DREXELBROOK®
A Leader In Level Measurement Solutions

Datasheet

DR2000

The modular TDR level meter

THE MODULAR TDR LEVEL METER

This device is a TDR Level Meter for measuring distance, level, volume and mass. Its modular design makes it an economical and reliable solution for common applications.

FEATURES

- 2-wire loop-powered HART® TDR level meter for liquids and solids
- DPR (Dynamic Parasite Rejection): the software dynamically eliminates false reflections caused by environmental disturbances and product build-up
- Quick coupling system permits removal of the converter under process conditions and 360° rotation to make the display screen easier to read
- Horizontal and vertical housing position to suit every installation
- The remote converter can be installed up to 100 m / 328 ft from the probe
- Display keypad is directly accessible without opening the cover
- Measuring range up to 40 m / 131 ft
- SIL2-compliant according to IEC 61508 for safety-related systems
- Large choice of probes to cover a vast range of applications
- Aluminium or stainless steel housing

Industries

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

Applications - Level, Volume, and Flow

- Liquid level measurement in process tanks for various chemical products
- Liquid and solid volume measurement for storage tanks

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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.

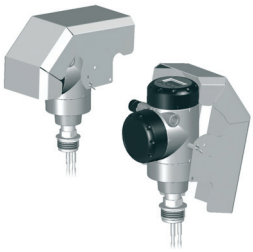
Compact / Horizontal version

- 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 300 m / 984 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 probe housing of the remote version.
- Easily opened and closed.

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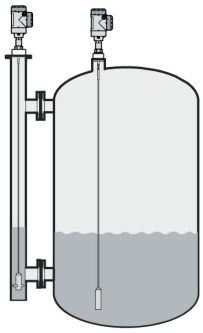
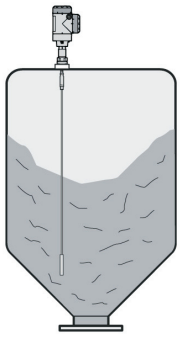
APPLICATIONS



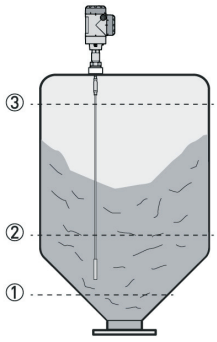
1. Level measurement of liquids

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 adapt the probe length and do a short configuration procedure.



2. Level measurement of solids

The level meter has a Ø4 mm / 0.15¨ single cable probe for measuring powders and granulates in silos up to 20 m / 65.6 ft high. It does not require any calibration: it is only necessary to adapt the probe length and do a short configuration procedure.



3. Volume measurement

A strapping table function is available in the configuration menu for volume measurement. Up to

30 volume 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 volumes between strapping table entries.

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PROBE SELECTION

Application table for probe selection	Double rod	Single rod	Single rod (segmented)	Coaxial	Coaxial (segmented)	Double cable	Single cable Ø4 mm / 0.15"	Single cable Ø2 mm / 0.08"
Maximum probe length, L								
4m/ 13 ft								
6m/ 20 ft								
40 m / 131 ft								
Liquids								
Liquid application								
LPG, LNG		1	1				1	1
Highly viscous liquids								
Highly crystallising liquids								
Highly corrosive liquids		2	3					
Foam								
Agitated liquids	4	4	4	4	4	4	4	4
Spray in tank		1	1				1	1
Storage tanks								
Installation in bypass chamber								
Small diameter nozzles and long nozzles		4	4				4	4
Stilling wells								
Solids								
Powders							5	
Granules, <5 mm / 0.2"							5	

	standard
	optional
	on request

1 Install the device in a stilling well or a bypass chamber

2 Make a selection from one of these 2 options: a probe made of Hastelloy® C-22 or a probe with a PVC, PVDF or PP protective sheath

