SOHOConnect Series

FN-403
FN-803

4/8-port 100Base-TX
Palm-Top Fast Ethernet Hub

Trademarks

FCC Warning

CE Mark Warning

Revision

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Introduction

About This Guide

Thank you for purchasing this Palm-Top 10/100Mbps Fast Ethernet Hub -- FN-403/FN-803. Compact in size and lightweight, utilizing the latest VLSI technology to provide high reliability levels, the units provide a flexible approach to hub deployment.

In this user's guide, you will learn product characteristics, it's features, and also some basic installation concepts. Please read the following section carefully before your installation.

Checklist

Carefully unpack the package and check its contents against the checklist given below.

- ♦ 100Base-TX Fast Ethernet hub
- ♦ User's manual
- ♦ AC power adapter
- ♦ Rubber Foot

Please inform your dealer immediately for any wrong, missing, or damaged part if possible, retain the carton including the original packing materials, and use them against to repack the product in case there is a need to return it to us for repair.

Product Features

♦ Conforms to IEEE 802.3u 100Base-TX Standard
♦ Provides LED indicators for monitoring overall hub condition and individual port status
♦ Automatic bad port partitioning to protect the network
♦ Conforming Fast Ethernet Class II Repeater specification
♦ For desktop installation

About Fast Ethernet

This hub is technically known as a 100Base-TX Class II Fast Ethernet hub. This Section describes what this means in practical terms.

Ethernet Standards and Operation Speeds

The standards of the Ethernet are defined by the Institute of Electrical and Electronics Engineers (IEEE). The standard for traditional Ethernet using hubs and twisted-pair cables is known as 10Base-T. Traditional Ethernet works at a signaling speed of 10Mbps, that is, ten megabits (slightly more than a character) per second. The Base in 10Base-T stands for "baseband," a one-bit-at-a-time signaling method; the T stands for twisted-pair cables.

Fast Ethernet was developed to meet the demand for increased "bandwidth," in other word, greater data-carrying capacity. A fast Ethernet hub works at 100Mbps, ten times the speed of a 10Base-T hub.

The IEEE had defined several Fast Ethernet Standards. The hub complies with the 100Base-TX standard: 100Mbps baseband signaling on twisted-pair cables, with signals crossing from the Transmit lines to the Receive lines somewhere between each pair of communication end nodes.

Fast Ethernet Hub Classes

This hub is a Class II Fast Ethernet hub. This means two things:

1. It will work with Fast Ethernet interface cards of one type only, and

2. It can be connected to another hub for the purpose of expanding the network.

Note: A Class I hub will work with more than one type of Fast Ethernet interface card, but cannot be connected to another hub.

100Base-TX Fast Ethernet Cabling

The twisted-pair cables used for traditional Ethernet and Fast Ethernet all look the same on the outside. Such cables, however, come in different grades and with different wire arrangement, and can have different kinds of sheathing.

The kinds of cables that can be used with a 100Base-TX Class II Fast Ethernet hub are

♦ Category 5 unshielded twisted-pair cable, and (Category 5 UTP)
♦ Type 1 shielded twisted-pair cable (Type 1 STP)

100Base-TX Fast Ethernet Summary

Be sure to remember the following rules about a 100Base-TX Class II Fast Ethernet hub:

1. All end nodes connected to the hub must have 100Base-TX Fast Ethernet interface cards.
2. Only Category 5 UTP or Type 1 STP cables may be used to connect and nodes to the hub. The cables must be straight-wired.
3. To expand a network built around one Fast Ethernet hub, you can connect the hub to one and only one other 100Base-TX Class II hub.

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Installation

Hardware Description

This section describes the important parts of the 100Base-TX Fast Ethernet hub. It presents front panel and rear panel drawings of the product showing the LEDs, connectors, and switches.

