

USB - i2c dongle for Analog Devices ADAU1701/ADAU1401 DSPs:

RG: Mar 21 2014 Rev 1.2

Software Control Mode:

The USB-i2c Dongle for Analog Devices DSPs closely emulates the functions of the USBi device as used with Sigma Studio. The device does not work with Sigma Studio, but a custom GUI has been created and can be modified for new customers. This is a GUI which could be used internally, or provided to end users.



The dongle when connected to a computer with the custom software will allow real time control of the parameters of the DSP while running. It will then update the Selfboot image in the eeprom of end product. The DSP when rebooting without the dongle will then boot with these new parameters. The process for the current generation of devices is to create your project in Sigma Studio, debugging with the USBi to get all of the filters desired. Export the files to get the parameters address, and create the selfboot .hex file. Our teams will use these files to create the custom interface images for your project.

Standalone programming mode - Only partial support at this time.

The device has provisions for some extra components which allow it to stand alone program the selfboot image into a target DSP based product. This is a general purpose i2c eeprom burner.

Dongle has a 256k eeprom on it, our current amplifier has an 8k eeprom, (maximum image size for the ADAU1701 DSP is 8.5k, it's unlikely for an image to use 100% of resources for this project. Some of the AD Selfbootable DSP's can hold a much bigger image, so should be able to support an image large enough to fit into the largest of these DSPs.

Current Status: At this time the device just stores a single profile image. This mode is used at the factory to program the devices with an initial configuration which is used for testing.

The capabilities could include something similar to this if a customer desires these features in the future.

Standalone Mode:

- Default:
 - Unit is illuminated with selected image pattern on Blue LEDs
 - All IO to the DSP board are configured as inputs with weak internal pullup
- Program Selected Image
 - Tap Button, Blue LEDs flash alternately during programming
 - If program fails to read back, illuminate Red light solid
 - Dongle remembers what image it was using between power cycles
 - Limit the number of programs of any selected image. Prevents IP theft.
 - Flash RED light if the programmer is out of programs for selected image.
 - When image is burned correctly, flash blue lights 3 times together, return to default state
- Select an Image
 - Push and hold the button until red light flashes.
 - Tap Button until Blue Lights match pattern for image desired:
 - 01 = Image 1
 - 10 = Image 2
 - 11 = Image 3
 - Red Flash times out after 3 Seconds from last button press
 - If no images in Memory, LEDs either all on, or all off.

Image Manager GUI Mode:

A block of eeprom on the dongle should store information on the images in the dongle.

Image information should be:

Description. (16 Bytes)

Date (8 Bytes) -> Use Date from File or Current Date

Version (4 Bytes) (eg, 2.34 or 124b)

Number of Programs Allowed (3 Bytes) (Default to Max or -1 for infinite?)

Number of Programs Remaining (3 Bytes)

Image Length (?? Bytes)
Image Start Address in local EEPROM (2 Bytes)
Image Checksum (2 Bytes)
Image Location in Dongle (1,2,3) 1 Byte

39++ Bytes / Image. or 123 Byte block
Dongle also needs memory to store what image it currently is on.

When plugged in, GUI should first query the dongle to read what the current images it has stored. Or if it hasn't been initialized, (blank eeprom on dongle)

GUI would have an interface to select a .HEX file, Fill in the above information about the file in the selection dialog.

Default GUI view would be a list of images stored in the programmer. With their description information above in an excel style table.

Button at end of table to flash an image into the target, right click on image name to bring up a dialog to either edit image information, or delete the image.

Description	File Date	Size	Location	[PROGRAM BUTTON]
Steep xovr 2Ch	Mar 1 2012	1034 Bytes	1	[FLASH]
DynBass 4CHin 01	Apr 15 2010	2000 Bytes	2	[FLASH]

Should also display memory space remaining on dongle in percent and bytes. If an image is selected that is too big to fit in the dongle. Toss a dialog to delete other images first.