



# Hermes 2000

## 28-Port Layer 2 Gigabit Ethernet Switches



### Description

Hermes 2000 series Layer 2 Gigabit Ethernet switches are designed to meet the stringent requirements of IEC 61850-3 for substation automation. Engineered for reliable operation in harsh environments, this switch offers full compliance with IEEE 1613 standards, ensuring resilience against high levels of electromagnetic interference (EMI), extreme temperatures, and mechanical stress. Equipped with 28 ports and advanced features like VLAN, PTP transparent clock function, IGMP snooping, and QoS, Hermes 2000 switches deliver high-performance networking for protection and control applications.

A variety of models are available with different port configurations and power supply ranges. Configuration is accomplished via the WebUI, CLI, SSHv2 and Telnet, or via micro-SD card. Syslog and SNMP are supported for management and alarming.

Hermes 2000 switches ensure reliable and efficient data transmission for protection, monitoring, and control in modern substation environments, providing the performance, security, and scalability required for today's smart grid applications.

### Key Features

#### Gigabit Ethernet

- 28 Gigabit (10/100/1000Mbps) ports (SFP and copper)
- Transparent to PRP, GOOSE, SV, and MMS

#### Rugged Design

- IEC 61850-3 and IEEE 1613 compliant
- Meets Class 2 reliability for guaranteed zero packet loss
- Compact, fanless aluminum enclosure

#### Redundant Networking

- PRP transparency with RSTP or FRNT protocols ensure rapid network recovery
- PTP transparent clock function maintains network time

#### Secure

- IEEE 802.1x and VLAN support for securing network access and traffic
- HTTPS and SSHv2 for secure configuration



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### Technical Data

#### General Data

Unit Dimensions	19.0"W x 1.69"H x 9.45"D (482.4 x 43 x 240mm)
Mounting / Front Panel Height	19" Rack / 1 RU
Housing Material	Aluminum
Degree of Protection	IP40-rated enclosure protection
Weight	8.4 lb (3.8 kg)

#### Power Supply

Supply Voltage Range	24-48V dc +/-20% or 110-240V dc/ac (50/60Hz) +/-20%
Power Consumption	LV and LVLV models: 30W HV and HVHV models: 33W
Redundant Power Supply	Optional (model dependent)
Connector Type	Pluggable compression screw terminal (16-28AWG/0.08-1.5mm <sup>2</sup> )

#### Indicators

LED	Status (bi-color red/green) RSTP/USR1 (green) FRNT (bi-color red/green) Power Supply 1 (bi-color red/green) Power Supply 2 (bi-color red/green) USR2 (configurable) LAN ports (bi-color yellow/green)
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#### Environmental

Operating Temperature	-40°C to +70°C (-40°F to +158°F)
Storage Temperature	-50°C to +85°C (-58°F to +185°F)
Humidity	5% to 95%, non-condensing
Altitude	2000m



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Ethernet	
Ports	28
Connector Type	RJ45, SFP
Data Rate	10/100/1000Mbps (RJ45) 100/1000Mbps (SFP)
VLANs	64
Priority Queues	8

Digital Input	
Number of Inputs	1
Connector Type	Pluggable compression screw terminal (16-28AWG/0.08-1.5mm <sup>2</sup> )
Voltage Input Signal	60V dc
Turn-On Voltage level	8V dc
Turn-Off Voltage level	5V dc
Max Current Drain	2.9mA

Alarm Contact	
Number of Outputs	1
Connector Type	Pluggable compression screw terminal (16-28AWG/0.08-1.5mm <sup>2</sup> )
Output Signal Type	Form C Solid state relay, DC general use, DC pilot duty
Max Switching Voltage	60V dc
Max Switching Current	80mA
Impedance	30Ω max



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Functional		
Console Port	USB micro B 2.0	
SD card	micro-SD, Secure Digital 2.0	
MTBF (Telcordia)	Hermes 2000-LVXX-4F-24T Hermes 2000-LVLV-4F-24T Hermes 2000-HVXX-4F-24T Hermes 2000-HVHV-4F-24T Hermes 2000-LVXX-16F-12T Hermes 2000-LVLV-16F-12T Hermes 2000-HVXX-16F-12T Hermes 2000-HVHV-16F-12T	645,000 hours 514,000 hours 678,000 hours 549,000 hours 674,000 hours 532,000 hours 710,000 hours 570,000 hours
Redundancy Protocols	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)	
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	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 Configuration and deployment using external memory RFC5424/RFC3164 Syslog (log files and remote syslog server) Port monitoring	



