

Model RLT400 series

FMCW Radar Level Transmitter

Frequency 80GHz FMCW /Measuring range up to 120m

Materontek
Sensing and Internet of Things

RLT400 series radar level transmitters are intelligent non-contact level measuring instruments with their working frequency of 80GHz, which output 4 to 20 mA analog signals. Their maximum measuring range is 120 meters. The antenna has been further optimized, and the new fast microprocessor can perform higher-speed signal analysis and processing, so that the instrument can be used for level measurement of other very complex conditions, such as different kinds of process storage tanks, reactors (reaction kettle) and solid silos, etc.

Technology:

80 GHz FMCW Radar sensor

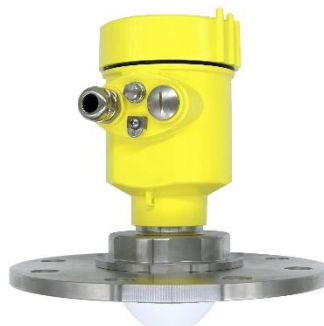
Applications:

Liquids and bulk solids in small vessels level measurement

Features:

- Non-contact liquid level measurement
- Accuracy as good as $\pm 2\text{mm}$
- Beam angle depending on antenna $3^\circ/8^\circ$
- 4-20mA output, Modbus RS485, HART
- Measuring range up to 120m
- 304SS, 316SS and PTFE coated wetted parts
- Frequency 80 GHz FMCW Radar sensor
- Bluetooth standard/Plug on Display
- Process Connection: Thread, flange

Performance Specifications



Model	RLT400-11	RLT400-12	RLT400-13
Applications	Liquid	Liquid	Solid powder, solid block
Type	FMCW Radar sensor Frequency 80 GHz	FMCW Radar sensor Frequency 80 GHz	FMCW Radar sensor Frequency 80 GHz
Measurement Type	Non-contacting	Non-contacting	Non-contacting
Measuring Range	0...10m	0...120m	0...120m
Accuracy	$\pm 2\text{mm}$	$\pm 2\text{mm}$	$\pm 5\text{mm}$
Output option	(4~20)mA/24VDC/2-wire (4~20)mA+HART/24VDC/2-wire (4~20)mA/220VAC/4-wire RS485 Modbus/24VDC/4-wire (4~20)mA+RS485 Modbus/24VDC/6-wire	(4~20)mA/24VDC/2-wire (4~20)mA+HART/24VDC/2-wire (4~20)mA/220VAC/4-wire RS485 Modbus/24VDC/4-wire (4~20)mA+RS485 Modbus/24VDC/6-wire	(4~20)mA/24VDC/2-wire (4~20)mA+HART/24VDC/2-wire (4~20)mA/220VAC/4-wire RS485 Modbus/24VDC/4-wire (4~20)mA+RS485 Modbus/24VDC/6-wire
Power Supply	24VDC, AC220V	24VDC, AC220V	24VDC, AC220V
Process Temp.	-40~+120°C	-40~+120°C	-40~+120°C
Process pressure	-1...20bar	-1...20bar	-1...20bar
Housing /Protection Class	Aluminium alloy/single cavity/IP67 Aluminium alloy/double cavity/IP67 304 stainless steel/single cavity/IP68	Aluminium alloy/single cavity/IP67 Aluminium alloy/double cavity/IP67 304 stainless steel/single cavity/IP68	Aluminium alloy/single cavity/IP67 Aluminium alloy/double cavity/IP67 304 stainless steel/single cavity/IP68
Process Mount	G $\frac{3}{4}$ ", $\frac{3}{4}$ "NPT G1- $\frac{1}{2}$ " A, 1- $\frac{1}{2}$ " NPT, Flange DN50, DN80, DN100, DN150	G3- $\frac{1}{2}$ " A, Flange DN80, DN100, DN125 DN150	Flange, DN80, DN100, DN125
Electrical Connection	M20x1.5 or $\frac{1}{2}$ "NPT	M20x1.5 or $\frac{1}{2}$ "NPT	M20x1.5 or $\frac{1}{2}$ "NPT
Display	Yes	Yes	Yes
Antenna type/material	$\varnothing 22\text{mm}$ Lens antenna Customised	$\varnothing 78\text{mm}$ Lens antenna Customised	$\varnothing 78\text{mm}$ Lens antenna Customised

