Network Infrastructure
for your Smart Grid
Kyland Technology Co., Ltd. is focusing on the development of communication technologies between machines especially in industrial hardened environments. Through combining data acquisition technologies and controlling data management technologies, Kyland provides advanced and reliable solutions for industrial information neural network platform.

Kyland has taken part in the drafting and writing of three international standards IEC61158 (Fieldbus for use in industrial control systems), IEC62439 (high-availability automation networks) and IEEE C37.238 (Standard Profile for Use of IEEE 1588 Precision Time Protocol in Power System). Being the founder of Chinese industrial communication solutions, Kyland devotes itself to create value for global customers through endless innovation.

Kyland’s core competence lies in embedded functions and management software and high-reliability hardware design. To be specific, Kyland has led the industry in ring redundancy, zero-packet-loss, precision clock synchronization, wide temperature range, and EMC technologies. We also feature sophisticated data security, physical-layer security, class-based broadcast storm control, intrinsic safety design, corrosion resistant design, and anti-vibration design technologies.

Till 2011, Kyland IEC61850 industrial Ethernet switches have been deployed in over 2000 running substations globally. Over 50 cities have used Kyland solution as backbone of their power distribution systems. More than 150 wind farms are running Kyland communication devices to manage their wind turbine controlling system. Totally 85,000+ Kyland devices are running in the field 24x7x365.

Focusing on industrial communication, Kyland keeps going toward the common goal of “Promoting industrial modernization with information technology”, and tries to extend industrial communication to every corner of human being’s industrial information technology.
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- Layer 3 48G/96+8G Port Full Gigabit Managed Rack Mountable IEC61850 Backbone Switch
- Layer 3 24G Port Full Gigabit Managed Rack Mountable IEC61850 Backbone Switch
- Layer 3 48+4G Port Managed Rack Mountable IEC61850 Backbone Switch
- Layer 3 24+4G Port Managed Rack Mountable IEC61850 Switch
- Layer 3 28G/24+4G Port Full Gigabit Managed Rack Mountable Modular IEC61850 & IEEE1588 Switch
- Layer 3 28G/24+4G Port Full Gigabit Managed Rack Mountable Modular IEC61850 Switch
- Layer 3 24+4G Port Managed Din-Rail Modular IEC61850 Backbone Switch

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- Layer 2 28G/24+4G Port Full Gigabit Managed Rack Mountable Modular IEC61850 & IEEE1588 Switch
- Layer 2 28G/24+4G Port Full Gigabit Managed Rack Mountable Modular IEC61850 Switch
- Layer 2 24+4G Port Managed Rack Mountable IEC61850 Switch
- Layer 2 24+4G Port Managed Rack Mountable Modular IEC61850 & IEEE1588 Switch
- Layer 2 24+4G Port Managed Rack Mountable IEC61850 Switch
- Layer 2 48+4G Port Managed Rack Mountable Modular IEC61850 Switch
- Layer 2 28 Port Managed Rack Mountable IEC61850 Switch

### Layer 2 Din-Rail Managed IEC61850

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- Layer 2 24+4G Port Managed Din-Rail Modular IEC61850 Switch
- Layer 2 16+2G Port Managed Din-Rail IEC61850 Switch
- Layer 2 20 Port Managed Din-Rail IEC61850 Switch
- Layer 2 16+4G Port Managed Din-Rail IEC61850 Switch
- Layer 2 10G Port Full Gigabit Managed Din-Rail IEC61850 Switch
- Layer 2 6+3G port Managed Din Rail IEEE1588v2 Industrial Ethernet Switch
- Layer 2 6+3G Port Managed Din-Rail IEC61850 Switch
- Layer 2 8+2G Port Managed Din-Rail IEC61850 Switch
- Layer 2 9 Port Managed Din-Rail IEC61850 Switch
- Layer 2 9 Port Simple Managed Din-Rail IEC61850 Switch
- Layer 2 8 Port Simple Managed Din-Rail Switch
- PTP (Precision Time Protocol) Clock Converter
- 4/6 Port 100M Managed Embedded Industrial Ethernet Switch

### Unmanaged Din-Rail Industrial Ethernet Switches

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- 16 Port Unmanaged Din-Rail Switch
- 9 Port Unmanaged Din-Rail Switch
- 8G Port Full Gigabit Unmanaged Din-Rail Switch
- 5G Port Full Gigabit Unmanaged Din-Rail Switch
- 5 Port Unmanaged Din-Rail Switch
- 5 Port Unmanaged Din-Rail Switch
- 8 Port Unmanaged Din-Rail Switch

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sales@kyland.com / www.kyland.com
EN50155 Industrial Ethernet Switches

- SICOM5424R 90: 24+4G Port IP40 Managed Rack Mountable EN50155 Switch
- SICOM8000 92: 24+4G Port IP67 Managed Panel Mounting EN50155 Switch
- SICOM8010 94: 8+2G Port IP67 Managed Panel Mounting EN50155 PoE Switch
- SICOM5208R 96: 8+2G Port IP40 Managed/Unmanaged Panel Mounting EN50155 PoE Switch
- SICOM1005R 98: 5 Port IP67 Unmanaged Panel Mounting EN50155 Switch

Power over Ethernet (PoE) Switches

- SICOM3024SM 100: Layer 2 24+4G Port Managed Rack Mountable Modular IEC61850 PoE Switch
- SICOM3030TS 104: 7+3G port Gigabit Managed PoE Industrial Ethernet Switch
- SICOM3008S 106: 8 Port Fast Ethernet Managed PoE Industrial Ethernet Switch
- KIEN2204S 108: 4+2G Port Gigabit Unmanaged PoE Industrial Ethernet Switch
- KIEN1005S 110: 5 Port Unmanaged Din-Rail PoE Switch

Traffic Ethernet Switches

- SICOM3170 112: 7+3G Port Managed Traffic Ethernet Switch
- SICOM3171 114: 5 Port Managed Traffic Serial Device Server
- SICOM3172 116: EoVDLS & Serial Device Server Integrated Traffic Industrial Ethernet Switch

Intrinsic Safety Ethernet Switches

- SICOM1016BA 118: Layer 2 12+4G Port Managed Panel Mounting Intrinsic Safety Switch
- SICOM1008BA 122: Layer 2 6+3G Port Managed Din-Rail Intrinsic Safety Switch
- SICOM1009BA 124: 9 Port Managed Embedded Intrinsic Safety Switch
- KIEN1008BA 126: 8 Port Unmanaged Din-Rail Intrinsic Safety Switch

Serial Device Server

- SICOM3005 128: 6 Port Managed Din-Rail Serial Server Function Integrated Programmable Switch
- KPS2204/KPS1000 130: 6 Port Managed Din-Rail Serial Device Server

Media Converters & Optical Fiber Terminals

- KOM300A 132: 3 Port Unmanaged Din-Rail Copper to Fiber Media Converter
- KOM300M 134: 3 Port Managed Din-Rail Copper to Fiber Media Converter
- KOM300F 136: 3 Port Unmanaged Din-Rail Copper to Fiber Media Converter
- KDM600 138: 2 Port Unmanaged Din-Rail Copper to Fiber LFP Media Converter
- KCM600G 140: 2G Port Gigabit Unmanaged Din-Rail Copper to Fiber Media Converter
- KDM200 142: Unmanaged Din-Rail Serial to Fiber Media Converter
- KODT2200/KODT2200B 144: Managed Wall Mounting/Rack Mountable Serial to Fiber Optical Fiber Terminal

Network Management Software

- Kyvision3.0 146: Network Management Software

Modules & Accessories

- GPS Module 148: GPS Clock Synchronization Module
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- Multi Functional Application Module 153: Multi Functional Application Interface Module
- SFP-1G 154: Gigabit SFP Modules
- SFP-1FX 155: 100M Fiber SFP Module
- SFP-1G to FX 156: Gigabit to 100Base-FX SFP module
**Overview**

SICOM6496 is a modular layer 3 managed industrial Ethernet switch with 48 10/100/1000Base-T(X) ports or 48 Gigabit SFP slots specially designed for core backbone network. It supports layer 3 data full wire-speed forwarding and full duplex or half duplex flow control. And SICOM6496 also supports DT-Ring protocols and the recovery time is less than 50ms.

**Features & Benefits**

- Redundancy Technology: supports DT-Ring protocols (recovery time < 50ms), MSTP and VRRP
- Routing Protocol: supports RIPv1/v2, OSPFv2, BGPv4 and static routing protocol
- Network Partition: supports VLAN, GVRP
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2, RMON, LLDP, BootP, SNTP, DHCP server/relay/client, ACL, FTP, TFTP, Syslog, ARP, QoS, LACP
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring
- Alarm Output: supports port and ring alarms

**Layer 3 48G/96+8G Port Full Gigabit Managed Rack Mountable IEC61850 Backbone Switch**

- Layer 3 Full Gigabit Backbone Solution
- Modular design, supports maximum 48 Gigabit ports or 96 10/100Base-TX ports + 8 Gigabit SFP slots
- RIPv1/v2, OSPF, BGP layer 3 routing protocols
- DT-Ring protocols, MSTP and VRRP
- Patented heat dissipation technology

**Technical Specifications**

**Standard**

IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

**Protocols**

DT-Ring, DT-Ring+, DT-VLAN, MSTP, VLAN, RIPv1/v2, OSPFv2, BGPv4, DVMRP, Telnet, HTTP, SNMPv1/v2, RMON, LLDP, BootP, SNTP, DHCP server/relay/client, ACL, FTP, TFTP, Syslog, ARP, QoS, LACP

**Switch Properties**

- Priority Queues: 8
- Number of VLANs: 4K
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- Routing Table: 30K
- MAC Table: 16K
- Packet Buffer: 512Mbit
- Packet Forwarding Rate: 71.4Mpps
- Switching Delay: <5μs

**Interface**

- 2 slots for power modules
- 2 slots for 3 types of 24-port or 52-port interface modules:
  1) Interface module with 4 combo 1000Base SFP slots or 10/100/1000Base-TX ports, and 20 10/100/1000Base-TX ports
  2) Interface module with 4 combo 1000Base SFP slots or 10/100/1000Base-TX ports, and 20 1000Base SFP slots
  3) Interface module with 4 1000Base SFP slots and 48 10/100Base-TX ports
- Console Port: RS232 (RJ45 connector)
**LED**
LEDs on Front Panel:
- Running LED: Run
- Power LED: PWR1, PWR2
- Interface LED: Link/ACT (RJ45 port), Link (Fiber port), ACT (Fiber port)

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

**Power Requirements**
- Power Input:
  - 48DC (36-72VDC), 220AC/DC (85-264VAC/120-370VDC)
- Power Terminal:
  - 3-pin 7.62mm-spacing plug-in terminal block
- Power Consumption: <150W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP30
- Dimensions (W×H×D):
  - 482.6×355×405 mm (19×13.97×16.10 in.)
- Weight: 20kg (44.092 pound)
- Mounting: Rack mounting

**Environmental Limits**
- Operating Temperature: -40 to 65°C (-40 to 149°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
237,000 hrs

**Warranty**
5 years

**Approvals**
- CE, FCC
- Industrial Standard
  - EMI: FCC CFR47 Part 15, ENS5022/CISPR22, Class A
  - EMS: IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
    - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
    - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
    - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
    - IEC61000-4-6 (CS): 3V (10kHz-150Hz), 10V (150kHz-80MHz)
    - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
    - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
    - IEC61000-4-10 (Damped oscillation): 100A/m
    - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1Kv/DM
    - IEC61000-4-14 (Common mode conduction): 30V (cont.), 300V (1s)
- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Power: IEC61850-3, IEEE1613
- Railway: ENS50155, ENS50121-4
- Traffic Control: NEMA TS-2

**Ordering Information**

**S1 and S2**: Modules for Slot1 and Slot2

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**4Combo20GE** = SM6.3-4GX/GE-20GE, interface module with 4 Gigabit RJ-45/SFP combo ports (10/100/1000 Base-TX, 1000Base-X), 20 x 10/100/1000Base-TX RJ45 ports

**4Combo20GX** = SM6.3-4GX/GE-20GX, interface module with 4 Gigabit RJ-45/SFP combo ports (10/100/1000 Base-TX, 1000Base-X) 20 Gigabit SFP slots

**4GX48T** = SM6.3-4GX-48T, interface module with 4 Gigabit SFP slots and 48 x 10/100Base-T(X) RJ45 ports

**XX** = None

**PS1 and PS2**: Power Supply 1 and 2

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<td>= SM6.3-Power-220AC/DC, power supply module of 220VAC/220VDC (85-264VAC/120-370VDC)</td>
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<td>= SM6.3-Power-48DC, power supply module of 48VDC (36-72VDC)</td>
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**XX** = No power supply (PS2 only)

**Extra Order Codes**

| SICOM6496-4Combo20GE-4Combo20GE-200AC/DC-XX |

2 interface modules with 4 Gigabit RJ-45/SFP combo ports (10/100/1000 Base-TX, 1000Base-X), 20 x 10/100/1000Base-TX RJ45 ports, totally 8 Gigabit combo ports and 40 Gigabit copper ports, single 85-264VAC/120-370VDC power supply

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**Mechanical Drawing**

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SICOM6524 is a 24G port layer 3 core industrial Ethernet switch specifically designed to operate stably in electrically harsh and climatically demanding industrial environments. It offers up to 24 Gigabit SFP ports or 10/100/1000Base-T(X) ports. The redundant function of optical fiber network, independent entire network management channel and entire network real-time management system provide multiplex guarantee for reliable operation of the system.

Features & Benefits

- Redundancy Technology: supports DT-Ring protocols (recovery time<50ms), MSTP and VRRP
- Routing Protocol: supports RIPv1/v2, OSPFv2, BGPv4 and static routing protocol
- Network Partition: supports VLAN, GVRP
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2, RMON, LLDP, BootP, SNTP, DHCP server/relay/client, ACL;
- FTP, TFTP, Syslog;
- ARP, QoS, LACP

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocols
DT-Ring, DT-Ring+, DT-VLAN, MSTP, VRRP;
IGMP, IGMP Snooping, PIM-SM, PIM-DM, DVMRP, RIPv1/v2, OSPFv2, BGPv4;
VLAN, GVRP;
Telnet, HTTP, SNMPv1/v2, RMON, LLDP, BootP, SNTP, DHCP server/relay/client;
ACL;
FTP, TFTP, Syslog;
ARP, QoS, LACP

Switch Properties
Priority Queues: 8
Number of VLANs: 4K
VLAN ID: 1-4094
Number of Multicast Groups: 256
Routing Table: 30K
MAC Table: 16K
Packet Buffer: 512Mbit
Packet Forwarding Rate: 35.7Mpps
Switching Delay: <5μs

Interface
Gigabit Ethernet Port Combinations:
1) 4 combo 1000Base SFP slots or 10/100/1000Base-TX ports, and 20 10/100/1000Base-TX ports
2) 4 combo 1000Base SFP slots or 10/100/1000Base-TX ports, and 20 1000Base SFP slots
Console Port: RS232 (RJ45 connector)
**LED**
LEDs on Front Panel:
- Running LED: Run
- Power LED: PWR1, PWR2
- Interface LED: Link, ACT

**Transmission Distance**
Twisted Pair:
- 100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber:
- 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

**Power Requirements**
- **Power Input:**
  - 24DC (18-36VDC), 48DC (36-72VDC), 110DC (77-150VDC), 220AC/DC (85-265VAC/120-375VDC)
- **Power Terminal:**
  - 5-pin 5.08mm-spacing plug-in terminal block
- **Power Consumption:** <58.6W
- **Overload Protection:** Support
- **Reverse Connection Protection:** Support
- **Redundancy Protection:** Support

**Physical Characteristics**
- **Housing:** Aluminum, fanless
- **Protection Class:** IP40
- **Dimensions (W×H×D):** 482.6×44×375 mm (19×1.73×14.76 in.)
- **Weight:** 5.5kg (12.125 pound)
- **Mounting:** 19 inch 1U Rack mounting

**Environmental Limits**
- **Operating Temperature:** -40 to 85°C (-40 to 185°F)
- **Storage Temperature:** -40 to 85°C (-40 to 185°F)
- **Ambient Relative Humidity:** 5 to 95% (non-condensing)

**MTBF**
342,000 hrs

**Warranty**
5 years

**Approvals**
CE, FCC

**Industrial Standard**
- **EMI:**
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
- **EMS:**
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz); 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-10s)
  - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
  - IEC61000-4-10 (Damped oscillation): 100A/m
  - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- **Machinery:**
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- **Industry:** IEC61000-6-2
- **Power:** IEC61850-3, IEEE1613
- **Railway:** EN50155, EN50121-4
- **Traffic Control:** NEMA TS-2

**Ordering Information**

**SICOM6524-4GX/GE-20GE-24DC**
4 Gigabit combo ports, 20 Gigabit SFP ports, 24DC (18-36VDC) power supply

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**Mechanical Drawing**

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**Ports: Interfaces**

- **4GX/GE-20GE:** 4 Gigabit RJ-45/SFP combo ports
  - (10/100/1000 Base-TX, 1000Base-X), 20 10/100/1000Base-TX RJ45 ports
- **4GX/GE-20GX:** 4 Gigabit RJ-45/SFP combo ports
  - (10/100/1000 Base-TX, 1000Base-X), 20 Gigabit SFP ports

PS: Power supply (Only single power supply is supported)

- 24DC = 18-36VDC
- 48DC = 36-72VDC
- 110DC = 77-150VDC
- 220AC/DC = 85-265VAC/120-375VDC

**Example Order Codes**

SICOM6524-4GX/GE-20GE-24DC
4 Gigabit combo ports, 20 Gigabit SFP ports, 24DC (18-36VDC) power supply
Layer 3 48+4G Port
Managed Rack Mountable
IEC61850 Backbone Switch

SICOM6448SM Series are layer 3 managed industrial Ethernet switches with 48 10/100Base-T(X) ports and 4 combo Gigabit SFP slots or 10/100/1000Base-T(X) ports. Offering hardware wire-speed layer 3 switching, they support static and dynamic routing to optimize the network. They provide high performance and reliable solutions for industrial projects and simply are your best choice.

Overview
SICOM6448SM Series are layer 3 managed industrial Ethernet switches with 48 10/100Base-T(X) ports and 4 combo Gigabit SFP slots or 10/100/1000Base-T(X) ports. Offering hardware wire-speed layer 3 switching, they support static and dynamic routing to optimize the network. They provide high performance and reliable solutions for industrial projects and simply are your best choice.

Features & Benefits
- Redundancy Technology: supports DT-Ring protocols (recovery time<50ms), MSTP and VRRP
- Routing Protocol: supports RIPv1/v2, OSPFv2, BGPv4 and static routing protocol
- Network Partition: supports VLAN, GVRP
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2, RMON, LLDP, BootP, SNTP, DHCP server/relay/client; DT-Psec, ACL;
- ARP, QoS, LACP

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocols
DT-Ring, DT-Ring+, DT-VLAN, MSTP, VRRP;
IGMP, IGMP Snooping, PIM-SM, PIM-DM, DVMRP; RIPv1/v2, OSPFv2, BGPv4;
VLAN, GVRP;
Telnet, HTTP, SNMPv1/v2, RMON, LLDP, BootP, SNTP, DHCP

Switch Properties
Priority Queues: 8
Number of VLANs: 4K
VLAN ID: 1-4094
Number of Multicast Groups: 256
Routing Table: 30K
MAC Table: 16K
Packet Buffer: 512Mbit
Packet Forwarding Rate: 13.1Mpps
Switching Delay: <5μs

Interface
Gigabit Ethernet Ports: 4 combo 1000Base SFP slots or 10/100/1000Base-TX ports
Fast Ethernet Ports: 48 10/100Base-TX RJ45 ports
Console Port: RS232 (RJ45 connector)
**LED**
LEDs on Front Panel:
- System LED: SYS
- Power LED: PWR1, PWR2
- Interface LED: Link, ACT

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 850nm, 550m (1000M)
  - Single Mode Fiber:
    - 1310nm, 10km/40km (1000M)
    - 1550nm, 60km/80km (1000M)

**Power Requirements**
- Power Input:
  - 24DC (18-36VDC), 48DC (36-72VDC), 110DC (77-150VDC), 220AC/DC (85-265VAC/120-375VDC)
- Power Terminal:
  - 5-pin 5.08mm-spacing plug-in terminal block
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (W×H×D): 482.6×44×375 mm (19×1.73×14.76 in.)
- Weight: 4kg (8.818 pound)
- Mounting: 19 inch 1U Rack mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
264,000 hrs

**Warranty**
5 years

**Approvals**
- CE, FCC

**Industrial Standard**
- EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
  - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
  - IEC61000-4-10 (Damped oscillation): 100A/m
  - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Power: IEC61850-3, IEEE1613
- Railway: ENS015S, ENS0121-4
- Traffic Control: NEMA TS-2

**Ordering Information**

**SICOM6448SM-**

- **Ports**
  - 48T = 48 x 10/100/1000Base-TX RJ45 ports
  - 4GX/GE-48T = 4 Gigabit RJ-45/SFP combo ports (10/100/1000 Base-TX, 1000Base-X) and 48 x 10/100/1000Base-TX RJ45 ports

**PS1** and **PS2**: Power supply 1 and 2

- 24DC = 18-36VDC
- 48DC = 36-72VDC
- 110DC = 77-150VDC
- 220AC/DC = 85-265VAC/120-375VDC
- XX = No power supply (PS2 only)

**Example Order Codes**

SICOM6448SM-4GX/GE-48T-24DC-24DC

4 10/100/1000Base TX RJ45 ports or 1000Base Gigabit SFP Combo ports, 48 10/100Base TX RJ45 ports, and dual redundant 18-36VDC power supplies
SICOM6424SM is a layer 3 managed modular industrial Ethernet switch with up to 24 100Base-FX or 10/100Base-T(X) ports, and 4 Gigabit SFP slots or 4 10/100/1000Base-T(X) ports. Offering hardware wire-speed layer 3 switching, they support static and dynamic routing to optimize the network. They provide high performance and reliable solutions for industrial projects with modular design.

**Features & Benefits**

- Redundancy Technology: supports DT-Ring protocols (recovery time<50ms), MSTP and VRRP
- Routing Protocol: supports RIPv1/v2, OSPFv2, BGPv4 and static routing protocol
- Network Partition: supports VLAN, GVRP
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2, RMON, LLDP, BootP, SNTP, DHCP server/relay/client; DT-Psec, ACL
- Network Security: supports ARP, QoS, LACP
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring
- Alarm Output: supports port, power and ring alarms

**Technical Specifications**

**Standard**

- IEEE 802.3i
- IEEE 802.3u
- IEEE 802.3ab
- IEEE802.3ac
- IEEE 802.3ad
- IEEE 802.3z
- IEEE 802.3x
- IEEE 802.1p
- IEEE 802.1Q
- IEEE 802.1s

**Protocols**

- DT-Ring, DT-Ring+, DT-VLAN, MSTP, VRRP;
- IGMP, IGMP Snooping, PIM-SM, PIM-DM, DVMRP, RIPv1/v2, OSPFv2, BGPv4;
- VLAN, GVRP;
- Telnet, HTTP, SNMPv1/v2, RMON, LLDP, BootP, SNTP, DHCP

**Switch Properties**

- Priority Queues: 8
- Number of VLANs: 4K
- VLAN ID: 1–4094
- Number of Multicast Groups: 256
- Routing Table: 30K
- MAC Table: 16K
- Packet Buffer: 512Mbit
- Packet Forwarding Rate: 9.5Mpps
- Switching Delay: <5μs
**Interface**
Gigabit Ethernet Ports: 4 1000Base SFP slots or 4 10/100/1000Base-TX RJ45 ports
Fast Ethernet Ports: max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24 10/100Base-TX RJ45 ports
Console Port: RS232 (RJ45 connector)
Alarm Contact: 3-pin 3.81mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
LEDs on Front Panel:
- Running LED: Run
- Alarm LED: Alarm
- Power LED: PWR1, PWR2
- Interface LED: Link/ACT (Fast Ethernet port), Speed (Fast Ethernet port), DPX (Gigabit Ethernet port), Link (Gigabit Ethernet port)

**Transmission Distance**
Twisted Pair:
- 100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber:
- 1310nm, 5km (1000M)
- 850nm, 550m (1000M)
Single Mode Fiber:
- 1310nm, 40km/60km (1000M)
- 1550nm, 60km/80km (1000M)
- 1310nm, 10km/40km (1000M)
- 1550nm, 60km/80km (1000M)

**Power Requirements**
Power Input:
- 24DC (18-36VDC), 48DC (36-72VDC), 110DC (82-185VDC), 220AC/DC (85-265VAC/120-370VDC)
Power Terminal:
- 3-pin 9.5mm-spacing plug-in terminal block
Power Consumption: <35W

Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Aluminum, fanless
Protection Class: IP40
Dimensions (WxHxD):
- 482.6x44x420 mm (19x1.73x16.54 in.)
Weight: 5kg (11.023 pound)
Mounting: 19 inch 1U Rack mounting

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
365,000 hrs

**Warranty**
5 years

**Approvals**
CE, FCC

**Industrial Standard**
EMI:
- FCC CFR47 Part 15, ENS5022/CISPR22, Class A
EMS:
- IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
- IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
- IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
- IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
- IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
- IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
- IEC61000-4-9 (Pulsed magnetic field): 1000A/m
- IEC61000-4-10 (Damped oscillation): 100A/m
- IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
- IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
- IEC60068-2-6 (Vibration)
- IEC60068-2-27 (Shock)
- IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Power: IEC61850-3, IEEE1613
Railway: ENS0155, ENS0121-4
Traffic Control: NEMA TS-2

**Mechanical Drawing**
### Ordering Information

<table>
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<th>Connector</th>
<th>PS1</th>
<th>PS2</th>
</tr>
</thead>
</table>

#### G: Gigabit Ports
- **4GX** = 4 Gigabit SFP ports
- **4GE** = 4 10/100/1000Base-TX RJ45 ports
- **None** = No Gigabit port

#### 100M: 100M Ports
- **24M** = 24 100Base-FX multi mode fiber ports
- **24S** = 24 100Base-FX single mode fiber ports
- **20M-4T** = 20 100Base-FX multi mode fiber ports, 4 10/100Base-TX RJ45 ports
- **20S-4T** = 20 100Base-FX single mode fiber ports, 4 10/100Base-TX RJ45 ports
- **16M-8T** = 16 100Base-FX multi mode fiber ports, 8 10/100Base-TX RJ45 ports
- **16S-8T** = 16 100Base-FX single mode fiber ports, 8 10/100Base-TX RJ45 ports
- **12M-12T** = 12 100Base-FX multi mode fiber ports, 12 10/100Base-TX RJ45 ports
- **12S-12T** = 12 100Base-FX single mode fiber ports, 12 10/100Base-TX RJ45 ports
- **8M-16T** = 8 100Base-FX multi mode fiber ports, 16 10/100Base-TX RJ45 ports
- **8S-16T** = 8 100Base-FX single mode fiber ports, 16 10/100Base-TX RJ45 ports
- **4M-20T** = 4 100Base-FX multi mode fiber ports, 20 10/100Base-TX RJ45 ports
- **4S-20T** = 4 100Base-FX single mode fiber ports, 20 10/100Base-TX RJ45 ports
- **24T** = 24 10/100Base-TX RJ45 ports

#### Distance: Fiber Distance
- **1310-5** = 1310nm, 5km
- **1310-40** = 1310nm, 40km
- **1310-60** = 1310nm, 60km
- **1550-80** = 1550nm, 80km

#### Connector: Fiber Connector
- **SC** = SC connectors
- **ST** = ST connectors
- **FC** = FC connectors

#### PS1 and PS2: Power supply 1 and 2
- **24DC** = 18-36VDC
- **48DC** = 36-72VDC
- **110DC** = 82-185VDC
- **220AC/DC** = 85-265VAC/120-370VDC
- **XX** = No power supply (PS2 only)

#### Example Order Codes
- **SICOM64245M-24M-1310-5-SC-24DC-24DC**

24 100Base-FX multi mode fiber ports with SC connectors 1310nm 5km, 20 10/100Base TX RJ45 ports, and dual redundant 24DC(18-36VDC) power supplies.
Layer 3 28G/24+4G Port Full Gigabit Managed Rack Mountable Modular IEC61850 & IEEE1588 Switch

- Supports RIP, OSPF layer 3 routing protocols
- Flexible modular design for easy expansion, 1U structure
- Supports max 28 Gigabit ports or 4 Gigabit ports and 24 fast Ethernet ports
- Supports IEEE1588v2
- Supports ITU-T G. 8261/G. 8262 (SyncE)
- Supports IEC62439-6, DT-Ring protocols, MSTP and VRRP
- Routing Protocol: supports RIPv1/v2, OSPFv2, BGPv4 and static routing protocol
- Network Partition: supports VLAN, GVRP, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, DHCP
- Synchronization Protocol: supports SNTP, IEC1588v2, ITU-T. G. 8261/G. 8262
- Network Security: supports IEEE 802.1X, SSH, SSL, TACACS+, RADIUS, ACL
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring, VCT (Virtual Cable Test)
- Alarm Output: supports IP/MAC conflicts, power, temperature, port and ring alarms
- Special Function: supports Link Check and Loop Status Check

Overview

SICOM6028GPT/SICOM6424PT series are members of Kyland intelligent modular platform SICOM GPT series which is an All-in-One solution integrating IEEE1588v2, SyncE, full gigabit, and both layer 2 & Layer 3 availability specifically designed to operate reliably in electrically harsh and climatically demanding utility substation and industrial environments. SICOM6028GPT/SICOM6424PT features the IEEE1588v2 & SyncE protocols with hardware time stamping allowing 10 nanoseconds time synchronization over each of 28 Gigabit/100M Ethernet ports. Its high port density in 1U chassis and fully modular design offers the maximum flexibility for easy expansion.

SICOM GPT Series is equipped with a Kyland patent IEC62439-6 ring protocol which enables less than 20ms recovery time. It also supports DT-Ring, RSTP/STP, MSTP and VRRP. Mini USB console port enables configuration easy backup and restore. SICOM GPT series has a GPS module, enabling the device to function as the clock source - offering accurate timing information obtained from GPS or Beidou GPS satellites. It also supports IRIG-B input and output modules which enable the customer to synchronize the whole system with large numbers of IRIG-B devices with accurate timing information. The new SICOM GPT series is fully compliant with IEC61850-3 and IEE1613 standards.

Features & Benefits

- Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocols (recovery time<50ms), MSTP and VRRP
- Routing Protocol: supports RIPv1/v2, OSPFv2, BGPv4 and static routing protocol
- Network Partition: supports VLAN, GVRP, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, DHCP
- Synchronization Protocol: supports SNTP, IEC1588v2, ITU-T. G. 8261/G. 8262
- Network Security: supports IEEE 802.1X, SSH, SSL, TACACS+, RADIUS, ACL
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring, VCT (Virtual Cable Test)
- Alarm Output: supports IP/MAC conflicts, power, temperature, port and ring alarms
- Special Function: supports Link Check and Loop Status Check
Technical Specifications

**Standard**
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s, IEEE802.1X, IEEE1588v2, ITU-T: G.8261/G.8262

**Protocols**
DT-Ring, DT-Ring+, DT-VLAN, MSTP, DRP, VRRP, IGMP, IGMP Snooping, GMRP, PIM-SM, PIM-DM, DVMRP, RIPv1/v2, OSPFv2, BGPv4;
VLAN, GVRP, PVLAN;
Telnet, HTTP, HTTPS;
SNMPv1/v2/v3, RMON, LLDP, BootP, DHCP Option 82, DHCP server/relay/client;
SNTP, RTC, PTP;
SSH, SSL, TACACS+, RADIUS, ACL;
FTP, TFTP, Syslog;
ARP, Modbus TCP, QoS, LACP

**Switch Properties**
Priority Queues: 8
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 16K
Packet Buffer: 12MB
Packet Forwarding Rate: 41.7Mpps (SICOM6028GPT), 9.5Mpps (SICOM6424PT)
Switching Delay: <5μs

**Interface**
1 1U slot for 4-port Gigabit interface module (1000Base SFP or 10/100/1000Base-TX port)
6 0.5U slots for 4-port Gigabit/Fast Ethernet interface modules
Gigabit Ethernet Ports: max 28 1000Base SFP slots or 28 10/100/1000Base-TX RJ45 ports
Fast Ethernet Ports: max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24 10/100Base-TX RJ45 ports
Console Port: Mini USB
USB Interface: USB2.0
Alert Contact: 5-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
1) LEDs on Front Panel:
Running LED: Run
Alarm LED: Alarm
Power LED: PWR1, PWR2
Interface LED: Link/ACT, Speed
Synchronization Finish LED: Lock
2) LEDs on Rear Panel:
Interface LED: Link/ACT
Port Speed LED: Speed
Data Transmitting and Receiving LED: Data (on IRIG-B interface module)
Synchronization Finish LED: SYNC (on IRIG-B and GPS interface modules)

**Transmission Distance**
Twisted Pair:
100m (Standard CAT5, CAT3e network cable)
Multi Mode Fiber:
1310nm, 5km (100M)
850nm, 550m (1000M)
Single Mode Fiber:
1310nm, 40km/60km (1000M)
1550nm, 60km/80km (1000M)
1310nm, 10km/40km (1000M)
1550nm, 60km/80km (1000M)

**Power Requirements**
Power Input: 24VDC (18-36VDC), 48VDC (36-72VDC), 220VAC/DC (85-264VAC/77-370VDC)
Power Terminal:
5-pin 5.08mm-spacing plug-in terminal block
Power Consumption:
<30W (full RJ45 ports); <44W (full fiber ports)
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Metal, fanless
Protection Class: IP40
Dimensions (WxHxD): 482.6×44×360 mm (19×1.73×14.17 in.)
Weight: <108g (22.046 pound)
Mounting: 19 inch 1U Rack mounting

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
371,000 hrs

**Warranty**
5 years

**Approvals**
CE, FCC

**Industrial Standard**
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
IEC61000-4-9 (Pulsed magnetic field): 1000A/m
IEC61000-4-10 (Damped oscillation): 100A/m
IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Power: IEC61850-3, IEEE1613
Railway: ENS0155, ENS0121-4
Traffic Control: NEMA TS-2

sales@kyland.com / www.kyland.com
KYLAND
Model Chassis: Chassis and Power Supplies

**SICOM6028GPT-24-XX** = SICOM6028GPT-MB-24DC-V1.0, SICOM6028GPT Chassis with 24VDC(18-36VDC) power supply

**SICOM6028GPT-24-24** = SICOM6028GPT-MB-24DC-24DC-V1.0, SICOM6028GPT Chassis with dual redundant 24VDC(18-36VDC) power supplies

**SICOM6028GPT-48-XX** = SICOM6028GPT-MB-48DC-V1.0, SICOM6028GPT Chassis with 48VDC(36-72VDC) power supply

**SICOM6028GPT-48-48** = SICOM6028GPT-MB-48DC-48DC-V1.0, SICOM6028GPT Chassis with dual redundant 48VDC(36-72VDC) power supplies

**SICOM6028GPT-HI-XX** = SICOM6028GPT-MB-220AC/DCW-V1.0, SICOM6028GPT Chassis with 85-264VAC/77-370VDC power supply

**SICOM6028GPT-HI-HI** = SICOM6028GPT-MB-220AC/DCW-220AC/DCW-V1.0, SICOM6028GPT Chassis with dual redundant 85-264VAC/77-370VDC power supplies

**SICOM6424PT-24-XX** = SICOM6424PT-MB-24DC-V1.0, SICOM6424PT Chassis with 24VDC(18-36VDC) power supply

**SICOM6424PT-24-24** = SICOM6424PT-MB-24DC-24DC-V1.0, SICOM6424PT Chassis with dual redundant 24VDC(18-36VDC) power supplies

**SICOM6424PT-48-XX** = SICOM6424PT-MB-48DC-V1.0, SICOM6424PT Chassis with 48VDC(36-72VDC) power supply

**SICOM6424PT-48-48** = SICOM6424PT-MB-48DC-48DC-V1.0, SICOM6424PT Chassis with dual redundant 48VDC(36-72VDC) power supplies

**SICOM6424PT-HI-XX** = SICOM6424PT-MB-220AC/DCW-V1.0, SICOM6424PT Chassis with 85-264VAC/77-370VDC power supply

**SICOM6424PT-HI-HI** = SICOM6424PT-MB-220AC/DCW-220AC/DCW-V1.0, SICOM6424PT Chassis with dual redundant 85-264VAC/77-370VDC power supplies

**1U Module**

XX = None

4GX1U = SM6.6-4GX-1U-V1.0, 1U Module with 4 Gigabit SFP ports

4GE1U = SM6.6-4GE-1U-V1.0, 1U Module with 4 Gigabit 10/100/1000Base-TX RJ45 ports

2GX2GE1U = SM6.6-2GX-2GE-1U-V1.0, 1U module with 2 Gigabit SFP ports and 2 10/100/1000Base-TX RJ45 ports
**Model Chassis: Chassis and Power Supplies**

**S2-S7: 0.5U Module**

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<th>Description</th>
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<td>4GX</td>
<td>SM6.6-4GX-0.5U-V1.0, 0.5U Module with 4 Gigabit SFP ports (Only available for SICOM6028GPT)</td>
</tr>
<tr>
<td>4GE</td>
<td>SM6.6-4GE-0.5U-V1.0, 0.5U Module with 4 Gigabit10/100/1000Base-TX RJ45 ports</td>
</tr>
<tr>
<td>4GX2GE</td>
<td>SM6.6-2GX-2GE-0.5U-V1.0, 0.5U Module with 2 Gigabit10/100/1000Base-TX RJ45 ports and 2 Gigabit SFP ports</td>
</tr>
<tr>
<td>4GT</td>
<td>SM6.6-4T-0.5U-V1.0, 0.5U Module with 4 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>4SSC</td>
<td>SM6.6-4S-SC-1550-80-0.5U-V1.0, 0.5U Module with 4 100Base-FX single mode fiber ports, 1310nm, 80km, SC connector</td>
</tr>
<tr>
<td>4SST</td>
<td>SM6.6-4S-ST-1550-80-0.5U-V1.0, 0.5U Module with 4 100Base-FX single mode fiber ports, 1310nm, 80km, ST connector</td>
</tr>
<tr>
<td>4SFC</td>
<td>SM6.6-4S-FC-1550-80-0.5U-V1.0, 0.5U Module with 4 100Base-FX single mode fiber ports, 1310nm, 80km, FC connector</td>
</tr>
<tr>
<td>4SSC60</td>
<td>SM6.6-4S-SC-1310-60-0.5U-V1.0, 0.5U Module with 4 100Base-FX single mode fiber ports, 1310nm, 60km, SC connector</td>
</tr>
<tr>
<td>4SSC80</td>
<td>SM6.6-4S-SC-1550-80-0.5U-V1.0, 0.5U Module with 4 100Base-FX single mode fiber ports, 1310nm, 80km, SC connector</td>
</tr>
<tr>
<td>4MSC</td>
<td>SM6.6-4M-SC-1310-5-0.5U-V1.0, 0.5U Module with 4 100Base-FX multimode fiber ports, 1310nm, 5km, SC connector</td>
</tr>
<tr>
<td>4MST</td>
<td>SM6.6-4M-ST-1310-5-0.5U-V1.0, 0.5U Module with 4 100Base-FX multimode fiber ports, 1310nm, 5km, ST connector</td>
</tr>
<tr>
<td>4MFC</td>
<td>SM6.6-4M-FC-1310-5-0.5U-V1.0, 0.5U Module with 4 100Base-FX multimode fiber ports, 1310nm, 5km, FC connector</td>
</tr>
<tr>
<td>2GX2SSC</td>
<td>SM6.6-2GX-2S-SC-1310-40-0.5U-V1.0, 0.5U Module with 2 Gigabit SFP ports and 2 100Base-FX single mode fiber ports, 1310nm, 40km, SC connector</td>
</tr>
<tr>
<td>2GX2SST</td>
<td>SM6.6-2GX-2S-ST-1310-40-0.5U-V1.0, 0.5U Module with 2 Gigabit SFP ports and 2 100Base-FX single mode fiber ports, 1310nm, 40km, ST connector</td>
</tr>
<tr>
<td>2GX2SFC</td>
<td>SM6.6-2GX-2S-FC-1310-40-0.5U-V1.0, 0.5U Module with 2 Gigabit SFP ports and 2 100Base-FX single mode fiber ports, 1310nm, 40km, FC connector</td>
</tr>
<tr>
<td>2SSC2T</td>
<td>SM6.6-2S-SC-1310-40-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 40km, SC connector and 2 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>2SST2T</td>
<td>SM6.6-2S-ST-1310-40-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 40km, ST connector and 2 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>2SFC2T</td>
<td>SM6.6-2S-FC-1310-40-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 40km, FC connector and 2 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>2SSC602T</td>
<td>SM6.6-2S-SC-1310-60-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 60km, SC connector and 2 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>2SSC802T</td>
<td>SM6.6-2S-SC-1550-80-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 80km, SC connector and 2 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>2MSC2T</td>
<td>SM6.6-2M-SC-1310-5-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX multimode fiber ports, 1310nm, 5km, SC connector and 2 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>2MST2T</td>
<td>SM6.6-2M-ST-1310-5-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX multimode fiber ports, 1310nm, 5km, ST connector and 2 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>2MFC2T</td>
<td>SM6.6-2M-FC-1310-5-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX multimode fiber ports, 1310nm, 5km, FC connector and 2 10/100Base-TX RJ45 ports</td>
</tr>
<tr>
<td>GPS</td>
<td>SM6.6-6GPS-OI-0.5U-V1.0, GPS Clock Synchronization Module BO = SM6.6-PPT-BO-0.5U-V1.1, IRIG-B PTP Clock Convector Output Module</td>
</tr>
</tbody>
</table>

**Accessories**

- DT-GPS-ANT-01 = GPS Antenna
- DT-SP-01 = GPS Surge Protection AR21T
- DT-LMR400-20-TNC-BNC = 20m coaxial cable with BNC(male) to TNC(male) adaptor
- DT-LMR400-2-TNC-BNC = 2m coaxial cable with BNC(male) to TNC(male) adaptor
- GPT Module Puller
- DT-XL-Mini-USB-USB-2m = 2M USB Console Cable
- Patch Cord Organizers (One Pair)
- DT-BNC(K)-TNC(K) = BNC (female) to TNC (female) connector
Layer 3 28G/24+4G Port Full Gigabit Managed Rack Mountable Modular IEC61850 Switch

- Supports RIP, OSPF layer 3 routing protocols
- Flexible modular design for easy expansion, 1U structure
- Supports max 28 Gigabit ports or 4 Gigabit ports and 24 fast Ethernet ports
- Supports IEC62439-6, DT-Ring protocols, MSTP and VRRP
- Provides Mini USB Console port, supports setting backup and recovery through USB
- Supports VCT (Virtual Cable Test)
- Exceeds IEC61850-3 and IEEE1613

Overview

SICOM6028GP/SICOM6424P are members of Kyland intelligent modular platform SICOM GPT series which is an All-in-One solution integrating IEEE1588v2, SyncE, full gigabit, and both layer 2 & Layer 3 availability specifically designed to operate reliably in electrically harsh and climatically demanding utility substation and industrial environments. SICOM6028GP/SICOM6424P are equipped with Kyland patent IEC62439-6/DRP ring protocol which enables less than 20ms recovery time. It also supports DT-Ring, RSTP/STP and MSTP. Mini USB console port enables configuration easy backup and restore. SICOM GPT series is fully compliant with IEC61850-3 and IEEE1613 standards.

