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### START HERE

Congratulations on your purchase of the NETGEAR® Model GC102 Gigabit Ethernet Media Converter - a cost-effective, high-performance network solution designed to enable flexible network design at gigabit speeds.

This installation guide describes how to install and use the Model GC102 Gigabit Ethernet Media Converter .

### FEATURES

The Model GC102 Gigabit Converter has the following features:

One RJ-45 connector port, using Category 5 or better cable to deliver 1000BASE-T up to 100m (328 ft)

One SC connector port, using 62.5/125 micron multimode fiber cable to deliver 1000BASE-SX up to 550m (1,804 ft)

Auto Uplink on the RJ-45 port to adjust for straight through or cross-over cables

Easy plug-and-play installation with no software to configure, which saves time and minimizes the potential for configuration errors.

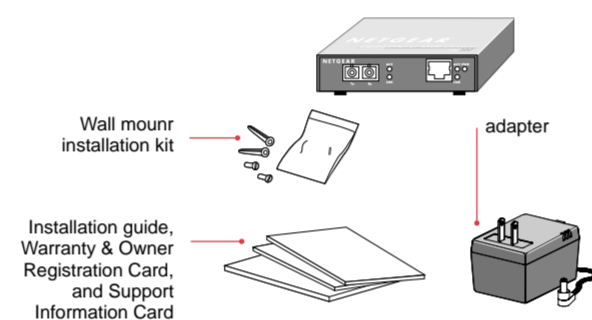
LEDs that provide network traffic and port status

IEEE 802.3x Flow Control standard compliance

Selector for Auto negotiation of flow control on the 1000BASE-SX port

Compact, sturdy metal case design that enables easy desktop, all-mount, or under-desk installation

### PACKAGE CONTENTS



Verify that your package contains the following:

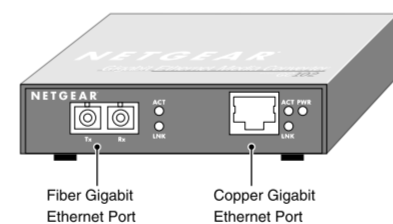
- Model GC102 Gigabit Ethernet Media Converter
- Wall Mounting kit
- This installation guide
- Warranty & Owner Registration Card
- Support Information Card
- Power adapter

Note: Do not remove the dust cover from the fiber port until you are ready to connect the fiber optic cable. Dust contamination can degrade the performance of the port and the media converter.

### PRODUCT ILLUSTRATION

Copper Gigabit Ethernet Port

Front Panel of the Model GC102 Gigabit Ethernet Media Converter

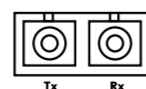


The RJ-45 port provides 1000BASE-T connectivity over Category 5 (Cat5) or better (Cat5e, Cat6) unshielded twisted pair (UTP) cables for a distance up to 100 m (328 ft).

With Auto Uplink technology, the GC102 automatically adjusts for either straight-through or crossover cables to make the right link.

Fiber Gigabit Ethernet Port

The SC port provides 1000BASE-SX connectivity over 62.5/125 micron multimode fiber cable for a distance up to 550m (1,804 ft). Be sure to match up the transmit and receive portions on the converter to the correct parts of the plug.



### LEDs

This table describes the activity of the Model GC102 Converter LEDs.

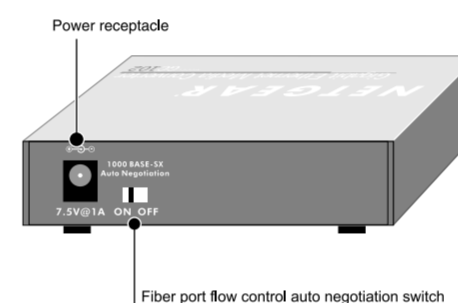
Label	Color	Activity	Description
PWR(Power)	Green	On Off	Power is supplied to the Converter. Power is disconnected.
LNK (Link) (located to the right of each port)	Green	On Off	A valid link is established on the port. A link is not established on the port.
ACT (Activity) (located to the right of each port)	Green	On Off	Packet transmission or reception is occurring on the port. No traffic is passing through the port

### Rear Panel

The rear panel of the Model GC102 Converter has a power adapter receptacle for the supplied power adapter, as well as a switch to select flow control for the fiber port. If the switch is in the 'ON' position, the GC102 will auto negotiate flow control on the SC connector. If the switch is in the 'OFF' position, the converter will not use flow control or respond to any negotiation message.

Note: The converter will determine the switch setting when powering up. Once the converter is operational, it ignores the switch position. If you want to change the setting, you must reset the converter.

