AMETEK®

DREXELBROOK®

DATA SHEET

# DR5200 2-Wire / 10GHz Radar (FMCW) Level Meter

## The Low-Cost FMCW Level Radar

This device is a non-contact radar level meter that uses FMCW technology. It measures distance, level and volume of liquids and pastes. It is ideal for measuring the level of corrosive products with its PP or PTFE antenna options.

## *FEATURES*

- PP or PTFE Wave Horn antennas for the measurement of corrosive products
- Modular design: horizontal or vertical position of housing is suitable for almost all installations
- Optional local display with an integrated 4-button keypad. It is not necessary to remove the housing cover to get access to the keypad.
- Quick coupling system permits removal of the housing under process conditions and rotation of the housing through 360°
- Bayonet housing cover permits easy opening and closing of the housing, even after years in service
- Measuring range up to 30 m / 98.4 ft
- Converter is backwards compatible with all DR3X00 and DR2200
- SIL2-compliant according to IEC 61508 for safety-related systems
- Each device is calibrated on dedicated calibration rigs before it leaves the factory
- Universal measurement device for liquids, pastes and slurries

### Industries

- Chemical market
- Oil & Gas
- Power
- Food
- Wastewater
- Metals, Minerals & Mining

### Applications - Level, Volume, and Flow

- Storage tanks
- Process tanks
- Open channel flow (if PACTware™ software tool is used)
- River level

# DR5200 2-Wire / 10GHz Radar (FMCW) Level Meter

## Modular Design

### Compact / Vertical version

- The converter is vertical. It is attached directly to the process connection (compact version).
- For installation of the device on the ground or in a recess.
- The optional LCD display is attached to the top or the side of the device.

### Compact / Horizontal version

- The converter is horizontal. It is attached directly to the process connection (compact version).
- This version is ideal for installation in areas with low roof clearances.

  For locations where it is easier to read data on the optional LCD display if the converter is in a horizontal position.

### Remote version

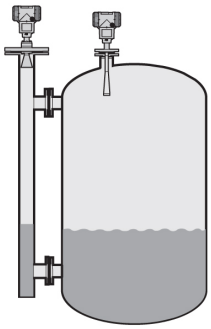
- Users can read measurements and configure the device from the bottom of the tank.
- The remote converter can be installed up to 100 m / 328 ft away from the process connection on the tank.
- Attach the remote converter to a wall, pipe or rigid surface with the supplied wall support.

### Weather protection

A weather protection option can also be ordered with the device. It is recommended for outdoor applications.

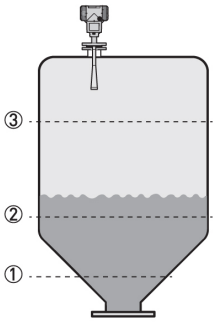
- Must be ordered with the device.
- Can be ordered for both compact versions of the device and the antenna housing of the remote version.
- Easily opened and closed.

# Applications



## 1. Level measurement of liquids

The level meter can measure the level of a wide range of liquid products on a large variety of installations within the stated pressure and temperature range. It does not require any calibration: it is only necessary to do a short configuration procedure.




## 2. Volume (mass) measurement

A strapping table function is available in the configuration menu for volume or mass measurement. Up to 30 volume (mass) values can be related to level values. For example:

Level 1= 2 m / Volume 1= e.g. 0.7 m³

Level 2= 10 m / Volume 2= e.g. 5 m³

Level 3= 20 m / Volume 3= e.g. 17 m³

This data permits the device to calculate (by linear interpolation) volume or mass between strapping table entries.

## 3. Flow rate measurement

Flow rate measurement is available for field devices that are used with PACTware™ software. A flow rate conversion function is in the DTM supplied with the device. Make a selection from 6 flow profiles: Parshall (ISO 9826), Venturi Rectangular (ISO 4359), Venturi Trapezoidal (ISO 4359), Venturi U (ISO 4359), V-Notch (ISO 1438) or Rectangular Notch (ISO 1438).

## Antenna Selection

The graphs below show which antenna to select for the application based on:

- D, the measuring range,
- $\varepsilon_r$, is the dielectric constant of the product being measured

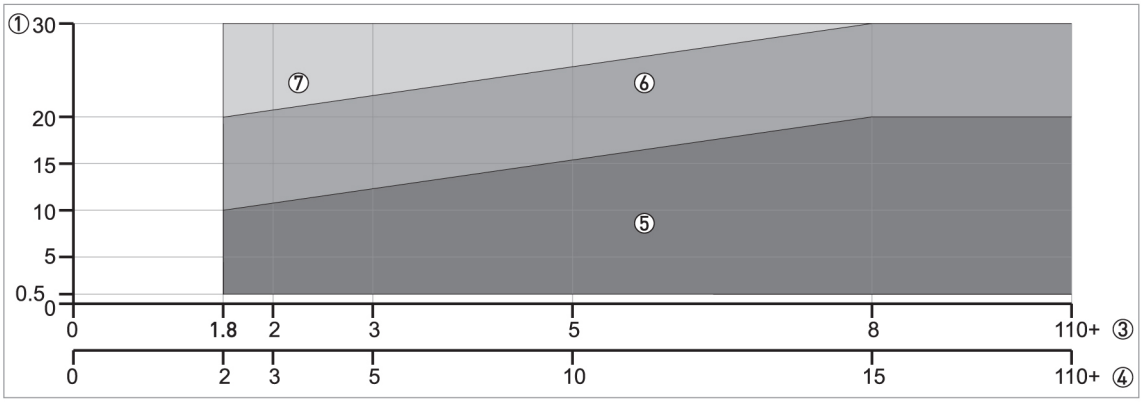



Figure 1-1: Selection of antenna (graph of distance in m against $\varepsilon_r$)

