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 2GHz 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	80 m / 262 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
Storage Temp.	-40…+85°C / -40…+185°F
Process Connection Temp.	Horn Antenna -40…+200°C / -40…+390°F Drop Antenna (PTFE) -40…+150°C / -40…+300°F Drop Antenna (PP) -40…+100°C / -40…+210°F (Ex: refer to relevant device spec.)
Shock Resistance	<40°C/s / <72°F/s

Process Conditions

Operating Pressure	Drop Antenna (PP) -1…16 bar / -14.5…232 psig; subject to process connection and flange temp. All Other Antennas -1…40 bar / -14.5…580 psig; subject to process connection and flange temp.
Dielectric Constant	≥1.5
Vibration Resistance	IEC 60068-2-6 and EN 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

CE-Mark		Conforms to applicable EU directives.
ATEX KEMA 04ATEXxxxxX	Ex ia	ATEX II 1 G D or II 1/2 G D or II 2 G D;
	EEx ia	IIC T6…T3 T65°C … T90°C IP 6X
	Exd	ATEX II 1/2 G D or II 2 G D;
	EEx d	[ia] IIC T6...T3 T65°C … T90°C IP 6X
FM CSA	Ex ia	Intrinsically Safe (IS) IS CL I, DIV 1, GR A,B,C,D DIP CL II, III, DIV 1, GR E,F,G NI ANI CL I, DIV 2, GR A,B,C,D (FM Only) DIP CL II, III, DIV 1 GR E,F,G Sensor Probe suitable for use in DIV 1 or ZONE 0 DIV 1 or ZONE 0 CL I, Zone 0, AEx ia IIC CL I, Zone 2, GR IIC T6, Ta = 60° C
	Ex d	Explosion Proof (XP) XP CL I, DIV 1, GR A,B,C,D (FM Only) CL I, DIV 2, GR A,B,C,D DIP CL II, III, DIV 1, GR E,F,G NI ANI CL I, DIV 2, GR A,B,C,D (FM Only) DIP CL II, III, DIV 2 GR F,G Sensor Probe suitable for use in DIV 1 or ZONE 0 CL I, Zone 0, AEx d ia IIC CL I, Zone 2, GR IIC T6, Ta = 60° C

DR7000 Series

Model Numbering

DR7000 4

Approval

0	without	7	FM / CSA XP Cl. I Div. 1 Gr. A-G / CSA Ex d [ia] Class I, Zone 1 - Dual Seal
2	ATEX II G/D 1, 1/2, 2 EEx ia IIC T6	8	IECEx Zone 2/20 Ex ia IIC T3... T6 Australia
3	ATEX II G/D 1, 1/2, 2 EEx d ia IIC T6	A	ATEX II 3G EExnA II T3... T6
6	FM / CSA IS Cl. I Div. 1 Gr. A-G - Dual Seal		

Material Process Connection and Antenna

0	316L / 1.4404
1	Hastelloy C-22 / 2.4602

Antenna

3	DN 80 Long OD (75 mm / 2.95") - long	8	DN 50 - Long OD = (43 mm / 1.69") with purging system
4	DN 40 Long (39 mm / 1.54")	F	DN 100- Long OD = (95 mm / 3.75")
5	DN 50 Long (43 mm / 1.69")	G	DN 100- Long OD = (95 mm / 3.75") with purging system
6	DN 80 (75 mm / 2.95") with purging system	P	DROP PTFE DN 80 Long OD = (75 mm /2.95") -50˚C to +100˚C
7	DN 40 - Long OD = (39 mm / 1.54") with purging system	S	DROP PP DN 80 Long OD = (75 mm /2.95") -50˚C to +100˚C

Antenna extension

0	without	8	extension 840 mm / 33.07 inch
1	extension 105 mm / 4.13 inch	A	extension 945 mm / 37.20 inch
2	extension 210 mm / 8.26 inch	B	extension 1050 mm / 41.34 inch
3	extension 315 mm / 12.4 inch	P	Flange Plate Protection (PP DROP) for DN 80/100, 3", 4", 80A & 100A Flanges
4	extension 420 mm / 16.54 inch	R	Flange Plate Protection (PP DROP) for DN 150, 6", 8" Flanges
5	extension 525 mm / 20.67 inch	S	Flange Plate Protection (PTFE DROP) for DN 80/100, 3", 4", 80A & 100A Flange
6	extension 630 mm / 24.80 inch	T	Flange Plate Protection (PTFE DROP) for DN 150, 6", 8" Flanges
7	extension 735 mm / 28.94 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	8	DN 100 PN 16 Form B1 EN1092
3	G1 1/2A ISO228	A	DN 100 PN 40 Form B1 EN1092
5	DN 40 PN 40 Form B1 EN1092	B	DN 150 PN 16 Form B1 EN1092
6	DN 50 PN 40 Form B1 EN1092	C	DN 150 PN 40 Form B1 EN1092
7	DN 80 PN 40 Form B1 EN1092		

Process connection ANSI

0	without	A	3" 150 lb RF ANSI B16.5
3	1"1/2 NPT	B	3" 300 lb RF ANSI B16.5
5	1" 1/2 150 lb RF ANSI B16.5	C	4" 150 lb RF ANSI B16.5
6	1" 1/2 300 lb RF ANSI B16.5	D	4" 300 lb RF ANSI B16.5
7	2" 150 lb RF ANSI B16.5	E	6" 150 lb RF ANSI B16.5
8	2" 300 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
2	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: German)
2	German
3	French
4	Italian
5	Spanish
6	Portugese
7	Japanese
8	Chinese (Mandarin)
A	Russian

Version

1	Drexelbrook Standard

Special Option

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

Other Great Solutions By: DREXELBROOK®

Universal III™ 509-75 Series

Level Transmitter

DM330 Series

Magnetostrictive Liquid Level Sensor

Wireless Interface Solutions

Wireless Analog / Digital Link
Tube Mount NEMA 4x Transmitter DIN-Rail / Receiver Set

2867021-DRX
2867034-DRX

OMNEX Trusted Wireless

USonic™ Series

Ultrasonic Level Transmitter

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