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Conformance/Approvals	
CE	CE-Compliant 2014/30/EU (EMC) 2014/35/EU (LVD) 2017/2102/EU (ROHS 3) 2015/863/EU (ROHS 2)
UKCA	UKCA Compliant
UL, USA/Canada	UL 61010-1 UL 61010-2-201 CSA 22.2 No. 61010-1 CSA 22.2 No. 61010-2-201
Substation Automation	IEEE 1613 compliant IEC 61850-3 compliant

EMC Standards		
Description	Standards	Level
ESD	EN 61000-4-2	Contact: ±8kV Air: ±15kV
Fast Transients	EN 61000-4-4	±4kV
Surge	EN 61000-4-5	Power Port: ±4kV LE, ±2kV LL I/O Port: ±4kV LE, ±2kV LL Ethernet Port: ±4kV LE
Power Frequency Magnetic Field	EN 61000-4-8	100 A/m, continuous 1000 A/m, 3s
Pulsed Magnetic Field	EN 61000-4-9	300 A/m
Damped Oscillatory Magnetic Field	EN 61000-4-10	300 A/m (peak)
AC Voltage Dips	EN 61000-4-11	70%, 1 period 40%, 50 periods 0%, 5 periods 0%, 50 periods
Main Frequency Voltage	EN 61000-4-16	Power Port: 30 V continuous, 300V 1s I/O Port: 30 V continuous, 300V 1s Ethernet Port: 30 V continuous, 300V 1s
DC Ripple	EN 61000-4-17	10% UN
1MHz Damped Oscillatory Wave	EN 61000-4-18	Power Port: ±2.5kV CM, DM I/O Port: ±2.5kV CM, DM Ethernet Port: ±2.5kV CM
DC Voltage Dips	EN 61000-4-29	70%, 100ms 40%, 100ms 0%, 50ms
Radiated RF Immunity	EN61000-4-3	20 V/m
Conducted RF Immunity	EN 61000-4-6	0.15-80MHz: 10V 27, 68MHz: 10V



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EMC Standards		
Description	Standards	Level
Radiated RF Emission	CISPR 16-2-3	Class A
Conducted RF Emission	CISPR 16-2-1 CISPR 22	Class A 2000V ac
Dielectric Strength	IEC 60255-27	2000V ac rms, 60s
Impulse Withstand	IEC 60255-27	Power Port: 5kV I/O Port: 5kV Ethernet Port: 1kV

Environmental Standards		
Description	Standards	Level
Temperature	EN 60068-2-1 EN 60068-2-2 EN 60068-2-14	Operational: -40°C to +70°C (-40°F to +158°F) Storage and transport: -50°C to +85°C (-58°F to +185°F)
Humidity	EN 680068-2-30 EN 60068-2-78	5-95 % relative humidity
Vibration	IEC 60255-21-1	Class 2: 1g, 60-150Hz
Seismic	IEC 60255-21-3	Class 2: 1g, 8-35Hz
Shock	IEC 60255-21-2	Class 2: 10g/11ms
Bump	IEC 60255-21-2	Class 2: 20g/16ms
Fall	IEEE 1613	100mm
Device Reliability	IEC 61850-3 IEEE 1613	Class 2

