



BG5-1604-10GSFP-360 Series

16-Port Industrial Managed Gigabit Ethernet 802.3bt PoE Switch

Interfaces

- 12-port 10/100/1000BASE-T Gigabit Ethernet with IEEE 802.3bt compliant PoE, 90W/port
- 4-port 1G/2.5G/10GbE SFP+ Slots
- One console and USB interface

High Reliability and Availability

- G.8032 ERPS v2
- STP/ RSTP/ MSTP
- Redundant power inputs design
- Wide operating temperature from -40°C ~ 75°C

802.3bt PoE with Advanced PoE Technologies

- Persistent PoE
- PoE Ping Alive

Versatile Management Capability

- HTTP, HTTPS
- CLI Command, Telnet and SSH
- SNMP v1/v2c/v3

Robust Security

- RADIUS, TACACS+, 802.1X Authentication
- ACL, IP Source Guard, SNMPv3



Introduction

Leonton's BG5-1604-10GSFP-360 Series is a 16-port managed Gigabit PoE Ethernet switch, which provides 12*10/100/1000BASE-T with IEEE 802.3bt compliant PoE, 90W/port, and 4*1G/2.5G/10GbE Fiber Slots. BG5-1604-10GSFP-360 Series is full manageable Layer-2 Ethernet switch series, and supports power inputs redundancy and PoE function with 90W per port output. BG5-1604-10GSFP-360 Series offers standardized network redundancy ITU-T G.8032 ERPS v2 (Ethernet Ring Protection Switch) protocol, providing <50ms recovery time to the network, to give user the chance to choose your Ethernet switch but not tied up with particular brand's product.

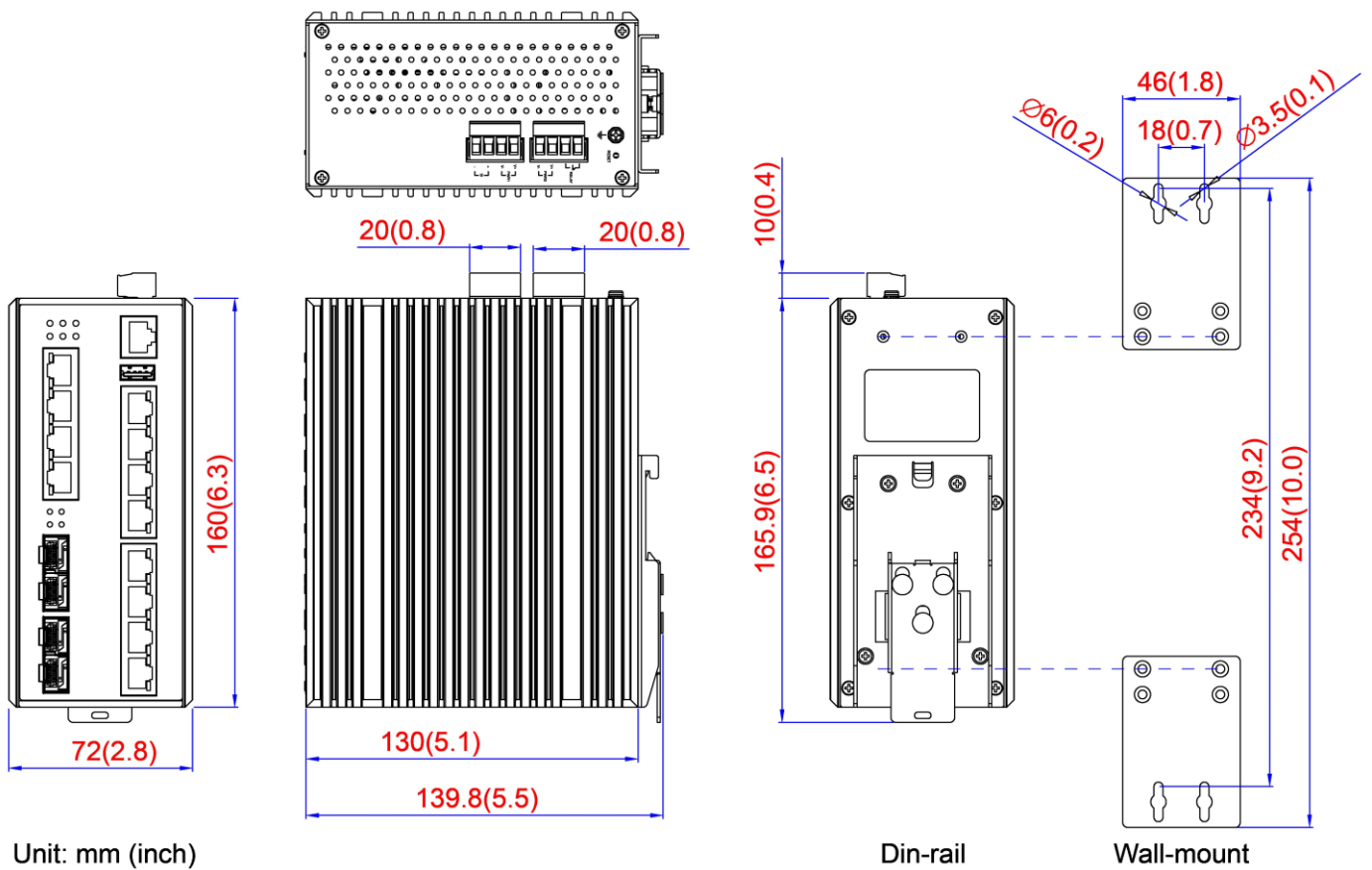
BG5-1604-10GSFP-360 Series provides comprehensive network security and management capability by supporting Multiusers account, IGMP, GVRP, VLAN, QoS, SNMP, RADIUS, TACACS+, Aggregation (Static, LACP), SSH, SSL, IP Source Guard to create a highly-secured network environment. For power saving purpose, assuring PD priority and enhancing security level of the network, BG5-1604-10GSFP-360 Series also supports PoE scheduling and PoE output limit function to set up PoE output duration and wattage at will.

