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General FAQs

What exactly is PurePath Studio?

PurePath Studio is a suite of tools used to develop software for TI's TAS3xxx family of audio SoCs. PurePath Studio consists of three primary tools.

The Graphical Development Environment (GDE) is a drag-and-drop programming environment which contains a library of common audio components that can be graphically arranged and connected together in order to create an audio signal flow. Once a graphical process flow is established, the GDE code generator is used to assemble the actual DSP code.

The Integrated Development Environment (IDE) is a traditional DSP code development environment consisting of an assembly code editor with contextual help facilities, an assembler, a simulator for debugging and other tools.

The Component Publisher tool can be used to create graphical drag-and-drop components from custom DSP code, ensuring seamless software development using both the Graphical and Integrated Development Environments.

With the PurePath Studio suite, a user has full flexibility in software development. A TAS3xxx device can be programmed completely in a graphical manner if time to market and ease of development are important or completely in assembly code if maximum efficiency and flexibility are required.

Which devices are supported by PurePath Studio?

The TAS3108, TAS3204, TAS3208 and TAS3308 are programmable with PurePath Studio.

Which devices meet industrial temperature specifications?

The TAS3108 and TAS3208 are available in industrial temperature (-40° to 105° C) versions.

How can I get a copy of PurePath Studio for evaluation?

A trial version of PurePath Studio can be downloaded free of charge from TI.com once a user has registered for TI's TAS3xxx PurePath Studio Evaluation Extranet. Access to this extranet can be requested by sending an email to PurePathStudio@list.ti.com with the following information:
- Full legal name of your Company
- Address of your Company
- Address(es) of sites where PurePath Studio will be used
- State/Country of legal incorporation of your Company
- Your name, title, phone number, fax number, email address

Is there any cost associated with PurePath Studio?

No. PurePath Studio does not require a licensing fee. The only potential fees related to PurePath Studio are 3rd party licensing fees associated with algorithms from companies such as Dolby and SRS.

What documentation is available for PurePath Studio and the TAS3xxx devices?

TI maintains a series of extranets that contain downloadable versions of the PurePath Studio software itself, as well as documentation related to PurePath Studio and the TAS3xxx family of audio SoCs.

The **TAS3xxx PurePath Studio Evaluation Extranet** contains a downloadable evaluation version of PurePath Studio. See (https://www-a.ti.com/extranet/cm/product/tas3xxxpurepatheval/dspinfoext/general/homepage.shtml).

The **TAS3xxx PurePath Studio Extranet** includes downloadable production versions of PurePath Studio, as well as a library of TI royalty free advanced audio algorithm components. It also contains PurePath Studio user's guides, TAS3xxx programming information and documentation. See (https://www-a.ti.com/extranet/cm/product/tas3xxxpurepath/dspinfoext/general/homepage.shtml).

The **TAS3xxx Product Information Extranet** contains TAS3xxx audio SoC documentation, including full datasheets, application notes, references designs and much more. See (https://www-a.ti.com/extranet/cm/product/tas3xxxprodinfo/dspinfoext/general/homepage.shtml).

The **TAS3xxx PurePath Studio 3rd Party Support Extranet** contains SDKs primarily intended for 3rd party developers, but also useful if you wish to create your own PurePath Studio components. See (https://www-a.ti.com/extranet/cm/product/tas3xxx3psupport/dspinfoext/general/homepage.shtml).

Access to these extranets can be requested by following the directions listed in the above "**How can I get a copy of PurePath Studio for evaluation?**" section of this FAQ. Please specify which extranets you wish to access.

Specific Hardware/Software FAQs

What is a GDE "component?"
A GDE component is a graphical, drag-and-drop block that contains all of the necessary DSP code and addressing information for a common audio function. It includes a help file accessible by right-clicking, as well as in some cases, a stand-alone graphical user interface.

How do I get information about a specific component?
Right clicking on a component will bring up a menu with a help file specific to that component. Additional information can also be found in the PurePath Studio GDE User's Guide located on the TAS3xxx PurePath Studio Extranet.

