APPLICATION NOTES

QSYS PLUG-IN FOR CANALI SERIES NON-DSP V.2.2

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This document is intended to assist the user in deploying the QSYS Plug-in for Canali Series non-DSP V.2.2. The plug-in is designed to control gain, mute, and power state. The plug-in reads device-wide and channel alarms and allows the user to write a custom nickname to each amplifier. This plug-in will control amplifiers of the Powersoft Canali Series, those which do **not** have DSP and Dante capability.

Requirements

There are a few requirements to run the plug-in and control the amplifier:
- Powersoft Canali Series Amplifier Model: Duecanali 804, Duecanali 1604, Duecanali 4804, Quattrocanali 1204, Quattrocanali 2404, Quattrocanali 4804 using v.2.0.2.48 or later firmware.
- QSYS Core with QSYS Designer v.8.0 or later software and firmware.
- Powersoft Armonía Plus Software v.1.4 or later.

Preparation

In preparation for the use of the plug-in, the user needs to set, or discover the IP Address on the amplifier. The Canali Series amplifier by default is set to receive an IP address from a DHCP server. If there is no DHCP server on the network, the amplifier will default to an address within the IP subnet: 169.254.X.Y, where X and Y are variable and unique to each unit.

Following are the steps to connect to the Canali Series amplifier and read its IP address:
1. Connect the Canali Series amplifier and the PC to the same network.
2. If there is no DHCP server available, set the PC Network Interface Card (NIC) to an address within the subnet 169.254.X.Y, otherwise, skip to the next step.
3. Open Armonía Plus software turn "Synchronization" On and hit "Match", then "Discovery." The Canali Series non-DSP should appear under the list of amplifiers discovered on the network. By hovering the mouse over an amplifier its current IP address will be displayed in a pop-up window.

Following are the steps to set the Canali Series amplifier IP address:
1. Click on and drag the amp from the Discovery column into the Workspace.
2. Click on "Config" and select the Canali Series amp to be configured in the Workspace.
3. Under "Select Mode" choose "DHCP" if a DHCP Server is present on the network and the amp is due to have a dynamic address. If there is no DHCP Server present, choose "Static" to assign a static IP address to the amp. The IP address must be a member of the subnet the QSYS core is operating within.
4. Click "Apply" and close Armonía Plus.

Important Note:
To ensure the accuracy of Read/Write control it is advisable to disengage Synchronization in Armonía Plus before controlling the nonDSP amplifier with this QSYS Plug-in.

Installation

The plug-in will come as a ".qplugx" encrypted QSYS Plug-in file. Following are the steps to install the plug-in for use with QSYS to control Powersoft Canali Series non-DSP amplifiers.

1. Once the plug-in is downloaded, deposit the file *Powersoft Canali nonDSP v.2.2.qplugx* into the PC's folder: C:\Users*UserNameHere*\Documents\QSC\Q-Sys Designer\Plugins.
2. Close QSYS Designer and re-open it.
3. The plug-in will appear in the "Plugins" tab (Figure 1) under Powersoft. Click on it and drag it into your design.
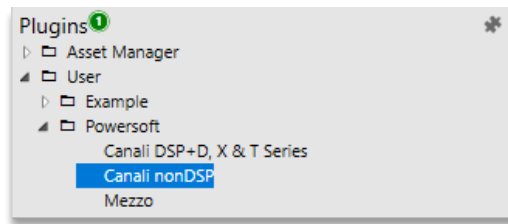

Figure 1 – Screenshot of Plugins section of QSYS Designer.

Getting Started

Following are the steps to get started with the plug-in:

