

PRESENTS

SDR +VNA

Lunaris

HF+6M multimode
Tranceiver

ANV
+VNA



Lunaris-SDR is a single board Digital Up and Down Conversion (DUC/DDC) full duplex HF+6m multi-mode 10W transceiver & a Vector Network Analyser, which is one of the finest SDR available.

Lunaris supports open source software:

- **PowerSDR Windows**
- **GHPSDR-Linux**
- **KISS CONSOLE -Windows**
- **cuSDR**
- **Gnu Radio**

Lunaris-Transceiver is based on HPSDR Hermes architecture. It is a highly integrated SDR **with additional features built on-board** - Vector Network Analyser, On board speaker, 10 MHz internal / external auto switching and Highly Thermal-Efficient Board design which will enhance your product life and will reduce frequency drifting trouble. Complete Lunaris SDR solution includes 10 watt linear amplifier and Low Pass Filters in a rugged aluminum enclosure. The Lunaris SDR enclosure provides sufficient cooling for operation in hot and humid environments. Further added **OPTO-isolated PTT out** so no more frying of FPGAs/rigs. **Shielding provision** has been added to Receiver Section- to have better crosstalk and EMI-RFI compliance. **Added Pure-Signal provision in the QRP model too so no user modification require to get the benefits of Pure-Signal feature.**

Lunaris Transceiver outputs 10 Watt RF power on 160-10m and 6m amateur band. The LPF board consists of seven relay switched low pass filters for transmitter harmonic suppression, It has three external BNC connectors, described below:

- Antenna 1 transmit-receive
- Antenna 2 transmit-receive
- Antenna 3 transmit-receive
- Internal Control - 10 pin ribbon cable

Lunaris-Transceiver + VNA is the finest SDR built with host of features, because of which it is a unmatched SDR+VNA available in the market. Thanks to all members of HPSDR Global Community. CEDA-Labz promises to keep all its product at a minimum possible cost to encourage using Lunaris. Any suggestion or wish list can be mailed to us - we will be happy to respond you.

Lunaris is available in four different forms:

1. Bare PCB -Bare Lunaris board, Bill of Materials and Solder-Paste file will be available for users who wish to construct a home built radio.
2. Assembled and Tested Board with 30 days warranty
3. Box Build Lunaris SDR in a rugged aluminium enclosure without any 10 watt linear amplifier and LPF - 1 year warranty
4. Complete Lunaris SDR solution with 10 watt linear amplifier and Low Pass Filters in a rugged aluminum enclosure - 1 year warranty

6 weeks lead time

Note: All designs will be open source but we need some time to check before we publish it

LUNARIS SDR Possible Applications

Lunaris is a single board Digital Up and Down Conversion (DUC/DDC) full duplex HF + 6m multi-mode transceiver and a VNA.

Lunaris Possible uses

- Radio Astronomy
- Spectrum Analysis
- General Purpose ADC board
- Software Defined Receiver
- Short Wave Listening (SWL)
- Amateur Radio HF Receiver
- Amateur Radio IF Receiver
- Panoramic Adapter for Communication Receivers (Any IF)
- FPGA based SDR Development Platform
- Ultrasound Receiver
- Radio Astronomy
- VLF Experimentation
- SDR Education
- Interferometer for passive RF signal location

LUNARIS Transceiver + VNA is based on HPSDR Hermes.

Key features and facilities:

- Transmitter two-tone 3rd order IMD of -50dBc on 20m @ 400mW O/P from lunaris main board
- 10W RF output on all bands
- Built-in high performance preamp, with a noise floor typically -135dBm in 500Hz
- Software-selectable 31dB input attenuator in 1dB steps
- FPGA code can be updated via the Ethernet connection
- Seven user-configurable open-collector outputs, independently selectable per band and Tx/Rx (for relay control, etc.)
- Separate open-collector PTT connection for amplifier control, etc.
- Microphone PTT jumper-selectable from tip or ring connection
- Jumper selectable configuration for dynamic or electret\condenser microphones
- Bias for electret microphones via jumper
- Four user-configurable 12 bit analog inputs (for ALC, SWR etc.)
- Three user-configurable digital inputs (for linear amplifier over temperature, etc.)
- Can operate from a 12-13.8V DC
- Built in 3.5Amps very low noise high efficiency DC-DC Converter
- I2C bus connector for control of external equipment
- QSK operation (performance dependant on associated PC and control software)
- Transverter port for VHF and microwave operation -Low-level transmitter output for transverter use
- Stereo audio outputs at line and headphone levels
- In-built 1W stereo audio amplifier for directly driving speakers
- Direct, de-bounced connections for a Morse key (straight or iambic) and PTT

- Low phase noise (-140dBc/Hz @ 1kHz at 14MHz) 122.88MHz master clock, which can be phase-locked to an internal 10MHz TCXO or external frequency reference
- Direct ribbon cable interface to Alex low and high pass filter
- Industry Standard TCP/IP network Ethernet interface supports static, APIPA or DHCP IP address
- Hermes responds to ping and ARP requests, auto senses Ethernet cable connection and connection speed
- 8-layer Hi-Speed Board design keeping in mind anybody wish to build manually should be a happy homebrewing
- Supports 7 High Independent Receivers on a single ADC.
- On Board Speaker so you can be head phone free at times you wish to
- **Can be used as Vector Network Analyzer** - Built in on board VNA-Bridge
- **On Board Auto 10Mhz Clock switching between internal and external 10Mhz Clock**
- **Lunaris box build includes 10 watt Linear Amplifier and Low Pass Filter**
- The Lunaris SDR enclosure provides sufficient cooling for operation in hot and humid environments
- Designed keeping in mind for Amateur Radio enthusiasts who would like to Homebrew assembling the board
- Added Heatsink on board to dissipate heat
- On Board VNA DUT SMA port
- On Board VNA Tx-OUT SMA port and Rx-IN SMA port
- On Board PTT IN port
- **Opto Isolated PTT-OUT**
- On Board Line-level input and Line-level output port
- Tough 4mm thick Aluminium DieCast Enclosure (Size in mm/inch- 180/7.09 L * 144/5.67 B * 57.5/2.26 H)
- Used Altera Cyclone III EP3C40Q240 FPGA. Its easy to rework and assemble for homebrewers too
- Ten user programmable debug LEDs internal on board
- ADC overload LED
- Reverse Polarity protection in Power-IN port
- Optimized for rugged use
- **1 year warranty - applicable to Box Build Complete Unit in Enclosure**

... coming up Lunaris with Two Receivers

... coming up Lunaris with 6Ghz Receiver

... coming up 100 watt and 500 watt Linear Amplifier

Note: All designs will be open source but we need some time to check before we publish it