



Product Overview

The 120GHz FMCW Radar level transmitter using 10GHz sweep bandwidth, it is been calculated by FPGA chip hardware can achieve the Fast Fourier Transform. The company's engineer & technical personnel creatively applied diffraction wave separation and spectrum refinement algorithm technique to reach the measurement accuracy up to 0.217mm (Theoretical value) within 50 meters range, and in the static air vertical reflection surface test, the distance-resolution is 8mm.

The product DCRD1000B just need 80ms to finished the distance measurement & calculation process for 100m ranges. This allows the system to have more time and resources to deal with various kinds of things on level application of the instrument, such as: echo signal probability assessment / level prediction / level reliability analysis / input&output/ communication, etc.

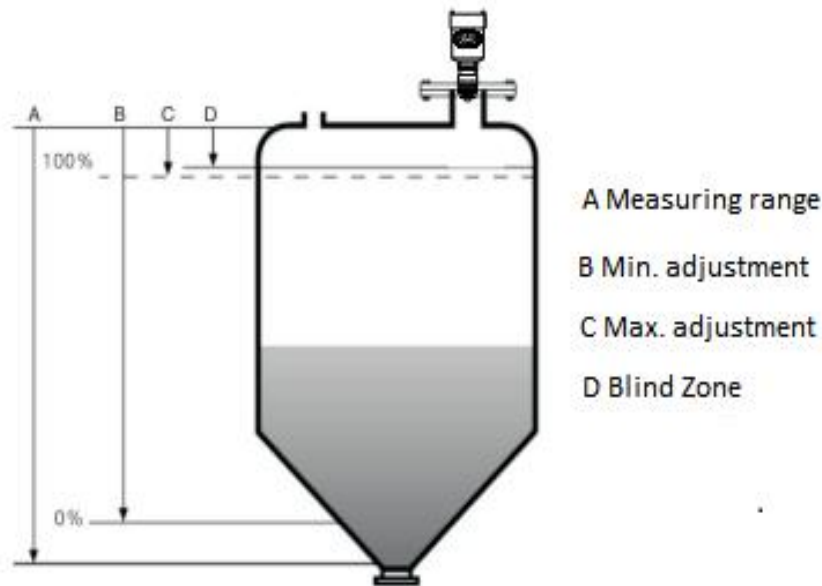
DCRD1000B using PTFE lens antenna with hermetic potting design, there is a perfect solution which resolved the antenna near field radiation suppression issues, that makes it has a good directional performance and less 1 degrees beam angle (the mass product manufacturing process differences, may be biased ± 0.3 degrees).





Product Principles

The FM continuous wave radar level meter product transmission signal is transmitted downward through the antenna. The signal is reflected back after contacting the surface of the measured medium, and is received by the antenna system again and transmitted to the electronic circuit part to be converted into a level signal.



Note: when applying the radar level meter, make sure that the highest material level cannot reach the measurement blind zone(the territory that indicate as D).

Application Features

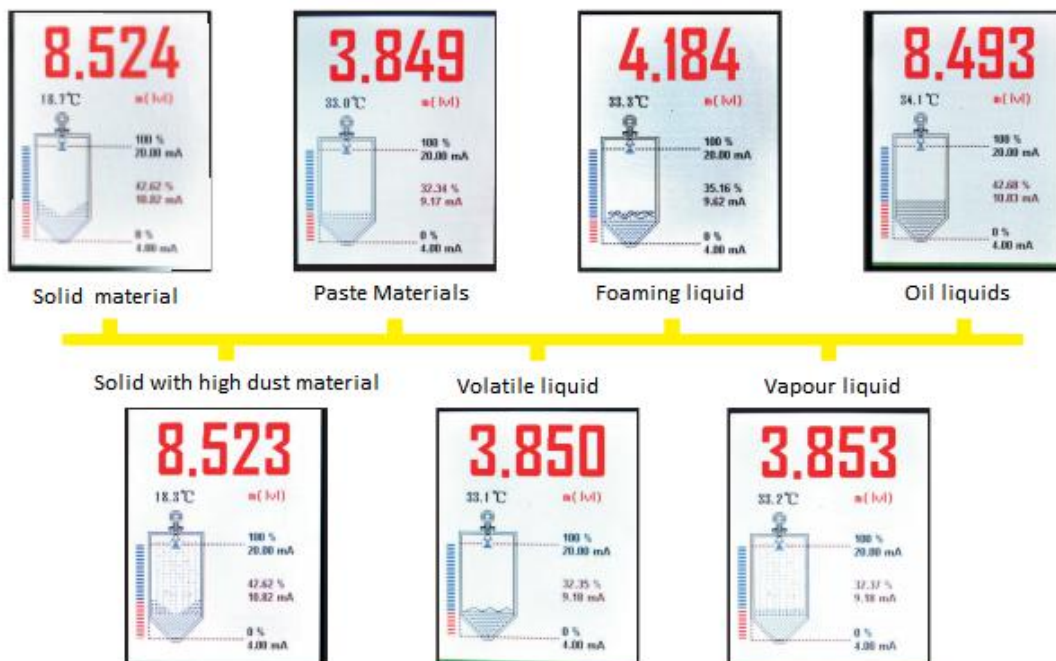
120GHz FMCW radar level transmitter, especially be used in the high temperature & pressure, strong dust & multiple mixing environment, it can satisfy many applications for a large range measurement with high-precision requirements.

