

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 16 x 10/100/1000 Base-T(X) RJ45, and up to 4 x COMBO of 10/100/1000 BASE-T(X) RJ45 and 100/1000BASE-X SFP, or 4x 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) / SSH v2.

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.

* Refer to Table 2 for additional technical specifications.

Features and Benefits

Table 1. Features

FEATURE	
SUPPORTS	<ul style="list-style-type: none"> • STP / RSTP / MSTP • LLDP (Link Layer Discovery Protocol) • Modbus TCP • VLAN Priority—supports priority-tagged frames to be received by specific IEDs • HTTPS / SSH v2 • SNTP for synchronizing the switch's clock • NTPv4 - Network Time Protocol Version 4* • TLS Version 1.2 • MRP - Media Redundancy Protocol**
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 UI, TELNET, CONSOLE(CLI), IMANAGE SOFTWARE RUNNING ON WINDOWS 10, NT /2000/ XP/2003/VISTA/7	
DIN RAIL AND PANEL MOUNT	

* 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
10/100/1000 BASE-T(X) RJ45 PORTS AUTO MDI/MDIX	Up to 16
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"> • SYSLOG with server / client structure; recording and viewing events in the System Event Log • SMTP for notification via email 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 μ 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

Product Specifications

TECHNOLOGY

- | | |
|-------------------|--|
| SECURITY FEATURES | <ul style="list-style-type: none">• STP/RSTP/MSTP• Device Binding and Remote Control security• Access Control List (ACL) for every port• Authentication, Authorization and Accounting (AAA)• RADIUS Authentication management• Port based network access control (NAS) 802.1x• QoS for achieving efficient bandwidth utilization• Private VLAN with Port Isolation Configuration• VLAN (802.1 Q) for segregation and securing network traffic• SNMPv3 authentication and privacy encryption• HTTPS / SSH v2 enhanced network security• Web and CLI authentication and authorization |
|-------------------|--|

- | | |
|-------------------|---|
| SOFTWARE FEATURES | <ul style="list-style-type: none">• Web or CLI based Management (Console or Telnet / SSH v2)• DHCP Server / Relay• VLAN (802.1Q) for segregating and securing network traffic• Supports SNMPv1/v2/v3• Traffic Prioritization—Storm Control and Quality of Service (QoS) including DSCP-Based QoS Ingress Port Classification• Multicast traffic—IGMP Snooping (IGMP v1/v2 / v3) and unregistered IPMCv4 Flooding• Warnings (Syslog and SMTP) and Fault Alarm (power failure)• Monitoring and Diagnostics—MAC Table and Port Statistics (ports monitoring including for SFP ports, system information, issuing PING packets for troubleshooting IP connectivity issues)• SNTP for synchronizing of clocks over network |
|-------------------|---|

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

PHYSICAL CHARACTERISTICS

ENCLOSURE	IP-40 Galvanized Steel
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DIMENSIONS (W X D X H)	133.7 (W) x 157.5 (D) x 154.1 (H) mm (5.27 x 6.20 x 6.07 inches)
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WEIGHT (G)	~3000 g
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POWER

INPUT POWER	Redundant Power Supplies: Dual Input 10-48VDC, Dual Input 36-75VDC, or Dual Input 110-370VDC or 90-264VAC 50/60Hz
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POWER CONSUMPTION (TYP.)	20 Watts
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OVERLOAD CURRENT PROTECTION	Present
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REVERSE POLARITY PROTECTION	Internal
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Product Specifications

