



MidiGateway 2x2

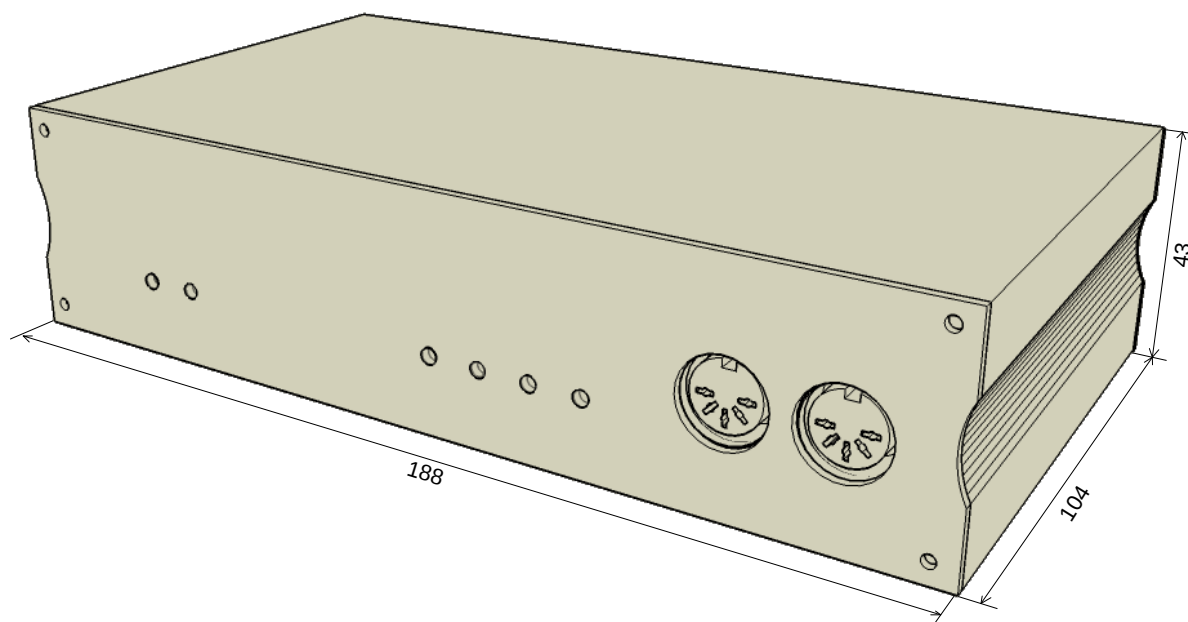
MidiGateway 4x4

User Manual

Release 0.5 – June 2013 – Copyright Cinara Technologies 2013

1 DIMENSIONS

All given dimensions are in millimeters.



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3 SAFETY INFORMATION

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. THE UNIT MUST NOT BE EXPOSED TO DRIPPING OR SPLASHING. DO NOT PLACE OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ON THE UNIT.

CAUTION: TO ENSURE REGULATORY COMPLIANCE, USE ONLY THE PROVIDED POWER ADAPTER AND INTERFACE CABLES.

CAUTION: DO NOT OPEN THE UNIT. DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

When using this device, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

1. Read all of the instructions listed here and/or in the user manual before you operate this device. Give particular attention to all safety precautions.
2. Retain the instructions for future reference.
3. Follow all warnings and instructions marked on the device
4. Unplug this device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners.
5. Do not use this product near water..
6. Do not operate the device if the ambient temperature exceeds 55° C (137° F). Ensure that sufficient ventilation and heat dissipation is provided for the equipment and all connected devices.
7. Do not place this product on an unstable surface, such as a table, shelf or stand. The product may fall causing serious damage.
8. Do not allow anything to rest on the power cord. Do not install this product where the cord may have anyone walking on it.
9. Never push objects of any kind into this product through holes and slots as they may short out parts that could result in a risk of fire or electric shock
10. Never spill liquid of any kind on the product
11. To reduce the risk of electric shock, do not disassemble this product, but take it to an authorized service facility. Incorrect reassembling can cause electric shock when the product is subsequently used
12. Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
13. Unplug this product from the wall outlet and refer servicing to an authorized service facility under the following conditions:
 - a. When the power supply cord or plug is damaged or frayed.
 - b. If liquid has been spilled onto the product.
 - c. If the product has been exposed to rain or water.

- d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as improper adjustment of other controls may result in damage and often requires extensive work by an authorized technician to restore the product to normal operation.
 - e. If the product has been dropped and has been damaged
 - f. If the product exhibits a distinct change in performance
14. This product contains parts that are sensitive to static shock. Please avoid touching interface connectors with bare hands.
15. Keep all packaging materials away from children. Properly dispose of unwanted packaging.

4 WARRANTY

CINARA Technologies warrants that the product that it manufactures will be free from defects in materials and workmanship for a period of one year from the date of shipment from an authorised CINARA Technologies reseller. If the device proves defective within the warranty period, CINARA Technologies will repair or replace at its sole discretion, the defective hardware. If the failure is due to an operator error, the user accepts the responsibility to pay any costs incurred in the diagnosis of the hardware, parts or shipping from our service facility.

CINARA Technologies makes no warranty of any kind, express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose. In no event shall CINARA Technologies be liable for indirect, special or consequential damages.

Opening the case of the unit voids the warranty as described above.

5 CONTACTS

Email: info@cinaratech.com

Telephone:

Facsimile:

Postal Address:

Chabrier Services
354 Chemin de la Pinatte- BP146
07130 SAINT-PERAY
FRANCE

If you require support for the CINARA MidiGateway, please visit the support area at <http://www.cinaratech.com/>

6 INTRODUCTION

Thank you for purchasing the CINARA MidiGateway product. The CINARA MidiGateway is designed to interconnect MIDI instruments and devices, PC or Mac computer with USB host interface and any network devices supporting the RTP-MIDI protocol.

6.1 FEATURES

The CINARA MidiGateway provides the following features

- Apple RTP-MIDI compliant with Ethernet and WiFi (optional) interfaces
 - **MidiGateway 2x2:** 2 RTP-MIDI sessions with up to 4 clients per session
 - **MidiGateway 4x4:** 4 RTP-MIDI sessions with up to 4 clients per session
- Apple Bonjour compatibility for Plug And Play configuration
- IP priority class support (DiffServ protocol support)
- RTP-MIDI recovery support
- MIDI over USB class compliant (compatible with native drivers)
 - **MidiGateway 2x2:** 2 USB MIDI virtual ports
 - **MidiGateway 4x4:** 4 USB MIDI virtual ports
- MIDI-IN ports compliant with MIDI standard
 - **MidiGateway 2x2:** 2 MIDI-IN/ 2 MIDI-OUT (32 discrete MIDI input channels, 32 discrete MIDI output channels)
 - **MidiGateway 4x4:** 4 MIDI-IN/ 4 MIDI-OUT (64 discrete MIDI input channels, 64 discrete MIDI output channels)
- LED activity indicators
- MIDI channel forwarding and filtering
- MIDI channel switching
- MIDI channel merging and splitting
- Web-based UI for control and management
- Fast and easy setup from any host with basic and advanced modes for MIDI routing configuration
- Low routing latencies
- Instant boot
- Low power consumption

6.2 PACKING CONTENTS

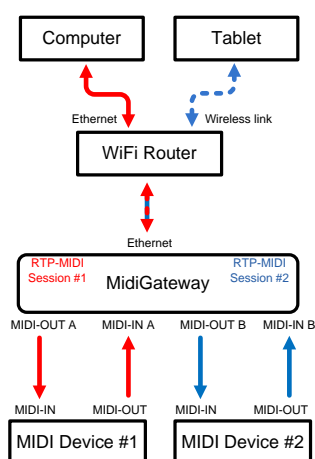
The CINARA MidiGateway package includes:

- 1 CINARA MidiGateway unit (2x2 or 4x4)
- 1 USB power supply (5V DC, 500mA)
- 1 USB A to B type cable (1.8m)
- 1 Cat.5e Ethernet cable (1m)
- 1 Wi-Fi RP-SMA 2.4GHz antenna (optional)
- Printed quick start guide

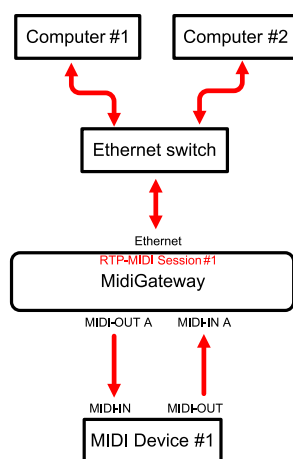
6.3 FUNCTIONALITY

6.3.1 CONNECTIVITY

The CINARA MidiGateway can be used to interconnect a large variety of MIDI devices with different network topologies. Legacy MIDI devices (e.g. MIDI instruments, synthesiser, expander) can be connected with hosts running applications connected to RTP-MIDI sessions. In point-to-point configuration, all MIDI channels of a MIDI interface are mapped over a single RTP-MIDI session on which is connected one RTP-MIDI remote host. In point-to-multipoint configuration, several RTP-MIDI remote hosts are connected to a single RTP-MIDI session, and may receive or transmit MIDI messages from/to a single legacy MIDI interface.



