## IPES-3408GSFP

## 8 10/100TX + 41000 SFP L2+ PoE at/af Industrial Managed Ethernet

Switch w/ enhanced G. 8032 Ring

- Enhanced G. 8032 ring protection < 20 ms for single ring. Supports auto mode, enhanced mode, train mode, multi-VLAN and basic mode; Enhanced G. 8032 ring covers multicast packets; MSTP 16MSTI /RSTP ; support MRP ring
- Miss-wiring avoidance \& node failure protection
- User friendly UI, including auto topology drawing and DDM threshold monitoring with $d B$ values***; Complete CLI
- Support LACP link aggregation, IGMP v3/router port, MLD snooping, DHCP server \& DHCP Option82; Port based DHCP distribution, Mac based DHCP server, DHCP Snooping; QoS by VLAN, SSH v2/SSL, HTTPS, INGRESS/EGRESS ACL L2/L3, TACACS+**, QinQ
■ Protocol based VLAN; IPv4 Subnet based VLAN

- Optional Environmental Monitoring** for temp., voltage, total PoE load and current. (-M model)


OVERVEW

Lantech IPES-3408GSFP is a high performance L2+ (Gigabit uplink) switch with 8 10/100TX +4 1000M SFP w/8 PoE 802.3af/at ports which provides L2 wire speed and advanced security function for network aggregation deployment. It delivers ITU G. 8032 enhanced ring recovery less than 20 ms in single ring while also supports train ring, enhanced mode, multiple VLAN model with easy configuration. The comprehensive QoS, QoS by VLAN, advanced security including INGRESS/EGRESS ACL L2/L3, TACACS+**, SSH v2/SSL, Mac based DHCP server, DHCP Option 82, DHCP server, IGMPv1/v2/v3/router port, QinQ are supported and also required in large network. It also supports Cisco Discovery Protocol (CDP) for Ciscoworks to detect the switch info and show on L2 map topology.

Up to 8 PoE at/af ports w/advanced PoE management Compliant with 802.3af/at standard, the Lantech IPES3408GSFP is able to feed each PoE port up to 30 Watts@54 VDC providing the connected PD devices. Lantech IPES3408GSFP supports advanced PoE management including PoE detection and scheduling. PoE detection can detect if the connected PD hangs then restart the PD; PoE scheduling is to allow pre-set power feeding schedule upon routine time table. Each PoE ports can be Enabled/disabled, get the voltage, current, Watt, and temperature info displayed on WebUI.

## Miss-wiring avoidance, Node Failure protection, Loop protection

The IPES-3408GSFP also embedded several features for stronger and reliable network protection in an easy and intuitive way. When the pre-set ring configuration failed or looped by miss-wiring, Lantech IPES-3408GSFP is able to alert with the LED indicator and disable ring automatically. Node failure
protection ensures the switches in a ring to survive after power breakout is back. The status can be shown in NMS when each switch is back. Loop protection is also available to prevent the generation of broadcast storm when a dumb switch is inserted in a closed loop connection.

DHCP option 82 \& Port based, Mac based DHCP, Option66, DHCP Snooping, IPv6 DHCP server
DHCP server can assign dedicated IP address by MAC or by port (Port based for single switch), it also can assign IP address by port for multiple switches with single DHCP option82 server. DHCP Snooping is supported. For the ending device which need to download file from TFTP server, DHCP Option66 server can offer IP address of TFTP server to DHCP client. Basic IPv6 DHCP service can be supported.

## Auto-provisioning for firmware/configuration update

The switch supports auto-provisioning for switch to auto-check the latest software image and configuration through TFTP server.

## User friendly GUI, Auto topology drawing

The user friendly UI, innovative auto topology drawing and topology demo makes IPES-3408GSFP much easier to get hands-on. The complete CLI enables professional engineer to configure setting by command line.

## Enhanced G. 8032 ring, 16 MSTI MSTP; MRP ring

Lantech IPES-3408GSFP features enhanced G. 8032 ring which can be self-healed in less than 20 ms for single ring topology protection covering Multicast packets. It also supports various ring topologies that covers double ring, multi-chain
(under enhanced ring), train ring, basic ring, multiple-VLAN ring and auto-ring by easy setup than others. The innovative autoRing configurator (auto mode) can calculate owner and neighbor in one step. It supports MSTP that allows each spanning tree for each VLAN for redundant links with 16 MSTI.