1. Select the "Powersoft Canali Series QSYS Control Module V.2.2" plug-in in the design.
2. Choose the model to control in the QSYS Properties pane (Figure 2).
3. Expand and connect any control pins you wish to incorporate into the design (Figure 3).
4. Enter a local UDP Port between 1024 and 49151. If controlling multiple amplifiers, each instance of the plug-in must have a different local UDP Port (Figure 4).
5. Enter the IP Address of the amplifier you wish to control into the text field (Figure 5).
   Important Note:
   Please know that once the IP Address has been entered, the user is controlling the Canali Series non-DSP amplifier at that IP address. Any further action is writing to the unit.
6. Click on the *Link* button to begin the initial amp settings read process and to begin the polling/connection scheme (Figure 5).
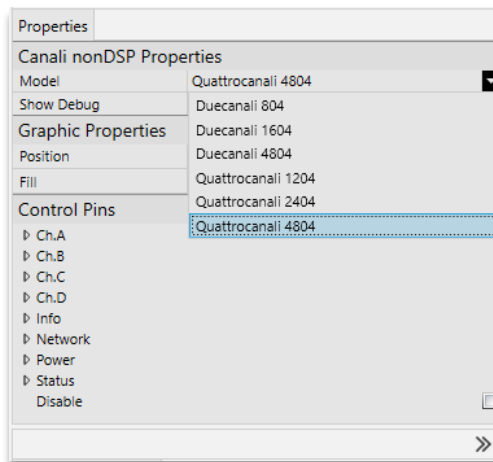
Figure 2 – Screenshot of QSYS Designer's Properties Pane.
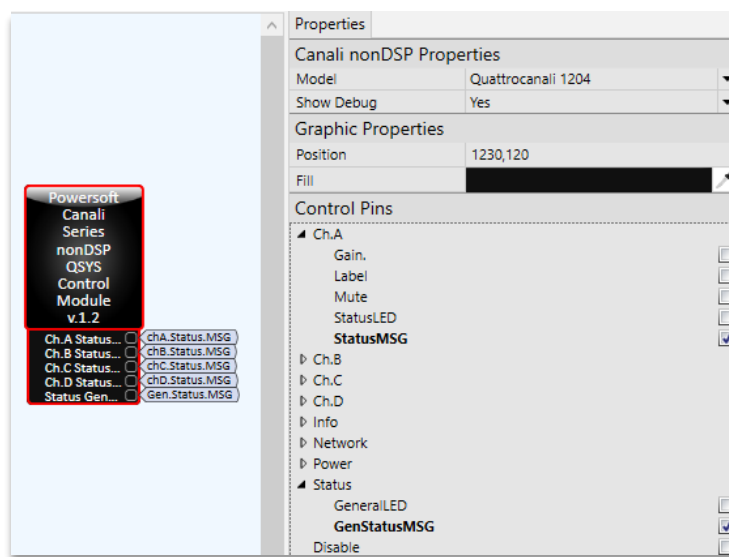

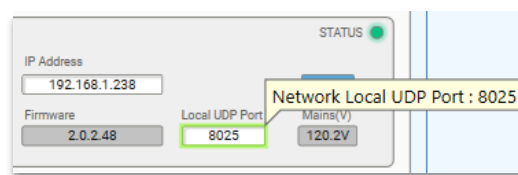Figure 3 – Screenshot of Control Pins of the Plug-in QSYS Designer.

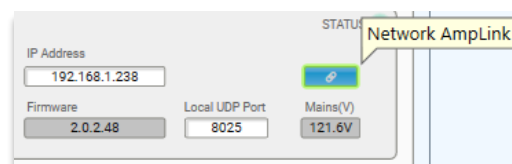Figure 4 – Screenshot of Local UDP Port text field.

Figure 5 – Screenshot of IP Address text field and AmpLink button.

Features

Following are a list of the plug-in features:

- In the top left corner of the plug-in the *Model* of the Canali Series amplifier is listed. Initially, the Model is selected in the Properties pane by the user. It is updated when the user clicks the *AmpLink* button, and the plug-in begins reading from the amplifier.

- The *Power* button is used to manually put the amp into Power-On, or Standby mode.

- The momentary *Blink* button will engage the (10) second LED Blink sequence. The Blink function can help to verify communication and identify the amplifier.

- The *Name* text field is for the Nickname that will live on the amplifier. This text field is limited to (16) characters.

- The text entry field *IP Address* is available for the user to enter the IP Address of the Canali Series amp due to be controlled:
  - The IP address must be a 32-bit numeric IPv4 address written as (4) numbers separated by periods.
  - If the IP address is invalid a warning will appear on the *Status* LED for a few seconds.

- The text entry field *Local UDP Port* is available for the user to enter the local UDP port the Core will use to receive messages from that amplifier:
  - The acceptable range is from 1024 to 49151
  - The plug-in transmits to the Canali Series non-DSP on UDP Port 8002. This is set statically within the Application Programming Interface (API). The local UDP port is used to distinguish the plug-in from other instances that are running within the design when receiving solicited messages from the amplifier.
  - When controlling multiple Canali Series non-DSP amps with multiple instances of the plug-in, each instance must have a unique Local UDP port number.

- The read only field *Mains(V)* will display the Mains AC voltage applied to the amplifier.

- The *AmpLink* button behaves according to toggle logic. Once a valid IP address is entered and the *AmpLink* button is pressed, the plug-in reads all settings and information from the amplifier and begins the polling and simulated connection sequence.

- The *Status LED* is a virtual LED that can indicate several conditions in the Amplifier.
  - A general status of "OK" and **green** LED color is to be expected when the amplifier is running normally.
  - There are fault warnings accompanied by a **red** LED color for the following conditions: Temperature Fault, Fan Fault, Vaux Fault, and Mains(V) Fault. If the user witnesses a **red** LED color on the *General Status LED,* they can check the *General Status Message* text and it will indicate which alarm has been triggered. The *General Status Value* will read; "OK," "Fault," "Compromised," or "Missing," depending on the condition.

- *Serial Number* is a read-only field with data read from the amp. Listed is the hardware serial number on the amplifier. It is read each time the user clicks the *AmpLink* button.

