

# 80GHz RADAR Level Transmitter

## RLT6400



Measuring range upto 70m



Single/ Dual Chamber Housing



Process Pressure: upto 20 bar



Sensor Housing (IP67/ IP68 Protection)

**Product  
Datasheet**

# ROCKSENSOR AT A GLANCE (ABOUT US)

Rocksensor is one of the global leaders specializing in Process Instrumentation, Research and Development and Designing of Industrial Automation Equipment. We provide highly precise pressure sensors and transmitters, flow metres, level transmitters and temperature transmitters with a prime focus to help our clients efficiently, safely and economically run complex industrial processes.

Rocksensor, headquartered in Switzerland, has its footprint in various geographical regions such as the US, Russia, South Korea, Italy, Germany, Singapore, Malaysia, Morocco, China, Taiwan, Australia, UAE, Brazil and India. Our clients come from some of the major industries such as Oil and Gas, Petrochemicals, Pharmaceuticals, FMCG, Automobiles, Water, Cement, Metal & Mining and mainly from the Power Industry like Nuclear, Thermal, Hydro and Solar.

Rocksensor deals in a wide range of highly accurate industrial automation instruments ensuring that even the complex industrial processes happen efficiently.

To fulfill the needs of our clients we make sure that our instruments work in even the harsh environmental conditions offering accurate recordings and communication.

We, at Rocksensor, believe in creating bonds that last a lifetime and create a success story for each and every client. Rocksensor aims to achieve a perfect fit in the global market landscape and establish our footprints across the globe.



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## KEY APPLICATION INDUSTRIES

- Oil and Gas sector
- Cement
- Metal
- Pulp and Paper
- Agriculture
- Textiles
- Chemicals
- Power
- Water
- Pharmaceutical
- Fertilizer
- Plastics and HVAC

## 80GHz RADAR Level Transmitter RLT6400



RLT6400R with  
Rod Antenna



RLT6400S with  
Hygienic Fittings



RLT6400H with  
Flange Version



RLT6400P with  
Plastic Antenna



RLT6400R in  
Thread Version



RLT6400C  
Compact Radar

### 1. Introduction

It is based on Frequency Modulated Continuous Wave (FMCW) technology, which transmits a continuous radar signal with the frequency increasing over time to create a signal sweep. The signal is then reflected back to the antenna, to calculate the level.

### 2. Typical Application

The RLT6400 series can measure all kinds of liquids, even under high pressure and extreme temperatures, in simple as well as difficult processing conditions.

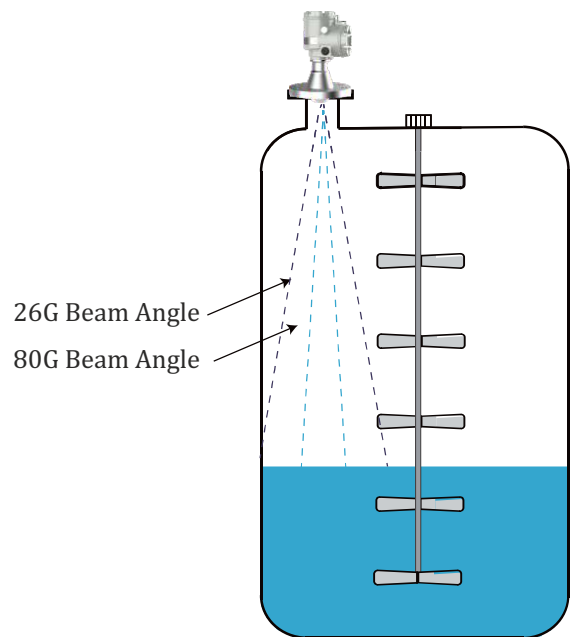
With compact antenna design it's particularly suitable for applications with tight space.

High focus make it possible for measurement for silos with high mounting nozzle or obstacle inside.

### 3. Measuring Principle

The radar uses 80GHz Frequency Modulated Continuous Wave.

The FMCW radar emits a high frequency signal whose frequency increases linearly during the measurement phase (called the frequency sweep). The signal is emitted, reflected from the measuring surface and received with a time delay,  $t$ . Delay time,  $t=2d/c$ , where  $d$  is the distance to the product surface and  $c$  is the speed of light in the gas above the product. For further signal processing the difference  $\Delta f$  is calculated from the actual transmit frequency and the receive frequency. The difference is directly proportional to the distance.



### 4. Advantages and Features

- With Zero Dead Zone: Isolated emitting & receiving signal enable full range measurement without dead zone. Unaffected by buildup or condensation near sensor.
- EverCheck: Real time self-monitoring on voltage, current and chip. Output warning when abnormality present.
- WavesMemo: Wave management concept. To help understand abnormal output, the RLT6400C storage echo automatically.
- MultiTrack: Due to new MultiTrack wave tracking algorithm, RLT6400C get highest reliability.

