ISEN-LD-26
Pulse radar level meter

26G high frequency radar level measuring instrument, the maximummeasuringdistancecanreach80meters.Theantenna is further optimized, and the new fast microprocessor can perform higher rate signal analysis and processing, so that the instrument can be used in some complex measurement conditions such as reactors and solid silos.

Product Feaatures

•The antenna is small in size and easy to install; non-contact radar, no wear and no pollution.
(2)Almost unaffected by corrosion and foam; almost unaffected by water vapor, temperature and pressure changes in the atmosphere.
(3)Severe dust environment has little effect on the work of high-frequency level meter.
(4)Shorter wavelength, better reflection on inclined solid surface.
(5)Small beam angle, concentrated energy, enhanced echo capability and conducive to avoiding interference.
(6)Smaller measurement blind area, good results for small tank measurement.
(7)High signal-to-noise ratio, better performance even under fluctuations.
(8)High frequency, the best choice for measuring solid and low dielectric constant media.
(9)Temperature compensation, real-time monitoring of the temperature in the electronic warehouse, automatic compensation of temperature drift coefficient. Using advanced microprocessors and unique echo processing technology, radar level meters can be applied to various complex working conditions. Using pulse working mode, the radar level meter has extremely low transmission power and can be installed in various metal and non-metal containers, without harming the human body and the environment.

Working Principle

The radar level antenna emits a narrow microwave pulse, which is transmitted downward through the antenna. After the microwave contacts thesurface of the measured medium, it is reflected back and received bythe antenna system again, and the signal is transmitted to the electronic circuit part and automaticallyconverted into a level signal (because the microwave propagation speed is extremelyfast, the time taken for the electromagnetic wave to reach the target and return to the receiver through reflection is almost instantaneous).

Application Field

26G radar level meter is widely used in various industrial fields, including chemical, petroleum, food, pharmaceutical, etc. These fields need to measure the height of liquid, powder, granular materials, and often face harsh environmental conditions such as high temperature and high pressure. 26G radar level meter can adapt to these complex environments, provide accurate measurement data, and ensure the stability and safety of the production process.

Product Line

1 ISEN-LD-26-81 PTFE rod type anti-corrosion radar

2 ISEN-LD-26-81F PTFE rod Flange anti-corrosion radar

3 ISEN-LD-26-82 High frequency horn radar

4 ISEN-LD-26-82F High frequency flange radar

5 ISEN-LD-26-83F High frequency universal flange radar

6 ISEN-LD-26-84 High frequency bracket radar

7 ISEN-LD-26-85 High frequency parabolic radar

8 ISEN-LD-26-86 High frequency PTFE sleeve radar

9 ISEN-LD-26-96 High frequency PP Flat Panel radar

10 ISEN-LD-26-87 High frequency waveguide radar

11 ISEN-LD-26-88 High frequency waveguide radar

12 ISEN-LD-26-97 High frequency Split radar

ProductLine（Continued）

13 ISEN-LD-26-102 Dual-chamber radar

Technical Specificatio n

Product model	1 ISEN-LD-26-81 PTFErod anti-corrosion radar
Application	Various corrosive liquids
Measurement range	0~10m，0~20m
Process connection	Thread, flange
Medium temperature	-40~130℃
Process pressure	-0.1~0.3MPa
Accuracy	±5mm
Protection level	IP67
Frequencyrange	26GHz
Explosion-prooflevel	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS485/Modbus

Product model	2 ISEN-LD-26-81F PTFE rod flange anti-corrosion radar
Application	Various corrosive liquids
Measurement range	0~10m，0~20m
Process connection	Thread,Fl ange
Medium temperature	-40~130℃
Process pressure	-0.1~0.3MPa
Accuracy	±5mm
Protection level	IP67
Frequencyrange	26GHz
Explosion-prooflevel	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS485/Modbus

Product model	3 ISEN-LD-26-82High frequencyhorn radar
Application	Resistant to temperature, pressureand slightly corrosi ve liquids
Measurement range	0~10m, 0~ 20m, 0~30m
Process connectio	T hre ad
Medium temperature	-40~ 120℃
Process pressure	-0.1~4.0MPa
Accuracy	±3mm
Protection level	IP67
Frequency range	26GHz
Explosion-proof level	ExiaIICT6Ga/EX diaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS4 85 /M o db us