MRP (Media Redundancy Protocol) can be supported for industrial automation networks.

## Editable configuration file

The configuration file of Lantech IPES-3408GSFP can be exported and edited with word processor for the other switches configuration with ease. The factory reset button can restore the setting back to factory default and built-in watchdog design can automatically reboot the switch when CPU is found dead.

## QoS by VLAN for legacy device

QoS by VLAN can allow switch to tag QoS by VLAN regardless the devices acknowledge QoS or not in which greatly enhance the bandwidth management in a network.

## QinQ, QoS and GVRP supported

It supports the QinQ, QoS and GVRP for large VLAN segmentation.

## IGMPv3, GMRP, router port, MLD Snooping, static

 multicast forwarding and multicast Ring protectionThe unique multicast protection under enhanced G. 8032 ring can offer immediate self-recovery instead of waiting for IGMP table timeout. It also supports IGMPv3, GMRP, router port, MLD snooping and static multicast forwarding binding by ports for video surveillance application.

### 802.1X security by MAC address

MAC-based port authentication is an alternative approach to 802.1x for authenticating hosts connected to a port. By authenticating based on the host's source MAC address, the host is not required to run a user for the $802.1 \times$ protocol. The RADIUS server that performs the authentication will inform the switch if this MAC can be registered in the MAC address table of switch.

## Event log \& message; 2DI / 2DO

In case of event, the IPES-3408GSFP is able to send an email to pre-defined addresses as well as SNMP Traps out immediately. It provides 2DI and 2DO. When disconnection of the specific port was detected; DO will activate the signal LED to alarm. DI can integrate the sensors for events and DO will trigger the alarm while sending alert information to IP network with email and traps.

## Optional environmental monitoring** for switch inside

## information (-M model)

The environmental monitoring can detect switch overall temperature, voltage, total PoE load and current where can send the SNMP traps and email when abnormal.

## Wide range dual DC powered; Relay contact alarm, High

 ESD protectionThe Lantech IPES-3408GSFP is designed with dual power supply at 48 VDC . The 12 V model is built with Booster technology that can accept input voltage from $12 \mathrm{~V} \sim 54 \mathrm{~V}$ and deliver PoE power at 48 V to feed the PD. Featured with relay contact alarm function, the IPES-3408GSFP is able to connect with alarm system in case of power failure. The IPES3408GSFP also provides $\pm 2000$ V EFT and $\pm 4000$ VDC (Contact) / $\pm 8000$ VDC (Air) Ethernet ESD protection, which can reduce unstable situation caused by power line and Ethernet.

## Industrial hardened design for extended temperature operation

Lantech IPES-3408GSFP features high reliability and robustness coping with extensive EMI/RFI phenomenon, environmental vibration and shocks usually found in factory, substation, steel automation, aviation, mining and process control. It is the best solution for Automation, transportation, surveillance, Wireless backhaul, Semi-conductor factory and assembly lines.

The -E model can be used in extreme environments with an operating temperature range of $-40^{\circ} \mathrm{C}$ to $75^{\circ} \mathrm{C}$

## FEATURES \& BENEFITS

- 8 10/100TX + 4 1000M SFP w/8 PoE 802.3af/at Injectors (Total 12 Ports Switch)
- Embedded 8 PoE Injectors IEEE802.3af/at function to feed power up to $30 \mathrm{~W} @ 54 \mathrm{~V}$; 15 W @ 48 V per port for active operation
- PoE voltage boost from 12 V to 54 V ( 12 V model)
- PoE management including PoE detection and scheduling for PD (power devices)
- Back-plane (Switching Fabric): 9.6Gbps
- 16K MAC address table
- DDM to support SFP diagnostic function ${ }^{* * *}$

Automatically convert the raw data into $d B$ values for TX power/RX power, making it easier to measure the fiber distance

- 10KB Jumbo frame
- User friendly UI, auto topology drawing, topology
demo, complete CLI for professional setting
- Enhanced G. 8032 Ring protection in $\mathbf{2 0 m s}<\mathbf{2 5 6}$ switches
- Support various ring/chain topologies including
train ring, enhanced ring, basic ring, auto ring \& multiple VLAN ring
- Enhanced G. 8032 ring configuration with ease
- Auto ring configuration(auto mode) for single
ring
Cover multicast and data packets protection
Dual DC input from 9.5V~60VDC, HV model with single 90~305VAC or 120~430VDC power input Provides EFT protection $\pm 2000$ VDC for power line. Supports $\pm 4000$ VDC (Contact) and $\pm 8000$ VDC (Air) Ethernet ESD protection
- Supports IEEE 802.1p Class of Service, per port provides 8 priority queues Port base, Tag Base and