## 5. Technical Specifications

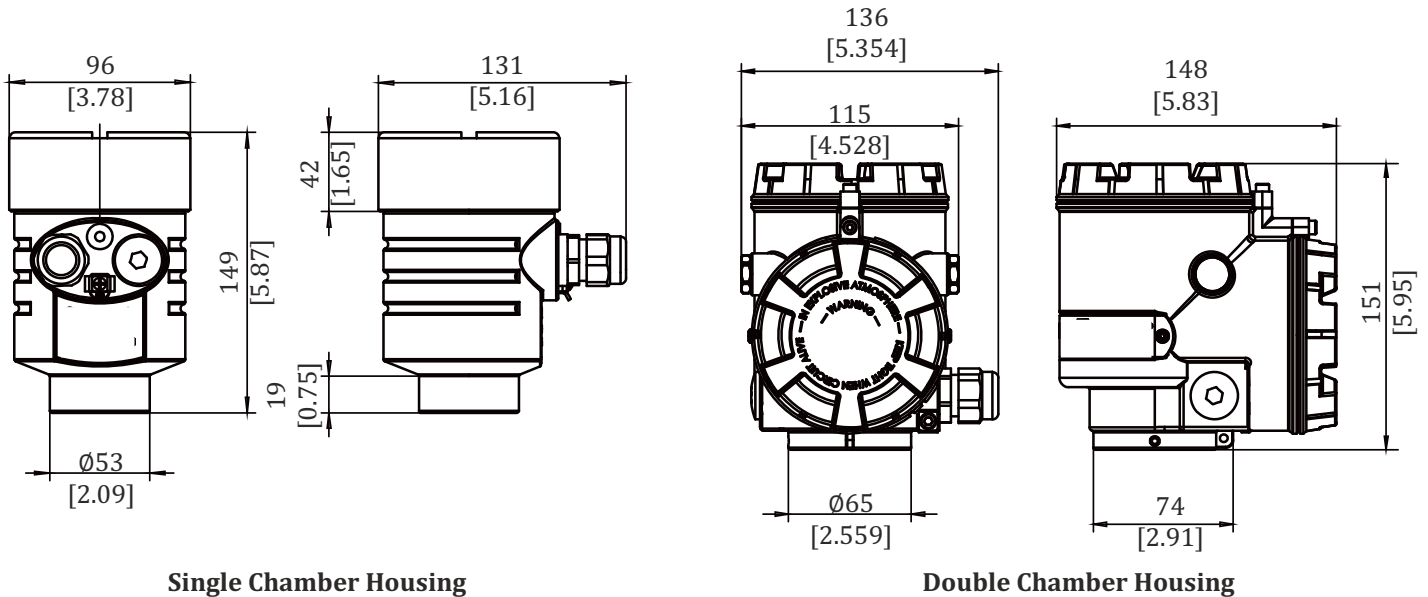
Model	RLT6400R with Rod Antenna	RLT6400T in Thread Version
Application	Applicable for continuous level measurement of aggressive liquids in storage containers, reactors or process vessels.	Applicable for continuous level measurement of liquids with slightly aggressiveness in storage containers, reactors or process vessels.
Measuring Range	0 ~ 30m/ 0 ~ 70m	
Process Fitting & Beam Angle	Thread G1½, 1½NPT; Beam angle 7°; Thread G3, 3 NPT, Beam angle 3°	Thread G¾, ¾NPT; Beam angle 14°; Thread G1½, 1½NPT; Beam angle 7°; Thread G3, 3 NPT, Beam angle 3°
Power	<0.5W	
Response Time	<2s	
Frequency	76 ~ 81Ghz	
Media-contracting Materials	Process fittings: PP; Antenna: PP; Seal: FKM, EPDM, KALREZ	Process fittings: 316L; Antenna: PEEK, PTFE; Seal: FKM, EPDM, KALREZ
Process Temperature	(-)40°C ~ 200°C	
Process Pressure	(-)1bar ~ 2bar	(-)1bar ~ 20 bar
Resolution	1mm	
Accuracy	±2mm	
Repeatability	±1mm	
Signal Output	4 ~ 20mA/ HART	
Display & Adjustment	LCD display, tank side display and tank side hub	
Protect Level	IP67	
Electrical Connection	2x M20*1.5(Cable diameter 9 - 13 mm)/ ½NPT	
Explosion Proof Grade	EX ia IIC T6 Ga/ EX dia [iaGa]IIC T6/T2 Gb	EX ia IIC T6 Ga/ Ex dia [iaGa]IIC T6/T2 Gb/ Ex iaD tD A21 IP67T80°C/T290°C

