



# **Wavesys**

## **Industrial Grade Switch**

## WSI-0702-SFP/ WSI-0702-SFP-Extd

7-Port Industrial Gigabit PoE+ Managed Ethernet Switch  
-4\*10/100/1000Base-TX with 4\*PoE-PSE(30W/Port) and  
1\*10/100/1000Base-TX + 2\*100/1000 SFP Slot



**About the Switch:** Wavesys's WSI-0702-SFP/ WSI-0702-SFP-Extd is a 7-port managed PoE Gigabit Ethernet switch, which provides 4\*10/100/1000 Base-T(X) with IEEE 802.3 af/at PoE compliant + 1 \* 10 / 100 / 1000 Base-TX, and 2\*100/1000 Fiber Slot. WSI-0702-SFP Series is full manageable Layer-2 Ethernet switch series and supports power inputs redundancy and PoE function with 30W per port output. WSI-0702-SFP Series offers standardized network redundancy ITU-T G.8032 ERPS v2 (Ethernet Ring Protection Switch) protocol, providing <50ms recovery time to the network.

WSI-0702-SFP Series provides comprehensive network security and management capability by supporting Multiusers account, IGMP, GVRP, VLAN, QoS, SNMP, RADIUS, TACACS+, Aggregation (Static, LACP), SSH, SSL, IP source guard to create a highly-secured network environment. For power saving purpose, assuring PD priority and enhancing security level of the network, WSI-0702-SFP Series also supports PoE scheduling and PoE output limit function to set up PoE output duration and watt at will.

WSI-0702-SFP Series as an industrial Ethernet switch product line, is designed to withstand harsh and extreme environment conditions. With fan-less design, WSI-0702-SFP Series still manages to be applied in extremely polarized temperature, from - 40oC to 75oC, making it the best choice in various industrial applications.

## Key Features

- 4-port 10/100/1000Base-T(X) Ethernet with IEEE 802.3af/at compliant PoE, 30W/port
- 1-port 10/100/1000Base-TX
- 2-port 100/1000 SFP slots
- Multiusers account for security
- Configuration: http, https, CLI Command, Telnet, SNMP, SSH
- Network redundancy support: G.8032 ERPS v2/ STP/ RSTP/ MSTP
- Supports Static routes for routing function
- Supports RADIUS, TACACS+ authentication protocol
- Supports QoS, LACP bandwidth control
- Supports VLAN, SNMP v1/v2c/v3, ACL, IP source guard for Ethernet security
- PoE ping alarm function for PoE ports power recycle
- Redundant power inputs design
- Operating temperature range - STD: - 10°C ~ 65°C, Extd: -40°C ~ 75°C

# Specification

## Technology

|           |   |
|-----------|---|
| Standards | IEEE 802.3 10Base-T Ethernet<br>IEEE 802.3u 100Base-TX Fast Ethernet<br>IEEE 802.3ab 1000Base-T<br>IEEE 802.3z 1000Base-X Gigabit Fiber<br>IEEE 802.3af/at Power over Ethernet<br>IEEE 802.3x Flow Control<br>IEEE 802.1d STP (Spanning Tree Protocol)<br>IEEE 802.1w RSTP (Rapid Spanning Tree Protocol)<br>IEEE 802.1s MSTP (Multiple Spanning Tree Protocol)<br>ITU-T G.8032 / Y.1344 ERPS v1/v2(Ethernet Ring Protection Switch)<br>IEEE 802.1Q Virtual Local Area Network (VLAN)<br>IEEE 802.1p QoS/CoS Protocol for Traffic Prioritization<br>IEEE 802.1X Network Authentication<br>IEEE 802.1AB Link Layer Discovery Protocol (LLDP)<br>IEEE 802.3ad Link Aggregation (LACP) |
|-----------|---|

|                 |                   |
|-----------------|-------------------|
| Processing Type | Store and Forward |
|-----------------|-------------------|

|              |  |
|--------------|--|
| Flow Control | IEEE 802.3x flow control, back pressure flow control |
|--------------|--|

