G4201TM
G.hn Master and Client

Instruction manual

Version 1.5
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For more information and purchase requests
contact info@gigacopper.net

1. Introduction

With the G.hn modem G4201TM you can easily **expand** your **network** over existing telephone cables.

The devices are also suitable for **forwarding fiber optic connections from the ONT to the router** via telephone line.

The modem supports both SISO (2-wire) and **MIMO (4-wire)** operation for higher bandwidth on long cables and increasing the range of the connection.

Any type of cable can be used for data transmission – both twisted pair and non-twisted pair, the net bandwidth is up to approx. 1500 Mbit/s (total download and upload) depending on the cable length.

The devices are used in pairs – a master and a client. Master determines the distribution of bandwidth towards the client and back (download / upload).

In a network with multiple clients, one G.hn switch must be used instead of multiple master modems. It enables central administration of the G.hn network and multiple parallel data connections through vectoring.

2. Packing

- G4201TM Master or G4201TM Client
- DC-12V/1A Power Adapter
- Bracket for wall mounting *(from serial no. R3A0266347)*
- RJ11/RJ11 telephone cable 1.5m, 4-wire (SISO and MIMO)
- *Only in DE*: TAE-F/RJ11 adapter, 4-pin (SISO and MIMO)

3. Specifications

- Dimensions (WxDxH): 111.5 x 83 x 24.5 mm
- Weight: 0.16 kg
- Operating temperature: 0°C - 40°C
- Power consumption: < 3 watts

4. G.hn specification

- G.hn Wave2, 2-200 MHz
- Connection type: SISO (1 wire pair, 2-200 MHz) and MIMO (2 wire pairs, 2-100 MHz)

- Physical bandwidth (PHY): approx. 1800 Mbit/s
- Net width: approx. 1500 Mbit/s (download + upload)
- Bandwidth distribution – variable, ex works: 70% download (direction master to client) 30% upload (direction client to master)
- Maximum allowable attenuation of the cable connection: 75dB

5. Panel description

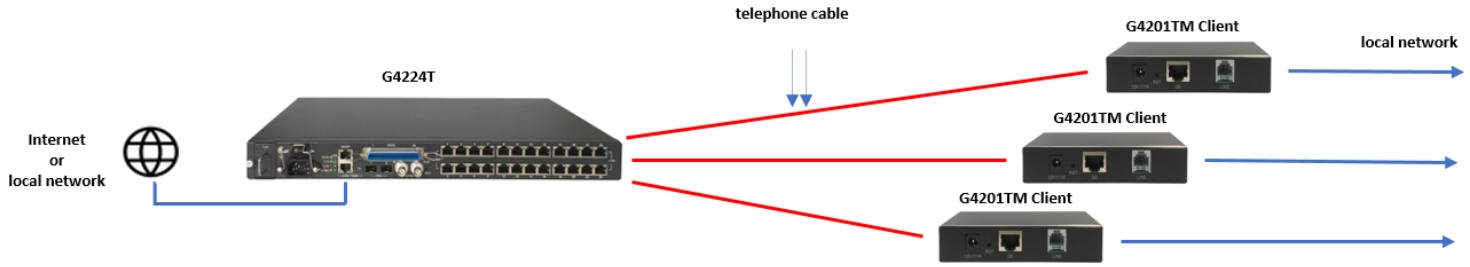
Panel and LED description

Labeling	Description
Rear	
12V DC	Power connector
RST	Recessed reset button (15 sec.)
LED on/off	All LEDs in front turn on/off *(from serial no. R3A0270452)*
LINE	G.hn connection
GE	Gigabit Ethernet Port
Front	
PWR LED	Indicates power availability
LINE LED	Status of the G.hn connection (green – OK, yellow – weak signal, off – no connection)
GE LED	Status of the Ethernet connection

