



**Toshniwal
Industries Pvt. Ltd.**
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MG Toshniwal Group

122 GHz Smart Level Radar Transmitters

TLR1000B Series



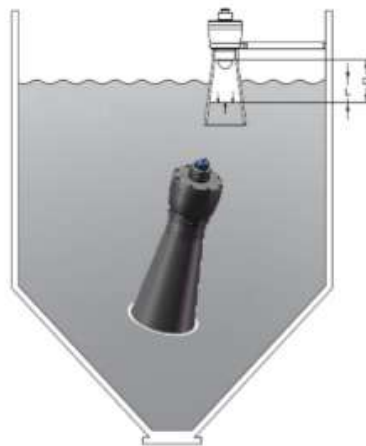
Features

- Smart features designed to make life easy
- Communicate via Bluetooth wireless technology
- Advanced diagnostics and Smart Meter Verification
- NAMUR type tested and IP68 / CE / Exia
- Versatile FMCW radar for application flexibility
- Industrial design concept, the appearance of the product fits In natural environment

Applications



1. Non-contacting radar technology is ideal for a wide range of applications as it is maintenance-free, has a top-down installation that reduces the risk of leakages, and is unaffected by process conditions such as density, viscosity, temperature, pressure.
2. TLR1000B4-S transmitters are used for non-contact level measurement of liquids and bulk solids, measuring all kinds of liquids, even under high pressure and extreme temperatures, in solvents as well as aggressive liquids, they are also suitable for use in applications with stringent hygiene requirements.
3. TLR1000B4-L can also measure the lightest to the heaviest of bulk solids with absolute reliability, even in the presence of dust and noise, without being affected by buildup or condensation. Suitable for liquids and bulk solids in simple process conditions.
4. TLR1000B4-S uses Frequency Modulated Continuous Wave (FMCW) technology and smart algorithms to maximize measurement accuracy and reliability, even in small tanks and challenging fast-filling vessels.
5. TLR1000B4-S with Flood Protection Cover, This can be critical with media that are highly corrosive, toxic or otherwise dangerous in a spill. The ability to read to the very top of the vessel is often called Overfill Capability.



Product Form



Toshniwal Industries Pvt. Ltd.

Industrial Estate, Makhapura, Ajmer- 305002, Rajasthan, India
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Specifications

Product No	TLR1000B4-S/L-R	TLR1000B4-S/L-K	TLR1000B4-S/L-A	TLR1000B4-S/L-H
Installation method	Threaded with overfill proof (option)			
Appearance Prcture				
Measuring Frequency	122 & 123 GHz Dynamic FM Sweep bandwidth 1 Ghz (122GHz 123 GHz : 1 GHz) Or 120 to 123 GHz Dynamic FM Sweep bandwidth 3 GHz (120GHz 123 GHz : 1 GHz)/ Option (The adjustment FM range can be coutomized according to the ISM requirement of the customer's region)			
Instrument Range	(10/18/30m)			(10/18/40m)
Dead Zone	< 200mm (10/18 range)			<300 mm
Measuring Principle	FMCW Radar system			
Resolution	0.05 m (Physical resolution C/ 2B =0.05M)			
Measuring Accuracy	+/- 1mm (<10m range)/ +/- 2mm (<18m range)/ +/- 4mm (<30m range)			
Temp Coeff	+/- 1ppm/ deg C			
Antenna Sensor Material	Polyoxymethylene (POM)/ (PTFE Customized option) the antenna is integrated with the housing			
Beam Angle	POM: 6 DEG / Gain 29dB ; PTFE : < 6 DEG / Gain 31 dB			
Output	RS-485	IO-Link	4-20mA	mA/ HART 7
Power Supply	9-38 VDC			16-40 VDVC
Process Connection	G1-½ or 1-½ NPT			
Procees Temp.	-40 ... +100 deg C			

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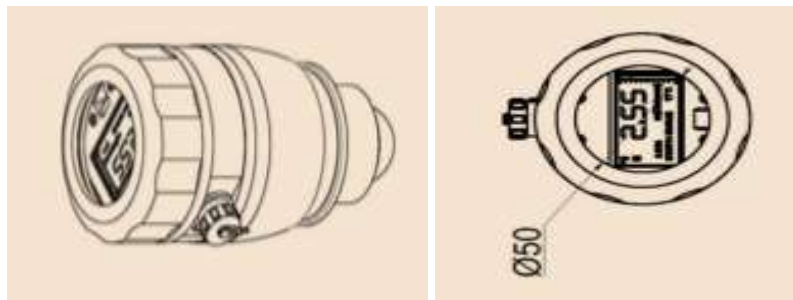
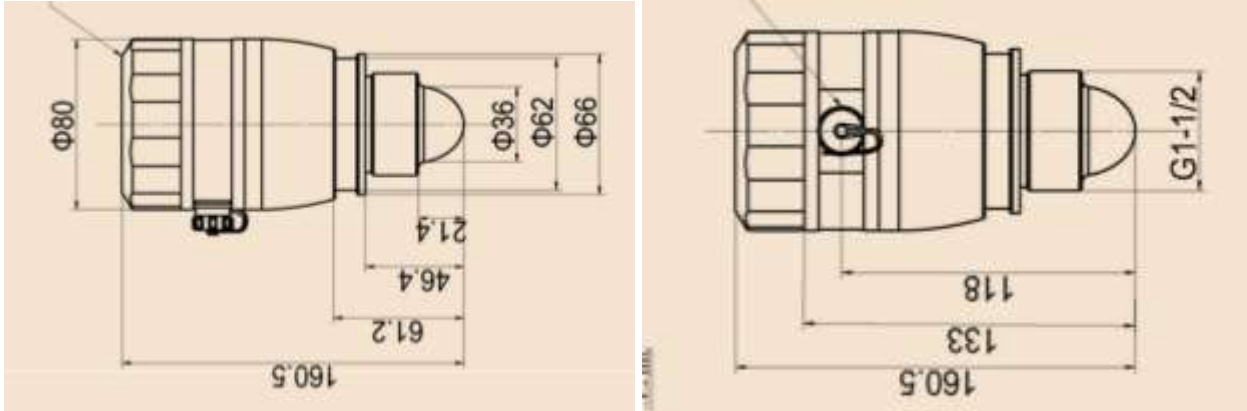




