

netsys

Networking your world

NM-102KIT MEDIA CONVERTER SERIES USER'S MANUAL



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Maximum signal rate derived from IEEE Standard specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead lower actual data throughput rate.

Foreword

The NM-102 A20/B20 is a WDM Ethernet media converter that translates transmission signals from a twisted-pair 100BASE-TX cable to 100BASE-FX fiber optic cable. NM-102 A20 is for CO side. NM-102 B20 is for CPE side. It expands network data transmission distances beyond the 100 meters limitation of copper wire to a maximum of 20 km by using single fiber optic cable in 100 Mbps.

The NM-102 A20/B20 provides auto-sensing detection of full duplex or half duplex signaling. It has easy-to-read diagnostic LED for continuous status reports on network speed, duplex media access control connection, and network traffic. The NM-102 A20/B20 uses standard RJ-45 UTP/STP and SC fiber optic connectors and is IEEE 802.3u 100BASE-TX/FX compliant and operates with all devices that adhere to this standard.

Caution:

The NM-102 A20/B20 are for **indoor** applications only. Do not use in harsh environments (Over temperature range: 0°C ~ 50°C (32°F ~ 122°F)).

Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions before device use.

- ◆ **DO NOT** open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel can service the device. Please contact your vendor for further information.
- ◆ **Use ONLY** the dedicated power supply for your device. Connect the power cord or power adapter to the right supply voltage (110V AC used for North America and 230V AC used for Europe).
- ◆ **DO NOT** use the device if the power supply is damaged as it might cause electrocution. If the power supply is damaged, remove it from the power outlet. **DO NOT** attempt to repair the power supply. Contact your local vendor to order a new power supply.
- ◆ **Place** connecting cables carefully so that no one will step on them or stumble over them. **DO NOT** allow anything to rest on the power cord and do not locate the product where anyone can work on the power cord.
- ◆ **DO NOT** install nor use your device during a thunderstorm. There may be a remote risk of electric shock from lightning.
- ◆ **DO NOT** expose your device to dampness, dust or corrosive liquids.
- ◆ **DO NOT** use this product near water, for example, in a wet basement or near a swimming pool.
- ◆ **Connect ONLY** suitable accessories to the device. Make sure to connect the cables to the correct ports.
- ◆ **DO NOT** obstruct the device ventilation slots, as insufficient airflow may harm your device.
- ◆ **DO NOT** store things on the device.
- ◆ **DO NOT** use the device for outdoor applications, and make sure all the connections are indoors. There may be a remote risk of electric shock from lightning.
- ◆ **Be careful** when unplugging the power, because the transformer may be very hot.
- ◆ **Keep** the device and all its parts and accessories out of children's reach.
- ◆ **Clean** the device using a soft and dry cloth rather than liquid or atomizers. Power off the equipment before cleansing it.
- ◆ This product is **recyclable**. Dispose of it properly.

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Chapter 1. Unpacking Information

1.1 Check List

Carefully unpack the package and check its contents against the check list.

Package Contents:

1. 1 x NM-102 A20
2. 1 x NM-102 B20
3. 2 x AC to DC (5V) Power Adaptor
4. 1x User's Manual

Note1:

Please inform your dealer immediately for any missing or damaged parts.
If possible, retain the carton including the original packing materials.
Use them to repack the unit in case there is a need to return for repair.

Note2:

1. Do not use sub-standard power supply, connect the power supply in device before be sure to check compliance with specifications. The NM-102KIT of the power supply at least use DC5V/1A.
2. Power supply included in package is commercial-grade. Do not use in harsh environments.

Chapter 2. Hardware Description

This section describes the important parts of the converter. It features the front indicators and rear connectors.