Notes: The listed specifications and dimensions are subject to change without prior notice

Model RLT400 series

FMCW Radar Level Transmitter
Frequency 80GHz FMCW /Measuring range up to 120m

Materontek
 Sensing and Internet of Things

Performance Specifications



Model	RLT400-14	RLT400-15	RLT400-16
Applications	Corrosive liquids/liquids with steam	Sanitary/pharmaceutical/chemical	High Temperature Measurement
Type	FMCW Radar sensor Frequency 80 GHz	FMCW Radar sensor Frequency 80 GHz	FMCW Radar sensor Frequency 80 GHz
Measurement Type	Non-contacting	Non-contacting	Non-contacting
Measuring Range	0...60m	0...20m	0...30m
Accuracy	±2mm	±2mm	±5mm
Output option	(4~20)mA/24VDC/2-wire (4~20)mA+HART/24VDC/2-wire (4~20)mA/220VAC/4-wire RS485 Modbus/24VDC/4-wire (4~20)mA+RS485 Modbus/24VDC/6-wire	(4~20)mA/24VDC/2-wire (4~20)mA+HART/24VDC/2-wire (4~20)mA/220VAC/4-wire RS485 Modbus/24VDC/4-wire (4~20)mA+RS485 Modbus/24VDC/6-wire	(4~20)mA/24VDC/2-wire (4~20)mA+HART/24VDC/2-wire (4~20)mA/220VAC/4-wire RS485 Modbus/24VDC/4-wire (4~20)mA+RS485 Modbus/24VDC/6-wire
Power Supply	24VDC, AC220V	24VDC, AC220V	24VDC, AC220V
Process Temp.	-40~+120°C	-40~+120°C	-40~+1000°C
Process pressure	-1...20bar	-1...20bar	-1...20bar
Housing /Protection Class	Aluminium alloy/single cavity/IP67 Aluminium alloy/double cavity/IP67 304 stainless steel/single cavity/IP68	Aluminium alloy/single cavity/IP67 Aluminium alloy/double cavity/IP67 304 stainless steel/single cavity/IP68	Aluminium alloy/single cavity/IP67 Aluminium alloy/double cavity/IP67 304 stainless steel/single cavity/IP68
Process Mount	Flange DN50,DN80,DN100 DN125,DN150	Clamp	Flange,DN80,DN100,DN125
Electrical Connection	M20x1.5 or 1/2"NPT	M20x1.5 or 1/2"NPT	M20x1.5 or 1/2"NPT
Display	Yes	Yes	Yes
Antenna type/material	Ø78mm Lens antenna Customised	Ø32mm Lens antenna Customised	Ø78mm Lens antenna Customised

Model RLT400 series

FMCW Radar Level Transmitter
Frequency 80GHz FMCW /Measuring range up to 120m

Ordering Information

Model	RLT400-11	RLT400-11-80GHz FMCW radar level transmitter
Measurement range	[0...xx]m	0...10m
Approval	P	Standard (Non-explosion proof)
	I	Ex ia IIC T6 Ga
	D	Ex d IIC T6 Gb
Electronic Component	S1	(4~20)mA/24VDC/2-wire
	S2	(4~20)mA+HART/24VDC/2-wire
	S3	(4~20)mA/220VAC/4-wire
	S4	RS485 Modbus/24VDC/4-wire
	S5	(4~20)mA+RS485 Modbus/24VDC/6-wire
Housing/Protection Level	A	Aluminium alloy/single cavity/IP67
	B	Aluminium alloy/double cavity/IP67
	C	304 stainless steel/single cavity/IP68
Process Connection/material	M1	Thread G¾"/304SS
	M2	Thread G1-½"/304SS
	M3	Thread ¾"NPT/304SS
	M4	Thread 1-½"NPT/304SS
	F1	DN50,PN16/304SS
	F2	DN80,PN16/304SS
	F3	DN100,PN16/304SS
	F4	DN125,PN16/304SS
	F5	DN150,PN16/304SS
	F6	2 inch-150Lb/304SS
	F7	3 inch-150Lb/304SS
	F8	4 inch-150Lb/304SS
	F9	5 inch-150Lb/304SS
	F0	6 inch-150Lb/304SS
	Fx	Customized
Process Temp.	T1	-40~+120°C
	Tx	Customized
Cable Entry	M	M20x1.5
	T	½"NPT
Bluetooth	N	Without
	Y	With
Label	S	Standard
	N	Neutral packing
	C	Custom label
For example		RLT400-11-[0..10]m-S1-A-M2-T1-M-N-A

