



Genelec Smart IP driver for LARA



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1. Introduction

Smart IP LARA module is for controlling Genelec Smart IP loudspeakers using REST style communication with a reduced set of HTTP/1.1 protocol. Smart IP API documentation can be downloadad from here:

<https://www.genelec.com/smart-ip-api>

2. Installation and Configuration

2.1. Installation

Minimum equipment requirement for the solution:

- Lightware UCX series Universal Matrix Switcher (FW: v2.12.0b3)
or UCX-BD series Universal Matrix Switcher (FW: v2.14.0b3) with built DSP
- Smart IP device, in this example: Genelec 4410 loudspeaker (FW: 44x0-1.4.0)
- Ethernet network switch
- Cables

Before you start, please setup Genelec active speaker as an audio device using Smart IP Manager.

Further information can be found here: <https://www.genelec.com/smart-ip-manager>

Before uploading any LARA module, or configuration, please download the latest Firmware from <https://lightware.com/>. Upgrade your UCX series Universal Matrix Switcher and activate LARA.

For further information please refer to the user manuals:

https://lightware.com/pub/media/lightware/filedownloader/file/User-Manual/Taurus_UCX_series_Users_Manual.pdf

<https://lightware.com/lara/>

https://lightware.com/pub/media/lightware/filedownloader/file/User-Manual/LARA_Users_Manual.pdf

2.2. Configuration

2.2.1. Starting LARA, Uploading Configuration

Start a new browser window typing : <https://192.168.1.88/lara> where the IP address is : UCX series matrix device

Choose: UPLOAD CONFIGURATION

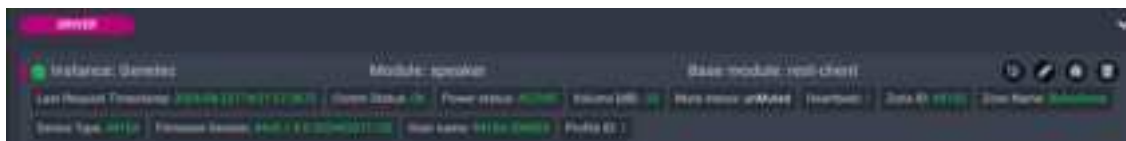


For detailed information please find chapter 5.7. Lightware Advanced Room Automation (LARA) in this document: https://lightware.com/pub/media/lightware/filedownloader/file/User-Manual/Taurus_UCX_series_Users_Manual.pdf

3. Dashboard Content

The following status indicator is displayed on the Status board in the row of the instance:

- Connection state of the device
- Product data (Device type, FW version)
- Power status, Mute status, Volume level, Zone information, Device information



4. Defined parameters

- ipAddressOrHost: The IP address or the host name of the Genelec Smart IP device, hereinafter loudspeaker in this example
- Username: defined in Smart IP Manager
- Password: defined in Smart IP Manager
- Min / Max Volume level can be defined. These are converted to status variables for future use in the logic module.
- Log messages can be enabled in the log section of LARA GUI.

EDIT GENELEC INSTANCE PARAMETERS

Instance name
Genelec

CONNECTION SETTINGS

IP Address or Hostname
192.168.1.130

IP address or Hostname of device

AUTHENTICATION SETTINGS

Username
admin

Username for basic authentication

Password
admin

Password for basic authentication

SETTINGS

Minimum Volume value
-72
Defines the speaker volume's minimum value (-132 ... 0 dB)

Maximum Volume value
-12
Defines the speaker volume's maximum value (-132 ... 0 dB)

Log message enabled
false
Enables log messages in the console log window

5. Defined Events

5.1. Heartbeat_priod:

This event is dispatched, after every 5000 ms. This means that the dashboard information is refreshed in every five seconds.

5.2. Speakererror:

This event is emitted in case of connection loss between the UCX and the Genelec speaker.

5.3. error:

e.g. Problem in the data transmission, e.g. wrongly set frame delimiter. `errormessage` parameter is defined in this event for the error code.

5.4. responseReceived:

The received string; `string` parameter is defined in this event. It can be used to analyse the content of the response received from the device.

5.5. Defined Status Variables:

maxVolume

minVolume

speakerCommunicationStable

identificationActive

profileList

networkData
measurementData
audioInputData
danteIPData
danteIdentity
versionString
muteState
volumeValue
powerstate

Content of these status variables based on the Genelec Smart IP API interface's description. Please refer to this API manual, and find some examples in the next chapter.

6. Defined Methods

6.1. put, post, get, del

Common rest api methods

6.2. heartbeat

Periodically queries data for the dashboard of LARA from the loudspeaker.

6.3. setMute

Sets the Mute State of the loudspeaker. If the parameter is "true" the speaker is muted, in case of "false" the speaker is unmuted.

