19" Managed 10G Ethernet Switch

RedFox 7528 Series

- **High performance and configurable**
  - Throughput for large networks and high bandwidth requirements
  - 4 x 10 Gbit uplink SFP+ fibre ports[1]
  - Advanced WeOS functionality
- **Designed for demanding mission critical applications**
  - Extensive range of approvals
  - Type tested and certified at independent labs
  - High-level of isolation between interfaces
- **Robust and reliable for long service life**
  - Ultra-robust IP40 fanless all-metal housing
  - Class-leading MTBF
  - -40 up to +70°C without ventilation holes
- **Unique future-proof industrial networking solutions**
  - Compliant cybersecurity features
  - Strong set of protocols and functions
  - Easy to use

EN 50121-4 Railway Trackside | EN 61000-6-2 Industrial Immunity | EN 61000-6-4 Industrial Emission

The RedFox-7528 Industrial Ethernet switch is designed to be a workhorse, providing performance and robustness today and for years to come. In today's world, many applications combine data, voice, and video, and as a result, high performance and reliability are required. The RedFox-7528 high performance industrial Ethernet switches provide an ideal solution for these large-scale industrial networks.

RedFox-7528 is designed for 19" cabinets according to the ETSI standard, which makes it suitable for use in control room networks as well as for cabinets installed along railway trackside installations. In addition to the ultra-rugged IP40 fanless all metal housing, it is equipped with configurable I/O fault contacts, which makes it ideal for easy installation and monitoring in industrial applications.

To ensure long service life and market leading MTBF, only industrial grade components are used. In addition, the switches can withstand constant vibration, extreme temperatures and demanding electrical environments. RedFox-7528 has been tested both by Westermo and external test labs to meet many standards regarding EMC, isolation, vibration and shock, all to the highest levels suitable for heavy industrial environments and rail trackside applications.

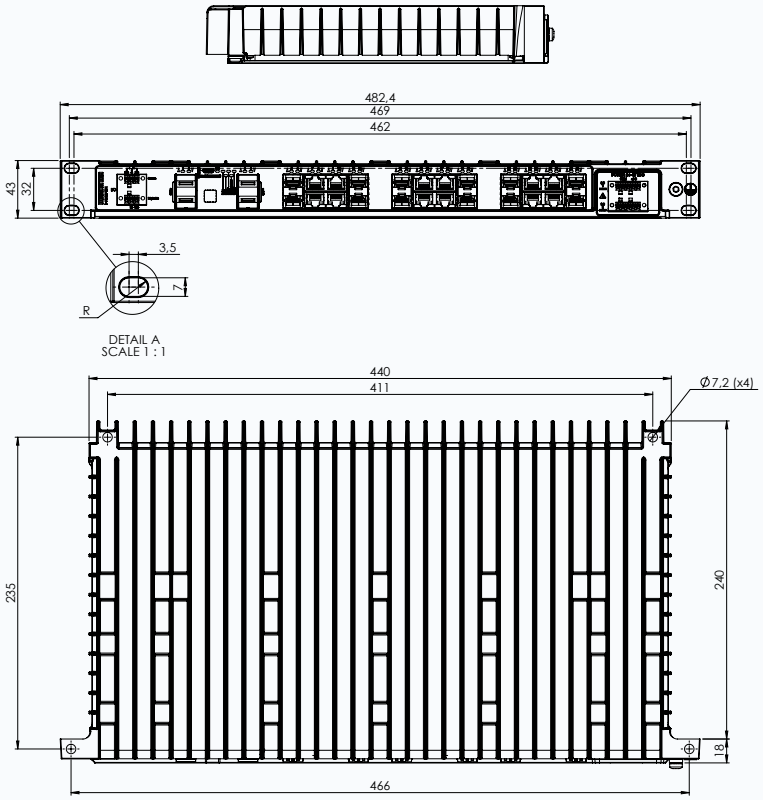
Powered by WeOS, the Westermo network operating system, the switches are flexible, feature-rich as well as easy to install and configure. WeOS has been developed to allow cross-platform and future-proof solutions and can deliver resilient and flexible networks, e.g. the FRNT ring protocol with very fast failover.

Ensuring the security of industrial data communication networks is of paramount importance, especially with the nature of cyberattacks becoming increasingly sophisticated. To reduce risk and increase cyberresilience, RedFox-7528 has an extensive suite of advanced cybersecurity features. These can be used to build networks in compliance with the IEC 62443 standard, which defines technical security requirements for data communication network components.

