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Communication Networks

INSTALLATION AND OPERATION MANUAL

CWFE2SC(M)(S)2

COMMERCIAL GRADE 10/100 MBPS
ETHERNET 2 PORT MEDIA CONVERTER

1 CHANNEL: ELECTRICAL ↔ OPTICAL

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The ComWorx™ VL CWFE2SC(M)(S)2 Ethernet 2 port media converters are designed to transmit and receive 10/100 Mbps data over multimode or single mode optical fiber. The electrical interface will Auto-Negotiate to a 10 Mbps, or 100 Mbps Ethernet rate without any adjustments. The optical interface operates at a 100 Mbps Ethernet rate. These media converters are commercial grade for light industrial use.

Content

Introduction

The ComNet CWFE2SC(M)(S)2 is a cost-effective solution for converting 10/100Base-TX electrical to and 100Base-FX fiber optic cable, It allows you to extend the distance of your 100Base-FX network up to 2 kilometers for multi-mode fiber or up to 30 kilometers for single-mode fiber. The ComNet CWFE2SC(M)(S)2 gives you the option of choosing between the most popular fiber cabling connectors: SC/multi-mode fiber connector and SC single-mode fiber connectors. The CWFE2SC(M)(S)2 module provides you with one fiber connector for your fiber optic cable and one Ethernet RJ45 port (Auto MDI/MDIX) for your 100BaseTX copper cable connection. There are 4 DIP- switches to set the operation mode for UTP, Fiber ports and link loss forwarding function.

Features

ComNet CWFE2SC(M)(S)2

- Complies with IEEE 802.3, 802.3u, and 802.3x standards.
- Converts between UTP cabling and fiber-optic cable.
- One RJ45 connector, Auto-MDI/MDIX for UTP port.
- Supports 10/100 Mbps Auto-negotiation for UTP port.
- Fiber optic cabling connectivity up to 30Km.
- Store-and-forward switching architecture.
- One SC fiber connector for 100Base-FX optical transmission.
- 4DIP-switches to set the operation mode and Link- Lost-Forwarding function.
- 6 LEDs for per port: 100, Link, Activity, Full, Collision, and per unit Power.
- External DC power adapter 12V/1A.
- FCC Class A, CE, UL, and CUL Mark certification

Package Contents

- Stand-alone converter module package contains following items.
  - Media Converter
  - AC-DC Power Adapter
  - User Guide

Compare the contents of your converter module with the checklist above. If any item is damaged or missing, please contact your local dealer for service.

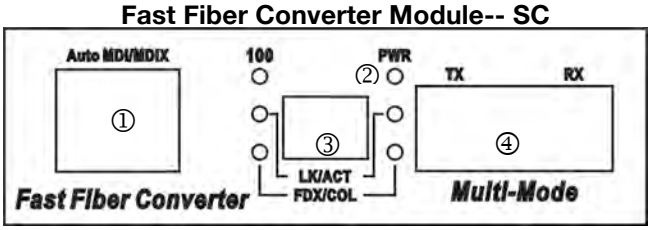
Hardware Description

Unit dimension (L x W x H) is: 119mm x 85mm x 26mm

Front Panel

The Front Panel of the **ComNet CWFE2SC(M)(S)2** consists of one RJ45 Port (Auto MDI/MDIX), 6 LED Indicators (UTP 100, LK/ACT, FDX/COL, Fiber LK/ACT, FDX/COL and PWR) and one fiber 100Base-FX Port.

Fast Fiber Converter Module-- SC



Ports

- **RJ45 Port (Auto MDI/MDIX):** the Ethernet RJ45 will auto-sense for 10Base-T or 100Base-TX connections. Auto MDI/MDIX means that you can connect to another switch or workstation without changing non-crossover or crossover cabling.

- **Fiber Port:** This port is for 100 Base-FX connections.

LED Indicators

There are 6 diagnostic LEDs located on the Front panel of the media converter. They provide real-time information of system and optional status. The indicator includes Power, UTP 100, LK/ACT, FDX/COL, Fiber LK/ACT, FDX/COL. The following table provides description of the LED status and their meanings.

LED	Status	Meaning
PWR	Green	Power on
100	Green	100Mbps UTP Speed
	OFF	10Mbps UTP Speed
LK/ACT (UTP)	Green	The unit is linking with its link partner.
	Blinks	The unit is transmitting or receiving packets from UTP devices.
	Off	No device attached
LK/ACT (Fiber)	Green	The unit is linking with the corresponding unit.
	Blinks	The unit is transmitting or receiving packets from FX devices.
	Off	No device attached
FDX/COL (UTP)	Orange	The UTP port is operating in full-duplex mode.
	Blinks	Collision of Packets is occurring in the port.
	Off	Half-duplex mode or no device attached
FDX/COL (Fiber)	Orange	The fiber port is operating in full-duplex mode.
	Blinks	Collision of Packets is occurring in the port.
	Off	Half-duplex mode or no device attached

DIP-switch

The DIP-switch is used to configure operation mode for LLF (**Link Lost Forwarding)** and operation mode for UTP/Fiber port. The default value of DIP switch is **OFF**.

