DCI-GSI Configuration Package

DCI Configuration

For DCI Configuration Tool 3.13

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dSPACE

How to Contact dSPACE

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How to Contact dSPACE Support

If you encounter a problem when using dSPACE products, contact your local dSPACE representative:

- Local dSPACE companies and distributors: http://www.dspace.com/go/locations
- For countries not listed, contact dSPACE GmbH in Paderborn, Germany.
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You can also use the support request form: http://www.dspace.com/go/supportrequest. If you are logged on to mydSPACE, you are automatically identified and do not need to add your contact details manually.

If possible, always provide the relevant dSPACE License ID or the serial number of the CmContainer in your support request.

Software Updates and Patches

dSPACE strongly recommends that you download and install the most recent patches for your current dSPACE installation. Visit http://www.dspace.com/go/patches for software updates and patches.

Important Notice

Contents

About This Document

Contents

This document gives detailed descriptions of the configuration of dSPACE communication interfaces (DCIs). Currently, you can use the DCI Configuration Tool to configure DCI-GSI2 interfaces.

Symbols

dSPACE user documentation uses the following symbols:

Symbol	Description
DANGER	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a hazard that, if not avoided, could result in property damage.
Note	Indicates important information that you should take into account to avoid malfunctions.
Tip	Indicates tips that can make your work easier.
	Indicates a link that refers to a definition in the glossary, which you can find at the end of the document unless stated otherwise.
	Precedes the document title in a link that refers to another document.

Naming conventions

dSPACE user documentation uses the following naming conventions:

%name% Names enclosed in percent signs refer to environment variables for file and path names.

< > Angle brackets contain wildcard characters or placeholders for variable file and path names, etc.

Special folders

Some software products use the following special folders:

Common Program Data folder A standard folder for application-specific configuration data that is used by all users.

`%PROGRAMDATA%\dSPACE\<InstallationGUID>\<ProductName>`

or

`%PROGRAMDATA%\dSPACE\<ProductName>\<VersionNumber>`

Documents folder A standard folder for user-specific documents.

`%USERPROFILE%\Documents\dSPACE\<ProductName>\<VersionNumber>`

Local Program Data folder A standard folder for application-specific configuration data that is used by the current, non-roaming user.

`%USERPROFILE%\AppData\Local\dSPACE\<InstallationGUID>\<ProductName>`

Accessing dSPACE Help and PDF Files

After you install and decrypt dSPACE software, the documentation for the installed products is available in dSPACE Help and as PDF files.

dSPACE Help (local) You can open your local installation of dSPACE Help:

- On its home page via Windows Start Menu
- On specific content using context-sensitive help via **F1**

dSPACE Help (Web) You can access the Web version of dSPACE Help at www.dspace.com.

To access the Web version, you must have a *mydSPACE* account.

PDF files You can access PDF files via the icon in dSPACE Help. The PDF opens on the first page.

Safety Precautions

Introduction Read and follow the safety precautions carefully.

Warning About Using the DCI Configuration Tool

Introduction Note the following warning when using the DCI Configuration Tool.

Danger potential *Using the DCI Configuration Tool can be dangerous. You must observe the following safety instructions and the relevant instructions in the user documentation.*

⚠ WARNING

Risk of serious injury and/or property damage

Using the DCI Configuration Tool can have a direct effect on networked electronic systems connected to it.

Improper or negligent use can result in serious personal injury and/or property damage.

Only persons who are qualified to use this software, and who have been informed of the above dangers and possible consequences, are permitted to use this product.

⚠ WARNING

Risk of serious injury and/or property damage

When using the DCI Configuration Tool, the user must ensure that the overall system that is affected by the electronic system connected to the dSPACE ECU interface is in a safe state, for example, that the vehicle's engine is not running. Changing configuration settings or updating the firmware of the dSPACE ECU interface has the effect of resetting the dSPACE ECU interface.

All applications where malfunctions or misoperation involve the danger of injury or death must be examined for potential hazards by the user, who must if necessary take additional measures for protection (for example, an emergency off switch).

The user bears sole responsibility for defining the configuration settings. Certain settings may cause damage to the dSPACE ECU interface or the connected electronic system if they are not set in accordance with the actual hardware conditions.

When using the DCI Configuration Tool with a dSPACE ECU interface, the user must ensure that no other tool, like ControlDesk or the dSPACE ECU Flash Programming Tool, accesses the dSPACE ECU interface at the same time.

The DCI Configuration Tool can also be used to reset the connected electronic control system or to alter its memory. These features are intended to facilitate putting a dSPACE ECU interface into operation for the first time. These features must not be used after the dSPACE ECU interface and the connected electronic system have been integrated into the overall system. In-depth expert knowledge of the connected electronic system and its software are required to assess the consequences of specific changes to the electronic system's memory. The user bears the sole responsibility for any modifications to the electronic system's memory.

Liability

It is your responsibility to adhere to instructions and warnings. Any unskilled operation or other improper use of this product in violation of the respective safety instructions, warnings, or other instructions contained in the user documentation constitutes contributory negligence, which may lead to a limitation of liability by dSPACE GmbH, its representatives, agents and regional dSPACE companies, to the point of total exclusion, as the case may be. Any exclusion or limitation of liability according to other applicable regulations, individual agreements, and applicable general terms and conditions remain unaffected.

Starting the DCI Configuration Tool

Where to go from here

Information in this section

How to Start the DCI Configuration Tool

Objective

You can start the dSPACE DCI Configuration Tool via the Microsoft Windows Start menu.

Preconditions

The dSPACE DCI Configuration Tool is installed.

Method

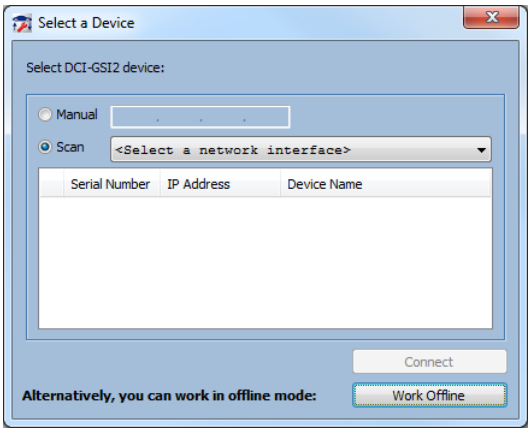
To start the DCI Configuration Tool

1 Click the Windows Start button and select dSPACE DCI-GSI Configuration Package <x.y> – dSPACE DCI Configuration Tool <x.y>.

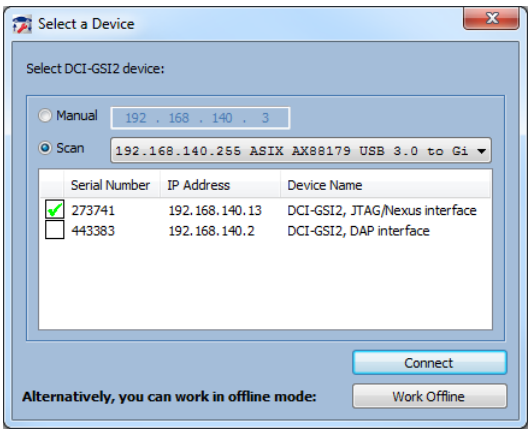
The dSPACE DCI Configuration Tool opens, starting with the Select a Device dialog.

Tip

If the DCI Configuration Tool is already open, you can open the dialog by selecting Device – Select Device from the menu bar.



2 Search for connected DCI-GSI2 devices and select the specific device you want to configure.

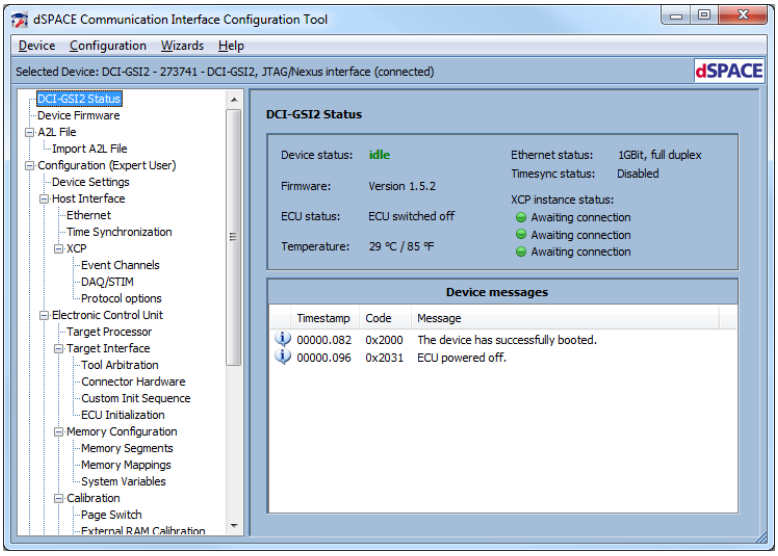


Tip

The DCI Configuration Tool provides several methods to search for connected DCI-GSI2 devices. Refer to Selecting a Specific DCI-GSI2 Device on page 11.

3 Click Connect.

The main window of the DCI Configuration Tool opens. Information on the selected device in the DCI Configuration Tool is displayed in the information area below the menu bar.



Result

You started the DCI Configuration Tool and selected one of the connected devices for configuration purposes.

Related topics

Basics

Selecting a Specific DCI-GSI2 Device 11

Selecting a Specific DCI-GSI2 Device

Introduction

There are two ways to select a specific DCI-GSI2 device for work in the DCI Configuration Tool. You can either scan the network for connected DCI-GSI2 devices, or directly connect to your DCI-GSI2 by entering its IP address.

Ethernet connection to host PC

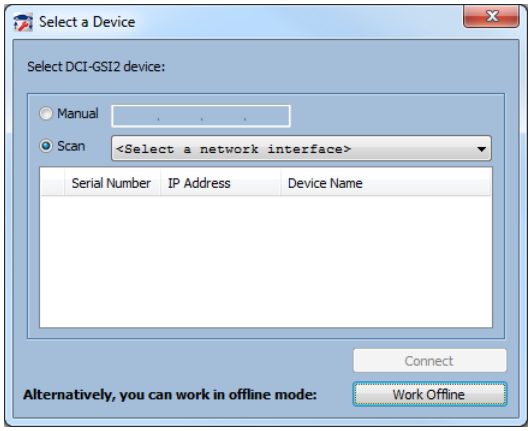
A DCI-GSI2 is connected to the host PC directly via an Ethernet interface. The Ethernet connection between the host PC and the DCI-GSI2 must be set up correctly.

Check if the Ethernet interface is correctly configured for your environment. The customer information leaflet which is shipped with every DCI-GSI2 states the Ethernet IP configuration with which your DCI-GSI2 was preconfigured by dSPACE. If necessary you have to change the Ethernet IP configuration. For details, refer to Integrating a DCI-GSI2 into a Network (ECU Interfaces Hardware Installation and Configuration 🕮).

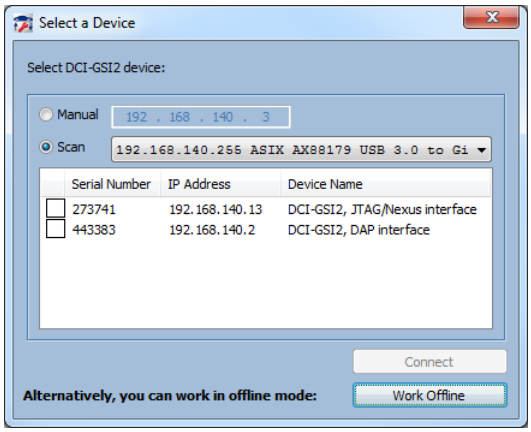
Scanning the network for connected DCI-GSI2 devices

To find all the DCI-GSI2 devices currently accessible from your host PC, you can perform a network scan. It uses broadcast packets to locate devices and gather information about them.

By default, no broadcast packets are sent and the Select a network interface option is selected.



Select a network interface from the list to start the device scan. The list contains an entry for each subnet configured on your host PC. After you select one of these entries, the device scan process is performed in the selected subnet only. The found devices are displayed for selection.

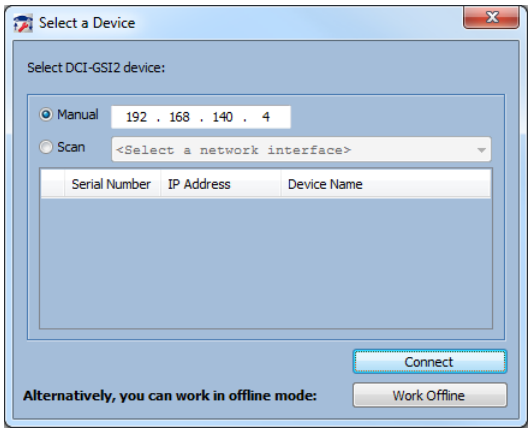


If you select 255.255.255.255 All Interfaces from the list, the device scan is performed on all network interfaces and all subnets connected to your PC. It will also find misconfigured devices that are not accessible with their current network configuration. A connection attempt to them will fail, but their network configuration can be changed via the Set Network Configuration menu command. For information on how to change the network configuration, refer to Integrating a DCI-GSI2 into a Network (ECU Interfaces Hardware Installation and Configuration 🕮).

Entering a specific IP address manually

If the device scan does not find your DCI-GSI2 device or if you do not want to generate broadcast packets by scanning the network, you can manually connect

to a DCI-GSI2 device by entering its IP address. Select the **Manual** option, enter the IP address and click **Connect**.



The main window of the DCI Configuration Tool opens. Information on the currently selected device is displayed in the information area below the menu bar.

Related topics

HowTos

How to Start the DCI Configuration Tool 9

Configuring a DCI-GSI2

Introduction

The DCI Configuration Tool provides wizards that guide you through the configuration and firmware update for a DCI-GSI2.

Where to go from here

Information in this section

Notes on Configuring a DCI-GSI2

Introduction

Read this topic before you begin configuring a DCI-GSI2.

Device configuration with the DCI Configuration Tool

The DCI Configuration Tool can be used to change the device configuration and perform firmware updates for a DCI-GSI2. It also helps you adapt an A2L file to use the DCI-GSI2 with a measurement and calibration tool (for example, ControlDesk) and for bypassing (for example, with the RTI Bypass Blockset).

Note

You should modify the configuration of the DCI manually only if you are very familiar with device configuration.
Before changing the configuration of a DCI-GSI2, it is recommended to create a backup of it. The DCI Configuration Tool comes with a default configuration file (G2C file) for each target processor family available for the DCI-GSI2. You can find the G2C files in the `DCI_ConfigurationTool\DCI-GSI2\Configuration` folder in your dSPACE DCI-GSI Configuration Package installation. Since dSPACE archives the configuration of a DCI-GSI2 before it is shipped, you can also get a backup of the initial configuration of your DCI-GSI2 from dSPACE, if necessary.

Related topics

HowTos

How to Download Configuration Files to a DCI-GSI2 19
How to Download New Firmware to a DCI-GSI2 16

How to Download New Firmware to a DCI-GSI2

Objective

To get access to new features or improve the functionality of the device, you need to download new firmware to the device.

Preconditions

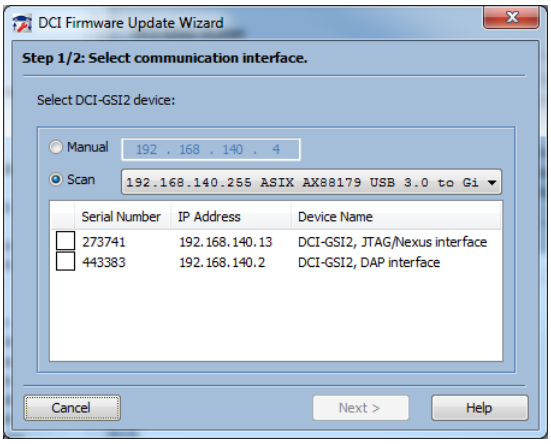
- To download new firmware to a DCI-GSI2, it must be connected to the host PC. For instructions on connecting a DCI-GSI2, refer to Connecting an ECU with DCI-GSI2 (ECU Interfaces Hardware Installation and Configuration 🕮).
- The dSPACE DCI Configuration Tool must be started. Refer to How to Start the DCI Configuration Tool on page 9.

Method

To download new firmware to the DCI-GSI2

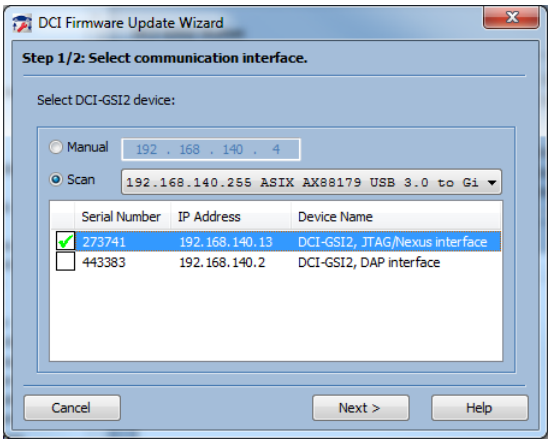
1 From the Wizards menu, select Start Firmware Update Wizard.

The DCI Firmware Update Wizard opens, starting with the Step 1/2: Select calibration interface dialog.



2 Select the DCI-GSI2 you want to update and click Next >.

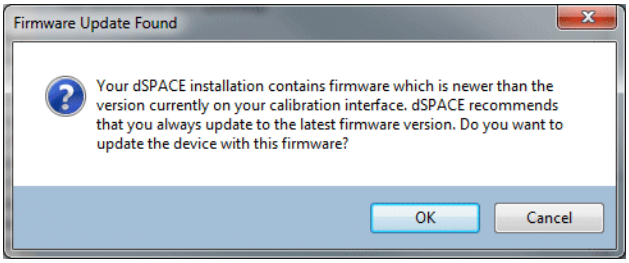
For information on how to select a DCI-GSI2, refer to Selecting a Specific DCI-GSI2 Device on page 11.



The Step 2/2: Firmware selection dialog opens.

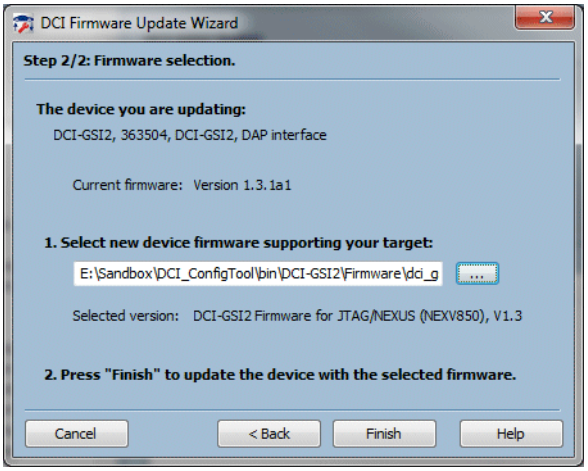
3 The wizard checks whether the DCI Configuration Tool installation contains appropriate firmware which is newer than the firmware that is currently installed on the device. If a newer version is available, a pop-up menu displays it.

(You can find the firmware files coming with the DCI Configuration Tool in the `DCI_ConfigurationTool\DCI-GSI2\Firmware` folder in your dSPACE DCI-GSI Configuration Package installation.)