Product model	4 ISEN-LD-26-82FHigh Frequency Flange Type Radar
Application	Resistant to temperature, pressure and slightly corrosi ve liquids
Measurement range	0~10m, 0~20m, 0~30m
Process connection	Flange
Medium temperature	-40~ 120℃
Process pressure	-0.1~4.0MPa
Accuracy	±3mm
Protection level	IP67
Frequency range	26GHz
Explosion-proof level	ExiaIICT6Ga/EX diaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS4 85 /M o db us

Technical Specification

Product model	5 ISEN- LD-26-83F High frequency universal flange radar
Application	Solidmaterials,strongdust,easytocrystallize,condensation
Measurement range	0~10m，0~20m，0~30m
Process connection	Universal flange
Medium temperature	-40~130℃
Process pressure	-0.1~4.0MPa
Accuracy	±5mm
Protection level	IP67
Frequencyrange	26GHz
Explosion-prooflevel	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS4 85 /M o db us

Product model	6 ISEN-LD-26-84 High frequency bracket radar
Application	Forriver and reservoir
Measurement range	0~10m，0~20m
Process connection	Thread,Fl ange
Medium temperature	-40~130℃
Process pressure	-0.1~4.0MPa
Accuracy	±5mm
Potection level	IP67
Frequency range	26GHz
Explosion-prooflevel	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS485/Modbus

Product model	7 ISEN-LD-26-85 High FrequencyParabolicRadar
Application	Solid materials, strong dust, easy to crystallize,condensation
Measurement range	0~10m/20m/30m/40m/50m
Process connection	Universal flange
Medium temperature	-40~ 120℃
Process pressure	-0.1~4.0MPa
Accuracy	±15mm
Protection level	IP67
Frequency range	26GHz
Explosion-proof level	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…2 0 m A/ HAR(two-wire/four-wire) RS4 85 /M o db us

Product model	8 ISEN-LD-26-87 High Frequency Waveguide Radar
Application	Corrosive liquids, steam, volatile liquids
Measurement range	0~10m，0~20m，0~30m
Process connection	Flange
Medium temperature	-40~ 130℃
Process pressure	-0.1~0.3MPa
Accuracy	±5mm
Protection level	IP67
Frequency range	26GHz
Explosion-proof level	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…2 0 m A/ HAR(two-wire/four-wire) RS4 85 /M o db us

Product model	9 ISEN-LD-26-96 High Frequency PP Flat Panel Radar
Application	Temperature-resistant, pressure-resistant, slightly corrosive liquids
Measurement range	0~10m/20m/30m/40m/50m
Process connection	Flange
Medium temperature	-40~120℃
Process pressure	-0.1~0.1MPa
Accuracy	±3mm
Protection level	IP67
Frequency range	26GHz
Explosion-prooflevel	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS485/Modbus

Product model	10 ISEN-LD-26-87 High Frequency Waveguide Radar
Application	Liquid, solid powder, horizontal tank gasoline and diesel, etc.
Measurement range	Cable antenna within 3 meters
Process connection	Flange
Medium temperature	-40~120℃
Process pressure	-0.1~2.0MPa
Accuracy	±5mm
Protection level	IP67
Frequency range	26GHz
Explosion-prooflevel	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS485/Modbus

Technical Specification

Product model	11 ISEN-LD-26-88 High frequency waveguide rod radar
Application	Liquid and solid powder measurement
Measurement range	Rod antenna within 2 meters
Process connection	Thread,flange
Medium temperature	40~120℃ (standard type) -40~250℃ (high temperature type)
Process pressure	-0.1~4.0MPa(flat flange)
	-0.1~0.1MPa(universal flange)
Accuracy	±10mm
Protection level	IP67
Frequencyrange	26GHz
Explosion-proof level	ExiaIICT6Ga/EXdiaIICT6Gb
Signal output	4…20mA/HART (two-wire/four-wire) RS485/Modbus

