


GREEN

GO

We Need To Talk!



Firmware Manual
V4.0

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Green-GO engine description

The Green-GO system is similar to a large matrix intercom system, but with its processing power spread throughout the system. All channel management and audio handling is performed by each device, using the Green-GO engine. Each engine has its own 32 work channels, plus program audio, announcement and emergency channels. Each of these channels can be programmed to work with any of the 250 Groups (or party lines) or one of up to 3000 users. One main feature of the system is that no central unit is required, meaning no single point of failure. For devices to work together, information needs to be shared. This is achieved by creating a single configuration file, which is stored on every device on the network. This file can be created and uploaded via the free configuration software. If a unit does not contain the correct configuration file, it can be uploaded from the software or directly cloned from another device, without the use of a computer.

Changes from Version 3 to Version 4

The firmware and software for Green-GO intercoms has moved from version 3 to version 4. Some major changes have been made to the internal design and network handling, to enable new features like wireless and remote connections. The main innovative features, such as the 250 groups (party lines), 3000 users and 32 channels per user, have not changed. A central unit is still not required.

All devices on a network must be running on either firmware V3 or V4.

What has changed?

The network data has changed from a Layer2 protocol to Layer3 IP multicast, enabling easier handling of Green-GO data on shared (audio/lighting/office) and corporate IT-managed networks.

Internal engine structure changes allow for the use of remote users. Any Green-GO user device, such as a beltpack or multichannel station, can be used anywhere in the world by plugging into an internet enabled network. By making a connection to a Green-GO bridge or bridge device in another location, it can become a full member of that Green-GO network and have access to all feature and channels, or Green-Go network.



Devices can be connected across the internet using two Green-GO bridge devices to connect selected groups. Fixed IP public addresses are required for use over the public internet.

Unified setup menu structures give users a clear experience, as the setup menu is structured the same on all devices. Features not supported by a device will not display in that device's menu. Some devices with direct access to a feature will not display that feature in the menu.

Chapter 1 - Software

Unified Setup Menus

1.0 - Program Audio

- Src > Select any of the groups to be the source for the program Audio. If multiple sources are active on the Group, all audio will be mixed into the program audio.
- Vol > Set the normal volume of the program audio between +12dB and Mute.
- Dim > Set the level of the dimming feature for the program audio. If any communication starts on any of the channels, or direct, then the program audio can dim or mute its audio. It can be set to 0dB (no change), -6/-12/-24dB dim or Mute.

1.1 - Channel Assignment

When a user is selected; the default channel assignments are loaded from the configuration file. It is still possible to change these settings locally via the Channel Assignment menu. Please note that this does not change the configuration file. In the Channel Assignment menu, all channels are listed with the assigned Group or User. Select a channel to start changing any setting for that channel. Channel options are:

- ID > Select a Group (aka party line) to become part of that channel, or select a User to enable a private conversation. Selecting none, instead of a Group or User, will disable the channel.
- Set Label/Change Label > In some situations it is useful to have a different name displayed, instead of the real Group or User name. This can be set here. An example use could be that a Camera Group is created, but for clarity



the channel is labeled “Director” for the camera operators. When a different label is set to a channel, it will be indicated by a ‘ mark before the name.

- Talk > Set the talk mode for the channel. This can be set to Talk/Momentary, when a short press will Latch/Unlatch the talk, and a long press will act as a push to talk. In Latch Mode, a press will always act as latch-on/latch-off. Momentary acts as Push to Talk. The final option is Disabled, and this can be set if the device should not be allowed to talk to the Group or User assigned to that channel.

- Listen On / Off > Set whether Listen is on or off for the channel. This can be used when the Listen on/off function is not available on the Front-Panel (for example on audio interfaces).

- Volume > Set the Channel volume to be used if no Front-Panel access to the function is available.

- Priority > Set the channel priority to Normal, Low or High. If a channel with a higher priority becomes active, then the audio can be dimmed or muted for lower priority channels. The Dim is set in the Option menu under Priority Dim.

- Call Send > Sets whether or not the device is allowed to send a Call to the Group or User assigned to the channel. This can be set to either Enable or Disable.

- Call Received > Sets whether a Call or Alert signal from the User or Group assigned to the channel is received (Enabled) or ignored (Disabled).

- Bandwidth > By default, Green-GO uses a default 16khz sampling and 16bit audio communication. This gives a very low network latency of only 12ms (comparable to audio traveling through 4 meters of air) and also only requires a very low network bandwidth (0.4% on 100Mbit). This allows a frequency range of up to around 7khz, perfect for ordinary voice communication. For some situations, like an announcement that goes over the main PA system, a larger audio bandwidth may be required. In these cases, the channel can be switched to Enhanced Bandwidth. The audio bandwidth now increases to around 15khz, and the network bandwidth used also doubles when talking on that channel. The setting is only used when sending audio to a Group or User, and has no influence when on listen.



