

# **10/100Mbps Autosensing Hub**

## **Installation Guide**

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## **FCC WARNING**

This equipment has been tested and found to comply with the limits for a Class B Digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

## Table of Contents

|                                                                            |    |
|----------------------------------------------------------------------------|----|
| <b>INTRODUCTION</b> .....                                                  | 1  |
| SOHOWARE™ 10/100MBPS AUTOSENSING HUB.....                                  | 1  |
| FEATURES.....                                                              | 1  |
| WHAT YOU GET.....                                                          | 2  |
| WHAT YOU NEED.....                                                         | 2  |
| GETTING TO KNOW YOUR SOHOWARE 10/100 AUTOSENSING HUB.....                  | 3  |
| <i>Front View</i> .....                                                    | 3  |
| <i>Rear View</i> .....                                                     | 3  |
| <b>GETTING STARTED</b> .....                                               | 4  |
| PLACING CONSIDERATIONS.....                                                | 4  |
| INSTALLING YOUR HUB.....                                                   | 4  |
| CONNECTING DEVICES TO THE HUB PORTS.....                                   | 4  |
| CONNECTING TO A WORKSATION.....                                            | 5  |
| CONNECTING TO A HUB/SWITCH.....                                            | 5  |
| <b>APPLICATION SCENARIOS</b> .....                                         | 6  |
| SCENARIO I. CONNECT CABLE/ADSL MODEM TO YOUR LAN (LOCAL AREA NETWORK)..... | 6  |
| SCENARIO II. EXPANSION OF THE EXISTING 10MBPS ETHERNET NETWORK.....        | 7  |
| SCENARIO III. FUTURE GROWTH.....                                           | 7  |
| <b>LED INDICATORS</b> .....                                                | 9  |
| <b>TROUBLESHOOTING</b> .....                                               | 10 |
| GENERAL PROBLEMS.....                                                      | 10 |
| SUPPORT FROM YOUR NETWORK SUPPLIER.....                                    | 11 |
| SUPPORT FROM NDC.....                                                      | 11 |
| <b>TECHNICAL SPECIFICATIONS</b> .....                                      | 12 |
| <b>NDC LIMITED WARRANTY</b> .....                                          | 14 |

## List of Figures

|                                                                                     |   |
|-------------------------------------------------------------------------------------|---|
| FIGURE 1. NDH305 FRONT VIEW .....                                                   | 3 |
| FIGURE 2. NDH308 FRONT VIEW .....                                                   | 3 |
| FIGURE 3. NDH305 REAR VIEW .....                                                    | 3 |
| FIGURE 4. NDH308 REAR VIEW .....                                                    | 3 |
| FIGURE 5. TWO-STEP INSTALLATION PROCEDURE .....                                     | 4 |
| FIGURE 6. CONNECTING TO A WORKSTATION .....                                         | 5 |
| FIGURE 7. CONNECTING TO A HUB/SWITCH .....                                          | 5 |
| FIGURE 8. CONNECT CABLE/ADSL MODEM TO THE UPLINK PORT OF 10/100<br>HUB .....        | 6 |
| FIGURE 9. CONNECT CABLE/ADSL MODEM TO ONE OF THE PCs ON THE<br>NETWORK .....        | 7 |
| FIGURE 10. CONNECT ANY OF YOUR EXISTING 10MBPS EQUIPMENT TO THE<br>10/100 HUB ..... | 7 |
| FIGURE 11. NETWORK EXPANSION- UPLINK TO ANOTHER HUB OR SWITCH .....                 | 8 |

# Introduction

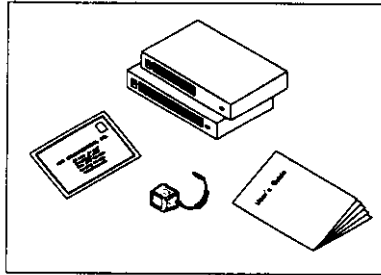
## **SOHware™ 10/100Mbps Autosensing Hub**

Congratulations on choosing a SOHware™ 5/8-port 10/100Mbps Autosensing Hub. They are designed for people who need high-speed network performance to handle bandwidth-intensive applications, such as multimedia, graphic design, video, or intensive database access, as well as who require the flexibility of mixed 100Mbps and 10Mbps networks. You can upgrade any of your legacy 10Base-T equipment on an as needed basis and optimize your investment. Most important, it is the only solution for coexistence of 100Mbps network and broadband Internet Access by Cable/ADSL modem with 10Base-T network interface. The 10/100 hubs feature five or eight autosensing 10/100 hub ports. All the ports are fully autosensing. Simply plug in the network cable and the 10/100 hubs will automatically determine the maximum speed (10Mbps or 100Mbps) of the connection.

