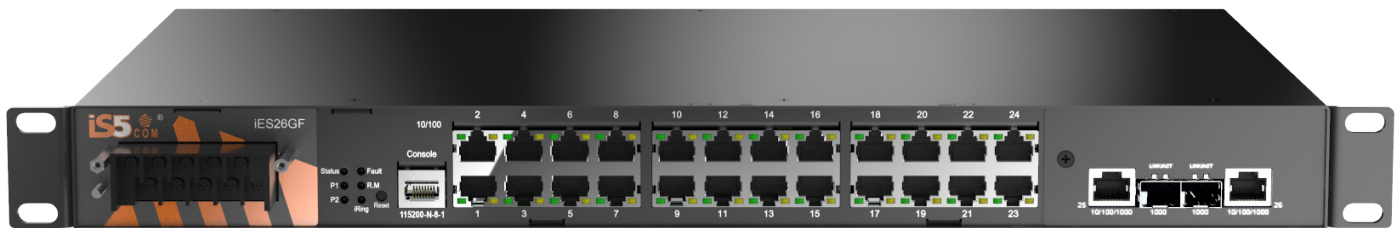


# iES26GF

Intelligent 26 Port Configurable Gigabit Ethernet Switch  
 IEC 61850-3 and IEEE 1613 Compliant



## Product Overview

iES26GF is an intelligent Ethernet switch designed to withstand the harshest environments of utility substations and rolling stock applications. The iES26GF provides redundancy support through functions such as STP/RSTP/MSTP assuring protection of all mission critical network applications.

iES26GF can be managed via the Web UI, iManage Software Suite, Telnet, and Console (CLI) / SSH v2.

- IP-based Bandwidth Management—for limiting maximum bandwidth of every IP device and configuring an IP camera and NVR with dedicated bandwidth
- Application-Based QoS—the switch also supports application-based QoS. Application-based QoS can be set with the highest priority for data streaming according to TCP/UDP port number.
- Device Binding—effectively binds the IP/MAC address of a device connected to the switch port. If the IP/MAC address of the connected device does not match the switch port binding information, the device will be blocked for security; other active network traffic protection and maintenance tools include Alive Check, Stream Check, and DoS/DDoS auto-prevention.

# 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)</li> <li>• Modbus TCP</li> <li>• VLAN Priority—supports priority-tagged frames to be received by specific IEDs</li> <li>• HTTPS / SSH v2</li> <li>• SNTP for synchronizing the switch's clocks</li> <li>• NTPv4 - Network Time Protocol Version 4*</li> <li>• TLS Version 1.2</li> <li>• MRP - Media Redundancy Protocol</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	
19 INCHES RACK MOUNTABLE	

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

\*\* MRP implementation is based on IEC 62439 Ed. 1.0

## PRODUCT SPECIFICATIONS

Table 2. Technical Specification

DESCRIPTION	SPECIFICATION
10/100BASE-T(X) RJ45	24
10/100/1000BASE-T(X) RJ45, OR 1000BASE-X SFP, OR 100 FX SC/ST, OR 1000SX MM ST/SC, OR 1000LX SM ST/SC	2
RS-232 SERIAL CONSOLE PORT	RS-232 in RJ-45 connector with console cable. 115200 bps, 8, N, 1
WARNING /MONITORING SYSTEM	Relay output for fault event alarming Syslog server / client to record and view events SMTP for event warning notification via email
ALARM	Relay output to carry capacity of 1 A at 24 VDC
TECHNOLOGY	
MAC TABLE	8K
PRIORITY QUEUES	8
PROCESSING	Store-and-Forward
SWITCH PROPERTIES	Switching latency: 7 $\mu$ s Switching bandwidth: 8.8 Gbps Max. Number of Available VLANs: 4096 IGMP multi cast groups: 32 for each VLAN Port rate limiting: User Defined
JUMBO FRAME	9.6 K