Export Information	
Country of Origin	Sweden
HS Code	8517.62

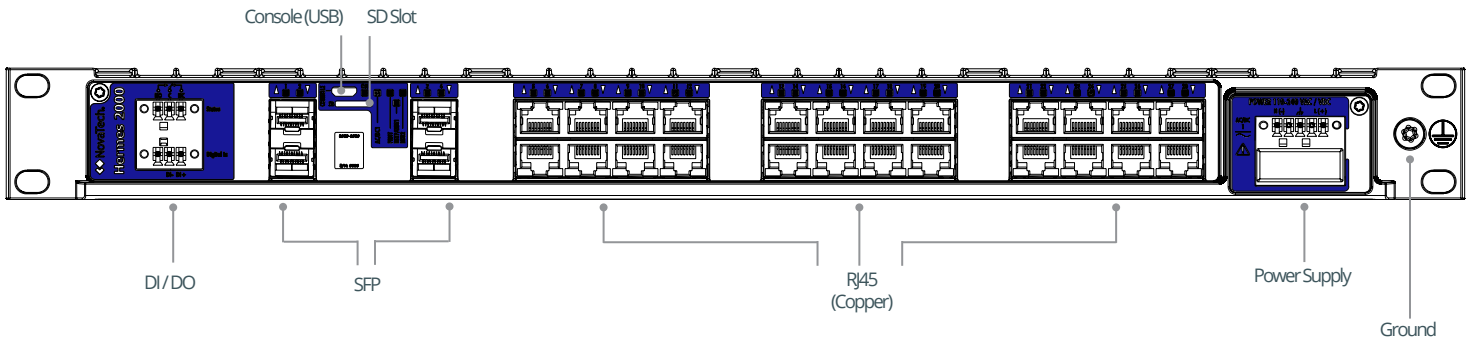


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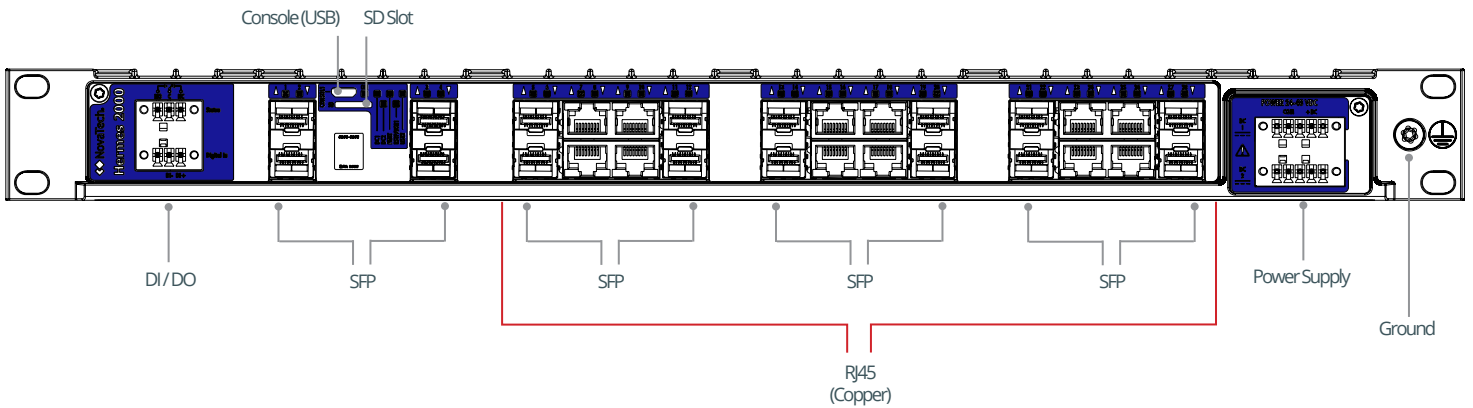
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## Product Diagram

### Front Panel (4F-24T Models)



### Front Panel (16F-12T Models)





## Hermes 2000 28-Port Layer 2 Gigabit Ethernet Switches

### Ordering Information

#### Hermes 2000 Switches

Model	Description
Hermes 2000-HVXX-4F-24T	19" rack mount Gigabit switch, 24 RJ45 copper ports, 4 SFP ports, single high voltage power supply
Hermes 2000-HVHV-4F-24T	19" rack mount Gigabit switch, 24 RJ45 copper ports, 4 SFP ports, redundant high voltage power supply
Hermes 2000-HVXX-16F-12T	19" rack mount Gigabit switch, 12 RJ45 copper ports, 16 SFP ports, single high voltage power supply
Hermes 2000-HVHV-16F-12T	19" rack mount Gigabit switch, 12 RJ45 copper ports, 16 SFP ports, redundant high voltage power supply
Hermes 2000-LVXX-4F-24T	19" rackmount Gigabit switch, 24 RJ45 copper ports, 4 SFP ports, single low voltage power supply
Hermes 2000-LVLV-4F-24T	19" rack mount Gigabit switch, 24 RJ45 copper ports, 4 SFP ports, redundant low voltage power supply
Hermes 2000-LVXX-16F-12T	19" rack mount Gigabit switch, 12 RJ45 copper ports, 16 SFP ports, single low voltage power supply
Hermes 2000-LVLV-16F-12T	19" rack mount Gigabit switch, 12 RJ45 copper ports, 16 SFP ports, redundant low voltage power supply

### Accessories

Model	Description
MM1	Multimode SFP transceiver, 850nm, LC connector, 1Gbps, 550m range
MM3	Multimode SFP Transceiver, 1310nm, LC connector, 100Mbps, 2 km range
SM1	Single mode SFP transceiver, 1310nm, LC connector, 1Gbps, 10km range
SM4	Single mode SFP transceiver, 1310nm, LC connector, 1Gbps, 40km range
RJ2	Copper SFP transceiver, RJ45 connector, 10/100/1000Mbps, 100m range

