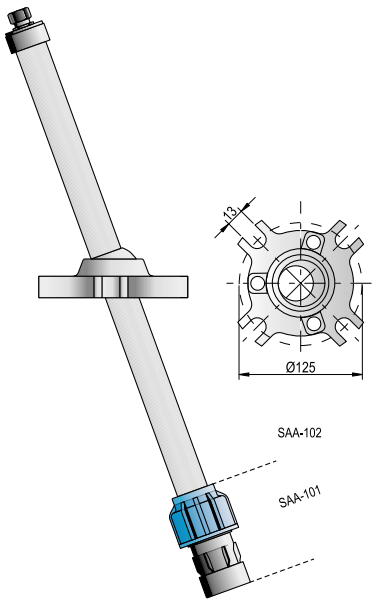
Process seals are ordered separately and must be specified in the text part of the order. Other seals are also available.



WP☐–212–☐, WP☐–213–☐



WP☐–2☐4–☐, WP☐–2☐5–☐



SAA–102

NIV24
WPA–212–4
WPA–214–4
WPA–224–4

NEW

Compact Non-Contact Microwave Level Transmitters

PiloTREK WE–200

The new **PiloTREK WE–200** non-contact radar level transmitters use the most advanced industrial measurement technology, the 80 GHz FMCW radar. The most fundamental advantage of 80 GHz radar compared to lower frequencies *(5…12 GHz and 25 GHz)* is the smaller antenna size, better focusability, and narrow beam angle. It uses the latest technology to measure liquids, masses, emulsions and other chemicals widely used in the water, food, energy, pharmaceutical and chemical industries, providing measurement results with millimeter accuracy. It is also excellent for measuring substances that tend to vaporize and liquids with a gas blanket or for free flowing solids.

In addition to the level, volume, and weight measurement functions, this product family also inherits the open channel flow measurement functions and the threshold functions to eliminate false and interfering echoes. Since no medium is required for millimeter waves to propagate, it can also be used in a vacuum.

The device can also be operated with HART®-compliant NIVELCO **EView2**, **MultiCONT** universal process controller, and PACT*ware*™ software, or programmed via Bluetooth® communication with the new **MobileEView** app.

FEATURES

- 2-wire 80 GHz *(W-band)* radar
- Accuracy of ±2 mm
- Small antenna diameter for easy installation
- Plug-in graphic display module
- Horn and plastic encapsulated antennas
- Compact design with IP66/IP67 protection
- User-friendly threshold management
- Configuration via Bluetooth® with MobileEView app
- PACTware™ compatible
- NIFLANGE weldable stainless steel flange options
- High-temperature version
- 5 years warranty
- Ex version

WES–214–4

WEP–214–4

APPLICATIONS

- For level measurement of liquids, emulsions and other media
- For free flowing solids
- Storage tanks, chemical tanks, open pits, sumps, wells
- Measurement through a plastic tank roof
- For materials that tend to vaporize
- For measuring liquids with a gas blanket
- It can also be used in a vacuum
- Open-channel flow measurement

WHS–214–B

CERTIFICATES

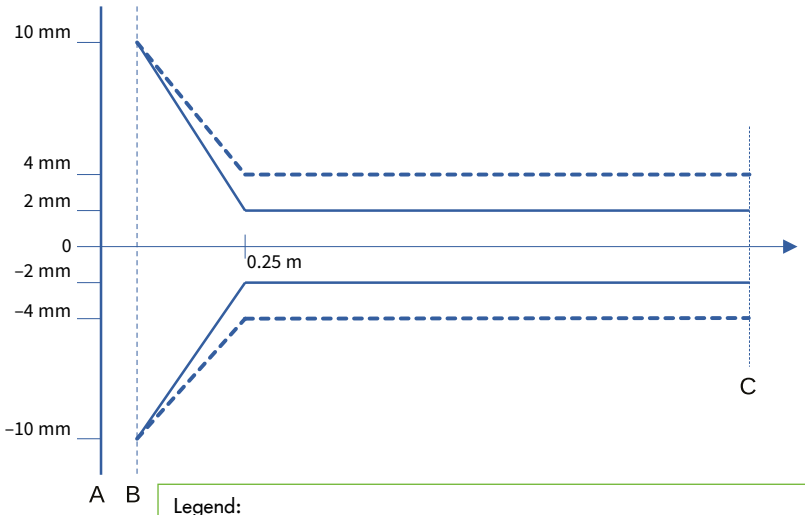
- ATEX *(Ex ia GD)*
- IECEx *(Ex ia GD) (in prep.)*
- INMETRO *(Ex ia GD)*, ANATEL
- FM CI1 Div1 *(XP) (in prep.)*

