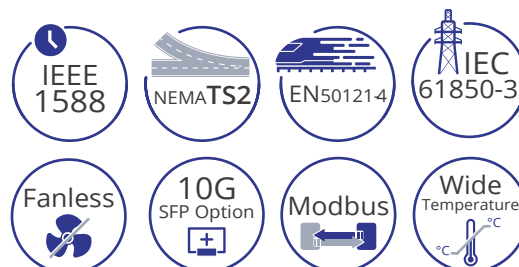


# InfraGreEn IG5 Rack Series

IEC 61850-3/IEEE 1588 L2/L3 Hardened Managed 24-port Gigabit and 4-port 1G/10G SFP+ Ethernet Switch



## Product Highlights

### High Bandwidth and Versatility

- 24 full gigabit ports for high bandwidth connections
- 4 1G/10G SFP+ uplink ports for fiber connections
- Full capacity switching running at full duplex
- Dual rate design at all ports, up to 10G
- Wide range of optical and electrical interface options
- Sufficient switching capacity at 128Gbp

### Hardened-Grade for Non-Ventilated & Harsh Environments

- Wide operating temperature range -40 to 75°C (-40 to 167°F)
- -40°C to +85°C operation meets IEC 60068-2-2 Environmental Type Testing
- Thermal shock, and electrical noise resistance

### Layer 3 Functionality

- Static routing, RIP v1/v2, and OSPF
- Redundancy with VRRPv2
- Reduces amount of broadcast traffic

### Time Stamped Supported

- IEEE 1588v2
  - Available in all ports
  - Support One-Step and Two-Step delay measurement mechanism
  - Operation as transparent clock

### Flexible Rack Cabinet Installation.

- 2 in 1 design, support rear and front installation at once.
- Concise communication status display
- Considerable ease of cabling management

### Support

- Complimentary technical support
- Free firmware upgrades and notifications
- Limited Lifetime Warranty

## Overview

EtherWAN's InfraGreEn IG5 Rack provides a Hardened Full-Gigabit Managed 28-port switching platform that combines the advantages of Layer 3 routing protocols with robust management features and hardened specifications. With support for static routing, Routing Information Protocol (RIP) v1/v2, and Virtual Router Redundancy Protocol (VRRP), these switches deliver outstanding flexibility and security in a high performance and cost-effective package. In addition, this innovative device supports the IEEE 1588v2 standard, which defines the Precision Time Protocol (PTP), used to synchronize clocks throughout a packet-switched network.

Multiple port combinations on the IG5 Rack series include: 24 port TX, 16 port TX + 8 SFP, 8 port TX + 16 port SFP, and 24 port SFP, providing effective modularity through a wide range of port combinations. All support gigabit transmission, with 4 ports supporting SFP+ for 1G/10G speed. Mountable on a 1U rack, the switches are equipped with EtherWAN's Alpha-Ring self-healing technology, providing less than 15ms fault recovery time making it ideal for applications intolerant to interruption.

A broad range of management features and options includes port security, IGMP snooping, port-based VLAN, GARP protocols, link aggregation and ACL, via web browser, Telnet, SSH, SNMP, RMON, HTTPS and SFTP. With the hardened specifications, the IG5 Rack is designed to operate at -40 to 75°C in harsh environments, and is IEC 61850 & IEEE 1613 compliant, capable of operating under high EMI environments, making it an ideal choice for mission-critical applications.

# Ordering Information

## Model

<b>IG5-24004YYY</b>	24-port 10/100/1000BASE-T(X) + 4-port 1G/10G SFP+ Hardened Managed Ethernet Switch
<b>IG5-16084YYY</b>	16-port 10/100/1000BASE-T(X) + 8-port 100/1000BASE SFP + 4-port 1G/10G SFP+ Hardened Managed Ethernet Switch
<b>IG5-08164YYY</b>	8-port 10/100/1000BASE-T(X) + 16-port 100/1000BASE SFP + 4-port 1G/10G SFP+ Hardened Managed Ethernet Switch
<b>IG5-00244YYY</b>	24-port 100/1000BASE SFP + 4-port 1G/10G SFP+ Hardened Managed Ethernet Switch

## Power Input Interface (YYY)

<b>FTR</b>	±24VDC or /±48VDC Redundant (Terminal Block), Power input location on same side as ports
<b>FWR</b>	88-300VDC or 100-240VAC Redundant (Terminal Block), Power input location on same side as ports
<b>RCR</b>	100-240VAC Redundant (AC Inlet), Power input location on opposite side to ports