The product DCRD1000B has an electromagnetic characteristic of the terahertz band, which makes it have advantage that other radar level products haven't, such as its ability to penetrate non-polar materials(ray properties), in an industrial environment where strong adhesion and strong dust, it has ideal measurement stability and environmental resistance to dry torsion, and does not require any purge equipment. This product also has a very small antenna beam angle and strong self-adaptive automatic gain function, it don't need to use the aiming configuration in most cases.



Application field

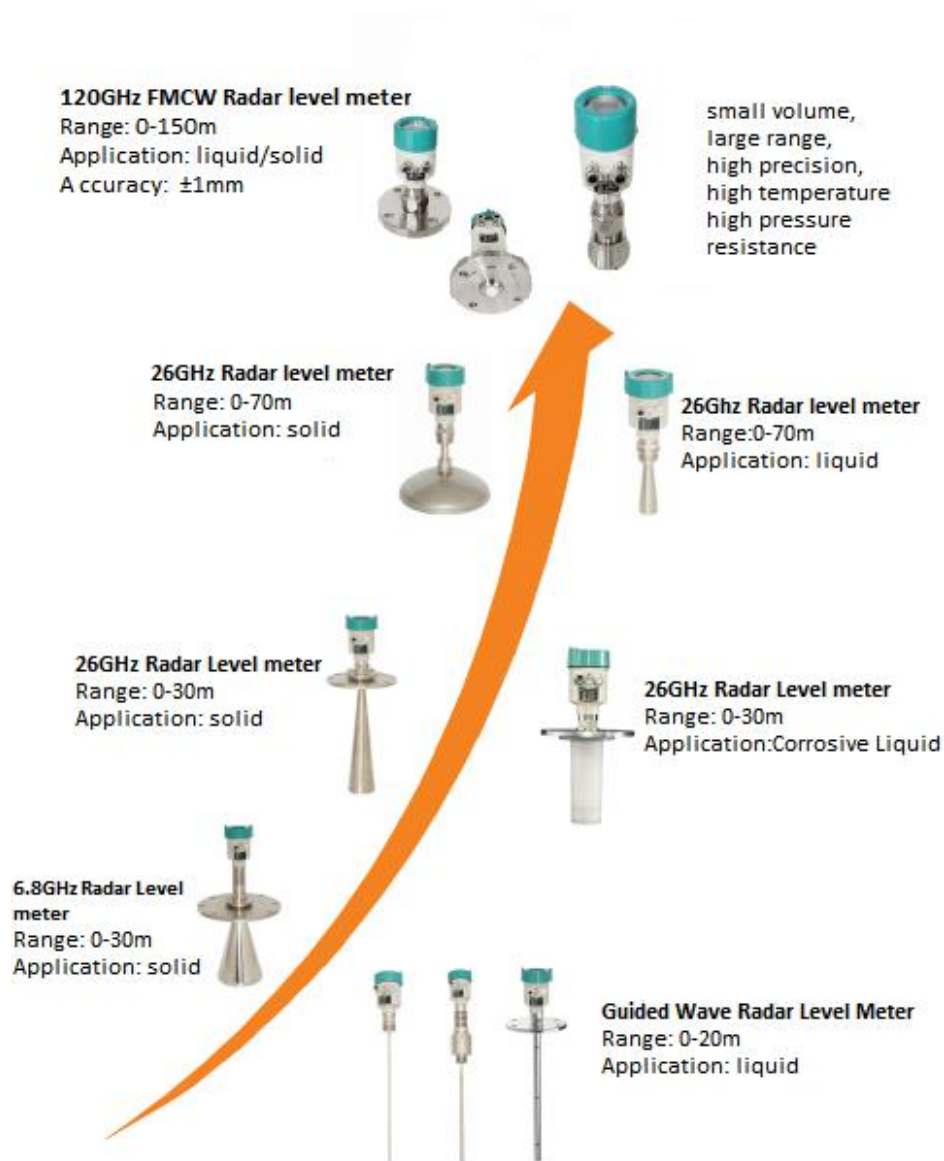
1. The product is especially suitable for the penetration measurement outside the tank or the perspective measurement through the quartz glass isolation flange in the environment of high temperature and high pressure reactor.
2. The product's electromagnetic wave emission angle is less than 1 degree, suitable for narrow space or guided wave pipeline measurement.
3. The product can reach a measuring range of 150m, which is suitable for the measurement of large storage tanks.
4. The product has extremely high measurement accuracy, especially suitable for high-precision measurement level measurement.
5. The product has a wealth of echo processing algorithms and empirical data of various working conditions; for extremely harsh working conditions such as strong dust, steam, and special process storage tanks such as stirring and heating rods, it has no other similar products.