## Network Management

|            |  |
|------------|--|
| Management | IPv4/IPv6, SNMP v1/v2c/v3, LLDP, LLDP-MED, HTTP, HTTPS, SSHv2 telnet, DHCP client, DHCPv6 client, DHCP server, Port Mirror, DNS client/proxy, IP based Access Filter, ICMPv6, syslog, Time Zone /Daylight Saving, NTP client, RMON, sFlow, Loop detection, Console Port, Power lost warning, relay trigger |
|------------|--|

|          |   |
|----------|---|
| Security | Port-based/Single/Multi 802.1X, ACL(Port/Rate Limiters/ACE), MAC-based Authentication, VLAN |
|----------|---|

|          |   |
|----------|---|
| Security | TACACS+, IP MAC binding, WEB/CLI authentication, Authorization (15 levels), Port Security Limit Control, ACLs for filtering/policing/port copy, IP source guard, ARP Inspection |
|----------|---|

|              |   |
|--------------|---|
| L2 Switching | Port/MAC/Protocol/IP Subnet-based VLAN, VLAN trunking, GARP/GVRP, Loop Guard, Link Aggregation static/LACP, BPDU guard, Error disable recovery, IGMPv2 snooping, MLD snooping, IGMP filtering, IPMC throttling / filtering leave proxy, DHCP snooping, ARP, MEP, G.8032 v1/v2 |
|--------------|---|

|              |                             |
|--------------|-----------------------------|
| L3 Switching | HCP option82, static routes |
|--------------|-----------------------------|

|     |   |
|-----|---|
| QoS | 802.1p Queueing, Input priority mapping, Storm control for Unicast/Multicast/Broadcast, Port/Queue/ACL policer, Port egress shaper, Queue egress shaper, DiffServ (DSCP), Tag remarking, Scheduler mode |
|-----|---|

|              |  |
|--------------|--|
| Power Saving | ActiPHY, PerfectReach, IEEE 802.3az EEE power management |
|--------------|--|

Network Redundancy STP/RSTP/MSTP, port trunk with LACP, ERPS v1/v2 (<50ms)

Configuration POE/POE+ port power allocation, Power budget protection, PoE output scheduled, PoE alive check and remote reboot PD device

System / Diagnostics Dual Image Protection, PING, PING6

### SNMP MIBs & RFC Standards

RFC 2674 VLAN MIB  
IEEE-802.1Q bridge MIB 2008  
RFC 2819 RMON (group 1, 2, 3, and 9)  
RFC 1213 MIB II  
RFC 1215 TRAPS  
RFC 4188 bridge  
RFC 4292 IP forwarding table  
RFC 4293 management information base for the Internet Protocol (IP)  
RFC 5519 multicast group membership discovery  
RFC 4668 RADIUS auth. client  
RFC 4670 RADIUS accounting  
RFC 3635 Ethernet-like  
RFC 2863 interface group MIB using SMI v2  
RFC 3636 802.3 MAU  
RFC 4133 entity MIB v3  
RFC 3411 SNMP management frameworks  
RFC 3414 user-based security model for SNMPv3  
RFC 3415 view-based access control model for SNMP  
RFC 2613 SMON – PortCopy  
IEEE 802.1 MSTP  
IEEE 802.1AB LLDP-MIB (LLDP MIB included in a clause of the STD)  
IEEE 802.3ad (LACP MIB included in a clause of the STD)  
IEEE 802.1X (PAE MIB included in a clause of the STD)  
TIA 1057 LLDP-MED ( MIB is part of the STD)  
RFC 3621 LLDP-MED Power (POE) (No specific MIB for POE+ exists)

### Switch Properties

(Back-Plane) 14Gbps

Priority Queues 8

Max. Number of VLANs 4095

VLAN ID Range VID 1 to 4095

Memory Buffer 4Mbits

Jumbo Frame 9.6Kbytes

MAC Table Size 8K

IGMP Group 1024

|               |  |
|---------------|--|
| Transfer Rate | 14,880pps for Ethernet port<br>148,800pps for Fast Ethernet port<br>1,488,000pps for Gigabit Ethernet port |
|---------------|--|

