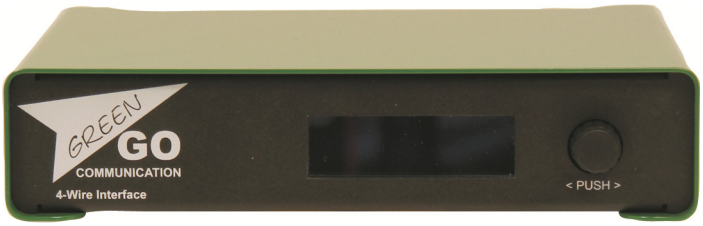
Green-GO Communications

Systems Manual V2.0



System Description and Overview

The Green-GO communications system is an Ethernet network based digital intercom system. Users can talk to multiple groups and/or directly to other users. Talking to a group can be compared to the analogue party-line or ring. Any direct contact between one user and another is a private conversation. There is NO central matrix or routing engine required for the Green-GO system, and it scales up and down as needed by just adding or removing devices to/from the network. An extra advantage of having no central unit is that, there is **no single point of failure**.

Audio distribution, e.g. program audio, can be easily injected in to the system and sent to a group. The audio can then be picked up by any device on the network as required. Another application for Green-GO is paging, and this is easily setup, either via a group or with direct user communication.

Non-audio communication

Owning to the network-based architecture of the system, multiple ways of communication can be used in addition to audio. Functions like calling/cueing/sending text messages and remote control of device settings, e.g. microphone mute and volume are also included.

System Devices

The Green-GO communication system includes the following devices:

- Beltpack (2 Channel)
- Wall Station (2 Channel Headset or Speaker)
- Wall Station (No Audio – visual cueing only)
- Multichannel Desk (8, 16, 24 or 32 Channels)
- Multichannel Rack (12 Channels)
- Dual 4-Wire Interface
- 2-Wire Interface
- DIN Mount Installation Interface

Devices can be powered from PoE (Power over Ethernet) or external 12Vdc power (except the beltpack, which is PoE only). A 5-Port Ethernet switch with 4 PoE ports on Ethercon is available from Green-GO, but the system will operate with any professional standard PoE switch.

Green-GO intercom engine

Each device has an identical intercom software engine. This engine has 32 channels, a program audio channel and an extra channel to receive direct user communication. So even a 2-channel beltpack has 32 channels to work with plus the program audio.

What is the difference between a User, Group and Channel ?

User

The system is based on users, NOT on devices. A user can be active on any device, even on multiple devices. When selecting a user on a device, the system will extract the channel configuration for the requested user from the configuration file. Configuration files are

replicated on all devices, storing all the information of all users, therefore this data is duplicated everywhere in the system. By having the complete configuration file on each device, no central unit is needed and devices can copy from each other. Each user has a unique ID and a human readable name.

Group

A group can be compared to an analogue party-line or ring system. Whereas an analogue system has 1 or 2 groups, the Green-GO system has 250 groups. When a user talks to a group, the audio will be sent to all users in that group. A user is part of a group when he has a channel setup with that group. If multiple users are talking to the same group, then the audio will be combined, as for an analogue system.

Channel

Each Green-GO intercom engine has 32 channels. A channel can be programmed as a Group or Direct User. When programmed as a Group, the user becomes part of the group and can listen to the group and talk to it. When programmed as a Direct User it enables a private direct conversation between users.

Options for a Channel are

Assignment → Assign a group or user to the channel (or disable the channel)

Talk Mode → Set the function of the talk button

- **Disabled**: Listen only
- **Momentary**: Push to Talk
- **Latch**: Push will toggle the talk on or off
- **Latch** / **Momentary**: Long press acts as momentary, short press will act as latch

Call Receive Enable → Receive calls [Yes/No] from the assigned group or user
e.g. an LD might want to have the “Sound” group on a channel, but does not want to be bothered with any calls on the channel

Call Send Enable → Able to Send calls [Yes/No] to the assigned group or user
e.g. the LD above might not be allowed to send a call to the “Sound” group

Program Audio

The program audio is an extra channel to be used as the background sound. The program audio can be any of the 250 groups. The audio should be injected into the system from any Line-In assigned to that group. Program audio is like a channel, but a user cannot talk to is and has the option to be dimmed or muted when there is activity on one of the channels.

Configuration

As each device has the complete systems configuration on-board, and not just for the user that is selected on the unit, it has knowledge of the other users settings. Setting a new user on a device will read the settings, shush as channel assignments and security from the configuration, without relying on a central unit. All units must have the same configuration in order to be able to communicate. If a unit has a different configuration, it can copy (clone) the configuration from any unit in the system. Ones cloned, the unit only needs to be set to the correct user and it is in the system.

Cueing (using Cue-lights)

Any Multichannel desk can send cue information as an attention (ATT) 'warn' signal that should then be acknowledged by the user at the receiving device. When the cue is acknowledged, the status goes to HOLD, and the displays go red. The Multichannel desk can then send the GO for that cue. If an attention signal is sent on a group, then only one user needs to acknowledge to go into the 'hold' status. Devices can be set up to automatically acknowledge an attention or to ignore cueing information completely (this can be found in the option menu).