3 Use a probe made of Hastelloy® C-22

4 Use this probe with an anchor fitting. For more data, refer to the handbook.

5 Max. length is 20 m / 65.5 ft, more on request

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SPECIFICATIONS

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

Converter	
Measuring system	
Application	Level and volume measurement of liquids, pastes, powders and granulates
Measuring principle	
Construction	Compact version: Measuring probe attached directly to a signal converter Remote version: Measuring probe installed on a tank and connected by a signal cable (max. length 100 m / 328 ft) to a signal converter
Operating conditions	
Ambient temperature	-40…+80°C/ -40…+176°F Integrated LCD display: -20...+60°C / -5...+140°F; if the ambient temperature is not in these limits, the display switches off
Storage temperature	-50…+85°C/ -60…+185°F (min. -40°C/ -40°F for devices with the integrated LCD display option)
Protection category	IP 66/67 equivalent to NEMA type 4X (housing) and type 6P (probe)
Materials	
Housing	Polyester-coated aluminium or stainless steel (1.4404 / 316L)
Cable entry	Plastic; nickel-plated brass, stainless steel
Electrical connections	
Power supply (terminals)	Terminals output - Non-Ex / Ex i: 12…30 VDC; min./max. value for an output of 22 mA at the terminal
	Terminals output - Ex d: 16…36 VDC; min./max. value for an output of 22 mA at the terminal
Current output load	Non-Ex / Ex i: RL [Ω] ≤ ((Uext -12 V)/22 mA). For more data, refer to Minimum power supply voltage on page 16.
	Ex d: RL [Ω] ≤ ((Uext -16 V)/22 mA). For more data, refer to Minimum power supply voltage on page 16.
Cable entry	M20 × 1.5; ½ NPT
Cable gland	Standard: none
	Options: M20×1.5 (cable diameter: 6...12 mm / 0.23...0.47"); others are available on request
Signal cable - remote version	None for non-Ex devices (4-wire shielded cable of max. length 100 m / 328 ft to be supplied by the customer). Supplied with all Ex-approved devices. For more data, refer to the handbook
Cable entry capacity (terminal)	0.5…2.5 mm²
Input and output	
Measured variable	Time between the emitted and received signal
Current output / HART®	
Output signal	4…20 mA HART® or 3.8…20.5 mA acc. to NAMUR NE 43 1
Resolution	±3 µA
Temperature drift (analog)	Typically 50 ppm/K
Temperature drift (digital)	Max. ±15 mm for the full temperature range
Error signal options	High: 22 mA; Low: 3.6 mA acc. to NAMUR NE 43; Hold (frozen value - not available if the output agrees with NAMUR NE 43) 2
PROFIBUS PA	
Type	PROFIBUS MDP interface that agrees with IEC 61158-2 with 31.25 kbit/s; voltage mode (MDP = Manchester Coded Bus Powered)
Function blocks	1 × Physical Block, 1 × Level Transducer Block, 4 × Analog Input Function Blocks
Device power supply	9...32 VDC - bus powered; no additional power supply required
Polarity sensitivity	No
Basic current	15 mA

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Display and user interface	
User interface options	LCD display (128 × 64 pixels in 8-step greyscale with 4-button keypad)
Languages	9 languages are available: English, German, French, Italian, Spanish, Portuguese, Japanese, Chinese (simplified) and Russian
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 60721-3-4 (1...9 Hz: 3 mm / 10...200 Hz:1g; 10g shock ½sinus: 11 ms)
Explosion protection	
ATEX (Ex ia or Ex d) DEKRA 11ATEX0166 X	**Compact version**
	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
	Remote version, transmitter
	II 2 G Ex ia [ia Ga] IIC T6...T4 Gb;
	II 2 D Ex ia [ia Da] IIIC T90°C Db;
	II 2 G Ex d ia [ia Ga] IIC T6...T4 Gb;
	II 2 D Ex ia tb [ia Da] IIIC T90°C Db
	Remote version, sensor
	II 1/2 G Ex ia IIC T6...T2 Ga/Gb
	II 1/2 D Ex ia IIIC T90°C Da/Db
	II 1/2 G Ex ia IIC T6...T2 Gb
	II 1/2 D Ex ia IIIC T90°C Db
ATEX (Ex ic) DEKRA 13ATEX0051 X	**Compact version**
	II 3 G Ex ic IIC T6...T2 Gc;
	II 3 D Ex ic IIIC T90°C Dc
	Remote version, transmitter
	II 3 G Ex ic [ic] IIC T6...T4 Gc;
	II 3 D Ex ic [ic] IIIC T90°C Dc
	Remote version, sensor
	II 3 G Ex ic IIC T6...T2 Gc;
	II 3 D Ex ic IIIC T90°C Dc
IECEx IECEx DEK 11.0060 X	**Compact version**
	Ex ia IIC T6…T2 Ga/Gb or Ex ia IIC T6…T2 Gb or Ex ic IIC T6…T2 Gc;
	Ex ia IIIC T90°C Da/Db or Ex ia IIIC T90°C Db or Ex ic IIIC T90°C Dc;
	Ex d ia IIC T6...T2 or Ex d ia IIIC T6...T2 Gb;
	Ex ia tb IIIC T90°C Da/Db or Ex ia tb IIIC T90°C Db
	Remote version, transmitter
	Ex ia [ia Ga] IIC T6…T4 Gb or Ex ic IIC T6…T4 Gc;
	Ex ia [ia Da] IIIC T90°C Db or Ex ic [ic] IIIC T90°C Dc;
	Ex d ia [ia Ga] IIC T6...T4 Gb;
	Ex ia tb [ia Da] IIIC T90°C Db
	Remote version, sensor
	Ex ia IIC T6…T2 Ga/Gb or Ex ia IIC T6…T2 Gb or Ex ic IIC T6…T2 Gc;
	Ex ia IIIC T90°C Da/Db or Ex ia IIIC T90°C Db or Ex ic IIIC T90°C Dc

