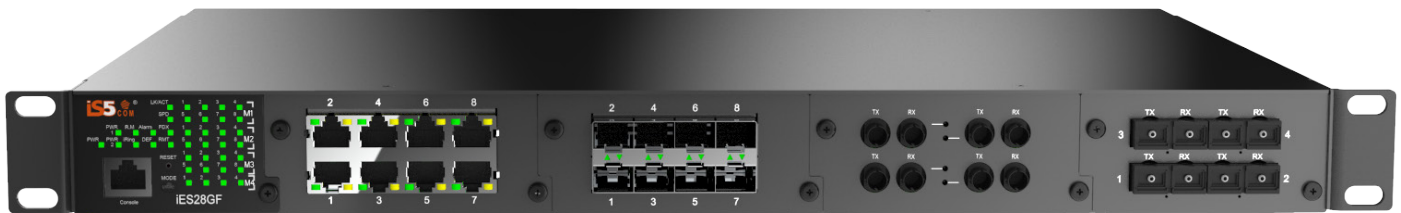


## iES28GF-L2

Intelligent 28 Port Configurable Gigabit Ethernet  
Switch IEC 61850, IEEE 1613, and EN50155 Certified



### Product Overview

iES28GF-L2 is a highly redundant and scalable Layer 2 with Basic Routing functionality managed Gigabit Ethernet switch with 4 fixed modules. It is designed to withstand the harshest environments of transmission and distribution substations and rolling stock applications. The switch is IEC 61850 Ed.2, IEEE 1613, and EN 50155 certified.

The iES28GF-L2 provides redundancy support through functions such as STP/RSTP/MSTP assuring protection of all mission critical network applications. The iES28GF-L2 can be managed via the Web UI, iManage Software Suite, Telnet, SSHv2, and Console (CLI). The switch provides advanced DOS/DDOS auto prevention.

The iES28GF-L2 is made of IP-40 galvanized steel and has a wide operating temperature range from -40°C to +85°C, which is suitable for the harshest of environments without use of fans.

# Features and Benefits

Table 1. Features

FEATURE	
SUPPORTS	<ul style="list-style-type: none"> <li>• STP / RSTP / MSTP</li> <li>• LLDP (Link Layer Discovery Protocol) and Modbus TCP</li> <li>• VLAN Priority—supports priority-tagged frames to be received by specific IEDs</li> <li>• HTTPS and SSH</li> <li>• SNTP for synchronizing the switch's clocks</li> <li>• NTPv4 - Network Time Protocol Version 4*</li> </ul>
IGMP V2 / V3 (IGMP SNOOPING)	
SNMP V1 / V2C /V3 & RMON	
ACL, AAA (RADIUS), AND NAS 802.1X (USER AUTHENTICATION)	
9.6K BYTES JUMBO FRAME	
MULTIPLE ALARM NOTIFICATION METHODS	
CONFIGURABLE BY WEB BROWSER, TELNET, CONSOLE (CLI), IMANAGE SOFTWARE RUNNING ON WINDOWS 10, NT/2000/XP/2003/VISTA/7	
RACK AND PANEL MOUNTING	

\* The NTPv4 version will be delivered to the customer by request.

## PRODUCT SPECIFICATIONS

Table 2. Technical Specification

DESCRIPTION	SPECIFICATION
SLOT 1 - (PORTS 1-8)	8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100/1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
SLOT 2 - (PORTS 9-16)	8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100/1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
SLOT 3 - (PORTS 17-24)	8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100/1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
SLOT 4 - (PORTS 25-28)	2 or 4 X 1000Base-X SFP Ports, 2 or 4 X 1000LX/SX Ports
RS-232 SERIAL CONSOLE PORT	RS-232 in RJ45 connector with console cable: 115200 bps, 8, N, 1
WARNING / MONITORING SYSTEM	Relay output for fault event alarming 2 alarm warning methods for system events supported: <ul style="list-style-type: none"> <li>• SYSLOG with server / client structure; recording and viewing events in the System Event Log</li> <li>• SMTP for notification via email</li> </ul> Event selection per port
ALARM	Relay output to carry capacity: <ul style="list-style-type: none"> <li>• 1 A @ 120 VAC</li> <li>• 2 A @ 24 VDC</li> <li>• 0.15 A @ 125 VDC</li> </ul>