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Type of Service Priority

- IEEE 802.1d STP, IEEE 802.1w RSTP,802.1s MSTP VLAN redundancy with 16 MSTI
- 4K 802.1Q VLAN, Port based VLAN, GVRP, QinQ, QoS
- Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console
- DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server Port based DHCP server; DHCP Option 66; DHCP Snooping, basic IPv6 DHCP server
- Mac based DHCP server to assign IP address
- Bandwidth Control

Ingress packet filter and egress rate limit Broadcast/multicast packet filter control

- Relay alarm output system events
- Miss-wiring avoidance LED indicator
Node failure protection
Ensure the switches in a ring to survive after power breakout is back
The status can be shown in NMS when each switch is back
- TFTP/ HTTP firmware upgrade
- System Event Log and SNMP Trap for alarm support; 32 RMON counters
- Security

SSL/SSH v2/INGRESS/EGRESS ACL L2/L3

- MAC address table: MAC address entries/Filter/static MAC-Port binding

IP Security: IP address security management to prevent unauthorized intruder.

TACACS+**
Login Security: IEEE802.1X/RADIUS
HTTPS for secure access to the web interface

- Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application
- Factory reset button to restore setting to factory default
- Watchdog design to auto reboot switch CPU is found dead
- Environmental monitoring for system input voltage, current , total PoE load and ambient temperature (M model)
- MLD Snooping for IPv6 Multicast stream
- Diagnostic including Ping / DDM information
- Supports 2DI / 2DO (Digital Input/Digital Output)
- Configuration backup and restoration

Supports editable configuration file for system quick installation

- Fanless IP30 metal housing with DIN rail and Wallmount** design
- Auto Provision to verify switch firmware with the latest or certain version


## DIMENSIONS (unit=mm)

## Standard model



12V model


## SPECIFICATION

| Hardware S | fication |
| :---: | :---: |
| Standards | IEEE802.3 10Base-T Ethernet <br> IEEE802.3u 100Base-TX <br> IEEE802.3z Gigabit fiber <br> IEEE802.3x Flow Control and Back <br> Pressure <br> IEEE802.3ad Port trunk with LACP <br> IEEE802.1d Spanning Tree <br> IEEE802.1w Rapid Spanning Tree <br> IEEE802.1s Multiple Spanning Tree <br> IEEE802.3ad Link Aggregation Control <br> Protocol (LACP) <br> IEEE802.1AB Link Layer Discovery <br> Protocol (LLDP) <br> IEEE802.1X User Authentication (Radius) <br> IEEE802.1p Class of Service <br> IEEE802.1Q VLAN Tag <br> IEEE802.3at/af Power over Ethernet |
| Switch Architecture | Back-plane (Switching Fabric): 9.6Gbps |
| Transfer Rate | 14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Gigabit Fiber Ethernet port |
| Mac Address | 16K MAC address table |
| Jumbo frame | 10KB |
| Connectors | 10/100TX: $8 \times$ ports RJ-45 PoE with Auto MDI/MDI-X function <br> $4 \times 1000$ SFP socket with DDM <br> RS-232 connector: RJ-45 type <br> Power \& Relay connector: $1 \times 6$-pole terminal block <br> DIDO : $1 \times 6$-pole terminal block |
| Network Cable | 10Base-T: 2-pair UTP/STP Cat. 3, 4, 5/ 5E/ <br> 6 cable <br> EIA/TIA-568 100-ohm (100m) <br> 100Base-TX: 2-pair UTP/STP Cat. 5/ 5E/ 6 <br> cable <br> EIA/TIA-568 100-ohm (100m) |
| Optical Cable | 1.25Gbps: <br> Multi mode: 0 to $550 \mathrm{~m}, 850 \mathrm{~nm}(50 / 125$ |