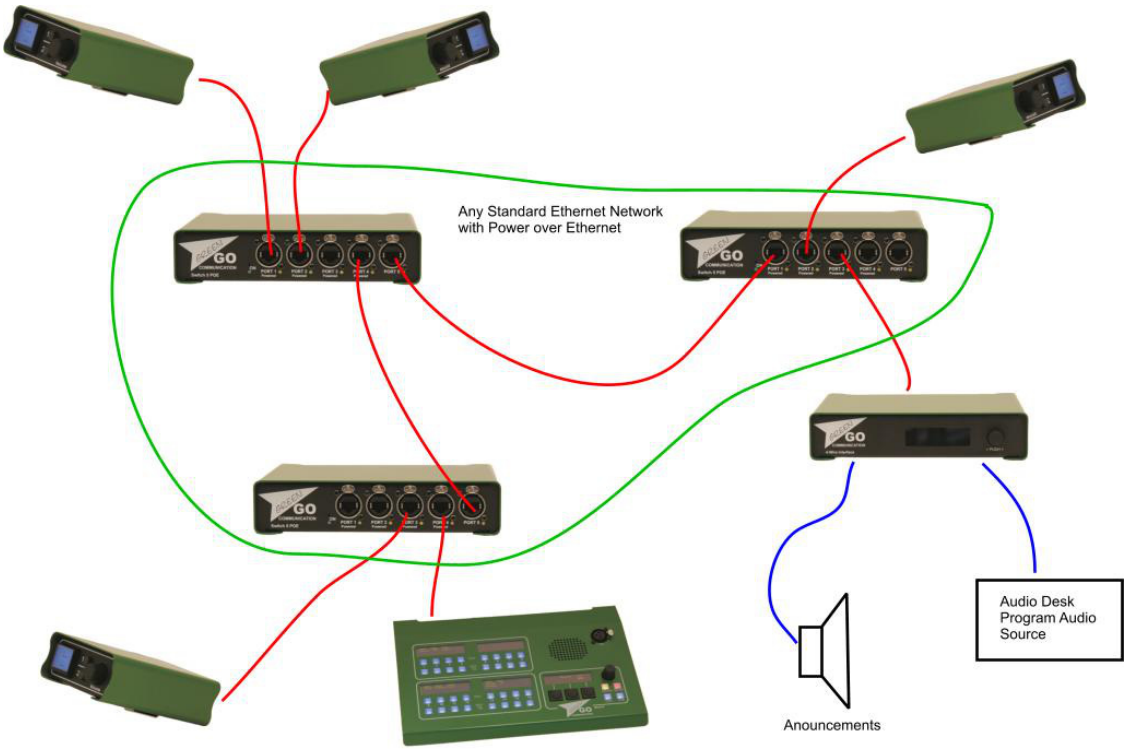
Networking Setup

Simple Network

This example network is the minimum system for the Green-GO system. Just two Beltpacks are needed and a standard Power over Ethernet (PoE) switch. The switch has the function of distributing the Ethernet signals (packets) and in the case of PoE, it also provides power to the connected devices.

The PoE-switch shown above is the Green-GO developed 5-port PoE switch. This is a 10/100 Mbit swith ports 1-4 supplying power to the units, with port 5 is a normal 10/100Mbit port. Special features of this switch include the Neutrik Ethercon plugs, a fixed mains-lead and future software upgrades to allow feedback to the control software. Please note the switch does not have to be the Green-GO version, any standard PoE switch should work, but may not offer all the features of the Green-GO switch.

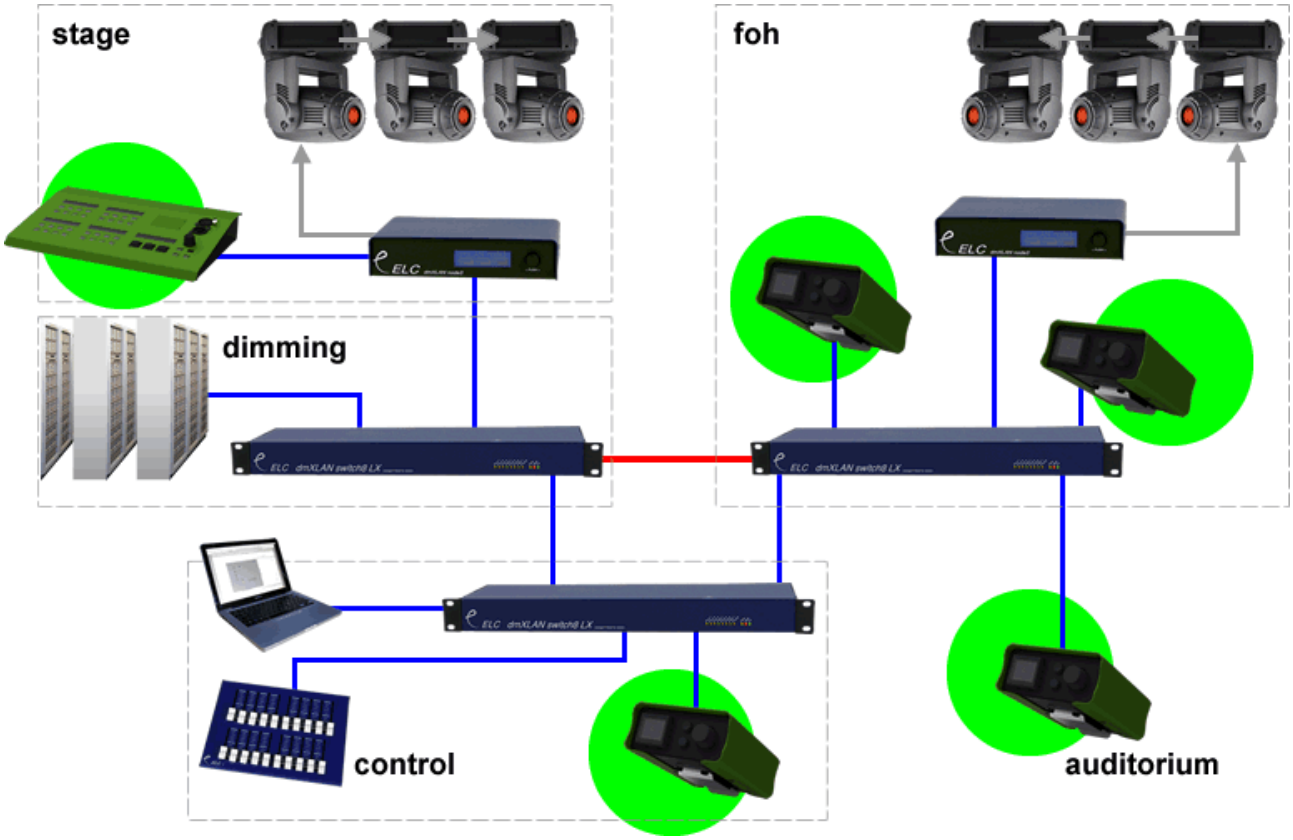
Larger Network



This Green-GO network describes a typical larger system with multiple switches, beltpacks and other Green-GO devices like the Multichannel desk station and a 4-wire interface. The system can be extended to virtually any size, and has all the features of a large matrix intercom system while still using a standard Ethernet wiring infrastructure. Audio sources for use as Program Audio can be inserted into the system at any place using a 4-wire interface, Multichannel Desk or Rack or DIN Install unit (i.e. any Green-GO unit with a

Line-In connection). Audio out (e.g. announcements or background audio, show relay etc.) can also be picked up anywhere on the network, by any unit with a Line-Out connection.