Ambient Temp.	-40 ... +80 deg C			
Operating Pressure	POM: -100 to +500 Kpa PTFE: -100 to +300 Kpa			
Display/ Adjustment	Mobile Manager V1.X , (V1.0.6(IOS)) / V1.0.112(Android)			
Wireless Comm.	Bluetooth			
Bluetooth Standard	Bluetooth 4.0			
Bluetooth range	20m			
O/P & PROTOCOL	Modbus/ SDI-12 (Customized option)		4-20 mA	HART7 (Downward Compatible)
Fault O/p	**		22mA/ 4 mA / 20.5mA	
Housing Material	POM MArterial (PTFE Customized Option)			
Live Display	With Display (160x80 LCD / 4 key button) / Mobile / i pad / PC			
No. of cable entry	1 PVC Insuled Cable (Aviation connector)			
Ingress Prot.	IP67/IP68			
Package Dimensions	267mmX 97mm x 97mm			
Benefit	<ol style="list-style-type: none"> 1. Maintenance free and durable . 2. Measurement not affected by build up or condensation. 3. Measures lightest to the heaviest of bulk solids with absolute reliability 4. Suitable for solvents as well as aggressive liquid, 5. User friendly adlustments (Via bluetooth) save installation time. 6. Sensor active LED indication. 7. Ergonomic and environment friendly design. 8. Flexibility in output options. 9. Suitable for hydrological application (Lakes, rivers, reservoirs) 10. The versatile design enables fit for purpose solutions and Flexibility in use. 			
Application	Liquid , Solid			



TLR1000B4-S-MG Products Dimensions in millimeters



Ordering Code

1. For Liquid

TLR1000B4-L	1	2	3	4	5	6	7
	R						RS485 With Modbus
	D						SDI Customized
	K						IO - LINK
	A						4-20 mA
	H						4-20 mA/ HART7
		G					

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		N					UNDER THEREAD CONNECTION 1-½ NPT
			R				Upper reed connection 34mm X 2
			T				Upper threaded connection G1
				10M			10 METERS
				18M			18 METERS
				30M			30 METERS
				40M			40 METERS (For HART Version Only)
					S		Housing material POM
					P		Housing material PTFE
						F	With over fill function

2. For Solid

TLR1000B4-S	1	2	3	4	5	6	7
	R						RS485 With Modbus
	D						SDI - 12 Customized
	K						IO - LINK
	A						4-20 mA
	H						4-20 mA/ HART7
		G					UNDER THEREAD CONNECTION B1-1/2
		N					UNDER THEREAD CONNECTION 1-½ NPT
			R				Upper reed connection 34mm X 2
			T				Upper threaded connection G1
				10M			10 METERS
				18M			18 METERS
				30M			30 METERS
				40M			40 METERS (For HART Version Only)

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					S		Housing material POM
					P		Housing material PTFE
						NA	NA



MSP Metaliks Ltd, Jharsuguda (OR)

Quote No.: FQ-44790-22 - R1

Techno - Commercial Offer

Sr. No	HSN/SAC Code	Item Code & Description	Delivery (In Weeks)	Qty.	Basic Price	Total Price	GST%
1	90269000	Model: TL-TV-6F211C40D INDENT NO: 300001561 DEPARTMENT: BENEFICIATION Type: Compact Ultrasonic Level Transmitter Make: TIPL Application: Slurry (2-wire series) Frequency: 54KHz Measuring Range: 0-6m Wet-side material: PTFE Process Connection: Threaded flange connection Process Flange: DN80 ASME B16.5 RF MOC: SS304 Class 150# Counter Flange: DN80 ASME B16.5 RF MOC: SS304 Class 150# Output: 4-20mA Communication: HART Switch Output: None Power Supply: DC24V Other details are as per the attached catalog.	8-10	10	32500	325000	18%
2	90269000	Model: TLR1000A2-SHD3511BLMA INDENT NO: 300001561 DEPARTMENT: BENEFICIATION Type: Pulse Radar Level Transmitter with Horn Type Antenna Frequency: 26GHz Beam Angle: 8 Deg Accuracy: +/-5mm Anti Explosion proof: Standard Type Output: 4-20mA with HART Power Supply: 9~36DCV (2-wire) Measuring Range: 30 Meter Dead Zone: 500 mm Process Connection: 100mm (DIN RF) Horn Size: 96mm Flange Material: SS304 Antenna Material: SS304 Special Features: Purging Display: LCD display Electrical Connection: M20X1.5 Others: None Other details are as per the attach catalog.	8-10	8	65500	524000	18%
3	90269000	Model: TLR1000B4-SHGT10MP INDENT NO: 300001502	8-10	11	75500	830500	18%