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SPECIFICATIONS

cFMus - Dual Seal-approved - for 4...20 mA HART output (pending for fieldbus options)	**NEC 500 (Division ratings)**
	XP-AIS / Cl. I / Div. 1 / Gr. ABCD / T6-T1;
	DIP / Cl. II, III / Div. 1 / Gr. EFG / T6-T1;
	IS / Cl. I, II, III / Div. 1 / Gr. ABCDEFG / T6-T1;
	NI / Cl. I / Div. 2 / Gr. ABCD / T6-T1
	NEC 505 (Zone ratings)
	Cl. I / Zone 0 / AEx d [ia] / IIC / T6-T1;
	Cl. I / Zone 0 / AEx ia / IIC / T6-T1;
	Cl. I / Zone 2 / AEx nA / IIC / T6-T1;
	Zone 20 / AEx ia / IIIC / T90°C
	Zone 20 / AEx tb [ia] / IIIC / T90°C
	Hazardous (Classified) Locations, indoor/outdoor Type 4X and 6P, IP66, Dual Seal
	CEC Section 18 (Zone ratings)
	Cl. I, Zone 0, Ex d [ia], IIC, T6-T1;
	Cl. I, Zone 0, Ex ia, IIC, T6-T1;
	Cl. I, Zone 2, Ex nA, IIC, T6-T1
	CEC Section 18 and Annex J (Division ratings)
	XP-AIS / Cl. I / Div. 1 / Gr. BCD / T6-T1
	DIP / Cl. II, III / Div. 1 / Gr. EFG / T6-T1
	IS / Cl.I / Div. 1/ Gr. BCD / T6-T1
	NI / Cl. I / Div. 2 / Gr. ABCD / T6-T1
NEPSI	Ex ia IIC T2~T6 Gb or Ex ia IIC T2~T6 Ga/Gb DIP A20/A21 TA T90°C IP6X
	Ex d ia IIC T2~T6 Gb or Ex d ia IIC T2~T6 Ga/Gb DIP A20/A21 TA T90°C IP6X
Other standards and approvals	
SIL - only for 4...20 mA HART output	Compact version only: SIL 2 - certified according to all the requirements in EN 61508 (Full Assessment) and for high/low demand mode operation. HFT=0, SFF=94.3% (for non-Ex / Ex i devices) or 92.1% (for Ex d devices), type B device
EMC	EMC Directives 2004/108/EC in conjunction with EN 61326-1 (2006). The device agrees with this standard if the time constant ≥ 3 seconds and: - the device has a coaxial probe or - the device has a single / double probe that is installed in a metallic tank. For more data. SIL 2-approved devices agree with EN 61326-3-1 (2006) and EN 61326-3-2 (2006)
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	On request: NACE MR0175 / ISO 15156; NACE MR0103

1 - HART® is a registered trademark of the HART Communication Foundation

2 - Only the 3.6 mA error signal is applicable to SIL-approved devices

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PROBE OPTIONS

	Single cable Ø2 mm / 0.08"	Single cable Ø4 mm / 0.16"	Single rod Ø8 mm / 0.31"
Measuring system			
Application	Liquids	Liquids and solids	
Measuring range	1...40 m / 3.3...131 ft	Liquids: 1...40 m / 3.3...131 ft Solids: 1...20 m / 3.3...65.6 ft	1...6 m / 3.3...19.7 ft
Dead zone	This depends on the type of probe. For more data, refer to Measurement limits on page 19.		
Measuring accuracy			
Accuracy (in direct mode)	Standard: ±10 mm / ±0.4", when distance ≤ 10 m / 33 ft; ±0.1% of measured distance, when distance > 10 m / 33 ft		
	Optional: ±3 mm/ ±0.1", when distance ≤ 10 m / 33 ft; ±0.03% of measured distance, when distance > 10 m / 33 ft		
Accuracy (in TBF mode)	±20 mm / ±0.8"		
Resolution	1 mm/ 0.04"		
Repeatability	±1 mm/ ±0.04"		
Maximum rate of change at 4 mA	10 m/min / 32.8 ft/min		
Operating conditions			
Min./Max. temperature at the process connection (also depends on the temperature limits of the gasket material. Refer to "Materials" in this table.)	-50…+300°C/ -58…+572°F	-50…+150°C/ -58…+302°F	
Pressure	-1…40 barg / -14.5…580 psig		
Viscosity (liquids only)	10000 mPa.s / 10000 cP		
Dielectric constant	≥ 1.8 in direct mode; ≥ 1.1 in TBF mode		
Materials			
Probe	Stainless steel (1.4404 / 316L)	Stainless steel (1.4401 / 316); Hastelloy® C-22 (2.4602)	
Gasket (process seal)	FKM/FPM (-40…+300°C/ -40…+572°F); Kalrez® 6375 (-20…+300°C/ -4…+572°F); EPDM (-50...+250°C/ -58...+482°F) 1	FKM/FPM (-40…+150°C/ -40… +302°F); Kalrez® 6375 (-20…+150°C/ -4…+302°F); EPDM (-50...+150°C / -58...+302°F) 1	
Process connection	Stainless steel (1.4404 / 316L); Hastelloy® C-22 (2.4602)		
Process connections			
Thread	For more data on options, refer to Order code on page 43		
Flange	For more data on options, refer to Order code on page 43		

