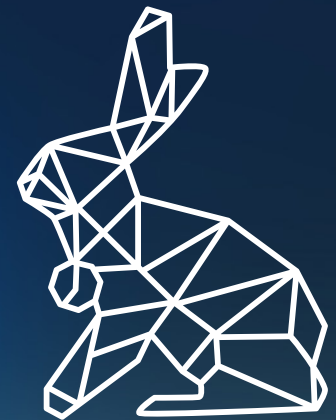


# WHITE RABBIT ZEN TIME PROVIDER

## WR-ZEN TP-FL



The fundamental standalone node that provides the White Rabbit features to a wide range of applications making use of its redundant connections. The WR-ZEN TP-FL easily distributes time and frequency to other equipment by implementing widely available timing protocols: PTP, NTP, 10MHz/PPS.

The WR-ZEN TP-FL combines ultra-stable clocks with low jitter and temperature compensated clock resources to enhance its synchronization accuracy in a cost-effective 1U form factor.

Features:

- 4x 1PPS expansion board optionally supported.
- 8x 1PPS expansion board optionally supported.

## Technical Specifications / WR-ZEN TP-FL

System On-Chip	
SoC	Xilinx Zynq series
CPU	Dual ARM® Cortex™-A9 MP@ 866MHz
Memories	<ul style="list-style-type: none"> <li>• 512 MB DDR3 (32-bit bus)</li> <li>• 256 Mbits Quad-SPI Flash</li> <li>• 16GB SD Card</li> </ul>
Software	
OS	Linux (Kernel v4.6)
Time Sync.	White Rabbit 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): <ul style="list-style-type: none"> <li>• 10 MHzSINOUT ref. clock (PLL)</li> <li>• CLK OUT(LVTTL)</li> <li>• PPS OUT (LVTTL)</li> <li>• PPS IN (LVTTL)</li> <li>• 10MHz IN (TTL/CMOS/ ECL/clipped sine)</li> </ul>
LCD	Information panel for alert & network
Expansion	4x SMA coaxial connectors(3.3V/50Ω): <ul style="list-style-type: none"> <li>• PPS out(LVTTL)</li> </ul>

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
4x1PPS expansion / 8x1PPS expansion boards optionally supported.

Clock Performance				
Phase noise (dBc/Hz)		Master	GM	Slave
	1Hz	-78.7	-86.2	-76.5
	10Hz	-107.5	-87.6	-79.7
	100Hz	-132.6	-107.2	-112.4
	1kHz	-143.5	-140.8	-143.6
	10kHz	-147.5	-143.0	-145.3
	100kHz	-145.6	-146.0	-149.1
TDev				
	• @1 sec		1.92E-11	
	• @ 10 sec		1.93E-12	
	• @ 100 sec		1.94E-13	
	• @ 1000 sec		1.98E-14	

### Physical Specification

Dimension	444 mm x 43 mm x 221 mm
Color	White (Metallic)

### Certification

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

### 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