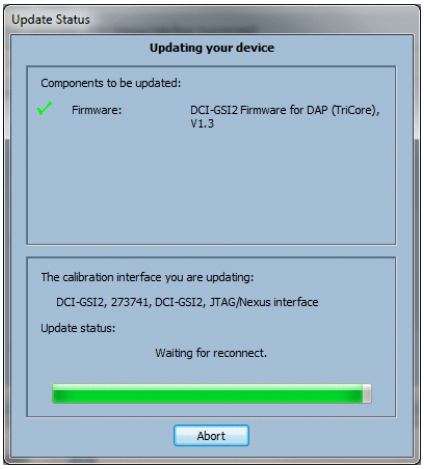


If you want to confirm the displayed firmware update, click **OK**.

Alternatively, you can select different firmware for the update. Click the **Browse** button in the **Step 2/2: Firmware selection** dialog to select the new firmware and click **Finish** to start the update.



In both cases the **Update Status** dialog opens.



4 After updating, click **OK** to close the dialog.

Result

The new DCI-GSI2 firmware is written to the DCI-GSI2. When the process has finished, the new firmware is immediately active.

⚠ WARNING

The DCI-GSI2 restarts automatically when the device firmware is updated. Make sure that the DCI-GSI2 is not being actively used for calibration, measurement, bypassing or flashing at that time.

Related topics

Basics

Notes on Configuring a DCI-GSI2 16

HowTos

How to Check the Current Status and Configuration of a DCI-GSI2 21

How to Download Configuration Files to a DCI-GSI2

Objective

You have to download a configuration file to a DCI-GSI2 in the following cases:

- You want to reuse a device for another ECU.
- You want to exchange a configuration file with other departments.
- You have received a configuration update for your device.

Preconditions

- To download a configuration file to a DCI-GSI2, it must be connected to the host PC. For instructions on connecting a DCI-GSI2, refer to Connecting an ECU with DCI-GSI2 (ECU Interfaces Hardware Installation and Configuration 🕮).
- The dSPACE DCI Configuration Tool must be started. Refer to How to Start the DCI Configuration Tool on page 9.

Method

To download configuration files to a DCI-GSI2

1. From the **Device** menu, select **Select Device**.
   The **Select a Device** dialog opens.
2. Select the DCI-GSI2 device you want to configure and click **Connect**.
   For information on how to select a DCI-GSI2, refer to Selecting a Specific DCI-GSI2 Device on page 11.
3. From the **Configuration** menu, select **Load Configuration**.
   A standard **Open** dialog opens for you to select a configuration file.

4 Select the configuration file (G2C) and click **Open**.

Note

The DCI Configuration Tool provides a default configuration file (G2C file) for each available target processor family and target interface of the DCI-GSI2. You can find the files in the `DCI_ConfigurationTool\DCI-GSI2\Configuration` folder in your dSPACE DCI-GSI Configuration Package installation.

The new configuration settings are available in the DCI Configuration Tool.

5 Change the configuration settings in the DCI Configuration Tool, if necessary.

6 From the **Configuration** menu, select **Flash Configuration** to activate the current configuration settings on the DCI-GSI2.

Result

The device configuration is written to the DCI-GSI2. When the process has finished, the new configuration is immediately active.

⚠ WARNING

The DCI-GSI2 restarts automatically when a new device configuration is downloaded. Make sure that the DCI-GSI2 is not being actively used for calibration, measurement, bypassing or flashing at that time.

Note

After reconfiguring your DCI-GSI2, you should check its status. Select the **DCI-GSI2 Status** page to ensure that no error is displayed for the **Device Status**.

Related topics

Basics

Notes on Configuring a DCI-GSI2 16

HowTos

How to Check the Current Status and Configuration of a DCI-GSI2 21

References

DCI-GSI2 Status Page 49

How to Check the Current Status and Configuration of a DCI-GSI2

Objective

In some cases you may need information on the current status and configuration of a DCI-GSI2. This information is available via the main window of the DCI Configuration Tool.

Preconditions

- To check its current status, the DCI-GSI2 must be connected to the host PC. For instructions on connecting a DCI-GSI2, refer to Connecting an ECU with DCI-GSI2 (ECU Interfaces Hardware Installation and Configuration 🕮).
- The dSPACE DCI Configuration Tool must be started. Refer to How to Start the DCI Configuration Tool on page 9.

Method

To check the current status and configuration of a DCI-GSI2

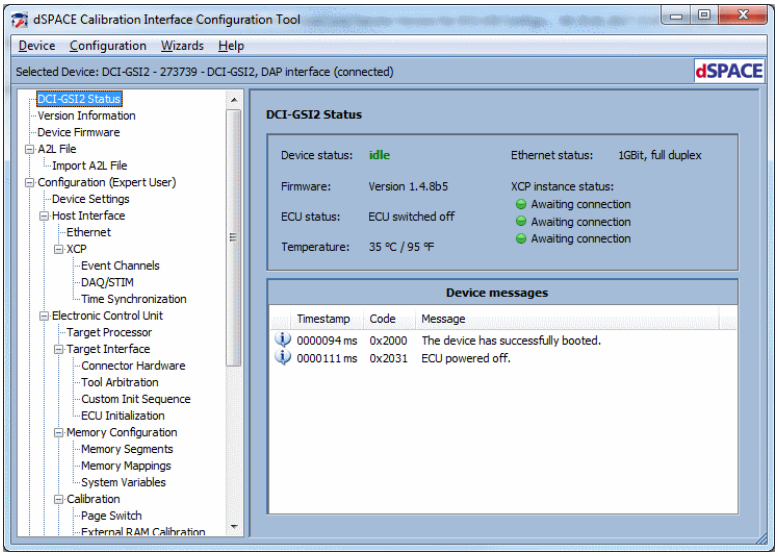
1 From the Device menu, select Select Device.

The Select a Device dialog opens.

2 Select the DCI-GSI2 device you want to check and click Connect.

For information on how to select a DCI-GSI2, refer to Selecting a Specific DCI-GSI2 Device on page 11.

The main window of the DCI Configuration Tool opens, displaying the current device status of the DCI-GSI2 and all recent info, warning and error messages.



3 Select the status or configuration category you want to check in the browser on the left side of the main window.

Result

The information is displayed on the right side of the main window.

For detailed information on the pages provided by the main window, refer to Main Window (DCI-GSI2) on page 36.

Related topics

References

How to Upload and Store the Configuration of a DCI-GSI2

Objective

You can save the configuration of a DCI-GSI2 to a file. It can then be used to configure a different DCI-GSI2 with the same settings, or transfer the settings to a different PC.

Preconditions

- To upload the configuration from a DCI-GSI2, it must be connected to the host PC. For instructions on connecting a DCI-GSI2, refer to Connecting an ECU with DCI-GSI2 (ECU Interfaces Hardware Installation and Configuration 🕮).
- The dSPACE DCI Configuration Tool must be started. Refer to How to Start the DCI Configuration Tool on page 9.

Method

To upload and store the configuration of a DCI-GSI2

1. From the **Device** menu, select **Select Device**.

   The **Select a Device** dialog opens.
2. Select the DCI-GSI2 device whose configuration you want to store to a file and click **Connect**.

   For information on how to select a DCI-GSI2, refer to Selecting a Specific DCI-GSI2 Device on page 11.

   A connection to the DCI-GSI2 device is established, and the device configuration is uploaded.
3. From the **Configuration** menu, select **Save Configuration File**.

   A standard **Save As** dialog opens for you to specify the path and name of the file you want to store the device configuration in.
4. Click **Save**.

Result

The device configuration is stored in the specified file.

Related topics

HowTos

How to Download Configuration Files to a DCI-GSI2 19

How to Adapt an A2L File Automatically

Objective

You can let the DCI Configuration Tool automatically insert the structures needed for using a DCI-GSI2 into an existing A2L file and modify them.

You can select the structures to be modified and/or inserted:

- The A2ML structure is adapted to describe the IF_DATA XCP structure.
- An IF_DATA XCP structure for XCP on Ethernet is inserted.
- The MEMORY_SEGMENT structures with the DATA program type are adapted to contain the necessary XCP information.
- Descriptions of the DCI-GSI2 system variables are inserted.
- An IF_DATA dSPACE_XCP structure is inserted. It contains additional information necessary for extended bypassing features.

Preconditions

The dSPACE DCI Configuration Tool must be started. Refer to How to Start the DCI Configuration Tool on page 9.

Method

To adapt an A2L file automatically

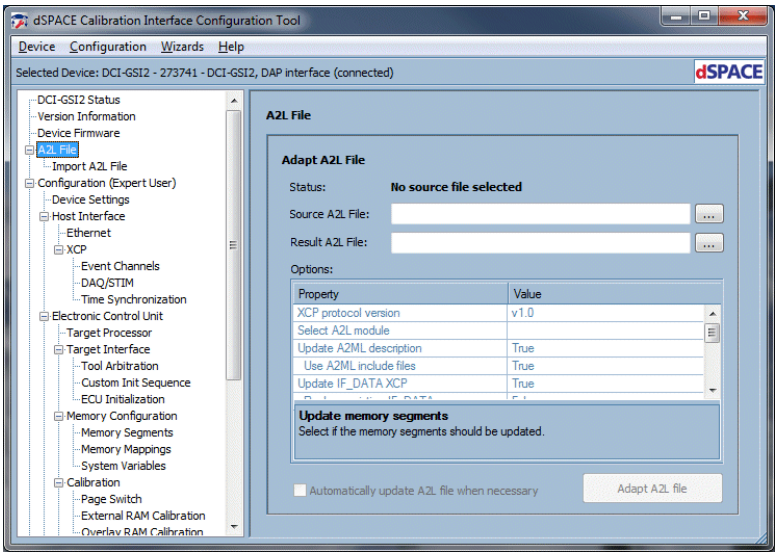
1. From the **Device** menu, select **Select Device**.
   The **Select a Device** dialog opens.
2. Select the DCI-GSI2 device you want to adapt an A2L file for and click **Connect**.
   For information on how to select a DCI-GSI2, refer to Selecting a Specific DCI-GSI2 Device on page 11.

Tip

You can also adapt/generate an A2L file without being connected to a DCI-GSI2. In the offline mode, you can load the configuration file to be used via the **Configuration – Load Configuration File** command. Refer to How to Download Configuration Files to a DCI-GSI2 on page 19.

3 In the dialog tree, select A2L File.

The A2L File page opens.

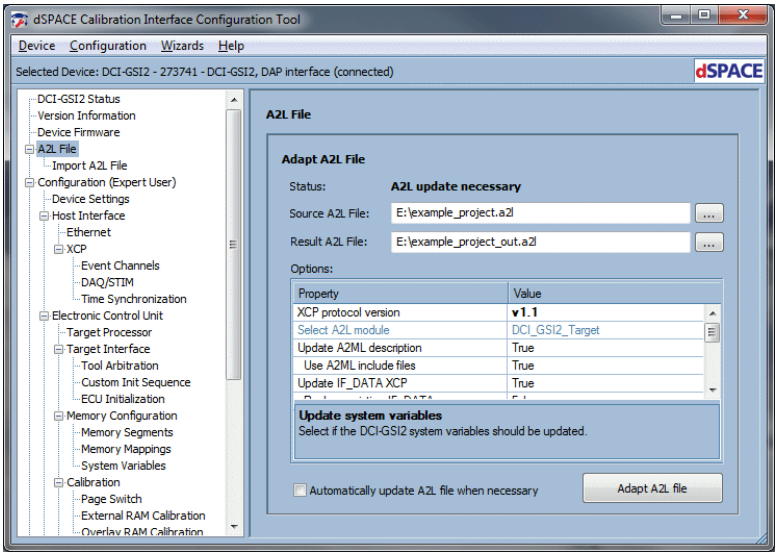


4 In the Source A2L File field, specify the existing A2L file you want to base the new A2L file for your DCI-GSI2 on. Click the Browse button next to the Source A2L File field to select the existing A2L file. The source A2L file is not modified by the DCI Configuration Tool.

5 In the Result A2L File field, select the name of the existing A2L file you want to adapt for use with the DCI-GSI2.

The result A2L file is overwritten each time the A2L file is adapted.

The Status field changes from No result file selected to a text displaying whether the current version of the result A2L file is up-to-date or an A2L file update is necessary.



6 Select the XCP protocol version for which to create the A2L structures. To let the DCI Configuration Tool automatically specify the suitable XCP protocol version, you can select 'Automatic'.

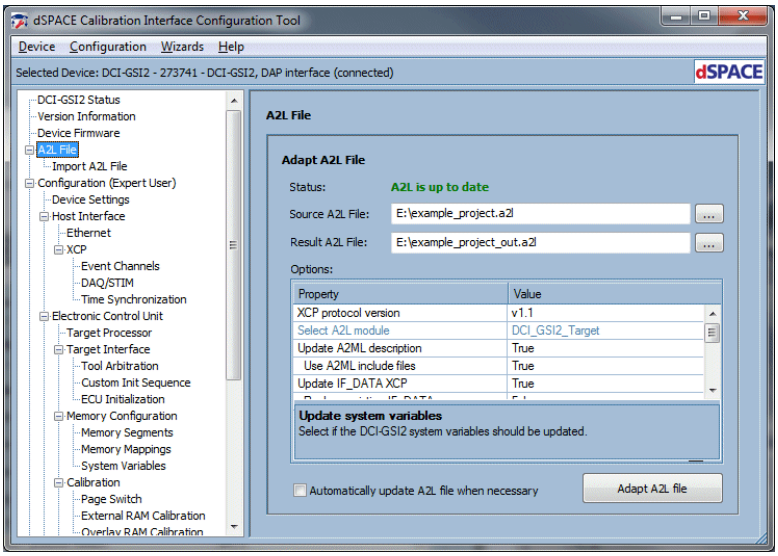
7 Specify which structures are to be adapted and whether memory segments and calibration methods are to be imported into the device configuration.

8 Click **Adapt A2L File** to start A2L file adaptation if the result file is not up-to-date.

Tip

To let the DCI Configuration Tool update the result A2L file automatically whenever this is necessary, select the **Automatically update A2L file when necessary** checkbox. Updating can be necessary, for example, when there was a change in the selected source A2L file or when you modify a device configuration setting relevant for the A2L file.

The **Status** field changes from **A2L update necessary** to **A2L is up to date**.



Result

The A2L file has been adapted for use with a DCI-GSI2.

The required structures are added or the existing structures are updated according to your settings, and the result is stored in the result A2L file.

Related topics

References

A2L File Page.....39

How to Generate a Basic A2L File

Objective

You can generate a basic A2L file that can be used as a template for adapting an A2L file manually. You can select all the structures to be inserted or updated that are needed for using a DCI-GSI2.

You can select the structures to be inserted into the basic A2L file:

- The A2ML structure is adapted to describe the IF_DATA XCP structure.
- An IF_DATA XCP structure for XCP on Ethernet is inserted.
- The MEMORY_SEGMENT structures with the DATA program type are adapted to contain the necessary XCP information.
- Descriptions of the DCI-GSI2 system variables are inserted.
- An IF_DATA dSPACE_XCP structure is inserted. It contains additional information necessary for extended bypassing features.

Preconditions

The dSPACE DCI Configuration Tool must be started. Refer to How to Start the DCI Configuration Tool on page 9.

Method

To generate a basic A2L file

1 From the **Device** menu, select **Select Device**.

The **Select a Device** dialog opens.

2 Select the DCI-GSI2 device you want to generate an A2L file for and click **Connect**.

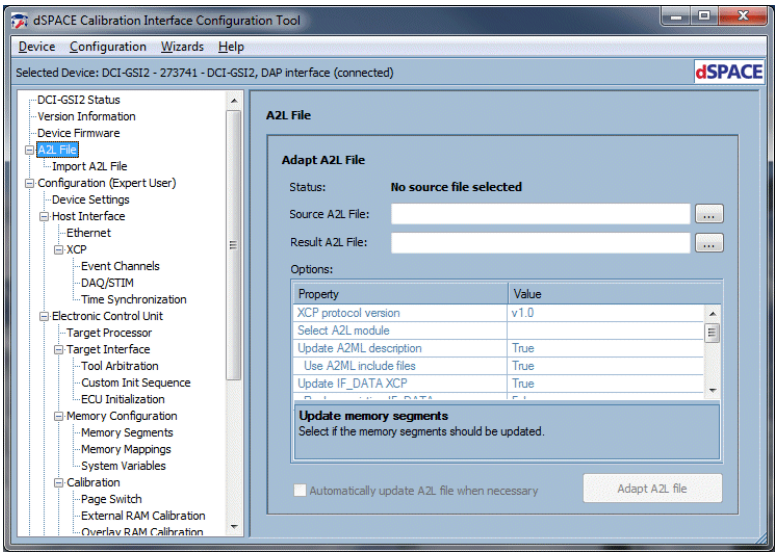
For information on how to select a DCI-GSI2, refer to Selecting a Specific DCI-GSI2 Device on page 11.

Tip

You can also adapt/generate an A2L file without being connected to a DCI-GSI2. In the offline mode, you can load the configuration file to be used via the **Configuration – Load Configuration File** command. Refer to How to Download Configuration Files to a DCI-GSI2 on page 19.

3 In the dialog tree, select A2L File.

The A2L File page opens.



4 In the Result A2L File field, specify the name of an A2L file to hold the structures necessary for using a DCI-GSI2.

When you click the Browse button, a standard Save As dialog opens for you to specify the file name.

5 Select the XCP protocol version for which to create the A2L structures. You can also select 'Automatic' to let the DCI Configuration Tool automatically specify the suitable XCP protocol version.

6 Specify which structures are to be inserted.

7 Click Generate A2L File to generate the A2L file structures into the result file.

Note

The Generate A2L File button is only available, if the Source A2L File field is empty.

Result

The basic A2L file has been generated with the required A2L structures according to the device configuration settings for use with a DCI-GSI2.

Now, you can integrate these A2L structures in an existing A2L file manually.

Related topics

References

A2L File Page 39

How to Perform Start-Up Diagnostics on a DCI-GSI2

Objective

The start-up diagnostics tests can be performed to check the physical connection between the DCI-GSI2 and the ECU, and for correct generation of ECU trigger events and correct integration of the dSPACE Calibration and Bypassing Service.

NOTICE

The ECU must not be used to control processes during the start-up diagnostics.

Preconditions

- To perform start-up diagnostics on a DCI-GSI2, the DCI-GSI2 must be connected to the host PC. For instructions on connecting a DCI-GSI2, refer to Connecting an ECU with DCI-GSI2 (ECU Interfaces Hardware Installation and Configuration 🕮).
- The dSPACE DCI Configuration Tool must be started. Refer to How to Start the DCI Configuration Tool on page 9.

Method

To perform start-up diagnostics on a DCI-GSI2

1. From the **Device** menu, select **Select Device**.

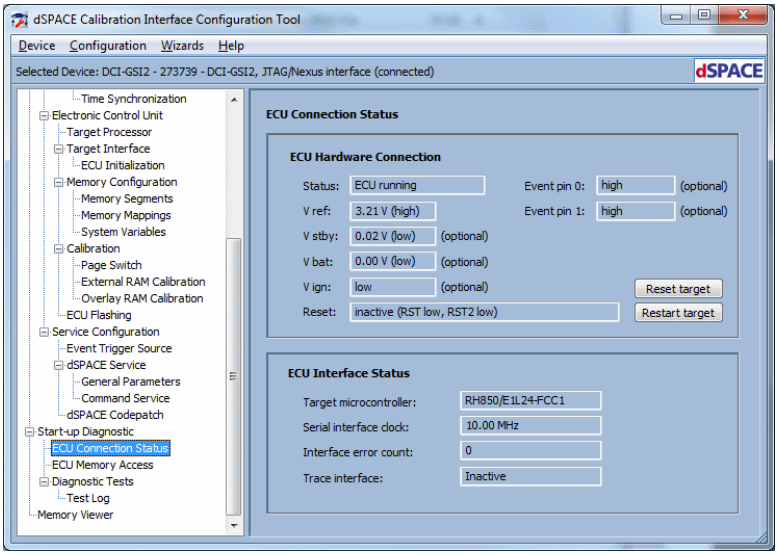
   The **Select a Device** dialog opens.

