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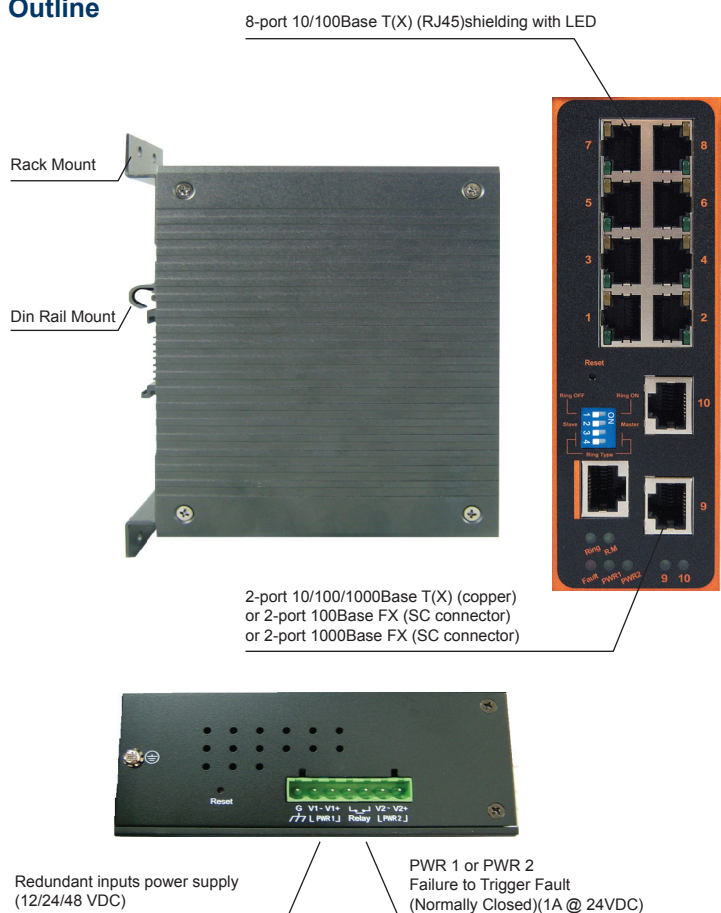
## Industrial Managed Ethernet Switch

■ ■ EH7510  
RoHS compliant

The Atop Harsh Environment Series EH7510 is a highly reliable and fault-tolerant Industrial 10-port managed Ethernet Switch. It equips 8-port 10/100Base T(X) RJ45 ports and 2-port 10/100/1000Base T(X)/FX Gigabit capacity that supports IEEE 802.3/802.3u/802.3x with 10/100M, IEEE 802.3ab/802.3z with 1000M, full/half duplex, and MDI/MDI-X auto-sensing. With its high performance switching device, EH7510 SERIES provides redundant self-recovery mechanism in less than 20ms on full load which allows you to scheme a reliable Ethernet network to build a redundant ring topology as your back-up solution. With a Multifunctional web dashboard, EH7510 SERIES offers intelligent features such as Quality of service (QoS), Virtual LAN (VLAN), IGMP, Port mirroring and security. The EH7510 SERIES is a plug-and-play solution for your Industrial Ethernet applications.

The EH7510 SERIES is designed for Industrial rugged applications. It equips a 7-pins terminal block to provide dual redundant power inputs with Reverse Polarity Protection and one set relay (NC) which allows field engineers to build up a stand-alone fault alarm system. Its IP-50 housing protection, wide operating temperature of -40 to 80°C and DIN-Rail mounting capacities are liable to do most industrial filed applications.

### Outline



### Industrial Managed Ethernet Switch

- Multiple reliable redundant Rings:
  - ERPS, iA-Ring, Compatible-Ring and U-Ring(for wireless)
  - All rapid recovery time from fault (<20ms)
  - ERPS support Simple Ring, Coupling Ring and Share Node Ring topologies
- IEEE 1588 v1/v2, SNTP support
- Storm filter support
- Port mirror, rate, status, statistics, configuration, security support
- Static trunk and LACP support
- QoS CoS/ToS/DiffServ Traffic Mapping
- GVRP, Port-based and 802.1Q VLAN support
- RSTP support
- MAC security and port based (802.1x) access control
- GMRP and IGMP snooping for multicast filtering
- Syslog, Alarm System(H/W Relay and E-mail notification) support
- ModBus TCP, DHCP, LLDP, Telnet/CLI, Web(SSL), SNMP v1/v2/v3, RMON, enterprise MIB and Topology Diagram support

★ The power input of EH7510 can be placed on either the top side or bottom side before shipment.

