ANL-9080

80GHz Radar Level Transmitters

Catalog V.2024

Phoenix. Chen

CHINASIMBA www.chinasimba.com

SN: DY.10.05.218

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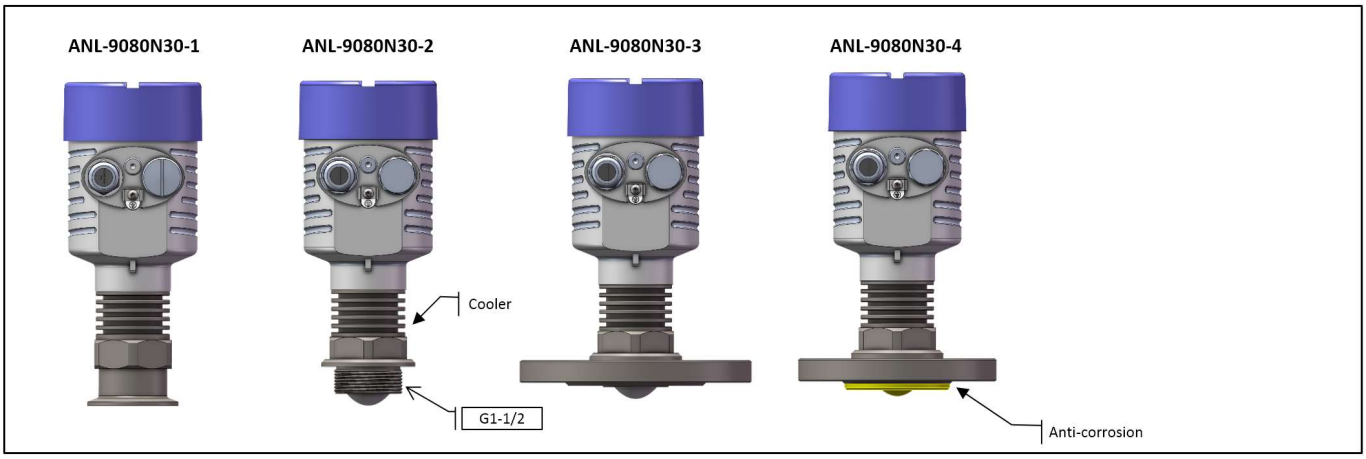
ANL-9080 80GHz FMCW radar level Gauges Overview

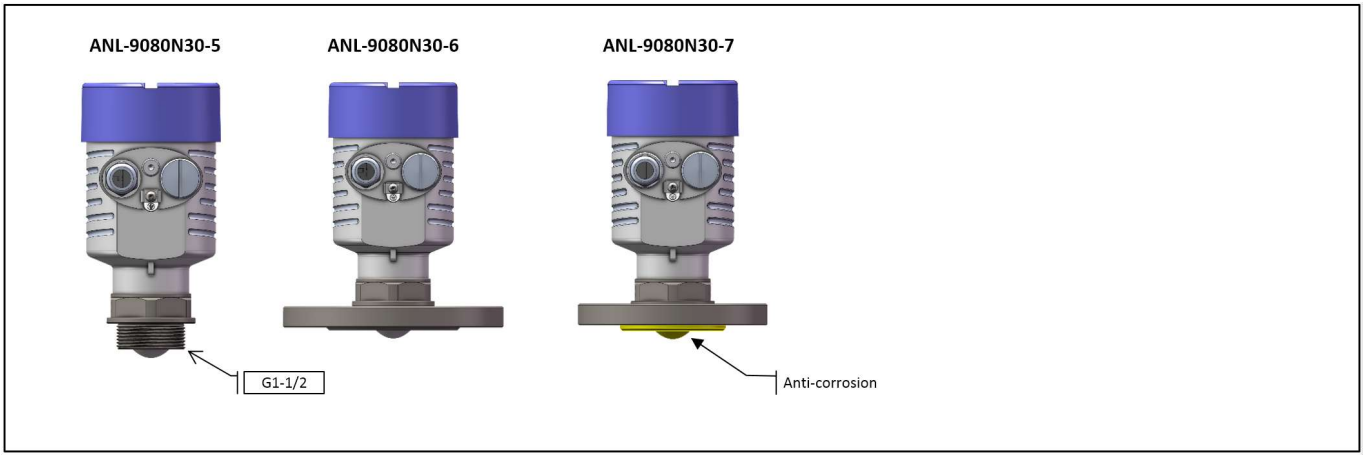
There are different frequencies for different radar level transmitters and the frequency can impact the measurement performance. when measuring in the absence (or less) of vapor and foam, the (ANL-9080) 80GHz frequency radar level transmitter is preferred in most normal applications due to greater mounting flexibility.
There are four kinds of the ANL-9080 series non-contacting radar transmitters, ANL-9080N30, ANL-9080N50, ANL-9080N80 and ANL-9080N100. The ANL-9080N30, ANL-9080N50, ANL-9080N80 are the superior performance 2/4-wire transmitters, which are suitable for most applications. The ANL-9080N100 is the 2/4-wire transmitter for some challenging applications.

9080N30 version

It's an ideal for small tanks and corrosive applications, there are 2 types of anti-corrosion models, and suitable for applications in small space installation conditions.

Minimum configurable flange size:	>= DN32
Minimum coupling thread size:	G1-½ NPT
Suitable Process Temperature Scope (*Min. … Max.*):	-60˚C … 250˚C
Suitable Process Pressure scope (*Min. … Max.*):	-1.0 … 5.0 MPa
Antenna Lens Aperture:	Diameter Ø30mm
Antenna Beam Angle interval:	6˚ … 8˚
Max. measuring limit range:	20M @liquid medium





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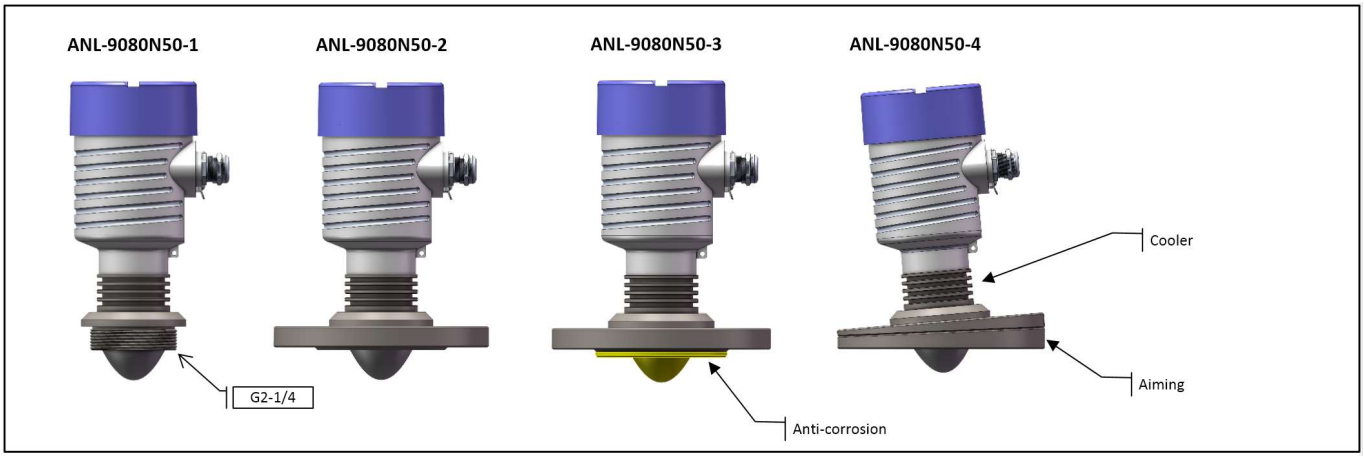
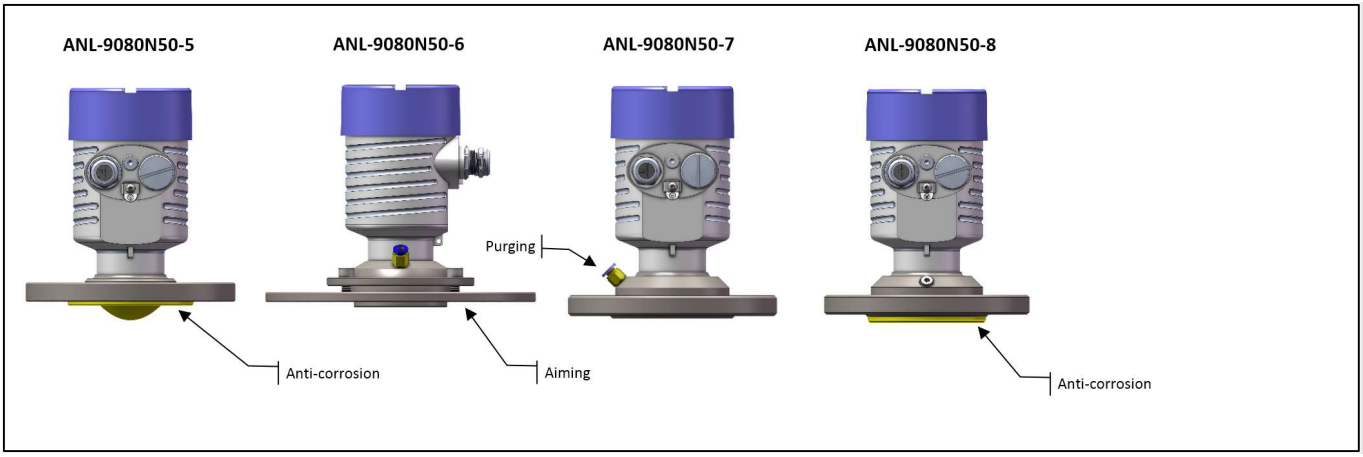
9080N50 version

Suitable for small (or some medium-sized) process connections (liquid, solid, powder) and corrosive environment, there are 3 types of anti-corrosion models, 2 types of aiming or/with purging models and an aiming model which it can hold pressure. The 9080N50 version is a popular and practical model that is ideal for petroleum, chemical industrial process applications.

Minimum configurable flange size:	>= DN50
Minimum coupling thread size:	G2-¼ NPT
Suitable Process Temperature Scope (*Min. … Max.*):	-60˚C … 300˚C
Suitable Process Pressure scope (*Min. … Max.*):	-1.0 … 5.0 MPa
Antenna Lens Aperture:	Diameter Ø50mm
Antenna Beam Angle interval:	4˚ … 6˚
Max. measuring limit range:	40M @liquid medium





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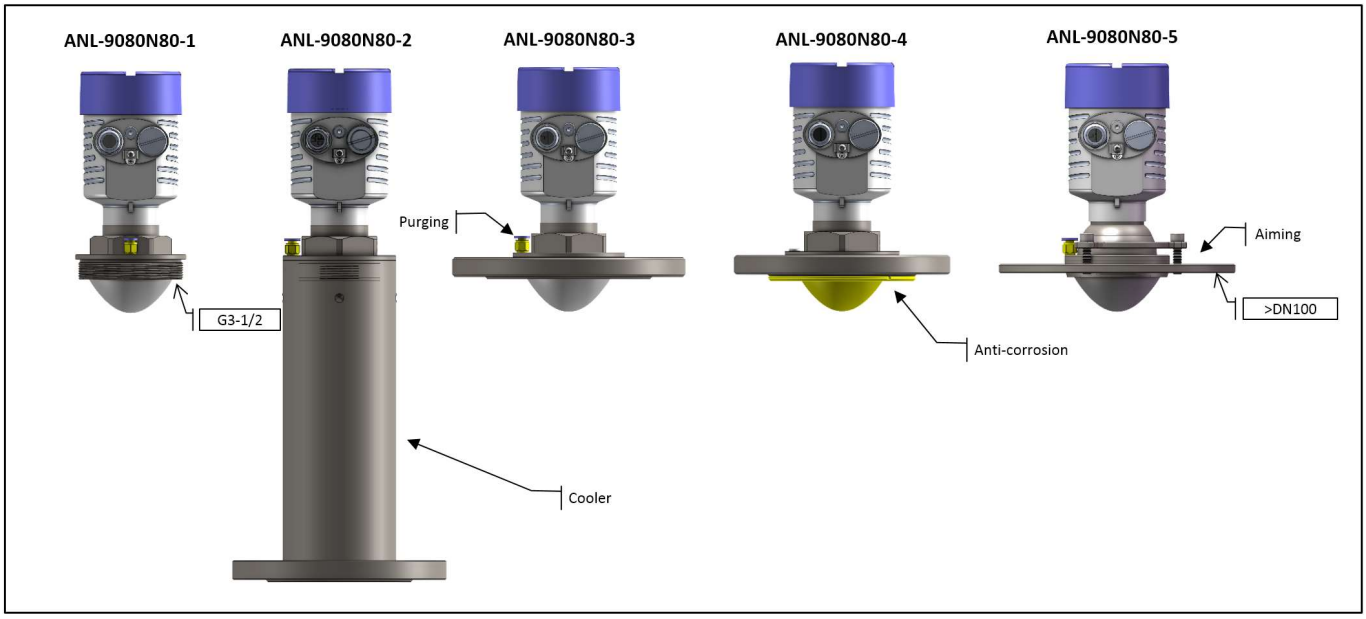
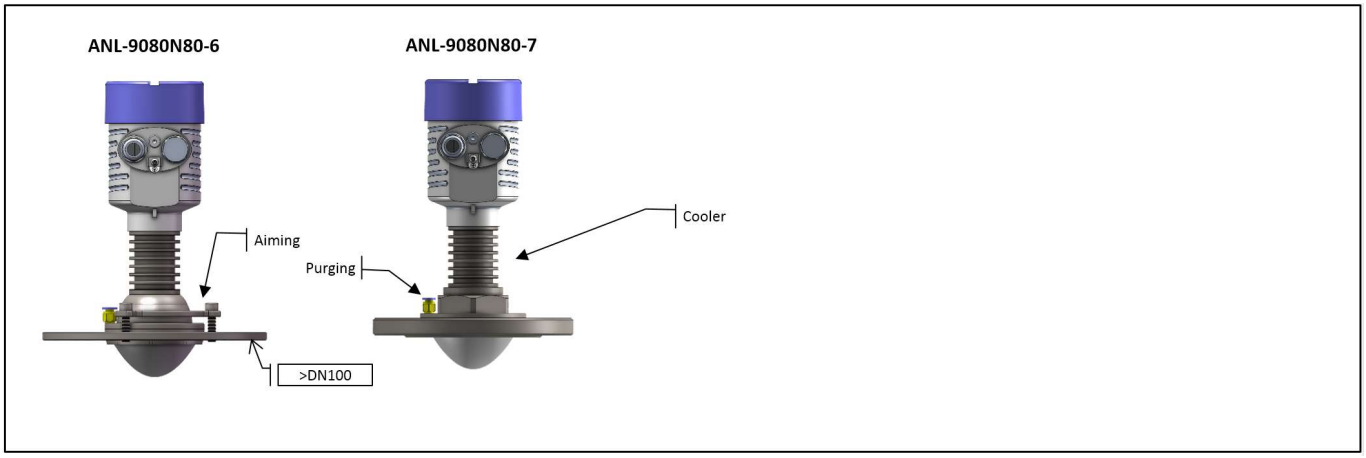
9080N80 version

Suitable for medium-sized process connections (liquid, solid, powder) and corrosive environment, and suitable for some extreme process conditions, higher temp difficult process conditions. Also good for heavy antenna condensation/build-up. It is a very flexible and practical model that can also be customized according to the process conditions of the application.

Minimum configurable flange size:	>= DN80
Minimum coupling thread size:	G3-½ NPT
Suitable Process Temperature Scope (*Min. … Max.*):	-60˚C … 200˚C / 450˚C (9080N80-2)
Suitable Process Pressure scope (*Min. … Max.*):	-1.0 … 3.5 MPa
Antenna Lens Aperture:	Diameter Ø80mm
Antenna Beam Angle interval:	4˚ … 6˚
Max. measuring limit range:	100M @liquid medium





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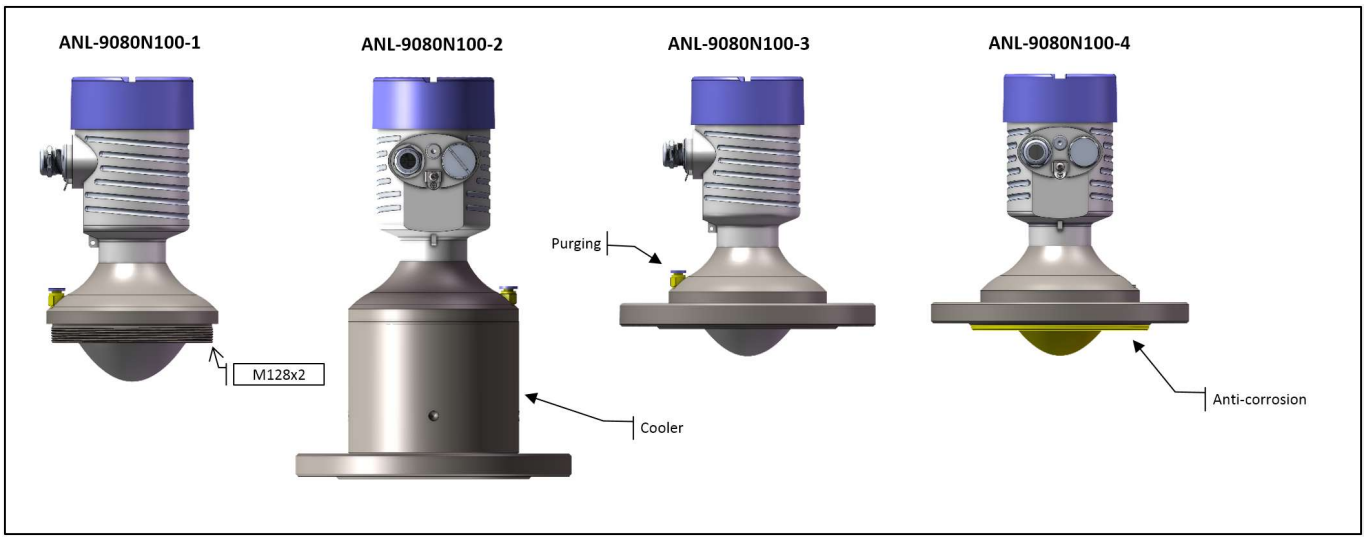
9080N100 version

Best choice for a broad range of applications, free propagation and pipe installations. Superior microwave management. Require large tank opening, and best choice for solids, long range.

Note: The 9080N100 does not have an aiming model.

Minimum configurable flange size:	>= DN100
Minimum coupling thread size:	M128x2
Suitable Process Temperature Scope (*Min. … Max.*):	-60˚C … 200˚C / 450˚C (9080N100-2)
Suitable Process Pressure scope (*Min. … Max.*):	-1.0 … 3.5 MPa
Antenna Lens Aperture:	Diameter Ø100mm
Antenna Beam Angle interval:	3˚ … 5˚
Max. measuring limit range:	150M @liquid medium



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Summary of the ANL-9080 model parameter table

ANL-9080 model	Connection Type	Process contact surface material	Lens Ant. Diameter mm	Ant. Beam Angle °	Antenna Gain dB	Min. Temp. : Max. Temp. Process Temp. ℃	Min. : Max. Pressure Mpa	Max. Radar Range (M) Recommended medium	Still pipe	Purging	Aiming on Stress	Aiming	Anti-corrosion
9080N30-1	Sanitary fittings DN 50	SST/PTFE (default) Or PEEK	30	6	26	-40 150 -60 150	-0.5 0.8 -1.0 5.0	20M for liquid, 10M for powder	√				
9080N30-2	Thread G1-1/2 NPT	SST/PTFE (default) Or PEEK	30	6	26	-40 150 -60 150	-0.5 0.8 -1.0 5.0	20M for liquid, 10M for solid	√				
9080N30-3	Thread >= DN32	SST/PTFE (default) Or PEEK	30	6	26	-40 250 -60 250	-0.5 0.8 -1.0 5.0	20M for liquid, 10M for solid					
9080N30-4	Min. flange >= DN32	SST/PTFE (default)	30	6	26	-40 250	-0.5 0.8	20M for liquid, 10M for solid					√
9080N30-5	Thread G1-1/2 NPT	SST/PTFE (default)	30	8	25	-40 150	-0.5 0.8	20M for liquid, 10M for solid	√				
9080N30-6	Min. flange >= DN32	SST/PTFE (default) Or PEEK	30	8	25	-50 180 -60 180	-0.5 0.8 -1.0 5.0	20M for liquid, 10M for solid					
9080N30-7	Min. flange >= DN32	SST/PTFE (default)	28	8	25	-40 180	-0.5 0.8	20M for liquid, 10M for solid					√
9080N50-1	Thread G2-1/4 NPT	SST/PTFE (default) Or PEEK	50	5	29	-40 150 -60 150	-0.8 0.8 -1.0 5.0	40M for liquid, 30M for solid	√				
9080N50-2	Min. flange >= DN50	SST/PTFE (default) Or PEEK	50	5	29	-40 200 -60 200	-0.8 0.8 -1.0 5.0	40M for liquid, 30M for solid					
9080N50-3	Min. flange >= DN50	SST/PTFE (default)	50	5	29	-40 200	-0.8 0.8	40M for liquid, 30M for solid					√
9080N50-4	Min. flange >= DN50	SST/PTFE (default) Or PEEK	50	5	29	-40 200 -60 200	-0.8 0.8 -1.0 5.0	40M for liquid, 30M for solid			√		
9080N50-5	Min. flange >= DN50	SST/PTFE (default)	48	5	28	-40 180	-0.8 0.8	40M for liquid, 30M for solid					√
9080N50-6	Min. flange >= DN80	SST/PTFE (default)	48	5	28	-40 180 -60 180	-0.8 0.8 -1.0 5.0	40M for liquid, 30M for solid		√*		√	
9080N50-7	Min. flange >= DN50 (or M80x2 obsolete)	SST/PTFE (default) Or PEEK	48	5	28	-40 180 -60 180	-0.8 0.8 -1.0 5.0	40M for liquid, 30M for solid		√*			
9080N50-8	Min. flange >= DN50	SST/PTFE (default)	48	5	28	-40 180	-0.8 0.8	40M for liquid, 30M for solid					√
9080N80-1	Thread G3-1/2 NPT	SST/PTFE (default) Or PEEK	80	4.5	31	-40 150 -60 150	-0.2 0.5 -1.0 3.5	0.1 ... 100M	√	√*			
9080N80-2	Min. flange >= DN80	SST/PTFE (default) Or PEEK	80	4.5	31	-40 450 -60 450	-0.2 0.5 -1.0 3.5	0.1 ... 100M	√	√*			
9080N80-3	Min. flange >= DN80	SST/PTFE (default) Or PEEK	80	4.5	31	-40 180 -60 180	-0.2 0.5 -1.0 3.5	0.1 ... 100M		√*			
9080N80-4	Min. flange >= DN80	SST/PTFE (default)	80	4.5	31	-40 180	-0.2 0.5	0.1 ... 100M					√
9080N80-5	Min. flange >= DN100	SST/PTFE (default) Or PEEK	80	4.5	31	-40 180 -60 180	-0.2 0.5 -0.2 0.5	0.1 ... 100M		√		√	
9080N80-6	Min. flange >= DN100	SST/PTFE (default) Or PEEK	80	4	32	-40 300 -60 300	-0.2 0.5 -0.2 0.5	0.1 ... 100M		√		√	
9080N80-7	Thread G3-1/2 NPT	SST/PTFE (default) Or PEEK	80	4	32	-40 280 -60 280	-0.2 0.5 -1.0 3.5	0.1 ... 100M	√	√*			
9080N100-1	Thread M128x2 NPT	SST/PTFE (default) Or PEEK	100	3.5	32	-40 180 -60 180	-0.2 0.5 -1.0 3.5	0.15 ... 100M (150M option)	√	√*			
9080N100-2	Min. flange >= DN100	SST/PTFE (default) Or PEEK	100	3.5	32	-40 350 -60 350	-0.2 0.5 -1.0 3.5	0.15 ... 100M (150M option)		√*			
9080N100-3	Min. flange >= DN100	SST/PTFE (default) Or PEEK	100	3.5	32	-40 200 -60 200	-0.2 0.5 -1.0 3.5	0.15 ... 100M (150M option)		√*			
9080N100-4	Min. flange >= DN100	SST/PTFE (default)	100	3.5	32	-40 200	-0.2 0.5	0.15 ... 100M (150M option)					√

Note: *Under the condition of purging function, the process pressure should not exceed 1.5MPa.