Product Advantages

RD1000B is a radar level measuring instrument that uses 120GHz frequency to measure. Even if the solid silo has large height, small diameter and strong dust, and there is a heating coil or stirring device in the liquid tank, the sensor can provide reliable and stable measurement results. Due to the high frequency and strong penetration ability; the small transmission beam angle can bypass these obstacles, and the attachment on the container wall does not affect the measurement accuracy.





RD1000B1

Application: Liquid, foam, highly corrosive liquid, food hygiene conditions.

Frequency range: 120GHz~130GHz, Frequency modulation sweep frequency width: 10GHz;

Measuring range: 0.1-50/100/150m;

Measurement resolution: 0.008m;

Accuracy: $\leq \pm 1\text{mm}$;

Launch Angle: 1° (With lens radome);

Dielectric constant range: 1.0~100, Medium viscosity $<1000\text{cp}$;

Power supply: 9.0~42.0VDC ($<5\text{W}$) four wire or 110-250VAC, 50Hz/60Hz ($<6\text{W}$) ;

Signal output: 4~20mA (with HART/MODBUS/PROFIBUS*bus) or RS-485;

Site operation/programming: 2.6"inch Color screen / 4 key configurable;

Process temperature/humidity: $-60\sim 200^\circ\text{C}$ $\leq 95\%\text{RH}$; $-60\sim 1000^\circ\text{C}$ (With antenna heat pipe/quartz isolation flange);

Housing material: Aluminium alloys single chamber or double chamber(220VAC Only with double chamber);

Antenna type: Lens antenna, PTFE/PEEK/PE, can choose Lens antenna guard/Anti-corrosive antenna/Antenna heat pipe/Quartz isolation flange;

Process pressure: $-1\sim 5\text{MPa}$; $-1\sim 32\text{MPa}$ (With quartz isolation flange);

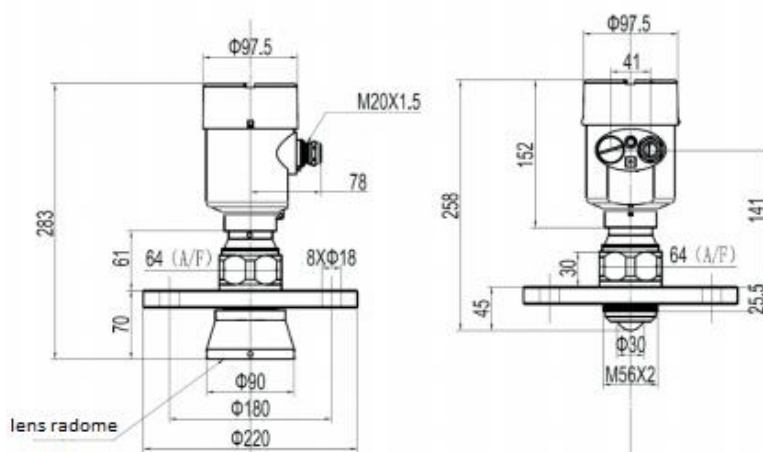
Cable inlet: M20x1.5;

