SMT107

User Manual



Certificate Number FM 55022

Revision History

Date	Comments	Engineer	Version
20/04/01	Initial	M.R.	1.0
24/11/05	Update information for CCS 3.1	M.A.	1.1
01/03/06	Update: Drivers location for CCS 3.1	SM	1.2

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SMT107 PCMCIA (PC-CARD) JTAG Emulator

The SMT107 is a size II PCMCIA (PC-CARD16) Card with full XDS510-JTAG Emulator capability built into it.

The emulator currently supports the TMS320C6000 family of DSP's from Texas Instruments and also Texas Instrument's Code Composer Studio development and debugging software environment.

The current basic package comes with PCMCIA Card, cable and device driver for Code Composer Studio. The full package includes Code Composer Studio at a special bundled price.

IF YOU EXPERIENCE ANY PROBLEMS OR HAVE ANY QUESTIONS REGARDING THE SMT107 EMULATOR THEN CONTACT THE SMT107 SUPPORT TEAM ON:

support@attavionics.com

Before You Start

Please take a few minutes to read this guide and acquaint yourself with both the installation process and the features of your card. Installation is simple, but you must take care to follow the instructions carefully.

Check the Contents

After opening and unpacking the box, you will find the following items:

- 1. SMT107 PCMCIA card,
- 2. SMT107 POD,
- 3. PCMCIA card cable (1m long),
- 4. JTAG cable (10cm long),
- 5. SMT107 Software Driver CD-ROM or Floppy Disk,
- 6. Installation Guide (this document).

PC System Requirements

In order to install the SMT107 and Code Composer for C6000, your PC will have to meet the following requirements:

- 1. A 486 or later processor with a minimum of 512MB Ram,
- 2. 1.5GB free hard disk space. This is for a standard CCS3.1 Platinum installation,
- 3. Microsoft Windows 2000 or later (Windows XP is advised),
- 4. Code Composer 3.0 (or later) or Code Composer Studio 2.2x (or later),
- 5. A free PCMCIA 16 bit slot.

Installation Instructions

If Code Composer for C6000 is not already installed on the host PC; install it now. Follow the instructions provided by Texas Instruments.

Hardware Installation

Both the SMT107 PCMCIA card and the cables supplied with the SMT107 are keyed to ensure they cannot be inserted incorrectly. Please ensure you are familiar with all these connections before you attempt to install the hardware. Then follow the following procedure.

- 1. Remove the power from the target board,
- 2. Shutdown and power off your PC,
- 3. Insert the SMT107 card into a spare PCMCIA slot in your machine,
- 4. Connect the PCMCIA card cable to the PCMCIA card,
- 5. Connect the other end of the PCMCIA card cable to the SMT107 POD,
- 6. Connect the JTAG cable to the SMT107 POD,
- 7. Connect the other end of the cable to the JTAG header on the target, using the blocked off pin to ensure correct alignment,
- 8. Reboot the PC,
- 9. Connect power to the target board,

Some operating systems (i.e. Microsoft Windows 95 & 98) allow you to insert PCMCIA cards with the machine already switched on. This is permitted with the SMT107.

However, you must make sure that the SMT107 is installed and configured correctly BEFORE you try to start Code Composer. Code Composer is not written to allow PCMCIA cards to be inserted and removed whilst it is running.

For Microsoft Windows NT4 systems, the SMT107 has to be installed BEFORE you switch the machine on. Windows NT4 is only able to recognise PCMCIA cards during the boot sequence, and therefore the card must be inserted prior to booting

Microsoft Windows 95/98 Driver Installation

Microsoft Windows 95 and 98 are so-called Plug-n-Play aware operating systems. This means that they can automatically detect and configure new hardware as it is added to your system. When rebooting the PC for the first time after installing the hardware (step 8 in the Hardware Installation), Win95/98 will ask you to perform the following setup sequence.