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Model selection guide for the ANL-9080 based on different process media characteristics

ANL-9080 : Guidelines on which model and antenna to select, depending on application

ANL-9080 Model and Antenna Guide		ANL-9080N30-1	ANL-9080N30-2	ANL-9080N30-3	ANL-9080N30-4	ANL-9080N30-5	ANL-9080N30-6	ANL-9080N30-7	ANL-9080N50-1	ANL-9080N50-2	ANL-9080N50-3	ANL-9080N50-4	ANL-9080N50-5	ANL-9080N50-6	ANL-9080N50-7	ANL-9080N50-8	ANL-9080N80-1	ANL-9080N80-2	ANL-9080N80-3	ANL-9080N80-4	ANL-9080N80-5	ANL-9080N80-6	ANL-9080N80-7	ANL-9080N100-1	ANL-9080N100-2	ANL-9080N100-3	ANL-9080N100-4
充气环境	Aeration	!	!	!	!	✓	!	✓	✓	!	✓	!	✓	!	!	✓	✓	✓	✓	✓	!	!	!	!	!	!	✓
搅拌	Agitation	!	!	!	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
环境温度变化	Ambient temperature changes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
堆积	build-up	✓	✗	✗	✗	✗	✗	✗	!	!	!	✓	!	✓	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
沸腾/湍流表面（低/中）	Boiling / Turbulent surface (low/medium)	!	!	!	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
沸腾/湍流表面（重）	Boiling / Turbulent surface (heavy)	✗	✗	✗	✗	✗	✗	✗	!	!	!	!	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
沸腾/湍流表面（蒸馏管）	Boiling / Turbulent surface(still-pipe)	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
腐蚀	Corrosive products (options available)	✗	✗	✗	✗	✓	✗	✓	✗	✗	✓	✗	✓	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✓
冷凝蒸汽/产品	Condensing vapor / product	✗	✗	✗	✗	✗	✗	!	✓	✓	✓	✓	!	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
改变密度/电介质/pH/压力/温度	Changing density/dielectric/pH/ pressure/temperature	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	✓	✓	✓	✓
涂料/粘性/结晶液体	Coating/viscous/crystallizing liquids	✓	!	!	!	!	!	✓	!	!	✓	!	✓	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
灰尘	Dust	✓	!	!	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
乳剂	Emulsion	!	!	!	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
泡沫	Foam	✓	✗	✓	✓	✗	✗	✗	✓	✓	✓	✓	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
泡沫（蒸馏管）	Foam (still-pipe)	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
工艺温度上限高	High process temperature limits	!	✗	!	!	!	✗	✗	!	!	!	!	✗	✗	✗	✗	!	✓	!	!	!	✓	✓	!	!	!	!
容器压力限制高	High vessel pressure limits	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!
内部障碍物	Internal obstructions	✗	✗	✗	✗	✗	✗	✗	!	!	!	✓	!	✓	!	!	!	!	!	!	✓	✓	!	✓	✓	✓	✓
工艺温度低 (<-40)	Low process temperatures	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
低容器压力（真空）	Low vessel pressures (vacuum)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✗	✓	!	!	!	!	!	!	!	!	!	!	!
具有极低介电性的材料	Materials with very low dielectric	!	!	!	!	!	!	!	✓	✓	✓	✓	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
噪声（EMI、电机）	Noise (EMI, motors)	!	!	!	!	!	!	!	✓	✓	✓	✓	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
泥浆	Slurries	!	!	!	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
固体、颗粒、粉末	Solids, granules, powders (bulk solids)	✗	!	✗	✗	!	!	✗	✓	✓	✓	✓	!	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
粘性、粘性产品	Viscous, sticky product	✗	!	✗	✗	!	!	✗	✓	✓	✓	✓	✓	!	!	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
持续蒸气（轻、中）	Vapor (light, medium)	✗	✗	✗	✗	✗	✗	✗	!	!	!	!	!	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
持续蒸气（重）	Vapor (heavy)	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
辐射污染物	Radiation contaminants	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

✗ Not Recommended
! Application Dependent (consult CHINASIMBA representative)
✓ Good

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Beam width via Nozzle limit line of the ANL-9080

Special considerations may have to be taken because of the nozzle, depending on the selection of ANL-9080 model and antenna.

The following recommendations should be considered when mounting the ANL-9080 radar level transmitter:

- The transmitter should be mounted with as few internal structures as possible within the beam angle
- The flat tank wall can be located within the antenna beam angle if there is a minimum distance from the transmitter to the tank wall

Diameter of radiated area at different distances from flange Datasheet:

Antenna Beam Angle →	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	14°	16°	18°	20°
Distance [mm]	Beam width, Diameter of radiated area (mm)															
100	1.7	3.5	5.2	7.0	8.7	10.5	12.2	14.0	15.7	17.5	19.2	20.9	24.4	27.9	31.4	34.9
150	2.6	5.2	7.9	10.5	13.1	15.7	18.3	20.9	23.6	26.2	28.8	31.4	36.7	41.9	47.1	52.4
200	3.5	7.0	10.5	14.0	17.5	20.9	24.4	27.9	31.4	34.9	38.4	41.9	48.9	55.8	62.8	69.8
250	4.4	8.7	13.1	17.5	21.8	26.2	30.5	34.9	39.3	43.6	48.0	52.4	61.1	69.8	78.5	87.3
300	5.2	10.5	15.7	20.9	26.2	31.4	36.7	41.9	47.1	52.4	57.6	62.8	73.3	83.8	94.2	104.7
350	6.1	12.2	18.3	24.4	30.5	36.7	42.8	48.9	55.0	61.1	67.2	73.3	85.5	97.7	110.0	122.2
400	7.0	14.0	20.9	27.9	34.9	41.9	48.9	55.8	62.8	69.8	76.8	83.8	97.7	111.7	125.7	139.6
450	7.9	15.7	23.6	31.4	39.3	47.1	55.0	62.8	70.7	78.5	86.4	94.2	110.0	125.7	141.4	157.1
500	8.7	17.5	26.2	34.9	43.6	52.4	61.1	69.8	78.5	87.3	96.0	104.7	122.2	139.6	157.1	174.5
1,000	17.5	34.9	52.4	69.8	87.3	104.7	122.2	139.6	157.1	174.5	192.0	209.4	244.3	279.2	314.2	349.1
3,000	52.4	104.7	157.1	209.4	261.8	314.2	366.5	418.9	471.2	523.6	575.9	628.3	733.0	837.7	942.5	1,047.2
5,000	87.3	174.5	261.8	349.1	436.3	523.6	610.8	698.1	785.4	872.6	959.9	1,047.2	1,221.7	1,396.2	1,570.8	1,745.3
7,000	122.2	244.3	366.5	488.7	610.8	733.0	855.2	977.4	1,099.5	1,221.7	1,343.9	1,466.0	1,710.4	1,954.7	2,199.1	2,443.4
10,000	174.5	349.1	523.6	698.1	872.6	1,047.2	1,221.7	1,396.2	1,570.8	1,745.3	1,919.8	2,094.3	2,443.4	2,792.4	3,141.5	3,490.6
15,000	261.8	523.6	785.4	1,047.2	1,309.0	1,570.8	1,832.5	2,094.3	2,356.1	2,617.9	2,879.7	3,141.5	3,665.1	4,188.7	4,712.3	5,235.8
20,000	349.1	698.1	1,047.2	1,396.2	1,745.3	2,094.3	2,443.4	2,792.4	3,141.5	3,490.6	3,839.6	4,188.7	4,886.8	5,584.9	6,283.0	6,981.1
25,000	436.3	872.6	1,309.0	1,745.3	2,181.6	2,617.9	3,054.2	3,490.6	3,926.9	4,363.2	4,799.5	5,235.8	6,108.5	6,981.1	7,853.8	8,726.4
30,000	523.6	1,047.2	1,570.8	2,094.3	2,617.9	3,141.5	3,665.1	4,188.7	4,712.3	5,235.8	5,759.4	6,283.0	7,330.2	8,377.3	9,424.5	10,471.7
35,000	610.8	1,221.7	1,832.5	2,443.4	3,054.2	3,665.1	4,275.9	4,886.8	5,497.6	6,108.5	6,719.3	7,330.2	8,551.9	9,773.6	10,995.3	12,216.9
40,000	698.1	1,396.2	2,094.3	2,792.4	3,490.6	4,188.7	4,886.8	5,584.9	6,283.0	6,981.1	7,679.2	8,377.3	9,773.6	11,169.8	12,566.0	13,962.2
45,000	785.4	1,570.8	2,356.1	3,141.5	3,926.9	4,712.3	5,497.6	6,283.0	7,068.4	7,853.8	8,639.1	9,424.5	10,995.3	12,566.0	14,136.8	15,707.5
50,000	872.6	1,745.3	2,617.9	3,490.6	4,363.2	5,235.8	6,108.5	6,981.1	7,853.8	8,726.4	9,599.0	10,471.7	12,216.9	13,962.2	15,707.5	17,452.8
55,000	959.9	1,919.8	2,879.7	3,839.6	4,799.5	5,759.4	6,719.3	7,679.2	8,639.1	9,599.0	10,558.9	11,518.8	13,438.6	15,358.4	17,278.3	19,198.1
60,000	1,047.2	2,094.3	3,141.5	4,188.7	5,235.8	6,283.0	7,330.2	8,377.3	9,424.5	10,471.7	11,518.8	12,566.0	14,660.3	16,754.7	18,849.0	20,943.3
65,000	1,134.4	2,268.9	3,403.3	4,537.7	5,672.2	6,806.6	7,941.0	9,075.4	10,209.9	11,344.3	12,478.7	13,613.2	15,882.0	18,150.9	20,419.8	22,688.6
70,000	1,221.7	2,443.4	3,665.1	4,886.8	6,108.5	7,330.2	8,551.9	9,773.6	10,995.3	12,216.9	13,438.6	14,660.3	17,103.7	19,547.1	21,990.5	24,433.9
75,000	1,309.0	2,617.9	3,926.9	5,235.8	6,544.8	7,853.8	9,162.7	10,471.7	11,780.6	13,089.6	14,398.5	15,707.5	18,325.4	20,943.3	23,561.3	26,179.2
80,000	1,396.2	2,792.4	4,188.7	5,584.9	6,981.1	8,377.3	9,773.6	11,169.8	12,566.0	13,962.2	15,358.4	16,754.7	19,547.1	22,339.6	25,132.0	27,924.4
85,000	1,483.5	2,967.0	4,450.5	5,933.9	7,417.4	8,900.9	10,384.4	11,867.9	13,351.4	14,834.9	16,318.3	17,801.8	20,768.8	23,735.8	26,702.8	29,669.7
90,000	1,570.8	3,141.5	4,712.3	6,283.0	7,853.8	9,424.5	10,995.3	12,566.0	14,136.8	15,707.5	17,278.3	18,849.0	21,990.5	25,132.0	28,273.5	31,415.0
95,000	1,658.0	3,316.0	4,974.0	6,632.1	8,290.1	9,948.1	11,606.1	13,264.1	14,922.1	16,580.1	18,238.2	19,896.2	23,212.2	26,528.2	29,844.3	33,160.3
100,000	1,745.3	3,490.6	5,235.8	6,981.1	8,726.4	10,471.7	12,216.9	13,962.2	15,707.5	17,452.8	19,198.1	20,943.3	24,433.9	27,924.4	31,415.0	34,905.6

Nozzle limit line of the DN32 process seal

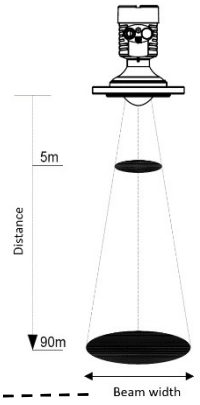
Nozzle limit line of the DN50 process seal

Nozzle limit line of the DN80 process seal

Nozzle limit line of the DN100 process seal

i.e. ANL9080N100 with Diameter 100mm Nozzle, the Max. Nozzle length should be less then 1909mm.

Calcu. Max. Nozzle length
= 1000mm + (100mm - 52.4mm) x (3000-1000) / (157.1mm - 52.4mm)
= 1909.26mm



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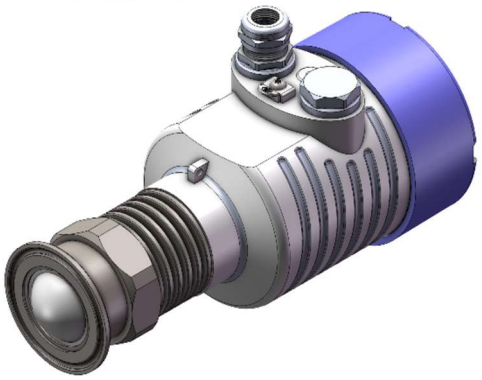
ANL-9080N30 regular version

Non-contact Radar Level Transmitter Datasheets

Version V.2024



Characteristics

- 80GHz Frequency FMCW radar system.
- Measurement application of the Small tanks in liquids, solids.
- Chemical industry reaction tanks, reactors. Stirring and corrosive environment applications.

Specifications

ANL-9080N30	Lens material PTFE	Lens material PEEK	N60 (cool version)
Max. measuring range	20M for liquid, 10M for solids/powder	20M for liquid, 10M for solids/powder	20M for liquid, 10M for solids/powder
Tx/Rx frequency	Tx/Rx frequency 76.2 to 80.2GHz Dynamic FM Sweep Bandwidth 1~4GHz (The adjustment FM range can be customized according to the ISM requirements of the customer's region)		
Near blind spot	< 100mm from the flange down surface		
Meas. Principle	FMCW Radar System		
Lens Antenna Medium	PTFE Φ30mm	PEEK Φ30mm	PEEK Φ30mm
Antenna beam / Gain	Beam angle 7~8°/ Gain 26~27dB *	Beam angle 7~8°/ Gain 25~26dB * (*) Note that the detailed data is described in the specific antenna type.	
Meas. Resolution	0.1mm (<10m range)		
Meas. Accuracy	±1 mm		
Ambient temperature	-40 … +85 °C		-60 … +105 °C
Process temperature	-40°C … +150°C/250°C *	-60°C … +150°C/250°C *	
Process pressure	-0.5 ~ +0.8MPa *	-1.0 ~ +5.0MPa * (*) Note that the detailed pressure range is described in the specific antenna type.	
Process connection	Flanges >= DN30 or Thread G1-½ or NPT		
Signal output	4-20 mA/HART7 2-wire, 4-20 mA/HART7 4-wire, Profibus PA / DP, Ethernet-APL, Modbus protocol 4-wire		
Variables influencing meas. accuracy	Specifications for the digital measured value Temperature drift - Digital output: ±1mm/10K relating to the max. measuring range or max. 15 mm Additional deviation through electromagnetic interference acc. to EN-61326: < ±10 mm Specifications apply also to the current output Temperature drift - Current output: ±0.02%/10K relating to the 16.7 mA span or max. ±0.2% Deviation in the current output due to digital/analogue conversion Non-Ex and Ex-ia version: < ±1μA; Ex-d-ia version: < ±1μA Additional deviation through electromagnetic interference acc. to EN-61326: < ±150μA		
Indication/Adjustment (LOI)	1. 160x80 LCD FSTN RGB backlight monitor adapter with keyboard module, operation Temp. -20°C … 70°C. or 128x64 OLED monitor adapter with keyboard module, operation Temp. -55°C … 80°C. (option) or 230x240 LCD TFT colors monitor adapter with keyboard module, operation Temp. -20°C … 70°C. (option only for 4-wrie system) 2. (APP) Radar MobileManager via BT wireless connection 3. (PC software) Radar PCManager /or Via a PC with PACTware/DTM (an interface converter AiW-305 USB CONNECT is required)		
Power supply	16V ~ 40 VDC / Load resistor ≈ 600Ω		
Wireless communication	Bluetooth 5.0 (Bluetooth 4.0 LE compatible), communication range 40m, in rainy day 20m		
Approvals	CLEx/CNEx: Ex ia IIC T6 Ga IP67; Ex d IIC T6 Gb IP67 // SIL2 (No. 6G230714.CSETW60)		
Housing	Single chamber / Double chamber, Aluminum / Stainless steel / Plastic PBT, IP66 / IP67 / IP68		
Applications	Liquids, solids, and stirring and corrosive environment applications		

SERVICE CONTACT: 86-13799977915, 86-18965063391(TECHNICAL SUPPORT), 86-18106067295(AFTER SALE SERVICE)
ALTHOUGH WE HAVE RECONCILED THE CONTENTS OF THE MANUAL WITH DESCRIPTION OF INSTRUMENT, THERE MAY STILL BE CHANGES WE CANNOT ENSURE THAT IT IS FULLY CONSISTENT. THE CONTENT WILL BE CHECKED AND CORRECTED IN AN ORDERLY, AND THE ERRATA WILL BE IN SUBSEQUENT RELEASES. WE WELCOME USERS TO MAKE VARIOUS SUGGESTIONS FOR IMPROVEMENT. [TECHNICAL DATA SUBJECT TO CHANGE]

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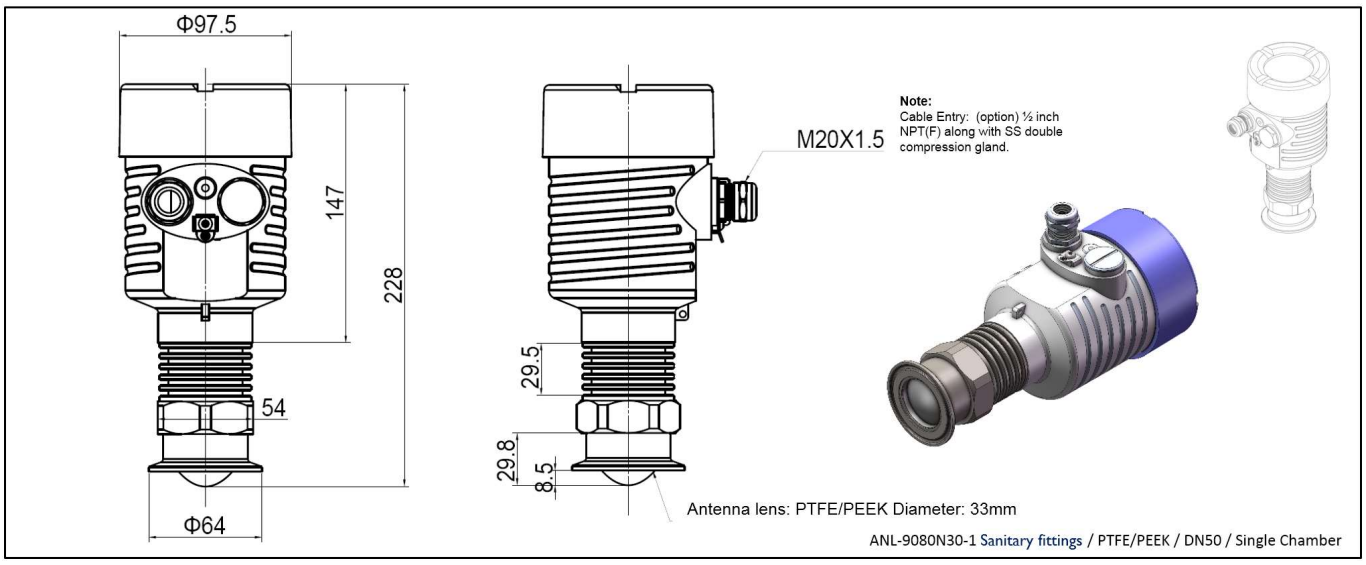
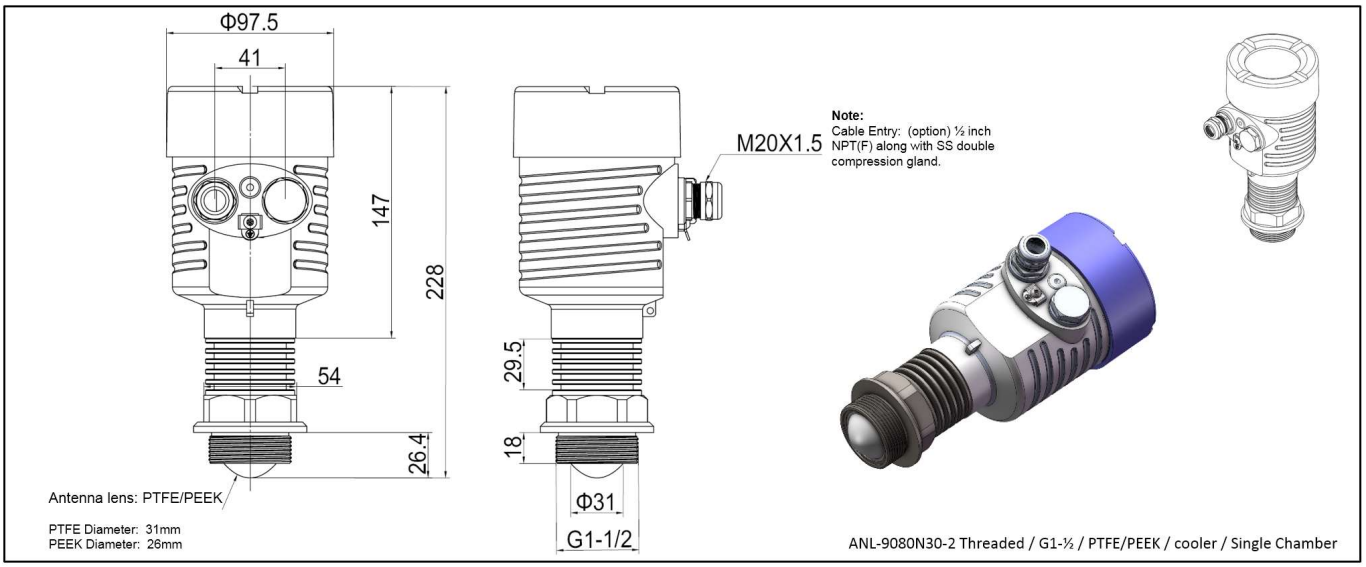
Dimensions

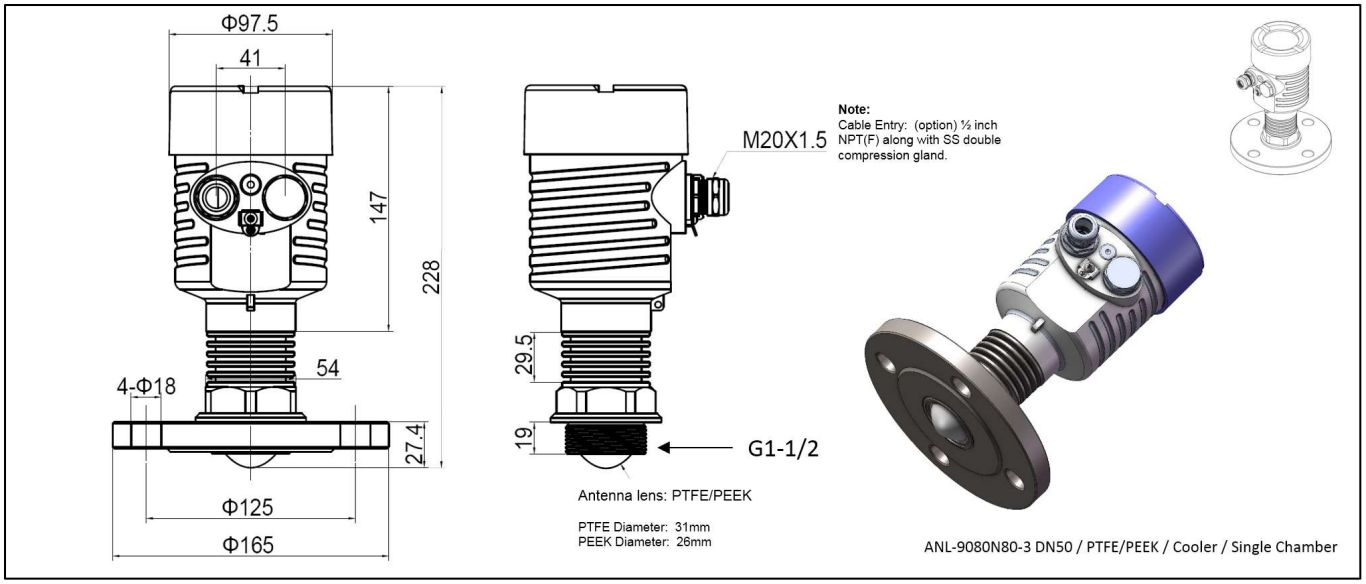
The following dimensional drawings represent only an extract of all possible versions. Detailed dimensional drawings can be downloaded at https://www.chinasimba.com/downloads.html "Drawings".