|  | $\mu \mathrm{m}) ; 0$ to $2 \mathrm{~km}, 1310 \mathrm{~nm}(50 / 125 \mu \mathrm{~m})$ |
| :--- | :--- |
|  | Single mode: 0 to $10 \mathrm{~km} / 30 \mathrm{~km} / 40 \mathrm{~km}$, |
|  | $1310 \mathrm{~nm}(9 / 125 \mu \mathrm{~m}) ; 0$ to $50 \mathrm{~km} / 60 \mathrm{~km} /$ |
|  | $80 \mathrm{~km} / 120 \mathrm{~km}, 1550 \mathrm{~nm}(9 / 125 \mu \mathrm{~m})$ |
|  | WDM $1.25 \mathrm{Gbps}:$ |
|  | Single mode: 0 to $10 \mathrm{~km} / 20 \mathrm{~km} / 40 \mathrm{~km} / 60$ |
|  | $\mathrm{~km}, 1310 \mathrm{~nm}(9 / 125 \mu \mathrm{~m}) ; 0$ to $80 \mathrm{~km}, 1490$ |
| $\mathrm{~nm}(9 / 125 \mu \mathrm{~m}) ; 0$ to $10 \mathrm{~km} / 20 \mathrm{~km} / 40 \mathrm{~km} /$ |  |
|  | $60 \mathrm{~km} / 80 \mathrm{~km}, 1550 \mathrm{~nm}(9 / 125 \mu \mathrm{~mm})$ |

Datasheet Version 5.0

| Power Consumption | 10W |
| :---: | :---: |
| Case Dimension | Metal case. IP-30, <br> 74 (W) $\times 105$ (D) $\times 152$ (H) mm (Standard <br> model) <br> $74(\mathrm{~W}) \times 135(\mathrm{D}) \times 152(\mathrm{H}) \mathrm{mm}(12 \mathrm{~V}$ <br> model) |
| Weight | 900 g |
| Installation | DIN Rail and Wall Mount** Design |
| EMI \& EMS | FCC Class A, <br> CE EN55032 Class A, CE EN55024, CE EN61000-4-2, CE EN61000-4-3, CE EN61000-4-4, CE EN61000-4-5, CE EN61000-4-6, CE EN61000-4-8, CE EN61000-6-2 <br> BS EN55032, BS EN55024, BS EN61000-4-2, BS EN61000-4-3, BS EN61000-4-4, BS EN61000-4-5, BS EN61000-4-6, BS EN61000-4-8 |
| Stability Testing | IEC60068-2-32 (Free fall), <br> IEC60068-2-27 (Shock), <br> IEC60068-2-64 (Vibration) |
| MTBF | 938,222 hours (standards: IEC62380) |
| Warranty | 5 years |
| Software Spe | fication |
| Management | SNMP v1 v2c, v3/ Web/Telnet/CLI |
| SNMP MIB | MIB <br> MIBII <br> SNMP MIB <br> Bridge MIB <br> IF MIB <br> RMON MIB <br> Private MIB |
| ITU G. 8032 | Support ITU G. 8032 v2/2012 for Ring protection in less than 20 ms for self-heal recovery (basic mode) <br> Support various ring/chain topologies Includes train ring, auto ring, basic single ring, enhanced ring, multiple-VLAN ring Enhanced G. 8032 ring configuration with ease. Protect multicast \& unicast data. |
| User friendly UI | Auto topology drawing <br> Topology demo <br> Auto configuration for <br> G.8032(auto mode) for single ring <br> DDM threshold monitoring with <br> dB values*** <br> Complete CLI for professional setting |
| Port Trunk with LACP | LACP Port Trunk: 8 Trunk groups |
| LLDP | Supports LLDP to allow switch to advise its identification and capability on the LAN |
| CDP | Cisco Discovery Protocol for topology mapping |
| Environmental Monitoring** | System status for input voltage, current and ambient temperature to be shown in GUI and sent alerting if any abnormal status (-M model) |
| VLAN | Port Based VLAN <br> IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096.) <br> GVRP, QinQ, Protocol based VLAN, IPv4 Subnet based VLAN |
| MLD Snooping | Support IPv6 Multicast stream |
| Spanning Tree | Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree with |