General Specifications	
<b>Technology</b>	
<b>Standards</b>	IEEE 802.3 10BaseT IEEE 802.3u 100BaseT(X) and 100Base FX IEEE 802.3ab 1000Base-T IEEE 802.3z 1000Base-SX/LX IEEE 802.1d MAC Bridges standard IEEE 802.1w for Rapid Spanning Tree Protocol(RSTP) IEEE 802.1p Class of Service IEEE 802.1P The GARP VLAN Registration Protocol(GVRP) IEEE 802.1Q VLAN Tagging IEEE 802.1D-1998 and IEEE 802.1Q-2005, GARP Multicast Registration Protocol(GMRP) IEEE 802.1X Port Based Network Access Control IEEE802.3x Flow Control and Back pressure IEEE 802.3ad Link Aggregation Control Protocol(LACP) IEEE 802.1AB Station and Media Access Control Connectivity Discovery(LLDP) IEEE 1588 Precision Clock Synchronization Protocol for Networked Measurement and Control Systems RFC768 UDP RFC783 TFTP RFC791 IP RFC792 ICMP RFC793 TCP RFC826 ARP RFC854 Telnet RFC894 IP over Ethernet RFC1112 IGMP v1 RFC2236 IGMP v2 RFC1541 DHCP Client RFC2030 SNMP RFC2068 HTTP RFC2284 EAP RFC2475 Differentiated Services RFC2865 RADIUS RFC3414 SNMPv3-USM RFC3415 SNMPv3-VACM ITU-T G.8032/Y.1344 Ethernet Ring Protection Switching (ERPS)
<b>Switch Properties</b>	Switching method: Store & Forward Switching Latency: 4.8 us Backplane switching capacity: 5.6G MAC addresses table: 8K with automatic learning and aging IGMP multicast groups: 256 Per-Port Priority Queues: 4 Packet Buffer Size: 256KB VLANs: 512 (include DEFAULT VLAN ID=1) VLAN ID Setting Range: 2 to 4094 Port rate limiting: 64K/128K/256K(up to 100 Mbps or 1000Mbps) resolution
<b>Flow Control</b>	IEEE 802.3x Flow Control and Back-pressure
<b>Processing type</b>	Store-and-Forward
<b>Redundancy</b>	ITU-T G.8032/Y.1344, ERPS Ethernet Ring Protection Switching (ERPS) (Recovering Time <20ms). iA-Ring Protocol (Recovering Time<20ms) Compatible-Ring Protocol (Recovering Time<20ms) U-Ring Protocol(for wireless environment) IEEE 802.1w, Rapid Spanning Tree Protocol (RSTP)
<b>Management</b>	Support Port mirror, rate, status, statistics, configuration, security Command Line Interface (CLI) via Console or Telnet HTTP graphical web-based, SSL (128-bit encryption) management SNMP Standard MIBs and Atop Proprietary MIB Support Remote Monitoring RMON (groups 1,2,3 and 9) Atop Utility (Switch View and Topology Diagram) ModBus TCP Management and Memory Map Configuration file backup/restore via TFTP server or Web server Firmware upgrade via Switch View or Web server Support SNTP and Time Zone, Daylight Saving Time and RTC Support IEEE 1588 v1/v2 with software time stamping on all ports PTP operation for high precision on switched networks (better than 81µs accuracy, typically 10µs). Supports master, slave and Peer To Peer transparent clock Support Local Event Log(saved in RAM or Flash Memory), 0~7 Log Level, Remote Syslog Server Support Static IP, DHCP Client, Gateway and DNS Diagnostics Ping Network Support Alarm condition: Port State, Power State and Syslog event Support H/W Relay and E-mail Alarm action