NM-102KIT Outlook

2.1 Front Panel

- 1. WDM Mode**
- 2. LED Indicators**
- 3. 10/100Mbps ETHERNET Port**

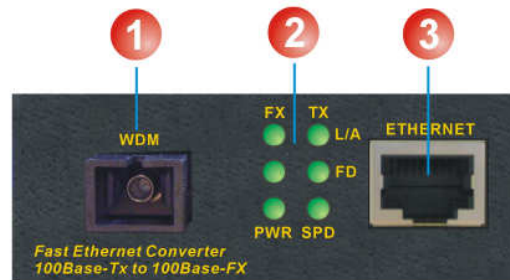


Figure 2.1 NM-102 front panel

2.2 Rear Panel

- 1. Power Jack(DC 5V In)**

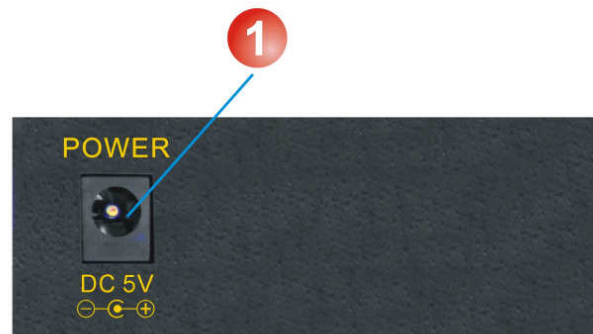
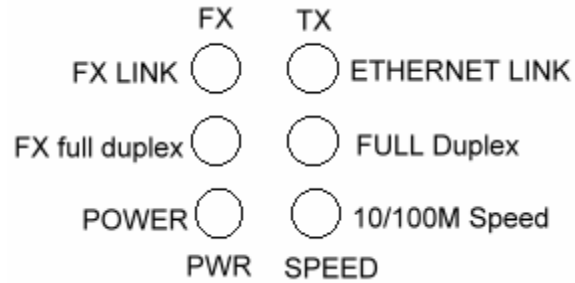


Figure 2.2 NM-102 rear panel

2.3 LED Indicators



FX			
LEDs	Color	Status	Descriptions
FX LINK	Green	ON	Optic fiber is connected
FX full duplex	Green	ON	Full Duplex
POWER/PWR	Green	ON	5-V power is turned on

TX			
LEDs	Color	Status	Descriptions
ETHERNET LINK	Green	ON	RJ-45 Ethernet is connected
FX full duplex	Green	ON	Full Duplex
10/100M Speed	Green	ON	100M Speed