6. Use in the local network

Variant 1 – "Point-to-P points": one master and client

Variant 2 – Connection to Switch G4224T or G4200-8T/4T



7. Use for the distribution of a fiber optic connection ("point-to-point")

8. Connection type and wire assignment on the device (RJ11 plug)

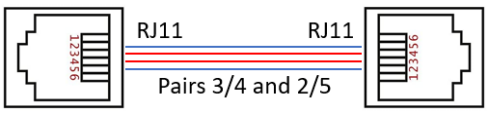
The G.hn connection can be established either via a pair of wires (connection type SISO = G.hn profile "PHONE 200MHz") or via two pairs of wires (connection type MIMO = G.hn profile "PHONE 100MHz MIMO"). The corresponding G.hn profile must be configured via the web interface in both modems or via the G.hn switch.

Default setting: G.hn profile "PHONE 200MHz".

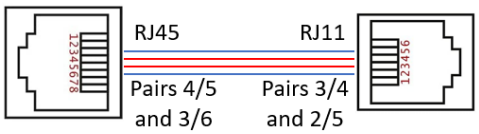
Core assignment
SISO Variante 1 – "Point-to-point"

Core assignment
SISO Variante 2 – Connection to switch

Core assignment
MIMO Variante 1 – "Point-to-P point"



Core assignment
MIMO Variante 2 – Connection to switch



9. Installation Notes

- The veins of a pair can be laid straight or crossed.
- Maximum range of the G.hn connection depends on the type of cable used, the type of connection and the environment. Typical values for a 0.5 mm twisted-pair cable: connection possible up to approx. 600/800 meters (SISO/MIMO), maximum bandwidth of 1500 Mbit/s – up to approx. 100/200 meters (SISO/MIMO).
- For longer cables (from approx. 100-150m), the bandwidth can be increased by up to 15% (SISO) or up to 25% (MIMO) by adjusting the signal level. To do this, the "Range optimization model" must be set to "Long" in the web interface of both modems or the "LongRangeMode" setting must be activated in the G.hn switch. After the change, both devices must be restarted.
- The negotiated bandwidth can be queried via the web interface of the devices (see points 12).
- The distribution of the bandwidth of the G.hn connection is variable. It can be set between 80/20% and 20/80%. By default, 70% of the bandwidth is reserved for download (from master to client) and 30% for upload (from client to master). The splitting can be done via the web interface of the master modem (menu item G.hn DownStream / UpStream Ratio) or can be configured via the G.hn switch.
- It is possible to transmit an analog telephone line on the same line parallel to the G.hn signal. To do this, use a DSL splitter.

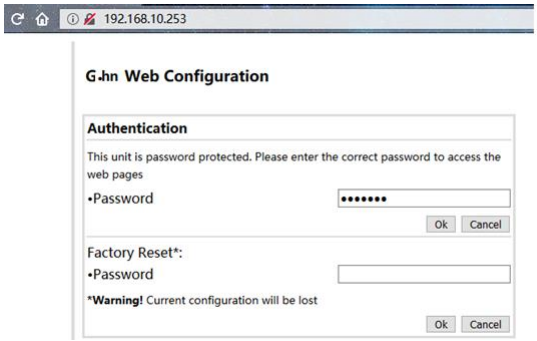
Further information and recommendations can be found on our homepage www.gigacopper.net under heading Support.

10. Administration

IP addresse: 192.168.10.25 2 (master), 192.168.10.253 (client). Login Passwor t: Paterna, Factory reset Passwort: betera

Registration via web interface

- Connect your computer to the G.hn modem through the GE port.
- Assign your computer a fixed IP address, e.g. 192.168.10.100 (netmask 255.255.255.0).
- Open a web browser and connect to 192.168.10.252 or 192.168.10.253.
- Log in with the default password: paterna