1.2 - Audio Setting

- Load Profile > Select one of the Audio profiles stored in the configuration file.
- Volume > Set the main output volume if not controllable from the main user interface.
- SideT > Set the side-tone between 0dB (full) and Mute (off).
- Auto > Automatic gain control can be switched between Off, Slow, Medium and Fast.
- Gain / MaxG > The Gain (or Max Gain when auto gain is enabled) range depends on the input type. Setting the Gain correctly is the most important step when using the system, as if the audio level is not set correctly it will result in low signal levels or high noise floors.
- (Garbage in > Garbage out). There is a level indicator on the right side of this menu showing the input level after the gain. This level should be just below the line (the orange section on colour displays or dotted section on monochrome screens).
- Thld > Noise-gate threshold can be set to off, or between -45dB and -20dB. Please note, that when switched to off, the device will always send audio onto the network when talk is enabled. If the threshold is set too high, then this will result in intermittent audio. When the gain is set correctly, a value of -35dB should be a good starting position.
- Hold > The noise gate hold time can be set to Fast (200ms), Medium(1s), Long(2.7s) or Extra Long (4s).
- Bias > Sets the bias voltage as On or Off for use with headsets.
- In > Selects the audio source. This depends on the device, and can be set to Headsets, Frontpanel Mic or Line Inputs. An added feature is to select a fixed tone generator, which can be used for system troubleshooting.
- Spkr Dim (MultiChannelDesk): If speaker dim is enabled, the front-panel speaker will dim when Talk is enabled.
- Mic Pwr (MultiChannelDesk): If the front-panel mic is selected as the input, then you can enable phantom power for it. The voltage of this depends on the unit.



1.3 - Options Menu

- Active Time > Set the time that a channel is active after the last audio activity. This time value is used for front-panel indication, GPI/O handling and answer functions.
- Isolate > Turn the Isolate function On or Off. On some devices, like the MultiChannelDesk, this is directly accessible on the front panel. When in Isolate mode, all channels will be muted except those channels with talk enabled. If no talk is enabled, then channels remain as normal.
- Buzzer > If a device has a buzzer built in, it can be switched on or off. The buzzer will sound when an alert is received on any channel with Call Receive enabled. The alert signal is activated when the call signal is received for more than 2 seconds.
- Tone > Sets the volume of signaling tones generated. Signal tones may be generated because of alert signals, cueing indicators, or because of connection issues (for the wireless system).
- Listen On Talk > If enabled, a muted channel will switch on the listen if talk on that channel is enabled.
- Answer > Enables or Disables the answer function. The answer function is activated by pulling up the rotary encoder On the BPX/WBPX Beltpack, or by pushing the rotary encoder on the Original Beltpack.
- Pop-Up > The Popup function shows information about channels that are not directly accessible. It can be selected between No Popups, Only on Cue, Cue and Direct, or All (Cue/Direct/Extended channels).
- Priority Dim > Set the channel priority to Normal, Low or High. If a channel with a higher priority becomes active, then the audio can be dimmed or muted for lower priority channels. The Dim is set in the Option menu under Priority Dim.
- Direct Volume > Set the volume for audio received from outside of the 32 channels and program audio, meaning it is using the direct channel. This level therefore sets the volume for Private talks where the source user is not on one of the 32 channels. The volume of this temporary channel can be set between +12dB and Mute.
- Direct Priority > Sets the channel priority for the temporary direct channels, as described previously.



- Auto Talk > Sets which channel will be enabled for talk if talk is enabled on no other channels. This function is useful for 2-wire and 4-wire interfaces, but can also be used with other devices.

- Cue Mode > Sets how the operator will need to react to an incoming cue signal. Normal will require actual feedback from the user after receiving an attention message. Auto will send a delivery acknowledgement directly back to the Cue sender, giving confirmation that the device has received the signal.

On Ignore, the cueing will be completely ignored and no indication will be given on the receiving unit, with the sender receiving no confirmation.

- Output Cue Time > This is available on devices with the capability of sending Cue information, such as the Multichannel desks. The Output Cue Time is the time a GO cue will remain active before it is automatically switched off. This time can be set in intervals between off (will not automatically switch off) and 60 seconds.

1.4 - Line In / Out

This menu controls the setup of the Line In and Out functions of the unit. The Line input on the unit can be used to send audio into the Green-GO system on any of the available Groups, up to 250. In addition it can be used as a source for the intercom, but this is setup in the Audio Settings menu (both can work in parallel). A function for the Line Input could be to inject Program audio into the system. The Line out can be set to output any audio from an assigned Group. A function of this could be for Announcement output. On the Multichannel desk, it is also possible to mix the Main intercom audio into the Line Out by setting the Main Mix Output.

Line In

- Group > Assign a Group that the audio should be sent to.

- Gain Mode > Set the automatic gain to Off, Slow, Medium or Fast.

- Gain or Max Gain > Set the gain for the Line Input. The level indicator on the right hand side of the display shows the input level after the gain. The level should be just below the line (the orange section on colour displays or dotted section on monochrome screens).

- Threshold > Noise-gate threshold can be set to off, or between -45dB and -20dB. Please note, that when switched to off, the device will always send audio onto the network when talk is enabled. If the threshold is set too high,



then this will result in intermittent audio. When the gain is set correctly, a value of -35dB should be a good starting position.

- Bandwidth > Can be set to Normal (7khz audio) or Enhanced (15khz audio).
Line Out

- Group > Assign a Group to receive audio for this output. If multiple sources send audio, then the audio will be mixed.

- Output > Set the output volume.

- Loopback > If needed, the audio from the Line In can be mixed in to the audio on the Line Out.

