19" Managed Ethernet Switch

RedFox 5528 Series

- **At the core of large high-performance industrial networks**
  - 28 Gigabit ports with up to 24 SFP fibre ports
  - Powerful CPU and switchcore
  - Advanced WeOS support
- **Designed for demanding Edge Network applications**
  - Various combinations of port and power options
  - Multiple network resilience solutions
  - Industrial, trackside and marine type tested
- **Robust and reliable for long service life**
  - Class-leading MTBF
  - Ultra-robust IP40 metal housing with all connectors on front
  - Only industrial grade components
- **Unique future proof industrial networking solutions**
  - Advanced cybersecurity features
  - Routing acceleration in hardware[1]
  - IEEE 1588v2 Precision Time Protocol (PTP)

EN 50121-4 Railway Trackside
EN 61000-6-1 Residential Immunity
EN 61000-6-3 Residential Emission
EN 61000-6-4 Industrial Emission
EN 61010-1 Safety Industrial Equipment

The RedFox 5528 series is designed for the core of large high-performance industrial networks and has been developed to cater to the needs of current and future industrial data networks, combining outstanding performance, durability and reliability. These switches are ideal for handling the big data and high bandwidth requirements typically found within transportation, manufacturing, energy, smart cities and other applications.

Integrating hardware, software and network design support tools, this next generation switch platform offers advanced capabilities, the lowest total cost of ownership and will create the most reliable and resilient networks on the market.

The switch is engineered to maintain uninterrupted data communication, even in exceptionally harsh environments. The RedFox 5528 series is tested and certified to withstand extreme temperatures, vibrations and shocks. The switches only use industrial grade components which contributes towards a market leading mean time between failure (MTBF), maximized service life, and reduced operational and life cycle costs.

Various port configurations are available, all with full gigabit speed, that can be further customized with SFP transceivers. The RedFox 5528 series is available in either a DC or AC power supply as well as a configurable I/O fault contact making the switch ideal for monitoring in industrial applications.

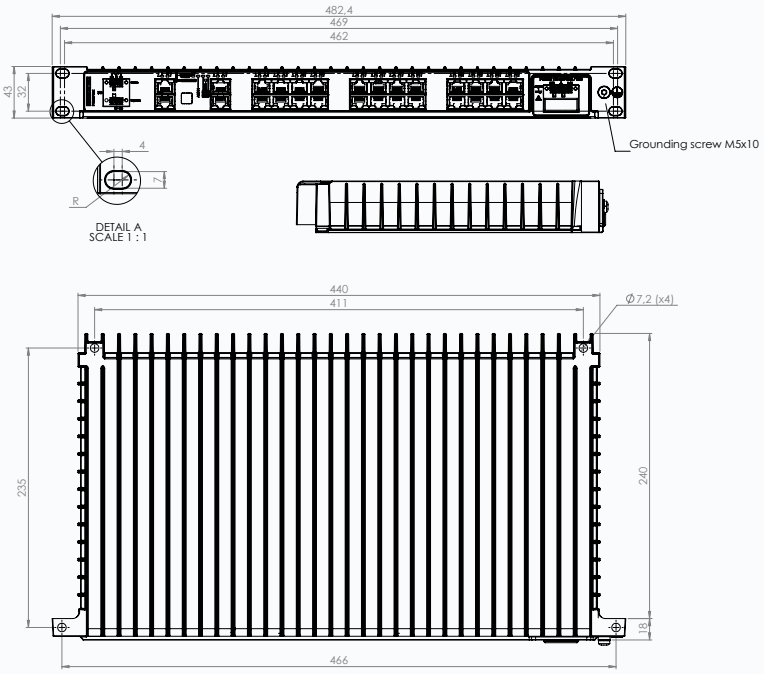
The RedFox 5528 series is powered by the next generation WeOS operating system, which ensures robust operation and support for an expanding range of protocols and features. In addition, recognizing the growing sophistication of cyberattacks, an extensive suite of cyber security tools is available.

The switches are also prepared for routing acceleration, extended cybersecurity and time synchronization IEEE 1588v2 applications, making them an ideal solution to meet future security and bandwidth requirements.

