

## **NOVA100 series**

**DH-1601**

**DH-2401**

**10/100Mbps Auto-Sense  
Dual Speed Hub**

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## **FCC Warning**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## **CE Mark Warning**

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

## **Remark**

This user's manual is for PLANET NOVA100 series Dual Speed hub model --

**DH-1601**

**DH-2401**

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Part No: EM-DH1601

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# 1. Introduction

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## About this Guide

Thank you for purchasing this Auto-sense 10/100Mbps Ethernet Hub -- DH-1601/DH-2401. PLANET's DH-1601/DH-2401 provides auto-detecting link speeds at 10Mbps or 100Mbps, per port. Compact in size and light-weight, 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 installation.

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## Check List

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

- NOVA 100 10/100Mbps 16/24-port Dual Speed hub
- User's manual
- Power Cord
- Accessories

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

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## Product Features

- ◆ Compliant with IEEE 802.3u 100Base-TX Class II, IEEE802.3, 10Base-T standard
- ◆ 16/24-port 10/100Mbps Auto-selection
- ◆ One UpLink button for easy hub cascade through UTP straight cable
- ◆ One slot supports optional Fiber-Optical port for long-distance connectivity
- ◆ Front panel LED indicators for 'at a glance' network status/diagnostics
- ◆ Fully compatible with all major Network Operating Systems and Ethernet frame types
- ◆ 19" industrial standard, rack-mountable or wall-mountable



## 2. General Description

### About DH-1601/ DH-2401

This section describes the important parts of the NOVA 100 16/24-port Dual Speed hub. It presents front and rear panel drawings of the product showing the LEDs and connectors.

DH-1601: 16-port 10/100Mbps Dual Speed Hub

DH-2401: 24-port 10/100Mbps Dual Speed Hub

### Front Panel of DH-1601/ DH-2401

The following figure shows the front panel of DH-1601/DH-2401 10/100Base-TX Dual Speed Ethernet hub.

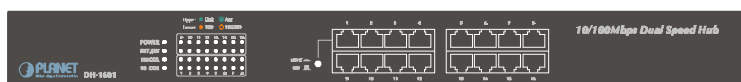


Figure 1. Front Panel of DH-1601

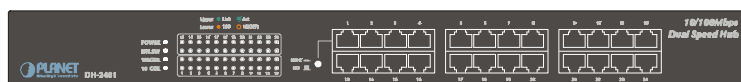
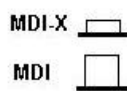


Figure 2. Front Panel of DH-2401

There are 16/24 - RJ-45 ports and one push-button on the front panel. Each port is labeled with a port number.

Port #1 is with one push button port labeled with port to link to a PC/End-node. Or, releases the through an ordinary straight-wired twisted-pair to port#1 and the other end to another hub's 1-16 or 1-24.



“MDI/ MDI-X”. You can either use this button used for connecting another hub cable by running one end of a straight cable standard 'station' port, i.e. any MDI-X port,

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 will 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.

### LED Indications

The following describes the function of each LED indicator.

LEDs	Status	Descriptions
PWR (Power LED)	Steady Amber	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.
10 COL (Collision LED)	Blinking Green	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. 10COL for 10Mbps segment, 100COL for 100Mbps Segment
100 COL	Blinking Amber	

EXT. SW.	Steady / Blinking Green	This LED turns on to indicate the rear switch module is installed and with a good link. Blinking green to indicate data forwarding and/or receiving
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LEDs	Status	Descriptions
LNK/Act (Link/ Activity LED)	Steady Amber / Blinking Amber	Each RJ45 station port on the hub is assigned an LED light for monitoring port "Good Link and Activity". Each LED is normally OFF after the power on operation, but will light up steadily to show "Good Link".  And flash to show that the receiving signals are passing into the hub.
100Mbps	Steady Green	Lit indicates 100Mbps device connected Off indicates 10Mbps device connected

**Table 1. Status of LED Indicators**

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## Rear Panel

On the rear panel there is a power AC power connector, power inlet, and one extension slot. The following describes the function of each connectors.



**Figure 3 Rear panel of DH-1601 / DH-2401**

**AC Power Slot**

The power cord should be plug into this socket. The AC Adapter accepts AC power range 90VAC~260VAC.

**Extension Slot**

For long distance connections, the DH-1601/DH-2401 can utilize an optional slide-in fiber-optic module after removal of its rear module cover.

**FAN**

For cooling the system, please check and make sure leave the space for the airflow and there is no any obstacle close to it while working.

## 3. Installation

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### Hardware Installation

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

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### 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 for 100Base-TX**, Category 3~5 cables for 10Base-T. Do not use similar-looking Category 2 or 3 cables or "flat satin" telephone cords for 100Base-TX connection.
- No more than 100-meter (about 328 feet) of cabling may be used between the hub and an end node; **no more than 5 metres (16.4 feet) may be used between two Fast Ethernet Hubs**. Under this limitation, no more than 205 meters of cabling may be used between any two-end nodes.
- To expand your network, proceed as below:
  - ◆ First -- you can connect the hub to another 100Base-TX Class II Fast Ethernet hub, **and no more than one**. To a 10Base-T Ethernet Hub with no more than 100 metres UTP, up to 3 10Base hubs can be cascaded. The connected hubs can be from different suppliers.
  - ◆ Second -- you can connect the hub to another hub through its extension slot. The modules support a switched port of 100Base-FX fibre-optic ST/SC interface. The installation is as section "Connecting the Fiber-optic module (optional)".