Supporting up to 28 Gigabit/100M Ethernet ports, the SICOM6028GP/SICOM6424P series has one 1U Gigabit slot for 4 Gigabit uplink ports, and 6 0.5U slots with 4 Gigabit or 100M ports on each module. With all high density ports being on rear panel, the SICOM GPT series is 1U height with only 360mm depth. Fully modular design offers the maximum flexibility for easy expansion. SICOM6028GP/SICOM6424P deliver great bandwidth, SFP expansions, network redundancy technology, management features, a fanless design, a wide operating temperature range of -40 to 85°C, and future proof protection of your industrial network.

Features & Benefits

- Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocols (recovery time<50ms), MSTP and VRRP
- Routing Protocol: supports RIPv1/v2, OSPFv2, BGPv4 and static routing protocol
- Network Partition: supports VLAN, GVRP, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, DHCP
- Synchronization Protocol: supports NTP time synchronization
- Network Security: supports IEEE 802.1X, SSH, SSL, TACACS+, RADIUS, ACL
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring, VCT (Virtual Cable Test)
- Alarm Output: supports IP/MAC conflicts, power, temperature, port and ring alarms
- Special Function: supports Link Check and Loop Status Check
Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE802.1x, IEC62439-6

Protocols
DT-Ring, DT-Ring+, DT-VLAN, MSTP, DRP, VRRP, IGMP, IGMP Snooping, GMRP, PIM-DM, PIM-SM, DVMRP, RIPv1/v2, OSPFv2, BGPv4;
VLAN, GVRP, PVLAN;
Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, BootP, DHCP Option 82, DHCP server/relay/client;
SNTP, NTP,
SSH, SSL, TACACS+, RADIUS, ACL,
FTP, TFTP, Syslog,
ARP, Modbus TCP, QoS, LACP

Switch Properties
Priority Queues: 8
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 16k
Packet Buffer: 12 Mbit
Packet Forwarding Rate: 41.7 Mpps (SiCOM6028GP), 9.5 Mpps (SiCOM6424P)
Switching Delay: <5µs

Interface
1.1U slot for 4-port Gigabit interface module (1000Base SFP or 10/100/1000Base-TX port)
6.05 U slots for 4-port Gigabit/Fast Ethernet interface modules
Gigabit Ethernet Ports: max 28 1000Base SFP slots or 28 10/100/1000Base-TX RJ45 ports
Fast Ethernet Ports: max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24 10/100Base-TX RJ45 ports
Console Port: Mini USB
USB Interface: USB2.0
Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

LED
1) LEDs on Front Panel:
Running LED: Run
Alarm LED: Alarm
Power LED: PWR1, PWR2
Interface LED: Link/ACT, Speed
2) LEDs on Rear Panel:
Interface LED: Link/ACT
Port Speed LED: Speed

Transmission Distance
Twisted Pair:
100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber:
1310nm, 5km (100M)
850nm, 550m (1000M)
Single Mode Fiber:
1310nm, 40km/60km (100M)
1550nm, 60km/80km (100M)
1310nm, 10km/40km (1000M)
1550nm, 60km/80km (1000M)

Power Requirements
Power Input:
24VDC (18-36VDC), 48VDC (36-72VDC).
220VAC/DC (85-264VAC/77-370VDC)
Power Terminal:
5-pin 5.08mm-spacing plug-in terminal block
Power Consumption:
<28W (full RJ45 ports); <42W (full fiber ports)
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

Physical Characteristics
Housing: Metal, fanless
Protection Class: IP40
Dimensions (WxHxD):
482.6x44x360 mm (19x1.73x14.17 in)
Weight: <10kg (22.046 pound)
Mounting: 19 inch 1U Rack mounting

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
368,000 hrs

Warranty
5 years

Approvals
CE, FCC

Industrial Standard
EN61:
FCC CFR47 Part 15, EN55022/CISPR22, Class A

EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10Hz-150kHz), ±10V (150kHz-80MHz)
IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
IEC61000-4-9 (Pulsed magnetic field): 1000A/m
IEC61000-4-10 (Damped oscillation): 100A/m
IEC61000-4-12 (Oscillatory wave): ±2.5kV/CM, 1kW/DM
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Power: IEC61850-3, IEEE1613
Railway: ENS015S, EN50121-4
Traffic Control: NEMA TS-2
**Ordering Information**

<table>
<thead>
<tr>
<th>Slot 1</th>
<th>Slot2</th>
<th>Slot3</th>
<th>Slot4</th>
<th>Slot5</th>
<th>Slot6</th>
<th>Slot7</th>
<th>PS</th>
</tr>
</thead>
</table>

**Model Chassis: Chassis and Power Supplies**  
SICOM6028GP-24-XX = SICOM6028GP-MB-24DC-V1.0, SICOM6028GP Chassis with 24VDC(18-36VDC) power supply  
SICOM6028GP-24-24 = SICOM6028GP-MB-24DC-24DC-V1.0, SICOM6028GP Chassis with dual redundant 24VDC(18-36VDC) power supplies  
SICOM6028GP-48-XX = SICOM6028GP-MB-48DC-V1.0, SICOM6028GP Chassis with 48VDC(36-72VDC) power supply  
SICOM6028GP-48-48 = SICOM6028GP-MB-48DC-48DC-V1.0, SICOM6028GP Chassis with dual redundant 48VDC(36-72VDC) power supplies  
SICOM6424P-24-XX = SICOM6424P-MB-24DC-V1.0, SICOM6424P Chassis with 24VDC(18-36VDC) power supply  
SICOM6424P-24-24 = SICOM6424P-MB-24DC-24DC-V1.0, SICOM6424P Chassis with dual redundant 24VDC(18-36VDC) power supplies  
SICOM6424P-48-XX = SICOM6424P-MB-48DC-V1.0, SICOM6424P Chassis with 48VDC(36-72VDC) power supply  
SICOM6424P-48-48 = SICOM6424P-MB-48DC-48DC-V1.0, SICOM6424P Chassis with dual redundant 48VDC(36-72VDC) power supplies  
SICOM6424P-HI-XX = SICOM6424P-MB-220AC/DCW-V1.0, SICOM6424P Chassis with 85-264VAC/77-370VDC power supply  
SICOM6424P-HI-HI = SICOM6424P-MB-220AC/DCW-220AC/DCW-V1.0, SICOM6424P Chassis with dual redundant 85-264VAC/77-370VDC power supplies  

**S1: 1U Module**  
XX=None  
4GX1U = SM6.6-4GX-1U-V1.0, 1U Module with 4 Gigabit SFP ports  
4GE1U = SM6.6-4GE-1U-V1.0, 1U Module with 4 Gigabit 10/100/1000Base-TX RJ45 ports  
2GX2GE1U = SM6.6-2GX-2GE-1U-V1.0, 1U module with 2 Gigabit SFP ports and 2 10/100/1000Base-TX RJ45 ports
**S2-S7: 0.5U Module**

XX = None

4GX = SM6.6-4GX-0.5U-V1.0, 0.5U Module with 4 Gigabit SFP ports (Only available for SICOM6028GP)

4GE = SM6.6-4GE-0.5U-V1.0, 0.5U Module with 4 Gigabit10/100/1000Base-TX RJ45 ports (Only available for SICOM6028GP)

2GX2GE = SM6.6-2GX-2GE-0.5U-V1.0, 0.5U Module with 2 Gigabit10/100/1000Base-TX RJ45 ports and 2 Gigabit SFP ports (Only available for SICOM6028GP)

4GX = SM6.6-4GX-0.5U-V1.0, 0.5U Module with 4 Gigabit SFP ports (Only available for SICOM6028GP)

4GE = SM6.6-4GE-0.5U-V1.0, 0.5U Module with 4 Gigabit10/100/1000Base-TX RJ45 ports (Only available for SICOM6028GP)

2GX2GE = SM6.6-2GX-2GE-0.5U-V1.0, 0.5U Module with 2 Gigabit10/100/1000Base-TX RJ45 ports and 2 Gigabit SFP ports (Only available for SICOM6028GP)

2SSC2T = SM6.6-2S-SC-1310-60-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 60km, SC connector and 2 10/100Base-TX RJ45 ports

2SST2T = SM6.6-2S-ST-1310-60-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 60km, ST connector and 2 10/100Base-TX RJ45 ports

2SFC2T = SM6.6-2S-FC-1310-60-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 60km, FC connector and 2 10/100Base-TX RJ45 ports

2SSC60 = SM6.6-2S-SC-1310-60-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 60km, SC connector and 2 10/100Base-TX RJ45 ports

2SSC80 = SM6.6-2S-SC-1550-80-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1550nm, 80km, SC connector and 2 10/100Base-TX RJ45 ports

2MSC2T = SM6.6-2M-SC-1310-5-0.5U-V1.0, 0.5U Module with 2 100Base-FX multimode fiber ports, 1310nm, 5km ,SC connector and 2 10/100Base-TX RJ45 ports

2MST2T = SM6.6-2M-ST-1310-5-0.5U-V1.0, 0.5U Module with 2 100Base-FX multimode fiber ports, 1310nm, 5km ,ST connector and 2 10/100Base-TX RJ45 ports

2MFC2T = SM6.6-2M-FC-1310-5-0.5U-V1.0, 0.5U Module with 2 100Base-FX multimode fiber ports, 1310nm, 5km ,FC connector and 2 10/100Base-TX RJ45 ports

**Accessories**

DT-GPS-ANT-01 = GPS Antenna

DT-SP-01 = GPS Surge Protection AR21T

DT-LMR400-20-TNC-BNC = 20m coaxial cable with BNC(male) to TNC(male) adaptor

DT-LMR400-2-TNC-BNC = 2m coaxial cable with BNC(male) to TNC(male) adaptor

GPT Module Puller

DT-XL-Mini-USB-USB-2m = 2M USB Console Cable

Patch Cord Organizers (One Pair)

DT-BNC(K)-TNC(K) = BNC (female) to TNC (female) connector

**Example Order Codes**

SICOM6028GP-HI-HI-4GX1U-4GX-4GX-4GX-4GX-4GX

2SSC2T = SM6.6-2S-SC-1310-60-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 40km, SC connector and 2 10/100Base-TX RJ45 ports

2SST2T = SM6.6-2S-ST-1310-60-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 40km, ST connector and 2 10/100Base-TX RJ45 ports

2SFC2T = SM6.6-2S-FC-1310-60-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 40km, FC connector and 2 10/100Base-TX RJ45 ports

2SSC602T = SM6.6-2S-SC-1310-60-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1310nm, 60km, SC connector and 2 10/100Base-TX RJ45 ports

2SSC802T = SM6.6-2S-SC-1550-80-2T-0.5U-V1.0, 0.5U Module with 2 100Base-FX single mode fiber ports, 1550nm, 80km, SC connector and 2 10/100Base-TX RJ45 ports

Example Order Codes

SICOM6028GP-HI-HI-4GX1U-4GX-4GX-4GX-4GX-4GX

SICOM6028GP with 28G SFP ports and dual redundant 85-264VAC/77-370VDC power supplies
SICOM6000 is modular layer 3 managed industrial Ethernet switch for Din Rail installation. It offers 4 combo Gigabit SFP slots or 10/100/1000Base-T(X) ports, 24 100M copper/fiber ports or 12 RS232/RS485 serial ports. SICOM6000 also comes with EMC industrial level 4 design and complies with IP40 protection class. Based on Kyvision 3.0, CLI, WEB interface, it offers concentrated management. The state-of-the-art OPC software enables the switch's management embedded in various industrial systems.

**Features & Benefits**

- Redundancy Technology: supports DT-Ring protocols (recovery time<50ms), MSTP and VRRP
- Routing Protocol: supports RIPv1/v2, OSPFv2, BGPv4 and static routing protocol
- Network Partition: supports VLAN, GVRP
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2, RMON, NT, LLDP, DHCP
- Network Security: supports ACL
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring
- Alarm Output: supports port, power and ring alarms

**Technical Specifications**

**Standard**
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

**Protocols**
DT-Ring, DT-Ring+, DT-VLAN, MSTP, VRRP;
IGMP, IGMP Snooping, PIM-SM, PIM-DM, DVMRP;
RIPv1/v2, OSPFv2, BGPv4;
VLAN, GVRP;
Telnet, HTTP, SNMPv1/v2, RMON, LLDP, BootP, NT, DHCP;
server/relay/client;
ACL;
FTP, TFTP, Syslog;
ARP, QoS, LACP

**Switch Properties**
Priority Queues: 8
Number of VLANs: 4K
VLAN ID: 1-4094
Number of Multicast Groups: 256
Routing Table: 30K
MAC Table: 16K
Packet Buffer: 512Mbit
Packet Forwarding Rate: 9.5Mpps
Switching Delay: <5μs
### Interface
- 1 slot for master switching module
- 1 slot for power module
- 1 slot for 4-port Gigabit Combo interface module
- 3 slots for 8-port Fast Ethernet interface modules or 4-port serial interface modules

**Gigabit Ethernet Ports:** 4 combo 1000Base SFP slots or 10/100/1000Base-TX ports
**Fast Ethernet Ports:** max 24 100Base-FX SFP slots or 24 10/100Base-TX RJ45 ports
**Serial Port:** max 12 RS232/RS485 ports, 20-pin 3.81-mm-spacing plug-in terminal block in each serial interface module
**Console Port:** RS232 (RJ45 connector)
**Alarm Contact:** 3-pin 3.81-mm-spacing plug-in terminal block, 250VAC/350VDC Max, 2A Max, 60W Max

### LED
- LEDs on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
  - Power LED: PWR1, PWR2
- LEDs showing the connection status of interface modules: L1 to L4
- Interface LED: Link/ACT, TX1-TX4 (serial port), RX1-RX4 (serial port)

### Transmission Distance
- Serial Cable: RS232, 15m; RS422/RS485, 1200m
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 2km (100M)
  - 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 40km (100M)
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

### Power Requirements
- Power Input:
  - 24DC (18-36VDC), 48DC (36-72VDC)
- Power Terminal:
  - 5-pin 5.08-mm-spacing plug-in terminal block
- Power Consumption: <35W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

### Physical Characteristics
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 320x165.5x236 mm (12.60x6.52x9.29 in.)
- Weight: <7kg (15.432 pound)
- Mounting: DIN-Rail or panel mounting

### Environmental Limits
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

### MTBF
- 251,487 hrs

### Warranty
- 5 years

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### Approvals
- CE, FCC

### Industrial Standard
- **EMI:**
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±3kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4KV/CM; Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

- **EMS:**
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
  - Industry: IEC61000-6-2
  - Railway: EN50155, EN50121-4
  - Traffic Control: NEMA TS-2

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### Mechanical Drawing
Ordering Information

SICOM6000 - _______ - _______ - _______ - _______ - _______

G         S1        S2        S3       PS

G: Gigabit Ports
XX = No Gigabit port
4G = SM6.1-4GX/GE, Interface module with 4 combo Gigabit SFP slots or 10/100/1000Base-T(X) RJ45 ports

S1 to S3: Slot 1-3
XX = None
8T = SM6.1-8T, Interface module with 8 x 10/100Base-T(X) ports, RJ45 connector
8F = SM6.1-8FX-SFP, Interface module with 8 x 100Base SFP slots

PS: Power Supply
24DC = SM6.1-Power-24, Power supply module of 24VDC (18-36VDC), dual redundant power inputs
48DC = SM6.3-Power-48, power supply module of 48VDC (36-72VDC), dual redundant power inputs

Example Order Codes
SICOM6000-4G-8T-8T-8T-24DC

4GX/GE combo ports, 24 10/100Base-TX RJ45 ports, 24DC(18-36VDC) power supply with dual redundant power inputs
Layer 2 IEC61850 Rack Mountable Industrial Ethernet Switches

**SICOM3028GPT**
**SICOM3424PT**

**Overview**

SICOM3028GPT/SICOM3424PT series are members of Kyland intelligent modular platform SICOM GPT series which is an All-in-One solution integrating IEEE1588v2, SyncE, full gigabit, and both layer 2 & Layer 3 availability specifically designed to operate reliably in electrically harsh and climatically demanding utility substation and industrial environments. SICOM GPT Series is equipped with a Kyland patent IEC62439-6 ring protocol which enables less than 20ms recovery time. It also supports DT-Ring, RSTP/STP, and MSTP. Mini USB console port enables configuration easy backup and restore. SICOM GPT series has a GPS module, enabling the device to function as the clock source - offering accurate timing information obtained from GPS or Beidou GPS satellites. It also supports IRIG-B input and output modules which enable the customer to synchronize the whole system with large numbers of IRIG-B devices with accurate timing information. The new SICOM GPT series is fully compliant with IEC61850-3 and IEEE1613 standards (KEMA certification in progress).

**Features & Benefits**

- **Supports** IEEE1588v2
- **Supports** ITU-T. G. 8261/G. 8262 (SyncE)
- **1U modular design for easy expansion, and supports max 28 Gigabit ports or 4 Gigabit ports and 24 fast Ethernet ports**
- **Supports** IEC62439-6, DT-Ring protocols and MSTP
- **Extensible GPS and IRIG-B input/output modules**
- Provides Mini USB Console port, supports setting backup and recovery through USB
- **Supports** VCT (Virtual Cable Test)
- **Exceeds** IEC61850-3 and IEEE1613
- **KEMA** (pending), CE, FCC certificates
Technical Specifications

**Standard**
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1x, IEEE802.1x, IEEE1588v2, IEC62439-6, ITU-T G.8261/G. 8262

** Protocols**
DT-Ring, DT-Ring+, DT-VLAN, MSTP, DRP;
IGMP Snooping, GMRP,
VLAN, GVRP, PVLAN;
Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, Bootp, DHCP server/relay/client, DHCP Option 82;
SNTP, PTP, RTC;
SSH, SSL, TACACS+, RADIUS, ACL;
FTP, TFTP, Syslog;
ARP, Modbus TCP, QoS, LACP.

**Switch Properties**
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 16K
Packet Buffer: 12Mbit
Packet Forwarding Rate: 41.7Mpps (SICOM3028GPT), 9.5Mpps (SICOM3424PT)
Switching Delay: <5μs

**Interface**
1 1U slot for 4-port Gigabit interface module (1000Base SFP or 10/100/1000Base-TX port)
6 0.5U slots for 4-port Gigabit/Fast Ethernet interface modules
Gigabit Ethernet Ports: max 28 1000Base SFP slots or 28 10/100/1000Base-TX R4S ports
Fast Ethernet Ports: max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24 10/100Base-TX R4S ports
Console Port: Mini USB
USB Interface: USB2.0
Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
1) LEDs on Front Panel:
Running LED: Run
Alarm LED: Alarm
Power LED: PWR1, PWR2
Synchronization Finish LED: Lock
2) LEDs on Rear Panel:
Interface LED: Link/ACT
Port Speed LED: Speed
Data Transmitting and Receiving LED: Data (on IRIG-B interface module)

**Transmission Distance**
Twisted Pair:
100m (Standard Cat5, CAT5e network cable)
500m, 550m (1000M)
850m, 550m (1000M)

Single Mode Fiber:
1310nm, 40km (100M)
1550nm, 80km (100M)
1310nm, 10km (40km (100M))
1550nm, 80km (100M)

**Power Requirements**
Power Input:
24VDC (18-36VDC), 48VDC (36-72VDC), 220VAC/DC (85-264VAC/77-370VDC)
Power Terminal:
5-pin 5.08mm-spacing plug-in terminal block
Power Consumption:
<28W (full RJ45 ports), <42W (full fiber ports)
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Metal, fanless
Protection Class: IP40
Dimensions (W×H×D): 482.6×44×360 mm (19×1.73×14.17 in.)
Weight: <10kg (22.046 pound)
Mounting: 19 inch 1U Rack mounting

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
359,000 hrs

**Warranty**
5 years

**Approvals**
KEMA (pending), CE, FCC

**Industrial Standard**
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
IEC61000-4-9 (Pulsed magnetic field): 1000A/m
IEC61000-4-10 (Damped oscillation): 100A/m
IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Power: IEC61850-3, IEEE1613
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2
Model Chassis: Chassis and Power Supplies

**SICOM3028GPT-24-XX** = SICOM3028GPT-MB-24DC-V1.0, SICOM3028GPT Chassis with 24VDC(18-36VDC) power supply

**SICOM3028GPT-24-24** = SICOM3028GPT-MB-24DC-24DC-V1.0, SICOM3028GPT Chassis with dual redundant 24VDC(18-36VDC) power supplies

**SICOM3028GPT-48-XX** = SICOM3028GPT-MB-48DC-V1.0, SICOM3028GPT Chassis with 48VDC(36-72VDC) power supply

**SICOM3028GPT-48-48** = SICOM3028GPT-MB-48DC-48DC-V1.0, SICOM3028GPT Chassis with dual redundant 48VDC(36-72VDC) power supplies

**SICOM3028GPT-HI-XX** = SICOM3028GPT-MB-220AC/DCW-V1.0, SICOM3028GPT Chassis with 85-264VAC/77-370VDC power supply

**SICOM3028GPT-HI-HI** = SICOM3028GPT-MB-220AC/DCW-220AC/DCW-V1.0, SICOM3028GPT Chassis with dual redundant 85-264VAC/77-370VDC power supplies

**SICOM3424PT-24-XX** = SICOM3424PT-MB-24DC-V1.0, SICOM3424PT Chassis with 24VDC(18-36VDC) power supply

**SICOM3424PT-24-24** = SICOM3424PT-MB-24DC-24DC-V1.0, SICOM3424PT Chassis with dual redundant 24VDC(18-36VDC) power supplies

**SICOM3424PT-48-XX** = SICOM3424PT-MB-48DC-V1.0, SICOM3424PT Chassis with 48VDC(36-72VDC) power supply

**SICOM3424PT-48-48** = SICOM3424PT-MB-48DC-48DC-V1.0, SICOM3424PT Chassis with dual redundant 48VDC(36-72VDC) power supplies

**SICOM3424PT-HI-XX** = SICOM3424PT-MB-220AC/DCW-V1.0, SICOM3424PT Chassis with 85-264VAC/77-370VDC power supply

**SICOM3424PT-HI-HI** = SICOM3424PT-MB-220AC/DCW-220AC/DCW-V1.0, SICOM3424PT Chassis with dual redundant 85-264VAC/77-370VDC power supplies

**S1: 1U Module**

XX = None

4GX1U = SM6.6-4GX-1U-V1.0, 1U Module with 4 Gigabit SFP ports

4GE1U = SM6.6-4GE-1U-V1.0, 1U Module with 4 Gigabit 10/100/1000Base-TX RJ45 ports

2GX2GE1U = SM6.6-2GX-2GE-1U-V1.0, 1U module with 2 Gigabit SFP ports and 2 10/1000Base-TX RJ45 ports

Ordering Information

<table>
<thead>
<tr>
<th>Slot</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
<th>S6</th>
<th>S7</th>
<th>PS</th>
</tr>
</thead>
</table>

Model Chassis: Chassis and Power Supplies
### 52-S7: 0.5U Module

**XX** = None

- **4GX** = SM6.6-4GX-0.5U-V1.0, 0.5U Module with 4 Gigabit SFP ports (Only available for SICOM3028GPT)
- **4GE** = SM6.6-4GE-0.5U-V1.0, 0.5U Module with 4 Gigabit 10/100/1000Base-TX RJ45 ports (Only available for SICOM3028GPT)
- **2GX2GE** = SM6.6-2GX-2GE-0.5U-V1.0, 0.5U Module with 2 Gigabit 10/100Base-TX RJ45 ports and 2 Gigabit SFP ports (Only available for SICOM3028GPT)

<table>
<thead>
<tr>
<th>Ports Type</th>
<th>Fibers</th>
<th>Distance</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigabit SFP ports and 2 100Base-FX multimode fiber ports, 1310nm, 5km</td>
<td>4MFC</td>
<td>2MFC2T</td>
<td>FC connector</td>
</tr>
<tr>
<td>Gigabit SFP ports and 2 100Base-FX multimode fiber ports, 1310nm, 5km</td>
<td>4MST</td>
<td>2MST2T</td>
<td>ST connector</td>
</tr>
<tr>
<td>Gigabit SFP ports and 2 100Base-FX single mode fiber ports, 1310nm, 40km</td>
<td>4MSC</td>
<td>2MSC2T</td>
<td>SC connector</td>
</tr>
</tbody>
</table>

### Accessories

- **DT-GPS-ANT-01** = GPS Antenna
- **DT-SP-01** = GPS Surge Protection AR21T
- **DT-LMR400-20-TNC-BNC** = 20m coaxial cable with BNC(male) to TNC(male) adaptor
- **DT-LMR400-2-TNC-BNC** = 2m coaxial cable with BNC(male) to TNC(male) adaptor
- **DT-XL-Mini-USB-USB-2m** = 2M USB Console Cable
- **DT-GPS-ANT-01** = GPS Antenna
- **DT-LMR400-20-TNC-BNC** = 20m coaxial cable with BNC(male) to TNC(male) adaptor
- **DT-LMR400-2-TNC-BNC** = 2m coaxial cable with BNC(male) to TNC(male) adaptor
- **DT-XL-Mini-USB-USB-2m** = 2M USB Console Cable
- **Patch Cord Organizers (One Pair)**
- **DT-BNC(K)-TNC(K)** = BNC (female) to TNC (female) connector

### Example Order Codes

- **SICOM3028GPT-HI-HI-4GX1U**
- **SICOM3028GPT-28G** = 28G SFP ports and dual redundant 85-264VAC/77-370VDC power supplies
SICOM3028GP
SICOM3424P

Layer 2 IEC61850 Rack Mountable Industrial Ethernet Switches

Overview

SICOM3028GP/SICOM3424P are members of Kyland intelligent modular platform SICOM GPT series which is an All-in-One solution integrating IEEE1588v2, SyncE, full gigabit, and both layer 2 & Layer 3 availability specifically designed to operate reliably in electrically harsh and climatically demanding utility substation and industrial environments. SICOM3028GP/SICOM3424P are equipped with Kyland patent IEC62439-6/DRP ring protocol which enables less than 20ms recovery time. It also supports DT-Ring, RSTP/STP and MSTP. Mini USB console port enables configuration easy backup and restore. SICOM GPT series is fully compliant with IEC61850-3 and IEEE1613 standards (KEMA certification in progress).

Supporting up to 28 Gigabit/100M Ethernet ports, the SICOM3028GP/SICOM3424P series has one 1U Gigabit slot for 4 Gigabit uplink ports, and 6 0.5U slots with 4 Gigabit or 100M ports on each module. With all high density ports being on rear panel, Kyland GPT series is 1U height with only 360mm depth. Fully modular design offers the maximum flexibility for easy expansion. SICOM3028GP/SICOM3424P deliver great bandwidth, SFP expansions, network redundancy technology, management features, a fanless design, a wide operating temperature range of -40 to 85°C, and future proof protection of your industrial network.

Features & Benefits

- Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocols (recovery time<50ms) and MSTP
- Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
- Network Partition: supports VLAN, GVRP, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP
- Network Security: supports MAC address binding with port, IEE802.1X, SSH, SSL, TACACS+, RADIUS, ACL
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring, VCT (Virtual Cable Test)
- Alarm Output: supports IP/MAC conflicts, power, temperature, port and ring alarms
- Special Function: supports Link Check and Loop Status Check

Layer 2 28G/24+4G Port Full Gigabit Managed Rack Mountable Modular IEC61850 Switch

- 1U modular design for easy expansion, and supports max 28 Gigabit ports or 4 Gigabit ports and 24 fast Ethernet ports
- Supports IEC62439-6, DT-Ring protocols and MSTP
- Provides Mini USB Console port; supports setting backup and recovery through USB
- Supports VCT (Virtual Cable Test)
- Exceeds IEC61850-3 and IEEE1613
- KEMA (pending), CE, FCC certificates
Technical Specifications

**Standard**
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s, IEEE802.1x, IEC62439-6

**Protocols**
- DT-Ring, DT-Ring+, DT-VLAN, MSTP, DRP;
- IGMP Snooping, GMRP;
- VLAN, GVRP, PVLAN;
- Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, Bootstrap, DHCP
- server/snooping/client, DHCP Option 82;
- NTP, RT, S
- SSH, SSL, TACACS+, RADIUS, ACL;
- FTP, TFTP, Syslog;
- ARP, Modbus TCP, QoS, LACP

**Switch Properties**
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 16K
- Packet Buffer: 1.2Mbit
- Packet Forwarding Rate: 41.7Mpps (SICOM3028GP), 9.5Mpps (SICOM3424P)
- Switching Delay: <5μs

**Interface**
- 1 1U slot for 4-port Gigabit interface module (1000Base SFP, 10/100/1000Base-TX)
- 6 0.5U slots for 4-port Gigabit/Fast Ethernet interface modules
- Gigabit Ethernet Ports: max 28 1000Base SFP slots or 28 10/100/1000Base-TX RJ45 ports
- Fast Ethernet Ports: max 24 100Base-FX, 5M/MM ports, FC/SC/ST connector or 24 10/100Base-TX RJ45 ports
- Console Port: Mini USB
- USB Interface: USB2.0
- Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
- 1) LEDs on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed
- 2) LEDs on Rear Panel:
  - Interface LED: Link/ACT
  - Port Speed LED: Speed

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CATSe network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
  - 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)
  - 1310nm, 10km/40km (100M)
  - 1550nm, 60km/80km (100M)

**Power Requirements**
- Power Input: 24VDC (18-36VDC), 48VDC (36-72VDC), 220VAC/DC (85-264VAC/77-370VDC)
- Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption: <26W (full RJ45 ports), <40W (full fiber ports)
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Metal, fanless Protection Class: IP40
- Dimensions (WxHxD): 482.6×44×360 mm (19×1.73×14.17 in.)
- Weight: <10kg (22.046 pound)
- Mounting: 19 inch 1U Rack mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 359,000 hrs

**Warranty**
- 5 years

**Approvals**
- KEMA (pending), CE, FCC

**Industrial Standard**
- EMI:
  - FCC CFR47 Part 15, EN50022/CISPR22, Class A
  - EN50155, EN50121-4
  - IEC61850-3, IEEE1613
  - Traffic Control: NEMA T5-2

- EMS:
  - IEC61000-4-2 (ESD): ±6kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±6kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±3kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (1kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
  - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
  - IEC61000-4-10 (Damped oscillation): 100A/m
  - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)

- Industry: IEC61000-6-2
- Power: IEC61850-3, IEEE1613
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA T5-2
**Ordering Information**

<table>
<thead>
<tr>
<th>Model Chassis</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
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<th>S6</th>
<th>S7</th>
<th>PS</th>
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<tr>
<td>SICOM3028GP-24-XX</td>
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</table>

**Model Chassis: Chassis and Power Supplies**

- SICOM3028GP-24-XX: SICOM3028GP-MB-24DC-V1.0, SICOM3028GP Chassis with 24VDC(18-36VDC) power supply
- SICOM3028GP-24-24: SICOM3028GP-MB-24DC-24DC-V1.0, SICOM3028GP Chassis with dual redundant 24VDC(18-36VDC) power supplies
- SICOM3028GP-48-XX: SICOM3028GP-MB-48DC-V1.0, SICOM3028GP Chassis with 48VDC(36-72VDC) power supply
- SICOM3028GP-48-48: SICOM3028GP-MB-48DC-48DC-V1.0, SICOM3028GP Chassis with dual redundant 48VDC(36-72VDC) power supplies
- SICOM3028GP-HI-XX: SICOM3028GP-MB-220AC/DCW-V1.0, SICOM3028GP Chassis with 85-264VAC/77-370VDC power supply
- SICOM3028GP-HI-HI: SICOM3028GP-MB-220AC/DCW-220AC/DCW-V1.0, SICOM3028GP Chassis with dual redundant 85-264VAC/77-370VDC power supplies
- SICOM3424P-24-XX: SICOM3424P-MB-24DC-V1.0, SICOM3424P Chassis with 24VDC(18-36VDC) power supply
- SICOM3424P-24-24: SICOM3424P-MB-24DC-24DC-V1.0, SICOM3424P Chassis with dual redundant 24VDC(18-36VDC) power supplies

**S1: 1U Module**

- XX: None
- 4GX1U: SM6.6-4GX-1U-V1.0, 1U Module with 4 Gigabit SFP ports
- 4GE1U: SM6.6-4GE-1U-V1.0, 1U Module with 4 Gigabit 10/100/1000Base-TX RJ45 ports
- 2GX2GE1U: SM6.6-2GX-2GE-1U-V1.0, 1U module with 2 Gigabit SFP ports and 2 10/100/1000Base-TX RJ45 ports
S2-S7: 0.5U Module

**XX** = None

- **4GX** = SM6.6-4GX-0.5U-V1.0, 0.5U Module with 4 Gigabit SFP ports (Only available for SICOM3028GP)
- **4GE** = SM6.6-4GE-0.5U-V1.0, 0.5U Module with 4 Gigabit10/100/1000Base-TX RJ45 ports (Only available for SICOM3028GP)
- **2GX2GE** = SM6.6-2GX-2GE-0.5U-V1.0, 0.5U Module with 2 Gigabit10/100/1000Base-TX RJ45 ports and 2 Gigabit SFP ports (Only available for SICOM3028GP)

- **4GX** = SM6.6-4GX-0.5U-V1.0, 0.5U Module with 4 10/100/1000Base-TX RJ45 ports (Only available for SICOM3028GP)
- **4SSC** = SM6.6-4S-SC-1310-40-40-0.5U-V1.0, 0.5U Module with 4 100Base-FX single mode fiber ports, 1310nm, 40km, SC connector
- **4SSC60** = SM6.6-4S-SC-1310-60-40-0.5U-V1.0, 0.5U Module with 4 100Base-FX single mode fiber ports, 1310nm, 60km, SC connector
- **4SSC80** = SM6.6-4S-SC-1310-80-40-0.5U-V1.0, 0.5U Module with 4 100Base-FX single mode fiber ports, 1310nm, 80km, SC connector
- **4MSC** = SM6.6-4M-SC-1310-5-40-0.5U-V1.0, 0.5U Module with 4 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connector
- **2GX2SSC60** = SM6.6-2GX-2S-SC-1310-60-40-0.5U-V1.0, 0.5U Module with 2 Gigabit SFP ports and 2 100Base-FX single mode fiber ports, 1310nm, 60km, SC connector

**Accessories**

- **DT-GPS-ANT-01** = GPS Antenna
- **DT-SP-01** = GPS Surge Protection AR21T
- **DT-LMR400-20-TNC-BNC** = 20m coaxial cable with BNC(male) to TNC(male) adaptor
- **DT-LMR400-2-TNC-BNC** = 2m coaxial cable with BNC(male) to TNC(male) adaptor
- **DT-MLX-Mini-USB-USB-2m** = 2M USB Console Cable
- **DT-MLX-Mini-USB-USB-2m** = 2M USB Console Cable
- **Patch Cord Organizers (One Pair)**
- **DT-BNC(K)-TNC(K)** = BNC (female) to TNC (female) connector

**Example Order Codes**

- **SICOM3028GP-HI-HI-4GX1U-4GX-4GX-4GX-4GX**
- **SICOM3028GP-HI-HI-4GX1U-4GX-4GX-4GX-4GX**

**Example Order Codes**

- **SICOM3028GP** with 28G SFP ports and dual redundant 85-264VAC/77-370VDC power supplies
SICOM3024P

Overview

SICOM3024P is a KEMA approved IEC61850 compliant managed industrial Ethernet switch specifically designed to operate stably in electrically harsh and climatically demanding utility substation and industrial environments. It offers up to 24 100Base TP/fiber ports, 4 Gigabit SFP slots or 10/100/1000Base-T(X) ports. The redundant function of optical fiber network, independent entire network management channel, redundant power supplies function, and entire network real-time management system provide multiplex guarantee for reliable operation of the system.

SICOM3024P V3.1 is a new hardware version with internal modular design and smaller dimension on the depth. The new hardware supports optional 1 Gigabit slot and 3 100M slots. 4 Gigabit fiber/copper ports are supported on the Gigabit slot, and 8 100M fast Ethernet with flexible combination of fiber and copper ports are supported on each 100M slot. The physical dimension of the new hardware on the depth has also been shortened from 420mm to 322.5mm enabling a much bigger flexibility for field physical limitations.

Features & Benefits

- Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
- Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
- Network Partition: supports VLAN, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP, RTC
- Network Security: supports DT-Psec, SSH, SSL, ACL
- Device Management: supports FTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring
- Alarm Output: supports IP/MAC conflicts, power, temperature, port and ring alarms
- Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE802.1p, IEEE 802.1Q, IEEE 802.1s

Protocols
DT-Ring, DT-Ring+, DT-VLAN, MSTP; IGMP Snooping, GMRP; VLAN, PVLAN; Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, DHCP, server, SNTP, RTC, DT-Psec, SSH, SSL, ACL; FTP, Syslog; ARP, QoS
Switch Properties
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 4Mbit
- Packet Forwarding Rate: 9.5Mpps
- Switching Delay: <5μs

Interface
- Gigabit Ethernet Ports: 4 1000Base SFP slots or 4 10/100/1000Base-TX RJ45 ports
- Fast Ethernet Ports: max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24 10/100Base-TX RJ45 ports
- Console Port: RS232 (RJ45 connector)
- Alarm Contact: 3-pin 5.08mm spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

LED
- LEDs on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
  - Interface LED: Link/ACT (Fast Ethernet port), Speed (Fast Ethernet port), DPX (Gigabit port), Link (Gigabit port)
- LEDs on Rear Panel:
  - Interface LED: Link/ACT
  - Port Speed LED: Speed

Transmission Distance
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber: 1310nm, 5km (100M), 850nm, 550m (1000M)
- Single Mode Fiber: 1310nm, 40km/60km (100M), 1550nm, 60km/80km (1000M)

Power Requirements
- Power Input:
  - 24VDC (18-36VDC), 48VDC (36-72VDC), 220VAC/DCW (85-264VAC/77-300VDC)
- Power Terminal: 5-pin 5.08mm spacing terminal block
- Power Consumption: <35W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

Physical Characteristics
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 482.6x44x322.5mm (19x1.73x12.69 in.)
- Weight: <4kg (8.818 pound)
- Mounting: 19 inch 1U Rack mounting

Environmental Limits
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
346,889 hrs

Warranty
5 years

Approvals
KEMA, State Grid (A type), CE, FCC

Industrial Standard
- EMI:
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
  - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
  - IEC61000-4-10 (Damped oscillation): 100A/m
  - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)

Industry: IEC61100-6-2
- Power: IEC61850-3, IEEE1613
- Railway: ENS0155, ENS0121-4
- Traffic Control: NEMA TS-2
  - Power: IEC61850-3, IEEE1613
  - Railway: ENS0155, ENS0121-4
  - Traffic Control: NEMA TS-2

Mechanical Drawing
Model Chassis: Chassis and power supplies

SICOM3024P-24-XX = SICOM3024P Chassis with 24VDC(18-36VDC) single power supply
SICOM3024P-24-24 = SICOM3024P Chassis with 24VDC(18-36VDC) dual redundant power supplies
SICOM3024P-48-XX = SICOM3024P Chassis with 48VDC(36-72VDC) single power supply
SICOM3024P-48-48 = SICOM3024P Chassis with 48VDC(36-72VDC) dual redundant power supplies
SICOM3024P-HI-XX = SICOM3024P Chassis with 220AC/DCW(85-265VAC/77-300VDC) single power supply
SICOM3024P-HI-HI = SICOM3024P Chassis with 220AC/DCW(85-265VAC/77-300VDC) dual redundant power supplies

S4: Uplink ports
XX = No Gigabit port
4GX = 4 Gigabit SFP ports
4GE = 4 10/100/1000Base-TX RJ45 ports
4T = 4 10/100Base-TX RJ45 ports

S1-S3: Slot 1 to Slot 3
XX = No interface module (Only one of the 3 slots can be none)
8MSC = Interface module with 8 100Base-FX multimode fiber ports, 1310nm, 5km, SC connector
8MST = Interface module with 8 100Base-FX multimode fiber ports, 1310nm, 5km, ST connector
8MF = Interface module with 8 100Base-FX multimode fiber ports, 1310nm, 40km, FC connector
8SC = Interface module with 8 100Base-FX singlemode fiber ports, 1310nm, 80km, SC connector
8ST = Interface module with 8 100Base-FX singlemode fiber ports, 1310nm, 80km, ST connector
8FC = Interface module with 8 100Base-FX singlemode fiber ports, 1310nm, 40km, FC connector
8SC60 = Interface module with 8 100Base-FX singlemode fiber ports, 1310nm, 60km, SC connector
8SC80 = Interface module with 8 100Base-FX singlemode fiber ports, 1310nm, 80km, SC connector
6MSC2T = Interface module with 6 100Base-FX multimode fiber ports, 1310nm, 5km, SC connector, 2 10/100Base-TX RJ45 ports
6MST2T = Interface module with 6 100Base-FX multimode fiber ports, 1310nm, 5km, ST connector, 2 10/100Base-TX RJ45 ports
6MF2T = Interface module with 6 100Base-FX multimode fiber ports, 1310nm, 40km, FC connector, 2 10/100Base-TX RJ45 ports
6SC2T = Interface module with 6 100Base-FX singlemode fiber ports, 1310nm, 40km, SC connector, 2 10/100Base-TX RJ45 ports
6ST2T = Interface module with 6 100Base-FX singlemode fiber ports, 1310nm, 40km, ST connector, 2 10/100Base-TX RJ45 ports
6FC2T = Interface module with 6 100Base-FX singlemode fiber ports, 1310nm, 40km, FC connector, 2 10/100Base-TX RJ45 ports

Example Order Codes
SICOM3024P-HI-HI-XX-8T-4MST4T-XX
4 100Base-FX multi mode fiber ports with ST connectors 1310nm 5km, 12 10/100Base TX RJ45 ports, and dual redundant 220AC/DCW(85-265VAC/77-300VDC) power supplies.