# Product Specifications

TECHNOLOGY	
MAC TABLE	8K
PRIORITY QUEUES	8
PROCESSING	Store-and-Forward
SWITCH PROPERTIES	Switching latency: 7 $\mu$ s Switch capacity: 56 Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 32 for each VLAN Port rate limiting: User Defined
JUMBO FRAME	9.6 K
SECURITY FEATURES	<ul style="list-style-type: none"> <li>• STP/RSTP/MSTP</li> <li>• Device Binding and Remote Control security</li> <li>• Access Control List (ACL) for every port</li> <li>• Authentication, Authorization and Accounting (AAA)</li> <li>• RADIUS and TACACS+ Authentication management</li> <li>• Port based network access control (NAS) 802.1x</li> <li>• QoS for achieving efficient bandwidth utilization</li> <li>• Private VLAN with Port Isolation Configuration</li> <li>• VLAN (802.1 Q) for segregation and securing network traffic</li> <li>• SNMPv3 authentication and privacy encryption</li> <li>• HTTPS / SSH enhanced network security</li> <li>• Web and CLI authentication and authorization</li> </ul>
SOFTWARE FEATURES	<ul style="list-style-type: none"> <li>• Web or CLI based Management (Console or Telnet / SSHv2)</li> <li>• DHCP Server / Relay</li> <li>• VLAN (802.1Q) for segregating and securing network traffic</li> <li>• Supports SNMPv1/v2/v3</li> <li>• Traffic Prioritization—Storm Control and Quality of Service (QoS) including DSCP-Based QoS Ingress Port Classification</li> <li>• Multicast traffic—IGMP Snooping (IGMP v1/v2 / v3) and unregistered IPMCv4 Flooding</li> <li>• Warnings (Syslog and SMTP) and Fault Alarm (power failure)</li> <li>• Monitoring and Diagnostics—MAC Table and Port Statistics (ports monitoring including for SFP ports, system information, issuing PING packets for troubleshooting IP connectivity issues)</li> <li>• SNTP for synchronizing of clocks over network</li> <li>• Basic Routing               <ul style="list-style-type: none"> <li>o Static Routing</li> <li>o RIPv2</li> <li>o VRRP</li> </ul> </li> </ul>
NETWORK REDUNDANCY	<ul style="list-style-type: none"> <li>• STP/RSTP/RSTP (IEEE 802.1 D /W)</li> <li>• MSTP (RSTP/ STP compatible)</li> <li>• Fast Recovery and Dual Port Recovery</li> </ul>

# Product Specifications

PHYSICAL CHARACTERISTICS	
DIMENSIONS (W X D X H)	Without Mounting Brackets 440.5 (W) X 360 (D) X 44.3 (H) MM (17.34 X 14.17 X 1.74 INCHES) With Mounting Brackets 479.3 (W) x 360 (D) x 44.3 (H) mm (18.87 x 14.17 x 1.74 inches)
WEIGHT (G)	6600 g
POWER	
INPUT POWER	Redundant Power Supplies: Dual Input 10-36VDC, Dual Input 36-75VDC, or Dual Input 110-370VDC or 90-264VAC
POWER CONSUMPTION (TYP.)	46 Watts max.
OVERLOAD CURRENT PROTECTION	Present
WARRANTY & MTBF	
WARRANTY	5 years, (extendable option with additional terms)
MTBF	210600 Hours / 24 Years (Operating Temperature: 55°C)