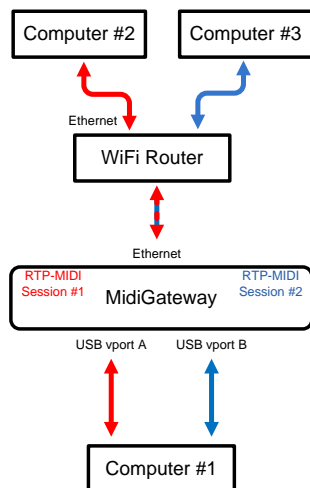
**Legacy MIDI/RTP-MIDI interconnection
Point-to-point configuration**



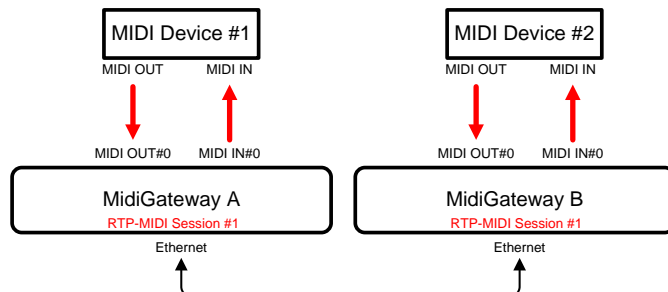
**Legacy MIDI/RTP-MIDI interconnection
Point-to-point configuration**

The USB MIDI virtual ports may be inter-connected in the same way with RTP-MIDI sessions and/or legacy MIDI interface. In particular, this configuration allows to connect some hosts without any RTP-MIDI drivers (e.g. Linux) to other RTP-MIDI hosts.

At last, two CINARA MidiGateways can be interconnected using RTP-MIDI without requiring any hosts. In that case, the CINARA MidiGateway has the same role as any other RTP-MIDI host devices, and may be used to interconnect MIDI devices using an already deployed LAN or Wireless LAN. In particular, it authorizes long distance connections to overcome the 10-meter limit of MIDI cables.



USB MIDI/RTP-MIDI interconnection



MidiGateway interconnection

6.3.2 MIDI CHANNEL ROUTING AND PROCESSING

The CINARA MidiGateway can support advanced channel routing and processing functions, while providing a simple and straightforward UI to achieve complex MIDI routing configurations. Four functions are currently supported and can be combined:

- MIDI channel forwarding
- MIDI channel merging
- MIDI channel splitting
- MIDI channel switching

Those functions can be easily configured using the simplified configuration mode. To fit requirements of more demanding applications, the UI provides an advanced configuration mode that allows combinations of all MIDI routing functions. In this mode, routing rules can be defined by the user and applied by the CINARA MidiGateway to route the MIDI messages from input to output interfaces. Each rule has the following parameters:

- Input MIDI interface: interface from which are coming the MIDI messages
- Output MIDI interface: interface on which are transmitted MIDI messages
- MIDI input channels: list of MIDI channels for which the rule is applied
- MIDI output channels: list of MIDI channels on which are mapped the MIDI input channels

Please refer to section 11.4.2 to learn how to configure MIDI routing rules.

Forwarding and filtering

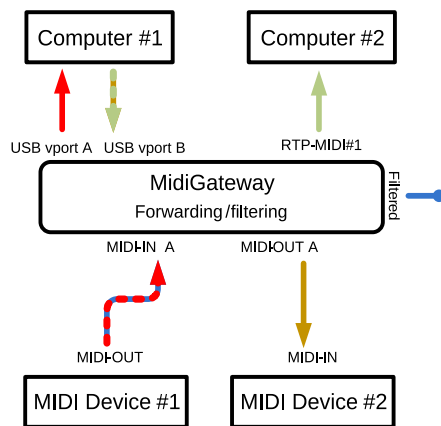
Incoming MIDI messages are routed over any output interfaces whatever their type (MIDI, USB, RTP-MIDI). In basic configuration mode, all MIDI channels of a single input interface are routed to a single output interface. In advanced configuration mode, some routing rules can be set on a per MIDI channel basis to provide higher configuration flexibility. This function can also be used to selectively pass or discard incoming MIDI messages. As an example, MIDI Channel #1 received over MIDI-IN port A can be forwarded to USB virtual port A, while MIDI Channel#2 received over the same port A is forwarded to RTP-MIDI#1 session. Other MIDI channels (#3-#16, System) can be ignored, and corresponding MIDI messages are then filtered.

Merging

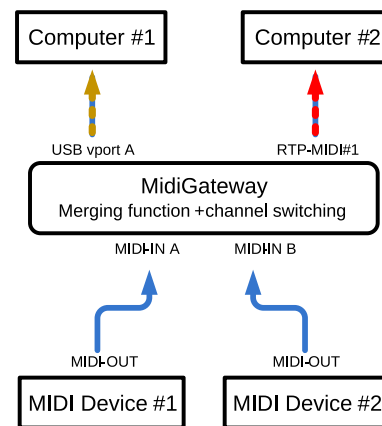
This function is used to connect two or more MIDI Outs or MIDI Thrus to a single MIDI In. For instance, two MIDI keyboards can be connected to a single MIDI sound module or a MIDI application supporting only one input interface. With this function, MIDI messages coming from two or more different input interfaces are then forwarded to a single output interface. A merging algorithm ensures the shortest delay by appropriately queuing MIDI messages.

Switching

The CINARA MidiGateway is able to change the MIDI channel identifier of incoming messages. Channel switching rules can be applied to any combination of input/output interfaces. For example, all MIDI messages received over Channel #1 on MIDI-IN port A can be mapped to channel #2 when forwarded to USB virtual port A, and channel #3 when sent to RTP-MIDI#1 session. This function is particularly useful when combined with the merging function. Two different MIDI devices generating MIDI messages on the same MIDI channels can simply be merged by switching the channels of one of the devices.



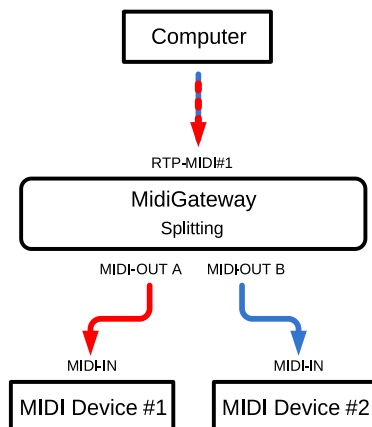
MIDI channels forwarding and filtering



MIDI channels merging and switching

Splitting

This function is used to connect one single MIDI Out to two or more MIDI Ins. For example, one MIDI sequencer running on a computer and using RTP-MIDI as output interface can be connected to several sound modules connected on MIDI-OUT ports. The CINARA MidiGateway is able to duplicate incoming MIDI messages to any output interface. Such a configuration can be defined on a per MIDI channel basis using the advanced configuration mode.



MIDI channels splitting

6.4 COMPATIBLE DEVICES

6.4.1 MIDI INTERFACES

Any devices compatible with the MIDI standard

6.4.2 USB INTERFACE

- Microsoft Windows XP/Vista/7/8
- Apple MacOS-X
- Linux distributions (USB only): Ubuntu, Fedora, RedHat, Debian, ...

6.4.3 NETWORK INTERFACE

- Microsoft Windows XP/Vista/7/8 with RTP-MIDI driver
- Apple MacOS-X SnowLeopard and upper
- iOS 6 devices: iPod Touch 4th generation, iPhone 3GS, iPhone 5, iPad
- Android applications compatible with RTP-MIDI specifications

7 POWER CONSIDERATIONS

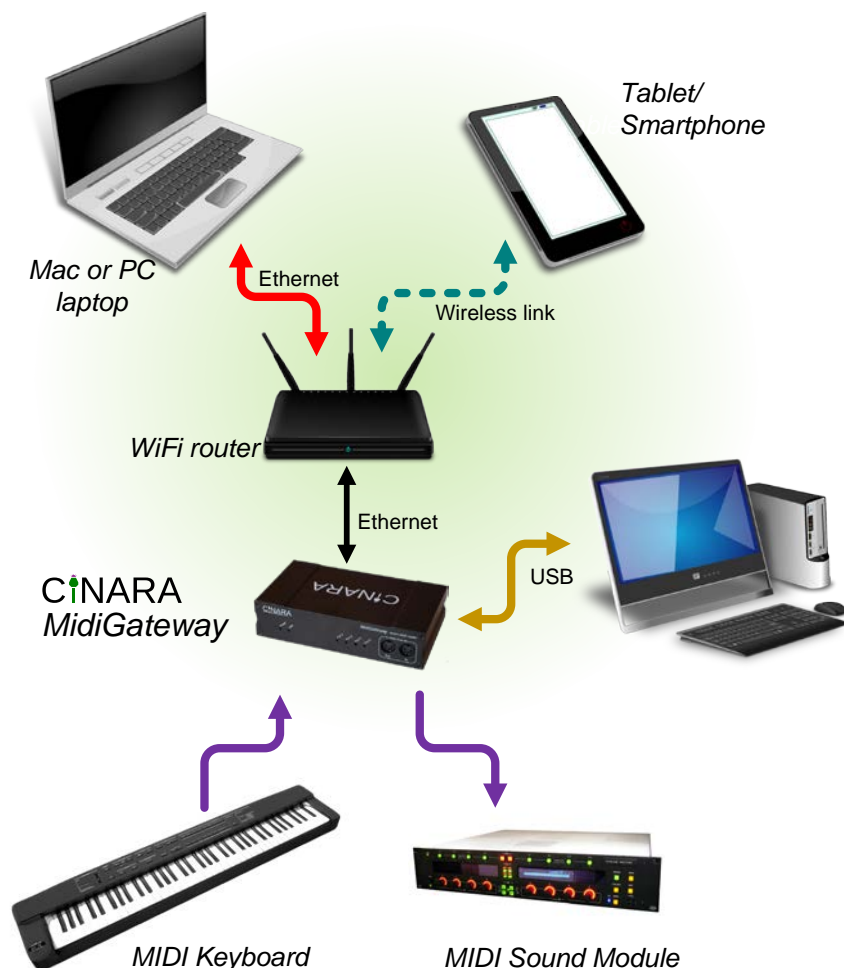
The CINARA MidiGateway can be either powered by the provided external 5V DC 500mA USB power supply, or by connecting it to a standard USB 1.1 or USB 2.0 host port by using the provided USB cable.