1. When rebooting for the first time, the following screen will appear:

Update Device Driver Wizard		
	This wizard will complete the installation of:	
	ATTL AvionicsSMT 107	
	by searching your local drives, network, and Internet locations for the most current driver.	
	If you have a disk or CD-ROM that came with this device, insert it now.	
	It is recommended that you let Windows search for an updated driver. To do this, click Next to continue.	
	<back next=""> Cancel</back>	

- 2. Insert the SMT107 Driver floppy or CD-ROM provided and Click Next.
- 3. Windows will search the floppy disk for a valid driver file, and the following screen will appear:

Update Device Driver W	Update Device Driver Wizard		
	Windows found the following updated driver for this device: ATT SMT 107 Test Bus Controller (Rev A) If you want to use this driver, click Finish. If this is not the correct driver and you want to search for a different driver manually, click Other Locations. Location of Driver		
~	Other Locations		
	< <u>B</u> ack Finish Cancel		

If Windows does not find a valid driver on the disk, then use the "Other Locations" button to browse for it.

- 4. Click "Finish", remove the SMT107 installation floppy and allow the computer to reboot.
- 5. Once the computer has rebooted then the installation can be checked by going to the Start Menu and choosing *Settings->Control Panel*. Then double-click the "System" icon, the "System Properties" window will appear. Select the "Device Manager" tab.

System Properties	? ×
General Device Manager Hardware Profiles Performance	
• View devices by type • • View devices by connection	
💻 Computer	
🔃 🏥 📲 BT Speedway	
E CDROM	
🔁 🖅 🚍 Disk drives	
📺 🖳 🖳 Display adapters	
🗄 🖶 🚭 Floppy disk controllers	
🕀 🚭 Hard disk controllers	
JTAG Test Bus Controller	
ATT SMT 107 Test Bus Controller (Rev A)	
🕀 🤯 Keyboard	
🛛 🕀 🥮 Modem	
Betwork adapters	
🕀 🖓 Ports (CUM & LPT)	-
P <u>r</u> operties Re <u>f</u> resh R <u>e</u> move Pri <u>n</u> t	
ОКСС	ancel

6. The card should be listed as a "JTAG Test Bus Controller" as shown above. Select the device and then click the "Properties" button.

7. The device properties window should appear. In the "General" tab check that the device is working properly then select the "Resources" tab...

ATT SMT 107 Test Bus	Controller (Rev A) Propert	ies 🤗 🗙
General Driver Resour	ces	
	rest Bus Controller (Rev A)	
<u>R</u> esource settings:		
Resource type	Setting	
Input/Output Range	0280 - 029F	
Input/Output Range	0680 - 069F	
Setting based on: Basic	c configuration 0001	7
Change Setting	✓ Use automatic settings	
Conflicting device list:		
No conflicts.		4
		-
	OK	Cancel

- 8. Make a note of the first I/O address (in this case 0x280) as this address will be required later,
- 9. Click "OK" to close the properties window,
- 10. Click "OK" to close the System window,
- 11. Close the "Control Panel",
- 12. Proceed to the Setting Up Code Composer Section of this manual.

Microsoft Windows NT4 Driver Installation

Microsoft Windows NT4 is not a Plug-n-Play aware operating system, and will not automatically detect and configure new hardware as it is added to your system. Therefore, it is necessary for you to run the supplied installation program to configure your SMT107 to work with Windows NT4. To do this, perform the following setup sequence.

- 1. Insert the SMT107 Driver floppy or CD-ROM provided and run a:\setup
- 2. The following screen will appear:



3. Allow the files to extract and the following screen will appear: Click "Next >"



4. Read the license agreement and click "Yes" to continue.

5. The User Information screen will appear:

Jser Information	×	1
	Type your name below. You must also type the name of the company you work for and the product serial number.	
	Name: Malcolm Robb Company: ATT Avionics Ltd	
Instal Shall	<u>S</u> erial:	
	< <u>B</u> ack <u>N</u> ext > Cancel	

- 6. Enter your name and company and then enter the serial number of your SMT107 board, this should be clearly marked on both the board itself and on the packaging. Now click "Next >". The driver installation will complete and you will be asked to restart the computer.
- 7. Click "Finish", remove the SMT107 installation floppy and allow the computer to reboot.
- 8. Once the computer has rebooted, proceed to the Setting Up Code Composer Section of this manual.

NOTE: When installing the SMT107 in a Windows NT4 systems, the Base IO address will always be 0x240. This is due to a limitation in the support for PCMCIA cards under Windows NT4. If another device is already using IO port 0x240, then it will be necessary to either remove or disable that device in order to allow the SMT107 to work correctly.