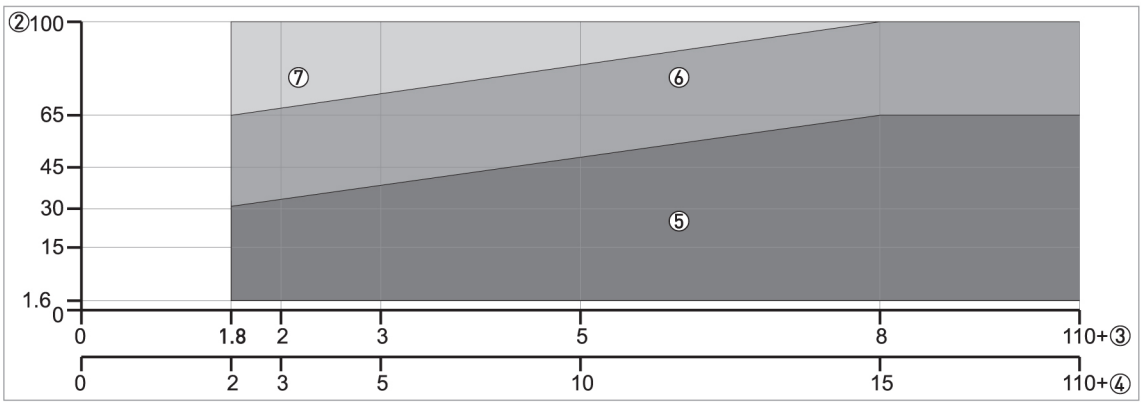



Figure 1-2: Selection of antenna (graph of distance in ft against $\varepsilon_r$)

1 - Tank height / Measuring range [m]

2 - Tank height / Measuring range [ft]

3 - $\varepsilon_r$ for storage tanks with smooth product surface

4 - $\varepsilon_r$ for process tanks without agitator or foam

5 - All antennas:

- DN80/3¨ and DN100/4¨ Metallic Horn antenna: only for use in a stilling well*
- Wave Guide antenna: maximum measuring range is 6 m / 19.68 ft

6 - DN150/6¨ or DN200/8¨ Metallic Horn antennas in a stilling well* or DN200/8¨ Metallic Horn antenna

7 - DN200/8¨ Metallic Horn antenna in a stilling well*

* A stilling well is equivalent to the Wave Guide antenna option or a bypass chamber

# DR5200 2-Wire / 10GHz Radar (FMCW) Level Meter

## Specifications

| Measuring system | |
|---|---|
| **Measuring principle** | 2-wire loop-powered level transmitter; X-band (10 GHz) FMCW radar |
| **Application range** | Level measurement of liquids, pastes and slurries |
| **Primary measured value** | Distance and reflection |
| **Secondary measured value** | Level, volume, mass and flow rate |
| **Design** | |
| **Construction** | The measurement system consists of a measuring sensor (antenna) and a signal converter |
| **Options** | Integrated LCD display (-20..+60°C/ -4…+140°F); if the ambient temperature is not in these limits, the display switches off automatically |
| | High-temperature (HT) extension (if the process connection temperature is more than +150°C / +302°F - Metallic Horn antenna only) |
| | Straight antenna extensions<br>Max. Extension length, PTFE Wave Horn antenna: 300 mm / 11.8¨; Max. Extension length, Metallic Horn antenna: 1000 mm / 39.4¨ |
| | "S" antenna extension<br>- only for DN150/6¨ and DN200/8¨ Metallic Horn antenna options |
| | "L" (right angle) antenna extension<br>- only for DN150/6¨ and DN200/8¨ Metallic Horn antenna options |
| | Antenna purging system<br>- only for DN150/6¨ and DN200/8¨ Metallic Horn antenna options |
| | Heating / cooling system (with or without the antenna purging system)<br>- only for DN150/6¨ and DN200/8¨ Metallic Horn antenna options |
| | Signal cable for remote housing version (refer to cable properties in "Electrical connection: Remote device version") |
| | Weather protection - for the compact version or the antenna housing (remote version). It cannot be ordered after delivery of the device. |
| **Max. Measuring range** | PTFE and PP Wave Horn antennas:<br>20 m / 65.6 ft |
| | DN80 / DN100 Metallic Horn antennas (installation only in stilling wells):<br>10 m / 32.8 ft |
| | DN150 / DN200 Metallic Horn antennas:<br>30 m / 98.4 ft |
| | Wave Guide antenna:<br>6m/ 19.68 ft |
| | Also depends on the dielectric constant of the product and the installation type. Refer also to "Antenna selection". |
| **Min. tank height** | 1m/ 3.3 ft |
| **Top dead zone** | Minimum value: Antenna length + antennna extension length + 100 mm / 3.9¨ |
| **Beam angle (½ angle) of antenna** | PP Wave Horn: 10° |
| | PTFE Wave Horn: 10° |
| | Metallic Horn DN80 / 3¨: 16° - used only in stilling wells |
| | Metallic Horn DN100 / 4¨: 12° - used only in stilling wells |
| | Metallic Horn DN150 / 6¨: 8° |
| | Metallic Horn DN200 / 8¨: 6° |
| | Wave Guide / stilling well: n/a - the radar signal is inside the tube. |

