

Installation of Fiber Optic Converters

WARNING! Invisible laser radiation is emitted from the fiber optic connectors. Avoid direct eye contact with live connectors on the converter or fiber optic cable.

Description

This product bulletin provides instructions for the installation of fiber optic converters to support FuelMaster® Plus FMU network communications. All FMU network cards are presently designed for 10/100 Mbps Ethernet communications, and connection to Cat 5/6 network cables with an RJ-45 connector. Cat 5/6 network cable, however, cannot support the communications cable lengths afforded with fiber optic cable. Installation of fiber optic converters will permit a cable network to be converted to fiber optic for long communication runs to the FMU, then convert back to cable for connection to the FMU network card.

There are many fiber optic converters on the market which satisfy a variety of fiber optic cables, and a variety of fiber optic connectors. This product bulletin addresses the use of a StarTech ET90110SC fiber optic converter (see Figure 1), which has been assigned Syntech part number 256702. This converter is reasonably priced, and may be used at either end of the fiber optic cable to convert from cable to fiber optic, or from fiber optic to cable. It is designed for use with SC fiber connectors to multimode 62.5/125 fiber cable to carry 10/100 Mbps Ethernet communications. Each converter is supplied with mounting hardware, and a power supply which requires connection to a 110 VAC power outlet. The StarTech converter supports communications through 2 km (1.2 miles) of fiber optic cable.

If bulk fiber optic cable is used, it is strongly recommended a networking professional be retained to install the SC connectors. Installation of the connectors requires special skills and special tools. Ready-made 62.5/125 multimode fiber cables with pre-installed SC connectors may be purchased in most any length.

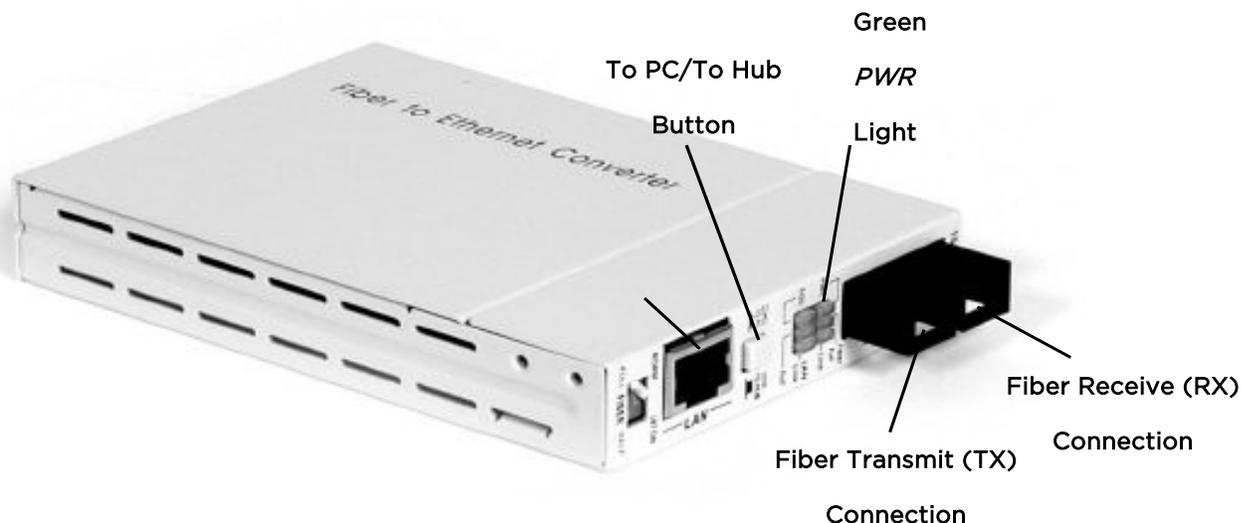


Figure 1. StarTech ET90110SC Fiber Optic Converter (STS part number 256702)

Converter Installation

Refer to Figure 1. The StarTech fiber optic converter may be installed at the source to convert network cable to fiber optic, and at the termination point to convert fiber optic back to cable. Unless you have the skills and special tools necessary to perform fiber optic connections, it is recommended someone with the necessary tools and skills be retained, or a pre-configured fiber optic patch cable in the needed length be purchased for this application. Fiber optic connection to the StarTech converter must be made with SC connectors installed on multimode 62.5/125 fiber optic cable. Dimensions of the converter are 5-1/2" L x 3-1/2" W x 3/4" D.