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		DEPARTMENT: SINTER Type: 122 GHz Radar Level Transmitter Process Connection: UNDER THEREAD CONNECTION B1-½ Upper threaded connection G1 Range: 10 Meters Housing material PTFE Other details are as per the attach catalog.					
4	90269 000	Model: TLR1000B4-LHGT10MPF DEPARTMENT: SINTER Type: 122 GHz Radar Level Transmitter Process Connection: UNDER THEREAD CONNECTION B1-½ Upper threaded connection G1 Range: 10 Meters Housing material PTFE With over fill function Other details are as per the attach catalog.	8-10	1	75500	75500	18%
5	90269 000	Model: TLR1000B3-SHDC04MD10S4TACPLM INDENT NO: 300001502 DEPARTMENT: SINTER TLR1000B3-SHDC04MD10S4TAAPLM Type: FMCW Radar Level Transmitter (Frequency: 80GHz) - Lens Type (With DN100 Flange connection) Anti Explosion proof: Standard Type Output: 4-20mA with HART Power Supply: 9~36V DC (2-Wire) Measuring Range: 40 Meters Process Connection: 100mm (DIN RF) Flange Material: SS304 Antenna Parts: SS304 Lens Material: PTFE (Temp Up to 250Â°C) Special Features: Purging Display: LCD Display Electrical Connection: M20X1.5 Othas details are as per the attached catalog.	8-10	2	97500	195000	18%
TOTAL BASIC PRICE: 1950000/- Taxes On Items: 351000/- Net Total Amount incl Tax: 2301000/-							

Payment Term : 30% Advance against PO, 70% Payment Against PI before despatch
Incoterm : FREIGHT TO PAY and INSURANCE BY CUSTOMER(FTPIC)
Price Basis : EXWORKS(EXW)

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PULSE RADAR SOLID/LIQUID LEVEL MEASUREMENT

TLR1000A1



Features

- High reliability non-contact radar solid/Liquid matter level transmitter
- Strong ability to penetrate dust and strong reliability
- 4-20mA current output or/and with HART/MODBUS/Profibus
- Graphical display and with Temperature sensor display
- Supports Bluetooth/WiFi



Introduction

Our TLR1000A Series 26 GHz Pulse Radar Level provides distance measurement based on the direct measurement of the running time of microwave pulses transmitted to and reflected from the surface of the product being measured. Pulse radar operates in the time domain and therefore it does not require the Fast Fourier transform analysis that characterizes FMCW radar. The running time for a distance of a few meters is measured in nanoseconds. For this reason, a special time transformation procedure is required to enable these short time periods to be measured accurately. The requirement is for a SLOW MOTION picture of the transit time of the microwave pulse with an expanded time axis. By slow motion we mean milliseconds instead of nanoseconds. Pulse radar has a regular and periodically repeating signal with a high pulse repetition frequency. Using a method of sequential sampling, the extremely fast and regular transit times can be readily transformed into an expanded time signal.





Principle of Operation

The principle of operation of a 26 GHz radar level transmitter is based on the measurement of the time it takes for radar waves to travel from the transmitter to the surface of the material being measured and back. This time-of-flight measurement is then used to calculate the level of the material. The radar level transmitter emits electromagnetic waves in the form of microwave signals, specifically at a frequency of 26 gigahertz (GHz). These signals are typically pulsed microwave signals. These microwave signals travel through the air towards the surface of the material. When the radar waves encounter the surface of the material, a portion of the signal is reflected back toward the radar level transmitter. The radar level transmitter measures the time it takes for the emitted signal to travel to the material's surface and return. This measurement is often referred to as the "time of flight" or "time delay." The calculated distance is then converted into a level measurement, typically in units such as meters or feet, depending on the system's configuration and user preferences.



Technical Specifications

- Specific Feature

Model	TLR1000A1-S3	TLR1000A1-S4	TLR1000A1-AX	TLR1000A1-AZ
Pictures				
Application	Solid/Liquid Level measurement, preferably for corrosive media acidic application with moderate fumes, precision requirements			
Max. Range	30M	70M	70M	30M
Accuracy	≤±5mm	≤±5mm	≤±5mm	≤±5mm
Process Connection	Flange SS304	Flange SS304	Flange PTFE	Flange SS304
Min. Flange Size	> DN80	> DN100	> DN80	> DN80
Antenna Material	SS304 /φ76mm horn	SS304 /φ96mm horn	PTFE for corrosive	PTFE for corrosive
Process Temperature	-60 ~ 150°C	-60 ~ 230°C	-50 ~ 120°C	-50 ~ 150°C
Process Pressure	-1.0 ~ 4.0 MPa	-1.0 ~ 4.0 MPa	-0.8 ~ 1.0 MPa	-0.8 ~ 1.5 MPa
Output	4-20mA+HART 2wire	4-20mA+HART 2wire	4-20mA+HART 2wire	4-20mA+HART 2wire
Option function	Modbus/PROFIBUS	Modbus/PROFIBUS	Modbus/PROFIBUS	Modbus/PROFIBUS
Blind Zone	300mm	450mm	400mm	400mm