1.5 - GP Input / Output

In the GPIO (General Purpose Input Output) menu, each GPIO Input and Output can be assigned a function. Each Input is labeled as "In 1": (function and function option) and each Output is labeled "Out 1": (function and function option). To change the settings for an Input or Output, go to the desired line and select it. It will then display the current function, function option, and if the port operates in a normally closed or normally open manner.

Input Function Option

Talk	Answer or Channel selection
Call	Channel Selection
Cue	Acknowledge / Send Attention / Send Hold / Send GO

Output Function Option

Active	Any channel or Channel selection
Call	Any channel or Channel selection
Cue receive	Selection on Cue states

1.6 - Set User

As each device on the Green-GO system internally holds a configuration file containing all information of the system, each device can be set to any user and load that user's default settings. This is done in the Set User menu. Multiple devices can be set to the same user without any problems, giving the option for an individual to have more than one unit, for example both a



multichannel desk with many direct channels and a wireless beltpack, with any private messages arriving on both devices.

When entering the Set User menu, all available users will be shown in a list. To protect certain users from being selected, a pin-code can be set in the configuration software for those users. When selecting these users, this pin-code is required for access. After a user is selected, all settings for that user will be loaded from the configuration file, including channels and program audio settings, access level profile and, if programmed, audio profile and user interface settings.

1.7 - Connection

The connection menu sets the way the unit connects into the Green-GO system. Local connection mode is the connection method used when the devices are directly on a network with other Green-GO devices. Remote connection is used if a device is operating in a remote location and is connecting to the Green-GO network through a Green-GO bridge or bridgeX interface. For the Remote connection, some extra settings are needed:

Password	This is an 8-character password that should match the settings in the bridge. The <i>generate password</i> option can be used to create a password.
Remote Port	The UDP port number that the remote bridge is programmed to.
Remote IP	The IP address for the bridge.
Backup	Switches the backup option on or off.
SndBuf	Size of the send buffer.
RecvBuf	Size of the receive buffer.

Changing size of Send and Receive buffers can help with latency issues on remote connection.

1.8 - Clone Config

An advantage of the Green-GO system having no central processor or unit, is that there is no single point of failure. For all devices to work together as one system, they all require the same configuration file. This file can be setup and uploaded via the free Green-GO configuration software. If a device does not



contain the same configuration file as others on the same network, it cannot communicate. To become part of the same system, it will need the configuration file, which can be uploaded from the software, or directly copied from another Green-GO device through the Clone Config menu.

When entering the clone config menu, the device will search for configurations on the network that differ from its current configuration. Up to 4 configurations can be displayed. Selecting a configuration will then copy that configuration from the network. After the clone is completed, the pack becomes part of the network. The next step would then be to select a user.

If a unit contains a different config from all other units on the network then all four LED's will flash Blue. When entering the clone config menu, the device will search for configurations on the network other than its current. Up to 4 configurations can be shown. Select the configuration and it will be copied from the network. After the clone is done, the pack becomes part of the network. Next step would be to select a user. At the end of the list in the clone configuration menu it gives the option of loading in a Factory Default configuration. This configuration has about 60 users, so even if no suitable configuration is available and no computer to program, this system can still be setup to function. Just load the Factory Default configuration, select users and make any channel modification as required. The system will always be available for operation.

1.9 - Device Options

The options available in this menu are completely dependent on the device used. This includes options such as backlight and led level settings, and function of the side encoders.

1.10 - Network

As Green-GO works directly on Ethernet, some IP settings are required. By default, the units will work with Dynamic IP addressing enabled. The units will look for a DHCP server on the network to obtain an IP address. If no DHCP server is found, the IP address will be assigned automatically by using the LLC standard, and the device will get a 169.254.x.x address. If a static IP address is preferred, then this can also be set in this menu, by switching off Dynamic and entering the IP address / Netmask and Gateway (gateway only needed if remote connections are used). Green-GO communication will still work even if IP addressing is setup incorrectly, however issues will arise when trying to connect with the computer software.



A bridge unit has 2 Network connection options, Internal and External. Internal settings are used for the network connected to the Green-GO system. The

External should be used to setup a secondary network, if in use. This could be an office network or public internet connection.

1.11 - Info

The top line of the Info menu will show the name programmed into the device from the configuration or connection software. This name is completely independent from the User selected, and can indicate, for example, the location "dressing room 1". The next line indicates if any protection is enabled on the configuration, and this can be used in protected configurations and systems with the 256-bit AES audio encryption enabled.

Line 3 > Serial number

Line 4 > Current firmware

Line 5 > IP address of the unit

Line 6 > Reset All Settings. Use this function to clear all settings in the unit except the configuration file.

1.12 - 4-Wire Port function

A 4-wire port can act in both User mode (with all 32 channels, program audio and GPIO) or in General purpose Line In/Out. To select this option, select either User, or Line In/Out Mode, in the Set User / Mode menu (see DEVICES section below).

1.13 - 2-Wire Port function

(Audio Line Setup, also see DEVICES section below)

- Mode > Selects operation mode / Line Level. The line level depends on the compatibility of the connected analog party-line system.

- Run Auto Null > After selecting the desired operational line level, an auto-nulling procedure is needed to setup the system. Before running the Auto-Null, the complete Party-Line system needs to be connected, with all microphones on the party-line system switched off. Once ready, run the auto null procedure to setup the selected line-level and remove the audio return.



