APPLICATION NOTE

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CONFIGURING CONVERGE PRO 2
GPIO PINS TO CONTROL
MICROPHONES AND LED'S

CONFIGURING CONVERGE® PRO 2 GPIO PINS TO CONTROL MICROPHONES AND LED'S

This application note provides information about the how to configure CONVERGE PRO 2 GPIO (General Purpose Input/Output) pins to control microphones and associated LEDs.

For example purposes, this app note illustrates a push-to-talk/push-to-mute configuration with a [Shure MX392 microphone](#).

All configuration screen images are from ClearOne's CONSOLE AI software.

The detailed procedure to set or change the type of GPIO pins on a CONVERGE PRO 2 is available in Chapter 6 of the [CONSOLE AI User Manual](#).

Related Information
[ClearOne Resource Library](#)
[CONSOLE AI User Manual](#)
[CONVERGE PRO 2 Brochure](#)
[CONVERGENCE AV Network Manager](#)

Introduction

A CONVERGE PRO 2 DSP has four configurable GPIO pins that allow the DSP to receive input from and send output to GPIO-compatible equipment such as microphones and LEDs. The DSP's native pins are default set with pin type as Open Collector Output.

You can set the pin type of each of the native pins as follows:

- Open Collector Output
- Active Output
- Logic Input
- Variable Voltage Control Input

The GPIO Expander for CONVERGE Pro 2 provides 12 Logic Input and 12 Open-Collector output pins. The pin type for all 24 pins on the Expander are fixed – you cannot change the pin type.

To achieve the desired control results, you must configure the GPIO pins.

The following are the major steps to configure GPIO pins to connect to microphones and LEDs:

1. Create a macro to trigger GPIO.
2. For each of the native pins you plan to use, set the pin type.
3. Allocate the pins.
4. Define the GPIO Logic Input pin triggers.
5. Define the GPIO Output pin actions.
6. Make the physical connection between the pins and the microphone.

Logic Input pins in Converge Pro 2 can run only Presets and Macros. Therefore, after you allocate a Logic Input pin, you must

- Define the logic input triggers
- Create and assign a macro or macros to execute the desired mute(s).

Important:

With the use of pushbuttons, the voltage that a GPIO pin sees depends on whether the pushbutton, when pressed, connects to:

- 5 Vdc - high
  or
- 0 Vdc - low or ground

The mute button of the Shure MX392 microphone behaves as follows:

Button status	Connection Potential
Depressed	0 Vdc (low/ground)
Released	5 Vdc (high)

The following information describes the steps to configure native GPIO pins for push-to-talk/push-to-mute functionality. The last step includes an illustration of connections with a GPIO Expander.
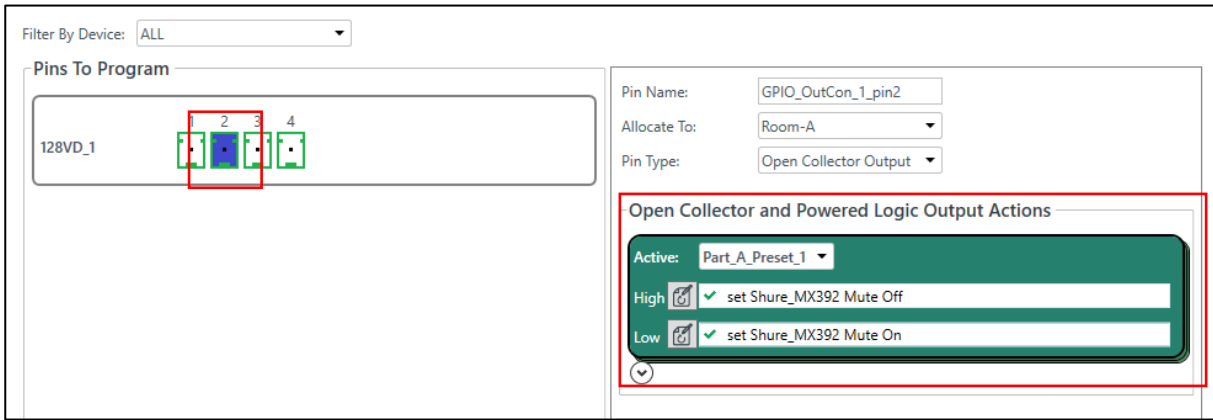
1. Create the Mute Macro
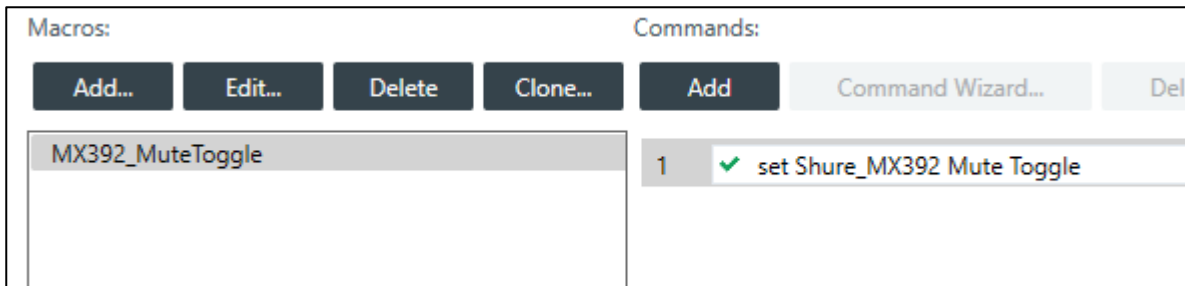
2. For one pin (pin 1 in this example), do the following:

   a. Set a pin type of Logic Input
   b. Allocate the pin
   c. Define the logic input trigger commands.
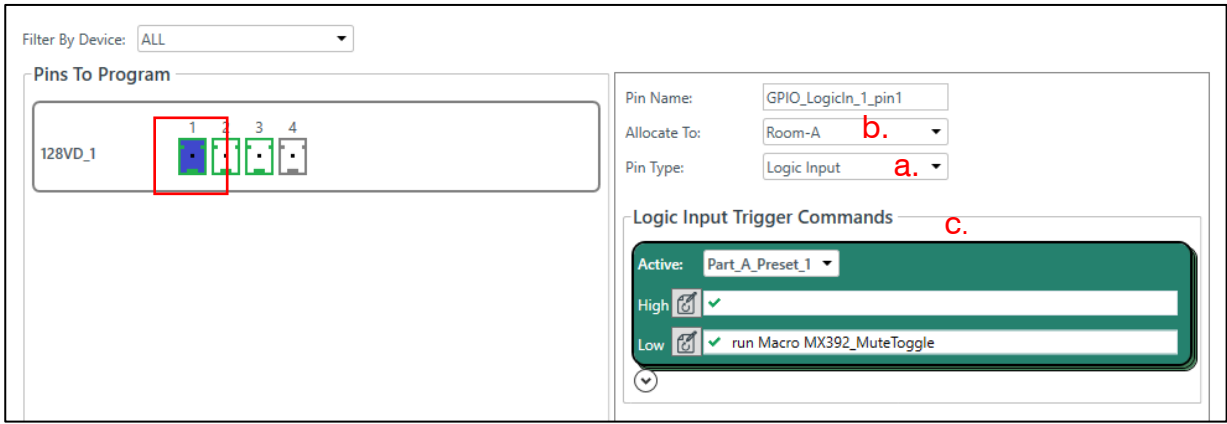
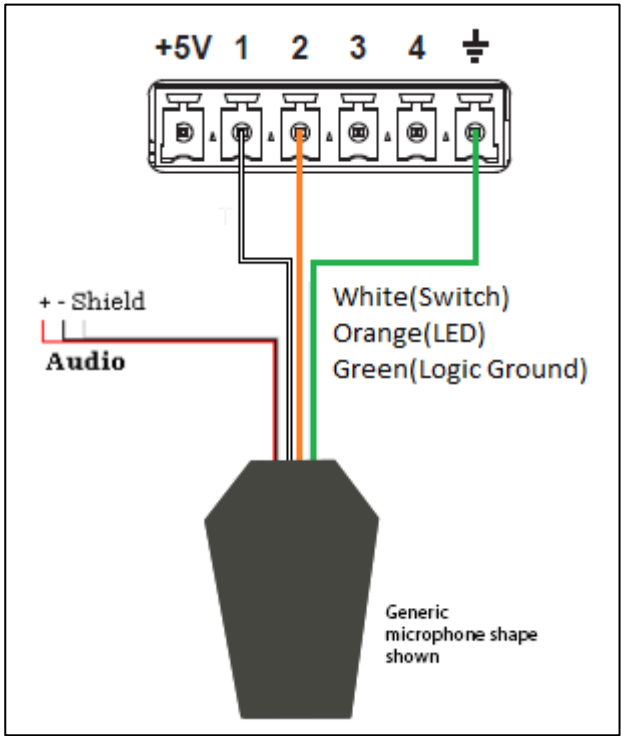3. For each open collector output pin, define the GPIO output pin actions.

4. Make the following connections:

   a. Connect the Shure MX392 microphone to the GPIO pins as follows:

Microphone wire	GPIO pin
White "switch"	Logic Input (1 in this example)
Orange "LED"	Open Collector Output (2 in this example)
Green "logic ground"	Ground pin

   b. Connect the microphone audio leads to the microphone channel phoenix block on the CONVERGE PRO 2.

+5V 1 2 3 4 ⏚

+ - Shield

Audio

White(Switch)
Orange(LED)
Green(Logic Ground)

Generic
microphone shape
shown

If you had used a GPIO Expander, the connections would be as shown below.

GPIO In
+5V 1 2 3 ⏚ +5V 4 5 6

Tx Rx ⏚

RS-232

+5V 1 2 3 ⏚ +5V 4 5 6 ⏚
GPIO Out

Audio
Shield - +

White (Switch)
Orange (LED)
Green (Logic Ground)

Generic
microphone shape
shown