



How to Use the TESSY Debug Matrix
Combinations of microcontrollers, compilers, and debugger software

- > TESSY Tutorial
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Preface

In order to keep you up-to-date with the latest developments on our products, we provide White Papers containing additional topics, special hints, examples and detailed procedures etc.

For more information on the current software and hardware revisions as well as our update service, please visit www.hitex.de, www.hitex.co.uk or www.hitex.com.

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1. Introduction

The “matrix” is a file in PDF format which indicates the combinations of microcontroller / cross compiler / debugger software supported by TESSY.

A current version of the matrix can be found here:

http://www.hitex.com/fileadmin/free/tessy/tessy_debug_matrix.pdf

To make use of this matrix, you should know:

- The vendor of the cross compiler you want to use with TESSY
- The target microcontroller architecture family
- The debugger software you want to use with TESSY
- The programming language of the software under test

It is advantageous if you know the version of compiler and debugger.

It is usually not necessary to know the exact derivative of the target microcontroller; the microcontroller family is sufficient.

2. Basis Check in Table A

2.1. Search for the Compiler Vendor

In the first column of table A of the matrix, search for the compiler vendor (in bold) in question. Don't mix up compiler vendor and microcontroller architecture, because some microcontroller vendors (e.g. Analog Devices, ARM, Fujitsu, Microchip, Renesas) also provide compilers and debuggers!

Compiler	CCS (TI)	CDT Debugger	Codewarrior (Freescale)	Cross Core (CCES)	C-Spy (IAR)	Fastview (PLS)	HEW (Renesas)	HighTec GNU (HighTec)*	HiTOP (Hitex)	MULTI 2000 (Green Hills)	MPLAB (MICROCHIP)*	Nios II GNU Debugger *	Noral Flex (Noral)	SEGGGER JLink debugger*	SingleStep (Windriver)	TrueSTUDIO*	Softune (Fujitsu)	STVD (ST Microelectr.)	TRACE32 (Lauterbach)	UDE (PLS)	Visual DSP (Analog Devices)	Wind River Workbench	µVision (Keil)	winIDEA (iSYSTEM)	ZAP (Cosmic)
ALTERA																									
NIOS II											✓							✓							
Analog Devices																									
Blackfin (++)			✓																		✓				
SHARC																									
Atollic																									
GCC																									
ARM																									
ADS Arm																									
ARM RVDS / Cortex																									

Fig. 1: Don't mix up compiler vendor and microcontroller vendor

2.2. Search the Compiler for the Architecture

Search if the compiler vendor provides a compiler for the microcontroller architecture in question.

Compiler	CCS	Code
HI-TECH		
PIC16		
PIC18		

Fig. 2 Line of the cross compiler

Example: In the figure above, the highlighted line represents the entry of the compiler from compiler vendor HI-TECH for the microcontroller architecture PIC18 (from microcontroller vendor Microchip).

2.3. Search for the Debugger

Search for the column of the debugger software in the line of the compiler.

Compiler	CCS (TI)	CDT Debugger	Codewarrior (Freescale)	Cross Core (CCES)	C-Spy (IAR)	Fastview (PLS)	HEW (Renesas)	HighTec GNU (HighTec)*	HiTOP (Hitex)	MULTI 2000 (Green Hills)	MPLAB (MICROCHIP)*	Nios II GNU Debugger *	Noral Flex (Noral)	SEGGGER JLink debugger*	SingleStep (Windriver)	TrueSTUDIO*	Softune (Fujitsu)	STVD (ST Microelectr.)	TRACE32 (Lauterbach)	UDE (PLS)	Visual DSP (Analog Devices)	Wind River Workbench	µVision (Keil)	winIDEA (iSYSTEM)	ZAP (Cosmic)	
ALTERA																										
NIOS II												✓									✓					
Analog Devices																										
Blackfin (++)				✓																	✓					
SHARC																										

Fig. 3: Find out if the debugger is supported

Example: In the figure above, the compiler vendor Analog Devices provides a cross compiler for the microcontroller architecture Blackfin (from microcontroller vendor Analog Devices) and for the microcontroller architecture SHARC (from microcontroller vendor Analog Devices). The cross compiler for Blackfin is supported with the debugger Cross Core Embedded Studio (CCES) from debugger vendor Analog Devices and with the debugger VisualDSP from debugger vendor Analog Devices. The cross compiler for SHARC is supported with the debugger Cross Core Embedded Studio (CCES) from debugger vendor Analog Devices but not with the debugger VisualDSP from debugger vendor Analog Devices. (Analog Devices is microcontroller vendor, compiler vendor, and debugger vendor at the same time.)

Please note: Not all pages in the matrix feature the same debugger columns! I.e. there are more debuggers than columns!

2.4. Check for the Language Support

Support for C as language of the software under test is available for all cross compilers. Support for C++ for a certain cross compiler is indicated by two plus signs.