Model RLT400 series

FMCW Radar Level Transmitter
Frequency 80GHz FMCW /Measuring range up to 120m

Model	RLT400-12	RLT400-12-80GHz FMCW radar level transmitter
Measurement range	[0...xxx]m	0...120m
Approval	P	Standard (Non-explosion proof)
	I	Ex ia IIC T6 Ga
	D	Ex d IIC T6 Gb
Electronic Component	S1	(4~20)mA/24VDC/2-wire
	S2	(4~20)mA+HART/24VDC/2-wire
	S3	(4~20)mA/220VAC/4-wire
	S4	RS485 Modbus/24VDC/4-wire
	S5	(4~20)mA+RS485 Modbus/24VDC/6-wire
Housing/Protection Level	A	Aluminium alloy/single cavity/IP67
	B	Aluminium alloy/double cavity/IP67
	C	304 stainless steel/single cavity/IP68
Process Connection/material	M5	Thread G3-1/2"/304SS
	F2	DN80,PN16/304SS
	F3	DN100,PN16/304SS
	F4	DN125,PN16/304SS
	F5	DN150,PN16/304SS
	F7	3 inch-150Lb/304SS
	F8	4 inch-150Lb/304SS
	F9	5 inch-150Lb/304SS
	F0	6 inch-150Lb/304SS
Process Temp.	Fx	Customized
	T1	-40~+120°C
	Tx	Customized
Cable Entry	M	M20x1.5
	T	1/2"NPT
Bluetooth	N	Without
	Y	With
Label	S	Standard
	N	Neutral packing
	C	Custom label
For example		RLT400-12-[0..10]m-S1-A-F3-T1-M-N-A

Model RLT400 series

FMCW Radar Level Transmitter
Frequency 80GHz FMCW /Measuring range up to 120m

Model	RLT400-13	RLT400-13-80GHz FMCW radar level transmitter
Measurement range	[0...xxx]m	0...120m
Approval	P	Standard (Non-explosion proof)
	I	Ex ia IIC T6 Ga
	D	Ex d IIC T6 Gb
Electronic Component	S1	(4~20)mA/24VDC/2-wire
	S2	(4~20)mA+HART/24VDC/2-wire
	S3	(4~20)mA/220VAC/4-wire
	S4	RS485 Modbus/24VDC/4-wire
	S5	(4~20)mA+RS485 Modbus/24VDC/6-wire
Housing/Protection Level	A	Aluminium alloy/single cavity/IP67
	B	Aluminium alloy/double cavity/IP67
	C	304 stainless steel/single cavity/IP68
Process Connection/material	F2	DN80,PN16/304SS
	F3	DN100,PN16/304SS
	F4	DN125,PN16/304SS
	F5	DN150,PN16/304SS
	F7	3 inch-150Lb/304SS
	F8	4 inch-150Lb/304SS
	F9	5 inch-150Lb/304SS
	F0	6 inch-150Lb/304SS
Process Temp.	Fx	Customized
	T1	-40~+120°C
Cable Entry	Tx	Customized
	M	M20x1.5
Bluetooth	T	½"NPT
	N	Without
Label	Y	With
	S	Standard
	N	Neutral packing
For example		RLT400-13-[0..10]m-S1-A-F3-T1-M-N-A