# DR5200 2-Wire / 10GHz Radar (FMCW) Level Meter

## Specifications

| Display and user interface | |
|---|---|
| **Display** | LCD display<br>128 × 64 pixels in 8-step greyscale with 4-button keypad |
| **Interface languages** | 3 language pack options (the language is given in the customer order):<br>1 English, French German and Italian<br>2 English, French,Spanish and Portuguese<br>3 English, Chinese (Mandarin), Japanese and Russian |
| **Measuring accuracy** | |
| **Resolution** | 1 mm/ 0.04¨ |
| **Repeatability** | ±1 mm/ ±0.04¨ |
| **Accuracy** | Standard: ±10 mm / ±0.4¨, when distance < 10 m / 33 ft; ±0.1% of measured distance, when distance > 10 m / 33 ft<br>Option: ±5 mm/ ±0.2¨, when distance < 10 m / 33 ft; ±0.05% of measured distance, when distance > 10m/ 33 ft |
| **Reference conditions acc. to EN 61298-1** | |
| **Temperature** | +15...+25°C / +59...+77°F |
| **Pressure** | 1013 mbara ±50 mbar / 14.69 psia ±0.73 psi |
| **Relative air humidity** | 60% ±15% |
| **Target** | Metal plate in an anechoic chamber |
| **Operating conditions** | |
| **Temperature** | |
| **Ambient temperature** | -40…+80°C/ -40…+176°F<br>Ex: see supplementary operating instructions or approval certificates |
| **Storage temperature** | -50…+85°C/ -58…+185°F<br>Process connection temperature<br>(higher temperature on request) |
| | PP Wave Horn antenna:<br>-20...+100°C / -4...+212°F |
| | PTFE Wave Horn antenna:<br>-50...+150°C / -58...+302°F |
| | Metallic Horn antenna / Wave Guide antenna:<br>Standard: FKM/FPM (-40…+150°C (+200°C with an HT extension) / -40…+302°F (+392°F with an HT extension));<br>Options: Kalrez® 6375 (-20…+150°C (+250°C with an HT extension) / -4…+302°F (+482°F with an HT extension)); PFA (-60°C…+130°C/ -76…+266°F); EPDM (-50...+130°C / -58...+266°F)The process connection temperature must agree with the temperature limits of the gasket material.<br>Ex: see supplementary operating instructions or approval certificates 1 |
| **Pressure** | |
| **Process pressure** | PP Wave Horn antenna:<br>-1…16 barg / -14.5…232 psig. For more data, refer to Pressure ratings on page 18. |
| | PTFE Wave Horn antenna:<br>-1…40 barg / -14.5…580 psig. For more data, refer to Pressure ratings on page 18. |
| | Metallic Horn antenna / Wave Guide antenna:<br>Standard: -1…40 barg / -14.5…580 psig; subject to the process connection used and the flange temperature. Higher pressure on request. |
| **Purging system (option)** | Max. 6 barg / 87 psig (higher pressure on request) |
| **Heating / cooling system (option)** | Max. 6 barg / 87 psig (higher pressure on request) |
| **Other conditions** | |
| **Dielectric constant ($\varepsilon_r$)** | Direct mode: ≥1.8<br>Refer also to "Technical data: Antenna selection" in the instruction manual |
| **Ingress protection** | IEC 60529: IP 66/67 |
| | NEMA 250: NEMA type 4X (housing) and type 6P (antenna) |
| **Maximum rate of change** | 10 m/min / 32.8 ft/min |

# DR5200 2-Wire / 10GHz Radar (FMCW) Level Meter

## Specifications

| Installation conditions | |
|---|---|
| **Process connection size** | The nominal diameter (DN) should be equal to or larger than the antenna diameter. |
| **Process connection position** | Make sure that there are not any obstructions directly below the process connection for the device. For more data, refer to Instruction Manual |
| **Dimensions and weights** | Refer to dimensions and weights data |
| **Materials** | |
| **Housing** | Standard: Polyester-coated aluminium |
| | Option: Stainless steel (1.4404 / 316L) |
| **Antenna options / Wetted materials** | PTFE Wave Horn antenna with a PTFE flange face |
| | PP Wave Horn antenna with a PP jacket/threaded process connection |
| | Stainless steel (1.4404 / 316L) Metallic Horn antenna with a PTFE process seal and an FKM/FPM, EPDM, Kalrez® 6375 or PFA O-ring gasket |
| | Stainless steel (1.4404 / 316L) Wave Guide antennas with a PTFE process seal and an FKM/FPM, EPDM, Kalrez® 6375 or PFA O-ring gasket |
| **Feedthrough** | PP Wave Horn antenna: this is a single-piece antenna (the feedthrough is filled with PP) |
| | PTFE Wave Horn antenna: this is a single-piece antenna (the feedthrough is filled with PTFE) |
| | Metallic Horn and Wave Guide antennas: Dual process seal system<br>- 1st seal: PTFE with O-ring gasket , 2nd seal: Metaglas® with O-ring gasket 2 |
| **Cable gland** | Standard: none |
| | Options: Plastic (Non-Ex: black, Ex i-approved: blue); nickel-plated brass; stainless steel |
| **Weather protection (Option)** | Stainless steel (1.4404 / 316L) |
| **Process connections** | |
| **Thread** | PP Wave Horn antenna: G 1½; 1½ NPT |
| **Flange version** | |
| **EN** | PTFE Wave Horn antenna: DN50…150 in PN16, PN40 |
| | Metallic Horn and Wave Guide antennas: DN80…200 in PN16, PN40; others on request |
| **ASME** | PTFE Wave Horn antenna: 2¨…6¨ in 150 lb / 300 lb |
| | Metallic Horn and Wave Guide antennas: 3¨…8¨ in 150 lb / 300 lb; others on request |
| **JIS** | PTFE Wave Horn antenna: 50...150A in 10K |
| | Metallic Horn and Wave Guide antennas: 80…200A in 10K; others on request |
| **Other** | Others on request |
| **Electrical connections** | |
| **Power supply** | Terminals output - Non-Ex / Ex i:<br>12…30 VDC; min./max. value for an output of 22 mA at the terminal |
| | Terminals output - Ex d:<br>16…36 VDC; min./max. value for an output of 22 mA at the terminal |
| **Maximum current** | 22 mA |
| **Current output load** | Non-Ex / Ex i: RL [Ω] ≤ ((Uext -12 V)/22 mA) |
| | Ex d: RL [Ω] ≤ ((Uext -16 V)/22 mA) |
| **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 |

