



CLOCK DISTRIBUTION SYSTEM AND TIME SERVER

LinkCD™



- Precision Frequency Reference
- 5 MHz, 10 MHz, 1 PPS Outputs
- Dual High-Stability OCXOs
- Ultra Low Phase Noise
- On-board GPS Receiver
- Stratum-0 NTP Server Option
- Integrated Distribution Amplifiers
- High Reliability Design
- Built-in Oscillator Redundancy
- Redundant Power Supplies
- M&C via Ethernet, USB or RS-232

LinkSat's LinkCD is a cost-effective redundant GPS-disciplined timing reference and clock distribution system that can be used anywhere a single source, high-reliability frequency reference is needed. The system produces multiple high-stability 10 MHz reference signal outputs with low spurious emissions and low phase noise. Applications include timing references for data networking, telephony and satellite communications.

HIGH RELIABILITY DESIGN - BUILT IN REDUNDANCY

Two high quality 10 MHz SC-cut Oven Controlled Crystal Oscillators (OCXO) act as primary and secondary reference sources. The secondary oscillator acts as a backup and is phase locked to the primary on-line oscillator. In the event of a primary oscillator failure, an automatic switchover puts the backup on-line. The system has redundant surge-protected power supplies for an added degree of reliability.

PRECISION GPS RECEIVER

The embedded Trimble Resolution T GPS Timing Receiver provides precise GPS/UTC timing for disciplining the LinkCD OCXOs. The 12 channel, parallel tracking receiver provides an extremely accurate 1 PPS signal that is within 15 ns to UTC (1 sigma). The LinkCD system removes quantization error, further improving 1 PPS accuracy to 5 ns. This enables the LinkCD system to achieve a typical long term accuracy of ± 100 parts per trillion. The GPS data is also available as a separate serial output on the M&C data stream.

INTEGRATED DISTRIBUTION SYSTEM

The reference signal is amplified and distributed to 14 separate 50 ohm AC coupled outputs. The multiple outputs are distributed in a way that provides at least 30 dB port-to-port isolation. Eight ports provide a nominal output level of 0 dBm, and six additional high power ports provide signal at +7 dBm.

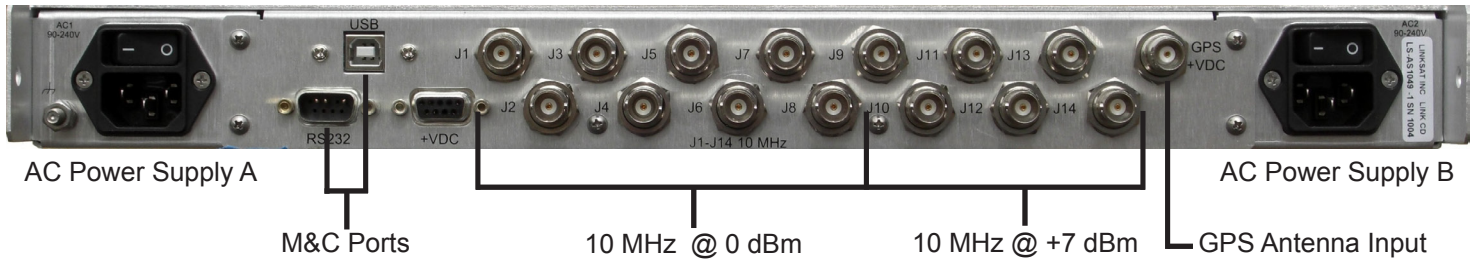
M&C USER INTERFACE

The LinkCD M&C provides front panel LED indications of status and faults. A PC-based GUI can be remotely accessed via the rear panel RS-232 serial connector or via the USB port. Monitored parameters in the GUI include online status, power supply status, fault information, in addition to continuously updated reference stability data and continuously updated GPS time.

OPTIONAL NTP SERVER

A Network Time Protocol (NTP) server is offered as an option in the LinkCD. The LinkCD equipped with the NTP option serves as a reference clock that serves network time to a stratum-1 server for satellite and terrestrial network applications. In a satellite network, for example, the LinkCD would act as a stratum-0 server to a LinkSat LinkIP, which would act as a stratum-1 server to the LAN and / or to LinkIPs in other sites in the network. The NTP option comes with three 10/100 Ethernet ports, as well as serial console and USB ports.

Rear Panel



Specifications

Stability

- Short Term, OCXO without GPS: $\leq \pm 0.01$ ppb
- Long Term, OCXO Locked to GPS: ± 0.1 ppb

OCXO SSB Phase Noise (maximum)

- 90dBc/Hz @ 1Hz offset
- 120dBc/Hz @ 10Hz offset
- 145dBc/Hz @ 100Hz offset
- 155dBc/Hz @ 1kHz offset
- 160dBc/Hz @ 10kHz offset

Protocols Supported

- 10 MHz
- 5 MHz /1 PPS, 25% / 75% Duty Cycle Output
- GPS Antenna & Cable Kit
- Custom Output Power Levels
- Ultra High Stability OCXOs
- Network Time Server (optional)

Options

- Network Time Server
- 1544 and 2048 MHz Outputs
- 1 PPS Output
- 5 MHz /1 PPS, 25% / 75% Duty Cycle Output
- IRIG-B Output
- GPS Antenna & Cable Kit
- Custom Output Power Levels
- Ultra High Stability OCXOs
- LCD Front Panel / Keypad

Optional Time Server Specifications

- Supports NTP v2, v3, & v4
- Supports SMNP v1, v2, & v3
- 2 x 10/100 Ethernet Ports (RJ-45)
- 2 x USB 2.0 Ports
- 1 x M&C Port (DB-9)
- Supports SSH & Telnet

Front Panel Indicators

- A Online: OCXO A Prime, OCXO B Backup
- B Online: OCXO B Prime, OCXO A Backup
- GPS Lock: Indicates presence of GPS 1 PPS
- Phase Lock: Backup OCXO locked to Primary
- PS-A OK: Presence of PS-A +5 & +12 VDC
- PS-B OK: Presence of PS-B +5 & +12 VDC

Physical Interface

- 10 MHz Outputs: BNC Female, 50 Ohm
- GPS Antenna Input: TNC Female, 50 Ohm
- RS-232 Serial Connector: DB-9M
- USB Interface Type: USB-B Receptacle
- External +VDC: +5 VDC, +12 VDC on DB-9F

Dimensions

- 19" (483 mm) Wide
- 17.5" (444 mm) Deep
- 1.5" (45 mm) High (1 RU)

Power

- Redundant Power Supplies with Filtered Inputs
- AC Power: 90 to 264 VAC, Autosensing
- Power Consumption: 45 Watts Max.