## Interface

|                      |  |
|----------------------|--|
| Rj45 Ports           | 4*10/100/1000 Base-T(X) with 4*PoE-PSE(30W/Port) + 1*10/100/1000Base-TX Auto-Negotiation, Full/Half Duplex, Auto-MDI/MDI-X   |
| PoE Pin Out          | V+, V+, V-, V-, for pin 1, 2, 3, 6 (End-span, Mode A)  |
| Fiber Port           | 2*100/1000 SFP slots   |
| Wavelength           | Depends on SFP modules   |
| LED Indicators       | System: Power 1, Power 2, Master, Ring, Fault<br>Ethernet ports: Speed/Link/Active<br>PoE: On-connected to PD devices<br>SFP: Link/Active  |
| Rs232 Serial Console | 1*RS232 in RJ45 connector with console cable, baud rate 115,200bps,8,N,1   |
| Relay Contact        | 24 VDC, 1A resistive   |
| Network Cable        | 10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m)<br>100Base-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)<br>1000Base-TX: 4-pair UTP/STP Cat.5/5E cable; EIA/TIA-568 100-ohm (100m) |
| Optical Cable        | Multi-mode cable - 50/125um or 62.5/125um,<br>Single-mode cable - 9/125um or 10/125um  |

## Power Requirements

|                             |  |
|-----------------------------|--|
| Input Voltage               | WSI-0702-SFP Series: Dual 48-55VDC redundant power input<br>WSI-0702-SFP-Extd Series: Dual 12-55VDC redundant power inputs |
| Power Connection            | 1 removable 6-contact terminal block   |
| Overload Current Protection | Present (Slow-Blow Fuse)   |
| Reverse Polarity Protection | Present  |
| System Power Consumption    | Max. 7.5W full loading   |
| Max. PoE Power Budget       | WSI-0702-SFP Series: 120W<br>WSI-0702-SFP Extd Series: 90W@12VDC (default power budget), 120W@24-55VDC                     |
| PoE Power Output            | 30W max. per PoE port  |

## Mechanical Characteristics

|                           |  |
|---------------------------|--|
| Housing                   | Metal, IP30 protection   |
| Dimensions<br>(W x H x D) | 54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)  |
| Weight                    | WSI-0702-SFP: Unit weight: 0.95kg (2.09 lb), Shipping weight:1.25 kg (2.75 lb)<br>WSI-0702-SFP-Extd: Unit weight: Unit weight: 1.02kg (2.24 lb), Shipping weight:1.32 kg (2.91 lb) Mounting DIN-Rail Mounting, Wall Mounting |

## Environmental Limits

|                       |  |
|-----------------------|--|
| Operating Temperature | STD: -10°C ~ 65°C (14°F ~ 149°F)<br>Extd: -40°C ~ 75°C (-40°F ~ 167°F) |
| Storage Temperature   | -40°C ~ 85°C (-40°F ~ 185°F)   |

|                           |                            |
|---------------------------|----------------------------|
| Ambient Relative Humidity | 5 to 95%, (non-condensing) |
|---------------------------|----------------------------|

## Regulatory Approvals

|   |  |
|---|--|
| EMI   | FCC Part 15 Subpart B Class A,<br>CE EN55032/EN61000-6-4 Class A   |
| EMS   | CE EN55035/EN61000-6-2 Class A:<br>IEC61000-4-2 (ESD), IEC61000-4-3 (RS), IEC61000-4-4 (EFT),<br>IEC61000-4-5 (Surge), IEC61000-4-6 (CS),<br>IEC61000-4-8 (Magnetic Field) |
| Free Fall   | IEC60068-2-32  |
| Shock   | IEC60068-2-27  |
| Vibration   | IEC60068-2-6   |
| Green   | RoHS Compliant   |
| Safety  | UL61010-1, UL61010-2-201   |
| Compliance  | MTBF WSI-0702-SFP:1000000 hrs.   |
| MTBF (Telcordia SR-332, Issue 3, GB, 25°C) hrs Warranty | WSI-0702-SFP: 1000000 hrs<br>WSI-0702-SFP-Extd: 1000000<br>5 Years   |

NOTE: Due to continuous improvement, all product specifications are subject to change without further notice.

