



# *VoIP Intercom Module Configuration Guide*

NQ-GA10P, NQ-GA10PV

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# Configuring the Nyquist VoIP Intercom Module

Bogen's plenum-rated Nyquist Voice over Internet Protocol (VoIP) intercom modules transform any low-impedance analog speaker into a full-featured Power-over-Ethernet (PoE) IP speaker. The modules use the latest technology to deliver superior audio quality, making them perfect for IP paging and audio distribution. The built-in talkback capability allows these modules to be used in VoIP intercom applications.

These 10-watt single-channel intercom modules are available with (NQ-GA10PV) or without (NQ-GA10P) an HDMI video output, depending upon the application needs. They also offer a CAN bus interface to work with the NQ-E7020 Digital Call Switch and a Form-C relay for controlling third-party devices. Additionally, when paired with Bogen's ANS500M microphone module (optional), these intercom modules can be turned into an ambient noise sensor to help maintain paging and background music intelligibility in high-noise environments.

If an HDMI video device is attached, this device can display messages and images sent by a Nyquist server, as well as a digital or analog clock. These messages can be used for scheduled announcements, emergency instructions, automatically triggered messages, simple ad-hoc messages, or many other purposes. If a Nyquist server is not present, the device will display an analog clock and compatibility information about supported resolutions. For further information on displaying and scheduling messages, see the "*Managing GA10PV Display Messages*" section of the *Nyquist System Administrator Guide*.

The Nyquist server or system controller can automatically discover and configure the VoIP intercom module, but you can also manage the device, and manually configure some settings, through the VoIP Intercom Module's web-based user interface (web UI).

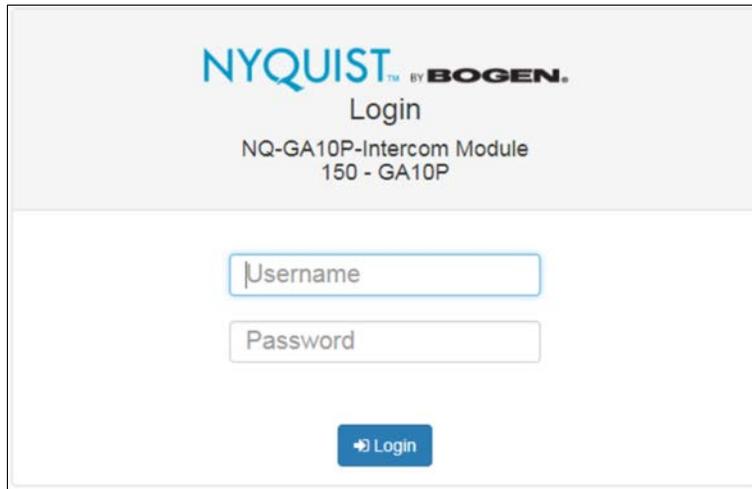
A short press of the appliance's **Reset** button reboots the device. If you press the **Reset** button for 10 seconds, the appliance returns to the factory default configuration settings. Returning to the default configuration settings does not change the appliance's firmware.

The following sections describe settings and configurations that can be applied to this device which are not controlled by the Nyquist server. For information about using Nyquist's automatic configuration process, refer to the *Nyquist System Administrator Guide*.

*To access the appliance's UI:*

*Note: Do not use third-party Chrome browser extensions with the Nyquist user interface.*

- 1 Access the appliance's web UI by doing one of the following:
  - a) On your web browser, enter the IP address for the appliance as the URL.
  - b) From the Nyquist web UI navigation bar, select **Stations**, select **Stations Status**, navigate to the device that you want to configure, and then select the **Link** icon.