## Software Features

<b>Interface</b>	+
CLI, Telnet, Web GUI	
<b>Management</b>	+
Firmware upgrade	
Configuration backup	
DHCP Server/Client	
RMON (Remote Monitoring)	
Port Mirroring	
NTP (Network Time Protocol) synchronization	
LLDP (Link Layer Discovery Protocol)	
IPv4/IPv6	
SNMP v1/v2c/v3	
Modbus TCP	
<b>Security</b>	+
MAC Address filtering	
Enable/Disable port	
Storm control	
System logging	
IEEE 802.1x LAN Access control	
Remote authentication through RADIUS and TACACS+	
Complex password support	
Multi-user login and privileged access management	
SSH for CLI and Telnet security	
SSL and HTTPS for web security	
ACL (Access Control List, up to 4096 entries)	

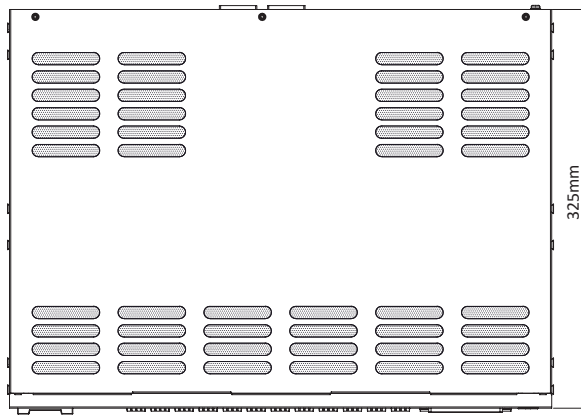
<b>Quality of Service (QoS)</b>	+
Priority Queues: 8 queues per port	
Traffic classification based on IEEE 802.1p CoS (Cost of Service), DSCP (Differentiated Services Code Point), WRR (Weighted Round Robin), and strict mode	
Rate Limiting (Ingress/Egress)	
<b>Layer 2 Features</b>	+
Auto-negotiation for port speed and duplex	Flow Control IEEE 802.3x full duplex mode Back-pressure half duplex mode
Redundant Protocols	IEEE 802.1D STP IEEE 802.1w RSTP IEEE 802.1s MSTP EtherWAN's Alpha-Ring network fault recovery
VLANs	IEEE 802.1Q Tag VLANs GVRP GMRP
Link Aggregation	Static Trunk (4 groups) IEEE 802.3ad LACP
IGMP Snooping v1/v2/v3	
<b>Layer 3 Features</b>	+
IP Packet Routing	Maximum number of routes in hardware: 64 entries Static Routing RIP v1/v2 OSPF v2
Routing Redundancy	VRRPv2
<b>Software Properties and Performance</b>	+
Switching Fabric	128Gbps
Forwarding Rate	95.23Mpps
Max VLANs	256 (4096 VID)
Jumbo Frame Size	9KB
MAC Table Size	16K
Packet Buffer Memory	12M bits

# Hardware Specifications

Interface		+
Ethernet	10/100/1000BASE-T(X): 0, 8, 16 or 24 ports 100/1000BASE SFP: 0, 8, 16 or 24 ports 1G/10G SFP+: 4 ports	
Console	1 x RJ45	
Digital Input	2 x Digital Input Wet Contact: 0-3V for State 0 13-30V for State 1 Max input current: 8mA Dry Contact: Logic Level 1-Close to GND Logic Level 0-Open	
Alarm Contact	2 x Relay output, current capacity 0.6A/30VDC	
LED Indicators	Per Unit: Power 1, Power 2 (Green) Per Port: Link/Activity (Green) Per Port: Alarm (Red)	
Technology		+
Standards	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX/100BASE-FX IEEE 802.3ab 1000BASE-T IEEE 802.3ae 10Gigabit Ethernet IEEE 802.3ad link aggregation control IEEE 802.3z 1000BASE-SX/1000BASE-LX IEEE 802.3x full duplex and flow control IEEE 802.1D STP IEEE 802.1p QoS IEEE 802.1Q Tag VLANs IEEE 802.1s MSTP IEEE 802.1w RSTP IEEE 802.1x PNAC IEEE 802.1ab LLDP	
Forward/Filtering Rate	14,880pps for 10Mbps 148,810pps for 100Mbps 1,488,100pps for 1000Mbps 14,881,000pps for 10Gbps	
Processing Type	Store-and-forward Auto-negotiation Half-duplex back-pressure and full-duplex flow control Auto MDI/MDIX	
System Memory	2Gb DDR3 SDRAM	
Flash Storage	1Gb	
Power		+
Input	Dual power built-in all models FTR: (Terminal Block) ±24VDC or ±48VDC FWR: (Terminal Block) 100 - 250VDC or 100 - 240VAC (Nominal) 88 - 300VDC or 88 - 264VAC (Operational) RCR: (AC Inlet) 100 - 240VAC	
Power Consumption	50W max.	
Protection	Reverse Polarity Protection	

