



EASY TO INSTALL

REMOTE SETTING

NON-CONTACT
MEASUREMENT

EXTENSIVE
APPLICATIONS

cover
protector



Bluetooth
Module



4G or NB-IoT



www.fine-tek.com

JFR3 FMCW Radar Level Transmitter

 **FineTek**

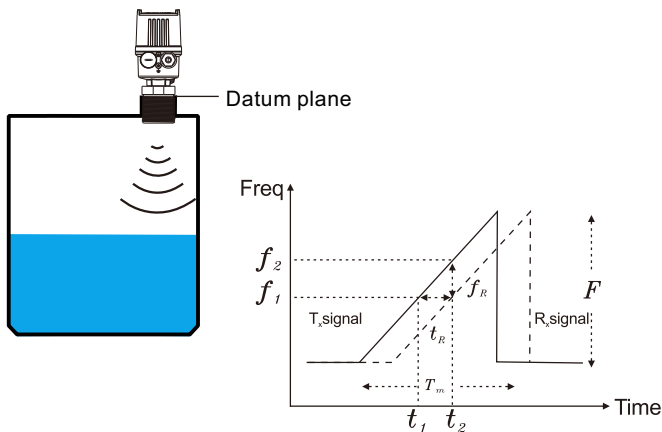
Innovation · Quality · Sharing

INTRODUCTION

JFR3 FMCW radar level transmitter is a non-contact measuring device, suitable for liquid level measurement in most tanks. It is easy to install, convenient to maintain, and can be used in corrosive applications. With its high precision and stability, it is widely used in liquid level detection and process control in the industrial field.

FMCW radar (JFR) adopts a high frequency (GHz level) scanning method; electromagnetic waves are transmitted from the antenna to the target to be measured, then reflected to the receiver over time. During this period, a frequency difference will appear, which can be further calculated to obtain the distance from the transmitting end to the measured object.

FineTek FMCW radar uses K Band frequency scanning, with a measurement bandwidth of around 1 GHz. The frequency difference is processed by Fast Fourier Transformation (FFT) which can accurately distinguish the main signal from background noise or echoes. Using a phase-lock Loop (PLL) circuit will result in a high accuracy and reliable measurement.



Design formula

$$Stop = \frac{F}{T_m} = \frac{f_R}{t_r} = \frac{f_R}{\frac{2R}{c}} \quad t_r = \frac{2R}{c}$$

$$R = \frac{F_R \times c \times T_m}{2F}$$

SPECIFICATION

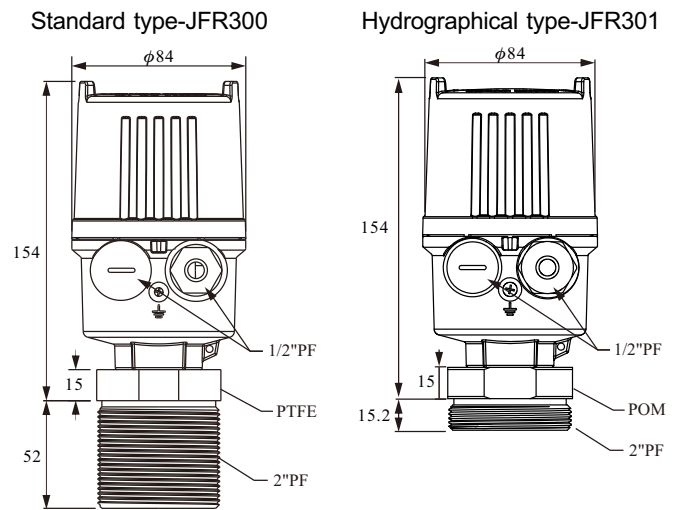
Model	2-Wire	4-Wire
Medium	Liquid	
Min. Dielectric constant	≥ 2	
Measuring range	10m(JFR301) / 12m(JFR300)	
Accuracy	< 2.5m, ± 5mm > 2.5m, ± 0.2% F.S	
Repeatability	±3 mm	
Ambient temperature	-40~+75 °C	
Process temperature	-40~+80 °C	
Operating pressure	-1~+10 bar	
Power supply	20~36Vdc	8~36Vdc
Analog output	4~20 mA	
Digital communication	—	RS-485
Local display	Five-digit Backlight LCM	
Housing material	Aluminum Alloy Ip67	
Frequency	26 GHz	
Antenna material	POM(JFR301) / PTFE(JFR300)	
Beam angle	16°	
Blind distance	350mm	200mm

FEATURES

- Non-contact measurement.
- Able to measure corrosive & toxic liquids, hydrocarbons and slurries.
- Measurement unaffected by specific gravity, temperature, viscosity or foam.
- Echo wave display – resulting in accurate adjustment and parameter setting.
- Measuring range scanning, background noise editing & removal, save function.
- Able to indicate distance, material level, percentage and current 4~20mA.
- Language selection of traditional Chinese, simplified Chinese, English.
- Low power consumption: max 480mW @ 24Vdc(2-Wire).
- Analog output: 4mA, 20mA.
- Can be calibrated and parameterized using FAS software for PC.