Model	RLT6400S with Hygenic Fittings	RLT6400C Compact Radar
Application	Applicable for continuous level measurement of liquid in food and pharmaceutical sectors.	Applicable for continuous level measurement of water, wastewater river, open channel, wet wells, lift station and simple chemical tanks
Measuring Range	0 ~ 30m	
Process Fitting & Beam Angle	Flange clamp 2; Mounting strap; DRD connection; Beam angle 6°	Thread G1½; Mounting strap; Beam angle 8°
Power	<0.5W	
Response Time	<2s	
Frequency	76 ~ 81Ghz	
Media-contracting Materials	Antenna: PTFE Seal: FKM,EPDM	Antenna PP
Process Temperature	(-)40°C ~ 200°C	(-)40°C ~ 80°C
Process Pressure	(-)1bar ~ 16bar	(-)1bar ~ 2bar
Resolution	1mm	
Accuracy	±2mm	
Repeatability	±1mm	
Signal Output	4-20 mA/HART	4 ~ 20mA/ HART/ RS485
Display & Adjustment	LCD display, tank side display and tank side hub	Standard: RS485 (Optional: Bluetooth or HART)
Protect Level	IP67	IP68/1P67
Electrical Connection	2x M20*1.5(Cable diameter 9 - 13 mm);/ ½NPT	Thread G1
Explosion Proof Grade	EX ia IIC T6 Ga/ Ex dia [iaGa]IIC T6/T2 Gb/ Ex iaD tD A21 IP67T80°C/T290°C	EX la IIC T6 Ga

Model	RLT6400P with Plastic Antenna	RLT6400F with Flange Version
Application	Applicable for continuous level measurement of aggressive liquids with lower demands on pressure and temperature ranges.	Applicable for continuous level measurement for extremely aggressive liquid in storage containers, reactors or process vessels.
Measuring Range	0 ~ 30m	
Process Fitting & Beam Angle	Flange from DN80,3"; Mounting strap; Beam angle 3°	Flange from DN50, 2"; Beam angle 6° Flange from DN80, 3"; Beam angle 3°
Power	<0.5W	
Response Time	<2s	
Frequency	76 ~ 81GHz	
Media-contracting Materials	Process fittings: PP; Antenna: PP; Seal: PP, PTFE	Process fittings: 316L; Antenna: PTFE, PFA, PP
Process Temperature	(-)40°C ~ 130°C	(-)40°C ~ 200°C
Process Pressure	(-)1bar ~ 2bar	(-)1bar ~ 16bar
Resolution	1mm	
Accuracy	±2mm	
Repeatability	±1mm	
Signal Output	4 ~ 20 mA/HART	
Display & Adjustment	LCD display, tank side display and tank side hub	
Protect Level	IP67	
Electrical Connection	2 X M20*1.5(Cable diameter 9 - 13 mm); ½NPT	
Explosion Proof Grade	EX ia IIC T6 Ga; Ex d ia [iaGa]IIC T6/T2 Gb	EX ia IIC T6 Ga; Ex d ia [iaGa]IIC T6/T2 Gb; Ex iaD ID A21 IP67T80°C/T290°C

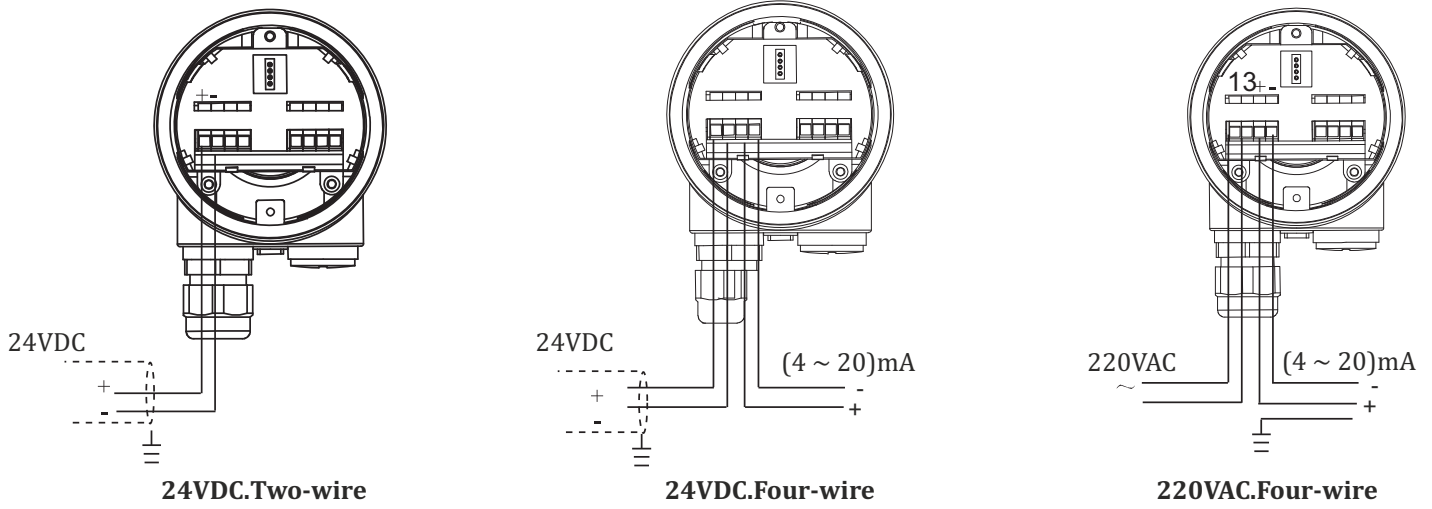
## 6. Housing Version

The housings are available as double chamber version in plastic, stainless steel or aluminium. They are available with protection ratings up to IP67 (1 bar).