1 Kalrez® is a registered trademark of DuPont Performance Elastomers L.L.C.

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PROBE OPTIONS

	Double cable 2× Ø4 mm / 0.16"	Double rod 2 × Ø8 mm / 0.31"	Coaxial Ø22 mm / 0.9"
Measuring system			
Application	Liquids		
Measuring range	1...40 m / 3.3...131 ft	1...4 m / 3.3...13.1 ft	1...6 m / 3.3...19.7 ft
Dead zone	This depends on the type of probe. For more data, refer to Measurement limits on page 19.		
Measuring accuracy			
Accuracy (in direct mode)	Standard: ±10 mm / ±0.4", when distance ≤ 10 m / 33 ft; ±0.1% of measured distance, when distance > 10 m / 33 ft		
	Optional: ±3 mm/ ±0.1", when distance ≤ 10 m / 33 ft; ±0.03% of measured distance, when distance > 10 m / 33 ft		
Accuracy (in TBF mode)	±20 mm / ±0.8"		
Resolution	1 mm/ 0.04"		
Repeatability	±1 mm/ ±0.04"		
Maximum rate of change at 4 mA	10 m/min / 32.8 ft/min		
Operating conditions			
Min./Max. temperature at the process connection (also depends on the temperature limits of the gasket material. Refer to "Materials" in this table.)	-50…+150°C/ -58…+302°F		
Pressure	-1…40 barg / -14.5…580 psig		
Viscosity (liquids only)	10000 mPa.s / 10000 cP	1500 mPa.s / 1500 cP	500 mPa.s / 500 cP
Dielectric constant	≥ 1.6 in direct mode		≥ 1.4 in direct mode
	≥ 1.1 in TBF mode		
Materials			
Probe	Stainless steel (1.4404 / 316L)	Stainless steel (1.4401 / 316); Hastelloy® C-22 (2.4602)	
Gasket (process seal)	FKM/FPM (-40…+150°C/ -40…+302°F); Kalrez® 6375 (-20…+150°C/ -4…+302°F); EPDM (-50...+150°C / -58...+302°F) 1		
Process connection	Stainless steel (1.4404 / 316L); Hastelloy® C-22 (2.4602)		
Process connections			
Thread	For more data on options, refer to Order code on page 43		
Flange	For more data on options, refer to Order code on page 43		

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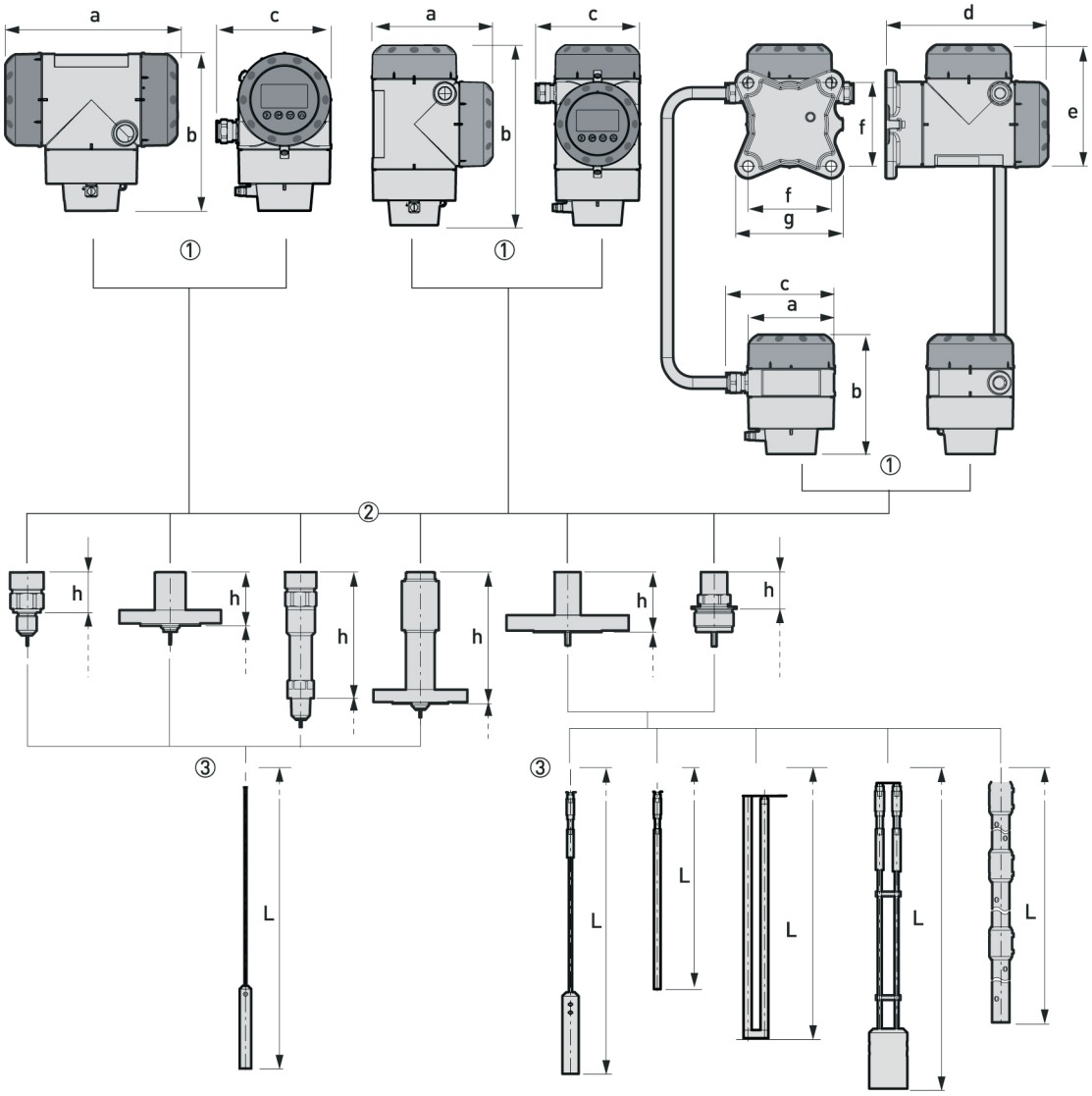
DIMENSIONS AND WEIGHTS