Note: The part number on the product label will still be SICOM3024P-4M-12T in order to be compliant with previous version.
SICOM3024PT is a precise clock synchronization solution of IEC61850 compliant managed industrial Ethernet switch specifically designed to operate stably in electrically harsh and climatically demanding utility substation and industrial environments. It offers up to 24 100Base TP/fier ports, 4 Gigabit SFP slots or 10/100/1000Base-T(X) ports. The redundant function of optical fiber network, independent entire network management channel, dual redundant power supplies function, and entire network real-time management system provide multiplex guarantee for reliable operation of the system.

**Overview**

- **Redundancy Technology:** supports DT-Ring protocols (recovery time<50ms) and RSTP
- **Multicast Protocol:** supports IGMP Snooping, GMRP and static multicast
- **Network Partition:** supports VLAN, PVLAN
- **Service Quality:** supports QoS
- **Bandwidth Management:** supports port trunking, port speed limit, broadcast storm control
- **Network Management and Monitoring:** supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, SNTP, PTP, RTC; SSH, SSL, ACL;
- **Synchronization Protocol:** supports SNTP, IEEE1588v2
- **Network Security:** supports SSH, SSL, ACL
- **Device Management:** supports FTP upgrade, also supports Syslog upload and download
- **Device Maintenance:** supports port mirroring
- **Alarm Output:** supports IP/MAC conflicts, power, temperature, port and ring alarms
- **Special Function:** supports Link Check and Loop Status Check

**Features & Benefits**

- Flexible modular design for easy expansion, and supports max 4 Gigabit ports and 24 fast Ethernet ports
- Supports DT-Ring protocols and RSTP
- Supports IEEE1588v2
- Supports Syslog upload and download
- Exceeds IEC61850-3 and IEEE1613

**Technical Specifications**

**Standard**

IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1w , IEEE1588v2

**Protocols**

DT-Ring, DT-Ring+, DT-VLAN, RSTP; IGMP Snooping, GMRP; VLAN, PVLAN; Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP; SNTP, PTP, RTC; SSH, SSL, ACL; FTP, Syslog; ARP, QoS

**Switch Properties**

- **Priority Queues:** 4
- **Number of VLANs:** 256
- **VLAN ID:** 1-4094
- **Number of Multicast Groups:** 256
- **MAC Table:** 8K
- **Packet Buffer:** 4Mbit
- **Packet Forwarding Rate:** 9.5Mpps
- **Switching Delay:** <5μs

**Interface**

SICOM3024PT-18: 5 1U slots for 4-port or 2-port Fast Ethernet interface modules (100Base-FX, 10/100Base-TX)

SICOM3024PT-28: 1 1U slot for 4-port Gigabit interface module (1000Base SFP, 10/100/1000Base-TX) and 6 1U slots for 4-port Fast Ethernet interface modules (100Base-FX, 10/100Base-TX)

Gigabit Ethernet Ports: 4 1000Base SFP slots or 4 10/100/1000Base-TX RJ45 ports
Fast Ethernet Ports: max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24 10/100Base-TX RJ45 ports
Console Port: RS232 (RJ45 connector)
Alarm Contact: 3-pin 3.81mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
1) LEDs on Front Panel:
- Running LED: Run
- Power LED: PWR1, PWR2
- Interface LED: Link/ACT (Fast Ethernet port), Speed (Fast Ethernet port), DPX (Gigabit port), Link (Gigabit port)
2) LEDs on Rear Panel:
- Interface LED: Link/ACT
- Port Speed LED: Speed

**Transmission Distance**
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
  - 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 60km/60km (100M)
  - 1550nm, 60km/80km (1000M)
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

**Power Requirements**
- Power Input:
  - 24VDC (18-36VDC), 48VDC (36-72VDC), 220VAC/DC (85-264VAC/120-370VDC)
- Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption:
  - <30W (SICOM3024PT-18)
  - <40W (SICOM3024PT-28)
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (W×H×D): 482.6×44×328mm (19×1.73×12.91in.) (SICOM3024PT-18)
  482.6×88×328mm (19×3.46×12.91in.) (SICOM3024PT-28)
- Weight:
  - 3.5kg (7.716 pound) (SICOM3024PT-18)
  - 5kg (11.023 pound) (SICOM3024PT-28)
- Mounting:
  - 19 inch 1U Rack mounting (SICOM3024PT-18)
  - 19 inch 2U Rack mounting (SICOM3024PT-28)

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
333,900 hrs

**Warranty**
5 years

**Approvals**
- CE, FCC

**Industrial Standard**
- EMI:
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±2kV; Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
  - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
  - IEC61000-4-10 (Damped oscillation): 100A/m
  - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Power: IEC61850-3, IEEE1613
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

**Mechanical Drawing**
### Ordering Information

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#### Chassis 18

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<td>S4</td>
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</table>

#### C: Chassis

18 = SICOM3024PT 1U Chassis  
28 = SICOM3024PT 2U Chassis

#### P1 & P2: Power Supply 1 & 2

- **24** = 24VDC (18-36VDC)  
- **110** = 110VDC (77-150VDC)  
- **HI** = 85-264VAC/120-370VDC

#### S1-S6: Slot 1 to Slot 6 100M Slots (Slot 6 is for SICOM3024PT-28 Chassis Only)

XX = None  
2T = Interface module with 2 10/100Base-TX RJ45 ports (only for S5 slot in SICOM3024PT-18 Chassis)  
4T = Interface module with 4 10/100Base-TX RJ45 ports  
2SSC2T = Interface module with 2 single mode fiber ports, 1310nm, 40km, SC connector, 2 10/100Base-TX RJ45 ports  
2SST2T = Interface module with 2 single mode fiber ports, 1310nm, 40km, ST connector, 2 10/100Base-TX RJ45 ports  
2SFC2T = Interface module with 2 single mode fiber ports, 1310nm, 40km, FC connector, 2 10/100Base-TX RJ45 ports  
2SSC602T = Interface module with 2 single mode fiber ports, 1310nm, 60km, SC connector, 2 10/100Base-TX RJ45 ports  
2SSC802T = Interface module with 2 single mode fiber ports, 1550nm, 80km, ST connector, 2 10/100Base-TX RJ45 ports  
2MSC2T = Interface module with 2 multi mode fiber ports, 1310nm, 5km, SC connector, 2 10/100Base-TX RJ45 ports  
2MST2T = Interface module with 2 multi mode fiber ports, 1310nm, 5km, ST connector, 2 10/100Base-TX RJ45 ports  
2MFC2T = Interface module with 2 multi mode fiber ports, 1310nm, 5km, FC connector, 2 10/100Base-TX RJ45 ports  
4SSC = Interface module with 4 single mode fiber port, 1310nm, 40km, SC connector  
4SSC60 = Interface module with 4 single mode fiber port, 1310nm, 40km, SC connector  
4SSC80 = Interface module with 4 single mode fiber port, 1310nm, 40km, ST connector  
4MSC = Interface module with 4 multi mode fiber port, 1310nm, 5km, SC connector  
4MST = Interface module with 4 multi mode fiber port, 1310nm, 5km, ST connector  
4MFC = Interface module with 4 multi mode fiber port, 1310nm, 5km, FC connector  
4GX = Interface module with 4 Gigabit SFP port  
4GE = Interface module with 4 10/100/1000Base-TX, RJ45 ports

#### G: Gigabit Slot (For SICOM3024PT-28 Chassis Only)

XX = None  
4GX = Interface module with 4 Gigabit SFP port

| SICOM3024PT-18-HI-HI-4T-4T-XX-XX |

#### Example Order Codes

- **18** 10/100Base-TX RJ45 ports, and dual redundant 220AC/DC(85-264VAC/120-370VDC) power supplies  
- **28** 4 Gigabit SFP ports, 24 10/100Base-TX RJ45 ports, and dual redundant 220AC/DC(85-264VAC/120-370VDC) power supplies

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KYLAND sales@kyland.com / www.kyland.com
SICOM3024

Layer 2 24+4G Port Managed Rack Mountable IEC61850 Switch

- Supports 4 Gigabit SFP slots, 16 10/100Base-TX ports and 8 Fast Ethernet fiber/RJ45 optional ports
- Supports DT-Ring protocols and MSTP
- Supports power failure alarm
- Exceeds IEC61850-3 and IEEE1613
- CE, FCC certification

Overview

SICOM3024 is a high-performance network-managed industrial Ethernet switch specially designed by KYLAND for industrial applications. Its high-performance switch engine, solid and closed case, high-efficiency single-rib-shape case for heat dissipation without using fans, overcurrent, overvoltage and EMC protection at power input side, and excellent EMC protection of RJ45 port make SICOM3024 applicable in harsh and dangerous industrial environments. The redundant function of optical fiber network, independent entire network management channel, dual redundant power supplies function, and powerful entire network real-time management system provide multiplex guarantee for reliable operation of the system.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports DT-Psec, SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
- IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocols
- DT-Ring, DT-Ring+, DT-VLAN, MSTP;
- IGMP Snooping, GMRP;
- VLAN, PVLAN;
- Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server;
- DT-Psec, SSH, SSL, ACL;
- FTP;
- ARP, QoS

Switch Properties
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 2Mbit
- Packet Forwarding Rate: 9.5Mpps
- Switching Delay: <5μs

Interface
- Gigabit Ethernet Ports: 4 or 2 1000Base SFP slots
- Fast Ethernet Fiber Ports: max 8 100Base-FX, SM/MM ports, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: max 24 10/100Base-TX RJ45 ports
- Console Port: RS232 (RJ45 connector)
LED
1) LEDs on Front Panel:
- Running LED: Run
- Interface LED: Link/ACT (Fast Ethernet port), Speed (Fast Ethernet port), DPX (Gigabit port), Link (Gigabit port)
2) LEDs on Rear Panel:
- Interface LED: Link/ACT
- Port Speed LED: Speed

Transmission Distance
Twisted Pair:
- 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
  - 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (1000M)
  - 1550nm, 60km/80km (1000M)
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

Power Requirements
Power Input:
- 12VDC (9-18VDC), 24VDC (18-36VDC), 48VDC (36-72VDC), 220VAC/DCW (85-264VAC/77-300VDC)
Power Terminal:
- 5-pin 5.08mm-spacing plug-in terminal block
Power Consumption: <21.6W

Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

Physical Characteristics
Housing: Aluminum, fanless
Protection Class: IP40
Dimensions (WxHxD): 482.6x44x245mm (19x1.73x9.65 in.)
Weight: 3kg (6.614 pound)
Mounting: 19 inch 1U Rack mounting

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
318,296 hrs

Warranty
5 years

Approvals
CE, FCC

Industrial Standard
EMI:
- FCC CFR47 Part 15, EN55022/CISPR22, Class A

EMS:
- IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
- IEC61000-4-3 (R5): 10V/m (80MHz-2GHz)
- IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
- IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
- IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
- IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
- IEC61000-4-9 (Pulsed magnetic field): 1000A/m
- IEC61000-4-10 (Damped oscillation): 100A/m
- IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
- IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
- IEC60068-2-6 (Vibration)
- IEC60068-2-27 (Shock)
- IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Power: IEC61850-3, IEEE1613
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

Mechanical Drawing
### Ports

- **4GX-24T**: 4 Gigabit SFP ports, 24 10/100Base-TX RJ45 ports
- **2GX-24T**: 2 Gigabit SFP ports, 24 10/100Base-TX RJ45 ports
- **2GX-2M-16T**: 2 Gigabit SFP ports, 2 100Base-FX multi mode fiber ports, 16 10/100Base-TX RJ45 ports
- **2GX-2S-16T**: 2 Gigabit SFP ports, 2 100Base-FX single mode fiber ports, 16 10/100Base-TX RJ45 ports

### Distance: Fiber Distance

- **1310-5**: 1310nm, 5km
- **1310-40**: 1310nm, 40km
- **1310-60**: 1310nm, 60km
- **1550-80**: 1550nm, 80km

### Connector: Fiber Connector

- **SC**: SC Connector
- **ST**: ST Connector
- **FC**: FC Connector

### PS1 & PS2: Power Supplies 1 & 2

- **XX**: None (power supply 2 only)
- **12DC**: 9-18VDC
- **24DC**: 18-36VDC
- **48DC**: 36-72VDC
- **220AC/DCW**: 85-264VAC/77-300VDC

### Example Order Codes

- **SICOM3024-2GX-24T-24DC-24DC**

  2 Gigabit SFP ports, 24 10/100Base-TX RJ45 ports, dual redundant 24DC(9-18VDC) power supplies
Layer 2 IEC61850 Rack Mountable Industrial Ethernet Switches

SICOM3048

Layer 2 48+4G Port Managed Rack Mountable Modular IEC61850 Switch

Overview

SICOM3048 is a modular network-managed industrial Ethernet switch specially designed by KYLAND for industrial applications. Its high-performance switch engine, solid and closed case, high-efficiency single-rib-shape case for heat dissipation without using fans, over-current, over-voltage and EMC protection at power input side, and excellent EMC protection of RJ45 port allow SICOM3048 to work in harsh and dangerous industrial environments. The redundant function of optical fiber network, independent entire network management channel, redundant power input function, and powerful entire network real-time management system provide multiplex guarantee for reliable operation of the system.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms), RSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1Q

Protocols
DT-Ring, DT-Ring+, DT-VLAN, RSTP;
IGMP Snooping, GMRP;
VLAN, PVLAN;
Telnet, HTTP, SNMPv1/v2/v3, RMON, LLDP, SNTP;
SSH, SSL, ACL;
ARP, FTP, QoS

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 4Mbit
Packet Forwarding Rate: 13.1Mpps
Switching Delay: <5μs

Interface
4 slots for 0.5U 6-port Fast Ethernet interface modules (100Base-FX, 10/100Base-TX)
Gigabit Ethernet Ports: 4 1000Base-SFP slots in SICOM3048 chassis
Fast Ethernet Ports: 24 100Base-TX RJ45 ports in SICOM3048 chassis and max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24 10/100Base-TX RJ45 ports by interface modules
Console Port: RS232 (RJ45 connector)
Alarm Contact: 3-pin 3.81mm-spacing plug-in terminal block, 250VAC/350VDC Max, 120mA Max

**LED**
1) LEDs on Front Panel:
   - Running LED: Run
   - Interface LED: Link/ACT (Fast Ethernet port), Speed (Fast Ethernet port), DPX (Gigabit port), Link (Gigabit port)
2) LEDs on Rear Panel:
   - Interface LED: Link/ACT
   - Port Speed LED: Speed

**Transmission Distance**
Twisted Pair:
- 100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber:
- 1310nm, 5km (100M)
- 850nm, 550m (1000M)
Single Mode Fiber:
- 1310nm, 40km/60km (100M)
- 1550nm, 60km/80km (100M)
- 1310nm, 10km/40km (1000M)
- 1550nm, 60km/80km (1000M)

**Power Requirements**
**Power Input:**
- 24DC (18-36VDC), 48DC (36-72VDC), 110DC (82-185VDC), 220AC/DC (85-264VAC/120-370VDC)
**Power Terminal:**
- 3-pin 3.81mm-spacing plug-in terminal block (24VDC, 48VDC),
- 3-pin 9.5mm-spacing terminal block (110VDC, 220VAC/DC),
- 3-phase AC electric outlet
**Power Consumption:** <36.2W

- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 482.6x88x245 mm (19x3.46x9.65 in.)
- Weight: <5kg (11.023 pound)
- Mounting: 19 inch 2U Rack mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 371,000 hrs

**Warranty**
- 5 years

**Approvals**
- CE, FCC

**Industrial Standard**
- EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
- Machinery: IEC60068-2-6 (Vibration)
- IEC60068-2-27 (Shock)
- IEC60068-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Power: IEC61850-3, IEEE1613
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

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**Mechanical Drawing**
### Ordering Information

<table>
<thead>
<tr>
<th>Fixed 24T</th>
<th>Gigabit Ports</th>
<th>Power Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot 1</td>
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<tr>
<td>Slot 2</td>
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<tr>
<td>Slot 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slot 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### C. Chassis (Gigabit ports and power supply)

- **4GX-24T-24DC** = SICOM3048-4GX-24T-MB-24DC-3x9.5-V1.1, SICOM3048 Chassis with 4 Gigabit SFP ports, fixed 24 x 10/100Base-TX RJ45 ports, 24VDC (18-36VDC) power supply.
- **4GX-24T-48DC** = SICOM3048-4GX-24T-MB-48DC-3x9.5-V1.1, SICOM3048 Chassis with 4 Gigabit SFP ports, fixed 24 x 10/100Base-TX RJ45 ports, 48VDC (36-72VDC) power supply.

- **4GX-24T-110VDC** = SICOM3048-4GX-24T-MB-110DC-3x9.5-V1.1, SICOM3048 Chassis with 4 Gigabit SFP ports, fixed 24 x 10/100Base-TX RJ45 ports, 110VDC (82-185VDC) power supply.
- **4GX-24T-220VAC/DC** = SICOM3048-4GX-24T-MB-220VAC/DC-3x9.5-V1.1, SICOM3048 Chassis with 4 Gigabit SFP ports, fixed 24 x 10/100Base-TX RJ45 ports, 220VAC/DC (85-264VAC/120-300VDC) 50/60Hz power supply.

- **4SST4T** = SM3.2-4S-ST-1310-40-2T-V2.0, Interface module with 4 Gigabit single mode fiber ports, 1310nm, 40km, FC connector, 2 x 10/100Base-TX RJ45 ports.
- **4MSC4T** = SM3.2-4M-ST-1310-40-2T-V2.0, Interface module with 4 Gigabit multi mode fiber ports, 1310nm, 40km, SC connector, 2 x 10/100Base-TX RJ45 ports.

#### Note:
- SICOM3048 only supports single power supply.

Second Table:

<table>
<thead>
<tr>
<th>Slot 1</th>
<th>Slot 2</th>
<th>Slot 3</th>
<th>Slot 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-</td>
<td>S1</td>
<td>S2</td>
</tr>
<tr>
<td>S3</td>
<td>S4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 100M Slots

- **XX** = None
- **S1** = SM3.2-6S-SC-1550-80-2T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1310nm, 80km, SC connector.
- **S2** = SM3.2-6S-ST-1310-60-4T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1310nm, 40km, ST connector.
- **S3** = SM3.2-6S-SC-1550-80-4T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1310nm, 80km, SC connector.
- **S4** = SM3.2-6S-ST-1310-60-4T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1310nm, 40km, ST connector.

**Example Order Codes**

- SICOM3048-4GX-24T-6T-6MSC-4MSC2T-220AC/DC-XX
- SICOM3048-4GX-24T, 2 x SM3.2-6T, 1 SM3.2-6M-SC-1310-S-V2.0, 1 SM3.2-4M-SC-1310-5-T2-V2.0, single power supply 85-264VAC/120-300VDC
SICOM2024M is a Layer 2 IEC61850 Rack Mountable Industrial Ethernet Switch designed by KYLAND for industrial applications. It supports up to 24 10/100Base-T(X) and 4 100Base-FX ports, and it also supports Kyvision 3.0 management software. Its high-performance switch engine, solid and closed case, high-efficiency single-rib-shape case for heat dissipation without using fans, overcurrent, overvoltage and EMC protection and excellent EMC protection of RJ45 port make SICOM2024M applicable in harsh and dangerous industrial environments.

### Overview

- **24 10/100Base-TX RJ45 ports, 4 100Base-FX SM/MM ports**
- **Supports RSTP**
- **Supports power failure alarm**
- **Allows front and rear panel mounting**
- **Exceeds IEC61850-3 and IEEE1613**

### Technical Specifications

**Standard**

- IEEE 802.3i, IEEE 802.3u, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

**Protocols**

- RSTP; IGMP Snooping, GMRP; VLAN, PVLAN; Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server; DT-Psec, SSH, SSL, ACL; FTP; ARP, QoS

**Switch Properties**

- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 4Mbit
- Packet Forwarding Rate: 4.2Mpps
- Switching Delay: <5μs

**Interface**

- Fast Ethernet Fiber Ports: max 4 100Base-FX, SM/MM ports, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: 24 10/100Base-TX RJ45 ports
- Console Port: RS232 (RJ45 connector)
- Alarm Contact: 3-pin 3.81mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

### Features & Benefits

1. Redundancy Technology: supports RSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports DT-Psec, SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power and port alarms
LED
1) LEDs on Front Panel:
   Running LED: Run
   Interface LED: Link/ACT (Fast Ethernet port), Speed (Fast Ethernet port), DPX (Gigabit port), Link (Gigabit port)
2) LEDs on Rear Panel:
   Interface LED: Link/ACT
   Port Speed LED: Speed

Transmission Distance
1) LEDs on Front Panel:
   Running LED: Run
   Alarm LED: Alarm
   Power LED: PWR1, PWR2
   Interface LED: Link/ACT (Fast Ethernet port), Speed (Fast Ethernet port)
2) LEDs on Rear Panel:
   Interface LED: Link/ACT
   Port Speed LED: Speed

Power Requirements
24DC (18-36VDC), 48DC (36-72VDC), 220AC/DCW (85-264VAC/77-300VDC)
Power Terminal:
5-pin 5.08mm-spacing plug-in terminal block
Power Consumption: <16.8W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

Physical Characteristics
Housing: Metal, fanless
Protection Class: IP40
Dimensions (WxHxD):
482.6x44x245mm (19x1.73x9.65 in.)
Weight: 2.5kg (5.512 pound)
Mounting: 19 inch 1U Rack mounting

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
338,566 hrs

Warranty
5 years

Approvals
CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, ENS5022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV/DM, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (CS): ±3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
IEC61000-4-9 (Pulsed magnetic field): 1000A/m
IEC61000-4-10 (Damped oscillation): 100A/m
IEC61000-4-12 (Oscillatory wave): ±2.5kV/CM, 1kV/DM
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Power: IEC61850-3, IEEE1613
Railway: ENS0155, ENS0121-4
Traffic Control: NEMA TS-2

Mechanical Drawing
### Ordering Information

<table>
<thead>
<tr>
<th>Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS1</th>
<th>PS2</th>
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</thead>
<tbody>
<tr>
<td>4M-24T</td>
<td>1310-5</td>
<td>SC</td>
<td>24DC</td>
<td>24DC</td>
</tr>
<tr>
<td>4S-24T</td>
<td>1310-40</td>
<td>ST</td>
<td>48DC</td>
<td></td>
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<tr>
<td>2M-24T</td>
<td>1310-60</td>
<td>FC</td>
<td>220AC/DCW</td>
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</tr>
<tr>
<td>2S-24T</td>
<td>1550-80</td>
<td>XX</td>
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<tr>
<td>2M-16T</td>
<td>1310-5</td>
<td>24DC</td>
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<tr>
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<td>1310-40</td>
<td>48DC</td>
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<tr>
<td>16T</td>
<td>1550-80</td>
<td>XX</td>
<td></td>
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</tr>
</tbody>
</table>

**Ports**
- **4M-24T** = 4 100Base-FX multi mode fiber ports, 24 10/100Base-TX RJ45 ports
- **4S-24T** = 4 100Base-FX single mode fiber ports, 24 10/100Base-TX RJ45 ports
- **2M-24T** = 2 100Base-FX multi mode fiber ports, 24 10/100Base-TX RJ45 ports
- **2S-24T** = 2 100Base-FX single mode fiber ports, 24 10/100Base-TX RJ45 ports
- **2M-16T** = 2 100Base-FX multi mode fiber ports, 16 10/100Base-TX RJ45 ports
- **2S-16T** = 2 100Base-FX single mode fiber ports, 16 10/100Base-TX RJ45 ports
- **24T** = 24 10/100Base-TX RJ45 ports
- **16T** = 16 10/100Base-TX RJ45 ports

**Distance: Fiber Distance**
- 1310-5 = 1310nm, 5km
- 1310-40 = 1310nm, 40km
- 1310-60 = 1310nm, 60km
- 1550-80 = 1550nm, 80km

**Connector: Fiber Connector**
- **SC** = SC Connector
- **ST** = ST Connector
- **FC** = FC Connector

**PS1 & PS2: Power Supplies 1 & 2**
- **XX** = None (power supply 2 only)
- **24DC** = 18-36VDC
- **48DC** = 36-72VDC
- **220AC/DCW** = 85-264VAC/77-300VDC

**Example Order Codes**
SICOM2024M-4M-24T-1310-5-SC-24DC-24DC

4 single mode fiber ports with SC connectors, 1310nm 5km, 24 10/100Base TX RJ45 ports, and dual redundant 24DC(18-36VDC) power supplies
SICOM4000 is a DIN-Rail modular managed industrial Ethernet switch supporting up to 4 Gigabit SFP slots, 24 100M copper/fiber ports or 24 RS232/RS485 serial ports. It also comes with EMC industrial level 4 design and complies with IP40 protection class. Based on Kyvision3.0, CLI, WEB interface, it offers concentrated management. The state-of-the-art OPC software enables the switch’s management embedded in various industrial systems.

Overview

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms), RSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE 802.3i
IEEE 802.3u
IEEE 802.3ab
IEEE 802.3z
IEEE 802.3x
IEEE 802.1p
IEEE 802.1Q
IEEE 802.1w

Protocols
DT-Ring, DT-Ring+, DT-VLAN, RSTP;
IGMP Snooping, GMRP;
VLAN, PVLAN;
Telnet, HTTP, SNMPv1/v2/v3, RMON, LLDP, SNTP;
SSH, SSL, ACL;
ARP, FTP, QoS

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1–4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 4Mbit
Packet Forwarding Rate: 9.5Mpps
Switching Delay: <5μs
**Interface**
- 1 slot for CPU module
- 1 slot for switching module
- 1 slot for power module
- 1 slot for 4-port Gigabit interface module
- 6 slots for 4-port Fast Ethernet interface modules or 4-port serial interface modules
- Gigabit Ethernet Ports: 4 1000Base SFP slots
- Fast Ethernet Ports: max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24/10/100Base-TX RJ45 ports
- Serial Port: max 24 RS232/RS485 ports
- Console Port: RS232 (RJ45 connector)
- Alarm Contact: 2-pin 3.81mm-spacing plug-in terminal block, 250VAC/350VDC Max, 120mA Max

**LED**
1) LEDs on Front Panel:
   - Running LED: Run
   - Alarm LED: Alarm
   - Power LED: PWR1, PWR2
   - Interface LED: Link/ACT, Speed (RJ45 port)
2) LEDs on Rear Panel:
   - Interface LED: Link/ACT
   - Port Speed LED: Speed

**Transmission Distance**
- Serial Cable:
  - RS232, 15m; RS422/RS485, 1200m
  - Twisted Pair:
    - 100m (Standard CAT5, CAT5e network cable)
    - 500m (CAT5e)
  - Multi Mode Fiber:
    - 1310nm, 5km (100M)
    - 850nm, 550m (1000M)
  - Single Mode Fiber:
    - 1310nm, 40km/60km (100M)
    - 1550nm, 60km/80km (100M)
    - 1310nm, 10km/40km (1000M)
    - 1550nm, 60km/80km (1000M)

**Power Requirements**
- Power Input:
  - 24DC (18-36VDC), 48DC (36-72VDC)
- Power Terminal:
  - 3-pin 3.81mm-spacing plug-in terminal block
- Power Consumption:
  - <24W (full Ethernet ports)
  - <36W (full serial ports)

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
282,000 hrs

**Warranty**
5 years

**Approvals**
- CE, FCC

**Industrial Standard**
- EMI:
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)

- Industry: IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (WxHxD):
  - 416x170x158 mm (16.38x6.69x6.22 in.)
- Weight: 8kg (17.637 pound)
- Mounting: DIN-Rail or panel mounting

**Mechanical Drawing**

[Image of mechanical drawing]
### Ordering Information

<table>
<thead>
<tr>
<th>Module Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chassis</strong></td>
<td>C:Chassis MB24 = SICOM4000-MB-24VDC, SICOM4000 Chassis 24VDC Version MB48 = SICOM4000-MB-48VDC, SICOM4000 Chassis 48VDC Version</td>
</tr>
</tbody>
</table>
2SSC802T24 = SM4.1-2S-SC-1310-80-2T-24VDC, interface module with 2 100Base-FX single mode fiber ports, 1310nm 80km, SC connector, and 2 10/100Base-TX RJ45 ports, 24VDC version
2MSC2T24 = SM4.1-2M-SC-1310-5-2T-24VDC, interface module with 2 100Base-FX multi mode fiber ports, 1310nm 5km, SC connector, and 2 10/100Base-TX RJ45 ports, 24VDC version
2MST2T24 = SM4.1-2M-ST-1310-5-2T-24VDC, interface module with 2 100Base-FX multi mode fiber ports, 1310nm 5km, ST connector, and 2 10/100Base-TX RJ45 ports, 24VDC version
SMFC2T24 = SM4.1-2M-FC-1310-5-2T-24VDC, interface module with 2 100Base-FX multi mode fiber ports, 1310nm 5km, FC connector, and 2 10/100Base-TX RJ45 ports, 24VDC version
2SSC602T48 = SM4.1-2S-SC-1310-60-2T-48VDC, interface module with 2 100Base-FX single mode fiber ports, 1310nm 60km, SC connector, and 2 10/100Base-TX RJ45 ports, 48VDC version
2SSC802T48 = SM4.1-2S-SC-1310-80-2T-48VDC, interface module with 2 100Base-FX single mode fiber ports, 1310nm 80km, SC connector, and 2 10/100Base-TX RJ45 ports, 48VDC version
2MSC2T48 = SM4.1-2M-SC-1310-5-2T-48VDC, interface module with 2 100Base-FX multi mode fiber ports, 1310nm 5km, SC connector, and 2 10/100Base-TX RJ45 ports, 48VDC version
2MST2T48 = SM4.1-2M-ST-1310-5-2T-48VDC, interface module with 2 100Base-FX multi mode fiber ports, 1310nm 5km, ST connector, and 2 10/100Base-TX RJ45 ports, 48VDC version
SMFC2T48 = SM4.1-2M-FC-1310-5-2T-48VDC, interface module with 2 100Base-FX multi mode fiber ports, 1310nm 5km, FC connector, and 2 10/100Base-TX RJ45 ports, 48VDC version
Example Order Codes
SICOM4000-MB24-24-XX-4T24-4T24-4T24-4T24-4T24-4T24
24 10/100Base-TX RJ45 ports, 24DC(18-36VDC) power supply power supplies.
SICOM3216 is one of Kyland green low power consumption industrial Ethernet switch series which supports max 18 ports including 2 Gigabit combo ports, 14 10/100Base-TX ports and 2 Fast Ethernet fiber/RJ45 optional ports. It is specially designed for harsh environments with wide temperature range, EMC level 4, IP40 protection class, and can be deployed in wind power, distribution network automation, transportation, oil & gas and many other industrial applications. SICOM3216 series supports Kyland latest IEC62439-6/DRP ring protocol as well as DT-Ring/+ and MSTP.

**Overview**

1. Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, GVRP, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports MAC address binding with port, IEEE802.1X, SSH, SSL, TACACS+, ACL
8. Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
9. Device Maintenance: supports port mirroring, VCT (Virtual Cable Test)
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

**Features & Benefits**

- Green Ethernet solution with ultra low power consumption design
- As low as 8 watts full load power consumption
- 2 Gigabit Combo ports, 14 10/100Base-TX ports and 2 Fast Ethernet fiber/RJ45 optional ports
- Supports IEC62439-6, DT-Ring protocols and MSTP
- Supports one-key recovery
- Provides Mini USB Console port, supports setting backup and recovery through USB
- Supports VCT (Virtual Cable Test)
- UL508 (pending), Class 1 Div 2 (pending), CE, FCC certificates

**Technical Specifications**

**Standard**
- IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s, IEEE 802.1X

**Protocols**
- DT-Ring, DT-Ring+, DT-VLAN, MSTP, DRP, IGMP Snooping, GMRP, VLAN, GVRP, PVLAN, Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTF, BootP, DHCP server/relay/client, DHCP Option 82, SSH, SSL, TACACS+, ACL, Syslog, FTP, TFTP, LACP, ARP, QoS, Modbus TCP

**Switch Properties**
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 2Mbit
- Packet Forwarding Rate: 5.4Mpps
- Switching Delay: <5μs

**Interface**
- Gigabit Ethernet Ports: 2 combo 1000Base SFP slots or 10/100/1000Base-TX ports
- Fast Ethernet Fiber Ports: max 2 100Base-FX, SM/MM ports, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: max 16 10/100Base-TX RJ45 ports
- Console Port: Mini USB
- Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60V Max
**LED**

- LEDs on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
  - Power LED: PWR1, PWR2
  - Ring LED: Ring
  - Interface LED: Link/ACT, Speed (RJ45 port)

**Reset Button**

Reboot and restore default configuration

**Transmission Distance**

- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
  - Multi Mode Fiber:
    - 1310nm, 5km (100M)
    - 850nm, 550m (1000M)
  - Single Mode Fiber:
    - 1310nm, 40km/60km (100M)
    - 1550nm, 60km/80km (100M)
    - 1310nm, 10km/40km (1000M)
    - 1550nm, 60km/80km (1000M)

**Power Requirements**

- Power Input:
  - 24DCW (18-72VDC)
- Power Terminal:
  - SICOM3216-16T: 8.0W
  - SICOM3216-2S/M-14T: 8.6W
  - SICOM3216-2GX/GE-16T: 10.5W
  - SICOM3216-2GX/GE-2S/M-14T: 11.1W

**Physical Characteristics**

- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (W×H×D):
  - 88x135x137mm (3.46×5.31×5.39 in.)
- Weight: 1.25kg (2.756 pound)

**Environmental Limits**

- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**

465,000 hrs

**Warranty**

5 years

**Approvals**

UL508 (pending), Class 1 Div 2 (pending), CE, FCC

**Industrial Standard**

EMI:
- FCC CFR47 Part 15, EN55022/CISPR22, Class A

EMS:
- IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
- IEC61000-4-3 (RS): 10V/m (80MHZ-2GHz)
- IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
- IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
- IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
- IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
- IEC60601-2-6 (Vibration)
- IEC60601-2-27 (Shock)

Industry:
- IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

---

**Mechanical Drawing**
## Ordering Information

| SICOM3216 - | _____ - | _______ - | _________ - | ___  
| Ports       | Distance | Connector | PS          |

### Ports
- **2GX/GE-16T** = 2 Gigabit combo ports, 16 10/100Base-TX RJ45 ports
- **2GX/GE-2M-14T** = 2 Gigabit combo ports, 2 100Base-FX multi mode fiber ports, 14 10/100Base-TX RJ45 ports
- **2GX/GE-2S-14T** = 2 Gigabit combo ports, 2 100Base-FX single mode fiber ports, 14 10/100Base-TX RJ45 ports
- **16T** = 16 10/100Base-TX RJ45 ports
- **2M-14T** = 2 100Base-FX multi mode ports, 14 10/100Base-TX RJ45 ports
- **2S-14T** = 2 100Base-FX single mode ports, 14 10/100Base-TX RJ45 ports

### Distance: Fiber Distance
- **1310-5** = 1310nm, 5km
- **1310-40** = 1310nm, 40km
- **1310-60** = 1310nm, 60km
- **1550-80** = 1550nm, 80km

### Connector: Fiber Connector
- **SC** = SC Connector
- **ST** = ST Connector
- **FC** = FC Connector

### PS: Power Supply
- **24DCW** = 18-72VDC, dual redundant power inputs

### Example Order Codes
- SICOM3216-2GX/GE-2M-14T-1310-5-SC-24DCW

2 Gigabit combo ports, 2 100Base-FX multi mode fiber ports, 14 10/100Base-TX RJ45 ports, 1310nm, 5km, SC connectors, 18-72VDC, dual redundant power inputs
SICOM3016 is a high-performance network-managed industrial Ethernet switch specially designed by KYLAND for industrial applications. It’s DIN-Rail installation and supports max 4 100Base-FX and 16 10/100Base-T(X) ports. Its high-performance switch engine, solid and closed case, high-efficient single-rib-shape case for heat dissipation without using fans, overcurrent, overvoltage and EMC protection at power input side, and excellent EMC protection of RJ45 port allow SICOM3016 to work in harsh and dangerous industrial environments. The redundant function of optical fiber network, independent entire network management channel, dual redundant power inputs function, and powerful entire network real-time management system provide multiplex guarantee for reliable operation of the system.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
6. Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server; DT-Psec, SSH, SSL, ACL; FTP; ARP, QoS
7. Network Security: supports DT-Psec, SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Layer 2 Din-Rail Managed
Din-Rail IEC61850 Switch

- 4 100Base-FX SM/MM ports, 16 10/100Base-TX ports
- Supports DT-Ring protocols
- SNMPv3, HTTPS, SSH security features
- EMC performance reaches industrial level 4
- Supports 110DC, 220AC/DCW power input
- CE, FCC certificates

Overview

Standard

<table>
<thead>
<tr>
<th>IEEE 802.3i</th>
<th>IEEE 802.3u</th>
<th>IEEE 802.3x</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE 802.1p</td>
<td>IEEE 802.1Q</td>
<td>IEEE 802.1s</td>
</tr>
</tbody>
</table>

Protocols

- DT-Ring, DT-Ring+, DT-VLAN, MSTP;
- IGMP Snooping, GMRP;
- VLAN, PVLAN;
- Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server;
- DT-Psec, SSH, SSL, ACL;
- FTP;
- ARP, QoS

Switch Properties

<table>
<thead>
<tr>
<th>Priority Queues: 4</th>
<th>Number of VLANs: 256</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLAN ID: 1-4094</td>
<td>Number of Multicast Groups: 256</td>
</tr>
<tr>
<td>MAC Table: 8K</td>
<td>Packet Forwarding Rate: 3.0Mpps</td>
</tr>
<tr>
<td>Switching Delay: &lt;5μs</td>
<td></td>
</tr>
</tbody>
</table>

Interface

Fast Ethernet Fiber Ports: max 4 100Base-FX SM/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Ports: 16 10/100Base-TX RJ45 ports
Console Port: RS232 (RJ45 connector)
Alarm Contact: 2-pin 3.81mm-spacing plug-in terminal block, 250VAC/350VDC Max, 120mA Max
**LED**
LEDs on Front Panel:
- Running LED: Run
- Alarm LED: Alarm
- Power LED: PWR1, PWR2
- Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
  - 1550nm, 40km/60km (100M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)

**Power Requirements**
- Power Input: 24DC (18-36VDC), 48DC (36-72VDC), 110DC (66-154VDC), 220AC/DCW (132-300VAC/176-400VDC)
- Power Terminal:
  - 3-pin 3.81mm-spacing plug-in terminal block (24DC, 48DC)
  - 3-pin 7.62mm-spacing plug-in terminal block (110DC, 220AC/DCW)
- Power Consumption: <9.7W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (W×H×D): 75×165×123mm (2.95×6.50×4.84 in.)
- Weight: 1.2kg (2.646 pound)
- Mounting: DIN-Rail or Panel mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 333,775 hrs

**Warranty**
- 5 years

**Approvals**
- CE, FCC

**Industrial Standard**
- EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS:
  - IEC61000-4-2 (ESD): ±8KV (contact), ±15KV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4KV, Data Port: ±2KV
  - IEC61000-4-5 (Surge): Power Port: ±2KV/DM, ±4KV/CM, Data Port:±2KV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V(1s)
- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

**Ordering Information**

<table>
<thead>
<tr>
<th>SICOM3016 - Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4M-16T</td>
<td>1310-5</td>
<td>SC</td>
<td>24DC</td>
</tr>
<tr>
<td>4S-16T</td>
<td>1310-40</td>
<td>ST</td>
<td>24DC</td>
</tr>
<tr>
<td>4S-8T</td>
<td>1310-60</td>
<td>FC</td>
<td>24DC</td>
</tr>
<tr>
<td>4S-60</td>
<td>1310-80</td>
<td>FC</td>
<td>24DC</td>
</tr>
<tr>
<td>2M-16T</td>
<td>1310-5</td>
<td>SC</td>
<td>24DC</td>
</tr>
<tr>
<td>2M-40</td>
<td>1310-40</td>
<td>ST</td>
<td>24DC</td>
</tr>
<tr>
<td>2M-60</td>
<td>1310-60</td>
<td>FC</td>
<td>24DC</td>
</tr>
<tr>
<td>2M-80</td>
<td>1310-80</td>
<td>FC</td>
<td>24DC</td>
</tr>
</tbody>
</table>

**Example Order Codes**
- SICOM3016-4M-16T-1310-5-SC-24DC

4 100M multi mode 1310nm 5km fiber ports with SC connector, 16 10/100Base-TX RJ45 ports, 24DC dual power inputs.
SICOM3016B

Layer 2 16+4G Port Managed Din-Rail IEC61850 Switch

- 4 Gigabit ports and 16 10/100Base-TX ports
- Supports DT-Ring protocols and MSTP
- Compact DIN-Rail product
- Intelligent network management
- Advanced security features
- Provides power failure alarm
- EMC performance reaches industrial level 4
- CE, FCC certificates

Overview

SICOM3016B is a high-performance network-managed industrial Ethernet switch specially designed by KYLAND for industrial applications. It’s DIN-Rail installation and supports max 4 combo Gigabit SFP slots or 10/100/1000Base-T(X) ports and 16 10/100Base-T(X) ports. Its high-performance switch engine, solid and closed case, high-efficient single-rib shape case for heat dissipation without using fans, overcurrent, overvoltage and EMC protection at power input side, and excellent EMC protection of RJ45 port allow SICOM3016B to work in harsh and dangerous industrial environments. The redundant function of optical fiber network, independent entire network management channel, dual redundant power inputs function, and powerful entire network real-time management system provide multiplex guarantee for reliable operation of the system.