ANL-9080N30-1 Sanitary fittings / PTFE/PEEK / DN50 / Single Chamber



ANL-9080N30-2 Threaded / G1-½ / PTFE/PEEK / cooler / Single Chamber



ANL-9080N80-3 DN50 / PTFE/PEEK / Cooler / Single Chamber

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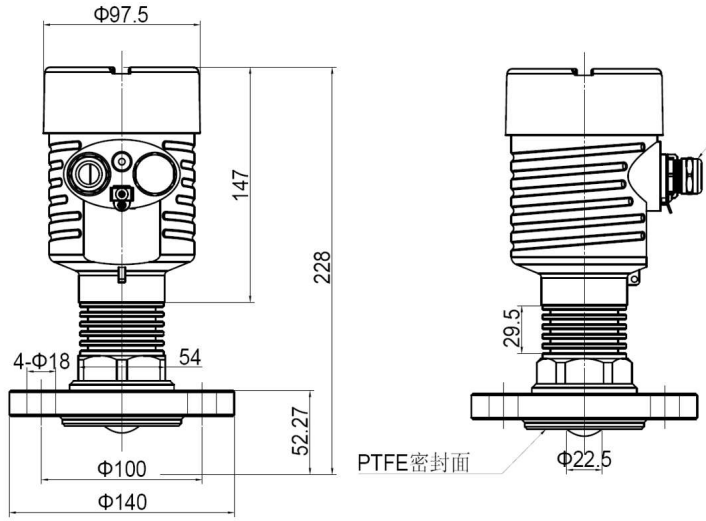
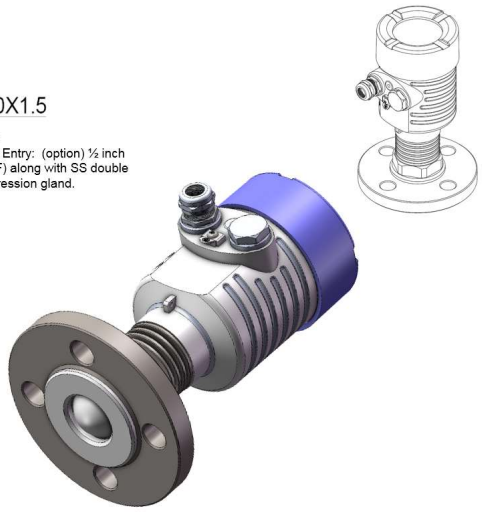
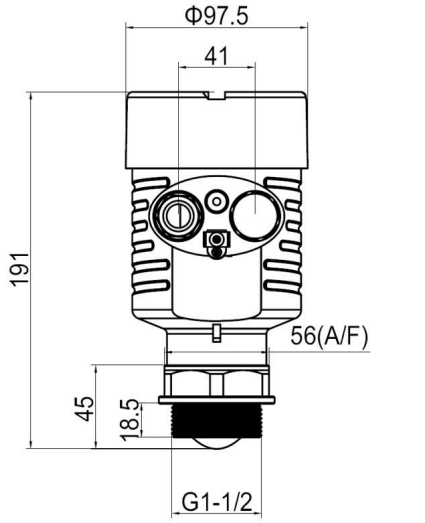
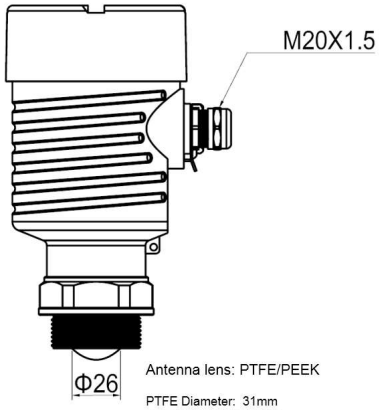
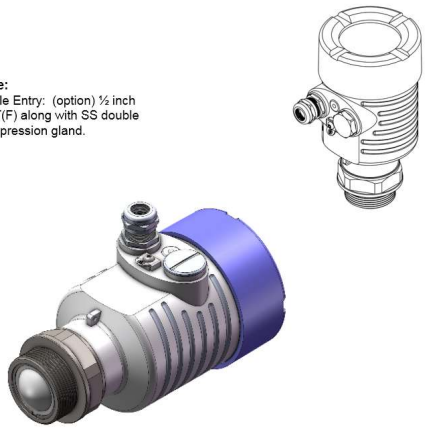




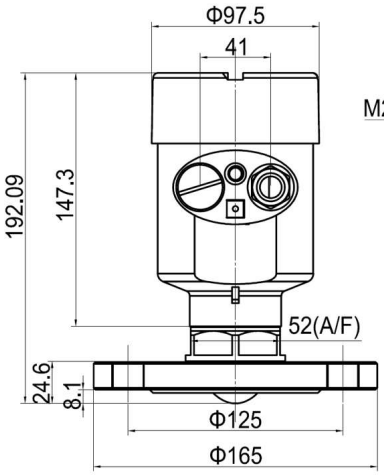
ANL-9080N80-4 Anti-corrosion / DN32 / PTFE / Cooler / Single Chamber

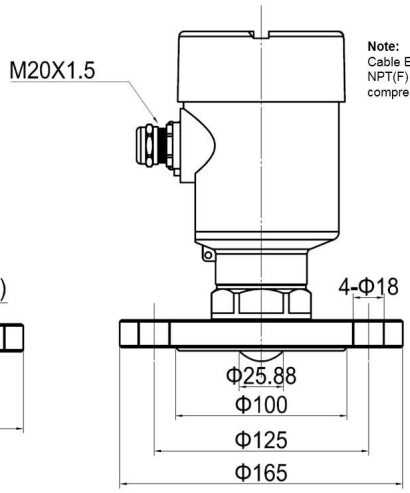


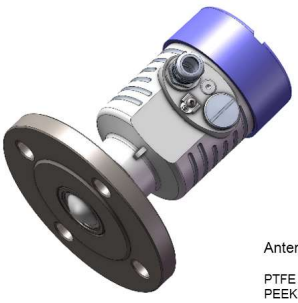


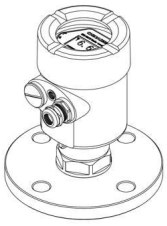


ANL-9080N30-5 Threaded / G1-½ / PTFE/PEEK / Single Chamber









Antenna lens: PTFE/PEEK
PTFE Diameter: 31mm
PEEK Diameter: 26mm

ANL-9080N30-6 DN50 / PTFE/PEEK / Single Chamber

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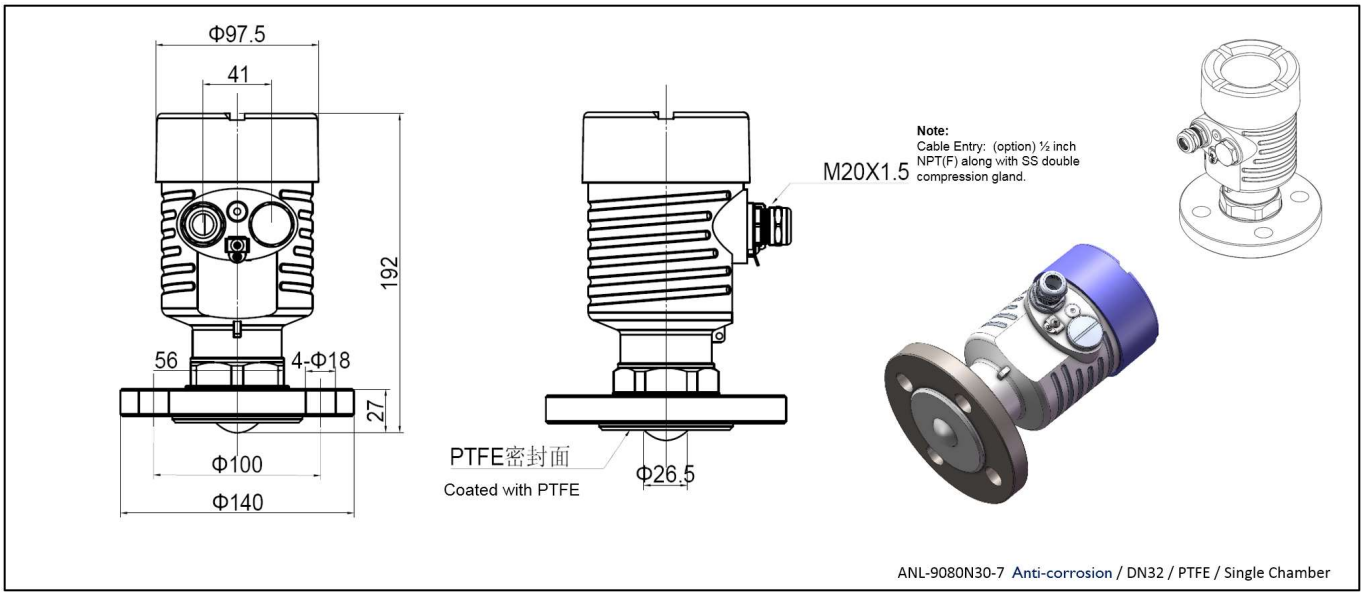

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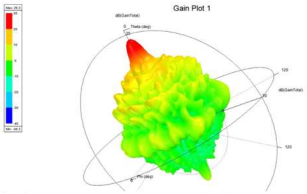
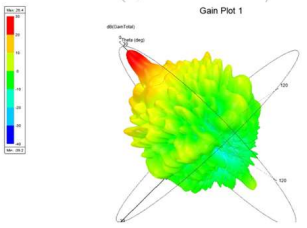
The Radar Antenna Specification of the ANL-9080N30

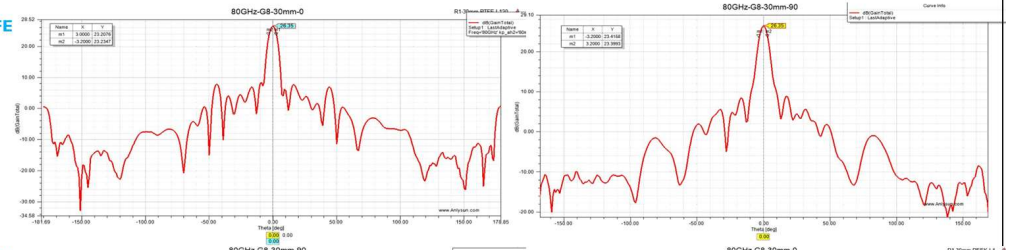
For ANL-9080N30-1, -2, -3, -4

Lens antenna material（透镜天线材质）	PTFE	PEEK
Antenna diameter（天线直径）	30mm	30mm
HPBW (half-power beam width / Beam angle)（3dB 半功率波束角）	6.2°	6.0°
FNBW (beam width between first nulls)（第一零点波束宽度）	28°	27°
Frequency Scope @ S_{11}< -10dB	77GHz~82.15GHz	
Antenna Gain（天线增益）	26.3dB	26.4dB

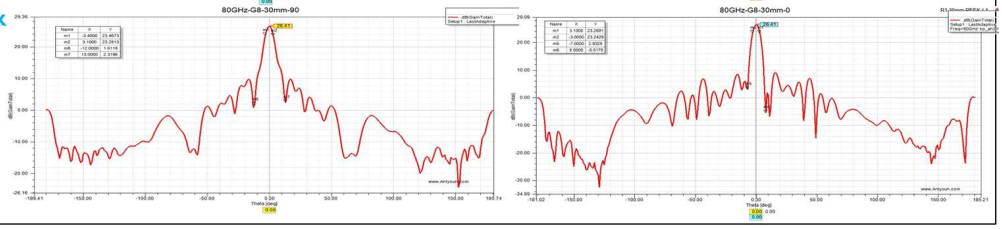




PTFE

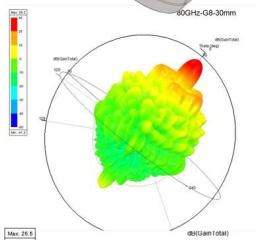


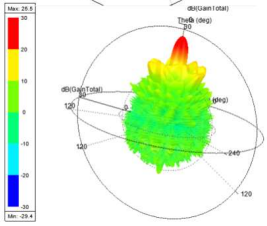
PEEK



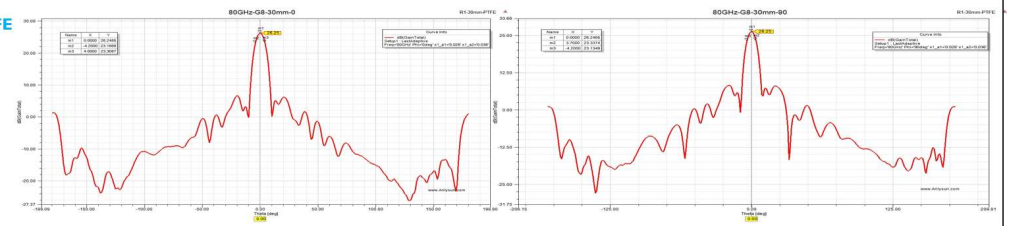
For ANL-9080N30-5, -6, -7

Lens antenna material（透镜天线材质）	PTFE	PEEK
Antenna diameter（天线直径）	30mm	30mm
HPBW (half-power beam width / Beam angle)（3dB 半功率波束角）	8°	7°
FNBW (beam width between first nulls)（第一零点波束宽度）	20°	20°
Frequency Scope @ S_{11}< -10dB	77GHz~82.15GHz	
Antenna Gain（天线增益）	26.25dB	25.5dB

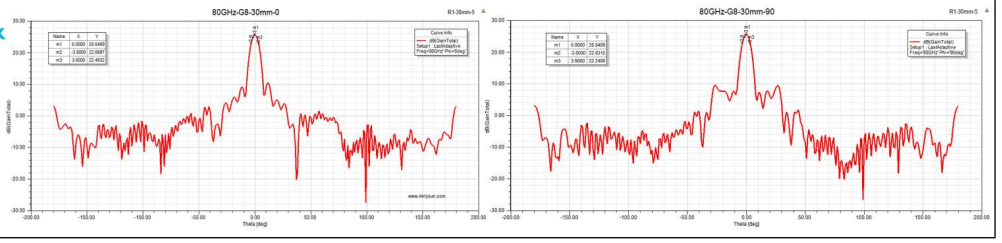




PTFE



PEEK



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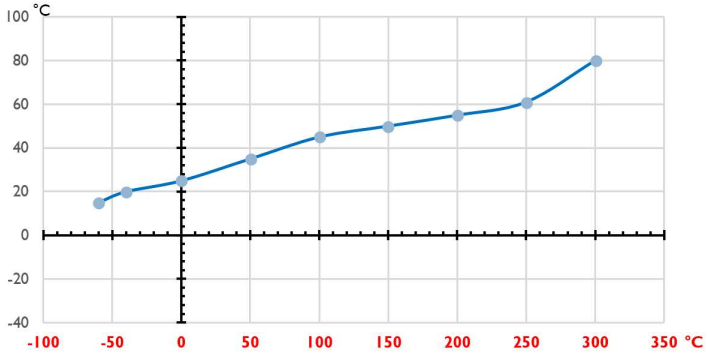
Thermal simulation graph for the ANL-9080N30

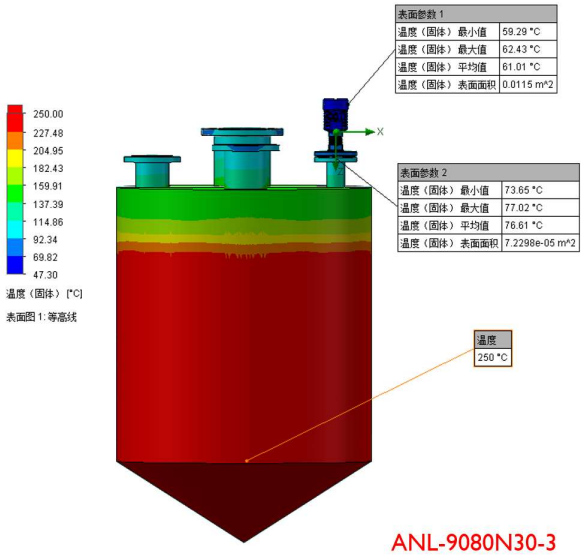
Start Ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: (including nozzle height) Flange height ≥40 cm from the material level in tank

Model simulation analysis:
This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 ℃ Celsius degrees. It's a dynamic thermal equilibrium to be reached.

Ambient temperature - Process temperature

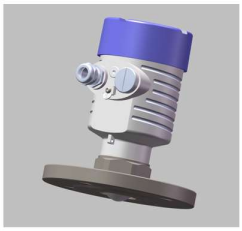


The Medium Max.Temp. @ inside tank: 250 °C



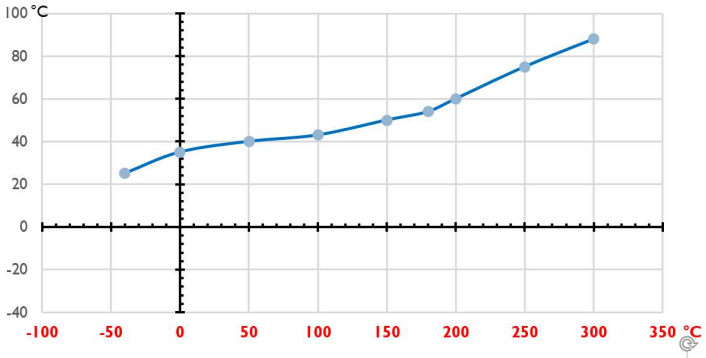
ANL-9080N30-3

Start Ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: (including nozzle height) Flange height ≥40 cm from the material level in tank

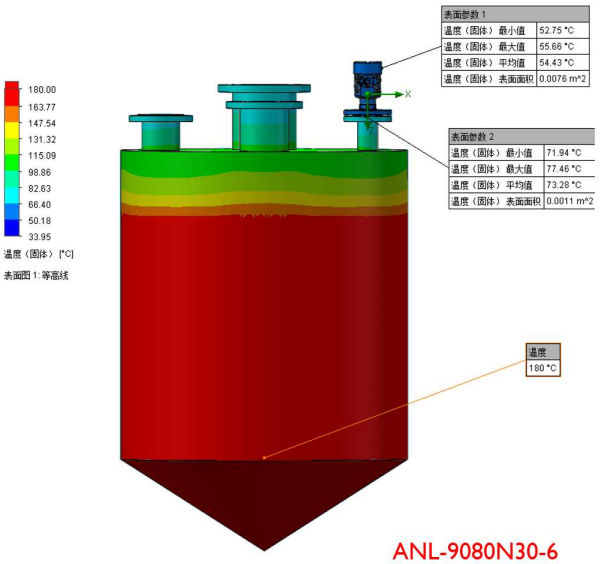


Model simulation analysis:
This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 ℃ Celsius degrees. It's a dynamic thermal equilibrium to be reached.

Ambient temperature - Process temperature



The Medium Max.Temp. @ inside tank: 180 °C



ANL-9080N30-6

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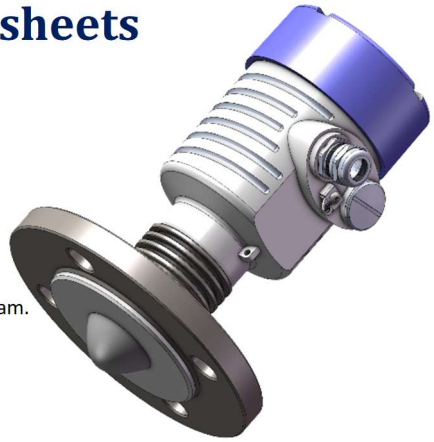
ANL-9080N50 regular version

Non-contact Radar Level Transmitter Datasheets

Version V.2024



Characteristics

- 80GHz Frequency FMCW radar system.
- Measurement application in liquids, solids.
- Chemical industry reaction tanks, reactors. Stirring and corrosive environment applications, also in steam.

Specifications

ANL-9080N50	Lens material PTFE	Lens material PEEK	N60 (cool version)
Max. measuring range	40M for liquid, 30M for solids/powder	40M for liquid, 30M for solids/powder	40M for liquid, 30M for solids/powder
Tx/Rx frequency	Tx/Rx frequency 76.2 to 80.2GHz Dynamic FM Sweep Bandwidth 1~4GHz (The adjustment FM range can be customized according to the ISM requirements of the customer's region)		
Near blind spot	< 100mm from the flange down surface		
Meas. Principle	FMCW Radar System		
Lens Antenna Medium	PTFE Φ50mm	PEEK Φ50mm	PEEK Φ50mm
Antenna beam / Gain	Beam angle 5°/ Gain 28.9dB	Beam angle 5°/ Gain 29.3dB	
Meas. Resolution	0.1mm (<10m range)		
Meas. Accuracy	±2 mm / ±1 mm (Precision Requirements Edition)		
Ambient temperature	-40 … +85 °C		-60 … +105 °C
Process temperature	-40°C … +180°C/200°C *	-60°C … +180°C/200°C *	
Process pressure	-0.8 ~ +0.8MPa *	-1.0 ~ +5.0MPa * (*) Note that the detailed pressure range is described in the specific antenna type.	
Process connection	Flanges >= DN50 or Thread G2-¼ or NPT		
Signal output	4-20 mA/HART7 2-wire, 4-20 mA/HART7 4-wire, Profibus PA / DP, Ethernet-APL, Modbus protocol 4-wire		
Variables influencing meas. accuracy	Specifications for the digital measured value Temperature drift - Digital output: ±1mm/10K relating to the max. measuring range or max. 15 mm Additional deviation through electromagnetic interference acc. to EN-61326: < ±10 mm Specifications apply also to the current output Temperature drift - Current output: ±0.02%/10K relating to the 16.7 mA span or max. ±0.2% Deviation in the current output due to digital/analogue conversion Non-Ex and Ex-ia version: < ±1μA; Ex-d-ia version: < ±1μA Additional deviation through electromagnetic interference acc. to EN-61326: < ±150μA		
Indication/Adjustment (LOI)	4. 160x80 LCD FSTN RGB backlight monitor adapter with keyboard module, operation Temp. -20°C … 70°C. or 128x64 OLED monitor adapter with keyboard module, operation Temp. -55°C … 80°C. (option) or 230x240 LCD TFT colors monitor adapter with keyboard module, operation Temp. -20°C … 70°C. (option only for 4-wrie system) 5. (APP) Radar MobileManager via BT wireless connection 6. (PC software) Radar PCManager /or Via a PC with PACTware/DTM (an interface converter AiW-305 USB CONNECT is required)		
Power supply	16V ~ 40 VDC / Load resistor ≈ 600Ω		
Wireless communication	Bluetooth 5.0 (Bluetooth 4.0 LE compatible), communication range 40m, in rainy day 20m		
Approvals	CLEx/CNEx: Ex ia IIC T6 Ga IP67; Ex d IIC T6 Gb IP67 // SIL2 (No. 6G230714.CSETW60)		
Housing	Single chamber / Double chamber, Aluminum / Stainless steel / Plastic PBT, IP66 / IP67 / IP68		
Applications	Liquids, solids, powder, and stirring and corrosive environment applications		

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Dimensions

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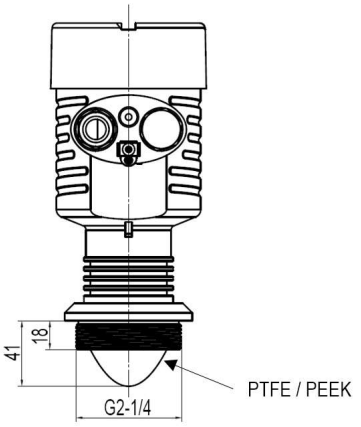
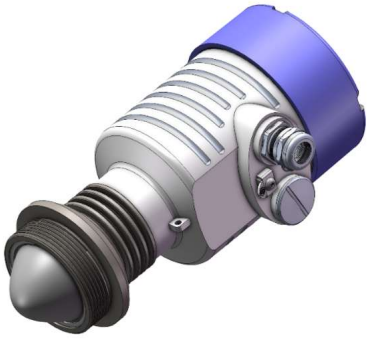
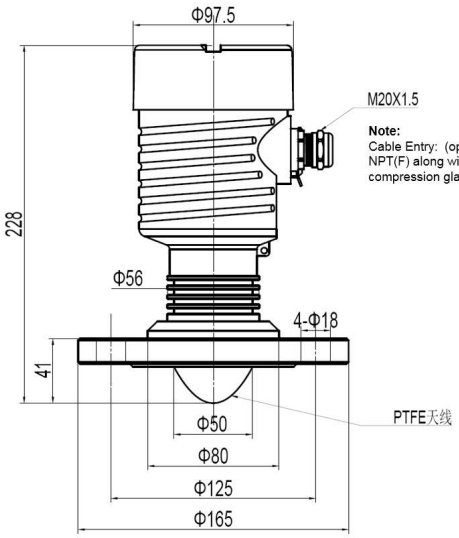


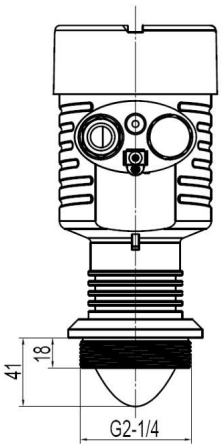


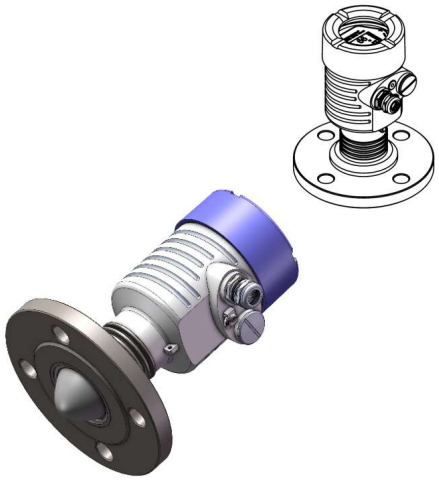
Note :
The lens antenna material is different, and the lens wheelbase is also different.