2. Select the DCI-GSI2 device you want to perform the start-up diagnostics tests for and click **Connect**.

   For information on how to select a DCI-GSI2, refer to Selecting a Specific DCI-GSI2 Device on page 11.

   The main window of the **dSPACE DCI Configuration Tool** opens.

3. To see the ECU status, execute a reset test, and get information on the status of the connection between the DCI-GSI2 and the ECU, select the **ECU Connection Status** page in the main window.



4 If you want to check the connection between the DCI-GSI2´s reset mechanism and the ECU´s reset line, click **Reset target**. The DCI-GSI2 resets the ECU. The DCI-GSI2 measures the reset line, and the result is displayed in the **Status** and **Reset** fields.

The ECU is kept in reset until you click **Restart target**. This allows you to easily measure the reset line yourself.

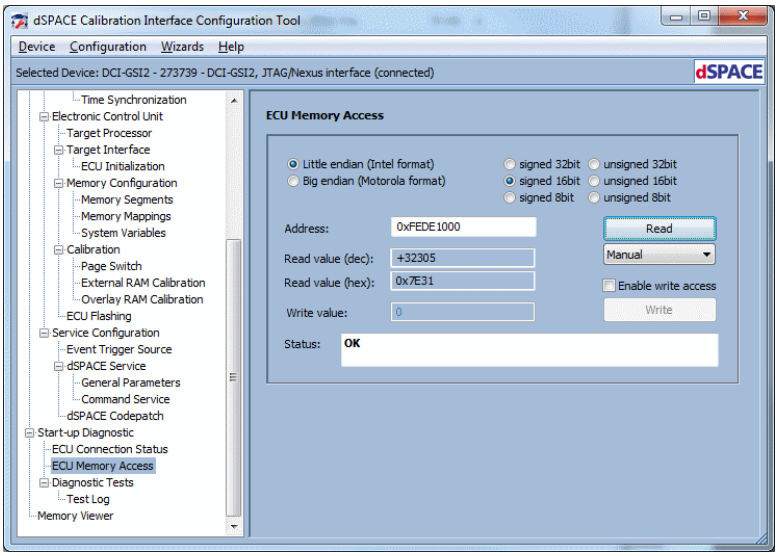
The connection state can be checked regardless of whether an application is running on the ECU.

Note

Note the following points regarding the ECU connection state information:

- The event pin lines must be connected correctly.
- The voltage state and interface pin information is partly optional. Sometimes not all the voltage state and interface pin information is provided, because the corresponding signals are not available on the connector adapters.

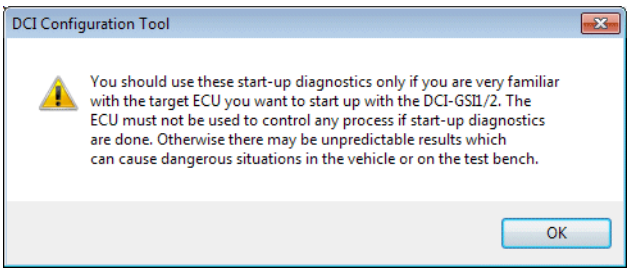
5 If you want to manually test accesses to the ECU memory, go to the ECU Memory Access page in the main window.



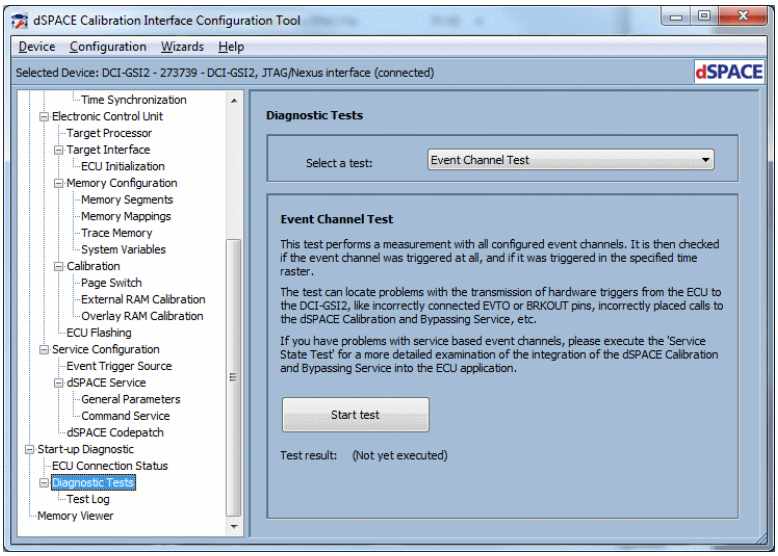
You can perform read and write accesses to any specific address in the ECU memory. This can be helpful, for example, for checking the basic functionality of the ECU interface connection, or for reading/writing ECU microcontroller registers.

6 To perform diagnostics or implementation tests, select the Diagnostic Tests page in the main window.

A warning similar to the following is displayed:



7 Click **OK** to open the **Diagnostic Tests** page.



8 Select the diagnostic or implementation test you want to perform from the **Select a test** drop-down list. The following tests are available:

- *Event channel* test: A measurement is performed with all the configured event channels. The test determines whether the event channels are triggered, and whether they are triggered in the specified time rasters.
- *Memory access* test: A series of read and write ECU memory accesses is executed on a configurable memory location. The memory location can be specified automatically or manually. The DCI Configuration Tool can also execute the memory access test by using a configurable range of ECU interface frequencies in order to determine the optimal ECU interface clock frequency.

The memory access test cannot be executed if measurement or bypassing is currently being executed on the ECU.

Note

You should edit the memory contents only if you are very familiar with the memory layout of your ECU and the ECU application. Neither the addresses of the variables nor the value ranges are checked. Erroneous manual editing of the ECU's memory can have unpredictable consequences on the ECU.

- *Trace interface* test: Checks whether the ECU trace interface functions properly. This is done by repeatedly reading the ECU memory via the serial interface and comparing the read data with the data received via the trace interface. Due to the volatility of the ECU memory contents, no definitive result can be presented. Rather, a certain probability that the trace interface is working correctly is calculated.
- *Service implementation* test: The current implementation of the dSPACE Calibration and Bypassing Service is checked. The DCI Configuration Tool checks whether the ECU application erroneously writes to the tool RAM memory. Then the DCI Configuration Tool performs a test initialization of the dSPACE Calibration and Bypassing Service, using the service parameters specified in the current device configuration, and checks the correct execution of the service background function and the service calls.

Note

To prevent effects on a running DAQ or bypassing scenario, you must ensure that no tool is active when the test is performed.

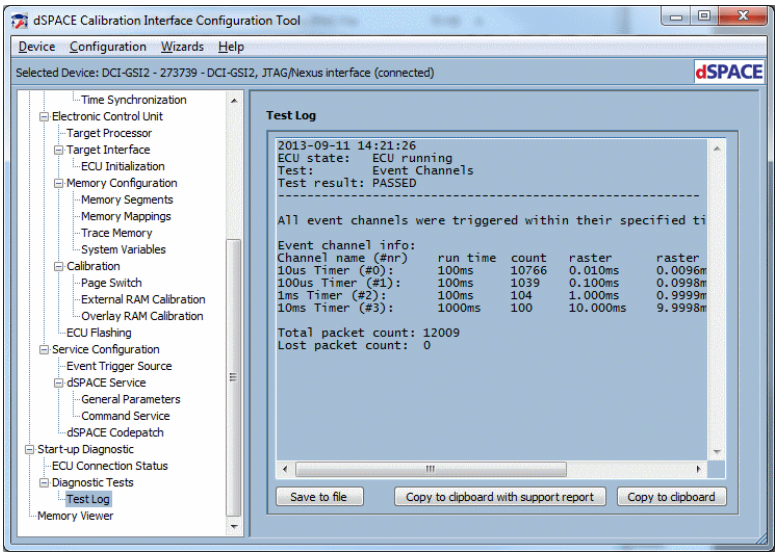
9 If you selected the memory access test, you must specify whether to perform a memory access loop test or an interface clock ramp test. For a memory access loop test, you must then specify the memory location to write data to during the test and enter the **Runtime** of the test. For an interface clock ramp test, you must specify the range of ECU interface frequencies to be tested, the memory location to write data to during the test, and the number of test cycles to be performed.

For both memory access test types, the address to write data to during the test can be specified manually or automatically. In the former case, you must enter the address in the **Address (hex)** edit field. The address must be located in the ECU RAM, and the ECU application must leave a memory range of 12 bytes unused. In the latter case, click **Use service ToolRAM address**. The DCI Configuration Tool uses a free address range in the service ToolRAM. This requires the dSPACE Calibration and Bypassing Service to be integrated into the ECU software and the DCI-GSI2 must be configured accordingly.

10 Click **Start test** to start the test. Information on the current test state is shown at the bottom of the **Diagnostic Tests** page.

11 Test details and the test result, connection status information, service data of the interfaces imported and used for the test, etc., are stored in a test log. If

the test is completed successfully, select the **Test Log** page in the main window to open the log and view the information. If the test fails, a message is displayed.



You can save the test log information (including additional support information if requested) to a text file, or copy it to the Clipboard for further use.

Result

You performed start-up diagnostics or service implementation tests for your DCI-GSI2. Test details and the result are written to a test log.

Related topics

References

Diagnostic Tests Page....52
ECU Connection Status Page....55
Start-Up Diagnostic Page....83
Test Log Page....93

dSPACE DCI Configuration Tool Reference

Main Window (DCI-GSI2)

Introduction

You can check the status and configuration of DCI-GSI2 device settings in the main window.

Note

Not all dialog pages are always available. Their availability depends on the target interface type, and on whether Expert user or Normal user is selected on the Configuration Page.

Where to go from here

Information in this section

XCP Page 98
To control the XCP host interface of the DCI-GSI2, and to provide access to general XCP settings.

A2L File Page

Access

Located on the top level of the main window.

Purpose

To generate or adapt an A2L file for use with a DCI-GSI2.

Description

To allow a measurement, calibration or bypassing tool to work with a DCI-GSI2, an A2L file is necessary. The A2L file must contain certain structures. The DCI Configuration Tool offers the option to automatically insert and/or modify the structures needed for using a DCI-GSI2 into an existing A2L file. It also offers the option to generate a basic A2L file that can be used as a template for adapting an A2L file manually. You can select the structures to be inserted or updated.

Note

Make sure that your A2L file conforms to the A2L specification. The latest ASAP2 version 1.6 can be downloaded from http://www.asam.net.

Subpages

The following subpages allow you to import an A2L file that contains information about the dSPACE Calibration and Bypassing Service integrated into the ECU application:

- Import A2L File Page on page 72

Dialog settings

Status Displays information on whether the current version of the result A2L file is up-to-date or the result A2L file must be updated (manually or automatically). A checksum-based mechanism is used to check if the current device configuration matches the information in the A2L file. If it does not match, the result A2L file needs to be updated. The result A2L file also needs to be updated if the source A2L file is modified after the last update of the result A2L.

Source A2L File Lets you select an existing A2L file to base the new A2L file for your DCI-GSI2 on. A standard **Open** dialog opens for you to select the source

A2L file. The source A2L file does not need to be specified if you only want to create a simple A2L file template.

The source A2L file is not affected by the DCI Configuration Tool. However, changes in the source A2L file are detected by the DCI Configuration Tool and therefore taken into account for A2L file adaptation.

Result A2L File Lets you select an A2L file to adapt for use with a DCI-GSI2. A standard Save As dialog opens for you to select the A2L file to be used with the DCI-GSI2. The result A2L file is a mandatory element.

The result A2L file is overwritten each time the Adapt A2L file or Generate A2L file command is called (manually or automatically).

Options – Feature level Lets you select the feature level of the DCI-GSI2 for which to adapt/generate the A2L file. For some new features supported by newer versions of the DCI-GSI2 firmware, it might be necessary to adapt the A2L file differently. Then, this option lets you pick the firmware version for which you want to adapt the A2L file. In most cases, it is appropriate to select '(Automatic)', especially when you are connected with the DCI-GSI2 that is to be used.

Options – XCP IF_DATA version Lets you select the XCP IF_DATA version for which to create the A2L structures. In most cases, you can select '(Automatic)' to let the DCI Configuration Tool automatically choose a suitable XCP IF_DATA version.

Options – Select A2L module Lets you select the A2L module to be adapted. The list contains all the `MODULE` elements specified in the source A2L file.

Options – Update A2ML description Lets you specify whether to update the `A2ML` description.

Options – Use A2ML include files Lets you specify whether to use include files in the `A2ML` description or to insert the AML description directly into the A2L file.

Options – Update IF_DATA XCP Lets you specify whether to insert/modify the `IF_DATA XCP` structure for XCP on Ethernet.

Options – Replace existing IF_DATA Lets you specify whether to replace the existing IF_DATA XCP/XCPplus entry by the IF_DATA XCP/XCPplus entry of the DCI-GSI2. If 'v1.1' is selected as the XCP protocol version, an existing IF_DATA XCP entry is replaced by an IF_DATA XCPplus entry.

Options – XCP transport layer protocol Lets you select the Ethernet transport layer(s) to be adapted. The selective transport layer protocol update can be used to improve the coexistence with other XCP devices.

Options – Update system variables Lets you specify whether to insert descriptions of the DCI-GSI2 system variables.

Options – Update memory segments Lets you specify how to handle `MEMORY_SEGMENT` entries in the A2L file. The following options are available:

- *Do nothing*

  The memory segments are not modified at all.
- *Adapt existing segments*

  Existing memory segments of DATA type are adapted to contain the XCP information necessary for calibration. The `MEMORY_SEGMENT` structures are extended by an `IF_DATA XCP` structure.
- *Adapt existing and generate new segments*

  In addition to adapting existing memory segments of DATA type (see above), memory segments that are defined in the DCI-GSI2 configuration are added to the A2L file.
- *Replace all segments*

  All the memory segments in the A2L file are removed and then replaced by the memory segments defined in the DCI-GSI2 configuration.

Options – Import memory segments from A2L Lets you specify whether memory segments are to be imported into the device configuration.

Note

If new memory segments are imported, the new configuration has to be flashed to the DCI-GSI2 device before the device is ready for use.

Options – Import calibration settings from A2L Lets you specify whether calibration settings are to be imported into the device configuration. If enabled, the following calibration settings are imported:

- Calibration method
- Overlay handles (for calibration via overlay units)
- Working page address (for calibration in external ECU RAM)

Note

If new calibration settings are imported, the new configuration has to be flashed to the DCI-GSI2 device before the device is ready to use.

Automatically update A2L file when necessary Lets you specify to let the DCI Configuration Tool update the result A2L file automatically whenever this is necessary, for example, due to a change in the selected source A2L file or when you modify a device configuration setting relevant for the A2L file.

Adapt A2L file (Available only if a source A2L file is specified) Lets you start A2L file adaptation. The required structures are added to the source A2L file and/or the existing structures are updated according to your settings, and the result is stored as the result A2L file.

Generate A2L file (Available only if no source A2L file is specified) Lets you start A2L file generation. The DCI Configuration Tool generates all the necessary structures and parts to the new A2L file and stores the file as the result A2L file.

Related topics

HowTos

Calibration Page

Access

Located below the Electronic Control Unit Page in the main window.

Purpose

To configure general calibration parameters, and to provide access to the settings that control the switching of calibration pages and the behaviors of the external RAM calibration method and the overlay RAM calibration method.

Subpages

The following subpages allow you to configure settings concerning switching memory pages and ECU calibration in external ECU RAM or via overlay units:

- Page Switch Page on page 80
- External RAM Calibration Page on page 70
- Overlay RAM Calibration Page on page 78

Dialog settings

In this section the general calibration parameters are described.

Calibration method Lets you specify the calibration method that is employed by the DCI-GSI2. The following methods are supported:

- *via overlay RAM units*

  Most microcontrollers provide so-called overlay memory, or calibration memory. This memory can be laid over the ECU flash to allow the calibration of ECU parameters.
- *in (external) RAM*

  For microcontrollers that do not provide an overlay memory, this more generic calibration method can be used. Here the calibration parameters are placed in ECU RAM (most often external memory), and can be laid over the ECU flash area using the memory management unit (MMU) of the microcontroller. To configure the MMU, a *dSPACE Calibration and Bypassing Service* has to be integrated into the ECU application.

For more information on the calibration methods, refer to the section Calibration Features (DCI-GSI2 Feature Reference 🕮).

Calibration page count Lets you specify the number of logical pages used for calibration. In general, two pages are used: a reference page containing the ECU flash contents, and a working page containing the working data.

Reference page initialization method Lets you specify the initialization method for the reference page. Some target microcontrollers do not allow read access to the flash memory. However, for calibration to work, the DCI-GSI2 needs to know the contents of the flash memory. For these cases, alternate reference page initialization methods are supported.

These are the available options:

- *download from host*

  Note

  - This option supports only one memory segment.
  - This option is relevant for ECU calibration via overlay RAM units only.

- *read ECU flash*

  This is the normal mechanism, where the DCI-GSI2 reads the ECU flash contents via the serial ECU interface.

- *read ECU flash, ignore errors*

  This option can be used for ECUs with ECC-protected flash memory that is invalid when unprogrammed. Access errors that occur while reading this type of flash memory areas are ignored, and the default value 0xFF is assumed for the affected areas.

- *upload via service*

  When this option is configured, and a *dSPACE Calibration and Bypassing Service* is integrated into the ECU application, the ECU flash contents are read using the service.

Related topics

Basics

Calibration Features (DCI-GSI2 Feature Reference 🕮)

Command Service Page

Access

Located below the dSPACE Service Page in the main window.

Purpose

To configure settings for the command service part of the dSPACE Calibration and Bypassing Service.

Description

Note

In some cases, you have to integrate only the command service part of the dSPACE Calibration and Bypassing Service into the ECU application, for example, for ECU calibration in external ECU RAM or for ECUs that do not allow reading the flash memory. In these cases, you have to configure only the mailbox address and size. However, these parameters can also be defined if the service is used for measurement and bypassing, which allows you to place the mailbox outside the service tool RAM.

Dialog settings

Mailbox address Lets you specify the ECU memory address of the command mailbox used for the communication between the DCI-GSI2 and the ECU service.

Alternatively, you can associate a variable from the A2L file. Click the button next to the address edit field. A dialog displaying all the variables defined in the assigned A2L file opens. After you select a variable from the list and confirm your selection via **OK**, the dialog closes and the selected variable is displayed in the parameter's edit field.

To remove the variable association, click the button again.

Mailbox size Lets you specify the size of the command mailbox in bytes.

Configuration Page

Access

Located on the top level of the main window.

Purpose

To specify whether to use all configuration settings or only a subset for configuration, and to provide access to the device settings, host interface settings, ECU interface settings and service settings.

Dialog settings

Select your experience level Lets you select your experience level for device configuration.

- *Normal user*: Only a subset of configuration pages and configuration settings is available in the main window. Configuration settings that are intended for experts only and have to be changed in special use cases only are hidden.
- *Expert user*: All configuration pages available for the used interface type are displayed in the main window and can be used for configuration purposes.

The currently selected experience level is displayed in the dialog tree.

Subpages

The following subpages allow you to specify device settings, host interface settings, ECU interface settings and service settings:

- Device Settings Page on page 51
- Host Interface Page on page 72
- Electronic Control Unit Page on page 61
- Service Configuration Page on page 82

Connector Hardware Page

Access

Located below the Target Interface Page in the main window.