|  | 16 MSTI |
| :---: | :---: |
| Quality of Service | The quality of service determined by port / CoS / ToS / VLAN / 61375-3-4 |
| Class of Service | Support IEEE802.1p class of service, per port provides 8 priority queues |
| Login Security | Supports IEEE802.1X <br> Authentication/RADIUS |
| Port Mirror | Support 3 mirroring types: "RX, TX and Both packet" |
| Network Security | Support 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder. <br> 802.1X access control for port based and MAC based authentication/MAC-Port binding <br> Management access control with priority Ingress/Egress ACL L2/L3 <br> SSL/ SSH v2 for Management <br> HTTPS for secure access to the web interface <br> TACACS+** for Authentication |
| IGMP | Support IGMP snooping v1,v2,v3; 1024 multicast groups; IGMP router port; IGMP query; GMRP** |
| Static MAC-Port bridge | Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application |
| Bandwidth Control | Support ingress packet filter and egress packet limit. <br> The egress rate control supports all of packet type. <br> Ingress filter packet type combination rules are Broadcast/Multicast/Flooded Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all types of packet. <br> The packet filter rate can be set an accurate value through the pull-down menu for the ingress packet filter and the egress packet limit. |
| Flow Control | Supports Flow Control for Full-duplex and Back Pressure for Half-duplex |
| System Log | Supports System log record and remote system log server |
| Relay Alarm | Provides one relay output for port breakdown, power fail and alarm. <br> Alarm Relay current carry ability: 1A @ DC24V |
| Protection | Miss-wiring avoidance Node failure protection Loop protection |
| SNMP Trap | Up to 10 trap stations; trap types including: <br> - Device cold start <br> - Authorization failure <br> - Port link up/link down <br> - DI/DO open/close <br> - Typology change(ITU ring) <br> - Power failure <br> - Environmental abnormal** |
| DHCP | Provide DHCP Client/ DHCP Server/DHCP Option 82/Port based DHCP; DHCP Option 66; DHCP Snooping; basic IPv6 DHCP server |
| Mac based DHCP <br> Server | Assign IP address by Mac |


| Diagnostic | Support Ping and DDM information |
| :--- | :--- |
| DNS | Provide DNS client feature |
| SNTP | Supports SNTP to synchronize system <br> clock in Internet |
| Firmware Update | Supports TFTP firmware update, TFTP <br> backup and restore; HTTP firmware <br> upgrade |
| Configuration | Supports text configuration file for system |


| upload and download | quick installation; Support factory reset <br> button to restore all settings back to <br> factory default. |
| :--- | :--- |
| Auto Provision | To verify switch firmware with the latest or <br> certain version |
| *Future release |  |
| **Optional |  |
| ***Optional DDM SFP required |  |

## ORDERING INFORMATION

- IPES-3408GSFP-48V .P/N: 8350-550
$810 / 100 T X$ PoE at/af up to $30 \mathrm{~W}+41000 \mathrm{M}$ SFP L2+ Industrial PoE Managed Ethernet Switch; $-20^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}$; Dual 45~56VDC
- IPES-3408GSFP-48V-E. $\qquad$ P/N: 8350-551
$810 / 100 T X$ PoE at/af up to $30 \mathrm{~W}+41000 \mathrm{M}$ SFP L2+ Industrial PoE Managed Ethernet Switch; $-40^{\circ} \mathrm{C}$ to $75^{\circ} \mathrm{C}$; Dual 45~56VDC
- IPES-3408GSFP-48V-M

P/N: 8350-552
8 10/100TX PoE at/af up to 30W + 4 1000M SFP L2+ Industrial PoE Managed Ethernet Switch w/Environmental monitoring; $20^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}$; Dual $45 \sim 56 \mathrm{VDC}$

- IPES-3408GSFP-48V-M-E $\qquad$ P/N: 8350-553
8 10/100TX PoE at/af up to 30W + 4 1000M SFP L2+ Industrial PoE Managed Ethernet Switch w/Environmental monitoring; $40^{\circ} \mathrm{C}$ to $75^{\circ} \mathrm{C}$; Dual $45 \sim 56$ VDC
- IPES-3408GSFP-12V. $\qquad$ P/N: 8350-558
$810 / 100 \mathrm{TX}$ PoE at/af up to $30 \mathrm{~W}+41000 \mathrm{M}$ SFP L2+ Industrial PoE Managed Ethernet Switch; $-20^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}$; Dual 9.5~56VDC
- IPES-3408GSFP-12V-E $\qquad$ P/N: 8350-559
$810 / 100 \mathrm{TX} \mathrm{PoE}$ at/af up to $30 \mathrm{~W}+41000 \mathrm{M}$ SFP L2+ Industrial PoE Managed Ethernet Switch; $-40^{\circ} \mathrm{C}$ to $75^{\circ} \mathrm{C}$; Dual 9.5~56VDC
- IPES-3408GSFP-12V-M. $\qquad$