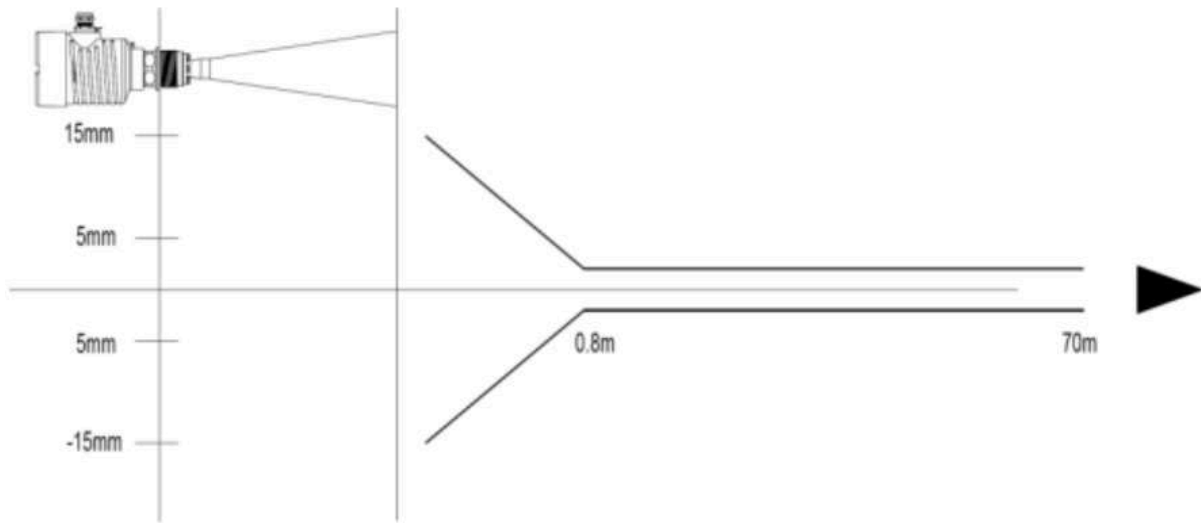


- **General Feature**

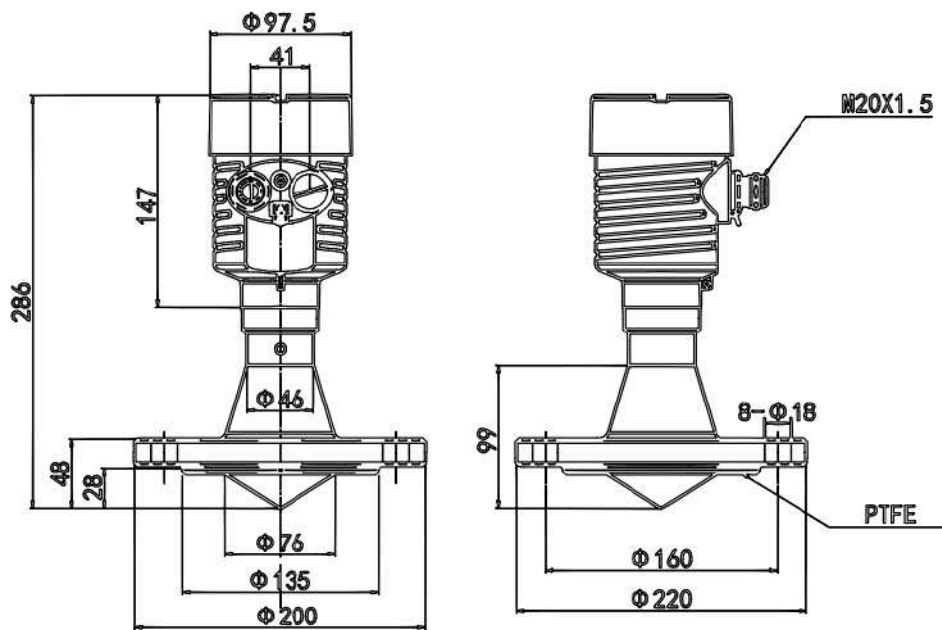
General Specifications	Features
Frequency	26GHz
Range	30m/70m
Display Resolution	0.5mm
Precision	±5mm
Beam angle	8°
Antenna Type	Horn $\phi > 76$ mm or lens (corrosive)
Signal Output	4-20mA+ HART 7 Profibus RS485
Failure Output	22mA and 20.5mA (optional)
Power Supply	16~40VDC (Ripple allowed: < 100 Hz, $U_{ss} > 1$ V; 100Hz@100KHz, $U_{ss} < 10$ mV)
Adjustment	Setup software/key configuration/mobile APP configuration/tank side table configuration Graphical 160*80 LCD display
Chamber	Signal/Double Aluminum Alloy or SS316(optional)
Connected Method	$> DN80$ (Depends on antenna and process connection)
IP Rating	IP67
Type Test	IEC 61326-1:2012