Technical Specifications

Standard
- IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocols
- DT-Ring, DT-Ring+, DT-VLAN, MSTP;
- IGMP Snooping, GMRP;
- VLAN, PVLAN;
- Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server;
- DT-Psec, SSH, SSL, ACL;
- FTP;
- ARP, QoS

Switch Properties
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 4Mbit
- Packet Forwarding Rate: 8.3Mpps
- Switching Delay: <5μs

Interface

Gigabit Ethernet Port Combinations:
1) 4 combo 1000Base SFP slots or 10/100/1000Base-TX ports
2) 2 combo 1000Base SFP slots or 10/100/1000Base-TX ports and 2 10/100/1000Base-TX ports
3) Fast Ethernet Ports: 16 10/100Base-TX RJ45 ports
4) Console Port: RS232 (RS485 connector)
5) Alarm Contact: 3-pin 3.81mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partiton: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports DT-Psec, SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check
**L2 Din Rail**

**LED**
- LEDs on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 850nm, 550m (1000M)
  - Single Mode Fiber:
    - 1310nm, 10km/40km (1000M)
    - 1550nm, 60km/80km (1000M)

**Power Requirements**
- Power Input:
  - 24DC (18-36VDC), 48DC (36-72VDC), 220AC/DC (120-300VDC/85-264VAC)
- Power Terminal:
  - 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption: <13.3W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (W×H×D):
  - 75x165x123mm (2.95×6.50×4.84 in.)
- Weight: 1.2kg (2.646 pound)
- Mounting: DIN-Rail or Panel mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 334,038 hrs

**Warranty**
- 5 years

**Approvals**
- CE, FCC

**Industrial Standard**
- EMI:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- EMS:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- Machinery:
  - IEC60068-2-6 (Vibration)
- Industry:
  - IEC61000-6-2
  - Railway: EN50155, EN50121-4
  - Traffic Control: NEMA TS-2

**Ordering Information**

**SICOM3016B - _____ - _____**

- **Ports**
  - 4GX/GE-16T = 4 Gigabit combo ports, 16 10/100Base-TX RJ45 ports
  - 2GX/GE-2GE-16T = 2 Gigabit combo ports, 2 10/100/1000Base-TX RJ45 ports, 16 10/100Base-TX RJ45 ports

**Example Order Codes**

- SICOM3016B-4GX/GE-16T-24DC
  - 4 Gigabit combo ports, 16 10/100Base-TX RJ45 ports, 24DC (18-36VDC) dual redundant power inputs

**PS: Power Supply**
- 24DC = 18-36VDC, dual redundant power inputs
- 48DC = 36-72VDC, dual redundant power inputs
- 220AC/DCW = 77-300VDC/85-264VAC, single power input

**Mechanical Drawing**

![Din Rail Installation](image)

![Panel Mounting Installation](image)

**KYLAND**

sales@kyland.com / www.kyland.com 57
Layer 2 10G Port Full Gigabit Managed Din-Rail IEC61850 Switch

- Green Ethernet solution with ultra low power consumption design
- As low as 9.5 watts full load power consumption
- 2 Gigabit Combo ports, 2 Gigabit SFP slots and 6 10/100/1000Base-TX ports
- Supports IEC62439-6, DT-Ring protocols and MSTP
- Supports one-key recovery
- Provides Mini USB Console port, supports setting backup and recovery through USB
- Supports VCT (Virtual Cable Test)
- IP40 protection class
- UL508 (pending), Class 1 Div 2 (pending), CE, FCC certificates

Overview

SICOM3010G is equipped with 10 Gigabit Ethernet ports and up to 4 fiber optic ports, making it ideal for Gigabit backbone network which requires a higher performance bandwidth for transferring large amounts of video, voice, and data across a network quickly. Redundant Ethernet IEC62439-6/DRP ring protocol, DT-Ring/+ and MSTP increase system reliability and the availability of your network backbone. The SICOM3010G series is designed especially for communication demanding applications, such as video and process monitoring, shipbuilding, ITS, and DCS systems, all of which can benefit from a scalable backbone construction.

Features & Benefits

1. Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, GVRP, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports MAC address binding with port, IEEE802.1X, SSH, SSL, TACACS+, ACL
8. Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
9. Device Maintenance: supports port mirroring, VCT (Virtual Cable Test)
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s, IEEE 802.1X

Protocols
DT-Ring, DT-Ring+, DT-VLAN, MSTP, DRP, IGMP Snooping, GMRP, VLAN, GVRP, PVLAN, Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, BootP, DHCP server/relay/client, DHCP Option 82; SSH, SSL, TACACS+, ACL, Syslog, FTP, TFTP, LACP, ARP, QoS, Modbus TCP

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 14.9Mpps
Switching Delay: <5μs

Interface
Gigabit SFP Slots: 2 1000Base SFP slots
Gigabit RJ45 Ports: 6 10/100/1000Base-TX RJ45 ports
Gigabit Combo Ports: 2 combo 1000Base SFP slots or 10/100/1000Base-TX ports
Console Port: Mini USB
Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

Green Ethernet solution with ultra low power consumption design
As low as 9.5 watts full load power consumption
2 Gigabit Combo ports, 2 Gigabit SFP slots and 6 10/100/1000Base-TX ports
Supports IEC62439-6, DT-Ring protocols and MSTP
Supports one-key recovery
Provides Mini USB Console port, supports setting backup and recovery through USB
Supports VCT (Virtual Cable Test)
IP40 protection class
UL508 (pending), Class 1 Div 2 (pending), CE, FCC certificates
**L2 Din Rail**

**LED**
- LEDs on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
  - Power LED: PWR1, PWR2
  - Ring LED: Ring
  - Interface LED: Link/ACT, Speed (RJ45 port)

**Reset Button**
- Reboot and restore default configuration

**Transmission Distance**
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber: 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

**Power Requirements**
- Power input: 24DCW (18-72VDC)
- Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption: 9.5W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 88x135x137mm (3.46x5.31x5.39 in.)
- Weight: 1.25kg (2.756 pound)
- Mounting: DIN-Rail or panel mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 345,000 hrs

**Warranty**
- 5 years

**Approvals**
- UL508 (pending), Class 1 Div 2 (pending), CE, FCC

**Industrial Standard**
- EMI:
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- EMS:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Railway: ENS0135, EN50121-4
- Traffic Control: NEMA TS-2

** Ports**
- 2GX/GE-6GE = 2 Gigabit combo ports, 6 10/100/1000Base-TX RJ45 ports
- 2GX/GE-2GX-6GE = 2 Gigabit combo ports, 2 1000Base-X SFP ports, 6 10/100/1000Base-TX RJ45 ports

**Ordering Information**
SICOM3010G - _______ - _______
- Ports: _______ PS: Power Supply
- 24DCW = 18-72VDC, dual redundant power inputs

**Example Order Codes**
SICOM3010G-2GX/GE-6GE-24DCW
2 Gigabit combo ports, 2 1000Base-X SFP ports, 6 10/100/1000Base-TX ports, 24DCW(18-72VDC) dual redundant power inputs
Layer 2 Din-Rail Managed IEC61850 Industrial Ethernet Switches

SICOM3306PT

Overview

SICOM3306PT Series is Kyland Din Rail IEEE1588v2 industrial Ethernet switch implementing IEEE1588v2 clock synchronization with hardware time stamping over each of the 3 Gigabit SFP ports and 6 10/100Base-TX ports. Combining IEEE1588v2 and SyncE (ITU-T.G.8261/G.8262), the synchronization precision accuracy can reach 10 nanoseconds which exceeds all the highest level of requirements for clock synchronization solution in smart grid and power utilities. SICOM3306PT is equipped with IEC62439-6/DRP ring protocol which enables less than 20ms recovery time. It also supports DT-Ring, RSTP/STP, MSTP and VRRP. Mini USB console port enables configuration easy backup and restore. Exceeding IEC61850-3 and IEEE1613 standards, SICOM330 Series is specifically designed to operate reliably in electronically harsh and climatically demanding utility substation and industrial environments.

Features & Benefits

1. Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring and MSTP.
3. Network Partition: supports VLAN, GVRP, PVLAN, Service Quality: supports QoS.
4. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control.
7. Network Security: supports MAC address binding with port, IEEE802.1X, SSH, SSL, TACACS+, ACL.
8. Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download.
9. Device Maintenance: supports port mirroring, VCT (Virtual Cable Test).
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms.
11. Special Function: supports Link Check and Loop Status Check.

Technical Specifications

Standard
- IEEE802.3i, IEEE802.3u, IEEE802.3ab, IEEE802.3ac, IEEE802.3ad, IEEE802.3z, IEEE802.3x, IEEE802.1p, IEEE802.1Q, IEEE802.1s, IEEE802.1X, IEEE1588-2008, IEC62439-6, SyncE (ITU-T.G.8261/G.8262)

Protocols
- DT-Ring, DT-Ring+, DT-VLAN, MSTP/DRP, IGMP snooping, GMRP, VLAN, GVRP, PVLAN, Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, Bootp, DHCP server/relay/client, DHCP Option 82, SNTP, PTP, RRC, SSH, SSL, TACACS+, RADIUS, ACL, FTP, TFTP, Syslog, ARP, Modbus, TCP/QoS, LACP

Switch Properties
- VLAN Ques: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 5.5Mpps
- Switching Delay: <5μs

Interface
- Gigabit Ethernet Ports: 3 100/1000Base-X SFP ports
- Fast Ethernet RJ45 Ports: 6 10/100Base-TX RJ45 ports
- Console Port: Mini USB
- Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max
Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
345,000 hrs

Warranty
5 years

Approvals
CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV; Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (Common mode conduction): 30V (cont.), 300V (1s)
Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)
Industry: IEC61000-6-2
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

LED
LEDs on Front Panel:
Running LED: Run
Alarm LED: Alarm
Power LED: PWR1, PWR2
Ring LED: Ring
Clock Sync LED: LOCK
Interface LED: Link/ACT, Speed (RJ45 port)

Reset Button
Reboot and restore default configuration

Transmission Distance
Twisted Pair: 100m (Standard CAT3, CAT5e network cable)
Multi Mode Fiber: 850nm, 550m (1000M)
Single Mode Fiber:
1310nm, 10km/40km (1000M)
1550nm, 60km/80km (1000M)

Power Requirements
Power Input: 24DCW (18-72VDC), 220AC/DCW (85-264VAC/77-300VDC)
Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
Power Consumption: 16W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

Physical Characteristics
Housing: Metal, fanless
Protection Class: IP40
Dimensions (WxHxD): 88x135x137mm (3.46x5.31x5.39 in.)
Weight: 2.25kg (4.96 pound)
Mounting: DIN-Rail or panel mounting

Ports
3GX-6T = 3 Gigabit SFP ports, 6 10/100Base-TX ports
2GX-6T = 2 Gigabit SFP ports, 6 10/100Base-TX ports

Example Order Codes
SICOM3306PT-3GX-6T-24DCW
3 Gigabit SFP ports, 6 10/100Base-TX RJ45 ports, 18-72VDC, dual redundant power inputs
SICOM3306 is one of Kyland green low power consumption industrial Ethernet switch series. It is equipped with 3 Gigabit SFP ports and 6 10/100Base-TX ports, making it ideal for building a Gigabit optic ring and leaving a spare Gigabit port for uplink use. Redundant Ethernet IEEE 62439-6/DRP ring protocol, DT-Ring/+ and MSTP increase system reliability and the availability of your network backbone. The SICOM3306 series is designed especially for harsh environments with -40 to 85°C wide temperature range, EMC level 4, IP40 protection class, and can be deployed in wind power, distribution network automation, transportation, oil & gas and many other industrial applications.

Overview

SICOM3306 is one of Kyland green low power consumption industrial Ethernet switch series. It is equipped with 3 Gigabit SFP ports and 6 10/100Base-TX ports, making it ideal for building a Gigabit optic ring and leaving a spare Gigabit port for uplink use. Redundant Ethernet IEEE 62439-6/DRP ring protocol, DT-Ring/+ and MSTP increase system reliability and the availability of your network backbone. The SICOM3306 series is designed especially for harsh environments with -40 to 85°C wide temperature range, EMC level 4, IP40 protection class, and can be deployed in wind power, distribution network automation, transportation, oil & gas and many other industrial applications.

Features & Benefits

1. Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, GVRP, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports MAC address binding with port, IEEE802.1X, SSH, SSL, TACACS+, ACL
8. Device Management: supports FTP/TFTP upload and download
9. Device Maintenance: supports port mirroring, VCT (Virtual Cable Test)
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
- IEEE 802.3i, IEEE 802.3u, IEEE 802.3ac, IEEE 802.3ad, IEEE 802.3z, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s, IEEE 802.1X
- IEEE 802.1D, 802.1Q

Protocols
- DT-Ring, DT-Ring+, DT-VLAN, MSTP, DRP;
- IGMP Snooping, GMRP;
- VLAN, GVRP, PVLAN;
- Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, BootP, DHCP server/relay/client, DHCP Option 82, SSH, SSL, TACACS+, ACL;
- Syslog, FTP, TFTP;
- LACP, ARP, QoS, Modbus TCP

Switch Properties
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1–4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 5.3Mpps
- Switching Delay: <5μs

Interface
- Gigabit Ethernet port combinations:
  1) 1, 2 or 3 1000Base SFP slots
  2) 1 combo 1000Base SFP slot or 10/100/1000Base-TX port
  3) 6 10/100/1000Base-TX RJ45 ports
- Fast Ethernet Fiber Ports: max 2 100Base-FX, SM/MM ports, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: max 8 10/100Base-TX RJ45 ports
- Console Port: Mini USB
- Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

Green Ethernet solution with ultra low power consumption design
- As low as 6 watts full load power consumption
- 3 Gigabit ports, 6 10/100Base-TX ports
- Supports IEC62439-6, DT-Ring protocols and MSTP
- Supports one-key recovery
- Provides Mini USB Console port, supports setting backup and recovery through USB
- Supports VCT (Virtual Cable Test)
- IP40 protection class
- UL508 (pending), Class 1 Div 2 (pending), CE, FCC certificates
**LED**
LEDs on Front Panel:
Running LED: Run
Alarm LED: Alarm
Power LED: PWR1, PWR2
Ring LED: Ring
Interface LED: Link/ACT, Speed (RJ45 port), Link/ACT(G1-G3)

**Reset Button**
Reboot and restore default configuration

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
410,000 hrs

**Warranty**
5 years

**Approvals**
UL508 (pending), Class 1 Div 2 (pending), CE, FCC

**Industrial Standard**

**EMI:**
FCC CFR47 Part 15, EN55022/CISPR22, Class A

**EMS:**
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV; Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

**Machinery:**
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

**Industry:** IEC61000-6-2
**Railway:** EN50155, EN50121-4
**Traffic Control:** NEMA TS-2

**Transmission Distance**
Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber: 1310nm, 5km (100M), 850nm, 550m (1000M)
Single Mode Fiber:
1310nm, 40km/60km (100M), 1550nm, 60km/80km (100M)
1310nm, 10km/40km (100M), 1550nm, 60km/80km (1000M)

**Power Requirements**
Power Input: 24DCW (18-72VDC)
Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
Power Consumption:
SICOM3306-2GX-6T: 6.5W, SICOM3306-3GX-6T: 7.0W
SICOM3306-1GX-8T: 6.0W, SICOM3306-1GX-2S/2M-6T: 7.1W
SICOM3306-1G/GE/2GE-6T: 6.8W, SICOM3306-3GE-6T: 6.6W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Metal, fanless
Protection Class: IP40
Dimensions (W×H×D): 53.6×135×106.5mm (2.11×5.31×4.19 in.)
Weight: 0.76kg (1.676 pound)
Mounting: DIN-Rail or panel mounting

**Ordering Information**
SICOM3306 - _______ - ________ - _________ - ___
Ports Distance Connector  PS
**Ports**
3GX-6T = 3 Gigabit SFP ports, 6 10/100Base-TX ports
2GX-6T = 2 Gigabit SFP ports, 6 10/100Base-TX ports
1GX-8T = 1 Gigabit SFP port, 8 10/100Base-TX ports
1GX-2M-6T = 1 Gigabit SFP port, 2 100Base-FX multi mode fiber ports, 6 10/100Base-TX ports
1GX-2S-6T = 1 Gigabit SFP port, 2 100Base-FX single mode fiber ports, 6 10/100Base-TX ports

**Distance: Fiber Distance**
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

**Connector: Fiber Connector**
SC = SC Connector
ST = ST Connector
FC = FC Connector

**PS: Power Supply**
24DCW = 18-72VDC, dual redundant power inputs

**Mechanical Drawing**

**Transmission Distance**
Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber: 1310nm, 5km (100M), 850nm, 550m (1000M)
Single Mode Fiber:
1310nm, 40km/60km (100M), 1550nm, 60km/80km (100M)
1310nm, 10km/40km (100M), 1550nm, 60km/80km (1000M)

**Power Requirements**
Power Input: 24DCW (18-72VDC)
Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
Power Consumption:
SICOM3306-2GX-6T: 6.5W, SICOM3306-3GX-6T: 7.0W
SICOM3306-1GX-8T: 6.0W, SICOM3306-1GX-2S/2M-6T: 7.1W
SICOM3306-1G/GE/2GE-6T: 6.8W, SICOM3306-3GE-6T: 6.6W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Metal, fanless
Protection Class: IP40
Dimensions (W×H×D): 53.6×135×106.5mm (2.11×5.31×4.19 in.)
Weight: 0.76kg (1.676 pound)
Mounting: DIN-Rail or panel mounting

**Ordering Information**
SICOM3306 - _______ - ________ - _________ - ___
Ports Distance Connector  PS
**Ports**
3GX-6T = 3 Gigabit SFP ports, 6 10/100Base-TX ports
2GX-6T = 2 Gigabit SFP ports, 6 10/100Base-TX ports
1GX-8T = 1 Gigabit SFP port, 8 10/100Base-TX ports
1GX-2M-6T = 1 Gigabit SFP port, 2 100Base-FX multi mode fiber ports, 6 10/100Base-TX ports
1GX-2S-6T = 1 Gigabit SFP port, 2 100Base-FX single mode fiber ports, 6 10/100Base-TX ports

**Distance: Fiber Distance**
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

**Connector: Fiber Connector**
SC = SC Connector
ST = ST Connector
FC = FC Connector

**PS: Power Supply**
24DCW = 18-72VDC, dual redundant power inputs
SICOM3000

Layer 2 8+2G Port Managed Din-Rail IEC61850 Switch

- 2 Gigabit SFP slots, 6 10/100Base-TX ports and 2 Fast Ethernet fiber/RJ45 optional ports
- Supports DT-Ring protocols and MSTP
- Supports GMRP, DHCP, SNMP, QoS
- SNIPv3, HTTPS, SSH, DT-Psec enhance network security
- UL508, CE, FCC certificates

Overview

The SICOM3000 series, Gigabit managed DIN-Rail industrial Ethernet switch, was developed by Kyland for industrial information layers in transport, power and mining applications. It offers 2 Gigabit SFP slots, 2 100M copper/fiber ports and 6 10/100Base-T(X) ports. Its fanless ribbed casing design and ability to handle a wide range of temperatures ensure high reliability in extreme industrial environments. Based on Kyvision3.0, CLI, WEB interface, it offers concentrative management. The state-of-the-art OPC software enables the switch’s management embedded in various industrial systems.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
6. Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server; DT-Psec, SSH, SSL, ACL; FTP; ARP, QoS
7. Network Security: supports DT-Psec, SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocols
DT-Ring, DT-Ring+, DT-VLAN, MSTP; IGMP Snooping, GMRP; VLAN, PVLAN; Telnet, HTTP, HTTPS, SNIPv1/v2/v3, RMON, LLDP, SNTP, DHCP server; DT-Psec, SSH, SSL, ACL; FTP; ARP, QoS

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 2Mbit
Packet Forwarding Rate: 4.2Mpps
Switching Delay: <5μs

Interface
Gigabit Ethernet Ports: max 2 1000Base SFP slots
Fast Ethernet Fiber Ports: max 2 100Base-FX SM/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Ports: max 8 10/100Base-TX RJ45 ports
Console Port: RS232 (RS485 connector)
Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/350VDC Max, 120mA Max
**LED**
LEDs on Front Panel:
Running LED: Run1, Run2
Power LED: PW1, PW2
Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
Twisted Mode Pair: 100m (Standard CAT5e, CAT5e network cable)
Multi Mode Fiber: 1310nm, 5km (100M), 850nm, 550m (1000M)
Single Mode Fiber:
1310nm, 40km/60km (100M), 1550nm, 60km/80km (100M)
1310nm, 10km/40km (1000M), 1550nm, 60km/80km (1000M)

**Power Requirements**
Power Input:
24DC (18-36VDC), 48DC (36-72VDC), 110DC (66-154VDC), 220AC/DC(132-300VAC/176-400VDC)
Power Terminal:
5-pin 0.88mm-spacing plug-in terminal block (24DC, 48DC)
3-pin 0.62mm-spacing plug-in terminal block (110DC, 220AC/DC)
Power Consumption: <10.6W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Aluminum, fanless
Protection Class: IP40
Dimensions (WxHxD):
75×140×123mm (2.95×5.51×4.84 in.)
Weight: 1.0kg (2.205 pound)
Mounting: DIN-Rail or Panel mounting

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
323,350 hrs

**Warranty**
5 years

**Approvals**
UL508, CE, FCC

**Industrial Standard**
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV; Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

**Ports**
2GX-2M-6T = 2 Gigabit SFP port, 2 100Base-FX multi mode fiber ports, 6 10/100Base-TX ports
2GX-2S-6T = 2 Gigabit SFP port, 2 100Base-FX single mode fiber ports, 6 10/100Base-TX ports
2GX-8T = 2 Gigabit SFP port, 8 10/100Base-TX ports
2M-6T = 2 100Base-FX multi mode fiber ports, 6 10/100Base-TX ports
2S-6T = 2 100Base-FX single mode fiber ports, 6 10/100Base-TX ports
8T = 8 10/100Base-TX RJ45 ports

**Distance: Fiber Distance**
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

**Connector: Fiber Connector**
SC = SC Connector
ST = ST Connector
FC = FC Connector

**PS: Power Supply**
24DC = 18-36VDC, dual redundant power inputs
48DC = 36-72VDC, dual redundant power inputs
110DC = 66-154VDC, single power input
220AC/DC = 132-300VAC/176-400VDC, single power input

**Ordering Information**
SICOM3000 - Ports - Distance - Connector - PS

**Mechanical Drawing**
SICOM3009A is one of Kyland green low power consumption industrial Ethernet switch series. It is equipped with 3 100Base-FX optic ports and 6 10/100Base-TX copper ports, making it ideal for building a fast Ethernet fiber optic ring and leaving a spare fiber port for uplink use. Redundant Ethernet IEC62439-6/DRP ring protocol, DT-Ring/+ and MSTP increase system reliability and the availability of your network backbone. The SICOM3009A series is designed especially for harsh environments with -40 to 85°C wide temperature range, EMC level 4, IP40 protection class, and can be deployed in wind power, distribution network automation, transportation, oil & gas and many other industrial applications.

Features & Benefits

1. Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, GVRP, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports MAC address binding with port, IEEE802.1X, SSH, SSL, TACACS+, ACL
8. Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
9. Device Maintenance: supports port mirroring, VCT (Virtual Cable Test)
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE802.3ac, IEEE 802.3ad, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s, IEEE 802.1X

Protocols
DT-Ring, DT-Ring+, DT-VLAN, MSTP, DRP; IGMP Snooping, GMRP, VLAN, GVRP, PVLAN, Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, BootP, DHCP server/relay/client, DHCP Option 82, SSH, SSL, TACACS+, ACL; Syslog, FTP, TFTP, LACP, ARP, QoS, Modbus TCP

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 1.4Mpps
Switching Delay: <5μs

Interface
Fast Ethernet Fiber Ports: max 3 100Base-FX, SM/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Ports: max 8 10/100Base-TX RJ45 ports
Console Port: Mini USB
Alarm Contact: 3-pin 0.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

Green Ethernet solution with ultra low power consumption design
As low as 5 watts full load power consumption
6 10/100Base-TX ports and 3 Fast Ethernet fiber/RJ45 optional ports
Supports IEC62439-6, DT-Ring protocols and MSTP
Supports one-key recovery
Provides Mini USB Console port, supports setting backup and recovery through USB
Supports VCT (Virtual Cable Test)
UL508 (pending), Class 1 Div 2 (pending), CE, FCC certificates
**L2 Din Rail**

**LED**
- LEDs on Front Panel: Running LED: Run
- Alarm LED: Alarm
- Power LED: PWR1, PWR2
- Ring LED: Ring
- Interface LED: Link/ACT, Speed (RJ45 port)

**Reset Button**
- Reboot and restore default configuration

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 350,877 hrs

**Warranty**
- 5 years

**Approvals**
- UL508 (pending), Class 1 Div 2 (pending), CE, FCC

**Industrial Standard**
- EMI:
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV; Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/CM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

**Ports**
- **3M-6T**: 3 100Base-FX multi mode ports, 6 10/100Base-TX ports
- **3S-6T**: 3 100Base-FX single mode ports, 6 10/100Base-TX ports
- **2M-6T**: 2 100Base-FX multi mode ports, 6 10/100Base-TX ports
- **2S-6T**: 2 100Base-FX single mode ports, 6 10/100Base-TX ports
- **1M-7T**: 1 100Base-FX multi mode ports, 7 10/100Base-TX ports
- **1S-7T**: 1 100Base-FX single mode ports, 7 10/100Base-TX ports
- **8T**: 8 10/100Base-TX ports

**Distance: Fiber Distance**
- 1310-5: 1310nm, 5km
- 1310-40: 1310nm, 40km
- 1310-60: 1310nm, 60km
- 1550-80: 1550nm, 80km

**Connector: Fiber Connector**
- SC = SC Connector
- ST = ST Connector
- FC = FC Connector

**PS: Power Supply**
- 24DCW = 18-72VDC, dual redundant power inputs

**Mounting**
- DIN-Rail or Panel mounting
KIEN7009 is one of Kyland green low power consumption industrial Ethernet switch series. It is equipped with 3 100Base-FX optic ports and 6 10/100Base-TX copper ports, making it ideal for building a fast Ethernet fiber optic ring and leaving a spare fiber port for uplink use. Redundant Ethernet IEC62439-6/DRP ring protocol and DT-Ring/+ increase system reliability and the availability of your network backbone. The KIEN7009 series is a light managed device which is designed especially for harsh environments with -40 to 85°C wide temperature range, EMC level 4, IP40 protection class, and can be deployed in wind power, distribution network automation, transportation, oil & gas and many other industrial applications.

**Overview**

KIEN7009 is one of Kyland green low power consumption industrial Ethernet switch series. It is equipped with 3 100Base-FX optic ports and 6 10/100Base-TX copper ports, making it ideal for building a fast Ethernet fiber optic ring and leaving a spare fiber port for uplink use. Redundant Ethernet IEC62439-6/DRP ring protocol and DT-Ring/+ increase system reliability and the availability of your network backbone. The KIEN7009 series is a light managed device which is designed especially for harsh environments with -40 to 85°C wide temperature range, EMC level 4, IP40 protection class, and can be deployed in wind power, distribution network automation, transportation, oil & gas and many other industrial applications.

**Technical Specifications**

**Standard**
IEEE 802.3i, IEEE 802.3u, IEEE802.3x, IEEE802.1Q, IEC62439-6

**Protocols**
DT-Ring, DT-VLAN, VLAN, Telnet, HTTP, SNMPv1/v2/v3, RMON, LLDP, Syslog, FTP, TFTP, Modbus TCP

**Switch Properties**
Number of VLANs: 256
VLAN ID: 1–4094
MAC Table: 8K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 1.4Mpps
Switching Delay: <5μs

**Interface**
Fast Ethernet Fiber Ports: max 3 100Base-FX, SM/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Ports: max 8 10/100Base-TX RJ45 ports
Console Port: Mini USB
Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
LEDs on Front Panel:
Running LED: Run
Alarm LED: Alarm
Power LED: PWR1, PWR2
Ring LED: Ring
Interface LED: Link/ACT, Speed (RJ45 port)

**Features & Benefits**

1. Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocols (recovery time<50ms)
2. Network Partition: supports VLAN
3. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
5. Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
6. Device Maintenance: supports VCT (Virtual Cable Test)
7. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms

**Green Ethernet solution with ultra low power consumption design**
**As low as 5.5 watts full load power consumption**
**Supports 6 10/100Base-TX ports and 3 Fast Ethernet fiber/RJ45 optional ports**
**Supports IEC62439-6 and DT-Ring protocols**
**Supports one-key recovery**
**Supports VCT (Virtual Cable Test)**
**Provides Mini USB Console port, supports setting backup and recovery through USB**
**UL508 (pending), Class 1 Div 2 (pending), CE, FCC certificates**
Reset Button
Reboot and restore default configuration

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
385,000 hrs

Warranty
5 years

Approvals
UL508 (pending), Class 1 Div 2 (pending), CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (Surge): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-6 (Common mode conduction): 30V (cont.), 300V (1s)
Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)
Industry: IEC61000-6-2
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

Ports
3M-6T = 3 100Base-FX multi mode ports, 6 10/100Base-TX ports
3S-6T = 3 100Base-FX single mode ports, 6 10/100Base-TX ports
2M-6T = 2 100Base-FX multi mode ports, 6 10/100Base-TX ports
2S-6T = 2 100Base-FX single mode ports, 6 10/100Base-TX ports
1M-7T = 1 100Base-FX multi mode ports, 7 10/100Base-TX ports
1S-7T = 1 100Base-FX single mode ports, 7 10/100Base-TX ports
8T = 8 10/100Base-TX ports

Ordering Information
KIEN7009 - ________ - ________ - ________ - ________
Ports  Distance  Connector  PS

Distance: Fiber Distance
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

Connector: Fiber Connector
SC = SC Connector
ST = ST Connector
FC = FC Connector

PS: Power Supply
24DCW = 18-72VDC, dual redundant power inputs
KIEN5000/KIEN6000, 8-port managed DIN-Rail industrial Ethernet switches, come with DT-Ring technology which is developed by Kyland and used to set up a redundant Ethernet ring network. KIEN5000/KIEN6000 support not only 12VDC, 24VDC and 48VDC with dual redundant power inputs, but also support high voltage AC/DC power supplies. With a web-based configuration interface, KIEN5000/KIEN6000 ensure an easy installation and management of the switches.

Overview

KIEN5000/KIEN6000, 8-port managed DIN-Rail industrial Ethernet switches, support DT-Ring protocol and STP. They also support IGMP Snooping and static multicast. These switches have features such as VLAN, PVLAN, QoS, SNMPv1/v2/v3, Telnet, CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, LLDP, Link Check, and Loop Status Check.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocol (recovery time<100ms) and STP
2. Multicast Protocol: supports IGMP Snooping and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports MAC address binding with port
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports power, port alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE802.3i, IEEE802.3u, IEEE802.3x, IEEE802.1p, IEEE802.1Q, IEEE802.1d

Protocols
DT-Ring, DT-VLAN, STP, VLAN, PVLAN, IGMP Snooping, FTP, HTTP, LLDP, QoS, SNMPv1/v2/v3, Telnet

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1–4094
Number of Multicast Groups: 256
Packet Buffer: 2Mbit
Packet Forwarding Rate: 1.2Mpps
Switching Delay: <5μs

Interface
Fast Ethernet Ports: 8 10/100Base-TX RJ45 ports (KIEN5000), 6 10/100Base-TX RJ45 ports and 2 100M fiber ports (KIEN6000)
Console Port: RS232 (RS45 connector)
Alarm Contact: 2-pin 3.81mm-spacing plug-in terminal block, 250VAC/350VDC Max, 120mA Max

LED
LEDs on Front Panel:
Running LED: Run1, Run2
Power LED: PWR1, PWR2
Interface LED: Link/ACT, Speed (RJ45 port)
**Transmission Distance**
Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber: 1310nm, 5km (100M)
Single Mode Fiber: 1310nm, 40km/60km (100M), 1550nm, 60km/80km (100M)

**Power Requirements**
Power Input: 12DC (9-18VDC), 24DC (18-36VDC), 48DC (36-72VDC), 110DC (77-150VDC), 220DC(120-375VDC),220AC(85-265VAC)
Power Terminal: 3-pin 3.81mm-spacing plug-in terminal block
Power Consumption: <6.7W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Aluminum, fanless
Protection Class: IP40
Dimensions (W×H×D): 55.4×139×119.5mm (2.18×5.47×4.70 in.)
Weight: 0.6kg (1.323 pound)
Mounting: DIN-Rail or Panel mounting

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**Ordering Information**

<table>
<thead>
<tr>
<th>Model &amp; Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS</th>
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<tbody>
<tr>
<td>KIEN5000-8T</td>
<td>8</td>
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<tr>
<td>KIEN6000-2M-6T</td>
<td>2</td>
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<tr>
<td>KIEN6000-2S-6T</td>
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<tr>
<td>Distance: Fiber Distance</td>
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<tr>
<td>1310-5 = 1310nm, 5km</td>
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<td>1310-40 = 1310nm, 40km</td>
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<td>1310-60 = 1310nm, 60km</td>
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<tr>
<td>1550-80 = 1550nm, 80km</td>
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<tr>
<td>Connector: Fiber Connector</td>
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<tr>
<td>SC = SC Connector</td>
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<td>ST = ST Connector</td>
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<tr>
<td>FC = FC Connector</td>
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**MTBF**
364,067 hrs

**Warranty**
5 years

**Approvals**
CE, FCC

**Industrial Standard**
EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV; Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V(1s)
Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)
Industry: IEC61000-6-2
Railway: EN50155, EN50121-4

**Example Order Codes**
KIEN5000-8T-12VDC
8 10/100Base-TX RJ45 ports, 12VDC(9-18VDC) dual redundant power inputs

**PS: Power Supply**
12DC = 9-18VDC, dual redundant power inputs
24DC = 18-36VDC, dual redundant power inputs
48DC = 36-72VDC, dual redundant power inputs
110DC = 77-150VDC, dual redundant power inputs
220DC = 120-375VDC, dual redundant power inputs
220AC = 85-265VAC, single power input
PTC1000 Clock Converter realizes the conversion from PTP to IRIG-B and PPS (Pulse Per Second). This allows the industrial devices that are equipped with IRIG-B clock interfaces and PPS interface to conveniently access PTP network. This achieves the normalization of network clocks and reaches high precision synchronization in the industrial control system. The PTC1000 supports Din-Rail installation. It provides one 100M fiber/copper optional port, one PPS port, two IRIG-B (DC) ports and two IRIG-B (AC) ports in the front panel.

Overview

PTC1000 Clock Converter realizes the conversion from PTP to IRIG-B and PPS (Pulse Per Second). This allows the industrial devices that are equipped with IRIG-B clock interfaces and PPS interface to conveniently access PTP network. This achieves the normalization of network clocks and reaches high precision synchronization in the industrial control system. The PTC1000 supports Din-Rail installation. It provides one 100M fiber/copper optional port, one PPS port, two IRIG-B (DC) ports and two IRIG-B (AC) ports in the front panel.

Features & Benefits

1. Network Management and Monitoring: supports CLI, Telnet, WEB management, Kyvision centralized management, SNMPv1/v2, LLDP
3. Device Management: supports FTP upgrade

Technical Specifications

- **Standard**
  - IEEE 802.3i, IEEE 802.3u, IEEE 802.3x, IEEE1588v2, ITU-G.8261/G.8262

- **Protocols**
  - Telnet, HTTPS, SNMPv1/v2, LLDP, PTP, RTC, FTP

- **Interface**
  - Fast Ethernet Port: 1 100Base-FX, SM/MM port, FC/SC/ST connector or 1 10/100Base-TX RJ45 port
  - Console Port: RS232 (RJ45 connector)
  - Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max
  - Clock Interface: BNC interface, 2-pin 5.08 mm-spacing pluggable terminal blocks, 4-pin 5.08mm-spacing pluggable terminal block

- **Clock Signal**
  - PPS: TTL level +5V, 50Ω, Rising edge based, pulse width 20ms-200ms, stepped by 20ms (adjustable in software)
  - IRIG-B DC: TTL level +5V, 600Ω, Rising edge based, Mark-Space Ratio 50%
  - IRIG-B AM: Vp-p, 2V-10V (adjustable in software, default Vp-p: 4.5V), 600Ω, Modulation Ratio 3:1, 4:1, 5:1, 6:1 (optional, default modulation ratio is 3:1)

- **LED**
  - LEDs on Front Panel
    - Running LED: Run
    - Alarm LED: Alarm
    - Power LED: PWR1, PWR2
    - Interface LED: Link/ACT, Speed
    - PTP Sync LED: Sync
**L2 Din Rail**

**Reset Button**
Reboot and restore default configuration

**Transmission Distance**
- Twisted Pair: 100m (Standard CATS, CAT5e network cable)
- Multi Mode Fiber: 1310nm, 5km (100M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (100M)
  - 1550nm, 80km (100M)

**Power Requirements**
- Power Input: 24VDC (18-36VDC), 220VAC/DCW(85-264VAC/77-300VDC)
- Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption: <4W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Warranty**
5 years

**Approvals**
- CE, FCC

**Industrial Standard**
- EMI:
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
  - EMI: IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RF): Power Port: ±2kV, Data Port: ±2kV
  - IEC61000-4-4 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
  - IEC61000-4-9 (Pulsed magnetic field): 100A/m
  - IEC61000-4-10 (Damped oscillation): 100A/m
  - IEC61000-4-11 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- EMS: IEC60068-2-6 (Vibration)
- IEC60068-2-27 (Shock)
- IEC60068-2-32 (Free Fall)

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 62.4x139x119.5 mm (2.45x5.47x4.70 in.)
- Weight: <0.75kg (1.653 pound)
- Mounting: Vertical or Horizontal Din-Rail

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
332,600hrs

**Machinery:**
- IEC60068-2-6 (Vibration)
- IEC60068-2-27 (Shock)
- IEC60068-2-32 (Free Fall)

**Industry:**
- IEC61000-6-2
- Power: IEC61850-3, IEEE1613
- Railway: ENS0155, ENS0121-4
- Traffic: NEMA TS-2

**Mechanical Drawing**

**Ordering Information**

<table>
<thead>
<tr>
<th>Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>1 10/100Base-TX RJ45 port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>1 100Base-FX multi mode port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>1 100Base-FX single mode port</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Connector:** Fiber Connector
- SC = SC Connector
- ST = ST Connector
- FC = FC Connector

**PS: Power Supply**
- 24DC = 18-36VDC, dual redundant power inputs
- 220AC/DCW = 85-264VAC/77-300VDC, single power input

**Example Order Codes**

PTC1000-M-1310-5-SC-220AC/DCW
1 multi mode 1310nm 5km fiber ports with SC connector, 85-264VAC/77-300VDC power supply
SICOM3004/ SICOM3006

4/6 Port 100M Managed Embedded Industrial Ethernet Switch

- 2 10/100Base-TX ports and 2/4 Fast Ethernet fiber/RJ45 optional ports
- Embedded mounting and small design simplify integration
- Supports DT-Ring protocols and MSTP

Overview

SICOM3004/3006 is embedded managed industrial Ethernet switch specially designed by KYLAND for industrial applications. It supports 2 10/100Base-T(X) ports, 2 or 4 100M copper/fiber ports. It run well in a wide range of temperature (-40 to 85°C). Based on Kyvision3.0, CLI, WEB interface, it offers concentrative management. The state-of-the-art OPC software enables the switch’s management embedded in various industrial systems.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports DT-Psec, SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocols
DT-Ring, DT-Ring+, DT-VLAN, MSTP, IGMP Snooping, GMRP, VLAN, PVLAN;
Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server;
DT-Psec, SSH, SSL, ACL;
FTP, ARP, QoS

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1~4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 2Kbit
Packet Forwarding Rate: 0.9Mpps
Switching Delay: <5μ

Interface
Fast Ethernet Fiber Ports: 3 100Base-FX, SM/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Ports: 6 10/100Base-TX RJ45 ports
Console Port: RS232 (RJ45 connector)
Alarm Output Contact: 6-pin 5.08mm-spacing plug-in terminal block,
250VAC/350VDC Max, 120mA Max, 60W Max
Alarm Input Contact: 6-pin 5.08mm-spacing plug-in terminal block, TTL level, offering alarm input for external power switching
LED Output Interface: 2x13 pins

Reset Button
System reset
**Power Requirements**

- Power Input: 3.3DC (3-5.5VDC)
- Power Terminal: Samtec’s board stacker
- Power Consumption: <10W

- Overload Protection: Support
- Reverse Connection Protection: Support

**Environmental Limits**

- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**

- 469,065 hrs

**Warranty**

- 5 years

**Approvals**

- CE, FCC

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**Ordering Information**

<table>
<thead>
<tr>
<th>Model &amp; Ports</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SICOM3004-4T</td>
<td>Embedded board with 4 10/100Base-TX interfaces</td>
</tr>
<tr>
<td>SICOM3004-2M-2T</td>
<td>Embedded board with 2 100Base-FX multi mode fiber interfaces and 2 10/100Base-TX interfaces</td>
</tr>
<tr>
<td>SICOM3004-2S-2T</td>
<td>Embedded board with 2 100Base-FX single mode fiber interfaces and 2 10/100Base-TX interfaces</td>
</tr>
<tr>
<td>SICOM3006-6T</td>
<td>Embedded board with 6 100Base-FX single mode fiber interfaces and 4 100Base-TX interfaces</td>
</tr>
<tr>
<td>SICOM3006-2M-4T</td>
<td>Embedded board with 2 100Base-FX multi mode fiber interfaces and 4 10/100Base-TX interfaces</td>
</tr>
<tr>
<td>SICOM3006-2S-4T</td>
<td>Embedded board with 2 100Base-FX single mode fiber interfaces and 4 10/100Base-TX interfaces</td>
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<tr>
<td>SICOM3006-4M-2T</td>
<td>Embedded board with 4 100Base-FX multi mode fiber interfaces and 2 10/100Base-TX interfaces</td>
</tr>
<tr>
<td>SICOM3006-4S-2T</td>
<td>Embedded board with 4 100Base-FX single mode fiber interfaces and 2 10/100Base-TX interfaces</td>
</tr>
</tbody>
</table>

**PS: Power Supply**

- 3.3DC = 3.3VDC (3-5.5VDC)

**Accessories: Test Board with port connectors**

- SICOM3004-Test-4T
- SICOM3004-Test-2M-2T
- SICOM3004-Test-2S-2T
- SICOM3006-Test-6T
- SICOM3006-Test-2M-4T
- SICOM3006-Test-2S-4T
- SICOM3006-Test-4M-2T
- SICOM3006-Test-4S-2T

---

**Physical Characteristics**

- Dimensions (W×H×D):
  - 95×25×80 mm (3.74×0.98×3.15 in.) (SICOM3006)
  - 80×25×80 mm (3.15×0.98×3.15 in.) (SICOM3004)
- Weight: 0.1kg (0.220 pound)
- Mounting: Embedded mounting

**Power Requirements**

- Power Input: 3.3DC (3-5.5VDC)
- Power Terminal: Samtec’s board stacker
- Power Consumption: <10W

---

**MTBF**

- 469,065 hrs

**Warranty**

- 5 years

**Approvals**

- CE, FCC
KIEN3016A

16 Port Unmanaged Din-Rail Switch

- Green Ethernet solution with ultra low power consumption design
- As low as 6.1 watts full load power consumption
- 14 10/100Base-TX ports and 2 Fast Ethernet fiber/RJ45 optional ports
- Compact DIN-Rail product
- Redundant AC/DC power inputs with wide voltage range
- EMC performance reaches industrial level 4
- IP40 protection class
- UL508 (pending), Class 1 Div 2 (pending), CE, FCC certificates

Overview

The KIEN3016A series are Kyland new ultra low power consumption Green Ethernet solution. Its full load power consumption is as low as 6.1 watts. The KIEN3016A switches are with a wide operating temperature range from -40 to 85°C. All models are with IP40 protection class and meet EMC industrial level 4 requirements.

