

MOTOROLA DSP56800 EMBEDDED SOFTWARE DEVELOPMENT KIT FREQUENTLY ASKED QUESTIONS

Product:	Motorola Embedded SDK for DSP56800 all versions
Category:	DSP functional library
Problem:	When I use the SDK the floating point libraries of the CodeWarrior for Motorola DSP sometimes give incorrect results?
Solution:	<p>The problem occurs only when the SDK DSP functional library is included. The dsp functional library sets up an operational mode that is often required for proper fixed-point operation. It configures the chip to operate in saturation mode and also for twos' complement rounding. This is explained in section 2.1.9 of the dspfunc library documentation.</p> <p>But the current run time floating point library of the CodeWarrior for Motorola DSP relies on the fact of the chip not having saturation turned on. So to have the floating-point operation performed correctly you must insure that saturation is not on. This can be easily performed with two macros that are defined in the arch.h. They are:</p> <pre>archSetNoSat() archSetSat32()</pre> <p>Remember for proper fixed-point math functionality using the dsp functional library the saturation bit must be on. So turn it off when you perform an actual floating point math operation and then turn the saturation on for fixed point operations using the dsp functional library. Additionally a macro exists to determine the state of the saturation so that the state can be modified and restored to its' previous state. This is:</p> <pre>bool archGetSetSaturationMode (bool bSatMode);</pre>
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Product:	Motorola Embedded SDK for DS56800 v2.1.1 and earlier
Category:	Installation
Problem:	The environment variable 'Embedded SDK source' is not created at installation.
Solution:	<p>The signs of this problem are that when the first attempt to build a project using the SDK CodeWarrior will have errors due to an unspecified path. Versions above v2.1.1 will not exhibit this problem. It is strongly recommended that customers install the latest version of the SDK, which is available for download from the Motorola SPS website. This is the preferred solution.</p> <p>To overcome the problem the path to the Embedded SDK source simply needs to be added to the Source Trees section of the IDE preferences panel. Add the name 'Embedded SDK source' as an absolute path. Choose the directory where the source files are located. If the SDK had been installed on the c drive in the standard directory then this will be: c:\Program Files\Motorola\Embedded SDK\src. This path can be different depending on where the SDK has been installed.</p>
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Product:	Motorola Embedded SDK for DSP56800 v2.1.1 and earlier
Category:	Installation
Problem:	The SDK installation is unable to update the Metrowerks stationeries.
Solution:	<p>The signs of this problem is that when attempting to create a new project, the 'Embedded SDK stationery' will not be an option. Versions above v2.1.1 will not exhibit this problem. It is strongly recommended that customers install the latest version of the SDK, which is available for download from the Motorola SPS website. This is the preferred solution.</p> <p>If the file folder: C:\Program Files\Metrowerks\CodeWarrior\Stationery\Embedded SDK does not exist, copy the file folder from C:\Program Files\WINDOWS\System\stationery\Embedded SDK to C:\Program Files\Metrowerks\CodeWarrior\Stationery. This path can be different depending on where CodeWarrior for Motorola DSP has been installed.</p>
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Product:	Motorola Embedded SDK for DSP56800 all versions
Category:	Installation
Problem:	When I install the Embedded SDK it cannot find CodeWarrior.
Solution:	The SDK requires that CodeWarrior be installed before attempting to install the SDK. Install CodeWarrior then install the SDK.
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Product:	Motorola Embedded SDK for DSP56800 version 2.2
Category:	Stationery
Problem:	When I develop code for the DSP56803 EVM using the ExtRam_and_Flash_Application stationary when I target the flash my program fails, but when I target external ram it runs correctly?
Solution:	This particular stationary only in the v2.2 SDK only incorrectly directs the access path for the SDK to the DSP56805 EVM code. The v2.2.1 SDK corrects this problem. Additionally nay project created under this stationary can be fixed by updating the access paths to the SDK to go to the DSP56803evm directory structure.
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Product:	Motorola Embedded SDK for DSP56800 all versions
Category:	CodeWarrior
Problem:	When I use the Console I/O functionality present in CodeWarrior v3.5.2 and the SDK I appear to get stuck in a print statement and continuously print out the same line. How do I get around this?
Solution:	<p>The problem is not in the SDK, but that the printf standard library doesn't properly handle interrupts occurring while it is actively sending out data to the Console I/O host. When printf is called it uses the JTAG/OnCE port to transfer data out to the host computer. To use the JTAG/OnCE port for this operation it at some point gets the chip into debug mode and the transfer occurs. But if interrupts are pending it doesn't continue out of the debug mode correctly and continues on in the printf routine. So the problem will occur whenever interrupts are timed such to make the error in the printf routines manifest itself.</p> <p>But if you look at the example below this problem can be easily overcome by enabling and disabling interrupts being allowed to flow into the core. This can be performed using two macros defined in the SDK arch.h file. Of course this solution of masking interrupts can cause some significant real time issues in your system, but Console I/O itself is inherently very intrusive so in reality the effect is probably not significant. This problem is being addressed in an upcoming release of CodeWarrior.</p> <p>Example Code:</p> <pre>archDisableInt(); printf("Hello world\n"); archEnableInt();</pre> <p>Other options exist for data exchange between the target and the host that are much less intrusive, File I/O or PC Master which are both components in the SDK. But these rely on the SCI port for communication so this port must be free and connected to the Windows host computer to be used.</p>
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Product:	Motorola Embedded SDK for DSP56800 all versions
Category:	SCI driver
Problem:	I want to get the number of bytes available in a read buffer is it possible to do this without issuing a read on the SCI port?
Solution:	Currently it is not possible to get the number of bytes available in a read buffer without actually reading the bytes. The SCI driver can be set up in non blocking mode you can use the read call to determine if data is available, but of course you will also get that data. But you will not block your application. Of course you can do the same thing in blocking mode, but you will block your operation until at least one byte comes in.
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Product:	Motorola Embedded SDK for DSP56800 versions 2.2.1 and earlier
Category:	Start up code
Problem:	When I use the SDK and perform 32 bit long variable compares in C the compare doesn't always work correctly. When I use the standard CodeWarrior stationary the problem goes away.
Solution:	In these versions of the SDK the startup code doesn't properly set the CC bit in the OMR register. The CC bit should be set for proper ANSI C operation of 32 bit compares. The SDK versions 2.2.1 and earlier do not properly set this bit. The latter versions of SDK correctly set this bit. To correct SDK 2.2.1 versions and earlier the startup code should be modified to set this bit. The proper location for the modification is the in the arch.c file and the archStart routine. Add the following assembly line to the routine before any of the jsr to other routines. <pre>bfset #0100,OMR //; Set CC for 32-bit compares</pre> After this has been modified the sys.lib should be rebuilt.
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