- Product Precision vs Distance Map

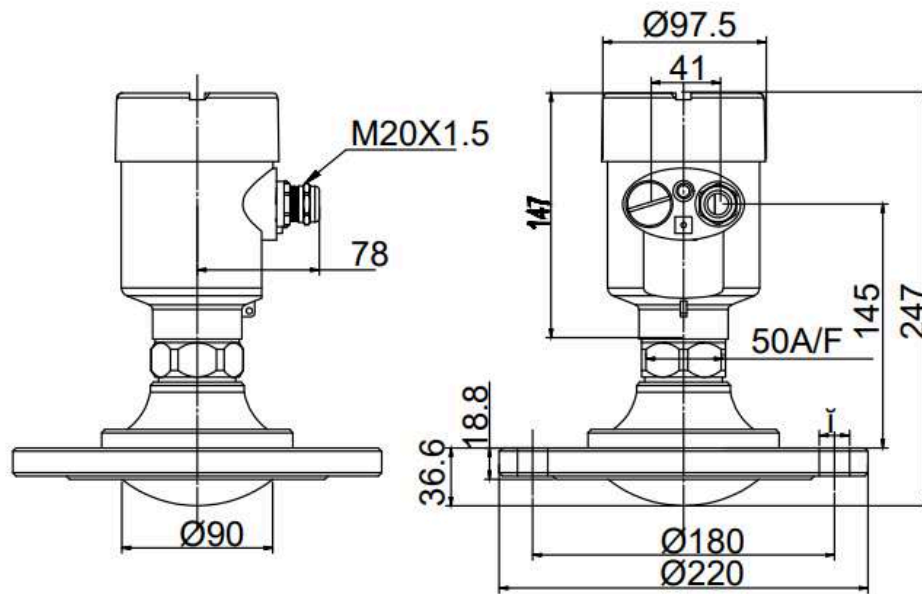


Dimension Details of TLR1000A1-AZ

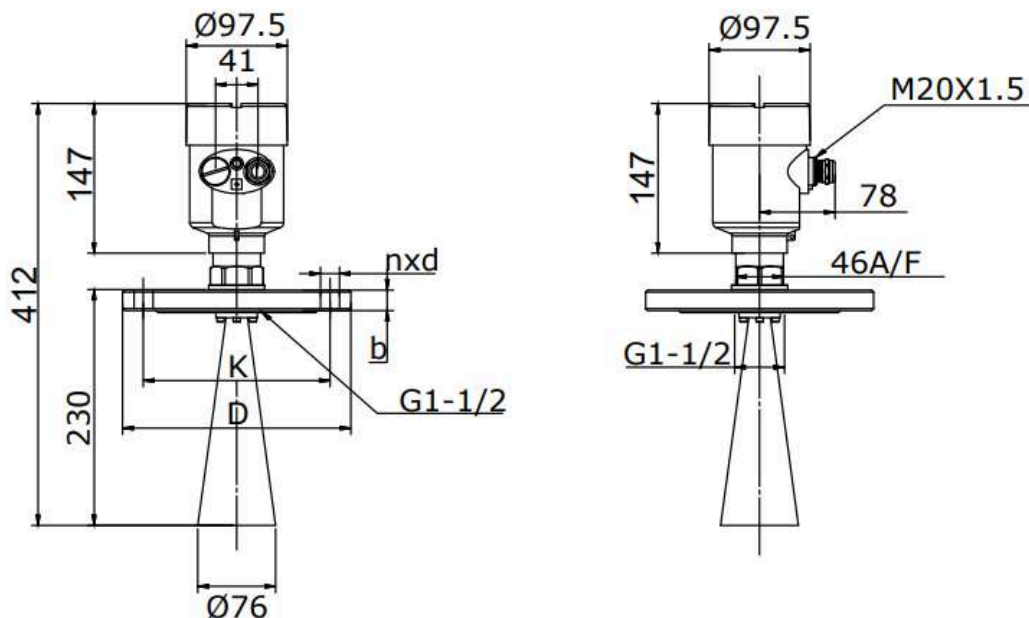




Dimension Details of TLR1000A1-AX



Dimension Details of TLR1000A1-S3/S4





FLANGE	D	K	nxd	b
DN80 PN1.6	Ø200	Ø 160	8XØ18	20
DN100 PN1.6	Ø220	Ø 180	8XØ18	20
DN125 PN1.6	Ø250	Ø 210	8XØ18	22

Selection Table : For TLR1000A1

Example:TLR1000A1-S3-1-H-A-S-1-1-N-1-N-M-N

0	Type
TLR1000A1	Pulse Radar Level Transmitter Frequency : 26GHz Beam Angle : 8 Deg
10	Type & Range
S3	Horn Type,30M Range
S4	Horn Type, 70M Range
AZ	Lens Type, 30M Range
AX	Lens Type, 70M Range
20	Antenna material
1	SS304 (For S3 & S4 Model)
2	SS316 (For S3 & S4 Model)
3	PTFE (For AX & AZ Model)
30	Output
H	4-20mA with HART
M	RS485 with ModBus
P	Profibus-PA
40	Power Supply
A	110~220VAC (With Double Chamber Only)
D	16-40VDC
50	Chamber Type
S	Single Chamber
D	Double Chamber
60	Process Connection
1	Flange



70	Flange Size & Flange Material
1	DN80 SS304 (For S3 & S4 Model)
2	DN100 SS304 (For S3 & S4 Model)
3	DN80 SS316 (For S3 & S4 Model)
4	DN100 SS316 (For S3 & S4 Model)
5	DN80 PTFE (For AX & AZ Model)
6	DN100 PTFE (For AX & AZ Model)
7	Custom Design
80	Communication
N	None
B	With Bluetooth
90	Housing Material
1	Aluminum
2	SS316
100	Display
N	None
L	LCD Display
110	Electrical Connection
M	M20X1.5
120	Special Feature
N	None
A	Aiming
B	Purging
C	Aiming & Purging

Order Note :

1. Consult us by calling us on 8448441044 or emailing on info@tipl.com for special designs.
2. Evaluate the exact Application, working conditions at the pressure detection point before ordering to avoid losses due to wrong product selection.
3. TIPL will not be responsible for losses due to wrong selection of specifications.



4. Customers should ensure power supply grounding, and installation of anti-lightning (surge protection) devices to minimize the chances of product failure.
5. The photos, color, form and dimensions of the product are indicative and can change based on product selection without prior notice.

