

Type 2298 80 GHz Radar Level Transmitter



PP

Product description

The 80 GHz (W-band) 2298 Pulse Radars are the most progressive non-contact level transmitter technology for industrial processes. With an excellent accuracy, compact antennas and a user-friendly set-up the 2298 is an effective, simple, low cost choice for demanding level applications. GF's 80 GHz radar featuring ± 2 mm (± 0.079 in.) accuracy and short dead band excels with its full plastic housing. Its antenna range incorporates a stainless steel horn and enclosed plastic tube choices.

Local programming of type 2298 is aided by an on-board display module. The signal processing algorithm of the 2298 is based on years of experience with non-contact level measurement making it an excellent choice for applications simple and challenging alike.

Features

- 7° beam angle
- Measurement through a plastic tank roof
- Small dead zone
- High accuracy
- Fast response time
- Tank mapping function
- Large dot matrix LCD display
- Predefined tank shapes
- Works with fumes, condensation, and light foam layers

Applications

- Bulk Storage Tanks
- Day Tanks
- Process vessels for Mixing and Batching
- Buffer Tanks
- Conditioning vessels
- Metal or Plastic



Specifications

Antenna type		Encapsulated Antenna				Stainless Steel Antenna*	
		Antenna size	ø1" *	ø1½"	ø75 mm*	ø1" *	ø1½" *
Dead zone ⁽¹⁾		0 m (0 ft)					
Max. measuring distance ⁽²⁾		10 m (33 ft)*	10 m (33 ft)	20 m (66 ft)*	30 m (98.5 ft)*	10 m (33 ft)	10 m (33 ft) 20 m (66 ft)
Antenna insertion length ⁽³⁾		56 mm (2.2")	70 mm (2.76")		115 mm (4.53")	69 mm (2.72)	80 mm (3.15")
Accuracy ⁽⁴⁾		±5 mm (±0.2")	±5 mm (±0.2")	±2 mm (±0.079")	±2 mm (±0.079")	±5 mm (±0.2")	±5 mm (±0.2") ±2 mm (±0.079")
Process pressure		-1...3 bar (-14.5...43.5 psi)				-1...25 bar (-14.5...362.6 psi)	
Beam angle (-3 dB)		12°	7°		4°	12°	7°
Process connection		1" BSP / NPT	1½" BSP / NPT		flange	1" BSP / NPT	1½" BSP / NPT
Materials	Antenna	PP, PVDF, PTFE*			PP/PVDF	1.4571 (316Ti) stainless steel	
	Housing	PBT					
	Seal	FPM (Viton®) (optionally: EPDM, FFKM Perfluoroelastomer (Kalrez® 6375))					
Wetted Parts	Horn Antenna	PP, PVDF, PTFE, Stainless steel 316 Ti					
	Antenna enclosure	PTFE, PP, PVDF					
Measured Values		Level, Distance; Calculated values: Volume, Mass					
Frequency of the Measuring Signal		~80 GHz (W-band)					
Linearity Error (as per EN 61298-2)		See diagram					
Minimum dielectric constant ϵ_r of the Medium		1.9 (refer to diagram)					
Resolution		0.1 mm (0.0039")					
Power Supply Voltage		12...36 V DC					
Output Digital Communication		4...20 mA; (3.9...20.5 mA); $RL_{max} = (US - 12 V) / 0.02 A + HART$					
Output Display		64 x 128 Dot Matrix LCD Graphical display unit					
Measuring Frequency		~1/s					
Antenna Diameter		1" (25.4 mm); 1½" (38.1 mm)					
Medium Process Temperature		-40...+80 °C (-40...+176 °F), PP encapsulation: -30...+80 °C (-22...+176 °F)					
Ambient Temperature		-40...+70 °C (-40...+158 °F); with display unit: -20...+70 °C (-4...+158 °F)					
Protection class		IP66 / IP67					
Electrical Connection ⁽⁵⁾		2x M20x1.5 cable gland + 2x internally threaded ½" NPT connection, cable outer diameter: Ø6...12 mm (Ø.24... Ø.47") (shielded cable is recommended), wire cross section: 0.5...1.5 mm ² (AWG20...AWG15)					
Electrical Protection		Class I overvoltage protection; (Class III [SELV])					
Communication Certifications		R&TTE, FCC					
Weight		PBT housing 0.6...0.8 kg (1.3...1.8 lb) SS housing 1.1...2 kg (2.4...4.4 lb)					
Standards and Approvals		Directive 2014/35/EU (LVD), Directive 2014/30/EU (EMC), Directive 2014/53/EU (RED), Directive 2015/863/EU (RoHS 3)					