AREAS OF APPLICATION

- Water and Wastewater Industry
- Energy / Utilities
- Food & Beverage
- Chemical & Pharmaceutical
- Agriculture
- Construction Materials
- Heavy Industry
- Packaging Industry

WET–215–B

LINEARITY ERROR



Legend:
- W□□–21□–□
- W□□–22□–□ / W□□–238–□

A – Plane of the device's process connection. **B** – The minimum measurement distance (X_m), below which the radar cannot measure, due to the insertion length of the antenna. **C** – Maximum measurement distance (X_M).


WET–215–B


WGB–225–B


WGS–215–B


WEK–224–E

OPERATING PRINCIPLE

The reflection of millimeter waves is highly dependent on the dielectric constant of the medium. Therefore, the dielectric constant (ε_r) of the medium to be measured must be greater than 1.9 for millimeter-wave level measurement.

Informative ε_r values							
Butane (C_4H_{10})	1.4	Ethers	4.4	Gasoline	2.3	Methyl alcohol (CH_3OH)	33.1
LP gas	1.6…1.9	Acetic acid (CH_3COOH)	6.2	Bitumen	2.6	Glycol ($C_2H_6O_2$)	37
Kerosene	2.1	Limestone	6.1…9.1	Carbon disulfide (CS_2)		Nitrobenzene ($C_6H_5NO_2$)	40
Crude Oil		Ammonia (NH_3)	17…26	Clinker	2.7	Glycerin ($C_3H_8O_3$)	41.1
Diesel Oil		Acetone (C_3H_6O)	21	Resin	2.4…3.6	Water (H_2O)	80
Benzol (C_6H_6)	2.2	Ethyl alcohol (C_2H_5OH)	24	Cereal Grain	3…5	Sulfuric acid (H_2SO_4) (T = 20 °C)	84

The measurement principle of a level transmitter with a millimeter wave signal is based on measuring the reflection's time of flight. The propagation speed of millimeter wave signals in air, gases and vacuum is almost constant regardless of the temperature and pressure of the medium, so the measured distance is independent of the physical parameters of the intermediate medium. The **PiloTREK WE–200** level transmitter is a frequency modulated continuous wave *(FMCW)* radar operating at 80 GHz *(W-band)*. The most obvious advantages of 80 GHz radars over lower frequency *(5…12 & 25 GHz)* radars are smaller antenna size, better focus, and smaller beam angle. A portion of the millimeter-wave continuous wave energy radiated by the level transmitter antenna is reflected from the measured surface, depending on the material to be measured. The distance of the reflecting surface is calculated with high accuracy by the electronics from the frequency shift of the reflected signal and converted into a distance, level, or volume signal by the electronics.