2.4 Installation

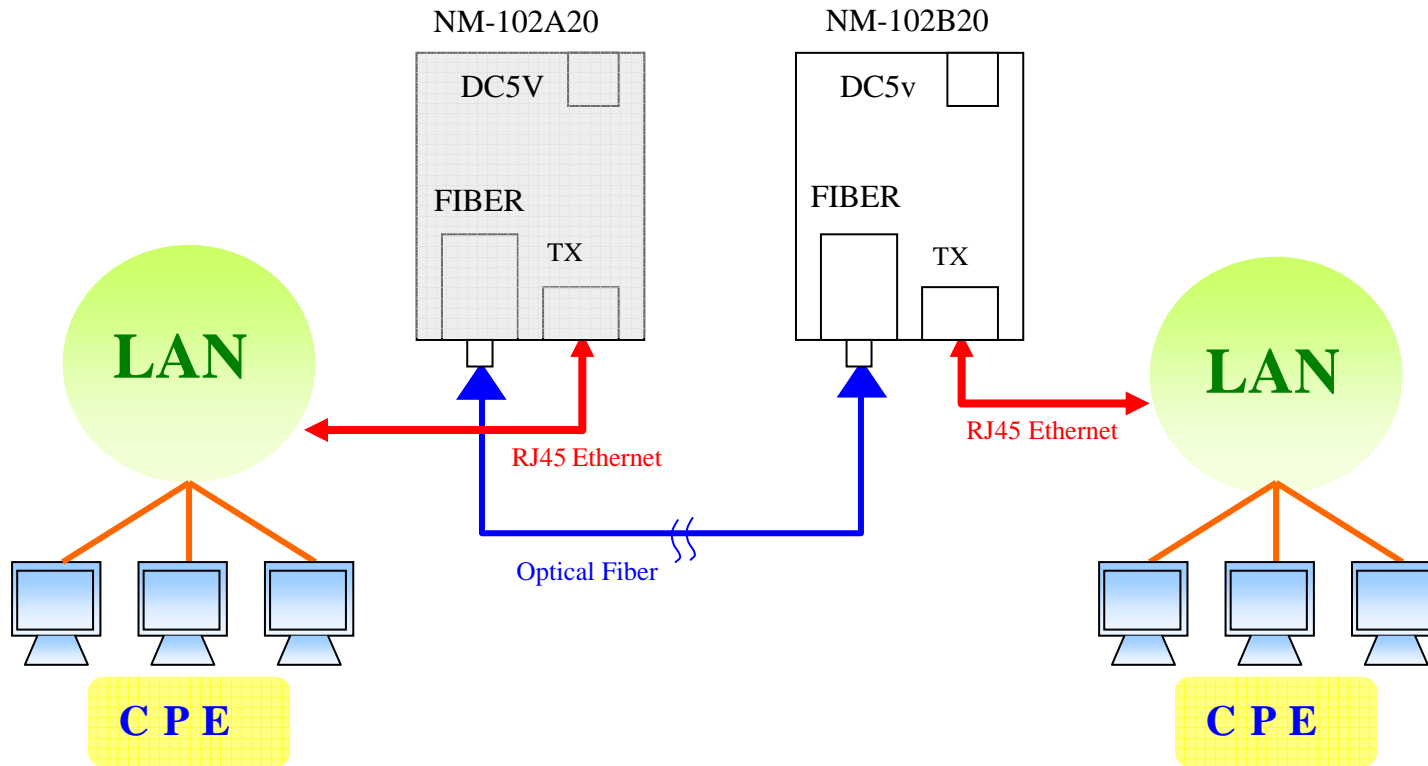


Figure 2.3 Application diagram

Appendix A: Product Specification

Key Features:

1. Support auto-MDIX and 10/100Base T for RJ-45 port
2. Complies with IEEE 802.3 for 10BaseT/802.3u for 100Base-TX and 100Base-FX.
3. Supports WDM duple mode for TX/RX on single fiber cable
4. Compact in size, easy installation
5. Data Transfer Rate: 100Mbps
6. Duplex mode support: Full or half-duplex mode by Auto-Negotiation
7. LED indicators: PWR, LNK/ACT, SPD, FDX for copper RJ-45 LINK/ACT, FDX for Fiber optic.
8. Fiber: Single Mode: 8.3/125, 8.7/125, 9/125 μ m optic fiber and up to 20km
9. EMI certified by CE, FCC
10. External Power Adapter: Input: AC 85~240 volts/50~60Hz. Output: DC 5V/1A

Specification:

Model:	NM-102A	NM-102B
Protocol and Standards:	IEEE802.3 & IEEE802.3u	
Maximum Speed:	Full Duplex: 200Mbps for 100Base-Tx Half Duplex: 100Mbps for 100Base-Tx	
Cabling:	Ethernet: 100Base-TX 2 pair Cate.5 UTP Cable Fiber: Single Mode 8.3/125, 8.7/125, 9/125µm	
Modes:	Full or half-duplex mode, Auto-Negotiation	
Packet Forwarding Rate (64Bytes):	14880pps@10Mbps / 148800pps@100Mbps	
Connector:	Copper: RJ-45 Fiber: Single SC-type connector	
TX Optical Frequency:	1550nm(1480~1580nm) 1310nm(1260~1360nm)	1310nm(1260~1360nm) 1550nm(1480~1580nm)
Max. / Min. Optical Launch Power:	-8dBm / -14dBm	
Optical Receive Sensitivity:	-31dBm	
Operating Temperature:	0°C ~ 50°C (32°F ~ 122°F)	
Storage Temperature:	-20°C ~ +65°C (-4°F ~ 149°F)	
Humidity:	Up to 90% (non-condensing)	
Dimension:	70(W) x 94(L) x 26(H) mm	

Specification for optic fiber

Type	Specification
Single-Mode Fiber (SMF)	diameter : 10/25 μ m wavelength: 1300 (1270~1355)nm
Multi-Mode Fiber (MMF)	diameter : 62.5/125 μ m wavelength 850 (1270~1355) nm diameter : 62.5/125 μ m wavelength 1300 (1270~1355)nm

Note:

NM-102KIT of acceptable db loss of the fiber-optic cable connected is 18dBm.