Purpose

To specify configuration settings for the connector adapter.

Description

Not all configuration settings are always available. Their availability depends on the target interface type.

Dialog settings

ASEMD/MPMD pin (Available only for JTAG/H-UDI) Lets you control the function of the ASEMD pin (for SH2A microcontrollers) or the MPMD pin (for SH4A microcontrollers). If you select *Disabled*, the pin function is disabled. In this case the ECU hardware has to ensure that the pin has the correct level for enabling the JTAG/H-UDI interface. If you select *high level* or *low level*, the pin is driven to a constant high or low level, whichever the ECU circuitry requires to enable the JTAG/H-UDI interface.

NOTICE

Setting this parameter to any value other than **Disabled** can cause hardware damage to the DCI-GSI2, the connector adapter and/or the ECU if the ECU is not prepared for this feature. If you are not sure whether your ECU is prepared for this feature, contact dSPACE Support.

BRKOUT pin driver mode override (Available only for DAP and JTAG/OCDS) Lets you specify whether the DCI-GSI2 is allowed to override the BRKOUT pin driver mode. This can be necessary when the BRKOUT pin is not configured with the 'strong driver, sharp edge' driver mode by the ECU software.

DAP enable pin (Available only for DAP) Lets you select the physical microcontroller pin that will be used for the DAP enable signal.

DIR pin enable (Available only for NBD) Lets you enable or disable the use of the NBD interface DIR pin. If you select *Disabled*, the pin is not driven. Enable this option only if the ECU interface requires the DIR pin functionality.

NOTICE

Setting this parameter to **Enabled** can cause hardware damage to the DCI-GSI2, the connector adapter and/or the ECU if the ECU is not prepared for this feature. If you are not sure whether your ECU is prepared for this feature, contact dSPACE Support.

ECU BRKOUT pin (Available only for DAP and JTAG/OCDS) Lets you specify the ECU pin to use as the BRKOUT pin. This pin is then used for transmitting triggers to the DCI-GSI2, for example, when the watchpoint pin event channel type is used.

If you select *Disabled*, the configuration of the BRKOUT pin by the DCI-GSI2 is disabled. The ECU application is then responsible for configuring the pin.

NOTICE

Selecting a BRKOUT pin that is not connected to a DCI-GSI2 event pin can cause hardware damage to the DCI-GSI2, the connector adapter and/or the ECU. For further information, contact dSPACE Support.

ECU flash enable pin (Available only for JTAG/Nexus (RH850)) Lets you specify the DCI-GSI2 pin to be driven high for enabling ECU flash programming.

NOTICE

Setting this parameter to any value other than **Disabled** can cause hardware damage to the DCI-GSI2, the connector adapter and/or the ECU if the ECU is not prepared for this feature. If you are not sure whether your ECU is prepared for this feature, contact dSPACE Support.

ECU watchdog control (Available only for DAP and JTAG/Nexus (MPC5xxx)) Lets you specify the handling of the ECU watchdog pin. For some target microcontrollers, the DCI-GSI2 can control the behavior of the watchdog by driving a certain ECU pin. The following options are available:

- Disabled

  The DCI-GSI2 does not affect the ECU watchdog.
- Controlled by slave tool only

  The behavior of the ECU watchdog is only controlled by the slave tool connected to the DCI-GSI2.
- Deactivated during ECU flashing

  The DCI-GSI2 deactivates the ECU watchdog only while performing ECU flash programming.
- Deactivated permanently

  The DCI-GSI2 deactivates the ECU watchdog permanently.

NOTICE

Setting this parameter to any value other than **Disabled** can cause hardware damage to the DCI-GSI2, the connector adapter and/or the ECU if the ECU is not prepared for this feature. If you are not sure whether your ECU is prepared for this feature, contact dSPACE Support.

ECU watchdog disable mechanism (Available only for DAP and JTAG/Nexus (MPC5xxx)) Lets you specify the mechanism to disable the ECU watchdog mechanism. The following options are available:

- *Watchdog disable pin*

  A dedicated watchdog disable pin is driven to disable the ECU watchdog.
- *Reset pull-up*

  The ECU reset line is driven high to disable the ECU watchdog.

EVTO0 pin (Available only for JTAG/Nexus (MPC5xxx)) Lets you select the physical microcontroller pin that will be used for the EVTO0 signal.

This value must be configured only for devices of the Freescale MPC57xx or STMicroelectronics SPC57xx families.

GSI BRKOUT pin (Available only for DAP) Lets you specify the physical pin on the DCI-GSI2 that is used to connect the BRKOUT pin.

RST pin configuration (Availability depends on the target interface type) Lets you specify the functionality of the reset pin 'RST'. The pin can either have no function or be used for detecting and/or generating ECU resets.

RST2 pin configuration (Availability depends on the target interface type) Lets you specify the functionality of the second reset pin 'RST2'. The pin can either be without function or be used for detecting and/or generating ECU resets.

Note

Not all the reset pins are available for every connector adapter. Select 'No function' for those pins that are not available on your connector adapter.

Related topics

Basics

Operational Reliability Features (DCI-GSI2 Feature Reference 🕮)

Custom Init Sequence Page

Access	Located below the Target Interface Page in the main window.
Purpose	To specify the custom initialization sequence of a serial interface.
Description	The serial interfaces of some ECUs have to be initialized by a special sequence. In most cases this is done so that the ECU application can detect if there is a tool connected. The configuration parameters in this section control the type of custom initialization sequence and its parameters.
Dialog settings	**Custom init sequence** Lets you specify the type of custom initialization sequence that is to be performed by the DCI-GSI2. Depending on the target microcontroller and debug interface, several options might be supported. If necessary for your ECU, dSPACE can provide you with the value that needs to be configured here. Customer-specific init sequences on request.

DAQ/STIM Page

Access	Located below the XCP Page in the main window.
Purpose	To configure XCP settings concerning DAQ and STIM.
Dialog settings	**DAQ optimization mode** Lets you specify the optimization mode used for DAQ. If optimization of DAQ variables is enabled, measured ECU variables located at consecutive addresses are merged into bigger chunks that can be transferred over the serial ECU interface more efficiently. This increases measurement throughput and decreases bypassing latencies. You may need to disable this feature when you are measuring variables that need to be accessed with a certain access width, for example, some ECU registers. Default value: *optimal* **STIM optimization mode** Lets you specify the optimization mode used for STIM. If optimization of STIM variables is enabled, stimulated ECU variables located at consecutive addresses are merged into bigger chunks that can be transferred over the serial ECU interface more efficiently. This increases measurement throughput and decreases bypassing latencies.

You may need to disable this feature when you are stimulating variables that need to be accessed with a certain access width, for example, some ECU registers.

Default value: *optimal*

Identification field type Lets you determine the structure of the header of XCP DAQ and STIM packets. The following options are supported:

- *relative byte*

  The DAQ/STIM packet header is two bytes long and consists of one byte for the ODT number and one byte for the DAQ list number. A maximum of 256 DAQ lists is supported.
- *relative word*

  The DAQ/STIM packet header is three bytes long and consists of one byte for the ODT number and two bytes for the DAQ list number.
- *relative word (aligned)*

  The DAQ/STIM packet header is four bytes long and consists of one byte for the ODT number, one byte for alignment and two bytes for the DAQ list number.

In most cases this setting does not need to be changed. It may be necessary to change this value if the XCP master requires DAQ/STIM packet alignment.

Default value: *relative word*

DCI-GSI2 Status Page

Access	Located on the top level of the main window.
Purpose	To get status information on the connected DCI-GSI2.
Description	The DCI-GSI2 Status page displays information only in online configuration mode (when a DCI-GSI2 was selected).

Dialog settings

Device status Displays the current operation mode of the DCI-GSI2, for example, idle or DAQ running.

Firmware Displays the firmware version of the selected DCI-GSI2.

ECU status Displays whether the ECU connected to the DCI-GSI2 is switched off, in reset, or running.

Temperature Displays the temperature of the DCI-GSI2's interior.

Ethernet status Displays the current Ethernet link speed and duplex mode.

XCP instance status Displays the connection status of the three XCP service instances of the DCI-GSI2. For each instance, tooltips provide detailed information.

Device messages Displays info, warning and error messages of the DCI-GSI2 that can be used to identify misconfigurations or operational problems. To clear all the entries, select **Clear Log** from the context menu.

Related topics

HowTos

How to Download Configuration Files to a DCI-GSI2 19

Device Firmware Page

Access

Located on the top level of the main window.

Purpose

To get information on the current firmware and download new firmware to the connected DCI-GSI2.

Description

In most cases the default firmware will support your connector adapter. You need to update the firmware only if you received a new firmware version from dSPACE to fix a problem or to use new features.

Dialog settings

Current firmware – Version Displays the firmware currently loaded on the device.

Current firmware – Interface Displays the interface type of the firmware that is currently loaded on the device.

Available firmware files Displays the firmware files provided by dSPACE that are currently available for the DCI-GSI2.

Selected firmware Lets you select the new firmware file. You can select one of the firmware files from the **Available firmware files** list via double-click, or you can click the **Browse** button next to the **Selected firmware** field to specify the path to a firmware file to be used for the firmware update.

Firmware info Displays information on the firmware version and the interface type the selected new firmware file is for.

Update firmware Lets you start the update process. The device firmware is written to the DCI-GSI2. This may take a little time. When the process has finished, the new firmware is immediately active.

⚠ WARNING

The DCI-GSI2 restarts automatically when the device firmware is updated. Make sure that the DCI-GSI2 is not being actively used for calibration, measurement, bypassing or flashing at that time.

Related topics

HowTos

How to Download New Firmware to a DCI-GSI2 16

Device Settings Page

Access

Located below the Configuration Page in the main window.

Purpose

To specify device identification settings, and to specify power settings controlling the power down behavior of the DCI-GSI2.

Dialog settings

Device name Lets you assign a name to the DCI-GSI2. It will be shown in the list of found devices when you search for all available DCI-GSI2s.

Device comment Lets you associate a comment with the DCI-GSI2.

ECU name Lets you assign a name to the ECU connected to the DCI-GSI2.

ECU comment Lets you associate a comment with the ECU.

Power down delay Lets you specify the delay in seconds after which the DCI-GSI2 enters the power down state after the power down conditions are met.

Related topics

Basics

Power Management (DCI-GSI2 Feature Reference 🕮)

Diagnostic Tests Page

Access

Located below the Start-Up Diagnostic Page in the main window.

Purpose

To perform start-up diagnostics and service implementation tests.

Description

You can select the kind of diagnostics or service implementation test to be performed, specify parameters where necessary, and start the test.

Dialog settings

Select a test Lets you select the test to be performed. The following tests are available:

- Event channel test

  A measurement is performed, using all the configured event channels. The test checks whether the event channels are triggered and whether they are triggered in the specified time rasters.
- Memory access test

  A series of read and write ECU memory accesses is executed on a configurable memory location. The address can be specified manually or selected automatically if the dSPACE Calibration and Bypassing Service was integrated into the ECU software. A memory range of 12 bytes starting at the specified address will be used for the test.

  You should run this test after you have initially set up the connection between the DCI-GSI2 and the ECU.

Note

Edit the memory contents only if you are very familiar with the memory layout of your ECU and the ECU application. Unlike variables changed via ControlDesk, manually edited values are not verified. Neither the addresses of the variables nor the value ranges are checked. Erroneous manual editing of the ECU's memory can have unpredictable consequences on the ECU, which can cause dangerous situations in the vehicle or on the test bench.

Note

To prevent effects on a running DAQ or bypassing scenario, you must ensure that no tool is active when the test is performed.

- Trace interface test

  Checks whether the ECU trace interface functions properly. The ECU memory is repeatedly read via the serial interface and the read data is compared with the data received via the trace interface. Due to the volatility of the ECU memory contents, no definitive result can be presented. Rather, a certain probability that the trace interface is working correctly is calculated.
- Service implementation test

  The current implementation of the dSPACE Calibration and Bypassing Service is checked. The device configuration must contain at least one service event channel whose service ID is called in the ECU application for this. The DCI Configuration Tool checks whether the ECU application erroneously writes to the tool RAM memory. Then the DCI Configuration Tool performs a test initialization of the dSPACE Calibration and Bypassing Service, using the service parameters specified in the current device configuration, and checks the service background functions. After the service is initialized correctly, a measurement is started to check whether the service is called and the hardware event triggers are transmitted correctly from the ECU to the DCI-GSI2.

Note

To prevent effects on a running DAQ or bypassing scenario, you must ensure that no tool is active when the test is performed.

Select the type of test (Available only for the memory access test) Lets you specify the kind of memory access test to be performed:

- Memory access loop test: The DCI Configuration Tool performs a memory read and write test loop at a specific memory location (specified in the **Address (hex)** edit field) for a certain amount of time (specified via the **Runtime** field). Any detected error will be reported in the test log. The test can be used to check the stability of the ECU interface connection over a long period of time or under changing conditions, such as engine cycle or environmental temperature.
- Interface clock ramp test: Changes the frequency of the serial interface clock within the specified range and performs a certain number of memory access cycles (specified in the **Test cycle count** field) at a specific memory location (specified in the **Address (hex)** edit field) each time. The test can be used to determine the maximum frequency supported by the serial debug interface. This can be helpful for achieving a maximum bypass and measurement performance, or for initially evaluating the quality of the serial interface connection between the ECU microcontroller and the DCI-GSI2.

Note

This test requires DCI-GSI2 firmware version 1.4 or later.

Use service ToolRAM address (Available only for the memory access test) Lets you determine the address for the test automatically. This requires the dSPACE Calibration and Bypassing Service to be integrated into the ECU software and the DCI-GSI2 must be configured accordingly.

Start test Lets you start the selected test. The test result is shown at the bottom of the page. After the test has finished, you can view details on the Test Log page.

Related topics

HowTos

How to Perform Start-Up Diagnostics on a DCI-GSI2 28

dSPACE Codepatch Page

Access

Located below the Service Configuration Page in the main window.

Purpose

To specify settings for dSPACE Codepatch.

Description

The configuration parameters on this page must be specified if *dSPACE Codepatch* has been selected for being used for measurement or bypassing on the Service Configuration Page on page 82.

Dialog settings

Subinterrupt type Lets you specify the method for subinterrupt handling. There are two subinterrupt handling methods to generate and handle multiple subinterrupts using a single hardware interrupt line: the bit-based and the byte-based subinterrupt mechanism.

Amount of subinterrupts Lets you specify the number of subinterrupts. The more subinterrupts are used, the more memory is required to handle them, and the longer it takes to read out the memory each time a trigger occurs.

Subinterrupt address Lets you specify the subinterrupt start address. Alternatively, you can associate a variable from the A2L file. Click the button next to the address edit field. A dialog displaying all the variables defined in the assigned A2L file opens. After you select a variable from the list and confirm your

selection via **OK**, the dialog closes and the selected variable is displayed in the parameter's edit field.

To remove the variable association, click the button again.

Subinterrupt address extension Lets you specify the extension of the subinterrupt start address.

Related topics

Basics

dSPACE Codepatch (DCI-GSI2 Feature Reference)

dSPACE Service Page

Access

Located below the Service Configuration Page in the main window.

Purpose

To provide access to the configuration settings required for the dSPACE Calibration and Bypassing Service.

Subpages

The following subpages allow you to specify parameters of the dSPACE Calibration and Bypassing Service to match the settings in the ECU application, and to configure settings for the command service part of the dSPACE Calibration and Bypassing Service:

- General Parameters Page on page 70
- Command Service Page on page 43

Related topics

Basics

dSPACE Calibration and Bypassing Service (DCI-GSI2 Feature Reference)
dSPACE Codepatch (DCI-GSI2 Feature Reference)

ECU Connection Status Page

Access

Located below the Start-Up Diagnostic Page in the main window.

Purpose

To view the ECU's current status detected by the DCI-GSI2, execute a reset check, get information on voltage and event lines states, and to get status information on the ECU interface.

Dialog settings

Status Displays the current reset status of the ECU as indicated by the DCI-GSI2. The possible states are:

- ECU switched off
- ECU in reset
- ECU running

Reset target Lets you invoke an ECU reset to check the connection between the DCI-GSI2's reset mechanism and the ECU's reset line. When you click the Reset Target button, the DCI-GSI2 resets the ECU. The DCI-GSI2 measures the reset line, and the result is displayed in the ECU State field. The ECU is kept in reset until you click Restart Target.

Restart target Lets you invoke an ECU restart after the ECU was reset by clicking the Reset Target button.

Reset Displays information on the current ECU reset detection state.

V ref Displays the measured voltage (if provided by the hardware) and the detected state of the reference voltage signal. With earlier versions of the DCI-GSI2 firmware, only the state information of the reference voltage signal is displayed.

V stby Displays the measured voltage (if provided by the hardware) and the detected state for standby current. With earlier versions of the DCI-GSI2 firmware, only standby voltage state information is displayed.

V bat Displays the measured battery voltage (if provided by the hardware) and the detected state. With earlier versions of the DCI-GSI2 firmware, only battery voltage state information is displayed.

V ign Displays the measured voltage (if provided by the hardware) and the detected state for ignition. With earlier versions of the DCI-GSI2 firmware, only ignition voltage state information is displayed.

Event pin 0 Displays whether the signal is low (active) or high (inactive) for event pin 0.

Event pin 1 Displays whether the signal is low (active) or high (inactive) for event pin 1.

Note

Note the following points in connection with the state information:

- The event pin lines must be connected correctly.
- The voltage state and interface pin information is partly optional. That is, the corresponding signals are not available for some connector adapters.

Target microcontroller Displays the type of the ECU microcontroller that has been detected by the DCI-GSI2.

Note

The DCI-GSI2 may not operate properly if it cannot identify the target microcontroller. In this case, contact dSPACE for information whether your microcontroller is supported.

Serial interface clock Displays the current clock frequency of the serial interface.

Interface error count Displays the number of interface errors occurred.

Trace interface Displays the current status and clock frequency of the trace interface, if it is connected and enabled.

Related topics

HowTos

How to Perform Start-Up Diagnostics on a DCI-GSI2 28

ECU Flashing Page

Access

Located below the Electronic Control Unit Page in the main window.

Purpose

To specify settings for ECU flash programming.

Description

ECU flashing is performed by a special flash kernel, which is provided by dSPACE. There are two mechanisms to start the flash kernel: a bootloader-based mechanism, where a special small boot code has to be integrated into the ECU application, and the brain-dead flashing mechanism, which does not require any ECU code modifications.

For more information on ECU flashing, refer to ECU Flash Programming via the DCI-GSI2 (DCI-GSI2 Feature Reference 🕮).

Dialog settings

ECU flashing mode Lets you select the mode for ECU flash programming. The possible values are:

- *Using bootloader*: A dSPACE command service boot loader, which was integrated into the ECU application, is used to start the flash kernel.

- *Brain-dead flashing*: The brain-dead flashing mechanism, which uses debug commands to start the flash kernel, is used. This is the default setting for all interfaces that support brain-dead flashing.
- *Brain-dead flashing - fast mode*: This is an alternative brain-dead flashing method for ECUs where the standard mechanism does not work.

The brain-dead mechanism is supported for a variety of target microcontrollers. Contact dSPACE for more information on supported microcontrollers and the availability of flash kernels.

Brain-dead flashing enable Lets you specify whether to use the bootloader-based mechanism or the brain-dead mechanism.

Note

The Brain-dead flashing enable option is available only for DCI-GSI2 firmware version 1.4.2 and earlier. As of firmware version 1.4.3, the ECU flashing mode option is used instead.