Rear Panel of the Model GC102 Gigabit Ethernet Media Converter



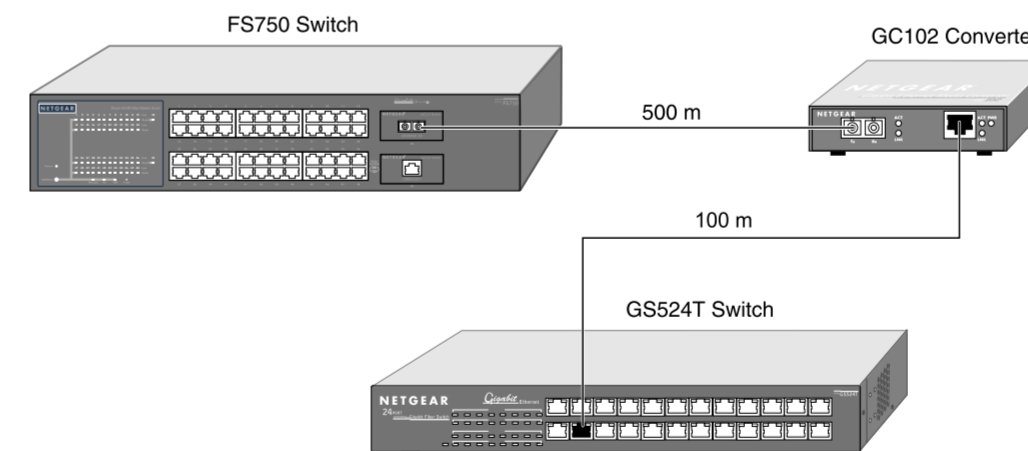
### APPLICATIONS

The Model GC102 Gigabit Ethernet Converter is designed to provide flexibility for your network design. Converters can be used as a stand-alone device or can be used in a back-to-back configuration. The examples in this section illustrate some common network environments, using other NETGEAR products. These examples focus on the benefit of the converter and do not show the workstations, servers, printers, and routers that you would expect to find on a network.

Although the examples illustrate specific NETGEAR switches, any switches can be used in the network configurations shown.

#### Stand alone configuration

The GC102 can be used in to convert a fiber connection from a distant wiring closet to the desired copper gigabit connection that is needed. In this example, a GS524T is able to support a distant FS750 with an AG711F Fiber Gigabit module in it by using the GC102.



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### Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, NETGEAR reserves the right to make changes to the products described in this document without notice. NETGEAR does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

### Certificate of the Manufacturer/Importer

It is hereby certified that the NETGEAR Model GC102 Converter has been suppressed in accordance with the conditions set out in the BMPT-AmtsblVfg 243/1991 and VfG 46/1992. The operation of some equipment (for example, test transmitters) in accordance with the regulations may, however, be subject to certain restrictions. Please refer to the notes in the operating instructions. Federal Office for Telecommunications Approvals has been notified of the placing of this equipment on the market and has been granted the right to test the series for compliance with the regulations.

### Voluntary Control Council for Interference (VCCI) Statement

This equipment is in the first category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines that are aimed at preventing radio interference in commercial and/or industrial areas.

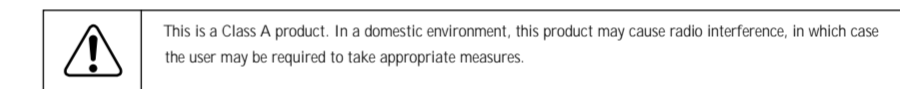
Consequently, when this equipment is used in a residential area or in an adjacent area thereto, radio interference may be caused to equipment such as radios and TV receivers.

### Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

Note: 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. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

### EN 55 022 Statement

This is to certify that the NETGEAR Model GC102 Converter is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).



### Canadian Department of Communications Radio Interference Regulations

The digital apparatus (NETGEAR Model GC102 Converter) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

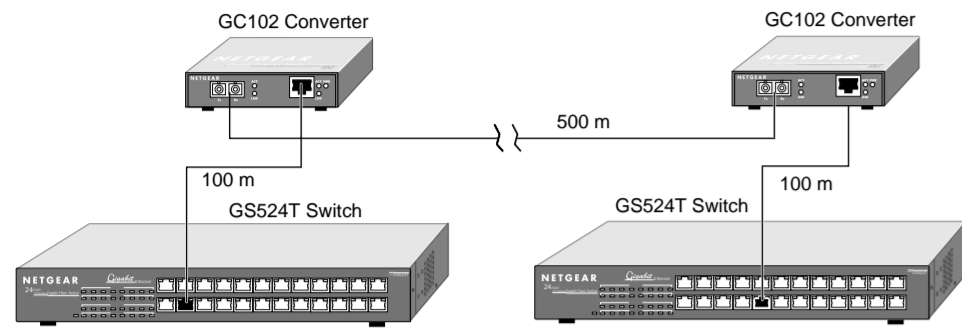
### Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (NETGEAR Modle GC102 Converter) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans les Réglementations sur le brouillage radioélectrique du Ministère des Communications du Canada.



## Back-to-back

Two GC102 Gigabit Converters can be used to extend the reach of an all copper gigabit network, enabling a work group or department to move to a different floor or nearby building. In this example, a network based on two GS524T Gigabit Ethernet Switches remains connected via the long fiber run made possible by the GC102.