TECHNICAL DATA

		PiloTREK W□□–200
Measured values		Distance; calculated values: level, volume, mass, flow
Signal frequency		77…81 GHz (W-band)
Measuring range[1]		0…30 m
Lowest ε_r of medium		1.9
Resolution		0.1 mm
Supply voltage		12…36 V DC
Output	Analog	4…20 mA (3.9…20.5 mA); $R_{Lmax} = (U_S - 12\ V) / 0.02\ A$
	Digital	Bluetooth® LE 5.1 (optional), HART® interface (loop resistance ≥250 Ω)
	Display	SAP–300 – graphic display unit
	Service interface	Compatible with SAT–506–0
	Relay *(optional)*	SPDT 30 V / 1 A DC; 42 V / 0.5 A AC
Measuring frequency		~1/s
Antenna material[1]		1.4571 stainless steel, or plastic antenna enclosure (PP / PVDF / PTFE)
Standard version	Process temperature	–40…+80 °C
	Ambient temperature	–40…+70 °C, with display –20…+70 °C
High-temperature version	Process temperature	–40…+200 °C[2]
	Ambient temperature	–40…+60 °C, with display –20…+60 °C
Process pressure		PP, PVDF, PTFE antenna: –1…3 bar; Stainless steel antenna: –1…40 bar
Seal		EPDM for PP and stainless steel (1.4571) antenna, FPM (Viton®) for PVDF and PTFE antenna. Optional: EPDM, FFKM Perfluoroelastomer (Kalrez® 6375)
Process connection		1", 1½" BSP / NPT, TriClamp, prepared for welded flange (NIFLANGE)
Ingress protection		IP66 / IP67
Electrical connection		2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection, cable outer diameter: Ø6…12 mm (shielded cable is recommended), wire cross section: 0.5…1.5 mm²
Electrical protection		Overvoltage Class 1; (Class III [SELV])
Housing material[1]		Fiberglass-reinforced plastic (PBT) / Painted aluminum / Stainless steel 1.4571
Weight		0.6…0.8 kg / 1.1…2 kg / 2.4…2.9 kg

[1] *According to order code.*
[2] *High temperature version with metal housing and stainless steel or PTFE encapsulated antenna only.*

TYPE-DEPENDENT DATA

	W□□–212–□ W□□–213–□	W□□–214–□ W□□–215–□	W□□–224–□ W□□–225–□
Dead zone[2]	0 m		
Maximum measuring range[3]	10 m		20 m
Accuracy[4]	±4 mm		±2 mm
Beam angle *(–3 dB)*	12°	7°	
Antenna insertion length[5]	80 mm	92 mm	
Process connection	1" BSP / NPT	1½" BSP / NPT	

[2] *Measured from the tip of the antenna.*
[3] May be limited in the case of low dielectric constant or non-perpendicular or non-planar media.
[4] *In the case of an ideal reflecting surface.*
[5] *Measured from the seal plane of the process connection.*

Ex INFORMATION

Application group		IIC	IIIC
Standard version		WE□–2□□–8 Ex, WG□–2□□–8 Ex	
Ex marking (ATEX)		⟨Ex⟩ II 1G Ex ia IIC T6 Ga	⟨Ex⟩ II 1D Ex ia IIIC T85°C Da
Ex marking (INMETRO)		Ex ia IIC T6 Ga	Ex ia IIIC T85°C Da
High-temperature version		WH□–2□□–8 Ex, WJ□–2□□–8 Ex[6]	
Ex marking (ATEX)		⟨Ex⟩ II 1G Ex ia IIC T6…T3 Ga	⟨Ex⟩ II 1D Ex ia IIIC T85°C…T180°C Da
Ex marking (INMETRO)		Ex ia IIC T6…T3 Ga	Ex ia IIIC T85°C…T180°C Da
Ex power supply, intrinsically safety data[7]		U_i = 30 V, I_i = 100 mA, P_i = 0.75 W C_i ≤ 12 nF, L_i ≤ 250 µH	U_i = 30 V, I_i = 140 mA, P_i = 1 W C_i ≤ 12 nF, L_i ≤ 250 µH
Supply voltage		12…30 V DC	
Electrical connection	Cable entry	2× M20×1.5 cable glands + 2× internally threaded ½" NPT connection	
	Cable outer diameter	Ø6…12 mm	
	Wire cross-section	0.5…1.5 mm²	