BG5-1604-10GSFP-360 Series as an industrial Ethernet switch product line is designed to withstand harsh and extreme environment conditions. With fan less design, BG5-1604-10GSFP-360 Series still manage to be applied in extremely polarized temperature, from -40°C to 75°C, making it the best choice in various industrial applications.

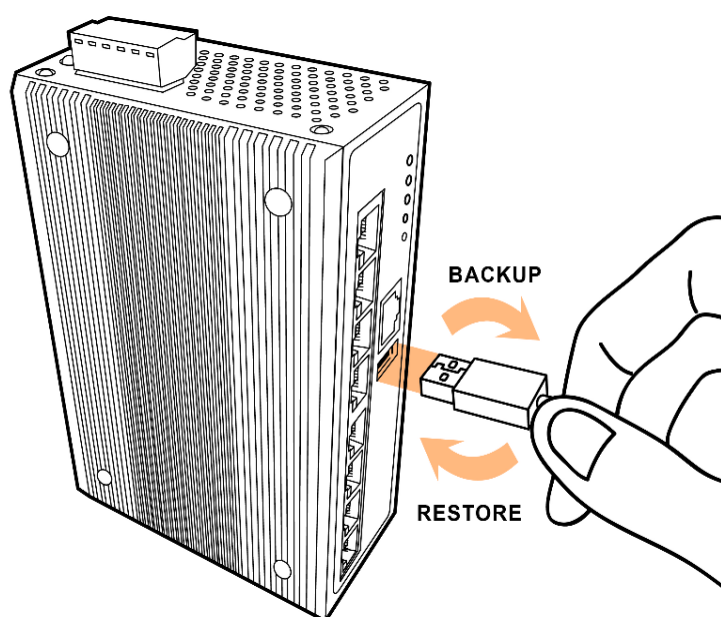
Applications



Dimension



USB Backup/Restore Function



Leonton's Managed Ethernet switch series supports USB 2.0 flash drive, which allows user to backup and restore the device configuration to meet the need of quick device swap. The USB port on Managed Ethernet switch series is applicable to the most common USB flash drives, hugely elevating convenience for user.

Technical Specifications

Interface

Copper Ports	12 x 10/100/1000BASE-T with bt PoE-PSE (90W/Port) Auto-Negotiation, Full/Half Duplex, Auto-MDI/MDI-X
Fiber Port	4 x 1G/2.5G/10GbE SFP+ slots
Wavelength	Depends on SFP modules
Console Port	1 x RS232 in RJ45 connector, baud rate 115,200bps,8,N,1
USB Port	1 x Type A USB 2.0
LED Indicators	• System: Power 1, Power 2, Master (M), Ring (R), Status, PoE Load (P/L) • Ethernet ports: Speed/Link/Active • PoE: On-connected to PD devices • SFP: Link/Active
PoE Pin Out	V-, V-, V+, V+, for pin 1, 2, 3, 6; V+, V+, V-, V-, for pin 4, 5, 7, 8 *Support Modes: Mode A, Mode B, 4-Pair Mode
Relay Contact	24 VDC, 1A resistive
DI	1* Digital Input (DI): State 0: -30~8VDC / State 1: 10~30VDC, Max. input current: 8mA
Network Cable	10BASE-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) 100BASE-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m) 1000BASE-T: 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, Single-mode cable - 9/125um or 10/125um