# DR5200 2-Wire / 10GHz Radar (FMCW) Level Meter

## Specifications

| Input and output | |
|---|---|
| **Output signal** | 4…20 mA HART® or 3.8…20.5 mA acc. to NAMUR NE 43 3 |
| **Resolution** | ±3 µA |
| **Temperature drift** | Typically 50 ppm/K |
| **Digital temperature drift** | Max. ±15 mm / 0.6¨ for the full temperature range |
| **Error signal** | High: 22 mA; Low: 3.6 mA acc. to NAMUR NE 43 |
| | |
| | |

| Approvals and certification | |
|---|---|
| **CE** | This device fulfils the statutory requirements of the EC directives. The manufacturer certifies successful testing of the product by applying the CE mark. |
| **Vibration resistance** | EN 60068-2-64 |
| **Metallic Horn (without antenna extension options):** | 5 Hz to 100 Hz: 4g |
| **Metallic Horn, PTFE or PP Wave Horn:** | 3.5 mm up to 8 Hz and 10 m/s²: 1g, 8.5 to 2000 Hz |
| **Explosion protection** | |
| **ATEX**<br>**DEKRA 11ATEX0166 X** | II 1/2 G, 2 G Ex ia IIC T6...T2 Ga/Gb or Ex ia IIC T6...T2 Gb; |
| | II 1/2 D, 2 D Ex ia IIIC T90°C Da/Db or Ex ia IIIC T90°C Db IP6X; |
| | II 1/2 G, 2 G Ex d ia IIC T6...T2 Ga/Gb or Ex d ia IIC T6...T2 Gb; |
| | II 1/2 D, 2 D Ex ia tb IIIC T90°C Da/Db or Ex ia tb IIIC T90°C Db IP6X |
| **IECEx**<br>**IECEx DEK 11.0060 X** | Ex ia IIC T6…T2 Ga/Gb or Ex ia IIC T6…T2 Gb; |
| | Ex ia IIIC T90°C Da/Db or Ex ia IIIC T90°C Db IP6X; |
| | Ex d ia IIC T6...T2 or Ex d ia IIC T6...T2 Gb; |
| | Ex ia tb IIIC T90°C Da/Db or Ex ia tb IIIC T90°C IP6X |
| **cFMus - Dual Seal-approved** | NEC 500 |
| | XP-IS / Cl. I / Div. 1 / Gr. ABCD / T6; |
| | DIP / Cl. II/III / Div. 1 / Gr. EFG / T6; |
| | IS / Cl. I/II/III / Div. 1 / Gr. ABCDEFG / T6; |
| | NI / Cl. I / Div. 2 / Gr. ABCD / T6 |
| | NEC 505 |
| | Cl. I / Zone 0 / AEx d [ia] / IIC / T6; |
| | Cl. I / Zone 0 / AEx ia / IIC / T6; |
| | Cl. I / Zone 2 / AEx nA [ia] / IIC / T6; |
| | Hazardous (Classified) Locations, indoor/outdoor Type 4X and 6P, IP66, Dual Seal |
| | CEC Section 18 (Zone ratings) |
| | Cl. I, Zone 1, Ex d, IIC (Antenna: Zone 0), T6; |
| | Cl. I, Zone 0, Ex ia, IIC, T6; |
| | Cl. I, Zone 2, Ex nA, IIC, T6 DIP A21 IP66 TB 95°C |
| | CEC Section 18 and Annex J (Division ratings) |
| | Cl. I, Div. 1/2, Gr. ABCD; Cl. II, Gr. EFG; Cl. III, T6; |

## Specifications

| | |
|---|---|
| **NEPSI** | Ex ia IIC T2~T6 DIP A21 TA IP66; |
| | Ex d ia IIC T2~T6 DIP A21 TA IP66 |
| **INMETRO** | Ex ia IIC T6…T2 Ga/Gb |
| | Ex ia IIIC T90°C Da/Db IP6X |
| | Ex d [ia Da] IIC T6…T2 Ga/Gb |
| | Ex tb [ia Da] IIIC T90°C Db IP6X |
| **Other standards and approvals** | |
| **SIL** | Compact version only: SIL 2 - according to EN 61508 and for high/low demand mode operation |
| **EMC** | Electromagnetic Compatibility Directive 2004/108/EC in conjunction with EN 61326-1 (2006)<br>SIL 2-approved devices agree with EN 61326-3-1 (2008) and EN 61326-3-2 (2008) |
| | |
| | |
| **Radio approvals** | R & TTE<br>Radio Equipment and Telecommunications Terminal Equipment Directive<br>1999/5/EC in conjunction with ESTI EN 302 372 (2006) |
| | FCC Rules<br>Part 15 |
| | Industry Canada<br>RSS-210 |
| **LVD** | Low-Voltage Directive 2006/95/EC in conjunction with EN 61010-1 (2001) |
| **NAMUR** | NAMUR NE 21 Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment |
| | 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 |
| **CRN** | This certification is applicable for all Canadian provinces and territories. For more data, refer to the website. |
| **Construction code** | Metallic Horn and Wave Guide antennas: NACE MR0175 / ISO 15156; NACE MR0103 |

**1** If the process connection temperature is more than 150°C/ 302°F and the device has Kalrez® 6375 or FKM/FPM gaskets, the device will also have an high temperature extension between the converter and the process connection. 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 ma- terial.