KIEN3016A series support IEEE 802.3i, IEEE802.3u and IEEE802.3x with 10/100M full/half-duplex, MDI/MDX-X auto-sensing. The KIEN3016A switches provide 24DCW (18-72VDC). These switches are specially designed for harsh industrial environments certified by UL508 and UL Class 1 Div 2 certifications.

Technical Specifications

**Standard**
- IEEE 802.3i
- IEEE 802.3u
- IEEE802.3x

**Switch Properties**
- MAC Table: 8K
- Packet Buffer: 2Mbit
- Packet Forwarding Rate: 2.4Mpps
- Switching Delay: <5μs

**Interface**
- Fast Ethernet Fiber Ports: max 2 100Base-FX, SM/MM ports, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: max 16 10/100Base-TX RJ45 ports
- Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
- LEDs on Front Panel:
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)

**Power Requirements**
- Power Input:
  - 24DCW (18-72VDC)
- Power Terminal:
  - 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption:
  - KIEN3016A-16T: 6.1W
  - KIEN3016A-2S/M-14T: 6.6W
Physical Characteristics

Housing: Metal, fanless
Protection Class: IP40
Dimensions (W×H×D): 88x135x137 mm (3.46×5.31×5.39 in.)
Weight: 1.2kg (2.646 pound)
Mounting: DIN-Rail or Panel mounting

Environmental Limits

- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
361,000 hrs

Warranty
5 years

Approvals
UL508 (pending), Class 1 Div 2 (pending), CE, FCC

Ordering Information

KIEN3016A - _______ - _______ - _______ - _______
Ports Distance Connector PS

Ports
2M-14 = 3 100Base-FX multi mode ports, 6 10/100Base-TX ports
2S-14 = 3 100Base-FX single mode ports, 6 10/100Base-TX ports
16T = 2 100Base-FX multi mode ports, 6 10/100Base-TX ports

Distance: Fiber Distance
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

Connector: Fiber Connector
SC = SC Connector
ST = ST Connector
FC = FC Connector

PS: Power Supply
24DCW = 18-72VDC, dual redundant power inputs

Example Order Codes
KIEN3016A-2M-16T-1310-5-SC-24DCW
2 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connectors, and 14 10/100Base-TX copper ports, 18-72VDC, dual redundant power inputs

Industrial Standard

EMI
- FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMI
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

EMS
- IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
- IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
- IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
- IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
- IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
- IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery
- IEC60068-2-6 (Vibration)
- IEC60068-2-27 (Shock)
- IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

Unmanaged
Unmanaged Din-Rail Industrial Ethernet Switches

KIEN1009

9 Port Unmanaged Din-Rail Switch

- Green Ethernet solution with ultra low power consumption design
- As low as 3.5 watts full load power consumption
- 1 Gigabit SFP slot, 6 10/100Base-TX ports and 3 Fast Ethernet fiber/RJ45 optional ports
- Redundant AC/DC power inputs with wide voltage range
- Both standard and wide operating temperature
- EMC performance reaches industrial level 4
- IP40 protection class
- UL508 (pending), Class 1 Div 2 (pending), CE, FCC certificates

Overview

The KIEN1009 series are Kyland new ultra low power consumption Green Ethernet solution. Its full load power consumption is as low as 3.5 watts. The KIEN1009 switches are available with a standard operating temperature range from 0 to 60°C, or with a wide operating temperature range from -40 to 85°C. All models are with IP40 protection class and meet EMC industrial level 4 requirements.

KIEN1009 series support IEEE 802.3i, IEEE802.3u and IEEE802.3x with 10/100M full/half-duplex, MDIX auto-sensing. The KIEN1009 switches provide 24DC(18-36VDC) (KIEN1009-8T), 24DCW (18-72VDC) (other). These switches are specially designed for harsh industrial environments certified by UL508 and UL Class 1 Div 2 certifications.

Technical Specifications

Standard
IEEE 802.3i
IEEE 802.3u
IEEE802.3x

Switch Properties
MAC Table: 8K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 1.4Mpps
Switching Delay: <5μs

Interface
Fast Ethernet Fiber Ports: max 3 100Base-FX, SM/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Ports: max 8 10/100Base-TX RJ45 ports

LED
LEDs on Front Panel:
Power LED: PWR (KIEN1009-E-8T)
PWR1, PWR2 (other models)
Interface LED: Link/ACT, Speed (RJ45 port)

Transmission Distance
Twisted Pair:
100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber: 1310nm, 5km (100M), 850nm, 550m (1000M)
Single Mode Fiber: 1310nm, 40km/60km (100M), 1550nm, 60km/80km (100M)

Power Requirements
Power Input:
24DC(18-36VDC) (KIEN1009-8T), 24DCW(18-72VDC) (other models)
Power Terminal:
3-pin 5.08mm-spacing plug-in terminal block (KIEN1009-E-8T);
5-pin 5.08mm-spacing plug-in terminal block (other models)
Power Consumption:
KIEN1009-8T: 3.5W
KIEN1009-8T: 3.5W
KIEN1009-15/M-7T: 3.8W
KIEN1009-25/M-6T: 4.1W
KIEN1009-35/M-6T: 4.4W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

Physical Characteristics
Housing: Metal, fanless
Protection Class: IP40
Dimensions (WxHxD): 53.6x135x106.5 mm (2.11x5.31x4.19 in.)
Weight: 0.76kg (1.676 pound)
Mounting: DIN-Rail or Panel mounting
Environmental Limits
Operating Temperature:
0 to 60°C (32 to 140°F) (KIEN1009-E-8T)
-40 to 85°C (-40 to 185°F) (other models)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
397,000 hrs

Warranty
5 years

Approvals
UL508 (pending), Class 1 Div 2 (pending), CE, FCC

Industrial Standard
EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)
Industry: IEC61000-6-2
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

Mechanical Drawing

Din Rail Installation

Panel Mounting Installation

Ordering Information
KIEN1009 - ______ - ______ - ______ - ______ - ________ - ______

Ports

E-8T = 8 10/100Base-TX RJ45 ports, 0 to 60°C operating temperature
8T = 8 10/100Base-TX RJ45 ports, -40 to 85°C operating temperature
1M-7T = 1 100Base-FX multi mode fiber port, 7 10/100Base-TX RJ45 ports,
-40 to 85°C operating temperature
1S-7T = 1 100Base-FX single mode fiber port, 7 10/100Base-TX RJ45 ports,
-40 to 85°C operating temperature
2M-6T = 2 100Base-FX multi mode fiber ports, 6 10/100Base-TX RJ45 ports,
-40 to 85°C operating temperature
2S-6T = 2 100Base-FX single mode fiber ports, 6 10/100Base-TX RJ45 ports,
-40 to 85°C operating temperature
3M-6T = 3 100Base-FX multi mode fiber ports, 6 10/100Base-TX RJ45 ports,
-40 to 85°C operating temperature
3S-6T = 3 100Base-FX single mode fiber ports, 6 10/100Base-TX RJ45 ports,
-40 to 85°C operating temperature

Distance: Fiber Distance
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

Connector: Fiber Connector
SC = SC Connector
ST = ST Connector
FC = FC Connector

PS: Power Supply
24DCW = 18-72VDC, dual redundant power inputs

Example Order Codes
KIEN1009-2M-6T-1310-5-SC-24DCW
2 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connectors, and 6
10/100Base-TX copper ports, 18-72VDC, dual redundant power inputs
KIEN1008G series are equipped with 8 Gigabit Ethernet ports and up to 2 fiber optic ports, making them ideal for applications that demand high bandwidth. KIEN1008G series are one of Kyland new ultra low power consumption Green Ethernet solutions. Its full load power consumption is 7.5W which enables not only power electricity saving, but also a longer life span for the devices. KIEN1008G full Gigabit unmanaged switches are powered with 24DCW (18-72VDC) power supply, and its operation temperature ranges from -40 to 85°C (-40 to 185°F). They are specially designed for harsh industrial environments and their EMC performance reaches industrial level 4. KIEN1008G series can be installed easily on a DIN-Rail or panel mounting distribution boxes.

overview
KIEN1008G series are equipped with 8 Gigabit Ethernet ports and up to 2 fiber optic ports, making them ideal for applications that demand high bandwidth. KIEN1008G series are one of Kyland new ultra low power consumption Green Ethernet solutions. Its full load power consumption is 7.5W which enables not only power electricity saving, but also a longer life span for the devices. KIEN1008G full Gigabit unmanaged switches are powered with 24DCW (18-72VDC) power supply, and its operation temperature ranges from -40 to 85°C (-40 to 185°F). They are specially designed for harsh industrial environments and their EMC performance reaches industrial level 4. KIEN1008G series can be installed easily on a DIN-Rail or panel mounting distribution boxes.

technical specifications

standard
IEEE 802.3i
IEEE 802.3u
IEEE 802.3ab
IEEE802.3z

switch properties
MAC Table: 8K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 11.9Mpps
Switching Delay: <5μs

interface
Gigabit Ethernet Port Combinations:
1) 2 combo 1000Base SFP slots or 10/100/1000Base-TX ports, and 6 10/100/1000Base-TX RJ45 ports
2) 8 10/100/1000Base-TX RJ45 ports

LED
LEDs on Front Panel:
Power LED: PWR1, PWR2
Interface LED: Link/ACT, Speed (RJ45 port)

transmission distance
Twisted Pair:
100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber:
850nm, 550m (1000M)

Single Mode Fiber:
1310nm, 10km/40km (1000M)
1550nm, 60km/80km (1000M)

power requirements
Power Input:
24DCW (18-72VDC)
Power Terminal:
5-pin 5.08mm-spacing plug-in terminal block
Power Consumption:
KIEN1008G-2GX/GE-6GE: 8.5W (full load)
KIEN1008G-8GE: 7.5W (full load)
Physical Characteristics
Housing: Metal, fanless
Protection Class: IP40
Dimensions (W×H×D):
88x135x137 mm (3.46x5.31x5.39 in)
Weight: 0.76kg (1.676 pound)
Mounting: DIN-Rail or Panel mounting

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient RelativeHumidity: 5 to 95% (non-condensing)

MTBF
357,000 hrs

Warranty
5 years

Mechanical Drawing

Ordering Information
KIEN1008G - _____ - ____
Ports PS

Ports
2GX/GE-6GE = 2 Gigabit combo ports, 6 10/100/1000Base-TX RJ45 ports
8GE = 8 10/100/1000Base-TX RJ45 ports

PS: Power Supply
24DCW = 18-72VDC, dual redundant power inputs

Example Order Codes
KIEN1008G-2GX/GE-6GE-24DCW
2 Gigabit combo ports, 6 10/100/1000Base-TX RJ45 ports, 18-72VDC dual redundant power inputs

Approvals
UL508 (pending), Class 1 Div 2 (pending), CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±3kV/DM, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Railway: EN50155, EN50121-4

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)
The KIEN1005G is Kyland’s new full Gigabit unmanaged industrial Ethernet switch. It is also a new member of ultra low power consumption Green Ethernet series, its full load power consumption is as low as 3.4 watts. The KIEN1005G supports a wide operating temperature range from -40 to 85°C. It provides IP40 protection class and meets EMC industrial level 4 requirements.

The KIEN1005G switch provides 24DCW (18-72VDC) redundant power inputs. This switch is specially designed for harsh industrial environments certified by UL508 and UL Class 1 Div 2 certifications and it is your best option for economical industrial Gigabit Ethernet solution.

**Overview**

The KIEN1005G is Kyland’s new full Gigabit unmanaged industrial Ethernet switch. It is also a new member of ultra low power consumption Green Ethernet series, its full load power consumption is as low as 3.4 watts. The KIEN1005G supports a wide operating temperature range from -40 to 85°C. It provides IP40 protection class and meets EMC industrial level 4 requirements.

The KIEN1005G switch provides 24DCW (18-72VDC) redundant power inputs. This switch is specially designed for harsh industrial environments certified by UL508 and UL Class 1 Div 2 certifications and it is your best option for economical industrial Gigabit Ethernet solution.

**Technical Specifications**

**Standard**
- IEEE 802.3i
- IEEE 802.3u
- IEEE 802.3ab
- IEEE802.3z

**Switch Properties**
- MAC Table: 1K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 7.4Mpps
- Switching Delay: <5μs

**Interface**
- Gigabit Ethernet Ports: 5 10/100/1000Base-TX RJ45 ports

**LED**
- LEDs on Front Panel:
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)

**Power Requirements**
- Power Input:
  - 24DCW (18-72VDC)
- Power Terminal:
  - 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption: 3.4W (full load)

- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (WxHxD):
  - 30x115x91.5 mm (1.18x4.53x3.60 in.)
- Weight: 0.76kg (1.676 pound)
- Mounting: DIN-Rail or Panel mounting
**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
357,000 hrs

**Warranty**
5 years

**Approvals**
UL508  Class 1 Div 2  CE, FCC

**Industrial Standard**
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A

**EMS:**
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DIV, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz); 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

**Machinery:**
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

**Industry:** IEC61000-6-2
Railway: EN50155, EN50121-4

**Mechanical Drawing**

**Ordering Information**

KIEN1005G - _____ - _____

Ports
5GE = 5 10/100/1000Base-TX RJ45 ports

PS: Power Supply
24DCW = 18-72VDC, dual redundant power inputs

**Example Order Codes**
KIEN1005G-5GE-24DCW
5 10/100/1000Base-TX RJ45 ports, 18-72VDC, dual redundant power inputs
KIEN1005A

5 Port Unmanaged Din-Rail Industrial Ethernet Switch

- Green Ethernet solution with ultra low power consumption design
- As low as 2.16 watts full load power consumption
- 4 10/100Base-TX ports and 1 Fast Ethernet fiber/RJ45 optional port
- Both standard and wide operating temperature
- EMC performance reaches industrial level 4
- IP40 protection class
- UL508, Class 1 Div 2, CE, FCC certificates

Overview

The KIEN1005A series are Kyland new ultra low power consumption Green Ethernet series, its full load power consumption is as low as 2.16 watts. The KIEN1005A switches are available with a standard operating temperature range from 0 to 60°C, or with a wide operating temperature range from -40 to 85°C. All models are with IP40 protection class and meet EMC industrial level 4 requirements.

KIEN1005A series support IEEE 802.3i and IEEE802.3u with 10/100M full/half-duplex, MDI/MDI-X auto-sensing. The KIEN1005A switches provide 24DC(18-36VDC) (KIEN1005A-5T-E) single power inputs, 224DCW (18-72VDC) and 220AC/DCW(85-264VAC/77-300VDC). These switches are specially designed for harsh industrial environments certified by UL508 and UL Class 1 Div 2 certifications.

KIEN1005A-SMS-EM, a newly added version of KIEN1005A, is a “green”, embedded industrial Ethernet module with low-power consumption (1.2 watts full load power consumption). It is applicable to wind power, subway PIS, power SCADA, sewage treatment, metallurgy, intelligent transportation, rail transit, and many other industries. KIEN1005A-SMS-EM Embedded Ethernet Switching Module can be directly installed in the target device. KIEN1005A-SMS-EM provides five 10/100Base-T(X) ports.

Technical Specifications

<table>
<thead>
<tr>
<th>Standard</th>
<th>IEEE 802.3i</th>
<th>IEEE802.3u</th>
<th>IEEE802.3x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Properties</td>
<td>MAC Table: 2K</td>
<td>Packet Buffer: 1Mbit</td>
<td>Packet Forwarding Rate: 0.8Mpps</td>
</tr>
<tr>
<td>Switching Delay: &lt;5μs</td>
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<td></td>
</tr>
<tr>
<td>Interface</td>
<td>Fast Ethernet Fiber Ports: max 1 100Base-FX, SM/MM port, FC/SC/ST connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast Ethernet RJ45 Ports: max 5 10/100Base-TX RJ45 ports</td>
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</tr>
<tr>
<td>LED</td>
<td>LEDs on Front Panel:</td>
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<td></td>
</tr>
<tr>
<td>Power LED: PWR (KIEN1005A-E-ST)</td>
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<tr>
<td>PWR1, PWR2 (other models)</td>
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<tr>
<td>Interface LED: Link/ACT, Speed (RJ45 port)</td>
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<tr>
<td>Transmission Distance</td>
<td>Twisted Pair:</td>
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<tr>
<td>100m (Standard CAT5, CAT5e network cable)</td>
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<tr>
<td>Multi Mode Fiber:</td>
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<tr>
<td>1310nm, 5km (100M)</td>
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<tr>
<td>Single Mode Fiber:</td>
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<tr>
<td>1310nm, 40km/60km (100M)</td>
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<tr>
<td>1550nm, 60km/80km (100M)</td>
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</tbody>
</table>
**Power Requirements**

Power Input:
KIEN1005A-E-5T: 24DC(18-36VDC)
KIEN1005A-SMS-EM-5T: Internal power supply 5DC(4.5-5.5VDC), External power supply 7DC(6.5-7.5VDC)
KIEN1005A other models: 24DCW(18-72VDC), 220AC/DCW (85-264VAC/77-300VDC), single power input

Power Terminal:
KIEN1005A-E-5T: 3-pin 5.08mm-spacing plug-in terminal block.
KIEN1005A-SMS-EM-5T: J.S.T XH-Connector-pitch 2.5mm (internal power), Phoenix MSTB 2.5/2-GF-5.08-(connector 7v power supply) (external power)
KIEN1005A other models: 5-pin 5.08mm-spacing plug-in terminal block

Power Consumption:
KIEN1005A-1S/M-4T: 2.64W (full load)
KIEN1005A-5T: 2.16W (full load)
KIEN1005A-SMS-EM-5T: 1.2W (full load)

Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**

Housing: Metal, fanless
Protection Class: IP40
KIEN1005A-SMS-EM-5T Dimensions (LxWxH): 120x70x15 mm (4.72x2.76x0.59 inch)
KIEN1005A Dimensions (WxHxD): 30x115x91.5 mm (1.18x4.53x3.60 in.)
Weight:
KIEN1005A-SMS-EM-5T: 0.075kg (0.165 pound)
KIEN1005A: 0.46kg (1.014 pound)
Mounting: DIN-Rail or Panel mounting

**Ordering Information**

KIEN1005A - ______- ______- ________-_____
Ports Distance Connector PS

**Ports**

E-ST = S 10/100Base-TX RJ45 ports, 0 to 60°C operating temperature
ST = S 10/100Base-TX RJ45 ports, -40 to 85°C operating temperature
1M-4T = 1 100Base-FX multi mode fiber port, 4 10/100Base-TX RJ45 ports, -40 to 85°C operating temperature
1S-4T = 1 100Base-FX single mode fiber port, 4 10/100Base-TX RJ45 ports, -40 to 85°C operating temperature
SMS-EM-ST = Embedded board with 5 10/100Base-TX RJ45 ports, 0 to 60°C operating temperature

**Environmental Limits**

Operating Temperature:
0 to 60°C (32 to 140°F) (KIEN1005A-E-5T)
0 to 60°C (32 to 140°F) (KIEN1005A-SMS-EM-5T)
-40 to 85°C (-40 to 185°F) (other models)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**

454,730 hrs

**Warranty**

5 years

**Approvals**

UL508, Class 1 Div 2, CE, FCC

**Industrial Standard**

EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A

EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)
Industry: IEC61000-6-2
Railway: EN50155, EN50121-4

**Distance: Fiber Distance**

1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

**Connector: Fiber Connector**

SC = SC Connector
ST = ST Connector
FC = FC Connector

**PS: Power Supply**

24DC = 18-36VDC, single power input (Only for KIEN1005A-E-5T)
SDC-7DC = Internal power supply 5DC(4.5-5.5VDC), External power supply 7DC(6.5-7.5VDC) (Only for KIEN1005A-SMS-EM-5T)
24DCW = 18-72VDC, dual redundant power inputs
220AC/DCW = 85-264VAC/77-300VDC, single power input
KIEN1005

5 Port Unmanaged Din-Rail Switch

- 4 10/100Base-TX ports and 1 Fast Ethernet fiber/RJ45 optional port
- Uplink port supports broadcast storm control and QoS functions
- EMC performance reaches industrial level 4
- IP40 protection class
- CE, FCC, DNV certificates

Overview

The KIEN1005 series of industrial Ethernet switches are entry-level industrial 5 port Ethernet switches that support IEEE 802.3/802.3u/802.3x with 10/100M, full/half-duplex, MDI/MDIX auto-sensing RJ45 ports. The KIEN1005 switches are rated to operate at temperatures ranging from -40 to 85°C, and are rugged enough for any harsh industrial environment. The switches can support not only 9-36VDC power supply but also 85-264VAC power supply eliminating extra external power supplies. KIEN1005 can be easily installed on a DIN-Rail as well as in panel mounting distribution boxes. The DIN-Rail mounting capability, wide operating temperature, and the IP40 housing with LED indicators make the plug-and-play KIEN1005 switches easy to use and reliable.

Technical Specifications

Standard
IEEE 802.3i
IEEE 802.3u
IEEE802.3x

Switch Properties
MAC Table: 1K
Packet Buffer: 512Kbit
Packet Forwarding Rate: 0.8Mpps
Switching Delay: <5μs

Overview

The KIEN1005 series of industrial Ethernet switches are entry-level industrial 5 port Ethernet switches that support IEEE 802.3/802.3u/802.3x with 10/100M, full/half-duplex, MDI/MDIX auto-sensing RJ45 ports. The KIEN1005 switches are rated to operate at temperatures ranging from -40 to 85°C, and are rugged enough for any harsh industrial environment. The switches can support not only 9-36VDC power supply but also 85-264VAC power supply eliminating extra external power supplies. KIEN1005 can be easily installed on a DIN-Rail as well as in panel mounting distribution boxes. The DIN-Rail mounting capability, wide operating temperature, and the IP40 housing with LED indicators make the plug-and-play KIEN1005 switches easy to use and reliable.

Technical Specifications

Standard
IEEE 802.3i
IEEE 802.3u
IEEE802.3x

Switch Properties
MAC Table: 1K
Packet Buffer: 512Kbit
Packet Forwarding Rate: 0.8Mpps
Switching Delay: <5μs

Interface
Fast Ethernet Fiber Ports: max 1 100Base-FX, SM/MM port, FC/SC/ST connector
Fast Ethernet RJ45 Ports: max 5 10/100Base-TX RJ45 ports

LED
LEDs on Front Panel:
Power LED: PWR
Interface LED: Link/ACT, Speed (RJ45 port)

Transmission Distance
Twisted Pair:
100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber:
1310nm, 5km (100M)
Single Mode Fiber:
1310nm, 40km/60km (100M)
1550nm, 60km/80km (100M)

Power Requirements
Power Input:
12DCW (9-36VDC), 220AC (85-265VAC)
Power Terminal:
3-pin 3.81mm-sapcing plug-in
Overload Protection: Support
Reverse Connection Protection: Support
Physical Characteristics
Housing: Aluminum, fanless
Protection Class: IP40
Dimensions (W×H×D): 36.5×120×90 mm (1.44×4.72×3.54 in.)
Weight: 0.3kg (0.661 pound)
Mounting: DIN-Rail or Panel mounting

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
454,730 hrs

Warranty
5 years

Approvals
CE, FCC, DNV

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Railway: EN50155, EN50121-4
Marine: DNV

Ordering Information
KIEN1005 - _______ - _______ - _______ - _______
Ports Distance Connector PS

Ports
ST = 5 10/100Base-TX RJ45 ports
1M-4T = 1 100Base-FX multi mode fiber port, 4 10/100Base-TX RJ45 ports
1S-4T = 1 100Base-FX single mode fiber port, 4 10/100Base-TX RJ45 ports

Distance: Fiber Distance
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

Connector: Fiber Connector
SC = SC Connector
ST = ST Connector
FC = FC Connector

PS: Power Supply
12DCW = 9-36VDC, dual redundant power inputs
220AC = 85-265VAC, single power input
The KIEN1000/KIEN2000 series of industrial Ethernet switches are entry-level industrial 8 port Ethernet switches that support IEEE 802.3/802.3u/802.3x with 10/100M, full/half-duplex, MDI/MDIX auto-sensing RJ45 ports. These industrial Ethernet switches are rated to operate at temperatures ranging from -40 to 85°C, and are rugged enough for any harsh industrial environment.

KIEN1000, with 8 port 10/100Base-TX RJ45 ports, supports DT-Ring protocol which enables a fast recovery redundant ring topology. KIEN1000B, with 8 port 10/100Base-TX RJ45 ports, is entry level version without the support with ring topology. KIEN2000, with 2 100Base-FX fiber ports and 6 10/100Base-TX RJ45 ports, supports DT-Ring protocol which enables a fast recovery redundant ring topology. KIEN2000B, with 2 100Base-FX fiber ports and 6 10/100Base-TX RJ45 ports, is entry level version without the support with ring topology.

The switches can support not only 12VDC/24VDC/48VDC power supply but also 110VDC/220V/AC/110VAC/220VAC power supply eliminating extra external power supplies. KIEN1000/KIEN2000 series can be easily installed on a DIN-Rail as well as in panel mounting distribution boxes. The DIN-Rail mounting capability, wide operating temperature, and the IP40 housing with LED indicators make the plug-and-play KIEN1000/KIEN2000 switches easy to use and reliable.

**Overview**

The KIEN1000/KIEN2000 series of industrial Ethernet switches are entry-level industrial 8 port Ethernet switches that support IEEE 802.3/802.3u/802.3x with 10/100M, full/half-duplex, MDI/MDIX auto-sensing RJ45 ports. These industrial Ethernet switches are rated to operate at temperatures ranging from -40 to 85°C, and are rugged enough for any harsh industrial environment.

KIEN1000, with 8 port 10/100Base-TX RJ45 ports, supports DT-Ring protocol which enables a fast recovery redundant ring topology. KIEN1000B, with 8 port 10/100Base-TX RJ45 ports, is entry level version without the support with ring topology. KIEN2000, with 2 100Base-FX fiber ports and 6 10/100Base-TX RJ45 ports, supports DT-Ring protocol which enables a fast recovery redundant ring topology. KIEN2000B, with 2 100Base-FX fiber ports and 6 10/100Base-TX RJ45 ports, is entry level version without the support with ring topology.

The switches can support not only 12VDC/24VDC/48VDC power supply but also 110VDC/220V/AC/110VAC/220VAC power supply eliminating extra external power supplies. KIEN1000/KIEN2000 series can be easily installed on a DIN-Rail as well as in panel mounting distribution boxes. The DIN-Rail mounting capability, wide operating temperature, and the IP40 housing with LED indicators make the plug-and-play KIEN1000/KIEN2000 switches easy to use and reliable.

**Technical Specifications**

**Standard**
IEEE 802.3i
IEEE 802.3u
IEEE802.3x

**Switch Properties**
MAC Table: 1K
Packet Buffer: 512Kbit
Packet Forwarding Rate: 1.2Mpps
Switching Delay: <5μs

**Interface**
KIEN1000/KIEN1000B
Fast Ethernet Ports: 8 10/100Base-TX RJ45 ports

KIEN2000/KIEN2000B
Fast Ethernet Fiber Ports: 2 100Base-FX, SM/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Ports: 6 10/100Base-TX RJ45 ports

Alarm Contact: 2-pin 3.81mm-spacing terminal block, 1A@30VDC, 0.5A@125VAC

**LED**
LEDs on Front Panel:
Redundant Mode LED: Run1, Run2
Power LED: PWR1, PWR2
Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber: 1310nm, 5km (100M)
Single Mode Fiber: 1310nm, 40km/60km (100M), 1550nm, 60km/80km (100M)
**Power Requirements**
Power Input: 12DC (9-18VDC), 24DC (18-36VDC), 48DC (36-72VDC), 110DC (72-140VDC), 220DC (154-300VDC), 220AC (110-264VAC).
Power Terminal: 3-pin 3.81mm-spacing plug-in terminal block.
Power Consumption: <6W.

Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Aluminum, fanless
Protection Class: IP40
Dimensions (WxHxD): 55.4 x 139 x 119.5 mm (2.18 x 5.47 x 4.70 in.)
Weight: 0.6kg (1.323 pound)
Mounting: DIN-Rail or Panel mounting

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
414,430 hrs

**Mechanical Drawing**
Din Rail Installation
Panel Mounting Installation

**Ordering Information**

<table>
<thead>
<tr>
<th>Model &amp; Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS</th>
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</thead>
<tbody>
<tr>
<td>KIEN1000-8T</td>
<td>1310-60</td>
<td>110-264VAC</td>
<td></td>
</tr>
<tr>
<td>KIEN1000-8T</td>
<td>1550-80</td>
<td>110-264VAC</td>
<td></td>
</tr>
</tbody>
</table>

**Connector: Fiber Connector**
SC = SC Connector
ST = ST Connector
FC = FC Connector

**PS: Power Supply**
12DC = 9-18VDC, dual redundant power inputs
24DC = 18-36VDC, dual redundant power inputs
48DC = 36-72VDC, dual redundant power inputs
110DC = 77-150VDC, dual redundant power inputs
220DC = 120-375VDC, dual redundant power inputs
220AC = 85-265VAC, single power input

**Example Order Codes**
KIEN1000-8T-220AC
8 10/100Base-TX copper ports, 110-264VAC power supply

**Unmanaged**

**Warranty**
3 years

**Approvals**
UL, CE, FCC

**Industrial Standard**
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (Surge): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV; Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4k/W/CM; Data Port: ±2kV
IEC61000-4-6 (C5): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
IEC61000-4-9 (Pulsed magnetic field): 1000A/m
IEC61000-4-10 (Damped oscillation): 100A/m
IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
Machinery:
IEC60958:2-6 (Vibration)
IEC60958:2-27 (Shock)
IEC60958:2-32 (Free Fall)
Industry: IEC61000-6-2
Railway: EN50155, EN50121-4

**Distance: Fiber Distance**
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
The SICOM5424R series EN50155 rack mountable managed Ethernet switches, which are equipped with 4 10/100/1000Base-TX M12 ports and 24 10/100Base-TX M12 ports, are designed especially for on track applications. The M12 connectors on Ethernet ports and M16 connectors on power supply contacts ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. The SICOM5424R series provide wide power input range of 24DC, 48DC and 220AC/DCW, and support -40 to 85°C wide temperature range. The SICOM5424R series Ethernet switches are compliant with EN50155/50121-4 requirements, making the switches suitable for a variety of industrial applications.

**Overview**

- **Standard**
  - IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

- **Protocols**
  - DT-Ring, DT-Ring+, DT-VLAN, MSTP; IGMP Snooping, GMRP; VLAN, PVLAN; Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, DHCP server; SNTP, RTC, DT-Psec, SSH, SSL, ACL; FTP, Syslog; ARP, QoS

- **Switch Properties**
  - Priority Queues: 4
  - Number of VLANs: 256
  - VLAN ID: 1-4094
  - Number of Multicast Groups: 256
  - MAC Table: 8K
  - Packet Buffer: 2Mbit
  - Packet Forwarding Rate: 9.5Mpps
  - Switching Delay: <5μs

- **Interface**
  - Gigabit Ethernet Ports: 4 10/100/1000Base-TX M12 ports
  - Fast Ethernet Ports: max 24 10/100Base-TX M12 ports
  - Console Port: RS232 (M12 connector)
  - Alarm Contact: M12, 250VAC/220VDC Max, 2A Max, 60W Max

- **Technical Specifications**

  **Support** 4 10/100/1000Base-TX M12 ports and maximum 24 10/100Base-TX M12 ports

  - Support DT-Ring and MSTP ring protocols
  - Support power failure alarm
  - Exceeds EN50155/EN50121-4
  - CE, FCC certification

**Features & Benefits**

1. **Redundancy Technology**: supports DT-Ring protocols (recovery time<50ms) and MSTP
2. **Multicast Protocol**: supports IGMP Snooping, GMRP and static multicast
3. **Network Partition**: supports VLAN, PVLAN
4. **Service Quality**: supports QoS
5. **Bandwidth Management**: supports port trunking, port speed limit, broadcast storm control
6. **Network Management and Monitoring**: supports CLI, Telnet, WEB management methods; Kyvision centralized management; SNMPv1/v2/v3, RMON, LLDP, SNTR, DHCP, RTC
7. **Network Security**: supports DT-Psec, SSH, SSL, ACL
8. **Device Management**: supports FTP upgrade, also supports Syslog upload and download
9. **Device Maintenance**: supports port mirroring
10. **Alarm Output**: supports IP/MAC conflicts, power, temperature, port and ring alarms
11. **Special Function**: supports Link Check and Loop Status Check

**LED**

- LEDs on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
- Power LED: PWR1, PWR2
- Interface LED: Link/ACT, Speed
Transmission Distance
Twisted Pair: 100m (Standard CAT5, CAT5e network cable)

Power Requirements
Power Input: 24VDC (18-36VDC), 48VDC (36-72VDC), 220VAC/DCW (85-264VAC/77-300VDC)
Power Terminal: 5-pin M12
Power Consumption: <21.6W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

Physical Characteristics
Housing: Aluminum, fanless
Protection Class: IP40
Dimensions (WxHxD): 482.6x132.5x245mm (19x5.22x9.65 in.)
Weight: <4.6kg (10.14 pound)
Mounting: 19 inch 3U Rack mounting

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
318,296 hrs

Warranty
5 years

Ordering Information
SICOM5424R - _____ - ____ - ____
Ports PS1 PS2

Example Order Codes
SICOM5424R-4GE-M12-24T-M12-220AC/DCW-220AC/DCW
4 10/100/1000Base-TX M12 ports, 24 10/100Base-TX M12 ports and dual redundant 220AC/DCW (85-264VAC/77-300VDC) power supplies.
24+4G Port IP67 Managed Panel Mounting EN50155 Switch

- 4 Gigabit ports with YMF15-LC connector, 24 10/100Base-TX ports with M12 connector
- Supports DT-Ring protocols and RSTP
- EMC performance reaches industrial level 4
- IP67 protection class
- CE, FCC certificates

Overview

SICOM8000 IP67 managed industrial Ethernet switch supports 24 10/100Base-T(X) ports with M12 connectors and 4 1000Base-LX/LH ports with YMF15-LC connectors. As a member of Kyland SICOM series, it supports DT-Ring protocol and Kyvision management software. It is specially designed for the harshest environments which require high protection class.

Features & Benefits

- Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
- Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
- Network Partition: supports VLAN, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP
- Network Security: supports DT-Psec, SSH, SSL, ACL
- Device Management: supports FTP upgrade
- Device Maintenance: supports port mirroring
- Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
- Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocol
DT-Ring, DT-Ring+, DT-VLAN, MSTP, IGMP Snooping, GMRP, VLAN, PVLAN, Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server, DT-Psec, SSH, SSL, ACL, FTP, ARP, QoS

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 4Mbit
Packet Forwarding Rate: 9.5Mpps
Switching Delay: <5µs

Interface
Gigabit Ethernet Ports: max 4 1000Base-LX/LH fiber ports with YMF15-LC connector
Fast Ethernet Ports: 24 10/100Base-TX ports with M12 connector
Console Port: RS232 (M12 connector)
Alarm Contact: M12, 250VAC/350VDC Max, 120mA Max
**LED**
LEDs on Front Panel:
Running LED: Run
Power LED: PWR
Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
Twisted Pair:
100m (Standard CATS, CAT5e network cable)
Multi Mode Fiber:
850nm, 550m (1000M)
Single Mode Fiber:
1310nm, 40km/60km (1000M)
1550nm, 60km/80km (1000M)

**Power Requirements**
Power Input:
24DC (18-36VDC), 48DC (36-72VDC)
Power Terminal: M16
Power Consumption: <20W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Aluminum, fanless
Protection Class: IP67
Dimensions (W×H×D):
189×76×340 mm (7.44×2.99×13.39 in.)
Weight: 2.5kg (5.512 pound)
Mounting: Panel mounting

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
385,000 hrs

**Warranty**
5 years

**Approvals**
CE, FCC

**Industrial Standard**
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
Machinery:
IEC61373 (Vibration and shock)
IEC60068-2-32 (Free Fall)
Industry: IEC61000-6-2
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

**Mechanical Drawing**

**Ordering Information**

SICOM8000 - ______-_____
Ports       PS

**Ports**
24T-M12 = 24 10/100Base-TX M12 ports
4GX-YMF15-24T-M12 = 4 1000Base-LX/LH ports with YMF15-LC connectors, 24 10/100Base-TX M12 ports

**PS: Power Supply**
24DC = 18-36VDC, 18-36VDC, single power input
48DC = 36-72VDC, 36-72VDC, single power input

**Example Order Code**
SICOM8000-4GX-YMF15-24T-M12-24DC
4 Gigabit combo ports, 20 Gigabit SFP ports, 24DC(18-36VDC) power supply
The SICOM8010 series IP67 M12 managed POE industrial Ethernet switches are designed for industrial applications in harsh environments. The M12 connectors ensure tight, robust connections, and guarantee reliable operation, even for applications that are subject to high vibration and shock. The SICOM8010 series Ethernet switches provide 8 fast Ethernet M12 ports with 8 IEEE 802.3af compliant PoE (Power-over-Ethernet) ports and 2 Gigabit copper uplink ports. The switches are classified as power source equipment (PSE) and provide both standard IEEE802.3af 48VDC PoE with up to 15.4 watts of power per port and 24VDC PoE with up to 25 watts of power per port.

The SICOM8010 switches can be used to power IEEE 802.3af compliant powered devices (PDs), eliminating the need for additional wiring. The switches support IP67 protection class with an operating temperature range of -40 to 85°C. The SICOM8010 switches are compliant with EN50155, EN55022 Class A&B and FCC CFR47 Part 15, making them suitable for a variety of industrial applications.

As one member of Kyland SICOM series, it supports DT-Ring protocol and Kyvision management software. And the centralized management function is also optional.

Features & Benefits
- Redundancy Technology: supports DT-Ring protocols (recovery time<30ms) and RSTP
- Multicast Protocol: supports IGMP Snooping and static multicast
- Network Partition: supports VLAN, GVRP, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP
- Network Security: supports MAC address binding with port, IEEE802.1X, SSH, SSL, TACACS+
- Device Management: supports FTP upgrade
- Device Maintenance: supports port mirroring
- Alarm Output: supports power, port and ring alarms
- Special Function: supports Link Check and Loop Status Check, POE

Technical Specifications

Overview

The SICOM8010 series IP67 M12 managed POE industrial Ethernet switches are designed for industrial applications in harsh environments. The M12 connectors ensure tight, robust connections, and guarantee reliable operation, even for applications that are subject to high vibration and shock. The SICOM8010 series Ethernet switches provide 8 fast Ethernet M12 ports with 8 IEEE 802.3af compliant PoE (Power-over-Ethernet) ports and 2 Gigabit copper uplink ports. The switches are classified as power source equipment (PSE) and provide both standard IEEE802.3af 48VDC PoE with up to 15.4 watts of power per port and 24VDC PoE with up to 25 watts of power per port.

The SICOM8010 switches can be used to power IEEE 802.3af compliant powered devices (PDs), eliminating the need for additional wiring. The switches support IP67 protection class with an operating temperature range of -40 to 85°C. The SICOM8010 switches are compliant with EN50155, EN55022 Class A&B and FCC CFR47 Part 15, making them suitable for a variety of industrial applications.

As one member of Kyland SICOM series, it supports DT-Ring protocol and Kyvision management software. And the centralized management function is also optional.

Features & Benefits
- Redundancy Technology: supports DT-Ring protocols (recovery time<30ms) and RSTP
- Multicast Protocol: supports IGMP Snooping and static multicast
- Network Partition: supports VLAN, GVRP, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP
- Network Security: supports MAC address binding with port, IEEE802.1X, SSH, SSL, TACACS+
- Device Management: supports FTP upgrade
- Device Maintenance: supports port mirroring
- Alarm Output: supports power, port and ring alarms
- Special Function: supports Link Check and Loop Status Check, POE

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- Alarm Output: supports power, port and ring alarms
- Special Function: supports Link Check and Loop Status Check, POE

Technical Specifications
**Switch Properties**
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 4.2Mpps
- Switching Delay: <5μs

**Interface**
- Gigabit Ethernet Ports: 2 10/100/1000Base-TX ports with M12 connector
- Fast Ethernet Ports: max 8 10/100Base-TX ports with M12 connector and POE function
- Console Port: RS232 (M12 connector)
- Alarm Contact: M12, 250VAC/350VDC Max, 120mA Max

**LED**
- LEDs on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
  - Power LED: PWR1, PWR2
  - PoE LED: PoE
- Interface LED: Link/ACT (Fast Ethernet port), Link (Gigabit port), ACT (Gigabit port)

**Transmission Distance**
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)

**Power Requirements**
- Power Input: 24DC(18-36VDC), 48DC (36-72VDC), 110DC(77-154VDC), 24POE(22-36VDC), 48POE(36-57VDC)
- Power Terminal: M16
- Power Consumption: <7W (no PD)
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP67
- Dimensions (WxHxD): 130x279x55 mm (5.12x10.98x2.17 in.)
- Weight: 1.8kg (3.968 pound)
- Mounting: Panel mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)
- MTBF: 393,000 hrs

**Warranty**
- 5 years

**Approvals**
- CE, FCC, China Academy of Railway Sciences certificate

**Industrial Standard**
- EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- Machinery:
  - IEC61373 (Vibration and shock)
  - IEC60686-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

**Mechanical Drawing**

**Ordering Information**

**Ports**
- 2GE-M12-8T-M12 = 2 10/100/1000Base-TX M12 ports, 8 10/100Base-TX M12 ports, non-POE
- 2GE-M12-8T-4P-M12 = 2 10/100/1000Base-TX M12 ports, 4 10/100Base-TX M12 ports including 4 802.3af PoE ports
- 2GE-M12-8T-8P-M12 = 2 10/100/1000Base-TX M12 ports, 8 10/100Base-TX M12 ports including 8 802.3af PoE ports
- 8T-M12 = 8 10/100Base-TX M12 ports including 8 802.3af PoE ports
- 8T-4P-M12 = 8 10/100Base-TX M12 ports including 4 802.3af PoE ports
- 8T-8P-M12 = 8 10/100Base-TX M12 ports including 8 802.3af PoE ports

**PS: Power Supply**
- 24DC = 18-36VDC, dual redundant power inputs in M16 connector (only for non-POE models)
- 48DC = 36-72VDC, dual redundant power inputs in M16 connector (only for non-POE models)
- 110DC = 77-154VDC, dual redundant power inputs in M16 connector (only for non-POE models)
- 24POE = 22-36VDC, dual redundant power inputs in M16 connector (only for POE models)
- 48POE = 36-57VDC, dual redundant power inputs in M16 connector (only for POE models)
The SICOM5208R series IP40 M12 managed POE industrial Ethernet switches are a light version of SICOM8010. They are designed for industrial applications in harsh environments especially for EN50155 & EN50121-4 on-train applications. The M12 connectors ensure tight, robust connections, and guarantee reliable operation, even for applications that are subject to high vibration and shock. The SICOM5208R series Ethernet switches provide 8 fast Ethernet M12 ports with 8 IEEE 802.3af compliant PoE (Power-over-Ethernet) ports and 2 Gigabit copper uplink ports. The switches are classified as power source equipment (PSE) and provide both standard IEEE802.3af 48VDC PoE with up to 15.4 watts of power per port and 24VDC PoE with up to 25 watts of power per port.