## 7. Electric Connection

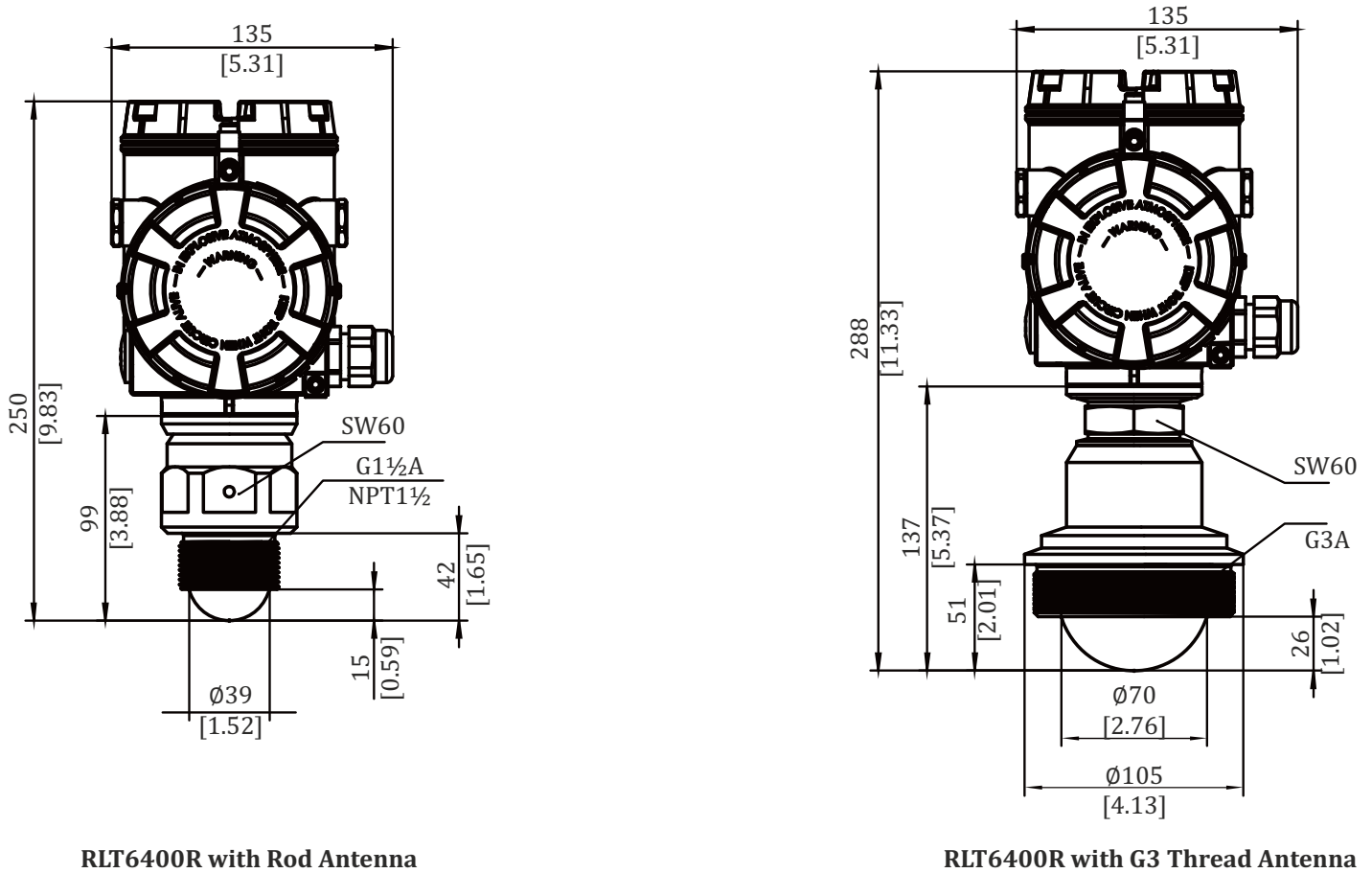
The instruments are available in different electronics versions. 4 ~ 20 mA/ HART in two and four-wire version with 24VDC and four-wire with 220VAC.



