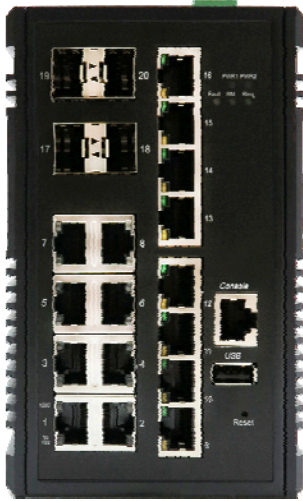


# MS-1604X

## 16+4 Port Industrial Managed Ethernet Switch with 10G Uplink



- 16x Gigabit Ethernet ports
- 4x 1/10 Gigabit Ethernet SFP+ Slot
- Built for harsh environments and wide temperature range application
- RSTP, MSTP, ERPS, LACP for Network Redundancy
- QoS CoS/DSCP to increase determinism
- Supports IGMP Snooping v1/v2/v3, up to 512 groups
- DHCP Relay Option 82 for policies IP address assignment
- SNMP v1/v2c/v3 for network management
- Supports Storm Protection
- USB storage for configuration-free replacement
- Supports industrial automation protocols Ethernet/IP and Modbus TCP

### Specifications

#### Technology

- IEEE 802.3 10BaseT
- IEEE 802.3u 100BaseTX
- IEEE 802.3ab 1000BaseT
- IEEE 802.3ae 10GBase over Fiber
- IEEE 802.3x Flow Control
- IEEE 802.3ad/802.1AX LACP
- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid STP
- IEEE 802.1s Multiple STP
- ITU-T G.8032 / Y.1344 ERPS
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1ad Stacked VLANs
- IEEE 802.1p Class of Service
- IEEE 802.1X Network Authentication
- IEEE 802.1AB LLDP
- IEEE 1588 PTP

#### Standards

**Processing Type** Store and Forward

#### Switch Properties

<b>Switch Fabric</b>	112Gbps
<b>Priority Queues</b>	8 Queues
<b>Jumbo Frame</b>	9216bytes
<b>MAC Table Size</b>	16K
<b>Packet Buffer</b>	12Mbits
<b>VLAN Table Size</b>	4094
<b>IGMP Group</b>	512

**ACL Group** 512

#### Software Feature

<b>Network Redundancy</b>	RSTP, MSTP, G.8032 ERPSv2, Port Trunking with LACP
<b>Security</b>	802.1X, RADIUS, TACACS+, SSL, SSH
<b>Management</b>	IPv4, IPv6, Web, Telnet, Serial Console, CLI, SNMP v1/v2c/v3, uPnP
<b>Diagnostics</b>	RMON, SNMP Inform/Trap, Syslog, SMTP, Port Mirroring, LLDP
<b>Configuration</b>	DHCP Server/Client, Relay Option 82, TFTP, USB
<b>Filter</b>	802.1Q VLAN, Q-in-Q, IGMP Snooping v1/v2/v3, IGMP Querier, Independent Vlan Learning
<b>Time Sync.</b>	NTP, IEEE1588v2 OC (Software Timestamp), TC (Hardware Timestamp)
<b>QoS</b>	CoS, DSCP, WRR/SPQ Queuing, Storm Protection
<b>PoE</b>	Powering Status, PoE Monitoring, Scheduling, PD Alive Check
<b>Industrial Profiles</b>	Ethernet/IP, Modbus TCP

#### Interface

**RJ45 Port** 16x 10/100/1000T(x), auto negotiation speed duplex mode, auto MDI/MDI-X

<b>Fiber Port</b>	4x 1/10 Gigabit Ethernet SFP+ Slot
<b>LED Indicators</b>	<b>Per unit:</b> PWR1, PWR2, Fault, Ring Master, Ring State <b>Ports:</b> Link/Active with highest speed(Green), low speed(Amber)
<b>Alarm Contact</b>	1x relay output with current carrying capacity of 1A @ 24 VDC
<b>Digital Inputs</b>	1x isolated input from the electronics. +13 to +30V for state "1" -30 to +3V for state "0" Max. input current: 8mA
<b>Button</b>	Multiple functions reset button
<b>Serial Console</b>	1x RS232 in RJ45 connector with console cable, 115.2Kbps, 8N1
<b>Storage</b>	1x USB 2.0 storage for firmware update, configuration backup, restore, boot up and syslog

### Power Requirements

<b>Operation Voltage</b>	12-48VDC, redundant dual inputs
<b>Connection</b>	1x removable 4-contact terminal block
<b>Power Consumption</b>	0.70A@24VDC
<b>Protection</b>	Overload Current Protected, Reverse Polarity Protected

### Mechanical Construction

<b>Enclosure</b>	Aluminum
<b>Protection Class</b>	IP30
<b>Dimensions</b>	91x145x118 mm (WxHxD)
<b>Weight</b>	0.97 kg

Features with star(\*) implies those are under development.

In a continuing effort of improvement and updated technology, product specifications are subject to change without notice.

