WHITE RABBIT
ZEN TIME PROVIDER
WR-ZEN TP-32BNC

The reliable node that provides multiple legacy 10MHz/xPPS timing outputs for all equipment in your rack cabinet through White Rabbit time transfer and its redundant connections.

The WR-ZEN TP-32BNC easily distributes time and frequency to other equipment by implementing standard timing protocols such as PTP, NTP, IRIG-B, 10MHz/xPPS, etc.

The WR-ZEN TP-32BNC combines ultra-stable clocks with low jitter and temperature compensated clock resources to enhance its synchronization accuracy.
**HIGHLIGHTS**
- Sub-nanosecond time accuracy
- Remote configuration and monitoring
- Distance range over 80 km using fiber
- Xilinx Zynq Family (ARM Dual Core)
- Linux OS
- WR and PTPv2
- Robustness & Redundancy
- 32 configurable timing outputs

### System On-Chip
- **SoC**: Xilinx Zynq series
- **CPU**: Dual ARM® Cortex™-A9 MP@ 866MHz
- **Memories**:
  - 512 MB DDR3 (32-bit bus)
  - 256 Mbits Quad-SPI Flash
  - 16GB SD Card

### Software
- **OS**: Linux (Kernel v4.6)
- **Time**: White Rabbit
- **Sync.**: PTPv2 (default and G.8265.1 profiles, up to 16 unicast clients)
- **NTP**: (client & server)
- **Protocols**: TCP/IP, SSH, SNMPv3, TFTP, DHCP, ARP, DNS, HTTP (web interface)

### Front Panel
- **Ethernet**: 2x 10/100/1000 Base-T RJ45 (Management, PTP, NTP)
- **SFP Ports**: 2x 1GbE
- **Clocks I/O**: 5xSMA coaxial connectors (3V/50Ω):
  - 10 MHzSINOUT ref. clock (PLL)
  - CLK OUT (LVTTL)
  - PPS OUT/IRIG-B (LVTTL)
  - PPS IN (LVTTL)
  - 10MHz IN (TTL/CMOS/ECL/clipped sine)
- **Fanout**: 32 BNC configurable outputs divided in 2 groups (1.7V/50Ω):
  - A&B: 10MHz (xPPS under license) with 50Ω termination
  - C&D: xPPS, IRIG-B with selectable 50Ω termination
- **LCD**: Information panel for alert & network
- **Debug**: USB Mini-B (ARM-UART)

### Clock Performance
<table>
<thead>
<tr>
<th>Phase noise (dBc/Hz)</th>
<th>Master</th>
<th>GM</th>
<th>Slave</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Hz</td>
<td>-78.7</td>
<td>-86.2</td>
<td>-76.5</td>
</tr>
<tr>
<td>10Hz</td>
<td>-107.5</td>
<td>-87.6</td>
<td>-79.7</td>
</tr>
<tr>
<td>100Hz</td>
<td>-132.6</td>
<td>-107.2</td>
<td>-112.4</td>
</tr>
<tr>
<td>1kHz</td>
<td>-143.5</td>
<td>-140.8</td>
<td>-143.6</td>
</tr>
<tr>
<td>10kHz</td>
<td>-147.5</td>
<td>-143.0</td>
<td>-145.3</td>
</tr>
<tr>
<td>100kHz</td>
<td>-145.6</td>
<td>-146.0</td>
<td>-149.1</td>
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<table>
<thead>
<tr>
<th>TDev</th>
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<tbody>
<tr>
<td>@1 sec</td>
</tr>
<tr>
<td>@ 10 sec</td>
</tr>
<tr>
<td>@ 100 sec</td>
</tr>
<tr>
<td>@ 1000 sec</td>
</tr>
</tbody>
</table>

### Physical Specification
- **Dimension**: 428 mm x 88 mm x 220 mm
- **Color**: White (Metallic)

### Certification
- **Soldering**: IPC-A-610 Rev E Class 2
- **Others**: CE, FCC, ROHS, SE, ISO-9001, ISO-14001

### Power Supply
- **Input**: Redundant 2x 100-240VAC, 50-60 Hz
- **Output**: 12V DC, 6.66A ~ 80W max

### Environmental Conditions
- **Temperature**: -10°C ~ +50°C
- **Humidity**: 0% ~ 90% RH