Callisto

Ultra-Low Noise Systems

Data Sheet

Compact Ultra-Low Noise Amplifier – P/N 3110 to 3130

Zero Maintenance Cryo-LNA

- **Maintenance Free, Service Life > 10 years**
- **Plug and Play** (no need for a vacuum pump)
- **Remote TCP/IP Connection**
- **Low Power Consumption** (compared to standard cryo systems)
- **High Flexibility/Adaptability**
  - 1 or 2 RF channels
  - Common enclosure for the different frequency bands
  - From 2 to 40GHz
- **Proven design** (several units produced for ESA, CNES and ZDS)
- **Compact System** (55x20x20cm – 11Kg)

Dual Channel Compact LNA

PSU

Main Specifications

Parameter	Specifications		
Frequency Band	X-Band (7.25-8.5GHz)	K-Band (18.2– 21.2GHz)	Ka-Band (25.5-27 GHz)
Noise Temperature	<20K	35K	50K
Gain	> 50dB		
Cooldown Time	1.5hrs		
Input Flange	WR112	WR42	WR34

* Full specification available on next page

Main Benefits

- **Improve Antenna G/T** (2dB@8GHz)
  - Increase Data Transfer Rate (up to 60%)
  - Improve link margin
- **Reduction of Antenna Diameter**
  - Antenna Cost Reduction (~ 20%)
  - **150K€ savings** for a 10m EO antenna
  - Reduce installation cost of antenna
  - Less susceptibility to high wind
  - Antenna pointing improvement

Available Frequency Bands

	S-Band 2GHz	C-Band 5-7 GHz	X-Band 8GHz	Ku-Band 11GHz	K-Band 20GHz	Ka-Band 26GHz	Q-Band 40GHz	Wide 2-14GHz
Status	Paper Design	Paper Design	Prod	Paper Design	Dev	Prod	R&D	Prod
Config.	1 or 2 Coax Input(s)	1 WG Input WR159	1or 2 WG Input(s) WR112	1or 2 WG Input(s) WR62-75	1or 2 WG Input(s) WR42	1or 2 WG Input(s) WR34	1 to 3 WG input(s) WR28-22	Feed Horn input
NT	<15K	<26K	<20K	25-30K	<35K	<50K	<70K	<40K

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Cryogenic Cooler – Zero Maintenance Proven Technology

Callisto employs world leading cryogenic technology for its products and the Compact Cryo-LNA uses a light-weight, highly efficient and long-life cryogenic cooler. A Stirling-cycle cryo-cooler is used working at 80K, which combines the cold finger and compressor into one compact unit that can work in any orientation.

The cooler has been developed to serve various applications including mobile telephone base station filter cooling. It has been produced in very high volumes and for which extremely long MTBF performance has been demonstrated. Contactless bearings and seals are designed for ultra-long operating life.

Full Specifications for Selected Frequency Bands

Parameter	Specifications			
Frequency Band	X-Band 1 (7.25-7.75GHz)	X-Band 2 (8.0-8.5GHz)	K-Band (18.2–21.2GHz)	Ka-Band (25.5-27 GHz)
Noise Temperature	<20K		35K	50K
Gain	> 50dB			
Input VSWR	< 1.43:1 (1.3:1 Typical)		< 2.0:1 (1.5:1 Typical)	
Output VSWR	< 1.22:1		< 1.3:1	
Pout 1dB	> +10dBm			
Gain flatness	±2dB			
Group delay variation	< 0.5ns			
Base temperature	100K			
Cooldown Time	1.5hrs			
Input Flange	WR112		WR42	WR34
RF output connector	SMA/N		SMA/K	K
M&C	TCP/IP			
Operating temperature	-10°C to +40°C			
Storage temperature	-40°C to +60°C			
Ventilation Requirement	Forced air cooling			
Typical Input Power	200W			
Input Voltage	230VAC/50Hz & 110VAC/60Hz			

Physical Specifications	
Dimension	557 x 172 x 214mm
Weight	~11Kg
Mounting	Can operate in any orientation, on a movable antenna structure.

*Interface Control Document available on Request