Combined Network



The Green-GO intercom system resides on top of a standard Ethernet Network Protocol and can be used on existing systems sharing the same network. This schematic diagram shows the Green-GO intercom in combination with a lighting control rig. As the Green-GO system only needs a small part of the available bandwidth it does not affect or degrade the host network.

Connections and Settings

This section describes all possible connections on Green-GO devices.

Ethernet connection

The Green-GO system is based on 10/100 Mbit Ethernet. The connector used (in most cases) is the Neutrik Ethercon. The Ethercon is a more heavy-duty version of the standard RJ45 connector, but normal RJ45 plugs will fit. Some Green-GO devices have regular RJ45 connectors, like the DIN Mount Installation unit. Units with two or more Ethernet connections have a built-in Ethernet switch.

Headset Connector

Headsets are connected to a 4-pin Male XLR. Pin-out is industry standard

Pin 1: Mic Ground
Pin 2: Mic Signal
Pin 3: Speaker –
Pin 4: Speaker +

The headset-mic input has a programmable gain with auto function. The gain can be set by the device software in the range of 30 to 70 dB. The auto-gain function can be enabled in 3 speeds or switched off. The mic also has a gate with an adjustable threshold. A bias voltage can be enabled when electret mics are used.

Microphone input Connector

On multichannel desks/racks there is a microphone input connector on the front panel. This connector is a 3-pin female XLR the input is balanced and has phantom power of 10V to enable LED rings, which are included on some types of microphone.

Pin 1: Ground
Pin 2: Signal +
Pin 3: Signal -

Line Input

The Line Input is on a Female 3-pin XLR and is balanced. Not all devices have a Line Input, and the function of the input depends on the device.

Pin 1: Ground
Pin 2: Signal +
Pin 3: Signal -

Line Output

Outputs are provided on 3-pin Male XLR and are impedance balanced. The function of the Line Out, on devices that have them, might differ.

Pin 1: Ground
Pin 2: Signal +
Pin 3: Signal -

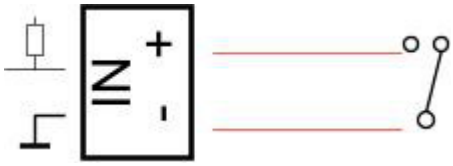
General Purpose Input Output (GPIO)

GPIO connections can be used for external control interfacing. The GPIO's are on SUB-D 9-pin Female connectors or screw terminals.

Sub-D 9-pin
Pin 1: +5V
Pin 2: Input 1
Pin 3: Input 2
Pin 4: Output 1 +
Pin 5: Output 2 +
Pin 6: Ground
Pin 7: Ground
Pin 8: Output 1 -
Pin 9: Output 2 -

GP Inputs

The inputs work with dry contacts to ground. The Input can act as Normally Open or Normally Closed (Inverted).

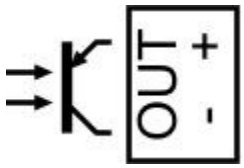


Functions:

- **Talk**: Enable the talk on a channel or use as answer (enabling talk on active channels)
- **Call**: Do a call on a selected channel.
- **Cue**: aknowledge a attension signal

GP Outputs

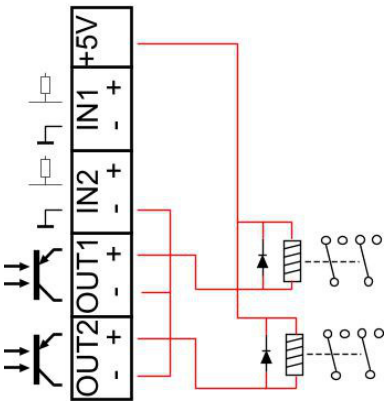
The outputs are provided on an opto-coupler (floating transistor). These ports can be used to control remote switches, small relays, etc. The Output can act as Normally Open or Normally Closed (Inverted)



Functions

- **Active**: Enabled when there is activity on any channel or a specific channel. Can be used for example to enable the transmitter on a radio.
- **Call**: Show calls received on any channel or a specific channel.
- **Cue**: Multiple Cue signaling options are avialable (e.g. Att, Hold, Go)

Example for driving small 5V relays

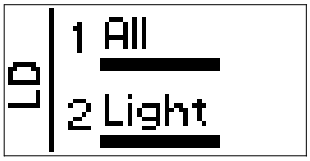


Devices and Operation

This section describes the function and operation of each device.

2-Channel Beltpack

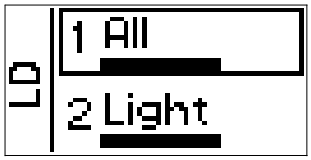
The beltback is designed as a 2 channel unit, with 2 talk buttons, a multifunctional rotary encoder with a push function and a RGB-backlit LCD button. Connections to the beltpack are a 4-Pin headset connector and an Ethercon network connector. It requires Power over Ethernet to operate.



Normal Operation

Talk

The 2 direct channel buttons are used to enable talk. These buttons work with both a momentary and toggle function. A short press will toggle, while a long press will work momentary. The push function of the rotary encoder is used for answering.
Pushing the encoder will enable the user to talk on the active channel(s). Active channels are channels with audio or Calling/Signalling received in the last 5 seconds (this active time can be adjusted in the Options menu), indicated by a rectangle around the channel.



Private Talk

A private conversation can be held with a different user (e.g. the stage manager). This will be indicated in the display. To answer press and hold the encoder.