Product model	12 IĖN-LD-26-97 High frequency split ra dar
Application	Resistant to temperature, pressure and slightly corrosive liquids
Measurement range	20m
Process connection	Flange
Medium temperature	-40~120℃
Process pressure	-0.1~0.1MPa
Accuracy	±3mm
Protection level	IP67
Frequencyrange	26GHz
Explosion-prooflevel	ExiaIICT6Ga/EXdiaIICT6Gb 4…
Signal output	20mA/HART (two-wire/four-wire) RS485/Modbus

Product wiring diagram (reference)

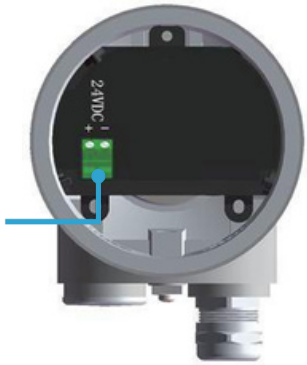
- Supply voltage

Cable requirements	The power supply cable can use an ordinary two-core cable, and the outer diameter of the cable should be (8-12) mm to ensure the sealing of the cable entrance. If there is electromagnetic interference, it is recommended to use a shielded cable.
(4• •20) mA/HART (Two-wire)	The power supply and output current signal share a two-core shielded cable. For the specific power supply voltage range, see the technical data. For the intrinsically safe type, a safety barrier must be added between the power supply and the instrument.
(4• •20) mA/HART (Four-wire)	The power supply and current signal are separated, and each uses a two-core shielded cable.For the specific power supply voltage range, see the technical data.
RS485/Modbus	The power supply and 485 signal lines are separated, and each uses a two-core shielded cable. For the specific power supply voltage range, see the technical data.

- Connection method

The 24V two-wire wiring diagram is as follows:

24VDC
(4~20mA)

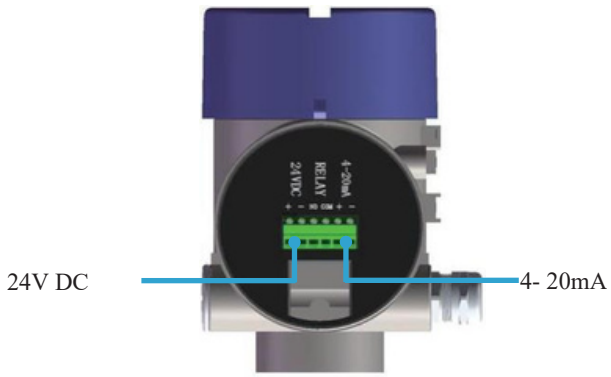


Product Wiring Diagram (Refer to Continued)

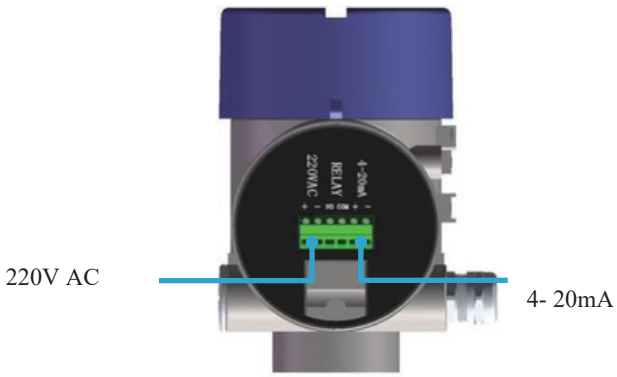
The 24V four-wire wiring diagram is as follows:

The 24V/12V RS485/Modbus wiring diagram is as follows• •

The wiring diagram of 24V dual-chamber four-wire system is as follows:



The wiring diagram of 220V dual-chamber four-wire system is as follows:



Instrument debugging

- Three debugging methods: (1) Display/buttons (2) PC debugging (3) HART handheld programmer

(1) Display/buttons

The instrument is debugged usingthe 4 buttons on the displayscreen. The language o f the debugging menu is selectable. After debugging, it is generally only used for display, and the measured value can be read very clearly through the glass window.