Housing dimensions



1 Housing options. From left to right: compact converter with horizontal housing, compact converter with vertical housing, and remote converter (top) and probe housing (bottom).

2 Process connection options. From left to right: threaded connection for Ø2 mm / 0.08¨ single cable probe, flange connection for Ø2 mm / 0.08¨ single cable probe, high-temperature (HT) threaded connection for Ø2 mm / 0.08¨ single cable probe, HT flange connection for Ø2 mm / 0.08¨ single cable probe, flange connection for other probes, threaded connection for other probes.

3 Probe options. From left to right: Ø2 mm / 0.08¨ single cable probe, Ø4 mm / 0.16¨ single cable probe, single rod (single-piece or segmented) probe, double rod probe, Ø4 mm / 0.16¨ double cable probe and coaxial (single-piece or segmented) probe.

All housing covers have bayonet connectors unless it is an explosion-proof (XP / Ex d-approved) device. The terminal compartment cover for explosion-proof devices has a thread with a flame path.

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DIMENSIONS

Housing options: Dimensions in mm

Dimensions [mm]	Compact - horizontal		Compact - vertical		Remote	
	Non-Ex / Ex i / IS	Ex d / XP	Non-Ex / Ex i / IS	Ex d / XP	Non-Ex / Ex i / IS	Ex d / XP
a	191	258	147	210	104	104
b	175	175	218	218	142	142
c	127	127	127	127	129	129
d	-	-	-	-	195	195
e	-	-	-	-	146	209
f	-	-	-	-	100	100
g	-	-	-	-	130	130

Housing options: Dimensions in inches

Dimensions [inches]	Compact - horizontal		Compact - vertical		Remote	
	Non-Ex / Ex i / IS	Ex d / XP	Non-Ex / Ex i / IS	Ex d / XP	Non-Ex / Ex i / IS	Ex d / XP
a	7.5	10.2	5.79	8.27	4.09	4.09
b	6.89	6.89	8.23	8.23	5.59	5.59
c	5.00	5.00	5.00	5.00	5.08	5.08
d	-	-	-	-	7.68	7.68
e	-	-	-	-	5.75	8.23
f	-	-	-	-	3.94	3.94
g	-	-	-	-	5.12	5.12

Process connection and probe options: Dimensions in mm

Dimensions [mm]	Probes with threaded connections			Probes with flange connections		
	Ø2 mm single cable probe	HT Ø2 mm single cable probe	Other probes	Ø2 mm single cable probe	HT Ø2 mm single cable probe	Other probes
h	43	169	45	61	186	73
L	For more data, refer to "Single probes" and "Double and coaxial probes" in this section.					

Process connection and probe options: Dimensions in inches

Dimensions [inches]	Probes with threaded connections			Probes with flange connections		
	Ø0.08" single cable probe	HT Ø0.08" single cable probe	Other probes	Ø0.08" single cable probe	HT Ø0.08" single cable probe	Other probes
h	1.69	6.65	1.77	2.40	7.32	2.87
L	For more data, refer to "Single probes" and "Double and coaxial probes" in this section.					