Lens Antenna PTFE : 41.0 mm
Lens Antenna PEEK : 35.0 mm

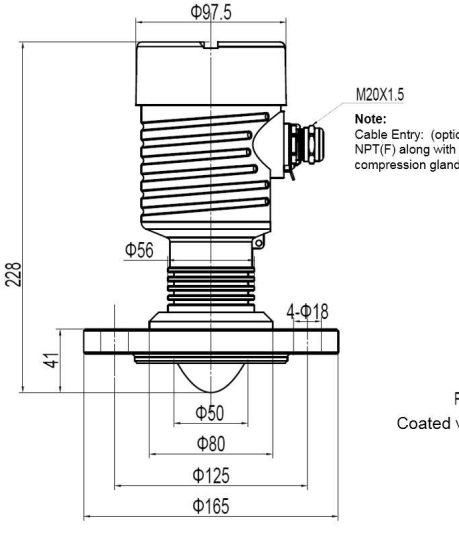
ANL-9080N50-1 Thread G2-1/4 / PTFE/PEEK / Single Chamber

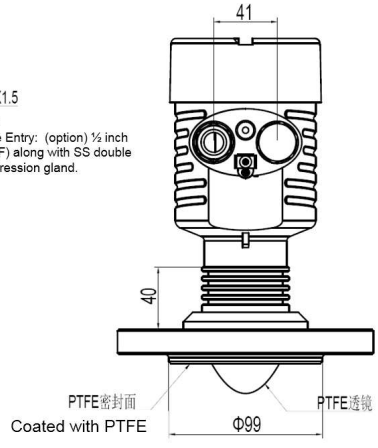


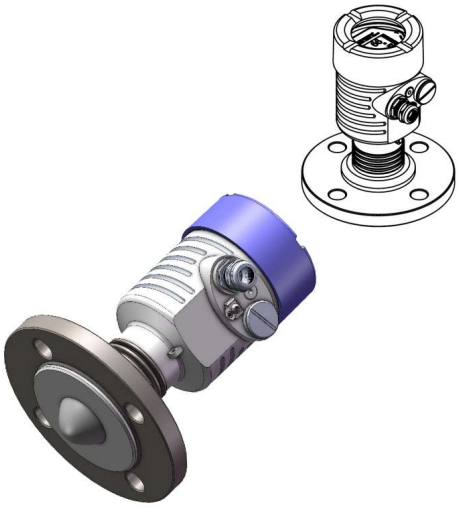




ANL-9080N50-2 DN50 / PTFE/PEEK / Single Chamber







ANL-9080N50-3 Anti-corrosion / DN50 / PTFE / Single Chamber

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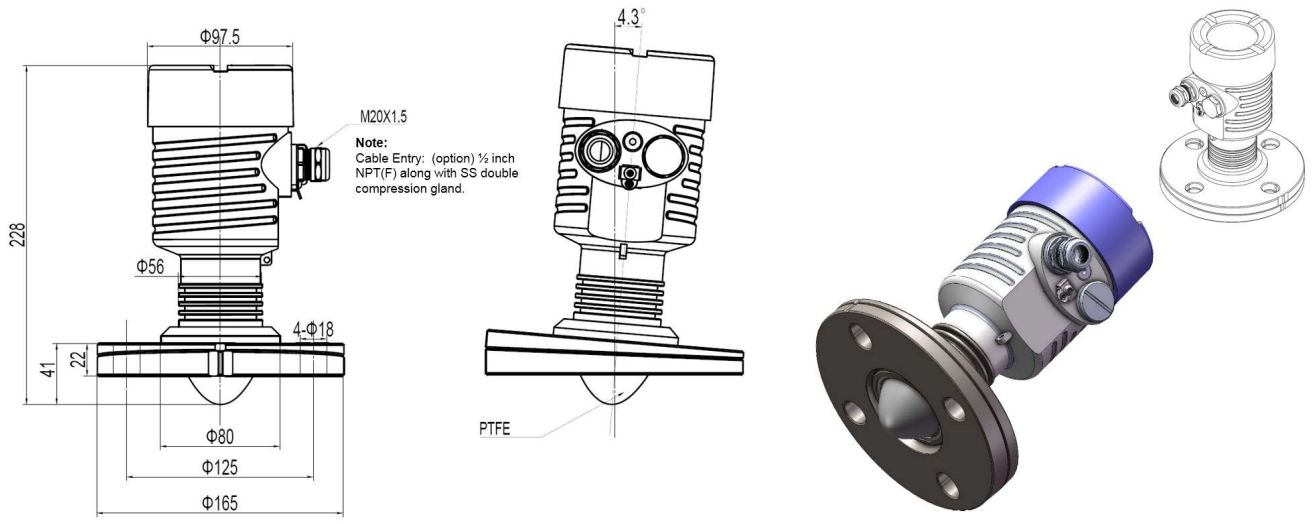
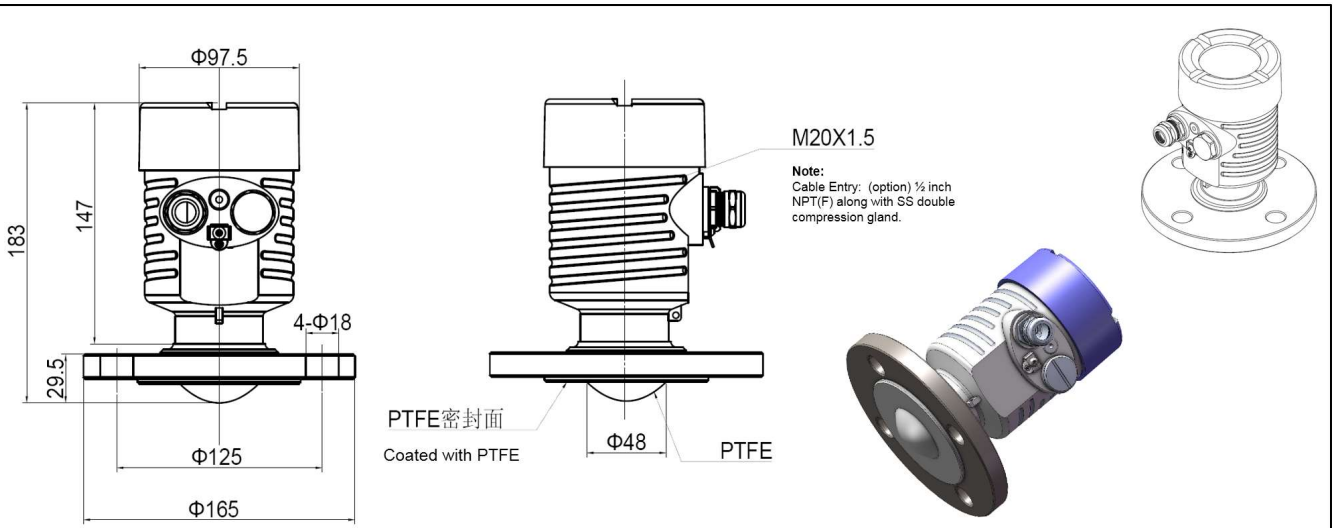
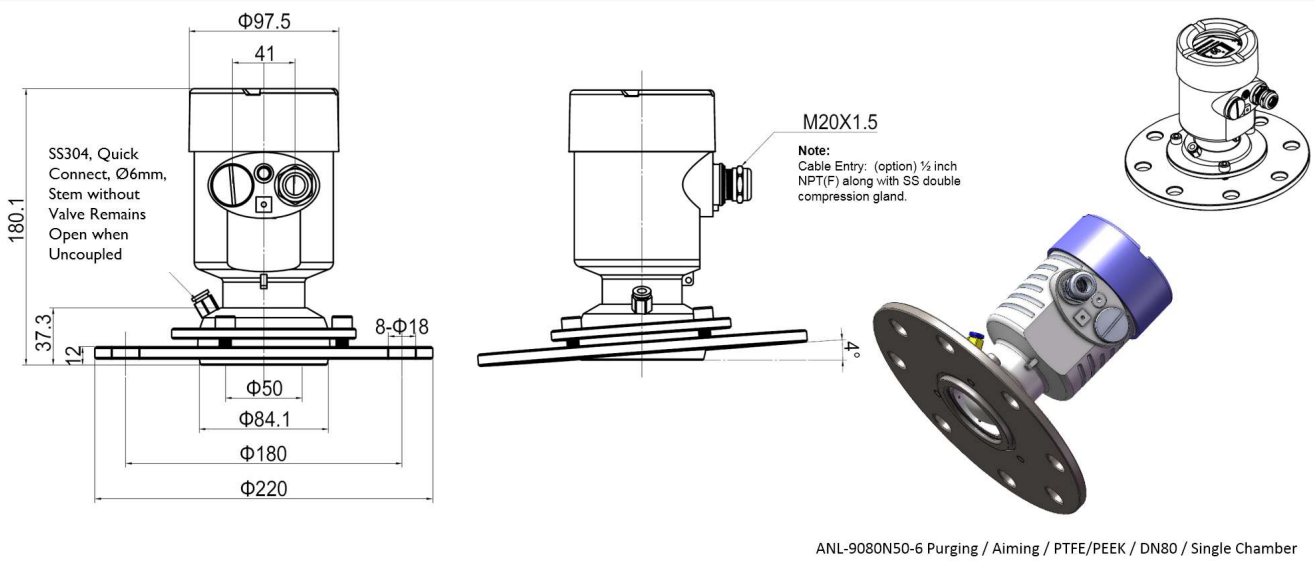


ANL-9080N50-4 Aiming / DN50 / PTFE/PEEK / Single Chamber



ANL-9080N50-5 Anti-corrosion / PTFE / DN50 / Single Chamber



ANL-9080N50-6 Purging / Aiming / PTFE/PEEK / DN80 / Single Chamber

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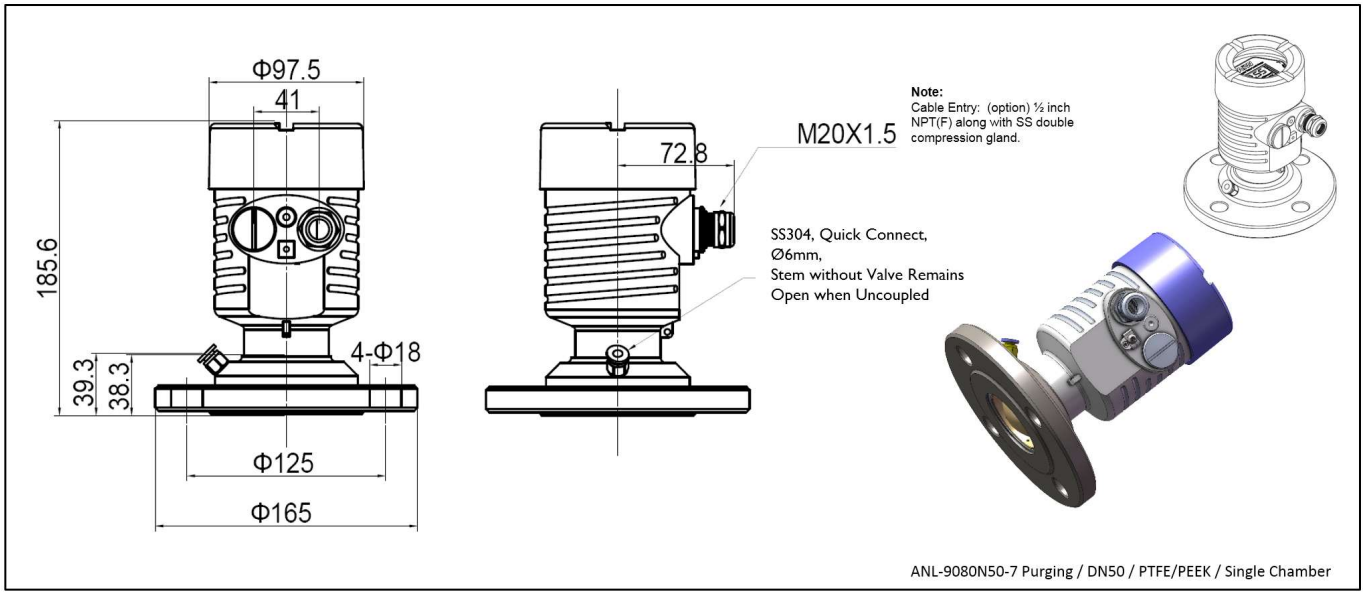
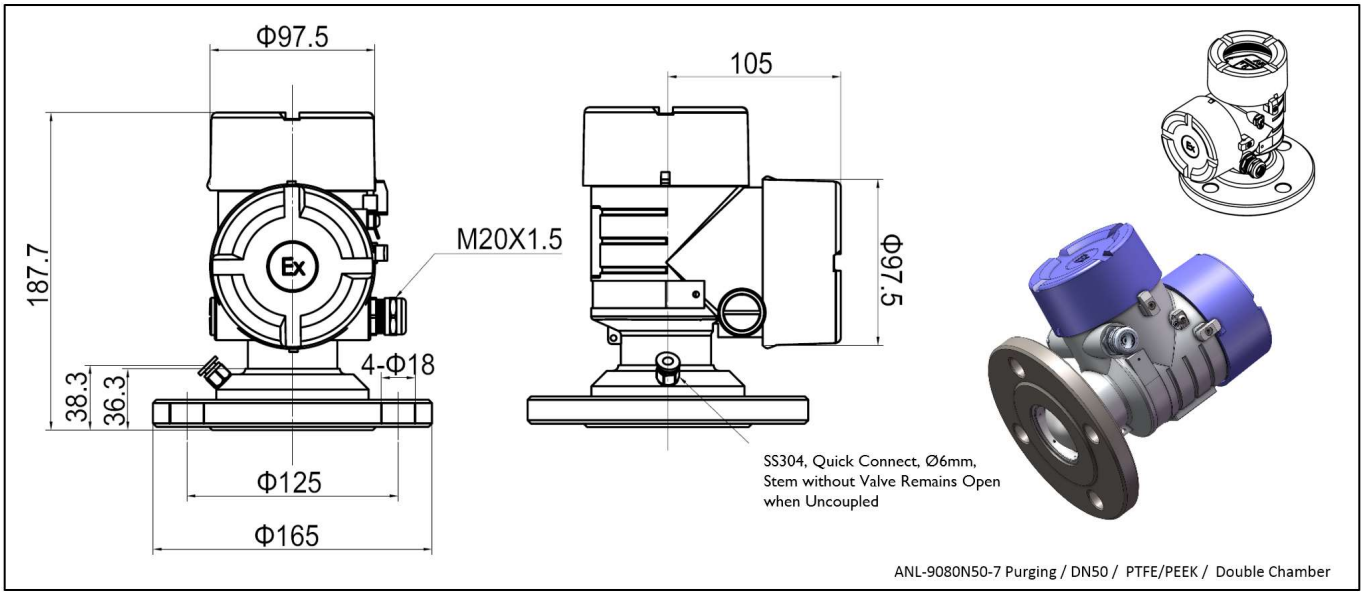
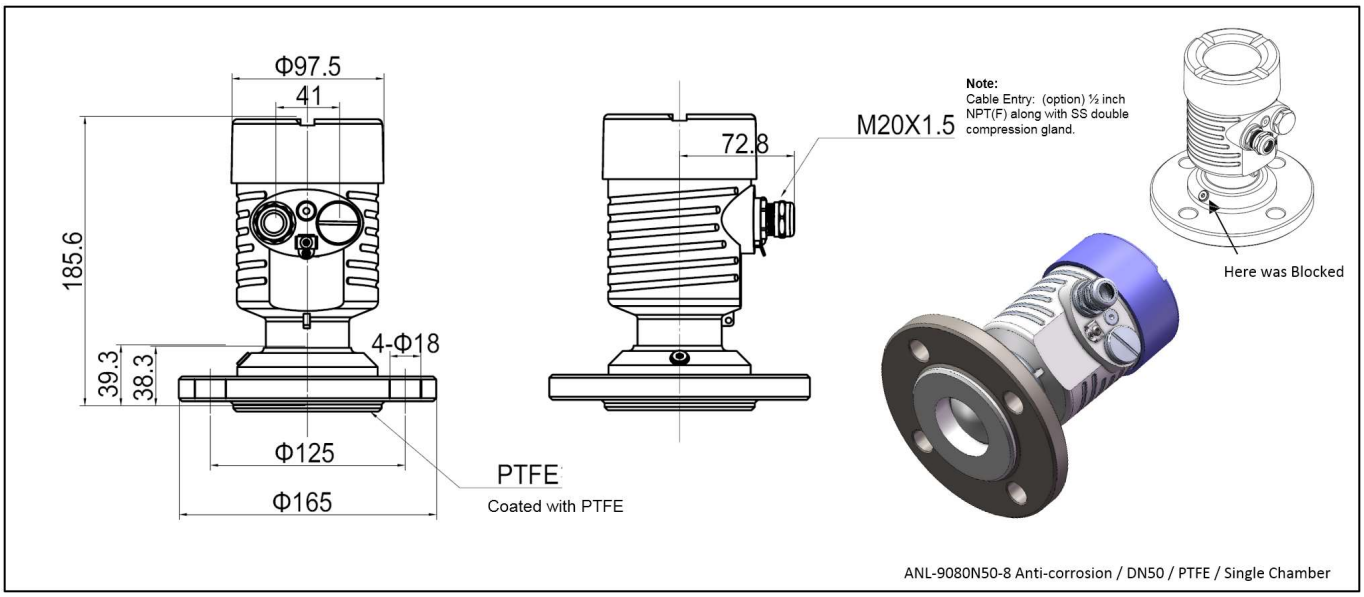


ANL-9080N50-7 Purging / DN50 / PTFE/PEEK / Single Chamber



ANL-9080N50-7 Purging / DN50 / PTFE/PEEK / Double Chamber



ANL-9080N50-8 Anti-corrosion / DN50 / PTFE / Single Chamber

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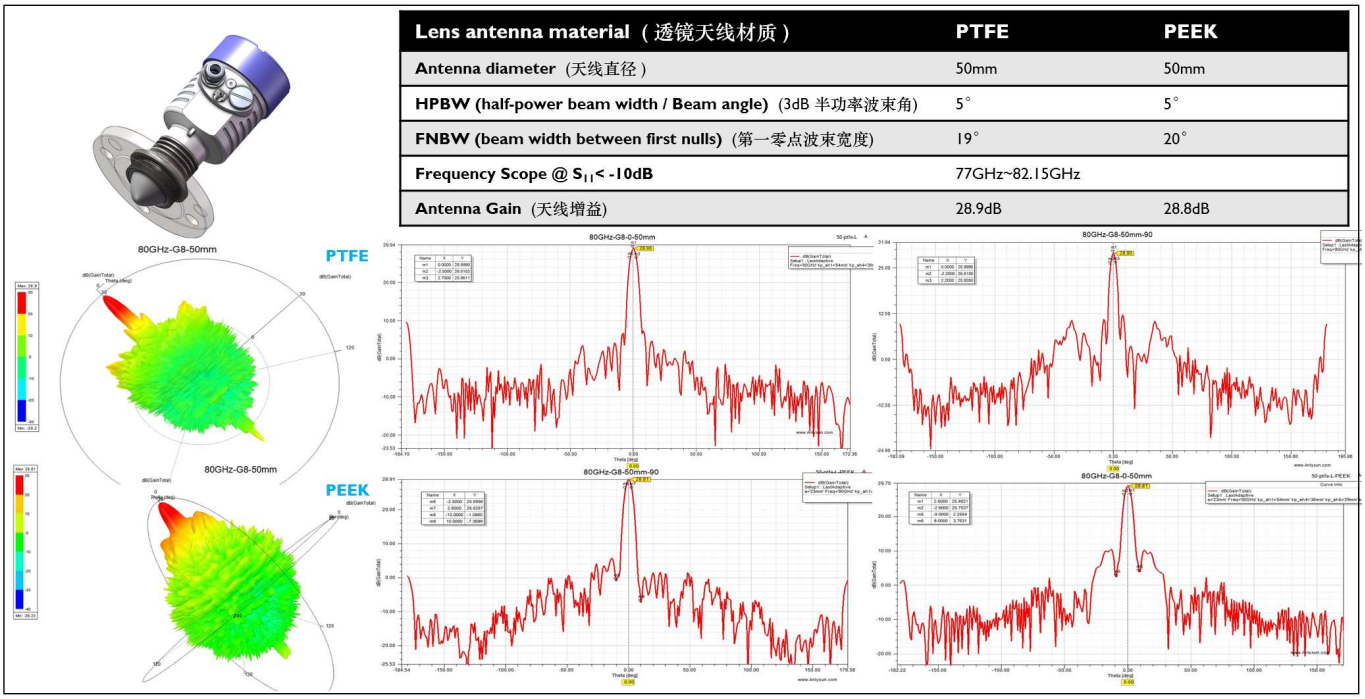
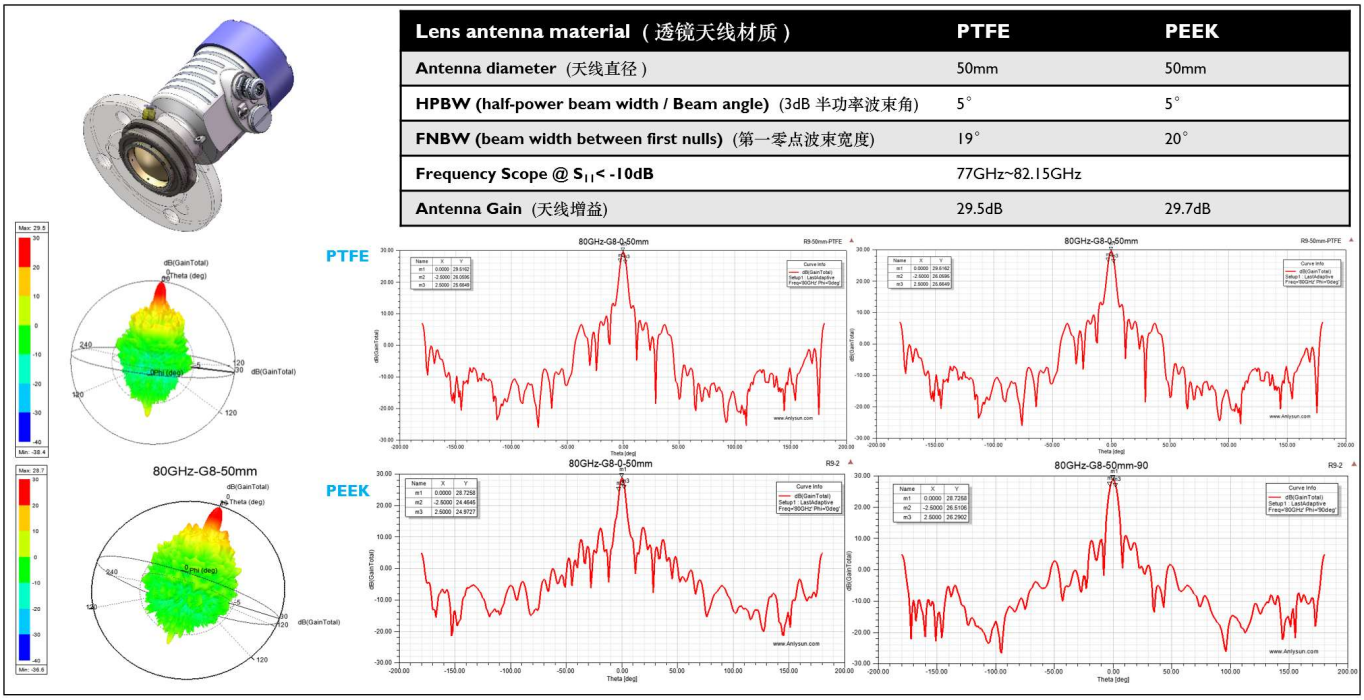
The Radar Antenna Specification of the ANL-9080N50

For ANL-9080N50-1, -2, -3, -4



Lens antenna material（透镜天线材质）	PTFE	PEEK
Antenna diameter（天线直径）	50mm	50mm
HPBW (half-power beam width / Beam angle)（3dB 半功率波束角）	5°	5°
FNBW (beam width between first nulls)（第一零点波束宽度）	19°	20°
Frequency Scope @ S_{11}< -10dB	77GHz~82.15GHz	
Antenna Gain（天线增益）	28.9dB	28.8dB

For ANL-9080N50-5, -6, -7, -8



Lens antenna material（透镜天线材质）	PTFE	PEEK
Antenna diameter（天线直径）	50mm	50mm
HPBW (half-power beam width / Beam angle)（3dB 半功率波束角）	5°	5°
FNBW (beam width between first nulls)（第一零点波束宽度）	19°	20°
Frequency Scope @ S_{11}< -10dB	77GHz~82.15GHz	
Antenna Gain（天线增益）	29.5dB	29.7dB

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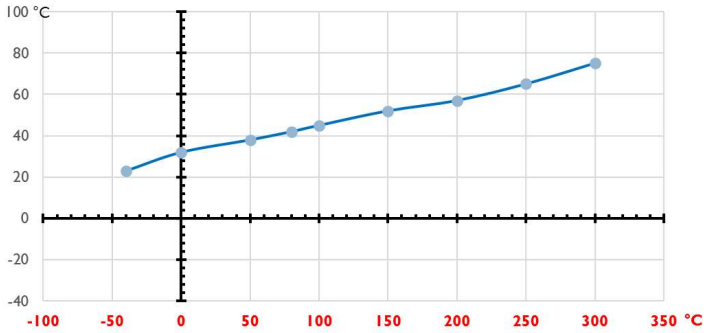
Thermal simulation graph for the ANL-9080N50

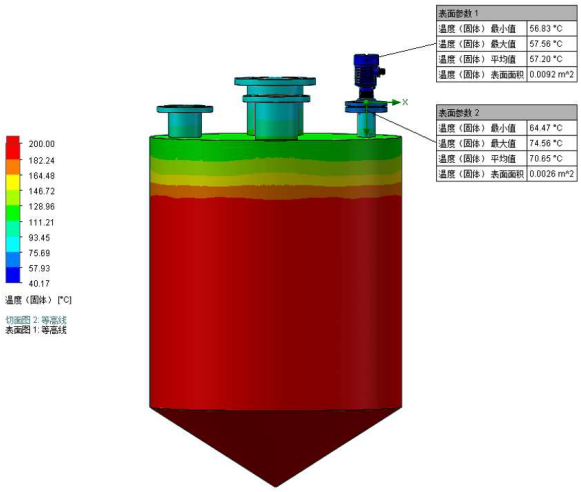
Start Ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: Flange height ≥40 cm from the material level in tank
(including nozzle height)

Model simulation analysis:
This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 °C Celsius degrees. It's a dynamic thermal equilibrium to be reached.

Ambient temperature - Process temperature



The Medium Max.Temp. @ inside tank: 200 °C

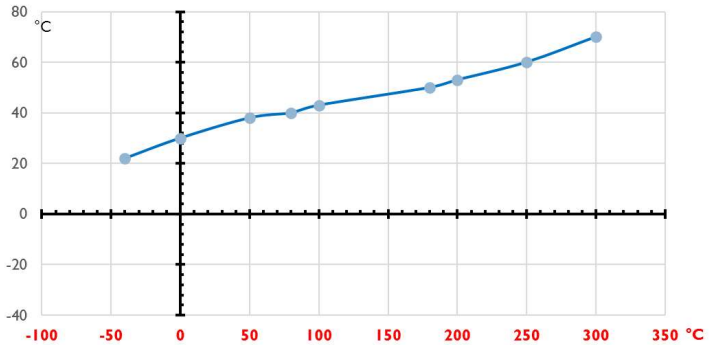


ANL-9080N50-2

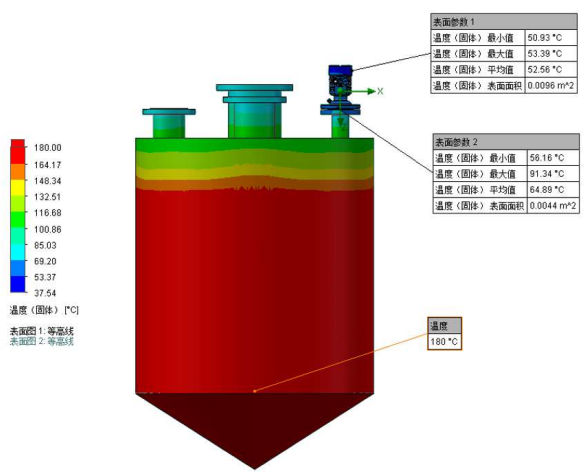
Start Ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: Flange height ≥40 cm from the material level in tank
(including nozzle height)

Model simulation analysis:
This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 °C Celsius degrees. It's a dynamic thermal equilibrium to be reached.

Ambient temperature - Process temperature



The Medium Max.Temp. @ inside tank: 180 °C



ANL-9080N50-7

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ANL-9080N80 Regular version

Non-contact Radar Level Transmitter Datasheets

Version V.2024

Characteristics

- 80GHz Frequency FMCW radar system.
- Measurement application in liquids, solids, the nozzle diameter >=80 mm.
- Suitable for stirred vessel (agitator blade) multistage applications, with aiming, purging and anti-corrosion.

