

# 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"> <li>10 MHz reference clock input (GPS/Cesium)</li> <li>1 x 62.5 MHz output reference clock</li> <li>1xPPS Input &amp; 1xPPS Output</li> </ul>

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

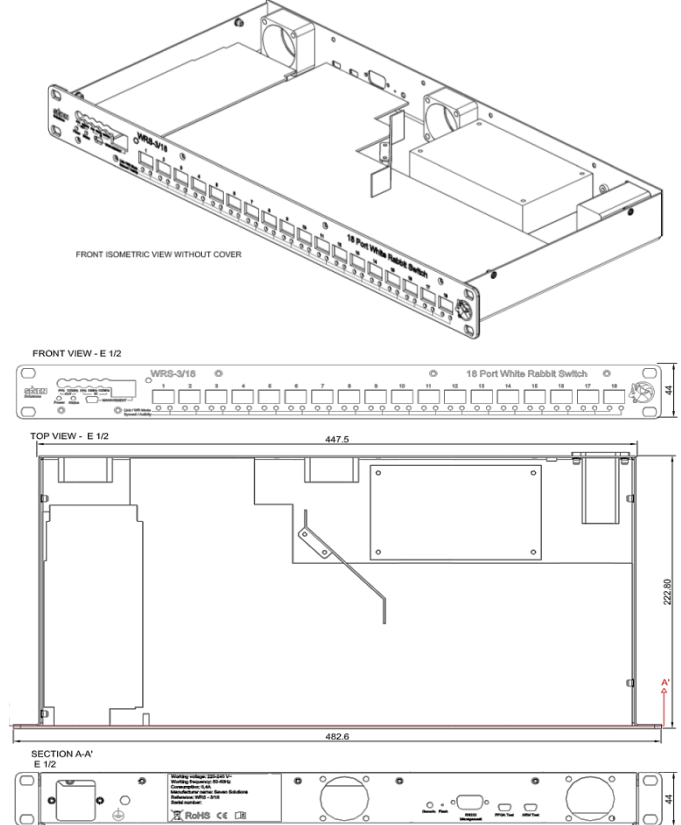
Environmental Conditions	
Temperature	-10°C ~ +50°C
	0% ~ 90% RH

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)



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