Physical		+
Casing Material	Metal	
IP Rating	IP40	
Dimensions	442 x 325 x 44mm (W x D x H) 17.4" x 12.8" x 1.73"	
Weight	4.6kg (10.14lbs)	
Installation Type	Rack mounting	
Environmental		+
Operating Temp.	-40 to 75°C (-40 to 167°F) (-40°C to +85°C base on IEC 60068-2-2 Environmental Type Testing 16 hours)	
Storage Temp.	-45 to 85°C (-49 to 185°F)	
Relative Humidity	5% to 95% (non-condensing)	
MTBF	446,556 hours	
Regulatory		+
ISO	Manufactured in ISO-9001 facility	
EMI	FCC Part 15B Class A VCCI Class A EN 61000-6-4	
EMS	EN 61000-6-2 EN 61000-4-2 (ESD) EN 61000-4-3 (Radiated RFI) EN 61000-4-4 (Burst) EN 61000-4-5 (Surge) EN 61000-4-6 (Induced RFI) EN 61000-4-8 (Magnetic field)	
Safety	UL 62368-1	
Vibration	IEC 60068-2-6	
Shock	IEC 60068-2-27	
Free Fall	IEC 60068-2-31	
Industrial	EN 50121-4	
Power Substation	IEC 61850-3/IEEE 1613	
Warranty		+
Length	Limited Lifetime	
Details	<a href="http://www.EtherWAN.com/us/support/warranty-policy">www.EtherWAN.com/us/support/warranty-policy</a>	
What's Included		+
Device	Ethernet Switch	
Cables	1 Console Cable	
Installation	Mounting brackets, screws	
Documentation	Quick Install Guide	
Power	2 AC Power Cord (for RCR models)	

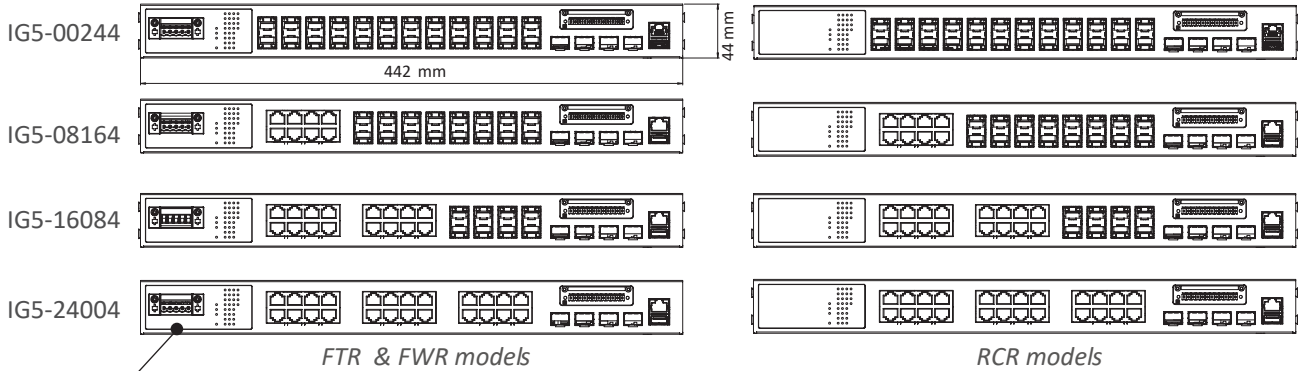
# Dimensions



Top

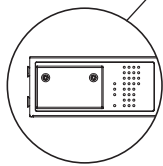


Side



FTR & FWR models

RCR models



Note: In order to reduce the chance of electric shock, UL regulations require that the terminal block cover (enclosed in the package) be installed on FWR models.