Specifications

ANL-9080N80	Lens material PTFE	Lens material PEEK	N60 (cool version)
Max. measuring range	100M	100M	100M
Tx/Rx frequency	Tx/Rx frequency 76.2 to 80.2GHz Dynamic FM Sweep Bandwidth 1~4GHz (The adjustment FM range can be customized according to the ISM requirements of the customer's region)		
Near blind spot	< 100mm from the flange down surface		
Meas. Principle	FMCW Radar System		
Lens Antenna Medium	PTFE Φ80mm	PEEK Φ80mm	PEEK Φ80mm
Antenna beam / Gain	Beam angle 4.5°/ Gain 31.9dB	Beam angle 4.0°/ Gain 30.5dB	
Meas. Resolution	0.1mm (<10m range)		
Meas. Accuracy	±2 mm		
Ambient temperature	-40 … +85 °C		-60 … +105 °C
Process temperature	-40°C … +200°C, -60°C … +300°C (with Belt Cooling Neck)	-60°C … +200°C, -60°C … +300°C (with Belt Cooling Neck)	
Process pressure	-0.2 ~ +0.5MPa	-1.0 ~ +3.5MPa	
Process connection	Flanges >= DN80		
Signal output	4-20 mA/HART7 2-wire, 4-20 mA/HART7 4-wire, Profibus PA / DP, Ethernet-APL, Modbus protocol 4-wire		
Variables influencing meas. accuracy	Specifications for the digital measured value Temperature drift - Digital output: ±1mm/10K relating to the max. measuring range or max. 15 mm Additional deviation through electromagnetic interference acc. to EN-61326: < ±10 mm Specifications apply also to the current output Temperature drift - Current output: ±0.01%/10K relating to the 16.7 mA span or max. ±0.15% Deviation in the current output due to digital/analogue conversion Non-Ex and Ex-ia version: < ±1μA; Ex-d-ia version: < ±1μA Additional deviation through electromagnetic interference acc. to EN-61326: < ±150μA		
Indication/Adjustment (LOI)	7. 160x80 LCD FSTN RGB backlight monitor adapter with keyboard module, operation Temp. -20°C … 70°C. or 128x64 OLED monitor adapter with keyboard module, operation Temp. -55°C … 80°C. (option) or 230x240 LCD TFT colors monitor adapter with keyboard module, operation Temp. -20°C … 70°C. (option only for 4-wrie system) 8. (APP) Radar MobileManager via BT wireless connection 9. (PC software) Radar PCManager /or Via a PC with PACTware/DTM (an interface converter AiW-305 USB CONNECT is required)		
Power supply	16V ~ 40 VDC / Load resistor > 600Ω		
Wireless communication	Bluetooth 5.0 (Bluetooth 4.0 LE compatible), communication range 40m, in rainy day 20m		
Approvals	Ex ia IIC T6 Ga IP67; Ex d IIC T6 Gb IP67		
Housing	Single chamber / Double chamber, Aluminum / Stainless steel / Plastic PBT, IP66 / IP67 / IP68		
Applications	liquids, solids, high-temperature applications		

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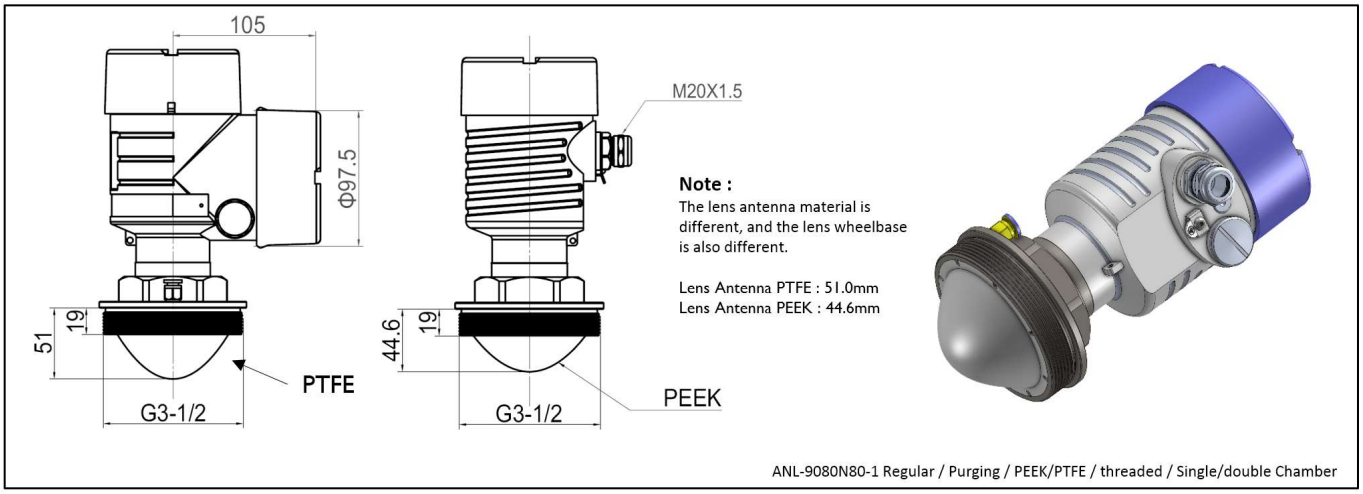
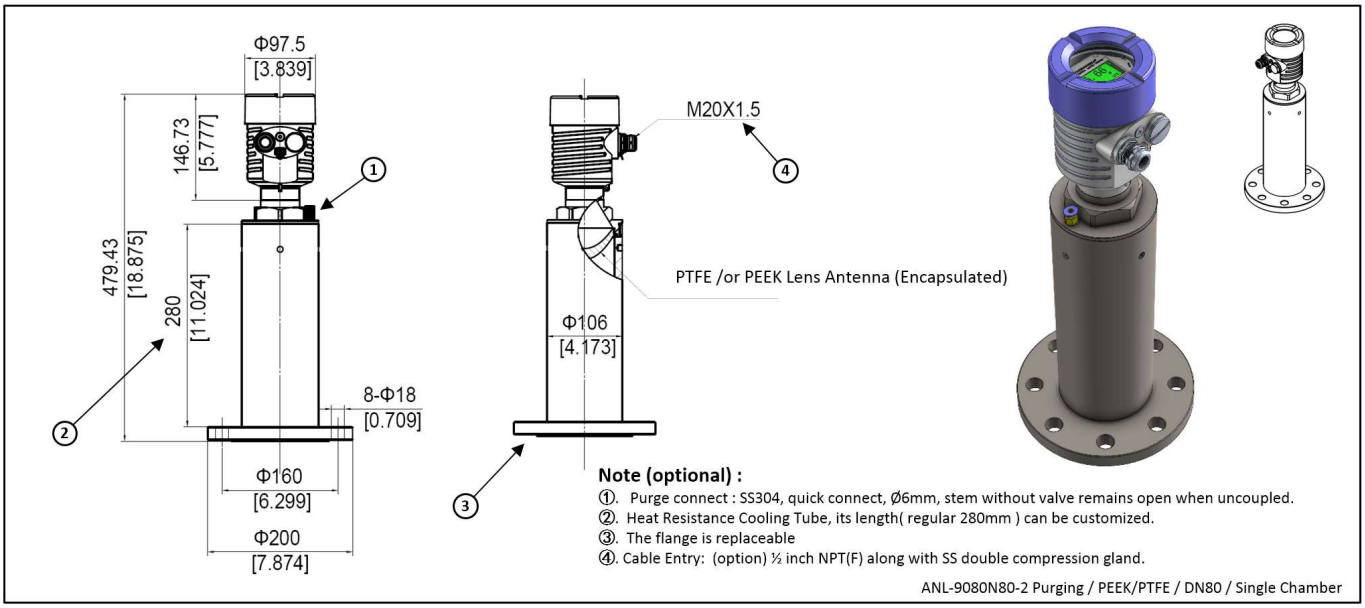
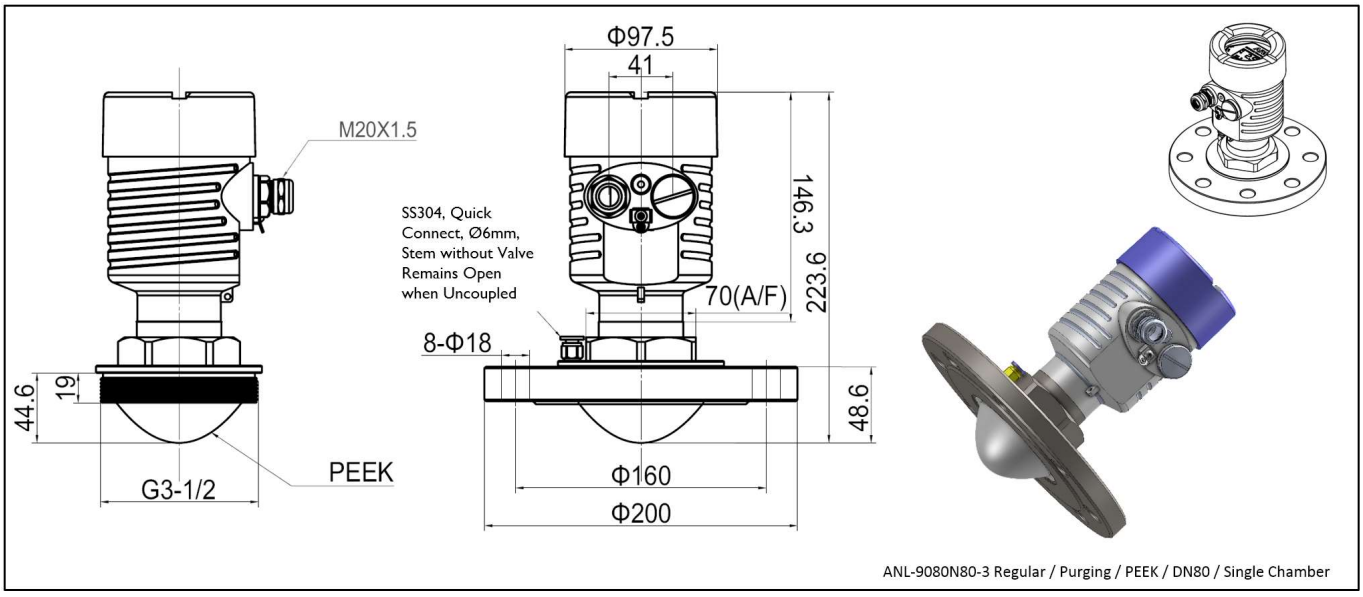


ANL-9080N80-1 Regular / Purging / PEEK/PTFE / threaded / Single/double Chamber



ANL-9080N80-2 Purging / PEEK/PTFE / DN80 / Single Chamber



ANL-9080N80-3 Regular / Purging / PEEK / DN80 / Single Chamber

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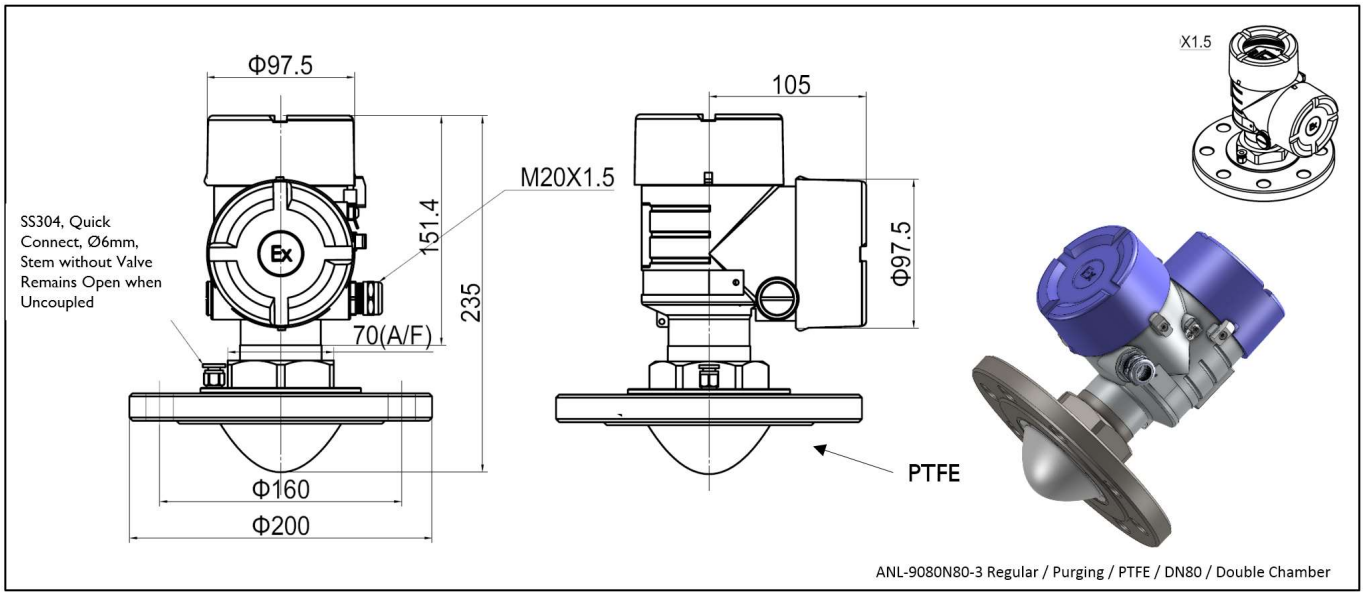
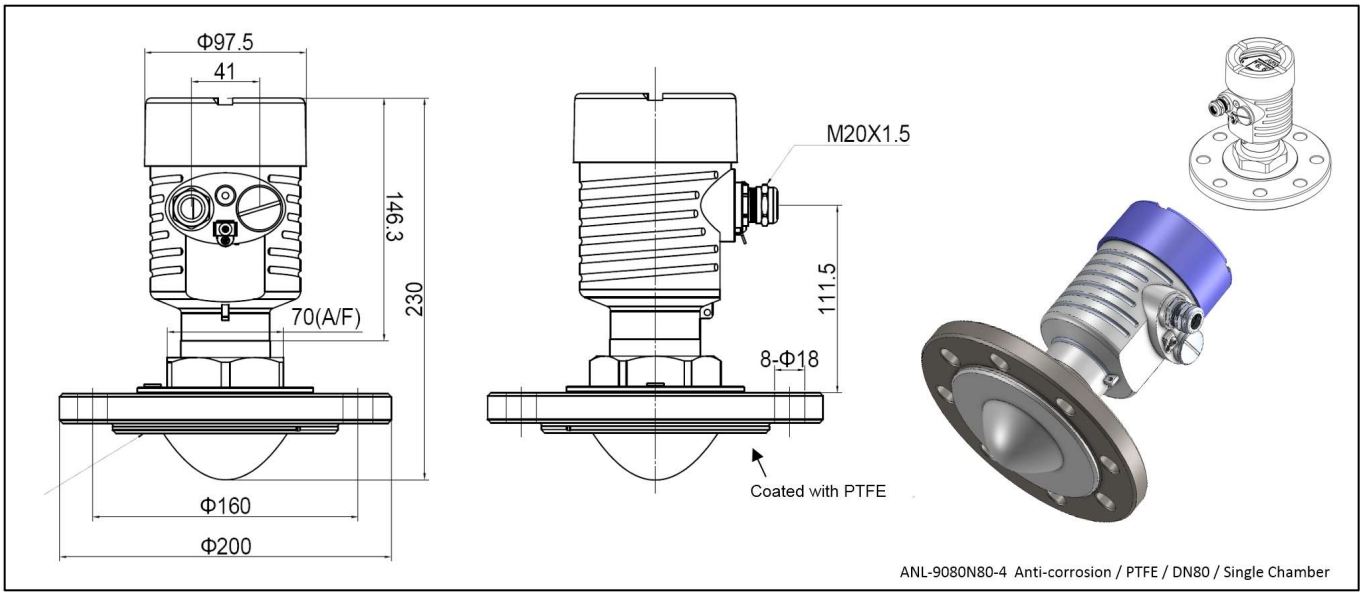
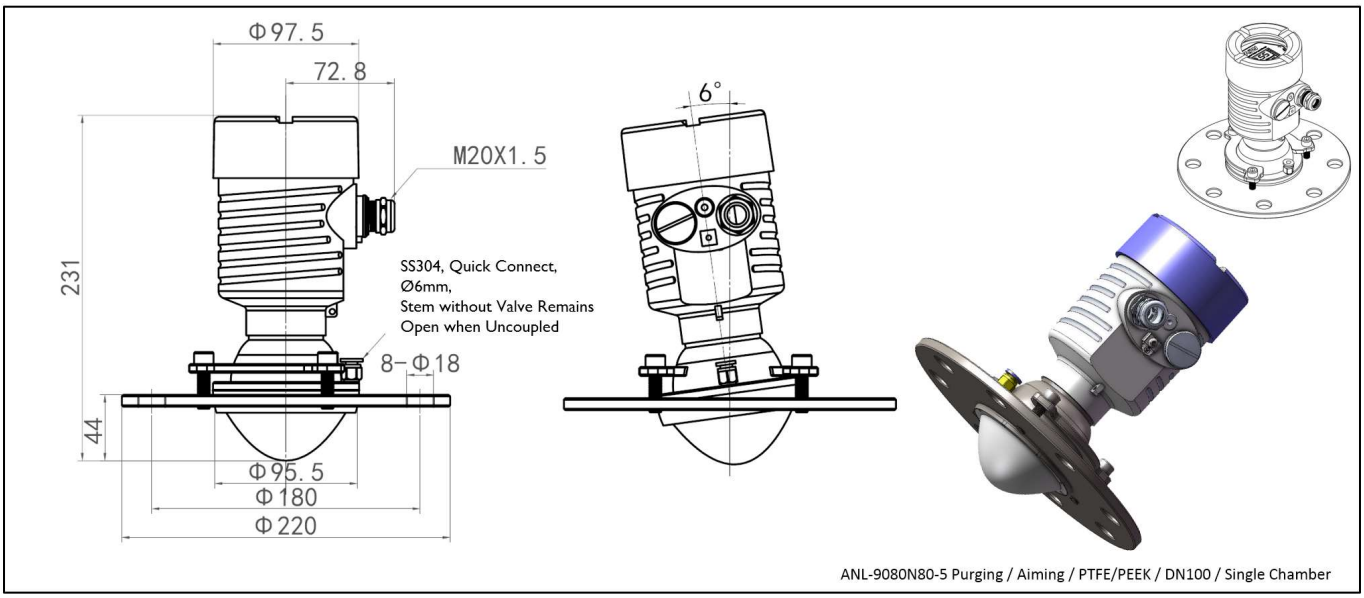


ANL-9080N80-3 Regular / Purging / PTFE / DN80 / Double Chamber



ANL-9080N80-4 Anti-corrosion / PTFE / DN80 / Single Chamber



ANL-9080N80-5 Purging / Aiming / PTFE/PEEK / DN100 / Single Chamber

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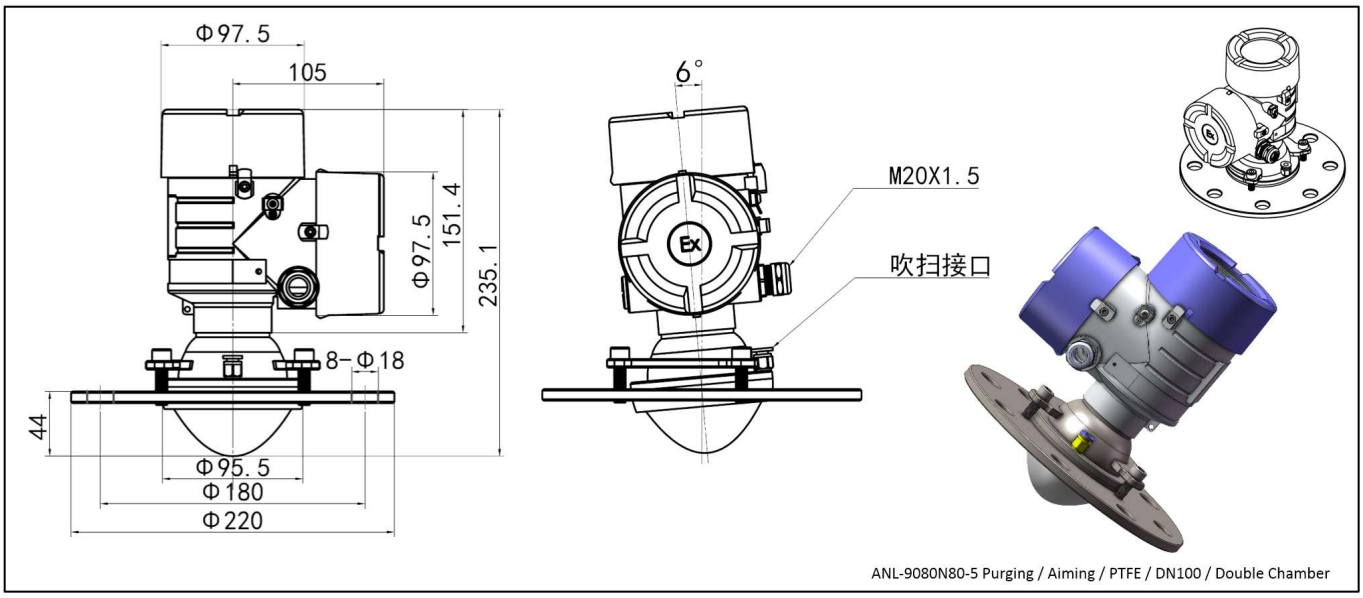
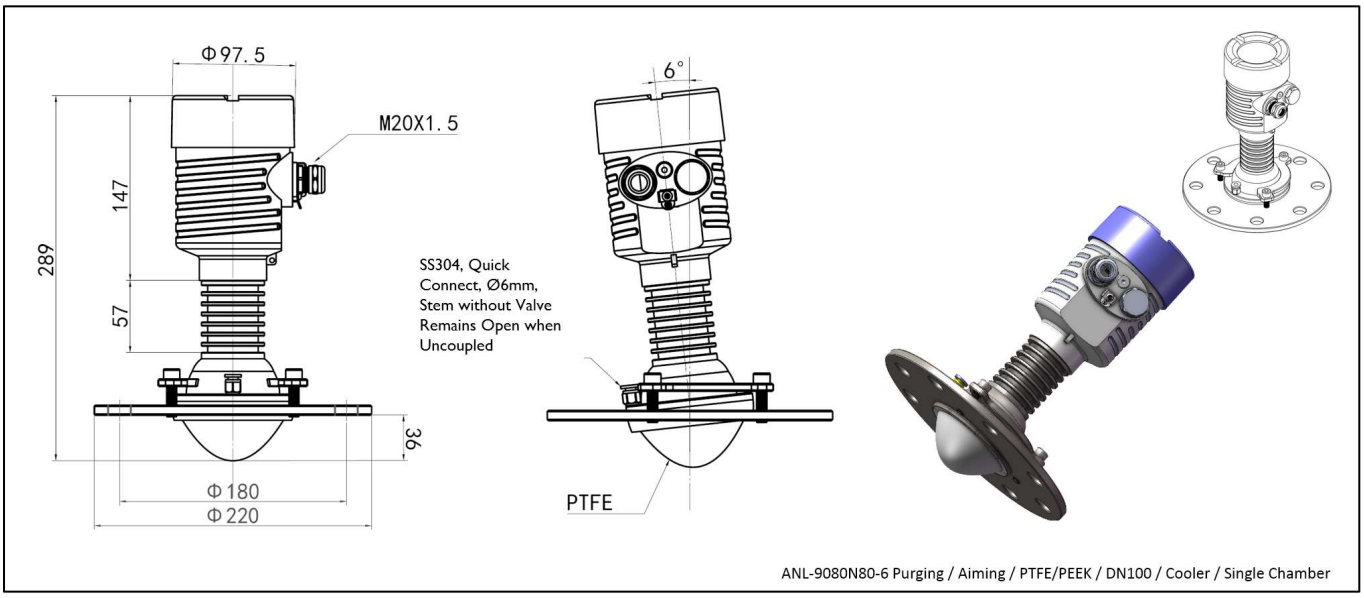
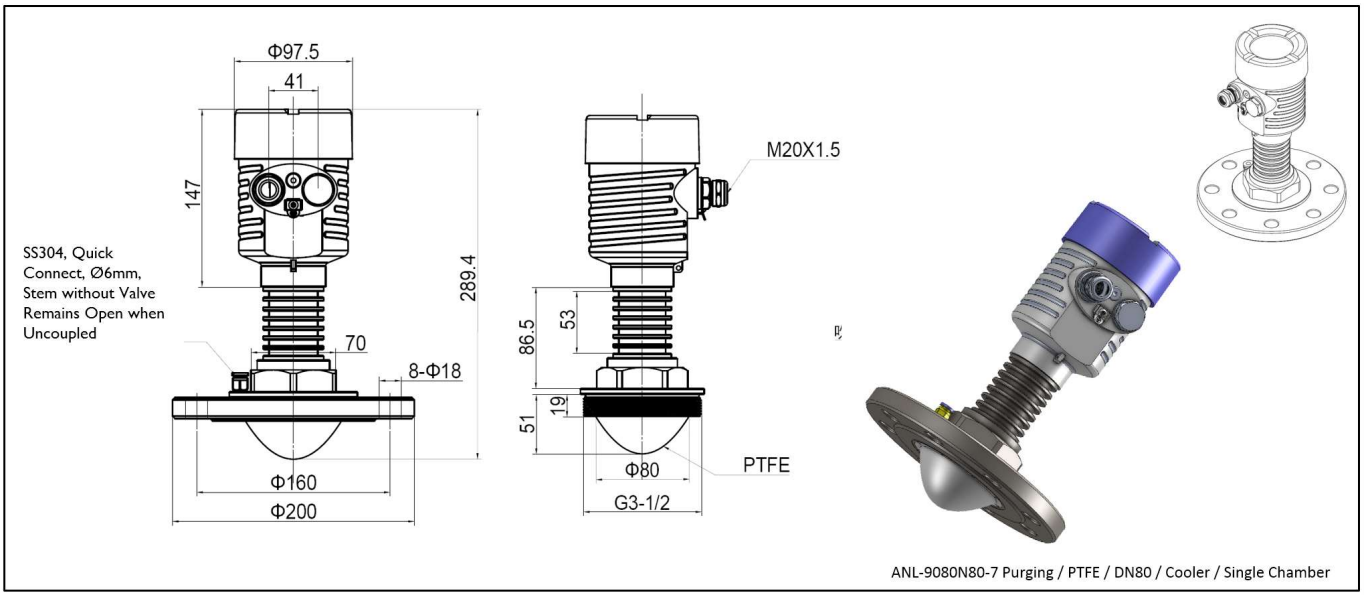


