



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.



Technical Specifications / WR-ZEN TP-FL

System On-Chip

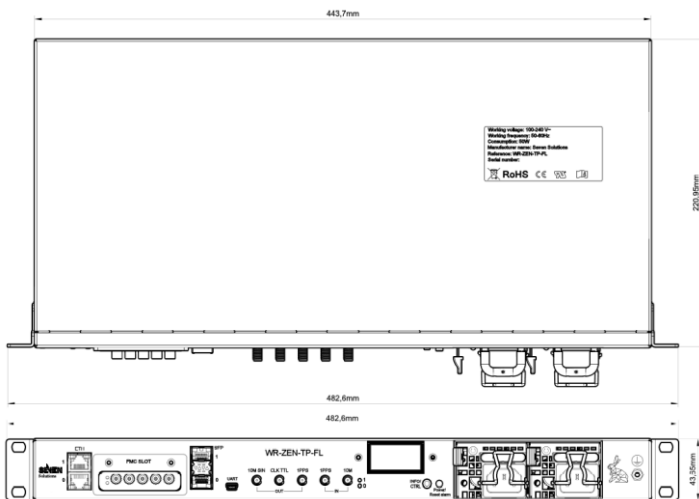
SoC	Xilinx Zynq series
CPU	Dual ARM® Cortex™-A9 MP@ 866MHz
Memory	<ul style="list-style-type: none"> 512 MB DDR3 (32-bit bus) 256 Mbits Quad-SPI Flash 16GB SD Card

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	5x SMA coaxial connectors (3.3V/50Ω): <ul style="list-style-type: none"> 10 MHz SIN OUT ref. clock (PLL) CLK OUT (LVTTTL) PPS OUT (LVTTTL) PPS IN (LVTTTL) 10MHz IN (TTL/CMOS/ECL/clipped sine)
LCD	Information panel for alert & network
Expansion	4x SMA coaxial connectors(3.3V/50Ω): <ul style="list-style-type: none"> PPS out(LVTTTL)



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

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