It is recommended to connect the power USB cable after all MIDI devices are connected to the CINARA MidiGateway.

Average measured power using the provided external USB power supply (220VAC – 5VDC) is around 1.2W in normal mode with all communication interfaces enabled (MIDI, USB, Ethernet).

8 QUICK START

The CINARA MidiGateway can interconnect MIDI instruments and devices, PC or Mac computer with USB host interface and any host machines connected to the Local Area Network (LAN) or Wireless LAN supporting the RTP-MIDI protocol.



8.1 CONNECTING MIDI DEVICES

Connecting the MIDI-OUT jack of a MIDI instrument to one of the MIDI-IN jacks of the CINARA MidiGateway using a MIDI cable (not provided) makes the CINARA MidiGateway able to receive MIDI messages from the instrument. Depending on the model of MidiGateway, up to 4 MIDI instruments can be connected.

Connecting one of the MIDI-OUT jacks of the CINARA MidiGateway to the MIDI-IN jack of a MIDI instrument will allow the CINARA MidiGateway to transmit MIDI message to the MIDI instrument. . Depending on the model of MidiGateway, up to 4 MIDI instruments can be connected in this ways.

8.2 CONNECTING COMPUTER DEVICES VIA USB PORT

The CINARA MidiGateway can be connected to any USB host supporting the USB MIDI class compliant device by using the provided USB cable (USB-A to USB-B type). Microsoft Windows (XP, Vista, 7, 8), Linux, MAC-OS do not require additional drivers since these operating systems natively

support the USB MIDI class compliant devices. Depending on your model of MidiGateway, up to 4 virtual USB MIDI interfaces can be available. When using this connection mode, the external power supply is not used since the CINARA MidiGateway is directly power-fed by the USB host device.

8.3 USING NETWORK DEVICES

8.3.1 IP ADDRESS ALLOCATION

In default factory configuration, when the CINARA MidiGateway is connected to the LAN, it automatically gets an IP address from a running DHCP server. Please refer to your router manual on which the DHCP server is running to get the value of the dynamically allocated address. The default symbolic name registered to the DHCP server is “midigw”. If no DHCP server was found on the LAN, then the CINARA MidiGateway uses the default IP address 192.168.1.32.

8.3.2 RTP-MIDI

The CINARA MidiGateway can communicate with any network device supporting the RTP-MIDI protocol stack. RTP-MIDI allows to connect music stations through existing LAN infrastructure avoiding long MIDI cables. RTP-MIDI does not necessarily rely on Ethernet and can be also used over wireless links (e.g. Wi-Fi). RTP-MIDI is particularly relevant to interconnect applications running on mobile terminals such as laptops, tablets or smartphones with legacy MIDI devices. RTP-MIDI is specified by IETF RFC 6295 and is natively implemented in MacOS-X and iOS devices (iOS>4.2, MacOS >10.6). RTP-MIDI is supported on Windows by installing an additional driver that is freely available (<http://www.tobias-erichsen.de/software/rtpmidi.html>). This Network MIDI driver is supported on Windows XP up to Windows 8, 32 and 64 bits, and is compatible with the network MIDI stack included in MAC OS-X and iOS 4.2.

Depending on your model of MidiGateway, up to 4 RTP-MIDI sessions can be available, each RTP-MIDI session supporting up to 4 clients.

The CINARA MidiGateway can be linked to any other RTP-MIDI compatible device. Before being able to transfer MIDI messages, a connection must be established between the MidiGateway and the remote device. For Windows or MacOS devices, this operation can be executed by using the configuration panel of the RTP-MIDI driver. Please refer to the RTP-MIDI driver documentation of your OS to learn how to setup connections between RTP-MIDI devices. As an alternative, you can use the CINARA MidiGateway UI to establish a connection to another RTP-MIDI device (see section 11.3.2 of this manual).

8.3.3 AUTOMATIC DEVICE DISCOVERY

The CINARA MidiGateway is compatible with the Apple Bonjour service discovery protocol and automatically announces its presence to other RTP-MIDI devices. Bonjour simplifies RTP-MIDI session setup without requiring any fastidious network operations. When the MidiGateway is powered, other RTP-MIDI device will automatically detect it and list the RTP-MIDI session provided by CINARA MidiGateway.

8.4 CONNECTING TO THE CONTROL AND MANAGEMENT INTERFACE

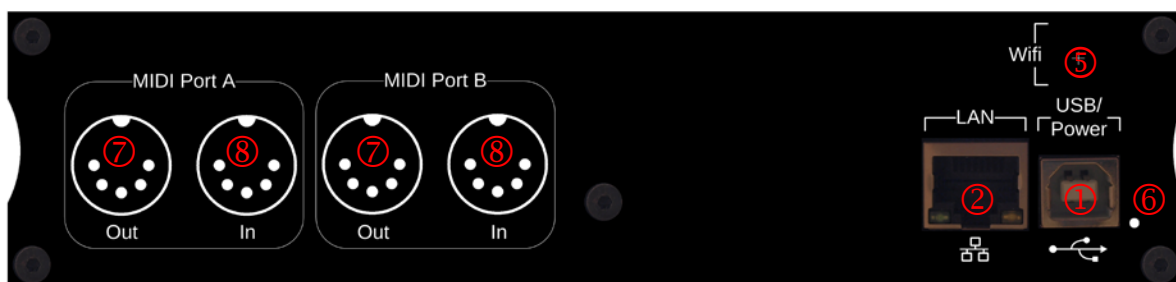
The CINARA MidiGateway provides a simple and straightforward built-in User Interface (UI) that is reachable from a web browser running on any network device connected to the same LAN. On devices supporting the Bonjour protocol, default URL is <http://midigw.local/>. On other devices, the allocated IP address shall be used instead of the symbolic name. For instance, if no DHCP server is

present on the LAN and the unit is using the default factory configuration, the CINARA MidiGateway UI can be reached using the URL <http://192.168.1.32/>

9 HARDWARE OVERVIEW



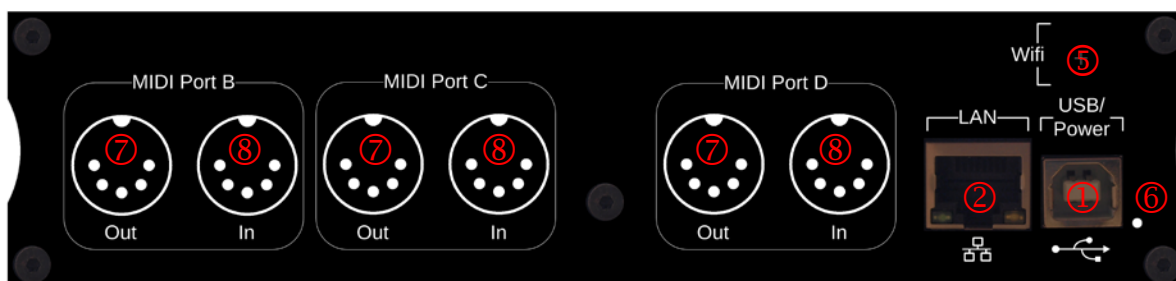
MidiGateway 2x2 Front View



MidiGateway 2x2 Rear View



MidiGateway 4x4 Front View



MidiGateway 4x4 Rear View

1. USB: type-B port. Connect it to any available USB 1.1 host port or to a compatible USB external power supply (USB cable and power supply are provided)

2. LAN: 10/100 Base T Ethernet port – type RJ45. Connect to a Fast Ethernet compatible switch, router or Wi-Fi Access Point.
LED_LAN1 (green): Ethernet Link status/activity
LED_LAN2 (orange): Ethernet auto-negotiation succeeded
3. Power LED (red): indicates that the CINARA MidiGateway unit is powered.
4. LAN LED: green lit in normal operation, indicates that the unit is connected to the LAN and an IP address is allocated (either via DHCP or statically assigned). The web-based UI and the RTP-MIDI sessions are reachable by other LAN devices.
Red lit in firmware update mode, indicates that the unit is ready to receive new firmware (see maintenance section 10.2).
5. Wi-Fi RP-SMA connector (optional): fits a Wi-Fi 2.4GHz RP-SMA antenna (provided only with the MidiGateway Wi-Fi edition).
6. Reset button: press the button behind the small hole during normal operation using a thin object like a paper clip.
 - Less than 4seconds: resets the unit and returns to normal mode.
 - More than 4 seconds: resets the unit and enters firmware mode. The front panel LAN LED turns red when the unit is ready.
7. MIDI-IN DIN5 ports (A,B,C,D) These ports receive MIDI messages from the connected MIDI instruments like MIDI keyboards, control tables. Connect one of the MIDI input ports on the CINARA MidiGateway to your external instrument's MIDI output jack (MIDI cable not provided)
8. MIDI-OUT DIN5 ports (A,B,C,D). These ports transmit MIDI messages to the connected instruments like MIDI expander, synthetizer. Connect one of the MIDI output ports on the CINARA MidiGateway to your external instrument's MIDI input jack.
9. MIDI LEDs: these LEDs indicate activity on MIDI ports. Green lit upon reception of MIDI messages on corresponding MIDI port. Red lit upon message transmission. Orange lit upon simultaneous transmission and reception of MIDI messages.