Interface clock while flashing Lets you specify the interface clock frequency of the serial interface to be used during ECU flash programming. Sometimes the clock frequency must be lowered for the time of ECU flash programming because the target microcontroller then runs with a frequency that is less than the normal frequency.

Related topics

Basics

ECU Flash Programming via the DCI-GSI2 (DCI-GSI2 Feature Reference 🕮)

ECU Initialization Page

Access

Located below the Target Interface Page in the main window.

Purpose

To specify settings used to control the ECU interface initialization behavior.

Dialog settings

ECU init delay Lets you specify the minimum delay between an ECU power-up or ECU reset and the first communication of the DCI-GSI2 with the ECU. It may be necessary to delay the first DCI-GSI2 communication until the ECU microcontroller has stabilized or the ECU's boot code has initialized the microcontroller.

You should configure the lowest value supported by your microcontroller and ECU application. The lower the value, the sooner a quick start measurement or bypass can start after an ECU reset.

Initialization data address Lets you specify the ECU address to write the initialization data to after the ECU init delay time has expired and the interface has been initialized.

Alternatively, you can associate a variable from the A2L file. Click the button next to the address edit field. A dialog displaying all the variables defined in the assigned A2L file opens. After you select a variable from the list and confirm your selection via OK, the dialog closes and the selected variable is displayed in the parameter's edit field.

To remove the variable association, click the button again.

Initialization data address extension Lets you specify the address extension for the initialization data. It is currently not used and should be set to zero.

Initialization data Lets you specify the data to download when the ECU starts. It can be written as a list of whitespace-separated byte values in decimal or hexadecimal format (for example, 0x11 0x22 0x33 0x44).

Initialization check enable Lets you enable or disable the initialization check. With the check enabled, the DCI-GSI2 periodically checks a specific byte memory location in the ECU memory until a certain value is read or a timeout occurs. Enabling the check can be used to let the DCI-GSI2 wait for the ECU application initialization to complete before a measurement, calibration or bypassing is started.

Initialization check address Lets you specify the ECU address of the byte to be checked periodically during the initialization check.

Alternatively, you can associate a variable from the A2L file. Click the button next to the address edit field. A dialog displaying all the variables defined in the assigned A2L file opens. After you select a variable from the list and confirm your selection via OK, the dialog closes and the selected variable is displayed in the parameter's edit field.

To remove the variable association, click the button again.

Initialization check address ext. Lets you specify the address extension for the initialization check byte. It is currently not used and should be set to zero.

Initialization check value Lets you specify the value of the initialization check byte. The DCI-GSI2 will wait until this value is read from the ECU.

Initialization check timeout Lets you specify the timeout value in microseconds for the initialization check. The DCI-GSI2 will wait this amount of time for the ECU to write the specified initialization check byte value.

ECU Memory Access Page

Access

Located below the Start-Up Diagnostic Page in the main window.

Purpose

To manually perform read and write accesses to any specific ECU memory address.

Dialog settings

Little endian (Intel format) Lets you select the little endian format as the byte order to be used for the ECU memory access. Little endian means that the lowest byte is the first you see when you look at the memory byte after byte.

Big endian (Motorola format) Lets you select the big endian format as the byte order to be used for the ECU memory access. Big endian means that the highest byte is the first you see when you look at the memory byte after byte.

Data type Lets you select the data type to be used for the read or write access test.

Address Lets you enter the ECU memory location on which to perform the read or write access. You can specify a decimal value or a hexadecimal value using the '0x' notation.

Read Lets you perform the read access to the specified memory location. When you click the Read button, the DCI Configuration Tool reads the value from the memory location you specified in the Address edit field and displays it in decimal and hexadecimal notation.

Via the list below the Read button, you can specify to perform the read access test only once or repeatedly. If you select *Manual*, the read access is executed once. If you select one of the periods, the read access is executed repeatedly according to the selected period.

In the Status field, you can see whether a read access was successful.

Read value (dec) Displays the value read from the specified ECU memory location as a decimal value.

Read value (hex) Displays the value read from the specified ECU memory location as a raw hexadecimal value, without any sign.

Enable write access Lets you enable or disable write access to the specified ECU memory location. If the checkbox is selected, the Write value edit field lets you specify a value to be written to the ECU memory, and the Write button is available.

Write value (Available only if Enable write access is selected) Lets you enter the value to be written to the ECU memory location specified in the Address edit field. You can specify a decimal value or a hexadecimal value using the '0x' notation.

Write (Usable only if Enable write access is selected) Lets you perform the write access to the specified memory location. When you click the Write button,

the DCI Configuration Tool writes the value you entered in the **Write value** edit field to the memory location specified in the **Address** edit field. Whether the write access was successful is displayed in the **Status** field.

Status Displays status information on the last performed read or write access.

Related topics

HowTos

How to Perform Start-Up Diagnostics on a DCI-GSI2 28

Electronic Control Unit Page

Access

Located below the Configuration Page in the main window.

Purpose

To get access to the ECU-related configuration settings.

Subpages

The following subpages allow you to specify configuration settings that depend on the ECU microcontroller and application:

- Target Processor Page on page 93
- Target Interface Page on page 84
- Memory Configuration Page on page 73
- Calibration Page on page 42
- ECU Flashing Page on page 57

Ethernet Page

Access

Located below the Host Interface Page in the main window.

Purpose

To control the behavior of the Ethernet interface of the DCI-GSI2.

Description

⚠ WARNING

Changing these settings may result in a loss of connectivity to the DCI-GSI2. You should change these settings only if you are aware of the consequences. If in doubt, contact your network administrator.
If the connectivity has been lost, the network configuration must be modified. Select **Set Network Configuration** from the **Device** menu for this. For further information, refer to Integrating a DCI-GSI2 into a Network (ECU Interfaces Hardware Installation and Configuration 🕮).

Dialog settings

Max. connection speed Lets you specify the maximum allowed Ethernet connection speed. The speed is limited to the configured value even if the DCI-GSI2 and the host both support faster Ethernet connections. The possible values are:

- 100 Mbit
- 1 GBit

Tip

Select 1 GBit if the DCI-GSI2 and the host support it. It reduces communication latencies and increases the communication throughput.

Flow control setting Lets you enable and disable the Ethernet flow control mechanism. The mechanism must be enabled in special cases only, i.e., if Ethernet packets are repeatedly lost. The mechanism can be enabled for each direction separately. The possible values are:

- *Disabled*
  Disables flow control.
- *RX enabled*
  Enables flow control for receiving Ethernet packets.
- *TX enabled*
  Enables flow control for transmitting Ethernet packets.
- *RX/TX enabled*
  Enables flow control for both directions.

Maximum transmission unit Lets you specify the maximum size of an Ethernet packet. In most cases the maximum transmission unit (MTU) should be configured to the maximum value supported by the Ethernet network. In some cases, for example, in high-end bypassing scenarios, it may be necessary to reduce the MTU in order to reduce communication latencies.
Default value: *1500*

The optimum value depends on the Ethernet network and the scenario the DCI-GSI2 is used in.

Network configuration source Lets you specify where the DCI-GSI2 gets its network configuration from. The following options are available:

- *Manual*

  The network configuration is determined manually by specifying the IP address, subnet mask and default gateway settings in the device configuration.
- *DHCP*

  The network configuration is determined by the DCI-GSI2 at run time using the DHCP protocol. A DHCP server has to be available in the network to assign the network configuration to the DCI-GSI2. The DCI-GSI2 is not reachable via Ethernet until a network configuration has been received.
- *DHCP, fallback on manual*

  The DCI-GSI2 tries to receive a network configuration from a DHCP server. If none has been received after a certain timeout, the IP address, subnet mask and default gateway settings from the device configuration are used.

IP address Lets you specify the address under which the DCI-GSI2 is reachable with the IP protocol. This setting is only effective if *Manual* or *DHCP, fallback on manual* has been selected as the **Network configuration source**.

You may have to change this value if the network adapter of your host PC is configured to a different subnetwork.

Default value: *192.168.140.2*

Subnet mask Lets you specify which packets do not target the local network and should therefore be sent to the network gateway. If there are no packets to be sent outside of the local network, this setting can be kept at **`0.0.0.0`**.

Default value: *0.0.0.0*

Default gateway Lets you specify the IP address of the default gateway. If there are no packets to be sent outside of the local network, this setting can be kept at **`0.0.0.0`**.

Default value: *0.0.0.0*

Related topics

Basics

Basics on DCI-GSI2 Configuration (DCI-GSI2 Setup Application Note 🕮)

Event Channels Page

Access	Located below the XCP Page in the main window.
Purpose	To specify event channels.
Description	The event channel configuration contains the parameters of each event channel. An event channel is executed whenever a certain event occurs. DAQ and STIM packets are sent and received on the basis on such events.
Dialog Settings	**Event channels - Name** Lets you specify a name for an event channel. **Event channels - Number** Lets you specify the number of an event channel in the range 0 ... 32767. The number has to be unique among all the event channels configured. **Event channels - Priority** Lets you specify the priority of an event channel in the range 0 ... 255. The priority determines whether the event channel can be interrupted by other event channels. The higher the value, the higher is the priority. The priority for an event channel used only for measuring (DAQ) should be zero. If event channels are used for bypassing (data stimulation), the priority should be increased for greater speed. It is recommended to use higher priorities for event channels with lower cycle times. For example, an event channel with a raster of 100 µs typically should have a higher priority than a 10 ms raster event channel. **Event channels – Time unit** Lets you specify the unit in which time is measured when the Time cycle parameter has a value greater than 0. The special time unit 'None' can be specified if the event channel is not cyclic or if its raster is unknown. The following values are available: ▪ None ▪ 1 µs ▪ 10 µs ▪ 100 µs ▪ 1 ms ▪ 10 ms ▪ 100 ms ▪ 1 s **Event channels – Time cycle** Lets you specify a multiplier for the time unit resulting in the event channel raster for a cyclic event channel. This means that if the event channel is cyclic, this value specifies the amount of time units that have to pass before the event occurs: `time unit * time cycle = event channel raster`.

If the event channel is not cyclic, the time cycle value should be set to 0.

Event channels - Type Lets you specify the type of the event source for an event channel.

Note

The event types are not all available for every ECU interface and ECU microcontroller type. For information on which event channel types are supported by which microcontroller family, refer to Target Processor-Specific Configuration Settings (DCI-GSI2 Setup Application Note 🕮). **Instant STIM**, **dSPACE Calibration and Bypassing Service** and **dSPACE Codepatch** are logical event channel types and therefore always available for all supported microcontroller families.

The following event channel types are supported:

- *Timer*

  The event source is the internal timer of the DCI-GSI2. The *time unit* and *time cycle* parameters determine the raster of the event channel. This event channel is asynchronous to the ECU application.

- *ECU pin*

  An ECU pin is used as the event source. The event channel is triggered whenever a high-to-low flank on the specified pin has been detected.

- *Poll event*

  Some ECU microcontrollers have a special trigger register, which is periodically polled by the DCI-GSI2. The event channel is triggered whenever a configurable bit is set in such a register.

- *Watchpoint message*

  Some ECU microcontrollers with a trace interface can generate so-called watchpoint messages whenever the ECU application writes to a certain memory location. This message is used to trigger the event channel.

- *Watchpoint Pin*

  Many ECU microcontrollers can toggle a so-called watchpoint pin when the ECU application writes to a certain memory location. The event channel is triggered whenever such a write access has caused the watchpoint pin to toggle.

- *Watchpoint polling*

  Some ECU microcontrollers can generate a poll event when a certain memory location is accessed. With this event type, several watchpoints are supported without needing a physical event pin.

- *Data trace write*

  If the ECU provides a data trace interface, accesses to any ECU memory location within the configured trace segments are detected by the DCI-GSI2 and can be used to trigger an event channel.

- *Data trace write value*

  If the ECU provides a data trace interface, one memory location can be configured, and the value written to this location by the ECU application determines the number of the event channel to be triggered.

- *Instant STIM*

  An event channel of this type can only be used for data stimulation (STIM). It is triggered as soon as the last packet of a STIM list has been received. It is therefore asynchronous to the ECU application.
- *Fast overwrite*

  An event channel of this type can only be used for data stimulation (STIM). When a variable is stimulated using this event channel, the DCI-GSI2 detects all write accesses to this variable by the ECU application, and immediately afterwards writes the variable to the ECU memory. As long as certain timing constraints are met, this mechanism allows bypassing without having to modify the ECU application code.
- *dSPACE Calibration and Bypassing Service*

  This event channel type must be used if a service call by the dSPACE Calibration and Bypassing Service is to be used as the event source. The dSPACE Calibration and Bypassing Service must have been integrated into the ECU application, and the service configuration must match the configuration in the DCI-GSI2. The service ID is a mandatory parameter, and a reference service call ID can be specified optionally as a second parameter. If one is specified, data stimulated in the service call is synchronized with the service call of the reference service ID.
- *dSPACE Codepatch*

  An event channel of this type has to be specified if a code patch has been integrated into the ECU application. The configuration of the ECU's subinterrupt mechanism must match the configuration in the DCI-GSI2.

Event channels - Add Item (Available via context menu) Lets you add a new event channel configuration.

Event channels - Clone Item (Available via context menu) Lets you clone the selected event channel configuration. The selected event channel configuration is copied and pasted to the end of the list.

Event channels - Delete Item (Available via context menu) Lets you delete the selected event channel configuration.

Event channels - Delete All Items (Available via context menu) Lets you delete all the event channel configurations from the list in one step.

Event channels - Move up / Move down (Available via context menu) Lets you move the selected event channel configuration up or down in the list.

Event type - Parameter 1 ... 3 Lets you specify up to three parameter settings for the selected event channel source. The meanings of these parameters depend on the configured event channel type (refer to the following table). The required parameters are named according to the event channel source. Unused parameters are ignored.

Event Channel Type	Parameter 1	Parameter 2	Parameter 3
Timer	–	–	Timer offset[1)]
ECU pin	Pin number	–	–

Event Channel Type	Parameter 1	Parameter 2	Parameter 3
Poll event	Bit number within the polling register	–	–
Watchpoint message	Watchpoint address	Watchpoint address extension	–
Watchpoint pin	Watchpoint address	Watchpoint address extension	Pin number
Watchpoint polling	Watchpoint address	Watchpoint address extension	–
Data trace write	Address of the variable	Trace unit number[2)]	Size (in bytes) of the variable
Data trace write value	Address of the variable	Trace unit number[2)]	Value to be written by the ECU
Instant STIM	–	–	–
Fast overwrite	–	–	–
dSPACE Calibration and Bypassing Service	Service ID[3)]	Reference service ID	–
dSPACE Codepatch	Subinterrupt number	–	–

1) The timer offset is only considered when the time synchronization feature of the DCI-GSI2 is enabled.
2) If this value is 0, the trace unit is ignored.
3) When you use the ECU Interface Manager to prepare ECU interfacing on a SCALEXIO system, the ID of an integrated service call must match the event channel number.

Alternatively, you can associate a variable from the A2L file. Click the button next to the address edit field. A dialog displaying all the variables defined in the assigned A2L file opens. After you select a variable from the list and confirm your selection via OK, the dialog closes and the selected variable is displayed in the parameter's edit field.

To remove the variable association, click the button again.

Related topics

Basics

DCI-GSI2 Event Types (DCI-GSI2 Feature Reference)

Event Trigger Source Page

Access

Located below the Service Configuration Page in the main window.

Purpose

To configure the hardware trigger used for service-based measurement or bypassing.

Description

If a service has been integrated into the ECU application for measurement or bypassing, it is necessary to transmit a hardware trigger from the ECU to the DCI-GSI2.

Dialog settings

Event source type Lets you specify the type of the event source that is used to trigger service events.

Tip

For information on which event source types are supported by which ECU target processors, refer to Target Processor-Specific Configuration Settings (DCI-GSI2 Setup Application Note 🕮).

The following options are supported:

- *Autodetect*

  If dSPACE Calibration and Bypassing Service 2.3 or later is used, a watchpoint pin can be configured automatically as the event source. The EVTO/BRKOUT pin must be connected to the DCI-GSI2 and no custom hardware trigger must be configured in the service.
- *Timer*

  If no physical event source is available, the internal timer of the DCI-GSI2 can be used to perform a kind of oversampling. Each time the timer expires, the DCI-GSI2 reads and evaluates the status of the subinterrupts, just as if an ECU event pin was toggled, for example.
- *ECU pin*

  An ECU pin is used as the event source. The event channel is triggered whenever a high-to-low flank has been detected on the specified pin.
- *Watchpoint Pin*

  Many ECU microcontrollers can toggle a so-called watchpoint pin when the ECU application writes to a certain memory location. The event channel is triggered whenever such a write access has caused the watchpoint pin to toggle.
- *Watchpoint message*

  Some ECU microcontrollers with a trace interface can generate so-called watchpoint messages whenever the ECU application writes to a certain memory location. This message is used to trigger the event channel.
- *Watchpoint polling*

  Some ECU microcontrollers can generate a poll event when a certain memory location is accessed. With this event type, several watchpoints are supported without needing a physical event pin.
- *Poll event*

  Some ECU microcontrollers have a special trigger register, which is periodically polled by the DCI-GSI2. The event channel is triggered whenever a bit is set in such a register.

- *Data trace write*

  If the ECU provides a data trace interface, accesses to any ECU memory location within the configured trace segments are detected by the DCI-GSI2 and can be used to trigger an event channel.

- *Data trace write value*

  If the ECU provides a data trace interface, one memory location can be configured, and the value written to this location by the ECU application determines the number of the event channel to be triggered.

If an address-based trigger like a watchpoint pin is used with the dSPACE Calibration and Bypassing Service, the address should be configured to the last 32-bit address of the service ToolRAM.

Event source parameter 1 ... 3 Lets you specify the parameters for the selected event trigger source. The meanings of the parameters depend on the configured event source type (refer to the following table). Parameters without an entry are ignored.

Event Source Type	Parameter 1	Parameter 2	Parameter 3
Timer	Time unit	Time cycle	–
ECU pin	Pin number	–	–
Poll event	Bit number within the polling register	–	–
Watchpoint message	Watchpoint address	Watchpoint address extension	–
Watchpoint pin	Watchpoint address	Watchpoint address extension	Pin number
Watchpoint polling	Watchpoint address	Watchpoint address extension	–
Data trace write	Address of the variable	Trace unit number[1)]	Size (in bytes) of the variable
Data trace write value	Address of the variable	Trace unit number[1)]	Value to be written by the ECU

[1)] If this value is 0, the trace unit is ignored.

Alternatively, you can associate a variable from the A2L file. Click the button next to the address edit field. A dialog displaying all the variables defined in the assigned A2L file opens. After you select a variable from the list and confirm your selection via OK, the dialog closes and the selected variable is displayed in the parameter's edit field.

To remove the variable association, click the button again.

Related topics

Basics

Manual Service Parameter Configuration (DCI-GSI2 Setup Application Note)
Service Parameter Configuration via A2L File (DCI-GSI2 Setup Application Note)

External RAM Calibration Page

Access

Located below the Calibration Page in the main window.

Purpose

To configure settings concerning the behavior of ECU calibration in external ECU RAM.

Dialog settings

Working page address Lets you specify the start address of the working page in the ECU RAM. It usually resides in an external RAM.

Enough unused space must be available at this address for all the configured memory segments to fit into it. The address should be 32-bit aligned.

Related topics

Basics

Calibration Features (DCI-GSI2 Feature Reference 🕮)

General Parameters Page

Access

Located below the dSPACE Service Page in the main window.