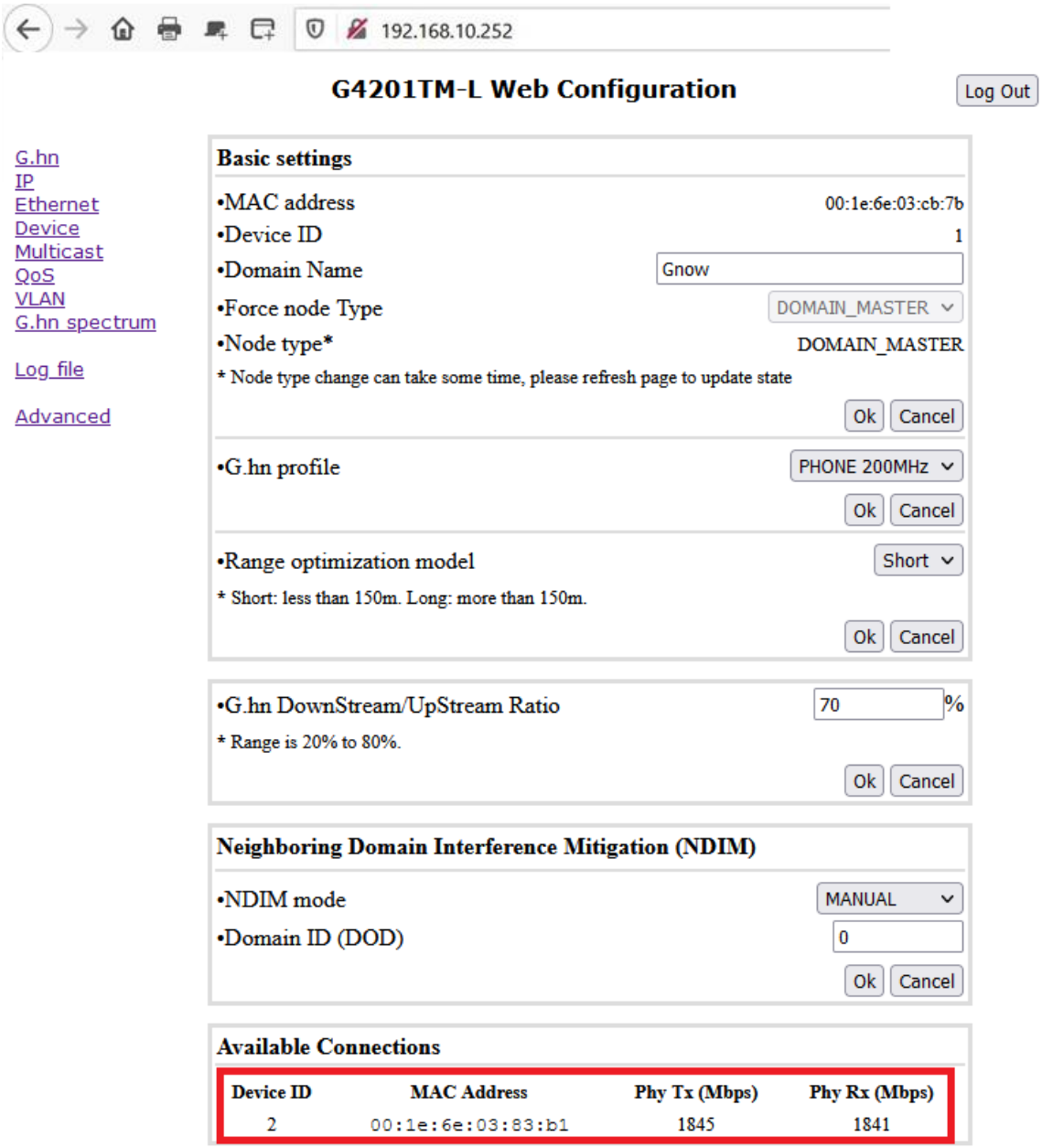
11. IP address

The modems do not require IP addresses from the local network segment during operation, because they mediate data traffic via the MAC addresses. By default, they do not obtain addresses from the local DHCP server.

If desired, static IP addresses can be configured or the DHCP client can be activated (menu "IP" in the web interface).