* Available on request.

(1) From the tip of the antenna, if dielectric constant (ϵ_r) < 80.

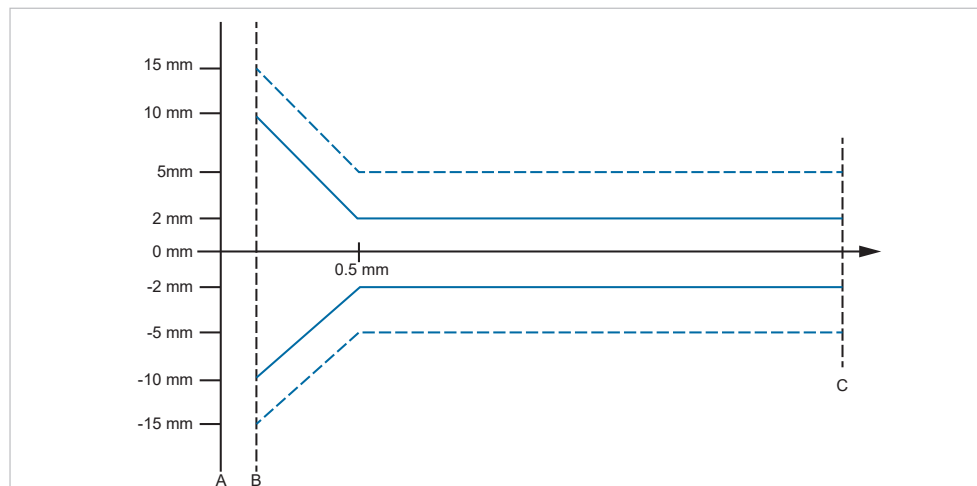
(2) May be limited for media with low dielectric constants or non-vertical or non-planar surfaces.

(3) From process connection.

(4) With an ideal reflecting surface, according to IEC 62828-1, an accuracy of ±2 mm (±0.079") is not guaranteed for Region 3 and Region 4 settings.

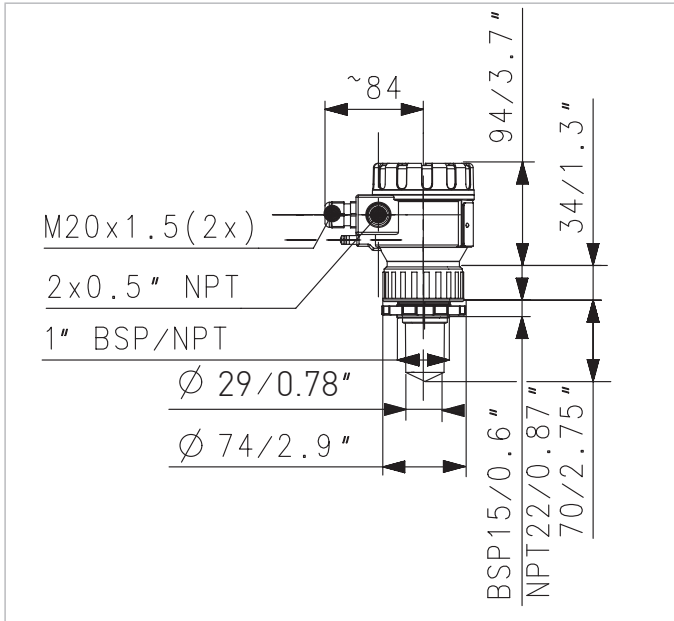
(5) Operate only with galvanically isolated power supply!