Purpose

To configure parameters of the dSPACE Calibration and Bypassing Service to match the settings in the ECU application.

Description

You have to integrate the *dSPACE Calibration and Bypassing Service* into the ECU application for various use cases. The service's parameters must be configured to match the settings in the ECU application.

Tip

In general, you simply have to copy the parameters from the `dsECUcfg.h` file of your dSPACE Calibration and Bypassing Service implementation.

Note

If the parameters you configure do not match the service configuration in the ECU application, the DCI-GSI2 cannot access the service correctly. As a consequence, measurement or bypassing may not function properly.

Dialog settings

ToolRAM address Lets you specify the start address of the tool RAM in the ECU RAM that is used by the dSPACE Calibration and Bypassing Service.

Alternatively, you can associate a variable from the A2L file. Click the button next to the address edit field. A dialog displaying all the variables defined in the assigned A2L file opens. After you select a variable from the list and confirm your selection via OK, the dialog closes and the selected variable is displayed in the parameter's edit field.

To remove the variable association, click the button again.

ToolRAM address extension Lets you specify the extension of the tool RAM address. It is currently not used and should be set to zero.

ToolRAM size Lets you specify the size in bytes of the tool RAM that is used by the dSPACE Calibration and Bypassing Service.

Subinterrupt type Lets you specify the method for subinterrupt handling. The DCI-GSI2 supports the bit-based and byte-based subinterrupt mechanisms as provided by the dSPACE Calibration and Bypassing Service.

The DCI-GSI2 does not support the word-based (16-bit) subinterrupt mechanism provided by the dSPACE Calibration and Bypassing Service. This subinterrupt handling method in general is used in combination with bypass interfaces based on dual-port memory (DPMEM) PODs.

For further information on the subinterrupt handling mechanisms, refer to the dSPACE Calibration and Bypassing Service Implementation document.

Amount of subinterrupts Lets you specify the number of subinterrupts. The more subinterrupts are used, the more memory is required to handle them, and the longer it takes to read out the memory when the subinterrupt structure is evaluated at an event trigger.

64-bit support Lets you specify whether to support 64-bit data transfers.

32-bit support Lets you specify whether to support 32-bit data transfers.

16-bit support Lets you specify whether to support 16-bit data transfers.

8-bit support Lets you specify whether to support 8-bit data transfers (byte-wise ECU access).

Bits support Lets you specify whether to support bit transfers to the ECU. If enabled, bit modifications in the ECU are possible.

Block copy support Lets you enable or disable data block transfers.

Several ATs support Lets you enable or disable the use of more than one Address Table per service call.

Double buffer support Lets you enable or disable the double buffer mechanism. The double buffer mechanism ensures that only consistent data is transferred to or from the tool RAM.

Wait support Lets you enable or disable the wait mechanism. If enabled, the ECU waits for a valid response from the prototyping system.

Failure checking support Lets you enable or disable the failure checking mechanism, which counts the number of failed data transfers. If a certain failure limit is exceeded, the ECU service stops copying data to the ECU memory.

Related topics

Basics

Manual Service Parameter Configuration (DCI-GSI2 Setup Application Note 🕮)

Host Interface Page

Access

Located below the Configuration Page in the main window.

Purpose

To specify configuration settings for the host interface of the DCI-GSI2.

Subpages

The following subpages allow you to control the Ethernet interface and the XCP host interface of the DCI-GSI2:

- Ethernet Page on page 61
- XCP Page on page 98
- Time Synchronization Page on page 94

Import A2L File Page

Access

Located below the A2L File Page in the main window.

Purpose

To import an A2L file that contains information about the dSPACE Calibration and Bypassing Service integrated into the ECU application. The service information might have been added to the A2L file manually or via the binary code modification features of the ECU Interface Manager.

To use the service configuration contained in the A2L file with DCI-GSI2, an import of the A2L file is required.

Description

When an A2L file that contains service information is imported, its dSPACE Calibration and Bypassing Service settings are displayed in the DCI Configuration Tool, and the service event channel settings are imported into the device configuration of the DCI-GSI2.

Dialog settings	**Import A2L file** Lets you import an A2L file containing service information, whose configuration settings are to be used with the DCI-GSI2. A standard Open dialog opens for you to select the A2L file.
Related topics	Basics Service Parameter Configuration via A2L File (DCI-GSI2 Setup Application Note 🕮)

Memory Configuration Page

Access	Located below the Electronic Control Unit Page in the main window.
Purpose	To get access to the configuration settings concerning the ECU memory.
Subpages	The following subpages allow you to configure memory segments used for ECU calibration, specify ECU-internal memory mappings, configure trace memory segments, and specify system variables: ▪ Memory Segments Page on page 75 ▪ Memory Mappings Page on page 73 ▪ Trace Memory Page on page 96 ▪ System Variables Page on page 83

Memory Mappings Page

Access	Located below the Memory Configuration Page in the main window.
Purpose	To specify configuration settings concerning the ECU-internal mapping between logical and physical memory addresses.
Description	Addresses specified in the A2L file usually refer to logical memory addresses. The ECU-internal mapping between the logical and physical memory addresses is performed by the target microcontroller's memory management unit (MMU). However, memory accesses by the DCI-GSI2 via the serial ECU interface may not

be affected by the MMU, so that the DCI-GSI2 needs to use physical addresses to access the ECU memory.

To let the DCI-GSI2 know the mapping between logical and physical addresses, it may be necessary to specify memory mappings. When a memory mapping is configured, addresses for accesses within the specified logical memory area are redirected to the specified physical memory area. This allows the DCI-GSI2 to access the ECU memory in the same way as the ECU application does. The specified memory mappings apply to all ECU memory accesses by the DCI-GSI2.

If the logical addresses specified in the A2L file match the physical addresses, you do not have to specify memory mappings.

Note

You should specify memory mappings only if they are needed. A wrong memory mapping configuration can cause faulty memory accesses by the DCI-GSI2 and lead to unpredictable results.

Dialog settings

Memory Mappings – Source address Lets you specify the source address. The source address is the logical start address of the memory mapping area.

Memory Mappings – Source address extension Lets you specify an address extension to the source address range. It is currently not used and should be set to 0.

Memory Mappings – Destination address Lets you specify the destination address. The destination address is the physical start address of the memory mapping area. Accesses within the source memory area are redirected to the destination memory area.

Memory Mappings – Destination address extension Lets you specify an address extension to the destination address range. It is currently not used and should be set to 0.

Memory Mappings – Length Lets you specify the length of the memory area in bytes.

Note

Memory accesses to the ECU must not cross memory mapping boundaries. Otherwise, correct function cannot be guaranteed.

Memory Mappings – Add Item (Available via context menu) Lets you add a new memory mapping.

Memory Mappings – Clone Item (Available via context menu) Lets you clone the selected memory mapping. The selected memory mapping is copied and pasted to the end of the list.

Memory Mappings – Delete Item (Available via context menu) Lets you delete the currently selected memory mapping.

Memory Mappings – Delete All Items (Available via context menu) Lets you delete all memory mappings from the list in one step.

Memory Mappings – Move up / Move down (Available via context menu) Lets you move the selected memory mapping up or down in the list.

Load MMU settings from ECU Lets you load the target processor's memory management unit (MMU) settings, if your processor supports MMU. The imported memory mappings are displayed in the list. Previously configured memory mapping entries are removed.

Related topics

Basics

Calibration Features (DCI-GSI2 Feature Reference 🕮)

Memory Segments Page

Access

Located below the Memory Configuration Page in the main window.

Purpose

To add, remove and configure memory segments.

Description

You need to configure the memory segments only if you intend to use the calibration feature of the DCI-GSI2.

Initially, no memory segments are preconfigured by dSPACE. If you want to calibrate you have to create memory segments that cover the area where the calibration parameters are located. Smaller memory segments are generally better, because they speed up the online transition in the host tool (for example, ControlDesk).

Dialog settings

A memory segment is defined by the following parameters:

Memory Segments – Address Lets you specify the start address of the memory segment.

Memory Segments – Address extension Lets you specify the address extension. It is currently not used and should be set to zero.

Memory Segments – Length Lets you specify the length of the memory segment in bytes.

Memory Segments – Type Lets you specify the type of the memory segment. The following types are available:

- *DATA*
- *CODE*
- *VARIABLES*
- *RESERVED*

Note

Only memory segments of *DATA* type are used for calibration. Memory segments of other types are ignored.

Memory Segments – Add Item (Available via context menu) Lets you add a new memory segment.

Memory Segments – Clone Item (Available via context menu) Lets you clone the selected memory segment. The selected memory segment is copied and pasted to the end of the list.

Memory Segments – Delete Item (Available via context menu) Lets you delete the currently selected memory segment.

Memory Segments – Delete All Items (Available via context menu) Lets you delete all memory segments from the list in one step.

Memory Segments – Move up / Move down (Available via context menu) Lets you move the selected memory segment up or down in the list.

Import memory segments from A2L file Lets you import the memory segments specified in the A2L file. The previously configured memory segments are removed from the list before the memory segments are imported from the A2L file.

Related topics

Basics

Calibration Features (DCI-GSI2 Feature Reference 🕮)

References

Memory Viewer Page 77

Memory Viewer Page

Access

Located on the top level of the main window.

Purpose

To display the contents of the ECU memory.

Description

The data can be displayed in different formats. You can modify the memory contents within the Memory Viewer. Modified values are displayed in red regardless of whether they were changed manually or via ControlDesk or by the ECU itself. Thus, data modifications can easily be recognized. This highlighting can be canceled by clicking the **Refresh** button or scrolling through the Memory Viewer.

The Memory Viewer page is available only in online configuration mode (when a DCI-GSI2 was selected).

Dialog settings

Display Lets you select the data format for the display in the Memory Viewer.

Address Lets you specify the memory whose contents are to be displayed in the Memory Viewer. You can enter a specific memory address.

Note

Only addresses that are located in configured memory segments can be accessed directly unless the specific memory segment 'Unrestricted access (0x00000000 - 0xFFFFFFFF)' is selected. In this case, the whole ECU memory space can be accessed.
Accessing invalid memory locations can result in ECU exceptions or undefined behavior.

Enable editing Lets you enable or disable the edit mode for the Memory Viewer. You can edit the memory contents in the Memory Viewer only if this setting is activated. The edit mode is deactivated by default.

Note

You should edit the memory contents only if you are very familiar with the emulation memory. Unlike variables changed via ControlDesk, manually edited values are not verified. Neither the addresses of the variables nor the value ranges are checked. Erroneous manual editing of the ECU's memory can have unpredictable consequences on the ECU, which can cause dangerous situations in the vehicle or on the test bench.

Auto refresh Lets you configure the Memory Viewer's refresh rate. You can select an interval at which the values are to be refreshed automatically. If you do

not want the Memory Viewer to be refreshed at regular intervals, but to initiate refreshing manually, you have to select "manual".

Refresh Lets you execute a refresh for the Memory Viewer. Refreshing removes the color highlighting from the modified values, that is, all values are displayed in black again.

Related topics

References

Memory Segments Page....75

Overlay RAM Calibration Page

Access

Located below the Calibration Page in the main window.

Purpose

To specify settings for calibration via overlay units.

Description

Calibration of ECU parameters via overlay units requires a memory overlay feature in the ECU.

To use the overlay RAM calibration method, at least one overlay handle must be configured. Overlay handles define which memory area of the overlay memory can be used for calibration. On most target microcontrollers the size of the overlay handles is fixed, but for some it is configurable. All overlay handles must have the same size and must not overlap. The number of possible overlay handles depends on the size of the overlay memory the target microcontroller provides.

An overlay handle is defined by its base address and its length.

Dialog settings

Overlay handles - Base address Lets you specify the base address of the overlay handle. It must be 32-bit aligned.

Overlay handles - Length Lets you specify the length of the overlay handle. It must be 32-bit aligned.

Overlay handles - Add Item (Available via context menu) Lets you add a new overlay handle.

Overlay handles - Clone Item (Available via context menu) Lets you clone the selected overlay handle. The selected overlay handle is copied and pasted to the end of the list.

Overlay handles - Delete Item (Available via context menu) Lets you delete the currently selected overlay handle.

Overlay handles - Delete All Items (Available via context menu) Lets you delete all overlay handles from the list in one step.

Overlay handles – Move up / Move down (Available via context menu) Lets you move the selected overlay handle up or down in the list.

Overlay register access Lets you specify whether to access the overlay registers directly or via a dSPACE command service. On some target microcontrollers it is not possible to directly write calibration registers via the serial ECU interface. An alternative mechanism is supported for these microcontrollers, using the *dSPACE Calibration and Bypassing Service* to read and write the calibration registers.

Note

When the service-based overlay register access method is used, the *dSPACE Calibration and Bypassing Service* has to be configured in a particular way. The *DSECU_CAL_MEMORY_COPY_METHOD* option has to be configured to *DSECU_MEMCPY_REGISTER*, and service version 2.2 or later is required.

Direct access should be configured unless your target microcontroller does not support it.

Target core mask Lets you specify the bit mask used to select the target cores to be calibrated. To select all cores, the target core mask must be set to 0.

Note

This configuration setting is relevant for Infineon AURIX microcontrollers only.

Cache handling Lets you specify whether the data cache is invalidated when the calibration overlays and/or the calibration data is modified. Depending on your ECU microcontroller and/or your ECU application, this might be necessary to make calibrated parameter values visible to the ECU. The possible values are:

- *None*

  The cache is not influenced by overlay changes.
- *Clear cache on mapping update*

  The cache is invalidated whenever the overlay handles are reconfigured, i.e., when new flash memory areas are overlaid with overlay memory or when overlays are disabled.
- *Clear cache on write*

  The cache is invalidated whenever parameter values are changed via the calibration mechanism.
- *Clear cache always*

  The cache is invalidated whenever the overlay handles and/or the parameter values are changed.

Default value: *Clear cache always*

Note

The cache invalidation feature depends on the ECU microcontroller capabilities. Therefore, it is not supported for all target interfaces.

Related topics

Basics

Calibration Features (DCI-GSI2 Feature Reference 🕮)

Page Switch Page

Access

Located below the Calibration Page in the main window.

Purpose

To configure settings concerning switching memory pages.

Description

There are two methods available for switching the calibration pages. The default method is to switch the calibration pages immediately after the command is given in the host tool. An alternative method is to delay the page switch until a certain event has occurred.

Dialog settings

Page switch method Lets you specify whether to use the immediate page switch method or the event-based one. If the immediate one is configured, which is the default, no further settings have to be made in this section.

Page switch event type Lets you specify the type of event that is used for event-based calibration page switches. The following options are available:

- *ECU pin*
- *Watchpoint pin*
- *External tool trigger*

Page switch event parameter 1 ... 3 Lets you specify up to three parameters according to the selected page switch event type. Their meanings depend on the configured page switch type. *Example*: If you selected 'ECU pin' as the page switch event type, only the page switch event parameter 1 is relevant. It specifies the event pin number.

Alternatively, you can associate a variable from the A2L file. Click the button next to the address edit field. A dialog displaying all the variables defined in the assigned A2L file opens. After you select a variable from the list and confirm your

selection via **OK**, the dialog closes and the selected variable is displayed in the parameter's edit field.

To remove the variable association, click the button again.

For information on the event types and their required parameters, refer to Event Channels Page on page 64.

Related topics

Basics

Calibration Features (DCI-GSI2 Feature Reference 🕮)

Protocol Options Page

Access

Located below the XCP Page in the main window.

Purpose

To configure options that influence the behavior of the XCP protocol implementation.

Description

For some use cases, the behavior of the XCP protocol implementation might have to be modified, for example, the amount of information returned by the `GET_ID` command for identifying the XCP slave.

Settings that influence the general behavior of the XCP protocol implementation can be configured on this page.

Dialog settings

Identification mode Lets you specify whether only the device name or a more detailed information string is returned by the DCI-GSI2 as a result of the `GET_ID(0)` XCP command.

Time synchronization event trigger Lets you enable and configure the generation of EV_TIME_SYNC events whenever a configurable event pin has been toggled. This can be used to synchronize the clock of the XCP master with the clocks of multiple XCP slaves by connecting them to the same event line and periodically triggering it. The possible values are:

- *disabled*
  Disables the generation of time sync events based on an event pin.
- *trigger via EVTO0 pin*
  Enables the generation of time sync events whenever pin EVTO0 is triggered.
- *trigger via EVTO1 pin*
  Enables the generation of time sync events whenever pin EVTO1 is triggered.

- *trigger via EVTO2 pin*
  Enables the generation of time sync events whenever pin EVTO2 is triggered.
- *trigger via EVTO3 pin*
  Enables the generation of time sync events whenever pin EVTO3 is triggered.

Default value: *disabled*

Service Configuration Page

Access

Located below the Configuration Page in the main window.

Purpose

To specify general service configuration settings, and to provide access to the configuration settings that define event trigger sources and that are required for the dSPACE Calibration and Bypassing Service or for code-patch-based bypassing.

Subpages

The following subpages allow you to configure hardware triggers used for measurement or bypassing, and specify settings for the dSPACE Calibration and Bypassing Service or dSPACE Codepatch:

- Event Trigger Source Page on page 67
- dSPACE Service Page on page 55
- dSPACE Codepatch Page on page 54

Dialog settings

Service type Lets you enable service support and select the type of service. The following options are available:

- *None*
  No service is selected.
- *dSPACE Calibration and Bypassing Service*
  Selects the dSPACE Calibration and Bypassing Service. Event channels of *dSPACE Calibration and Bypassing Service* type can be used.
- *dSPACE Codepatch*
  Selects the dSPACE code patch. Event channels of *dSPACE Codepatch* type can be used.

Memory access alignment Lets you specify whether ECU variables that are accessed with the service and whose address is not aligned with their sizes are split into several aligned accesses. The possible values are:

- *enforce alignment*
  Ensures that all service variable accesses are aligned. This option prevents access alignment problems, but it might impair performance and/or require more ToolRAM space for target systems that support unaligned accesses.

- *ignore alignment*

  Performs ECU variable access with the specified address and size, ignoring any misalignments.

Default value: *enforce alignment*

Related topics

Basics

dSPACE Calibration and Bypassing Service (DCI-GSI2 Feature Reference 🕮)

Start-Up Diagnostic Page

Access

Located on the top level of the main window.

Purpose

To get information on the connection state and available diagnostics tests for your DCI-GSI2.

Subpages

The following subpages allow you to perform diagnostics and service implementation tests:

- ECU Connection Status Page on page 55
- ECU Memory Access Page on page 60
- Diagnostic Tests Page on page 52

Related topics

HowTos

How to Perform Start-Up Diagnostics on a DCI-GSI2 28

System Variables Page

Access

Located below the Memory Configuration Page in the main window.

Purpose

To specify configuration settings concerning system variables generated by the DCI-GSI2.

Description

The DCI-GSI2 provides some special measurement variables for monitoring the state of the ECU and the DCI-GSI2, for example, the status of the ECU reset line, or the current temperature within the DCI-GSI2 enclosure. These special measurement variables are called *system variables*. For a complete list of available system variables, refer to Status Information on the ECU and DCI-GSI2 (DCI-GSI2 Feature Reference 🕮).

System variables are accessible in two different ways:

- Using address extension 254. In this case system variables start at address offset 0. This mechanism is always possible and does not need to be activated.
- Using address extension 0. In this case the system variables are mapped into the normal ECU address space. This mechanism has to be activated and configured using the parameters described below.

Dialog settings

System variable mapping Lets you enable or disable the system variable mapping into the ECU memory space.

System variable address Lets you specify the address at which the system variables are mapped into the ECU address space. It should be an address area which is not used by the ECU, i.e., which does not point to any physical memory. The address must be 32-bit aligned.