DIMENSION

(Unit:mm)



ENVIRONMENTAL APPLICATION

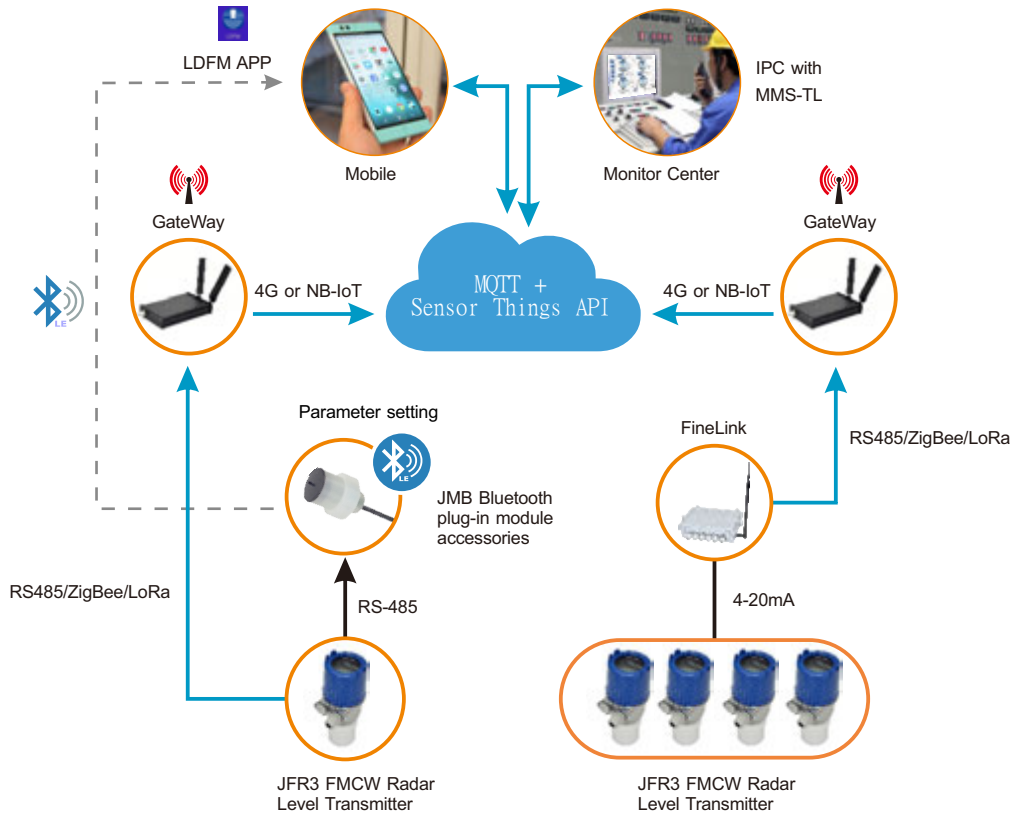
1. With an onsite universal level gauge display, it can be used for distance measurement, liquid level measurement, stock indication or pump control.
2. Liquid level monitoring of raw water, recycled water or wastewater in various applications such as storage tanks, rivers, channels, pools etc.
3. Liquid level measurement in process tanks with mediums such as water, grease, resin, paint, heavy oil, beverage, etc.

APPLICATION

Support MQTT Cloud & Sensor Things API

JFR3 combines GateWay (4G / NB-IoT) to access the Internet. The level measurement data can be uploaded to the cloud through MQTT. Users can acquire and analyze data on the cloud platform.

Sensor Things API is an "Open Geospatial Consortium (OGC) standard" that provides an open and unified framework. It defines the "semantics" of the IoT information at the application



Example

■ Short Antenna Type (Hydrographical) - JFR301

Installation onsite

Measuring range: 10m

Application: Pond, throttle pond, detention basin.



■ Storage Application - JFR300

Can be used in plastic storage tanks. The low dielectric constant of plastic makes radar wave signals have a penetrating property.

It can be directly top-mounted, without drilling holes for the flange extension tube and it won't damage the integrity of the storage.