6.4. setVolume

Sets the loudspeaker's volume level via the "level" Parameter, which can be within this range: -133 .. 0 dB

6.5. setPowerState

Sets the Power State of the loudspeaker. If the parameter is "ACTIVE" the device is powered on, in case of "STANDBY" the device is on standby mode.

6.6. getDeviceInfo

Gets the following device information:

```
Versionstring: {  
  fwId: '44x0-1.4.0-202405311152',  
  build: '7f915d',  
  baseId: '1.0.0',  
  hwId: '',  
  model: '4420',  
  category: 'SAM_2WAY',  
  technology: 'SAM_IP',  
  upgradeId: 10,  
  apiVer: 'v1'  
}
```

6.7. getAoIPIdent

Gets the AV over IP (Dante) information:

```
Dante information: {  
  id: '001dc1ffe829b26',  
  name: 'Genelec-829b26',  
  fname: 'Genelec-829b26',  
  mac: '00:1D:C1:82:9B:26'  
}
```

6.8. getAoIPData

Gets the AV over IP (Dante) network parameters:

```
Dante information: { ip: '192.168.5.70', mask: '255.255.252.0', gw: '192.168.7.254' }
```

6.9. **getMeasurementData**

Gets the measured parameters from the loudspeaker.

```
[2024-06-25 14:12:23.399] - TEST_logic - Measurement data: {  
  uptime: '23h 44m 6s',  
  bsLevel: -197.900009,  
  twCoilT: 53,  
  twLevel: -185.5,  
  inLevel: -116.800003,  
  nwInKbps: 76,  
  cpuLoad: 69,  
  cpuT: 53.6000023  
}
```

6.10. **getProfileList**

Gets list of profiles stored in the loudspeaker

Profile list: { selected: 0, startup: 0, list: [] }

6.11. **setProfileID**

Restore profile from flash and set it as an active profile.

6.12. **getNetworkConfig**

Gets the network configuration.

```
Network data: {  
  hostname: '4420-200502',  
  mode: 'auto',  
  ip: '192.168.5.68',  
  mask: '255.255.252.0',  
  gw: '192.168.7.254',  
  vollp: '0.0.0.0',  
  volPort: 0,  
  auth: 'admin:admin'  
}
```

6.13. **getAudioInputData**

Gets the list of selected inputs.

Audio input information: { input: ['A', 'AoIP01', 'AoIP02'] }

6.14. **identification**

Identify the speaker by flashing front LED

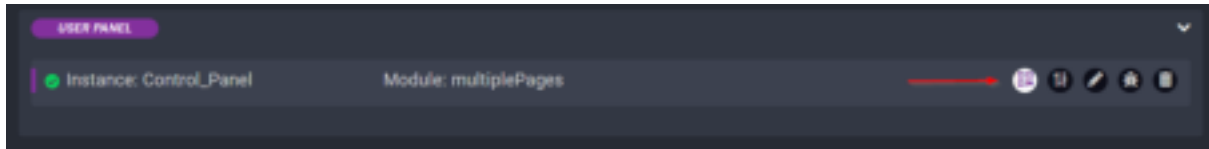
6.15. **setLEDIntensity**

Sets the speaker's front LED brightness

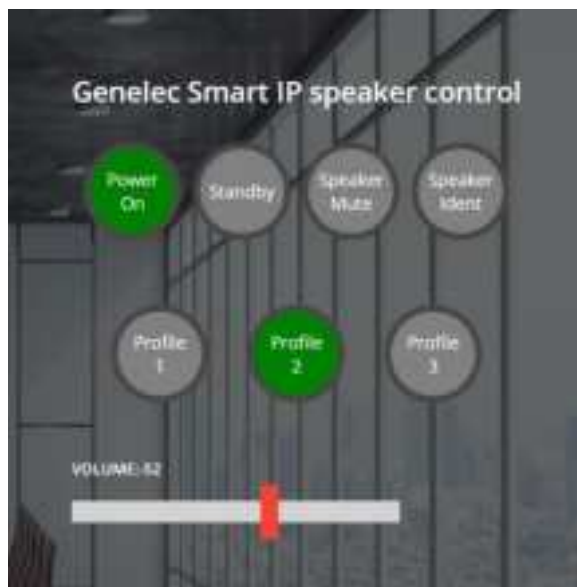
7. Defined Rules in the Test Logic Module

There are two kinds of Rules defined in the TEST logic module.