The system variable area is currently fixed to a size of 0x100 (256) bytes.

Related topics

Basics

Status Information on the ECU and DCI-GSI2 (DCI-GSI2 Feature Reference 🕮)

Target Interface Page

Access

Located below the Electronic Control Unit Page in the main window.

Purpose

To specify settings that are specific for the selected target interface.

Description

Note

These settings control the behavior of the interface between the ECU and the DCI-GSI2. Only experts should modify these values.

Subpages

The following subpages allow you to configure the tool arbitration, the custom initialization sequence, the ECU interface initialization behavior, and settings of the connector adapter:

- Tool Arbitration Page on page 95
- Custom Init Sequence Page on page 48
- ECU Initialization Page on page 58
- Connector Hardware Page on page 45

Dialog settings for DAP

Interface type Displays the selected target interface type.

Interface clock Lets you specify the frequency used to drive the serial DAP interface to the ECU. The higher the frequency, the more data can be transferred via the interface. However, in some cases a high frequency causes transmission errors.

Default value: *80,000 kHz (80 MHz)*

Note

To generate the configured target interface frequency, the DCI-GSI2 uses a PLL to generate a base frequency, which is divided by a number. As a consequence, the DCI-GSI2 cannot generate any arbitrary frequency, but a frequency very close to the configured one.

However, the actual clock frequency will never exceed the configured one. For example, if the configured frequency is 25,140 kHz, the DCI-GSI2 can generate a frequency of 25,000 kHz. The DCI-GSI2 will not generate a frequency of 25,500 kHz, for example.

DAP mode Lets you specify the operational mode of the DAP interface. The following options are available:

- *2-pin mode*

  Two pins are used for the communication with the ECU.
- *3-pin mode*

  Three pins are used for the communication with the ECU.
- *wide mode*

  Three pins are used for the communication with the ECU, two of them are bidirectional.
- *2-pin mode with direction pin*

  Three pins are used for the communication with the ECU, one of them is used to determine the direction of the data signal.
- *fixed 3-pin mode*

  Three pins are used for the communication with the ECU exclusively. In contrast to the other DAP mode options, where the 2-pin mode is used during initialization of the DAP interface, only three pins are used for interface communication.

Note

Select this mode only for TriCore AURIX targets, or if you are sure that the DAP interface was set to 3-pin mode in the ECU application.

ECU bus priority Lets you specify the target-microcontroller-internal bus priority of accesses initiated by the DCI-GSI2.

For more information on internal bus priorities, refer to the documentation of your microcontroller.

ECU reset generation Lets you specify how the DCI-GSI2 generates ECU resets, for example, during ECU flash programming. You can select between the use of the reset pin and the use of a protocol command of the serial interface.

This option must be set to *via serial interface* if the ECU does not provide a reset pin, or if the pin is not connected to the DCI-GSI2.

Trigger in protocol enable Lets you enable the *trigger in protocol* option of the DAP interface, where the trigger information is transported with every DAP telegram. This can reduce the event polling latency and jitter at the cost of minimally less data throughput.

Event polling break time Lets you specify the maximum time period in which an event polling has to be performed. If you want to use a default value, set the break time to zero.

Dialog settings for JTAG/ARM

Interface clock Lets you specify the frequency used to drive the serial JTAG interface to the ECU. The higher the frequency, the more data can be transferred via the interface. However, in some cases a high frequency might cause transmission errors.

Default value: *10,000 kHz (10 MHz)*

Note

To generate the configured target interface frequency, the DCI-GSI2 uses a PLL to generate a base frequency, which is divided by a number. As a consequence, the DCI-GSI2 cannot generate any arbitrary frequency, but a frequency very close to the configured one.

However, the actual clock frequency will never exceed the configured one. For example, if the configured frequency is 25,140 kHz, the DCI-GSI2 can generate a frequency of 25,000 kHz. The DCI-GSI2 will not generate a frequency of 25,500 kHz, for example.

Gated clock enable Lets you enable or disable the gated clock. If enabled, the clock signal of the JTAG interface is active during communication only. If disabled, the clock stays active even if there is no communication. In most cases this option can be enabled.

ECU reset generation Lets you specify how the DCI-GSI2 generates ECU resets, for example, during ECU flash programming. You can select between the use of the reset pin and the use of a protocol command of the serial interface.

This option must be set to *via serial interface* if the ECU does not provide a reset pin, or if the pin is not connected to the DCI-GSI2.

Dialog settings for JTAG/Nexus (MPC5xxx)

Interface clock Lets you specify the frequency used to drive the serial JTAG interface to the ECU. The higher the frequency, the more data can be transferred via the interface. However, in some cases a high frequency causes transmission errors.

The interface clock can be determined automatically by the DCI-GSI2. This automatic mode is the preferred setting for this parameter. A discrete frequency should only be specified to counter transmission problems.

Default value: *0 (automatic)*

Note

To generate the configured target interface frequency, the DCI-GSI2 uses a PLL to generate a base frequency, which is divided by a number. As a consequence, the DCI-GSI2 cannot generate any arbitrary frequency, but a frequency very close to the configured one.
However, the actual clock frequency will never exceed the configured one. For example, if the configured frequency is 25,140 kHz, the DCI-GSI2 can generate a frequency of 25,000 kHz. The DCI-GSI2 will not generate a frequency of 25,500 kHz, for example.

MCKO clock divisor Lets you select the divisor for the MPC5xxx's processor clock used to generate the MCKO clock. This clock is used for the transmission of messages over the auxiliary interface of the MPC5xxx microcontroller.

Initial value: *4* (the MCKO clock is ¼ of the target microcontroller clock)

Optimum value: *2* or *1*, depending on the target microcontroller

MDO pin count Lets you specify the number of MDO signal lines between the DCI-GSI2 and the ECU. MDO pins are used to transport the trace data. The possible values depend on the target microcontroller, the hardware design of the ECU, and its connection to the DCI-GSI2. To see how many MDO pins your target microcontroller provides, refer to Processor-Specific Configuration Settings (Freescale/NXP MPC55xx/MPC56xx and STMicroelectronics SPC55xx/SPC56xx Families) (DCI-GSI2 Setup Application Note 🕮).

The auxiliary port is used for the transmission of trace messages from the ECU to the DCI-GSI2. The more signal lines are connected, the higher is the bandwidth of the auxiliary port interface, and the less likely are trace message overruns.

CENSOR_CTRL password Lets you specify the CENSOR_CTRL password used to gain access to the Nexus interface. It is only needed for some members of the MPC5xxx microcontroller family.

Gated clock enable Lets you enable or disable the gated clock. If enabled, the clock signal of the JTAG interface is active during communication only. If

disabled, the clock stays active even if there is no communication. In most cases this option can be enabled.

JTAG ready line enable Lets you enable or disable the JTAG ready line. If the line is connected to the DCI-GSI2, this option should be enabled to improve the data throughput over the JTAG interface. If this option is enabled, but the target microcontroller does not have a JTAG READY line, or the line is not connected to the DCI-GSI2, memory accesses to the ECU will not work.

To see if your target microcontroller supports the READY line, refer to Processor-Specific Configuration Settings (Freescale/NXP MPC55xx/MPC56xx and STMicroelectronics SPC55xx/SPC56xx Families) (DCI-GSI2 Setup Application Note 🕮).

ECU reset generation Lets you specify how the DCI-GSI2 generates ECU resets, for example, during ECU flash programming. You can select between the use of the reset pin and the use of a protocol command of the serial interface.

This option must be set to *via serial interface* if the ECU does not provide a reset pin, or if the pin is not connected to the DCI-GSI2.

Dialog settings for JTAG/Nexus (RH850)

Interface clock Lets you specify the frequency used to drive the serial JTAG interface to the ECU. The higher the frequency, the more data can be transferred via the interface. However, in some cases a high frequency causes transmission errors.

Default value: *25,000 kHz (25 MHz)*

Note

To generate the configured target interface frequency, the DCI-GSI2 uses a PLL to generate a base frequency, which is divided by a number. As a consequence, the DCI-GSI2 cannot generate any arbitrary frequency, but a frequency very close to the configured one.

However, the actual clock frequency will never exceed the configured one. For example, if the configured frequency is 25,140 kHz, the DCI-GSI2 can generate a frequency of 25,000 kHz. The DCI-GSI2 will not generate a frequency of 25,500 kHz, for example.

Gated clock enable Lets you enable or disable the gated clock. If enabled, the clock signal of the JTAG interface is active during communication only. If disabled, the clock stays active even if there is no communication. In most cases this option can be enabled.

ECU reset generation Lets you specify how the DCI-GSI2 generates ECU resets, for example, during ECU flash programming. You can select between the use of the reset pin and the use of a protocol command of the serial interface.

This option must be set to *via serial interface* if the ECU does not provide a reset pin, or if the pin is not connected to the DCI-GSI2.

Use EVTO pin for event polling Lets you enable the use of the EVTO pin (watchpoint pin) for event polling. If enabled, the watchpoint pin is toggled whenever a bit is set in the polling event register. This decreases the latency of

the event polling mechanism and can also increase the data throughput of the serial ECU interface.

OCD-ID password Lets you specify the OCD-ID password that is necessary to initialize the Nexus interface of the ECU microcontroller. The OCD-ID specified here must match the value in the ECU microcontroller. Otherwise, communication with the ECU is not possible. The format of the password is identical to the format of the password in the ECU flash memory.

Code flash password Lets you enter the code flash password, which might be necessary for read access to the ECU code flash memory. The value specified here must match the value in the ECU microcontroller. Otherwise, reading the code flash memory contents is not possible and calibration might not work. The format of the password is identical to the format of the password in the ECU flash memory.

Data flash password Lets you enter the data flash password, which might be necessary for read access to the ECU data flash memory. The value specified here must match the value in the ECU microcontroller. Otherwise reading the data flash memory contents is not possible. The format of the password is identical to the format of the password in the ECU flash memory.

Event polling break time Lets you specify the maximum time period in which an event polling has to be performed. If you want to use a default value, set the break time to zero.

Dialog settings for JTAG/Nexus (V850)

Interface clock Lets you specify the frequency used to drive the serial JTAG interface to the ECU. The higher the frequency, the more data can be transferred via the interface. However, in some cases a high frequency causes transmission errors.

Default value: *25,000 kHz (25 MHz)*

Note

To generate the configured target interface frequency, the DCI-GSI2 uses a PLL to generate a base frequency, which is divided by a number. As a consequence, the DCI-GSI2 cannot generate any arbitrary frequency, but a frequency very close to the configured one.

However, the actual clock frequency will never exceed the configured one. For example, if the configured frequency is 25,140 kHz, the DCI-GSI2 can generate a frequency of 25,000 kHz. The DCI-GSI2 will not generate a frequency of 25,500 kHz, for example.

MCKO clock divisor Lets you select the divisor for the microcontroller's internal clock used to generate the MCKO clock. This clock is used for the transmission of messages over the auxiliary interface of the microcontroller.

Initial value: *4* (the MCKO clock is ¼ of the target microcontroller clock)

Optimum value: *2* or *1*, depending on the target microcontroller

MDO pin count Lets you specify the number of MDO signal lines between the DCI-GSI2 and the ECU. MDO pins are used to transport the trace data. The

possible values depend on the target microcontroller, the hardware design of the ECU, and its connection to the DCI-GSI2. To see how many MDO pins your target microcontroller provides, refer to Generic Configuration Settings for the Renesas V850E2 Target Processor Family (DCI-GSI2 Setup Application Note 🕮).

The auxiliary port is used for the transmission of trace messages from the ECU to the DCI-GSI2. The more signal lines are connected, the higher is the bandwidth of the auxiliary port interface, and the less likely are trace message overruns.

MSEO pin count Lets you specify the number of MSEO signal lines between the DCI-GSI2 and the ECU. MSEO pins are used to signal the start and end of trace messages. The possible values depend on the target microcontroller, the hardware design of the ECU and its connection to the DCI-GSI2. To see how many MSEO pins your target microcontroller provides, refer to Generic Configuration Settings for the Renesas V850E2 Target Processor Family (DCI-GSI2 Setup Application Note 🕮).

The auxiliary port is used for the transmission of trace messages from the ECU to the DCI-GSI2. The more signal lines are connected, the higher is the bandwidth of the auxiliary port interface, and the less likely are trace message overruns.

OCD-ID word 1, OCD-ID word 2, OCD-ID word 3 Lets you specify the three 32-bit words of the 96-bit OCD-ID word that is necessary to initialize the Nexus interface of the ECU microcontroller. The OCD-ID specified here must match the value in the ECU microcontroller. Otherwise communication with the ECU is not possible.

Gated clock enable Lets you enable or disable the gated clock. If enabled, the clock signal of the JTAG interface is active during communication only. If disabled, the clock stays active even if there is no communication. In most cases this option can be enabled.

ECU reset generation Lets you specify how the DCI-GSI2 generates ECU resets, for example, during ECU flash programming. You can select between the use of the reset pin and the use of a protocol command of the serial interface.

This option must be set to *via serial interface* if the ECU does not provide a reset pin, or if the pin is not connected to the DCI-GSI2.

Use EVTO pin for event polling Lets you enable the use of the EVTO pin for event polling. If enabled, the pin is toggled whenever a bit is set in the polling event register. This decreases the latency of the event polling mechanism and can also increase the data throughput of the serial ECU interface.

Enable this option to minimize the event polling latency only if the EVTO pin is available and connected to the DCI-GSI2. Otherwise, disable it.

Event polling break time Lets you specify the maximum time period in which an event polling has to be performed. If you want to use a default value, set the break time to zero.

Dialog settings for JTAG/OCDS

Interface type Displays the selected target interface type.

Interface clock Lets you specify the frequency used to drive the serial JTAG interface to the ECU. The higher the frequency, the more data can be transferred via the interface. However, in some cases a high frequency causes transmission errors.

Default value: *40,000 kHz (40 MHz)*

Note

To generate the configured target interface frequency, the DCI-GSI2 uses a PLL to generate a base frequency, which is divided by a number. As a consequence, the DCI-GSI2 cannot generate any arbitrary frequency, but a frequency very close to the configured one.
However, the actual clock frequency will never exceed the configured one. For example, if the configured frequency is 25,140 kHz, the DCI-GSI2 can generate a frequency of 25,000 kHz. The DCI-GSI2 will not generate a frequency of 25,500 kHz, for example.

Gated clock enable Lets you enable or disable the gated clock. If enabled, the clock signal of the JTAG interface is active during communication only. If disabled, the clock stays active even if there is no communication. In most cases this option can be enabled.

ECU bus priority Lets you specify the target-microcontroller-internal bus priority of accesses initiated by the DCI-GSI2.

For more information on internal bus priorities, refer to the documentation of your microcontroller.

ECU reset generation Lets you specify how the DCI-GSI2 generates ECU resets, for example, during ECU flash programming. You can select between the use of the reset pin and the use of a protocol command of the serial interface.

This option must be set to *via serial interface* if the ECU does not provide a reset pin, or if the pin is not connected to the DCI-GSI2.

Event polling break time Lets you specify the maximum time period in which an event polling has to be performed. If you want to use a default value, set the break time to zero.

Dialog settings for NBD

GSI-to-ECU interface clock Lets you specify the frequency used to drive the serial NBD interface to the ECU. The higher the frequency, the more data can be transferred via the interface. However, in some cases a high frequency causes transmission errors.

Default value: *10,000 kHz (10 MHz)*

Note

To generate the configured target interface frequency, the DCI-GSI2 uses a PLL to generate a base frequency, which is divided by a number. As a consequence, the DCI-GSI2 cannot generate any arbitrary frequency, but a frequency very close to the configured one.

However, the actual clock frequency will never exceed the configured one. For example, if the configured frequency is 25,140 kHz, the DCI-GSI2 can generate a frequency of 25,000 kHz. The DCI-GSI2 will not generate a frequency of 25,500 kHz, for example.

ECU-to-GSI interface clock Lets you specify the frequency used to drive the serial NBD interface from the ECU to the DCI-GSI2. Specifying a value of "0" lets the DCI-GSI2 use the same clock as for the GSI-to-ECU direction.

Default value: *0 (same as GSI-to-ECU clock)*

Tip

If interface communication errors occur, it is recommended to first reduce the ECU-to-GSI clock before reducing the GSI-to-ECU clock. This solves most of the communication problems with a minimum impact on performance.

Event polling break time Lets you specify the maximum time period in which an event polling has to be performed. If you want to use a default value, set the break time to zero.

Event polling register address Lets you specify the address of a 32-bit register that is to be polled periodically by the DCI-GSI2 firmware. The register must have hardware support for the event polling mechanism, i.e., once read by the DCI-GSI2, the bits must be reset to zero automatically.

Related topics

Basics

Basics on DCI-GSI2 Configuration (DCI-GSI2 Setup Application Note 🕮)

Target Processor Page

Access	Located below the Electronic Control Unit Page in the main window.
Purpose	To specify settings that are specific to the microcontroller of the ECU.
Dialog settings	**Processor type** Lets you select the type of the ECU target processor. Which options are available depends on the interface type of the firmware that has been flashed to the DCI-GSI2. In most cases, this setting can be configured to *autodetect*. Default value: *autodetect* Optimum value: If there are any problems with the ECU microcontroller auto detection or if the auto detection feature is not supported for the target microcontroller family, the microcontroller is to be specified here. **ECU endianness** Displays the byte order (also called endianness) of the ECU microcontroller. The possible values are: ▪ *big endian*: Motorola byte order, MSB first ▪ *little endian*: Intel byte order, MSB last

Test Log Page

Access	Located below the Diagnostic Tests Page in the main window.
Purpose	To view and save test details and the test result of a performed diagnostics test.
Description	You can save the test log contents (including additional support information, if necessary) to a text file, or copy them to the Clipboard for further use, for example, to paste them into an e-mail.
Dialog settings	**Test log** Displays the test log containing details and the result of the last performed test. You can view service data of the IF_DATA elements used for the test, status information, and results of individual test stages, etc. **Save to file** Lets you save the contents of the test log to a text file. You are asked whether you want to save additional support information to the file.

Copy to clipboard with support report Lets you copy the test log contents with additional support information to the Clipboard for further use. The Clipboard holds the same textual support information as a support report generated via the **Help – Support** command.

Copy to clipboard Lets you copy the contents of the test log to the Clipboard for further use.

Related topics

HowTos

How to Perform Start-Up Diagnostics on a DCI-GSI2 28

Time Synchronization Page

Access

Located below the Host Interface Page in the main window.

Purpose

To configure settings of the global time synchronization feature.

Description

For synchronizing the global time base of the DCI-GSI2 with other Ethernet devices (including the XCP master and other DCI-GSI2 devices), the DCI-GSI2 supports the standardized IEEE802.1AS time synchronization protocol. The parameters of the time synchronization implementation can be configured on this page.

Dialog settings

Timesync protocol Lets you enable and specify the protocol to be used for the global time synchronization feature. The possible values are:

- *Disabled*
  Time synchronization is disabled.
- *IEEE802.1AS*
  Enable time synchronization with standardized IEEE802.1AS protocol.

- *Direct mode*

  Enable time synchronization using the direct mode, which does not require protocol support of the Ethernet switches in the network.

Default value: *Disabled*

IEEE802.1AS clock priority1 Lets you specify the first priority of the slave clock, which is used by the best master clock algorithm to determine the clock grandmaster of the system.

Default value: *248*

IEEE802.1AS clock priority2 Lets you specify the second priority of the slave clock, which is used by the best master clock algorithm to determine the clock grandmaster of the system.