# Product Specifications

## TECHNOLOGY

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>
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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></ul>
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NETWORK REDUNDANCY	<ul style="list-style-type: none"><li>•RSTP (IEEE 802.1 D/w)</li><li>•MSTP (RSTP/ STP compatible)</li><li>•Fast Recovery</li><li>•Dual Port Recovery</li></ul>
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## PHYSICAL CHARACTERISTICS

ENCLOSURE	IP40 galvanized steel
DIMENSION (W X D X H)	486 (W) x 290 (D) x 44 (H) mm (19.12 x 11.41x 1.74 inches)
WEIGHT (G)	3.900 g

## POWER

REDUNDANT POWER INPUT	Redundant Power Supplies: Dual Input 24VDC(Nom), 10-36VDC (Oper), or Dual Input 48VDC(Nom), 36-75VDC (Oper), or Dual Input 145-240VDC(Nom), 125-300VDC(Oper) or 100-240VAC(Nom), 88-264VAC(Oper) 50/60Hz
OVERLOAD CURRENT PROTECTION	Present
POWER CONSUMPTION	23W

# Product Specifications

Table 3. Compliance Specification

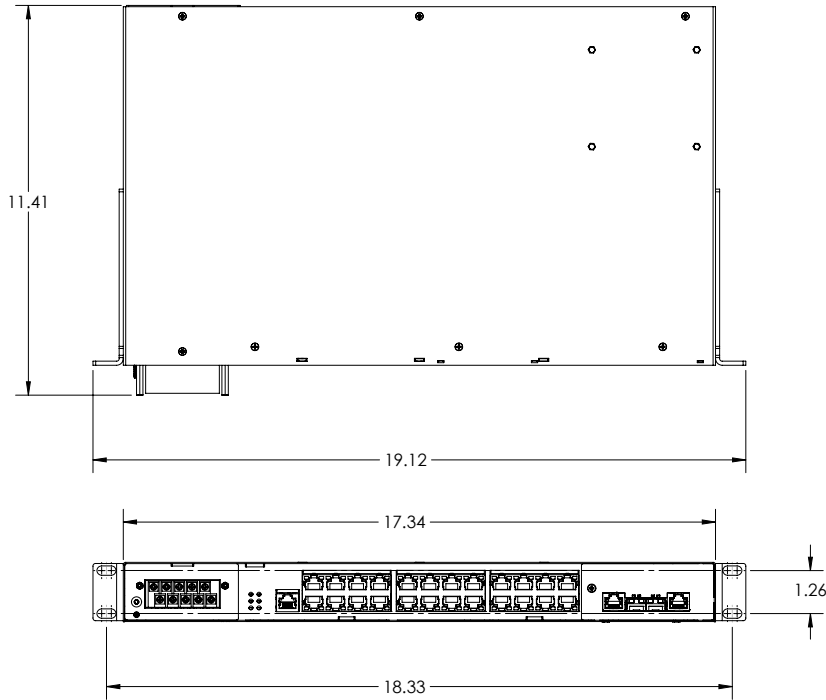
TYPE	STANDARDS
ELECTROMAGNETIC EMISSIONS	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
ELECTROMAGNETIC IMMUNITY	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
INDUSTRY STANDARDS	IEC 61850-3, IEEE 1613
SAFETY STANDARDS	EN60950-1
OPERATING ENVIRONMENT	-40oC to +85oC (-40o to 185oF) (no fans) EN 60068-2-21
STORAGE ENVIRONMENT	-40oC to +85oC (-40o to 185oF) EN 60068-2-14
OPERATING HUMIDITY	5% to 95% Non-condensing EN 60068-2-30
SHOCK	IEC60068-2-27
FREE FALL	IEC60068-2-32
VIBRATION	IEC60068-2-6
WARRANTY	5 years, (extendable option with additional terms)