Volume

The main function of the rotary encoder is to adjust the master volume. To change the mix volume of a direct channel, press and hold the channel button and rotate the encoder. Pressing the encoder will toggle the mix volume between mute and default.

Calling / Signalling

Pressing the display button will send a call alert to channel 1. Sending a call/signal to channel 2 requires the user to press and hold the channel 2 button and the display button. Sending a call for more then 3 seconds will change the CALL into an ALERT.
Received calls are displayed by a Red/Blue flashing display. When the CALL changes to an ALERT, then the buzzer will sound (if enabled).

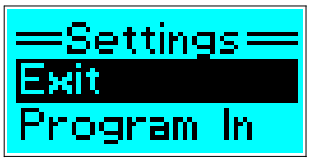
Cueing

A Multichannel station can send ATTENTION, HOLD or GO signals and request an acknowledgement. When an Attention is received, the display will blink orange/blue and a ringtone will be heard in the headset.

To acknowledge the attention request, simply push the display button. The ringtone will stop and the display will go to HOLD (red back light).

When the GO is sent, a short ring tone will be heard in the headset and the display changes to Green, until the Multichannel station removes the GO status.

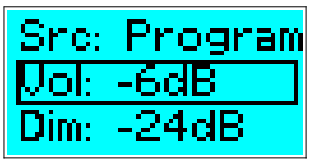
Settings and Options



To enter the settings menu press and hold the rotary encoder and then press the display button. The following options are available in the settings menu :

- Exit: return to normal operation
- Change program audio options
- Change channel assignments
- Change Microphone (auto gain / gain / gate threshold / sidetone)
- Options such as Display (Flip / Brightness), Buzzer (On/Off) and Active time
- Set User: load user settings from the configuration
- Clone Configuration: copy system settings from a different unit.
- Info (e.g. serial number and firmware version)

In the sub-menus, select an item with the encoder and press to enter the edit mode.



In edit mode, the encoder is used to change the value. Press the encoder again to exit the edit mode and return to the selection mode.

Program Audio

Src → Select one of the groups as program audio source
Vol → Set normal volume for the program audio
Dim → Set the amount of volume level the program audio drops on other activities.

Channel Assignments (Channel 1 and 2)

Type → Set the channel to a Group (party line)
or Direct User (private talk)
ID → Select the Group or User

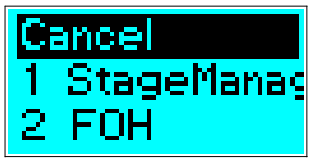
Microphone

Set Default → Set all values to a known working setting
SideT → Set the sidetone (the amount of signal from your own microphone in your headset)
Auto → Set the auto gain function to Off/Slow/Med/Fast, this can be used

to regulate the maximum level of the microphone
MaxG / Gain → Maximum microphone gain in Auto, Gain in fixed mode
Thld → Threshold for the noise gate. Set this to a level that if you are not talking, the microphone is off.

Options
Displ Normal / Flip → in display flip, the display will be inverted. Used if the beltpack is used upside-down
Displ Bright / Dim → in Dim, the back light will be dimmed
Buzzer On / Off → Set the call buzzer function
Tone → Set the audio level for call and cue ringtone
Cue-Mode → Normal / Auto Answer / Ignore

Set User
Select the user and load the settings for this user. Select Cancel to exit this menu without selecting an other user.



Clone Configuration
The top line will show the name of the current configuration.
Cancel will exit this menu without changing anything. Up to 4 other configurations found on the network will be shown below and can be selected. The last option at the bottom of the list is to load the Factory Default configuration file.

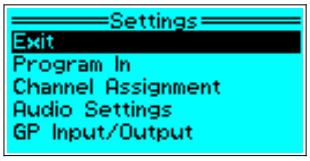
Wallmount Control

The Beltpack is also available in a Wall-mountable version. The differences are that the wallmount unit has an internal Ethernet connection, features GPIO connections internally on screw terminals and has a larger RGB backlit display. Available versions are a Wallpanel with no audio (this version differs from the beltpack functionality), a headset version with a 4-pin headset connector and a speaker/microphone version.

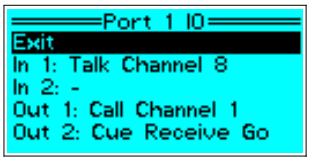
Wallpanel with Audio

As stated previously, the Wallpanel unit with audio acts like a Beltpack. The display is larger, but can also be pressed. The encoder and talk buttons are also on the unit and operate in the same way as on the Beltpack. The difference is that the Wallpanel also has GPIO connections internally (2x in and 2x out).

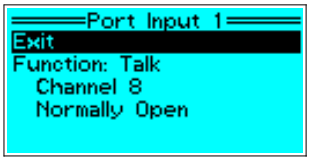
To enter the Setup menu press and hold the encoder, and then press the display.



Under the GP Input/Output menu you can edit the GPIO settings



Select an Input or Output port, and press the encoder to select.



Now the port can be edited.

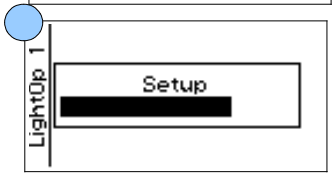
Set the Function / Option and the Mode (Normally open or Close)

Wallpanel (no Audio)

The Wallpanel without audio, compared to the version with audio, does not have a headset or speaker/mic, or Encoder/Talk buttons. It does feature internal GPIO's on screw terminals (2x In and 2x Out) and a display with push function.

In the normal operation mode the display only shows the name of the user.

To enter the Setup-menu press and hold the top left corner for 5 seconds.



As there is no encoder on the unit, the corners of the display are used.

Top Left is **Select**
Top Right is **Up**
Bottom Right is **Down**

Menu items are accessed in the same way as on the Wallpanel and Beltpack.

Multichannel Desk/Rack Station

(MCD8/16/24/32 or MCR12)

The Multichannel Desk/Rack station gives a direct overview of many channels. Versions available are 8, 16, 24 or 32 channel desk versions and a 12 channel rack-mounted version. The 16 channel version is illustrated above.