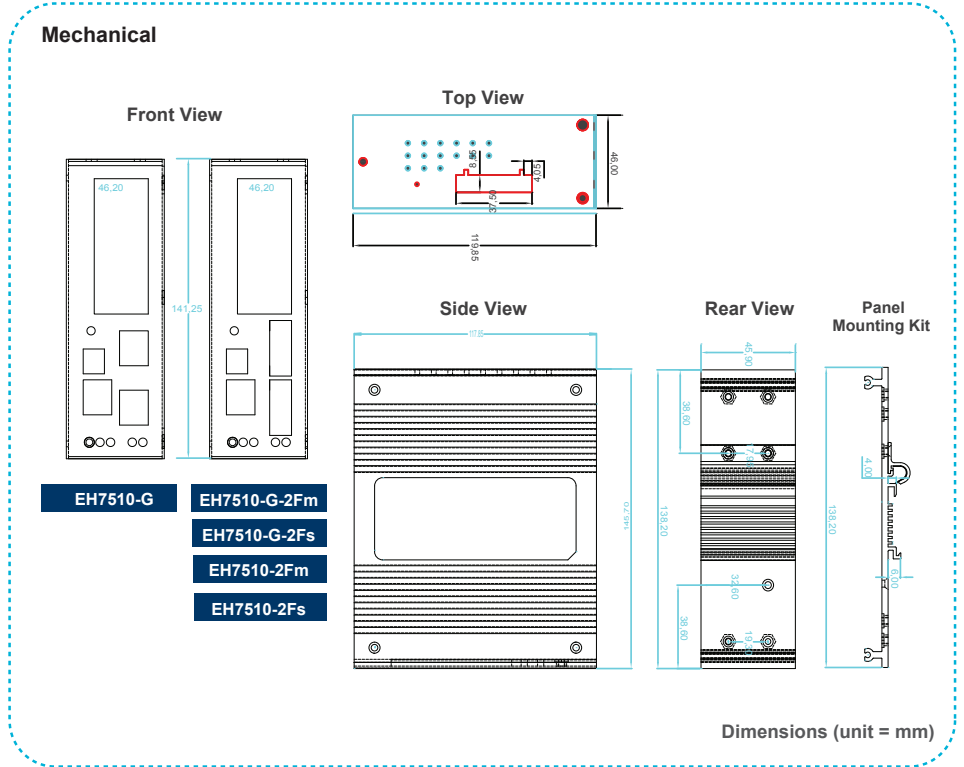
General Specifications	
<b>Technology</b>	
<b>MIB</b>	Atop Proprietary MIB Standard IETF RFC MIBs <ul style="list-style-type: none"> <li>■ RFC 1493 Bridge MIB</li> <li>■ RFC 1213 MIB II</li> <li>■ RFC 2819 RMON MIB</li> <li>■ RFC 2011 SNMPv2 IP MIB</li> <li>■ RFC 3411 SNMP Framework MIB</li> <li>■ RFC 3412 SNMP-MPD MIB</li> <li>■ RFC 3413 SNMP Target MIB, SNMP Notification MIB</li> <li>■ RFC 3414 SNMP User-Based SM MIB</li> <li>■ RFC 3415 SNMP View Based ACM MIB</li> <li>■ RFC 2013 TCP MIB</li> <li>■ RFC 1215 Trap</li> <li>■ RFC 2012 UDP MIB</li> <li>■ RFC 2013 TCP MIB</li> <li>■ RFC 1757 RMON</li> <li>■ RFC 1157 SNMP</li> <li>■ RFC 2571 SNMPv2</li> <li>■ LLDP standard MIB               <ul style="list-style-type: none"> <li>- LLDP Config Group</li> <li>- LLDP Stats Group</li> <li>- LLDP Local System Group</li> <li>- LLDP Remote System Group</li> </ul> </li> </ul>
<b>Interface</b>	
<b>RJ45 Ports</b>	10/100BaseT(X), Auto MDI/MDI-X 10/100/1000BaseT(X), Auto MDI/MDI-X (Uplink)
<b>Fiber Ports</b>	100BaseFX ports (SC connector) (Uplink) 1000BaseFX ports (SC connector) (Uplink)
<b>LED Indicators</b>	LNK/ACT(Steady green-Link up/Blinking-data transmitting & receiving) PWR1(Green), PWR2(Green), Fault(Red), RM(Green), Ring(Green)
<b>Console Port</b>	RS-232(RJ45 connector)
<b>DIP Switches</b>	Ring, Master(Ring type: ERPS, iA-Ring, compatible-Ring)
<b>Power Requirements</b>	
<b>Dual Inputs Voltage</b>	12/24/48 VDC
<b>Dual Inputs Current</b>	0.6A @ 24VDC
<b>Overload Current Protection</b>	2.2A @ 12VDC
<b>Connection</b>	Removable dual 7-pin Terminal Block for power input
<b>Reverse Polarity Protection</b>	Present
<b>Consumption</b>	14.4W
<b>Physical Characteristics</b>	
<b>Housing</b>	IP50 protection (>2.5mm objects, IEC60529), metal case(AL6063T5).
<b>Dimensions (W x H x D)</b>	53.4mm x 145.7mm x 119.9mm (2.10 x 5.74 x 4.72 in)
<b>Weight</b>	Approx 1100 g
<b>Installation</b>	DIN-Rail mount kit, wall mount kit (optional)
<b>Environmental Limits</b>	
<b>Operating Temperature</b>	-40 ~ 80°C (-40 ~ 176°F)
<b>Storage Temperature</b>	-40 ~ 85°C (-40 ~ 185°F)
<b>Ambient Relative Humidity</b>	5% to 95% (non-condensing)
<b>Notes:</b>	For UL policy the maximum operating temperature is 60°C, and the human body can tolerate maximum temperature is 70°C.
<b>Regulatory Approvals</b>	
<b>Safety</b>	UL60950-1, CSA C222, No.60950-1-07, CB
<b>EMI</b>	FCC part 15, CISPR (EN55022) class A
<b>EMS</b>	IEC61000-4-2 (ESD) level 3 IEC61000-4-3 (RS) level 3 IEC61000-4-4 (EFT) level 3 IEC61000-4-5 (Surge) level 2/3 IEC61000-4-6 (CS) level 3
<b>Rail Traffic</b>	EN50155
<b>Application</b>	EN50121-4
<b>Shock</b>	MIL-STD-810F
<b>Free Fall</b>	MIL-STD-810F
<b>Vibration</b>	MIL-STD-810F
<b>MTBF</b>	176,122 hrs (20.11 Years) (Data base: MIL-HDBK-217F, GB 25°C )
<b>Warranty</b>	5 years (please visit www.atop.com.tw for more details)

