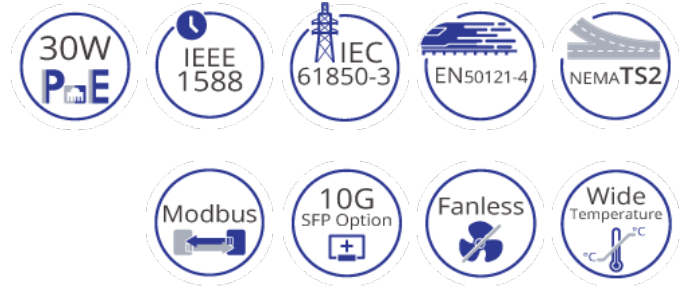


## IG5 SV 系列

IEC 61850-3/IEEE 1613 強固級網管型 24 埠 Gigabit (8\*PoE) + 4 埠1G/10G SFP+ 乙太網路交換器



## 產品介紹

### 什麼是第三層交換器 (Layer 3 Switch) ?

益網科技 IG5 SV 強固級網管型交換器在原有 IG5 Rack 系列高可靠性基礎上進一步升級。更好的性能表現承襲原有豐富的連接埠組合,並在 16 埠和 8 埠的銅纜組合中新增兩款具有 8 個 IEEE 802.3af/at PoE 連接埠的新型號。提供每埠高達 30W 的功率輸出,搭配智慧控制器讓 90W 的總功率預算做最有效即時的分配。特別適合需要高電磁安全防護和整合網路供電配置的應用。

24 ~ 48VDC 的輸入電壓,強固的 IP40 金屬機殼防護搭配更緊湊的機身尺寸,為深度有限的空間安裝提供了更好的靈活性。豐富的第二層管理功能,並支持第三層路由設置,滿足大型網路環境的高效數據傳輸。內建數位 I/O 與繼電器控制埠,可擴充偵測、告警系統,實現多元彈性的網路建構。

所有型號均符合 IEC 61850-90-4 GOOSE 訊息傳輸要求和 IEEE 1588v2 精確時間協定 (PTP) 進行網路時間同步,確保電力系統的快速反應和高可靠性。IG5 SV 具有 10G 頻寬、IEEE 802.3at type 2 相容性,符合 IEC 61850-3、IEEE 1613 和 IEC 60255-27 標準,高達 5kV 的脈衝保護,是城市基礎設施、智慧交通、工業物聯網和智慧能源管理等關鍵任務應用的理想選擇。

EtherWAN — "When Connectivity is Crucial."

## 產品亮點

### + 高頻寬和多介面配置

24 埠 Full Gigabit 全千兆高頻寬連接  
4 個獨立 SFP+ 埠支援 1G/10G 光纖連接  
128Gbps 全雙工交換容量  
內建數位 I/O 控制埠銜接偵測、告警系統

### + 第三層網管功能

靜態路由、RIP v1/v2, 和 OSPF  
VRRP 虛擬路由器備援協定

### + 支援變電站通訊傳輸與時間同步

符合 IEC61850-90-4 GOOSE 與多播訊息傳輸  
所有連接埠皆支援 IEEE 1588v2 PTP 協議  
支援 One-Step & Two-Step 對等延遲量測機制  
可作為透明時鐘的網橋裝置運行

### + PoE 功能

提供 8 個 IEEE 802.3 af/at type 2 PoE 埠  
每埠最大 30W 輸出, 總功率預算 90W  
支援 PoE 看門狗 (PoE Watchdog) 監控功能

### + 靈活的安裝

支援機架式和面板式安裝  
整合式通訊狀態面板  
便於電纜管理

### + 適用於不通風和惡劣環境的強固設計

-40至 75°C (-40至167°F)  
寬工作溫度範圍操作符合 IEC60068-2-2 環境類型測試  
高耐溫衝擊和高雜訊抗噪通過 IEC 61850-3 和 IEEE  
1613 標準測試  
通過 IEC 60255-27 電氣保護安全測試

## 軟體功能

### + Interface

CLI, Telnet, Web GUI

### + Management

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

### + Security

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)  
IPSG (IP Source guard)  
DAI (Dynamic ARP Inspection)  
DHCP Snooping

### + Layer 2 Features

**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**

### + Layer 3 Features

#### **IP Packet Routing**

Maximum number of routes in hardware:  
512 entries  
Static Routing  
RIP v1/v2  
OSPF v2