Connections

The MCD and MCR units have a variety of connections. There are 2 Ethernet ports with a built-in Ethernet switch. Port 2 can be used to power the unit via Power over Ethernet, leaving Port 1 free to be used for example to connect a laptop. The Multichannel Stations can also be powered from an external 12Vdc source, if PoE is not available at that location. Other connections are Line-In, Line-Out for audio distribution, GPIO connector for external control, a headset connector and a front panel Microphone.

Controls

The user interface control has two main areas: **Channel** and **Control**.

Channel Area

The channels are divided into groups of 4 with 2 RGB backlit buttons per channel and a display.
The display shows the audio mix level as a small bar on top of the name of the assigned Group or User.

Channel Button Top Row

The top row of buttons are always used for Talk enable. The buttons have a toggle and momentary (push to talk) fashion. A short press will toggle the channel on/off, while a long press will be a momentary action.
The button back-light will indicate the status.

- Green: talk function enabled on the channel (microphone is on)
- Orange: talk activity on the channel (somebody is talking on the channel)
- Red blinking: CALL received

Channel Button Bottom Row

The bottom row of the channels has 3 functions depending on the operating mode. The operation mode can be set on the right side of the Control area.

- Listen mode: switch on or off the channel listening (button orange lit), select a channel to change the mix volume or to remotely disable a microphone.
- Call mode: send a call to a channel (group or user). Hold longer to send an alert (buzzer).
- Cue mode: send attention/hold/go to remote users.

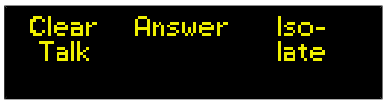
Control Section

The control section of the multichannel unit has a display with 3 soft keys, 4 operating mode selection keys (Listen. Call, Cue and Setup) and an encoder with push function.

Encoder function
The main function of the encoder is the master volume. Push the encoder to mute the master. Mute is displayed by the Listen button flashing red. To set the volume, turn the encoder.

Operation Modes
Push a mode button to alter the relevant operating mode

Listen Mode

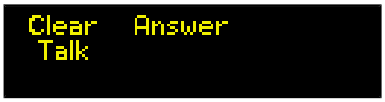


In Listen mode you can change the Mix volume of the channels and also the Speaker/Headset/Program audio volume.
Softkey 1: Switch off all channel talks
Softkey 2: Switch on temporary channel talk on all active channels (Answer)
Softkey 3: Isolate function (LED will indicate if it is on of off). When in isolate mode, if any channel is in talk, then other channel audio will be muted. This helps to remove distraction from a conversation.

To change a channel-mix volume press and hold the bottom channel button and turn the encoder.
Softkey 1: Mute selected channel mix
Softkey 2: Set channel-mix to default on
Softkey 3: Send microphone off signal to all users on the selected channel

To change the Speaker / Headset / Program volume, push the Listen button to enter the volume adjust menu. The Listen button will blink orange. Press and hold a softkey and turn the encoder to change the selected volume.

Call Mode



In call mode you can send a Call and Alert to Groups and Users using the bottom channel row of buttons.
Softkey 1: Switch off all channel talks
Softkey 2: Switch on temporary channel talk on all active channels (Answer)

Cue Mode

In cue mode it is possible to send attention/hold and go commands to remote users.
Pushing a bottom row channel button will force the channel (group or user) in to attention mode. Attention is indicated by an orange flashing channel button. The remote user will see the attention request on the display and hear a ringtone in the headset. When a remote user acknowledges the attention, the channel will go in to Hold. Hold is indicated by a red button.

Softkey 1: Send GO to all channels in ATTENTION and HOLD state.To send a go to a single channel

press the bottom channel button that is in attention or hold state.
Softkey 2: Talk enable on all channels in attention and hold state
Softkey 3: Press and hold and select the channels to cancel the cueing. Press softkey 1 to cancel all channels.

!!! Note: The Cue button will blink when not in Cue mode and if any channels are in att/hold/go status.

Settings and Options

Setup Mode

In setup mode it is possible to change functions of the unit:

- Program Audio settings
- Channel Assignment
- Input: Microphone input selection and setup
- Line In: Set the function of the line input
- Line Out: Set the function of the Line output
- Options: Functions like buzzer on/off, backlight, screen saver
- User: change the selected user
- Clone Config: change the system configuration
- Info: show serial number and firmware version.

Functionality of the submenu

A number on the right side of the display indicates multiple pages. Use the encoder to change page.
Press and hold a softkey and turn the encoder to change the value shown above the softkey.

Program Audio:

Channel → Select one of the groups as program audio source
Volume → Set normal volume for the program audio
Dim → Set the amount of volume level the program audio drops on other activity

Channel Assignment:

Channel → Select one of the 32 channels (or push the channel button)
Mode → Set User or Group (ID show the number of the selected user or group)
xxxx → Channel assigned to group or user

Input (microphone settings):

Input → Select the input source:
Headset (XLR4)
Mic (Front panel XLR3 female)
Line In (Rear panel XLR3 female)

Auto Gain → Sets the auto gain function to Off/Slow/Med/Fast, can be used to regulate the maximum level of the microphone
Max G / Gain → Maximum microphone gain in Auto, Gain in fixed mode
Threshold → Threshold for the noise gate. Can be set this to a level that if you are not

talking, the microphone is off.

SideTone → Adjust the audio feedback from your own microphone to your headset

Line In:

Destination → Group to send the audio signal to.

--- will indicate the signal is not sent.

Auto Gain → Sets the auto gain function to Off/Slow/Med/Fast, can be used to regulate the maximum level of the input

Max G / Gain → Maximum gain in Auto / Gain in fixed

Threshold → Threshold for the noise gate. Can be set this to a level that if there is no signal on the input, nothing is sent.

Line Out:

Mode → Set the function of the output

Main Out: Output main mix (same signal as headset/speaker)

Channel: Output any group from the network

Channel → Select a group to output (example Announcement)

Volume → Set output volume

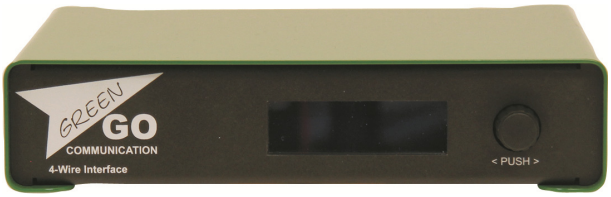
User:

Select the user and load the settings for this user. Select Cancel to exit this menu without selecting a user.