ANL-9080N80-5 Purging / Aiming / PTFE / DN100 / Double Chamber



ANL-9080N80-6 Purging / Aiming / PTFE/PEEK / DN100 / Cooler / Single Chamber



ANL-9080N80-7 Purging / PTFE / DN80 / Cooler / Single Chamber

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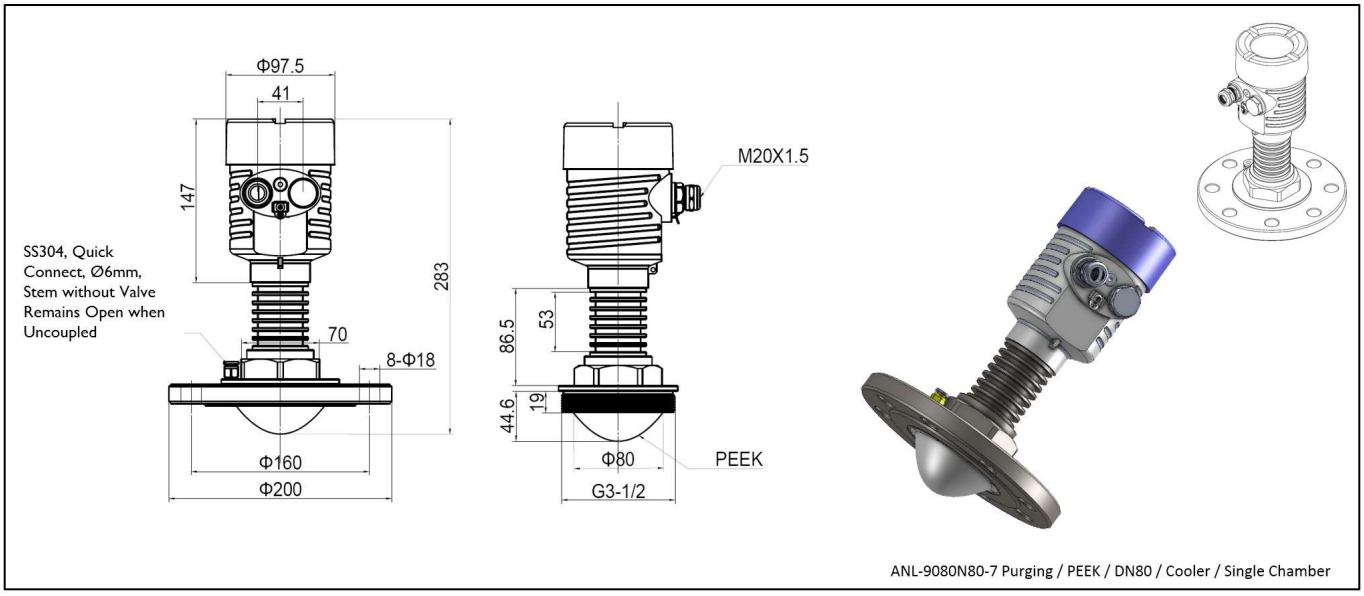

TEL: (86)591-83850480/1
FAX: (86)591-83850481
EMAIL: master@anlysun.com
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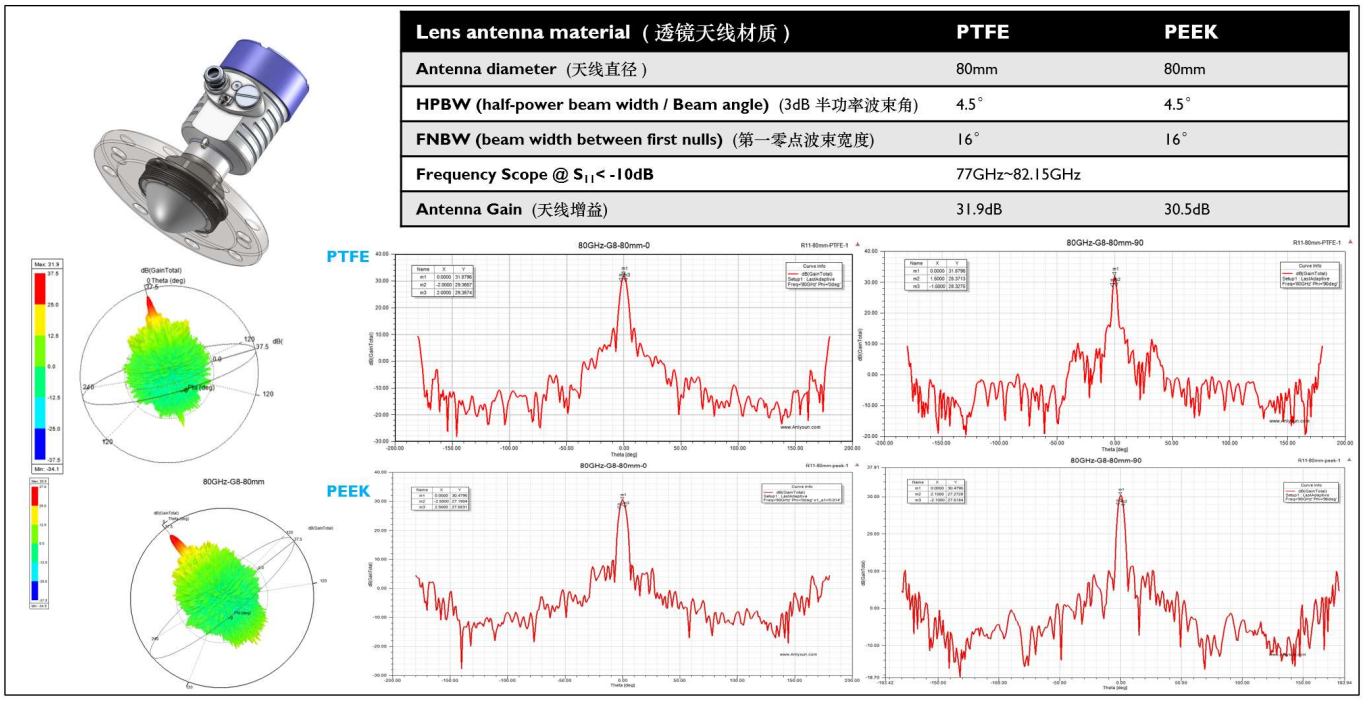
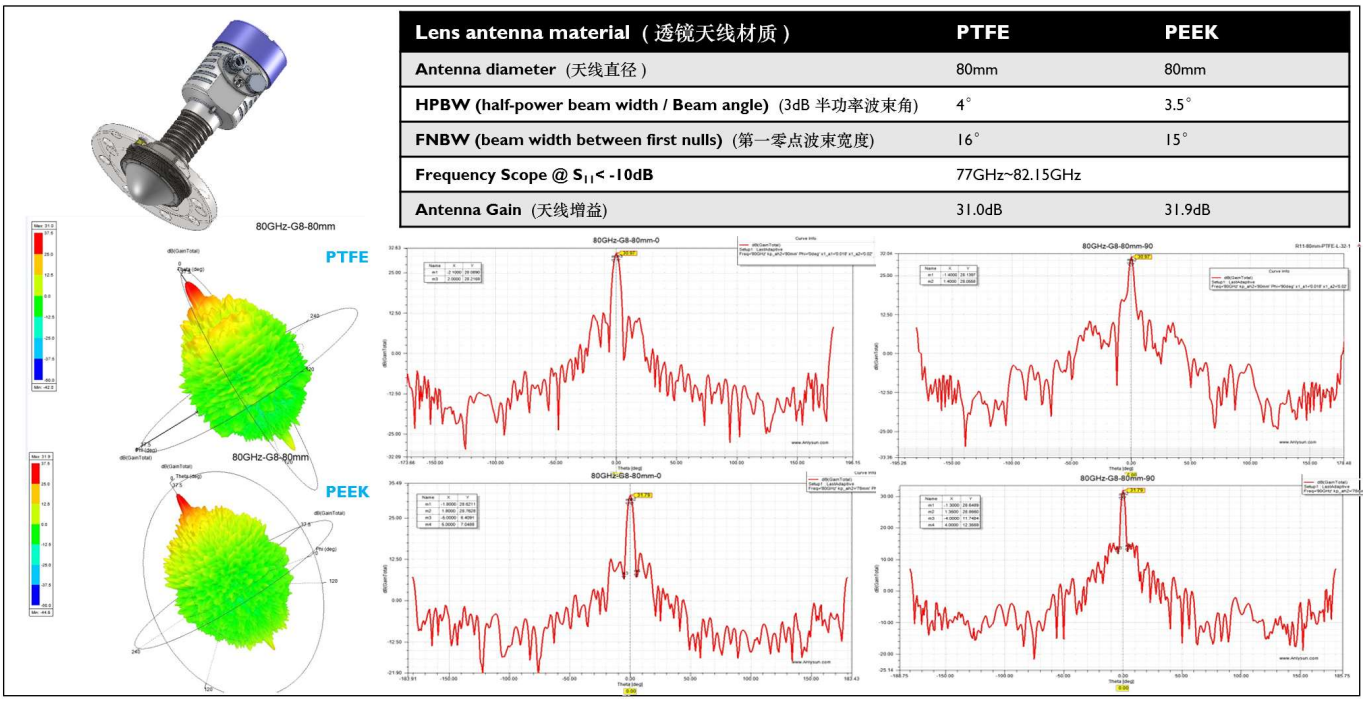
The Radar Antenna Specification of the ANL-9080-2

For ANL-9080N80-1, -2, -3, -4, -5



Lens antenna material（透镜天线材质）	PTFE	PEEK
Antenna diameter（天线直径）	80mm	80mm
HPBW (half-power beam width / Beam angle)（3dB 半功率波束角）	4.5°	4.5°
FNBW (beam width between first nulls)（第一零点波束宽度）	16°	16°
Frequency Scope @ S_{11}< -10dB	77GHz~82.15GHz	
Antenna Gain（天线增益）	31.9dB	30.5dB

For ANL-9080N80-6, -7



Lens antenna material（透镜天线材质）	PTFE	PEEK
Antenna diameter（天线直径）	80mm	80mm
HPBW (half-power beam width / Beam angle)（3dB 半功率波束角）	4°	3.5°
FNBW (beam width between first nulls)（第一零点波束宽度）	16°	15°
Frequency Scope @ S_{11}< -10dB	77GHz~82.15GHz	
Antenna Gain（天线增益）	31.0dB	31.9dB

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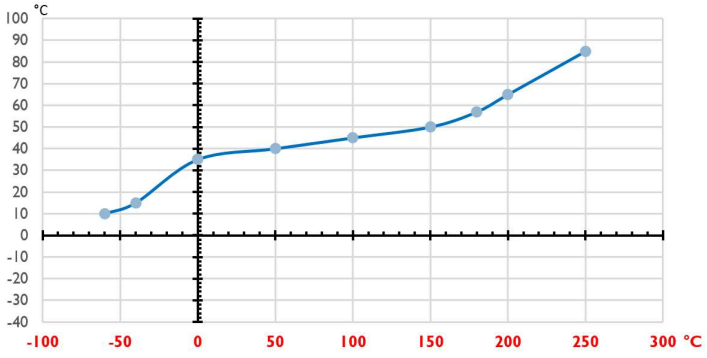
Thermal simulation graph for the ANL-9080N80

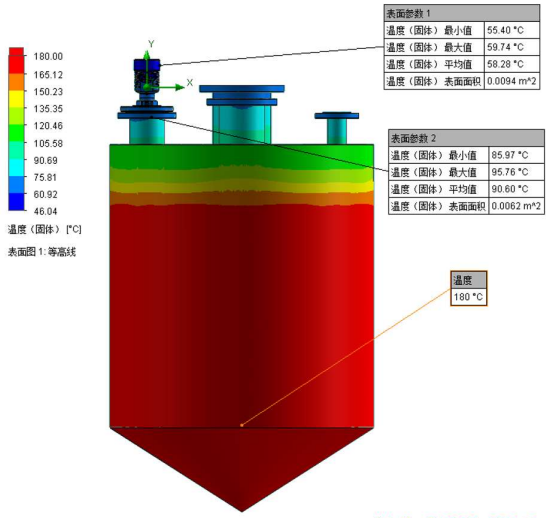
Start Ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: (including nozzle height) Flange height ≥40 cm from the material level in tank

Model simulation analysis:
This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 ℃ Celsius degrees. It's a dynamic thermal equilibrium to be reached.

Cavity temperature .vs. Process temperature



The Medium Max.Temp. @ inside tank: 200 °C

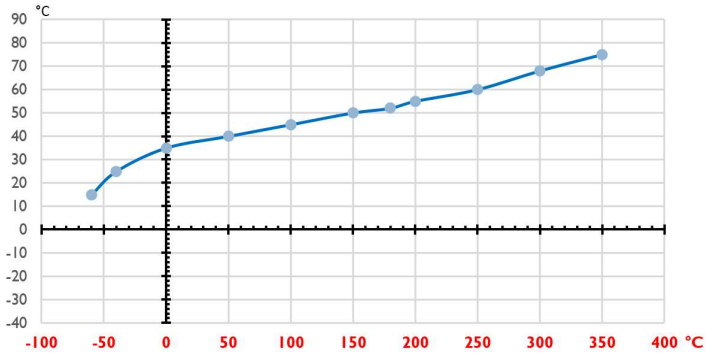


ANL-9080N80-3

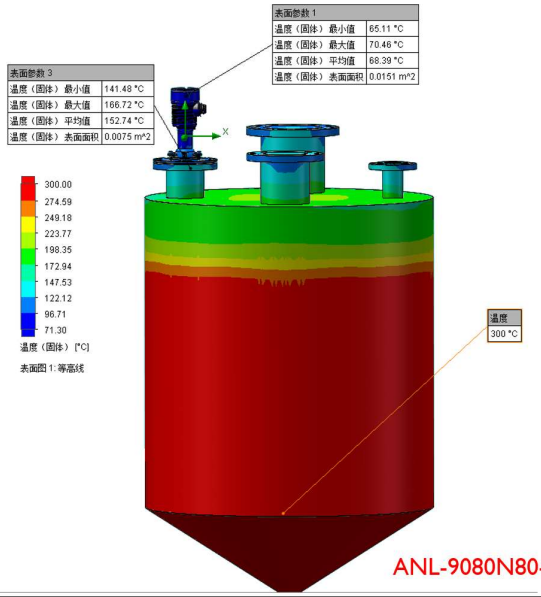
Start Ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: (including nozzle height) Flange height ≥40 cm from the material level in tank

Model simulation analysis:
This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 ℃ Celsius degrees. It's a dynamic thermal equilibrium to be reached.

Cavity temperature .vs. Process temperature



The Medium Max.Temp. @ inside tank: 300 °C



ANL-9080N80-6

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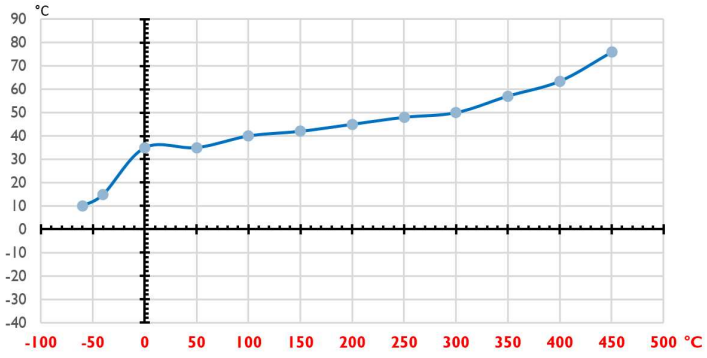
Start Ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: (including nozzle height) Flange height ≥40 cm from the material level in tank

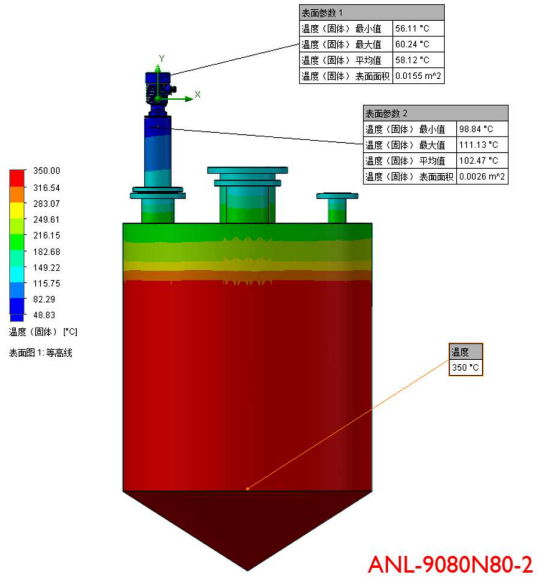
Model simulation analysis:

This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 ℃ Celsius degrees. It's a dynamic thermal equilibrium to be reached.

Cavity temperature ***.vs.*** *Process temperature*



The Medium Max.Temp. @ inside tank: 450 °C



ANL-9080N80-2

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ANL-9080N100 regular version

Non-contact Radar Level Transmitter Datasheets

Version V.2024

Characteristics

- 80GHz Frequency FMCW radar system.
- Measurement application in liquids, solids, the nozzle diameter >=100 mm.
- Suitable for dust applications, also the liquid which be heated with steam.

Specifications

ANL-9080N100	Lens material PTFE	Lens material PEEK	N60 (cool version)
Max. measuring range	100M	100M	100M
Tx/Rx frequency	Tx/Rx frequency 76.2 to 80.2GHz Dynamic FM Sweep Bandwidth 1~4GHz (The adjustment FM range can be customized according to the ISM requirements of the customer's region)		
Near blind spot	< 100mm from the flange down surface		
Meas. Principle	FMCW Radar System		
Lens Antenna Medium	PTFE Φ100mm	PEEK Φ100mm	PEEK Φ100mm
Antenna beam / Gain	Beam angle 3.5°/ Gain 31.51dB	Beam angle 3.5°/ Gain 31.4dB	
Meas. Resolution	0.1mm (<10m range)		
Meas. Accuracy	±2 mm		
Ambient temperature	-40 … +85 °C		-60 … +105 °C
Process temperature	-40°C … +200°C	-60°C … +200°C	
Process pressure	-0.2 ~ +0.5MPa	-1.0 ~ +3.5MPa	
Process connection	Flanges >= DN100		
Signal output	4-20 mA/HART7 2-wire, 4-20 mA/HART7 4-wire, Profibus PA / DP, Ethernet-APL, Modbus protocol 4-wire		
Variables influencing meas. accuracy	Specifications for the digital measured value Temperature drift - Digital output: ±1mm/10K relating to the max. measuring range or max. 15 mm Additional deviation through electromagnetic interference acc. to EN-61326: < ±10 mm Specifications apply also to the current output Temperature drift - Current output: ±0.01%/10K relating to the 16.7 mA span or max. ±0.15% Deviation in the current output due to digital/analogue conversion Non-Ex and Ex-ia version: < ±1μA; Ex-d-ia version: < ±1μA Additional deviation through electromagnetic interference acc. to EN-61326: < ±150μA		
Indication/Adjustment (LOI)	10. 160x80 LCD FSTN RGB backlight monitor adapter with keyboard module, operation Temp. -20°C … 70°C. or 128x64 OLED monitor adapter with keyboard module, operation Temp. -55°C … 80°C. (option) or 230x240 LCD TFT colors monitor adapter with keyboard module, operation Temp. -20°C … 70°C. (option only for 4-wrie system) 11. (APP) Radar MobileManager via BT wireless connection 12. (PC software) Radar PCManager /or Via a PC with PACTware/DTM (an interface converter AiW-305 USB CONNECT is required)		
Power supply	16V ~ 40 VDC / Load resistor > 600Ω		
Wireless communication	Bluetooth 5.0 (Bluetooth 4.0 LE compatible), communication range 40m, in rainy day 20m		
Approvals	Ex ia IIC T6 Ga IP67; Ex d IIC T6 Gb IP67		
Housing	Single chamber / Double chamber, Aluminum / Stainless steel / Plastic PBT, IP66 / IP67 / IP68		
Applications	liquids, solids, dust applications		

SERVICE CONTACT: 86-13799977915, 86-18965063391(TECHNICAL SUPPORT), 86-18106067295(AFTER SALE SERVICE)
ALTHOUGH WE HAVE RECONCILED THE CONTENTS OF THE MANUAL WITH DESCRIPTION OF INSTRUMENT, THERE MAY STILL BE CHANGES WE CANNOT ENSURE THAT IT IS FULLY CONSISTENT. THE CONTENT WILL BE CHECKED AND CORRECTED IN AN ORDERLY, AND THE ERRATA WILL BE IN SUBSEQUENT RELEASES. WE WELCOME USERS TO MAKE VARIOUS SUGGESTIONS FOR IMPROVEMENT. [TECHNICAL DATA SUBJECT TO CHANGE]

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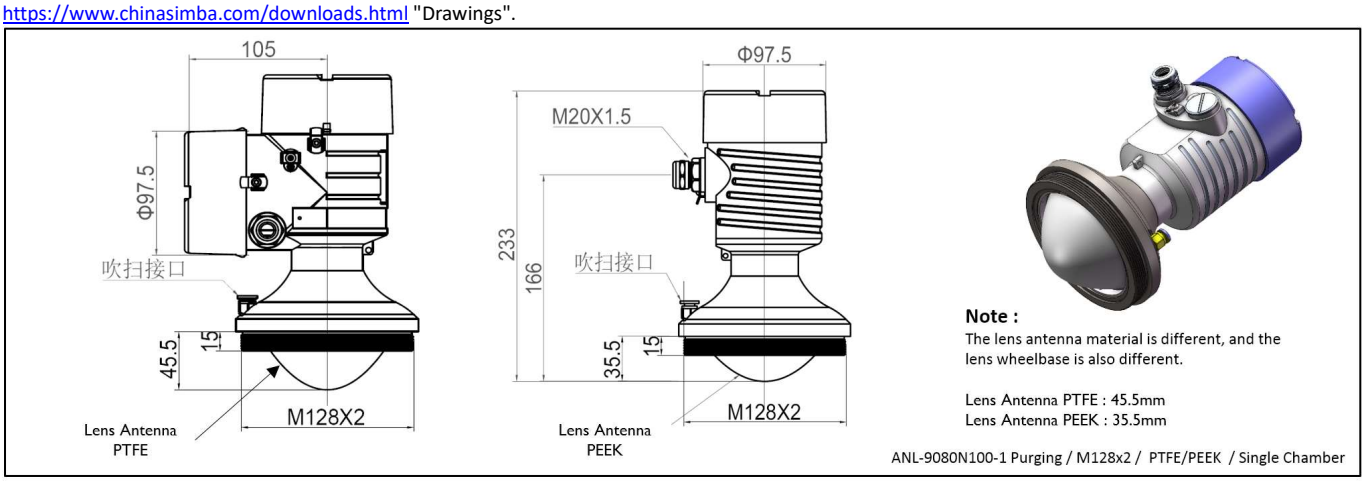
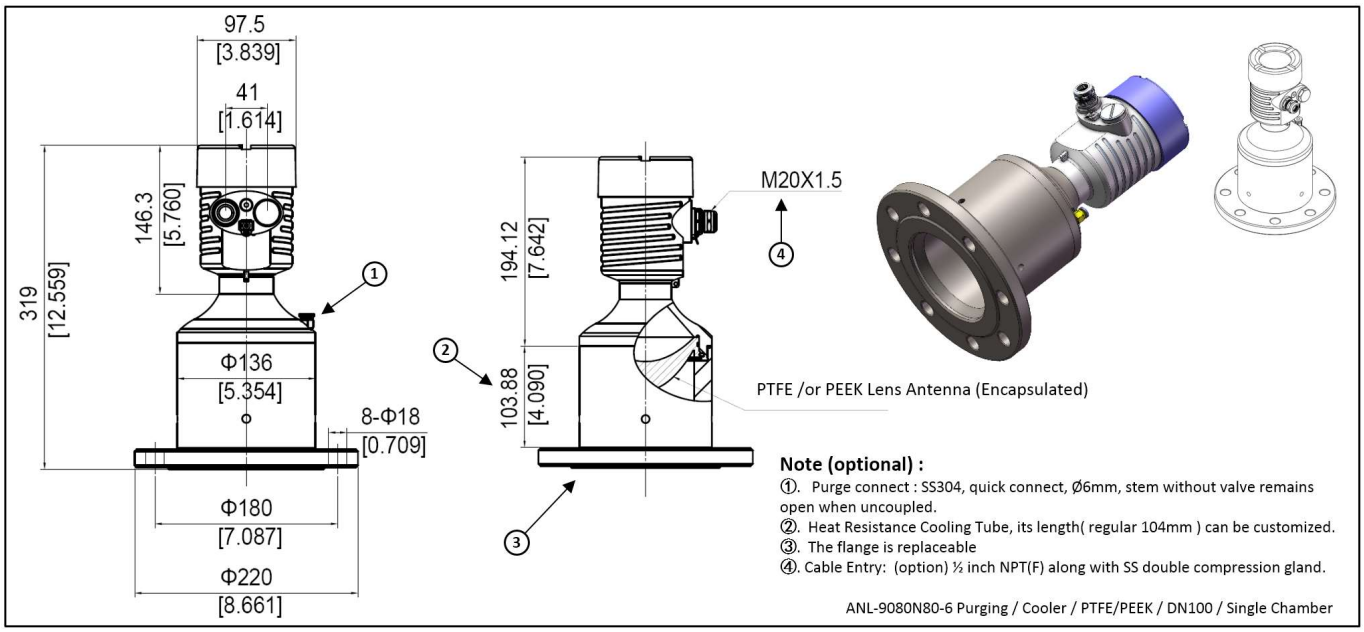
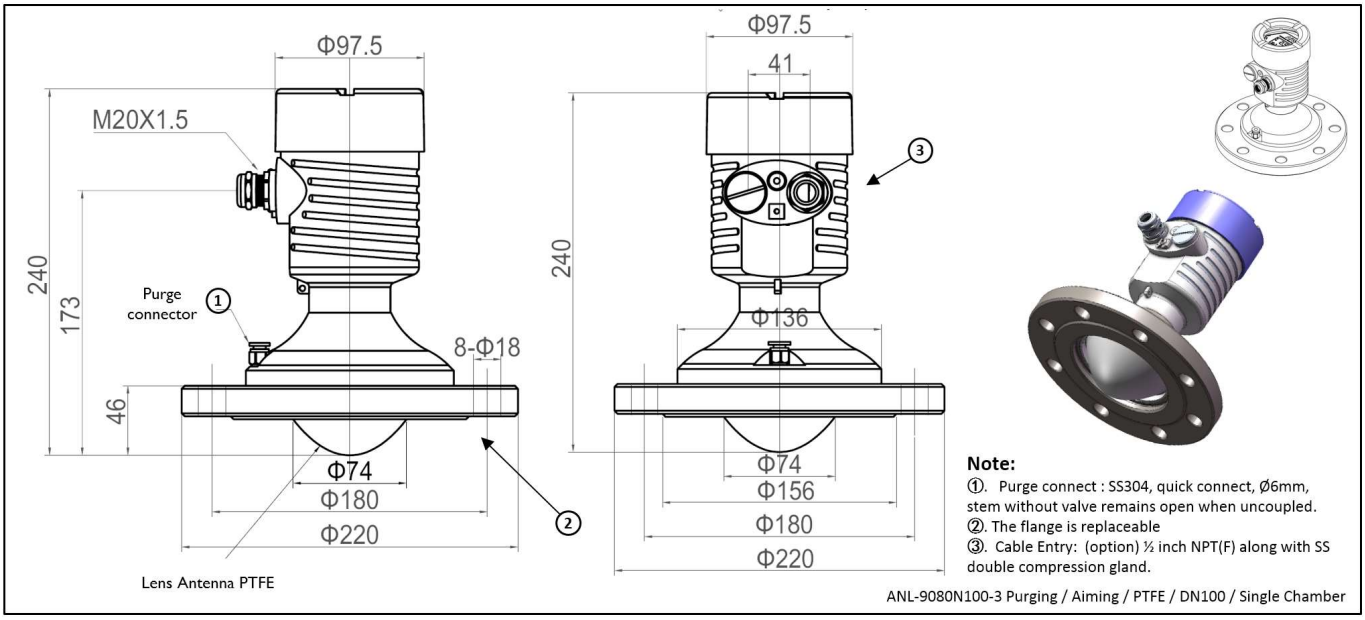
Dimensions

The following dimensional drawings represent only an extract of all possible versions. Detailed dimensional drawings can be downloaded at https://www.chinasimba.com/downloads.html "Drawings".







