

APPLICATON-1

레이더 레벨 전송기 (80G FMCW) KC-2021R Series



80G FMCW 레이더 레벨 전송기

카다로그

01 | 80G FMCW 레이더 레벨 전송기

03 | KC – 2021R Series

05 | KC – 2021R-1

07 | KC – 2021R-2

KC - 2021R-3

11 | KC - 2021R-4

13 | KC - 2021R-5

15 | KC - 2021R-W

80G FMCW 레이더 레벨 전송기

개요

KC-2021R 시리즈 레이더 레벨 센서는 FMCW(주파수 변조 연속파) 특수 밀리미터파 기술을 사용하는 레벨 측정 장비 중 하나이며, 작동 주파수는 76~81GHz입니다.

신호 출력은 2선식 4~20mA, 4선식 4~20mA 또는 RS485 옵션을 제공합니다.

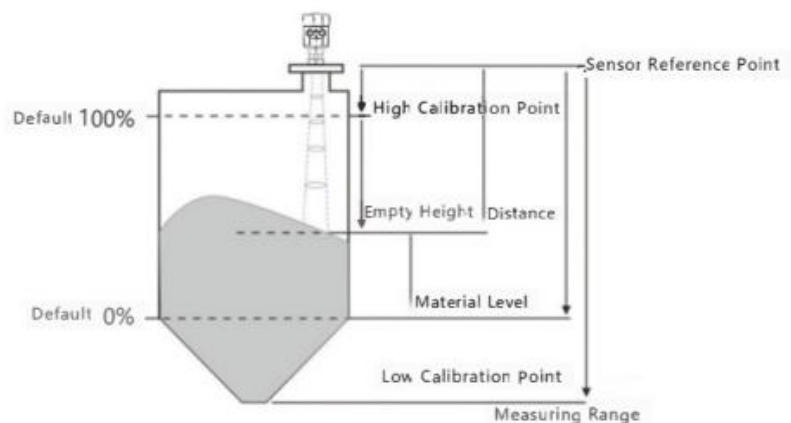
최대 측정 거리는 120m이며, 사각지대는 8cm입니다. 안테나 빔 각도는 약 3°로 뛰어난 성능으로 액체, 고체 및 분말 재료의 정확한 측정에 적합합니다.

원리 : 레이더 레벨 센서는 선형 주파수 변조 펄스 신호를 방출하고, 전파 경로에 있는 장애물에 의해 반사되는 에코파를 포착합니다. "믹서"를 통해 두 신호를 결합하여 중간 주파수 신호(IF)를 생성합니다. 이 신호를 처리하고 계산하여 원하는 거리를 계산합니다.

장점 :

1. 초소형 구조의 상보형 금속 산화막 반도체 트랜지스터(CMOS) 부품을 기반으로 높은 신호대 잡음비와 사각지대를 줄였습니다.
2. 5GHz의 작동 대역폭은 더 높은 측정 분해능과 정확도를 의미합니다.
3. 3° 안테나 빔 각도로 주변 환경의 간섭이 장비에 미치는 영향을 줄이고 설치가 더욱 편리합니다.
4. 파장이 짧아 고체 표면에서 더 나은 반사 성능을 제공하므로 범용 플랜지가 필요하지 않습니다.
5. 원격 디버깅 및 업그레이드를 지원하여 대기 시간을 줄이고 작업 효율성을 향상시킵니다.

- **거리** : 실시간 값=거리
- **재료레벨** :
실시간 값=최저교정점-거리(최소값0)
- **빈높이** : 거리-최고교정점(최소값0)



80G FMCW 레이더 레벨 전송기

KC-2021R 시리즈



Application	Liquid Measurement
Type	Integral
Measuring Range	0~10m, 30m, 120m
Antenna Type	Lens/PTFE
Mounting Thread	Thread G1.5/Flange
Beam angle	8°
Response Time	<0.6s (Due To parameter setting)
Medium Temperature	(-40~120)°C
DK Value Of Medium	>1.5
Process Pressure	(-0.1~2) Mpa
Accuracy	<2mm
Signal Output	(4~20) mA HART, RS485 Modbus-RTU
Working Frequency	(76~81) GHz
Protection Grade	IP68
Explosion proof Grade	Ex ia IIC T6 Ga

Unit	Code	Parameters
Transmitter Type	P	Standard
	F	Explosion-Proof
Housing/ Protection Grade	L	Aluminum Alloy/IP68
	G	Aluminum Alloy Dual Chamber/IP67
	Y	Special Terms
Process Connection	G	Thread G1.5
	Y	Special Terms
Input Power, Output	2	2 wires(4~20)mA 24VDC/HART
	3	4 Wires(4~20)mA 220VAC
	4	4 Wires(4~20)mA RS485 Modbus-RTU
	Y	Special Terms
Cable Connection	M	M20*1.5
	N	NPT1/2
Measuring Medium	L	Liquid
Measuring Range	1	(0~30)m
	2	(0~60)m
	3	(0~120)m
Special Terms	Y	Special terms

