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Golden Rules Co.,Ltd

Liquid
Radar Level Meter

KC-2021R Series
RADAR LEVEL METER



The nation's development item, 100% domestic goods, Patent **NO. 10-1660226**

12. Non-contact type Radar Level Transmitter

12-1. Liquid type KC-2021R Series

Radar Level Transmitter

Feature



Non-contact type
KC-2021R

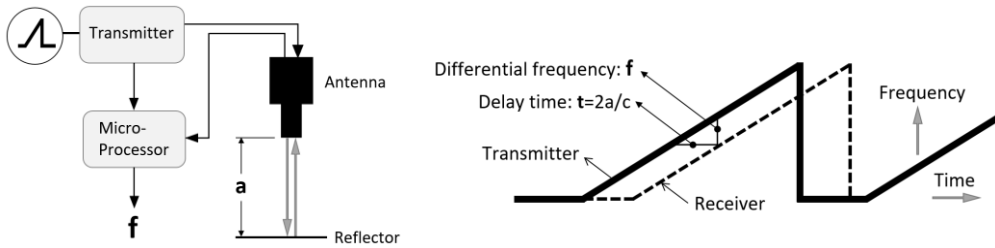
- Based on the newly developed CMOS millimeter wave RF chip, more sophisticated RF architecture was realized and the signal-to-noise ratio was increased to have a small dead band (dead band: 80mm).
- The 5 GHz operating frequency bandwidth means higher measurement resolution and accuracy. The antenna beam angle is 8°, so that interference from the surrounding environment and water vapor can be minimized. The accuracy is good enough to have an error of 2mm. A shorter wavelength is designed to increase the reflection characteristic of the frequency.
- It has 8° beam angle and self-adaptive automatic gain algorithm function. It is easy to find the surface reflection point of the target object.
- Short response time (80~100ms) and adjustable measuring cycle (0.5~300m/Min) Fake echo frequencies can be easily removed.
- Because the PTFE lens antenna is completely sealed, there is no frequency leakage and it can be used safely.
- The high-temperature and high-pressure special antenna can be supplied separately, meter can be selected.
- By designing only liquid measurement, the product price has been drastically reduced. With Hangul, anyone can easily adjust it.
- Accuracy (mm): Liquid $\pm 2\text{mm}$
- Power: 24V DC, 22.5mA
- Protection class: IP67
- Connection Pressure : -1 ~ 2.0 Mpa
- Signal output: DC 4~20 mA current output @HART

*The KC-2021R high-performance version of the radar level transmitter shows excellent performance even in harsh environments where the sensor part is heavily dusted and coated.

Description

The KC2021R high-performance version radar level transmitter is a powerful level meter that utilizes the "frequency continuous modulation" theory, which can meet the level measurement requirements of liquids. The KC-2021R Series uses high-performance version radar technology to provide superior signal processing capabilities, and to improve high-frequency measurement technology to a new level, with lower measurement limits and improved stability and accuracy. It is a non-contact radar level meter with Frequency Modulated Continuous Wave method (FMCW) and is a radar level meter dedicated to liquids in water treatment and all industries.

The information contained herein is subject to change without notice.



- Using the frequency difference (Δf) from the received signal by continuously emitting a frequency modulated signal
- The transmission frequency increases linearly with time and the modulation duration remains longer than the time the reflected wave returns.
- The frequency difference of the transmitted and received signals is proportional to the time delay difference (T) of the transmitted signal

$$\Delta f = (df/dt) * T \quad (df/dt \text{ is the swept frequency rate of change})$$

$$a = c * T / 2$$

Product Performance

- ◆ **Precision**
Accuracy (mm): Liquid < ± 2 mm
- ◆ **Repeatability**
< 1mm
- ◆ **Response time**
< 80 ~ 100ms
- ◆ **Measuring range**
Liquid: 10m, 20m
- ◆ **Frequency**
76 to 81 GHz
- ◆ **Resolution**
1-2mm
- ◆ **Beam angle**
8°
- ◆ **Measured minimum DK value**
> 2.0
- ◆ **Measurement time**
1m/min to 300m/min (adjustable)

Operating Specification

- ◆ **Measuring medium**
Liquid
- ◆ **Measuring pressure range (assembly part)**
Flange : 0.3 MPa Std.



◆ Fluid & Ambient Temperature

Fluid : Std. -40 ~ 85 °C, Option : -40 ~ 150 °C

Ambient : -40 ~ 85 °C

Humidity : ≤ 95% RH

◆ Input Power

DC 24V, 22.5mA

◆ Output Signal (Std.)