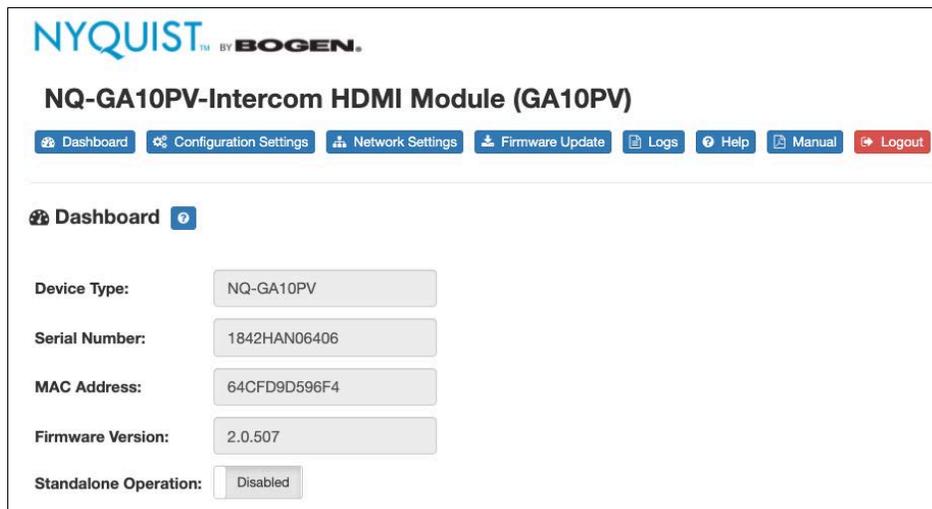


**Figure 1. Nyquist Appliance Login**

- 2 At the Nyquist Appliance - Login page, enter username and password, and then select **Login**.

The default username is **admin**; the default password is **bogen**.

The dashboard for the selected appliance appears.



**Figure 2. Intercom Module Dashboard**

# Using the Dashboard

The dashboard displays the following fields:

**Table 1. Appliance Dashboard Fields**

|                             |   |
|-----------------------------|---|
| <b>Device Type</b>          | Identifies the model of this device.  |
| <b>Serial Number</b>        | Identifies the serial number for the device.  |
| <b>MAC Address</b>          | Specifies the Media Access Control (MAC) address, which is a unique identifier assigned to network interfaces for communications on the physical network segment. |
| <b>Firmware Version</b>     | Provides the firmware version installed on the device.  |
| <b>Standalone Operation</b> | Enables or disables Standalone mode.  |

The following buttons are available at the top of all pages in the application.

**Table 2. Appliance Dashboard Buttons**

|                               |   |
|-------------------------------|---|
| <b>Dashboard</b>              | Displays the dashboard.   |
| <b>Configuration Settings</b> | Accesses the Configuration Settings page where you can view and set various options. If Standalone Operation is not enabled, you can also receive configuration settings from a Nyquist server. |
| <b>Network Settings</b>       | Accesses the Network Settings page where you can view and set network settings, such as the static IP address.  |
| <b>Firmware Update</b>        | Accesses the Firmware Update page where you can view the current Nyquist version, update firmware to a new version, restore the configuration to factory defaults, and reboot the appliance.    |
| <b>Logs</b>                   | Accesses log files, which record either events or messages that occur when software runs and are used when troubleshooting the appliance.   |
| <b>Help</b>                   | Accesses the appliance's online help.   |
| <b>Manual</b>                 | Displays this appliance's configuration guide.  |
| <b>Logout</b>                 | Logs out of the appliance's dashboard.  |

## Standalone Operation

This device can run in Standalone Operation mode, where it will not interact with a Nyquist server (e.g., E7000 or C4000). This means the device will not:

- Fetch device configuration from Nyquist server
- Register with Nyquist server (via SIP)
- Store backup information to Nyquist server
- Allow access to Nyquist server-based NTP

Standalone Operation mode is ideal for scenarios that do not require the full functionality provided by an integrated system, such as the Bogen C4000 or E7000 Series, but has the ability to provide paging, multi-channel audio processing, and a SIP endpoint for a PBX/VoIP phone system. It can be used to play music, audio, paging, and related functions.