Table 3. Compliance Specification

DESCRIPTION	SPECIFICATION	LEVEL
<b>PRODUCT SAFETY TESTS</b>		
IP RATING	IEC 61850-3 clause 6.6.2 IEC 60529 clause 6.11 ISO 20653:2013	IP20
CLEARANCE AND CREEPAGE	IEC 61850-3 clause 6.6.1	Overvoltage Category III, Pollution Degree II
IMPULSE VOLTAGE	IEC 61850-3 clause 6.6.3 IEEE 1613 clause 5.3	5kV on auxiliary power supply 1kV on digital inputs (Fault Relay) 0.5kV on station bus ports
DIELECTRIC VOLTAGE	IEC 61850-3 clause 6.6.4 IEEE 1613 clause 5.2	2.8kVDC on auxiliary power supply 2.8kVDC on digital inputs (Fault Relay) 0.7kVDC on station bus ports
INSULATION RESISTANCE	IEC 61850-3 clause 6.9.2.2 IEC 60255-27 clause 10.6.4.4	500VDC
PROTECTIVE BONDING	IEC 61850-3 clause 6.6.5	less than 0.1 Ohms
FLAMMABILITY	IEC 61850-3 clause 6.6.6	Wires V1 Connectors V2
SINGLE FAULT CONDITION	IEC 61850-3 clause 6.6.7	5VDC, 12VDC
SAFETY	EN 60950-1	
<b>ELECTROMAGNETIC COMPATIBILITY (EMC) TESTS</b>		
RADIATED EMISSION	IEC 61850-3 clause 6.7.4 CISPR22 table 5/7 FCC Part 15 EN 50155	class A
CONDUCTED EMISSION	IEC 61850-3 clause 6.7.4 CISPR22 table 1/3 FCC Part 15 EN 50155	class A

# Product Specifications

DESCRIPTION	SPECIFICATION	LEVEL
1 MHZ DAMPED OSCILLATORY WAVE	IEC 61850-3 clause 6.7.3 IEC 61000-4-18 IEEE 1613 clause 6.3.1 IEEE 1613.1 clause 5	class 1 2.5 kV CM, 1.0kV DM auxiliary power supply and on digital inputs 2.5 kV CM, Ethernet ports
ELECTROSTATIC DISCHARGES	IEC 61850-3 clause 6.7.3 IEC 61000-4-2 IEEE 1613 clause 8 IEEE 1613.1 clause 8	8kV contact, 15kV air
RADIATED RADIO FREQUENCY MAGNETIC FIELD	IEC 61850-3 clause 6.7.3 IEC 61000-4-3 IEEE 1613 clause 7 IEEE 1613.1 clause 7	class 1 20 V/m
FAST TRANSIENT/BURST	IEC 61850-3 clause 6.7.3 IEC 61000-4-4 IEEE 1613 clause 6 IEEE 1613.1 clause 5	class 1 4kV
SURGE	IEC 61850-3 clause 6.7.3 IEC 61000-4-5 IEC 1613.1 clause 6	class 1 PS Ports ±4kV LE ±2kV LL FAIL RLY ±4kV LE ± 2kV LL Eth Ports ± 4kV LE
CONDUCTED DISTURBANCE INDUCED BY RF FIELDS	IEC 61850-3 clause 6.7.3 IEC 61000-4-6 IEEE 1613.1 clause 9	class 1 0.15-80MHz at 10V 27, 68 MHz at 10V
MAIN FREQUENCY VOLTAGE	IEC 61850-3 clause 6.7.3 IEC 61000-4-16 IEEE 1613.1 clause 12	class 1 PS Ports 30V cont, 300V 1 sec FAIL RLY 30V cont, 300V 1 sec Eth Ports 30V cont, 300V 1 sec
POWER FREQUENCY MAGNETIC FIELD	IEC 61850-3 clause 6.7.3 IEC 61000-4-8 IEEE 1613.1 clause 10	100 A/m cont. 1000 A/m 3s
D.C. VOLTAGE DIPS	IEC 61850-3 clause 6.7.3 IEC 61000-4-29	class 1 40%; 0.1s 70%; 0.1s
A.C. VOLTAGE DIPS	IEC 61850-3 clause 6.7.3 IEC 61000-4-11	class 1 40% 0.1s 70% 0.1s
D.C. VOLTAGE INTERRUPTIONS	IEC 61850-3 clause 6.7.3 IEC 61000-4-29	class 1 100%; 0.05s
A.C. VOLTAGE INTERRUPTIONS	IEC 61850-3 clause 6.7.3 IEC 61000-4-11	class 1 40%; 1s (50c)
D.C. RIPPLE	IEC 61850-3 clause 6.7.3 IEC 61000-4-17 IEEE 1613 clause 4.2	class 1 10% Ur_DC
DAMPED OSCILLATORY MAGNETIC FIELD	IEEE 1613.1 clause 11 IEC 61000-4-10	100 A/m (peak)
<b>BURDEN TESTS</b>		
BURDEN AC PS	IEC 61850-3 clause 6.8.1, 6.8.2	88VAC/Load 53VA 264VAC/Load 67VA
BURDEN DC PS	IEC 61850-3 clause 6.8.1, 6.8.2	100VDC/Load 33VA 300VDC/Load 33VA

