

# APPLICATION NOTE

Converge Console (Version 1.0.4)  
Converge Pro Product Family

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## OPTIMIZING GAIN STRUCTURE

### Purpose

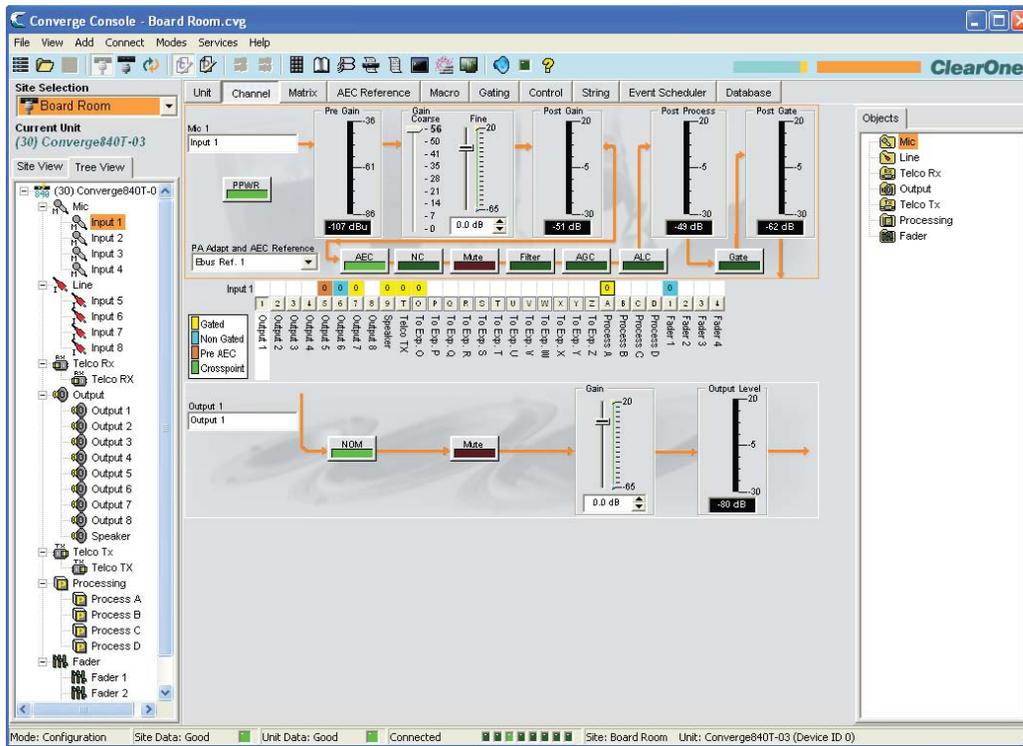
This document provides guidelines for setting levels to optimize the gain structure for Converge Pro installations. Optimizing gain structure maximizes the signal-to-noise ratio for each channel, optimizes the performance of Converge Pro processing functions, and ensures optimal audio quality.

Use these guidelines when optimizing initial gain structure for a venue:

- Connect all input sources and output devices to the Converge Pro unit(s).
- Turn off all processing functions, including AGC/ALC (Automatic Gain Control/Automatic Level Control), NC (Noise Cancellation), and Filters.
- Optimize all mic and line inputs that are routed to an output before optimizing the output.
- When optimizing output channels, the objective is to match the output to the nominal gain of the input of the device that is connected to the Converge Pro output channel.
- In general, turn NOM off when an output channel feeds an amplifier. Turn NOM on when optimizing telco tx channels, in sound reinforcement applications, and when optimizing for video codec configurations.
- After optimizing gain using the procedures below, re-enable processing functions and NOM as required.

### Optimizing Gain for Mic Input Channels

1. Open the **Channel Tab** and select the **Mic Input** on the **Tree View Tab** that you want to optimize (as shown below).



2. Have somebody repeat a test count at a normal distance from the microphone (generally this would be seated at the conference table or positioned for a video teleconference).
3. Adjust the **Coarse Gain Slider** until the peaks on the **Post Gain Meter** are close to +6dB (just hitting yellow), and the average level is close to 0dB.
4. Adjust the **Fine Gain Slider** until the peaks on the **Post Gain Meter** are as close to +6dB and the average level is as close to 0dB as possible.
5. Repeat the above steps for each mic input in the venue.

**NOTE:** The Post Gain Meter is a peak meter. If the meter remains green, the level may be too low. If it peaks into red, clipping occurs.