Switch Properties

Switching Capacity	104Gbps
Forwarding Rate	77.37Mpps
MAC Table Size	32K
Packet Buffer	32Mbits
Jumbo Frame	9.6Kbytes
Max. VLAN Number	4095
VLAN ID	1 to 4095
IGMP Groups	1024
Transfer Rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Gigabit Ethernet Port 14,880,000pps for 10 Gigabit Ethernet Port

Power Requirements

Input Voltage	Dual 48-55VDC redundant power inputs * For IEEE802.3 bt application, power supply not less than 53V is recommended
Power Connection	2*removable 4-contact terminal block
Overload Current Protection	Present (Slow-Blow Fuse)
Reverse Polarity Protection	Present
System Power Consumption	Max. 25W full loading
Max. PoE Power Budget	360W

Mechanical Characteristics

Housing	Metal, IP30 protection
Dimensions (W x H x D)	72 x 160 x 130 mm (2.80 x 6.30 x 5.10 inch)
Weight	Unit weight: 2.164 kg (4.77 lb), Shipping weight: 2.614 kg (5.76 lb)
Mounting	DIN-Rail Mounting, Wall Mounting

Environmental Limits

Operating Temperature	• STD: -10°C ~ 65°C (14°F ~ 149°F) • EOT: -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)

Software Features

VLAN	• Private VLAN • Port-based VLAN • IP Subnet-based VLAN • GVRP • Voice VLAN	• Guest VLAN • MAC-based VLAN • Protocol-based VLAN • VLAN Trunking
L2 Features	• STP • MSTP • Port Mirror • Loop Protection • BPDU Guard • MEP	• RSTP • G.8032 ERPS v1/v2 • Loop Detection • LACP • Error Disable Recovery
L2 Multicast	• IGMPv1/v2/v3 Snooping • IGMP Filtering • IPMC Filtering Leave Proxy	• MLDv1/v2 Snooping • IPMC Throttling
L3 Features	• ARP • NAT • OSPFv2, OSPFv3 (Developing)	• Static Route • RIPv2, RIPv6 (Developing) • VRRPv2, VRRPv3 (Developing)
QoS	• 802.1p • Port/Queue/ACL Policer • Queue Egress Shaper • Tag Remarking	• Input Priority Mapping • Port Egress Shaper • DiffServ (DSCP) • Scheduler Mode
Time Synchronization	• Precision Time Protocol (PTP)	
Power Saving	• ActiPHY • 802.3az Energy Efficient Ethernet (EEE)	• PerfectReach
PoE	• Power Budget Protection • PoE Alive Check	• PoE Output Scheduling • Persistent PoE
Security	• SSHv2 • Port-based 802.1X • MAC-based Authentication • QoS Assignment • TACACS+ • Web/CLI Authentication • Port Security • IP Source Guard • DHCP Snooping • Secure Copy Protocol (SCP)	• IP Based Access Filter • Access Control List (ACL) • ACL for Filtering/Policing/Port Copy • VLAN Assignment • IP MAC Binding • User Privilege (15 levels) • RADIUS Authentication and Accounting • ARP Inspection • Broadcast/Multicast/Unicast Storm Control • Secure FTP
Management	• IPv4/IPv6 • LLDP / LLDP-MED	• SNMP v1/v2c/v3 • HTTP / HTTPS