## 8. Operation

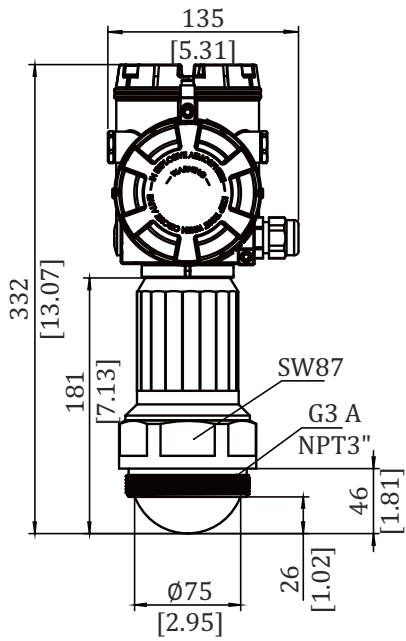
The adjustment of the instrument is carried out via the LCD display, tank side display, tank side hub and HART communicator.

## 9. Dimensions

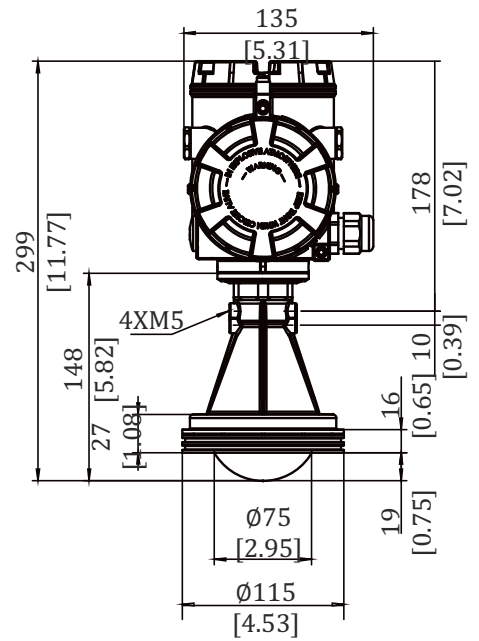


RLT6400R with Rod Antenna

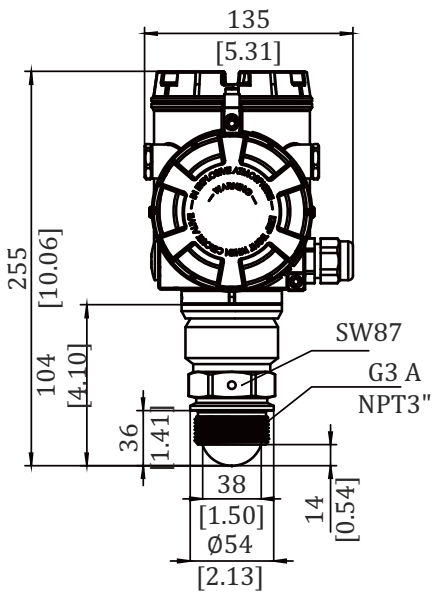
RLT6400R with G3 Thread Antenna



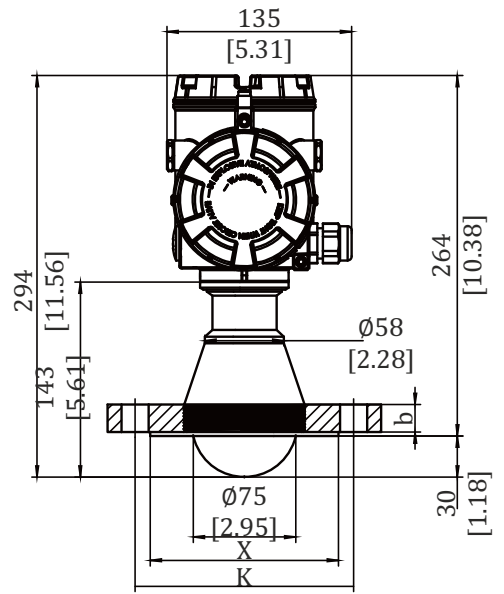
RLT6400R with Rod Antenna



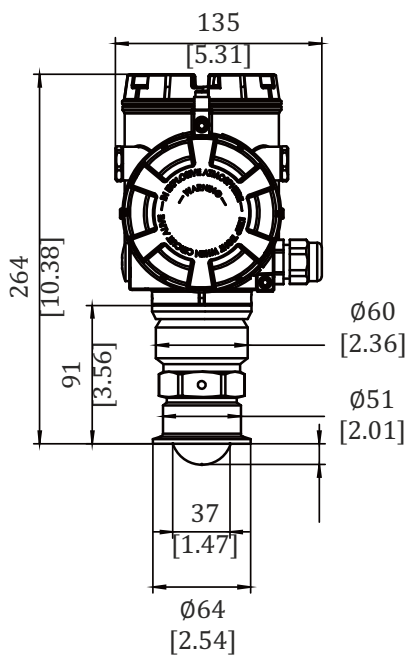
RLT6400P with Plastic Horn Antenna



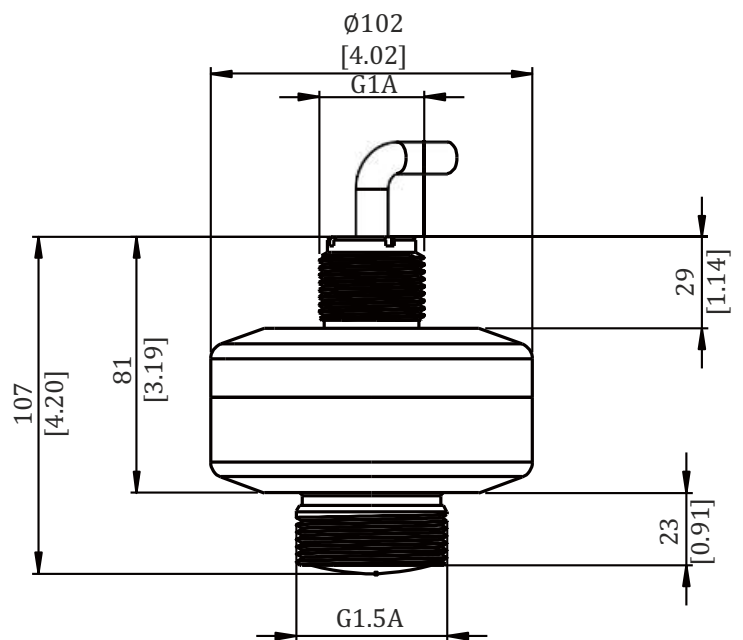
RLT6400R with Thread G1½ antenna



RLT6400H with Flange Connection



RLT6400S with Hygienic Connection



RLT6400C Compact Radar



## 10. Ordering Code

### RLT6400R RADAR Level Transmitter with Rod Antenna



RLT6400R	Radar Level Transmitter								
Code	1	2	3	4	5	6	7	8	9

Language	
English	A
Customized	T

Approval	
Standard	XX
Ex la TIC 16 Ga	CX
Ex dia [iaGa]IIC T6/ T2 Gb	DX
Customized	TT

Antenna Version/ Material	
Rod antenna/ PTFE	A
Rod antenna/ PFA	J

Process Fitting	
Thread G1½	TG
Thread G3	TH
Flange DN50	FC
Flange DN80	FD
Flange DN100	FE
Flange DN150	FK
Flange ASME 2"	AM
Flange ASME 3"	AN
Flange ASME 4"	AP
Flange ASME 6"	AR
Customized	TT

LCD Display	
X	Without display
A	With display

Cable Entry / Cable Gland/ Connecting Cable	
M	M20x1.5/ with/ without
N	½NPT/ without/ without

Housing/ Protection	
A	Single chamber/ Aluminum/ IP67