<	Exit programming mode Return to the previous menu [Shortcut] Display echo curve
^	Modify parameter values
↻	Select programming item Select edit parameter position Parameter item content display
OK	Enter programming mode Confirm prog ramming item Confirm parameter modification

Display/buttons

① LCD display ② Buttons

Instrument commissioning (continued)

(2) Upper computer debugging

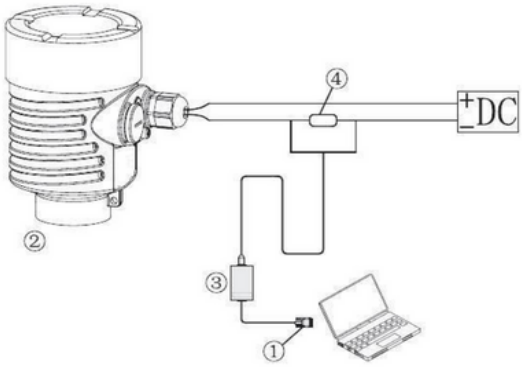
Connect to the host co mputer via HART

① USB interface

② Radar level meter

③ HART adapter

(4) 250Ω resistor

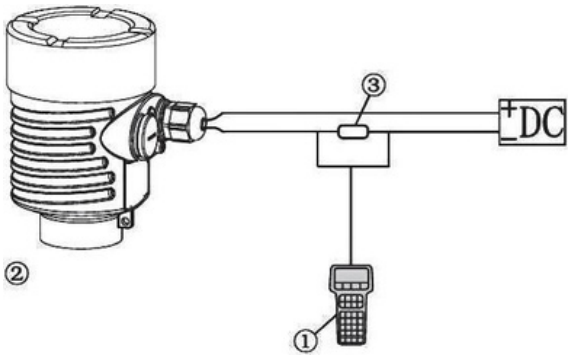


(3) HART handheld programmer programming

① HART handheld programmer

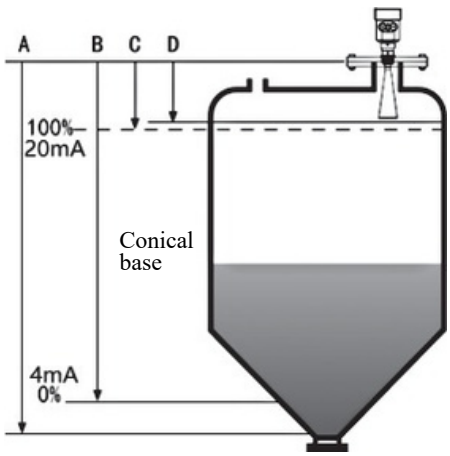
② Radar level meter

③ 250Ω resistor



Installation Requirements

- Parameter diagram

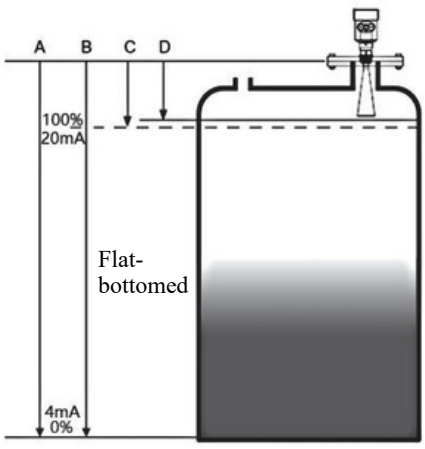


A Range setting

B Low position adjustment

C High position adjustment

D Blind zonerange

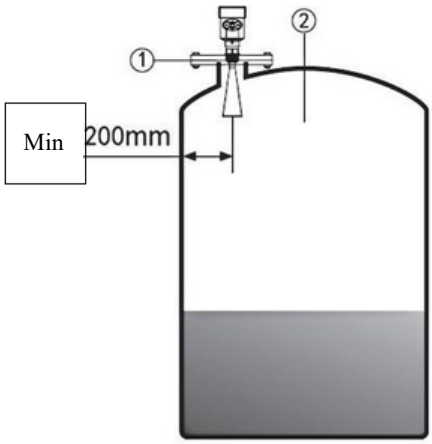


Note: The reference surface for measurement is: the bottom surface of the thread or the sealing surface of the flange . When using a radar level meter, be sure to ensure that the highest material level does not enter the measurement blind area (area shown in D in the figure). When setting the range parameters, be sure to include the height of the tapered part of the tank on site (refer to A in the figure).