10 OPERATIONS

10.1 NORMAL MODE

When connecting the CINARA MidiGateway unit to a USB host port or to an external USB power supply, the unit enters Normal mode. The power LED is lit (red) indicating the unit is correctly powered, and MIDI LEDs shortly flashes. If the unit is connected to a valid LAN port, the LAN LED is lit (green).

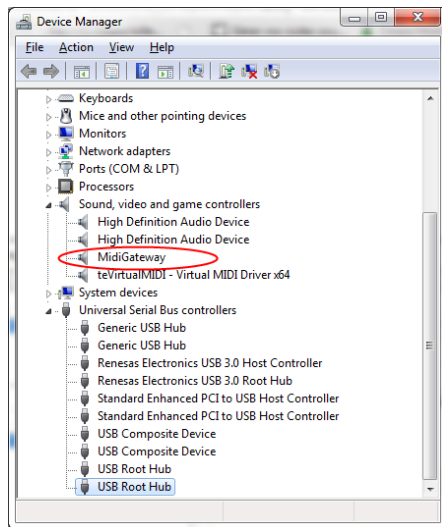
10.1.1 MIDI OPERATIONS

If a pair of MIDI ports is connected to compatible MIDI instruments using standard DIN5 MIDI cables, the corresponding MIDI LEDs briefly blinks when a MIDI message is received (red) or transmitted (green). No particular setup is required to configure MIDI ports. However, it is recommended to plug the MIDI cables before powering up the CINARA MidiGateway unit.

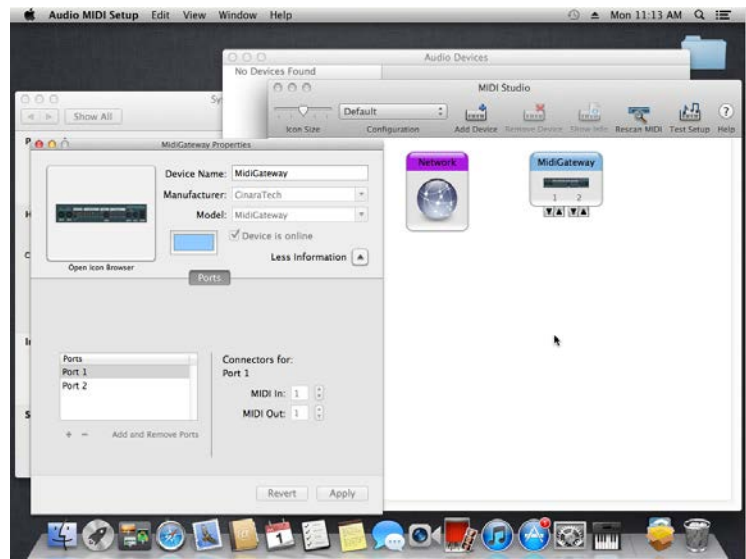
10.1.2 USB OPERATIONS

If the CINARA MidiGateway is connected to a valid USB 1.1 host port, the USB host should detect a new USB audio device and install the corresponding USB Audio driver. Up to 4 new MIDI virtual ports

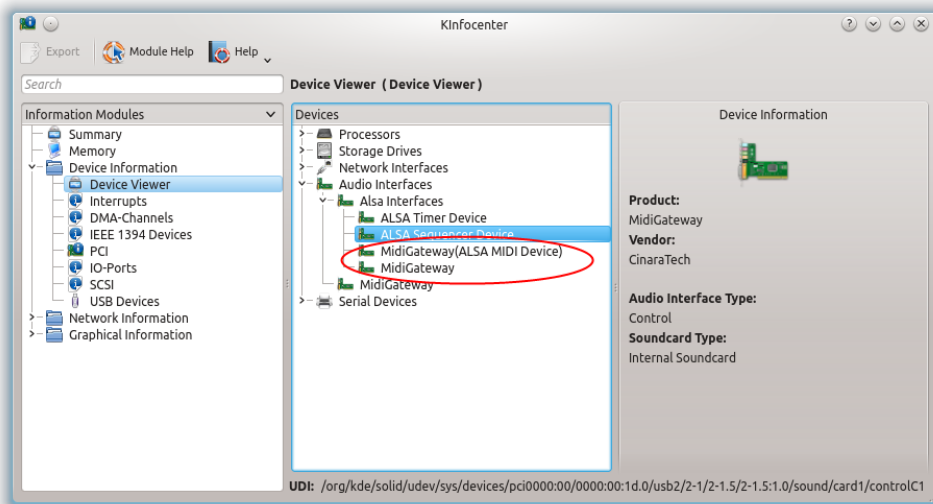
are made available for MIDI applications running on the host machine. Correct USB-MIDI configuration can be checked by referring to your OS manual.



Windows 7



MAC OS



Linux (KDE user interface)

10.1.3 NETWORK OPERATIONS

Ethernet/IP

The LAN cable may be plugged or unplugged at any time even if the unit is already powered. If configured in DHCP mode, a new DHCP IP address allocation process is automatically started each time the cable is plugged. The front panel LAN LED indicates if the unit is correctly connected to the network and is able to communicate with other LAN devices.

RTP-MIDI

Depending on the CINARA MidiGateway model and the current RTP-MIDI configuration, up to 4 RTP-MIDI local sessions are available and can be enabled. These sessions can be joined from any remote RTP-MIDI device, provided that each session can support up to 4 RTP-MIDI connections. Connections can be established using one of the following methods:

- on remote hosts, using the dedicated dialogs provided for RTP-MIDI settings. This method is possible for Windows- and MAC-OS-based hosts as shown in the following screenshots. However, it is not possible on iOS devices since iOS does not provide at that time any mean to establish connections. Please refer to the documentation of MacOS or Windows RTP-MIDI driver to learn how to establish connection between hosts and remote RTP-MIDI devices.
- on the CINARA MidiGateway, using the RTP-MIDI panel in the embedded UI. In that case, the CINARA MidiGateway is able to provide **automatic connection** at power-up for fast RTP-MIDI deployment.

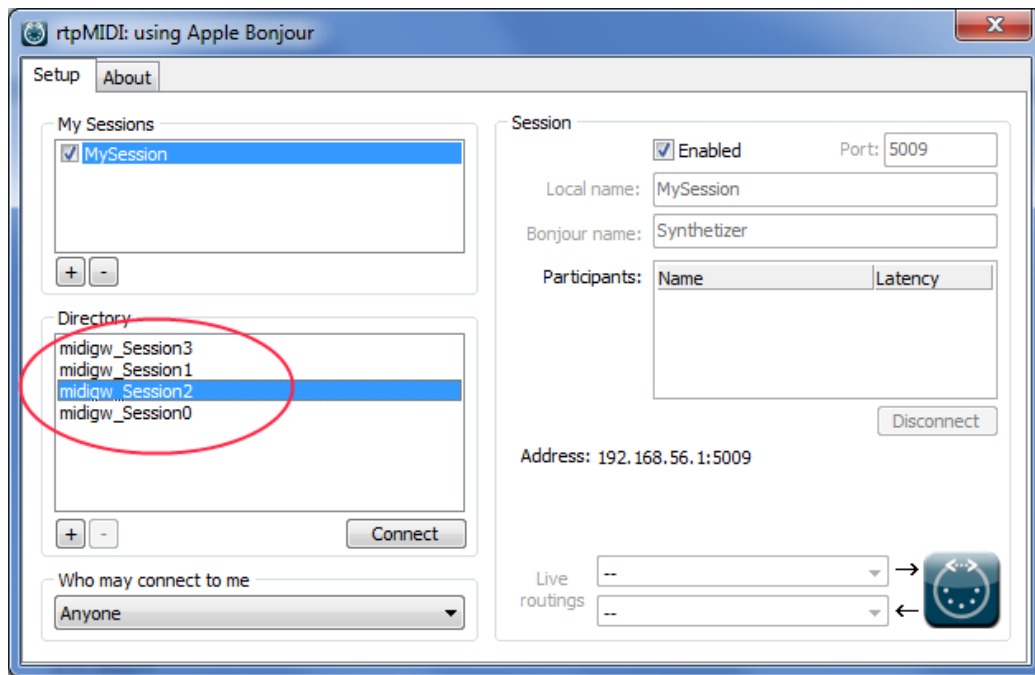
In any case, firewall configuration on remote hosts shall be carefully checked in order to enable RTP-MIDI protocol. RTP-MIDI uses two UDP sessions identified by specific UDP ports, customizable through the embedded UI.

The CINARA MidiGateway is able to apply a **dedicated service class** to outgoing RTP-MIDI packets in order to optimize transmission delay, jitter and packet losses on LAN and WLAN. The service class can be setup using the embedded UI (see section 11.2.4).