Clone Configuration:

The top line will show the name of the current configuration. Cancel will exit this menu without changing anything. Up to 4 other configurations found on the network will be shown below and can be selected. The option at the bottom of the list is to load the Factory Default configuration file.

Dual 4-Wire Interface



The 4-Wire interface unit can be used to integrate Green-GO with other analogue systems. It is a Dual unit, meaning that it has two separate programmable parts. Each part can act as a user (like a beltpack) or as a general purpose Line-In/Out to be used for audio distribution like Program or Announcements.

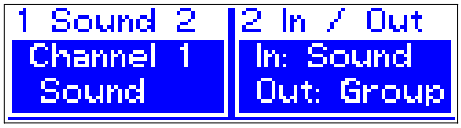
Connections

As stated previously this is a dual unit, with separate parts referred to as Port 1 and Port 2. Each port has a Balanced Line-In put on a 3-pin Female XLR and a Impedance Balanced Line-Out on a 3-pin Male XLR. A GPIO port is also available for each port, and 2 Ethernet ports on Neutrik Ethercon are included. The unit can be powered via PoE from Lan Port 2 or via the 12Vdc plug. The USB connector is included for future use.

Controls

Controls on the Interface unit comprise a Backlit graphical LCD screen and a rotary encoder with a push function.

Operation



The Main display shows the information on the 2 ports. Using the encoder you can scroll through all assigned channels. The last page shows information about the unit, e.g. the current firmware version. Pressing the encoder will access into the settings menu.

Settings and Options

The options in the main settings menu are:

- Exit: Return to normal operation
- Port 1: Adjust settings for port 1
  e.g. User assignment, Audio settings, GPIO, etc.
- Port 2: Adjust settings for port 2
- Clone Configuration: Copy system settings from a different unit

Port Settings

Each port can be used in user mode or in none-user mode. This is selected in the sub menu Set User.

User Mode

In this mode, each port is a user with talk,call and cueing controls. 32 channels + program audio can be setup for each port. The talk/call/cue control is done via the GPIO's.

Sub menus are:

- Channels: Change the channel assignment for each of the 32 channels
- Program Audio: Set the options for the Program audio source and levels
- Audio In/Out: Set the analog input/output options e.g. gain/gate and volume
- GP Input/Output: setup the functions of the GPIO's
- Set User: change the assigned user to the port, or set it to none-user mode.

Channel Assignment

First select the channel from the list of 32, then adjust all the parameters for this channel, like:

Vol → Set the output-mix volume for this channel
Type → Set the channel to a Group (party line) or Direct User (private talk)
ID → Select the Group or User

Program Audio

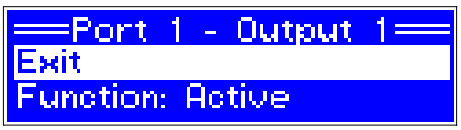
Src → Select one of the groups as program audio source
Vol → Set normal volume for the program audio
Dim → Set the amount of volume level the program audio reduces on other activities.

Audio In/Out

Set Default → Set all values to a known working setting
Output → Set the output volume
Auto → Set the auto gain function to Off/Slow/Med/Fast, can be used to regulate the maximum level of the microphone
MaxG / Gain → Maximum microphone gain in Auto / Gain in fixed
Thld → Threshold for the noise gate. Set this to a level that if no signal is on the input, then nothing is send onto the network.

GP Input/Output

Select the GPIO port that you want to change and this gives access to edit the input or output.
The first line sets the function of the port, the next line sets a parameter for this function.
For example: Set the function to Talk and then you can set the parameter to a dedicated channel of as a general answer button. More of these functions are described on page 8 in the GPIO section in this manual.
The last line sets the polarity of the input port, either Normally Open or Normally Closed.



TIP:

When the port is set to user mode, a GP input control is needed to enable the talk on a channel. To always enable the talk function on a channel, program a GP input as Talk enable on the channel (e.g. channel 1), but as Normally Closed. Now if no switch is connected to the input, it will always be active. Please note that the

threshold in the audio settings is set correct, so when there is no audio on the input, nothing is sent onto the network.

Non-User mode
This mode is used as a general purpose audio input and output. The Line-In can be programmed to send audio into a group on the network. The Line-Out can be programmed to receive audio from a group on the network.

Line-In
Dest → Set the Group where the audio from the input should go.
Auto → Set the auto gain function to Off/Slow/Med/Fast, can be used to regulate the maximum level of the microphone
MaxG / Gain → Maximum gain in Auto / Gain in fixed
Thld → Threshold for the noise gate. Set this to a level that if no signal is on the input,

Line-Out
Source → Set the group to listen to.
Output → Set the output volume

2-Wire Interface (Party-Line)

The 2-Wire interface unit can be used to integrate Green-GO with legacy analogue party-line systems.

It is a Dual unit, meaning that it has two separate programmable parts. Each part can act as a user (like a beltpack) or as a general purpose Line-In/Out to be used for audio distribution like Program or Announcements.

Connections

The unit has 1 Port with a Male and Female XLR 3-pin to connect to an analogue party-line. Supported third-party systems are Clearcom/RTS/Telex/ASL. An external powersupply/termination for the line is needed, the interface acts as a beltpack.
The Line input is balanced on Female 3 pin XLR. The Line Output is on a 3 pin Male XLR and is impedance balanced.
2 Ethernet ports on Neutrik Ethercon are included. The unit can be powered via PoE from Lan Port 2 or via the 12Vdc plug. The USB connector is included for future use.

Controls

Controls on the Interface unit comprise a Backlit graphical LCD screen and a rotary encoder with a push function.

Operation

The Main display shows the information on the 2 ports. Using the encoder you can scroll through all assigned channels. The last page shows information about the unit, e.g. the current firmware version. Pressing the encoder will access into the settings menu.

