LinksKey

Gigabit Ethernet
Fiber
Media Converter

User Manual

V 3.1

☞ Brief introduction

Thank you for purchasing Linskey Gigabit Ethernet Fiber Media Converter! It provides a media conversion allowing high-speed integration of fiber optic and twisted-pair segments. The fiber media converter provides seamless translation between fiber optic and Gigabit Ethernet networks.

The table below is for purchasing information:

Model	Specifications
LKS-FCM22C/T-2	100TX to 100FX Multi-Mode SC/ST Fiber Converter (2km, 1.2mi)
LKS-FCS22C-20	100TX to 100FX Single-Mode SC Fiber Converter (20km, 12.4mi)
LKS-FCS22C-40	100TX to 100FX Single-Mode SC Fiber Converter (40km, 24.9mi)
LKS-FCS22C-60	100TX to 100FX Single-Mode SC Fiber Converter (60km, 37.3mi)
LKS-FCS21C-T/R40	100TX to 100FX Single Fiber WDM Transmitter/Receiver Single-Mode SC/ST Fiber Converter (40km, 24.9mi)
LKS-FCM32C/T-05	1000TX to 1000FX Multi-Mode SC/ST Fiber Converter (550m,1804ft)
LKS-FCS32C-20	1000TX to 1000FX Single-Mode SC Fiber Converter (20km, 12.4mi)
LKS-FCS31C-T/R20	1000TX to 1000FX Single Fiber WDM Transmitter/Receiver Single-Mode SC Fiber Converter (20km, 12.4mi)

☞ Package content

Please check the following items have been included in the package:

- Gigabit Ethernet Fiber Media Converter x 1
- AC switching power adapter x 1
- User manual x 1
- Product warranty card x 1

Please contact the local reseller immediately for any loss or damage to the above items.

☞ Installation

Before you begin the installation, check the AC voltage of your area. The AC power adapter which is used to provide the DC power for the unit, and should have the AC voltage matching the commercial power voltage in your area.

Applying Power

1. Connect the DC plug to the DC input jack located on the back of the media converter before connecting to the AC power outlet.

2. To ensure against accidental disconnection, tie the DC power cable with the cable tie located the back of the media converter.
3. Connect the AC power adapter to the AC power outlet.
4. Check the Power LED indication on the media converter.

Making TP Port Connection

TP port is featured to support connection to:
- Auto-negotiation devices
- Auto-negotiation incapable 10Base-T devices
- Auto-negotiation incapable 100Base-TX devices
- Auto-negotiation incapable 1000Base-T devices

Network Cables

- 10Base-T:2-pair UTP CAT 3,4,5, EIA/TIA-568 100-ohm STP
- 100Base-TX:2-pair UTP CAT 5, EIA/TIA-568 100-ohm STP
- 1000Base-T:4-pair UTP CAT 5e,6 EIA/TIA-568 100-ohm STP
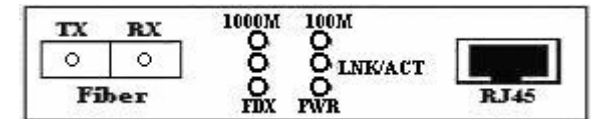- Link distance: Up to 100 meters

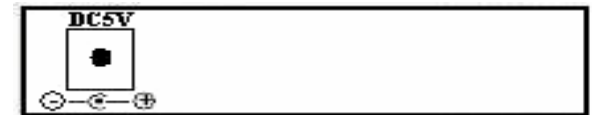

Figure 1.   Front Panel

Figure 2.   Back Panel

Making FX Port Connection

FX port operates at 1000Mbps and full duplex (factory default). A variety of fiber options is listed in next section. Since the WDM (Wavelength Division Multiplexing) single fiber media converters use different wavelengths for transmission and receiving respectively, the link partner device located on the remote end of the single fiber should match the wavelength used on the single fiber converter. Using 50/125 or 62.5/125 micron multi-mode fiber cable to connect to the fiber port of multi-mode media converter. Using 9/125 micron single-mode fiber cable to connect to the single-mode media converter.

