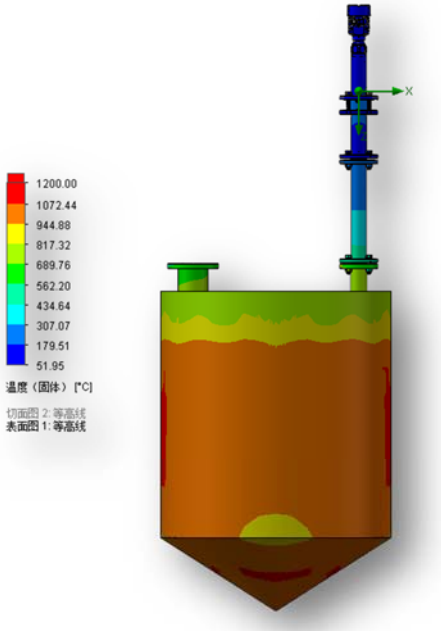
TEL: (86)591-83850480/1
FAX: (86)591-83850481
EMAIL: master@anlysun.com
www.chinasimba.com

ANL-9127HTHP for High Temperature and High Pressure Application Environment

122 GHz FMCW Radar Level Transmitters

Features

- The thermal bridge antenna structure design adopts high-temperature resistant steel photonic crystal, bidding farewell to the traditional nitrogen cooling device.
- Meets process temperatures from 400□ to a maximum of 1800□, but does not require a nitrogen circulation cooling unit.
- Intelligent echo detection is designed to make it easy to apply at high temperatures.
- Multi-platform configuration means, communication via Bluetooth wireless technology, or HART/DTM.
- Versatile FMCW radar for application flexibility, and advanced diagnostics and Smart Meter Verification.
- NAMUR type tested and IP67 / Exd / Exia



Applications

- Blast furnace level measurement
- High temperature and high pressure reactor Applications
- Metallurgical industry
- Chemical high pressure and high temperature reaction tank

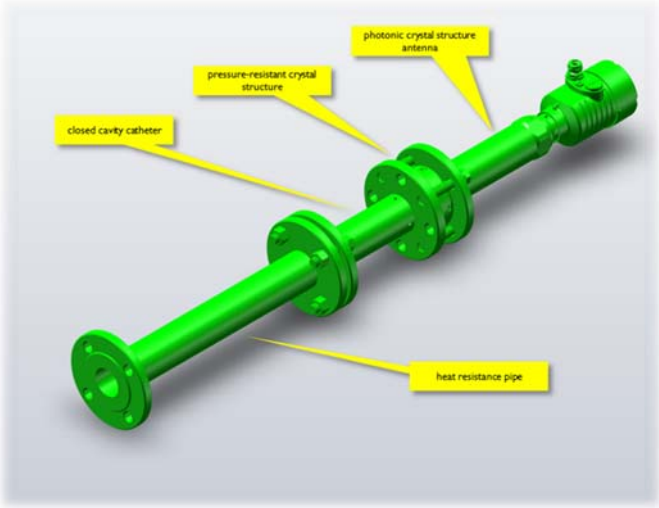
Water vapor condensation in the antenna

Description

Traditionally radar level transmitter measure in high-temperature application environment, using a nitrogen purging for cooling, but for long-term nitrogen cooling causes water vapor condensation in the antenna structure, the radar cannot measure correctly needs to be cleaned regularly.

ANL-9127HTHP radar system adopts a new thermal bridge design, adopts high-temperature resistant steel photonic crystal structure, prevents heat conduction by thermal resistance, and forms a steep temperature gradient so that the radar electronic chamber always maintains a temperature upper limit of not more than 85 degrees Celsius.

The upper part of the antenna structure of ANL-9127HTHP radar system is composed of photonic crystal fiber (PCF) structure antenna, pressure-resistant crystal structure and closed cavity catheter, and the lower part is composed of heat resistance pipe, which is made of high-temperature steel 310S material, for applications with process temperature exceeding 1800 degrees Celsius, the process connection material needs to be made of tungsten steel.



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Photonic crystal fibers (PCF) structure antenna have many peculiar properties. Only one mode transmission can be supported in a wide range of electromagnetic wave bandwidth, the arrangement of pores in the cladding area can greatly affect the mode properties, and the asymmetric arrangement of pores can also produce a large birefringence effect of radar electromagnetic waves, which provides the possibility for us to design high-performance antennas with high pressure strength, and it can withstand 8MPa pressure under static pressure. The figure on the right shows the photonic crystal fiber structure inside the antenna of the ANL-9127HTHP.