## PREPARE THE SITE

Before you begin installing your Converter, prepare the installaiton site. Make sure your operating environment meets the operating environment requirements of the equipment.

Characteristic	Requirement
Temperature	Ambient temperature between 0° and 40° C (32° and 104°F). No nearby heat sources such as direct sunlight, warm air exhausts, or heaters.
Operating humidity	Maximum relative humidity of 90%, noncondensing.
Ventilation	Minimum 2 inches (5.08 cm) on all sides for cooling. Adequate airflow in room or wiring closet.
Operating conditions	At least 6 feet (1.83 m) to nearest source of electromagnetic noise (such as photocopy machine or mace welder)
Power	Adequate power source within 6 feet (1.83 m).

Warning: Class 1 laser device.

Warning: Do not stare into the laser beam.

## INSTALL THE CONVERTER

To install your converter on a flat surface, you do not need any special tools. Be sure the converter is positioned with at least 2 inches of space on all sides for ventilation.

To install the converter on a wall, measure the distance between the mounting holes on the back of the converter and mark the wall to match the location of the mounting holes on the converter. At the marks, screw into the wall the two screws in the mounting kit included in your package contents. Choose a location that is near the devices to be connected, is close to an electrical outlet, and provides at least 2 inches of space all around the converter for ventilation.

## CONNECT DEVICES TO THE CONVERTER

Before connecting the converter, be sure to review "Applications" on page 2 to determine the appropriate configuration for your networking needs.

To connect the converter :

- 1.Connect the devices to the RJ-45 port on the converter, using Category 5 UTP cable and an RJ-45 plug.

ⓘ Note: Ethernet specifications limit the cable length between your converter and your switch, server or PC to 328 feet (100 meters).

2. Connect the device to the SC port on the converter, using multimode fiber cable and an SC connector.

ⓘ Note: Ethernet specifications limit the cable length between your converter and your switch, server, or PC to 1,804 feet (550 meters).

- 3.Connect one end of the power adapter to the power outlet on the rear panel of the switch and the other end of the power adapter cable to the wall outlet.

## VERIFY INSTALLATION

When power has been applied to the Converter :

The green PWR (Power) LED on the front panel is on.

The green LNK LED on each connected port is on.

Refer to the table in the "LEDs" section for information about the LEDs and their activity.

## TROUBLESHOOTING INFORMATION

Symptom	Cause	Solution
Green Link LED is off on an active port	Port connection is not functioning	Make sure the attached device is powered and there is a proper connection at that end.  Make sure the network adapter card installed in the PC is working. Verify that the network adapter card is 1000 Mbps capable and that the 1000 Mbps LED and Link LEDs are on at the network adapter card in the PC.  Make sure the proper cable is installed, and check for miswired cable pairs or loose connectors.
Green Link LED intermittent the	Port connection is not functioning, an active port.	Make sure the port termination at the Netgear GC102 Converter end and the device end are correct. Check crimp on the RJ-45 connectors. It is also important that Category 5 cable or better is used and that it is certified for 1000 Mbps operation.  Make sure the length of the UTP cable from the converter to the device does not exceed 328 feet (100 meters) for copper connections or 1,804 feet (550 meters) for fiber connections.

## REPLACEMENT POWER ADAPTER

If, for any reason, the power adapter for any of the hubs fails, please contact NETGEAR immediately to order a replacement adapter. Use the following table when ordering a specific power adapter.

Order Code	GC102
PWR-024-001	Power adapter (7.5V DC, 1A), North America
PWR-024-002	Power adapter (7.5V DC, 1A), Europe
PWR-024-003	Power adapter (7.5V DC, 1A), United Kingdom
PWR-024-004	Power adapter (7.5V DC, 1A), Australia
PWR-024-005	Power adapter (7.5V DC, 1A), Japan

Specifications	Model GC102 Converter
Network Protocol and Standards Compatibility	IEEE 802.3z 1000BASE-SX Gigabit Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3x Flow Control
Interface	RJ-45 connector for 1000BASE-T SC connector for 1000BASE-SX
Input Voltage (Power Adapter)	7.5V@1A
Environmental Specifications	Operating temperature: 0 to 40°C (32 to 104°F) Operating humidity: 90% maximum relative humidity, noncondensing
Electromagneic Emissions	CE mark, commercial FCC Part 15, Class A C-Tick EN 55 022 (CISPR 22), Class A VCCI Class 1 ITE
Electromagnetic Susceptibility	Electrostatic discharge (ESD): IEC 801-2, Level 2/3/4 Radiated electromagnetic field: IEC 801-3, Level 2 Electrical fast transient/burst: IEC 801-4, Level 2 Electrical surge: IEC 801-5, Level 2
Performance Specifications	Network latency (using 64-byte packets): 1000 Mbps to 1000 Mbps: 1.1 microseconds, maximum