B	Double chamber/ Aluminum/ IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316LSS/ IP67

Electronics	
H	Two-wire 4-20mA/HART; 24VDC
B	Four wire 4-20mA/HART; 220VAC
I	Four wire 4-20mA/HART; 24VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

Sealing Material/ Temp./ Pressure	
M	FKM/ (-)40 ~ 130°C/ (-)1 ~ 2bar
N	FKM/ (-)40 ~ 200°C/ (-)1 ~ 2bar
O	EPDM/ (-)40 ~ 130°C/ (-)1 ~ 2bar
X	KALREZ 6230/ (-)15 ~ 130°C/ (-)1 ~ 2bar
Z	KALREZ 6375/ (-)15 ~ 130°C/ (-)1 ~ 2bar
T	Customized

**Example:** RLT6400R-AXXATGMWANX

A - Language: English

XX - Approval: Standard

A - Antenna Version/ Material: Rod antenna/ PTFE

TG - Process Fitting: Thread G1½

M - Sealing Material/ Temp./ Pressure: FKM/ (-)40~130°C/ (-)1~2bar

W - Electronics: Wireless; GPRS; Wireless C Mesh

A - Housing/ Protection: Single Chamber/ Aluminum / IP67

N - Cable Entry / Cable Gland/ Connecting Cable:

½NPT/ Without/ Without

X - LCD Display: Without Display

\*For any customisation, contact our sales team

# 80GHz RADAR Level Transmitter RLT6400

## RLT6400R RADAR Level Transmitter with Thread Version Antenna



RLT6400R	Radar Level Transmitter								
Code	1	2	3	4	5	6	7	8	9

Language	
English	A
Customized	T

Approval	
Standard	XX
Ex la TIC 16 Ga	CX
Ex dia [iaGa] IIC T6/ T2 Gb	DX
Customized	TT

Antenna Version/ Material	
Thread version antenna 316L+PTFE	T
Thread version antenna/ 316L+PEEK	V

Process Fitting	
Thread G1½	TG
Thread G3	TH
Thread NPT1½	TD
Thread NPT3	TI
Customized	TT