The SICOM5208R switches provide both managed and unmanaged versions, and support IP40 protection class with an operating temperature range of -40 to 85°C. The SICOM5208R switches are compliant with EN50155, EN55022 Class A&B and FCC CFR47 Part 15, making them suitable for a variety of industrial applications.

As one member of Kyland SICOM series, it supports DT-Ring protocol and Kyvision management software. And the centralized management function is also optional.

**Technical Specifications**

**Standard**
- IEEE 802.3i
- IEEE 802.3ab
- IEEE802.3af
- IEEE 802.3u
- IEEE 802.3z
- IEEE 802.3x
- IEEE 802.1p
- IEEE 802.1Q
- IEEE 802.1W
- IEEE 802.1X

**Protocols**
- DT-Ring, DT-VLAN, DT-Ring+, RSTP;
- IGMP Snooping, VLAN, GVRP, PVLAN;
- Telnet, HTTP, HTTPS;
- SNMPv1/2/v3, RMON, LLDP, SNTP, DHCP server;
- SSH, SSL, TACACS+;
- FTP, QoS, ARP, PoE

**Supports max 2 10/100/1000Base-TX ports with M12 connector and 8 10/100Base-TX ports with M12 connector**
**Provides the models supporting 802.3af PoE function**
**Supports managed and unmanaged models**
**Managed models support DT-Ring protocols and RSTP**
**Compliant with EN50155, M12 connector, specially designed for rail transit projects**
**EMC performance reaches industrial level 4**
**IP40 protection class**
**Switch Properties**

- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 1 Mbit
- Packet Forwarding Rate: 4.2 Mpps
- Switching Delay: <5μs

**Interface**

- Gigabit Ethernet Ports: max 2 10/100/1000Base-TX ports with M12 connector
- Fast Ethernet Ports: max 8 10/100Base-TX ports with M12 connector and POE function
- Console Port: RS232 (M12 connector)
- Alarm Contact: M12, 250VAC/350VDC Max, 120mA Max

**LED**

- LEDS on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm (Managed models)
  - Power LED: PWR1, PWR2
  - PoE LED: PoE (PoE models)
- Interface LED: Link/ACT (Fast Ethernet port), Link (Gigabit port), ACT (Gigabit port)

**Transmission Distance**

- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)

**Power Requirements**

- Power Input:
  - Non-PoE: 24DC(18-36VDC), 48DC(36-72VDC), 110DC(77-154VDC)
  - PoE: 24POE(22-36VDC), 48POE(36-57VDC)
- Power Terminal: M16
- Power Consumption: <7W (no PD)

- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**

- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (WxHxD): Panel Mounting, 130mmx279mmx51.2mm (5.12x10.98x2.02 in.)
- Din Rail, 130mmx249mmx51.2mm (5.12x9.80x2.02 in.)
- Weight: 1.5kg (3.307 pound)
- Mounting: Panel mounting, Din Rail

**Environmental Limits**

- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**

393,000 hrs

**Warranty**

5 years

**Approvals**

CE, FCC

**Industrial Standard**

ENi:
- FCC CFR47 Part 15, ENS5022/CISPR22, Class A

**EMG**

- IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
- IEC61000-4-3 (RF): 10V/m (80MHz-2GHz)
- IEC61000-4-4 (ETT): Power Port: ±4kV, Data Port: ±2kV
- IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
- IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
- IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

**Machinery**

IEC61373 (Vibration and shock),
- IEC60068-2-32 (Free Fall)

**Industry**

IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA T5-2

**Ordering Information**

SICOM5208R - ______ - ___
The SICOM1005R series Ethernet switches are IP67 rated for the toughest industrial applications. The rugged housing and connectors guard the connection against dust, water and oil. By using M12 connectors, it is assured that Ethernet cables will connect tightly to the switch, and will be robust enough to protect your applications from external disturbances, such as the vibration and shock encountered in the transportation industry. This unmanaged industrial Ethernet switch is specially designed for moving vehicles, rail transportation, and tunnels which circumstances have special requirements on anti vibration, corruption and humidity. It offers 5 10/100Base-T(X) ports with M12 connectors and the operating temperature ranges from -40 to 85°C. SICOM1005R industrial Ethernet switches can be powered with 24VDC, 48VDC, 110VDC and 220VAC/DC full range power supplies. With a space-saving housing dimension, it can be mounted virtually anywhere in your applications.

**Overview**

- 5 10/100Base-TX ports with M12 connector
- IP67 protection class
- Supports broadcast storm control
- Full range power supplies including 24VDC, 48VDC, 110VDC and 220VAC/DC

**Technical Specifications**

**Standard**
IEEE 802.3i
IEEE 802.3u
IEEE802.3x

**Switch Properties**
MAC Table: 1K
Packet Buffer: 64Kbit
Packet Forwarding Rate: 0.8Mpps
Switching Delay: <5μs

**Interface**
Fast Ethernet Ports: 5 10/100Base-TX ports with M12 connector

**LED**
LEDs on Front Panel:
Power LED: PWR
Interface LED: Link/ACT

**Transmission Distance**
Twisted Pair:
100m (Standard CAT5, CAT5e network cable)

**Power Requirements**
Power Input:
24DC (18-36VDC), 48DC(36-72VDC),110DC (77-154VDC), 220AC/DC (85-264VAC/120-300VDC)
Power Terminal: M12
Power Consumption: <2W
Approvals
CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz); 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC61373 (Vibration and shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Railway: EN50155, EN50121-4

Physical Characteristics
Housing: Aluminum, fanless
Protection Class: IP67
Dimensions (WxHxD): 62x56x120 mm (2.44x2.20x4.72 in.)
Weight: 0.5kg (1.102 pound)
Mounting: Panel mounting

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
461,171 hrs

Warranty
5 years

Overload Protection: Support
Reverse Connection Protection: Support

Mechanical Drawing

Ordering Information
SICOM1005R - ______ - _____
Ports        PS

Ports: Interfaces
ST-M12 = 5 10/100Base-TX M12 ports
B-ST-M12 = 5 10/100Base-TX M12 ports, featured with broadcast storm control

PS: Power supply
24DC = 18-36VDC
48DC = 36-72VDC
110DC = 77-154VDC
220AC/DC = 120-300VDC/85-264VAC,50/60Hz

Accessories
M12-4Pin-99-3729-810-04 = 4 pin M12 connector of 10/100Base-TX port
M12-4Pin-99-1430-812-04 = 4 pin M12 connector of power supply
DT-XL-TX-M12-RJ45-1m = 100M copper port adaptor, M12 to RJ45, 1m length

Example Order Codes
SICOM1005R-ST-M12-24DC
5 10/100Base-TX M12 ports, 18-36VDC power supply
Layer 2 24+4G Port Managed Rack Mountable Modular IEC61850 PoE Switch

- Flexible 2U modular design for easy expansion
- Supports DT-Ring protocols and RSTP
- Max 24 802.3af PoE ports
- Compliant with IEC61850-3 and IEEE1613
- Allows front and rear panel mounting
- Supports power failure alarm

Overview

SICOM3024SM is a Gigabit modular managed industrial Ethernet switch which supports up to 24 high-power POE feeding ports. It supports DT-Ring and DT-Ring+ with recovery time less than 50ms. Its powerful network management system supports CLI, Telnet, WEB, SNMP, OPC and network topology auto-generation. The reliable short lagging function, the function of zero packet loss in long-time full load running and in Goose message real-time transmission make SICOM3024SM quite suitable for digital substations and other fields.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and RSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

- **Standard**
  - IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3af, IEEE 802.3z, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1w

- **Protocols**
  - DT-Ring, DT-Ring+, DT-VLAN, RSTP;
  - IGMP Snooping, GMRP;
  - VLAN, PVLAN;
  - Telnet, HTTP, SNMPv1/v2/v3, RMON, LLDP, SNTP;
  - SSH, SSL, ACL;
  - ARP, FTP, QoS

- **Switch Properties**
  - Priority Queues: 4
  - Number of VLANs: 256
  - VLAN ID: 1-4094
  - Number of Multicast Groups: 256
  - MAC Table: 8K
  - Packet Buffer: 4Mbit
  - Packet Forwarding Rate: 9.5Mpps
  - Switching Delay: <5μs

- **Interface**
  - 4 0.5U slots for 6-port Fast Ethernet interface modules (100Base-FX, 10/100Base-TX)
  - Gigabit Ethernet Ports: 4 1000Base SFP slots
  - Fast Ethernet Ports: max 24 100Base-FX, SM/MM ports, FC/SC/ST connector or 24 10/100Base-TX RJ45 ports
  - Console Port: RS232 (RJ45 connector)
**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 361,290 hrs

**Warranty**
- 5 years

**Approvals**
- CE, FCC

**Industrial Standard**
- **EMI:**
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
- **EMS:**
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (IC): 30V (1kHz-150kHz); 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
  - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
  - IEC61000-4-10 (Damped oscillation): 100A/m
  - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- **Machinery:**
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- **Industry:** IEC61000-6-2
- **Power:** IEC61850-3, IEEE1613
- **Railway:** EN50155, EN50121-4
- **Traffic Control:** NEMA TS-2

**LED**
1) LEDs on Front Panel:
- Running LED: Run
- Interface LED: Link/ACT (Fast Ethernet port), Speed (Fast Ethernet port), DPX (Gigabit port), Link (Gigabit port)
2) LEDs on Rear Panel:
- Interface LED: Link/ACT
- Port Speed LED: Speed

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
  - 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

**Power Requirements**
- Power Input:
  - 24DC (18-36VDC), 48DC (36-72VDC), 220AC/DC (85-265VAC/120-375VDC)
  - Power Terminal: 3-phase AC electric outlet
- Power Consumption: <25W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (W×h×D): 482.6x88x245mm (19x3.46x9.65 in.)
- Weight: <5kg (11.023 pound)
- Mounting: 19 inch 2U Rack mounting

**Mechanical Drawing**
## Ordering Information

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<th>Gigabit Ports</th>
<th>POE Power Supply</th>
<th>Power Supply</th>
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<td><strong>Slot4</strong></td>
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### C: Chassis (Gigabit ports and power supply)

- **4GX-24DC = SICOM3024SM Chassis with 4 Gigabit SFP ports, 18-36VDC power supply, no PoE power supply**
- **4GX-48DC = SICOM3024SM Chassis with 4 Gigabit SFP ports, 36-72VDC power supply, no PoE power supply**
- **4GX-220AC/DC = SICOM3024SM Chassis with 4 Gigabit SFP ports, 120-375VDC/85-265VAC power supply, no PoE power supply**
- **24DC = SICOM3024SM Chassis, 18-36VDC power supply, no PoE power supply**
- **48DC = SICOM3024SM Chassis, 36-72VDC power supply, no PoE power supply**
- **220AC/DC = SICOM3024SM Chassis, 120-375VDC/85-265VAC power supply, no PoE power supply**
- **POE-4GX-24DC = SICOM3024SM Chassis with 4 Gigabit SFP ports, 18-36VDC power supply, 22-36VDC PoE power supply**
- **POE-4GX-48DC = SICOM3024SM Chassis with 4 Gigabit SFP ports, 36-72VDC power supply, 36-57VDC PoE power supply**
- **POE-24DC = SICOM3024SM Chassis, 18-36VDC power supply, 22-36VDC PoE power supply**
- **POE-48DC = SICOM3024SM Chassis, 36-72VDC power supply, 36-57VDC PoE power supply**

### S1-S4: 100M Slots

- **XX = None**
- **6SSC = SM3.2-6S-SC-1310-40-V2.0, Interface module with 6 100Base-FX single mode fiber ports, 1310nm, 40km, SC connector**
- **6SST = SM3.2-6S-ST-1310-40-V2.0, Interface module with 6 100Base-FX single mode fiber ports, 1310nm, 40km, ST connector**
- **6SFC = SM3.2-6S-FC-1310-40-V2.0, Interface module with 6 100Base-FX single mode fiber ports, 1310nm, 40km, FC connector**
- **6SSC60 = SM3.2-6S-SC-1550-80-V2.0, Interface module with 6 100Base-FX single mode fiber ports, 1550nm, 80km, SC connector**
- **6SSC80 = SM3.2-6S-SC-1550-80-V2.0, Interface module with 6 100Base-FX single mode fiber ports, 1550nm, 80km, SC connector**
- **6MSC = SM3.2-6M-SC-1310-5-2T-V2.0, Interface module with 6 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connector**
- **6MST = SM3.2-6M-ST-1310-5-2T-V2.0, Interface module with 6 100Base-FX multi mode fiber ports, 1310nm, 5km, ST connector**
- **6MFC = SM3.2-6M-FC-1310-5-2T-V2.0, Interface module with 6 100Base-FX multi mode fiber ports, 1310nm, 5km, FC connector**
- **4SSC2T = SM3.2-4S-SC-1310-40-2T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1310nm, 40km, SC connector, 2 10/100Base-TX RJ45 ports**
- **4SST2T = SM3.2-4S-ST-1310-40-2T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1310nm, 40km, ST connector, 2 10/100Base-TX RJ45 ports**
- **4SFC2T = SM3.2-4S-FC-1310-40-2T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1310nm, 40km, FC connector, 2 10/100Base-TX RJ45 ports**
- **4SSC602T = SM3.2-4S-SC-1550-80-2T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1550nm, 80km, SC connector, 2 10/100Base-TX RJ45 ports**
- **4SSC802T = SM3.2-4S-SC-1550-80-2T-V2.0, Interface module with 4 100Base-FX single mode fiber ports, 1550nm, 80km, SC connector, 2 10/100Base-TX RJ45 ports**
- **4MSC2T = SM3.2-4M-SC-1310-5-2T-V2.0, Interface module with 4 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connector, 2 10/100Base-TX RJ45 ports**
- **4MST2T = SM3.2-4M-ST-1310-5-2T-V2.0, Interface module with 4 100Base-FX multi mode fiber ports, 1310nm, 5km, ST connector, 2 10/100Base-TX RJ45 ports**
- **4MFC2T = SM3.2-4M-FC-1310-5-2T-V2.0, Interface module with 4 100Base-FX multi mode fiber ports, 1310nm, 5km, FC connector, 2 10/100Base-TX RJ45 ports**
- **2SSC4T = SM3.2-2S-SC-1310-40-4T-V2.0, Interface module with 2 100Base-FX single mode fiber ports, 1310nm, 40km, SC connector, 4 10/100Base-TX RJ45 ports**
$2SST4T = \text{SM3.2-2S-ST-1310-40-4T-V2.0, Interface module with 2 100Base-FX single mode fiber ports, 1310nm, ST connector, 4 10/100Base-TX RJ45 ports}$

$2FC4T = \text{SM3.2-2S-FC-1310-40-4T-V2.0, Interface module with 2 100Base-FX single mode fiber ports, 1310nm, FC connector, 4 10/100Base-TX RJ45 ports}$

$2SSC604T = \text{SM3.2-2S-SC-1310-60-4T-V2.0, Interface module with 2 100Base-FX single mode fiber ports, 1310nm, 60km, SC connector, 4 10/100Base-TX RJ45 ports}$

$2SSC804T = \text{SM3.2-2S-SC-1550-80-4T-V2.0, Interface module with 2 100Base-FX single mode fiber ports, 1550nm, 80km, SC connector, 4 10/100Base-TX RJ45 ports}$

$2MSC4T = \text{SM3.2-2M-SC-1310-5-4T-V2.0, Interface module with 2 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connector, 4 10/100Base-TX RJ45 ports}$

$2MST4T = \text{SM3.2-2M-ST-1310-5-4T-V2.0, Interface module with 2 100Base-FX multi mode fiber ports, 1310nm, 5km, ST connector, 4 10/100Base-TX RJ45 ports}$

$2MFC4T = \text{SM3.2-2M-FC-1310-5-4T-V2.0, Interface module with 2 100Base-FX multi mode fiber ports, 1310nm, 5km, FC connector, 4 10/100Base-TX RJ45 ports}$

$6T = \text{SM3.2-6T-V2.0, Interface module with 6 10/100Base-TX RJ45 ports}$

**Example Order Codes**

SICOM3024SM-4GX-24DC-6T-6M5C-4M5C2T

SICOM3024SM-4GX-24DC Chassis, 2 x SM3.2-6T, 1 SM3.2-6M-SC-1310-5-V2.0, 1 SM3.2-4M-SC-1310-5-2T-V2.0
SICOM3307S

Overview

SICOM3307S is Kyland Din Rail Managed PoE industrial Ethernet switch supporting 3 100/1000M SFP or 10/100/1000Base-TX RJ45 combo ports and implementing IEEE802.3at PoE Plus over each of the 7 10/100Base-TX ports. Each of the 10/100Base-TX ports can support max 30 watts feed power. SICOM3307S is equipped with IEC62439-6/DRP ring protocol which enables less than 20ms recovery time. It also supports DT-Ring, RSTP/STP, MSTP and VRRP. Mini USB console port enables configuration easy backup and restore. Exceeding EN50155, EN50121-4 and NEMA TS-2, SICOM3307S Series is specifically designed to operate reliably in a variety of industrial applications such as utility substation, transportation and traffic video surveillance systems.

Features & Benefits

- Redundancy Technology: supports IEC62439-6 (recovery time<20ms), DT-Ring protocol suite (recovery time<50ms) & MSTP
- Multicast Protocol: support IGMP Snooping, GMRP and static multicast
- Network Partition: supports VLAN, GVRP, VLAN
- Service Quality: supports QoS
- Bandwidth Management: supports Ports Trucking, port speed limit,broadcast storm control
- Network Management Monitoring: supports CLI, Telnet, WEB management, Kyvision centralized management, SNMP v1/v2/v3, RMON, LLDP, SNTP, DHCP, CLI, Telnet, WEB management, Kyvision
- Network Security: supports MAC address binding with port, IEEE802.1X,SSH,SSL,TACACS+,ACL,DT-Psec
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring, VCT (Cable Fault Test)

Technical Specifications

Standard

IEEE 802.3u;IEEE 802.3u;IEEE 802.3ab;IEEE802.3ac;IEEE 802.3ad;IEEE 802.3z;IEEE 802.3x;IEEE 802.1p;IEEE 802.1Q; IEEE 802.1s; IEEE 802.1X;IEEE 802.3at

Protocol

DT-Ring, DT-VLAN, DT-Ring+, MSTP, IGMP snooping, GMRP, VLAN, GVRP, PVLAN, Telnet, HTTP, HTTPS, SNMP v1/v2/v3, RMON, LLDP, SNTP, Bootp, DHCP, server/relay/client, DHCP: Option 82; SSH, SSL, TACACS+, ACL, DT-Psec, Syslog, FTP, TFTP, LACP, QoS, ARP, Modbus TCP, ARP, PoE

Switch Properties

Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1~4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 5.6Mpps
Switching Delay: <5us

Interface

Gigabit Ethernet Ports: 1000Base-X, 0/100/1000 Base -T(X) Combo ports
Fast Ethernet Ports: 10/100Base-TX RJ45 ports
Console Port: Mini USB
Alarm Contact:
3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
LEDs on Front Panel:
Running LED: Run
Alarm LED: Alarm
Power LED: PWR1, PWR2
Ring LED: Ring
Interface LED:
Link/ACT, Speed (Electrical Port), Link/ACT (GX1-GX3)
PoE LED: 1-7

**Reset Button**
Reset: Reboot and restore default configuration

**Transmission Distance**
Twisted Pair:
100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber:
850nm,550m(Gigabit)
Single Mode Fiber:
1310nm, 10km/40km (Gigabit)
1550nm, 60km/80km (Gigabit)

**Power Requirements**
Power Input:
48DC (44-57VDC),
Power Terminal:
5-pin 5.08mm-spacing plug-in terminal block
Power Consumption: <11W(no PD),<250W(Full PD)
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**
Housing: Aluminum cooling surface, fanless
Protection Class: IP40
Dimensions (WxHxD): 88x135x137mm (3.46x5.31x5.39 in)
Weight: 1.25kg (2.76 pound)
Mounting: DIN-Rail or panel mounting

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
323,350 hrs

**Warranty**
5 years

**Approvals**
CE, FCC (pending)

**Industrial Standard**
EMI:
FCC Part 15(Class A), EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)
Industry: IEC61000-6-2
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

**Mechanical Drawing**

**Ordering Information**
SICOM3307S-3GX/GE-7T-7P-48DC
3 100/1000M SFP or 10/100/1000Base-TX RJ45 combo ports, 7 10/100Base-TX RJ45 ports, each of them support IEEE802.3af/at PoE plus with max 30 watts feed power per port, 48VDC(44-57VDC) power supply
SICOM3008S

8 Port Fast Ethernet Managed PoE Industrial Ethernet Switch

- 8 PoE Ethernet copper ports comply with 802.3at
- Each PoE port provides max 30W 48VDC feed power
- Intelligent power consumption detection, PD power supply state detection and PoE scheduling functions
- Supports IEC62439-6, DT-Ring, RSTP and MSTP ring protocols
- Supports reset button for fast reboot or loading default settings
- Provides Mini USB Console port, supports setting backup and recovery through USB
- Supports VCT (Cable Fault Test)

Overview

SICOM3008S is Kyland Din Rail Managed PoE industrial Ethernet switch implementing IEEE802.3af/at PoE Plus over each of the 8 10/100Base-TX ports. Each of the 10/100Base-TX ports can support max 30 watts feed power. SICOM3008S is equipped with IEC62439-6/DRP ring protocol which enables less than 20ms recovery time. It also supports DT-Ring, RSTP/STP, MSTP and VRRP. Mini USB console port enables configuration easy backup and restore. Exceeding EN50155, EN50121-4 and NEMA TS-2, SICOM3008S Series is specifically designed to operate reliably in a variety of industrial applications such as utility substation, transportation and traffic video surveillance systems.

Features & Benefits

- Redundancy Technology: supports IEC62439-6 (recovery time <20ms), DT-Ring protocol suite (recovery time <50ms) & MSTP
- Multicast Protocol: support IGMP Snooping, GMRP and static multicast
- Network Partition: supports VLAN, GVRP/VLAN
- Service Qualit: supports QoS
- Bandwidth Management: supports Ports Trunking, port speed limit, broadcast storm control
- Network Management Monitoring: supports CLI, Telnet, WEB management, Kyvision centralized management, SNMP v1/v2/v3, RMON, LLDP, SNTP, DHCP
- Network Security: supports MAC address binding with port, IEEE802.1X, SSH/SSL, TACACS+, ACL, DT-Psec
- Device Management: supports FTP/TFTP upgrade, also supports Syslog upload and download
- Device Maintenance: supports port mirroring, VCT (Cable Fault Test)

Technical Specifications

Standard

IEEE 802.3u,IEEE 802.3j,IEEE 802.3ab,IEEE802.3ac,IEEE 802.3ad,IEEE 802.3z,IEEE 802.3x,IEEE 802.1p,IEEE 802.1Q, IEEE 802.1s, IEEE 802.1X,IEEE 802.3at

Protocol

DT-Ring, DT-VLAN, DT-Ring+, MSTP, IGMP snooping, GMRP, VLAN, GVRP, PVLAN, Telnet, HTTPS/HTTP, SNMP v1/v2/v3, RMON, LLDP, SNTP, BootP, DHCP, server/relay/client, DHCP Option 82; SSH, SSL, TACACS+, ACL, DT-Psec, Syslog, FTP, TFTP, LACP, QoS, ARP, Modbus TCP, ARP, PoE

Switch Properties

Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 5.6Mpps
Switching Delay: <5us

Interface

Fast Ethernet Ports: 8 x 10/100Base-T (X) auto-sensing Ethernet RJ45 interface
Console Port: Mini USB
Alarm Contact:
3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

**LED**
- LED on Front Panel:
  - Running LED: Run
  - Alarm LED: Alarm
  - Power LED: PWR1, PWR2
  - Ring LED: Ring
  - Interface LED: Link/ACT, Speed
  - PoE LED: 1-8

**Transmission Distance**
Twisted Pair:
100m (Standard CAT5, CAT5e network cable)

**Reset Button**
Reboot and restore default configuration

**Power Requirements**
- Power Input: 48VDC(44-57VDC)
- Power Terminal:
  - 5-pin 5.08mm-spacing plug-in terminal block
  - Power Consumption: <1.1W(NO PD), <250W(Full load PD)
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Aluminum cooling surface, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 88x135x137mm (3.46x5.31x5.39 in.)
- Weight: 1.25kg (2.76 pound)
- Mounting: DIN-Rail or panel mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
325,120 hrs

**Warranty**
- 5 years

**Approvals**
- CE, FCC (pending)

**Industrial Standard**
- EMI:
  - FCC Part 15(Class A), EN55022/CISPR22, Class A
  - EME:
    - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
    - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
    - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
    - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
    - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
    - IEC61000-4-16 (Common Mode conduction): 30V (cont.), 300V (1s)
- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)

**Ordering Information**

**POE**

**Mechanical Drawing**

**Din Rail Installation**

**Panel Mounting Installation**

**SICOM3008S-8T-8P-48DC**

8 10/100Base-TX RJ45 802.3at PoE ports, each of them support IEEE802.2af/at PoE plus with max 30 watts feed power per port, 44-57VDC power supply
KIEN2204S is Kyland Din Rail Unmanaged PoE industrial Ethernet switch supporting 2 100/1000M SFP or 10/100/1000Base-TX RJ45 combo ports and implementing IEEE802.3at PoE Plus over each of the 4 10/100Base-TX ports. Each of the 10/100Base-TX ports can support max 30 watts feed power. KIEN2204S is equipped with Mini USB console port enables configuration easy backup and restore. Exceeding EN50155, EN50121-4 and NEMA TS-2, KIEN2204S Series is specifically designed to operate reliably in a variety of industrial applications such as utility substation, transportation and traffic video surveillance systems.

Overview

KIEN2204S is Kyland Din Rail Unmanaged PoE industrial Ethernet switch supporting 2 100/1000M SFP or 10/100/1000Base-TX RJ45 combo ports and implementing IEEE802.3at PoE Plus over each of the 4 10/100Base-TX ports. Each of the 10/100Base-TX ports can support max 30 watts feed power. KIEN2204S is equipped with Mini USB console port enables configuration easy backup and restore. Exceeding EN50155, EN50121-4 and NEMA TS-2, KIEN2204S Series is specifically designed to operate reliably in a variety of industrial applications such as utility substation, transportation and traffic video surveillance systems.

Technical Specifications

**Standard**
IEEE 802.3i,IEEE 802.3u,IEEE 802.3ab,IEEE802.3z,IEEE 802.3at

**Switch Properties**
MAC Table: 2K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 4.5Mpps
Switching Delay: <5μs

**Interface**
Gigabit Ethernet Ports: 2 x 1000Base-X or 10/100/1000 Base -T(X) Combo ports 4 x Fast Ethernet Ports: 10/100Base-T(X)RJ45 ports

**LED**
LEDs on Front Panel:
- Alarm LED: Alarm
- Power LED: PWR1, PWR2
- Interface LED:
  - Link/ACT, Speed (Electrical Port), Link/ACT (GX1-GX2)
  - PoE LED: 1-4

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
  - Multi Mode Fiber:
    - 850nm,550m(Gigabit)
    - Single Mode Fiber:
      - 1310nm, 10km/40km (Gigabit)
      - 1550nm, 60km/80km (Gigabit)

- PoE+ Ethernet copper ports comply with 802.3at
- Each PoE port provides max 30W 48VDC feed power
- Intelligent power consumption detection, PD power supply state detection and PoE scheduling functions
- Supports wide operating temperature: -40 to 85°C
- Meet EMC industrial level 4 requirements
- IP40 protection class
**Power Requirements**

- Power Input: 48DC (44-57VDC)
- Power Terminal: 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption: <6W(no PD), <126W(Full load PD)
- Overload Protection: Support
- Reverse Connection Protection: Support

**Physical Characteristics**

- Housing: Aluminum cooling surface, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 88x135x137mm (3.46x5.31x5.39 in.)
- Weight: 1.25kg (2.76 pound)
- Mounting: DIN-Rail or panel mounting

**Environmental Limits**

- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**

326,200 hrs

**Warranty**

5 years

**Approvals**

- CE, FCC (pending)

**Industrial Standard**

- EMI:
  - FCC Part 15(Class A), EN55022/CISPR22, Class A
  - IEC61000-3-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-3-3 (RF): 10V/m (80 MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

- SMS:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)

- Industry: IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

**Mechanical Drawing**

![Din Rail Installation](image)

![Panel Mounting Installation](image)

**Ordering Information**

KIEN2204S-2GX/GE-4T-4P-48DC

2 100/1000M SFP or 10/100/1000Base-TX. RJ45 combo ports, 4 10/100Base-TX RJ45 ports, each of them support IEEE802.2af/at PoE plus with max 30 watts feed power per port, 48VDC(44-57VDC)
The KIEN1005S industrial Ethernet switches are unmanaged 5-port PoE (Power-over-Ethernet) switches provided by Kyland. The switches support 1 fast Ethernet fiber/RJ45 optional port and 4 10/100Base-TX PoE ports compliant with IEEE802.3af. The output power per port can reach 15.4 watts at 44-57VDC. KIEN1005S can be used to power IEEE802.3af compliant powered devices (PD), eliminating the need for additional wiring, and support IEEE 802.3/802.3u with 10/100M, full/half-duplex, MDI/MDI-X auto-sensing to provide an economical solution for your industrial Ethernet network.

### Overview

- 1 Fast Ethernet fiber/RJ45 optional port and 4 10/100Base-TX POE ports compliant with IEEE802.3af
- The output power per POE port is 15.4W
- Operating temperature is -40°C to 85°C
- EMC performance reaches industrial level 4
- IP40 protection class

### Technical Specifications

#### Standard
- IEEE 802.3i
- IEEE 802.3u
- IEEE 802.3af

#### Switch Properties
- MAC Table: 2K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 0.8Mpps
- Switching Delay: <5μs

#### Interface
- Fast Ethernet Fiber Ports: max 1 100Base-FX, SM/MM port, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: max 5 10/100Base-TX RJ45 ports

#### LED
- LEDs on Front Panel:
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT
  - POE LED: POE

#### Transmission Distance
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber: 1310nm, 5km (100M)
- Single Mode Fiber: 1310nm, 40km/60km (100M); 1550nm, 60km/80km (100M)
**Power Requirements**

- **Power Input:** 48DC(44-57VDC)
- **Power Terminal:** 5-pin 5.08mm-spacing plug-in terminal block
- **Power Consumption:** <3W (no PD), <70W (full load PD)
- **Overload Protection:** Support
- **Reverse Connection Protection:** Support

**Physical Characteristics**

- **Housing:** Metal, fanless
- **Protection Class:** IP40
- **Dimensions (WxHxD):** 53.6x135x106.5 mm (2.11x5.31x4.19 in.)
- **Weight:** 0.5kg (1.102 pound)
- **Mounting:** DIN-Rail or Panel mounting

**Environmental Limits**

- **Operating Temperature:** -40 to 85°C (-40 to 185°F)
- **Storage Temperature:** -40 to 85°C (-40 to 185°F)
- **Ambient Relative Humidity:** 5 to 95% (non-condensing)

**MTBF**

353,350 hrs

**Mechanical Drawing**

- Din Rail Installation
- Panel Mounting Installation

**Ordering Information**

- **Ports:** Interface
  - ST-4P = 1 10/100Base-TX RJ45 port, 4 10/100Base-TX RJ45 802.3af PoE ports
  - 1M-4T-4P = 1 100Base-FX multi mode port, 4 10/100Base-TX RJ45 802.3af PoE ports
  - 1S-4T-4P = 1 100Base-FX single mode port, 4 10/100Base-TX RJ45 802.3af PoE ports

- **Distance:** Fiber Distance
  - 1310-5 = 1310nm, 5km
  - 1310-40 = 1310nm, 40km
  - 1310-60 = 1310nm, 60km
  - 1550-80 = 1550nm, 80km

**Connector:** Fiber Connector

- **SC** = SC Connector
- **ST** = ST Connector
- **FC** = FC Connector

**PS:** Power Supply

- **48DC** = 44-57VDC

**Example Order Codes**

KIEN1005S-5T-4P-48DC

5 10/100Base-TX RJ45 ports, 4 of them support 802.3af PoE output, the switch support 44-57VDC power supply
Overview

SICOM3170 is an ultra low power consumption (less than 8 Watts), Managed Industrial Ethernet switch. This dual slot Ethernet switch is designed to slide into an open Detector Chassis Slot of any Signal cabinet. This Managed Industrial Ethernet Switch is widely deployed in SCADA and OSS networks around the world. This proven ultra low power consumption switch (Green Product - RoHS) features 2 SFP Gigabit ports, Seven 10/100 RJ45 Ports and One 10/100/1000 RJ45 Port. The SICOM3170 Industrial Signal Control Switch is the first of a series of Traffic Ethernet Switches Series from Kyland and a continuation of our “Green Ethernet” product line.

The “SICOM 3170” Industrial Ethernet switch offers a significant increase in the application and bandwidth capabilities of the highly configurable Kyland SICOM line of Managed Industrial Ethernet switches. This is the perfect switch for the deployment of bandwidth-intensive applications such as internal and external video surveillance at traffic intersections, local and regional control systems. This network switch can be easily installed into any traffic cabinet with an open dual slot in a detector input chassis. Clean, filtered 12VDC or 24VDC power is provided directly from the back-plane of the detector chassis and eliminates the need for additional power supplies and power cables within the traffic cabinet. The SICOM 3170 is the easiest and fastest to deploy Industrial Ethernet network switch. Requiring less than 8 Watts of power to operate it is also a “Green Ethernet” Industrial Ethernet switch, and fully RoHS compliant.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and RSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, GVRP, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports MAC address binding with port, IEEE802.1X, TACACS+, SSH, SSL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Technical Specifications

Standard
IEEE802.1p, IEEE802.1Q, IEEE802.1w, IEEE802.1X, IEEE802.3i, IEEE802.3ab, IEEE802.3af, IEEE802.3u, IEEE802.3x, IEEE802.3z

Protocol
DT-Ring, DT-Ring+, DT-VLAN, RSTP; VLAN, GVRP, PVLAN; IGMP Snooping, GMRP; Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server; SSH, SSL, TACACS+; FTP, ARP, QoS
Switch Properties
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 4Mbit
- Packet Forwarding Rate: 5.5Mpps
- Switching Delay: <5μs

Interface
- Gigabit Ethernet Ports: 2 1000Base SFP slots and 1 10/100/1000Base-TX RJ45 port
- Fast Ethernet Ports: 7 10/100Base-TX RJ45 ports
- Console Port: RS232 (RJ45 connector)

LED
- LEDs on Front Panel:
  - Running LED: Run
  - Power LED: PWR
- Interface LED: Link/ACT (Fast Ethernet Port), Speed (Fast Ethernet port), Act (Gigabit Ethernet port), Link (Gigabit Ethernet port)

Transmission Distance
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber: 850nm, 550m (1000M)
- Single Mode Fiber: 1310nm, 10km/40km (1000M), 1550nm, 60km/80km (1000M)

Power Requirements
- Power Input: 12DCW(9-36VDC)
- Power Connector: PCB Golden Finger
- Power Consumption: <8W
- Overload Protection: Support
- Reverse Connection Protection: Support

Physical Characteristics
- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 58x114x205mm (2.28x4.49x8.07 in.)
- Weight: 0.8kg (1.764 pound)
- Mounting: Inserted into a rack through rail slots

Environmental Limits
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
- 370,000 hrs

Warranty
- 5 years

Approvals
- CE, FCC, RoHS

Industrial Standard
- EMI: FCC CFR47 Part 15, EN55022, Class A&B
- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-1GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
  - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
  - IEC61000-4-10 (Damped oscillation): 30A/m
  - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
- IEC61000-6-2
- Power: IEC61850-3, IEEE1613
- Railway: EN50121-4
- Traffic Control: NEMA KS-2

Ordering Information
SICOM3170-2GX-1GE-7T-12DCW
- 2 Gigabit SFP ports, 1 10/100/1000Base-TX RJ45 ports, 7 10/100Base-TX RJ45 ports, 12DCW(9-36VDC)
SICOM3171 is an ultra low power consumption (less than 3.5 Watts), Managed Traffic Ethernet Serial Device Server. This single slot serial server is designed to slide into an open Detector Chassis Slot of any signal cabinet. This Traffic Serial Server is widely deployed in SCADA and OSS networks around world. This proven ultra low power consumption serial server (Green Product-RoHS) features one 10/100Base-TX Ethernet port, and four serial ports being selectable for RS232, RS422 and RS485 serial connectivity. The SICOM3171 Managed Traffic Ethernet Serial Server is the second of a series of Traffic Ethernet Switches Series form Kyland and a continuation of our “Green Ethernet” product line.

The SICOM3171 Traffic Ethernet Serial Server has COM, TTY or GUI port control and management function, offers monitoring and diagnostic utility. It enables data security via SSHv2 and SSL/TLS, and variety of IP addressing methods DHCP, RARP, ARP-PING for remote installation. It’s the ideal for network enabling and remotely managing variable message signs, loop detectors, ramp meters or any RS-232/422/485 serial device. This serial sever can be easily installed into any traffic cabinet with an open single slot in a detector input chassis. Clean, filtered 12VDC or 24VDC power is provided directly from the back-plane of the detector chassis and eliminates adding to the mess of additional power supplies and power cables within the traffic cabinet.

Overview

- 1 10/100Base-TX port, 4 RS232/422/485 serial ports
- Green Ethernet solution with low power consumption design
- IP40 protection class

Features & Benefits

1. Transmission Protocol: supports TCP and UDP protocols
2. Network Management and Monitoring: supports CLI, Telnet, WEB management methods, SNMPv1/v2
3. Network Security: supports SSH, SSL
4. Device Management: supports FTP upgrade
5. Device Maintenance: supports port mirroring

Technical Specifications

**Standard**
- IEEE802.3i
- IEEE802.3u
- IEEE802.3x

**Protocol**
- TCP, UDP,
- FTP,
- Telnet, SNMPv1/v2,
- HTTP, HTTPS, SSH, SSL,
- ARP, RARP

**Interface**
- Fast Ethernet Port: 1 10/100Base-TX RJ45 ports
- Serial Ports: 4 RS232/RS485/RS422 serial ports

**LED**
- LEDs on Front Panel:
  - Running LED: Run
  - Power LED: PWR
- Interface LED: Link (Fast Ethernet port), ACT (Fast Ethernet port)
**Transmission Distance**
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)

**Power Requirements**
- Power Input: 12DCW (9-36VDC)
- Power Connector: PCB Golden Finger
- Power Consumption: <3.5W

Overload Protection: Support
Reverse Connection Protection: Support

**Physical Characteristics**
- Housing: Metal
- Protection Class: IP40
- Dimensions (WxHxD): 30x114x205mm (1.18x4.49x8.07 in.)
- Weight: 350g (0.772 pound)
- Mounting: Inserted into a rack through a rail slot

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 306,600 hrs

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**Warranty**
- 5 years

**Approvals**
- CE, FCC, RoHS

**Industrial Standard**
- EMI: FCC Part 15, Class A&B

- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-1GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
  - IEC61000-4-9 (Pulsed magnetic field): 1000A/m
  - IEC61000-4-10 (Damped oscillation): 30A/m
  - IEC61000-4-12 (Oscillatory wave): 2.5kV/CM, 1kV/DM
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)

Traffic Control: NEMA TS-2

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**Mechanical Drawing**

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**Ordering Information**

| SICOM3170-2GX-1GE-7T-12DCW | 2 Gigabit SFP ports, 1 10/100/1000Base-TX RJ45 ports, 7 10/100Base-TX RJ45 ports, 12DCW (9-36VDC) |
SICOM3172

EoVDSL & Serial Device Server Integrated Traffic Industrial Ethernet Switch

- 2 EoVDSL ports, 4 10/100Base-TX RJ45 ports and 2 RS232/RS485 serial ports
- Support DT-Ring and RSTP protocol
- Serial ports support TCP Server/Client, UDP mode
- Industrial level 4 EMC performance

Overview

SICOM3172 is an ultra low power consumption (less than 10 Watts), managed EoVDSL & serial device server integrated traffic industrial Ethernet switch. This dual slot Ethernet switch is designed to slide into an open Detector Chassis Slot of any signal cabinet. This Traffic Ethernet Switch is widely deployed in SCADA and OSS networks around world. This proven ultra low power consumption device features two EoVDSL ports with RJ11 connector, four 10/100Base-TX Ethernet port, and two serial ports being selectable for RS232, RS422 and RS485 serial connectivity. The SICOM3172 Managed Traffic Ethernet Serial Server is the third of a series of Traffic Ethernet Switches Series form Kyland and a continuation of our green energy efficiency product line.

The SICOM3172 Traffic Ethernet Switch provides reliable, long distance Ethernet communications over telephone grade cable with speeds up to 100Mbps over up to 2km distances. These two EoVDSL uplinks cut implementation time and cost by utilizing exiting phone lines for high speed data communications. This EoVDSL & Serial Device Server Integrated Traffic Industrial Ethernet Switch can be easily installed into any traffic cabinet with an open dual slot in a detector input chassis. Clean, filtered 24VDC power is provided directly from the back-plane of the detector chassis and eliminates adding to the mess of additional power supplies and power cables within the traffic cabinet.