## Updating Firmware

When you select **Firmware Update** from the appliance's web UI, the Firmware Update page appears. From this page you can determine which Nyquist firmware version the appliance is using and if an update is available. You can also load a firmware release, install the loaded firmware, restore the configuration to factory defaults, and reboot the appliance.

*Note:* A Nyquist appliance connected to the Nyquist network receives a configuration file from the Nyquist server that includes the latest firmware available from the server. If the firmware is different from the one installed on the appliance, an automatic firmware update occurs unless the **Firmware** parameter for the station is left blank. Refer to the *Nyquist System Administrator Guide* for more information.



**Figure 3. Firmware Update Page**

*To use the Firmware Update page:*

- 1 On the appliance web UI's main page, select **Firmware Update** to view or update the firmware version.
- 2 If the device is in Standalone mode, selecting the **Check for Updates** button checks the Bogen website for the latest firmware version available. If a version newer than the one currently installed is found, it is downloaded to the appliance.
- 3 If you already have a firmware file you would like to install to the appliance, select **Upload Firmware** to upload the firmware file from your computer to the appliance. A popup screen appears that allows you to select the file that you want to upload. You can navigate to the file's location. After you select the file, select **Upload**.
- 4 The page displays the uploaded firmware version ("New Nyquist Version") and an **Update Firmware** button appears. Select this button if you want to update the appliance's firmware to the uploaded version.
- 5 If you want to return your appliance to its original factory configuration, select **Restore Factory Settings**.
- 6 Select **Reboot Appliance** to restart your appliance.

**Table 3. Firmware Update settings**

|                                 |  |
|---------------------------------|--|
| <b>Current Nyquist Version</b>  | Shows the version of the appliance's currently installed firmware.   |
| <b>New Nyquist Version</b>      | Shows the version of the firmware that has been loaded, though not installed, onto the appliance.  |
| <b>Update Firmware</b>          | Available only when a new firmware version has been loaded onto the appliance (as specified in New Nyquist Version).<br><br>Installs the loaded firmware. A reboot may be required after installation.   |
| <b>Upload Firmware</b>          | Prompts the user to specify a firmware file, which will then be loaded (though not installed) onto the appliance.<br><br><i>Note:</i> To obtain the firmware file for a specific version, please contact Bogen Customer Service.                 |
| <b>Check for Updates</b>        | Available only when the appliance is configured for Standalone mode.<br><br>Checks the Bogen website for the latest firmware version available and, if it finds a version newer than what is currently installed, downloads it to the appliance. |
| <b>Restore Factory Settings</b> | Returns the appliance to its original factory configuration.<br><br><i>Note:</i> This does not install the original appliance firmware. The firmware will not be changed.  |
| <b>Reboot Appliance</b>         | Restarts the appliance.  |

## Network Settings Tab Parameters

Network settings can be configured dynamically by the Nyquist server or manually by using the appliance's web UI.

*To manually configure network settings:*

- 1 On the appliance web UI's main page, select **Network Settings**.

- 2 Select your desired network settings.
- 3 Select **Save**.

**Network Settings** ?

IP Address: 172.31.19.220

Netmask: 255.255.255.0

Gateway: 172.31.19.254

VLAN ID: 9

VLAN Priority: 0 - Best Effort ▾

NTP Server: 172.31.19.203

TFTP Server: 172.31.19.203

TFTP Server from DHCP: No ▾

DHCP Enabled: Yes ▾

Reboot Appliance: No ▾

Save

**Figure 4. Network Settings**

Network settings are described in the following table:

**Table 4. Network Settings**

|                      |   |
|----------------------|---|
| <b>IP Address</b>    | Identifies the IP address assigned to the appliance.  |
| <b>Netmask</b>       | Identifies the subnetwork subdivision of an IP network.   |
| <b>Gateway</b>       | Identifies the address, or route, for the default gateway.  |
| <b>VLAN ID</b>       | Identifies the Virtual Local Area Network (VLAN) for this appliance. Values range from 0 to 4094. |
| <b>VLAN Priority</b> | Identifies the priority of the network traffic on the VLAN. Priority can range from 0 through 7.  |