Table 4. Standards and Management

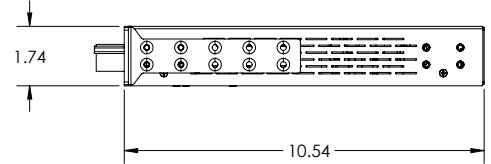
DESCRIPTION	SPECIFICATION
IEEE STANDARDS	<ul style="list-style-type: none"> <li>IEEE 802.3 for 10Base-T</li> <li>IEEE 802.3u for 100Base-TX and 100Base-FX</li> <li>IEEE 802.3ab for 1000Base-T</li> <li>IEEE 802.3z for 1000Base-X</li> <li>IEEE 802.3x for Flow control</li> <li>IEEE 802.3ad for LACP (Link Aggregation Control Protocol)</li> <li>IEEE 802.1D Spanning Tree Protocol (STP)</li> <li>IEEE 802.1W Rapid Spanning Tree Protocol (RSTP)</li> <li>IEEE 802.1Q – 2014 Bridged Networks</li> <li>IEEE 802.1-2010 Port Based Network Access Control</li> <li>IEEE 802.1AB – 2016 Station and Media Access Connectivity discovery (LLDP)</li> <li>IEEE 802.1AX Link Aggregation</li> </ul>
RFC COMPLIANCE	<ul style="list-style-type: none"> <li style="width: 33%;">• RFC 768: UDP</li> <li style="width: 33%;">• RFC 1901,1902-1907 SNMPv2</li> <li style="width: 33%;">• RFC 2131, 2132: DHCP</li> <li style="width: 33%;">• RFC 783: TFTP</li> <li style="width: 33%;">• RFC 2273-2275: SNMPv3</li> <li style="width: 33%;">• RFC 2236: IGMP v2</li> <li style="width: 33%;">• RFC 791: IPv4</li> <li style="width: 33%;">• RFC 2571: SNMP Management</li> <li style="width: 33%;">• RFC 3376: IGMP v3</li> <li style="width: 33%;">• RFC 792: ICMP</li> <li style="width: 33%;">• RFC 1166: IP Addresses</li> <li style="width: 33%;">• RFC 2474: DiffServ Precedence</li> <li style="width: 33%;">• RFC 793: TCP</li> <li style="width: 33%;">• RFC 1643: Ethernet Interface MIB</li> <li style="width: 33%;">• RFC 3046: DHCP Relay Agent Information Option</li> <li style="width: 33%;">• RFC 854: Telnet</li> <li style="width: 33%;">• RFC 1757: RMON</li> <li style="width: 33%;">• RFC 3580: 802.1x RADIUS</li> <li style="width: 33%;">• RFC 959: FTP</li> <li style="width: 33%;">• RFC 2068: HTTP</li> <li style="width: 33%;">• RFC 4250-4252 SSH Protocol</li> <li style="width: 33%;">• RFC 1157: SNMPv1</li> <li style="width: 33%;">• RFC 2990 QoS</li> </ul>

# Dimensions

All dimensions are shown in inches [millimeters].



\*FRONT TB VERSION SHOWN



# Ordering Information

## SUPPORTED SFPs FOR iES26GF

ORDER CODE	DESCRIPTION	PORTS 25-26
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-40	SFP 100Mbps Singlemode LC Transceiver 40km, 1300nm, -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-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	•

BASE	POWER SUPPLY 1	POWER SUPPLY 2	MOUNT	POWER TERMINALS	SLOT 1 PORT 1-8	SLOT 2 PORT 9-16	SLOT 3 PORT 17-24	SLOT 4 PORT 25&26	MOD	DESCRIPTION
iES26GF	LV	XX	R	R	8RJ45	8RJ45	8RJ45	2GRJ45		
iES26GF										Core assembly and packaging
		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
						XX	XX			None
					8RJ45	8RJ45	8RJ45			8 X 10/100Base-T(X) RJ45
								XX		None
								2GRJ45		2 X 10/100/1000Base-T(X) RJ45
								2GSFP		2 X 1000Base-X SFP
								2GCX		Combo** 2 X 10/100/1000Base-T(X) RJ45 and 2 X 1000Base-X SFP
								2MMSC		2 X 100FX Multimode SC, 1310nm, 2km
								2MMST		2 X 100FX Multimode ST, 1310nm, 2km
								2SMSC15		2 X 100FX Singlemode SC, 1310nm, 15km