80G FMCW 레이더 레벨 전송기

KC-2021R-1



Application	Liquid Measurement
Type	Integral
Measuring Range	0~10m, 30m
Antenna Type	Lens/PTFE
Mounting Thread	Thread G1.5/Flange
Beam angle	8°
Response Time	<0.6s (Due To parameter setting)
Medium Temperature	(-40~120)°C
DK Value Of Medium	>1.5
Process Pressure	(-0.1~2) Mpa
Accuracy	<2mm
Input Power, Output Signal	2 wires(4~20)mA 24VDC/HART
Working Frequency	(76~81) GHz
Explosion proof Grade	Ex ia IIC T6 Ga



Unit	Code	Parameters
Transmitter Type	P	Integral type (Standard)
	F	Explosion-Proof
Housing/ Protection Grade	L	Aluminum Alloy/IP68
	G	Aluminum Alloy Dual Chamber/IP67
	Y	Special Terms
Antenna Type	2	Lens/PTFE G1.5
	3	Anti-Corrosive
Process Connection	G	Thread G1.5
	Y	Special Terms
Input Power, Output	2	2 wires(4~20)mA 24VDC/HART
	3	4 Wires(4~20)mA 220VAC
	Y	Special Terms
Cable Connection	M	M20*1.5
	N	NPT1/2
Measuring Medium	L	Liquid
Special Terms	Y	Special terms

80G FMCW 레이더 레벨 전송기

KC-2021R-2



Application	Measurement Of Liquid , Solid
Type	Integral
Measuring Range	0~120m
Antenna Type	Lens/PTFE
Mounting Thread	Thread G3.5/Flange
Beam angle	3°
Response Time	<0.6s (Due To parameter setting)
Medium Temperature	(-40~120)°C
DK Value Of Medium	>1.5
Process Pressure	(-0.1~2) Mpa
Accuracy	<2mm
Signal Output	(4~20) mA HART, RS485 Modbus-RTU
Working Frequency	(76~81) GHz
Protection Grade	IP68
Explosion proof Grade	Ex ia IIC T6 Ga



Unit	Code	Parameters
Transmitter Type	P	Integral (Standard)
	F	Explosion-Proof
Housing/ Protection Grade	L	Aluminum Alloy/IP68
	G	Aluminum Alloy Dual Chamber/IP67
	Y	Special Terms
Antenna Type	1	Lens/PTFE
	3	Anti-Corrosive
Process Connection	G	Thread G3.5
	B	Flange DN80 PN10
	L	Flange DN80 PN10 Universal Type
	C	Flange DN100 PN10
	K	Flange DN100 PN10 Universal Type
	Y	Special terms
Input Power, Output	2	2 wires(4~20)mA 24VDC/HART
	3	4 Wires(4~20)mA 220VAC
	4	4 Wires(4~20)mA RS485 Modbus-RTU
	Y	Special Terms
Cable Connection	M	M20*1.5
	N	NPT1/2
Measuring Medium	L	Liquid
	S	Solid
	D	Powder
Measuring Range	1	(0~30)m
	2	(0~60)m
	3	(0~120)m
Special Terms	Y	Special terms

80G FMCW 레이더 레벨 전송기

KC-2021R-3



Application	Measurement Of Solid
Type	Integral
Measuring Range	0~10m, 30m
Antenna Type	Lens/PTFE
Mounting Thread	Thread G3.5/Flange
Beam angle	3°
Response Time	<0.6s (Due To parameter setting)
Medium Temperature	(-40~120)°C
DK Value Of Medium	>1.5
Process Pressure	(-0.1~2) Mpa
Accuracy	<2mm
Signal Output	(4~20) mA HART
Working Frequency	(76~81) GHz
Explosion proof Grade	Ex ia IIC T6 Ga

Unit	Code	Parameters
Transmitter Type	P	Integral type (Standard)
	F	Explosion-Proof
Housing/ Protection Grade	L	Aluminum Alloy/IP68
	G	Aluminum Alloy Dual Chamber/IP67
	Y	Special Terms
Antenna Type	1	G3.5 Lens/PTPE
	3	Anti-Corrosive
Process Connection	G	Thread G3.5
	B	Flange DN80 PN10
	L	Flange DN80 PN10 Universal Type
	C	Flange DN100 PN10
	K	Flange DN100 PN10 Universal Type
	Y	Special terms
Input Power, Output	2	2 wires(4~20)mA 24VDC/HART
	3	4 Wires(4~20)mA 220VAC
	Y	Special Terms
Cable Connection	M	M20*1.5
	N	NPT1/2
Measuring Medium	S	Solid
Special Terms	Y	Special terms