- Callsignal > Sending and receiving Call signals to and from the Party-Line is supported. The types of signaling supported are both DC (switching a hard voltage onto the audio line) and AC (sending a 20khz tone). If the 2-wire interface receives a Remote Mic mute command from a multichannel desk, it can send a 24khz AC signal onto the analog party-line, as some analog party-line systems support this feature.
- Threshold > The Noise-gate can be set, but on a 2-wire port it cannot be disabled, as this would generate issues with echo and the internal DSP not functioning correctly. If an echo can be heard on the Green-GO system, then it would in most cases indicate an error in the 2-wire/party-line setup.
- To 2-wire > If the audio on the Partyline received from Green-GO is too low or high, then it can be changed with this value.
- From 2-wire > If the audio from the Partyline to Green-GO is too low or high, then it can be changed with this value.
- Null On Boot > enable or disable the Auto nulling procedure when the device is booted.

1.14 - Bridge(X) function and setup

A bridge has 2 or 4 (BridgeX) connection ports, not to be confused with Ethernet ports, able to support 2 or 4 active connections. Each connection can be setup as Group Bridge or Remote User access.

In Group Bridge, a Group from the Green-GO configuration is selected. All audio on this group will be sent to its counterpart bridge, and all audio received from the other bridge will be sent to the Group on the Green-GO system. The two bridges create one large group between 2 sites. If 3 sites need to be connected, then each site will need 2 connections (one for each additional site).

Users can also use advanced mode, which removes the loop back protection within the bridge. In this mode, you can use a central site, with all remote sites connecting to it. Having 3 remote sites would require a single connection from two of the sites back to the third site, and this site would provide the loop back to all the other sites.

On one site, the connection should be set as Active, and the other set to Passive. A Passive connection will wait for a connection initiated from an Active connection.



- Password > To be setup the same on both ends. Generate Password can be used to create a non-guessable password.
- Local Port (on Passive Connection) > UDP port to which the Active connection is to connect.
- Remote Port > UDP port to which the Passive connection should connect to
- Remote IP > IP address of the bridge unit with the Passive connection
- Backup > Switches the backup option On or Off. This enables switching to a second bridge to be used in case of failure of the first bridge, by automatically selecting an IP address 'one address higher'. This works on a VPN or local network, but it will not work using a public IP address.
- SndBuf > Size of the send buffer
- RecvBuf > Size of the receive buffer

Changing the size of Send and Receive buffers can help with latency issues on connection.

User Access mode allows for any Green-GO device to remotely connect into this connection and become a full member of the Green-GO system. It is possible to set the User selection to be open for the unit, or fixed by setting the User option. In the Connection menu, the following settings are available:

- Password > To be setup the same on both ends. Generate Password can be used to create a non guessable password.
- Local Port > UDP port to which the Active connection is to connect.
- Backup > Switches the backup option On or Off. This enables switching to a second bridge to be used in case of failure of the first bridge, by automatically selecting an IP address 'one address higher'. This works on a VPN or local network, but it will not work using a public IP address.
- SndBuf > Size of the send buffer
- RecvBuf > Size of the receive buffer

Changing the size of Send and Receive buffers can help with latency issues on connection.

When using the iPhone App, the bridge needs to be set to User Access mode, with the User option assigned to a user, not to "Any".

Chapter 2 - Devices

2.0 - Beltpack BPX

Beltpacks have 2 connections, an XLR4 for the headset, and a Neutrik Ethercon for network connection and power via Power over Ethernet (PoE). The user interface has a colour OLED screen, 4 buttons with RGB LEDs next to them, and 2 side rotary encoders with click function. The click function of the encoder it accessed by pulling up the encoder. The first function of the encoder is the main volume. Each encoder can also be assigned a different default function in the setup menu, such as program audio volume or side tone. When a talk button on a channel is pressed, the encoders control the volume of that channel. Clicking the encoder when a talk button is pressed will toggle the channel between Mute and Enabled. Pulling up any of the 2 encoders will bring up the second display page. If the answer function in the Options menu is enabled, and any channel is active, then talk will also be enabled for these channels. The second display page shows the name of the user selected on the device, and gives access to the Extended channels via button 4.

Holding down the green talk button of that channel, and rotating the encoder can change individual channel volumes. Holding the green talk button and clicking the encoder can quickly mute a channel.

The following Multiple channel operation modes are available:

2-Channel operation

Channels 1 and 2 are visible on the display. The buttons on the Left are the talk buttons, and the buttons on the right used to send call signals to the groups or users assigned to the channels.

3-Channel operation

The display will show channels 1 to 3, and buttons 1 to 3 act as talk buttons. Button 4 has a special function. When no talk is enabled on channels 1 to 3, button 4 gives direct access to the extended channel menu. If talk is enabled



on any of channels 1 to 3, the function of button 4 becomes send call, where pressing will send a call signal to any channel with talk enabled.

4-Channel operation

Access to the first 4 channels is given, with the buttons acting as talk buttons. In this mode it is not possible to send call signals to any of the 4 channels.

Extended Channels Menu

Up to 32 Channels that are not available from the main operation mode can be accessed in this menu by scrolling through the list with the encoder. The top left button acts as Talk button for the selected channel, and the lower left button for sending calls. The top right button mutes or enables the channel. Press and hold this button and turn the encoder to change the channel volume. Pressing the button on the lower right exits this mode.