**2** Metaglas® is a registered trademark of Herberts Industrieglas, GMBH & Co., KG

**3** HART® is a registered trademark of the HART Communication Foundation

# DR5200 - 2-Wire / 10GHz Radar (FMCW) Level Meter

## *DIMENSIONS*

Housing, process connection and antenna options

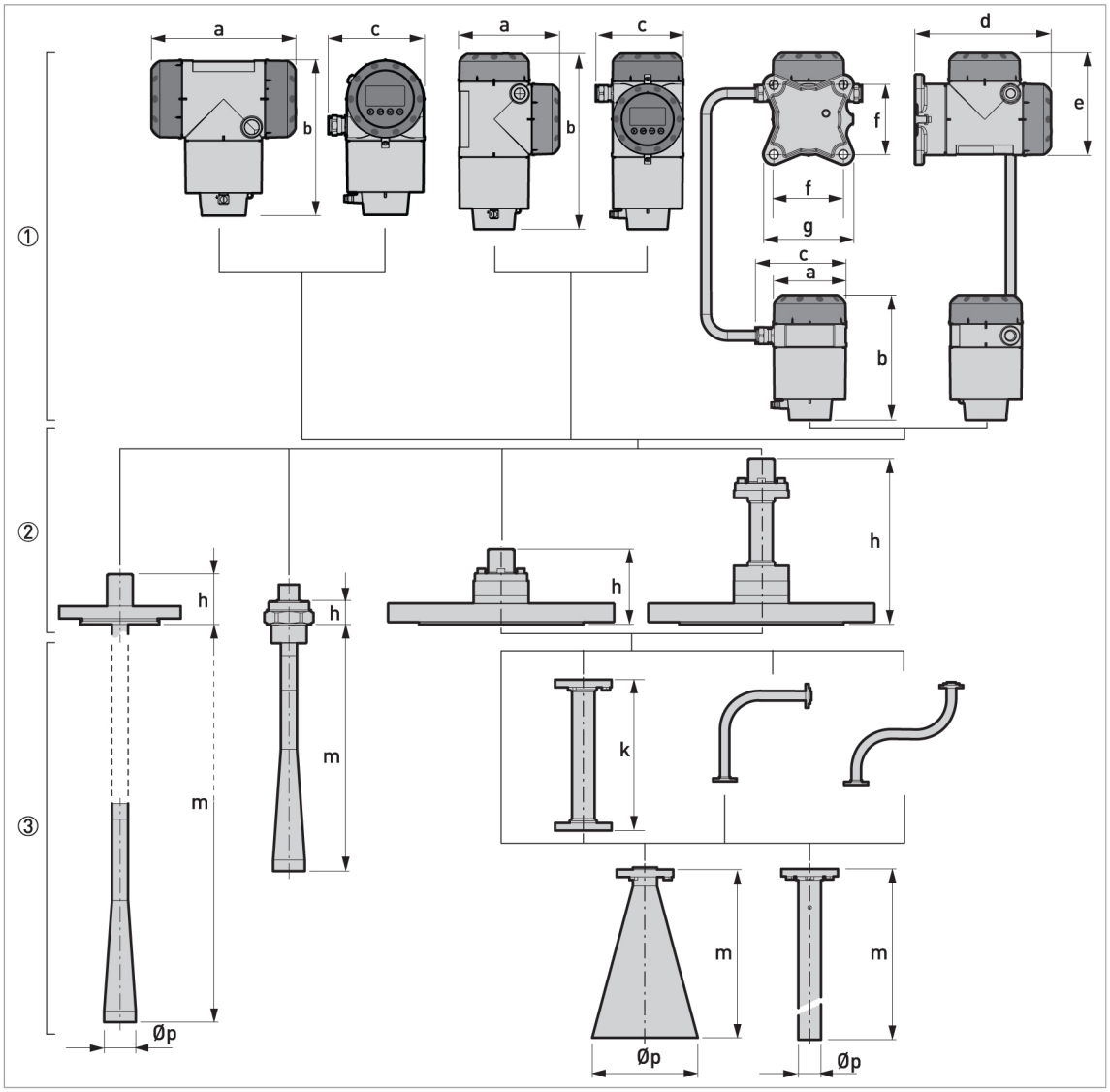



***Figure 2-15: Housing, process connection and antenna options***

**1** Housing options. From left to right: compact converter with horizontal housing, compact converter with vertical hous- ing, and remote converter (top) and antenna housing (bottom)

**2** Process connection options. From left to right: flange connection for PTFE Wave Horn antenna, threaded connec- tion for PP Wave Horn antenna, flange connection for Metallic Horn and Wave Guide antennas, flange connection with a high-temperature (HT) extension for Metallic Horn and Wave Guide antennas

**3** Antenna options. From left to right: PTFE Wave Horn antenna, PP Wave Horn antenna, Metallic Horn antenna (with or without an antenna extension option: straight, "L" or "S" extension), Wave Guide antenna