## Optional Accessories - Power Supply Series

WHDR-30-24 36W Industrial DIN-Rail Power Supply, 24VDC/1.5A, Universal 85-264VAC/120-370VDC power input, Plastic, -30°C ~ 70°C

### 60W Power Supply Series

WHDR-60-24 60W Industrial DIN-Rail Power Supply, 24VDC/2.5A, Universal 88-264VAC/124-370VDC power input, Plastic, -30°C ~ 70°C

WMDR-60-24 60W Industrial DIN-Rail Power Supply, 24VDC/2.5A, Universal 88-264VAC/124-370VDC power input, Plastic, -30°C ~ 70°C

### 75W Power Supply Series

WEDR-75-48 75W Industrial DIN-Rail Power Supply, 48VDC/1.6A, Universal 90-264VAC/127-370VDC power input, Metal, -20°C ~ 60°C

WNDR-75-48 75W Industrial DIN-Rail Power Supply, 48VDC/1.6A, Universal 90-264VAC/127-370VDC power input, Metal, -20°C ~ 70°C

### 120W Power Supply Series

WEDR-120-48 120W Industrial DIN-Rail Power Supply, 48VDC/2.5A, Universal 90-264VAC/127-370VDC power input, Metal, -20°C ~ 60°C

WNDR-120-24 120W Industrial DIN-Rail Power Supply, 24VDC/5A, Universal 90-264VAC/127-370VDC power input, Metal, -20°C ~ 70°C

WNDR-120-48 120W Industrial DIN-Rail Power Supply, 48VDC/2.5A, Universal 90-264VAC/127-370VDC power input, Metal, -20°C ~ 70°C

### 240W Power Supply Series

WNDR-240-48 240W Industrial DIN-Rail Power Supply w/ PFC, 48VDC/5A, Universal 90-264VAC/127-370VDC power input, Metal, -20°C ~ 70°C

WSDR-240-24 240W Industrial DIN-Rail Power Supply w/ PFC, 24VDC/10A, Universal 88-264VAC/124-370VDC power input, Metal, -25°C ~ 70°C

### 480W Power Supply Series

WNDR-480-48 480W Industrial DIN-Rail Power Supply w/ PFC, 48VDC/10A, Universal 90-264VAC/127-370VDC power input, Metal, -20°C ~ 70°C

## OPTIONAL ACCESSORIES - SFP Transceiver Series

### 100Mbps Multi-mode SFP Transceiver Modules Series

WSFP-TM02 100Mbps SFP Transceiver/LC, MMF, 2KM, 1310nm, 0°C ~ 70°C

WSFP-TM02-T 100Mbps SFP Transceiver/LC, MMF, 2KM, 1310nm, -40°C ~ 85°C

## 100Mbps Single-mode SFP Transceiver Modules Series

|                |   |
|----------------|---|
| WSFP-TS20-WA   | 100Mbps BiDi SFP Transceiver/LC, SMF, 20KM, TX: 1310nm/RX: 1550nm, 0°C ~ 70°C     |
| WSFP-TS20-WA-T | T 100Mbps BiDi SFP Transceiver/LC, SMF, 20KM, TX: 1310nm/RX: 1550nm, -40°C ~ 85°C |
| WSFP-TS20-WB   | 100Mbps BiDi SFP Transceiver/LC, SMF, 20KM, TX: 1550nm/RX: 1310nm, 0°C ~ 70°C     |
| WSFP-TS20-WB-T | 100Mbps BiDi SFP Transceiver/LC, SMF, 20KM, TX: 1550nm/RX: 1310nm, -40°C ~ 85°C   |
| WSFP-TS30      | 100Mbps SFP Transceiver/LC, SMF, 30KM, 1310nm, 0°C ~ 70°C                         |
| WSFP-TS30-T    | 100Mbps SFP Transceiver/LC, SMF, 30KM, 1310nm, -40°C ~ 85°C                       |