<b>Mounting</b>	DIN-Rail Mounting, Optional Wall Mounting Kits
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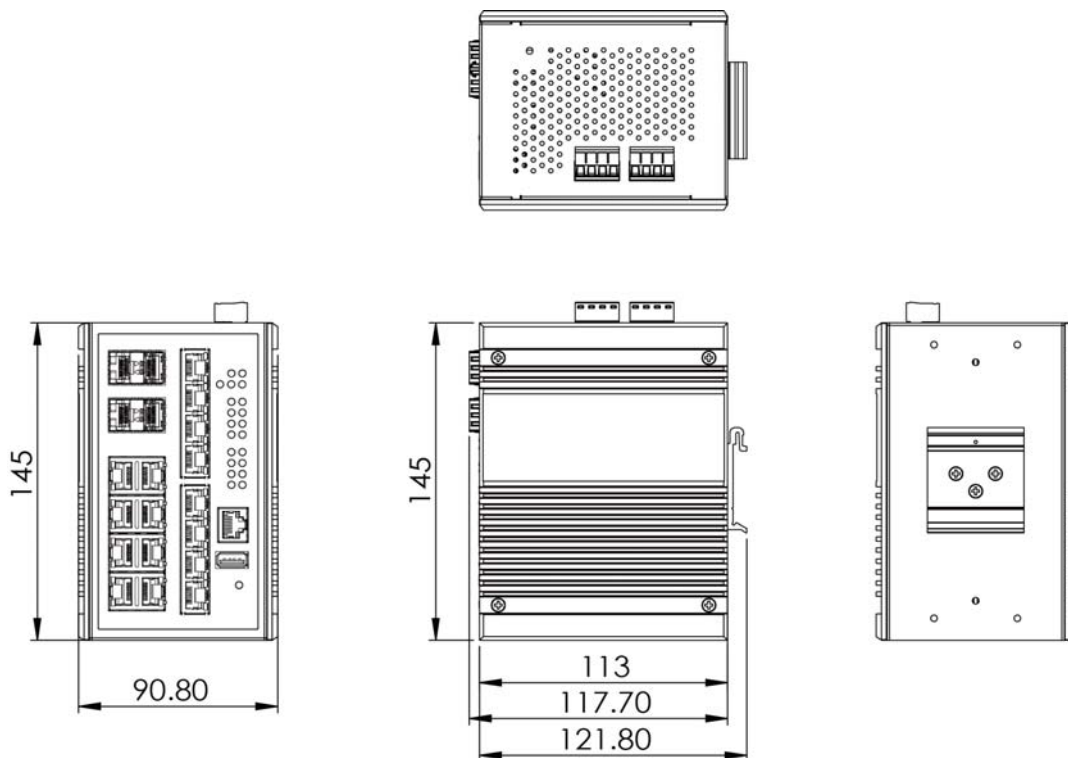
### Environmental Limits

<b>Operating Temperature</b>	Standard: -10°C ~ 60°C (14°F ~ 140°F) Extended: -40°C ~ 75°C (-40°F ~ 167°F) For 10G SFP+: -40 ~ 60°C (32°F ~ 140°F)
<b>Storage Temperature</b>	-40°C ~ 85°C (-40°F ~ 185°F)
<b>Ambient Relative Humidity</b>	5 to 95%, (Non-Condensing)

### Regulatory Approvals

<b>EMI</b>	FCC Part 15 Subpart B Class A CE EN 55032 Class A
<b>EMS</b>	IEC61000-4-2 (ESD) IEC61000-4-3 (RS) IEC61000-4-4 (EFT) IEC61000-4-5 (Surge) IEC61000-4-6 (CS) IEC61000-4-8 (Magnetic Field)
<b>Free Fall</b>	IEC60068-2-32
<b>Shock</b>	IEC60068-2-27
<b>Vibration</b>	IEC60068-2-6
<b>Green</b>	RoHS Compliant
<b>Certifications</b>	UL 60950-1/62368 (Pending) IEC 61000-6-2 IEC 61000-6-4 EN 50121-4
<b>MTBF</b>	>100,000 hours
<b>Warranty</b>	5 Years

## Dimensions (unit = mm)



## Ordering Information

**MS-1604X** 16+4 Port Industrial Managed Ethernet Switch with 10G Uplink  
 - 16x 10/100/1000T(x) + 4x 1/10 Gigabit Ethernet SFP+ Slot  
 - Operating Temperature: -10°C ~ 60°C (14°F ~ 140°F)

**MS-1604X-T** 16+4 Port Industrial Managed Ethernet Switch with 10G Uplink  
 - 16x 10/100/1000T(x) + 4x 1/10 Gigabit Ethernet SFP+ Slot  
 - Operating Temperature: -40°C ~ 75°C (-40°F ~ 167°F)  
 For 10G SFP+: -40 ~ 60°C (-40°F ~ 140°F)

## Optional Accessories

**MDR-20-24** Industrial DIN-Rail Power Supply with 24VDC Output, provide max. 20W Power  
**MDR-40-48** Industrial DIN-Rail Power Supply with 48VDC Output, provide max. 40W Power  
**MDR-60-48** Industrial DIN-Rail Power Supply with 48VDC Output, provide max. 60W Power