Installation Requirements (Continued)

- Installation position

Install at 1/4 or 1/6 of the diameter.
Note: The minimum distance from the tank wall should be 200mm.
Note: • •Reference plane
••Center of container or a xis of symmetry

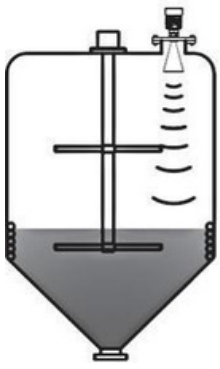


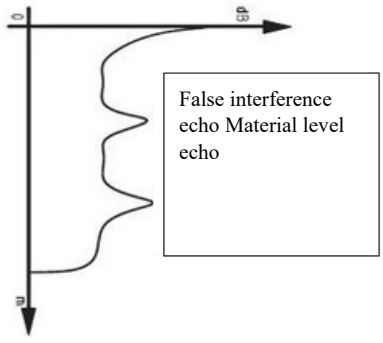
➤ Thetop planeoftheconicaltank can be installed in themiddleofthetank to p to ensurethat thebottom oftheconecan be m ea sur ed.

➤ When there is a material pile, the antenna should be vertically aligned with the material surface. If the material surface is uneven and the pile angle is large, a universal flange must be used to adjust the speaker angle so that the speaker is aligned with the material surface as much as possible.

(Becausetheinclinedsolidsurfacewillcauseecho attenuation and even signal loss

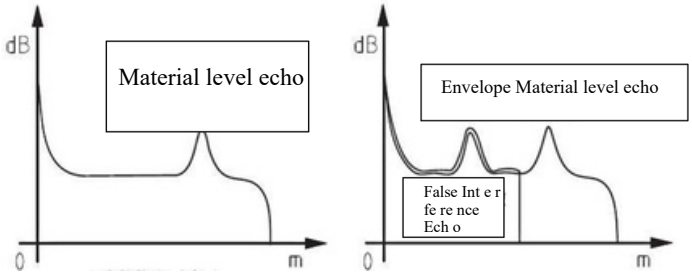
➤ False echo storage
When there is a stirring paddle in the tank that interferes with the radar measurement, if th e stirring paddle ca nnot be avoided, false echo storage is required to eliminate the interference signal generated by thefalse wave.





Installation Requirements (Continued)

If you want to get a normal level echo,the false echo storage can store the echosignal between the envelope lines in the figurebelow and define it as a false signal, thereby getting a normal level echo signal.



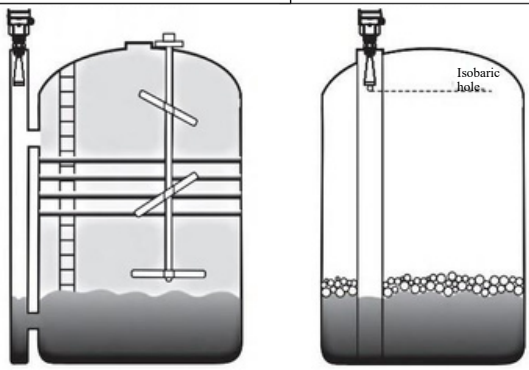
Normal material echo curve

False echo storage function eliminates interference caused by obstacles

➤ Waveguide installation

Using a waveguide installation (waveguide or bypass) can avoid the influence of obstacles and foam in the container on the measurement. Due to feeding, stirring or other process treatments in the container, foam will form on the surface of some liquid media and attenuate the signal. If the foam causes measurement errors, you should install the sensor in a waveguide or use a waveguide level meter.

Bypass Stillpipe Installation	Waveguide Installation

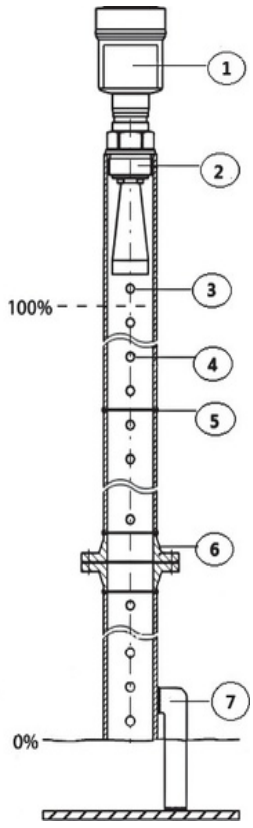


Measurement is carried out in a waveguide with a minimum diameter of 50mm. When connecting the waveguide, avoid large cracks and welds. In addition, perform "false echo learning" when necessary.