Installation On Site



ORDER INFORMATION

JFR3 FMCW Radar Level Transmitter

-Standard type (JFR300)-

JFR 3 0 0 0 0 - C 1 2 1 A A B 2 0 3 0 0 ^① **BA**

^① **Output/Input**

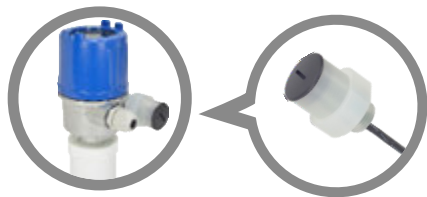
- A: 4-Wire , 8-36Vdc With RS-485 , (No Local Display)
- B: 4-Wire , 8-36Vdc With RS-485 and 4-20mA , (Local Display)
- C: 2-Wire , Loop Power 24Vdc , 4-20mA , (Local Display)

-Hydrographical(JFR301)-

JFR 3 0 1 0 0 - C 2 1 7 A A B 2 0 3 0 0 ^① **BA**

^① **Output/Input**

- B: 4-Wire , 8-36Vdc With RS-485 and 4-20mA , (Local Display)
- C: 2-Wire , Loop Power 24Vdc , 4-20mA , (Local Display)



Bluetooth plug-in module accessories(4-Wire)
Order Code: **JMB10000-501A503**

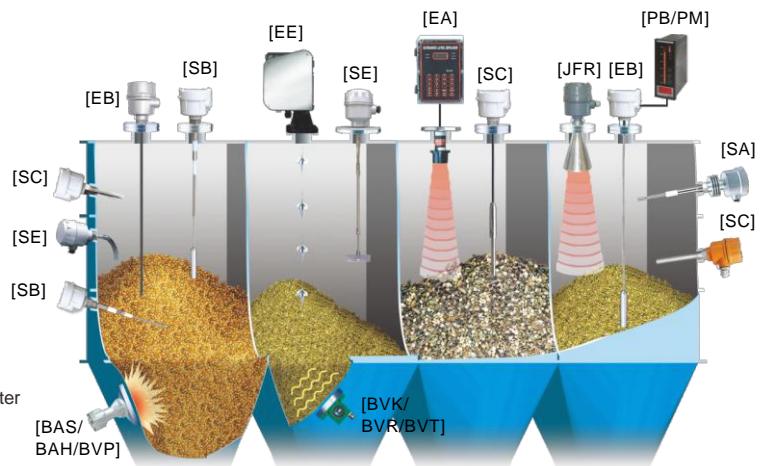
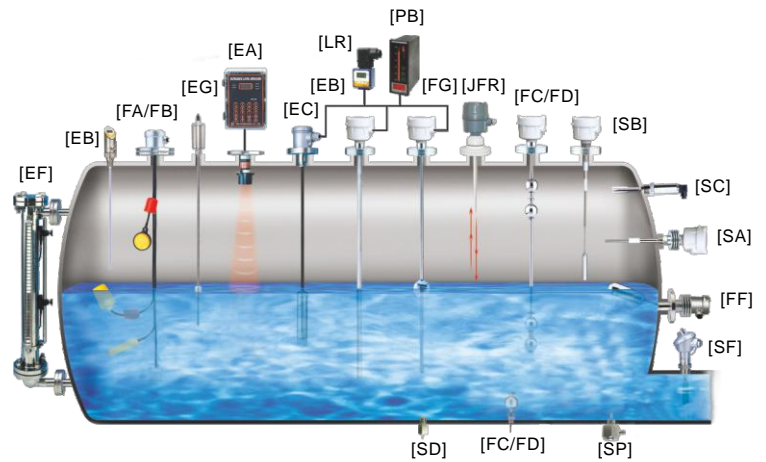


JFR3 display type cover protector accessories
Order Code: **HP420-L090256001**

Cover protector

EXAMPLES OF TANK-MOUNTING

- [FC/FD] Mini Float/Magnetic Float Level Switch
- [FG] Magnetic Float Level Transmitter
- [FF] Side Mounting Float Switch
- [FA/FB] Cable Float Level Switch
- [SP] Thermal Dispersion Flow Switch
- [SF] Paddle Flow Switch
- [SD] Optical Level Switch
- [SE] Rotary Paddle Level Switch
- [SA] Capacitance Level Switch
- [EC] Pressure Level Transmitter
- [LR] Loop Power Indicator
- [SC] Vibrating Probe Level Switch
- [SC] Tuning Fork Level Switch
- [EB] RF-Capacitance Level Transmitter
- [SB] RF-Capacitance / Admittance Level Switch
- [EG] Magnetostrictive Level Transmitter
- [EF] By-Pass Level Transmitter
- [MEF] Mini By-Pass Level Transmitter
- [EA] Ultrasonic Level Transmitter
- [JFR] FMCW Radar Level Transmitter
- [EE] Electromechanical Level Measuring System
- [ED] Speed Monitor
- [SRT/SRS] Conveyer Belt Misalignment Switch & Safety Cable Pull Switch
- [PB/PM] Microprocessor Based Bargraphic Display Scaling Meter
- [BRD/AE] Valve and Controller for Dust Collector System
- [BAS/BAH/BVP] Air Hammer
- [BVK/BVR/BVT] Pneumatic Vibrator



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