Optical Fiber Specifications						
Speed	Fast Ethernet 100BaseFX			Gigabit Ethernet 1000BaseFX		
Mode	Multimode	Single Mode	Single Mode	Multimode	Single Mode	Single Mode
Connectors	SC	SC	SC	SC	SC	SC
Typical Distance	2 km	15 km	30 km	550 m/300 m	10 km	70 km
Cable Size Core/Cladding	50/125 um 62.5/125 um	9/125 um	9/125 um	50/125 um	9/125 um	9/125 um
Wavelength	1,310 nm	1,310 nm	1,310 nm	850 nm	1310 nm	1550 nm
Max. TX Power	-14 dBm / -14 dBm	0 dBm	5 dBm	-4 dBm	-3 dBm	5 dBm
Min. TX Power	-23.5 dBm / -20 dBm	-20 dBm	0 dBm	-9.5 dBm	-9.5 dBm	-9.5 dBm
RX Sensitivity	-31 dBm	-32 dBm	-36 dBm	-18 dBm	-20 dBm	-24 dBm
Link Budget	7.5 dB / 11 dB	12 dB	36 dB	8.5 dB	10.5 dB	24 dB
Saturation / overload	0 dBm	0 dBm	0 dBm	0 dBm	-3 dBm	-3 dBm
Remark	EH7510-2Fm	EH7510-2Fs	customize	EH7510-G-2Fm	EH7510-G-2Fs	customize

Relay ON-OFF Status					
No.	PWR1	PWR2	Fault LED	Relay contact	External Buzzer
1	off	off	off	closed	buzzing
2	off	on	red	closed	buzzing
3	on	off	red	closed	buzzing
4	on	on	off	open	no buzz

4-Pin DIP Switch			
DIP 1 and 2 definition			
DIP Switch	Off	On	
1	Ring is deactivate	Ring is activate	
2	Slave	Master	
DIP 3 and 4 definition			
DIP 3	DIP 4	Ring Type	
Off	Off	Select ERPS	
Off	On	Select iA-Ring	
On	Off	Select Compatible-Ring (only slave mode is supported)	

- The default ring ports are Port9 and Port10 when DIP 1 is set to "ON".
- DIP 1 must be set to "ON" position to enable DIP 2, 3, and 4. If DIP 1 is set to "OFF" position, then DIP 2, 3, and 4 will all be disabled.
- When the Compatible-Ring is selected, DIP 2 is unused (Only support Slave).
- U-Ring(for wireless) can be configured via web.