The following materials will be required:

1. StarTech converters; as required, one for each end of the fiber optic cable
2. Multimode 62.5/125 fiber optic cable with SC connectors
3. Cat 5/6 patch cables to connect the converter to the network on the building end, and to the network card on the FMU end; length will vary.
4. As required, an outlet box for the FMU includes an outlet box, cover, GFI receptacle, approx. 2 feet each of 14 AWG THHN black, white, and green wire, conduit nipple, locknut for conduit nipple, and conduit bushing. If the need is known when the FMU is ordered, an outlet box may be pre-installed.

Perform the following to install the StarTech fiber optic converter at the source (in the building):

1. Find a location which has access to the network through a Cat 5 or 6 cable, access to the source of the fiber optic cable, and also offers an outlet for 110 VAC electrical power. It will be easier and more cost effective to extend a Cat 5 or 6 cable, if necessary.
2. Plug the Cat 5 or 6 straight-through cable RJ-45 connector into the converter LAN receptacle.
3. If so equipped, push in the converter to PC/To Hub button.
4. Remove the rubber dust caps from the fiber transmit and receive connectors. Plug the fiber optic transmit connector into the T (or TX) receptacle, and plug the receive connector into the R (or RX) receptacle.
5. Set the Full/Half FIBER switch to Half. Some older converters accomplish this with a dipswitch.
6. Connect the power adapter to the converter, and plug it into a 110 VAC power outlet.

NOTE The StarTech converter is designed for use in temperatures ranging from 32 to 158 degrees F, and humidity levels of 0 to 90%. If low temperature or humidity levels at the FMU fall outside these ranges, the converter should be mounted within areas of the FMU protected by heaters. Areas protected by heaters are areas behind the FMU upper door, or behind the FMU surge protection panel.

Perform the following to install the StarTech fiber optic converter in the FMU:

1. Determine a mount location for the converter. Wherever it is mounted must provide access to the fiber optic connectors and provide protection from the environment. The power adapter must plug into 110 VAC power, and a Cat 5/6 patch cable must be routed from the converter to the FMU network card. It will be easier to install a longer Cat 5/6 patch cable, than extending the fiber optic cable.
2. An outlet box will be necessary to power the converter's power adapter. If an outlet box is not installed following: perform the following:

WARNING Injury to personnel and damage to equipment may occur if not followed. Ensure FMU power is turned off at the power source (i.e., circuit breaker) before proceeding with this task. Removing power at the FMU Power Switch will not remove power from incoming power wires.

- a. Remove AC power from the FMU at its circuit breaker.
- b. Unlock and open the FMU pedestal and upper cabinet doors.
- c. Loosen the retaining screws and remove the upper and lower electrical access panels in the pedestal.
- d. See Figure 2. Assemble an outlet box with a GFI receptacle, approximately two feet of 14 AWG THHN black, white, and green wire, a conduit nipple, and conduit locknut. Connect the black, white, and green wire to the corresponding hot, neutral, and ground connectors on the GFI receptacle, then push the loose end of the wires through the conduit nipple. Seat the GFI receptacle in the outlet box and install the outlet box cover.



Figure 2. Outlet Box Installation

NOTE It will not matter which conduit access hole is selected for mounting the outlet box. It might be preferable to install the outlet box after all other conduit have been installed.