Front panel

The following figure shows the front panel of 4/8-port 100Base- TX Fast Ethernet hub.
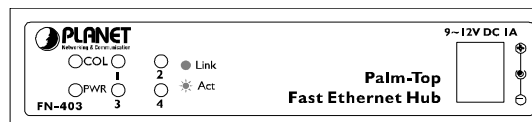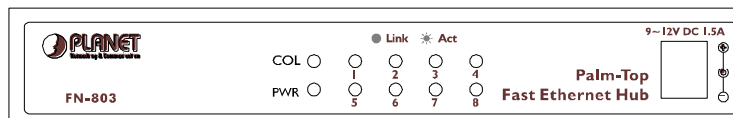

Figure 1, FN-403 Front Panel

Figure 2. FN-803 Front Panel

LED Indication

On the front panel, there are several LED indicators for monitoring the device itself, and the network status. At a quick glance of the front panel, the user would be able to tell if the product is receiving power; if it is monitoring another hub or concentrator; or if a problem exists on the network.

The following describes the function of each LED indicator

Power LED
Color: Red
Label: PWR
Function: This LED light is located at the left side on the front panel. It will light up (ON) to show that the product is receiving power. Conversely, no light (OFF) means the product is not receiving power.

Port's Link and Act
Color: Green
Label: Link, Act
Function: Each RJ45 station port on the hub is one numbered LED indicator for monitoring port "Good Link" and data traffic. The LED is normally OFF after the power on operation, but will light up steadily to show "Good Link" when port is been connected. And the LED will flash rapidly to show data passing in and out the port.

Collision LED
Color: Orange
Label: COL
Function: A "collision" in Ethernet, is when two end nodes transmit at the same time. The indicator lights up whenever there is a collision between a directly attached end node and any other node

DC Power Jack
The power cord should be plug into this socket. The DC jack accepts DC power equal to 12VDC, 1~1.5A power supply.

Rear Panel
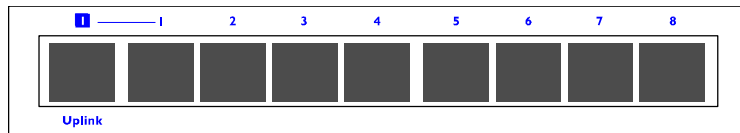

Figure 4. FN-403 Rear Panel

Figure 5. FN-803 Rear Panel

There are 4/8 RJ-45 jacks on the front panel. Each jack is labeled with a port number.

- All ports' Transmit and Receive lines are crossed within the hub. A 100Base-TX port must be internally cross-wired (MDI-X) to let you connect an end node using straight-wired cabling.
- An additional "Uplink" (or called MDI-II) port besides port 1. The "Uplink" port is used for connection another hub through an ordinary straight-wired twisted-pair cable by running one end of straight cable to "Uplink" port and the other end to another hub's station port.

Hardware installation

After selecting an appropriate location, you are ready to connect it. This section covers important rules regarding Fast Ethernet connections, and describes how to connect the hub to end nodes, another hub, and power supply.

General Rules

Before making any connections to the hub, note the following rules:

- All network connections to the hub must be made using Category 5 UTP or Type 1 STP cables. Do not use similar-looking Category 2 or 3 cables or "flat satin" telephone cords.

- No more than 100 meter (about 328 feet) of cabling may be used between the hub and an end node; no more than 5 meters (16.4 feet) may be used between two hubs. Each stack is composed up to 2 hubs max. Under this limitation, no more than 205 meters of cabling may be used between ANY two-end nodes.

♦ To expand your network, you have three methods:
  ⇒ You can connect the hub to another 100Base-TX Class II Fast Ethernet hub, but not to more than one, and not to any other kind of hub through "Uplink" port. These two hubs can come from different suppliers.

Connecting End Nodes

LAN end nodes such as single-user computers, servers, bridges, and routers must be connected to the 100Base-TX ports using straight-wired high-grade (Category 5 unshielded or Type 1 shielded) twisted-pair cabling.

- We recommend starting with the higher-numbered ports when connecting Ethernet LAN and the new hub does not have an "Uplink" port or switch, you will have to use "Uplink" port on the hub for the connection.

- We also recommend making sure the end node be turned off before plugging the cable in for the first time. If the plug does not fit well and the node's LAN board is loose, forcible insertion can momentarily break an internal contact and damage the end node.

Followings are step-by-step instructions for connecting and end node to the hub using straight-wired twisted-pair cable.