Settings and Options

The options in the main settings menu are:

- Exit: Return to normal operation
- Set User: change the assigned user to the port, or set it to none-user mode.
- Channels: Change the channel assignment for each of the 32 channels
- Program Audio: Set the options for the Program audio source and levels
- 2-Wire Port: Setup the anlogue settings for the party-line
- Line In: Setup the Line Input
- Line Out: Setup the Line Output

Channel Assignment

First select the channel from the list of 32, then adjust all the parameters for this channel, like:

Vol → Set the output-mix volume for this channel
Type → Set the channel to a Group (party line)
or Direct User (private talk)

ID → Select the Group or User

Program Audio

Src → Select one of the groups as program audio source
Vol → Set normal volume for the program audio
Dim → Set the amount of volume level the program audio reduces on other activities.

2-Wire Port

Mode → Select the Line level for the partyline. This is dependand on the brand. After selection, the unit will preform a auto-null sequence to adjust the audio levels.
Run Auto-Null → Manually restart a Auto Null sequence.
Call Signal → Set the type of calling either DC (clearcom/ASL) or AC (RTS and also clearcom) or both.
Thld → Input gate threshold. If there is a lot of humm on the line, this may need to be set higher.
Output → After the Auto-Null it is stil posible to change the Output volume.
Input Gain → Same as with the Output it is possible to change the input gain after the auto-null sequence.

!!! NOTE: when running the auto-null, have the complete system connected and all mic's off.