# Product Specifications

DESCRIPTION	SPECIFICATION	LEVEL
INRUSH CURRENT	IEC 61850-3 clause 6.8.1.2, 6.8.2.2	100VDC 0.02A 0.3s 300VDC 0.08A 0.3s
<b>CLIMATIC ENVIRONMENTAL TESTS</b>		
DRY HEAT OPERATIONAL	IEC 61850-3 clause 6.9.3.1 IEC 60068-2-2, test Bd	+85°C; 16 hours
	IEEE 1613 clause 3.1.1	+85°C
COLD OPERATIONAL	IEC 61850-3 clause 6.9.3.2 IEC 60068-2-1, test Ad	-40°C; 16 hours
	IEEE 1613 clause 3.1.1	-40°C
DRY HEAT STORAGE	IEC 61850-3 clause 6.9.3.3 IEC 60068-2-2, test Bb	+85°C; 16 hours
	IEEE 1613 clause 3.1.2	+85°C
COLD STORAGE	IEC 61850-3 clause 6.9.3.4 IEC 60068-2-1, test Ab	-40°C; 16 hours
	IEEE 1613 clause 3.1.2	-40°C
CHANGE OF TEMPERATURE	IEC 61850-3 clause 6.9.3.5 IEC 60068-2-14 test Nb	-40°C; +85°C 3 hours; 5 cycles
DAMP HEAT, STEADY STATE	IEC 61850-3 clause 6.9.3.6 IEC 60068-2-78 test Cab	+55°C; 93%, 10 days
DAMP HEAT, CYCLIC	IEC 61850-3 clause 6.9.3.7 IEC 60068-2-78 test Db IEEE 1613 clause 3.1.3	+25°C; 97%. 55°C 93% 12h+12h
<b>MECHANICAL ENVIRONMENTAL TESTS</b>		
VIBRATION RESPONSE	IEC 61850-3 clause 6.8.1, 6.8.2	class 1 0.5g, 10Hz - 150Hz
VIBRATION ENDURANCE	IEC 61850-3 clause 6.10.1 IEC 60255-21-1	class 1 1g, 10 - 150Hz
SHOCK RESPONSE	IEC 61850-3 clause 6.10.2 IEC 60255-21-2	class 1 5g, 11ms
SHOCK WITHSTAND	IEC 61850-3 clause 6.10.2 IEC 60255-21-2	class 1 15g, 11ms
BUMP	IEC 61850-3 clause 6.10.2 IEC 60255-21-2	class 1 10g, 16ms
SEISMIC (SINGLE AXIS SWEEP)	IEC 61850-3 clause 6.10.3 IEC 60255-21-3	class 1
FREE FALL	IEC 60068-2-32	100m
<b>ENCLOSURE PROTECTION</b>		
ENCLOSURE PROTECTION	IEC 61850-3 clause 6.11	IP40
<b>ALTITUDE</b>		
ALTITUDE	IEC 61850-3 section 4, table 1	less than or equal to 2000m
	IEC 61850-3 section 7.2, table 25	86 kPa to 106 kPa