Setup Menu

To access the setup menu, go into the second display page by lifting up one encoder, followed by lifting up the other encoder.

Device Options Menu

- UI: Set the operation mode.
- Flip: Select to whether to display either main operations and/or setup menu.
- Enc < / Enc >: Set the default operation mode for the left and right encoder.
- LED brightness: Set the LED brightness.
- Scr saver: Set the screen saver to prevent screen burn in the OLED display.

Wireless Beltpack WBPX

The Green-GO wireless beltpack is designed to act in the same fashion as the wired version, with the same user interface display, same buttons and encoders, and with full access to all 32 channels and functions. The



differences between the two units are in the connections and some of the menu items. The wireless beltpack requires a Green-GO active antenna to operate, and uses 1.9Ghz DECT to communicate. The active antenna is connected directly to the Ethernet network and can handle a maximum of 4 wireless beltpacks simultaneously. On the back, there is an on/off switch to power on the device. To power off the device, slide the switch and the display will show a timeout counter before switching off. A mini USB connector is used for charging the battery, or for connecting to a computer. When connected to the computer the USB connection, in combination with the wireless control software, is used for firmware upgrades. The second display page, accessed by lifting up one of the encoders, will show the battery state, RF field strength and connected antenna index number, in addition to features displayed in the wired version.

Setup Menu

To access the setup menu, go into the second display page by lifting up one encoder, followed by lifting up the other encoder.

Clone Config

The 'clone config' menu acts the same as in a wired pack, but it controls the configuration stored in the active antenna. The active antenna has one active configuration used by all wireless beltpacks connected to that active antenna. Cloning the config of one wireless beltpack also changes the configuration on other wireless beltpacks connected to the same antenna.

Connection Menu

Wireless pairing and setup is described in a separate section.

Active Antenna WAA

The active antenna is used to connect the wireless beltpacks to the Green-GO network. It can serve up to 4 wireless beltpacks simultaneously, and has a Neutrik Ethercon for network connection and power via Power over Ethernet. On the bottom, you will find a small button and bi-colour LED, for use in setup. This is described in the Wireless pairing and setup section. The bi-colour LED will display as follows:

- Blinking GREEN: Operational, with other Green-GO devices with the same configuration file available on the network.



- Blinking GREEN/RED: Operational, but no other Green-GO devices with the same configuration file available on the network.
- Blinking RED (2x pre second): Pairing mode, described below.
- Blinking RED fast: Firmware error. Please check the firmware or upload a new version.

Wireless Connection Setup

For wireless beltacks to work with an active antenna, the two need to be paired. Pairing can be done over the air or via the Wireless Control software.

Over The Air Pairing

Each Wireless Beltack can remember up to 4 Active Antennas, whereas an Active Antenna has the option of remembering a maximum of 6 Wireless Beltacks.

Even though an Active Antenna has the possibility to remember 6 Beltacks, only 4 can be active and connected at one time. This is on a 'first come, first served' basis. To start the pairing of a Beltack to an Active antenna, the Active Antenna should first be put into pairing mode by pressing the small button on the bottom of the antenna for about 1 second, and releasing. The LED should now blink RED (about twice per second). Next, on the Wireless Beltack, enter the connection menu and select a connection between 1 and 4. If a connection is already programmed, then first delete it. Next, select the connection and select "Start Pairing". After a few seconds, the message should read Registered. The Active Antenna now goes out of pairing mode. If you need to pair another beltack to the antenna, the same procedure should be repeated. When the maximum of 6 beltacks are paired, any new beltack will overwrite the last one paired. You can clear all paired devices on the antenna by first putting it in pairing mode, as described before, and then pressing and holding the button for about 10 seconds. The LED will start flashing faster, and finally light up continuously RED when completed.

Original Beltack GBP2

The original beltack has 2 connections. These are an XLR4 pin for headset connections, and a Neutrik Ethercon for network connection and power. The unit is powered via PoE (Power over Ethernet). The user-interface consists of



an LCD button with RGB backlight, 2 direct channel buttons, and a rotary encoder with push function.

Main Operation

Rotating the encoder will change the main volume. Channels 1 and 2 are shown on the display and controlled by the 2 direct channel buttons. These buttons act as talk buttons, and their operation is defined by the channel setting. Pressing the LCD button will send a call on channel 1 or channel 2, if talk is enabled on that channel. If a cue attention is sent, then it can be acknowledged by pressing the LCD button. If a channel is active and the answer function is enabled, then pressing the encoder will switch on talk on any active channel.

Extended Channels Menu

To enter the Extended channels menu, double click the encoder. Use the rotary encoder to scroll through channels 3 and above. Press the encoder to enable Talk. Rotating the encoder whilst it is depressed will change the channel level. Pressing the LCD button will send a call on the selected channel. To exit the menu, click on one of the direct channel buttons, or scroll to the option marked "Exit" and click the Encoder.

Setup Menu

Entering the Setup menu is done from the main menu, by pressing and holding the Encoder, followed by pressing the LCD button. Setup menu items are described in the Unified Setup Menu section.

