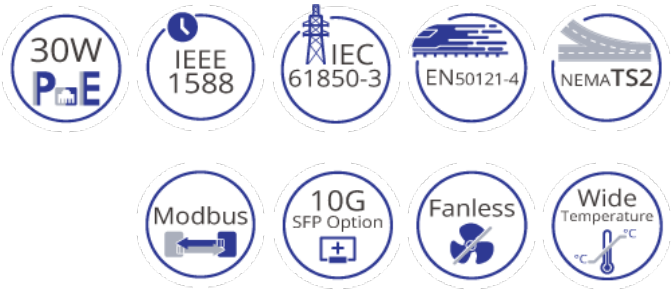
# IG5 SV 系列

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

## 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

## 第三層網管功能

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

## 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

## 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

## 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

Complience
- 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

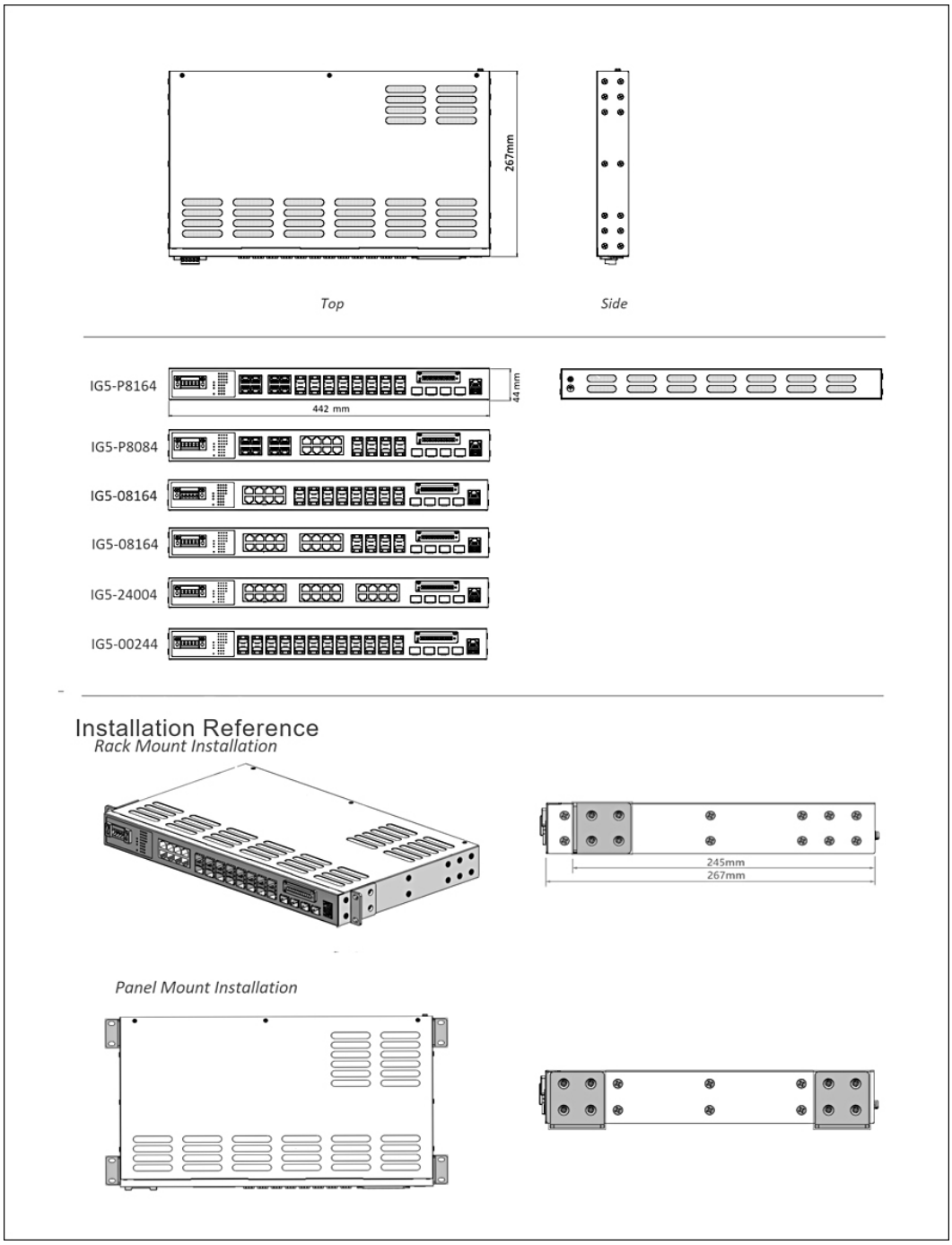
## What's Included

**Device**
Ethernet Switch