Linearity error

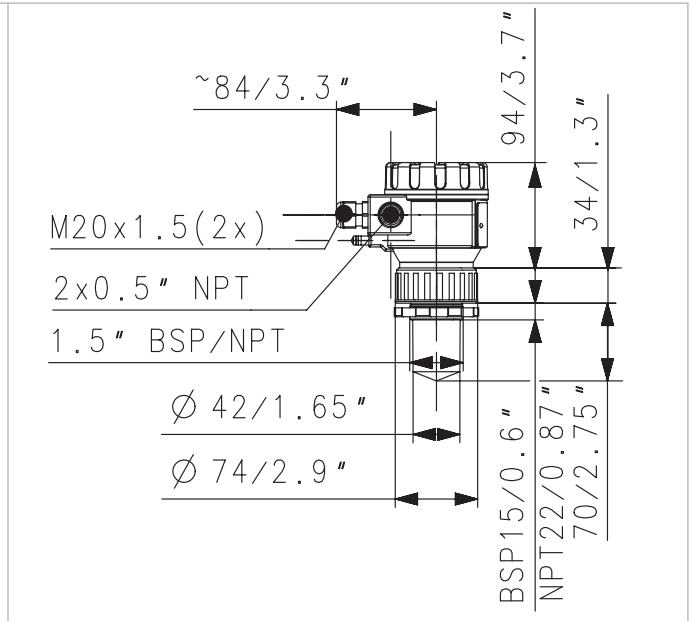


- Transmitters up to 10 m measuring range
- Transmitters up to 20 m measuring range
- A** Process connection plane of the device
- B** The minimum measurement distance below which the radar cannot measure, due to the insertion length of the antenna (X_m)
- C** Maximum measurement distance (X_M)

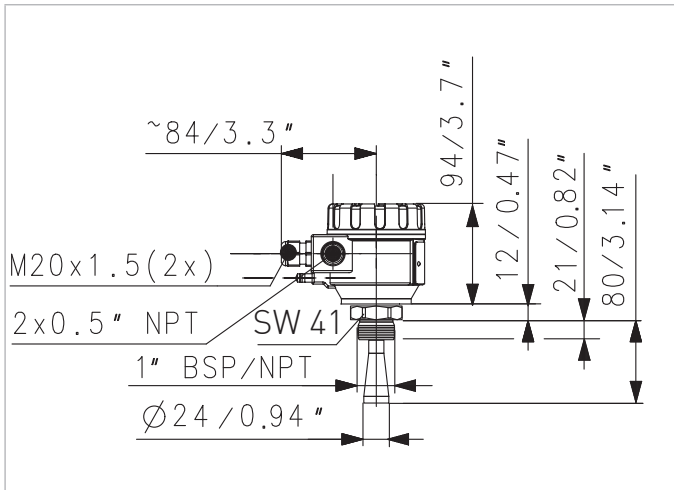
Dimensions



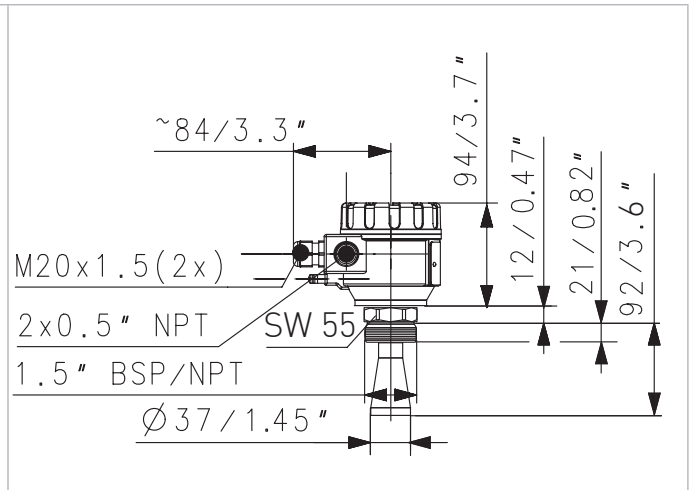
Encapsulated Antenna ø1"