Front



FTR & FWR models

RCR models

Back

# Software

**Network Management** eVue™ Network Configuration and Monitoring Tool

**Network Discovery** eLite™ Network Discovery and IP Configuration Tool

The screenshot shows the EtherWAN web interface. At the top, there are navigation tabs: Home, Devices, Batch, Group, Events, and Settings. On the right, there are links for Screen Zoom and Logout. The main content area is divided into three sections:

- Device List:** A table with columns for IP, System Name, and Group. It lists 10 devices with their respective IP addresses and system names.
- Topology:** A network diagram showing various nodes (routers, switches, servers) connected in a mesh-like structure. A legend indicates Online (green circle), Offline (grey circle), and Event (red circle).
- Latest Events:** A table showing recent events with columns for Acknowledged, ID, Severity, Time, Service, Node, and Message.

IP	System Name	Group
192.168.50.12	EG99-5012	
192.168.50.62	EX709-5062	
192.168.50.254	R50	
192.168.50.11	EG99-5011	
192.168.50.63	EX74-5063	
192.168.50.14	EX779-5014	
192.168.50.61	EX71v2-5061	
192.168.50.44	EX71-5044	
192.168.50.64	EX73-5064	
192.168.50.34	EX739-5034	

Acknowledged	ID	Severity	Time	Service	Node	Message
✓	5107	Normal	6/28/2019, 9:50:35 AM	login	server	User 'admin' logged in.
✓	5106	Normal	6/27/2019, 10:00:50 AM	login	server	User 'admin' logged in.
✓	5105	Major	6/24/2019, 1:18:23 PM	ping-monitor	192.168.1.19	Web 192.168.1.19 is down.
✓	5105	Major	6/24/2019, 1:18:23 PM	ping-monitor	192.168.1.19	Telnet 192.168.1.19 is down.
✓	5104	Normal	6/24/2019, 1:12:34 PM	login	server	User 'admin' logged in.

The screenshot shows the eLite application window. It has a menu bar with 'List Server', 'Firmware', 'Configuration', and 'Help'. Below the menu is a toolbar with various icons. The main area contains a table with IP addresses and MAC addresses.

IP Address	MAC Address
192.168.50.22	00:e0:b3:50:22:00
192.168.50.31	00:e0:b3:50:31:00
192.168.50.72	00:e0:b3:50:72:00
192.168.50.55	00:e0:b3:50:55:00
192.168.50.23	00:e0:b3:50:23:00
192.168.50.73	00:e0:b3:50:73:00
192.168.50.44	00:e0:b3:50:44:00
192.168.50.64	00:e0:b3:50:64:00
192.168.50.43	00:e0:b3:50:43:00
192.168.50.62	00:e0:b3:50:62:00
192.168.50.71	00:e0:b3:50:71:00
192.168.50.24	00:e0:b3:50:24:00

## Accessories

Part Number	Speed Info	Mode	Distance	Operating Temperature	Wavelength	DDM
EX-0155NSP-MB2L-A	100Mbps	Multi	2km	-40 to 85°C	1310nm	
SFPMIS20M	100Mbps	Single	20km	-40 to 85°C	1310nm	✓
SFPGIM5AM	1000Mbps	Multi	275m/550m	-40 to 85°C	850nm	✓
SFPGIM02M	1000Mbps	Multi	2km	-40 to 85°C	1310nm	✓
SFPGIS10M	1000Mbps	Single	10km	-40 to 85°C	1310nm	✓
SFPTIM3AM	10Gbps	Multi	300m	-40 to 85°C	850nm	✓
SFPTIS10M	10Gbps	Single	10km	-40 to 85°C	1310nm	✓

### For more SFP, please visit website:

Hardened 100BASE SFP Modules +

[www.etherwan.com/us/products/sfp-fiber-transceiver](http://www.etherwan.com/us/products/sfp-fiber-transceiver)

Hardened Gigabit SFP Modules +

[www.etherwan.com/us/products/sfp-fiber-transceiver](http://www.etherwan.com/us/products/sfp-fiber-transceiver)

Hardened 10G SFP+ Modules +

[www.etherwan.com/us/products/sfp-fiber-transceiver](http://www.etherwan.com/us/products/sfp-fiber-transceiver)

DIN-Rail Power Supplies +

[www.etherwan.com/us/products/din-rail-power-supply](http://www.etherwan.com/us/products/din-rail-power-supply)

# Application