## **Features**

- ◆ Five or eight dual-speed 10/100 autosensing ports
- ◆ Plug-n-Play; makes network installation a no-brainer
- ◆ Automatic setting of each port to the highest speed. No configuration changes/service interruptions migrating from 10Mbps to 100Mbps
- ◆ Built-in internal switch; mix & match 10Mbps and 100Mbps
- ◆ Store-and forward switching between 10Mbps and 100Mbps networks; protects against data-error and enhances effective network traffic
- ◆ Front panel LED indicators; troubleshooting at a glance
- ◆ Complies with IEEE 802.3 10Base-T and 802.3u 100Base-TX standards
- ◆ FCC Class B certified for both office and residential use

## ***What You Get***



- One 5-port or 8-port 10/100 autosensing hub
- One AC power Adapter
- This installation guide
- Registration card  
(register to receive: Free)
  - ✓ Warranty protection
  - ✓ Information on upcoming product releases and special product offers
  - ✓ Technical support

## ***What You Need***

- Desktop/Notebook PCs
- Network Adapters, e.g. SOHware Fast
- Network Cables, e.g. SOHware Cable
- A Standard network Operating System, e.g. Windows 95/98/NT

## Getting to Know Your SOHOware 10/100 Autosensing Hub

### Front View

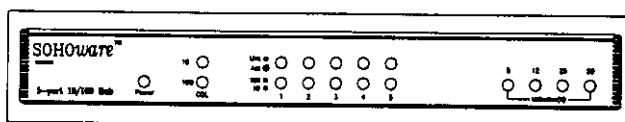


Figure 1. NDH305 Front View

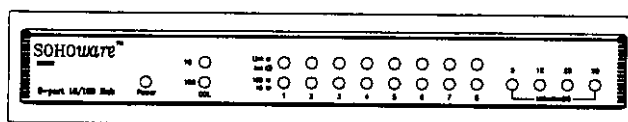


Figure 2. NDH308 Front View

✓ LED indicators

See LED Indicators, page 9, for detailed information on the LEDs.

### Rear View



Figure 3. NDH305 Rear View

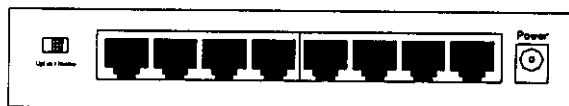


Figure 4. NDH308 Rear View

✓ Five/Eight hub ports

✓ One Uplink/Normal slide-switch on the first port

✓ One power socket

Refer to "Connecting Devices to the Hub Ports" on Page 4, for Application Scenarios, on page 6.

# Getting Started

## Placing Considerations

It is better to place this hub where they will not be subjected to extreme temperatures, humidity, or excessive electromagnetic interference. Do not block the ventilation holes on the side.

## Installing Your Hub

Installation couldn't be easier. Only two steps and you're in business:

1. **Plug:** Plug the cable of the connected device to the port of the hub
2. **Play:** Plug one end of the power adapter into the rear panel of the hub and the other into the wall socket

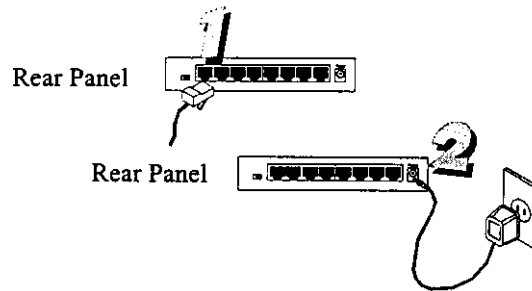


Figure 5. Two-Step Installation Procedure

## Connecting Devices to the Hub Ports

This section will show you how to connect a workstation or another hub/switch to this hub. Before you connect network devices to it, note that:

- **Normal:** makes a normal twisted-pair connection
- **Uplink:** uplinks to another hub or switch

*Note: One of the devices, either the connected hub/switch or this 5/8-port 10/100 autosensing hub, must be set in the UPLINK position.*

The following examples will give you a better idea of how to connect a device to this hub.