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MODEL NUMBERING

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

DR2000	C/F 2-wire loop-powered Guided Radar (TDR) level meter

Housing material

0	Without
1	DR2000 C / Compact (Aluminium housing)
2	DR2000 C / Compact (Stainless Steel housing)
3	DR2000 F / Sensor (Aluminium housing) with Remote electronic (Aluminium housing) 1
4	DR2000 F / Sensor (Stainless Steel housing) with Remote electronic (Stainless Steel housing) 1
5	DR2000 F / Sensor (Stainless Steel housing) with Remote electronic (Aluminium housing) 1

Approval (2)

0	Without
1	ATEX Ex ia IIC T2...T6 + DIP 3
2	ATEX Ex d ia IIC T2...T6 + DIP 3
4	ATEX Ex ic IIC T2...T6 + DIP (Zone 2 and 22) 3
6	IECEx Ex ia IIC T2…T6 + DIP 3
7	IECEx Ex d ia IIC T2…T6 + DIP 3
8	IECEx Ex ic IIC T2...T6 + DIP (Zone 2 and 22) 3
A	cFMus IS Cl. I/II/III Div. 1 Gr. A-G; Cl. I Zone 0/20, Ex ia IIC/IIIC T2…T6 1
B	cFMus IS-XP/DIP Cl. I/II/III Div. 1, Gr. A-G (A not for Canada); Cl. I Zone 0/20, Ex d/tb IIC/IIIC T2…T6 1
C	cFMus NI Cl. I/II/III Div. 2, Gr. A-G; Cl. I Zone 2, Ex nA IIC T2…T6 1
L	NEPSI Ex ia IIC T2~T6 + DIP
M	NEPSI Ex d ia IIC T2~T6 + DIP

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)

Process seal (temperature / pressure / material / notes)

0	Without
1	-40...+150°C (-40...+302°F) / -1...40 barg (-14.5...580 psig) / FKM/FPM (Viton) - for all probes
2	-20...+150°C (-4...+302°F) / -1...40 barg (-14.5...580 psig) / Kalrez® 6375 - for all probes
3	-50...+150°C (-58...+302°F) / -1...40 barg (-14.5...580 psig) / EPDM - for all probes
6	-40...+300°C (-40...+572°F) / -1...40 barg (-14.5...580 psig) / FKM/FPM (Viton) - only for the HT version of the Ø2 mm single cable probe
7	-20...+300°C (-4...+572°F) / -1...40 barg (-14.5...580 psig) / Kalrez® 6375 - only for the HT version of the Ø2 mm single cable probe
8	-50...+250°C (-58...+482°F) / -1...40 barg (-14.5...580 psig) / EPDM - only for the HT version of the Ø2 mm single cable probe

Probe (probe type / material / measuring range)

0	Without

Continued on next page

DR2000 – TDR level meter

MODEL NUMBERING - CONTINUED

For liquids only	
2	Single rod - Ø8 mm (0.31") segmented / 316L - 1.4404 / 1...6 m (1.97...19.69 ft)
3	Single cable - Ø2 mm (0.08") / 316 - 1.4401 / 1...40 m (1.97...131.23 ft)
6	Double rod - 2×Ø8 mm (0.31") / 316L - 1.4404 / 1...4 m (1.97...13.12 ft)
7	Double cable - 2×Ø4 mm (0.16") / 316 - 1.4401 / 1...40 m (1.97...131.23 ft)
D	Single cable - Ø2 mm (0.08") / Hastelloy® C22® / 1...40 m (1.97...131.23 ft)
A	Coax - Ø22 mm (0.87") / 316L - 1.4404 / 0.6...6 m (0.98...19.69 ft)
B	Coax - Ø22 mm (0.87") segmented / 316L - 1.4404 / 0.6...6 m (0.98...19.69 ft)
E	Coax - Ø22 mm (0.87") / Hastelloy® C22® / 0.6...6 m (0.98...19.69 ft)
For liquids and solids	
1	Single rod - Ø8 mm (0.31") / 316L - 1.4404 / 1...6 m (1.97...19.69 ft)
4	Single cable - Ø4 mm (0.16") / 316 - 1.4401 / liquids: 1...40 m (1.97...131.23 ft); solids: 1...20 m (1.97...65.92 ft)
Probe connection without probe	
K	Probe connection (316L - 1.4404) for single rod or single cable probe - probe not included - not available for single cable Ø2 mm (0.08")
L	Probe connection (316L - 1.4404) for double rod or double cable probe - probe not included

Probe end (probe end type / material / probe)	
0	Without
1	Counterweight Ø14 × 100 mm (0.55 × 3.94") / 316L - 1.4404 / Single cable - Ø2 mm (0.08")
F	Counterweight Ø14 × 100 mm (0.55 × 3.94")/ Hastelloy® C22® / Single cable - Ø2 mm (0.08")
2	Counterweight Ø20 × 100 mm (0.79 × 3.94") / 316L - 1.4404 / Single cable - Ø4 mm (0.16")
5	Counterweight Ø38 × 60 mm (1.5 × 2.36") / 316L - 1.4404 / Double cable - Ø4 mm (0.16")
8	Chuck / 316L - 1.4404 / Single cable - Ø4 mm (0.16")
B	Crimped end / 316L - 1.4404 / Single cable - Ø4 mm (0.16")
D	Open end / 316L - 1.4404 / Single cable - Ø4 mm (0.16")
7	Turnbuckle / 316L - 1.4404 / Single/double cable - Ø4 mm (0.16")
A	Threaded end / 316L - 1.4404 / Single/double cable - Ø4 mm (0.16")