Pressure-resistant crystal structure, it is a lens made by quartz sealing process, and its thickness varies depending on the process temperature of the actual application.
The closed cavity duct forms a closed air interlayer that increases thermal resistance and is placed on the warmer side to prevent condensation inside. Its heat transfer is the result of the comprehensive action of three heat transfer methods: heat conduction, convection and radiation, and is also related to the radiation performance (blackness, temperature), air layer thickness, position, air-to-air layer thickness, position, air-to-air seal ability, heat flow direction and other factors.

Typical Application

The process temperature is 400~500□ application.

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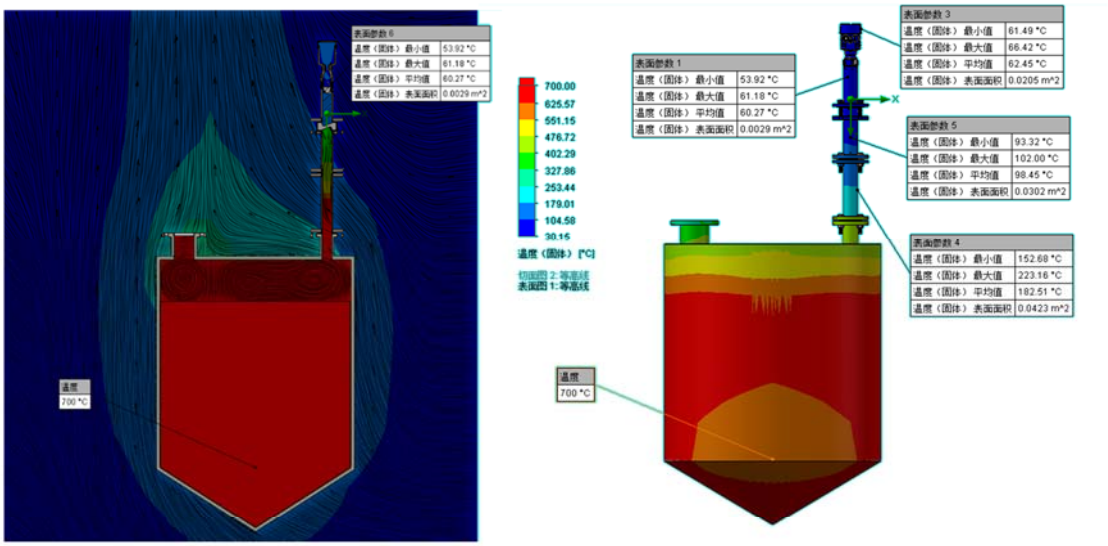
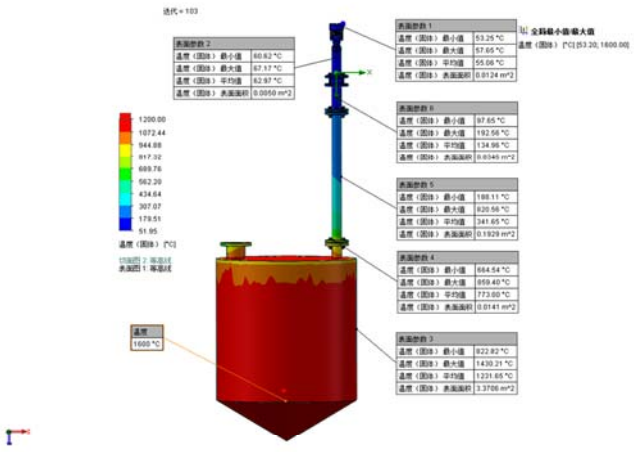
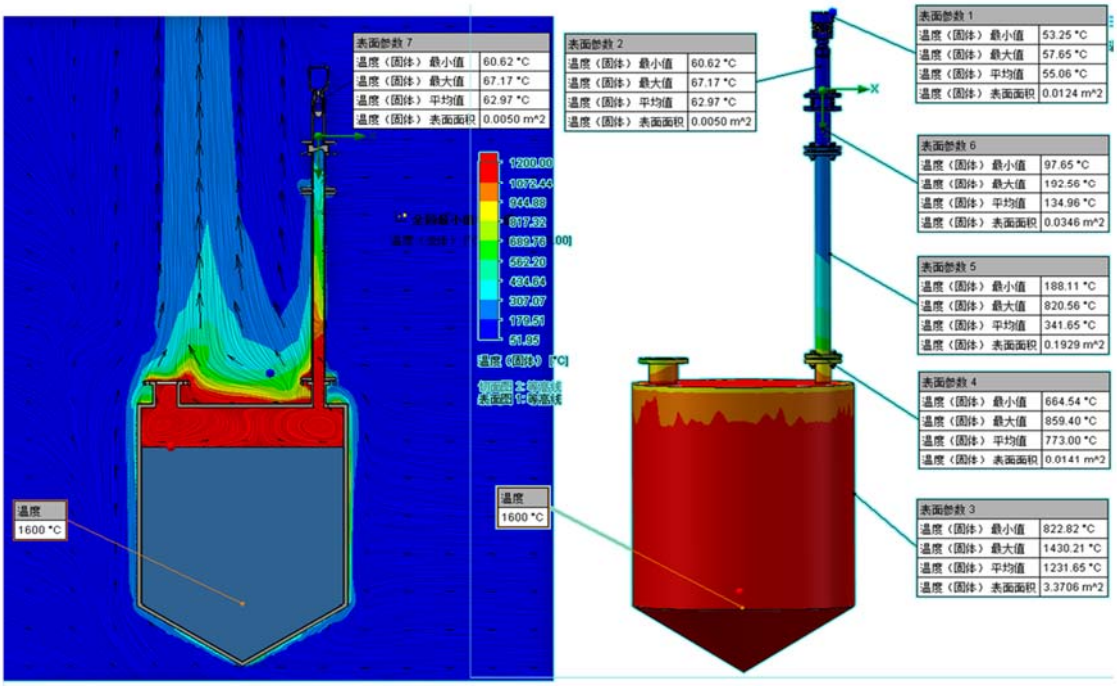
The process temperature is 700□ application.