Encapsulated Antenna ø1½"



Stainless Steel Antenna ø1"



Stainless Steel Antenna ø1½"

Ordering Information

Mfr. Part No	Description
159300452	2298 Radar Level Transmitter, 0-10m, LCD, PP/PBT housing, 1½", 70 mm, BSP
159300453	2298 Radar Level Transmitter, 0-10m, LCD, PVDF/PBT housing, 1½", 70 mm, BSP
159300455	2298 Radar Level Transmitter, 0-10m, LCD, PP/PBT housing, 1½", 70 mm, NPT
159300456	2298 Radar Level Transmitter, 0-10m, LCD, PVDF/PBT housing, 1½", 70 mm, NPT
159300426	2298 Radar Level Transmitter, 0-20m, LCD, PP/PBT housing, 1½", 70 mm, BSP
159300427	2298 Radar Level Transmitter, 0-20m, LCD, PVDF/PBT housing, 1½", 70 mm, BSP
159300430	2298 Radar Level Transmitter, 0-20m, LCD, PP/PBT housing, 1½", 70 mm, NPT
159300431	2298 Radar Level Transmitter, 0-20m, LCD, PVDF/PBT housing, 1½", 70 mm, NPT
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PP/PBT housing, 1", 56 mm, BSP
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PVDF/PBT housing, 1", 56 mm, BSP
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PTFE/PBT housing, 1", 56 mm, BSP
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PP/PBT housing, 1", 56 mm, NPT
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PVDF/PBT housing, 1", 56 mm, NPT
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PTFE/PBT housing, 1", 56 mm, NPT
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PTFE/PBT housing, 1½", 70 mm, BSP
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PTFE/PBT housing, 1½", 70 mm, NPT
*on request	2298 Radar Level Transmitter, 0-20m, LCD, PTFE/PBT housing, 1½", 70 mm, BSP
*on request	2298 Radar Level Transmitter, 0-10m, LCD, PP/PVDF housing, 75 mm, 115 mm, Flange
*on request	2298 Radar Level Transmitter, 0-10m, LCD, stainless steel housing, 1", 69 mm, BSP
*on request	2298 Radar Level Transmitter, 0-10m, LCD, stainless steel housing, 1", 69 mm, NPT
*on request	2298 Radar Level Transmitter, 0-10m, LCD, stainless steel housing, 1½", 80 mm, BSP
*on request	2298 Radar Level Transmitter, 0-10m, LCD, stainless steel housing, 1½", 80 mm, NPT
*on request	2298 Radar Level Transmitter, 0-20m, LCD, stainless steel housing, 1½", 80 mm, BSP
*on request	2298 Radar Level Transmitter, 0-20m, LCD, stainless steel housing, 1½", 80 mm, NPT

Accessories

Mfr. Part No	Code	Description
	159 300 208	HART - USB Modem
3-8058-3	Special order	Wire-mount GF i-Go signal (4 to 20 mA / S ³ L) converter to connect 2298 to 9900 Transmitter
3-8058-2	159 300 967	DIN rail mount GF i-Go (4 to 20 mA / S ³ L) converter to connect 2298 to 9900/9950 Transmitter
3-8050	159 000 184	Universal Mount Kit
2-9900.396	159 001 701	Angle Adaptor
3-9900-1P	159 001 695	9900 Transmitter - Panel Mount
3-9900-1	159 001 696	9900 Transmitter - Field Mount
3-9950-1	159 001 841	9950 Base Unit – Two Channel Multi-Parameter Inputs, Two 4 to 20 mA Outputs, Panel Mount, DC Power
3-9950-2	159 001 842	9950 Base Unit – Two Channel Multi-Parameter Inputs, Two 4 to 20 mA Outputs, Panel Mount, AC or DC Power

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Tel. +41 52 631 11 11 • www.gfps.com • E-Mail: info.ps@georgfischer.com