Recommend the cables: AWG18 or 0.75mm^2 ;

Protection grade: IP67;

Explosive-proof grade: Exia II CT6Ga, Exdia II CT6Gb;

Installation type: M56x2 screw thread or DN50 flange;





RD1000B2

Application: Solid, solid with heavy dust material.

Frequency range: 120GHz~130GHz, Frequency modulation sweep frequency width: 10GHz;

Measuring range: 0.1-50/100/150m;

Measurement resolution: 0.008m;

Accuracy: $\leq \pm 1\text{mm}$;

Launch Angle: 1° (With lens radome);

Dielectric constant range: 1.0~100, Medium viscosity $<1000\text{cp}$;

Power supply: 9.0~42.0VDC ($<5\text{W}$) four wire or 110-250VAC, 50Hz/60Hz ($<6\text{W}$) ;

Signal output: 4~20mA (with HART/MODBUS/PROFIBUS*bus) or RS-485;

Site operation/programming: 2.6" inch Color screen / 4 key configurable;

Process temperature/humidity: $-60\sim 200^\circ\text{C}$ $\leq 95\%\text{RH}$; $-60\sim 1000^\circ\text{C}$ (With antenna heat pipe/quartz isolation flange);

Housing material: Aluminium alloys single chamber or double chamber (220VAC Only with double chamber);

Antenna type: Lens antenna, PTFE/PEEK/PE, can choose Lens antenna guard/Anti-corrosive antenna/Antenna heat pipe/Quartz isolation flange;

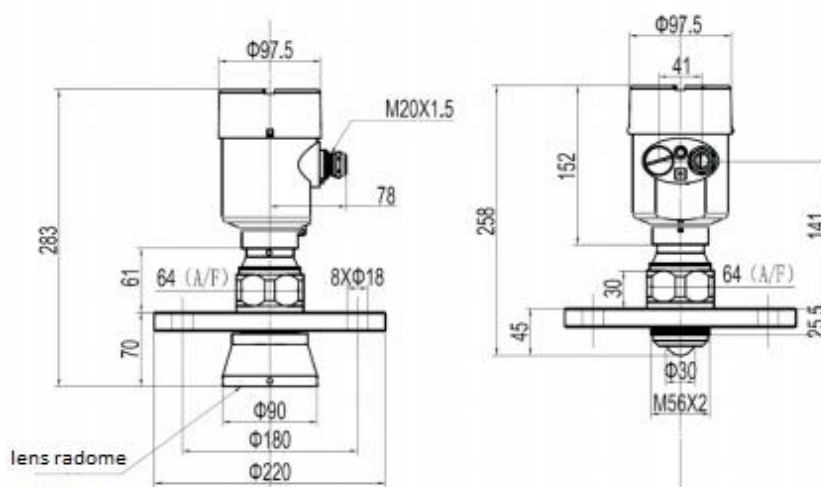
Process pressure: $-1\sim 5\text{MPa}$; $-1\sim 32\text{MPa}$ (With quartz isolation flange);

Cable inlet: M20x1.5;

Recommend the cables: AWG18 or 0.75mm^2 ;

Explosive-proof grade: Exia II CT6Ga, Exdia II CT6Gb;

Installation type: M56x2 screw thread or DN50 flange;





RD1000B3

Applications: High temperature&high pressure

Frequency range: 120GHz~130GHz, Frequency modulation sweep frequency width: 10GHz;

Measuring range: 0.1-50/100/150m;

Measurement resolution: 0.008m;

Accuracy: $\leq \pm 1\text{mm}$;

Launch Angle: 1° (With lens radome);

Dielectric constant range: 1.0~100, Medium viscosity $<1000\text{cp}$;

Power supply: 9.0~42.0VDC($<5\text{W}$) four wire or 110-250VAC, 50Hz/60Hz ($<6\text{W}$) ;