1. Select a port on the hub
2. Plug one end of the cable into the node's RJ-45 jack.
3. Plug the cable's other end into the selected RJ-45 jack on the hub.

To test and end-node connection, connect the hub to power, then turn the hub and the end node on. The link indicator for the port should shine steadily. If it does not, check the cable and all connections.

Connecting the Hub to Another Hub by Uplink port

You can connect the hub to another 100Base-TX Class II Fast Ethernet hub using a twisted-pair cable. Never, connect the hub to any other kind of hub,

or to more than one 100Base-TX Class II hub.

Make the connection as follows:

1. Make sure "Uplink" port on the hub is free.
2. Plug one end of the cable into "Uplink" port on the hub.
3. Plug the cable's other end into the available port (except "Uplink" port) on the cascaded hub.

Connecting the Hub to DC Power

After making network connections as described in the preceding sections, you are ready to plug the hub in and turn it on.

The hub can run on DC power with 12 volt, 1.5A maximum. The external power supply attached is specialized for 4/8-port fast Ethernet hub. The input voltage of AC Adapter is depended on the country volts AC and any frequency from 50 to 60 hertz. The center pole of DC jack is polarity "+", and outside polarity "-".

Before plugging the hub in, make sure the power cord
(1) is long enough to reach an AC wall outlet of an approved type,
(2) has plugs that match both the hub's power inlet and the type of wall outlet you will use, and
(3) conforms to safety regulations in your area.

Hardware Troubleshooting

Symptom: Link indicator remains off
Causes: Workstation's network adapter, cable or hub port is defective.
Solution: The most common cause is a defective network adapter or cable connection. Check the corresponding cable connections, or the workstations network adapter for possible defects. Verify that the correct cable type is being used. (Note that crossover cable is only required if you cascade hubs via RJ45 station ports, i.e. an Uplink port is not used.) Replace the defective cable or adapter.

Some network adapter's link indicator need to be initialized by software driver. Therefore, if no driver is pre-loaded, the hub's link indicator will remain off even the connection completed.

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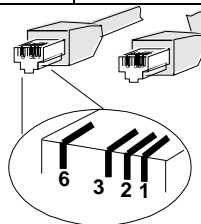
Appendix A
RJ-45 Pin Assignments

Pin	Hub's Station Ports 1-8 (MDI-X port)	Uplink Port (MDI-II port)
1	Input Receive Data +	Output Transmit Data+
2	Input Receive Data -	Output Transmit Data-
3	Output Transmit Data+	Input Receive Data +
6	Output Transmit Data-	Input Receive Data -
4,5,7,8	Not used	Not used

Schematics for both straight and crossover twisted-pair cable are shown below. (Note that crossover cable is only required if you cascade hubs via the RJ-45 station ports; i.e. the Uplink port is not used.)

Straight-Through/Crossover Cable

The pin assignment of the cables both ends should be as below:

Straight-through		Crossover	
Hub (MDI-X)	Adapter(MDI-II)	Hub (MDI-X)	Hub (MDI-X)
Pin 1	Pin 1	Pin 1	Pin 3
Pin 2	Pin 2	Pin 2	Pin 6
Pin 3	Pin 3	Pin 3	Pin 1
Pin 6	Pin 6	Pin 6	Pin 2

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Appendix B
Specifications

Transmission Technique	: Baseband
Topology	: Star
Access Method	: CSMA/CD
Transmission Rate	: 100Mbps
Cable types	: Category 5 unshielded, or Type 1 shielded, 100Mbps twisted-pair cabling
Connectors Supported	: Four/Eight 100Base-TX ports with RJ-45 jacks, the "Uplink" port is shared with port#1.
LED Indicators	: System: Power, Collision
	Port: Link / Active
Power Supply	: DC12V, 1-1.5A
Dimensions (WxHxD)	: 103 x 84 x 25 mm / 146 x 84 x 25 mm
Operating temperature	: 0 - 50 degree C
Humidity	: 0% to 90% (non-condensing)
Electrical standards	: FCC Rules, Part 15, Subpart B, Class A
	EN 55022 (CISPR 22: 1985), Class A

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