Line-In

See 4-wire operation

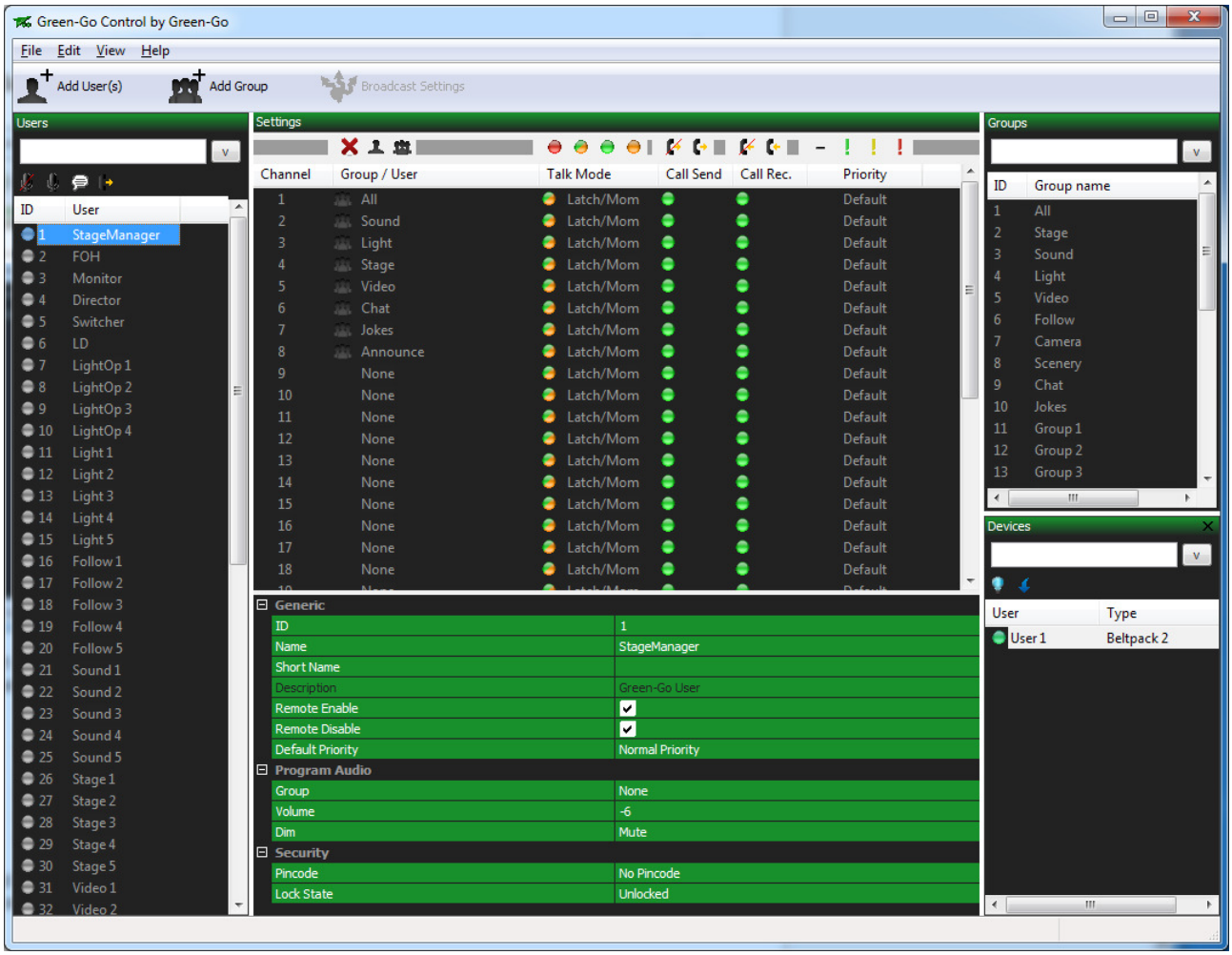
Line Out

See 4-wire operation

Clone Configurations

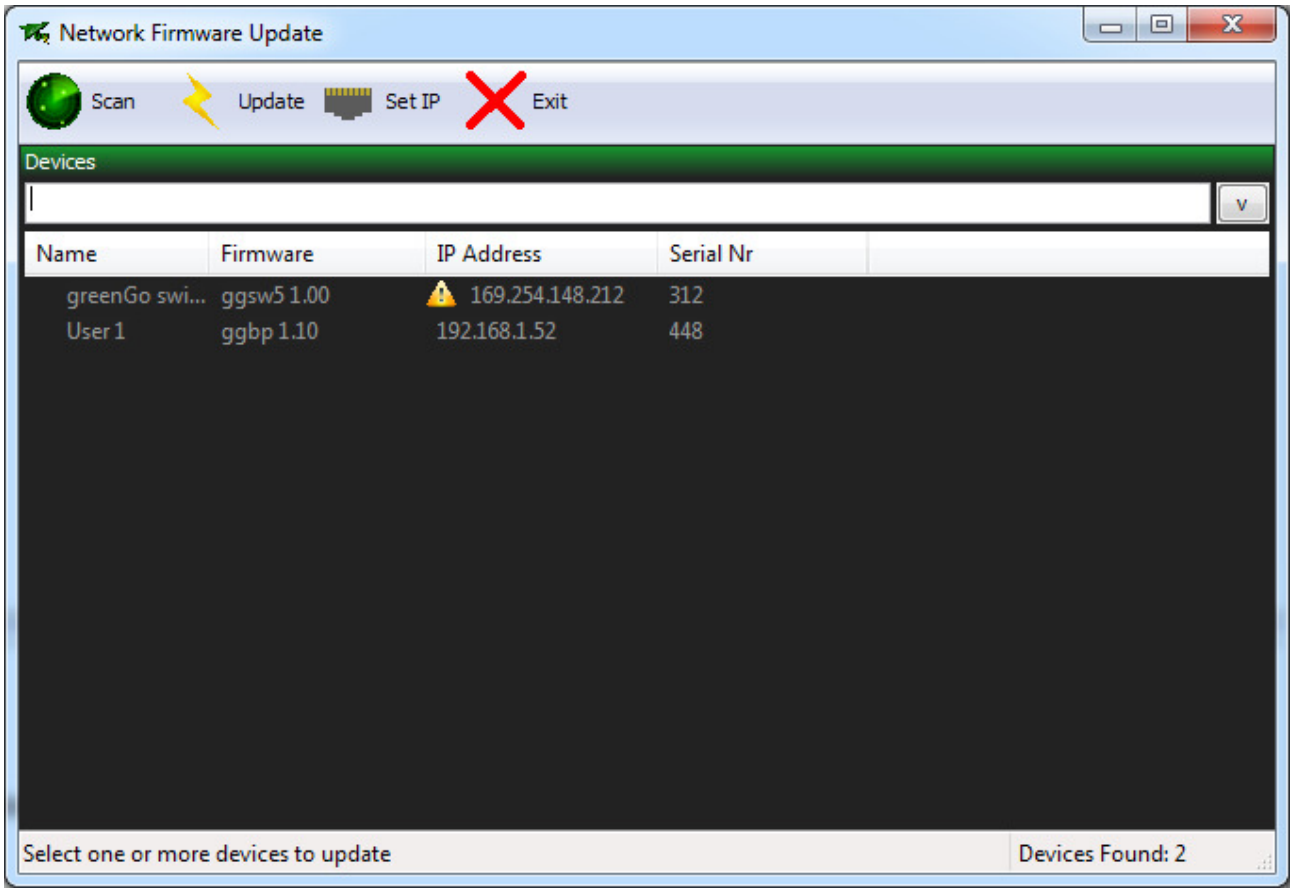
See Beltpack operation

Configuration Software



The control software is used to create and modify the system configuration. It defines all groups/users and user channel and global settings. It also shows all connected devices on the network.

Update Software



The Firmware Update program is part of the software package. This program is used to upgrade the firmware on the devices. The four buttons on the menu bar are:

- Scan: Search for devices on the network
- Update: Send new firmware to the selected devices. (you'll be asked what firmware file to send).
- Set IP: With this option it is possible to change the IP address of the unit to Dynamic (default) or a Static address. Changing the IP address is normally NOT needed, but is available.
- Exit: quit the program.

Latest firmware versions are with the software package, or can be requested vie email to: support @ greengocom.com

Practical Considerations

Power over Ethernet and Crossover Cables

All units work on Power over Ethernet (abbreviated to PoE). Some units can also work with an external power supply (multi channel stations and interface units). PoE uses a sensing method to check if a connected device needs power and how much. It will only apply power when needed. PoE comes in two ways: either power on the data lines or on the spare lines: Green-GO products support both. There is also no need to worry about using crossover cables as all devices support MDIX (automatic detection).

Bandwidth and Latency

The system audio runs at 16kHz sample frequency with 16-bit dynamic range. The number of active sources determines the network bandwidth used. An active source is, for example, a user with talk enabled and actually speaking (this is the gate functionality). Each active source uses about 340kBits/sec, less than 0.4% on a 100MBit network. The audio latency is fixed at 12 milliseconds, comparable to standing 4 metres away from the person talking (no lip-sync problems).

Quality of Service (QoS) / Class of Service / IEEE 802.1p

Green-GO communication system is designed to work on a shared network. As the latency of Green-GO is very low (12 milliseconds), there is a small requirement on the network switches used. The switches need to support Quality of Service (QoS) or IEEE 801.2p. Almost every professional switch supports this, but check the specifications.

VLAN and 1GB backbones

Green-GO can work with or without a VLAN. When deploying a large scale network with a 1GB backbone that uses a lot of multicast/broadcast (more than 100Mbit), then it is good practice to create a VLAN for Green-GO as it is based on 100Mbit Layer2 multicast technology.

Boot up time and Network indication

The boot up time of the devices is less than 3 seconds, but care should be taken as some switches can take up to 30 seconds to bring up the network link (this can be due to spanning tree functionality of the switches). Each Green-GO device will indicate if the network connection is ok and that there are other Green-GO devices "visible" with the same configuration. The beltpacks will have a blue backlight if there is a problem or no other devices are found, the Multichannel device will blink the Setup button will flash red and the interface units will flash the backlight.

IP addressing

The IP address is NOT needed for normal operation of the system. The handling of IP addresses is only needed if the Green-GO devices need to communicate with a computer (only for loading new configuration or monitoring and firmware updates). By default the units get a dynamic ip address via DHCP or LLC, a fixed ip address can be set with the Firmware Update program.

Cabling and Connectors

Use of Ethercon Cable Parts on beltpacks is recommended, because the connector on the beltpack may be damaged if the network cable is snagged.