Note: All optical fiber media converters must be used in pair.

Single fiber optic media converter, the TX model must be paired with the RX model and vice versa.

☞ LED indicators

LED indicators serve as device monitoring and error display. The following is the explanation for each LED indicator.

LEDs	State	Indication
Link/Act	On	TP/Fiber link connection established
	Blinking	TP/Fiber transmitting or receiving data
FDX	On	Connection in full duplex mode
	Off	Connection in half-duplex mode
PWR	On	Power on
1000	On	TP connection speed is 1000Mbps
100	On	TP connection speed is 100Mbps

☞ Transmission characteristics of dual fiber converter

Dual Fiber	Transmitting optical power (dBm)	Receving sensitivity (dBm)	Transmission distance (km)	Loss allowed (dBm)
MM/SC/ 1310nm	-10 ~ -5	-23	0.55	7
SM/SC/ 1310nm	-9 ~ -3	-24	20	11
SM/SC/ 1310nm	-2 ~ 3	-24	40	20
SM/SC/ 1550nm	-3 ~ 2	-24	60	19
SM/SC/ 1550nm	-3 ~ 2	-24	80	24

☞ Transmission characteristics of single fiber converter

Single Fiber	Transmitting optical power (dBm)	Receiving sensitivity (dBm)	Transmission distance (km)	Loss allowed (dBm)
SM/SC/ 1310/1550	-3 ~ -9	-24	20	Standard loss: 1310nm-0.4/km; 1550nm-0.25/km; 1490nm-0.25/km
SM/SC/ 1310/1550	>-4	-24	40	
SM/SC/ 1490/1550	>-1	-24	60	

☞ Main feature

1. Built in high efficiency SRAM for packet buffer, with 1K entry lookup table and 4-way associative hash algorithm
2. Half-duplex back-pressure and IEEE802.3x full duplex flow control
3. Auto MDI/MDI-X detection function on the TP port
4. Support link fault pass through function
5. Support far end fault function on the FX port
6. LED display for easy monitoring of device status
7. Transmission distance 550m multi-mode, 120km single-mode
8. Low power consumption

☞ Technical parameters

1. Standard: IEEE 802.3 10Base-T standard,
   IEEE 802.3u 100Base-TX/FX standard,
   IEEE 802.3ab 1000Base-T standard and
   IEEE 802.3z 1000Base-FX
2. Protocol: CSMA/CD
3. Connector: one UTP RJ-45 connector, one SC/ST connector
4. Operation mode: full duplex mode or half-duplex mode
5. Power consumption: 5V DC 1A (4.5W max.)
6. Operation temperature: 0℃ - 55 ℃ (32°F - 131°F)
7. Storage temperature: -20℃ - 70 ℃ (-4°F - 158°F)
8. Relative humidity: 5%-90%
9. TP cable: 10Mbps - Category 3, 4, or 5 UTP
   100Mbps - Category 5 UTP
   1000Mbps - Category 5e or 6 UTP
10. FX cable: Multi-mode - 50/125, 62.5/125 or 100/140μm
    Single-mode - 8.3/125, 8.7/125, 9/125 or 10/125μm
11. Dimensions: 94mm x 70mm x 26mm (3.7in x 2.8in x 1.0in)

☞ Cautions:

1. This product is suitable for indoor application.
2. Put on the dust cover of fiber interface when not used.
3. It is forbidden to stare at the TX fiber-transfer end with naked eyes.

☞ Troubleshooting:

1. Fail to transmit data: Make sure the UTP distance does not exceed 100m, and the fiber distance does not exceed the maximum distance. Verify that both nodes are running at the same speed.
2. UTP or Fiber Link LED is not lit: Check the power on the network device connected to the converter, make sure it is turned ON. Check the cables, make sure the UTP cable complies with EIA/TIA 568 specification and fiber optic cables comply with industry standards.