Setting-up Code Composer

Versions prior to 3.0

1. Start the "Setup CCStudio" program. Close the "Import Configuration" window which may open automatically.

System Configuration Available Board/Simulator Types Import a Configuration File System Needs a Board. Click Here Select Device Driver File Look jn: Import State Color State Color Select Device Driver File Import Select Device Driver File Import Select Device Driver File Select Device Driver File Select Device Driver File Import StateSedwr TisinC64wx dvr Device Driver (*.dvr) Cancel	Code Composer Setup		
System Needs a Board. Click Here Click Here Clock in: <td>System Configuration</td> <td>Available Board/Simulator Types</td> <td></td>	System Configuration	Available Board/Simulator Types	
Select Device Driver File ? X Look in: Initian drivers import Initian drivers	<mark>My System</mark> System Needs a Board. Click Here	때 C64xx Simulator (Texas Instruments) 때 C6xxx Simulator (Texas Instruments)	Import a Configuration File Install a Device Driver
Dran a device driver to the left to add a board to the system	Select Device Driver File ? X Look jn: in drivers import if import import if import import if import if it indeforms.dvr if import if it indeforms.dvr if import if idea if it indeforms.dvr if idea if it indeforms.dvr if idea if idea if id		

- 2. From the options on the right-most panel, choose "Install a Device Driver".
- 3. The "Select Device Driver File" dialog will appear, choose the file "att107-6x.dvr" and click "Open".
- 4. The "Device Driver Properties" window will appear, enter a suitable name and description to help identify the driver file.

Device Driver	Properties	? ×
Location: D:\ti\driver	Device Driver Name: SMT107 s\att107-6x.dvr	Browse
User Descri	ption:	
SMT107 P	CMCIA JTAG Emulator	4
	OK	Cancel

5. Click "OK" the device will now be listed in the central panel of the Code Composer Setup window.

6. To select the SMT107 as the driver used by Code Composer, double-click the entry in the central panel. Details of the SMT107 will appear in the right-most panel and the "Board Properties" dialog will appear...

Board Properties	? ×
Board Name & Data File Board Properties Processor Configuration	
Board <u>N</u> ame: SMT107	
Use generated board data file	
C Specify custom board data file	
Browse	
Connect to other boards	
Device Driver Location:	
D:\ti\drivers\att107-6x.dvr	
Next > (Cancel

If you have a custom board data file for your target hardware link to it here, otherwise use the default generated board data file and click "Next >" to move to the "Board Properties" screen.

7. In the I/O Port Value field enter the value you noted down from Section 13 of the Driver Installation (eg. 0x280). Click "Next >" to move to the "Processor Configuration" screen.

Board Properties		
Board Name & Data File	Board Properties Processor Configuration	
Property	Value	
I/O Port	0x280	
Channes area artu uralura	and the state of t	
junange property value	as necessary in the right column.	
	Nevt > Ca	ncel

Follow the instructions on the dialog to add as many processors as there are on the target board. Click "Finish".

Board Properties	? ×		
Board Name & Data File Board Prope	erties Processor Configuration		
Available Processors: Processors On The Board: TMS320C6200 BYPASS Add Single Add Multiple Remove			
Processor <u>N</u> ame: CPU_2			
Identify processors on your board t Processors," changing the "Proce Single" or "Add Multiple." Repeat	by selecting a processor type from "Available ssor Name" as required, and then select "Add for all processors on your board.		
	Finish Cancel		

8. The device should now be listed in the "My System" directory on the left-most panel of the Code Composer Setup screen. Use *File->Save* to save your changes and then *File->Exit* to complete the Setup procedure.

🀬 Code Composer Setup		
<u>File E</u> dit <u>V</u> iew <u>H</u> elp		
System Configuration	Available Processor Types	
My System CPU_1 CPU_1 To Add Another Processor, D To Add Another Board, Click Here	TMS320C6200	Import a Configuration File Install a Device Driver
prag a processor to the left to add to the currently	-selected board.	///

9. You can now start Code Composer in the normal way.

Version 3.0 and Later

The device driver interface configuration has been changed for CCS version 3.0 and higher.