# Ordering Information

BASE	POWER SUPPLY 1	POWER SUPPLY 2	MOUNT	POWER TERMINALS	SLOT 1 PORT 1-8	SLOT 2 PORT 9-16	SLOT 3 PORT 17-24	SLOT 4 PORT 25&26	MOD	DESCRIPTION
								2SMST15		2 X 100FX Singlemode ST, 1310nm, 15km
								2SMSC40		2 X 100FX Singlemode SC, 1310nm, 40km
								2SMST40		2 X 100FX Singlemode ST, 1310nm, 40km
								2SMSC60		2 X 100FX Singlemode SC, 1310nm, 60km
								2SMST60		2 X 100FX Singlemode ST, 1310nm, 60km
								2SMSC80		2 X 100FX Singlemode SC, 1550nm, 80km
								2SMST80		2 X 100FX Singlemode ST, 1550nm, 80km
								2SMSC100		2 X 100FX Singlemode SC, 1550nm, 100km
								2SMST100		2 X 100FX Singlemode ST, 1550nm, 100km
								2GMMSC		2 X 1000SX Multimode SC, 850nm, 550m
								2GMMST		2 X 1000SX Multimode ST, 850nm, 550m
								2GSMST10		2 X 1000LX Singlemode SC, 1310nm, 10km
								2GSMSC10		2 X 1000LX Singlemode ST, 1310nm, 10km
								2GSMSC40		2 X 1000LX Singlemode SC, 1310nm, 40km
								2GSMST40		2 X 1000LX Singlemode ST, 1310nm, 40km
								2GSMSC70		2 X 1000LX Singlemode SC, 1550nm, 70km
								2GSMST70		2 X 1000LX Singlemode ST, 1550nm, 70km
									C1	Conformal Coating

\*\* Combo of 2 ports available, only 1 Port can be used in combination

## iES26GF Sample Order Code

iES26GF-LV-XX-RR-8RJ45-8RJ45-8RJ45-2GRJ45

Description: 26 Port 61850 Ethernet Switch with combination Gigabit ports, (Power Supply 1) Input 18-36VDC, (Power Supply 2) None, (Mount and Power Terminals) Rack Mounting and Power Terminals in the Rear opposite Ethernet Ports/Display Front with Ethernet Ports, (Ethernet Port 1-8) 8 X 10/100Base-T(X) RJ45, (Ethernet Port 9-16) 8 X 10/100Base-T(X) RJ45, (Ethernet Port 17-24) 8 X 10/100Base-T(X) RJ45, (Ethernet Port 25&26) 2 X 10/100/1000Base-T(X) RJ45.

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

iES26GF-LV-XX-RR-8RJ45-8RJ45-8RJ45-2GRJ45-C1

Description: 26 Port 61850 Ethernet Switch with combination Gigabit ports, (Power Supply 1) Input 18-36VDC, (Power Supply 2) None, (Mount and Power Terminals) Rack Mounting and Power Terminals in the Rear opposite Ethernet Ports/Display Front with Ethernet Ports, (Ethernet Port 1-8) 8 X 10/100Base-T(X) RJ45, (Ethernet Port 9-16) 8 X 10/100Base-T(X) RJ45, (Ethernet Port 17-24) 8 X 10/100Base-T(X) RJ45, (Ethernet Port 25&26) 2 X 10/100/1000Base-T(X) RJ45. This system will be conformal coated.



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