Process connection (size / pressure rating / flange finish)			
0	**0**	**0**	Without
Threaded - ISO 228			
C	**P**	**0**	G ½ 4
D	**P**	**0**	G ¾A 5
E	**P**	**0**	G 1A 5
G	**P**	**0**	G 1½A
Threaded - ASME B1.20.1			
C	**B**	**0**	½ NPTF - B1.20.3 (Dryseal) 4
D	**A**	**0**	¾ NPT 5
E	**A**	**0**	1 NPT 5
G	**A**	**0**	1½ NPT

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DR2000 – TDR level meter

MODEL NUMBERING - CONTINUED

EN / DIN Flanges - EN 1092-1 6			
E	D	1	DN25 PN10 - Form B1 flange 7
E	E	1	DN25 PN16 - Form B1 flange 7
E	F	1	DN25 PN25 - Form B1 flange 7
E	G	1	DN25 PN40 - Form B1 flange 7
G	D	1	DN40 PN10 - Form B1 flange
G	E	1	DN40 PN16 - Form B1 flange
G	F	1	DN40 PN25 - Form B1 flange
G	G	1	DN40 PN40 - Form B1 flange
H	D	1	DN50 PN10 - Form B1 flange
H	E	1	DN50 PN16 - Form B1 flange
H	F	1	DN50 PN25 - Form B1 flange
H	G	1	DN50 PN40 - Form B1 flange
L	D	1	DN80 PN10 - Form B1 flange
L	E	1	DN80 PN16 - Form B1 flange
L	F	1	DN80 PN25 - Form B1 flange
L	G	1	DN80 PN40 - Form B1 flange
M	D	1	DN100 PN10 - Form B1 flange
M	E	1	DN100 PN16 - Form B1 flange
M	F	1	DN100 PN25 - Form B1 flange
M	G	1	DN100 PN40 - Form B1 flange
P	D	1	DN150 PN10 - Form B1 flange
P	E	1	DN150 PN16 - Form B1 flange
P	F	1	DN150 PN25 - Form B1 flange
P	G	1	DN150 PN40 - Form B1 flange (for non-Ex devices only)
R	E	1	DN200 PN16 - Form B1 flange
R	G	1	DN200 PN40 - Form B1 flange (for non-Ex devices only)
ASME B16.5 / ANSI Flanges 8			
E	1	A	1" 150 lb RF 7
E	2	A	1" 300 lb RF 7
G	1	A	1½" 150 lb RF
G	2	A	1½" 300 lb RF
H	1	A	2" 150 lb RF
H	2	A	2" 300 lb RF
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 (for non-Ex devices only)
R	1	A	8" 150 lb RF
R	2	A	8" 300 lb RF (for non-Ex devices only)

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DR2000 – TDR level meter

MODEL NUMBERING - CONTINUED

JIS B2220 Flanges			
G	U	P	40A JIS 10K RF
H	U	P	50A JIS 10K RF
L	U	P	80A JIS 10K RF
M	U	P	100A JIS 10K RF
P	U	P	150A JIS 10K RF
R	U	P	200A JIS 10K RF

Alternative flange faces	
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)
M	RJ, ASME B16.5 (Ring joint)
C	LG, ASME B16.5 (Large groove)
D	LF, ASME B16.5 (Large female)
E	LT, ASME B16.5 (Large tongue)
F	LM, ASME B16.5 (Large male)
G	SG, ASME B16.5 (Small groove)
H	SF, ASME B16.5 (Small female)
K	ST, ASME B16.5 (Small tongue)
L	SM, ASME B16.5 (Small male)

Output	
1	2-wire / 4...20 mA passive HART
3	2-wire / PROFIBUS PA (for the compact version only)

Cable entry / cable gland	
0	Without
1	M20×1.5 / Without
2	M20×1.5 / Plastic
3	M20×1.5 / Brass
4	M20×1.5 / Stainless steel
A	½ NPT (brass) / Without
B	½ NPT (stainless steel) / Without

Continued on next page

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MODEL NUMBERING - CONTINUED

Housing option / Display	
1	Horizontal housing / No display (for the compact version only)
2	Horizontal housing / Display (for the compact version only)
3	Horizontal housing / No display + weather protection (for the compact version only)
4	Horizontal housing / Display + weather protection (for the compact version only)
A	Vertical housing / No display
B	Vertical housing / Display top
C	Vertical housing / Display side (not available for Ex d ia / XP-approved devices)
D	Vertical housing / No display + weather protection
E	Vertical housing / Display top + weather protection
F	Vertical housing / Display side + weather protection (not available for Ex d ia / XP-approved devices)

Display language (English is supplied with all devices)	
0	Without (if no display)
1	English
2	German
3	French
4	Italian
5	Spanish
6	Portuguese
7	Japanese
8	Chinese (simplified)
A	Russian