- e. Find an unused conduit access hole in the bottom of the electrical access compartment matching the size of your conduit nipple. Remove the plastic hole plug.
- f. Thread the outlet box wires through the conduit access hole, then insert the exposed end of the conduit nipple into the access hole. Secure with a locknut and install a conduit bushing to protect the wires.

NOTE Damage to equipment may occur if not followed. Ensure the outlet box is connected to wires exiting the AC surge protection so the equipment plugged into the outlet box has surge protection.

- g. If applicable, disconnect the wire nut connections for the black (hot) and white (neutral) wires exiting the two-wire harness on the back of the surge panel. Connect the black and white wires for the outlet box into these connections. Connect the green wire to the ground lug at the bottom of the electrical access compartment. The outlet box installation is complete.
3. Set the Full/Half FIBER switch to Half. Some older converters accomplish this with a dipswitch.
 4. If so equipped, push in the converter to PC/To Hub button.
 5. Mount the converter in the desired location. If desired, the converter may be secured in place with heavy duty adhesive backed Velcro.
 6. Connect the Cat 5/6 patch cable on one end to the converter **LAN** receptacle, and on the other end to the FMU network card RJ-45 connector.
 7. Remove the rubber dust caps from the converter fiber transmit and receive connectors. Plug the fiber optic transmit connector into the **T** (or **TX**) receptacle, and plug the receive connector into the **R** (or **RX**) receptacle.
 8. Plug the converter power supply into the outlet box and run the other end of the power supply cable to the converter. Keep this cable away from any 110 VAC cables/connections. Plug it into the converter. A green **PWR** light on the converter should illuminate.
 9. If installing an FMU network card, refer to Product Bulletin 114 for network card installation and setup.
 10. Reinstall the upper and lower FMU electrical access panels and tighten the retaining screws.
 11. Close and lock the FMU pedestal door.
 12. Restore AC power to the FMU and observe the **LINK** and **TX/RX** lights on the forward center edge of the FMU network card. When a connection and incoming signal is present a steady amber **LINK** light, and a flashing **TX/RX** light should be observed.
 13. Close and lock the FMU upper cabinet door.

Verify Communications

Verify network communications to the FMU:

1. Open the FuelMaster® Plus software program.
2. Click the Online icon. The Go Online with FMUs window will open.
3. Under Online Types, click on Query.
4. Under Check Online Sites, select the site to be tested by checking the box to the left of the site name.
5. Click on Connect. A display similar to the following in the Status Output Window should be observed when a satisfactory network communications link is made:

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**SESSION FOR DATABASE ENTRY: [Master]
DB Path: C:\Program Files\SynTech\FuelMasterPlus\FuelMasterPlus.mdb
Database Custom Type: None
Connecting to: Site '0001' attempt:1
Site Name:
Begin connecting, time:10:55:03 07/23/07
Connect to site 0001 on 07/23/07 10:55:04 connection type 1
initializing socket...
socket initialized
Setup
Connecting to 172.16.72.20
ip: 172.16.72.20 port: 23
LOGIN successful
Starting FTP session...
started ftp session
Getting Site Config...
Requesting configuration for site 0001 satellite 0
Succeed to get site config: Master
Ending FTP session...
closing ftp session
Disconnecting...
logging out
hangup and disconnect
Socket Disconnecting... 07/23/07 10:55:31
Socket Disconnected on 07/23/07 10:55:31
Disconnected from site 0001 on 07/23/07 10:55:31
Generating the Polling Report...
The Polling Report was saved to a file...
Polling Report File Name:
C:\ProgramFiles\SynTech\FuelMasterPlus\PollReports\PollReport_20070723_10550
Deleting DONE InventoryLoad items
FINAL time: 10:55:38 07/23/07
***END OF STATUS REPORT***

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If LOGIN successful was observed, a satisfactory link was established, and the converter installation is a success.

TIP

If any questions arise, contact Syntech Systems, Inc.'s Customer Satisfaction Center (CSC) at 1-800-888-9136, ext. 2, or email support@myfuelmaster.com.