### A. Connecting to a Workstation

Usually 10Mbps or 100Mbps workstations are connected to Port 2~8, while other hubs or switches are connected to Port 1 for uplinking. If you connect the workstation to Port 1, remember to set it as the Normal Position.

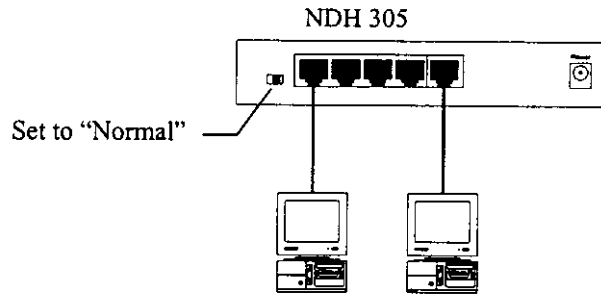


Figure 6. Connecting to a Workstation

### B. Connecting to a Hub/Switch

Either the connected hub/switch or the 10/100 Hub should be set to the UPLINK position, e.g. if this 10/100 hub is set to the Uplink position, you can connect it to any normal port of the other hub/switch.

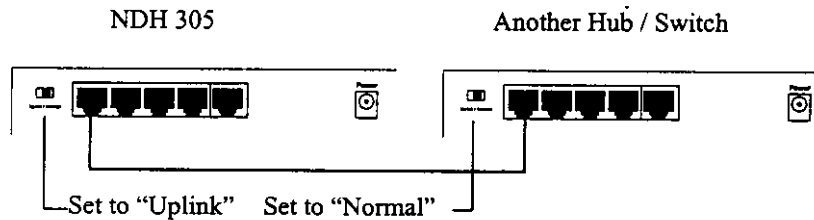


Figure 7. Connecting to a Hub/Switch

*Note: The maximum uplink distance for a 100Mbps Fast Ethernet hub-to-hub connection is 5 meters with a maximum of two devices. Connection to a Switch will lengthen the uplink distance up to 100-meter.*

## Application Scenarios

This section gives some examples of how to place the 10/100 autosensing hubs so as to achieve the maximum utilization from your networking hardware and for your future growth.

### **Scenario I. Connect Cable/ADSL Modem to your LAN (Local Area Network)**

*Method 1. Directly connect the Cable/ADSL Modem to the **uplink port** (set to the **Uplink position**) of hub by Cat. 3 or Cat. 5 UTP (Unshielded Twist Pair) cable*

Few of the existing Cable/ADSL Modem have 100Base-TX network interface to connect to LAN, if you want to use 100Mbps Fast Ethernet network and Cable/ADSL Modem for high-speed Internet access at the same network, 10/100 Hub is the only solution for you. Your registered IP number limits the user number who can access Internet.

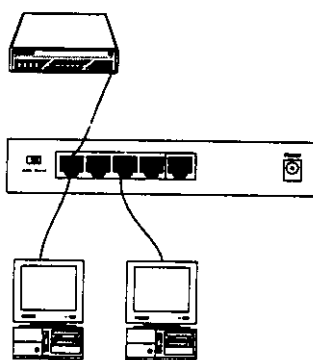


**Figure 8. Connect Cable/ADSL Modem to the Uplink port of 10/100 Hub**

*Method 2. Connect the Cable/ADSL Modem to one of the PCs on the network*

If you only register one IP account and want to share it to other users on the network, then you must connect the Cable/ADSL modem to one of the PCs, and share the IP by the Internet Sharing tool, no matter software or hardware, for example, Sygate Internet Sharing software.

