



WRS-3/18

White Rabbit Switch v3.3

Standalone version with 18 SFP ports

White Rabbit Switch (WRS) is the key component of the White Rabbit Protocol that provides precision timing and high synchronization over an Ethernet-based network.

By using a WRS in your facilities you access to following features:

- Time precision: sub-nanosecond timing
- Scalability: thousands of nodes in the network
- Distance range: over 10km using fiber
- PTPv2, Sync-E supported
- Deterministic: fixed latency
- Robustness & Redundancy
- Dynamic calibration
- RS-232 and Ethernet management

Actually, it is the most accurate, flexible and easiest solution to synchronize different nodes on your installation over Ethernet.

The WRS-3/18 version is a standalone version for 18 SFP connectors.

FPGA	
Type	Xilinx Virtex-6 (LX240T)
Package	1156-pin BGA
Slices	37,680 (4 LUTs and 8 flip-flops)
Memories	416x36Kb (9,504Kb) Block RAM 32MB NOR Flash
Softcore	LatticeMico32 (LM32)
I/O	20 GTX transceivers for SFP links 40 GPIO for generic purpose (LEDs, SFP detection, ...)
Monitoring	Monitoring power supply Temperature sensor control

On-Chip Clock Generation	
PLL	AD9516 (14-Output Clock Generator with Integrated 1.6 GHz VCO)
Synthesizer	TI CDCM61002RHBT (28-683Mhz)
DAC	2xAD5662BRJ (16bit; 2.7-5.54V)

Front Panel	
Clocks I/O	5 SMC coaxial connectors: <ul style="list-style-type: none"> 10 MHz reference clock input (GPS/Cesium) 1 x 62.5 MHz output reference clock 1xPPS Input & 1xPPS Output

Ports	18 x SFP cages*. <i>*SFP transceivers are not included in all packages. Seven Solutions recommends 1.25Gbps, 1490 /1310 nm, Single Fiber Bi-directional SFP.</i>
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Management	100Base-T Ethernet (Remote) USB Mini-B (Local)
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Back Panel	
GPS	RS232 Port (input from GPRMC)
Debug	USB Mini-B FPGA USB Mini-B ARM

Certification	
Soldering	IPC- 610 Rev E Class 2
Others	ISO-9001, ISO-14001, CE, RoHS

Power Supply	
Input	100-240VAC, 2.0A 50-60 Hz
Output	12V DC, 6.66A – 80W max

Environmental Conditions	
Temperature	-10°C ~ +50°C

0% ~ 90% RH



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CPU	
Type	ARM Atmel AT91 SAM9G45
Core	400MHz (ARM926E)
Memories	64MB DDR2 (16-bit bus chip) 256MB NAND flash chip 8MB boot flash
I/O	32bit Async Bridge with FPGA 100Base-T Ethernet

Software	
OS	Linux (Kernel v2.6.39)
Timing	WRP daemon (node discovery, etc.) PTPv2 daemon
Switching	IEEE802.1x protocols (multicasting, spanning tree, GMRP/-GARP) VLAN Tagging SNMP switch management
Protocols	TCP/IP, SSH, SNMP, TFTP, DHCP, ARP, DNS

Physical Specification	
Dimension	482,8x42,34x222 mm

Weight	
Color	White (Metallic)

