DREXELBROOK®

A Leader In Level Measurement Solutions

AMETEK®

DR7000 Series

Level Radar for Distance, Level and Volume of Liquids, Slurries and Solids

The new DR7000, **FMCW** 26 GHz radar offers State-of-the-Art components. The DR7000 is able to operate over a larger bandwidth: This ensures sharper resolution and higher accuracy. The higher signal dynamics of the DR7000 allow the accurate detection of even the smallest level changes.

The DR7000 is a 2-Wire, Loop Powered, device with an easy navigation display and touch screen user interface which allows for easy configuration and setup.

- **Easy Navigation Display**

  Choice of different Touch Screens: (tank illustration, bargraph, signal and reflectivity screen)
- **2-Wire**

  Class I Div1, Zone 0 Installation
- **Process Seal Ensures Vessel Integrity**
- **Antenna Types and Materials for all Applications**

Designed to Perform Better than any Other Radar

Vessel Obstructions Ignored

Agitators and other objects such as struts, inlets, ladders, have less effect on signal reduction.

The 26GHz FMCW signal is easier to evaluate and the results are more accurate and repeatable.

Agitated Surface

State-of-the-Art signal processing and a 2MHz bandwidth allow the DR7000 to determine the true level in the tank - even with agitated surfaces.

Makes Level Gauging Easier than Ever

Wizard Works Wonders

Setting up a 2-wire level gauge couldn't be easier: Simply fit the gauge to the tank, wire it up and switch it on:

- Step 1 – The DR7000 tests itself to make sure its electronics are working perfectly.
- Step 2 – The DR7000's Wizard walks you through a simple series of questions to define your tank and the product you want to measure.
- Step 3 – That's all you need. Your DR7000 is already measuring.

Interactive Help

Not certain what to do? You don't need a handbook. Simply wait 10 seconds, the help screen will appear and tell you what to do.

Continuous Level Measurement

DR7000 Series

Specifications

Input

Function	K-band 26 GHz FMCW radar
Parameter	Level, distance, volume and reflectivity
Min. Tank Height	0.5 m / 1.5 ft
Max. Range	40 m / 131 ft
Dead Zone	Antenna length + 0.1 m antenna length + 4”

Output Signal

Output signal	4 - 20 mA HART® or 3.8 - 20.5 mA acc. to NAMUR NE 43
Accuracy	0.05% (rel. 20 mA; 20°C / 68°F)
Resolution	±2 µA
Temperature Drift	Typically 50 ppm/K
Error Signal	High: 22 mA; Low: 3.6 mA acc. to NAMUR NE 43
Max. Load	350 ohm

Measuring Accuracy - Reference conditions acc. to IEC770

Temperature	+20°C ±5°C / +68°F ±9°F
Pressure	1013 mbar abs. ±20 mbar 14.69 psig ±0.29 psig
Relative Humidity	60% ±15%
Resolution	1 mm / 0.04 “
Accuracy	±3 mm / ±0.12”
Beam Angle:	DN 40 / ANSI 1 1/2” 20° DN 50 / ANSI 2” 15° DN 80 / ANSI 3” 10°

Application Conditions

Ambient Temp.	-40…+80°C / -40…+175°F; EEx i: -40…+60°C / -40…+140°F
Storage Temp.	-40…+85°C / -40…+185°F
Flange Temp.	-40…+150°C / -40…+300°F (Ex: refer to relevant device spec.)
Shock Resistance	100°C/min

Process Conditions

Operating Pressure	1…40 bar / -14.5…580 psig; subject to process connection and temp.
Dielectric Constant	≥1.5
Vibration Resistance	IEC 68-2-6 and prEN 50178 (10...57Hz: 0.075 mm / 57...150 Hz: 1 g)
Protection Category	IP 66/67 equiv. to NEMA 6-6X

Mechanical Data

Housing	Aluminium
Wetted Parts	Stainless steel (1.4404 / 316L); Hastelloy C-22 (2.4602)
Process Fitting	Stainless steel (1.4404 / 316L); Hastelloy C-22 (2.4602)
Gaskets	Viton (-40…+150°C / -40…+300°F); Kalrez 6375 (-20…+150°C / -5 …+300°F)