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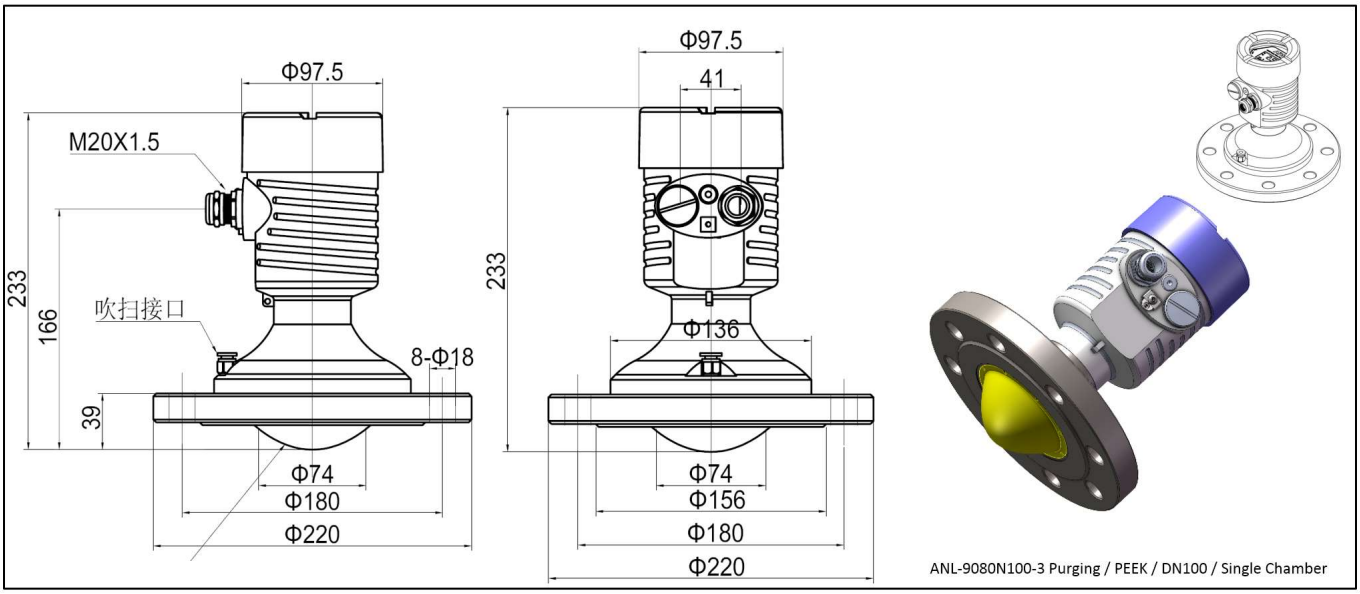
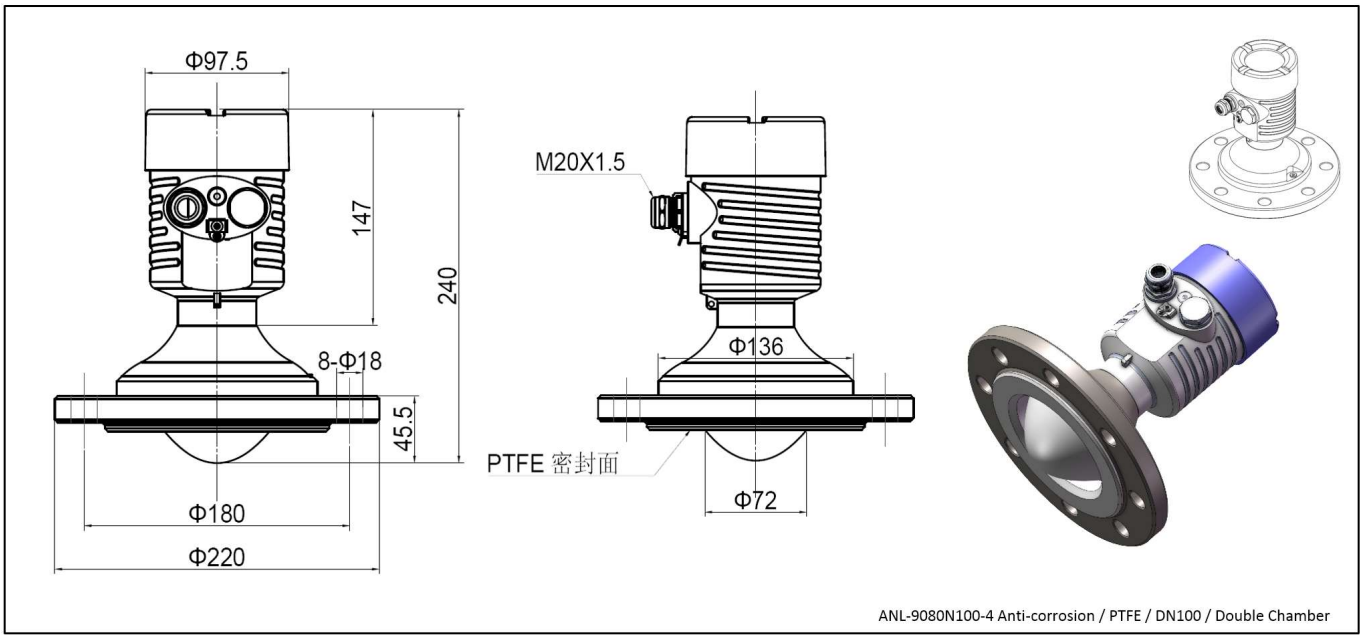


ANL-9080N100-3 Purging / PEEK / DN100 / Single Chamber



ANL-9080N100-4 Anti-corrosion / PTFE / DN100 / Double Chamber

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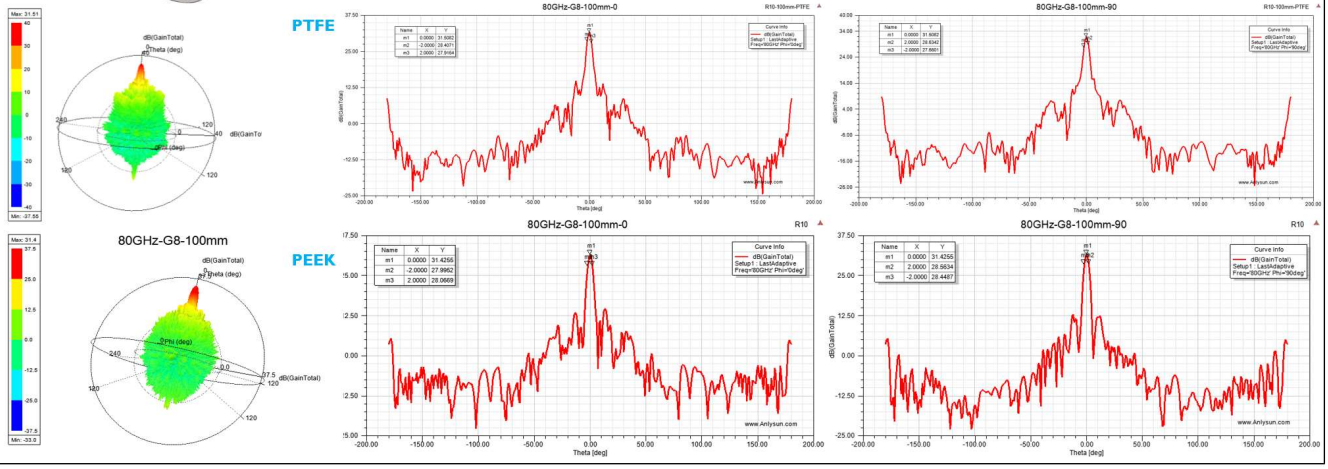
The Radar Antenna Specification of the ANL-9080N100

Lens antenna material（透镜天线材质）	PTFE	PEEK
Antenna diameter（天线直径）	100mm	100mm
HPBW (half-power beam width / Beam angle)（3dB 半功率波束角）	3.5°	3.5°
FNBW (beam width between first nulls)（第一零点波束宽度）	10°	9°
Frequency Scope @ S_{11}< -10dB	77GHz~82.15GHz	
Antenna Gain（天线增益）	31.51dB	31.4dB



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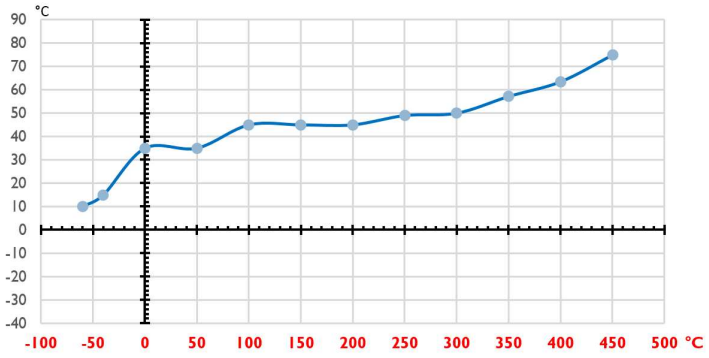
Thermal simulation graph for the ANL-9080N100

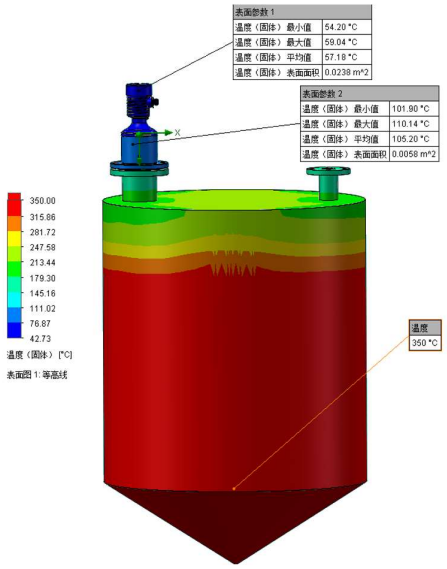
Start ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: (including nozzle height) Flange height ≥40 cm from the material level in tank

Model simulation analysis:
This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 ℃ Celsius degrees. It's a dynamic thermal equilibrium to be reached.

Cavity temperature ***.vs.*** *Process temperature*

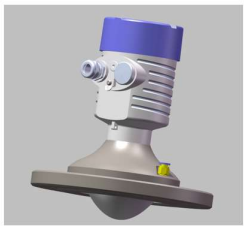


The Medium Max.Temp. @ inside tank: 450 °C

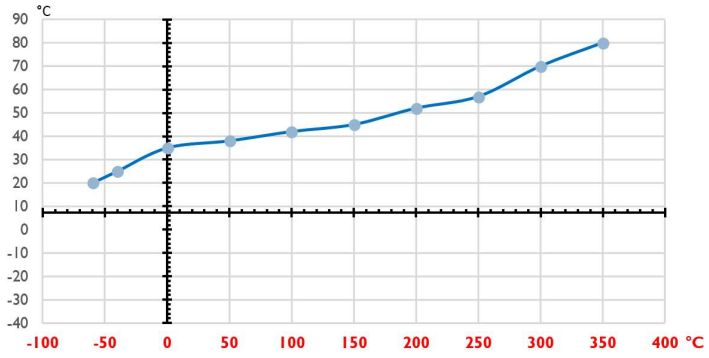


Start ambient temperature: 25°C
Initial device housing Temp.: 35°C
Material properties in tank: Solid, constant heat source
Ambient wind speed: level 1 wind, 0.3m/s, soft wind
Surface of tank and device: Solar radiation and stainless steel absorbing wall
Process connection: (including nozzle height) Flange height ≥40 cm from the material level in tank

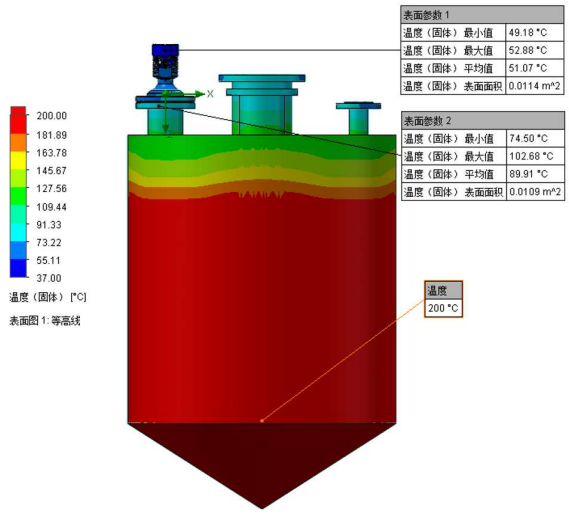
Model simulation analysis:
This is an analysis of setting up to the maximum allowable temperature value of the material in the tank, when the maximum temperature of the surface of the device shell is maintained at 65 ℃ Celsius degrees. It's a dynamic thermal equilibrium to be reached.



Cavity temperature ***.vs.*** *Process temperature*



The Medium Max.Temp. @ inside tank: 200 °C



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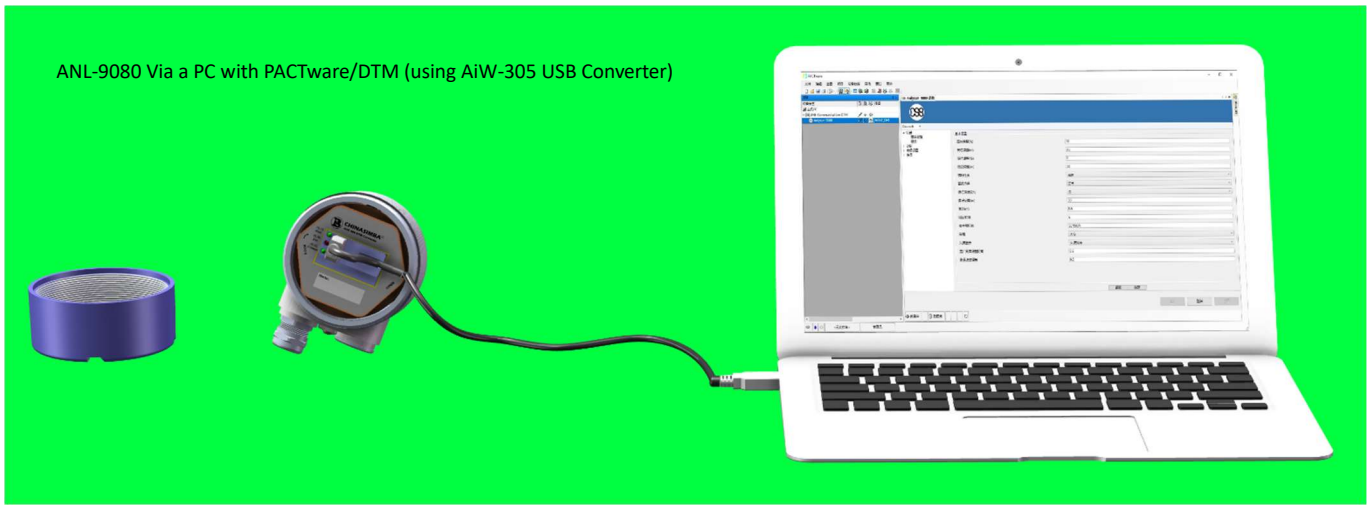
Adapters / Accessories

DTM Adapter for ANL-9080



AiW-305 USB Converter Adapter

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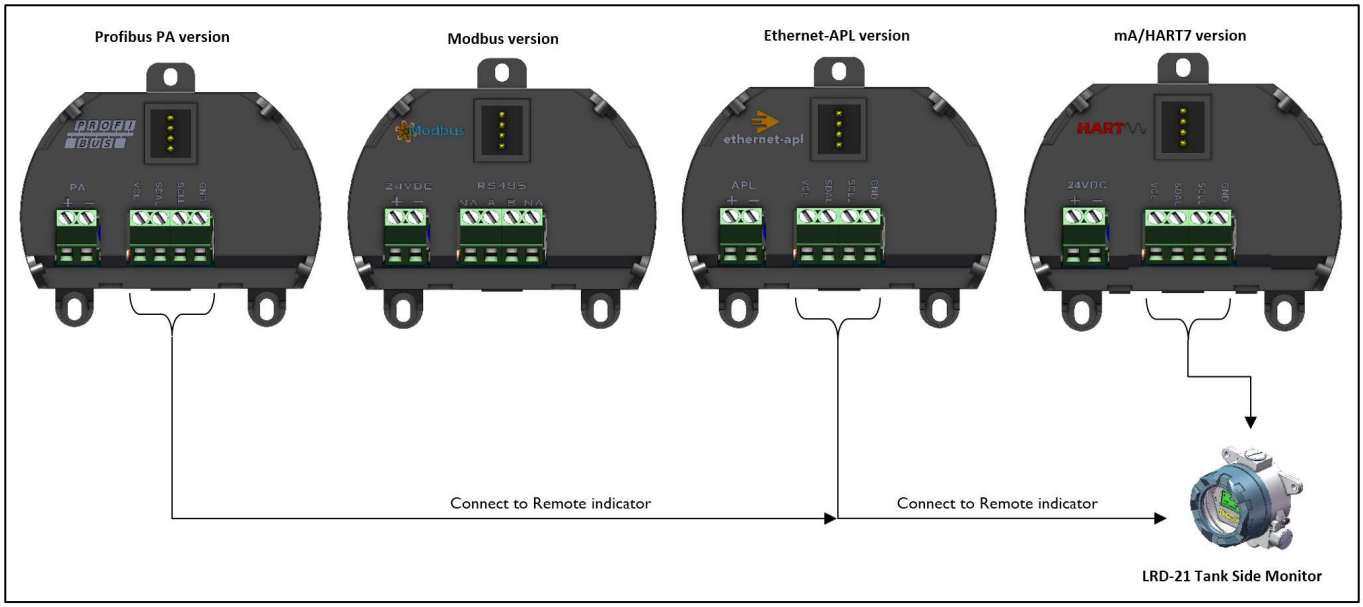
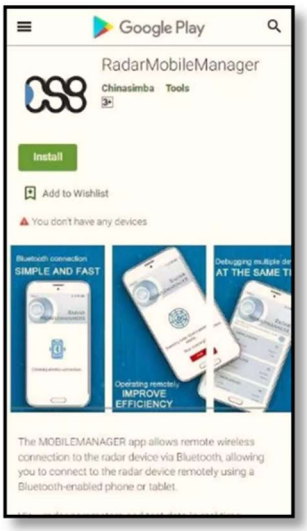
Remote programmer cum Indicator Adapters

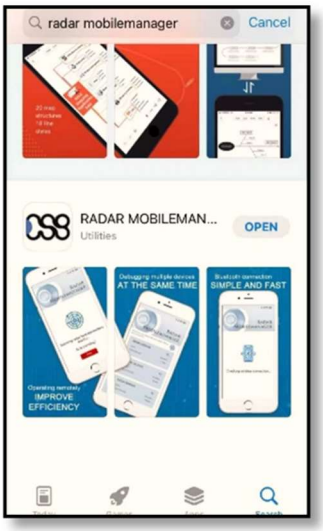
Remote indicator connects for ANL-9080

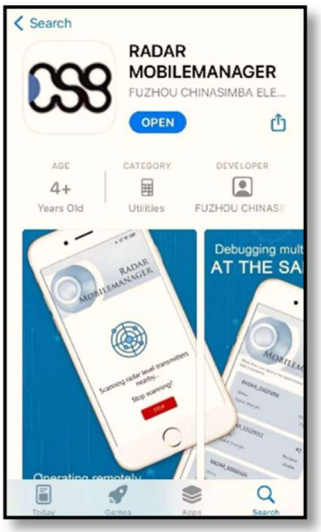


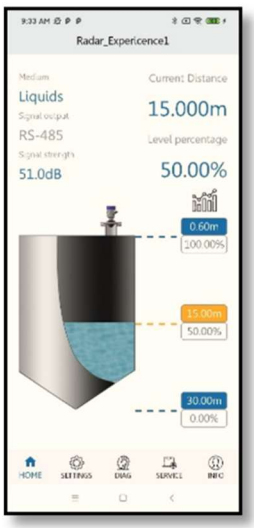
Remote indicator via Bluetooth communication

ANL-9080 radar level transmitters (with Bluetooth function) can be connected to mobile phone through Bluetooth wireless system. The mobile phone needs to install the RadarMobileManager APP. This is a free registered APP (Android and IOS etc.) software, which can be downloaded and installed directly in major APP Stores, or please contact the relevant product suppliers.