### Optimizing Gain for Line Input Channels

Line inputs are optimized using the same procedure as mic inputs, with the following exceptions. Select the **Line Input** you want to optimize on the **Tree View Tab**. With the line source connected, monitor the **Post Gain Meter** and adjust the gain level.

**NOTE:** Line sources, including video codecs, consumer grade CD players, DVD players and VCRs, commonly require 10-12 dB of gain to bring their levels up to 0 dBu.

### Optimizing Gain for Telco Rx Channels

Optimize telco rx inputs using the same procedure as mic inputs, with the following exceptions. Select **Telco Rx** on the **Tree View Tab**. With someone talking on the phone, monitor the **Post-Gain Meter** and adjust the gain level.

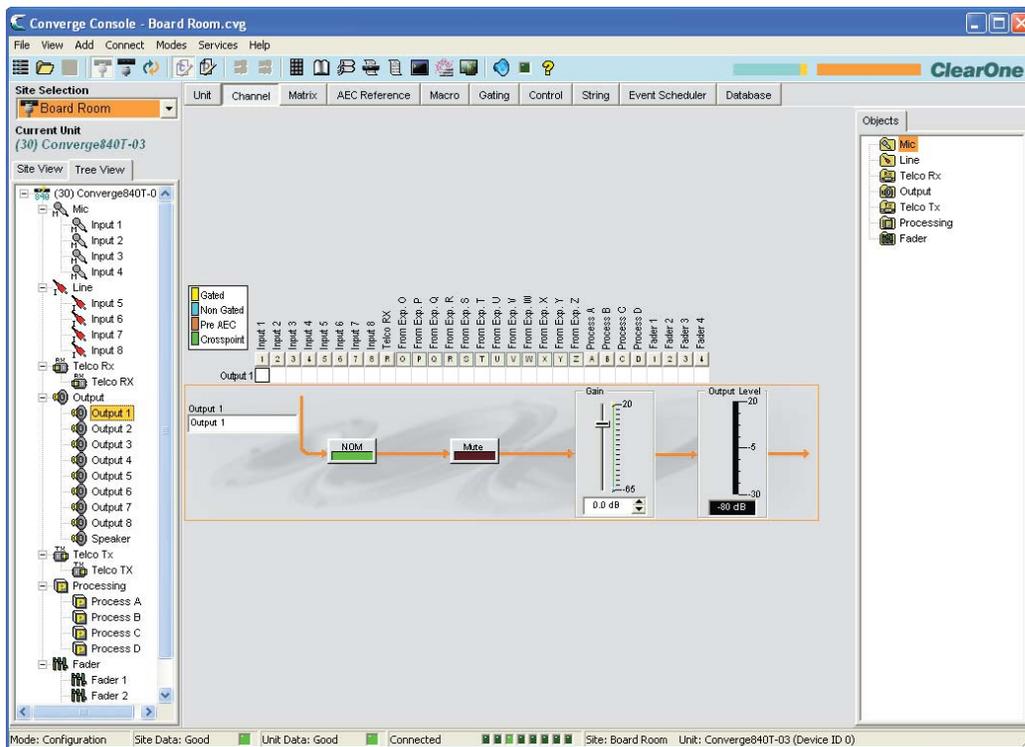
### Optimizing Gain for Telco Tx Channels

Optimize telco tx outputs using the same procedure as output channels, with the following exceptions. Select **Telco Tx** on the **Tree View Tab**. With someone speaking into the microphones routed to the telco tx, monitor the **Post Gain Meter** and adjust the gain level.

**NOTE:** Use a standard handset on the far end because levels can be unpredictable from speaker phones and amplified headsets.

## Optimizing Gain for Output Channels

1. Open the **Channel Tab** and select the **Output Channel** on the **Tree View Tab** that you want to optimize, as shown below.



2. Optimize the gain level for all mic, line, and telco rx inputs routed to the selected output channel.
3. Adjust the **Gain Slider** until the average level on the **Gain Meter** matches the nominal level of the next device in the chain.
4. Repeat the above steps for each output channel in the system.

## Additional Information

For more information on optimizing gain structure and channel configuration, refer to the *Converge Pro Installation & Operation Manual* for these related topics:

- **Configuration Mode Overview**
- **Mic Input Settings**
- **Line Input Settings**
- **Telco Rx Settings (840T and TH20)**
- **Telco Tx Settings (840T and TH20)**
- **Output Settings**
- **AEC (Acoustic Echo Cancellation)**
- **AGC/ALC (Automatic Gain Control/Automatic Level Control)**
- **NC (Noise Cancellation)**
- **Filters**