Can I make my own components?
Yes. The PurePath Studio Integrated Development Environment coupled with the Component Publisher tool allows users to develop, test, and publish custom code as a graphical component available to use in the GDE. Consult the PurePath Studio GDE User's Guide located on the TAS3xxx PurePath Studio Extranet for more information regarding how to build custom components.

What 3rd party algorithms are available in PurePath Studio?
TI is partnered with most major 3rd party algorithm providers. Please subscribe to the PurePath Studio Extranet in order to find most up to date information on supported 3rd party algorithms.

How do I get 3rd party algorithms?
Generally, the 3rd party algorithm components are provided directly by the 3rd party. In some cases, the algorithm components are provided by TI, assuming your company has a licensing agreement in place with the 3rd party.

Does TI offer advanced audio algorithms?
Yes. TI has a suite of advanced audio algorithms such as 3D virtualizers, psychoacoustic bass boost, dynamic volume control, matrix decode and more. These algorithms are provided free of charge with PurePath Studio and do not require any sort of licensing fee. Additional details can be found on the PurePath Studio Extranet.

Why do I have to begin each GDE process flow with a "framework" component?
Each TAS3xxx device has different analog peripherals and I^2C addressing. The framework component allows PurePath Studio to know which TAS3xxx device it is being used with.

How do I customize a GDE Framework?
Custom frameworks can be developed and built using a 3rd party compiler. The KEIL CA51 Compiler kit is available through TI for a discounted price. A description of the kit can be found at http://www.keil.com/c51/ca51kit.asp

What is needed to boot a TAS3xxx device?

A TAS3xxx device contains both a master and slave I^{2}C module. When using the master I^{2}C module, the TAS3xxx device can be booted from an external EEPROM. When using the slave I^{2}C module, the TAS3xxx device can be booted from a system's host microcontroller.

Why do I get a warning about aliased components in the GDE?

The PurePath Studio GDE allows aliasing as a way to control multiple identical components with one I^{2}C command. This warning is a just reminder to the user that two or more components are aliased together, and does not necessarily indicate an error in the application diagram. If this warning occurs when aliasing is unintended, the user can simply click on the "Redo I^{2}C Addresses" Button in the I^{2}C overview window of the GDE.

For more information regarding aliasing refer to the PurePath Studio GDE User's Guide available on the PurePath Studio Extranet.

Why do I need to load a configuration file when using the GDE?

Configuration files are scripts that control the behavior of the analog and communication peripherals integrated on the TAS3xxx devices. For example, the ADCs and DACs on the TAS3204 can be powered up or down, or configured in different modes by changing the register settings in the configuration script. Beginning with PurePath Studio v1.78 and later, configuration of the device will be done via configuration of a component inside the GDE pallet.

What's the difference between low cost EVMs (TAS3xxxEVM-LC) and regular EVMs (TAS3xxxEVM)?

The low cost EVMs are primarily designed for ease of use and software development. They include limited input/output hardware and many of the channels on the TAS3xxx device are accessible only by header connectors.

The regular EVMs are designed for full system development and allow access to all TAS3xxx I/O as well as including other functionality such as SPDIF I/O, ASRCs and MCUs.

Specific details can be found on TI.com.

Why does the GDE only allow me to connect two channels of audio even though the device is capable of processing more?

By default, the GDE populates the I/O components with two ports. If a component allows more channels, they can be selected with the InputChannels and OutputChannels fields under the "Properties" window. Refer to the PurePath Studio GDE User's Guide available on the PurePath Studio Extranet for specific details on reconfiguring the number of I/O ports on the components.

How do I purchase an Evaluation Module?

Evaluation modules are available from the TI eStore. http://www.ti-estore.com/. The EVMs are also linked from the TAS3xxx device folders on TI.com.

Do I get schematics with the Evaluation Module?

Schematics, board gerbers, sample software and documentation are all provided on the CD-ROM which is shipped with each kit.

How do I change the sampling rate on the TAS3xxx Devices?

When in master mode, all TAS3xxx devices operate at 48 kHz sample rate. An external ASRC is necessary if different sample rates are desired.

When in slave mode, the TAS3xxx devices are slaved to the incoming I^{2}S MCLK (MCLK = 512Fs, SCLK = 64Fs). Please consult individual TAS3xxx data sheets for details about supported sampling frequencies for each device.