



Cryogenic Solutions

TTI develops equipment to operate at cryogenic temperatures down to 4K (-269°C) such as LNAs, Cryostats and VLBI receivers

Cryogenic Low Noise Amplifiers

S band (2,21 – 2,35 GHz), **C band** (4-8 GHz) and **X band** (8,15 – 8,63 GHz) Cryogenic LNAs designed to operate at extremely low temperatures (down to 4K) and based on **GaAs, InP HEMT** or **hybrid technologies**. These amplifiers are intended for applications that require **very low equivalent noise temperature** – such as Radio Astronomy or Space Communications. The noise temperature of these LNAs is less than 5K if we refer to GaAs technology, or 4K in the case of InP technology.

TTI cryogenic LNAs provide very **low current consumption** and a very **light weight**. These LNAs are **extremely stable** and **highly reliable** at cryogenic operating temperatures.



Cryostats



Laboratory type (reconfigurable) and **specific type** (customised), including the following characteristics:

- Vector Network Analysers
- Closed cycle operation (Helium recharge no needed)
- **Temperature inside dewar up to 4K**
- High temperature stability (>24 hours)
- Automatic cycles and remote operation
- DC & RF customised hermetic interfaces
- Servo-controlled power supplies
- Internal cabling and interconnections
- Cooling / heating time (~3 / 2 hours)



VLBI receivers

Turn Key Receivers: Design, Manufacturing, Installation and Training:

- **Antenna Feed** (dual band , wideband...)
- Polarizer
- Cryogenically cooled RF unit (Cryostats + LNAs)
- Room temperature RF & IF units
- Remote control and
- Monitoring system
- Calibration Unit