12. Query the negotiated bandwidth

Thebandwidth negotiated by the devices for both transmission directions can be queried via the web interface of each device. The reported values are gross data transfer rates at the physical layer (PHY). The transfer speed at the application level is about 15-20% lower.



13. VLAN usage in the network

The devices support VLANs according to the 802.1Q standard.

In the factory setting, the VLAN tags are forwarded transparently. External Ethernet switches can be used for the formation and use of VLANs.

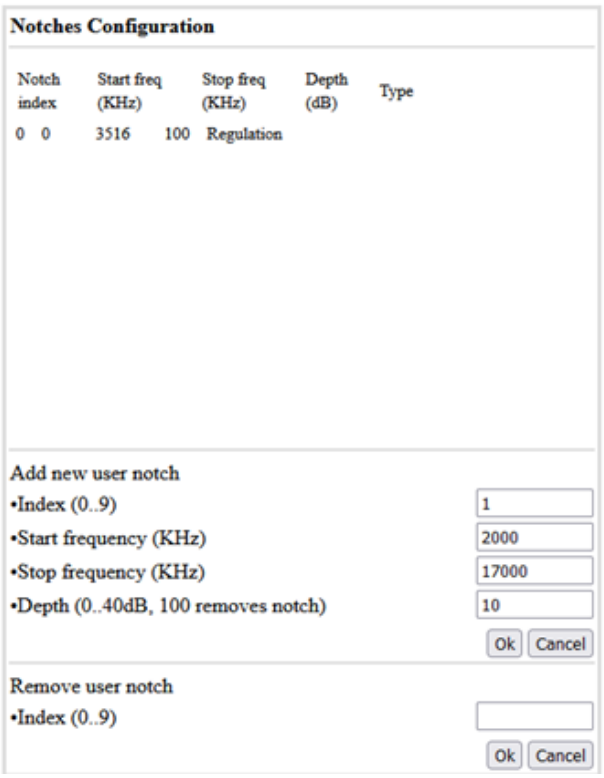
Instead of external Ethernet switches, VLAN configuration can be done by the manageable G.hn G4200-8T/4T and G4224T switches.

14. Notching, Compatibility with DSL/VDSL

The G.hn modems can also be used in parallel with DSL/VDSL connections with unshielded Telephone cables as well as via double wires of a common cable.

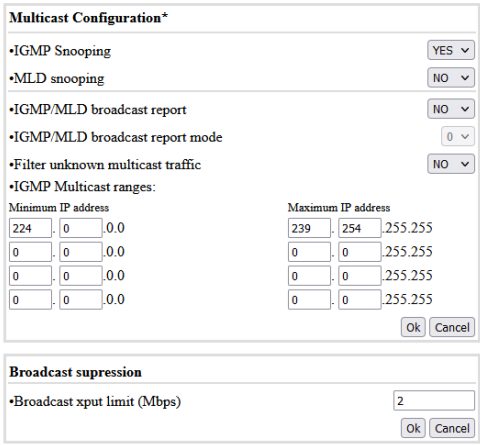
In the case of DSL and VDSL50, the G.hn modems usually do not require any settings.

For compatibility with VDSL100 (profile 17a) andVDSL250 (profile 35b), the G.hn level in the range 2-17MHz or 2-30MHz must normally be lowered by 10dB. The setting must be configured in the master modem (menu item G.hn spectrum) or in the switch.



15. Use of Multicast IP-TV

For the transmission of multicast IP-TV (e.g. Telekom MagentaTV) in the network, "IGMP Snooping" must be activated in the multicast configuration.



16. Wall mount

There are 4 small black screws in the corners on the back of the device.

To attach the brackets for wall mounting, first loosen 2 screws on one side, place the bracket and fix it with these screws.

Repeat the step on the other side.

17. Warranty

We offer a 12-month warranty on all products purchased from us. Full warranty terms can be found at https://www.gigacopper.net/wp/en/warranty/