Note: Waveguide installation cannot be used when measuring adhesive media.

➤ Design requirements for waveguides Metal material, smooth inside of the tu be ;

Preferably stretched stainless steel tubes or tubes with longitudinal welds;
The weld must be as flat as possible and coaxial with the hole;
When extending with pre-welded flanges or sleeves and using ball valves, the transition tube must be aligned on the inside and fixed after precise matching;
the gap on the transition tube is ≤0.1mm;
Welding along the tube wall is not allowed. T he inner wall of the waveguide must remain smooth. If the inside is accidentally welded, the resulting uneven ness and welds should be removed, otherwise it will cause serious interference echoes, which will facilitate the adhesion of the medium;
The waveguide must at least reach the desired minimum filling height, because the measurement can only be performed inside the tube;
The aperture is ≤5mm, the number is arbitrary, single-sided or full-through; The an tenn a diameter of the sensor should be as consistent as possible with the inner di ameter of the tube;
The diameter should remain consistent throughout the length;
① Radar sensor ② Thread or flange on the instrument ③ Exhaust hole
④ Equal pressure hole ⑤ Weld ⑥ Neck welding flange ⑦ Fixing of wave peak tube



SelectionChart

ISEN-LD-26	26 GPulse Radar Level M eter													
Code	Radar type	81	81F	82	82F	83F	84	85	86	87	88	96	97	102
81	PTFE rod anti-corrosion radar	√												
81F	PTFE rod flange anti-corrosion r adar		√											
82	High-frequency horn radar			√										
82F	High-frequency flange radar				√									
83F	High-frequency universal flange ra dar					√								
84	High-frequency bracket radar						√							
85	High-frequency parabolic radar							√						
86	High-frequency PTFE sleeve radar								√					
87	High-frequency waveguide cable radar									√				
88	High-frequency waveguide rod rada r										√			
96	High-frequency PP flat plate ra dar											√		
97	High-frequency split ra												√	
102	dar Dual-cavity radar													√
Code	Measuring range													
0	0~20m													
1	20~40m													
2	40~70m													
Code	Medium temperature													
N	-40~85℃(normaltemperature)													
T	-40~200℃(hightemperature)													
H	-40~800℃(ultra-hightem perature)													
Code	Process pressure													
1	-0.1~1.6MPa													
2	-0.1~4.0MPa													
Code	Shell material													
L	Aluminum alloy													
G	Stainless steel													
Code	Connection method													
A	G1-1/2"(threadedinstallation)													
B	1-1/2"NPTthread (threaded insta llation)													
C	DN50(flange installation)													
D	DN80(flange installation)													
E	DN100(flange installation)													
F	DN125(flange installation)													

Selection Chart

Code	Connection material	
4	SUS304 stainlesssteel	
6	SUS316 stainlesssteel	
7	PP/PTFE	
Code	Bell mouthdiameter	
1	76mm	
2	96mm	
3	121mm	
Code	Antennatype	
1	Rod antenna	
2	PTFE rod antenna	
3	Steel cable weight antenna	
4	Hornantenna	
5	Flatantenna	
6	Splitantenna	
7	Universalflangeantenna	
8	Parabolicantenna	
Code	Outputsignal	
1	4-20mAoutput	
2	4-20mA output+HART	
3	4-20mA output+RS485	
4	Bluetooth output	
Code	Displaytype	
1	Singlechamberwith display (standard version)	
2	Dual chamberwithdisplay	
Code	Powersupply	
A	220VAC (dualchamber)	
D	24VDC (singlechamber)	

Selection Example

Example: ISEN-LD-26-82-0N1LA62111D, 26G horn radar, range 0~20m, temperature -40~85℃ room temperature, pressure -0.1~1.6MPa, aluminum alloy, G1-1/2" thread installation, SUS316 stainless steel, horn diameter 96mm, horn antenna, 4-20mA output, single cavity with display (standard version), power supply 24VDC.

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