[6] *Under development*

[7] *In IIB applications, Ex power supply data for IIIC can be used.*

TEMPERATURE DATA FOR Ex CERTIFIED MODELS

	Standard version WE□–2□□ / 3□□–8 Ex, WG□–2□□ / 3□□–8 Ex	High-temperature version WH□–2□□–8 Ex / WH□–3□□–8 Ex, WJ□–2□□–8 Ex / WJ□–3□□–8 Ex			
Temperature data	Ex ia IIC, Ex ia IIIC	Ex ia IIC, Ex ia IIIC			
Temperature class	**T6 T85°C**	**T6 T85°C**	**T5 T100°C**	**T4 T135°C**	**T3 T180°C**
Highest process temperature	+80 °C		+100 °C	+135 °C	+180 °C
Highest surface temperature at the process connection	+70 °C			+135 °C	
Highest ambient temperature	+70 °C			+60 °C	

POLARIZATION

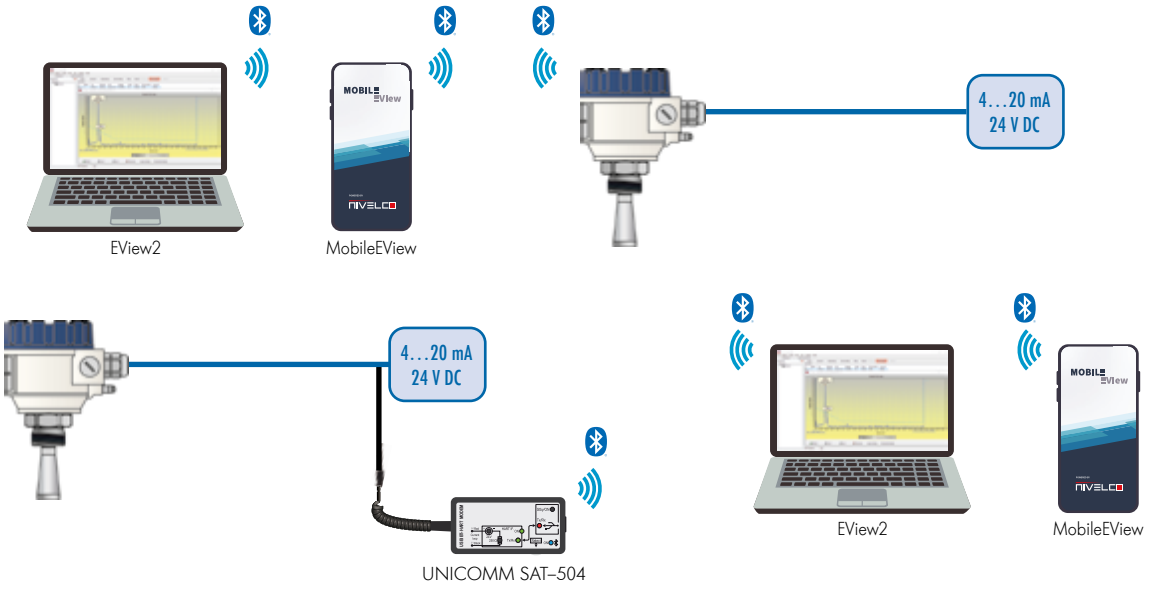
The **PiloTREK W–200** 80 GHz radar is much less sensitive to installation conditions, both in terms of polarization and clutter sensitivity, due to its narrow and nearly circular beamwidth.

BACKGROUND MAPPING

Thanks to its 80 GHz FMCW technology, it is much less sensitive to the presence of clutter than previous generation radars. It now has an easy-to-use, flexible threshold management ***(EView2)*** that allows echoes from clutter in the tank to be easily masked if necessary. The threshold curve is designed to mask unwanted echoes from the measurement. Echo peaks below the threshold are not included in the evaluation.