80G FMCW 레이더 레벨 전송기

KC-2021R-4



Application	Measurement Of Liquid, Solid
Type	High Temp' And Press' Resistant Type
Measuring Range	0~60m
Antenna Type	Lens/PTFE
Thread And Antenna size	Flange
Beam angle	3°
Response Time	<0.6s (Due To parameter setting)
Medium Temperature	(-40~1200)°C
DK Value Of Medium	>1.5
Process Pressure	(-0.1~2) Mpa (with Quartz Isolation Flange)
Accuracy	<2mm
Signal Output	(4~20) mA HART. RS485 Modbus-RTU
Working Frequency	(76~81) GHz
Protection Grade	IP68

Unit	Code	Parameters
Transmitter Type	P	Standard
	Y	Special Terms
Housing/ Protection Grade	L	Aluminum Alloy/IP68
	G	Aluminum Alloy Dual Chamber/IP67
	Y	Special Terms
Process Connection	B	Flange DN80 PN25
	Y	Special terms
Input Power, Output	2	2 wires(4~20)mA 24VDC/HART
	3	4 Wires(4~20)mA 220VAC
	4	4 Wires(4~20)mA RS485 Modbus-RTU
	Y	Special Terms
Cable Connection	M	M20*1.5
	N	NPT1/2
Measuring Medium	L	Liquid
	S	Solid
	D	Powder
Measuring Range	1	(0~30)m
	2	(0~60)m
	Y	Special terms
Midium temperature	T0	-40~120°C
	T1	-40~200°C
	T2	0~600°C
	T3	0~1200°C
Process pressure	P0	-0.1~2MPa
	P1	-0.1~20MPa (Normal tempreature)
Special Terms	Y	Special terms



80G FMCW 레이더 레벨 전송기

KC-2021R-5



Application	Measurement Of Liquid , Solid
Measuring Range	0~120m
Antenna Type	Lens/PTFE
Mounting Thread	Thread G3.5/Flange
Beam angle	8°
Response Time	<0.6s (Due To parameter setting)
Medium Temperature	(-40~200)°C
DK Value Of Medium	>1.5
Process Pressure	(-0.1~4) Mpa
Accuracy	<2mm
Signal Output	4 wires(4~20) mA, RS485 Modbus-RTU, SDI-12
Working Frequency	(76~81) GHz



Unit	Code	Parameters	
Transmitter Type	P	Integral type (Standard)	
	F	Explosion-Proof	
Housing/ Protection Grade	L	Aluminum Alloy/IP68	
	G	Aluminum Alloy Dual Chamber/IP67	
	Y	Special Terms	
Antenna Type	2	G3.5 Lens/PTFE	
	G	Thread G3.5	
Process Connection	B	Flange DN80 PN10	
	C	Flange DN100 PN10	
	Y	Special terms	
Input Power, Output	3	4 Wires(4~20)mA 220VDC/HART	
	4	4 Wires RS485 Modbus-RTU+(4~20)mA	
	5	4 Wires(4~20)mA 220VAC	
	6	SDI-12+(4~20)mA 24VDC	
	Y	Special Terms	
Cable Connection	M	M20*1.5	
	N	NPT1/2	
Measuring Medium	S	Solid	
	L	Liquid	
Special Terms	Y	Special terms	

80G FMCW 레이더 레벨 전송기

KC-2021R-W



Application	Water level maeurement
Type	Integral
Measuring Range	0~30m
Antenna Type	Integrated lens antenna design
Mounting method	Installing by bracket
Beam angle	6°
Ambient Temperature	(-40~85)°C
Accuracy	±3mm
Signal Output	RS485 Modbus-RTU or wireless
Working Frequency	(76~81) GHz
Protection Grade	IP67



Unit	Code	Parameters
Lens	B	With lens, beam angle 6°
Communication	R	RS485 Communication
	N	NB lot Communication
	G	4G all networks
	L	LoRa Communication
	Y	Special terms
Installation bracket	W	With installing bracket
	N	Without installing bracket
Measuring Range	1	(0~10)m
	2	(0~20)m
	3	(0~30)m
	Y	Special Terms
Special Terms	Y	Special terms

www.goldenrules.co.kr

질량/체적유량계 & 스마트전송기,레벨전송기,수질계측기
전문 제조

전국 대리점

Certified in accordance with

KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

032-817-1240

goldenrules2014@naver.com

인천 연수구 송도미래로30 A-1805(송도스마트밸리)

 (주)골든룰