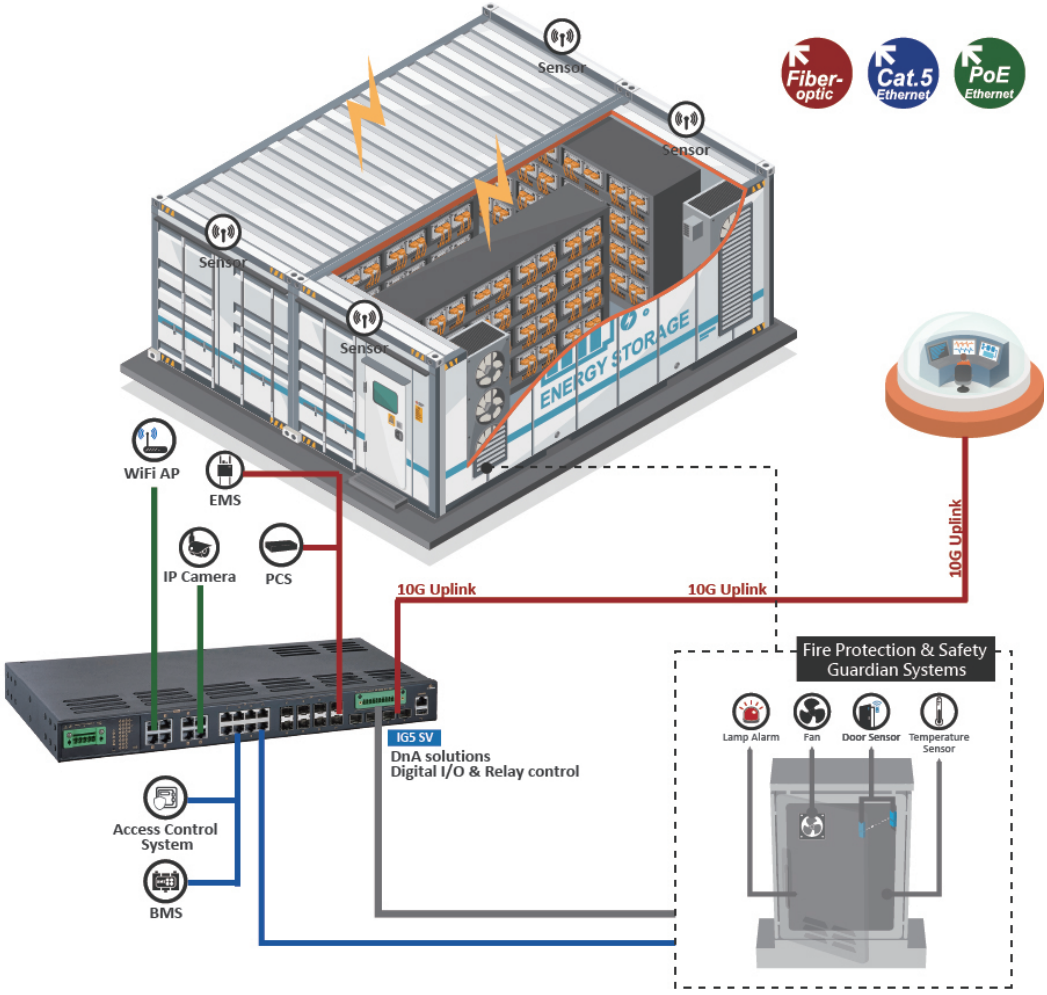
**Cables**
1 Console Cable

**Installation**
Mounting brackets, screws

# 產品尺寸圖

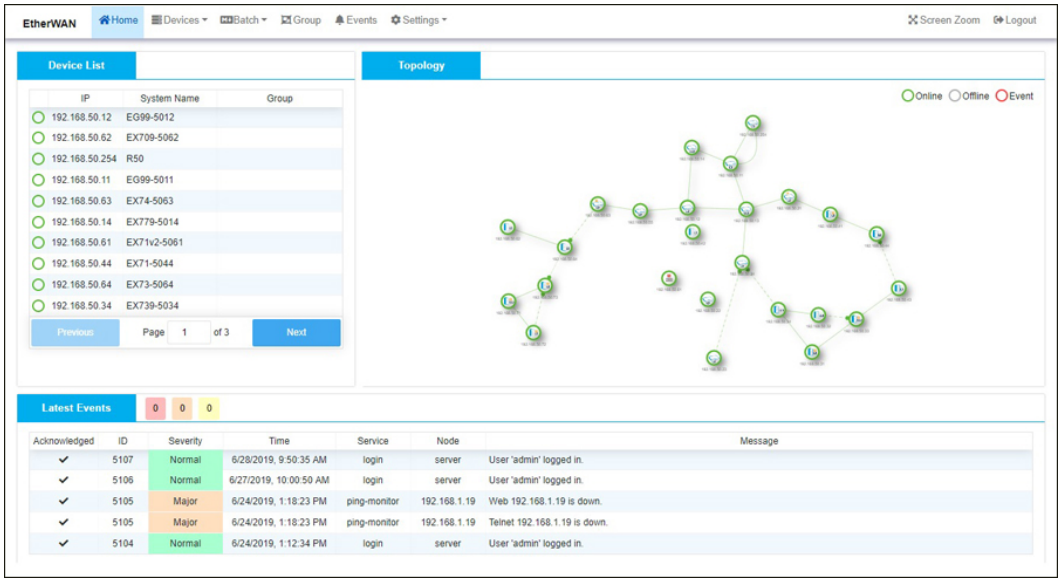

267mm
Top
Side
IG5-P8164
442 mm
44 mm
IG5-P8084
IG5-08164
IG5-08164
IG5-24004
IG5-00244
Installation Reference
Rack Mount Installation
245mm
267mm
Panel Mount Installation

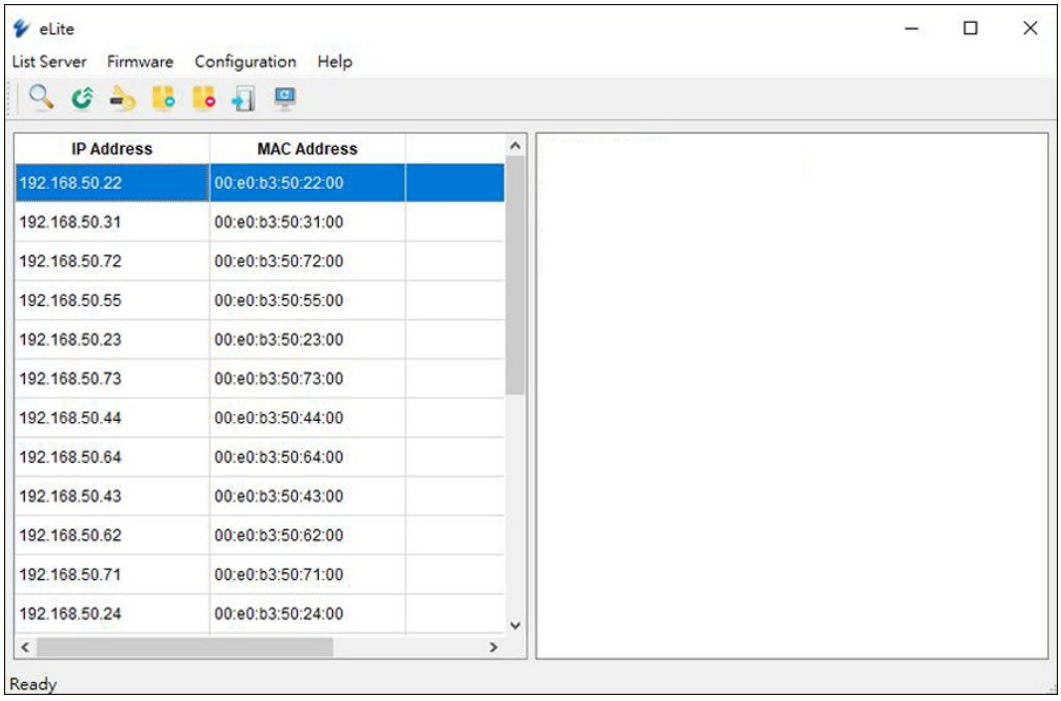
# 應用範例


Fiber-optic
Cat.5 Ethernet
PoE Ethernet
Sensor
Sensor
Sensor
Sensor
ENERGY STORAGE
WiFi AP
EMS
IP Camera
PCS
10G Uplink
10G Uplink
10G Uplink
IG5 SV
DnA solutions
Digital I/O & Relay control
Access Control System
BMS
Fire Protection & Safety Guardian Systems
Lamp Alarm
Fan
Door Sensor
Temperature Sensor

# 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 |



# 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** | www.etherwan.com/tw/products/sfp-fiber-transceiver |
| **Hardened Gigabit SFP Modules** | www.etherwan.com/tw/products/sfp-fiber-transceiver |
| **Hardened 10G SFP+ Modules** | www.etherwan.com/tw/products/sfp-fiber-transceiver |
| **DIN-Rail Power Supplies** | www.etherwan.com/tw/products/din-rail-power-supply |

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