**Table 4. Network Settings (Continued)**

|                              |   |
|------------------------------|---|
| <b>NTP Server</b>            | <p>Identifies the IP address or the domain name of the Network Time Protocol (NTP) Server.</p> <p><i>Note:</i> This field is only editable when Standalone Operation is enabled.</p>  |
| <b>TFTP Server</b>           | <p>Identifies the host name or IP address of the Trivial File Transfer Protocol (TFTP) server.</p> <p>The specified TFTP server can be used to automatically set this device's <b>Configuration</b> settings via the <b>Get Configuration from Server</b> button.</p> <p>If <b>TFTP Server from DHCP</b> (see below) is set to "Yes", this value will be auto-configured via DHCP option 66, assuming the DHCP server has been configured to provide option 66. For details, see the documentation for your DHCP server.</p> <p><i>Note:</i> A TFTP server runs on the Nyquist server on port 69 (the standard TFTP port) and the optional Nyquist DHCP service automatically provides this TFTP address via option 66.</p> <p><i>Note:</i> If this value is unspecified, the <b>TFTP Server from DHCP</b> will automatically be set to "Yes", this field will become read-only, and DHCP will be used to configure this setting. To change this value, the <b>TFTP Server from DHCP</b> setting must be set to No, which makes the field editable.</p> <p><i>Note:</i> This setting is not available when Standalone Operation is enabled.</p> |
| <b>TFTP Server from DHCP</b> | <p>"Yes" means the device will use the DHCP option 66 value to retrieve an address for the TFTP Server from DHCP.</p> <p>"No" means the device will ignore the DHCP option 66 value and use the manually configured value of the TFTP Server (see above).</p> <p><i>Note:</i> This setting is not available when Standalone Operation is enabled.</p>   |

**Table 4. Network Settings (Continued)**

|                         |  |
|-------------------------|--|
| <b>DHCP Enabled</b>     | Indicates if the device is enabled to use DHCP to retrieve its IP configuration. |
| <b>Reboot Appliance</b> | Indicates that this appliance should reboot when the Save button is clicked.     |

## Configuration Settings Tab Parameters

The easiest way to configure Nyquist appliances is to obtain configuration settings from the Nyquist server by selecting **Get Configuration From Server**. However, you can manually configure an appliance through the appliance's Web UI when Standalone Operation is enabled (see "*Standalone Operation Configuration Settings*" on page 11).

To view or modify the Nyquist appliance configuration:

- 1 On the appliance Web UI's main page, select **Configuration Settings**.
- 2 View the settings as described in Table 5 on page 9 for normal configuration, or modify the settings as described in "*Standalone Operation Configuration Settings*" on page 11 for Standalone Operation configuration.
- 3 If changes were made (Standalone Operation only), click the **Save Configuration Settings** and/or **Save Multicast Addresses** buttons to save your changes.

The following table describes the **Configuration Settings** tab settings when Standalone Operation is *not* enabled for this device:

**Table 5. Configuration Settings (Standalone disabled)**

|                                      |   |
|--------------------------------------|---|
| <b>Get Configuration from Server</b> | Retrieves configuration settings (i.e., web username, server, and local port) from the TFTP server specified in the Network Settings (see Table 1 on page 1). |
| <b>Web Username</b>                  | Displays the username of the current user.  |
| <b>Emergency-All-Call</b>            | Identifies the IP address, port number, cut level (volume), and station list used for emergency all-call pages.   |
| <b>All-Call</b>                      | Identifies the IP address, port number, cut level (volume), and station list used for all-call pages.   |

**Table 5. Configuration Settings (Standalone disabled) (Continued)**

|                           |  |
|---------------------------|--|
| <b>Audio Distribution</b> | Identifies the IP address, port number, cut level (volume), and station list used for audio distribution.                                |
| <b>Multicast #</b>        | Identifies the IP address, port number, cut level (volume), and station list used for the multicast audio stream of one (or more) zones. |