All housing covers have bayonet connecto
compartment cover for explosion-proof d

# Dimensions

## Housing Options: Dimensions in mm and inches

| Dimensions | Compact - horizontal | | Compact - vertical | | Remote | |
|---|---|---|---|---|---|---|
| | Non-Ex or Ex i (Ex d) | | Non-Ex or Ex i (Ex d) | | Non-Ex or Ex i (Ex d) | |
| | [mm] | [inches] | [mm] | [inches] | [mm] | [inches] |
| a | 191 (258) | 7.5 (10.2) | 147 (210) | 5.79 (8.27) | 104 (104) | 4.09 (4.09) |
| b | 214 (214) | 8.43 (8.43) | 258 (258) | 10.16 (10.16) | 181 (181) | 7.13 (7.13) |
| c | 127 (127) | 5.00 (5.00) | 127 (127) | 5.00 (5.00) | 129 (129) | 5.08 (5.08) |
| d | - | - | - | - | 184 (184) | 7.24 (7.24) |
| e | - | - | - | - | 163 (226) | 6.42 (8.90) |
| f | - | - | - | - | 100 (100) | 3.94 (3.94) |
| g | - | - | - | - | 155 (155) | 6.10 (6.10) |

## Process connection and antenna options: Dimensions in mm

| Dimensions [mm] | PTFE Wave Horn | PP Wave Horn | Metallic Horn | | | | Wave Guide |
|---|---|---|---|---|---|---|---|
| | | | DN80 / 3" | DN100 / 4" | DN150 / 6" | DN200 / 8" | |
| h | 68 | 33 | 100 (220 for the HT extension) (**1**) | | | | |
| k | - | - | 100, 200, 300, 400, 500, 1000 (**2**) | | | | |
| m | 296 (3) | 322 | 112 | 148.5 | 223 | 335 | 1000... 6000 |
| Øp | 43 | 43 | 80 | 100 | 140 | 200 | 30 |

**1** The HT extension is only for Metallic Horn and Wave Guide antennas. It is attached between the signal converter and the flange if the process connection temperature is +150...+250°C.

**2** These are the length options for the straight antenna extension. For data about the dimensions of “S” and “L” extensions, refer to the illustrations that follow.

**3** Other antenna lengths are available: 396, 496 or 596 mm. These options are for tanks with long nozzles.

## Process connection and antenna options: Dimensions in inches

| Dimensions [inches] | PTFE Wave Horn | PP Wave Horn | Metallic Horn | | | | Wave Guide |
|---|---|---|---|---|---|---|---|
| | | | DN80 / 3" | DN100 / 4" | DN150 / 6" | DN200 / 8" | |
| h | 2.68 | 1.30 | 3.94 (8.66 for the HT extension) (**1**) | | | | |
| k | - | - | 3.94, 7.87, 11.81, 15.75, 19.68 or 39.37 (**2**) | | | | |
| m | 11.65 3 (3) | 12.68 | 4.41 | 5.85 | 8.78 | 13.19 | 39.4... 236.2 |
| Øp | 1.69 | 1.69 | 3.15 | 3.94 | 5.51 | 7.87 | 1.18 |

**(1)** The HT extension is only for Metallic Horn and Wave Guide antennas. It is attached between the signal converter and the flange if the process connection temperature is +302...+482°F.

**(2)** These are the length options for the straight antenna extension. For data about the dimensions of “S” and “L” extensions, refer to the illustrations that follow.

**(3)** Other antenna lengths are available: 15.59", 19.53" or 23.46". These options are for tanks with long nozzles.

## Model Numbering

| DR5200 | 4 | DR5200 C/F Non-Contact Radar (FMCW) Level Meter |
|---|---|---|

| Converter / Version (Housing material) | |
|---|---|
| 0 | Without |
| 1 | DR5200 C / Compact (Aluminium housing) |
| 2 | DR5200 C / Compact (Stainless Steel housing) |
| 3 | DR5200 F / Sensor (Aluminium housing) with Remote electronic (Aluminium housing) |
| 4 | DR5200 F / Sensor (Stainless Steel housing) with Remote electronic (Stainless Steel housing) |
| 5 | DR5200 F / Sensor (Stainless Steel housing) with Remote electronic (Aluminium housing) |

| Approval | |
|---|---|
| 0 | Without |
| 1 | ATEX Ex ia IIC T2…T6 + DIP - Note 1 |
| 2 | ATEX Ex d ia IIC T2..T6 + DIP - Note 1 |
| 3 | ATEX Zone 2 Ex nA II T3…T6 + DIP - Pending - Note 1 |
| 6 | IECEx Ex ia IIC T2…T6 + DIP - Note 1 |
| 7 | IECEx Ex d ia IIC T2…T6 + DIP - Note 1 |
| A | cFMus IS Cl. I/II/III Div. 1 Gr. A-G; Cl. I Zone 0/1/2, AEx ia IIC; T2…T6 + DIP (USA/CAN) - Note 2 |
| B | cFMus XP-IS Cl. I Div. 1 Gr. A-D; Cl. I Zone 0/1/2, AEx d[ia] IIC; T2…T6 + DIP (USA/CAN) - Note 2 |
| C | cFMus NI Cl. I Div. 2 Gr. A-D; Cl. I Zone 2, AEx nA[ia] IIC; T6 (USA/CAN) - Note 2 |
| L | NEPSI Ex ia IIC T2…T6 + DIP - Pending - Note 1 |
| M | NEPSI Ex d ia IIC T2…T6 + DIP - Pending - Note 1 |
| R | INMETRO Ex ia IIC T2…T6 + DIP - Pending - Note 1 |
| S | INMETRO Ex d ia IIC T2…T6 + DIP - Pending - Note 1 |

| Other approval | |
|---|---|
| 0 | Without |
| 1 | SIL2 (for the compact version (C) with a 4...20 mA output only) |
| 4 | CRN (Canadian Registration Number) |
| 5 | CRN + SIL2 (for the compact version (C) with a 4...20 mA output only) |