Device Options Menu

- Display – This can be set to normal or flipped. Flipped can be useful when hanging the backpack upside-down.
- Default Backlight – This can be set to White, White Dimmed, Blue or Off.
- Backlight Timeout – This can be set from Always on to Timed.

Multichannel Desk / Rack MCD / MCR

The Multichannel desk / rack stations are available in desk sizes of 8/16/24/32 channels, and a rack size of 12 channels.

Connections on the units:

- Front-panel mic and speaker.
- Headset connection.
- Line In/Out, GPIO (2x in and 2x out).
- 2 Ethernet connections.

The unit can be powered by connecting Ethernet Port 2 to a PoE switch, or by connecting a 12V power supply to the DC input plug. The front-panel consists of multiple channel sections and a main section.

Channel section

Each channel section contains 4 channels. 2 RGB backlit buttons and a portion of the display are dedicated to each channel. The top button always functions as Talk button, the operation of which is defined for each channel in the channel settings. The button also indicates channel activity and the receiving of calls. The function of the bottom button is selectable via the 3 buttons in the main section, which are Listen, Call and Cue.

Listen: The button can be used to mute or enable the channel. Pressing and holding the button then enables the encoder to change the channel volume. Pressing the channel listen button also gives access to extra functions on the main section, like Remote Mute and quick Channel Setup.

- **Call:** Pressing the button will send a call signal to the Group or User on that channel. Holding it for longer will send an Alert.

- **Cue:** Pressing the button will send a Cue Attention to a Group or User. Cues can be active on multiple channels. If a Cue is acknowledged, then the button will show the Hold status. Pressing the channel button again will send the Go command. Alternatively, clicking on "Go All" in the main section will set all active channels to Go.

Main Section

The main section has a display with 3 soft function buttons, 4 function buttons labeled Listen, Call, Cue and Setup, and a rotary encoder with push function. The rotary encoder's main function is for main volume control. The display and soft function buttons will change depending on the current status. The



channel buttons can be switched between Listen, Call and Cue modes, as follows:

- Listen: The soft function buttons give access to the Extended channels. The answering function will enable talk on any active channel. Isolate will enable or disable the isolate function, as described in the unified options menu. Clicking on the Listen button when in Listen mode will bring-up the volume settings for Speaker, Headset and Program Audio. Select any one of the 3 by pressing the assigned button, and use the encoder to adjust the volume.

- Call: Functions under Call are the same as under the Listen mode.

- Cue: Depending on cues active, the functions are Direct Go, Clear, Go All and Talk.

Direct Go > press the button, and select a channel to directly send a Go command to.

Clear > press the button, and select a channel to cancel a cue command for, or select Cancel All to cancel all cues.

Go All > Send Go to any active Cue channel.

Talk > Switch on the talk function for any active Cue channel.

The Cue button will flash Green when not in Cue mode if cues are still active on channels.

Extended Channels Menu

Channel not directly accessible from the front-panel are available in the Extended channels menu. Use the encoder to select a channel, and use the Talk and Call buttons below the screen as required. The button marked Vol can be used to mute or enable the channel, or can be held whilst rotating the encoder to adjust the volume. To Exit the extended channels menu, press the Listen button. Pressing the Setup button will give access to channel settings.

Audio Settings

Input options on the multichannel devices are Headset, Mic (frontpanel XLR3) or Line In. If Mic Pwr is enabled for the front-panel mic, then 10V of phantom power is supplied to the XLR3.

Line In/Out Menu

The multichannel units have an extra function on the Line In/Out when compared to other units. This is the option to mix the Main intercom mix into the Line Out of the unit.

Device Options

- Startup: Select which function is enabled when the unit is powered on. This can be Listen, Call, Cue, or the last function selected.
- Backlight: Select the time it takes for the screen to timeout. As the multichannel desks have OLED displays, it is best not to have the screens on when not in use. Screen burn-in could occur if left on for long periods of time.
- ScreenBright: Set the brightness of the screen.
- BackLight: Set the LED backlight to Low, Medium or High.
- Led Colour: There are 2 versions of LEDS used in the production of the Multichannel desks. The colour can be Normal or Swapped.

Wallpanel

The wallpanel unit has either an XLR4 headset connection, or a built-in speaker and microphone. Internally, a RJ45 Ethernet connection is used for data and power via PoE. If PoE is not available, then the 12V internal connection can be used. It is also possible to use both. Other internal connections are the GPIO (2 x In and 2x Out). The Front panel user interface consists of 1 large LCD button with RGB backlight, 2 direct channel talk buttons, and 1 rotary encoder with push function.

Main Operation

There are 2 modes of operation for the wallpanel. These are Normal and Listen only. This is selected in the Device Options menu.

Normal Operation

Turning the encoder will change the main volume. Channels 1 and 2 are shown on the display and controlled by the 2 direct channel buttons. These buttons act as talk buttons, and their operation is defined by the channel

setting. Pressing the LCD button will send a call on channel 1 or channel 2, if talk is enabled on that channel. If a cue attention is sent, then it can be acknowledged by pressing the LCD button. If a channel is active and the Answer function enabled, then pressing the encoder will switch on talk on any active channel.