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FMCW Radar Level Transmitter

TLR1000B2



Features

- Products designed for solid/liquid level/powder/paste measurement applications with large, medium and small ranges (0.1m to 100m), and liquid level/powder/paste measurement of medium and small ranges (0.1m to 50m).
- The product designed for application is characterized by fast measurement response, two-wire 4mA current can be turned on, and the product software has designed a multi-echo mode active tracking and identification technology, so that it can stably identify the correct echo in harsh working conditions.
- In solid measurement or in the environment of large dust and large pile angle, the product system will automatically turn on the echo gain control function according to the quality of the echo signal.
- 160x80 LCD Backlight display, Bluetooth, HART7
- Low voltage and low current startup, fast measurement response

Application

Chemical, Petroleum, Medical, Coal, Cement, Sinter, Food and Grain, Alumina, Bulk Materials



Technical Specifications

Specifications	Features
Product Type	FMCW Radar Level Transmitter
Frequency	76.2 to 80.2GHz Dynamic FM sweep bandwidth 4GHz
Range	40M/100M /120M
Resolution	0.1mm (40M) / 0.5mm (100M)
Antenna	PEEK, lens antenna
Accuracy	± 3mm (40M) / ± 5mm (100M)
Beam angle	3° / Antenna gain 31.4dB
Antenna	PEEK, lens antenna
Communication	HART / MODBUS / PROFIBUS (optional) / Bluetooth / LoRa / IOT
Connection	DN100 flange, with air purge / DN50 flange, with air purge
Process Connection	-1 ~ 3MPa or -4~10MPa (with reinforced flange structure) -1 ~ 4MPa or -4~12MPa (with reinforced flange structure) (suitable for DN50 installation diameter)
Process Temperature	-40 ~ 150°C, or -40 ~ 300°C (With additional cooling duct on the upper part of the flange) -40 ~ 120°C, or -40 ~ 230°C (With additional cooling duct on the upper part of the flange) (suitable for DN50 installation diameter)
Housing material	Aluminum alloy single housing or double housing (220VAC only with double housing)
Wiring	M20x1.5 (Ø5...9mm)
Failure mode	22mA or 4mA/20.5mA (adjustable)
Process pressure	-1 ~ 3MPa or -4~10MPa (with reinforced flange structure) -1 ~ 4MPa or -4~12MPa (with reinforced flange structure) (suitable for DN50 installation diameter)
Signal output	4-20mA, H ART5(standard) or HART7
Power Supply	16V~36VDC / 2-wire / 4-wire, 220VAC / 4-wire
IP Rating	IP67

