Chapter 15. C50 Domain

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15.1 Introduction

The C50 domain generates assembly code for the Texas Instruments C5x series of processors. Chapter 12 describes the features common to all code generation domains. The basic principles of writing code generation stars are explained in section 12.2. You will find explanations for codeblocks, macros, and attributes there. This chapter explains features specific to the C50 domain. Refer to the C50 chapter in the user manual for an introduction to these domains.

15.2 Data Types

The supported CG50 data types are:

```
int
intarray
fix
fixarray
```

In addition the `complex` data type is supported for portholes (but not states). A `complex` number is stored as a sequence of two 16 bit numbers. The real part is stored at the lower address.

15.3 Attributes

In addition to the code generation attributes detailed in 12.2.6, for C50 attributes are defined to specify the Single Access RAM and Double Access RAM memory banks. They are:

`A_BMEM`	Allocate this state in the address range specified by the *bMemMap* target parameter.
`A_UMEM`	Allocate this state in the address range specified by the *uMemMap* target parameter.

The underlying bits are `AB_BMEM`, and `AB_UMEM`. Each attribute above turns one off and turns the other on (e.g. `A_BMEM` turns `AB_BMEM` on and `AB_UMEM` off).

Also for C50 stars, portholes can assert attributes `P_BMEM` and `P_UMEM`, which work in exactly the same way as `A_BMEM` and `A_UMEM`. The default attribute for a C50 porthole is `P_BMEM`, which allocates the porthole buffer in DARAM memory. Specifying the `P_UMEM` attribute places the porthole buffer in SARAM memory.

15.4 Code Streams

The C50 domain uses the default assembly language code streams discussed in “Assembly code streams” on page 12-17. Additionally, TITarget declares a code stream named `TISuProcs` to store code that should be placed outside the main loop. Note that the code stored in this code stream will get added after the `wrapup` methods of the stars have been called. The `TISuProcs` code stream is useful for adding procedures when using non-COFF assemblers (like the TI DSK assembler) or defining tables of coefficients in program memory (as an example, the C50 instruction `macd` needs one of the operands to be in program memory)

15.5 Symbols

The DSKC50 targets defines certain symbols that are meant to be unique. They are `AIC_INIT, SETUPX, SETUPR, XINT, RINT and TINT`. The C50Sin star defines a global symbol `SINTBL` used to store a sine table that is shared by all C50Sin stars. The user should avoid redefining these symbols in the output assembly file.

15.6 Reserved Memory

The DSKC50 target reserves the last 9 words in DARAM block 1 to store data needed to configure the Analog Interface Chip in the DSK board