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms), RSTP
2. Multicast Protocol: supports IGMP Snooping and static multicast protocol
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports SSH, TACACS+, AAA
8. Device Management: supports FTP upgrade, configuration upload/download
9. Device Maintenance: supports port mirroring, LLDP, link check
10. Device Monitoring: supports port and ring alarms

Technical Specifications

Standards

IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocols

DT-Ring, DT-Ring+, RSTP, IGMP snooping,
VLAN, PVLAN, Telnet, HTTP, SNMPv1/v2/v3, RMON, SNTP, LLDP, SSH, TACACS+, AAA, FTP, ARP, QoS
### Switch Properties
- **Priority:** 4
- **VLAN:** 256
- **VLAN ID:** 1-4093
- **Number of Multicast Groups:** 256
- **MAC address Table:** 8K
- **Packet Buffer:** 1Mbit
- **Packet Forwarding Rate:** 0.9Mpps
- **Switching Delay:** <5us

### Interface
- **EoVDSL ports:** 2 ports with RJ11 connector, rate: 2/3/5/15/20/25/55/100Mbps
- **Copper ports:** 4 ports with RJ45 connector, 10/100Base-TX
- **Serial ports:** 2 RS232/RS485 serial ports with RJ45 connector
- **Console port:** RS232, RJ45

### LED
- **LED on front panel**
- **Running LED:** Run
- **Power LED:** PWR
- **Ring LED:** Ring
- **EoVDSL port data receiving/sending LED:** V1, V2
- **EoVDSL port role LED:** CO1, CO2
- **Interface LED:** Link/ACT (Fast Ethernet Port)

### Transmission Distance

<table>
<thead>
<tr>
<th>EoVDSL</th>
<th>No</th>
<th>Rate(Mbps)</th>
<th>Distance(m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>55</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>25</td>
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<td>1500</td>
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</tr>
<tr>
<td>7</td>
<td>3</td>
<td>1800</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>2000</td>
<td></td>
</tr>
</tbody>
</table>

**Serial ports:** RS232 15m, RS422/RS485 1200m.  
**Copper ports:** 100m (Standard CAT5, CAT5e cable)

### Power Requirements
- **Power Input:** 24DC (18-36VDC)
- **Power Connector:** PCB Golden Finger
- **Power Consumption:** <10W

### Physical Characteristics
- **Housing:** Metal, fanless
- **Protection Class:** IP30
- **Dimensions (WxHxD):** 41.45x114x167.50mm (1.63x4.49x6.59 in.)
- **Weight:** 0.8kg (1.76 pound)
- **Mounting:** Inserted into a rack through rail slots

### Environmental Limits
- **Operating Temperature:** -40 to 85°C (-40 to 185°F)
- **Storage Temperature:** -40 to 85°C (-40 to 185°F)
- **Ambient Relative Humidity:** 5 to 95% (non-condensing)

### MTBF
- 307,699 hours

### Warranty
- 5 years

### Approvals
- CE, FCC

### Industrial Standard
- **EMI:** FCC Part15 Class A&B
- **EMS:**  
  - IEC61000-4-2(ESD) ±8kV(contact),±15kV(air)  
  - IEC61000-4-3(Electric Field Strength) 10V/m(80MHz-2GHz)  
  - IEC61000-4-4(EFT) Power Port±4kV(Data Port±2kV)  
  - IEC61000-4-5(Surge) Power Port±2kV/DM,±4kV/CM,Data Port±2kV  
  - IEC61000-4-6(CS) 10V(150kHz-80MHz)  
  - IEC61000-4-16(EMI conduction) 30V(300V)  
- **Machinery:**  
  - IEC60068-2-6 (Vibration)  
  - IEC60068-2-27 (Shock)  
  - IEC60068-2-32 (Free Fall)

### Industry
- IEC61000-6-2
- Traffic Control: NEMA TS-2

### Ordering Information
- **SICOM3172-1EoVDSL-4T-24DC** = 1 EoVDSL port, 4 10/100Base-TX RJ45 ports, 24DC (18-36VDC) power supply  
- **SICOM3172-2EoVDSL-4T-24DC** = 2 EoVDSL port, 4 10/100Base-TX RJ45 ports, 24DC (18-36VDC) power supply  
- **SICOM3172-1EoVDSL-2T-24DC** = 1 EoVDSL port, 4 10/100Base-TX RJ45 ports, 2 RS232/RS485 ports, 24DC (18-36VDC) power supply  
- **SICOM3172-2EoVDSL-2T-24DC** = 2 EoVDSL port, 4 10/100Base-TX RJ45 ports, 2 RS232/RS485 ports, 24DC (18-36VDC) power supply
SICOM3016BA series of industrial Ethernet switches are one of Kyland latest members of intrinsic safety and Green Ethernet industrial Ethernet switches specially designed for coal mining industry which requires a significant low power consumption and intrinsic safety for the devices. SICOM3016BA is equipped with a high switching engine, 4 Gigabit SFP ports and maximum 12 100Base-FX ports. This kind of full fiber ports configuration including Gigabit uplinks obviously meets the increasing requirements for full fiber ports solutions and high bandwidth uplinks in coal mining industries. Its full load power consumption is as low as 10 watts. Over current and over voltage protection, EMC-protection power supply, outstanding EMC protection on RJ45 ports, redundant power inputs and PCB coating guarantee the reliable operation of the devices.

Integrated device with housing and bare board (embedded Ethernet switch) are both available on SICOM3016BA. The bare board can be installed in customer's existing devices easily and enrich the Ethernet communication functions. SICOM3016BA provides powerful network management functions. The device can be managed through CLI, Telnet, Web and SNMP-based network management software. SICOM3016BA supports SVDC and 12VDC power supplies which are the main power options for coal mining industries.

Overview

Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
6. Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2, RMON, LLDP, SNT, DHCP
7. Network Security: supports SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

Layer 2 12+4G Port Managed Panel Mounting Intrinsic Safety Switch

- Green Ethernet solution
- Low power consumption design to meet the intrinsic safety requirements of coal mining
- 4 Gigabit SFP slots, 6 100Base-FX SM/MM ports, 6 Fast Ethernet fiber/RJ45 optional ports
- Supports DT-Ring protocols and MSTP
- Supports auto-generation of network topology
- PCB coating is available
- Embedded model provides pins for LED output and power failure alarm input
Technical Specifications

Power Requirements
- **Power Input:**
  - 5VDC (4.5-5.5VDC), 12VDC (9-18VDC)
- **Power Terminal:**
  - 6-pin 3.81mm-spacing plug-in terminal block
- **Power Consumption:**
  - SICOM3016BA-4GX-12S/M<10W
- **Overload Protection:** Support
- **Reverse Connection Protection:** Support
- **Redundancy Protection:** Support

Physical Characteristics
- **Housing:** Metal, fanless
- **Protection Class:** IP40
- **Dimensions (W×H×D):**
  - Integrated device 284×44×141mm (11.18×1.73×5.55 in.)
  - Embedded board 235×30×130 mm (9.25×1.18×5.12 in.)
- **Weight:**
  - Integrated device 1.5kg (3.307 pound),
  - Embedded board 0.5kg (1.102 pound)
- **Mounting:** Panel mounting or Embedded mounting

Environmental Limits
- **Operating Temperature:** -40 to 85°C (-40 to 185°F)
- **Storage Temperature:** -40 to 85°C (-40 to 185°F)
- **Ambient Relative Humidity:** 5 to 95% (non-condensing)
- **MTBF:** 329,032 hrs
- **Warranty:** 5 years
- **Approvals:** CE, FCC

Industrial Standard
- **EMI:**
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
- **EMS:**
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (FT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- **Machinery:**
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- **Industry:** IEC61000-6-2
- **Traffic Control:** NEMA TS-2
- **Coal Mining:** GB/T3836.1, GB/T3836.2, GB/T3836.3, GB/T3836.4

Interface
- Gigabit Ethernet Ports: 4 10000Base SFP slots
- Fast Ethernet Fiber Ports: max 12 100Base-FX, SM/MM ports, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: max 6 10/100Base-TX RJ45 ports
- Console Port: RS232 (RJ45 connector)
- Alarm Contact: 6-pin 3.81mm-spacing plug-in terminal block

Switch Properties
- **Priority Queues:** 4
- **Number of VLANs:** 256
- **VLAN ID:** 1-4094
- **MAC Table:** 8K
- **Packet Buffer:** 2Mbit
- **Packet Forwarding Rate:** 7.7Mpps
- **Switching Delay:** <5μs

LED
- **LEDs on Front Panel:**
  - Running LED: Run
  - Alarm LED: Alarm
  - Power LED: PW1, PW2
  - Interface LED: Link/ACT, Speed (RJ45 port), Link/ACT (100M fiber ports)
- **Pins for LED output (Embedded):**

Transmission Distance
- **Twisted Pair:**
  - 100m (Standard CAT5, CAT5e network cable)
- **Multi Mode Fiber:**
  - 1310nm, 5km (1000M)
  - 850nm, 550m (1000M)
- **Single Mode Fiber:**
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

Standard
- IEEE 802.3i
- IEEE 802.3u
- IEEE 802.3ab
- IEEE 802.3z
- IEEE 802.1p
- IEEE 802.1Q
- IEEE 802.1s

Protocol
- DT-Ring, DT-Ring+, DT-VLAN, MSTP,
- IGMP Snooping, GVRP,
- VLAN, PVIAN,
- Telnet, HTTP, HTTPS, SNMPv1/v2, RMON, LLDP, SNTDP, DHCP server,
- SSH, SSL, ACL,
- FTP, ARP, QoS
**Mechanical Drawing**

![Mechanical Drawing]

**Ordering Information**

SICOM3016BA - _____ - ________ - _________ - ___

<table>
<thead>
<tr>
<th>Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-4GX-12S</td>
<td></td>
<td></td>
<td>4 Gigabit SFP port, 12 100Base-FX single mode fiber ports, PCB coating</td>
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<tr>
<td>C-4GX-12M</td>
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<td>4 Gigabit SFP port, 12 100Base-FX multi mode fiber ports, PCB coating</td>
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<tr>
<td>C-4GX-6S-6T</td>
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<td>4 Gigabit SFP port, 6 100Base-FX single mode fiber ports, 6 10/100Base-TX ports, PCB coating</td>
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<td>C-4GX-6M-6T</td>
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<td>4 Gigabit SFP port, 6 100Base-FX multi mode fiber ports, 6 10/100Base-TX ports, PCB coating</td>
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<tr>
<td>C-3GX-12S</td>
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<td>C-3GX-12M</td>
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<td>3 Gigabit SFP port, 12 100Base-FX multi mode fiber ports, PCB coating</td>
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<tr>
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<td>3 Gigabit SFP port, 6 100Base-FX single mode fiber ports, 6 10/100Base-TX ports, PCB coating</td>
</tr>
<tr>
<td>3GX-6M-6T</td>
<td></td>
<td></td>
<td>3 Gigabit SFP port, 6 100Base-FX multi mode fiber ports, 6 10/100Base-TX ports, PCB coating</td>
</tr>
<tr>
<td>EM-C-4GX-12S</td>
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<td>Embedded board, 4 Gigabit SFP port, 12 100Base-FX single mode fiber ports, PCB coating</td>
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<tr>
<td>EM-C-4GX-12M</td>
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<td>Embedded board, 4 Gigabit SFP port, 12 100Base-FX multi mode fiber ports, PCB coating</td>
</tr>
<tr>
<td>EM-C-4GX-6S-6T</td>
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<td></td>
<td>Embedded board, 4 Gigabit SFP port, 6 100Base-FX single mode fiber ports, 6 10/100Base-TX ports, PCB coating</td>
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<tr>
<td>EM-C-4GX-6M-6T</td>
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<td>Embedded board, 4 Gigabit SFP port, 6 100Base-FX multi mode fiber ports, 6 10/100Base-TX ports, PCB coating</td>
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<td>EM-C-3GX-12S</td>
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<td>Embedded board, 3 Gigabit SFP port, 12 100Base-FX single mode fiber ports, PCB coating</td>
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<tr>
<td>EM-C-3GX-12M</td>
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<td>Embedded board, 3 Gigabit SFP port, 12 100Base-FX multi mode fiber ports, PCB coating</td>
</tr>
</tbody>
</table>
EM-C-3GX-6S-6T = Embedded board, 3 Gigabit SFP port, 6 100Base-FX single mode fiber ports, 6 10/100Base-TX ports, PCB coating
EM-C-3GX-6M-6T = Embedded board, 3 Gigabit SFP port, 6 100Base-FX multi mode fiber ports, 6 10/100Base-TX ports, PCB coating

Distance: Fiber Distance
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km

Connector: Fiber Connector
SC = SC Connector

PS: Power Supply
5DC = 4.5-5.5VDC, dual redundant power inputs
12DC = 9-18VDC, dual redundant power inputs

Example Order Codes
SICOM3016BA-C-4GX-12S-1310-40-SC-5DC
4 Gigabit SFP port, 12 100Base-FX single mode fiber ports, 1310nm 40km, PCB coating, 4.5-5.5VDC dual redundant power inputs
SICOM3000BA

Layer 2 6+3G Port Managed Din-Rail Intrinsic Safety Switch

- Green Ethernet solution with ultra low full load power consumption of 5.2 watts
- 3 Gigabit SFP slots and 6 10/100Base-TX ports
- Supports DT-Ring protocols and RSTP
- Intrinsic safety design, meeting intrinsic safety requirements
- Ethernet ports can withstand 1500VAC power frequency voltage
- CE, FCC, coal mining safety certificates
- PCB coating is available

**Overview**

The SICOM3000BA series, intrinsically safe low power consumption Gigabit managed DIN-Rail industrial Ethernet switch, was developed by Kyland for industrial information layers in transport, power and mining applications. It offers 3 Gigabit SFP slots and 6 10/100Base-T(X) ports. Its fanless ribbed casing design and ability to handle a wide range of temperatures ensure high reliability in extreme industrial environments. Its full load power consumption is less than 5.2W, and it has passed Mine Safety Certification. Based on Kyvision3.0, CLI, WEB interface, it offers concentric management. The state-of-the-art OPC software enables the switch’s management embedded in various industrial systems.

**Technical Specifications**

**Standard**
- IEEE 802.3i
- IEEE 802.3u
- IEEE 802.3z
- IEEE 802.3x
- IEEE 802.1p
- IEEE 802.1Q
- IEEE 802.1w

**Protocol**
- DT-Ring, DT-Ring+, DT-VLAN, RSTP
- IGMP Snooping
- VLAN, PVLAN
- Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, S/NTP, DHCP server
- SSH, SSL, TACACS+
- FTP, ARP, QoS

**Switch Properties**
- Priority Queues: 4
- Number of VLANs: 256
- VLAN ID: 1-4094
- Number of Multicast Groups: 256
- MAC Table: 8K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 5.4Mpps
- Switching Delay: <5μs

**Features & Benefits**

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and RSTP
2. Multicast Protocol: supports IGMP Snooping and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports MAC address binding with port, SSH, SSL, TACACS+
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

**Interface**
- Gigabit Ethernet Ports: 3 1000Base SFP slots
- Fast Ethernet Ports: 6 10/100Base-TX RJ45 ports
- Console Port: RS232 (RJ45 connector)
- Alarm Output Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/350VDC Max, 120mA Max
**Intrinsic Safety**

### Environmental Limits
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

### MTBF
- 384,273 hrs

### Warranty
- 5 years

### Approvals
- CE, FCC, Coal mining safety certificate

### Industrial Standard
- EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS: IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM
  - Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- Machinery:
  - IEC60068-2 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- Industry: IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2
- Coal Mining: GB/T3836.1, GB/T3836.2, GB/T3836.3, GB/T3836.4

**LED**
- LEDs on Front Panel:
  - Running LED: Run1
  - Ring Redundant LED: Run2
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed (RU45 port), Link/ACT(GX1-GX3)

**Reset Button**
- Reboot and load default configuration

**Transmission Distance**
- Twisted Pair: 100m (Standard CATs, CAT5e network cable)
- Multi Mode Fiber: 850nm, 550m (1000M)
- Single Mode Fiber:
  - 1310nm, 10km/40km (1000M)
  - 1550nm, 60km/80km (1000M)

**Power Requirements**
- Power Input: 12DCW(0-36VDC)
- Power Terminal:
  - 6-pin 5.08mm-spacing plug-in terminal block (3.3VDC, 12VDC)
  - 3-pin 3.81mm-sapping plug-in terminal block (24VDC, 48VDC)
- Power Consumption: <5.2W (full load)

**Physical Characteristics**
- Housing: Aluminum, fanless
- Protection Class: IP40
- Dimensions (WxHxD):
  - Integrated device, 75x140x123 mm (2.95x5.51x4.84 in.)
  - Embedded board, 61.3x130.5x101 mm (2.41x5.14x3.98 in.)
- Weight: Integrated device, 1.0kg (2.205 pound)
- Embedded board, 0.3kg (0.661 pound)
- Mounting: DIN-Rail or Panel mounting

**Ordering Information**

<table>
<thead>
<tr>
<th>SICOM3000BA</th>
<th>Ports</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3GX-6T</td>
<td>3 Gigabit SFP port, 6 10/100Base-TX RU45 ports</td>
<td></td>
</tr>
<tr>
<td>2GX-6T</td>
<td>2 Gigabit SFP port, 6 10/100Base-TX RU45 ports</td>
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</tr>
<tr>
<td>C-3GX-6T</td>
<td>3 Gigabit SFP port, 6 10/100Base-TX RU45 ports, PCB coating</td>
<td></td>
</tr>
<tr>
<td>EM-C-3GX-6T</td>
<td>Embedded board, 3 Gigabit SFP port, 6 10/100Base-TX RU45 ports, PCB coating</td>
<td></td>
</tr>
</tbody>
</table>

**PS: Power Supply**
- 12DCW = 9-36VDC, dual redundant power inputs

**Example Order Codes**
- SICOM3000BA-EM-C-3GX-6T-12DCW
  - Embedded board with 3 Gigabit SFP ports and 6 10/100Base-TX RU45 ports, PCB coating, 9-36VDC dual redundant power inputs
The SICOM3009BA series, embedded intrinsically safe low power consumption managed industrial Ethernet switch, was developed by Kyland for industrial applications. It offers 3 100Base-FX ports and 6 10/100Base-T(X) ports. Its full load power consumption is less than 3.9W and it has passed mine safety certification. Based on Kyvision3.0, CLI, WEB interface, it offers concentrative management. The state-of-the-art OPC software enables the switch’s management embedded in various industrial systems.

### Overview

- **Standard**
  - IEEE 802.3i
  - IEEE 802.3u
  - IEEE 802.3x
  - IEEE 802.1p
  - IEEE 802.1Q
  - IEEE 802.1w

- **Protocol**
  - DT-Ring, DT-Ring+, DT-VLAN, RSTP;
  - IGMP Snooping;
  - VLAN, PVLAN;
  - Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server;
  - SSH, SSL, TACACS+;
  - FTP, ARP, QoS

- **Switch Properties**
  - Priority Queues: 4
  - Number of VLANs: 256
  - VLAN ID: 1-4094
  - Number of Multicast Groups: 256
  - MAC Table: 8K
  - Packet Buffer: 1Mbit
  - Packet Forwarding Rate: 1.4Mpps
  - Switching Delay: <5μs

### Features & Benefits

1. Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and RSTP
2. Multicast Protocol: supports IGMP Snooping and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
7. Network Security: supports MAC address binding with port, SSH, SSL, TACACS+;
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports power, port and ring alarms
11. Special Function: supports Link Check and Loop Status Check

### Technical Specifications

- **Standard**
  - IEEE 802.3i
  - IEEE 802.3u
  - IEEE 802.3x
  - IEEE 802.1p
  - IEEE 802.1Q
  - IEEE 802.1w

- **Protocol**
  - DT-Ring, DT-Ring+, DT-VLAN, RSTP;
  - IGMP Snooping;
  - VLAN, PVLAN;
  - Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server;
  - SSH, SSL, TACACS+;
  - FTP, ARP, QoS
Intrinsic Safety

Power Requirements

- **Power Input**: 3.3DCW (3.5-5.5VDC)
- **Power Terminal**: 6-pin 5.08mm-spacing plug-in terminal block
- **Power Consumption**: <3.9W (full load)
- **Overload Protection**: Support
- **Reverse Connection Protection**: Support
- **Redundancy Protection**: Support

Physical Characteristics

- **Dimensions (W×H×D)**: 130×35×107 mm (5.12×1.38×4.21 in.)
- **Weight**: 0.3kg (0.661 pound)
- **Mounting**: Embedded mounting

Environmental Limits

- **Operating Temperature**: -40 to 85°C (-40 to 185°F)
- **Storage Temperature**: -40 to 85°C (-40 to 185°F)
- **Ambient Relative Humidity**: 5 to 95% (non-condensing)

MTBF

376,919 hrs

Warranty

5 years

Approvals

- CE
- FCC

Ordering Information

SICOM3009BA - ______ - _______ - ________ - ______

<table>
<thead>
<tr>
<th>Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-C-3S-6T</td>
<td>1310-5 = 1310nm, 5km</td>
<td>SC</td>
<td>3.3DCW</td>
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<tr>
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<td>1310-10 = 1310nm, 10km</td>
<td>SC</td>
<td>3.3DCW</td>
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<tr>
<td>EM-C-3S-6T</td>
<td>1310-15 = 1310nm, 15km</td>
<td>SC</td>
<td>3.3DCW</td>
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<tr>
<td>EM-C-3S-6T</td>
<td>1310-20 = 1310nm, 20km</td>
<td>SC</td>
<td>3.3DCW</td>
</tr>
<tr>
<td>EM-C-3S-6T</td>
<td>1310-40 = 1310nm, 40km</td>
<td>SC</td>
<td>3.3DCW</td>
</tr>
<tr>
<td>EM-C-3S-6T</td>
<td>1310-60 = 1310nm, 60km</td>
<td>SC</td>
<td>3.3DCW</td>
</tr>
<tr>
<td>EM-C-3S-6T</td>
<td>1310-80 = 1310nm, 80km</td>
<td>SC</td>
<td>3.3DCW</td>
</tr>
<tr>
<td>EM-C-3S-6T</td>
<td>1310-100 = 1310nm, 100km</td>
<td>SC</td>
<td>3.3DCW</td>
</tr>
</tbody>
</table>

Example Order Codes

SICOM3009BA-EM-C-3M-6T-1310-5-SC-3.3DCW
Embedded board with 3 100M multi mode fiber ports with 1310nm, 5km, SC connector, and 6 10/100Base-TX RJ45 ports, PCB coating, 3.5-5.5VDC power supply

Mechanical Drawing
KIEN1008BA series industrial Ethernet switches are Kyland latest entry level of intrinsic safety and Green Ethernet solutions specially designed for coal mining industry which requires significant low power consumption and intrinsic safety features. KIEN1008BA is an unmanaged switch equipped with maximum 8 100M fiber ports or 10/100M copper ports which consumes as low as 5.5 watts under full load. Over current and over voltage protection, EMC-protection power supply, outstanding EMC protection on RJ45 ports, PCB coating process guarantee the reliable operation of the devices.

Integrated device with housing and bare board (embedded Ethernet switch) are both available on KIEN1008BA. The bare board can be installed in customer’s existing devices easily and enrich the Ethernet communication functions. KIEN1008BA supports 3.3VDC and 12VDC power supplies which are the main power options for coal mining industries.

Intrinsic Safety Ethernet Switches

8 Port Unmanaged Din-Rail
Intrinsic Safety Switch

- 8 Fast Ethernet fiber/RJ45 optional ports, supports full fiber port configuration
- Meet the requirements of coal mining safety standard
- Ethernet port can withstand 1500VAC power frequency voltage
- EMC performance reaches industrial level 4
- IP40 protection class

Overview

KIEN1008BA series industrial Ethernet switches are Kyland latest entry level of intrinsic safety and Green Ethernet solutions specially designed for coal mining industry which requires significant low power consumption and intrinsic safety features. KIEN1008BA is an unmanaged switch equipped with maximum 8 100M fiber ports or 10/100M copper ports which consumes as low as 5.5 watts under full load. Over current and over voltage protection, EMC-protection power supply, outstanding EMC protection on RJ45 ports, PCB coating process guarantee the reliable operation of the devices.

Integrated device with housing and bare board (embedded Ethernet switch) are both available on KIEN1008BA. The bare board can be installed in customer’s existing devices easily and enrich the Ethernet communication functions. KIEN1008BA supports 3.3VDC and 12VDC power supplies which are the main power options for coal mining industries.

Technical Specifications

Standard
IEEE 802.3i
IEEE 802.3u

Switch Properties
MAC Table: 8K
Packet Buffer: 1Mbit
Packet Forwarding Rate: 1.2Mpps
Switching Delay: <5μs

Interface
Fast Ethernet Fiber Ports: max 8 100Base-FX, 5M/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Port: max 4 10/100Base-TX RJ45 ports
Alarm Contact: 3-pin 5.08mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max

LED
LEDs on Front Panel:
Running LED: Run
Power LED: PWR1, PWR2
Interface LED: Link/ACT (100M fiber ports)

Transmission Distance
Twisted Pair:
100m (Standard CAT5, CAT5e network cable)
Multi Mode Fiber:
1310nm, 5km (100M)
Single Mode Fiber:
1310nm, 40km/60km (100M)
1550nm, 60m/80km (100M)

Power Requirements
Power Input:
3.3VDC (3-5.5VDC), 12DC (9-18VDC)
Power Terminal:
5-pin 5.08mm-spacing plug-in terminal block
Power Consumption: <5.5W

Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support
**Physical Characteristics**
- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (W×H×D): 53.6×135×106.5 mm (2.11×5.31×4.19 in.)
- Weight: 0.76kg (1.676 pound)
- Mounting: DIN-Rail or Panel mounting

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
- 385,000 hrs

**Warranty**
- 5 years

**Approvals**
- CE, FCC, Coal mining safety certificate

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**Intrinsic Safety**

**Industrial Standard**

**EMI:**
- FCC CFR47 Part 15, EN55022/CISPR22, Class A

**EMS:**
- IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
- IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
- IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
- IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
- IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
- IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

**Machinery:**
- IEC60068-2-6 (Vibration)
- IEC60068-2-27 (Shock)
- IEC60068-2-32 (Free Fall)

**Industry:**
- IEC61000-6-2
- Railway: EN50155, EN50121-4
- Coal Mining: GB/T3836.1, GB/T3836.2, GB/T3836.3, GB/T3836.4

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**Ports**

<table>
<thead>
<tr>
<th>KIEN1008BA</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**Ports**

- **4M-4T** = 4 100M multi mode fiber ports, 4 10/100Base-TX RJ45 ports
- **4S-4T** = 4 100M single mode fiber ports, 4 10/100Base-TX RJ45 ports
- **EM-C-4M-4T** = Embedded board, 4 100M multi mode fiber ports, 4 10/100Base-TX RJ45 ports, PCB coating
- **EM-C-4S-4T** = Embedded board, 4 100M single mode fiber ports, 4 10/100Base-TX RJ45 ports, PCB coating
- **6M-2T** = 6 100M multi mode fiber ports, 2 10/100Base-TX RJ45 ports
- **6S-2T** = 6 100M single mode fiber ports, 2 10/100Base-TX RJ45 ports
- **EM-C-6M-2T** = Embedded board, 6 100M multi mode fiber ports, 2 10/100Base-TX RJ45 ports, PCB coating
- **EM-C-6S-2T** = Embedded board, 6 100M single mode fiber ports, 2 10/100Base-TX RJ45 ports, PCB coating
- **8M** = 8 100M multi mode fiber ports
- **8S** = 8 100M single mode fiber ports
- **EM-C-8M** = Embedded board, 8 100M multi mode fiber ports, PCB coating
- **EM-C-8S** = Embedded board, 8 100M single mode fiber ports, PCB coating

**Distance: Fiber Distance**

- **1310-5** = 1310nm, 5km
- **1310-40** = 1310nm, 40km
- **1310-60** = 1310nm, 60km
- **1550-80** = 1550nm, 80km

**Connector: Fiber Connector**

- SC = SC Connector
- ST = ST Connector
- FC = FC Connector

**PS: Power Supply**

- **3.3DCW** = 3-5.5VDC
- **12DC** = 9-18VDC

**Example Order Codes**

<table>
<thead>
<tr>
<th>KIEN1008BA-EM-C-4M-4T-1310-5-SC-3.3DCW</th>
</tr>
</thead>
</table>

Embedded board with 4 100M multi mode fiber ports with 1310nm, 5km, SC connector, and 4 10/100Base-TX RJ45 ports, PCB coating, 3-5.5VDC power supply
SICOM3005 is a serial server function integrated programmable industrial Ethernet switch. It is developed under Linux platform supporting redevelopment. It supports 4 serial ports, 2 100M copper/fiber ports and 3 10/100Base-T(X) ports. Its fanless ribbed casing design and ability to handle a wide range of temperatures ensure high reliability in extreme industrial environments. Based on Kyvision3.0, CLI, WEB interface, it offers concentrated management. The state-of-the-art OPC software enables the switch’s management embedded in various industrial systems.

Overview

- Redundancy Technology: supports DT-Ring protocols (recovery time<50ms) and MSTP
- Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
- Network Partition: supports VLAN, PVLAN
- Service Quality: supports QoS
- Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
- Network Management and Monitoring: supports CLI, Telnet, WEB management methods, Kyvision centralized management, SNMPv1/v2, RMON, LLDP, SNTP, DHCP
- Network Security: supports SSH, SSL, ACL
- Device Management: supports FTP upgrade
- Device Maintenance: supports port mirroring
- Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
- Special Function: supports Link Check and Loop Status Check

Features & Benefits

6 Port Managed Din-Rail Serial Server Function Integrated Programmable Switch

- Supports DT-Ring protocols and MSTP
- Integrates industrial Ethernet switch with serial server, supports 4 RS232/RS485 ports
- Serial ports support TCP Server/Client, UTP working mode, supports one-key recovery
- EMC performance reaches industrial level 4
- IP40 protection class
- CE, FCC certificates

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s

Protocol
DT-Ring, DT-Ring+, DT-VLAN, MSTP; IGMP Snooping, GMRP; VLAN, PVLAN; Telnet, HTTP, HTTPS, SNMPv1/v2, RMON, LLDP, SNTP, DHCP server; SSH, SSL, ACL; FTP; ARP, QoS

Switch Properties
Priority Queues: 4
Number of VLANs: 256
VLAN ID: 1-4094
Number of Multicast Groups: 256
MAC Table: 8K
Packet Buffer: 2Mbit
Packet Forwarding Rate: 0.9Mpps
Switching Delay: <5μs

Interface
Fast Ethernet Fiber Ports: max 2 100Base-FX SM/MM ports, FC/SC/ST connector
Fast Ethernet RJ45 Ports: max 6 10/100Base-TX RJ45 ports
Serial Ports: max 4 RS232/RS485 ports, 20-pin 3.81mm-spacing terminal block
Console Port: RS232 (RJ45 connector)
Alarm Contact: 3-pin 3.81mm-spacing plug-in terminal block, 250VAC/220VDC Max, 2A Max, 60W Max
**LED**

LEDs on Front Panel:
- Running LED: Run1
- Power LED: PWR1, PWR2

Transmitting and Receiving LEDs of Serial Ports: T1-T4, R1-R4
- Interface LED: Link/ACT, Speed (RJ45 port), Link/ACT (100M fiber ports)

**Reset Button**

Reboot and load default configuration

**Transmission Distance**

- **Serial Cable:** RS232: 15m; RS485: 1200m
- **Twisted Pair:** 100m (Standard CAT5, CAT5e network cable)
- **Multi Mode Fiber:** 1310nm, 5km (100M)
- **Single Mode Fiber:** 1310nm, 40km/60km (100M)

**Power Requirements**

- **Power Input:** 12DC (9-18VDC), 24DC (18-36VDC), 48DC (36-72VDC)
- **Power Terminal:** 5-pin 5.08mm-spacing plug-in terminal block
- **Power Consumption:** <10W
- **Overload Protection:** Support
- **Reverse Connection Protection:** Support
- **Redundancy Protection:** Support

**Physical Characteristics**

- **Housing:** Aluminum, fanless
- **Protection Class:** IP40
- **Dimensions (WxHxD):** 55.4x139x119.5 mm (2.18x5.47x4.70 in.)
- **Weight:** 0.6kg (1.323 pound)
- **Mounting:** DIN-Rail or Panel mounting

**Ordering Information**

<table>
<thead>
<tr>
<th>Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2M-3T-4D</td>
<td>10/100Base-TX RJ45 ports, 4 RS232/485 serial ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2S-3T-4D</td>
<td>10/100Base-TX RJ45 ports, 4 RS232/485 serial ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5T-4D</td>
<td>10/100Base-TX RJ45 ports, 4 RS232/485 serial ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2M-4T</td>
<td>10/100Base-TX RJ45 ports, 4 RS232/485 serial ports</td>
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<td></td>
</tr>
<tr>
<td>2S-4T</td>
<td>10/100Base-TX RJ45 ports, 4 RS232/485 serial ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6T</td>
<td>10/100Base-TX RJ45 ports</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Environmental Limits**

- **Operating Temperature:** -40 to 85°C (-40 to 185°F)
- **Storage Temperature:** -40 to 85°C (-40 to 185°F)
- **Ambient Relative Humidity:** 5 to 95% (non-condensing)

**MTBF**

307,699 hrs

**Warranty**

5 years

**Approvals**

- **CE, FCC**

**Industrial Standard**

- **EMI:** FCC CFR47 Part 15, EN55022/CISPR22, Class A
- **EMS:**
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- **Machinery:**
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- **Industry:** IEC61000-6-2
- **Railway:** EN50155, EN50121-4
- **Traffic Control:** NEMA TS-2

**Distance: Fiber Distance**

- 1310-5 = 1310nm, 5km
- 1310-40 = 1310nm, 40km
- 1310-60 = 1310nm, 60km
- 1550-80 = 1550nm, 80km

**Connector: Fiber Connector**

- SC = SC connectors
- ST = ST connectors
- FC = FC connectors

**PS: Power Supply**

- 12DC = 9-18VDC, dual redundant power inputs
- 24DC = 18-36VDC, dual redundant power inputs
- 48DC = 36-72VDC, dual redundant power inputs
KPS2204 is a programmable serial server developed for the network applications of serial devices. KPS2204 combines Ethernet and serial data communication, and offers protocol transition between Ethernet and serial protocol. KPS2204 is specially designed for harsh and dangerous industrial environments. It has solid and closed enclosure, fanless design with single rib heat dissipation surface, EMC protection properties for power supply over current or over voltage, EMC protection properties for RJ45 and RS232/422/485 data ports. Dual power inputs also ensure the reliability of device.

KPS2204 supports 2 10/100Base-TX RJ45 ports and 4 RS232/422/485 serial ports which can be RS232, RS422 or RS485. It is a managed device which supports TELNET, WEB and SNMP based management software. The serial device server inside the KPS2204 is based on ARM embedded platform.

KPS1000 is the embedded board of serial device server which is the part of KPS2204. This embedded serial device server card can be installed in other devices enriching the serial server functionalities.

Overview
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Features & Benefits
- Transmission Protocol: supports TCP and UDP protocols
- Network Management and Monitoring: supports Telnet, WEB management methods, SNMPv1/v2, DHCP
- Network Security: supports SSH, SSL
- Device Management: supports FTP/TFTP upgrade

Technical Specifications

**Standard**
IEEE 802.3i, IEEE 802.3u, IEEE802.3x

**Protocol**
TCP, UDP, FTP, TFTP;
Telnet, HTTP, SNMPv1/v2, DHCP;
SSL, SSH, ARP, TCP/IP, ICMP

**Interface**
Fast Ethernet RJ45 Ports: 2 10/100Base-TX RJ45 ports
Serial Ports: 4 RS232/RS422/RS485 ports with DB9 connector
Bit error rate of data transmission: 0
Electrical characteristic: compliant with 3-wire RS232, 4-wire RS422 and 2-wire RS485 standards
Data bits: 5, 6, 7, 8 (Default: 8)
Stop bits: 1, 1.5, 2 (Default: 1)
Parity bit: None, Even, Odd, Space, Mark (Default: None)
Flow control: XON/XOFF (Default: XOFF)
Baud rate: 50bps-1000Kbps (Default: 9600)

**LED**
LEDs on Front Panel:
Running LED: Run
Power LED: PWR1, PWR2
Interface LED: Link, ACT, copper ports, T1-T4, R1-R4 serial ports

**Reset Button**
Reboot and load default configuration
Transmission Distance
Serial Cable: RS232: 15m; RS422/485: 1200m
Twisted Pair: 100m (Standard CAT5, CAT5e network cable)

Power Requirements
Power Input:
KPS2204: 24DC (18-36VDC), 48DC (36-72VDC)
KPS1000: 3.3DC (3.15-3.45VDC)
Power Terminal: 5-pin 0.08mm-spacing plug-in terminal block
Power Consumption: 3W
Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

Physical Characteristics
Housing: Aluminum, fanless
Protection Class: IP40
Dimensions (W×H×D): 55.4×139×119.5 mm (2.18×5.47×4.70 in.)
Weight:
KPS2204: 0.5kg (1.102 pound)
KPS1000: 0.05kg (0.11 pound)
Mounting: DIN-Rail or Panel mounting

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
333,755 hrs

Warranty
5 years

Approvals
CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz); 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)
Industry: IEC61000-6-2
Power: IEC61850-3, IEEE1613
Railway: EN50155, EN50121-4
Traffic Control: NEMA TS-2

Mechanical Drawing

Ordering Information
KPS2204-2T-4D-232/422/485-24DC = 2 10/100Base-TX RJ45 ports, 4 RS232/433/485 serial ports, 18-36VDC power supply
KPS2204-2T-4D-232/422/485-48DC = 2 10/100Base-TX RJ45 ports, 4 RS232/433/485 serial ports, 36-72VDC power supply
KPS1000-EM-C-1T-4D-232/485-3.3DC = Embedded serial device server, 1 10/100Base-TX RJ45 ports, 4 RS232/485 serial ports, 3.15-3.45VDC power supply, PCB coating
KOM300A

3 Port Unmanaged Din-Rail Copper to Fiber Media Converter

- Green Ethernet solution with ultra low power consumption design
- As low as 2.2 watts full load power consumption
- 2 10/100Base-TX ports and 1 100Base-FX port
- Redundant AC/DC power inputs with wide voltage range
- EMC performance reaches industrial level 4
- IP40 protection class
- UL508 Class 1 Div 2, CE, FCC certificates

Overview

The KOM300A is a new member of Kyland ultra low power consumption Green Ethernet series, its full load power consumption is as low as 3.1 watts. The KOM300A industrial media converter has 1 100Base-FX fiber port and 2 10/100Base-TX copper ports. It supports Telnet, WEB, Kyvision management and works in wide operating temperature range from -40 to 85°C.

The KOM300A series provide 24DCW (18-72VDC) and 220AC/DCW (85-264VAC/77-300VDC) power supply. It supports IP40 protection class and EMC industrial level 4 requirements. These media convertors are specially designed for harsh industrial environments certified by UL508 and UL Class I Div 2 certifications.

Technical Specifications

Standard
- IEEE 802.3i
- IEEE 802.3u

Switch Properties
- MAC Table: 2K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 0.8Mpps
- Switching Delay: <5μs

Interface
- Fast Ethernet Fiber Ports: 1 100Base-FX, SM/ MM port, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: 2 10/100Base-TX RJ45 ports

LED
- LEDs on Front Panel:
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed (RJ45 port)

Transmission Distance
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
  - 1310nm, 40km/60km (100M)
- Single Mode Fiber:
  - 1550nm, 60km/80km (100M)
**Power Requirements**

Power Input:
- 24DCW (18-72VDC), 220AC/DCW (85-264VAC/77-300VDC)

Power Terminal:
- 5-pin 5.08mm-spacing plug-in terminal block

Power Consumption: 2.2W (full load)

Overload Protection: Support
Reverse Connection Protection: Support
Redundancy Protection: Support

**Physical Characteristics**

- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (W×H×D): 30×115×91.5mm (1.18×4.53×3.60 in.)
- Weight: 0.3kg (0.661 pound)
- Mounting: DIN-Rail or Panel mounting

**Environmental Limits**

- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**

462,741 hrs

**Warranty**

5 years

**Approvals**

- UL508, Class 1 Div 2, CE, FCC

**Industrial Standard**

- EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)

- Industry: IEC61000-6-2
- Railway: EN50155, EN50121-4

**Ports**

- 1M-2T = 1 100Base-FX multi mode ports, 2 10/100Base-TX ports
- 1S-2T = 1 100Base-FX single mode ports, 2 10/100Base-TX ports

**Distance: Fiber Distance**

- 1310-5 = 1310nm, 5km
- 1310-40 = 1310nm, 40km
- 1310-60 = 1310nm, 60km
- 1550-80 = 1550nm, 80km

**Power Requirements**

- 24DCW (18-72VDC), 220AC/DCW (85-264VAC/77-300VDC)

**Power Input**:

- Power Terminal:
  - 5-pin 5.08mm-spacing plug-in terminal block

**Power Consumption**

- 2.2W (full load)

**Overload Protection**

- Support

**Reverse Connection Protection**

- Support

**Redundancy Protection**

- Support

**Physical Characteristics**

- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (W×H×D): 30×115×91.5mm (1.18×4.53×3.60 in.)
- Weight: 0.3kg (0.661 pound)
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- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**

- 462,741 hrs

**Warranty**

- 5 years

**Approvals**

- UL508, Class 1 Div 2, CE, FCC

**Industrial Standard**

- EMI: FCC CFR47 Part 15, EN55022/CISPR22, Class A
- EMS:
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

- Machinery:
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)

- Industry: IEC61000-6-2
- Railway: EN50155, EN50121-4

**Ordering Information**

- **Ports**: 1M-2T = 1 100Base-FX multi mode ports, 2 10/100Base-TX ports
- **Distance**: Fiber Distance
  - 1310-5 = 1310nm, 5km
  - 1310-40 = 1310nm, 40km
  - 1310-60 = 1310nm, 60km
  - 1550-80 = 1550nm, 80km

**Connector: Fiber Connector**

- SC = SC Connector
- ST = ST Connector
- FC = FC Connector

**PS: Power Supply**

- 24DCW = 18-72VDC, dual redundant power inputs
- 220AC/DCW = 220AC/DCW (85-264VAC/77-300VDC), single power input

**Example Order Codes**

- KOM300A-1M-2T-1310-5-SC-24DCW
  - 1 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connectors, and 2 10/100Base-TX copper ports, 18-72VDC, dual redundant power inputs
The KOM300M is a new member of Kyland ultra low power consumption Green Ethernet series, its full load power consumption is as low as 2.2 watts. The KOM300M industrial media converter has 1 100Base-FX fiber port and 2 10/100Base-TX copper ports. It supports Telnet, WEB, Kyvision management and works in wide operating temperature range from -40 to 85°C.

The KOM300M series provide 24DCW(18-72VDC) redundant power inputs and support IP40 protection class and EMC industrial level 4 requirements. These media convertors are specially designed for harsh industrial environments certified by UL508 and UL Class I Div 2 certifications.

### Overview

The KOM300M is a new member of Kyland ultra low power consumption Green Ethernet series, its full load power consumption is as low as 2.2 watts. The KOM300M industrial media converter has 1 100Base-FX fiber port and 2 10/100Base-TX copper ports. It supports Telnet, WEB, Kyvision management and works in wide operating temperature range from -40 to 85°C.