## P/N: 8350-5581

8 10/100TX PoE at/af up to 30W + 4 1000M SFP L2+ Industrial PoE Managed Ethernet Switch w/Environmental monitoring; $20^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}$; Dual $9.5 \sim 56 \mathrm{VDC}$

- IPES-3408GSFP-12V-M-E
.P/N: 8350-5591
8 10/100TX PoE at/af up to 30W + 4 1000M SFP L2+ Industrial PoE Managed Ethernet Switch w/Environmental monitoring; $40^{\circ} \mathrm{C}$ to $75^{\circ} \mathrm{C}$; Dual $9.5 \sim 56$ VDC


## OPTIONAL ACCESSORIES

## DIN Rail Power

| $\square$ NDR-480 Series | 480W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 |
| :---: | :---: |
|  | Operating Temp. $-20^{\circ} \mathrm{C} \sim 70^{\circ} \mathrm{C}$ (ambient, derating each output at $2.5 \%$ per degree from $50^{\circ} \mathrm{C} \sim 70^{\circ} \mathrm{C}$ ) |
| - NDR-240 Series | 240 W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 |
|  | Operating Temp. $-20^{\circ} \mathrm{C} \sim 70^{\circ} \mathrm{C}$ (ambient, derating each output at $2.5 \%$ per degree from $50^{\circ} \mathrm{C} \sim 70^{\circ} \mathrm{C}$ ) |
| - NDR-120 Series | 120W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 |
|  | Operating Temp. $-20^{\circ} \mathrm{C} \sim 70^{\circ} \mathrm{C}$ (ambient, derating each output at $2.5 \%$ per degree from $50^{\circ} \mathrm{C} \sim 70^{\circ} \mathrm{C}$; For 115 VAC , please refer to derating curve on NDR-120 Series datasheet) |
| - NDR-75 Series | 75W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 |
|  | Operating Temp. $-20^{\circ} \mathrm{C} \sim 70^{\circ} \mathrm{C}$ (ambient, derating each output at $2.5 \%$ per degree from $50^{\circ} \mathrm{C} \sim 70^{\circ} \mathrm{C}$; For 115 VAC , please refer to derating curve on NDR-120 Series datasheet) |

## Mini GBIC (SFP)

- 8330-162-V1 MINI GBIC 1000SX (LC/MM/0.5KM) Transceiver 8330-163-V1 ■ 8330-165-V1 - 8340-0591-V1
- 8330-166-V1
- 8330-169-V1
-8330-167-V1 8330-170-V - 8330-168-V1

8330-197-V1
■8330-198-V1
■ 8330-195-V1

MINI GBIC 1000SX2 (LC/MM/2KM) Transceiver MINI GBIC 1000LX (LC/SM/10KM) Transceiver MINI GBIC 1000LHX (LC/SM/40KM) Transceiver MINI GBIC 1000XD (LC/SM/50KM) Transceiver MINI GBIC 1000XD (LC/SM/60KM) Transceiver MINI GBIC 1000ZX (LC/SM/80KM) Transceiver MINI GBIC 1000EZX (LC/SM/120KM) Transceiver MINI GBIC 10/100/1000T (100m) Transceiver 1.25 Gbps BiDi SFP 0.5KM Transceiver (WDM 1310) 1.25 Gbps BiDi SFP 0.5KM Transceiver (WDM 1550) 1.25 Gbps BiDi SFP 2KM Transceiver (WDM 1310)

8330-196-V1
-8330-188-V1 - 8330-189-V1 8330-186-V1 8330-187-V1 8330-180-V1 8330-182-V1 -8330-181-V1 8330-183-V1 $\square 8330-184-\mathrm{V} 1$ $\mathbf{8 3 3 0} \mathbf{- 1 8 5 - V 1} \quad 1.25 \mathrm{Gbps}$ BiDi SFP 80KM Transceiver (WDM 1550 All SFP\# ended with D are with DDM function

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## Wall Mount Bracket

MBAK19003 Wall mount bracket for 74(W) x 105 (D) x $152(\mathrm{H}) \mathrm{mm} / 74$ (W) $\times 135(\mathrm{D}) \times 152(\mathrm{H})$ mm Industrial switches
MBAK19004 19" Rack Mounting Kit for $74 \times 105 \times 152 \mathrm{~mm} / 74 \times 135 \times 152 \mathrm{~mm}$ Industrial Switch

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