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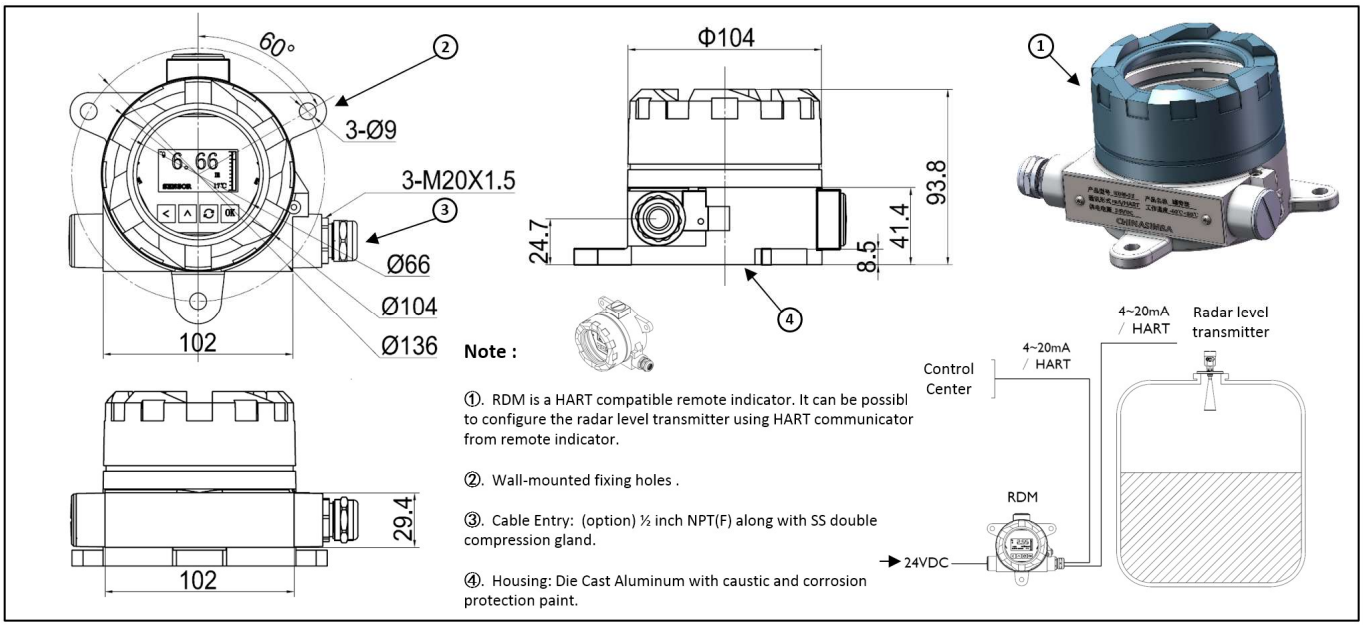
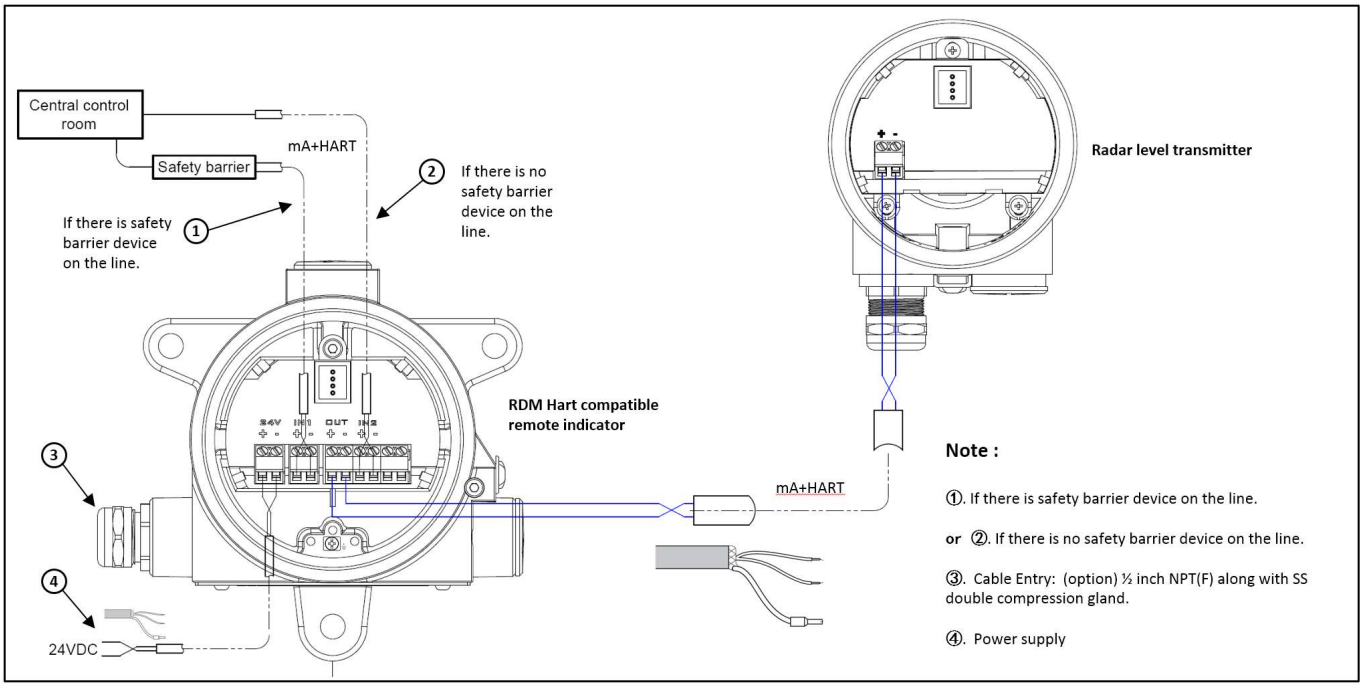
Remote indicator with HART compatible (RDM-25)





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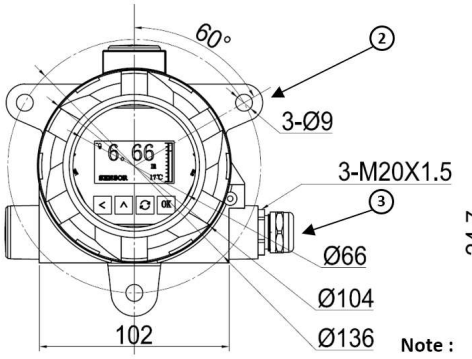
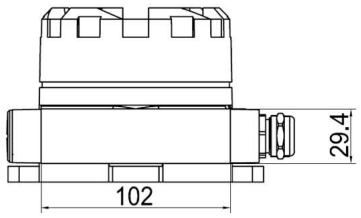
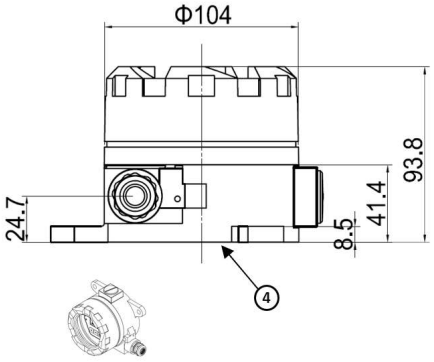
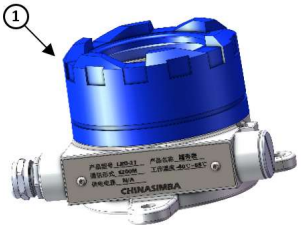
Remote indicator via Serial communication (LRD-21)









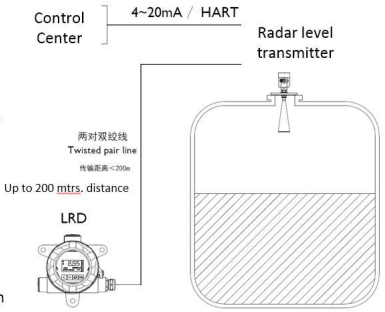
Note :

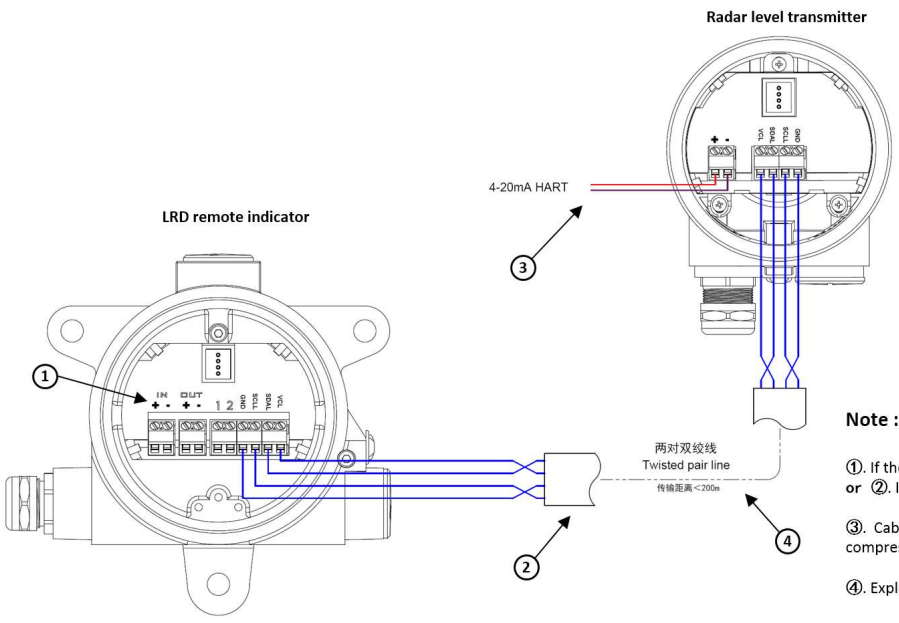
①. LRD is a serial communication remote indicator. It can be possible to configure the radar level transmitter LOI (Local Operator Interface) from remote indicator.

②. Wall-mounted fixing holes .

③. Cable Entry: (option) ½ inch NPT(F) along with SS double compression gland.

④. Housing: Die Cast Aluminum with caustic and corrosion protection paint.





Note :

①. If there is safety barrier device on the line.
or ②. If there is no safety barrier device on the line.

③. Cable Entry: (option) ½ inch NPT(F) along with SS double compression gland.

④. Explosion-proof twisted pair cable specifications:
MHSYVP-5 4x2 0.5mm^2

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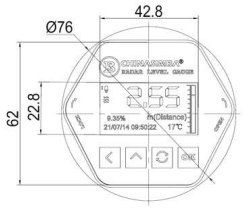
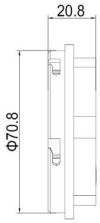
Indication/Adjustment LOI Adapter

160x80 LCD RGB Backlight Monitor Adapter

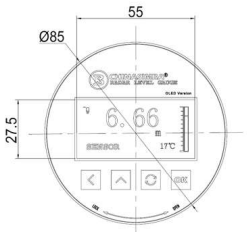
Display type: FSTN
View direction: 6 o'clock
Operation temperature : -20°C ... 70°C

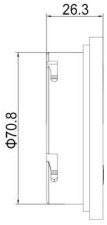




128x64 OLED graphic Monitor Adapter

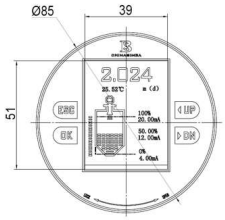
Display type: OLED
View direction: 180 o'clock
Operation temperature : -55°C ... 80°C

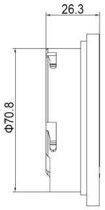




320x240 LCD TFT colors Monitor Adapter

Display type: 2.4" TFT 65K/262K colors
View direction: 6 o'clock
Operation temperature : -20°C ... 70°C





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Model Technical data

The technical data in the corresponding safety instructions included in the delivery are valid for approved instruments (approved for explosion protection). These data may differ from those listed here, for example with regard to process conditions or voltage supply.

1. Materials and weights			
	Materials, wetted parts		
	Antenna, process fitting	N/A	
	Process seala		
	For the process conditions, please also note the specifications on the nameplate. The lowest value (amount) always applies.		
	Flange nozzle length		
	Process installation		
	Process temperature		
	Process pressure		
	Materials, non-wetted parts		
	Housing	Nylon PA6 (Polyamide), Fiberglass	
	Housing seals	Applicable temperature of the housing：-65 ~ 120 ℃	
	Cable gland	Board insulating silicone gel (Dielectric Silicone Gel) potting	
	Sealing, cable gland	Gel potting density/viscosity: 0.97g/cm3/800cPs	
	Blind plug, cable gland		
	Inspection window for the indication	Display module ejector: Material C3604 brass / Stretch: 80gF / Life: >50000 times, Maximum current >1A, Contact resistance<0.03R	
	Weight		
	Product weight	< 0.3 kg (Elec. Module)	
	Contains package weight		
2. Torques			
	Max. torque mounting boss		
	Max. torque for NPT cable glands and Conduit tubes		
3. Input variable			
	Measured variable	The measured value is the distance between the flange side of the sensor and the surface of the medium. The flange face is also the reference plane for measurement.	
	Max.measuring range (Depending on application and medium)	10/20/40/50/70/100/150M	
	Minimum measuring distance	Depending on the operating conditions and Ant type	
	mode 1, 2, 4		
	mode 3		
4. Switch-on phase			
	Run-up time for UB = 16 V DC, 18 V DC, 24 V DC	< 45 s	< 6 s
	Starting current for run-up time	≤ 3.6 mA	≤ 15mA
	Power consumption	The peak current duration at power-on instantaneous ≤ 5uS, and the current stabilization time is ≤50uS	
	@ ≤ 3.6 mA	<45mW@16VDC; <65mW@18VDC; <90mW@24VDC (2 Wired)	
	@ 4mA	<50mW@16VDC; <75mW@18VDC; <100mW@24VDC (2 Wired)	
	@ 20mA	<245mW@16VDC; <370mW@18VDC; <485mW@24VDC (2 Wired)	
5. Output variable			
	Output signal	4 ... 20 mA/HART	4 ... 20 mA/HART
	Range of the output signal	3.8 ... 20.5 mA/HART (factory setup)	
	Analog Signal resolution	1 µA	
	Resolution, digital	≤ 0.5 mm	
	Fault signal, current output (adjustable)	≤ 3.6 mA, ≥ 21 mA， The latest applicable measurements	
	Max. output current	≤ 23.5mA	
	Starting current	≤ 3.6 mA；≤ 4 mA Turn-on 18s	
	Load	~600 Ohm @ 24V DC (670 Ohm @ 24V DC Option)	
	Damping (63 % of the input variable), adjustable	0 ... 120 s	
	HART output values		
	PV (Primary Value)	Linear percentage value	
	SV (Secondary Value)	Distance / Level / Space	
	TV (Third Value)	Measurement reliability	
	QV (Fourth Value)	Electronic module temperature	
	Fulfilled HART specification	HART V7.0 (programmable via PACTware/DTM)	
	Further information on Manufacturer ID, Device ID, Device Revision	See the FieldComm Group of Companies' webpage	
	Other optional output protocols (be arbitrarily selected)		
	MODBUS (RS485)	Modbus RTU	
	Profibus PA (Process Automation)	V3.02 Process automation data transfer enables sensors and actuators to be connected to a single bus	
	Profibus DP (Decentralized Periphery)	High-speed data communication is provided for device-level control systems and distributed I/O front-end sensors	
	Ethernet APL		
	SDI-12	V1.3 is applied in multi-parameter measurement and control in industry and agriculture, river and lake hydrology and meteorology and other global environment monitoring, aquaculture and food industries, and can transmit data far away	
	IO-Link	IEC 61131-9	
6. Deviation (according to DIN EN 60770-1)			
	Reference conditions according to DIN EN 61298-1		
	Temperature	+18 ... +30 ℃ (+64 ... +86 °F)	
	Relative humidity	45 ... 75 %	
	Air pressure	860 ... 1060 mbar/86 ... 106 kPa (12.5 ... 15.4 psig)	
	Installation reference conditions		
	Distance to installations	> 100 mm @Antenna edge (with 50mm aperture lens antenna condition)	
	Reflector	Flat plate reflector	
	False reflections	Biggest false signal, 20 dB smaller than the useful signal	
	Deviation with liquids		
	Measuring distance > 0.30 m	≤ 2 mm	
	Measuring distance ≤ 0.30 m	≤ 10 mm	
	Non-repeatability (already included in the meas. deviation)	≤ 1 mm	
	Deviation with bulk solids	The values depend to a great extent on the application. Binding specifications are thus not possible.	

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7. Variables influencing measurement accuracy			
	Specifications apply to the digital measured value	** Additional error of the digital output from a change in ambient temperature by 10°C from the normal 20°C*	
	Temperature drift - Digital value	< 1 mm/10K, Max. 3 mm	
	Specifications apply also to the current output	** Additional error of the analog output 4/20 mA from a change in ambient temperature by 10°C from the normal 20°C*	
	Temperature drift - Current output	< 0.03 %/10K or 0.3 % Max, for the 16.7 mA range (regular); < 0.01 %/10K or 0.15 % Max, for the 16.7 mA range(for N60)	
	Deviation in the current output due to digital/analogue conversion	1µA *(Additional error of converting a digital signal into an analogue 4/20 mA with a two-wire power supply connection)*	
	Additional deviation through electromagnetic interference		
	According to NAMUR NE 21	< 80 µA	
	According to EN 61326-1		
	According to IACS E10 /IEC 60945	< 250 µA	
8. Characteristics and performance data			
	Measuring frequency	76.2 ~ 80.2GHz W-band FM technology (ISM compliant)	
	Measuring cycle time @With operating voltage $U_B \geq 24$ VDC	≤ 1500ms (Depends on the energy supply)	≤ 600ms
	Step response time @Time span after a sudden distance change from 1 m to 5 m until the output signal reaches 90 % of the final value for the first time (IEC 61298-2). Valid with operating voltage $U_B \geq 24$ V DC.	≤ 8 s	≤ 2 s
	Beam angle @Outside the specified beam angle, the energy level of the radar signal is 50% (-3 dB) less.	3° ~ 7° Depends on the configured antenna type	
	Dielectric constant	> 1.6 (liquid) , > 2.0 (Solid)	
9. Ambient conditions			
	Ambient temperature device	-40 ... 85 ℃ (Regular) -60 ... 105 ℃ (low cold) N60	
	Ambient temperature display	-65 ...120 ℃	
	Storage and transport temperature	-55 ... 85 ℃	
10. Mechanical environmental conditions			
	Vibrations (oscillations)	Class 4M8 acc. to IEC 60271-3-4 (5 g at 4 ... 200 Hz)	
	Impacts (mechanical shock)	Class 6M4 acc. to IEC 60271-3-6 (50 g, 2.3 ms)	
	Impact resistance	IK07 acc. to IEC 62262	
11. Electromechanical data			
	Cable entry		
	• Options	M20 x 1.5; ½ NPT	
	• Cable gland	M20 x 1.5 (cable diameter 5 ... 9 mm)	
	• Closing cap	½ NPT	
	Wire cross-section (spring-loaded terminals)		
	• Stranded wire	0.2 mm² (AWG 24) ... 2.5 mm² (AWG 14) with a minimum insulation thickness of 0.5 mm or more	
12. Bluetooth interface			
	Bluetooth standard	V5.0 /or V4.2	
	Frequency	2.402 ... 2.480 GHz	
	Max. emitted power	+2.2 dBm	
	Max. number of participants	1	
	Effective range typ.(Depending on the local conditions)	25 m (82 ft)	
13. Indication			
	Measured value and menu display		
	• Optional HMI	160x80 dot matrix LCD display with background illumination with bar chart showing level scale values	
	• Max. indicating range	-99999 ... 99999	
14. Adjustment			
	Optional HMI	4 buttons for operating menus	
	Tank side meter	LRD type tank side meter (serial digital communication), RDM type tank side meter (HART protocol communication)	
	Field DTM communicator	AiW-30S (Master Mode), AiW-31S (Slave Mode)	
	PC/Notebook	CHINASIMBA® PC Manager software	
	Mobile terminal equipment	CHINASIMBA® Radar Mobile Manager software	
15. Voltage supply			
	Operating voltage U_B		
	• at 4 mA	12 ... 40 V DC	9 ... 40 V DC
	• at 20 mA	9 ... 40 V DC	9 ... 40 V DC
	Operating voltage scope U_B - with illuminated LCD display and adjustment module	16 ... 40 V DC *(Min. ~ Max., Supply voltage of the transmitter is 4/20 mA with a two-wire power supply connection)*	9 ... 40 V DC
	Reverse voltage protection	Built in	
16. Overvoltage protection			
	Dielectric strength against metallic mounting parts	>10KV	
	Overvoltage resistance (test impulse voltages 1.2KV/50 µs at 42 Ω)	> 1KV	
	Insulation resistance	∞	
	Dielectric strength	≤ 5mA @500VDC	
	Power frequency magnetic field immunity	100A/m @X,Y	
	Electrostatic discharge immunity	> 4KV	
	Radiated immunity to radio frequency electromagnetic fields	10V/m @80MHz ~ 1000MHz	
	Electrical fast transient burst immunity	> 2KV	
	Additional overvoltage arrester	Due to the floating structure of the electronics and comprehensive insulation measures generally not necessary	
17. Electrical protective measures			
	Protection rating	IP66/IP67 according to IEC 605294X and UL 50	
	Altitude above sea level	5000 m (16404 ft)	
	Protection class	III	
	Pollution degree	4	

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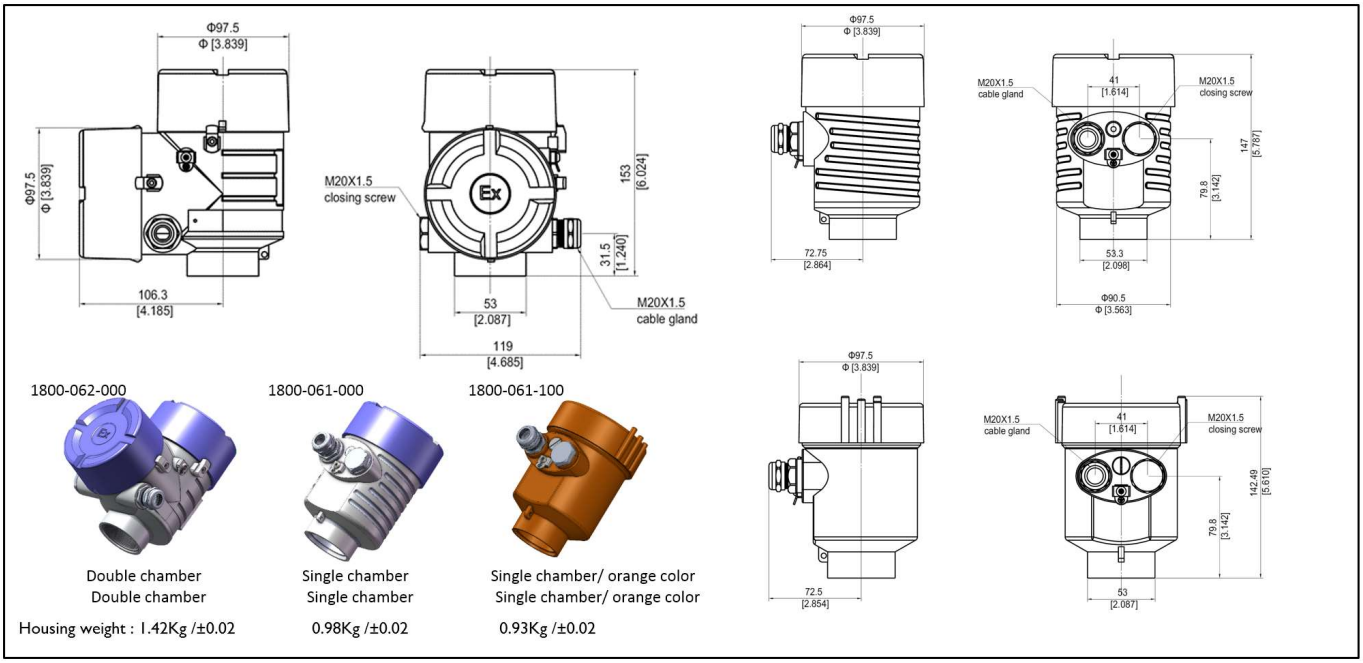
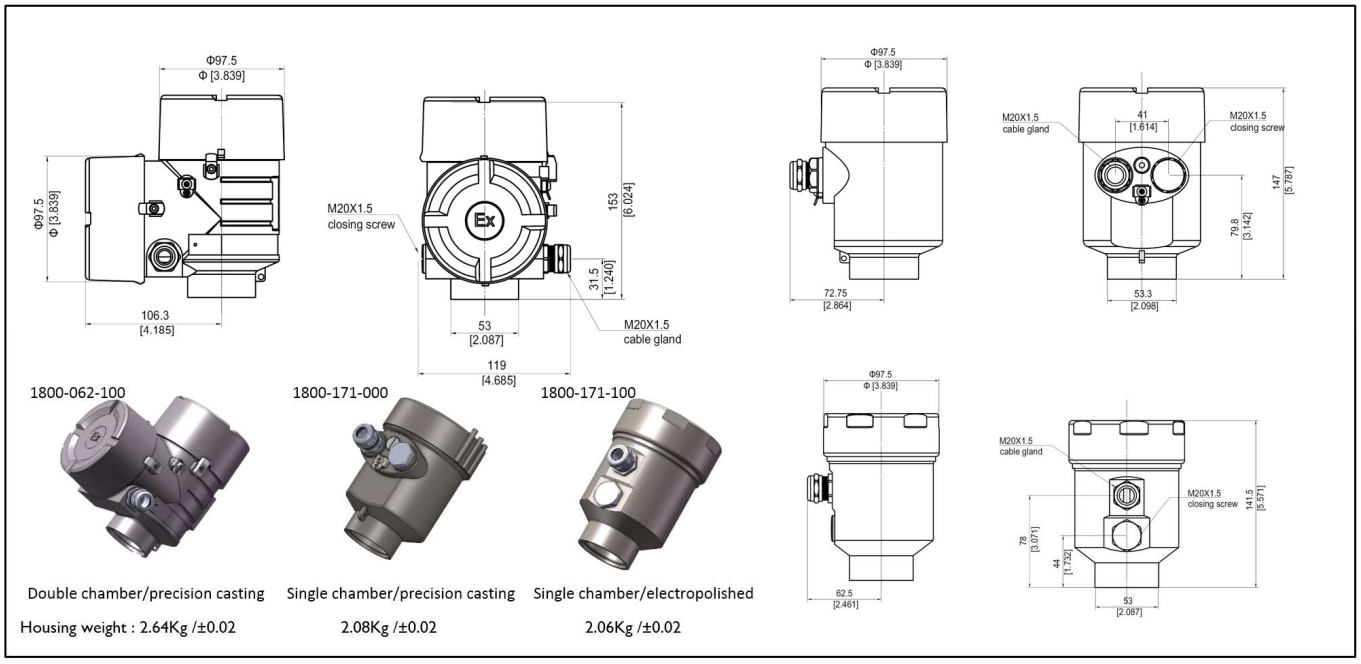
Housing Drawing

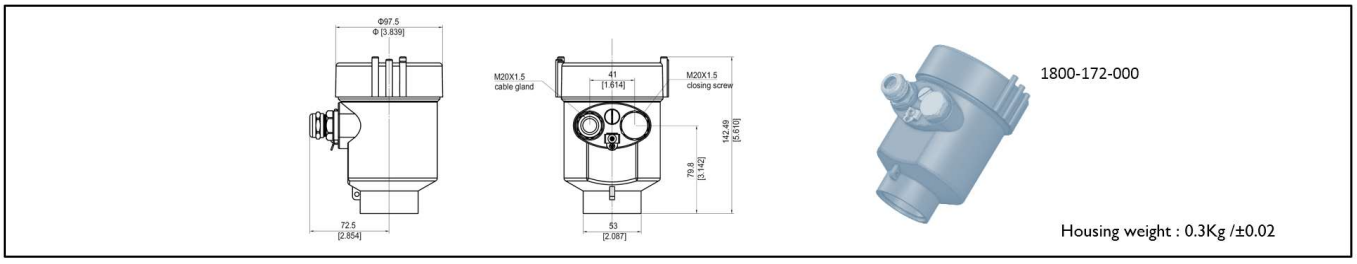
Aluminum housing



Stainless steel housing



Plastic housing



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