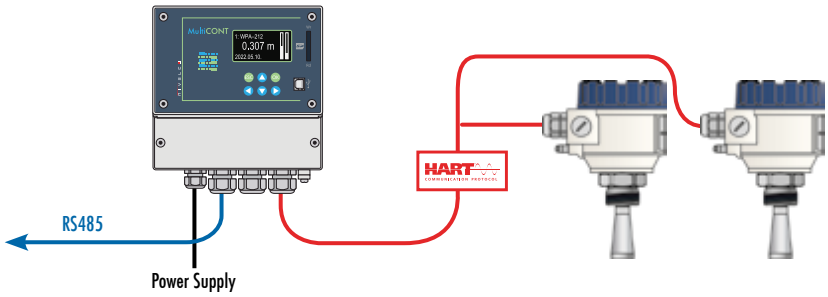
Bluetooth® CONNECTIVITY

The Bluetooth® option on the **PiloTREK W–200** Series allows for convenient device setup and diagnostics via the NIVELCO **MobileEView** app for Android or iOS or the free **EView2** software download for laptops.

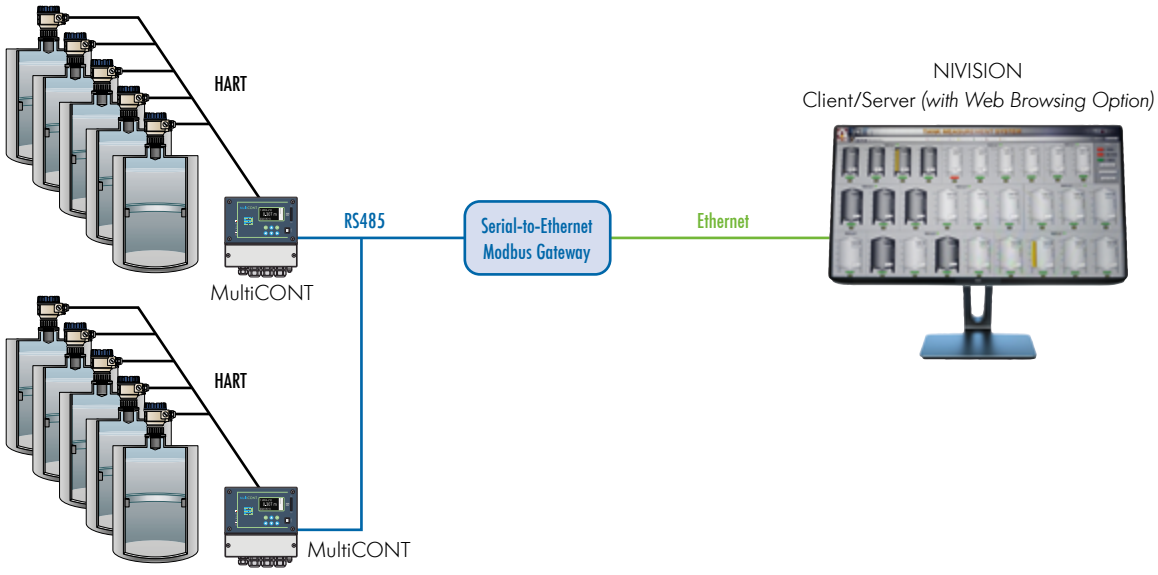


PiloTREK TRANSMITTERS IN HART® MULTIDROP LOOP

MultiCONT multi-channel remote controllers process, display, and transmit data from NIVELCO's HART®-equipped transmitters in a multidrop loop. Up to 15 of these connected transmitters can be programmed and maintained from MultiCONT, which supports data-logging tasks. MultiCONT provides programmable relay outputs, while 4…20 mA outputs are available through remote I/O modules.



MultiCONT can send measurement data via RS485 to PLCs, computers running third-party SCADA systems, or the NIVELCO **NIVISON** inventory monitoring system.



WIRING

WEK–2□□–B

PROGRAMMING, ECHO MAP

All parameters can be programmed via the optional **UNIDISP SAP–300** plug-in display; measurement and output parameters can be set using a text-based menu system. Measured values are displayed as numbers and bar graphs on the dot-matrix screen. The echo map helps detect false reflections and optimizes measurement configuration.