#### **Routing Redundancy**

VRRPv2

## + Quality of Service (QoS)

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)

## + Software Properties and Performance

### 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

## 硬體規格

### + Interface

#### Ethernet

10/100/1000BASE-T(X) PoE: 8 ports (PoE models)  
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

#### Config Backup

1 x USB (Type A Connector)

#### 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  
0.5A/48VDC

#### LED Indicators

Per Unit: Power 1, Power 2 (Green)  
Link/Activity (Green)  
Per Port: Alarm (Red)  
PoE Port: PoE Status (Green)

### + Physical

#### Casing Material

Metal

#### IP Rating

IP40

#### Dimensions

442 x 267 x 44mm (W x D x H)  
17.4" x 10.5" x 1.73"

#### Weight

4.6kg (10.14lbs) / 4.0kg (8.82lbs)

#### Installation Type

Rack mounting / Panel mounting

### + Environmental

#### Operating Temp.

-40 to 75°C (-40 to 167°F)  
(-40°C to 85°C for IEC 60068-2-2 Environmental 16  
hours)

#### Storage Temp.

-45 to 85°C (-49 to 185°F)

#### Relative Humidity

5% to 95% (non-condensing)

#### MTBF

790,907 hours

## + 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 802.1D 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

## + Regulatory

### ISO

Manufactured in ISO-9001 facility

### EMI

FCC Part 15B Class A  
VCCI Class A  
EN 61000-6-4  
BSMI

### 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/IEC 60255-27  
IEC 61850-90-4

## + Power

### Input

24VDC to 48VDC (Nominal)  
18 - 60VDC (Operational)  
Redundant Power Inputs (Terminal Block)

### Power Consumption

50W max. (Without PoE)

### Protection

Reverse Polarity Protection  
Overload Current Protection

### PoE (Available for PoE models)

#### PoE Modes

- 802.3af/at Mode A: Pins 1/2(-), 3/6(+)

#### Power Output

- Ports 1-8: 15W Up to 30W/port  
- Total Power Budget: 90W

#### Compliance

- IEEE 802.3af type 1, ≤15.4W PD devices  
- IEEE 802.3at type 2, 30W PD devices.

## + Warranty

### Length

Limited Lifetime

### Details

[www.etherwan.com/support/warranty-policy](http://www.etherwan.com/support/warranty-policy)