S/W No	Status	Description
1	ON	UTP 100Mbps Full Duplex mode
	OFF	UTP Auto-Negotiate
2	ON	Fiber in Half Duplex
	OFF	Fiber in Full Duplex
3	ON	LLF Enable
	OFF	LLF Disable
4	ON	Pure converter mode
	OFF	Switch Converter mode

Link Lost Forwarding (DIP-Switch 3): When LLF is enabled, it allows UTP link failures to be reported to the fiber side and also allows a fiber link failure to be reported to the UTP side. Therefore, a link loss forward feature is provided in both UTP and fiber side.

Pure Converter mode (DIP-Switch 4): When the pure converter mode is enabled (on), it operates with minimal latency. The transmission flow does not wait until the entire frame is ready, but instead it forwards the received data immediately after the data has been received. The UTP port should be forced at 100M in this application. When DIP-Switch is in Switch Converter mode (off), the converter function is same as Switch Hub.

[Note] Do not change the DIP-switch setting when UTP or fiber port is transmitting or receiving data. It may cause some data errors. If you change the DIP-switch setting, please power off the converter and power it on again to make the setting effective.

Rear Panel

The rear panel contains a power socket, which accepts 8–24 VDC @ 220mA.

Cabling

- For the Twisted-pair segment unshielded twisted pair (UTP) or shielded twisted pair (STP) cabling can be used. The cable must comply with the IEEE 802.3u 100Base TX standard for Category 5. The cable between the converter and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.
- For the single mode fiber optic segment, use 9/125 μm single mode fiber cable. You can connect two devices over a distance of 30 Kilometers.
- For the multimode fiber optic segment use 50 or 62.5/125 um multimode fiber cable. You can connect two devices up to a 2-kilometer (6,562 ft.) distance.

Problem Solving

- Check the DIP-switch configuration. It must be set in the same operational mode as the corresponding link.

- Select the proper UTP/fiber optic cable to construct your network. The single-mode media converter must use single-mode fiber optic cable. Please check that you are using the right cable.

Optical Fiber Specifications

The following table shows the optical Fiber Specification

Module Name	Wavelength (nm)	Avg. Launch Power (dB)	Avg. Sensitivity (dB)
ComNet CWFE2SCM2	1310 (nm)	-18 (dB)	-30 (dB)
ComNet CWFE2SCS2	1310 (nm)	-6 (dB)	-34 (dB)

Module Name	Avg. Power Loss Budget (dBm)	Max. FDX Fiber Distance (Km)	Fiber Size (um)
ComNet CWFE2SCM2	12 (dBm)	2 (Km)	62.5/125 50/125
ComNet CWFE2SCS2	28 (dBm)	30(Km)	9/125

Optical Specifications of Transceivers

1310 nm Multimode Single Mode	Transmitter (Output Center Wavelength): 1261~1360 nm
	Receiver (Wavelength of Operation): 1100~1600 nm
	Optical Transmit Power: Min. –15 dBm, Max. –7 dBm
	Sensitivity: Min. ---, Max. –34 dBm

Technical Specifications

ComNet CWFE2SC(M)(S)2 technical specifications are as follows:

Standard	IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX/100BASE-FX IEEE802.3x Flow Control and Back pressure
Connector	Fiber: Duplex SC RJ45 Socket: CAT-3/5 (10/100Mbps) Twisted Pair cable Auto MDI/MDI-X and Auto-Negotiation Function Support
Switch architecture	Store and Forward
Fiber parameters	**Fiber Core:** Multi-Mode (62.5/125um, 50/125um) Single-Mode (9/125μm) **Wavelength:** 1310nm Multimode & Single-mode **Fiber Distance:** Multi-Mode Fiber 2KM Single-Mode Fiber 30 KM
Transparent packet	64 to 1518 Bytes for Non-VLAN Ethernet packet
Link Lost Forward	**UTP ➔ Fiber**: If UTP port link is down, the converter will force the fiber to link down. **Fiber ➔ UTP**: If Fiber port link is down, the media converter will force UTP port to link down.
DIP Switch	**DIP Switch 1:** UTP Auto-Negotiate / 100Mbps Full Duplex mode **DIP Switch 2:** Fiber Full/Half Duplex **DIP Switch 3:** LLF (Link Lose Forwarding) Disable/Enable **DIP Switch 4:** Switch Converter / Pure converter mode
LED	Module: Power, TX (100Mbps, LK/Act, FDX/COL) Fiber (LK/Act, FDX/COL)
Power	Stand-alone (external adapter): DC12V / 1A
Dimension	Module: 119mm x 85mm x 26mm
EMI & safety	FCC Class A, CE, UL, CUL

ComNet Customer Service

Customer Care is ComNet Technology's global service center, where our professional staff are ready to answer your questions at any time. Email address of ComNet Global Service Center: customercare@ComNet.net

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