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## Model Numbering - Continued

| Pressure / Temperature / Sealing (higher flange temperature and process pressure on request) | |
|---|---|
| 0 | Without |
| 1 | 40 bar / -40°C...+150°C (-40°F…+302°F) / FKM, FPM - for the Metallic Horn antenna and Wave Guide |
| 5 | 40 bar / -50°C...+130°C (-58°F…+266°F) / EPDM - for the Metallic Horn antenna and Wave Guide |
| 6 | 40 bar / -20°C...+150°C (-4°F…+302°F) / Kalrez 6375 - for the Metallic Horn antenna and Wave Guide |
| A | 40 bar / -60°C...+130°C (-76°F…+266°F) / PFA - for the Metallic Horn antenna and Wave Guide |
| D | 40 bar / -40°C...+200°C (-40°F…+392°F) / FKM (Viton) - for the Metallic Horn antenna and Wave Guide |
| K | 40 bar / -20°C...+250°C (-4°F…+482°F) / Kalrez 6375 - for the Metallic Horn antenna and Wave Guide |
| R | 16 bar / -20°C...+100°C (-4°F…+212°F) / PP - for the PP Wave Horn antenna |
| T | 40 bar / -50°C...+150°C (-58°F…+302°F) / PTFE - for the PTFE Wave Horn antenna |

| Material and Antenna | |
|---|---|
| 0 | Without |
| 1 | 316L / Metallic horn (sheet metal) DN80 (3¨) |
| 2 | 316L / Metallic horn (sheet metal) DN100 (4¨) |
| 3 | 316L / Metallic horn (sheet metal) DN150 (6¨) |
| 4 | 316L / Metallic horn (sheet metal) DN200 (8¨) |
| G | PP / Wave Horn, maximum socket length 200 mm / 7.9¨ |
| H | PTFE / Wave Horn, maximum nozzle length 200 mm / 7.9¨ |
| L | 316L /Metallic wave guide ≤1m (3.28 ft) |
| M | 316L /Metallic wave guide ≤1.5m (4.92 ft) |
| N | 316L / Metallic wave guide ≤2m (6.56 ft) |
| P | 316L / Metallic wave guide ≤2.5 m (8.2 ft) |
| R | 316L / Metallic wave guide ≤3m (9.84 ft) |
| S | 316L / Metallic wave guide ≤3.5 m (11.48 ft) |
| T | 316L / Metallic wave guide ≤4 m (13.12 ft) |
| U | 316L / Metallic wave guide ≤4.5 m (14.76 ft) |
| V | 316L / Metallic wave guide ≤5m (16.4 ft) |
| W | 316L / Metallic wave guide ≤5.5 m (18.04 ft) |
| X | 316L / Metallic wave guide ≤6 m (19.68 ft) |

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## Model Numbering - Continued

| Material and Antenna extension | |
|---|---|
| 0 | Without |
| 6 | PTFE, antenna extension for maximum nozzle length 300 mm / 11.8" - Note 3 |
| 7 | PTFE, antenna extension for maximum nozzle length 400 mm / 15.7" - Note 3 |
| 8 | PTFE, antenna extension for maximum nozzle length 500 mm / 19.7" - Note 3 |
| E | 316L / 100 mm (4") for the Metallic Horn antenna option only - Note 3 |
| F | 316L / 200 mm (8") for the Metallic Horn antenna option only - Note 3 |
| G | 316L / 300 mm (12") for the Metallic Horn antenna option only - Note 3 |
| H | 316L / 400 mm (16") for the Metallic Horn antenna option only - Note 3 |
| K | 316L / 500 mm (20") for the Metallic Horn antenna option only - Note 3 |
| R | 316L / 1000 mm (40") for the Metallic Horn antenna option only - Note 3 |
| W | 316L / "S" extension - Note 3 |
| X | 316L / "L" (right angle) extension - Note 3 |

| Process connection: Size / Pressure rating / Flange finish | | | |
|---|---|---|---|
| 0 | 0 | 0 | Without |
| **Threaded - ISO 228** | | | |
| G | P | 0 | G 1½ - Note 4 |
| **Threaded - ASME B1.20.1** | | | |
| G | A | 0 | 1½ NPT - Note 4 |
| **EN / DIN Flanges - EN 1092-1 5** | | | |
| H | E | 1 | DN50 PN16 - Form B1 flange - Note 6 |
| H | G | 1 | DN50 PN40 - Form B1 flange - Note 6 |
| L | E | 1 | DN80 PN16 - Form B1 flange |
| L | G | 1 | DN80 PN40 - Form B1 flange |
| M | E | 1 | DN100 PN16 - Form B1 flange |
| M | G | 1 | DN100 PN40 - Form B1 flange |
| P | E | 1 | DN150 PN16 - Form B1 flange |
| P | G | 1 | DN150 PN40 - Form B1 flange |
| R | E | 1 | DN200 PN16 - Form B1 flange - Note 7 |
| R | G | 1 | DN200 PN40 - Form B1 flange - Note 7 |
| **ASME B16.5 / ANSI Flanges** - Note 5 | | | |
| H | 1 | A | 2" 150 lb RF - Note 6 |
| H | 2 | A | 2" 300 lb RF - Note 6 |
| L | 1 | A | 3" 150 lb RF |
| L | 2 | A | 3" 300 lb RF |
| M | 1 | A | 4" 150 lb RF |
| M | 2 | A | 4" 300 lb RF |
| P | 1 | A | 6" 150 lb RF |
| P | 2 | A | 6" 300 lb RF |
| R | 1 | A | 8" 150 lb RF - Note 7 |
| R | 2 | A | 8" 300 lb RF - Note 7 |