The **Configuration Settings** tab also displays the following information for each **Device Station** attached to the amplifier:

|                    |  |
|--------------------|--|
| <b>Port Number</b> | Shows the port number of the appliance.  |
| <b>Port Type</b>   | Shows the device type to which the port connects.  |
| <b>Account ID</b>  | Shows the SIP account (IP address) associated with the device preceded by the extension of the device associated with this port. |
| <b>Local Port</b>  | Shows the port used for SIP.   |
| <b>Username</b>    | Shows the username or extension for the station associated with the port.  |

# Standalone Operation Configuration Settings

**Configuration Settings**

Device Type: NQ-GA10PV-Intercom HDMI Module

Device Name: NQ-GA10PV

Web Username: admin

Web Password: [Empty]

Web Confirm Password: [Empty]

Time Zone: New York

Output Power (Watts): 1/2

Enable SIP Calls: Yes

External Relay Trigger: Disabled

SIP Server Address: 192.168.5.99

SIP Network Port: 5060

SIP Codecs: G722 | ulaw | alaw

SIP Extension: 501

SIP Username: 501

SIP Password: bogen

Talkback Gain: 0 dB

Intercom Cut Level: -20 dB

Save Configuration Settings

**Multicast Addresses**

Sorting: Disabled

|   | Multicast IP Address | Multicast Port Number | Codec | Channels | Cut Level (dB) |
|---|----------------------|-----------------------|-------|----------|----------------|
| + | 239.1.1.1            | 6000                  | G722  | 1        | -20            |

Note: The following codecs are supported for multicast: G711 u-law, G711 a-law, G722, and OPUS.

Save Multicast Addresses

**Figure 5. Appliance Configuration Settings (Standalone enabled)**

The following table describes the **Configuration Settings** tab settings when Standalone Operation is enabled for this device:

**Table 6. Configuration Settings (Standalone enabled)**

|                             |  |
|-----------------------------|--|
| <b>Device Type</b>          | Displays the type of this device.                        |
| <b>Device Name</b>          | Provides a name for this device.                         |
| <b>Web Username</b>         | Specifies a web username for this appliance.             |
| <b>Web Password</b>         | Specifies a web password for logging into the appliance. |
| <b>Web Confirm Password</b> | Re-enter the password used to log into the appliance.    |
| <b>Time Zone</b>            | Specifies the time zone in which the device resides.     |

**Table 6. Configuration Settings (Standalone enabled)**

|   |   |
|---|---|
| <b>Enable SIP Calls</b>                 | Enables this device to receive one-way SIP calls, wherein only the caller can be heard (such as announcements). If enabled, a number of SIP-related configuration settings are displayed.   |
| <b>SIP Server Address<sup>a</sup></b>   | Specifies the IP address of the SIP Registration Server with which the device will register.  |
| <b>SIP Network Port<sup>a</sup></b>     | Specifies the IP port on which to communicate with the SIP Registration Server (typically 5060).  |
| <b>SIP Codecs<sup>a</sup></b>           | Displays a read-only list of codecs allowed on SIP sessions.  |
| <b>SIP Extension<sup>a</sup></b>        | Specifies the SIP extension for this device.<br><br>The extension, along with the IP address, is used to specify the URI used to place a SIP call to this extension:<br><br><code>sip:&lt;extension&gt;@&lt;local_ip_address&gt;</code> |
| <b>SIP Username<sup>a</sup></b>         | Specifies the SIP username used to register with the SIP server.  |
| <b>SIP Password<sup>a</sup></b>         | Specifies the SIP registration password used to register with the SIP server.   |
| <b>Output Power (Watts)<sup>a</sup></b> | Specifies the output power for the amplifier in Watts.<br><br>Valid values are: 1/8, 1/4, 1/2, 1, 2, and 4.   |
| <b>Intercom Cut Level<sup>a</sup></b>   | Cut level for intercom calls.<br><br>This can be a value from -42 to 0 dB.  |
| <b>Talkback Gain<sup>a</sup></b>        | Input gain applied to talkback for intercom calls.<br><br>This can be a value from -12 to 20 dB.  |

a. Available only when Enable SIP Calls has a value of Yes.

