

# iES20GF

**Intelligent 20 Port Managed Gigabit Ethernet Switch  
IEC61850 and IEEE1613 Compliant**

## Product Overview



The iES20GF is an intelligent managed 20 port Gigabit Ethernet switch with up to 20 x 10/100/1000Base-T(X) RJ45, and up to 4 x 100/1000Base-X SFP, or 4 x 100Base-FX, or 4 x 1000Base-SX/LX ports.

The switch is IEC61850-3 and IEEE1613 compliant.

The iES20GF provides redundancy support through functions such as STP/RSTP/MSTP assuring protection of all mission critical network applications. iES20GF can be managed via the Web, iManage Software Suite, Telnet, and Console (CLI).

The switch 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 the use of fans.



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# Features

Table 1. Features

Feature	
<b>Supports:</b>	<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>• PTP clock synchronization</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	
DIN rail and panel mount	



## Product Specifications

**Table 2. Technical Specification**

Description	Specification
10/100/1000 Base-T(X) RJ45 Ports Auto MDI/MDIX	Up to 20
Combo of 10/100/1000 Base-T(X) RJ45 and 100/1000Base-X SFP, or 10/100/1000 Base-T(X) RJ45, or 100/1000 Base-X SFP, or 100FX MM/SM SC/ST, or 1000SX MM SC/ST, 1000LX SM SC/ST ports	Up to 4
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 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: 40 Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 32 per each VLAN Port rate limiting: User Defined
Jumbo frame	9.6K
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 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>



Description	Specification
<b>Software Features</b>	<ul style="list-style-type: none"><li>• Web or CLI based Management (Console or Telnet / SSH)</li><li>• Redundancy— STP/RSTP/MSTP and Fast Recovery</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>• Supports PTP Client (Precision Time Protocol) clock synchronization</li></ul>
<b>Network Redundancy</b>	<ul style="list-style-type: none"><li>• RSTP (IEEE 802.1 D/w)</li><li>• MSTP (RSTP/ STP compatible)</li><li>• Fast Recovery and Dual Port Recovery</li></ul>
<b>Physical Characteristics</b>	
<b>Enclosure</b>	IP-40 Galvanized Steel
<b>Dimensions (W x D x H)</b>	133.7 (W) x 157.5 (D) x 154.1 (H) mm (5.27 x 6.20 x 6.07 inches)
<b>Weight (g)</b>	~3000 g
<b>Power</b>	
<b>Input Power</b>	Redundant Power Supplies: Dual Input 10-48VDC, Dual Input 36-75VDC, or Dual Input 110-370VDC or 90-264VAC
<b>Power Consumption (Typ.)</b>	20 Watts
<b>Overload Current Protection</b>	Present
<b>Reverse Polarity Protection</b>	Internal



**Table 3. Compliance Specifications**

Type	Standards
<b>Electromagnetic Emissions</b>	FCC Part 15, CISPR (EN 55022) class A, EN 50155 (EN 50121-3-2, EN 55011, EN 50121-4)
<b>Electromagnetic Immunity</b>	EN 61000-4-2 (ESD), EN 61000-4-3 (RS), EN 61000-4-4 (EFT), EN61000-4-5 (Surge), EN 61000-4-6 (CS), EN 61000-4-8, EN61000-4-11
<b>Industry Standards</b>	IEC 61850-3, IEEE 1613
<b>Safety Standards</b>	EN 60950-1
<b>Operating Environment</b>	-40°C to +85°C (-40° to 185°F) (no fans) EN 60068-2-21
<b>Storage Environment</b>	-40°C to +85°C (-40° to 185°F) EN 60068-2-14
<b>Operating Humidity</b>	5% to 95% Non-condensing E60068-2-30
<b>Shock</b>	IEC 60068-2-27
<b>Free Fall</b>	IEC 60068-2-32
<b>Vibration</b>	IEC 60068-2-32
<b>Warranty</b>	5 years