Automatic discovery

The CINARA MidiGateway implements the multicast Domain Name System (mDNS), and is fully compatible with products that support the Apple Bonjour service. This feature provides two benefits:

- automatic host name resolution: the embedded UI can be reached from any web browser using an unique and easy-to-remember URL set by default to <http://midigw.local>. In the same way, the HTTP embedded server is announced and can be automatically discovered by any web browser supporting Bonjour.
- automatic RTP-MIDI session announcement: CINARA MidiGateway sessions are automatically detected by other compatible RTP-MIDI/Bonjour devices. There is no need to know any network parameters such as IP addresses or UDP ports to establish connections between RTP-MIDI devices. The following screenshot shows how the 4 enabled RTP-MIDI sessions are listed in the RTP-MIDI configuration dialog box on a Windows host machine.



Symbolic names (host name, RTP-MIDI session name) can be customized from the embedded UI in order to facilitate deployment of multiple units across a single LAN. Bonjour session name is the concatenation of the host name and the RTP-MIDI session name as defined in the UI.

10.1.4 CONFIGURATION USING THE BUILT-IN UI

At any time in normal mode, the user can connect to the built-in UI from any network devices connected to the LAN such as PC, Mac computers, tablets or smartphones. By default, the built-in UI is available at URL <http://midigw.local/>.

Instead of the device name, the allocated IP address can also be used to access the UI. If DHCP is used (default case), then refer to the documentation of the router on which the DHCP server is running to get the allocated IP address. If DHCP is not used, then the default IP address is 192.168.1.32 and the built-in UI is available at URL <http://192.168.1.32/>

Access to the UI configuration part can be protected by a login/password authentication scheme. Except for networking and authentication configuration, all changes are immediately applied by the CINARA MidiGateway. The configuration can be saved into the CINARA MidiGateway so that it is active each time the unit is powered up (see section 11.5).

By enabling the login/password authentication scheme, access to the UI of the CINARA MidiGateway is protected and a login/password is required to view/modify configuration parameters. Only the status information is available for non-authenticated UI sessions. Default timeout for authenticated session is fixed to 120 seconds.

The UI is described in detail in section 11.

10.2 FIRMWARE MAINTENANCE MODE

The device enters this mode when the reset button is pressed for more than 4 seconds in Normal mode or when no valid firmware was found by the unit boot loader process at startup.

Cinara MidiGateway_2x2 Firmware Maintenance

Firmware to upload: No file chosen

to upload the file!

to factory setting!

In this mode, the CINARA MidiGateway can no longer be joined using the UI and is not able to communicate with any MIDI device. All MIDI communication interfaces are then disabled (USB, RTP-MIDI, MIDI). In this mode, the sole Ethernet interface is enabled and a dedicated UI can be accessed by using the <http://192.168.1.32/update.html> URL from any connected LAN host as shown in screenshot of figure above. The LAN LED is lit (red) and indicates that the device is ready to execute firmware maintenance operations. Firmware maintenance mode UI provides two functions that are not accessible in normal mode:

- Unit reset to factory configuration.
- Firmware upload service

After the firmware maintenance operations are executed, the unit can be safely powered off by unplugging the USB power cable. By plugging in again the USB power cable, the unit restarts in normal mode.

10.2.1 RESTORE FACTORY CONFIGURATION

By executing this operation, the CINARA MidiGateway is reset to its default settings. The user specific configuration is lost and can no longer be restored. This function can be useful when the unit is an unknown state, in particular when a static IP address has been allocated and is no longer known. Default setting parameters are listed in the following sub-sections.

10.2.2 DEFAULT FACTORY PARAMETERS

	Parameter name	Default value	Relevant section
Network	Host Name	Midigw	11.2.1
	IP Address	192.168.1.32	11.2.3
	Gateway address	192.168.1.1	11.2.3
	Network mask	255.255.255.0	11.2.3
	DHCP	Enabled	11.2.2
	Class of traffic	CS0	11.2.4
RTP-MIDI	Session#0 state	Enabled	11.3.1
	Local session#0 name	Session0	11.3.1
	UDP port for session#0	5453	11.3.1
	Session #1 state	Enabled	11.3.1
	Local session#1 name	Session1	11.3.1
	UDP port for session#1	5455	11.3.1
	Session #2 state	Enabled	11.3.1
	Local session#2 name	Session2	11.3.1
	UDP port for session#2	5457	11.3.1
	Session #3 state	Enabled	11.3.1

	Local session#3 name	Session3	11.3.1
	UDP port for session#3	5459	11.3.1
	MIDI Active Sync	300ms	11.3.1
	RTP Time Sync	Disabled	11.3.1
	Bandwidth Throttling	None	11.3.1
MIDI Routing	Mode	Basic	11.4.1
	Forwarding state for port A	MIDI/USB/RTP-MIDI Session0	11.4.1
	Forwarding state for port B	MIDI/USB/RTP-MIDI Session1	11.4.1
Settings	Login	admin	11.5
	Password	admin	11.5
	Authentication scheme	Disabled	11.5

10.2.3 FIRMWARE UPLOADING SERVICE

This operation allows updating the running firmware that is executed when in normal mode. Only firmware provided by CINARA Technologies and adapted to the unit can be uploaded to the device. Just select the firmware file on the host machine using the Browse button, then validate with OK. Do NOT unplug the USB cable until the UI returns a message indicating the firmware is OK. This procedure shall take between 10 and 15 seconds depending on the firmware size.

It is not required to reset the unit to factory configuration after uploading a new firmware. Indeed, the user settings are kept intact during firmware upload operations.

If the firmware uploading procedure failed because of unexpected power-off, the unit will automatically restart in firmware maintenance mode until a new valid firmware is uploaded successfully.

10.2.4 PRACTICAL GUIDE FOR FIRMWARE UPDATE

1. Download a fresh firmware file on the host machine from the CINARA web site.

2. Connect a host machine (any operating system is supported) to the CINARA MidiGateway using the LAN Interface. Direct Ethernet connection is supported.
3. Configure your host machine with correct IP parameters. The CINARA MidiGateway uses IP address 192.168.1.32, so the host must be configured on the same LAN address. For example, the host machine may use the following configuration:

IP address 192.168.1.100
Subnet mask: 255.255.255.0
Gateway address: 192.168.1.1

See Annex A in section 15 to learn how to setup IP parameters for Windows OS.

4. Power-on the CINARA MidiGateway using the external USB power supply or one of the USB port of the host machine. Push the reset button for more than 4 seconds, until the LAN LED becomes red.
5. Open a web browser on the host machine, and connect to the URL <http://192.168.1.32/update.html>
6. Select the downloaded firmware on the host machine by using the browse button and validate
7. Wait for the “Firmware is OK” message to be displayed in web browser (allow 10-15 seconds for the message to appear). DO NOT unplug the power USB cable until firmware uploading has completed.
8. Reboot the CINARA MidiGateway by unplugging and plugging in again the USB cable.
9. The unit is now ready to execute the new uploaded firmware. The host machine can be configured back with original IP parameters.

Note: in case of power down during the firmware uploading process of step 7, the unit shall automatically restart in firmware maintenance mode. Then, the user can restart firmware operations as indicated above and go directly at step 5.

11 CONTROL AND MANAGEMENT INTERFACE

The CINARA MidiGateway provides a simple and fast user interface available from any JavaScript compatible web browser running on a host machine connected to the LAN or Wireless LAN if a Wi-Fi Access Point is setup within the LAN area. Using the UI, the user can setup network configuration, MIDI routing, access control and access real-time status of the CINARA MidiGateway unit. The user has the ability to save the current configuration and remotely reboot the unit.

11.1 HOME

The Home panel is the default web page when entering the UI. It is used to welcome and authenticate the user when the password authentication scheme is in-use.

The screenshot shows the CINARA web interface. At the top, there is a navigation bar with buttons for HOME, CONFIGURATION, STATUS, and LOGOUT. The main content area is titled 'Home » Login'. Below the title, there is a welcome message 'Welcome on Cinara MidiGateway'. A 'Login' section contains two input fields for 'Login:' and 'Password:', followed by a 'Login' button. A sidebar on the left has a 'Login' link. At the bottom, there is a copyright notice: 'Cinara Technologies Copyright 2013 - cinaratech.com'.

11.2 NETWORK CONFIGURATION

Using this panel, the user can setup the network parameters used by the CINARA MidiGateway. Except for the priority class field, all changes are applied at next reboot. So, after changing any parameters in the “Network” panel, it is important to go to the “Settings” panel and save modification to flash memory. Otherwise, new network configuration will not be applied.

The screenshot shows the CINARA web interface with the 'CONFIGURATION' tab selected. The main content area is titled 'Configuration » Network'. Below the title, there is a 'Network parameters' section. It contains several input fields: 'Device name:' with the value 'midigw2', 'IP address:' with the value '192.168.56.32', 'Gateway address:' with the value '192.168.56.1', and 'Net mask:' with the value '255.255.255.0'. There is also a dropdown menu for 'RTP Service Class:' with the value '0:CS0-BE'. A checkbox labeled 'Enable DHCP' is checked. A 'Submit' button is at the bottom. A sidebar on the left has links for 'Network', 'RTP-MIDI', 'MIDI Basic Routing', 'MIDI Advanced Routing', and 'Settings'. At the bottom, there is a copyright notice: 'Cinara Technologies Copyright 2013 - cinaratech.com'.

11.2.1 DEVICE NAME

This field is the network device name of the CINARA MidiGateway. This symbolic name is used for DHCP IP address allocation procedure, and also to announce the unit to other Bonjour compatible devices. It is also used as prefix for declared MIDI-RTP sessions. When several MidiGateway are

used on a single LAN, it is required that each unit shall have a hostname distinct from the default one ("midigw").