Process Connection

Thread	G 1 1/2; NPT 1 1/2
Flange	DN 40…DN 150 (PN 40 / PN 16); 1 1/2”…8” (150 lb / 300 lb); 10 K (40…100A)

Electrical Connection - 2-Wire Power Supply

Terminals Output 1	Non-Ex/ EEx i 24 V DC (14 … 30 V DC) EEx d 24 V DC (20 … 36 V DC)
Cable Entry Terminals	M20x1.5; 1/2 NPT; G 1/2 0.5…1.5 mm²

Human machine interface

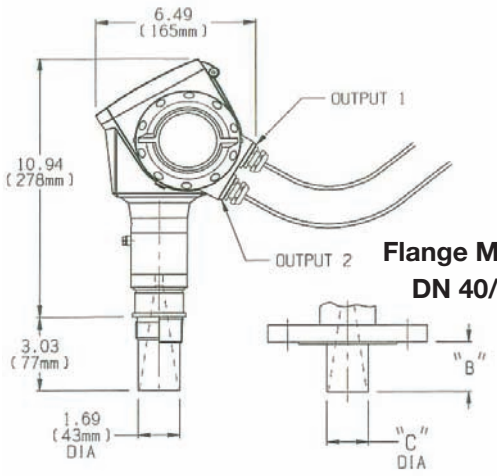
Display	9 lines, 160x160 pixels in 8-step greyscale with 4-button keypad
Operating Languages	English, German, French, Italian, Spanish, Portugese, Japanese, Chinese (Mandarin), Russian

Approvals

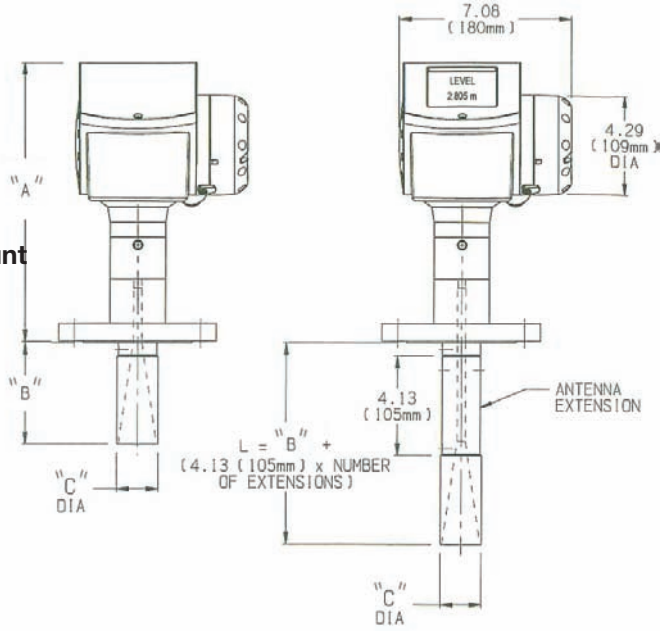
ATEX (pending)	ATEX II G D EEx ia IIC T3...T6 ATEX II 1/2 G D EEx d [ia] IIC T6...T3
FM	IS class I Div. 1 Gr. A...G; XP class I Div. 1 Gr. A…G
CSA (pending)	IS class I Div. 1 Gr. A...G; XP class I Div. 1 Gr. A…G