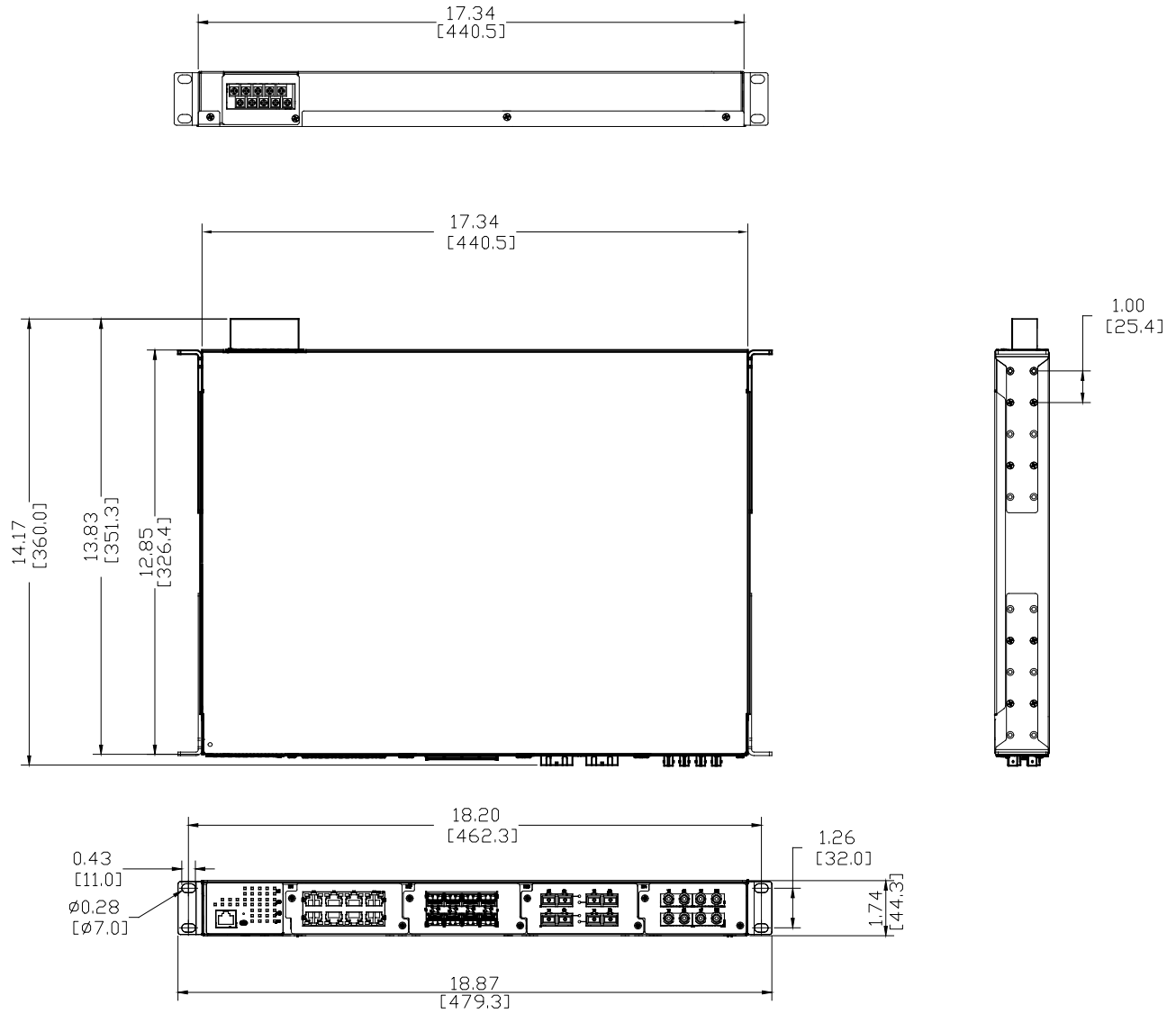
# Product Specifications

Table 4. Standards and Management

DESCRIPTION	SPECIFICATION		
IEEE STANDARDS	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D - 1998 Spanning Tree Protocol (STP) IEEE 802.1D – 2004 /w Rapid Spanning Tree Protocol (RSTP) IEEE 802.1Q – 2014 Bridged Networks IEEE 802.1-2010 Port Based Network Access Control IEEE 802.1AB – 2016 Station and Media Access Connectivity discovery (LLDP) IEEE 802.1AX Link Aggregation		
RFC COMPLIANCE	<ul style="list-style-type: none"> <li>• RFC 768: UDP</li> <li>• RFC 783: TFTP</li> <li>• RFC 791: IPv4</li> <li>• RFC 792: ICMP</li> <li>• RFC 793: TCP</li> <li>• RFC 854: Telnet</li> <li>• RFC 959: FTP</li> <li>• RFC 1157: SNMPv1</li> </ul>	<ul style="list-style-type: none"> <li>• RFC 1901,1902-1907 SNMPv2</li> <li>• RFC 2273-2275: SNMPv3</li> <li>• RFC 2571: SNMP Management</li> <li>• RFC 1166: IP Addresses</li> <li>• RFC 1643: Ethernet Interface MIB</li> <li>• RFC 1757: RMON</li> <li>• RFC 2068: HTTP</li> <li>• RFC 2990 QoS</li> </ul>	<ul style="list-style-type: none"> <li>• RFC 2131, 2132: DHCP</li> <li>• RFC 2236: IGMP v2</li> <li>• RFC 3376: IGMP v3</li> <li>• RFC 2474: DiffServ Precedence</li> <li>• RFC 3046: DHCP Relay Agent Information Option</li> <li>• RFC 3580: 802.1x RADIUS</li> <li>• RFC 4250-4252 SSH Protocol</li> </ul>

# Dimensions

All dimensions are shown in inches [millimeters].





# Ordering Information

## SUPPORTED SFPs FOR iES28GF-L2

ORDER CODE	DESCRIPTION	WORKS WITH	