11.2.2 DHCP

When DHCP is enabled, the CINARA MidiGateway uses the DHCP protocol to obtain an IP address from a DHCP server running on the LAN. When disabled, static IP address allocation is preferred, the user is in charge of defining the IP address, network mask and gateway address.

11.2.3 IP ADDRESS/NETWORK MASK/GATEWAY ADDRESS

When DHCP is not used, these parameters are used to respectively set the IP address, IP network mask and IP gateway address used by the CINARA MidiGateway to communicate over the LAN and WAN. When DHCP is enabled, these parameters are not relevant except when the CINARA MidiGateway failed to get an IP address from a DHCP server. For instance, this may occur if no DHCP server is present on the LAN.

11.2.4 RTP SERVICE CLASS

This parameter is used to set the service class that is used for RTP-MIDI traffic. Service classes are defined by the DiffServ protocol as standardized by RFC 4594. It is mainly used by managed Ethernet switches and routers for classifying and managing traffic in order to provide Quality of Service (QoS). DiffServ defines different DSCP service classes as listed in the table below. This table also gives default mapping between DSCP values, 802.1p priority levels and Wi-Fi Multimedia Access Categories (WMMAC). Service Classes are ordered by priority (from the lowest to the highest).

DSCP Traffic Type	DSCP value	802.1p Traffic Type	802.1p	WMM AC
Best Effort	0-7	Best Effort	0	BE (Bulk Effort Priority)
Class 1	8-15	Background	1	BK (Bulk Priority)
Class 2	16-23	Spare	2	BK (Bulk Priority)
Class 3	24-31	Excellent Effort	3	BE (Bulk Effort Priority)
Class 4	32-39	Controlled Load	4	BE (Bulk Effort Priority)
Express forwarding	40-47	Video (<100ms latency)	5	VI (Video priority)
Control	48-55	Video (<10ms latency)	6	VI (Video priority)
Control	56-63	Network Control	7	VO(Voice priority)

The RTP Service class parameter is particularly useful when running RTP-MIDI over a LAN or WLAN with mixed traffic. Intermediate switches and Wi-Fi Access Point apply QoS policy in order to prioritize RTP-MIDI traffic. This helps reducing transmission latencies, jitter and packet losses.

Most of Ethernet Manageable switches support traffic classification and priorities. Please refer to the documentation of your Ethernet switches to check if they support those functions.

On a Wi-Fi network, it is recommended to use the highest access category (i.e. VO) and use some Wi-Fi Access Point or routers that are certified as WMM by the Wi-Fi Alliance. Traffic classification and priority functions are supported by all WMM devices. Please refer to the documentation of your Wi-Fi device before setting the priority class used for RTP-MIDI traffic.

11.3 RTP-MIDI CONFIGURATION

In this panel, the user can setup RTP-MIDI local sessions, establish RTP-MIDI connections to remote RTP-MIDI devices and monitor the status of currently established RTP-MIDI connections.

CINARA

HOME CONFIGURATION STATUS LOGOUT

Network
RTP-MIDI
MIDI Basic Routing
MIDI Advanced Routing
Settings

Configuration » RTP MIDI

RTP-MIDI Session: **EndPoint0**

RTP-MIDI Session features

Enabled ☒

Name:

UDP Port:

Time Sync: ☐

Active Sensing:

Bandwidth Throttling

☒ None
☐ BitRate
☐ Window

BitRate:

Submit

Connect to

Remote RTP-MIDI Sessions:

Automatic connection ☐

Connect

Remote session participants

Name	State	Latency(ms)	Packet Losses

Autoconnect list

Bonjour Name

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11.3.1 RTP-MIDI LOCAL SESSION SETUP

Each RTP-MIDI local session can be setup independently by selecting them using the drop-down list at the top of the panel. The UI is able to change the following features attached to each RTP-MIDI session:

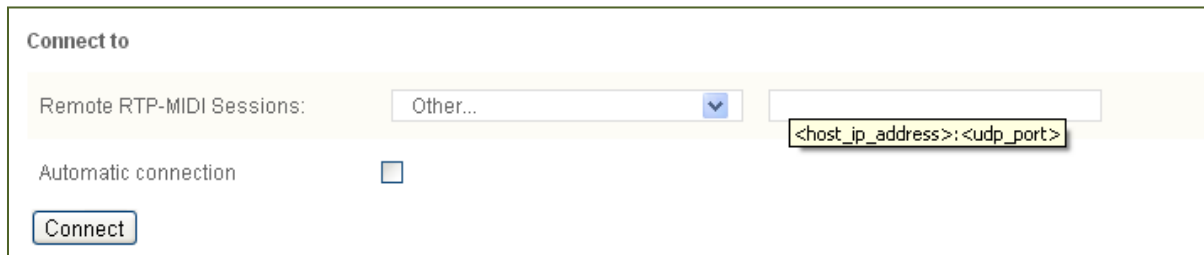
- Name: the RTP-MIDI session name. It is used to announce the RTP-MIDI session name to other RTP-MIDI nodes. The Bonjour name is the concatenation of the MidiGateway host name and the session name.
- UDP port: UDP port used for the RTP-MIDI session. It should be noticed that RTP-MIDI protocol uses two consecutive UDP ports for each opened RTP-MIDI session. The user must make sure not to select an UDP port already used by other services in the LAN.
- Time Sync: by enabling this feature, the MidiGateway uses RTP timestamps to schedule the MIDI messages on the output interfaces. This option is useful to achieve very accurate timing, in particular when playing MIDI files or sequences from a MIDI sequencer. However, it should be disabled when the CINARA MidiGateway is used for live execution.
- Active sensing: specify the periodicity in milliseconds of the transmission of MIDI active sensing messages over the RTP-MIDI links. Setting this field to 0 will disable MIDI active sensing message generation. Default value is fixed to 300ms by the MIDI specification. However, it is recommended to set a lower periodicity value to deal with potential network packet losses, especially when the CINARA MidiGateway is connected to devices on Wireless LAN networks (64ms is a well-adapted value for that usage).
- Bandwidth throttling: this parameter allows to choose the algorithm used to schedule outgoing MIDI messages. Three choices are possible:
 - None: no bandwidth limitation, messages are forwarded over an output interface at their incoming rate. This may results on packet overflow in the remote host.
 - BitRate: messages are forwarded on output interface but according to a specified maximum bit rate. If the incoming rate of messages is greater than the specified maximum rate supported by the output interface during a long period of time, then some MIDI messages can be dropped (dropped packets are reported as Tx Error in the “Status” panel). Setting a bit rate equal to the MIDI defined baud rate (31250 bps) is a good conservative choice.
 - Auto: an advanced control flow algorithm is used to optimize bandwidth between RTP-MIDI receiver and transmitter. This mode can only be used between two CINARA MidiGateways.

Name and UDP port can be changed only when the MIDI-RTP local session is disabled. A session that is currently in-use (i.e. has some Remote participants) cannot be disabled. Other features can be changed at any time.

11.3.2 RTP-MIDI CONNECTION ESTABLISHMENT

The CINARA MidiGateway can initiate a connection to a Remote session when a name of a remote RTP-MIDI session in the drop-down list is selected and the “Connect” button is pushed. The CINARA MidiGateway supports the Bonjour protocol and is able to maintain the list of all RTP-MIDI sessions announced by Bonjour-compatible devices on the LAN. Alternatively, the user may select the “Other...” choice in the drop-down list, and directly enters an IP and UDP port to establish a connection towards a device that does not support Bonjour.

By checking the “Automatic connection” option, the CINARA MidiGateway will try to open the RTP-MIDI connection toward the specified remote session immediately after power-up the unit. This option is particularly useful to automatically establish connections between the different RTP-MIDI devices.



11.3.3 RTP-MIDI CONNECTION MONITORING

The Remote session participants list enumerates all the RTP-MIDI hosts that are connected to the selected local RTP-MIDI session (i.e. session selected in the drop-down list on top of the panel). It reports the following information:

- Name of the remote RTP-MIDI session
- State of the connection (Connecting/Inviting/Connected)
- Latency: measured packet transfer delay between the transmitter and the receiver
- Packet losses: number of lost packets since the establishment of the connection.

A single local RTP-MIDI session may support at most 4 connections towards remote RTP-MIDI sessions. Each established connection can be closed independently by clicking on the “Disconnect” hyperlink.

The Autoconnect list reports all automatic connections that have been setup for the selected local RTP-MIDI session. An automatic connection can be removed by clicking on the “Remove” hyperlink.

All changes relative to the Autoconnect functions must be saved by using the “Save setting” function in the “setting” panel and (see section 11.5).