*Note: You must install two NICs( Network Interface Card) on the PC connected to the Cable/ADSL modem, one for LAN(Local Area Network) connection, one for Cable/ADSL modem connection.*

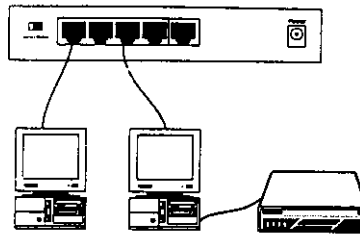


Figure 9. Connect Cable/ADSL Modem to one of the PCs on the network

### **Scenario II. Expansion of the existing 10Mbps Ethernet Network**

Any existing 10Mbps Ethernet devices, no matter hubs or adapters, can cooperate with this 10/100 autosensing Fast Ethernet hub. Such flexibility lets you optimize your investment to mix and match everyone's needs.

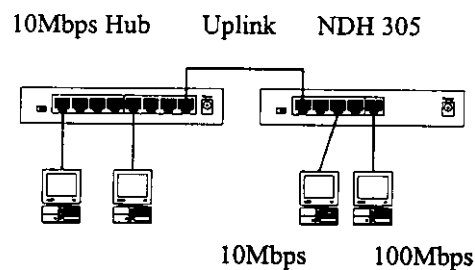


Figure 10. Connect any of your existing 10Mbps equipment to the 10/100 hub

### **Scenario III. Future Growth**

You can connect up to 5/8 devices, including the PCs, networking peripherals, and uplinked hub, to the 5/8-port 10/100 hub.

More than 5/8 PCs? No problem! When your network needs to grow beyond the five/eight available connections provided by the hub, you simply purchase another hub or switch (e.g. SOHware™ SuperFlex 10/100 8-port Hub plus one Switch port, SOHware™ Plug-n-Switch) and cascade it with the original.

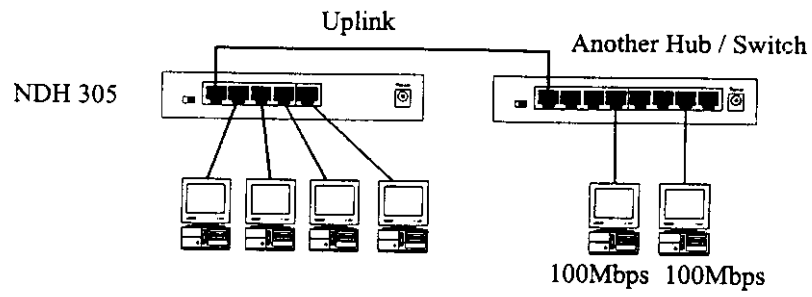


**Figure 11. Network Expansion- uplink to another hub or switch**

## LED Indicators

LEDs are all located on the front panel . One Power and two Collision LEDs per hub, as well as one Link/Activity, and one speed-detection, 100Mbps or 10Mbps, LEDs per port. There are also four Utilization LEDs.

The LED indicators will help you monitor the status of each port and the connected segments.

The basic functions of the LED indicators are given below.

| LED Function                 | Color | Description                                                                           |
|------------------------------|-------|---------------------------------------------------------------------------------------|
| Power                        | Green | Lit: Power On<br>Unlit: Power Off                                                     |
| Collision-10                 | Amber | Flashing: Data collision occurring on the 10Mbps network segment                      |
| Collision-100                | Amber | Flashing: Data collision occurring on the 100Mbps network segment                     |
| Link/Activity<br>(each port) | Green | Lit: Indicates an adapter is connected to the hub<br>Flashing: Data being transmitted |
| 10 or 100<br>(each port)     | Green | Lit: Indicates 100Mbps connection<br>Unlit: Indicates 10Mbps connection               |
| Utilization                  | Green | Indicates network traffic in terms of percentage of Fast Ethernet bandwidth           |

# Troubleshooting

Should you experience a problem with a SuperFlex hub, the LEDs will help you determine the problem. Follow the steps below according to the status of the LEDs.