Ordering Information								
Model Name	Port Interface							
Extended Temperature (-40°C to 80°C)	Part Number	10/100BaseT(X)	100BaseFX		1000BaseFX		Gigabit Ethernet	
			Multi Mode, SC Connector	Single Mode, SC Connector	Multi Mode, SC Connector	Single Mode, SC Connector	10/100/1000 BaseT(X)	100/1000 Base SFP
EH7510-G	1P1EH7510G0001G	8	---	---	---	---	2	---
EH7510-G-2Fs	1P1EH7510G2FM1G	8	---	---	---	2	---	---
EH7510-G-2Fm	1P1EH7510G2FS1G	8	---	---	2	---	---	---
EH7510-2Fs	1P1EH75102FM01G	8	---	2	---	---	---	---
EH7510-2Fm	1P1EH75102FS01G	8	2	---	---	---	---	---

Optional Accessories			
US315-12(US-Y)	Y-Type (BT1-10V) power adaptor, 100~240VAC input, 1.25A @ 12VDC output, US plug	AD1120-24F	120W/5A DIN-Rail 24 VDC power supply with universal 100~240VAC/120~370VDC input
USE315-12(EU-Y)	Y-Type (BT1-10V) power adaptor, 100~240VAC input, 1.25A @ 12VDC output, EU plug	AD1120-48F	120W/2.5A DIN-Rail 48 VDC power supply with universal 100~240VAC/120~370VDC input
AD1024-24F	24W/1A DIN-Rail 24 VDC power supply with universal 100~240VAC/120~370VDC input	2ESDP-07P	7-pin 5.08mm Terminal Block with 180° Angle
AD1048-24FS	48W/2A DIN-Rail 24 VDC power supply with universal 100~240VAC/120~370VDC input	CDK-459-Silver	Conductive metal DIN-Rail Kit, Silver
AD1072-24F	72W/3A DIN-Rail 24 VDC power supply with universal 100~240VAC/120~370VDC input	WMK-459-Black	Metal Wall Mount Kit, Black
AD1100-24F	100W/4A DIN-Rail 24 VDC power supply with universal 100~240VAC/120~370VDC input	GDC-90	90mm copper woven grounding cable

## Regulatory Approvals and Environmental Type Tests

### EMI Immunity Type Tests

Test	Description		Test Levels	Severity Levels
FCC part 15	-	Subpart B	-	class A
EN55022	-	2006+A1:2007	-	class A

### EMS Tests

Test	Description		Test Levels	Severity Levels
IEC61000-4-2	ESD	Contact discharge	6 KV, Criterion A	level 3
		Air discharge	8 KV, , Criterion A	level 3
IEC61000-4-3	RS	Enclosure ports	10 V/m (80 - 1000 MHz), Criterion A	level 3
IEC61000-4-4	EFT	Power Line	2 KV, Criterion B	level 3
IEC61000-4-5	Surge	Line to earth	1 KV, Criterion B	level 2
		Power Line	2 KV, Criterion B	level 3
IEC61000-4-6	CS	Line to earth	3 V (0.15 - 80 MHz), Criterion A	level 3
		Power Line	10 V (0.15 - 80 MHz), Criterion A	level 3

### Safety Tests

Test	Description		Rating	Severity Levels
UL60950-1	-	2nd Edition, 2007-03-27	12~48V DC, 1.2A	-
CSA C22.2 No.60950-1-07	-	2nd Edition, 2007-03	12~48V DC, 1.2A	-
CB	-	IEC 60950-1:2005 second version	12~48V DC, 1.2A	-

### Environmental Type Tests

Test	Description		Test Levels	Severity Levels
MIL-STD-810F	Shock	Impact acceleration & Pluse duration	40g @ 11ms	-
MIL-STD-810F	Freefall	8 corners, 12 edges, 6 faces	122 cm	-
MIL-STD-810F	Vibration	Packaged Random waveform	x: 2.4 Grms y: 1.28 Grms z: 3.85 Grms	-
		Operating Random waveform	x: 0.740 Grms y: 0.204 Grms z: 1.04 Grms	-

### Rail Traffic Application

Test	Description		Application	Severity Levels
EN50155	EMC	EN50121-3-2	Railway Application	-
	Environment	EN60068-2-1	Railway Application	-
		EN60068-2-2 EN61373		-
EN50121-4	EMC	-	Railway Application	-

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CA\_EH7510\_E : v4-120730