

DSP Code Standards (*DRAFT*)

General Comments

Much of the DSP code structure is determined by the architectures of our several modules. A substantial portion of the architecture is shared among multiple modules. Thus it will enhance reliability and ease of development to establish a set of coding conventions that allow us to share source code between architectures whenever and wherever possible. The follow standards are an attempt to enable such a code structure.

The architecture of each module is built around a standard set of boards. These are:

- Analog (or, front-end) boards
- Timing board
- Digital board

We propose to

File Naming Conventions

Header Files

Header files specific to boards will have special naming conventions as follows:

- Analog Boards
 - **ana_6048_xxx.h** where 6048_xxx indicates the design drawing number
 - BPM analog board (1st gen. module): **ana_6048_100.h**
 - BPM analog board (2nd gen. module): **ana_6048_114.h**
 - FLM analog board (v1): **ana_6048_116.h**
 - BSM analog board: **ana_6048_116.h**
- Timing Boards
 - **tim_6048_xxx.h** where 6048_xxx indicates the design drawing number
 - Timing board (1st gen. module): **tim_6048_101.h**
 - Timing board (2nd gen. module): **tim_6048_115.h**
- Digital Boards
 - **dig_6048_xxx.h** where 6048_xxx indicates the design drawing number
 - SHARC digital board: **dig_6048_102.h**
 - TS101 digital board: **dig_6048_113.h**

Code Files

DSP source code for the various architectures will fall in 3 categories:

- Code that is specific to a particular DSP
- Algorithm code that can be shared across DSPs
- Algorithm code that can be shared between the control system and one or more of the DSP architectures

Naming conventions for these different categories will be as follows:

- Code that is specific to the SHARC DSP architecture will carry the prefix **sh_**
- Code that is specific to the TS101 DSP architecture will carry the prefix **ts_**
- Code that can be shared across DSP architectures will carry the prefix **dsp_**
- Code that can be shared between the DSPs and control system programs will carry the prefix of the control system library to which they belong and will live in a sub-directory called “*shared*” within that library. *This naming convention will take precedence over the three preceding rules.*

Hardware-Level Macro and Variable Naming Conventions

Macro definitions referring to specific board types will follow the convention:

- Analog board macros will start with the prefix **ANA_**
- Timing board macros will start with the prefix **TIM_**
- Digital board macros will start with the prefix **DIG_**

Global variable names associated with specific board types will follow the convention:

- Analog board variables will start with the prefix **ana_**
- Timing board variables will start with the prefix **tim_**
- Digital board variables will start with the prefix **dig_**
- **EXCEPT** when the variables are pointers. In this case, a **p_** will precede the ana_, tim_, or dig_ prefix to indicate a pointer type. In fact, most variables associated with specific board types will be pointers (to registers or memory) so the most common situation will be

Examples