Linear 4~20mA @HART 2-wire

◆ Error Output

4mA, 22mA or 20.5mA (configurable)

◆ LCD Display

LCD display 128 X 64 pixels / level, distance (space), 4-20mA current, %
Adjustment in the window window by the 4 push button attached to the
instrument panel Adjustment variable: Level range: (0 ~ 10m, 0 ~ 20m) Level
unit: m, % Response time / correction value: (1 ~ 7) sec / 0.5 ~ 5 Zero & Span

Body Specification**◆ Wetted Parte**

Antenna Body – SUS304 (Option : SUS316, PTFE)

Antenna Lens – PTFE, PVDF

Thread / Flange – 304SS (Option : SUS316, PTFE, PVDF)

Housing – AL.-Casting (Option : Stainless steel)

◆ Flow meter body

Water Proof IP67

◆ Conduit connection (Selection)

½" NPT(F), ½" PF(F), M20X1.5

AWG18 or 0.75m2 Calbe

◆ Flow meter mounting (Selection)

G1.5" Thread, Flange

JIS 10k RF Flange

◆ Certificate

KC (CASE All) Certificate

Standard antenna dimensions and basic configuration III

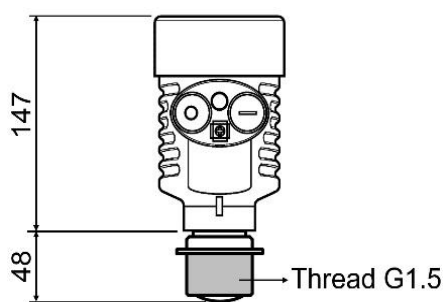
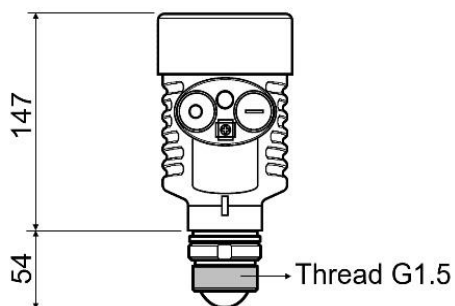
G11/2" Thread : Material: SUS304, SUS316, PTFE, PVDF



SUS304 antenna



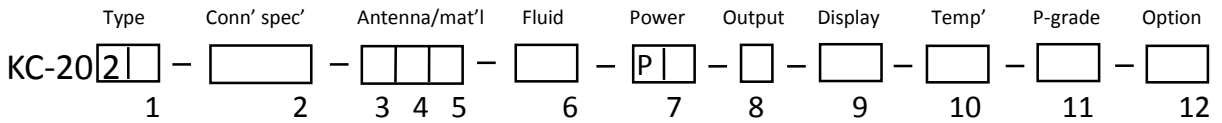
PTFE antenna



Photos for high-temperature and high-pressure applications and examples of on-site installation



Order Code_ KC-2021R Series (Radar Level Transmitter)



structure type	Code 1
Standard type	1R
Ex-proof type: Ex d IIC T6	2R
Agency approved, customer specified	W

Measured Medium	Code 6
Liquid	1
Agency approved, customer specified	W

Housing/protection grade	Code 11
AL-Casting/ IP67	1
SUS304/ IP67 (Option)	2
Agency approved, customer specified	W

Connection Spec'	Code 2
Thread G1.5" Male	T
DIN Flange DN50	50
DN Flange DN80	80
DIN Flange DN100	100
DIN Flange DN125	125
Agency approved, customer specified	W

Input Power	Code 7
24V DC, 22.5mA	1
Agency approved, customer specified	W

Option	Code 12
Cooling fin for high temp'	H
Cooling fin for high temp' & filter	HF
Agency approved, customer specified	W

Output Signal	Code 8
4-20mA with HART/ 2-wire	1
Agency approved, customer specified	W

Antenna type/ Mat'l	Code 3,4,5
type	Material
Lens	PTFE
Housing	AL-Casting SUS304
Thread or Flange	SUS304 SUS316
Agency approved, customer specified	

Display	Code 9
No Readout	NR
Digital Display(LCD)	DD
Agency approved, customer specified	W

process temp'	Code 10
-40 ~ 85°C (Std.)	1
-40 ~ 150°C (Option)	2
Agency approved, customer specified	W

Requirements when ordering products	<ol style="list-style-type: none"> 1) Product base model 2) Measuring range and highest upper level 3) Fluid type, operating temperature, operating pressure 4) Meter connection method and size 5) Connection flange type and antenna material (standard: SUS304, option: SUS316, PTFE, PVDF) 6) Antenna body material (SUS304, SUS316, PTFE) 7) Tank shape and size: W, D, H 8) Tank nozzle (connection single pipe) size 9) Wire connector size (M20 X 1.5 or 1/2" NPT) 10) Additional options and caveats
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Delivery Performance ~ 125 EA

Enduser	Application	Model
Gyeongine Corporation		KC-2021R
Daeshin Plant Co., Ltd.		KC-2021R
Daegu Facility Management Corporation		KC-2021R
Daegu Flood Management System		KC-2021R
Dongyang Cement		KC-2021R
Yuhan Chemical		KC-2021R
Inseong Industry		KC-2021R
ILJIN Material		KC-2021R
Asia Paper		KC-2021R
Samsung Corning		KC-2021R
Shinsung Ascon		KC-2021R
Jeil Feed		KC-2021R
Hyundai Cement		KC-2021R
Hyundai Steel		KC-2021R
Hyundai Environment		KC-2021R
Hwaseung Industry		KC-2021R
Posco		KC-2021R
Posce Steel		KC-2021R
Posco Comtech		KC-2021R
JNC		KC-2021R
KCC		KC-2021R
Rural Community Corporation		KC-2021R



Golden Rules

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Flow & Level & Pressure & Temperature
water quality analyzer/**TMS**
professional manufacturing

Distributor

Certified in accordance with

KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

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