[1]In the extended version, the RedFox-7528-E, the 10G line speed routing/layer 3 performance is valid for a limited layer 3 feature set that is specified more in detail in the WeOS section in this datasheet

Specifications - RedFox-7528

Dimensional drawing



Housing	
Dimensions (W x H x D)	482.4 x 43 x 258 mm (18.99 x 1.69 x 10.16 inches)
Housing	Full metal
Weight	3.8 kg

Interface	
SFP+ ports	4 x 10 Gbit/s
RJ-45 copper ports	12 x 10/100/1000 Mbit/s, Ethernet TX
SFP ports	12 x 100/1000 Mbit/s
Console port	1 x micro USB
Micro SD	1 x Secure Digital 2.0
I/O (1 digital in, 1 digital out)	1 x 5-ports detachable screw terminal

Power parameters	
Rated voltage	24 to 48 VDC
Operating voltage	18 to 60 VDC
Rated current	1.39 A at 24 VDC 0.68 A at 48 VDC
Dual input	Yes
Galvanic isolation	To all ports

Environmental	
Temperature, operating	-40 up to +70°C (-40 up to +158°F)[a]
Temperature, storage and transport	-40 to +85°C (-40 to +185°F)
Ingress protection	IP40
Humidity, operating	5-95% relative humidity
Corrosive gases	IEC 60068-2-60, method 3, ISA-S71.04 class G3 environment
Altitude	2000 m/80 kPa

[a] Depending on SFP+ transceiver type

MTBF hours	
Telcordia	763,000 hours
MIL-HDBK 217F	371,000 hours

Type	Approval/Compliance
EMC	• EN/IEC 61000-6-2, Immunity industrial environments • EN/IEC 61000-6-4, Emission industrial environments • FCC Part 15.105 class A
Trackside	• EN 50121-4/IEC 62236-4, Railway signalling and telecommunications apparatus
Safety	• EN/IEC/UL 62368-1, Safety Requirements for audio/video, information and communication technology equipment

Switch properties	
Number of VLAN	64
Priority queues	8

Software	
WeOS	WeOS 5; westermo.com/solutions/weos
WeConfig	westermo.com/solutions/weconfig

Warranty	
Validity	5 years

Ordering information	
Art. no.	Description
3641-4540	RedFox-7528-F4G10-F12G-T12G-LV
3641-4440	RedFox-7528-E-F4G10-F12G-T12G-LV

Accessories	
3125-0150	PS-60, DIN-rail Power Supply
100 Mbit transceivers 1 Gbit transceivers 10 Gbit transceivers	westermo.com/products/accessories/sfp-transceivers

Specification WeOS 5

The WeOS operating system has been developed by Westermo for its current as well as future range of Ethernet hardware products. This layer 2 and layer 3 switching solution enables Westermo to create complex multimedia ring networks and routing solutions. WeOS not only provides solutions to many challenging industrial networking issues, but also helps to protect investments by ensuring the future availability of fully compatible solutions. WeOS is the core of our latest ranges of Ethernet hardware allowing complex multimedia ring networks and routing solutions to be created.

Westermo has many years of experience developing products for industrial applications. At the heart of all Westermo networking solutions is the need for ease of use. By standardising on a single operating system for all Westermo Ethernet products this helps to simplify the installation, operation and maintenance of individual devices and complete networks. Once a user is familiar with a Westermo product, that knowledge can be readily applied to all our other devices. A web screen simplifies the configuration of many functions, whilst a command line interface allows for fine tuning.