	• DHCP Client • DHCP Server • DNS Proxy • Syslog • Daylight Saving • RMON • Command Line Interface (CLI) • Relay Trigger • Telnet Server and Client • Dual Image Protection • Ping6 • DDMI • SMTP	• DHCPv6 Client • DNS Client • ICMPv6 • Time Zone • NTP Client • sFlow • Power Lost Warning • DHCP Option 82 • TFTP • Ping • USB Configuration Backup/Restore • Modbus TCP
Standards and MIBs	• IEEE 802.3 10BASE-T Ethernet • IEEE 802.3ab 1000BASE-T • IEEE 802.3ae 10 Gigabit Ethernet • IEEE 802.3bt PoE, 90W/port • IEEE 802.3x Flow Control • IEEE 802.1w RSTP (Rapid Spanning Tree Protocol) • ITU-T G.8032 / Y.1344 ERPS v1/v2 (Ethernet Ring Protection Switch) • IEEE 802.1Q Virtual Local Area Network (VLAN) • IEEE 802.1X Network Authentication • IEEE 802.3ad Link Aggregation (LACP) • RFC 2674 VLAN MIB • RFC 2819 RMON (group 1, 2, 3, and 9) • RFC 1215 TRAPS • RFC 4292 IP forwarding table • RFC 5519 multicast group membership discovery • RFC 4670 RADIUS accounting • RFC 2863 interface group MIB using SMI v2 • RFC 4133 entity MIB v3 • RFC 3414 user-based security model for SNMPv3 • RFC 2613 SMON – PortCopy • IEEE 802.3ad (LACP MIB included in a clause of the STD) • TIA 1057 LLDP-MED (MIB is part of the STD)	• IEEE 802.3u 100BASE-TX Fast Ethernet • IEEE 802.3z 1000BASE-X Gigabit Fiber • IEEE 802.3af/at Power over Ethernet • IEEE 802.1D STP (Spanning Tree Protocol) • IEEE 802.1s MSTP (Multiple Spanning Tree Protocol) • IEEE 802.1p QoS/CoS Protocol for Traffic Prioritization • IEEE 802.1AB Link Layer Discovery Protocol (LLDP) • IEEE 802.3x flow control, back pressure flow control • IEEE-802.1Q bridge MIB 2008 • RFC 1213 MIB II • RFC 4188 bridge • RFC 4293 management information base for the Internet Protocol (IP) • RFC 4668 RADIUS auth. client • RFC 3635 Ethernet-like • RFC 3636 802.3 MAU • RFC 3411 SNMP management frameworks • RFC 3415 view-based access control model for SNMP • IEEE 802.1AB LLDP-MIB (LLDP MIB included in a clause of the STD) • IEEE 802.1X (PAE MIB included in a clause of the STD)
Regulatory Approvals		
EMI	• FCC Part 15 Subpart B Class A, • EN61000-6-4 Class A	• CE EN55032
EMS	• CE EN55035 • IEC61000-4-2 (ESD) • IEC61000-4-4 (EFT) • IEC61000-4-6 (CS)	• EN61000-6-2 • IEC61000-4-3 (RS) • IEC61000-4-5 (Surge) • IEC61000-4-8 (Magnetic Field)
Free Fall	• IEC60068-2-32	
Shock	• IEC60068-2-27	
Vibration	• IEC60068-2-6	
Green	• RoHS Compliant	
Safety	• UL61010-1 (Pending) • UL61010-2-201 (Pending)	• ISA 12.12.01 (Pending) • E-mark (Pending)
Compliance	• NEMA TS2 (ITS) (Pending)	
MTBF(Telcordia SR-332, Issue 3, GB, 25°C)	258,071 hrs.	
Warranty	5 Years	

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

Packet Contents

BG5-1604-10GSFP-360(-T) Ethernet switch x 1
RJ45 (Male) to DB-9 RS-232 (Female) serial console cable x 1
Wall-mount installation kits x 1
Quick installation guide (printed) x 1

Comparison Table

Model Name	10/100/1000 bt PoE++	1G/2.5G/10GbE SFP+	Power Inputs	PoE Max. Power Budget	Operating Temperature
BG5-1604-10GSFP-360	12	4	48-55VDC	360W	-10°C ~ 65°C
BG5-1604-10GSFP-360-T	12	4	48-55VDC	360W	-40°C ~ 75°C

Ordering Information

BG5-1604-10GSFP-360	16-Port Industrial Managed Gigabit Ethernet 802.3bt PoE Switch -12*10/100/1000BASE-T Ethernet with IEEE 802.3bt compliant PoE, 90W/port + 4*1G/2.5G/10GbE SFP+ Slots, 48-55VDC, -10°C ~ 65°C
BG5-1604-10GSFP-360-T	16-Port Industrial Managed Gigabit Ethernet 802.3bt PoE Switch -12*10/100/1000BASE-T Ethernet with IEEE 802.3bt compliant PoE, 90W/port + 4*1G/2.5G/10GbE SFP+ Slots, 48-55VDC, -40°C ~ 75°C

Optional Accessories - Power Supply Series

75W Power Supply Series

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

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

NDR-240-48	240W Industrial DIN-Rail Power Supply w/ PFC, 48VDC/5A, Universal 90-264VAC/127-370VDC power input, Metal, -20°C ~ 70°C
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480W Power Supply Series

