

## Using the CodeTEST Probe with 16-bit Processors

*This document describes the requirements for connecting the CodeTEST Probe to a target with a 16-bit processor.*

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### Purpose

This document supplements the *Setup and Installation Guide for the CodeTEST Probe*, which provides generic information on setting up, connecting, and configuring the CodeTEST Probe, and describes CodeTEST address and data port requirements, and bus and timing requirements.

When using CodeTEST Tools on targets with a 16-bit processor core and a 16-bit data bus, some features and setup requirements differ from those for other processors. The differences are addressed throughout the standard CodeTEST documentation, and are summarized here.

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### Features

The following CodeTEST tools are supported:

- Trace Tool
- Performance Tool
- Coverage Tool

The following are not supported:

- Memory Tool
- User-defined instrumentation functions (CTPrintf, CTPuts, CTUserTag, CtUserDef)
- Dynamic RTOS task names

The CodeTEST Instrumenter supports the following:

	Maximum Number Per Executable:
Tags	$2^{14} - 1$ (16,383)
Files	$2^{24} - 1$ (16,777,215)
Tags per expression for MC/DC	$2^{11} - 1$ (2047)

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## Instrumentation

When you set up your system for instrumentation, ‘tags’ are inserted into your code. The tag data is collected from your application by the CodeTEST Probe using a tag port on your target. “Compressed 16-bit instrumentation” must be used for targets with a 16-bit processor core and a 16-bit data bus. Address bits Addr[6..1] and Data bits Data[15..0] are used by the Probe. To use compressed 16-bit instrumentation:

- Reserve a contiguous 64-word memory block, ending in 0x00 or 0x80 for the tag port memory. The base address is *ctPort16*.  
For 16-bit tag port requirements, see Chapter 5, “Selecting and Defining Tag Port Addresses,” in the *Setup and Installation Guide for the CodeTEST Probe* and Chapter 2, “The CodeTEST Instrumenter,” in the *Instrumenter Reference Manual*.
- Initialize *ctPort16*. In the main file of your project add the following at the top of the file after all `#include` statements. Change the value of *ctPort16* to match the correct address for your system. For example:  

```
volatile unsigned int *ctPort16 = (volatile unsigned int *) 0x4000;
```
- Select **16+6** for **Port Size** when you configure the Probe in the CodeTEST Manager.  
See Chapter 6, “Probe Configuration Utility,” in the *Setup and Installation Guide for the CodeTEST Probe*.
- Specify **0xFFFF007F** for the **Port Address Mask** when you configure the Probe in the CodeTEST Manager.  
See Chapter 6, “Probe Configuration Utility,” in the *Setup and Installation Guide for the CodeTEST Probe*.
- Create an Instrumenter configuration file (`*.ctrc`) and a compiler driver file (`*.drvvr`) for your system.  
As an example, see the file `%CT_HOME%\instrconfig\gnu-16.ctrc`. Set the environment variable `CT_TARGET` to point to your configuration file.
- On the Instrumenter command line or in the Instrumenter configuration file for your system, specify either `-tags-to-port-16` or `-tags-to-ctTag-16` as the tag format.  
See Chapter 2, “The CodeTEST Instrumenter,” in the *Instrumenter Reference Manual*.