WeOS Standard - Layer 2 protocols and functionality
Resilience and High Availability
FRNTv0/v2 flexible ring topologies (multiring, subrings and ring coupling), IEEE 802.1D/802.1w (RSTP), IEEE 802.1AX/802.3ad Link Aggregation (LACP and Static), IEC 62439-2 Media Redundancy Protocol (MRP; single instance or dual instances at MRP master)[a.]
Layer 2 Switching
IEEE 802.1D MAC Bridges, IEEE 802.1Q Static VLAN and VLAN Tagging, Q-in-Q Tunnelling, IEEE 802.1AB LLDP, IGMPv1/v2/v3 Snooping, Static Multicast MAC filters, MLDv1/v2 Snooping
Layer 2 QoS
IEEE 802.1p Class of Service with flexible classification (VLAN tag priority, IP DSCP/ToS, Port ID), MAC Authentication, IEEE 802.1X Port Access Control, Ingress and Egress Rate limiting
IP Host Services
Static IPv4/v6 Address, DHCP Client, DNS Client, DDNS, ZeroConf (mDNS and SSDP), NTP Client (NTPv4), IPv4/v6 Interfaces (Ethernet, VLAN, Loopback and Blackhole)
Network Servers
DHCP Server (including options 1, 3, 6, 7, 12, 15, 42, 61, 66, 68 and 82), DHCP Relay Agent (including options 54 and 82), DNS Proxy Server (DNS forwarder and Host records), NTP client/server (NTPv4), IEEE 1588/PTP Transparent Clock (including Power Profile v1/v2)[b.]
Management Tools
Westermo configuration tool WeConfig, Web interface (HTTP and HTTPS), Command Line Interface (CLI) via console port, SSHv2 and Telnet, Local and Central Authentication (RADIUS/TACACS+), Role Based Access Control (RBAC), Password Compliance Policy, SNMPv1/v2c/v3, Secure Copy (SCP) for remote file upload and download, Local file management (via HTTP, FTP, TFTP and SCP), Load/save files from/to external memory[c.], Configuration and Deployment using external memory[c.], Tech support button, Flexible alarm and event handling system, RFC5424/RFC3164 Syslog (log files and remote syslog server), Port monitoring
SNMP MIB Support (read-only)
RFC 1213 MIB-2, RFC 2819 RMON MIB, RFC 2863 Interface MIB, RFC 3433 Entity Sensor MIB, RFC 3635 Ether-like Interface MIB, RFC 4133 Entity MIB, RFC 4188 Bridge MIB, RFC 4318 RSTP MIB, RFC 4363 Q-BRIDGE MIB, RFC 4836 MAU MIB, IEEE 802.1AB LLDP MIB, IEEE 802.1AX LAG MIB, IEC 62439-2 MRP MIB, WESTERMO-DDM MIB (SFP), WESTERMO-EVENT MIB, WESTERMO-FRNT MIB, WESTERMO-INTERFACE MIB, WESTERMO-TCN MIB

[a.] Available as add-on-function. Please see your local Westermo sales contact to purchase a license for your product.

[b.] Except 10G ports

[c.] Only applicable for models with SD card slot

WeOS Extended - Layer 3 protocols and functionality[a.]
IP Host Services
IP Interfaces (SSL, VPN, GRE)
IP Routing and VPN
Static IP Routing, Floating Static Routes, Multinetting, Proxy ARP, Dynamic IP routing (OSPFv2, RIPv1/v2), VRRPv2/v3, Protocol Independent Multicast - Sparse-Mode (PIM-SM), Static Multicast Routing, Stateful Inspection Firewall, Firewall Hit Counters, IP Masquerading (NAT/NAPT), Port Forwarding, Stateless NAT (1-1 NAT), IPsec VPN (IKEv2 PSK), SSL VPN (Client and Server, Certificate Authentication, Pre-shared Key (PSK) Point-to-Point Mode, Layer-2 and Layer-3 VPN, Layer-2 VPN bridging, Address pool and address per CN, TLS Authentication), Generic Routing Encapsulation (GRE), Policy Based Routing, Equal-Cost Multi-Path (ECMP), OpenVPN Multipath TCP (MPTCP), Route monitor
SNMP MIB Support (read-only)
RFC 2787 VRRPv2 MIB, RFC 6527 VRRPv3 MIB

[a.] Products with software level WeOS Extended include all functionality listed for WeOS Standard

Redfox 7528: - Offloading Unicast Routing

WeOS introduces hardware offloading for Unicast routing on the Redfox 7000/5000 series. This allows Unicast routes to be handled directly in the devices switch core, providing line-speed level routing performance for the offloaded routes.

The offloading setting is in this release limited in scope and therefore not enabled by default. The known limitations for offloading in this release are:

- Routed IPv6 traffic is handled by the CPU
- IP multicast traffic will be routed by the CPU
- Firewall forwarding chain will not impact any routed Unicast traffic
- NAT will not be performed on any routed traffic
- Only VLAN interfaces can be used, usage of port-interfaces will not perform any traffic forwarding
- Policy-Based Routing will not function
- SSL-tunnel will function to some extent via the CPU but is strongly discouraged from being used in this release

For more information see the WeOS user guide