To test the system please find the QR code link button in the Control Panel section:



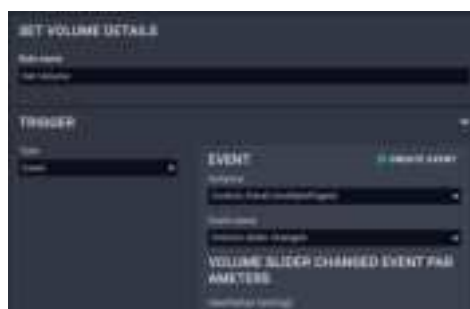
After pushing it the new browser window will open with a simple menu bar. In this menu bar Speaker Control submenu opens the operational panel:

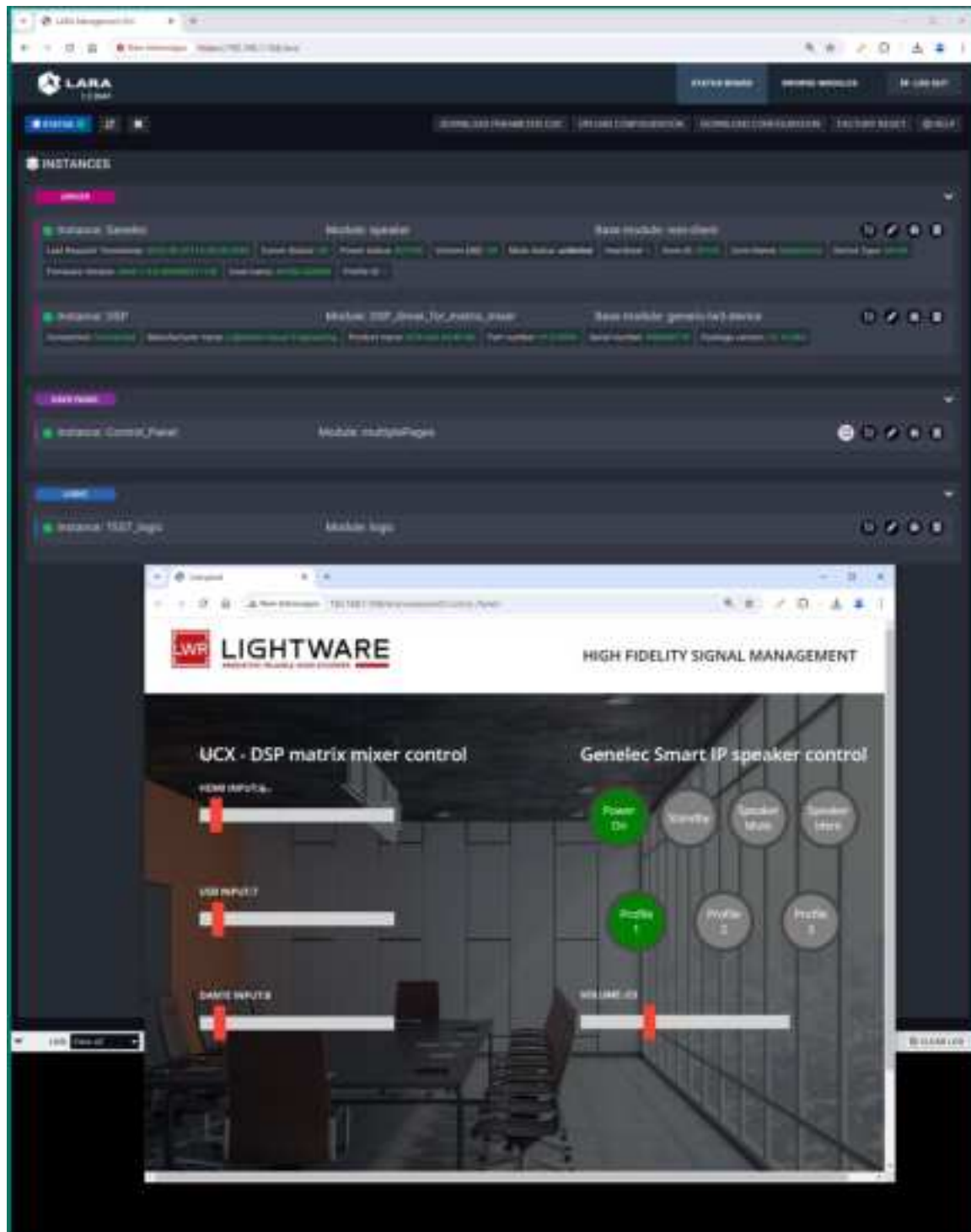


7.1. Rules for setting parameters of the loudspeaker:

setVolume,
Power On,
Standby,
speaker Mute pressed,
profile button pressed

These Rules are triggered by events emitted by the Control panel (button press, slider move)





7.2. Rules for getting data from the loudspeaker

Rules are triggered by changes of the corresponding Status Variables of Speaker Module e.g. gives feedback for changing the volume value for the speaker.

The actions made in these Rules are very simple just they log out the content of the given Status Variable if the logging is enabled in the parameter section.

Rev.	Release date	Changes	Editor
v1.0.0	02-07-2028	Initial version	Péter Szabó 3
v1.1.0	22-08-2024	setLedIntensity, min/max Volume, UCX-BD series built DSP control added	Péter Szabó 3