The following parameters appear for each Multicast Address configured for this device.

|                              |   |
|------------------------------|---|
| <b>Multicast IP Address</b>  | Specifies the multicast IP address on which to receive audio streams. |
| <b>Multicast Port Number</b> | Specifies the multicast port on which to receive audio streams.       |

**Codec**

Specifies the codec to be used when decoding audio.  
Select one of the following values:

- G711 u-law
  - Intercom call quality
  - A narrowband audio codec that provides toll-quality audio at 64 kbps. The u-law version is primarily used in North America and Japan.
- G711 a-law
  - Intercom call quality
  - A narrowband audio codec that provides toll-quality audio at 64 kbps. The a-law version is primarily used in most countries outside of North America and Japan.
- G722
  - Tone and paging quality
  - A wideband audio codec operating at 48, 56, and 64 kbps.
- OPUS
  - Music quality
  - An audio codec format designed for speech and general audio, supporting low latency, constant and variable bitrate encoding (6 to 510 kbps), and five sampling rates (from 8 to 48 kHz).

**Channels**

Channel(s) on which the audio streams will be output.

One or more of the following values:

- Speaker

**Cut Level (dB)**

Specifies the cut level for the audio stream.

This can be a value from -70 to 0 dB.

The default value is -20 dB.

*Note:* To modify, click on the value, adjust the slider on the popup using the cursor keys or mouse, and click the check box button.

*Note:* A maximum of 24 multicast entries is supported.

Multicast Addresses should be ordered by priority, highest priority first. If multiple streams are active on the same channel simultaneously, the one with the highest priority will be played. Set the **Sorting** switch to Enabled and drag entries using the 4-way arrow symbols to drag entries up and down to rearrange the priorities.

## Accessing Log Files

A log file records events and messages that occur when software runs, to be used when troubleshooting the appliance. From the appliance's web-based UI, log files can be viewed directly or exported via download to your PC, Mac, or Android device, where they can be copied to removable media or attached to an email for technical support.

*To view a log file:*

- 1 On the appliance Web UI's main page, select **Logs**.
- 2 From the drop-down menu, select the log that you want to view.  
Multiple versions of the same log, and zipped copies of the log, may be available.
- 3 To export the file, select **Export**.  
A link to a .txt file appears in the browser's lower left corner.



**Figure 6. Logs**

Available logs are described in the following table. If a log file is empty, however, it will not appear in the drop-down list of available logs.

**Table 7. Logs**

| Log        | Description  |
|------------|--|
| ampws.log  | Contains information about protection status and logs protection events with temperature information at the time of event. |
| auth.log   | Contains system authorization information, including user logins and authentication methods that were used.                |
| btmtp      | Contains information about failed login attempts.  |
| daemon.log | Contains information logged by the various background daemons that run on the system.                                      |
| debug      | Contains errors and debug information.   |
| dpkg.log   | Contains information that is logged when a package is installed or removed using dpkg command.                             |
| faillog    | Contains user failed login attempts.   |

**Table 7. Logs (Continued)**

| <b>Log</b>   | <b>Description</b>   |
|--------------|--|
| kern.log     | Contains information logged by the kernel and recent login information for all users.  |
| lastlog      | Contains information on the last login of each user.   |
| messages     | Contains messages generated by Nyquist.  |
| php5-fpm.log | Contains errors generated by the PHP script.   |
| syslog       | Contains list of errors that occur when the server is running and server start and stop records  |
| user.log     | Contains information about all user level logs.  |
| wtmp         | Contains historical record of users logins at which terminals, logouts, system events, and current status of the system, and system boot time. |