Version	
0	Standard orders and orders for solid applications in China
6	Orders for the USA
A	Orders for liquid applications in China

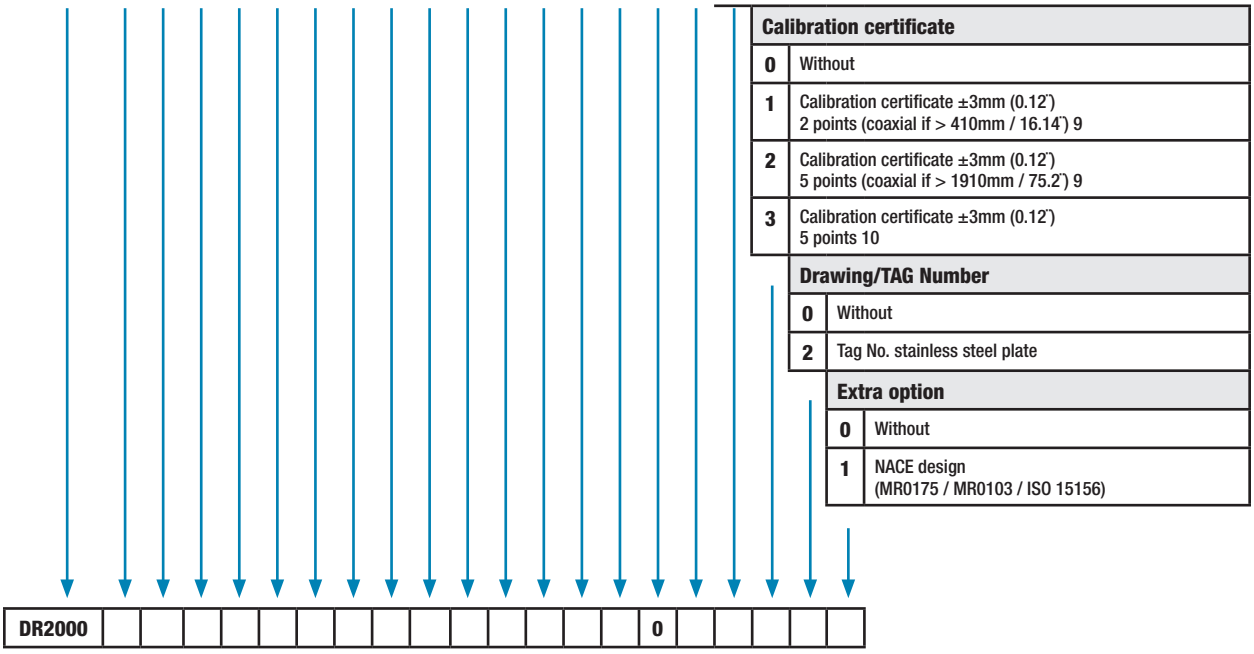
0	Remote options
0	Without
6	Signal cable 10 m (Remote version only; non-Ex: grey, Ex: blue)
7	Signal cable 25 m (Remote version only; non-Ex: grey, Ex: blue)
8	Signal cable 50 m (Remote version only; non-Ex: grey, Ex: blue)
A	Signal cable 75 m (Remote version only; non-Ex: grey, Ex: blue)
B	Signal cable 100 m (Remote version only; non-Ex: grey, Ex: blue)

Adaptor	
0	Without
1	BM100A adaptor
2	BM102 adaptor

Continued on next page

DR2000 - TDR level meter

MODEL NUMBERING - CONTINUED



Calibration certificate	
0	Without
1	Calibration certificate ±3mm (0.12˝) 2 points (coaxial if > 410mm / 16.14˝) 9
2	Calibration certificate ±3mm (0.12˝) 5 points (coaxial if > 1910mm / 75.2˝) 9
3	Calibration certificate ±3mm (0.12˝) 5 points 10

Drawing/TAG Number	
0	Without
2	Tag No. stainless steel plate

Extra option	
0	Without
1	NACE design (MR0175 / MR0103 / ISO 15156)

1 Only for the "4...20 mA passive HART" output option

2 For more data, refer to the Technical data section (Approvals and certification)

3 DIP= Dust Ignition Proof

4 For Ø2 mm / 0.08¨ single cable probes only

5 Do not use with double rod and double cable probes

6 Other flange faces are available. Refer to your local supplier for more data.

7 Do not use with double rod, double cable and coaxial probes

8 Flanges with RF faces have a slip on-type design with an anti-blowout feature. Other flange faces are available. Refer to your local sup- plier for more data.

9 For liquids only

10 For liquids only and not for the coaxial probe. Calibration points for this option are given by the customer.

AMETEK®
Telephone: +1 215-674-123 or e-mail: drexelbrook.info@ametek.com
Fax: +1 215 674-2731: | 205 Keith Valley Road | Horsham PA 19044 U.S.A.

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www.drexelbrook.com