Appendix B: Troubleshooting

Diagnosing Media Converter Indicators

The Media Converter can be easily monitored through its comprehensive panel indicators. These indicators assist in identifying problems the Media Converter may encounter. This section describes common problems you may encounter and possible solutions

1. Symptom:	POWER indicator does not light up (green) after power on.
Cause:	Defective power outlet, power cord, internal power supply
Solution :	<p>Check the power outlet by plugging in another that is functioning properly.</p> <p>Check the power cord with another device. If these measures fail to resolve the problem, have the unit power supply replaced by an qualified distributor.</p>
2. Symptom:	Link indicator does not light up (green) after making a connection.
Cause:	Network interface (e.q., a network adapter card on the attached device), network cable, or switch port is defective.
Solution :	<ul style="list-style-type: none"> ◆ Verify if both of the switch and attached device are powered on. ◆ Be sure the cable is plugged into both the switch and corresponding device. ◆ Verify that the proper cable type is used and its length does not exceed specified limits. ◆ Check the adapter on the attached device and cable connections for possible defects. ◆ Replace the defective adapter or cable if necessary.

Appendix C: Compliance and Safety Information

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a computing device, pursuant to Part 15 of FCC class B rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generate, 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:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. The equipment and the receiver should be connected to outlets on separate circuits.
4. Consult the dealer or an experienced radio/television technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

If this telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the

proper functioning of your equipment. If they do, you will be notified in advance in order for you to make necessary modifications to maintain uninterrupted service.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

Important Safety Instructions

- ◆ **Caution:** The direct plug-in wall transformer serves as the main product for disconnecting. The socket outlet shall be installed near the product and be readily accessible.
- ◆ **Caution:** Use only the power supply included with this product. In the event the power supply is lost or damaged: In the United States, use only with CSA certified or UL listed Class 2 power supply, rated **5Vdc 1A** or above.
IN Europe, use only with CE certified power supply, rated **5Vdc 1A** or above.
- ◆ **Do not** use this equipment near water, for example in a wet basement.
- ◆ **Avoid** using a telephone during an electrical storm. There may be a remote risk of electrical shock from lightning.
- ◆ **Do not** use the telephone to report a gas leak in the vicinity of the leaking area.
- ◆ If you experience trouble with this unit, please contact customer service of your dealer immediately.
- ◆ **DO NOT DISASSEMBLE THIS EQUIPMENT.** It does not contain any user serviceable components.

FCC Warning



This equipment has been tested 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 can generate, use, and 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 owner's 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.

WEEE Warning



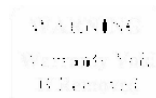
To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Warranty

The original owner that the product delivered in this package will be free from defects in material and workmanship for one year parts after purchase. For the warranty to apply, you must register your purchase by returning the registration card indicating the date of purchase.

There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty will not apply to any products which have been subjected to any misuse, neglect or accidental damage, or which contain defects which are in any way attributable to improper installation or to alteration or repairs made or performed by any person not under control of the original owner.

The above warranty is in lieu of any other warranty, whether express, implied, or statutory, including but not limited to any warranty of merchantability, fitness for a particular purpose, or any warranty arising out of any proposal, specification, or sample. Shall not be liable for incidental or consequential damages. We neither assumes nor authorizes any person to assume for it any other liability.



WARNING:

- 1.DO NOT TEAR OFF OR REMOVE THE WARRANTY STICKER AS SHOWN, OR THE WARRANTY IS VOID.**
- 2.WARRANTY VOID IF USE COMMERCIAL-GRADE POWER SUPPLY IS USED AT HARSH ENVIRONMENTS.**