## 1Gbps Multi-mode SFP Transceiver Modules Series

|             |  |
|-------------|--|
| WSFP-GM00   | 1Gbps SFP Transceiver/LC, MMF, 550M, 850nm, 0°C ~ 70°C   |
| WSFP-GM00-T | 1Gbps SFP Transceiver/LC, MMF, 550M, 850nm, -40°C ~ 85°C |
| WSFP-GM02   | 1Gbps SFP Transceiver/LC, MMF, 2KM, 1310nm, 0°C ~ 70°C   |
| WSFP-GM02-T | 1Gbps SFP Transceiver/LC, MMF, 2KM, 1310nm, -40°C ~ 85°C |

## 1Gbps Single-mode SFP Transceiver Modules Series

|                |   |
|----------------|---|
| WSFP-GS10      | 1Gbps SFP Transceiver/LC, SMF, 10KM, 1310nm, 0°C ~ 70°C                       |
| WSFP-GS10-T    | 1Gbps SFP Transceiver/LC, SMF, 10KM, 1310nm, -40°C ~ 85°C                     |
| WSFP-GS10-WA   | 1Gbps BiDi SFP Transceiver/LC, SMF, 10KM, TX: 1310nm/RX: 1550nm, 0°C ~ 70°C   |
| WSFP-GS10-WA-T | 1Gbps BiDi SFP Transceiver/LC, SMF, 10KM, TX: 1310nm/RX: 1550nm, -40°C ~ 85°C |
| WSFP-GS10-WB   | 1Gbps BiDi SFP Transceiver/LC, SMF, 10KM, TX: 1550nm/RX: 1310nm, 0°C ~ 70°C   |
| WSFP-GS10-WB-T | 1Gbps BiDi SFP Transceiver/LC, SMF, 10KM, TX: 1550nm/RX: 1310nm, -40°C ~ 85°C |
| WSFP-GS20      | 1Gbps SFP Transceiver/LC, SMF, 20KM, 1310nm, 0°C ~ 70°C                       |
| WSFP-GS20-T    | 1Gbps SFP Transceiver/LC, SMF, 20KM, 1310nm, -40°C ~ 85°C                     |
| WSFP-GS40      | 1Gbps SFP Transceiver/LC, SMF, 40KM, 1310nm, 0°C ~ 70°C                       |
| WSFP-GS40-T    | 1Gbps SFP Transceiver/LC, SMF, 40KM, 1310nm, -40°C ~ 85°C                     |
| WSFP-GS40-WA   | 1Gbps BiDi SFP Transceiver/LC, SMF, 40KM, TX: 1310nm/RX: 1550nm, 0°C ~ 70°C   |
| WSFP-GS40-WB   | 1Gbps BiDi SFP Transceiver/LC, SMF, 40KM, TX: 1550nm/RX: 1310nm, 0°C ~ 70°C   |
| WSFP-GS60      | 1Gbps SFP Transceiver/LC, SMF, 60KM, 1550nm, 0°C ~ 70°C                       |
| WSFP-GS60-T    | 1Gbps SFP Transceiver/LC, SMF, 60KM, 1550nm, -40°C ~ 85°C                     |
| WSFP-GS60-WA   | 1Gbps BiDi SFP Transceiver/LC, SMF, 60KM, TX: 1310nm/RX: 1550nm, 0°C ~ 70°C   |
| WSFP-GS60-WB   | 1Gbps BiDi SFP Transceiver/LC, SMF, 60KM, TX: 1550nm/RX: 1310nm, 0°C ~ 70°C   |
| WSFP-GS80      | 1Gbps SFP Transceiver/LC, SMF, 80KM, 1550nm, 0°C ~ 70°C                       |
| WSFP-GS80-T    | 1Gbps SFP Transceiver/LC, SMF, 80KM, 1550nm, -40°C ~ 85°C                     |
| WSFP-GSH2      | 1Gbps SFP Transceiver/LC, SMF, 120KM, 1550nm, 0°C ~ 70°C                      |
| WSFP-GSH2-T    | 1Gbps SFP Transceiver/LC, SMF, 120KM, 1550nm, -40°C ~ 85°C                    |



# Easily Connect & Power Up for Your High-Power PoE Networks

PoE (Power over Ethernet) technology is widely adopted for supporting networking devices power and connectivity when facing the challenge of wiring in rigorous environments with power sourcing limitations. IEEE standards specify the maximum power output from PSE (power sourcing equipment) as well as the power budget for the PD (powered device) to ensure the interoperability of both devices in the market. With the increasing need of higher power in applications, the maximum PD power available is increased by this amendment to IEEE standards.