Continued on next page

## Model Numbering - Continued

| JIS B2220 Flanges | | | |
|---|---|---|---|
| H | U | P | 10K 50A RF - Note 6 |
| L | U | P | 10K 80A RF |
| M | U | P | 10K 100A RF |
| P | U | P | 10K 150A RF |
| R | U | P | 10K 200A RF - Note 7 |

| Alternative flange faces | |
|---|---|
| 0 | Without |
| 2 | Form B2, EN 1092-1 (surface roughness must be specified in the order) |
| 3 | Form C, EN 1092-1 (Tongue) |
| 4 | Form D, EN 1092-1 (Groove) |
| 5 | Form E, EN 1092-1 (Male) |
| 6 | Form F, EN 1092-1 (Female) |
| B | FF, ASME B16.5 (Flat face) |

| Output | |
|---|---|
| 1 | 2-wire / 4...20mA passive HART |
| B | PROFIBUS PA (2-wire) |

| Cable entry / Cable gland | |
|---|---|
| 1 | M20×1.5 / without |
| 2 | M20×1.5 / Plastic (Non-Ex: black; Ex i: blue) |
| 3 | M20×1.5 / Brass |
| 4 | M20×1.5 / Stainless Steel |
| A | ½ NPT (Brass) / without |
| B | ½ NPT (Stainless Steel) / without |

| Housing option / Display | |
|---|---|
| 1 | Horizontal housing / No display |
| 2 | Horizontal housing / Display |
| 3 | Horizontal housing / No display + Weather protection |
| 4 | Horizontal housing / Display + Weather protection |
| A | Vertical housing / No display |
| B | Vertical housing / Display top |
| C | Vertical housing / Display side |
| D | Vertical housing / No display + Weather protection |
| E | Vertical housing / Display top + Weather protection |
| F | Vertical housing / Display side + Weather protection |

Continued on next page

## Model Numbering - Continued

| Display language | |
|---|---|
| 0 | Without |
| 1 | English |
| 2 | German |
| 3 | French |
| 4 | Italian |
| 5 | Spanish |
| 6 | Portuguese |
| 7 | Japanese |
| 8 | Chinese (Mandarin) |
| A | Russian |

| Version | |
|---|---|
| 0 | Standard |
| 6 | With FCC radio approval (FCC Part 15 and RSS-210) |

| Module Option | |
|---|---|
| 0 | Without |

| Remote option | |
|---|---|
| 0 | Without |
| 6 | Signal cable 10m / Grey (std) or Blue (Ex) (DR5200 only) |
| 7 | Signal cable 25m / Grey (std) or Blue (Ex) (DR5200 only) |
| 8 | Signal cable 50m / Grey (std) or Blue (Ex) (DR5200 only) |
| A | Signal cable 75m / Grey (std) or Blue (Ex) (DR5200 only) |
| B | Signal cable 100m / Grey (std) or Blue (Ex) (DR5200 only) |

| Adaptor | |
|---|---|
| 0 | Without |
| 1 | Adaptor for flange system |

| Calibration certificate | |
|---|---|
| 0 | Without |
| 1 | Calibration certificate ±5 mm 2 points |

| TAG Number | |
|---|---|
| 0 | Without |
| 2 | Tag No. stainless steel plate (16 characters max.) |

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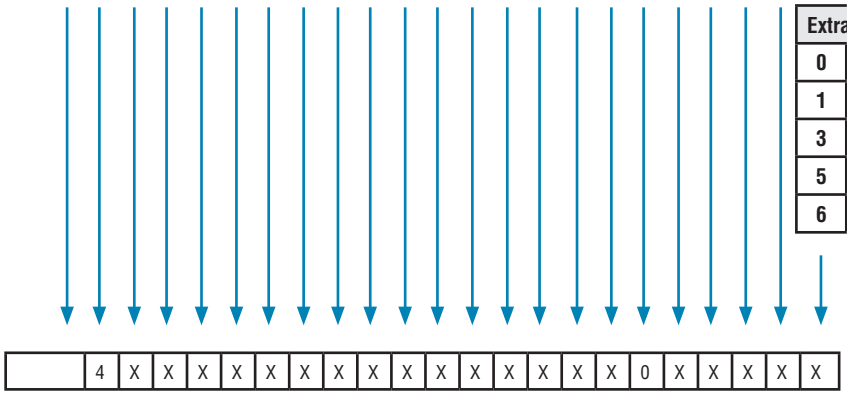
## Model Numbering - Continued




| Extra option | |
|---|---|
| 0 | Without |
| 1 | NACE design MR0175 / MR0103 / ISO 15156) |
| 3 | Heating / Cooling - Note 8 |
| 5 | Purging - Note 8 |
| 6 | Purging + Heating / Cooling - Note 8 |

**1** DIP= Dust Ignition Proof

**2** DIP= Cl. II/III Div. 1 Gr. E, F, G

**3** For device dimensions, refer to the “Dimensions” section

**4** For the PP Wave Horn antenna option only

**5** Other flange faces are available. Refer to your local supplier for more data. Flanges with the PTFE Wave Horn antenna option have a slip on-type design with an anti-blowout feature.

**6** Minimum flange size for the PTFE Wave Horn antenna. This is not available for the Metallic Horn antenna.

**7** This flange is not available for the PTFE Wave Horn antenna option

**8** For DN150 and DN200 Metallic Horn antenna only



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