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### Connecting End Nodes

LAN end nodes such as single-user computers, servers, bridges, and routers must be connected to the 10/100Base-TX ports using straight-wired high-grade (Category 5 unshielded or Type 1 shielded) twisted-pair cabling. (Category 3, Category 4 can not be used for 100Base-TX)

- ◆ We recommend starting with the lower-numbered ports when connecting to the Ethernet LAN. However, connection to another hub that does not have an "Uplink" port or a slide-switch, you will have to use the first port on the hub for the connection. (In this case, please leave the first port as it could up link and being a cascade port)
- ◆ We also recommend making sure any end nodes are 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.

Following are step-by-step instructions for connecting an 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 port.
3. Plug the cable's other end into the selected RJ-45 port on the hub.

To test an 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 and the 100Mbps LED should lit as well if a 100Base-TX device is

connected. If it does not, check the cable and all connections.

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## Hub to Hub connection, through 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 the first port on the hub is free.
2. Release the button next to the RJ-45 jack in the front panel.
3. Plug one end of the cable into the first port on the hub.
4. Plug the cable's other end into the available port (except “Uplink” or MDI port) on the second hub.

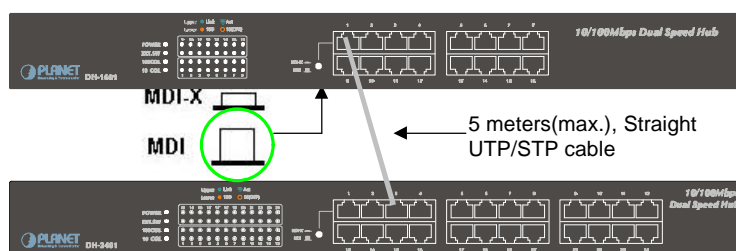


Figure 6. Hub to Hub cascade through UpLink port

Connected Device	Wiring Distance	Cabling
Fast Ethernet Class II Hub	5 meters	Cat 5. UTP
Ethernet Hub	100 meters	Cat 3~5, UTP
10/100Mbps Ethernet Switch	100 meters	Cat 5. UTP

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## Connecting the Fiber-optic module (optional)

You can connect the hub to another 100Base-FX Switching hub or to a PC through the fiber-optic module. Make the connection as follows or refer to the installation guide of the module to get more.

1. Unplug the power. Remove the two screws of the extension slot of the hub.
2. Slide in the module with care, and secure the two screws.
4. Connect the fiber-optic connector (ST or SC type) tightly. Please make sure the fiber connections are crossed. That is, the TX port of the module to RX port of the connected PC or switch, and RX to TX.
5. Power on the hub and the connected device, the Link LED in the front panel should light and blink while data receiving or forwarding.

For fiber-optic wiring limitation, please refer to the module's installation guide for detail. In general, the round-trip bit-time latency between **any** two-end devices in the same collision domain should be within 512 bit-time (IEEE802.3u, Fast Ethernet)

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## Connecting the Hub to AC Power

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

The input voltage is from 90 to 250 volts AC and any frequency from 50 to 60 hertz. Adjustment to the power source is automatic; there is no switch to set.

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.

In most parts of the world you must use a three-conductor power cord with an integral three-prong grounding plug.

If the supplied power cord does not meet all three requirements given above, contact your computer equipment dealer and obtain one that does. Do not use an extension cord or multi-socket adapter; do not attempt to use a cord designed for any other kind of power inlet or wall outlet; do not use a cord that fails to meet safety standards in your part of the world.

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**Note:**

1. The device is a power-required device, it means, it will not work till it is powered. If your networks should active all the time, please consider use an UPS (Uninterrupted Power Supply) for your device. It will prevent you from network data loss or network downtime.
2. In some area, installing a surge suppression device may also help to protect your hub from being damaged by unregulated surge or current to the Switch or the power adapter.

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## 4. 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 workstation's 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 needs to be initialized by a software driver. Therefore, if no driver is pre-loaded, the hub's link indicator will remain off even after a connection is completed.
- Symptom:** 100Mbps indicator remains blinking after connection
- Causes:** Workstation's network adapter, or connected device failed in N-Way auto-detection mode.
- Solution:** The most common cause may be the incompatibility of the attached N-Way device. Verify that the driver of the network interface card is correct or loaded. If the driver of the card or the switch supports manual mode selection, we suggest you set the device to 100Mbps Half-duplex or 10Mbps Half-duplex directly.

## Appendix

### Product Specification

Model	DH-1601		DH-2401	
Ports	16 (10/100Mbps Auto-sensing)		24 (10/100Mbps Auto-sensing)	
LED Indicators	Ports : 100Mbps, LINK/ACT System : PWR, 100 COL, 10 COL, Ext. SW			
Optional 100Base-FX Module slot	1			
	ST / SC Interface, Half / Full-duplex support			
Dimensions (L,D,H)	430 mm x 180 mm x 44 mm (16.9" x 7.1" x 1.73")			
Placement	19" Rack Mount			
ENVIRONMENTAL SPECIFICATIONS				
Fuse Protection	250V/2A			
Input Voltage Range	90 to 250 VAC			
Input Frequency	50 / 60 Hz ± 3%			
Power Consumption	30 watts (max)		35 watts (max)	
Temperature	0 - 55 degree C (Operating)			
Humidity	10-85%, non-condensing (Operating)			
Weight (N.W.)	2 kg		2.1 kg	
STANDARDS COMPLIANCE				
Electromagnetic Compatibility	FCC part 15 class A, CE-Mark			
Network Protocols	IEEE 802.3 (Ethernet), 10Base-T IEEE 802.3u (Fast Ethernet), 100Base-TX, 100Base-FX Class II Repeater			



**EMDH1601V**