The process temperature is 1200□ application.



The process temperature is 1600□ application.



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Specifications

Product No	ANL-9127HTHP		
Probe mode	2-Wire	4-Wire	Additional heat-resisting waveguide fittings
Appearance Picture			
Parameter			
Measuring Frequency	122 to 123GHz Dynamic FM Sweep Bandwidth 1GHz (122GHz~123GHz: 1GHz) or 120 to 123GHz Dynamic FM Sweep Bandwidth 3GHz (from 118GHz: 3~10GHz)/option (The adjustment FM range can be customized according to the ISM requirements of the customer's region)		
Instrument Range	**20/50M**		
Antenna Constructe Materials	SS304/316	The material is determined by the process temperature	
Meas. Principle	FMCW Radar System		
Meas. Accuracy	±5mm (=<30m range)		
Power Supply	**16 - 42 VDC (Low current start-up)**		
Process Connection	>DN50	> DN50, Customized Option	
Process Temperature	-55 ... +400	+400 ... +2000	
Ambient Temperature	-55 ... +105		
Operating Pressure	-0.5 ... 6MPa		
Display/Adjustment	4-Wire: 320*240 Dot TFT LCD color sunlight display/4 key 2-Wire: 160*80 Dot BL LCD sunlight display/4 key Chinasimba Software: PCManager V1.x, MobileManager V1.x (v1.0.6(IOS) /v1.0.12(Android))		
Wireless communication Range	Bluetooth 2.0/25M		
Output & Protocol	4-20mA/HART - 2-wire; 4-20mA/HART - 4-wire ModBus/SDI-12(Customized Option) Profibus PA / DP		
Fault Output	**22mA/4mA/20.5mA (option)**		
Live Display	Mobile / iPad / PC		