Model RLT400 series

FMCW Radar Level Transmitter

Frequency 80GHz FMCW /Measuring range up to 120m

Model	RLT400-14	RLT400-14-80GHz FMCW radar level transmitter
Measurement range	[0...xx]m	0...60m
Approval	P	Standard (Non-explosion proof)
	I	Ex ia IIC T6 Ga
	D	Ex d IIC T6 Gb
Electronic Component	S1	(4~20)mA/24VDC/2-wire
	S2	(4~20)mA+HART/24VDC/2-wire
	S3	(4~20)mA/220VAC/4-wire
	S4	RS485 Modbus/24VDC/4-wire
	S5	(4~20)mA+RS485 Modbus/24VDC/6-wire
Housing/Protection Level	A	Aluminium alloy/single cavity/IP67
	B	Aluminium alloy/double cavity/IP67
	C	304 stainless steel/single cavity/IP68
Process Connection/material	F1	DN50,PN16/304SS
	F2	DN80,PN16/304SS
	F3	DN100,PN16/304SS
	F4	DN125,PN16/304SS
	F5	DN150,PN16/304SS
	F6	2 inch-150Lb/304SS
	F7	3 inch-150Lb/304SS
	F8	4 inch-150Lb/304SS
	F9	5 inch-150Lb/304SS
	F0	6 inch-150Lb/304SS
Process Temp.	Fx	Customized
	T1	-40~+120°C
Cable Entry	Tx	Customized
	M	M20x1.5
Bluetooth	T	½"NPT
	N	Without
Label	Y	With
	S	Standard
	N	Neutral packing
	C	Custom label
For example		RLT400-14-[0..10]m-S1-A-F3-T1-M-N-A

Model RLT400 series

FMCW Radar Level Transmitter
Frequency 80GHz FMCW /Measuring range up to 120m

Model	RLT400-15	RLT400-15-80GHz FMCW radar level transmitter
Measurement range	[0...xx]m	0...20m
Approval	P	Standard (Non-explosion proof)
	I	Ex ia IIC T6 Ga
	D	Ex d IIC T6 Gb
Electronic Component	S1	(4~20)mA/24VDC/2-wire
	S2	(4~20)mA+HART/24VDC/2-wire
	S3	(4~20)mA/220VAC/4-wire
	S4	RS485 Modbus/24VDC/4-wire
	S5	(4~20)mA+RS485 Modbus/24VDC/6-wire
Housing/Protection Level	A	Aluminium alloy/single cavity/IP67
	B	Aluminium alloy/double cavity/IP67
	C	304 stainless steel/single cavity/IP68
Process Connection/material	C1	Clamp 50.5mm/304SS
	C2	Clamp 64mm/304SS
	C3	Clamp 105mm/304SS
	Fx	Customized
Process Temp.	T1	-40~+120°C
	Tx	Customized
Cable Entry	M	M20x1.5
	T	½"NPT
Bluetooth	N	Without
	Y	With
Label	S	Standard
	N	Neutral packing
	C	Custom label
For example		RLT400-15-[0..10]m-S1-A-F3-T1-M-N-A

Model RLT400 series

Materontek

Sensing and Internet of Things

FMCW Radar Level Transmitter

Frequency 80GHz FMCW /Measuring range up to 120m

Model	RLT400-16	RLT400-16-80GHz FMCW radar level transmitter
Measurement range	[0...xx]m	0...30m
Approval	P	Standard (Non-explosion proof)
	I	Ex ia IIC T6 Ga
	D	Ex d IIC T6 Gb
Electronic Component	S1	(4~20)mA/24VDC/2-wire
	S2	(4~20)mA+HART/24VDC/2-wire
	S3	(4~20)mA/220VAC/4-wire
	S4	RS485 Modbus/24VDC/4-wire
	S5	(4~20)mA+RS485 Modbus/24VDC/6-wire
Housing/Protection Level	A	Aluminium alloy/single cavity/IP67
	B	Aluminium alloy/double cavity/IP67
	C	304 stainless steel/single cavity/IP68
Housing/Protection Level	F2	DN80,PN16/304SS
	F3	DN100,PN16/304SS
	F4	DN125,PN16/304SS
	F7	3 inch-150Lb/304SS
	F8	4 inch-150Lb/304SS
	F9	5 inch-150Lb/304SS
	Fx	Customized
Process Temp.	T1	-40~+1000°C
	Tx	Customized
Cable Entry	M	M20x1.5
	T	½"NPT
Bluetooth	N	Without
	Y	With
Label	S	Standard
	N	Neutral packing
	C	Custom label
For example		RLT400-16-[0..10]m-S1-A-F3-T1-M-N-A