- *Firmware* is a read-only field with data read from the amp. Listed is the firmware version that lives on the amplifier. It is read each time the user clicks the *AmpLink* button.

- The Channel Section is made up of the following controls (Figure 6):
    - The *Channel Status LED* – This virtual LED can indicate several conditions in the amp regarding the output channels.
        - A general status of "OK" and **green** LED color is to be expected when the amplifier channel is running normally.
        - There are fault warnings accompanied by a **red** color for the following channel conditions: Temperature Fault, Thermal Limiting Fault, Clip Signal Fault, and Voltage Rail Fault.

    - *The Channel Label* – This label lives entirely within the QSYS environment and is not associated with a parameter in the Canali Series non-DSP API.
    - *Headroom* – A useful control which demonstrates the available dynamic range the user has on that output channel. The signal readout is pre-mute. The range depicted is from greater than (>) 24dB to -12dB:
        - The (>) 24dB indicator is triggered by the channel's signal presence parameter.
        - The blue LEDs Indicate 6dB steps of reduction in the headroom available below the limiter threshold for that channel.
        - The first yellow LED indicates a gain reduction of 0 to 6dB due to limiting.
        - The second yellow LED indicates that the output is experiencing a gain reduction of 6 to 12dB.
        - The red LED indicates a gain reduction of more than 12dB.

    - *Gain* – The gain for the output. It ranges from -60dBu to +15dBu.
    - Mute – The Mute button for the output channel. The icon change is a result of feedback from the amplifier confirming that the output channel is muted.
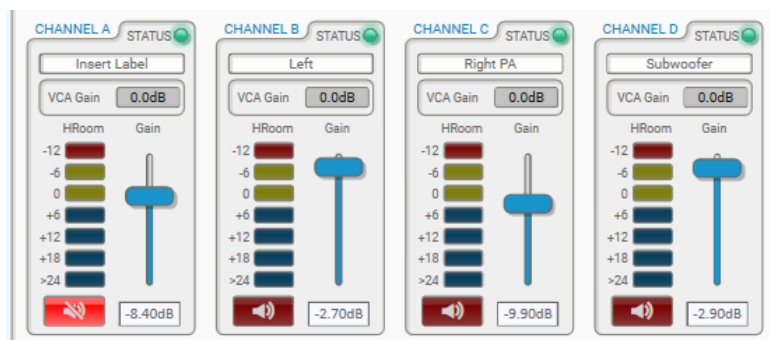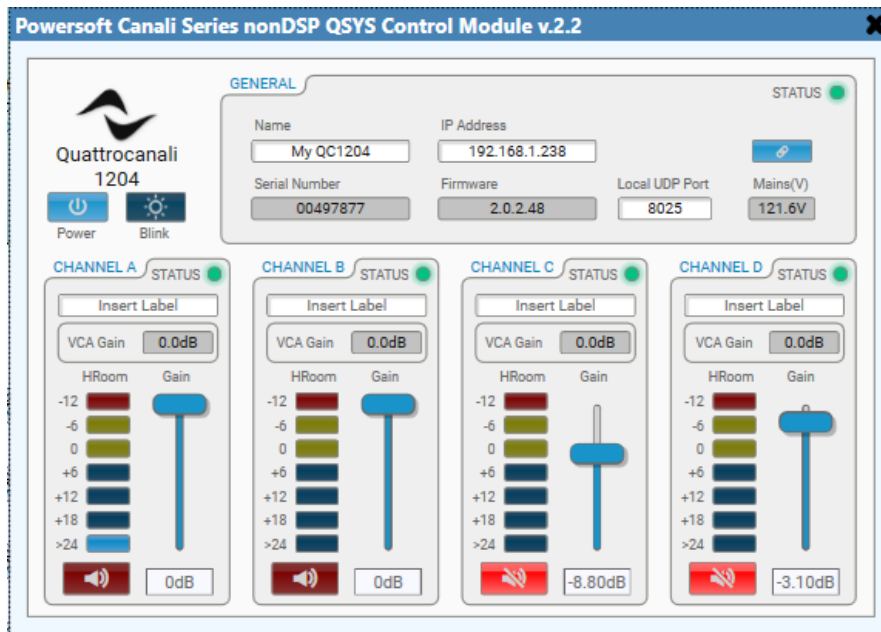

Figure 6 – Screenshot of Channel Section.

Figure 7 – Screenshot of Plug-in Main Page.

Final Comments

- It is important to close Armonía, or any 3rd party application communicating with the Canali Series non-DSP amplifier before starting the plug-in. The UDP Server in the amp at this time will only support (1) socket.
- It is important to know that once the IP Address for the amplifier has been entered, the user is controlling that amplifier. The *AmpLink* button reads the settings from the amplifier and starts the polling and simulated connection scheme.

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