Sealing Material/ Temperature/ Pressure	
FKM/(-)40 ~ 130°C/(-)1 ~ 20bar	A
FKM/(-)40 ~ 200°C/(-)1 ~ 20bar	B
EPDM/(-)40~130°C/(-)1~20bar	F

LCD Display	
X	Without display
A	With display

Cable Entry / Cable Gland/ Connecting Cable	
M	M20x1.5/ with/ without
N	½NPT/ without/ without

Housing/ Protection	
A	Single chamber/ Aluminum/ IP67
B	Double chamber/Aluminum/IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316LSS/ IP67

Electronics	
H	Two-wire 4-20mA/HART; 24VDC
B	Four wire 4-20mA/HART; 220VAC
I	Four wire 4-20mA/HART; 24VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

Sealing Material/ Temperature/ Pressure	
R	KALREZ 6230/(-)15 ~ 130°C/ (-)1 ~ 20bar
S	KALREZ 6230/(-)15 ~ 200°C/ (-)1 ~ 20bar
G	KALREZ 6375/(-)15 ~ 130°C/ (-)1 ~ 20bar
H	KALREZ 6375/(-)15 ~ 200°C/ (-)1 ~ 20bar
T	Customized

**Example:** RLT6400R-AXXTTGAWANA

A - Language: English

XX - Approval: Standard

T - Antenna Version/ Material: Thread version antenna 316L+PTFE

TG - Process Fitting: Thread G1½

A - Sealing Material/ Temp./ Pressure: FKM/(-)40 ~ 130°C/(-)1 ~ 20bar

W - Electronics: Wireless; GPRS; Wireless C Mesh

A - Housing/ Protection: Single Chamber/ Aluminum / IP67

N - Cable Entry / Cable Gland/  
Connecting Cable : ½NPT/  
Without/ Without

A - LCD Display: With Display

\*For any customisation, contact our sales team

## RLT6400P RADAR Level Transmitter with Plastic Horn Antenna



RLT6400P	Radar Level Transmitter								
Code	1	2	3	4	5	6	7	8	9

Language	
English	A
Customized	T

Approval	
Standard	XX
Ex la TIC 16 Ga	CX
Ex dia [iaGa]IIC T6/ T2 Gb	DX
Customized	TT

Antenna Version/ Material	
Horn antenna Ø75mm/ PP	B
Horn antenna Ø75mm/ PTFE	U

Process Fitting	
Flange DN80	FD
Flange DN100	FE
Flange DN150	FK
Flange ASME 3"	AN
Flange ASME 4"	AP
Flange ASME 6"	AR
Customized	TT

Sealing Material/ Temp./ Pressure	
PP/ (-)40 ~ 80°C/ (-)1 ~ 2bar	C
PTFE/ (-)40 ~ 130°C/ (-)1 ~ 2bar	I
Customized	T

LCD Display	
X	Without display
A	With display

Cable Entry / Cable Gland/ Connecting Cable	
M	M20x1.5/ with/ without
N	½NPT/ without/ without

Housing/ Protection	
A	Single chamber/ Aluminum/ IP67
B	Double chamber/ Aluminum/ IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316LSS/ IP67

Electronics	
H	Two-wire 4-20mA/HART; 24VDC
B	Four wire 4-20mA/HART; 220VAC
I	Four wire 4-20mA/HART; 24VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

**Example:** RLT6400P-AXXBTTWCWANA

A - Language: English

XX - Approval: Standard

B - Antenna Version/ Material: Horn antenna Ø75mm/ PP

TT - Process Fitting: Customized

C - Sealing Material/ Temp./ Pressure: PP/ (-)40 ~ 80°C/ (-)1 ~ 2bar

W - Electronics: Wireless; GPRS; Wireless C Mesh

A - Housing/ Protection: Single Chamber/ Aluminum / IP67

N - Cable Entry / Cable Gland/ Connecting Cable:

½NPT/ Without/ Without

A - LCD Display: With Display

\*For any customisation, contact our sales team

# 80GHz RADAR Level Transmitter RLT6400

## RLT6400H RADAR Level Transmitter with Flange Version Antenna



RLT6400H	Radar Level Transmitter								
Code	1	2	3	4	5	6	7	8	9

Language	
English	A
Customized	T

Approval	
Standard	XX
Ex la TIC 16 Ga	CX
Ex dia [iaGa] IIC T6/ T2 Gb	DX
Customized	TT

Antenna Version/ Material	
Flange with encapsulated antenna/ PP	F
Flange with encapsulated antenna/ PTFE	D
Flange with encapsulated antenna/ PFA	G

Process Fitting	
Flange DN80	FD
Flange DN100	FE
Flange DN150	FK
Flange ASME 3"	AN
Flange ASME 4"	AP
Flange ASME 6"	AR
Customized	TT

LCD Display	
X	Without display
A	With display

Cable Entry / Cable Gland/ Connecting Cable	
M	M20x1.5/ with/ without
N	½NPT/ without/ without