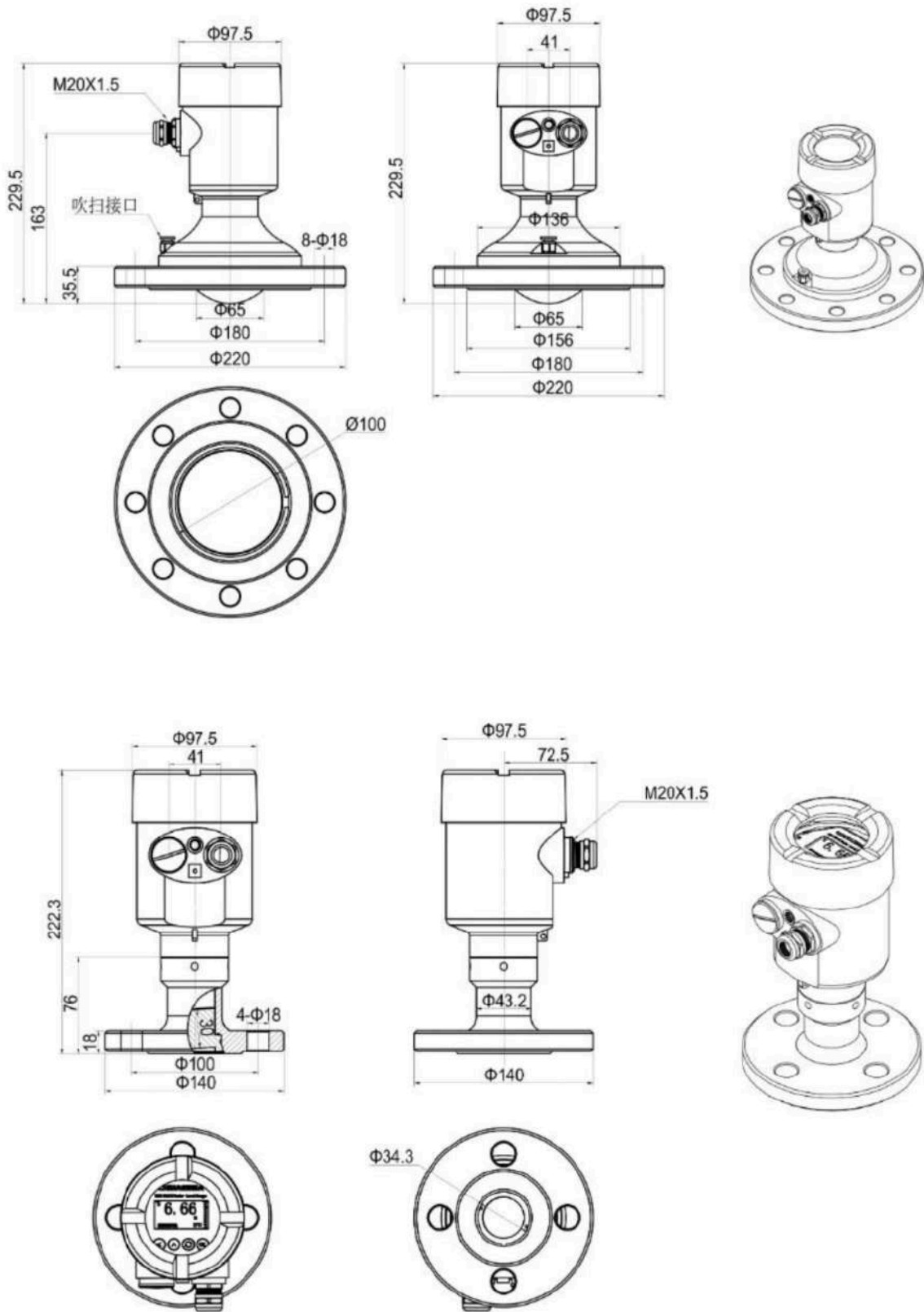
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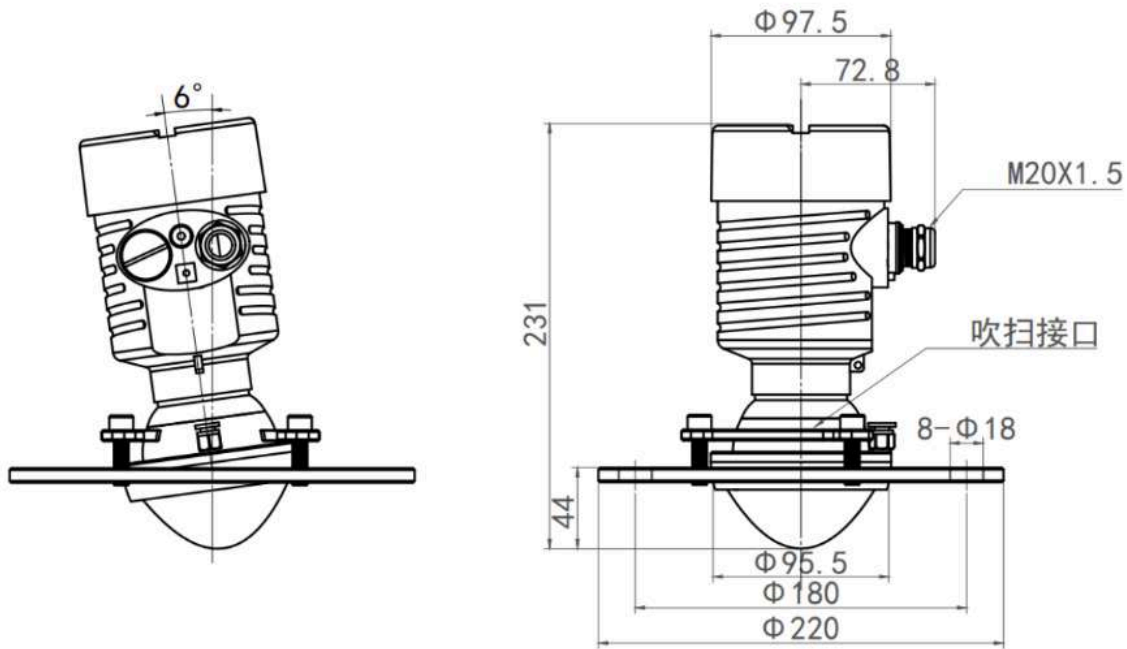
Dimension Details of TLR1000B2



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Selection Table : For TLR1000B2

Example:TLR1000B2-S-DC-B-1-S5-B-N

0	Description
TLR1000B2	FMCW Radar Level Transmitter Frequency :80 GHz
10	Output
S	4-20mA
H	4-20mA with HART
M	RS485 with ModBus
P	Profibus-PA
20	Power Supply
AC	220AC)
DC	24VDC
30	Measuring Range
A	10M
B	50M
C	100M
D	120M

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40	Alarm Relay
1	No
2	With Relay Alarm
50	Antenna Material
S4	SS304
S5	SS316
60	Lens Material
B	PEEK ANT
C	PTFE ANT
80	Communication
N	No Wireless
A	Bluetooth
90	Special Function
1	No
2	With Purging
3	Anti Corrosion
4	Universal ADJ

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FMCW RADAR LEVEL TRANSMITTER

TLR1000B7



Features

- High focus, The min beam angle can reach 3°.
- Multiple debugging methods.
- Used in conjunction with corresponding instruments, it can output the measured value of solid level and liquid level.
- Suitable for installation in containers with obstacles such as stirring, heating pipes, and ladders. A smaller beam angle allows the beam to avoid internal obstacles, without interfering echoes, ensuring accurate measurement by the instrument.
- LCD display, mainboard, microwave board, each with an independent MCU, LCD display, mainboard, microwave board, each with an independent MCU.



Introduction

FMCW frequency modulated continuous wave technology for 80 GHz radar level meters. The radar emits a 76-81GHz high-frequency microwave signal with linear frequency modulation, which is emitted from the radar antenna. When the microwave signal encounters the surface of the measured medium, some of its energy is reflected back by the surface of the medium and received by the radar antenna. A part of the microwave transmitting signal in radar is mixed with the received signal to obtain the difference frequency signal. The differential frequency signal is obtained by Fourier transform algorithms such as FFT or DFT to obtain the differential frequency spectrum signal, thereby obtaining the frequency difference. According to the linear frequency modulation signal frequency difference is proportional to time thus the time difference is obtained. Based on the time difference and the distance between the antenna and the surface of the measured medium, the distance between the antenna and the surface of the measured medium can be calculated.