[1]Released in 2nd phase

Specifications - RedFox 5528

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	RedFox-5528-(E-)T28G	RedFox-5528-(E-)F4G-T24G	RedFox-5528-(E-)F16G-T12G	RedFox-5528-(E-)F24G-T4G
RJ-45 copper ports 10/100/1000 Mbit/s	28	24	12	4
SFP 100/1000 Mbit/s	0	4	16	24
Console micro USB	1	1	1	1
Micro SD	1	1	1	1
I/O (1 digital in, 1 digital out)	1	1	1	1

Power parameters	RedFox-5528-(E-)LV	RedFox-5528-(E-)HV
Rated voltage	24 to 48 VDC	110 to 240 V AC/DC
Operating voltage	18 to 60 VDC	85 to 264 V AC/DC
Rated current, all T28G models	0.95 A at 24 VDC 0.49 A at 48 VDC	0.12 A at 240 V AC/DC 0.24 A at 110 V AC/DC
Rated current, all T24G models	1.02 A at 24 VDC 0.51 A at 48 VDC	0.13 A at 240 V AC/DC 0.26 A at 110 V AC/DC
Rated current, all T12G models	1.17 A at 24 VDC 0.59 A at 48 VDC	0.15 A at 240 V AC/DC 0.30 A at 110 V AC/DC
Rated current, all T4G models	1.29 A at 24 VDC 0.64 A at 48 VDC	
Dual input	♦	
Galvanic isolation to all ports	♦	♦

Models	RedFox-5528-(E-)F24G-T4G-LV	RedFox-5528-(E-)LV	RedFox-5528-(E-)HV
Environmental			
Temperature, operating: -40 to +74°C (-40 to +165°F)		♦	
Temperature, operating: -40 to +70°C (-40 to +158°F)	♦		♦
Temperature, storage and transport: -50 to +85°C (-58 to +185°F)	♦	♦	♦
Ingress protection: IP40	♦	♦	♦
Humidity, operating: 5-95% relative humidity	♦	♦	♦
Corrosive gases: IEC 60068-2-60	♦	♦	
Altitude: 2000 mA/80 kPA	♦	♦	♦
MTBF hours			
Telcordia, all T28G models		620.000 hours	653.000 hours
Telcordia, all T24G models		643.000 hours	678.000 hours
Telcordia, all T12G models		706.000 hours	710.000 hours
Telcordia, all T4G models	860.000 hours		
Approvals EMC			
EN 61000-6-1		♦	
EN 61000-6-2	♦	♦	♦
EN 61000-6-3		♦	
EN 61000-6-4	♦	♦	♦
Approvals EMI			
FCC Part 15.105 class A	♦		♦
FCC Part 15.105 class B		♦	
Approvals Marine			
DNV GL rules for classification - Ships and offshore units	♦	♦	
Approvals Safety			
EN/IEC/UL 62368-1	♦	♦	
EN/IEC/UL 61010-1, 61010-2-201			♦
Approvals Trackside			
EN 50121-4	♦	♦	♦
IEC 62236-4	♦	♦	♦
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		

Art.no.	Product	WeOS standard	WeOS extended
3641-4500	RedFox-5528-T28G-LV	♦	
3641-4510	RedFox-5528-F4G-T24G-LV	♦	
3641-4520	RedFox-5528-F16G-T12G-LV	♦	
3641-4600	RedFox-5528-F24G-T4G-LV	♦	
3641-4508	RedFox-5528-T28G-HV	♦	
3641-4518	RedFox-5528-F4G-T24G-HV	♦	
3641-4528	RedFox-5528-F16G-T12G-HV	♦	
3641-4400	RedFox-5528-E-T28G-LV	♦	♦
3641-4410	RedFox-5528-E-F4G-T24G-LV	♦	♦
3641-4420	RedFox-5528-E-F16G-T12G-LV	♦	♦
3641-4700	RedFox-5528-E-F24G-T4G-LV	♦	♦
3641-4408	RedFox-5528-E-T28G-HV	♦	♦
3641-4418	RedFox-5528-E-F4G-T24G-HV	♦	♦
3641-4428	RedFox-5528-E-F16G-T12G-HV	♦	♦

Accessories	
3125-0150	PS-60, power supply, DIN-mounted (available for LV models)
100 Mbit transceivers 1 Gbit transceivers	https://www.westermo.com/products/accessories/sfp-transceivers
WeConfig	https://www.westermo.com/products/software/weconfig

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)
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[b.], Configuration and Deployment using external memory[b.], 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.] 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