Housing Material	Al material(or Customized Option)		
No.of Cable Entries	M20x1.5 (φ5.9mm)		
Explosion-proof grade	Exd / Exia		
Features	High Temperature and High Pressure 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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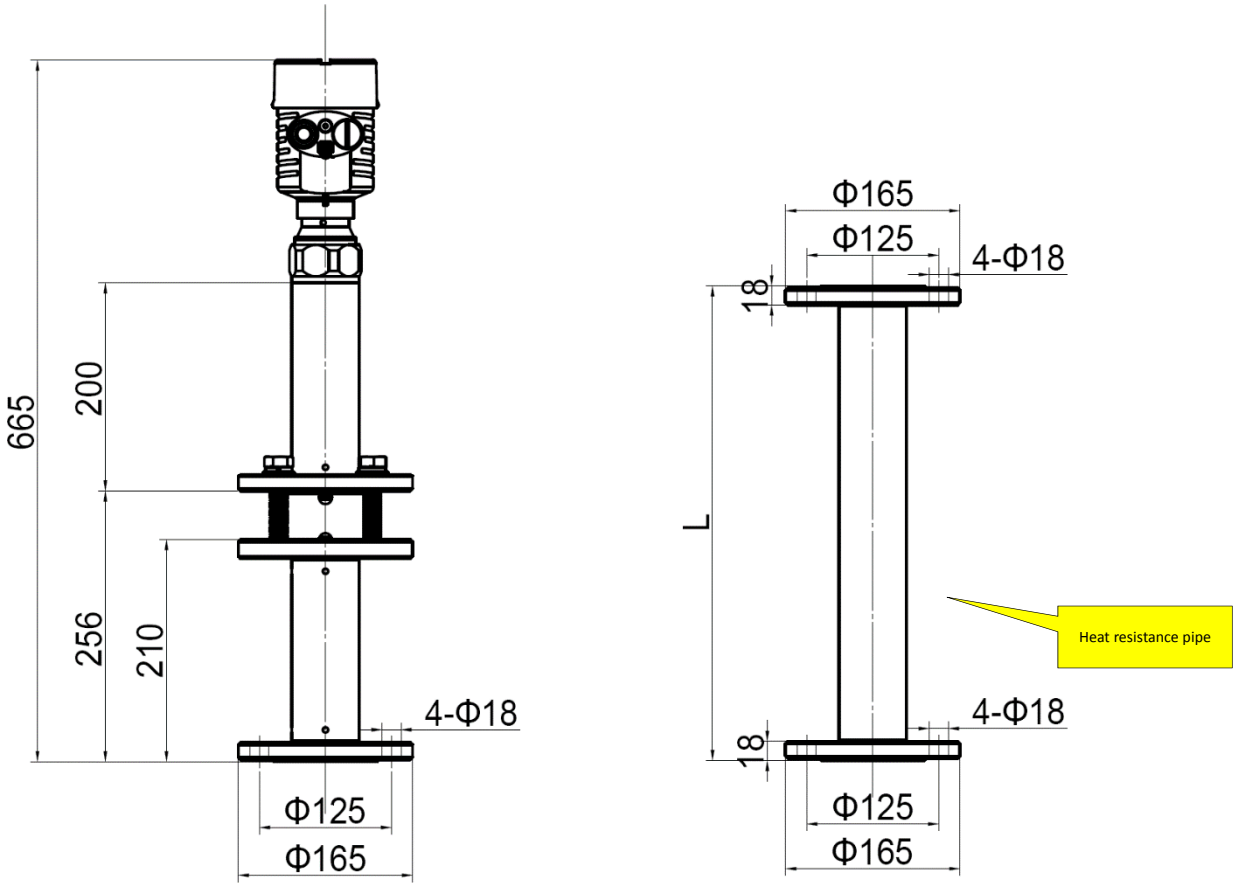
ANL-9127HTHP Products Dimensions in millimeters



ANL-9127HTHP Ordering Codes

ANL-9127HTHP	1	2	3	4	5	6	7	8	NOTE
	S								4-20mA
	H								4-20mA with HART
	P								ProfiBus PA
	M								RS485 with ModBus
		AC							220ACV
		DC							24DCV
			Mxx						Product Range (M) = xx
				Y					with relay alarm
				N					NO
					DN50				DN50 / Process connection flange specifications
					xxxx				Other custom flanges : xxxx
						S304			SS 304 / heat-resisting waveguide
						S316			SS 316 / heat-resisting waveguide
						S310			310S / heat-resisting waveguide
						Tu			Tungsten / heat-resisting waveguide
							Lxxx		Heat-resisting waveguide length: xxxx CM
								Cxxxx / yy MPa	Process temperature: xxxx and Pressure yy Mpa

ANL-9127HTHP-S-DC-M20-N-DN50-S316-L20-C700/5MPa	Output: 4-20mA Power: 24DCV Range: 20M Flange: DN50 S316 200M Heat-resisting waveguide Process temperature: 700 and Pressure 5MPa

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For more information contact your regional sales representative.
sales@chinasimba.com
https://www.chinasimba.com/

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