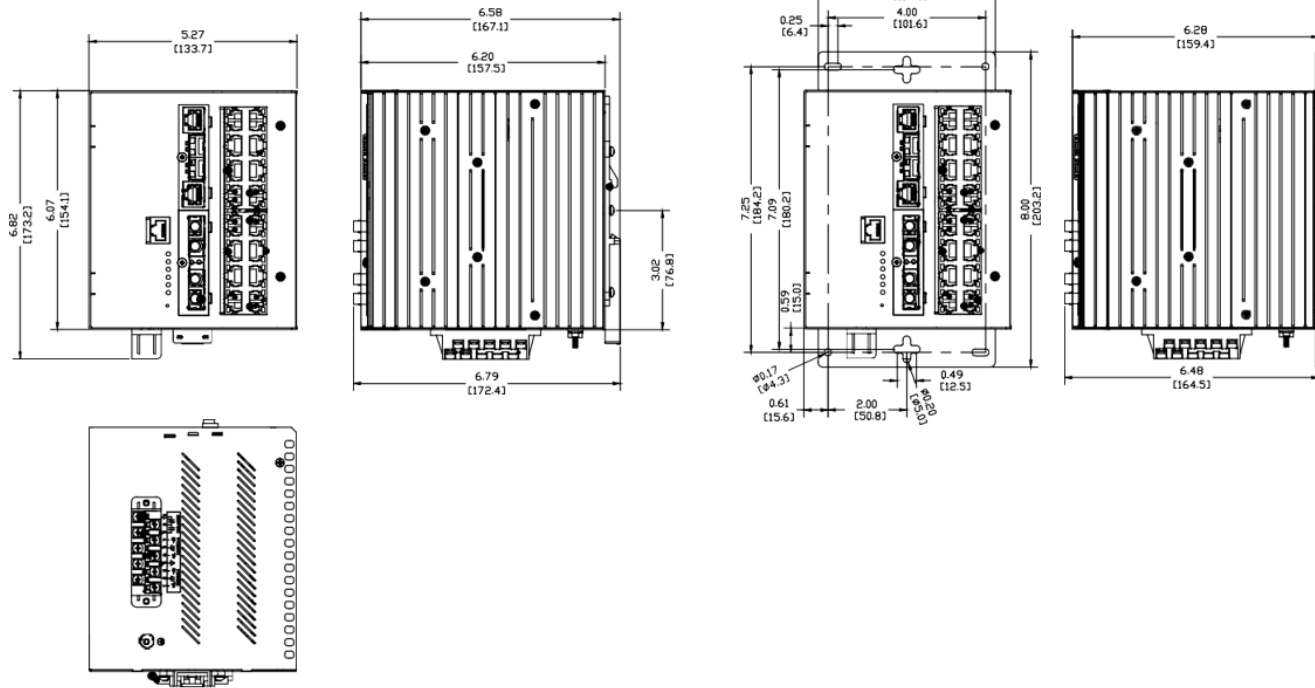
**Table 4. Standards and Management**

Description	Specification			
<b>IEEE Standards</b>	<p>IEEE 802.3 for 10Base-T            IEEE 802.3u for 100Base-TX and 100Base-FX            IEEE 802.3ab for 1000Base-T            IEEE 802.z 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</p>			
<b>RFC Compliance</b>	<table border="0"> <tr> <td style="vertical-align: top;"> <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> </td> <td style="vertical-align: top;"> <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> </td> <td style="vertical-align: top;"> <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> </td> </tr> </table>	<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>
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# Dimensions

All dimensions are shown in inches.