## IEEE 802.3af

Power Sourced  
15.4W

Power Requested  
13W



IP Camera



IP Phone

## IEEE 802.3at

Power Sourced  
30W

Power Requested  
25.5W



Wireless AP



IP Camera

## IEEE 802.3bt

Power Sourced  
90W

Power Requested  
71.3W



PTZ Camera



PTZ Controller



Smart Lighting



Digital Signage

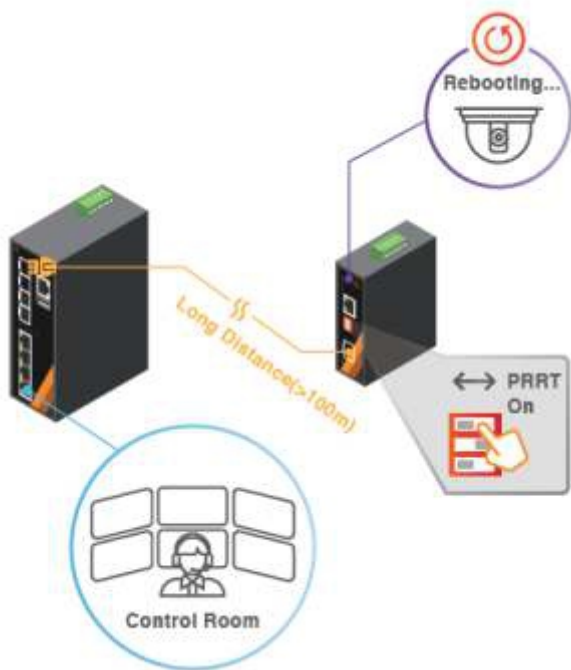


POS System

## Time-Saving. Effort-Saving.

### PRRT (PD Remote Reset Technology)

Enabling PRRT function can save you hours, miles and lots of efforts. With simply pull and plug on fiber cable of networking device connected with BT PoE product in the near field site, remote PSE system can be rebooted to reset remote PD devices



## Persistent PoE

PD devices are connected to collect important data for a wide array of crucial applications, such as video surveillance, to guarantee personal and property safety. It is one of the most users' concerns when it comes to PD devices shut -down in a key moment.

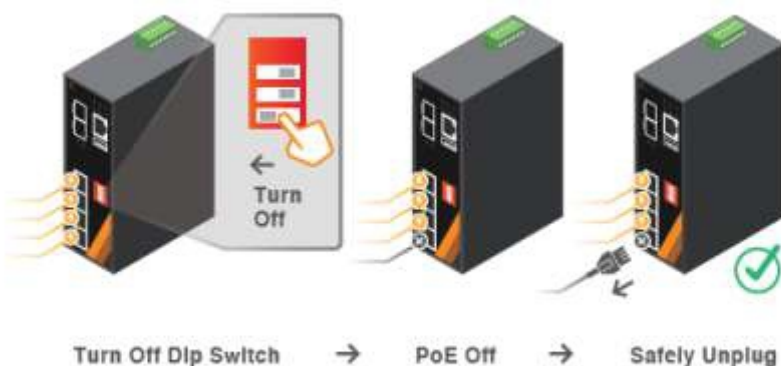
Wavesys' s Persistent PoE provides uninterrupted power delivery to PD devices even when the firmware is being upgraded, ensuring PD devices smooth operation with no worry.



## Prevent Electric Spark Risk

### Safe PoE Disable

High power PoE (802.3bt) accompanies the risk of electric spark. Safe PoE Disable design allows users to safely unplug the copper cable, ensuring zero electric spark danger and prevent fire hazard.



## Responsive PoE Management

Users are able to manage the PoE devices according to different operating status with both hardware and software reminders thoroughly.