Table 3. Compliance Specification

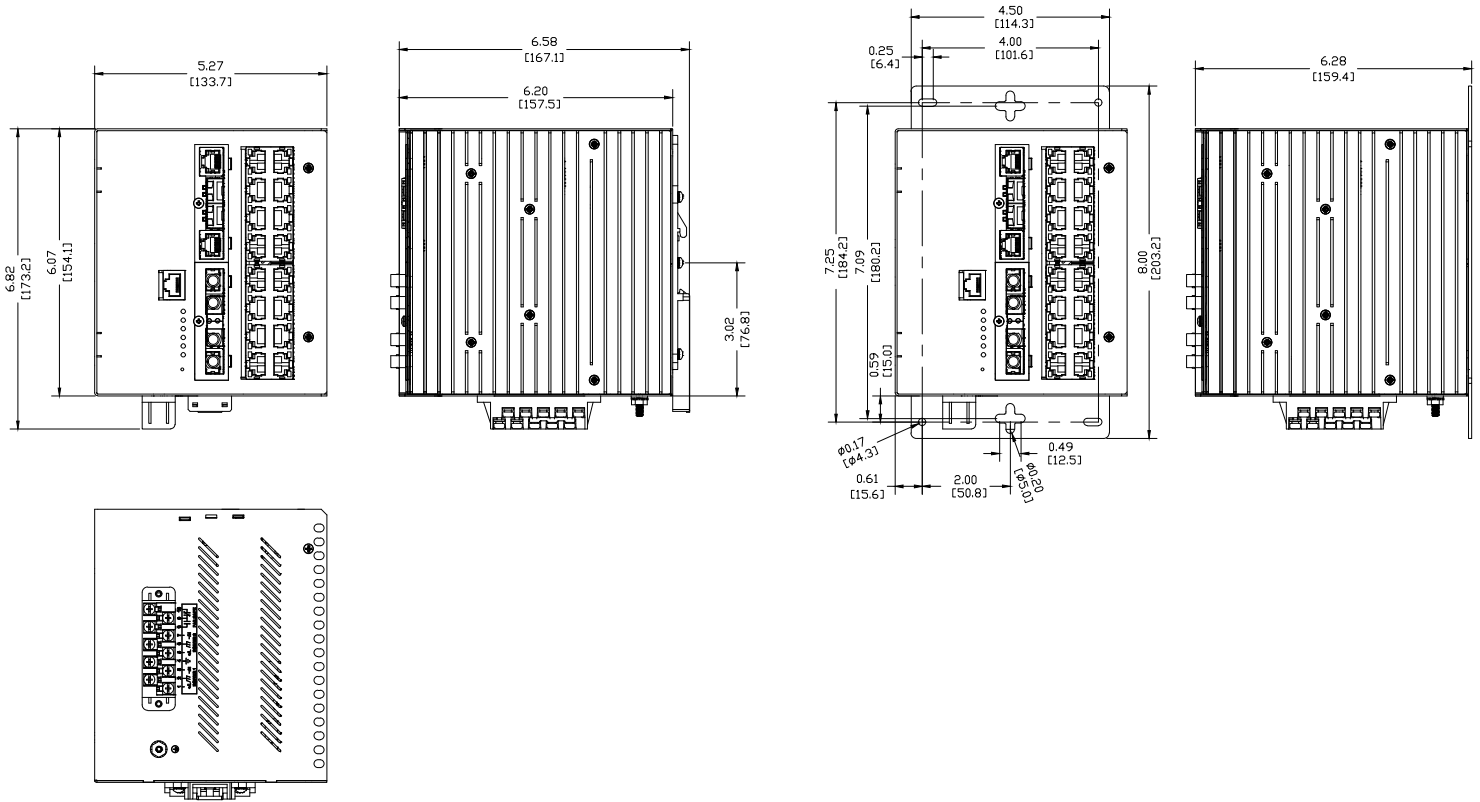
TYPE	STANDARDS
ELECTROMAGNETIC EMISSIONS	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
ELECTROMAGNETIC IMMUNITY	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
INDUSTRY STANDARDS	IEC 61850-3, IEEE 1613
SAFETY STANDARDS	EN60950-1
OPERATING ENVIRONMENT	-40°C to +85°C (-40o to 185°F) (no fans) EN 60068-2-21
STORAGE ENVIRONMENT	-40°C to +85°C (-40° to 185°F) 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"> 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 style="width: 33%;">• RFC 768: UDP <li style="width: 33%;">• RFC 1901,1902-1907 SNMPv2 <li style="width: 33%;">• RFC 2131, 2132: DHCP <li style="width: 33%;">• RFC 783: TFTP <li style="width: 33%;">• RFC 2273-2275: SNMPv3 <li style="width: 33%;">• RFC 2236: IGMP v2 <li style="width: 33%;">• RFC 791: IPv4 <li style="width: 33%;">• RFC 2571: SNMP Management <li style="width: 33%;">• RFC 3376: IGMP v3 <li style="width: 33%;">• RFC 792: ICMP <li style="width: 33%;">• RFC 1166: IP Addresses <li style="width: 33%;">• RFC 2474: DiffServ Precedence <li style="width: 33%;">• RFC 793: TCP <li style="width: 33%;">• RFC 1643: Ethernet InterfaceMIB <li style="width: 33%;">• RFC 3046: DHCP Relay Agent Information Option <li style="width: 33%;">• RFC 854: Telnet <li style="width: 33%;">• RFC 1757: RMON <li style="width: 33%;">• RFC 3580: 802.1x RADIUS <li style="width: 33%;">• RFC 959: FTP <li style="width: 33%;">• RFC 2068: HTTP <li style="width: 33%;">• RFC 4250-4252 SSH Protocol <li style="width: 33%;">• RFC 1157: SNMPv1 <li style="width: 33%;">• RFC 2990 QoS

Dimensions

All dimensions are shown in inches [millimeters].



SUPPORTED SFPs FOR iES20GF

ORDER CODE	DESCRIPTION	PORTS 9-20
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	•
SFP100-SM-100	SFP 100Mbps Singlemode LC Transceiver 100km, 1550nm, -40°C to +85°C	•
SFP100-SM-120	SFP 100Mbps Singlemode LC Transceiver 120km, 1550nm, -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	•

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†	MOD	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**)

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†	MOD	DESCRIPTION
						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

Ordering Information

iES20GF Sample Order Code

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

Description: 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.

The same unit, may be ordered with conformal coating by appending 'C1' to the order code, for example: iES20GF-LV-LV-D-8GRJ45-XX-2GSFP-2GSFP-C1

Description: 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. This system will be conformal coated.



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