Simple programming and setup menu

The displayed values are clearly visible

MOUNTING

The device must be mounted far as possible from interfering objects inside the tank and from sources of interference, such as waves, vortices or strong vibrations. The antenna cover must be parallel to the measured surface within ±2…3°.

For outdoor use, we recommend using an aluminum housing. In regions with extremely hot climates, we recommend protecting the device from direct sunlight to avoid exceeding the ambient temperature limits of the housing.

PiloTREK WE–200 80 GHz Compact — 5 years

2-wire compact radar level transmitter with stainless steel horn antenna or plastic encapsulated antenna

Version

W□■ – 2 ■■ – ■

E		Transmitter
G		Transmitter with plug-in display
H	*	Transmitter, high temperature version (max. +200 °C)
J	*	Transmitter with plug-in display, high temperature version (max. +200 °C)

* High temperature version with metal housing and stainless steel or PTFE encapsulated antenna only.

Antenna / Housing

W■□ – 2 ■■ – ■

P		PP / Fiberglass-reinforced plastic (PBT)
A		PP / Painted aluminum
D		PP / Stainless steel
M		1.4571 / Fiberglass-reinforced plastic (PBT)
S		1.4571 / Painted aluminum
K		1.4571 / Stainless steel
V		PVDF / Fiberglass-reinforced plastic (PBT)
B		PVDF / Painted aluminum
W		PVDF / Stainless steel
F		PTFE / Fiberglass-reinforced plastic (PBT)
T		PTFE / Painted aluminum
L		PTFE / Stainless steel

Antenna type

W■■ – □■■ – ■

2		Horn

Measurement range

W■■ – 2 □■ – ■

1		10 m
2		20 m
3	**	30 m

** Under development

Process connection

W■■ – 2 ■□ – ■

2		1" BSP (only for 10 m measuring range)
3		1" NPT (only for 10 m measuring range)
4		1½" BSP (only for 10 m or 20 m measuring range)
5		1½" NPT (only for 10 m or 20 m measuring range)
C	***	1½" TriClamp (only for 1.4571 or PTFE antenna version)
D	***	2" TriClamp (only for 1.4571 or PTFE antenna version)
E	***	3" TriClamp (only for 1.4571 or PTFE antenna version)
F	***	4" TriClamp (only for 1.4571 or PTFE antenna version)
8	**	Ø75 mm (2½") prepared for flange (only 30 m and encapsulated types, flanges available from size DN80 should be ordered separately)
S		Prepared for welded flange (only for 10 and 20 m ranges, with 1½" stainless steel antenna, flange type MF_–___–L to be ordered separately)

** Under development
*** Based on individual quote

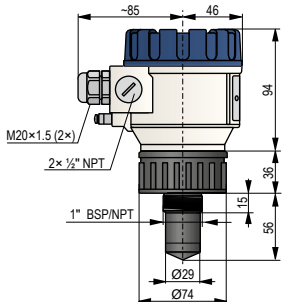
Output / Certificates

W■■ – 2 ■■ – □

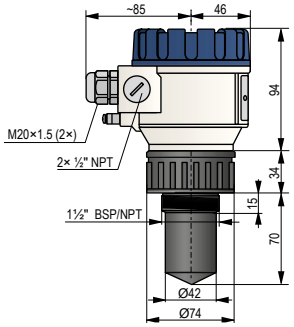
4		4...20 mA + HART®
5	**	4...20 mA + HART® / Ex ta D
8		4...20 mA + HART® / Ex ia GD
B		4...20 mA + HART® + Bluetooth®
C	**	4...20 mA + HART® + Bluetooth® / Ex ta D
E		4...20 mA + HART® + Bluetooth® / Ex ia GD
H		4...20 mA + HART® + relay
F	**	4...20 mA + HART® + relay / Ex ta D
R		4...20 mA + HART® + relay + Bluetooth®
J	**	4...20 mA + HART® + relay + Bluetooth® / Ex ta D