Extended Channels Menu

To enter the Extended channels menu, double click the encoder when in Normal operations mode. Use the rotary encoder to scroll through channels 3 and above. Pressing the encoder will enable Talk. Rotating the encoder whilst it is depressed will change the channel level. Pressing the LCD button will send a call on the selected channel. To exit the menu, click on one of the direct channel buttons, or scroll to the operation marked Exit and click on the Encoder.

Listen Only Operation

Listen only operation is intended for applications such as dressing room use. This mode allows for easy selection between stages, and gives volume control to the person in the room. The main volume will not change, so announcements and special calls will always be heard. The first channels should be programmed with the audio of multiple venues or stages. Selection between the channels is achieved by clicking any of the 2 channel buttons (marked by an → arrow on the display). A list of available channels with names appears. Scrolling through the list will directly switch between the channels. Press any key to go back, or this will happen automatically after a short period of time. The selection for this mode is in the Device Options menu, where it is possible to set the number of available channels. Entering the Setup menu is the same as when in Normal operation.

Device Options Menu

- Default backlight: This can be set to White, White Dimmed, Blue or Off.
- Backlight Timeout: This can be switched between always on and timed.
- Listen Mode: When set to Off, the operation is as normal. When in Listen Mode, a number of channels (starting at channel 1) are available for selection.



Wallpanel No Audio

The wallpanel no audio option is available for situations where only an indicator light is needed. The frontpanel here has only one large RGB backlit LCD button. This operates to view incoming calls or cues. Pressing the button will acknowledge a cue. Internal connections are RJ45 for Ethernet and power via PoE, GPIO (2 x In and 2 x Out), and optional 12V input.

Setup Menu

To enter the setup menu, press and hold the top left corner of the display for 10 seconds. When pressed for 3 seconds, a countdown bar appears. The setup menu is navigated by using the corners. The top left corner is for Select or Enter, and the right top and bottom corners are for up and down.

Device Options Menu

- Default Backlight – This can be set to White, White Dimmed, Blue or Off.
- Backlight Timeout – This can be set between Always on and Timed.

4-Wire Interface

The 4-wire interface can be used to connect to other analog systems. The unit has 2 parts (or ports), each with its own Green-GO engine. There are two 2 Ethernet connections on the back of the unit with a built in switch. The unit is powered by connecting an Ethernet switch with Power over Ethernet to Lan port 2, or via a 12V DC supply connected to the DC input plug. Each of the 2 sections has an audio line input and output on XLR3, and a GPIO connector.

Main Operation

Each of the ports can be used in general purpose Line In/Out, or in User mode. This is selected via the Set User / Mode option in the ports setup menu. In general purpose Line In/Out mode, any of the 250 groups can be assigned to the input and to the output separately. When user mode is active, the port has all the features of the Green-GO engine, such as having 32 channels and program audio available. Control for the user is done by using GPIO and/or Autotalk. On the main display, the statuses of both ports are shown. Turning the encoder will show individual port status with indication per channel.



Setup Menu

To enter the setup menu, click on the front-panel encoder. The menu gives access to the setup menus for ports 1 and 2, clone config, network setup and device options.

Device Options Menu

- Display – This can be Normal or flipped.
- Default Backlight – This can be set to White, White Dimmed, Blue or Off.
- Backlight Timeout – This can be set between Always on and Timed.

2-Wire Interface

When integrating “old style” analog party-line systems, a 2-wire interface is needed. The unit has a 2-wire intercom port via XLR3, and an extra general purpose Line In and Output port. The 2 Ethernet connections on the back feature a built in switch. The unit is powered by connecting an Ethernet switch with Power over Ethernet to Lan port 2, or by connecting a 12V DC supply to the DC input plug. The 2-wire can be setup as a user, with all features such as 32-channel availability. Auto talk should be setup, normally to channels 1, to enable audio from the party-line to enter the Green-GO network.

Setup Menu

To enter the setup menu, click on the front-panel encoder. The menu gives access to the setup menus for ports 1 and 2, clone config, network setup and device options.

Device Options Menu

- Display – This can be Normal or flipped.
- Default Backlight – This can be set to White, White Dimmed, Blue or Off.
- Backlight Timeout – This can be set between Always on and Timed.



Setting up for 2-wire Audio

Connect the complete 2-wire system to the Intercom port, making sure all microphones are switched off. Next, enter the Audio Line Setup and select the correct type and signal level, before clicking on Auto Null. This will find the correct balance for the 2-wire line. Use the threshold to block any unwanted noise from the party-line from entering the Green-GO network. If the audio level from the Green-GO system to the analog party-line is not ideal, then use the “to 2-wire” parameter to adjust this. If the audio received from the party-line is too low or too high a level for the Green-GO system, then adjust the value for “From 2-wire”.

PLEASE NOTE: The Intercom connection on the unit needs to be terminated. This is automatically done by either a master station or power supply in an existing party-line system. When the connection is not in use, a termination plug needs to be connected, otherwise there will be noise generated on the adjacent Line In and Line Out. A terminator plug can be as simple as placing a resistor between 200 and 400 ohms between pins 1 and 3.

PLEASE ALSO NOTE: If the 2-wire line is not setup correctly, echoes may appear on the Green-GO network.