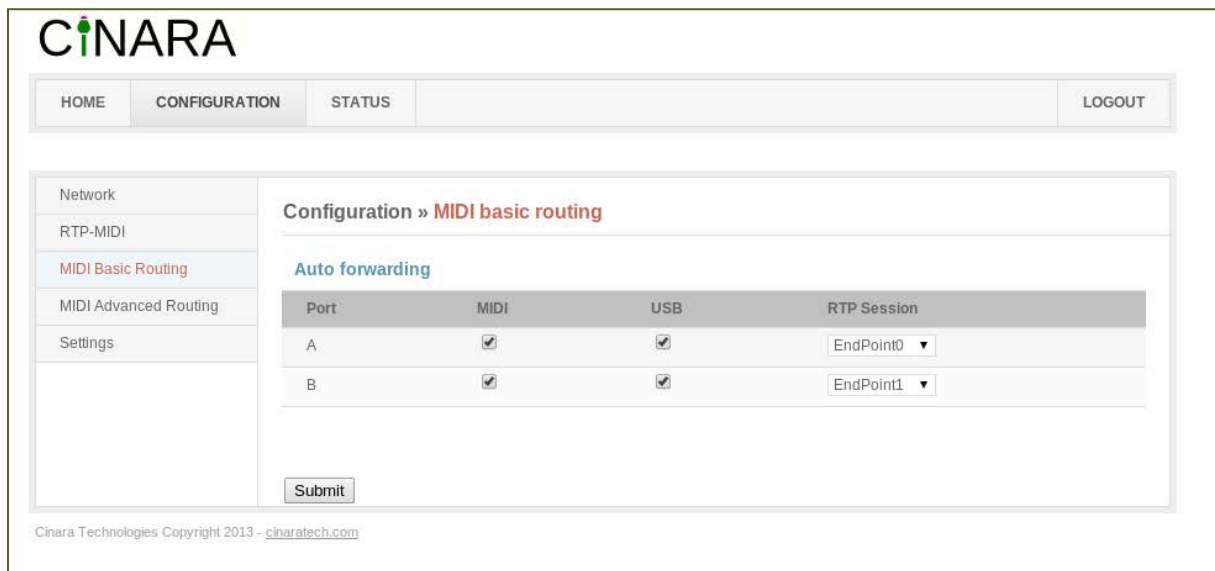
11.4 MIDI ROUTING

Two modes are available to configure the MIDI routing function. The basic mode provides fast and simple configuration, and is well adapted to simple interconnection topologies. The advanced mode may fit requirements of more demanding applications, and allows combination of all the routing features provided by the CINARA MidiGateway. Selection between basic and advanced routing mode is done by checking the “Enable advanced routing” option at the top of the “MIDI Advanced Routing” panel.

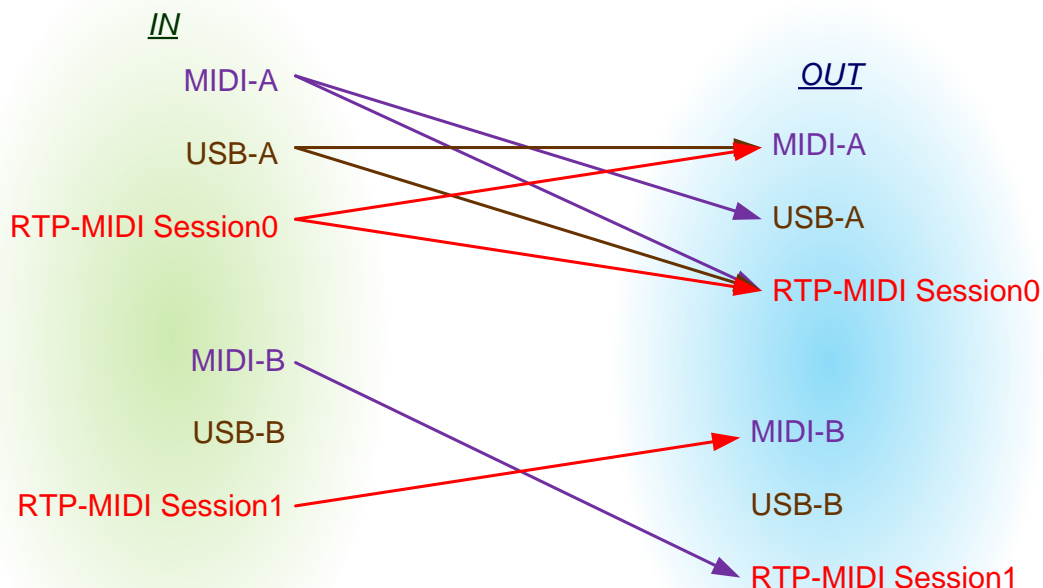
11.4.1 BASIC MODE

When the basic mode is selected, this panel is used to configure the auto-forwarding function between the different interfaces provided by the CINARA MidiGateway. According to the product version, up to 4 MIDI ports and USB-MIDI virtual ports can be supported. For MIDI and USB, they are named ports A, B, C, D. For a given port, the forwarding function for the corresponding interface (MIDI, USB) and one RTP-MIDI local session can be enabled. Then, all MIDI messages received on one of the

interfaces (MIDI, USB) and selected RTP-MIDI session are forwarded to the others whatever the MIDI channel is.



For instance, in the configuration presented in the previous screenshot, the MIDI messages received on the MIDI-IN A interface are forwarded to USB-A interface and RTP-MIDI Session0. Some similar rules are applied for MIDI messages coming on USB-A and RTP-MIDI Session0. They are respectively forwarded to the MIDI-OUT A interface plus RTP-MIDI Session0, and MIDI-OUT A plus USB-A interfaces. However, in this configuration, MIDI messages received on the MIDI-IN B interface are only forwarded to RTP-MIDI Session1.



When the advanced mode is in use, it is no longer possible to change any parameter in the basic routing panel. To go back to basic mode, the following procedure must be applied: first, uncheck the

“Enable advanced routing” function in the “MIDI Advanced Routing” panel, then submit the change in the same panel. Second, go back to the “MIDI Basic routing” panel and submit the new parameters. At this stage, all routing rules are reset according to the basic routing mode configuration.

CINARA

HOME CONFIGURATION STATUS LOGOUT

Network
RTP-Midi
Midi Basic Routing
Midi Advanced Routing
Settings

Configuration » **Midi basic routing**

Auto forwarding

Port	Midi	USB	RTP Session
A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	EndPoint0 ▾
B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	EndPoint1 ▾

Advanced routing is enabled!

Submit

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11.4.2 ADVANCED MODE

This panel allows to select between basic and advanced routing mode by checking/unchecking the corresponding option at the top of the panel. Whatever the mode is, it reports the list of all active routing rules. A MIDI routing rule includes the following parameters:

- Input MIDI interface: interface from which the MIDI messages are coming
- Output MIDI interface: interface on which the MIDI messages are transmitted
- MIDI input channels: list of MIDI channels for which the rule is applied
- MIDI output channels: list of MIDI output channels on which the MIDI input channels are mapped

In basic routing mode, rules are automatically created and managed by the system.

CINARA

HOME

CONFIGURATION

STATUS

LOGOUT

Network

RTP-MIDI

MIDI Basic Routing

MIDI Advanced Routing

Settings

Configuration » MIDI Advanced routing

☐ Enable advanced routing

Forwarding rules

Input Port	Output Port	Channels	System
MIDI-port A	USB-port A	1-16	<input checked="" type="checkbox"/>
MIDI-port A	RTP-EndPoint0	1-16	<input checked="" type="checkbox"/>
USB-port A	MIDI-port A	1-16	<input checked="" type="checkbox"/>
USB-port A	RTP-EndPoint0	1-16	<input checked="" type="checkbox"/>
RTP-EndPoint0	MIDI-port A	1-16	<input checked="" type="checkbox"/>
RTP-EndPoint0	USB-port A	1-16	<input checked="" type="checkbox"/>
MIDI-port B	USB-port B	1-16	<input checked="" type="checkbox"/>
MIDI-port B	RTP-EndPoint1	1-16	<input checked="" type="checkbox"/>
USB-port B	MIDI-port B	1-16	<input checked="" type="checkbox"/>
USB-port B	RTP-EndPoint1	1-16	<input checked="" type="checkbox"/>
RTP-EndPoint1	MIDI-port B	1-16	<input checked="" type="checkbox"/>
RTP-EndPoint1	USB-port B	1-16	<input checked="" type="checkbox"/>
MIDI-port A ▼	MIDI-port A ▼	1-16	<input checked="" type="checkbox"/>

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Rule addition

In advanced routing mode, the user may append some customized rules by completing the last line of the forwarding rules list, and validate with the “Add” button. Input and output MIDI interfaces can be selected by using the corresponding drop-down lists. The rule involves MIDI system channel if the System checkbox is validated. The involved input and output user channels (1 to 16) can be entered into the corresponding field. This allows selecting MIDI input channels and eventually switching them to different output MIDI channels. The following syntax is used:

{MIDI Input channel start of range}-{MIDI Input channel end of range} [>{MIDI Output channel start of range}] [:...]

Examples

- “1-3” selects channel 1 to 3 (no channel switching)
- “1;3” selects channel 1 and 3 (no channel switching)
- “1-3>2” selects channel 1,2 and 3 and maps them to channels 2,3 and 4.
- “1>2;3>1” selects channel 1 and 3 and respectively maps them to channels 2 and 1.

Rule deletion

A rule can be deleted by clicking on the corresponding “Delete” button on the right of the panel.

11.5 SETTINGS

The “Settings” panel allows to execute the following operations:

- Define and set an administrator login/password to protect the UI access. By enabling the administrator login/password, access to the UI of the CINARA MidiGateway is protected by a password-based authentication scheme. The newly defined authentication parameters are active only at next startup, so the user must save the configuration into flash memory after having modified authentication parameter values.
- Save all parameters modified in other panels to the flash memory embedded in the CINARA MidiGateway: modified parameters are active each time the CINARA MidiGateway is powered up.
- Reset parameters to the default factory setting. See section 10.2.2 for the list of default parameters.
- Reboot the system. Using this command, the user can remotely reboot the system without unplugging the power cable. Hardware interfaces are all reset and saved configuration is applied.