** Under development

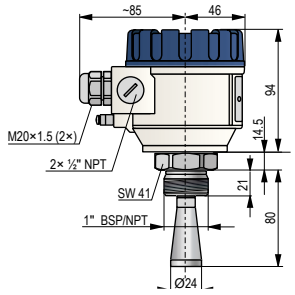
Need of IEC Ex is to be specified in the text part of the order



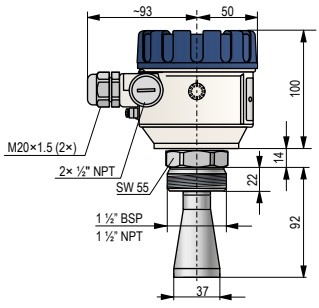
WEP–212–□, WEP–213–□



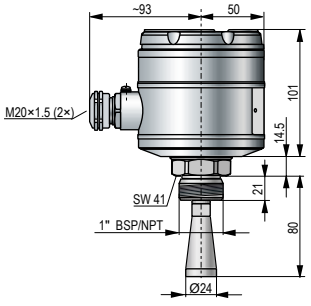
WEP–2□4–□, WEP–2□5–□



WEM–212–□, WEM–213–□



WES–2□4–□, WES–2□5–□



W□K–212–□, W□K–213–□

NEW

Compact Non-Contact Microwave Level Transmitters

Accessories sold separately; see relevant page for details

S A P – 3 0 0 – 0	Graphic plug-in display module
S A T – 5 0 4 – ■	HART®-USB/Bluetooth® modem
S A K – 3 0 5 – ■	HART®-USB/RS485 modem
S A T – 5 0 6 – ■	eLINK Module
M F ■ – ■ ■ ■ – ■	Mounting flange

Process seal material

- Factory default: EPDM for PP and 1.4571 antenna, FPM for PVDF and PTFE antenna
- Optional: EPDM, FPM, FFKM available for all types

Process seals are ordered separately and must be specified in the text part of the order. Other seals are also available.

NIFLANGE MFT — 5 years

Available in carbon steel, PTFE lined carbon steel, polipropylene (PP), and stainless steel, DIN, ANSI, and JIS flanges

Prices on request

Type

□ F ■ – ■ ■ ■ – ■

M	Mounting flange

Version

M F □ – ■ ■ ■ – ■

A	Flat Face (A)
T	Raised Face (B1)
C	Tongue (C)
D	Groove (D)

Standard / Flange material / Form

M F ■ – □ ■ ■ – ■

1	DIN / Carbon steel / EN 1092 B1
2	DIN / Stainless steel / EN 1092 B1
3	DIN / Polypropylene / EN 1092 A
5	ANSI / Carbon steel / ASME B16.5 RF
6	ANSI / Stainless steel / ASME B16.5 RF
7	ANSI / PP/ ASME B16.5 FF
A	JIS / Carbon steel / B 2220 RF
B	JIS / Stainless steel / B 2220 RF
C	JIS / PP / B 2220 FF

Dimension DIN / ANSI / JIS

M F ■ – ■ □ ■ – ■

D	DN15 / ½" / 15A
A	DN20 / ¾" / 20A
B	DN25 / 1" / 25A
C	DN32 / 1¼" / 32A
7	DN40 / 1½" / 40A
0	DN50 / 2" / 50A
1	DN65 / 2½" / 65A
2	DN80 / 3" / 80A
3	DN100 / 4" / 100A
4	DN125 / 5" / 125A
5	DN150 / 6" / 150A
6	DN200 / 8" / 200A
8	DN250 / 10" / 250A
9	DN300 / 12" / 300A

Pressure DIN / ANSI / JIS

M F ■ – ■ ■ □ – ■

5	PN6 / - / 5K
6	PN10 / - / 10K
1	PN16 / 150 psi / 16K
2	PN25 / 300 psi / 30K
3	PN40 / 600 psi / 40K
4	PN63 / 900 psi / 63K

Internal dimension

M F ■ – ■ ■ ■ – □

2	1" BSP
5	1" NPT
7	1½" BSP
8	1½" NPT
L	Weldable to WE (stainless steel only)

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