

The **TES-B01 Time and Frequency Source for New Generation Network** comes in two different sub rack: 19" and ETSI compatible. When hosted in 19" sub rack it is provided with keypad and display for local management. Status LED's are always present in both configuration (19" and ETSI compatible).

Two hot replaceable PSU (AC or DC) as well as 2 GbE LAN interface for remote management (i.e. web interface, SNMP), PTP/IEEE 1588 v2 Grandmaster clock, SyncE, NTP Server and SFP optical link are also present.

The Unit is designed to meet the most stringent ITU-T recommendation:

- ITU-T G.803: Architecture of transport networks based on the synchronous digital hierarchy,
- ITU-T G.8261: Timing and synchronization aspects in packet networks,
- ITU-T G.8262: Timing characteristics of a synchronous Ethernet equipment slave clock,
- ITU-T G.8264: Distribution of timing through packet networks
- ITU-T G.8275: Precision time protocol telecom profile for phase/time synchronization with full timing support from the network.

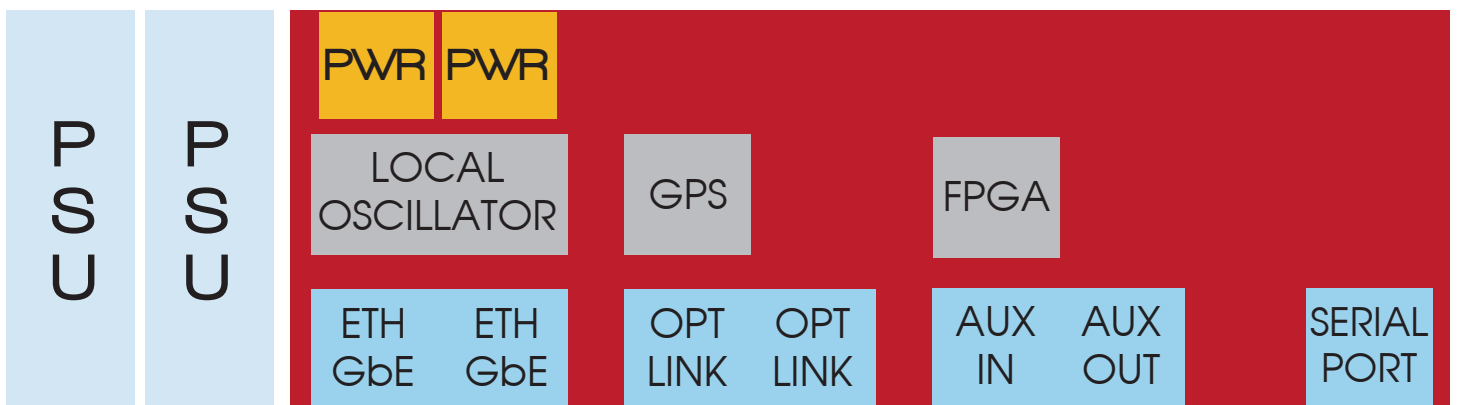
The **TES-B01 Time and Frequency Source for New Generation Network** is also equipped with a local oscillator (OCXO or Rubidium of your choice) and a GPS receiver.



TES-B01 Front View

- ✓ ARM Cortex A9 @ 667 MHz Dual Core
- ✓ 512 MB DDR3
- ✓ Linux 2.6 Operative System
- ✓ 2x GbE Network Interface
- ✓ 2x SFP 2.5 Gbps
- ✓ Support up to 500 clients (PTP-IEEE1588v2)
- ✓ Support up to 10,000 NTP requests per second (per Ethernet port)
- ✓ Complanar bus for high degree of flexibility
- ✓ Integrated GPS Receiver
- ✓ IEEE1588v2 and SyncE compliant
- ✓ NTP Time Server
- ✓ E1/T1 interfaces
- ✓ 10 MHz, PPS and ToD interfaces
- ✓ Dual hot replaceable PSU
- ✓ LCD crosspad and status LED's for local management
- ✓ Integrated web server and SNMP for remote management

Block Diagram



GNSS

Receiver: 1,575.42 MHz – 12 Channels,
Tracking: 12 satellite correlation,
PPS Accuracy: < 50 nsec,
Acquisition time: 4 minutes,
Stability when locked: +/- 1E-12 after 24 hours,
Antenna connector TNC
Optional: GLONASS

Interfaces

AC Power option, 110-220 VAC (IEC 60320 C14 socket)
DC Power option, 36-72 VDC (terminal block)
LCD Display and Crosspad for local management
SNMP protocol and integrated Web Server
2 GbE - PTP/SyncE I/O combo port
- shielded RJ45, 10/1000 BaseT Ethernet (also used for management)
- SFP (optical) 1000 BaseX
each port is configured as either as an input port (client) or an output port (master)
T1/E1 I/O via BNC connectors
- G.703/9 G.823/824 sync interface compliance
1 Time of Day (ToD) output via RS232
1 PPS Output via BNC connector
1 10MHz output via BNC connector

IEEE 1588 v2 PTP Output

PTP output client capacity: up to 500 clients
Up to 128 messages per second per client
1-step (2-step clock optional)
PTP Profiles
- ITU-T G.8265.1 Frequency Profile (IPV4)
- Telecom Profile (ITU-T G.8265.1)
- Default Profile (IEEE 1588 v2)
VLAN (802.1Q, 802.1p)
Best Master Clock Algorithm (BMCA), with Default Profile

IEEE 1588 v2 PTP Input

Boundary Clock function
Multi-sync function uses both PTP input or frequency input (SyncE or E1/T1)
IPV4
1-step (2-step clock optional)
PTP Profiles
- Telecom Profile (ITU-T G.8265.1)

NTP

Protocol: NTPv4
Role: Master Clock Stratum 1 (with GPS) – slave clock Stratum 2
Packet rate: 20.000 transactions per second

Time and Frequency Accuracy

When locked to GNSS:
Time within 100ns of UTC (ITU-T G.8272 sec. 6 for PRTC)
Frequency: compliant to G.811 frequency accuracy.
VLAN (802.1Q, 802.1p)

Holdover Performance

OCXO: 1E-10 / day
Rb: 2E-11 / day

Holdover values are approximated and assume operation at constant temperature, no initial frequency or phase offset, and that the unit has been powered for two weeks and locked to GNSS for three consecutive days.

Synchronous Ethernet

SyncE can be used as a frequency input and can be generated as an output (as Master)
Conforms to relevant sections: ITU-T G.8261, G.8262 and G.8264 ESMC

Network Support

IPV4
ICMP (RFC 792)
HTTP
TELNET
SNMP
DHCP (RFC2131)
IEEE 1588 v2 PTP
NTP
IEEE 802.1Q, 802.1p VLAN
DSCP

Mechanical

Size:	Height:	44 mm
	Width:	438 mm
	Depth:	295 mm

Rack mounts: 19" and 23" rack mount option (ETSI compatible).