Bridge and BridgeX

The bridge devices can be used to create a connection between 2 separate networks, or to allow remote users to connect into the Green-GO system. On the back of the units, there are 4 Ethernet ports on Neutrik Ethercon, divided in to 2 network connections. The Internal network connection should be connected to the Green-GO network. The External network connection can be used to connect to a separate network, such as an office network. Both connections should NOT be connected to the same network. Each of these network connections has their own IP address settings. If the External network connection is not used, the IP address should be set to the 0.0.0.0. The unit is powered by connecting an Ethernet switch with Power over Ethernet to Internal network port 2, or by using the 12V DC input.



Operation

A bridge has 2 operational ports or streams, whereas the BridgeX has 4 streams available. Each stream can work in either Group Bridge mode or User Access mode.

Group Bridge Mode

Use the Group Bridge mode to share a group or party-line between 2 separate Green-GO systems. By linking the 2 systems, one large party-line is created. Both Green-GO systems can work on completely different configuration files. The Bridge on each location needs to have the correct configuration file for the local Green-GO system. On each side, a Group is selected. These can be different groups on both sides. All audio on the group on one side will be transferred to the other side, and sent out as audio to the assigned group. Call signals can also be transferred if this is enabled.

To make the connection between both sides, one side should be setup as a passive connection (waiting for the other side to connect to). The other side should be set to active, and programmed with the IP address and port settings of the Passive unit. Both sides can be set as active, as long as the Remote ports are set to be the same.

Remote User Access Mode

A bridge port in Remote User Access mode allows Green-GO devices to connect to the Green-GO network remotely and become full members of the system with all the same functions, as if they were connected locally.

Connection via Internet

The bridge units give the option to use the Green-GO system worldwide via the Internet. This may involve some adjustment to the setup of the routers involved. For each bridge stream in a Passive Group Bridge or User Access mode, the router may need to be programmed to forward the assigned UDP ports (local port in the connection setting menu) to the IP address of the bridge. The IP address required depends on the connection to the bridge. If the router is connected to the same network as the Green-GO system, then it should have access to the Internal network of the Bridge unit. If the router is on the same network as the External network port of the bridge, for example an office network, then the router should forward to the External IP address of the Bridge. Remote Users and Active Group Bridge connections need to be programmed to the IP address of the Router's Internet connection. To find out



the Internet address of a location, go to <https://whatismyipaddress.com/> when connected to the Internet at that location (on the Passive bridge side).

Troubleshooting

- My unit cannot talk to other units.

The configuration files may not match. Please check in the clone config menu to see if other configs are available on the system.

- There is an echo on the system.

Check the settings of any 2-wire connection, or if microphones are active close to the speakers of headsets.

- After plugging in a device, it starts up but takes some time before communicating with the network.

This may be because of the protection settings in a managed switch. The switch needs to be certain that the newly plugged in device will not create a loop in the network.

- Green-GO intercom communication is working, but the configuration software has issues connecting.

This would be an IP addressing issue. The intercom communication will work even if the IP addresses of the devices do not match, but the computer software will not be able to connect, despite the possibility of it “seeing” the devices.

- Bridge connection does not display.

If the display shows Error (or Err), then the passwords on both sides may not match. If the passive side remains in waiting whilst the active side is connecting, then the active side will not be able to communicate with the bridge. This could be due to an incorrect IP address, or possibly an incorrect forwarding setting in the router.



Changes:

Wireless

- “Not connected” indicator: a tone is heard and shown on the display when the pack is not connected. The level of this audio tone can be set in Options>Tone.
- Battery low indicator option: (Device Options > Batt Low On/Off). This will produce a short beep when the battery level is getting low.
- Bad signal indicator option: (Device Options > Bad Signal: Off/1..5). If powered on, the unit will generate a beeping sound when the received data signal is missing information. Levels can be set from 1 (very bad) to 5 (some missing data). This will only be heard when no communication is active.
- Roaming feature: (Connection > Roaming: Off/1..5) When powered on, the pack will measure the quality of the data signal. If the signal reaches a selected level, then it will disconnect from the current antenna and try to find a better connection. Levels can be set from 1 (very bad) to 5 (some missing data).

Wireless Beltpack and Wired Beltpack (4 Button Version)

- Setup encoder functions for the Left and Right encoder separately: (Device>Options). Options are Main volume, Program Audio volume, Sidetone or disabled.

General

- 2 extra listen only channels have been added; Announce and Emergency.

The announce channel is Listen only and always has a high priority. When audio comes in on this channel, it can dim or mute other audio. This can be achieved by setting the Prio Dim in the Options menu. When audio comes in, it will be shown on the display.

The Emergency channel is the highest priority channel. It is listen only and if audio comes in on this channel, it will mute all other audio. A Message is shown on the display. These channels can be found in the Channel Assignment menu, after channel 32.



- Listen On Talk option: When enabled, it will enable the listen feature on a channel, as long as talk is enabled (Option menu).
- Answer function: Enable/Disabled (Option menu),
- Popup option (Option menu). Popup messages are enabled.
- No popup: No popup messages will be shown on the display.
- Popup Cue: Only Cue messages will be shown
- Popup Cue + Direct: Cue messages and Direct incoming messages will be shown. This also enables the Announce and Emergency message to be displayed.
- Popup All: Includes all of the above messages, and when audio is present on extended channels.

Using the highest standard of components, Green-GO manufacturers all of their products alongside their design team in the Netherlands.

Green-GO is designed and manufactured in the Netherlands by ELC Lighting.

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