Signal output: 4~20mA (with HART/MODBUS/PROFIBUS*bus) or RS-485;

Site operation/programming: 2.6"inch Color screen / 4 key configurable;

Process temperature/humidity: $-60\sim 200\text{ }^\circ\text{C}$ $\leq 95\%\text{RH}$; $-60\sim 1000\text{ }^\circ\text{C}$ (With antenna heat pipe/quartz isolation flange);

Housing material: Aluminium alloys single chamber or double chamber(220VAC Only with double chamber);

Antenna type: Lens antenna, PTFE/PEEK/PE, can choose Lens antenna guard/Anti-corrosive antenna/Antenna heat pipe/Quartz isolation flange;

Process pressure: $-1\sim 5\text{MPa}$; $-1\sim 32\text{MPa}$ (With quartz isolation flange);

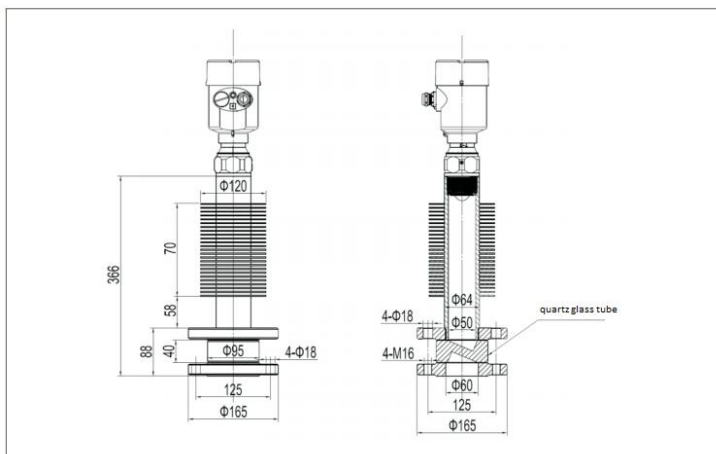
Cable inlet: M20x1.5;

Recommend the cables: AWG18 or 0.75mm^2 ;

Protection grade: IP67;

Explosive-proof grade: Exia II CT6Ga, Exdia II CT6Gb;

Installation type: M56x2 screw thread or DN50 flange;





6. RD1000B Model Selection

United	Code	Technical Parameter
Anti-explosion	P	Standard (non-Ex)
	I	Intrinsic safety (ExiaIICT6 Ga)
	D	Intrinsic safety+Exd (Exd ia II CT6 Gb)
Process connection/Material	M	Screw thread M56x2
	A	Flange DN50/stainless steel 316
	B	Flange DN80/stainless steel 316
	C	Flange DN100/stainless steel 316
	D	Flange DN125/stainless steel 316
	M	Universal joint flange DN80/stainless steel 316
	K	Universal joint flange DN100/stainless steel 316
	Y	Special custom
Antenna Type/ Material	P1	Lens antenna
	P2	Lens antenna+radome
	P3	Lens antenna high temperature type
	P4	Lens antenna ferrule Type
	Y	Special custom
Seal/Process temperature	V	Viton/(-40~150)°C
	K1	Kalrez/(-40~250)°C
	K2	Kalrez/(-40~600)°C
	K3	Kalrez/(-40~1000)°C
Electronic unit	2	(4~20)mA/24V DC/HART two wire
	3	(4~20)mA/24V DC/HART four wire
	4	(4~20)mA/(85~265)V AC/HART four wire
	5	RS485/Modbus/(6-26)V DC
	6	Radio frequency 433M
Housing/Protection grade	L	Aluminum / IP67
	G	Aluminum / IP67 Double chamber
Cable entry	M	M20*1.5
	N	½ NPT
Live display/ Programming	A	With
	X	Without
Special custom	Y	Special custom



P roduct Application

Measurable products: petroleum, petroleum products, heavy oil, asphalt, gasoline and other light-colored petroleum products, acid, food, beer, alcohol, milk, liquefied gas, sewage, solution, phenol, ore, cement, seeds, coal ash, solvent , crushed stone, mineral fertilizer, dye, chemical reactor with "agitator", eucalyptus oil, coal tar, slag, syrup, etc.