- 1. Copy the *SMT107.dll* from the disc to the *{CCS_base}\drivers*, *{CCS_base}\cc\bin* and in *C:\WINDOWS\system32 folders*.
- 2. Copy the SMT107_XDS510_Connection.xml file from the disc to the {CCS_base}\drivers\TargetDB\connections folder.
- 3. Start the CCS setup program and select the "create board" table in the middle pane

Code composer studio setup				
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>H</u> elp				
System Configuration	Available Connections	Connection Description	My System	^
My System	Content 510-Class Content 560-Class Content Simulator Content Simulator Content Simulator Content Simulator Content Simulator Content Simulator Content Simulator Content Simulator Content Simulator	Other 510-Class Emulator Connection Other 560-Class Emulator Connection Other Simulator Connection SMT 107 XDS510 Emulator Connection TI Simulator Connection TI XDS510 Emulator Connection TI XDS560 Emulator Connection		
Save & Quit Remove Re	Factory Boards	Custom Boards 🕋 Create Board	Modify Properties	>
, Drag a device driver to the left to a	, dd a board to the syst	em.	2	

4. Select the **"SMT107 XDS510 Emulator Connection"** and press the now active "Add" button. This will now open a configuration dialog box.

Connection Properties		? 🛛
Connection Name & Data File	Connection Properties	
Connection SMT107	(SMT107)	XDS510 Emulator)
Auto-generat	e board data file	▼ <u>B</u> rowse
Diagnostic Utility: Diagnostic Arguments:		Browse
	Ne	xt > Cancel

- 5. Give the board a suitable name and press "Next".
- 6. Change the configuration page so that the Emulator I/O port is 0x320 in this case (note that is generally 0x240, please checking in the System properties for the POD IO address). Then press "Finish".

Connection Properties		? 🔀
Connection Name & Data File	Connection Properties	
Property	Value	
Emulator I/O Port	The XDS510 is at port 0x320	ī I
JTAG TCLK Frequency (MH	z) Assume TCLK is legacy 10.368MHz	
TMS/TDO Output Timing	Rising edge allows faster TCLK	
Change property value as ne	ecessary in the right column.	
	Finish	Cancel

7. Then select a family of processors, and add them to the board configuration.

🐉 Code Composer Studio Setup				
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>H</u> elp				
System Configuration	Available Processor	Driver Location	SMT107	^
	 ★TMS320C2400 ★TMS320C2700 ★TMS320C2800 ★ARM11 ★ARM7 ★ARM9 ★ICEPidk_A ★TMS320C5400 ★TMS320C5400 ★TMS320C6200 ★TMS320C6700 ★TMS320C6700 ★TMS320C6710 ★TMS320C6400 ★BYPASS 	C:\CCStudio_v3.1\drivers\tixds24x.dvr C:\CCStudio_v3.1\drivers\tixds27x.dvr C:\CCStudio_v3.1\drivers\tixds510arm11.dvr C:\CCStudio_v3.1\drivers\tixds510arm7.dvr C:\CCStudio_v3.1\drivers\tixds510arm9.dvr C:\CCStudio_v3.1\drivers\tixds510icepick.dvr C:\CCStudio_v3.1\drivers\tixds510icepick.dvr C:\CCStudio_v3.1\drivers\tixds54x.dvr C:\CCStudio_v3.1\drivers\tixds54x.dvr C:\CCStudio_v3.1\drivers\tixds6400.dvr C:\CCStudio_v3.1\drivers\tixds6000.dvr C:\CCStudio_v3.1\drivers\tixds6000.dvr C:\CCStudio_v3.1\drivers\tixds6000.dvr C:\CCStudio_v3.1\drivers\tixds6000.dvr C:\CCStudio_v3.1\drivers\tixds6000.dvr C:\CCStudio_v3.1\drivers\tixds6400.dvr C:\CCStudio_v3.1\drivers\tixds6400.dvr	Connection Type: SMT107 XDS510 Emulator Diagnostics Utility None Emulator I/O Port: The XDS510 is at port 0x320 JTAG TCLK Frequency (MHz): Assume TCLK is legacy 10.368MHz TMS/TDO Output Timing: Rising edge allows faster TCLK	
	Factory Boards	🖼 Custom Boards 🌸 Create Board		>
Save & Quit Remove R	e << Add <	< Add Multiple	Modify Properties	
Drag a device to the left to add to	the currently-selected	board.		1

8. Save and Exit, and start code composer without forgetting to connect the target (in the menu DEBUG of CCS).