Application

Measurement of block and powder materials with complex process conditions



Technical Specifications

Specifications	Features
Product Type	FMCW Radar Level Transmitter
Frequency Range	76~81GHz
Range	120M
Antenna Material	Thread integrated antenna/ Stainless steel 316L、PP/PTFE/PEEK
Contact Medium Material	Stainless steel 316L、PP/PTFE/PEEK
Process Pressure	-1...20bar
Process Temperature*	-40°C...+200°C
Process Connection	Thread/Flange connection
Accuracy	±2mm
Beam angle	Beam angle 7°(thread G1 1/2、1 1/2 NPT) Beam angle 3°(thread G3、3NPT)
Resolution Ratio	1mm
Response Time	<2s
Signal Output	4...20mA/HART/RS485
Antenna	PEEK, lens antenna
Signal Output	4...20mA/HART/RS485
Display Debugging	LCD、Tank side monitor、Phone (bluetooth) Upper computer software
Electrical Connection	M20*1.5 (Cable diameter 6~12mm) 1/2 NPT
Ingress Protection	IP67

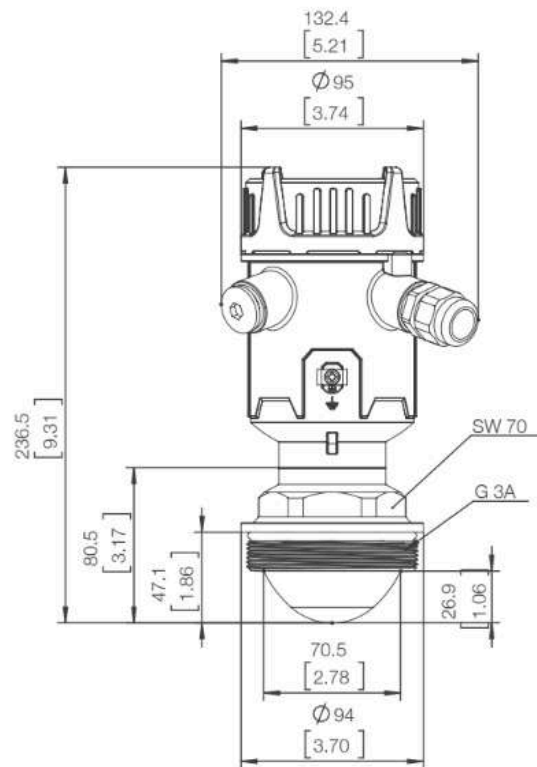
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Dimension Details of TLR1000B



Selection Table : For TLR1000B

Example:TLR1000B

0	Description
TLR1000B	FMCW Radar Level Transmitter Frequency:80 GHz
10	Antenna Type/Process Material
AB	Integrated Antenna ϕ 75/316L+PTFE
AC	Integrated Antenna ϕ 75/316L+PEEK
NB	Integrated Antenna ϕ 75/316L+PP
TT	Special Customization
20	Process Connection
TH	Thread G3
FD	Flange Connection DN80
FE	Flange Connection DN100
FK	Flange Connection DN150

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AN	Flange Connection ASME 3"
AP	Flange Connection ASME 4"
AR	Flange Connection ASME 6"
TT	Special Customization
30	Flange Connection Material
A	No Flange Connection
B	304
C	Carbon Steel
D	316L
E	PTFE (20mm Thickness, PTFE Flange Connection)
F	PVC
G	PP(20mm Thickness, PP Flange Connection)
T	Special Customization
40	Sealing Material/Process Temperature/Process Pressure
A	FKM/-40...+130°C/-1...20bar
B	FKM/-40...+200°C/-1...20bar
F	EPDM/-40...+130°C/-1...20bar
R	KALREZ 6230/-15...+130°C/-1...20bar
S	KALREZ 6230/ -15...+200°C/-1...20bar
G	KALREZ 6375/-20...+130°C/-1...20bar
H	KALREZ 6375/-20...+200°C/-1...20bar
T	Special Customization
50	Electronic Components
H	Two-Wire 4...20mA/HART/RS485; 24 VDC
B	Four-Wire 4...20mA/HART/RS485; 220 VAC
I	Four-Wire 4...20mA/HART/RS485; 24 VDC
T	Special Customization
60	Housing/Material/Protection Rating
A	Single Compartment/Aluminum Housing/IP67
B	Double Compartment/Aluminum Housing/IP67
U	Single Compartment/Stainless Steel 316/IP67
W	Double Compartment/Stainless Steel 316/IP67
T	Special Customization



80	Cable Entry/Gland Waterproof Connector/Cable Connection
M	M20x1.5/Yes/No
N	½ NPT/No/No
90	LCD Display/Bluetooth
X	No/No
A	Yes/No
B	No/Yes
C	Yes/Yes
100	Peripheral Devices
0	No

Order Note:

- Consult us by calling us on 8448441044 or emailing on info@tipl.com for special designs.
- Evaluate the exact Application, working conditions at the pressure detection point before ordering to avoid losses due to wrong product selection.
- TIPL will not be responsible for losses due to wrong selection of specifications.
- Customers should ensure power supply grounding, and installation of anti-lightning (surge protection) devices to minimize the chances of product failure.
- The photos, color, form and dimensions of the product are indicative and can change based on product selection without prior notice.

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