		SLOT 1-3 (8GSFP)	SLOT-4 (xGSFP)
SFP100-MM-550	SFP 100Mbps Multimode LC Transceiver 550m, 850nm, -40°C to +85°C	•	
SFP100-MM-2	SFP 100Mbps Multimode LC Transceiver 2km, 1310nm, -40°C to +85°C	•	
SFP100-SM-20	SFP 100Mbps Singlemode LC Transceiver 20km, 1310nm, -40°C to +85°C	•	
SFP100-SM-60	SFP 100Mbps Singlemode LC Transceiver 60km, 1310nm, -40°C to +85°C	•	
SFP100BIDI1-SM-40	SFP 100Mbps Bi-Directional Singlemode LC Transceiver 40km, TX1310nm, RX1550nm, -40°C to +85°C	•	
SFP100BIDI2-SM-40	SFP 100Mbps Bi-Directional Singlemode LC Transceiver 40km, TX1550nm, RX1310nm, -40°C to +85°C	•	
SFP100-TX	SFP 100Mbps TX RJ45 Transceiver 100m, -40°C to +85°C	•	
SFP1000-TX	SFP 1000Mbps TX RJ45 Transceiver 100m, -40°C to +85°C	•	•
SFP1000-MM-550	SFP 1Gbps Multimode LC Transceiver 550m, 850nm, -40°C to +85°C	•	•
SFP1000-MM-2	SFP 1Gbps Multimode LC Transceiver 2km, 1310nm, -40°C to +85°C	•	•
SFP1000-SM-10	SFP 1Gbps Singlemode LC Transceiver 10km, 1310nm, -40°C to +85°C	•	•
SFP1000-SM-20	SFP 1Gbps Singlemode LC Transceiver 20km, 1310nm, -40°C to +85°C	•	•
SFP1000-SM-40	SFP 1Gbps Singlemode LC Transceiver 40km, 1310nm, -40°C to +85°C	•	•
SFP1000-SM-60	SFP 1Gbps Singlemode LC Transceiver 60km, 1550nm, -40°C to +85°C	•	•
SFP1000-SM-80	SFP 1Gbps Singlemode LC Transceiver 80km, 1550nm, -40°C to +85°C	•	•
SFP1000BIDI1-SM-10	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 10km, TX1310nm, RX1550nm, -40°C to +85°C	•	•
SFP1000BIDI2-SM-10	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 10km, TX1550nm, RX1310nm, -40°C to +85°C	•	•