DR7000 Series Dimensions

DN 50 w/ 1 1/2" Thread

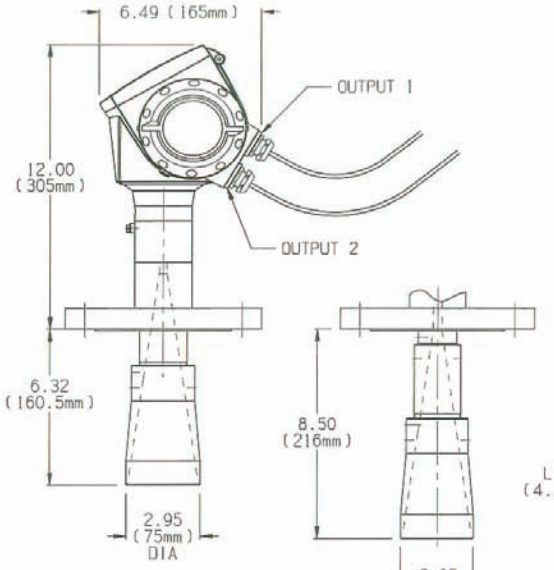


Flange Mount DN 40/50



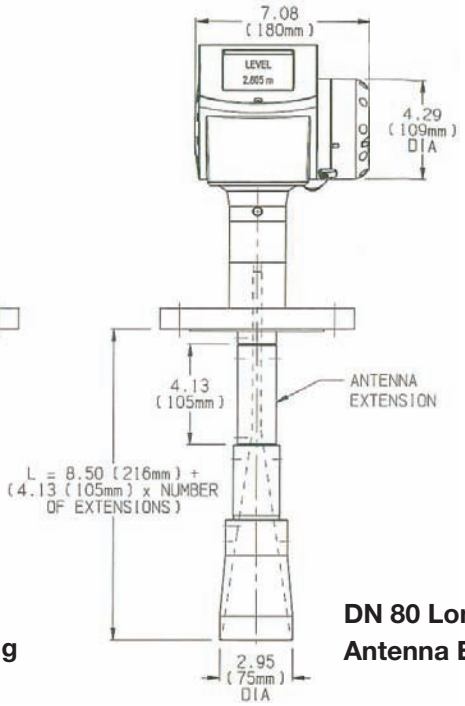
DN 40/50 Long w/ Antenna Extension

Antenna	C mm / Inch	B mm / Inch	A mm / Inch
DN 40 Std.	39 / 1.5	39 / 1.5	305 / 12
DN 40 long	39 / 1.5	95 / 3.7	305 / 12
DN50 Std.	43 / 1.7	51 / 2	305 / 12
DN50 long	43 / 1.7	106 / 4.2	305 / 12



DN 80

DN 80 Long



DN 80 Long w/ Antenna Extension

Possible Combinations of the Antenna and Process Connection Options

Process Connection			DN 40 Std.	DN 40 Long	DN 50 Std.	DN 50 Long	DN 80 Std.	DN 80 Long
1 1/2" NPT Threaded					○			
1 1/2" G Threaded					○			
ANSI Flange	EN Flange	JIS Flange						
1 1/2"	DN 40	40A	●	●				
2"	DN 40	50A	○	○	●	●		○
3"	DN 80	80A	○	○	○	○	●	●
> 3"	DN > 80	>80A	○	○	○	○	●	●

● **Prefered** ○ **Possible, Consult Factory**

DR7000 Series

Model Numbering

DR7000 4

Approval
- 0 without
- 2 ATEX II G/D 1, 1/2, 2 EEx ia IIC T6
- 3 ATEX II G/D 1/2, 2 EEx d ia IIC T6
- 4 ATEX II G/D 1, 1/2, 2 EEx ia IIC T6 + WHG
- 5 ATEX II G/D 1/2, 2 EEx d ia IIC T6 + WHG
- 6 FM / CSA IS Cl. I Div. 1 Gr. A-G
- 7 FM / CSA XP Cl. I Div. 1 Gr. A-G
- 8 FM / CSA General purpose

Material Process Connection and Antenna
- 0 316L / 1.4404
- 1 Hastelloy C-22 / 2.4602

Antenna
- 0 antenna DN 40 (Ø 39 mm / 1.54 inch)
- 1 antenna DN 50 (Ø 43 mm / 1.69 inch)
- 2 antenna DN 80 (Ø 75 mm / 2.95 inch)
- 3 antenna DN 80 (Ø 75 mm / 2.95 inch) - long
- 4 antenna DN 40 Long (Ø 39 mm / 1.54 inch)
- 5 antenna DN 50 Long (Ø 43 mm / 1.69 inch)