## ***General Problems***

### ***Power LED is off***

- Check that one end of the power cord is connected to the rear of the 10/100 hub and the other end is connected to a wall power outlet

### ***The Power LED is on but the Link LEDs are off***

- Check that the connecting device is turned on
- Make sure the cables are wired correctly, and that you are using the correct cable type for 10Base-T or 100Base-TX
- Check that the cable connections are secure and undamaged

### ***Uplink Port Link LED is off***

- If the connected device is a hub or a switch, be sure that only one device is set to UPLINK
  - *Uplinking via the Uplink port of the 10/100 hub*  
Use the slide-switch beside the port to set the UPLINK port (port 1) of the SOHware™ 10/100 autosensing hub to UPLINK, and another device connected to that port cannot be set to UPLINK
  - If you set the connected hub or switch to UPLINK, use its Uplink port to connect to the 10/100 hub and set the 10/100 hub to Normal
- Be sure that the port is set to normal when a workstation is connected to the UPLINK of the 10/100 hub

## ***Support From Your Network Supplier***

If additional assistance is required, call your SuperFlex supplier for help. Have the following information ready before you make the call.

1. LED status
2. A list of the product hardware (including revision levels), and if possible, a brief description of the network structure
3. Details of recent configuration changes, if applicable

## ***Support from NDC***

If you are unable to receive support from your SuperFlex supplier, technical support is available from NDC. Contact your local NDC sales office.

### ***USA:***

Telephone: 1-408-7300888  
Toll-Free (US only): 800-632-1118  
FAX: 1-408-7300889  
E-mail address: support@ndclan.com

### ***Europe and Asia Pacific:***

Telephone: 886-3-5783966  
FAX: 886-3-5777989  
E-mail address: techsupt@ndc.com.tw

## Technical Specifications

|                                        |                                                                                                                   |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| ■ Standards Compliance                 | IEEE 802.3(10BASE-T), IEEE 802.3u(100Base-TX) Class II Repeater                                                   |
| ■ Electromagnetic Standards Compliance | Class B<br>CE-Mark En 50081-1/50082-1 Class B (CISPR 22 Class B)<br>VCCI Class B                                  |
| ■ Transmission Rate                    | 10/100 Mbps autosensing on every port                                                                             |
| ■ Connection Ports                     | 5/8                                                                                                               |
| ■ Packet Forwarding Mode               | Store-n-Forward                                                                                                   |
| ■ Uplink Port                          | Port #1 (Slide- Switch)                                                                                           |
| ■ Max. Cable Lengths                   | 5 Meters to Fast Ethernet hub<br>100 Meters for hub to workstation/Switch/Ethernet Hub                            |
| ■ Cabling                              | 10Base-T: Category 3 or Category 5 UTP<br>100Base-TX: Category 5 UTP or STP                                       |
| ■ LEDs                                 | Per unit: Power, utilization<br>Per segment: Collision<br>Per port: Link & Activity, 10Mbps or 100Mbps connection |
| ■ Power Adapter                        | AC to DC (+12V 1A)                                                                                                |
| ■ Temperature                          | 0 to 50 °C ambient                                                                                                |
| ■ Humidity                             | 10% to 90%, (non-condensing)                                                                                      |
| ■ Dimensions                           | 160 x 100 x 25 mm (6.30 x 3.94 x 0.98 in.)                                                                        |
| ■ Warranty                             | Hub unit: Lifetime Limited<br>Power Supply: 1 year                                                                |

- **LEDs:**

Per Unit: One power LED

Per segment: Collision & Activity

Per Hub Port: Link & Partition

Per Switch Port: 10Mbps Link & Activity, 100Mbps Link & Activity, Full-duplex/Collision

- **Physical Dimensions:**

**NDS108**

Width – 10.0 inches (254 mm)

Height – 1.4 inches (35 mm)

Depth – 5.3 inches (135 mm)

Weight – 2.2 lb (1 kg)

**NDS316**

Width – 11.5 inches (295 mm)

Height – 1.8 inches (45 mm)

Depth – 8 inches (205 mm)

Weight – 5.5lb (2.5kg )

- **Operating Environment:**

Temperature: 0°C to 40°C

Non-condensing Humidity: 10% to 90%

- **Certification:**

FCC Class B, CE Class B, VCCI Class B

- **Warranty:**

Lifetime limited for hub; 1year for hub fan

# **NDC Limited Warranty**

## ***Hardware***

NDC (NDC Communications, Inc.) warrants its products to be free of defects in workmanship and materials, under normal use and service, from the date of purchase from NDC or its Authorized Reseller and for the period of time specified in the documentation supplied with each product.