BASE	POWER SUPPLY 1	POWER SUPPLY 2	MOUNT	POWER TERMINALS	SLOT 1 PORT1-8*	SLOT 2 PORT 9-16	SLOT 3 PORT 17-24	SLOT 4 PORT 25-28**	MOD	DESCRIPTION
iES28GF-L2	HV	XX	R	F	8GRJ45	8GRJ45	8GSFP	4GSFP	C1	
iES28GF-L2										Layer 2 Switch core assembly and packaging
	XX	XX								None
	LV	LV								Input 10-36VDC
	MV	MV								Input 36-75VDC
	HV	HV								Input 110-370VDC or 90-264VAC
			R							Rack Mounting
			P							Panel Mounting
			N							No Mounting hardware
				F						Power Terminals in the Front with Ethernet Ports/Display Rear opposite Ethernet Ports
				R						Power Terminals in the Rear opposite Ethernet Ports/ Display Front with Ethernet Ports
									C1	Conformal Coating

\* For Slots 1-3, subsequent slots cannot be populated if the preceding slot is empty.

\*\* See Accessories for SFP transceiver pricing.

i55COM #	SLOTS 1-3 DESCRIPTION
XX	None
8GRJ45	8 X 10/100/1000Base-T(X) RJ45
8GSFP	8 X 100/1000Base-X SFP (Blank no SFP transceivers**)
2MMSC2	2 X 100FX Multimode SC, 2km, 1310nm
4MMSC2	4 X 100FX Multimode SC, 2km, 1310nm
2MMST2	2 X 100FX Multimode ST, 2km, 1310nm
4MMST2	4 X 100FX Multimode ST, 2km, 1310nm
2SMSC15	2 X 100FX Singlemode SC, 15km, 1310nm
4SMSC15	4 X 100FX Singlemode SC, 15km, 1310nm
2SMST15	2 X 100FX Singlemode ST, 15km, 1310nm
4SMST15	4 X 100FX Singlemode ST, 15km, 1310nm
2SMSC40	2 X 100FX Singlemode SC, 40km, 1310nm
4SMSC40	4 X 100FX Singlemode SC, 40km, 1310nm
2SMST40	2 X 100FX Singlemode ST, 40km, 1310nm
4SMST40	4 X 100FX Singlemode ST, 40km, 1310nm
2SMSC60	2 X 100FX Singlemode SC, 60km, 1310nm
4SMSC60	4 X 100FX Singlemode SC, 60km, 1310nm
2SMST60	2 X 100FX Singlemode ST, 60km, 1310nm
4SMST60	4 X 100FX Singlemode ST, 60km, 1310nm
2SMSC80	2 X 100FX Singlemode SC, 80km, 1550nm
4SMSC80	4 X 100FX Singlemode SC, 80km, 1550nm
2SMST80	2 X 100FX Singlemode ST, 80km, 1550nm
4SMST80	4 X 100FX Singlemode ST, 80km, 1550nm
2SMSC100	2 X 100FX Singlemode SC, 100km, 1550nm
4SMSC100	4 X 100FX Singlemode SC, 100km, 1550nm
2SMST100	2 X 100FX Singlemode ST, 100km, 1550nm
4SMST100	4 X 100FX Singlemode ST, 100km, 1550nm
2GMMSC	2 X 1000SX Multimode SC, 550m, 850nm
4GMMSC	4 X 1000SX Multimode SC, 550m, 850nm
2GMMST	2 X 1000SX Multimode ST, 550m, 850nm
4GMMST	4 X 1000SX Multimode ST, 550m, 850nm
2GSMSC10	2 X 1000LX Singlemode SC, 10km, 1310nm
4GSMSC10	4 X 1000LX Singlemode SC, 10km, 1310nm
2GSMST10	2 X 1000LX Singlemode ST, 10km, 1310nm
4GSMST10	4 X 1000LX Singlemode ST, 10km, 1310nm
2GSMSC40	2 X 1000LX Singlemode SC, 40km, 1310nm
4GSMSC40	4 X 1000LX Singlemode SC, 40km, 1310nm
2GSMST40	2 X 1000LX Singlemode ST, 40km, 1310nm
4GSMST40	4 X 1000LX Singlemode ST, 40km, 1310nm
2GSMSC70	2 X 1000LX Singlemode SC, 70km, 1550nm
4GSMSC70	4 X 1000LX Singlemode SC, 70km, 1550nm
2GSMST70	2 X 1000LX Singlemode ST, 70km, 1550nm
4GSMST70	4 X 1000LX Singlemode ST, 70km, 1550nm