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

1Gbps Multi-mode SFP Transceiver Modules Series

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

1Gbps Single-mode SFP Transceiver Modules Series

SFP-GS10	1Gbps SFP Transceiver/LC, SMF, 10KM, 1310nm, 0°C ~ 70°C with UPC connector
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SFP-GS10-T	1Gbps SFP Transceiver/LC, SMF, 10KM, 1310nm, -40°C ~ 85°C with UPC connector
SFP-GS10-WA-DDM	1Gbps BiDi SFP Transceiver/LC, SMF, 10KM, TX: 1310nm/RX: 1550nm, 0°C ~ 70°C with UPC connector, Support DDM function
SFP-GS10-WA-DDM-T	1Gbps BiDi SFP Transceiver/LC, SMF, 10KM, TX: 1310nm/RX: 1550nm, -40°C ~ 85°C with UPC connector, Support DDM function
SFP-GS10-WB-DDM	1Gbps BiDi SFP Transceiver/LC, SMF, 10KM, TX: 1550nm/RX: 1310nm, 0°C ~ 70°C with UPC connector, Support DDM function
SFP-GS10-WB-DDM-T	1Gbps BiDi SFP Transceiver/LC, SMF, 10KM, TX: 1550nm/RX: 1310nm, -40°C ~ 85°C with UPC connector, Support DDM function
SFP-GS20	1Gbps SFP Transceiver/LC, SMF, 20KM, 1310nm, 0°C ~ 70°C with UPC connector
SFP-GS20-T	1Gbps SFP Transceiver/LC, SMF, 20KM, 1310nm, -40°C ~ 85°C with UPC connector
SFP-GS40-DDM	1Gbps SFP Transceiver/LC, SMF, 40KM, 1310nm, 0°C ~ 70°C with UPC connector, Support DDM function
SFP-GS40-DDM-T	1Gbps SFP Transceiver/LC, SMF, 40KM, 1310nm, -40°C ~ 85°C with UPC connector, Support DDM function
SFP-GS40-WA-DDM	1Gbps BiDi SFP Transceiver/LC, SMF, 40KM, TX: 1310nm/RX: 1550nm, 0°C ~ 70°C with UPC connector, Support DDM function
SFP-GS40-WB-DDM	1Gbps BiDi SFP Transceiver/LC, SMF, 40KM, TX: 1550nm/RX: 1310nm, 0°C ~ 70°C with UPC connector, Support DDM function
SFP-GS60-DDM	1Gbps SFP Transceiver/LC, SMF, 60KM, 1550nm, 0°C ~ 70°C with UPC connector, Support DDM function
SFP-GS60-DDM-T	1Gbps SFP Transceiver/LC, SMF, 60KM, 1550nm, -40°C ~ 85°C with UPC connector, Support DDM function
SFP-GS60-WA	1Gbps BiDi SFP Transceiver/LC, SMF, 60KM, TX: 1310nm/RX: 1550nm, 0°C ~ 70°C with UPC connector
SFP-GS60-WB-DDM	1Gbps BiDi SFP Transceiver/LC, SMF, 60KM, TX: 1550nm/RX: 1310nm, 0°C ~ 70°C, Support DDM function
SFP-GS80-DDM	1Gbps SFP Transceiver/LC, SMF, 80KM, 1550nm, 0°C ~ 70°C with UPC connector, Support DDM function
SFP-GS80-DDM-T	1Gbps SFP Transceiver/LC, SMF, 80KM, 1550nm, -40°C ~ 85°C with UPC connector, Support DDM function
10Gbps Multi-mode SFP+ Transceiver Modules Series	
SFP-XM00	10Gbps SFP+ Transceiver/LC, MMF, 300M, 850nm, 0°C ~ 70°C
SFP-XM00-T	10Gbps SFP+ Transceiver/LC, MMF, 300M, 850nm, -40°C ~ 85°C
10Gbps Single-mode SFP+ Transceiver Modules Series	
SFP-XS10	10Gbps SFP+ Transceiver/LC, SMF, 10KM, 1310nm, 0°C ~ 70°C
SFP-XS10-T	10Gbps SFP+ Transceiver/LC, SMF, 10KM, 1310nm, -40°C ~ 85°C
Copper SFP Transceiver Modules Series	
SFP-GC00-SG	SFP to 10/100/1000BASE-T copper Module, 0°C ~ 70°C
SFP-GC00-SE	SFP to 1000Base-T copper Module, 0°C ~ 70°C