Should a product fail to be in good working order during the applicable warranty period, NDC will, at its option and expense, repair or replace it, or deliver to the purchaser an equivalent product or part at no additional charge except as set forth below. Repair parts and replacement products are furnished on an exchange basis and will be either reconditioned or new. All replaced products and parts will become the property of NDC. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

NDC shall not be liable under this warranty if its testing and examination disclose that the alleged defect in the product does not exist or was caused by the purchaser's, or any third party's misuse, neglect, improper installation or testing, unauthorized attempt to repair or modify, or any other cause beyond the range of the intended use, or by accident, fire, lightning, or other hazard.

## ***Software***

Software and documentation materials are supplied "as is" without warranty as to their performance, merchantability, or fitness for any particular purpose. However, the diskette media containing the software are covered by a 90-day warranty which protects the purchaser against failure within that period.

## ***Limited Warranty Service Procedures***

Any product (1) received in error, (2) in a defective or non-functioning condition, or (3) exhibiting a defect under normal working conditions, can be returned to NDC by following these steps:

You must prepare:

- dated proof of purchase
- product model number & quantity
- product serial number
- precise reason for return
- your name/address/email address/telephone/fax

1. Inform the distributor or retailer
2. Ship the product back to the distributor/retailer with prepaid freight. The purchaser must pay the shipping freight from the distributor/retailer to NDC. Any package sent C.O.D. (Cash On Delivery) will be refused
3. Charges: Usually RMA (Returned Material Authorization) items will be returned to the purchaser via AIR MAIL, prepaid by NDC. If returned by another carrier, the purchaser will pay the difference. A return freight and handling fee will be charged to the purchaser if NDC determines that there was "No Problem Found" or that the damage was caused by the user

### ***Warning***

NDC is not responsible for the integrity of any data on storage equipment (hard drives, tape drives, floppy diskettes, etc.). We STRONGLY recommend that our customers backup their data up before sending such equipment in for diagnosis or repair.

### ***Services after Warranty Period***

After the warranty period expires, all products can be repaired for a reasonable service charge. The shipping charges to and from the NDC facility will be borne by the purchaser.

### ***Return for Credit***

In the case of a DOA (Dead on Arrival) or a shipping error, a return for credit will automatically be applied to the purchaser's account, unless otherwise requested.

### ***Limitation of Liability***

All expressed and implied warranties of a product's merchantability, or of its fitness for a particular purpose, are limited in duration to the applicable period as set forth in this limited warranty, and no warranty will be considered valid after its expiration date.

If this product does not function as warranted, your sole remedy shall be repair or replacement as provided for above. In no case shall NDC be liable for any incidental, consequential, special, or indirect damages resulting from loss of data, loss of profits, or loss of use, even if NDC or an authorized NDC distributor/dealer has been advised of the possibility of such damages, or for any claim by any other party.

## EC DECLARATION OF CONFORMITY

For the following equipment:

**Product Name** : 5/8-port SOHware 10/100 Fast Hub  
**Model Number** : NDH305/NDH308

Produced by:

**Manufacturer's Name** : NATIONAL DATACOMM CORPORATION  
**Manufacturer's Address** : 2F, NO. 28, INDUSTRY EAST 9TH ROAD  
SCIENCE PARK, HSIN-CHU  
TAIWAN, R.O.C.

is hereby confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (89/ 336/ EEC).

The product meets or exceeds the following EMC standards:

**EN 50081-1(1992):** EN 55022 (class B)  
EN 61000-3-2  
**EN 50082-1(1992):** IEC 801-2  
IEC 801-3  
IEC 801-4

The manufacturer/importer is responsible for this declaration:

**Company Name** : NDC (EUROPE) CO., LTD  
**Company Address** : 1, EARLSFORT CENTRE,  
HATCH STREET,  
DUBLIN 2, IRELAND

Person authorized to make this declaration:

**Name** : CHIN-TU WU  
**Position/Title** : MANAGING DIRECTOR

\_\_\_\_\_  
Date

\_\_\_\_\_  
Legal Signature