## + What's Included

### Device

Ethernet Switch

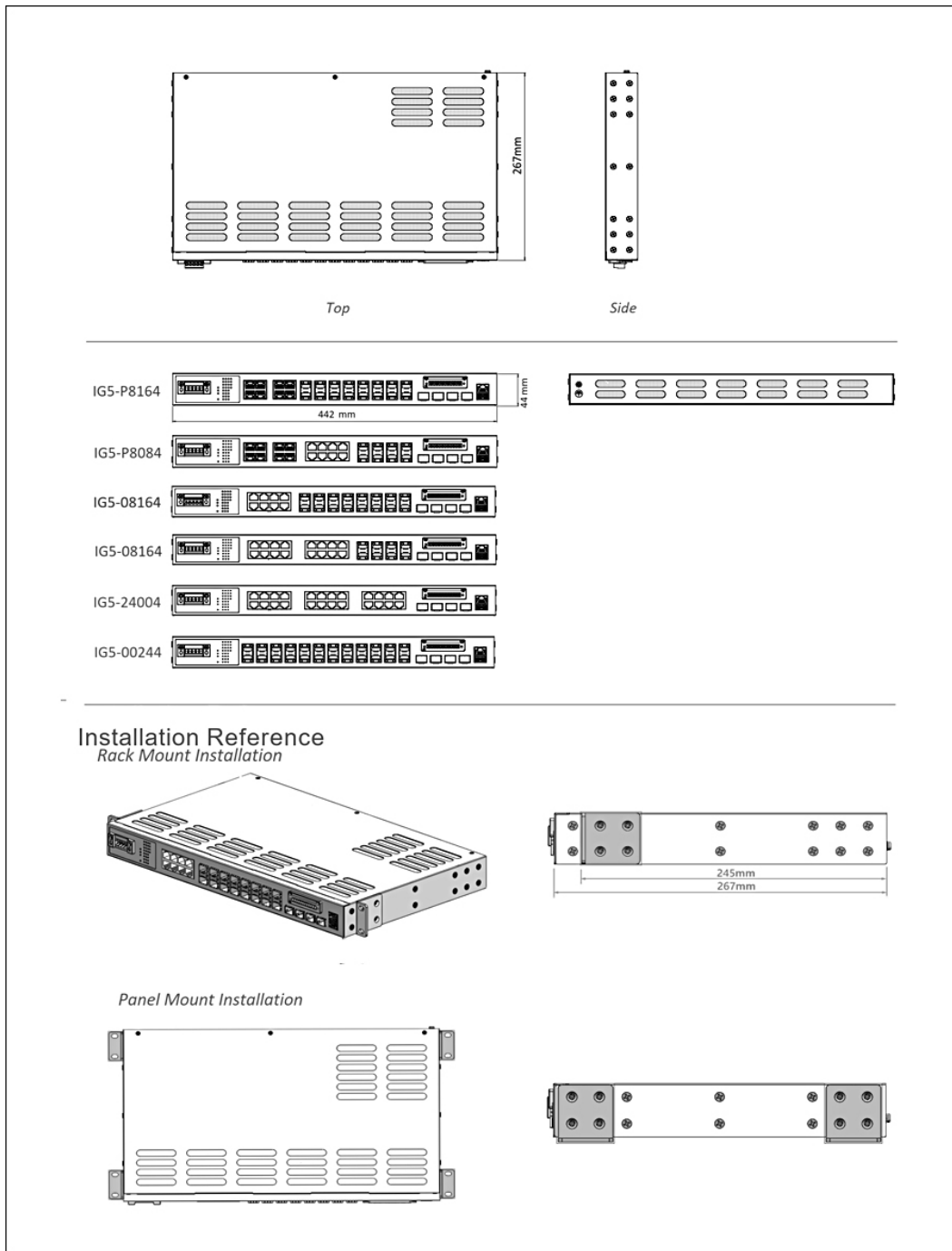
### Cables

1 Console Cable

### Installation

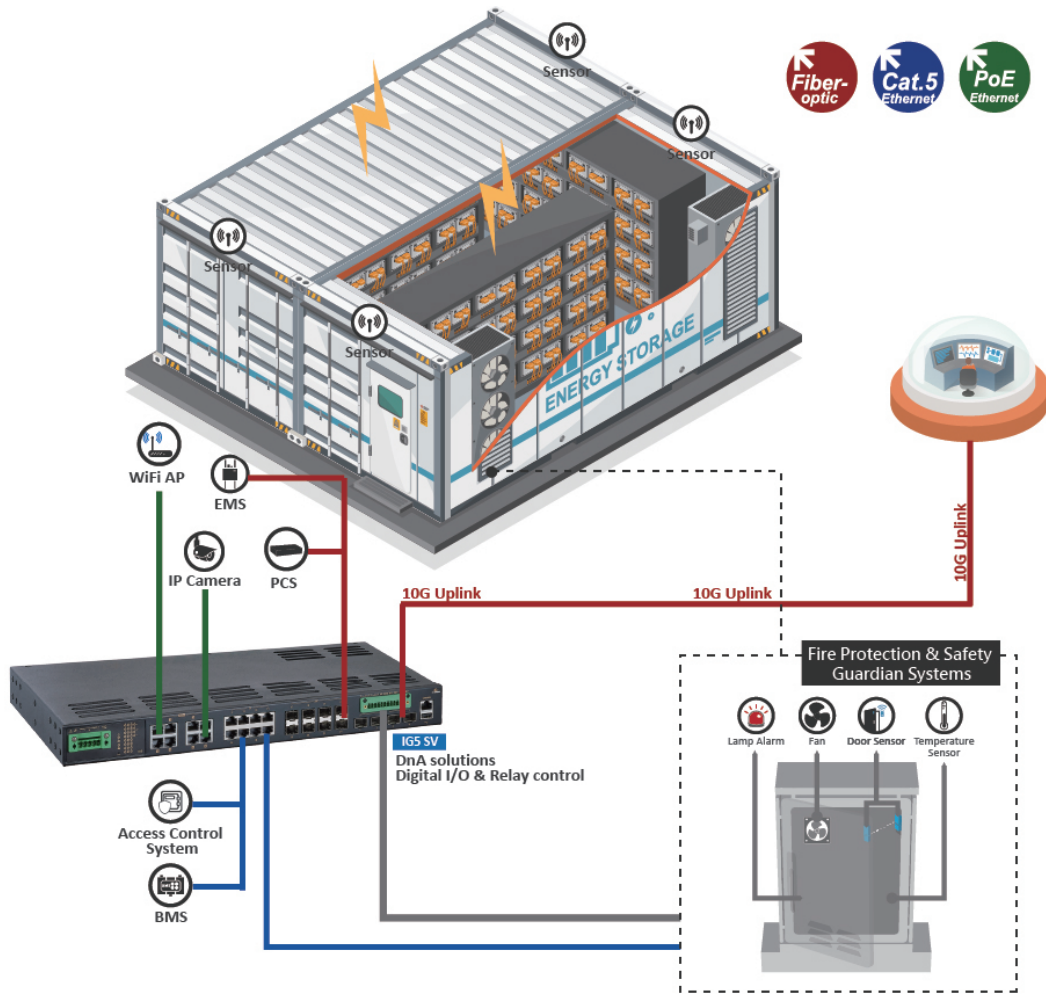
Mounting brackets, screws

# 產品尺寸圖





# 應用範例



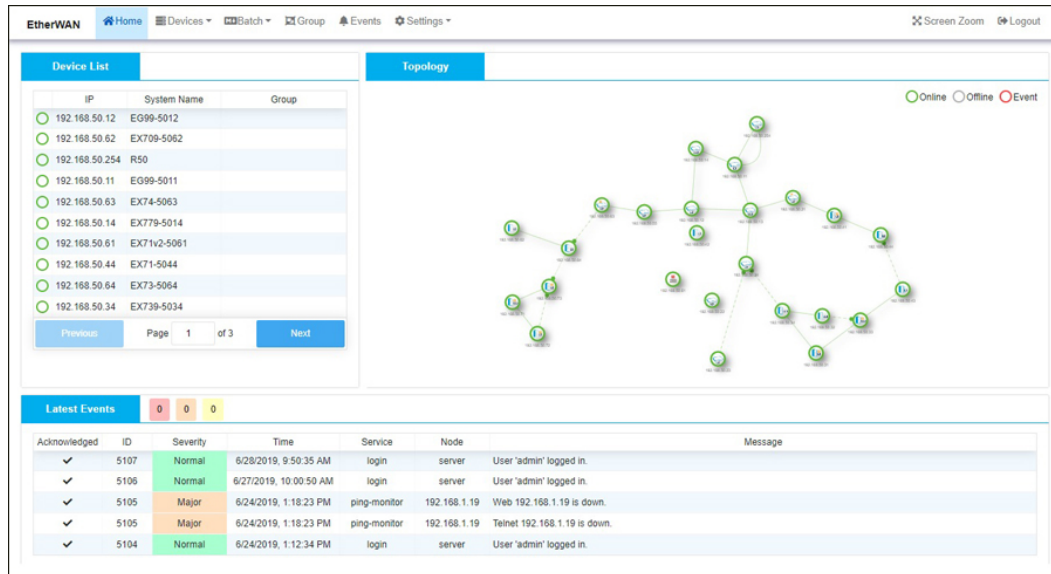
# 軟體工具

網路管理

[eVue™ 網絡配置和監控工具](#)

網路探索

[eLite™ 網絡偵測和IP 配置工具](#)



The screenshot shows the EtherWAN web interface. At the top, there are navigation tabs: Home, Devices, Batch, Group, Events, and Settings. The main content area is divided into two sections: 'Device List' and 'Topology'.