### Technical Specifications

**Standard**
- IEEE 802.3i
- IEEE 802.3u

**Protocol**
- Telnet, SNMPv1/v2, LLDP, HTTP, Modbus TCP, FTP, TFTP

**Switch Properties**
- MAC Table: 2K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 0.8Mpps
- Switching Delay: <5μs

**Interface**
- Fast Ethernet Fiber Ports: 1 100Base-FX, SM/MM port, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: 2 10/100Base-TX RJ45 ports

**LED**
- LEDs on Front Panel:
  - Running LED: Run
  - Power LED: PWR1, PWR2
- Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)
**Power Requirements**
- **Power Input:** 24DCW (18-72VDC)
- **Power Terminal:** 5-pin 5.08mm-spacing plug-in terminal block
- **Power Consumption:** 2.7W (full load)
- **Overload Protection:** Support
- **Reverse Connection Protection:** Support
- **Redundancy Protection:** Support

**Physical Characteristics**
- **Housing:** Metal, fanless
- **Protection Class:** IP40
- **Dimensions (WxHxD):** 30x115x91.5mm (1.18x4.53x3.60 in.)
- **Weight:** 0.3kg (0.661 pound)
- **Mounting:** DIN-Rail or Panel mounting

**Environmental Limits**
- **Operating Temperature:** -40 to 85°C (-40 to 185°F)
- **Storage Temperature:** -40 to 85°C (-40 to 185°F)
- **Ambient Relative Humidity:** 5 to 95% (non-condensing)

**MTBF**
- 462,741 hrs

**Mechanical Drawing**

![Mechanical Drawing](image)

**Ordering Information**

**KOM300M**

<table>
<thead>
<tr>
<th>Ports</th>
<th>Distance</th>
<th>Connector</th>
<th>PS</th>
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<tbody>
<tr>
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<td>SC</td>
<td>24DCW</td>
</tr>
<tr>
<td>1M-2T</td>
<td>1310-40</td>
<td>ST</td>
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</tr>
<tr>
<td>1M-2T</td>
<td>1310-60</td>
<td>FC</td>
<td>24DCW</td>
</tr>
<tr>
<td>1M-2T</td>
<td>1550-80</td>
<td>24DCW</td>
<td>24DCW</td>
</tr>
</tbody>
</table>

**Example Order Codes**

KOM300M-1M-2T-1310-5-SC-24DCW
1 100Base-FX multi mode ports, 1310nm, 5km, SC connectors, and 2 10/100Base-TX copper ports, 18-72VDC, dual redundant power inputs

**Connector: Fiber Connector**
- SC = SC Connector
- ST = ST Connector
- FC = FC Connector

**PS: Power Supply**
- 24DCW = 18-72VDC, dual redundant power inputs

**Warranty**
- 5 years

**Approvals**
- UL508, Class 1 Div 2, CE, FCC

**Industrial Standard**
- **EMI:**
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A
- **EMS:**
  - IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
  - IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
  - IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
  - IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
  - IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
  - IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)
- **Machinery:**
  - IEC60068-2-6 (Vibration)
  - IEC60068-2-27 (Shock)
  - IEC60068-2-32 (Free Fall)
- **Industry:** IEC61000-6-2, Railway: EN50155, EN50121-4
KOM300F is an industrial fiber optic converter which can work in harsh electromagnetic environment and wide range of temperature. KOM300F supports not only 12VDC, 24VDC, 48VDC, but also support high voltage 110VDC and 220VAC/DC.

**Overview**

KOM300F is a 3 port Unmanaged Din-Rail Copper to Fiber Media Converter.

- 2 10/100Base-TX ports and 1 100Base-FX port
- EMC performance reaches industrial level 4
- IP30 protection class
- CE, FCC certificates

**Technical Specifications**

**Standard**
- IEEE 802.3i
- IEEE 802.3u

**Switch Properties**
- MAC Table: 2K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 0.8Mpps
- Switching Delay: <5μs

**Interface**
- Fast Ethernet Fiber Ports: 1 100Base-FX, SM/MM port, FC/SC/ST connector
- Fast Ethernet RJ45 Ports: 2 10/100Base-TX RJ45 ports

**LED**
- LEDs on Front Panel:
  - Running LED: Run
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)

**Power Requirements**
- Power Input:
  - Power Input: 12DCW(9-36VDC),48DC(36-72VDC),110DC(70-140VDC),
  - 220AC/DC(85-264VAC/120-370VDC)
- Power Terminal:
  - 3-pin 3.81mm-sapcing plug-in terminal block
- Power Consumption: <4.1W
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Metal, fanless
- Protection Class: IP30
- Dimensions (WxHxD):
  - 36x100x75mm (1.42x3.94x2.95 in.)
- Weight: 0.3kg (0.661 pound)
- Mounting: DIN-Rail or Panel mounting
Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
462,741 hrs

Warranty
5 years

Approvals
CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A

EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM; Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Railway: EN50155, EN50121-4

Ordering Information
KOM300F - ______ - ________ - ___________ - ____

Ports      Distance      Connectors      PS
1M-2T = 1 100Base-FX multi mode ports, 2 10/100Base-TX ports
1S-2T = 1 100Base-FX single mode ports, 2 10/100Base-TX ports

Distance: Fiber Distance
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

Example Order Codes
KOM300F-1M-2T-1310-5-SC-220AC/DC
1 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connectors, and 2 10/100Base

Connector: Fiber Connector
SC = SC Connector
ST = ST Connector
FC = FC Connector

PS: Power Supply
12DCW = 9-36VDC, single power input
48DC = 36-72VDC, single power input
110DC = 70-140VDC, single power input
220AC/DC = 120-370VDC/85-264VAC, single power input
The KOM600 is a new member of Kyland ultra low power consumption Green Ethernet series, its full load power consumption is as low as 2 watts. The KOM600 industrial media converter has 1 100Base-FX fiber port and 1 10/100Base-TX copper port. It supports wide operating temperature range from -40 to 85°C.

The KOM600 series provide 24DCW (18-72VDC) redundant power inputs and support IP40 protection class and EMC industrial level 4 requirements. These media convertors are specially designed for harsh industrial environments certified by UL508 and UL Class I Div 2 certifications.

Overview

The KOM600 is a new member of Kyland ultra low power consumption Green Ethernet series, its full load power consumption is as low as 2 watts. The KOM600 industrial media converter has 1 100Base-FX fiber port and 1 10/100Base-TX copper port. It supports wide operating temperature range from -40 to 85°C.

The KOM600 series provide 24DCW (18-72VDC) redundant power inputs and support IP40 protection class and EMC industrial level 4 requirements. These media convertors are specially designed for harsh industrial environments certified by UL508 and UL Class I Div 2 certifications.

Technical Specifications

**Standard**
- IEEE 802.3i
- IEEE 802.3u
- IEEE 802.3ab
- IEEE802.3z

**Interface**
- Fast Ethernet Fiber Port: 1 100Base-FX, SM/MM port, FC/SC/ST connector
- Fast Ethernet RJ45 Port: 1 10/100Base-TX RJ45 port

**LED**
- LEDs on Front Panel:
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed (RJ45 port)

**Transmission Distance**
- Twisted Pair:
  - 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber:
  - 1310nm, 5km (100M)
- Single Mode Fiber:
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)

**Power Requirements**
- Power Input:
  - 24DCW (18-72VDC)
- Power Terminal:
  - 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption: 2W (full load)
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

**Physical Characteristics**
- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (WxHxD):
  - 30x115x91.5 mm (1.18 x 4.53 x 3.60 in.)
- Weight: 0.46kg (1.014 pound)
- Mounting: DIN-Rail or Panel mounting
Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
546,000 hrs

Warranty
5 years

Approvals
UL508, Class 1 Div 2, CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A

Mechanical Drawing

Ordering Information
KOM600 - _______ - _______ - _______ - _______
Ports Distance Connector PS

Ports
1M-1T = 1 100Base-FX multi mode ports, 1 10/100Base-TX ports
1S-1T = 1 100Base-FX single mode ports, 1 10/100Base-TX ports

Distance: Fiber Distance
1310-5 = 1310nm, 5km
1310-40 = 1310nm, 40km
1310-60 = 1310nm, 60km
1550-80 = 1550nm, 80km

Connector: Fiber Connector
SC = SC Connector
ST = ST Connector
FC = FC Connector

PS: Power Supply
24DCW = 18-72VDC, dual redundant power inputs

Example Order Codes
KOM600-1M-1T-1310-5-SC-24DCW

1 100Base-FX multi mode fiber ports, 1310nm, 5km, SC connectors, and 1 10/100Base-TX copper ports, 18-72VDC, dual redundant power inputs
The KOM600G industrial Gigabit media converters are designed to provide reliable and stable 10/100/1000BaseT(X) to 1000Base-FX SFP media conversion in harsh industrial environments. KOM600G supports 24DCW (18-72VDC) redundant power inputs, IP40 protection class and meets EMC industrial level 4 requirements. Its operating temperature ranges from -40 to 85°C. Belonging to Kyland Green Ethernet switches series, KOM600G’s full load power consumption is as low as 4.5 watts.

### Overview

The KOM600G industrial Gigabit media converters are designed to provide reliable and stable 10/100/1000BaseT(X) to 1000Base-FX SFP media conversion in harsh industrial environments. KOM600G supports 24DCW (18-72VDC) redundant power inputs, IP40 protection class and meets EMC industrial level 4 requirements. Its operating temperature ranges from -40 to 85°C. Belonging to Kyland Green Ethernet switches series, KOM600G’s full load power consumption is as low as 4.5 watts.

### Technical Specifications

#### Standard
- IEEE 802.3i
- IEEE 802.3u
- IEEE 802.3ab
- IEEE802.3z

#### Switch Properties
- MAC Table: 8K
- Packet Buffer: 1Mbit
- Packet Forwarding Rate: 1.2Mpps
- Switching Delay: <5μs

#### Interface
- Gigabit SFF Port: 1 1000Base SFF port
- Gigabit RJ45 Port: 1 10/100/1000Base-TX RJ45 port

#### LED
- LEDs on Front Panel:
  - Power LED: PWR1, PWR2
  - Interface LED: Link/ACT, Speed (RJ45 port)

#### Transmission Distance
- Twisted Pair: 100m (Standard CAT5, CAT5e network cable)
- Multi Mode Fiber: 850nm, 550m (1000M)
- Single Mode Fiber: 1310nm, 10km/40km (1000M); 1550nm, 60km/80km (1000M)

#### Power Requirements
- Power Input:
  - 24DCW (18-72VDC)
- Power Terminal:
  - 5-pin 5.08mm-spacing plug-in terminal block
- Power Consumption: 4.5W (full load)
- Overload Protection: Support
- Reverse Connection Protection: Support
- Redundancy Protection: Support

#### Physical Characteristics
- Housing: Metal, fanless
- Protection Class: IP40
- Dimensions (WxHxD): 30x115x91.5 mm (1.18x4.53x3.60 in.)
- Weight: 0.46kg (1.014 pound)
- Mounting: DIN-Rail or Panel mounting
Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
546,000 hrs

Warranty
5 years

Approvals
UL508, Class 1 Div 2, CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A
EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-2GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±2kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industries: IEC61000-6-2
Railways: EN50155, EN50121-4

Mechanical Drawing

Ordering Information
KOM600G - ______ - ______

Ports
1GX-1GE = 1 Gigabit SFP port, 1 10/100/1000Base-TX RJ45 port

PS: Power Supply
24DCW = 18-72VDC, dual redundant power inputs

Example Order Codes
KOM600G-1GX-1GE-24DCW

1 Gigabit SFP port, 1 10/100/1000Base-TX RJ45 port, 18-72VDC, dual redundant power inputs
KOM200 provides serial to fiber switching for the low-rate signals of RS232, RS485 and RS422. It is specially designed for harsh industrial environment that has special requirements on electromagnetic immunity.

**Overview**

One fiber port, three types of serial ports (RS232/RS422/RS485)

- Transparent communication without the need of debugging, plug and play
- Serial ports have 15KV ESD protection circuit
- Serial ports support hot plugging
- Abundant power supply options
- EMC performance reaches industrial level 4

**Technical Specifications**

**Standard**
- RS232
- RS422
- RS485

**Interface**
- Fiber Ports: one SM/MM fiber port, FC/SC/ST connector
- Serial Ports: 3 serial ports (RS232/RS422/RS485), 8-pin 3.81mm-spacing terminal block
- RS485 interface can be connected to 32-128 nodes

**LED**
- LEDs on Front Panel:
  - Running LED: Run
  - Interface LED: Link/ACT, Data (1, 2)

**Transmission Distance**

- **Serial Cable:**
  - RS232: 15m
  - RS422/RS485: 1200m
- **Multi Mode Fiber:**
  - 1310nm, 5km (100M)
- **Single Mode Fiber:**
  - 1310nm, 40km/60km (100M)
  - 1550nm, 60km/80km (100M)

**Power Requirements**

- **Power Input:**
  - 12DCW(9-36VDC), 48VDC (36-72VDC), 110DC (70-140VDC), 220AC/DC (85-264VAC/120-370VDC)
- **Power Terminal:** 3-pin 3.81mm-spacing plug-in terminal block
- **Power Consumption:** <3W

- Overload Protection: Support
- Reverse Connection Protection: Support

**Physical Characteristics**

- **Housing:** Metal, fanless
- **Protection Class:** IP30
- **Dimensions (WxHxD):**
  - 36x100x75mm (1.42x3.94x2.95 in.)
- **Weight:** 0.3kg (0.661 pound)
- **Mounting:** DIN-Rail or Panel mounting
Environmental Limits
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

MTBF
1,162,867 hrs

Warranty
5 years

Approvals
CE, FCC

Industrial Standard
EMI:
FCC CFR47 Part 15, EN55022/CISPR22, Class A

EMS:
IEC61000-4-2 (ESD): ±8kV (contact), ±15kV (air)
IEC61000-4-3 (RS): 10V/m (80MHz-1GHz)
IEC61000-4-4 (EFT): Power Port: ±4kV, Data Port: ±3kV
IEC61000-4-5 (Surge): Power Port: ±2kV/DM, ±4kV/CM, Data Port: ±2kV
IEC61000-4-6 (CS): 3V (10kHz-150kHz); 10V (150kHz-80MHz)
IEC61000-4-8 (Power frequency magnetic field): 100A/m (cont.), 1000A/m (1s-3s)
IEC61000-4-9 (Pulsed magnetic field): 1000A/m
IEC61000-4-10 (Damped oscillation): 30A/m
IEC61000-4-12 (Oscillatory wave): ±2.5kV/CM, ±1kV/DM
IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
IEC60068-2-6 (Vibration)
IEC60068-2-27 (Shock)
IEC60068-2-32 (Free Fall)

Industry: IEC61000-6-2
Railway: EN50155, EN50121-4

Ordering Information

KOM200 - Ports - Distance - Connectors - PS

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<th>PS</th>
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<td>1310-40</td>
<td>SC, ST</td>
<td>120-370VDC/85-264VAC</td>
</tr>
</tbody>
</table>

Distance: Fiber Distance
- 1310-5 = 1310nm, 5km
- 1310-40 = 1310nm, 40km

Connector: Fiber Connector
- SC = SC Connector
- ST = ST Connector
- FC = FC Connector

PS: Power Supply
- 12DCW = 9-36VDC, single power input
- 48DC = 36-72VDC, single power input
- 110DC = 70-140VDC, single power input
- 220AC/DC = 120-370VDC/85-264VAC, single power input
Managed Wall Mounting/Rack Mountable Serial to Fiber Optical Fiber Terminal

- Flexible networking: ring, chain, tangent ring
- Dual fiber redundant technology (<20ms)
- Three types of serial ports: RS232/RS422/RS485
- Serial ports have 15KV ESD protection circuit
- Alarm output for the failure of fiber ports
- Dual master stations backup function
- 8 full duplex channels, 8 × 8 data cross-connection
- Level conversion function of data interface
- Abundant power supply options

Overview

The KODT series is specially designed for industrial application by KYLAND. It comes as the combination of serial data transmission, Ethernet and optical technology and communication for industrial process control.

Technical Specifications

**Standard**
RS232
RS422
RS485

**Interface**
Fiber Ports: 2 SM/MM fiber ports, FC/SC/ST connector (KODT2200)
4 SM/MM fiber ports, FC/SC/ST connector (KODT2200B)
Serial Ports: Bit Error Rate: 10
Asynchronous rate: 0-115.2Kbps (Adaptive)
Electrical characteristic: compliant with RS232/RS422/RS485
standards
Physical interface: DB25-hole
Quantity of serial ports: 6 (KODT2200), 12 (KODT2200B)
Console Port: RS232 (RJ11 connector)

**LED**
LEDs on Front Panel:
Running LED: Run
Interface LED: ORDA, ORDB, RXD1-RXD (KODT2200)
ORDA-ORDD, TX1-TX8, RX1-RX8 (KODT2200B)

**Transmission Distance**
Serial Cable: RS232: 15m; RS422/RS485: 1200m
Multi Mode Fiber: 1310nm, 5km (100M)
Single Mode Fiber: 1310nm, 40km/60km (100M)
1550nm, 60km/80km (100M)

**Power Requirements**
Power Input: 12DC (9-18VDC), 24DC (18-36VDC), 48DC (36-72VDC), 110DC (66-154VDC), 220AC/DC (85-264VAC/120-370VDC)
Power Terminal: 3-pin 3.81mm-sapcing plug-in terminal block, 3-phase AC electric outlet
Power Consumption: <2.7W (KODT2200), <3.3W (KODT2200B)
Overload Protection: Support
Reverse Connection Protection: Support

**Physical Characteristics**
Housing: Metal, fanless
Protection Class: IP30
Dimensions (WxHxD): 129x28x158 mm (5.08x1.10x6.22 in.) (KODT2200)
482.6x44x139.7 mm (19x1.73x5.5 in.) (KODT2200B)
Weight: 0.6kg (1.323 pound) (KODT2200)
1.5kg (3.307 pound) (KODT2200B)
Mounting: Panel mounting (KODT2200), 19 inch 1 U Rack mounting (KODT2200B)

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**MTBF**
318,653 hrs
Media Converter

EMS:
- IEC61000-4-2 (ESD): ±6kV (contact), ±8kV (air)
- IEC61000-4-3 (RS): 10V/m (80MHz-1GHz)
- IEC61000-4-4 (EFT): Power Port: ±2kV, Data Port: ±1kV
- IEC61000-4-5 (Surge): Power Port: ±1kV/DM, ±2kV/CM, Data Port: ±1kV
- IEC61000-4-6 (CS): 3V (10kHz-150kHz), 10V (150kHz-80MHz)
- IEC61000-4-16 (Common mode conduction): 30V (cont.), 300V (1s)

Machinery:
- IEC60068-2-6 (Vibration)
- IEC60068-2-27 (Shock)
- IEC60068-2-32 (Free Fall)

Industry:
- IEC61000-6-2
- Railway: EN50155, EN50121-4
- Traffic Control: NEMA TS-2

Mechanical Drawing

KODT2200 (Panel Mounting)
KODT2200B (Rack Mounting)

Ordering Information

<table>
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<th>Model &amp; Ports</th>
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<th>PS</th>
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<tr>
<td>KODT2200-2S</td>
<td>1310-5</td>
<td>ST</td>
<td>24DC</td>
</tr>
<tr>
<td>KODT2200B-2M</td>
<td>1310-5</td>
<td>FC</td>
<td>48DC</td>
</tr>
<tr>
<td>KODT2200B-2S</td>
<td>1310-5</td>
<td>FC</td>
<td>110DC</td>
</tr>
<tr>
<td>KODT2200B-4M</td>
<td>1310-5</td>
<td>FC</td>
<td>220AC/DC</td>
</tr>
<tr>
<td>KODT2200B-4S</td>
<td>1310-5</td>
<td>FC</td>
<td>220AC/DC</td>
</tr>
</tbody>
</table>

Example Order Codes
- KODT2200-2M-1310-5-SC-220AC/DC
  Wall mounting chassis, 2 100Base-FX multi mode fiber ports, 1310nm 5km, SC connector, 120-370VDC/85-264VAC, single power supply

Connector: Fiber Connector
- SC = SC Connector
- ST = ST Connector
- FC = FC Connector

PS: Power Supply
- 12DC = 9-18VDC, single power input
- 24DC = 18-36VDC, single power input
- 48DC = 36-72VDC, single power input
- 110DC = 70-140VDC, single power input
- 220AC/DC = 120-370VDC/85-264VAC, single power input

Industrial Standard
- EMI:
  - FCC CFR47 Part 15, EN55022/CISPR22, Class A

Approvals
- CE, FCC

Warranty
- 5 years

Example Model & Ports:
- KODT2200-2M = Wall mounting chassis, 2 100Base-FX multi mode fiber ports
- KODT2200-2S = Wall mounting chassis, 2 100Base-FX single mode fiber ports
- KODT2200B-2M = Rack mounting chassis, 2 100Base-FX multi mode fiber ports
- KODT2200B-2S = Rack mounting chassis, 2 100Base-FX single mode fiber ports
- KODT2200B-4M = Rack mounting chassis, 4 100Base-FX multi mode fiber ports
- KODT2200B-4S = Rack mounting chassis, 4 100Base-FX single mode fiber ports

Distance: Fiber Distance
- 1310-5 = 1310nm, 5km
- 1310-40 = 1310nm, 40km
Kyvision is the network management software designed by Kyland for monitoring, configuring and maintaining industrial Ethernet switches like SICOM series and KIEN series in industrial communication network as well as other RFC1213-compliant devices.

Designed according to TMN regulations, its management functions include facility management, alarm management, right management, topology management and configuration management. Meanwhile, Kyvision provides maintenance functions to cope with different access networks such as topology interface, topology connecting display, topology alarm association display, operation diary record and so on, making it more convenient and efficient for users to maintain and update networks.

Empolyed JAVA and C/S, Kyvision is suitable to work on multiple operation platforms such as Windows, Solaris and Linux.

Overview

Features & Benefits

- High performance network management software, supports 10 users at the same time and can monitor up to 1000 devices
- Auto-detection of devices, and real-time event alerts to user
- Auto-generation of network topology with circular or square layout
- Supports record and query of operation and system logs
- Provides Socket and OPC interfaces for user secondary development
- Batch upload and download of configuration files, along with multiple simultaneous software upgrades by built-in FTP server

1. Supports multi-clients end, at most 10 users at the same time (can be expanded according to customer’s requirements)
2. Supports two kinds of topology methods: network segment topology and appointed IP topology, auto-detection of devices and auto-generation of topology connection between devices
3. Powerful network management software, able to manage up to 1,000pcs of devices (can be expanded according to customer’s requirements)
4. Able to work on Windows, Solaris and Linux operation platform
5. Alarm ring notification and alarm confirmation mechanism supported
6. Supports configuration interface display, dynamically showing device status
7. Supports alarm history query, able to query alarm history according to subnets, devices and time period; supports alarm data output
8. Supports operation diary records, able to examine the maintenance and operation diary of the system
9. Supports user management, right class management and subnet right management, able to configure management domains according to users’ requirements
10. Display in English or Chinese
11. Humanized interface configuration function, including subnet topology display, facility navigation bar display, network management incident display, facility alarm association display and so on
12. Provides network management of Socket and OPC interfaces, making it possible for users’ further development
Device Management
- Create new subnet and device
- Delete device
- Device's configurations and information
- Configure SNMP
- PING device
- Manage via Telnet and web browser
- Alarm all
- Configure device properties

Authority Management
User authorities include creating administrator, deleting users and modifying user properties. Subnet right is to assign manageable subnets to existing users.

This software provides three kinds of management rights: Administrator, Operator and Monitor. Administrator has all the rights, including device management, alarm management, user management, subnet right management and function monitoring; Operator has all the rights of Administrator except user management; Monitor only has the monitoring right.

Topology Management
Two-dimensional display of device topology in the home topology interface and alarm association display of communication problems (the color of corresponding alarm icons will also be changed).

Topology connection display between devices and port alarm association display (If there is an alarm, the color of the connection line will be changed).

Fast auto-topology and connection, supports manually set connections

Configuration Management
There are two ways to view device configuration picture: double click the device in network topology area or click the device with the right key and choose "view device configuration". The configuration diagram dynamically showing the port status of the devices.

Alarm Management
The alarm management modular continuously checks all the devices and the alarm of switch communication problems. Through TRAP message sent from corresponding switches and alarm information of switch status, it monitors switch status alarm and records the alarms into the database. In the home topology diagram, the color of device pictures and topology links, the alarm display bar, the device color in tree-shape navigation together reflects the device alarm status. It provides current alarm and alarm history checking and data output of alarm history according to subnets, devices, time period, alarm type and so on. Alarm informing is sent by bell ringing, email and short message and can be shielded separately.

Personalized Configurations
Kyvision provides device picture changing, topology background color or picture changing, alarm bell sets changing functions, which is able to offer different visual and sound effects.

System Requirements
CPU: Pentium 4, 1.6GHz
Memory: 1.0G
Disk Space: 2.0G
Screen: 1024x768
GPS Clock Synchronization Module

Overview
GPS clock synchronization module is specifically designed for switches including SICOM6028GPT, SICOM6424PT, SICOM3028GPT, and SICOM3424PT, which support PTP protocol. The GPS receiver and precise clock included in the module can provide an extremely precise GPS signal for host switches. GPS clock synchronization module provides one GPS signal input port and one PPS output port.

Technical Specifications
- **Interface**
  - GPS Input: 5VDC, BNC connector
  - PPS Output: +5V, 50Ω, adjustable pulse width, BNC connector

- **LED**
  - LEDs on front panel
  - Fix: Satellite positioning LED
  - Lock: System clock lock LED

- **Precision Parameters**
  - Model name: SM6.6-GPS-OI-0.5U
  - Short term stability (t=1s): 1x10^-9
  - PPS precision: ±100ns
  - 1 day free run precision: ±2x10^-8
  - 1 year free run precision: ±4x10^-7
  - GPS clock synchronization precision: ±1x10^-11
  - Clock accuracy for 1 hour free run: ±6μs
  - Clock accuracy for 1 day free run: ±865μs
  - Clock accuracy for 1 year free run: ±6.3s
  - Time drifts with temperature changes while free run: ±2x10^-7 (0-50°C)
  - Lock time: <20min (Cold boot, typical value)

- **Physical Characteristics**
  - Housing: Metal, fanless
  - Protection Class: IP40
  - Dimension (WxHxD): 122.6x20.3x106.8mm (4.83x0.80x4.20 in.)
  - Weight: 0.3Kg (0.661 pound)

- **Signal Receiving Sensitivity**
  - Receiver: 14 channels GPS C/A coding receiver
  - Tracking Sensitivity: -160 dBm
  - Acquisition Sensitivity: -155 dBm
  - Operating Frequency: 1575.42MHz±1.023MHz

- **Power Requirements**
  - Power input: 3.3VDC
  - Power terminal: A type interface (powered by backplane)
  - Power consumption: ~4.5W (booting), 3W (operating)

- **Environmental Limits**
  - Operating Temperature: 0 to 50°C (32 to 122°F)
  - Storage Temperature: -20 to 70°C (-4 to 158°F)
  - Ambient Relative Humidity: 5 to 95% (non-condensing)

- **Warranty**
  - 5 years

Mechanical Drawing

Ordering Information
SM6.6-GPS-OI-0.5U = GPS Clock Synchronization Module
IRIG-B PTP Clock Convertor Output Module

Overview
IRIG-B PTP clock converter output module is specifically designed for SICOM6028GPT, SICOM6424PT, SICOM3028GPT and SICOM3424PT which support PTP protocol. It realizes the conversion from PTP to IRIG-B clock and PPS (Pulse Per Second). This allows the IRIG-B format industrial devices to receive PTP high precision clock through our switches conveniently. This enables a high precision synchronization in the whole industrial network. The module provides two IRIG-B (DC) outputs, two IRIG-B (AC) outputs and one PPS output.

Environmental Limits
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

Warranty
- 5 years

Technical Specifications

Interface
- IRIG-B (DC): TTL, +5V level, 600Ω, trigger by rising edge, port load: 40mA, BNC connector or 2-Pin 5.08mm-spacing plug-in terminal block socket
- IRIG-B (AC): Vp-p software adjustable, 600Ω, modulation ratio software adjustable, BNC connector or 2-Pin 5.08mm-spacing plug-in terminal block socket
- PPS: TTL, +5V level, 50Ω, trigger by rising edge, pulse width 20ms-200ms, software adjustable with step of 1ms.

LED
- LED on front panel
- Run: Module on/off status

Physical Characteristics
- Housing: Metal, fanless
- Protection Class: IP40
- Dimension (WxHxD): 122.6x20.3x106.8mm (4.83x0.80x4.20 in.)
- Weight: 0.3Kg (0.661 pound)

Power Requirements
- Power input: 3.3VDC
- Power terminal: A type interface (powered by backplane)
- Power consumption: <1W

Ordering Information
- SM6.6-PTP-BO-0.5U-V1.1 = IRIG-B PTP Clock Converter Output Module
PTP over E1/T1 Module

**Overview**

PTP over E1/T1 precision clock interface module is specifically designed for Kyland GPT series including SICOM6028GPT, SICOM6424PT, SICOM3028GPT, and SICOM3424PT which support PTP protocol. It realizes precise transmission of Ethernet based clock messages over traditional SDH network with an accuracy of less than 1μs.

**Technical Specifications**

**Interface**

- E1/T1 Interface
  - Speed: 2.048Mbps(E1), 1.544Mbps(T1)
  - Resistor: Unbalanced 75Ω, Balanced 120Ω
  - Connector: Unbalanced BNC, Balanced RJ45
  - Electrical: ITU-T G.703, G.704
  - Standard: ITU-T G.823

**LED**

- LEDs on front panel
  - Operation status: RUN
  - Ethernet status: Ethernet
  - E1 Status: Link, Loss

**Physical Characteristics**

- Housing: Metal, fanless
- Protection Class: IP40
- Dimension (WxHxD): 122mmx20.3mmx114.1mm(W×H×D) (4.83x0.80x4.49 in.)
- Weight: 0.3Kg (0.661 pound)

**Power Requirements**

- Power input: 3.3VDC
- Power terminal: A type interface (powered by backplane)
- Power consumption: <3W

**Environmental Limits**

- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

**Warranty**

5 years

**Ordering Information**

SM6.6-PTP-OVER-E1/T1 = PTP time sync module over E1/T1
HSR/PRP Module

Overview
SM6.6-HSR/PRP interface module is a plug-in Redbox module specially designed for GPT series realizing both IEC62439-3-5/HSR (High-availability Seamless Redundancy) and IEC62439-3-4/PRP (Parallel Redundancy Protocol). The selection of HSR and PRP is configurable in the software. This plug-in Redbox module, which supports two 10/100/1000Base-TX RJ45 ports, is a full FPGA hardware solution with low switching latency and high communication efficiency. Enriched with this HSR/PRP module, a reliable redundancy network with Zero Recovery Time and Zero Packet Loss can be established with the deployment of Kyland GPT series. SM6.6-HSR/PRP supports two versions: Standard version and Professional version, which are defined for different network load.

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Warranty
5 years

Technical Specifications

**Interface**
Port-A: 10/100/1000Base-T(X) RJ45
Port-B: 10/100/1000Base-T(X) RJ45
Backplane: 1000Base-T(X)

**Switching**
Protocol: HSR, PRP (pending)
Switching latency < 3us
Table size: Standard, 512; Professional, 8K
Ring Node: Standard, 30; Professional, 200

**LED**
Interface Speed: Link/ACT

**Physical Characteristics**
Housing: Metal, fanless
Protection Class: IP40
Dimension (WxHxD): 122mmx20.3mmx114.1mm (4.83x0.80x4.49 in.)
Weight: 0.22Kg (0.485 pound)

**Power Requirements**
Power input: 3.3VDC
Power terminal: A type interface (powered by backplane)
Power consumption: Standard<5W; Professional<8W

Ordering Information
SM6.6-HSR/PRP = Standard Plug-in HSR/PRP Redbox with 2 10/100/1000Base-TX RJ45 ports
SM6.6-HSR/PRP-Pro = Professional Plug-in HSR/PRP Redbox with 2 10/100/1000Base-TX RJ45 ports
Serial Device Server Module

Overview
SM6.6-4D-RJ50 is a plug-in serial device server interface module specially designed for Kyland GPT series supporting 4 selectable RS232/422/485 serial ports in 10 pin RJ50 connector, isolated IP address and management. This serial module is fully compliant with EMC level 4 with each serial port integrated with ±15kV ESD protection circuit. It enriches GPT series with standard serial device server functionalities for utility applications.

Technical Specifications

Standard
IEEE 802.3i, IEEE 802.3u, IEEE 802.3x

Protocol
TCP, UDP, FTP, TFTP, Telnet, HTTP, HTTPS, SSL, SSH, ARP, TCP/IP, ICMP;

Interface
4 RS232/422/485 serial ports, 10 pin RJ50 connector
Bit error rate: 0
Electrical characteristic: 3 wire RS232, 4 wire RS422, 2 wire RS485
Data bits: 5, 6, 7, 8, default is 8
Stop bits: 1, 1.5, 2, default is 1
Parity bits: None, Even, Odd, Space, Mark, default is None
Flow control: XON/XOFF, default is XOFF
Baud Rate: 50bps-1000Kbps, default is 9600

LED
LED on front panel
RUN LED: RUN
Serial port LED: TX, RX

Reset Button
Reset button for easy module reset without need to reboot the device

Transmission Distance
Serial: RS232, 15m; RS422/485: 1200m

Power Requirements
Power input: 3.3VDC
Power terminal: A type interface (powered by backplane)
Power consumption: 2.5W

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Warranty
5 years

Mechanical Drawing

Ordering Information
SM6.6-4D-RJ50 = Serial device server interface module with 4 RS232/422/485 serial ports in RJ50 connectors
Multi Functional Application Module

SM6.6-MFA module is a plug-in computing platform with Linux OS specially designed for GPT series. This industrial grade module is compliant with IEC61850-3 and IEEE1613. Multiple application software packages can be loaded within the platform to enhance the service performance and functionality. Security, time sync management and multiple gateway protocols enable customer an economic way of deploying extensive application using computing power of the module.

Overview

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Warranty
5 years

Hardware
CPU: PowerPC 400MHz
DRAM: 256MB/64bit
Flash: 128MB
Watchdog: Built-in, 15s time out
Interface: 1000Base-X/10/100/1000Base-T(X) Combo (Faceplane), 1000Base-X (Backplane)
LED Indicator: Link, ACT

OS
Linux 2.6 with Real-Time extension

Apps: Data Processing Package
Standard: Realtime data collection, process and forwarding, including IEC60870-5-101 and IEC60870-5-104 protocol
Additional: DNP or Modbus or Profibus or IEC61850 Server or IEC61850 Client

Apps: Time Sync Package
Timing Management System

Apps: Security Package
Firewall, NAT

Physical Characteristics
Housing: Metal, fanless
Protection Class: IP40
Dimension (WxHxD): 122mmx20.3mmx114.1mm (4.83x0.80x4.49 in.)
Weight: 0.22kg (0.485 pound)

Power Requirements
Power input: 3.3VDC
Power terminal: A type interface (powered by backplane)
Power consumption: 2.5W

Technical Specifications

Ordering Information

Hardware
SM6.6-MFA = Plug-in Multifunction functional application platform with 1GX/GE combo port

Software License
DP-S1 = Standard Data processing package: Realtime data collection, process and forwarding, including IEC60870-5-101 and IEC60870-5-104 protocol
DP-A1 = Additional data processing application: DNP
DP-A2 = Additional data processing application: Modbus
DP-A3 = Additional data processing application: Profibus
DP-A4 = Additional data processing application: IEC61850 Server
DP-A5 = Additional data processing application: IEC61850 Client
TP-S1 = Standard Time sync application: TMS
SP-S1 = Standard Security application
### Modules & Accessories

#### SFP-1G

**Gigabit SFP Modules**

- Transmission rate is up to 1.25Gb/s
- Working voltage is 3.3V
- Differential signal LVPECL input and output
- TTL signal detection
- Hot-swappable LC duplex connector
- UL, TüV certificates

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#### Technical Specifications

**Standard**
SFP MSA (INF-8074i), IEEE802.3z, ITU-T G.695, FC-PI v2.0

**Interface**
LC Connector

**Physical Characteristics**
Protection Class: IP20
Dimensions (W×H×D): 13.7×8.5×57.2 mm (0.54×0.33×2.25 in.)
Weight: 40g (0.088 pound)

**Environmental Limits**
- Operating Temperature: -40 to 85°C (-40 to 185°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Ambient Relative Humidity: 5 to 95% (non-condensing)

#### 1000Base SFP (1.25Gbit/s) Parameter Table

<table>
<thead>
<tr>
<th>Property</th>
<th>SX</th>
<th>LX</th>
<th>LH</th>
<th>ZX</th>
<th>ZX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Multi Mode (M)</td>
<td>Single Mode (S)</td>
<td>Single Mode (S)</td>
<td>Single Mode (S)</td>
<td>Single Mode (S)</td>
</tr>
<tr>
<td>Center Wavelength (nm)</td>
<td>850</td>
<td>1310</td>
<td>1310</td>
<td>1550</td>
<td>1550</td>
</tr>
<tr>
<td>Transmission Distance (km)</td>
<td>0.55</td>
<td>10</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Application Range of Transmission Distance (km)</td>
<td>0-0.55</td>
<td>0-10</td>
<td>12-40</td>
<td>24-60</td>
<td>27-80</td>
</tr>
<tr>
<td>Transmitting Optical Power</td>
<td>-11</td>
<td>-10</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>Receiving Sensitivity (dBm)</td>
<td>-2</td>
<td>-3</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Overload Optical Power (dBm)</td>
<td>-18</td>
<td>-21</td>
<td>-23</td>
<td>-22</td>
<td>-25</td>
</tr>
</tbody>
</table>

#### Ordering Information

- **IGSFP-M-SX-LC-850-0.55** = Gigabit SFP module, Multi mode, 850nm, 0.55km, LC connector, -40 to 85°C operating temperature
- **IGSFP-S-LX-LC-1310-10** = Gigabit SFP module, Single mode, 1310nm, 10km, LC connector, -40 to 85°C operating temperature
- **IGSFP-S-LH-LC-1310-40** = Gigabit SFP module, Single mode, 1310nm, 40km, LC connector, -40 to 85°C operating temperature
- **IGSFP-S-ZX-LC-1550-60** = Gigabit SFP module, Single mode, 1550nm, 60km, LC connector, -40 to 85°C operating temperature
- **IGSFP-S-ZX-LC-1550-80** = Gigabit SFP module, Single mode, 1550nm, 80km, LC connector, -40 to 85°C operating temperature
**SFP-1FX**

100M Fiber SFP Modules

- Transmission rate is up to 155Mb/s
- Working voltage is 3.3V
- PECL input and output
- TTL signal detection
- Hot-swappable LC duplex connector
- UL, TuV certificates

**Technical Specifications**

**Standard**
SFP MSA (INF-8074i), IEEE802.3ah

**Interface**
LC Connector

**Physical Characteristics**
Protection Class: IP20
Dimensions (W×H×D): 13.7×8.5×57.2 mm (0.54×0.33×2.25 in.)
Weight: 40g (0.088 pound)

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**Technical Specifications**

<table>
<thead>
<tr>
<th>Property</th>
<th>LX</th>
<th>LH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Multi Mode (M)</td>
<td>Single Mode (S)</td>
</tr>
<tr>
<td>Center Wavelength (nm)</td>
<td>1310</td>
<td>1310</td>
</tr>
<tr>
<td>Transmission Distance (km)</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>Application Range of Transmission Distance (km)</td>
<td>0-2</td>
<td>20-40</td>
</tr>
<tr>
<td>Transmitting Optical Power (dBm)</td>
<td>-21</td>
<td>-6</td>
</tr>
<tr>
<td>Receiving Sensitivity (dBm)</td>
<td>-15</td>
<td>0</td>
</tr>
<tr>
<td>Overload Optical Power (dBm)</td>
<td>-30</td>
<td>-34</td>
</tr>
<tr>
<td>Overload Optical Power (dBm)</td>
<td>-10</td>
<td>-10</td>
</tr>
</tbody>
</table>

**Ordering Information**

IFSFP-M-LX-LC-1310-2 = 100M SFP module, Multi mode, 1310nm, 2km, LC connector, -40 to 85°C operating temperature
IFSFP-S-LH-LC-1310-40 = 100M SFP module, Single mode, 1310nm, 40km, LC connector, -40 to 85°C operating temperature
IFSFP-S-LH-LC-1550-80 = 100M SFP module, Single mode, 1310nm, 80km, LC connector, -40 to 85°C operating temperature

**Warranty**
3 years

**Approvals**
UL, TuV, RoHS

**Industrial Standard**
EMI:
CISPR22 ITE Class B, FCC Class B, CENELEC EN55022, VCCI Class1
EMS:
IEC61000-4-2 Class 2 (>4.0KV)
IEC61000-4-3 Class 2
MIL-STD-883E Method 3015.7 Class 1 (>1.5KV)
SFP-1G to FX

Gigabit to 100Base-FX SFP module

- Transmission rate is up to 125Mb/s
- Built-in SGMII physical layer interface
- Working voltage is 3.3V
- Hot-swappable LC duplex connector
- Compliant with RoHS standard

Technical Specifications

**Standard**
SFP MSA (INF-8074i), IEEE802.3ah

**Interface**
LC Connector

**Physical Characteristics**
Protection Class: IP20
Dimensions (W×H×D): 13.7×8.5×57.2 mm (0.54×0.33×2.25 in.)
Weight: 40g (0.088 pound)

**Environmental Limits**
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

**1000Base to 100Base SFP (125Mbit/s) Parameter Table**

<table>
<thead>
<tr>
<th>Property</th>
<th>LX Type</th>
<th>LX Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Wavelength (nm)</td>
<td>1310</td>
<td>1310</td>
</tr>
<tr>
<td>Transmission Distance (km)</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Application Range of Transmission Distance (km)</td>
<td>0-2</td>
<td>0-10</td>
</tr>
<tr>
<td>Transmitting Optical Power Mini. (dBm)</td>
<td>-20</td>
<td>-15</td>
</tr>
<tr>
<td>transmitting Optical Power Max. (dBm)</td>
<td>-14</td>
<td>-8</td>
</tr>
<tr>
<td>Receiving Sensitivity (dBm)</td>
<td>-31</td>
<td>-28</td>
</tr>
<tr>
<td>Overload Optical Power (dBm)</td>
<td>-8</td>
<td>-8</td>
</tr>
</tbody>
</table>

**Ordering Information**

IG-FSFP-M-LX-LC-1310-0.55 = Gigabit to 100M SFP module, Multi mode, 1310nm, 0.55km, LC connector, -40 to 85°C operating temperature
IG-FSFP-S-LX-LC-1310-10 = Gigabit to 100M SFP module, Single mode, 1310nm, 10km, LC connector, -40 to 85°C operating temperature
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