i55COM #	SLOT 4 DESCRIPTION
XX	None
2GSFP	2 X 1000Base-X SFP (Blank no SFP transceivers**)
4GSFP	4 X 1000Base-X SFP (Blank no SFP transceivers**)
2GMMSC	2 X 1000SX Multimode SC, 550m, 850nm
4GMMSC	4 X 1000SX Multimode SC, 550m, 850nm
2GMMST	2 X 1000SX Multimode ST, 550m, 850nm
4GMMST	4 X 1000SX Multimode ST, 550m, 850nm
2GSMSC10	2 X 1000LX Singlemode SC, 10km, 1310nm
4GSMSC10	4 X 1000LX Singlemode SC, 10km, 1310nm
2GSMST10	2 X 1000LX Singlemode ST, 10km, 1310nm
4GSMST10	4 X 1000LX Singlemode ST, 10km, 1310nm
2GSMSC40	2 X 1000LX Singlemode SC, 40km, 1310nm
4GSMSC40	4 X 1000LX Singlemode SC, 40km, 1310nm
2GSMST40	2 X 1000LX Singlemode ST, 40km, 1310nm
4GSMST40	4 X 1000LX Singlemode ST, 40km, 1310nm
2GSMSC70	2 X 1000LX Singlemode SC, 70km, 1550nm
4GSMSC70	4 X 1000LX Singlemode SC, 70km, 1550nm
2GSMST70	2 X 1000LX Singlemode ST, 70km, 1550nm
4GSMST70	4 X 1000LX Singlemode ST, 70km, 1550nm

# Ordering Information

## iES28GF-L2 Sample Order Code

iES28GF-L2-LV-HV-RR-8GRJ45-8GRJ45-8GSFP-4GSFP

Description: 28 Port Ethernet Gigabit Switch, (Power Supply 1) Input 10-36VDC, (Power Supply 2) Input 110-370VDC or 90-264VAC, Rack Mounting/ Power Terminals in the Rear opposite Ethernet Ports/Display Front with Ethernet Ports,(Slot 1 (Ports 1-8)) 8 X 10/100/1000Base-T(X) RJ45, (Slot 2 (Ports 9-16)) 8 X 10/100/1000Base-T(X) RJ45, (Slot 3 (Ports 17-24))8 X 100/1000Base-X SFP (Blank no SFP transceivers), (Slot 4 (Ports 25-28)) 4 X 1000Base-X SFP (Blank no SFP transceivers).

The same unit, may be ordered with conformal coating by appending '-C1' to the order code, for example:

iES28GF-L2-LV-HV-RR-8GRJ45-8GRJ45-8GSFP-4GSFP-C1

Description: 28 Port Ethernet Gigabit Switch, (Power Supply 1) Input 10-36VDC, (Power Supply 2) Input 110-370VDC or 90-264VAC, Rack Mounting/ Power Terminals in the Rear opposite Ethernet Ports/Display Front with Ethernet Ports,(Slot 1 (Ports 1-8)) 8 X 10/100/1000Base-T(X) RJ45, (Slot 2 (Ports 9-16)) 8 X 10/100/1000Base-T(X) RJ45, (Slot 3 (Ports 17-24))8 X 100/1000Base-X SFP (Blank no SFP transceivers), (Slot 4 (Ports 25-28)) 4 X 1000Base-X SFP (Blank no SFP transceivers). This system will be conformal coated.

NOTE: When selecting 2GSFP, 4GSFP, or 8GSFP (Blank no optical transceivers\*\*) \*\*SFPs are to be ordered separately.



**For more information, visit: [is5com.com](http://is5com.com)**

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