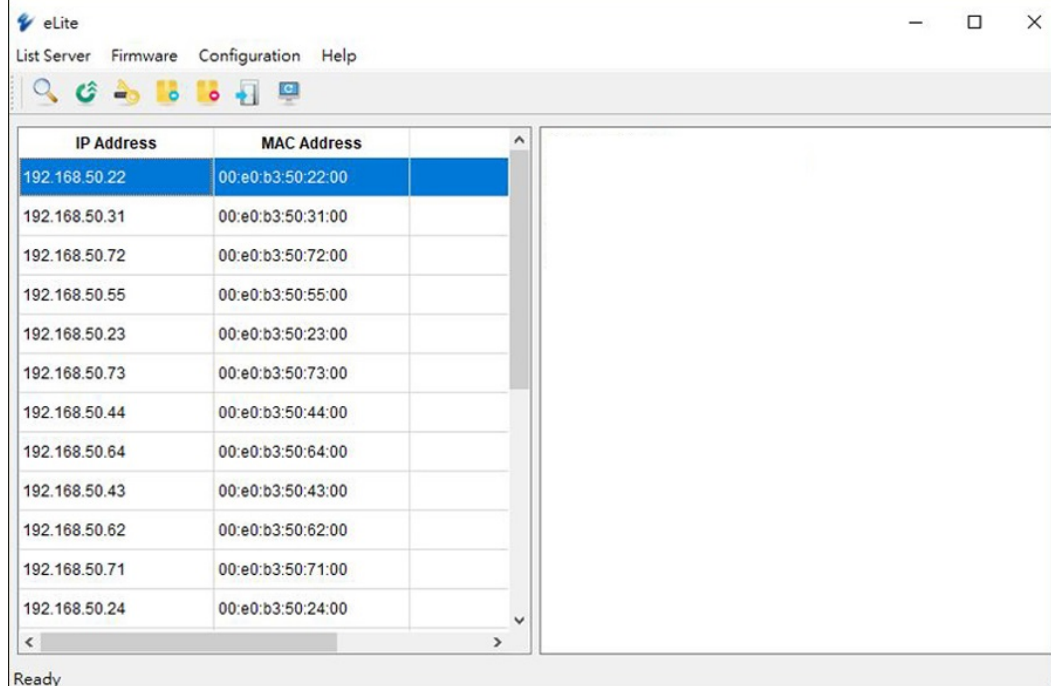
**Device List:** A table with columns for IP, System Name, and Group. It lists 13 devices, all with green status indicators.

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	

**Topology:** A network diagram showing various nodes 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 system events.

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	Teinet 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. The title bar reads 'eLite' and the menu bar includes 'List Server', 'Firmware', 'Configuration', and 'Help'. Below the menu bar is a toolbar with several icons. The main area contains a table with two columns: 'IP Address' and 'MAC Address'.

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

The status bar at the bottom of the window displays 'Ready'.

## 訂購型號

### + PoE 機種

IG5-P8084FTE	8 埠 10/100/1000BASE-T(X) PoE + 8 埠 10/100/1000BASE-T(X) + 8 埠 100/1000BASE SFP + 4 埠 1G/10G SFP+網管型乙太網路交換器
IG5-P8164FTE	8 埠 10/100/1000BASE-T(X) PoE + 16 埠 100/1000BASE SFP + 4 埠 1G/10G SFP+ 網管型乙太網路交換器

### + Non-PoE 機種

IG5-24004FTE	24 埠 10/100/1000BASE-T(X) + 4 埠 1G/10G SFP+ 網管型乙太網路交換器
IG5-16084FTE	16 埠 10/100/1000BASE-T(X) + 8 埠 100/1000BASE SFP + 4 埠 1G/10G SFP+ 網管型乙太網路交換器
IG5-08164FTE	8 埠 10/100/1000BASE-T(X) + 16 埠 100/1000BASE SFP + 4 埠 1G/10G SFP+ 網管型乙太網路交換器
IG5-00244FTE	24 埠 100/1000BASE SFP + 4 埠 1G/10G SFP+ 網管型乙太網路交換器

### + 配件選購

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	✓
SFPTIM3AM	10Gbps	Single	10km	-40 to 85°C	1310nm	✓

### + 更多配件選擇, 請參照下列網址:

Hardened 100BASE SFP Modules	<a href="http://www.etherwan.com/tw/products/sfp-fiber-transceiver">www.etherwan.com/tw/products/sfp-fiber-transceiver</a>
Hardened Gigabit SFP Modules	<a href="http://www.etherwan.com/tw/products/sfp-fiber-transceiver">www.etherwan.com/tw/products/sfp-fiber-transceiver</a>
Hardened 10G SFP+ Modules	<a href="http://www.etherwan.com/tw/products/sfp-fiber-transceiver">www.etherwan.com/tw/products/sfp-fiber-transceiver</a>
DIN-Rail Power Supplies	<a href="http://www.etherwan.com/tw/products/din-rail-power-supply">www.etherwan.com/tw/products/din-rail-power-supply</a>