## Ordering Information

Base	Power Supply 1	Power Supply 2	Mount	Ethernet Port 1-8	Ethernet Port 9-16	Ethernet Port 17&18†	Ethernet Port 19&20†	Conformal Coating	Description
iES20GF	LV	LV	D	8GRJ45	XX	2GSFP	2GSFP	C1	
iES20GF									Managed core assembly and packaging
		XX							None
	LV	LV							Input 10-48VDC
	MV	MV							Input 36-75VDC
	HV	HV							Input 110-370VDC or 90-264VAC
			D						DIN Rail Mounting
			P						Panel Mounting
			N						No Mounting Hardware
				8GRJ45					8 X 10/100/1000Base-T(X) RJ45
					XX				None
					8GRJ45				8 X 10/100/1000Base-T(X) RJ45
						XX	XX		None
						2GCX	2GCX		Combo*** 2 X 10/100/1000Base-T(X) RJ45 and 2 X 100/1000Base-X SFP (Blank no optical transceivers**)
						2GRJ45	2GRJ45		2 X 10/100/1000Base-T(X) RJ45
						2GSFP	2GSFP		2 X 100/1000Base-X SFP (Blank no optical transceivers**)
						2MMSC	2MMSC		2 X 100FX Multimode SC, 1310nm, 2km
						2MMST	2MMST		2 X 100FX Multimode ST, 1310nm, 2km
						2SMSC15	2SMSC15		2 X 100FX Singlemode SC, 1310nm, 15km
						2SMST15	2SMST15		2 X 100FX Singlemode ST, 1310nm, 15km
						2SMSC40	2SMSC40		2 X 100FX Singlemode SC, 1310nm, 40km
						2SMST40	2SMST40		2 X 100FX Singlemode ST, 1310nm, 40km
						2SMSC60	2SMSC60		2 X 100FX Singlemode SC, 1310nm, 60km
						2SMST60	2SMST60		2 X 100FX Singlemode ST, 1310nm, 60km
						2SMSC80	2SMSC80		2 X 100FX Singlemode SC, 1550nm, 80km
						2SMST80	2SMST80		2 X 100FX Singlemode ST, 1550nm, 80km
						2SMSC100	2SMSC100		2 X 100FX Singlemode SC, 1550nm, 100km
						2SMST100	2SMST100		2 X 100FX Singlemode ST, 1550nm, 100km
						2GMMSC	2GMMSC		2 X 1000SX Multimode SC, 850nm, 550m
						2GMMST	2GMMST		2 X 1000SX Multimode ST, 850nm, 550m
						2GSMST10	2GSMST10		2 X 1000LX Singlemode SC, 1310nm, 10km
						2GSMSC10	2GSMSC10		2 X 1000LX Singlemode ST, 1310nm, 10km
						2GSMSC40	2GSMSC40		2 X 1000LX Singlemode SC, 1310nm, 40km
						2GSMST40	2GSMST40		2 X 1000LX Singlemode ST, 1310nm, 40km
						2GSMSC70	2GSMSC70		2 X 1000LX Singlemode SC, 1550nm, 70km
						2GSMST70	2GSMST70		2 X 1000LX Singlemode ST, 1550nm, 70km
								C1	Conformal Coating



†Ports 17 and 18 must either be Singlemode or Multimode and not mixed. Connector type must also be the same i.e. SC/ST cannot be combined with SFP or RJ45.

†Ports 19 and 20 must either be Singlemode or Multimode and not mixed. Connector type must also be the same i.e. SC/ST cannot be combined with SFP or RJ45.

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

**Example Order Code  
Description:**

iES20GF-LV-LV-D-8GRJ45-XX-2GSFP-2GSFP-C1

61850 - 20 Port Ethernet Switch, (Power Supply 1) Input 10-48VDC, (Power Supply 2) Input 10-48VDC, DIN Rail Mounting, (Ethernet Port 1-8)) 8 X 10/100/1000Base-T(X) RJ45, (Ethernet Port 9 -16) - None, (Ethernet Port 17&18) 2 X 100/1000Base-X SFP, (Ethernet Port 19&20) 2 X 100/1000Base-X SFP, C1 - added for conformal coating.