- PoE Budget
- Ping Alive
- PoE Schedule
- Event Indicator
- PoE Loading



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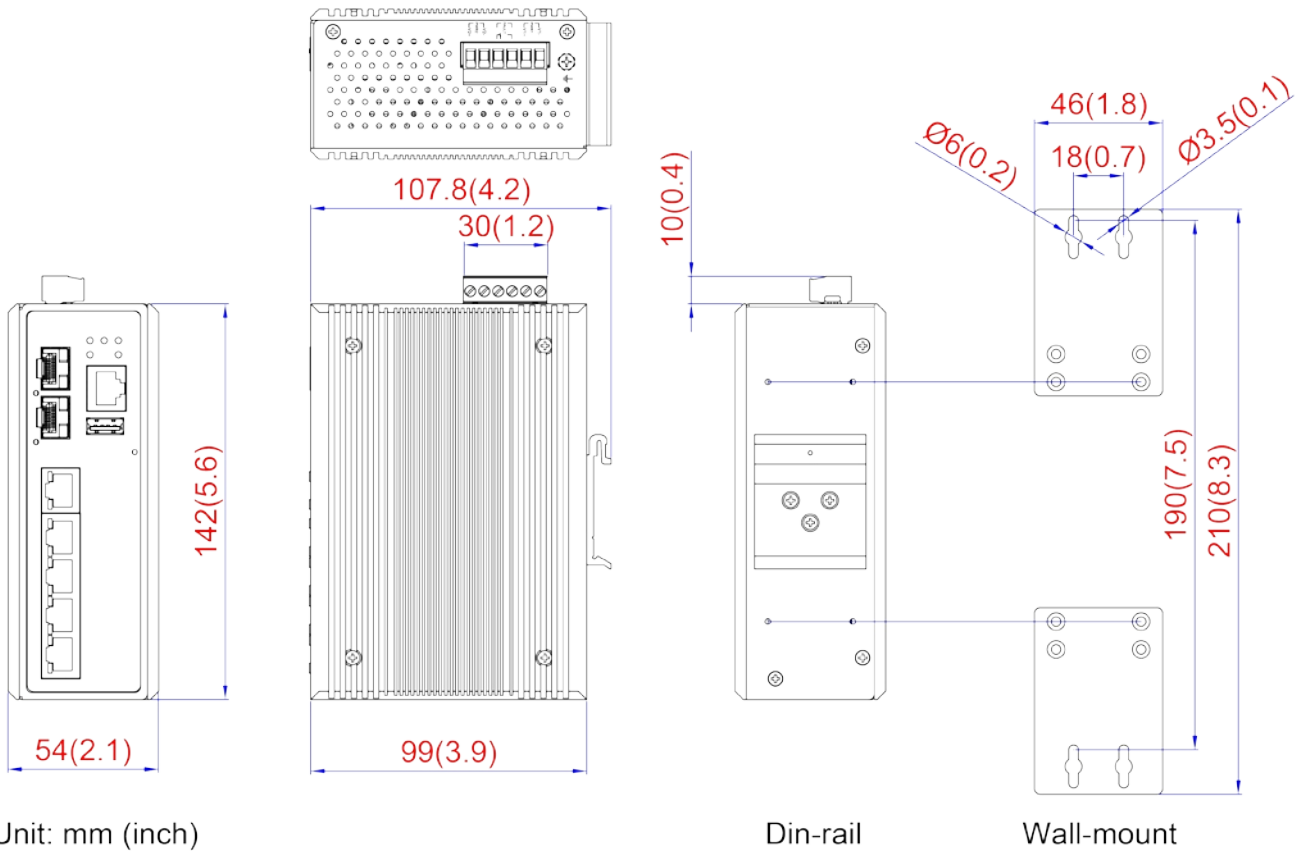


## Copper SFP Transceiver Modules Series

WSFP-GC00-SG SFP to 10/100/1000Base-T(X) copper Module, 0°C ~ 70°C

WSFP-GC00-SE SFP to 1000Base-T copper Module, 0°C ~ 70°C

## Dimension



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