	CCS (TI)	CDT Debugger	Codewarrior (Freescale)	Cross Core (CCES)	C-Spy (IAR)	Fastview (PLS)	HEW (Renesas)	HighTec GNU (HighTec)*	HiTOP (Hitex)	MULTI 2000 (Green Hills)	MPLAB (MICROCHIP)*	Nios II GNU Debugger *	Noral Flex (Noral)	SEgger JLink debugger*	SingleStep (Windriver)	TrueSTUDIO*	Softune (Fujitsu)	STVD (ST Microelectr.)	TRACE32 (Lauterbach)	UDE (PLS)	Visual DSP (Analog Devices)	Wind River Workbench	µVision (Keil)	winIDEA (iSYSTEM)	ZAP (Cosmic)
ALTERA																									
NIOS II												✓							✓						
Analog Devices																									
Blackfin				✓																	✓				
SHARC				✓																					

Fig. 4: The “++” indicates support for C++

2.5. If the Basic Check Fails

I.e. you cannot find the green tick mark for your combination of microcontroller / compiler / debugger.

Generally, the manufacturer of TESSY supports steadily new microcontrollers / compilers / debuggers!

You can write an e-mail to sales@hitex.de to state what you would need and to find out if there is a chance to adapt TESSY accordingly. This question has a technical aspect (Is it possible at all?) and an economical aspect (How high is the effort for adaptation?).

You can rate by yourself:

If the cross compiler is not supported: Please check if a cross compiler from the same compiler vendor is supported for another microcontroller architecture. In this case, it is highly probable that the cross compiler for your microcontroller architecture can be supported (with little effort for adaptation of TESSY). Even if this is not the case, there is a good chance that your compiler can be supported (with higher effort for adaptation of TESSY), because every compiler can be supported generally. However the effort might be so high that it doesn't make sense economically.

If the debugger is not supported: Please check if a debugger from the same debugger vendor is supported for another cross compiler / microcontroller architecture. In this case, it is highly probable that the debugger for your microcontroller architecture can be supported. If the debugger is not yet supported with TESSY, please write an e-mail to sales@hitex.de and ask about it.

Please note: It might be the case that a debugger cannot be supported by TESSY technically, because TESSY controls the debugger remotely and there are debugger which do not enable a remote program like TESSY to take control. Those debuggers usually do neither feature a script language (for batch execution) nor a command interface (API) for interacting with the debugger.

3. Check Versions

3.1. Check Compiler Version in Table B

C Compiler	Tested Versions
IAR	
78K05/78K0/78K0r	4.70.1 (EWB)
8051	8.20 (EWB)
ARM	4.41A, 5.20, 6.x (EWB)
dsPIC	1.40 (EWB)
AVR	4.12A, 5.50.1 (EWB)
M16C	1.36A, 3.30A (EWB)
M32C	3.10A (EWB)
MSP430	3.30A, 4.21(EWB)

Fig. 5: Table B indicates the tested versions of a compiler from a certain vendor for a certain microcontroller architecture

Example: In the figure above, the compiler vendor IAR provides a cross compiler for the microcontroller architecture AVR (from microcontroller vendor Atmel). This compiler was tested with TESSY using the version 4.12A and 5.50.1. (In this case, the version numbers refer to the version of the Embedded Workbench (EWB) from IAR, in which the compilers are included).

3.2. Check Compiler Version in Table B

Debugger/Emulator/ Simulator	Tested Versions
ALTERA	
Nios II GNU Debugger	10.0
Analog Devices	
Visual DSP	4.0, 5.x
Cross Core (CCES)	1.0.2

Fig. 6: Table C indicates the tested versions of a debugger from a certain debugger vendor

Example: In the figure above, the debugger vendor Analog Devices provides a debugger Visual DSP. This debugger was tested with TESSY using the version 4.0 and 5.x.

3.3. Remarks

3.3.1. One Version for Compiler and Debugger

Sometimes cross compiler and debugger are included in the same development environment. In this case, only one version number is given.

3.3.2. About Tested Versions

The version numbers indicated refer to tested versions, i.e. this version of the compiler resp. debugger was tested with TESSY. Usually this was done during implementation of the respective support in TESSY. This means, if the tested version and the version you want to use with TESSY is “similar” (e.g. the tested version is 5.0 and you want to use TESSY with 5.1) you can assume that the version you want to use is also supported by TESSY. The probability that TESSY supports the version you want to use with TESSY is even higher if it is between two tested versions (e.g. tested version are 4.1 and 5.0, and you want to use 4.2). You cannot assume that TESSY supports the version you want to use if you are using a version which is older (i.e. lower version number) than the first version which was tested with TESSY (e.g. tested version 4.0 and you want to use 3.2). The manufacturer of TESSY usually does not implement support for old (obsolete) compiler versions retrospectively.

If minor adaptations of TESSY are necessary to support a certain version, this is usually managed by the technical support.

Unfortunately, there is no absolute guarantee that a certain combination is actually supported until you try it out.

Any comments are appreciated.

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