Housing/ Protection	
A	Single chamber/ Aluminum/ IP67
B	Double chamber/Aluminum/IP67

U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316LSS/ IP67

Electronics	
H	Two-wire 4-20mA/HART; 24VDC
B	Four wire 4-20mA/HART; 220VAC
I	Four wire 4-20mA/HART; 24VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

Sealing Material/ Temp./ Pressure	
C	PP/ (-)40 ~ 80°C/ (-)1 ~ 2bar
D	PP/ (-)40 ~ 80°C/ (-)1 ~ 16bar
I	PTFE/(-)40~130°C/(-)1~16bar
Y	PTFE/(-)40~200°C/(-)1~16bar
P	PFA/(-)40~130°C/(-)1~16bar
Q	PFA/ (-)40 ~ 200°C/ (-)1 ~ 16bar
T	Customized

**Example:** RLT6400H-AXXF TTCWANA

A - Language: English

XX - Approval: Standard

F - Antenna Version/ Material: Flange with encapsulated antenna/ PP

TT - Process Fitting: Customized

C - Sealing Material/ Temp./ Pressure: PP/ (-)40~80°C/ (-)1~2bar

W - Electronics: Wireless; GPRS; Wireless C Mesh

A - Housing/ Protection: Single Chamber/ Aluminum / IP67

N - Cable Entry / Cable Gland/ Connecting Cable:

½NPT/ Without/ Without

A - LCD Display: With Display

\*For any customisation, contact our sales team

## RLT6400S RADAR Level Transmitter with Hygenic Antenna



RLT6400S	Radar Level Transmitter								
Code	1	2	3	4	5	6	7	8	9

Language	
English	A
Customized	T

Approval	
Standard	XX
Ex la TIC 16 Ga	CX
Ex dia [iaGa] IIC T6/ T2 Gb	DX
Customized	TT

Antenna Version/ Material	
Hygenic antenna/ 316L+PTFE	H

Process Fitting	
Clamp 2" DIN32676 ISO2852	CA
Clamp 3" DIN32676 ISO2852	CB
Clamp 4" DIN32676 ISO2852	CC
Customized	TT

Sealing Material/ Temperature/ Pressure	
PTFE/(-)40~130°C/(-)1~10bar	HY
PTFE/(-)40~200°C/(-)1~10bar	HL
Customized	T

LCD Display	
X	Without display
A	With display

Cable Entry / Cable Gland/ Connecting Cable	
M	M20x1.5/ with/ without
N	½NPT/ without/ without

Housing/ Protection	
A	Single chamber/ Aluminum/ IP67
B	Double chamber/ Aluminum/ IP67
U	Single chamber/ 316L SS/ IP67
W	Double chamber/ 316LSS/ IP67

Electronics	
H	Two-wire 4-20mA/HART; 24VDC
B	Four wire 4-20mA/HART; 220VAC
I	Four wire 4-20mA/HART; 24VDC
W	Wireless; GPRS; Wireless C Mesh
T	Customized

**Example:** RLT6400S-AXXHTTHYWANA

A - Language: English

XX - Approval: Standard

H - Antenna Version/ Material: Hygenic antenna/ 316L+PTFE

TT - Process Fitting: Customized

HY - Sealing Material/ Temp./ Pressure: PTFE/ (-)40 ~ 130°C/ (-)1 ~ 10bar

W - Electronics: Wireless; GPRS; Wireless C Mesh

A - Housing/ Protection: Single Chamber/ Aluminum / Ip67

N - Cable Entry / Cable Gland/ Connecting Cable: ½NPT/ Without/ Without

A - LCD Display: With Display

\*For any customisation, contact our sales team

## 80GHz RADAR Level Transmitter RLT6400

### RLT6400C Compact RADAR Level Transmitter



RLT6400C	Radar Level Transmitter						
Code	1	2	3	4	5	6	7

Version	
Max. 8m	D
Max. 15m	R
Max. 30m	U
Max. 35m(Customized)	T

Approval	
Standard	XX
Ex ia IIC T6 Ga	CX
Customized	TT

Antenna Material	
PP	Z

Electronics	
18 ~ 36VDC/ 4 ~ 20mA, 2-wire	H
18 ~ 36VDC/ 4 ~ 20mA, 4-wire	U
Customized (Battery powered)	T

Protection	
R	IP67
S	IP68

Cable Length	
M	5M
N	10M
T	Customized

Communication	
A	RS485
B	HART/ Bluetooth/ GPRS/ GSM/ Wifi
T	Customized

**Example:** RLT6400C-DXXZTAMR

D - Version: Max. 8m

XX - Approval: Standard

Z - Antenna Material: PP

T - Electronics: Customized (Battery powered)

A - Communication: RS485

M - Cable Length: 5M

R - Protection: IP67

\*For any customisation, contact our sales team