The screenshot displays the CINARA web interface. At the top, the CINARA logo is visible. Below it is a navigation bar with tabs: HOME, CONFIGURATION, STATUS, and LOGOUT. The CONFIGURATION tab is active. On the left side, there is a sidebar menu with options: Network, RTP-MIDI, MIDI Basic Routing, MIDI Advanced Routing, and Settings (which is highlighted). The main content area is titled 'Configuration » Settings'. It is divided into two sections: 'Administration' and 'Operations'. The 'Administration' section contains fields for 'Login' (with the value 'admin') and 'Password' (with masked characters '*****'). There is a checkbox labeled 'Enable administrator password' which is currently unchecked, and a 'Submit' button. The 'Operations' section contains three buttons: 'Save settings to embedded flash memory', 'Reset to factory settings', and 'Reboot system'. At the bottom left of the interface, a footer line reads 'Cinara Technologies Copyright 2013 - cinaratech.com'.

11.6 REAL-TIME STATUS

In this panel, the user may get real-time statistics about the usage of the network interfaces, MIDI ports, USB virtual ports and RTP-MIDI local sessions. For each port, the number of received and

transmitted MIDI messages is reported. Those values can be helpful to check the MIDI routing configuration.

CINARA

HOME CONFIGURATION STATUS LOGOUT

Global

Status » Global

Device

Product name: MidiGateway 2x2
 Serial number: 00390023-04003900-47040039
 Firmware: gw2_wd_0.53

LAN

Host Name: midigw
 MAC address: 84:5C:93:23:00:39
 IP address: 10.10.10.112
 Gateway IP address: 10.10.10.1

IFName	In(LowPty)Rx/Err	In(HighPty)Rx/Err	Out(Tx/Err)
Ethernet	435/0	69/0	196/0

MIDI Stats

Port Name	In	Out	Rx Error	Tx Error
MIDI-port A	0	0	0	0
MIDI-port B	0	0	0	0
USB-port A	0	0	0	0
USB-port B	0	0	0	0
RTP-EndPoint0	0	0	0	0
RTP-EndPoint1	0	0	0	0

Refresh

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This panel gives the following information:

- Product name
- Serial number of the unit
- Firmware version
- Current network name (aka host name) as defined in the network configuration panel
- Ethernet MAC address
- Currently used IP address and gateway address (either allocated by DHCP or statically assigned)

For each MIDI interfaces, the panel gives the following statistics:

- Number of received MIDI messages

- Number of transmitted MIDI messages
- Number of received errors (i.e. missed or corrupted MIDI messages)
- Number of transmitted errors (i.e. dropped MIDI messages because of overflowed internal transmission queue)

12 EXAMPLE SETUPS

13 TROUBLESHOOTING

13.1 NETWORK CONNECTION ISSUES

Issue #1: The CINARA MidiGateway UI cannot be reached.

- Check Ethernet cable on the CINARA MidiGateway.
- Check that the LAN LED status is green.
- Check IP configuration on the LAN.
- Connect to DHCP server and check if one address is allocated to the CINARA MidiGateway (default name is “midigw”).
- Try to connect to the CINARA MidiGateway UI, entering the URL into the web browser bar and using the allocated IP address get in the previous step.

Issue #2: RTP-MIDI driver on PC host cannot detect the CINARA MidiGateway RTP-MIDI sessions

- Check that Bonjour is installed as recommended by the RTP-MIDI driver setup.
- Connect to the UI to check that the CINARA MidiGateway is visible from the host
- Check that the MidiGateway sessions are enabled by using the UI.

Issue #3: RTP-MIDI driver on PC or MAC host cannot connect to one of the CINARA MidiGateway RTP-MIDI sessions

- Check firewall configuration in Windows.

Issue #4: Some latencies are noticeable when using Wi-Fi device.

Some Wi-Fi devices may use power saving algorithms that introduce delay due to the wake-up period of the peripheral. Try to set a low value (typically 64ms) for the MIDI Active sensing period (RTP-MIDI panel, see section 11.3.1) of the corresponding RTP-MIDI local session.

13.2 MIDI ISSUES

Issue #1: Some errors are reported in the Status panel, what does it mean?

The CINARA MidiGateway implements queues in order to forward MIDI messages from one interface to another. Even though they are large, overflow may occur if the MIDI message source sends large volumes of packets from a high-speed interface (e.g. Ethernet) towards a lower-speed interface (e.g. MIDI).

When it is used as an RTP-MIDI transmitter, the CINARA MidiGateway supports different control flow schemes to avoid MIDI message dropping in the receiver, while optimizing bandwidth. They can be selected in the RTP-MIDI panel as described in section 11.3.1.

14 SPECIFICATIONS

Environmental and Physical

Depth	104mm
Width	188mm
Height	43mm
Weight	440g
Operating Temperature	0°C~40°C (32 ~104 °F °F)
Storage Temperature	-40°C~70°C(-40°F~158°F)
Operating humidity	10% ~ 90% RH, Non-condensing
Storage	5% ~ 90% RH, Non-condensing

Construction

Housing	aluminium
---------	-----------

Connections and cabling type

DC power input/USB socket	USB Type-B female
USB cable	USB A to B cable (maximum 5m)
MIDI IN/OUT ports	DIN5 female connectors
MIDI cable	Shielded twisted pair cable (maximum 15m)
Network port	RJ45 female connector with LED

Network cable	10BASE-T: UTP category 3, 4, 5 cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m) 100BASE-TX: UTP category 5, 5e cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m)

General

Standards	IEEE 802.3, USB 1.1 Full-Speed device, MIDI
Protocols	TCP/IP, DHCP, ICMP, RTP-MIDI, HTTP, USB-MIDI, mDNS, DiffServ
Ports	One 10/100M Auto-Negotiation Ethernet port One USB 1.1. Full-Speed device port MidiGateway2x2: 2 MIDI-IN/2 MIDI-OUT ports MidiGateway4x4: 4 MIDI-IN/4 MIDI-OUT ports
LEDs	Power/LAN/MIDI ports
Safety & Emissions	EN 60950-1, EN 55022, EN 55024, EN 55103-1, EN 55103-2

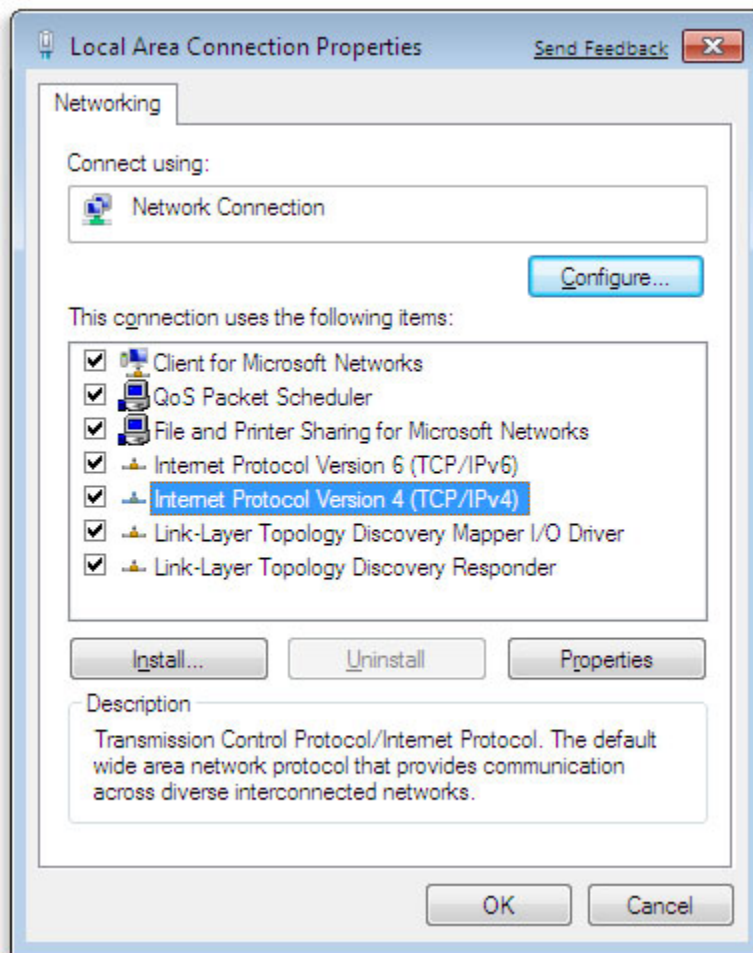
Electrical

AC Power	100-240V nominal, 50/60Hz
Power supply unit	USB DC5V 500mA
Typical power consumption	1.2W (240V, 50Hz)

15 ANNEX A : CHANGING TCP/IP SETTINGS

Those instructions apply to Microsoft Windows 7.

1. Open Network Connections by clicking the Start button, and then selecting Control Panel. Under Network and Sharing Center, click View network connections.
2. Right-click the connection that you want to change, and then select Properties. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.
3. Click the Networking tab. Under This connection uses the following items, click either Internet Protocol Version 4 (TCP/IPv4) or Internet Protocol Version 6 (TCP/IPv6), and then click Properties.
 - To specify IPv4 IP address settings, do one of the following:
 - To get IP settings automatically using DHCP, click Obtain an IP address automatically, and then click OK.



4. To specify an IP address, click Use the following IP address, and then, in the IP address, Subnet mask, and Default gateway boxes, type the IP address settings.