Antenna extension
- 0 without
- 1 extension 105 mm / 4.13 inch
- 2 extension 210 mm / 8.26 inch
- 3 extension 315 mm / 12.4 inch
- 4 extension 420 mm / 16.54 inch
- 5 extension 525 mm / 20.67 inch
- 6 extension 630 mm / 24.80 inch
- 7 extension 735 mm / 28.94 inch
- 8 extension 840 mm / 33.07 inch
- A extension 945 mm / 37.20 inch
- B extension 1050 mm / 41.34 inch

Feedthrough/Temperature/Sealing
- 0 Standard / -40°C...+150°C / Viton GLT
- 1 Standard / -20°C...+150°C / Kalrez 6375
- 2 Metaglas / -30°C...+150°C / Viton GLT
- 3 Metaglas / -20°C...+150°C / Kalrez 6375

Process connection EN
- 0 without
- 3 G1 1/2A ISO228
- 5 DN 40 PN 40 Form B1 EN1092
- 6 DN 50 PN 40 Form B1 EN1092
- 7 DN 80 PN 40 Form B1 EN1092
- 8 DN 100 PN 16 Form B1 EN1092
- A DN 100 PN 40 Form B1 EN1092
- B DN 150 PN 16 Form B1 EN1092
- C DN 150 PN 40 Form B1 EN1092

Process connection ANSI
- 0 without
- 3 1"1/2 NPT
- 5 1" 1/2 150 lb RF ANSI B16.5
- 6 1" 1/2 300 lb RF ANSI B16.5
- 7 2" 150 lb RF ANSI B16.5
- 8 2" 300 lb RF ANSI B16.5
- A 3" 150 lb RF ANSI B16.5
- B 3" 300 lb RF ANSI B16.5
- C 4" 150 lb RF ANSI B16.5
- D 4" 300 lb RF ANSI B16.5
- E 6" 150 lb RF ANSI B16.5
- F 8" 150 lb RF ANSI B16.5

Process connection other
- 0 without
- 5 10K 40A RF JIS B2238
- 6 10K 50A RF JIS B2238
- 7 10K 80A RF JIS B2238
- 8 10K 100A RF JIS B2238

Output
- 0 1 output 4...20mA (HART)

Housing/Cable entry/Cable gland
- 0 Aluminium / M20x1,5 / without
- 1 Aluminium / 1/2 NPT / without
- 2 Aluminium / G 1/2 / without
- 3 Aluminium / M20x1,5 / Plastic (non-EEx: black, EEx i: blue)
- 4 Aluminium / M20x1,5 / Metall (only for EEx d devices)

Housing option
- 0 without
- 1 Distance piece
- 2 Weather protection
- 3 Distance piece + weather protection

HMI (display and keys ... English is default second language for 2-3-4-5-6-7-8-A)
- 0 without
- 1 English (second language: Spanish)
- 2 German
- 3 French
- 4 Italian
- 5 Spanish
- 6 Portugese
- 7 Japanese
- 8 Chinese (Mandarin)
- A Russian

Version
- 1 Drexelbrook Standard

Dummy
- 0 without

Material certificate
- 0 without
- 1 3.1.B certificate: wetted parts
- 2 3.1.B certificate: parts under pressure
- 3 Positive Material Identification (PMI): wetted parts
- 4 Positive Material Identification (PMI): parts under pressure
- 5 2.1. material conformity certificate

Hydraulics control certificate
- 0 without
- 1 2.3. Hydraulics test certificate
- 2 3.1.B Hydraulics test certificate

Calibration certificate
- 0 without
- 1 Calibration certificate

Certificate (Miscellaneous)
- 0 Without
- 1 2.1. Order conformity certificate

Drawing /TAG Number
- 0 without
- 1 Drawing (overall dimensions)
- 2 Tag No. stainless steel plate
- 3 Drawing + TAG No. Stainless steel

DR7000	4								0				1	0						*Subject to Change Without Notice*

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