Default value: *248*

Timesync role (only for direct mode) Lets you directly specify the clock master role of the device when the direct mode is used. Only one device can be configured as master in the network.

Default value: *Slave*

Tool Arbitration Page

Access	Located below the Target Interface Page in the main window.
Purpose	To configure interface arbitration.
Description	The tool arbitration feature is not supported for all serial interface types.
Dialog settings	**Arbitration enable** Lets you enable or disable the tool arbitration feature of the DCI-GSI2. When tool arbitration is enabled, a second tool can be connected to the DCI-GSI2 (e.g., a debugger), and/or the DCI-GSI2 can be connected to a tool that supports arbitration. **Slave tool enable** (Available only if tool arbitration is enabled) Lets you specify if a slave tool can be connected to the DCI-GSI2. Via this option, you can enable or disable the DCI-GSI2's tool connector for connecting an additional tool. This option should only be enabled if there is a tool connected to the DCI-GSI2.
Related topics	Basics Debugging the ECU (DCI-GSI2 Feature Reference 🕮)

Trace Memory Page

Access

Located below the Memory Configuration Page in the main window.

Purpose

To configure trace memory segments, and to specify trace settings.

Description

For the trace mechanism to work, the DCI-GSI2 and the ECU must know which memory regions are to be traced. You have to configure the trace memory segments for this. A trace memory segment is defined by the following parameters: trace unit(s), start address, address extension, and segment length.

If the ECU application generates more data than can be transmitted over the trace interface, a so-called trace overrun occurs. In such a case, information about one or more ECU write accesses is lost. As a result, the DCI-GSI2 has to reinitialize its ECU memory mirror and some measurement data may be lost.

Dialog settings

Trace Memory Segments – Trace unit(s) Displays the bit mask determining which trace unit(s) will be configured to use the trace memory segment. Some target microcontrollers have several units that can generate trace data. The relevant trace source unit(s) can be selected with this parameter.

The following options are available:

- 0x1 = CPU0
- 0x2 = DMA0
- 0x4 = CPU1
- 0x8 = DMA1

For information on which trace units are supported by which ECU microcontroller, refer to Target Processor-Specific Configuration Settings (DCI-GSI2 Setup Application Note 🕮).

Trace Memory Segments – Start address Lets you specify the start address of the trace segment area.

Trace Memory Segments – Address extension Lets you specify the extension to the trace segment start address. It is currently not used and should be set to 0.

Trace Memory Segments – Length Lets you specify the size of the trace segment area in bytes.

Trace Memory Segments – Add Item (Available via context menu) Lets you add a new trace memory segment.

Trace Memory Segments – Clone Item (Available via context menu) Lets you clone the selected trace memory segment. The selected trace memory segment is copied and pasted to the end of the list.

Trace Memory Segments – Delete Item (Available via context menu) Lets you delete the selected trace memory segment.

Trace Memory Segments – Delete All Items (Available via context menu) Lets you delete all the trace memory segments from the list.

Trace Memory Segments – Move up / Move down (Available via context menu) Lets you move the selected trace memory segment up or down in the list.

Trace config mode Lets yo specify whether whether the trace memory segments are configured manually only, or if optimization via the DCI-GSI2 is allowed. For example, if optimization is enabled, the DCI-GSI2 automatically adds the service memory to the trace memory segments, if possible.

The following values are possible:

- *Manual*

  The trace memory segments are configured manually.
- *Manual, optimized*

  The trace memory segments are configured manually, but the configuration is optimized by the firmware.

Default value: *Manual, optimized*

Trace overrun stall enable Lets you enable or disable trace overrun stalling. When a trace overrun occurs, the DCI-GSI2 must reinitialize the whole trace memory mirror, which takes some time and might cause a loss of measurement data. To avoid trace overruns in certain scenarios it is acceptable to stall the ECU microcontroller before such a trace overrun occurs.

The following options are possible:

- *Disabled*

  Trace stalling is disabled.
- *Enabled*

  Trace stalling is enabled if it is supported by the target microcontroller.

Default value: *Disabled*

Trace overrun stall high water mark Lets you specify a high water mark which determines when it is necessary to stall the ECU microcontroller. Since stalling the ECU microcontroller might take some time, the stall must be initiated before the trace buffer in the ECU is full. This setting is a percentage and determines the threshold value that the filling level of the ECU-internal trace buffer must exceed to initiate the microcontroller stall.

Default value: *90*

Trace overrun stall low water mark Lets you specify a low water mark which determines when stalling the ECU microcontroller is stopped. The filling level of a stalled microcontroller's ECU-internal trace buffer must fall below this percentage to continue running.

Default value: *80*

Related topics	Basics Measurement via Data Trace Interface (DCI-GSI2 Feature Reference 🕮)

Version Information Page

Access	Located on the top level of the main window.
Purpose	To get information on the selected DCI-GSI2 device.
Description	The Version Information page is available only in online configuration mode (when a DCI-GSI2 was selected).

XCP Page

Access	Located below the Host Interface Page in the main window.
Purpose	To control the XCP host interface of the DCI-GSI2, and to provide access to general XCP settings.
Description	The XCP instance configuration determines the communication parameters that are specific for each XCP slave instance. Currently, the DCI-GSI2 supports three independent XCP slave instances.
Subpages	The following subpages allow you to configure event channels and DAQ/STIM optimization, and specify XCP time synchronization settings: ▪ Event Channels Page on page 64 ▪ DAQ/STIM Page on page 48 ▪ Protocol Options Page on page 81

Dialog settings

XCP instance configuration - TCP/UDP Port Displays the TCP/IP and UDP/IP port number used by an XCP slave instance. In most cases this value does not need to be changed.

Default values: *8670, 8671 and 8672*

Note

The TCP/IP protocol and the UDP/IP protocol can be used to connect to the DCI-GSI2 via Ethernet.

The TCP/IP protocol offers protection from data loss, but with higher data overhead and communication latencies. It should be used for calibration, measurement and ECU flashing. The UDP/IP protocol does not prevent data loss, but has very little overhead and lower communication latencies. It should be used for bypassing.

XCP instance configuration - Messaging level Displays the level of text messaging for an XCP slave instance. The following levels are possible:

- *None*

  No text messages are sent to the XCP master.
- *Error*

  Only error messages are sent to the XCP master.
- *Warning*

  Error and warning messages are sent to the XCP master.
- *Info*

  All text messages generated by the DCI-GSI2 are sent to the XCP master.

You should modify this value according to your requirements regarding the reception of status messages via XCP.

XCP instance configuration - Add Item (Available via context menu) Lets you add a new XCP instance.

XCP instance configuration - Clone Item (Available via context menu) Lets you clone the selected XCP instance. The selected XCP instance is copied and pasted to the end of the list.

XCP instance configuration - Delete Item (Available via context menu) Lets you delete the currently selected XCP instance.

XCP instance configuration - Delete All Items (Available via context menu) Lets you delete all the displayed XCP instances in one step.

XCP instance configuration – Move up / Move down (Available via context menu) Lets you move the selected XCP instance up or down in the list.

A2L path Lets you specify a path to the A2L file. This path can be uploaded by the XCP master and then used to locate the A2L file. This mechanism is

optional and may not be supported by the XCP master. This value is the same as the result A2L file value on the A2L File Page.

A2L name Lets you specify the name of the A2L file. It can be uploaded by the XCP master and then used to locate the A2L file. This mechanism is optional and may not be supported by the XCP master.

A2L URL Lets you specify a URL to the A2L file. It can be uploaded by the XCP master and then used to locate the A2L file. This mechanism is optional and may not be supported by the XCP master.

Reset ECU on tool connect Lets you enable or disable an ECU reset by the DCI-GSI2 when a host tool is connected via the XCP protocol. An ECU reset might be useful in cases of code-patch-based bypassing, for example.

This parameter determines whether ECU reset is to be triggered by an XCP instance, and if it is, which XCP instance is to be used to trigger the ECU reset when an XCP connection is established. The following options are available:

- *Disabled*
- *Enabled for XCP instance 1*
- *Enabled for XCP instance 2*
- *Enabled for XCP instance 1 + 2*
- *Enabled for XCP instance 3*
- *Enabled for XCP instance 1 + 3*
- *Enabled for XCP instance 2 + 3*
- *Enabled for all XCP instances*

Related topics

Basics

General Features of the DCI-GSI2 (DCI-GSI2 Feature Reference 🕮)

Automating the DCI Configuration Tool

Introduction

The DCI Configuration Tool provides a command line interface that allows you to automate device configuration tasks.

How to Use the DCI Configuration Tool via Command Line

Objective

You can use the command line interface to access several DCI Configuration Tool functions without using the graphical user interface. You can specify a series of parameters to use when starting the DCI Configuration Tool. These can be commands to be executed, command parameters, and options for modifying the tool behavior.

Syntax

```
DCI_ConfigurationTool [/help]
                      [/adapt [src A2L][result A2L]]
                      [/connect <ipaddr>]
                      [/connect <s/n>]
                      [/connect]
                      [/download]
                      [/exit]
                      [/fwupdate <firmware path>]
                      [/import <A2L file path>]
                      [/load <config file path>]
                      [/net <s/n> <ip> [mask][gw]]
                      [/net <s/n> dhcp <on/off>]
                      [/quiet]
                      [/report <report file path>]
                      [/reset [set/clear/pulse]]
                      [/save <config file path>]
                      [/wait <time in ms>]
```

You can use the following parameters:

Parameter	Description
`/help` or `/h` or `/?`	Displays a help screen that lists all command line parameters and options with short descriptions.
`/adapt` or `/a`	Prepares an A2L file for use with the DCI-GSI2 by adding/updating certain required structures. If no parameters are specified for this command, an A2L file is adapted according to the settings in the currently active device configuration. For further information, refer to A2L File Page on page 39.
`/adapt [<source A2L>][<result A2L>]` or `/a [<source A2L>][<result A2L>]`	If only one A2L file is specified as a parameter for this command, a basic A2L file with the specified name is generated. If a source A2L file and a result A2L file are specified as parameters, the specified source A2L file is adapted and the results are stored in the specified result A2L file.
`/connect` or `/c`	Connects to a DCI-GSI2 on the network. If no parameters are specified for this command, the tool connects to the first DCI-GSI2 device found on the network. This option should only be used when there is only one device connected. After the connection has been established the device configuration is uploaded.
`/connect <ipaddr>`	Connects to the DCI-GSI2 with the specified IP address. After the connection has been established, the device configuration is uploaded.
`/connect <s/n>`	Connects to the DCI-GSI2 with the specified serial number. After the connection has been established the device configuration is uploaded.
`/download` or `/d`	Downloads the device configuration to a DCI-GSI2 device. A device configuration must have been previously loaded and a connection to a device must have been established. If necessary, the device is restarted for the changed device configuration to take effect.
`/exit` or `/x`	Closes the tool.
`/fwupdate <firmware path>` or `/f <firmware path>`	Updates the firmware of the currently connected DCI-GSI2 device using the specified firmware file.
`/import <A2L file path>` or `/i <A2L file path>`	Imports the dSPACE Calibration and Bypassing Service configuration and service instances into a DCI-GSI2 device configuration. The device configuration must have been previously loaded from a file or device.
`/load <config file path>` or `/l <config file path>`	Loads the device configuration settings from the specified DCI-GSI2 configuration file. Any previously loaded device configuration is replaced.

Parameter	Description
`/net <s/n> <ip> [mask] [gw]` or `/n <s/n> <ip> [mask] [gw]`	Updates the IP configuration of the DCI-GSI2 device with the specified serial number. The IP address must be specified, the mask and gateway address are optional. The format of these parameters follows the common convention 'x.x.x.x', e.g., 192.168.140.1.
`/net <s/n> dhcp <on/off>` or `/n <s/n> dhcp <on/off>`	Enables (on) or disables (off) the DHCP setting of the DCI-GSI2 device with the specified serial number.
`/quiet` or `/q`	Prevents messages and dialogs from being displayed. This option includes the closing of the DCI Configuration Tool after the last command is executed.
`/report <report file path>` or `/r <report file path>`	Saves the support report generated by the DCI Configuration Tool to the specified text file. The support report contains textual information on the configuration parameters of the DCI-GSI2 used, version information on dSPACE software components, and DCI-GSI2-internal status information. You can attach the generated file to an e-mail later on.
`/reset [set/clear/pulse]`	Performs an ECU reset. If no parameter is specified, a reset pulse is implicitly executed. By using the `set` parameter, the ECU is reset until the reset is cleared. The `clear` parameter lets you clear the ECU reset. If the `pulse` parameter is set, an ECU reset pulse is generated.
`/save <config file path>` or `/s <config file path>`	Saves the device configuration settings to the specified DCI-GSI2 configuration file. A device configuration must have been previously loaded from a file or a device.
`/wait <time in ms>` or `/w <time in ms>`	Waits for the specified number of milliseconds.

All command line arguments are optional.

Method

To use the DCI Configuration Tool via command line

1. Open a Command Prompt window.
2. Change to the `DCI_ConfigurationTool\Bin` folder in your dSPACE DCI-GSI Configuration Package installation.
3. Enter `DCI_ConfigurationTool [parameters]`.

Result

The DCI Configuration Tool is started, and the desired operations are executed.

Typical scenarios when starting the DCI Configuration Tool

There are three typical scenarios to start the DCI Configuration Tool in automated mode:

- No command line parameters are specified: The DCI Configuration Tool is started normally, i.e., by opening the Select a Device dialog.

- The path to a G2C configuration file is specified as the only command line parameter: The DCI Configuration Tool is started directly in the offline configuration mode, and the specified configuration file is loaded.
- A sequence of commands and command line parameters is specified: The DCI Configuration Tool is started in automated mode and performs the specified operations.

Examples

The following examples show how to use command line parameters to perform tasks with the DCI Configuration Tool automatically.

- To load the settings from a specific configuration file in the DCI Configuration Tool, and then download the device configuration to the DCI-GSI2 device with the specified IP address, enter:

  ```
  DCI_ConfigurationTool /connect 192.168.140.2 /load
  "C:\Config\dci_gsi2_config_tricore_dap_v1.2.g2c" /download
  ```

- To save the device configuration to a file without showing any dialogs, enter:

  ```
  DCI_ConfigurationTool /connect 192.168.140.2 /save
  "C:\Config\dci_gsi2_upload.g2c" /quiet
  ```

- To connect to the DCI-GSI2 with the specified serial number, adapt the specified source A2L file and store the results in the specified result A2L file, and to close the tool at the end, enter:

  ```
  DCI_ConfigurationTool /connect 243756 /adapt
  "C:\a2l\new_a2l_file.a2l" "C:\a2l\new_a2l_file_gsi2.a2l"
  /exit
  ```

Preparing a Support Request

Introduction

If you have difficulties with your DCI-GSI2 which you cannot solve on your own, contact dSPACE Support by sending a support request.

How to Create a Support Report

Objective

If you have difficulties with your DCI-GSI2 which you cannot solve on your own, contact dSPACE Support by sending a support request. As well as a description of the problem and information on how to reproduce it, your e-mail should also contain a "support report" generated by the DCI Configuration Tool.

Note

Alternatively, you can create support information for all connected DCI-GSI2 devices using the dSPACE Installation Manager's diagnostic feature.

Support report

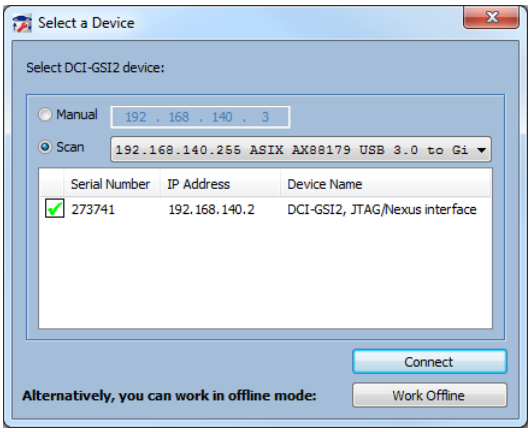
To help dSPACE Support in analyzing the observed problem and to speed up your support request, you should attach a "support report" to your e-mail. The support report contains textual information on the configuration parameters of the DCI-GSI2 used, version information on dSPACE software components, and DCI-GSI2-internal status information.

Method

To create a support report

1 Start the DCI Configuration Tool.

2 In the Select a Device dialog, select the device you have had a problem with.



Tip

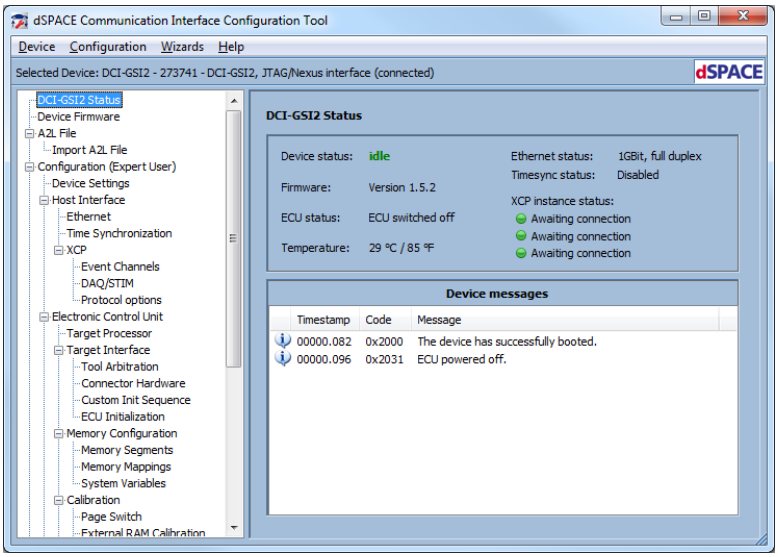
If the DCI Configuration Tool is already open, you can open the dialog by selecting Device – Select Device from the menu bar.

3 Click Connect.

Note

Do not click Work Offline. This option does not allow you to create a support report.

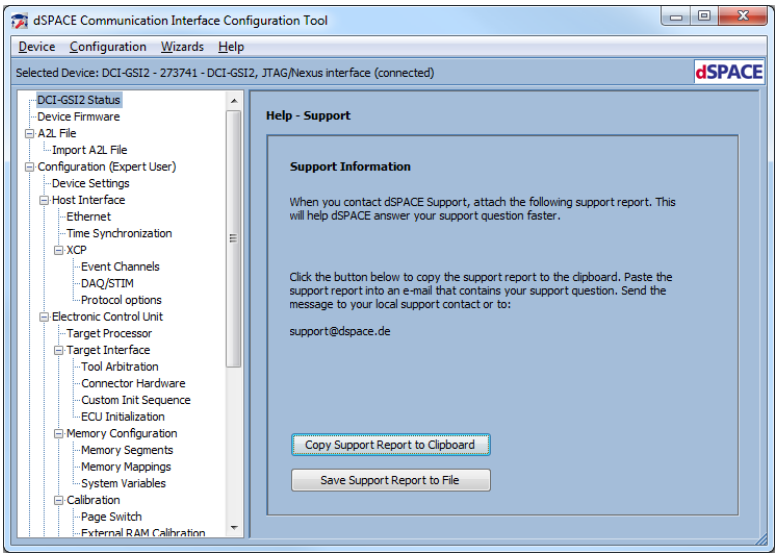
The main window of the DCI Configuration Tool opens.



4 Switch off the ECU and the device, and power them up again.

5 Reproduce the problem you observed.

6 Choose **Help – Support** from the DCI Configuration Tool's menu bar to open the **Support Information** page.



7 Click **Copy Support Report to Clipboard** to copy the support information to the Clipboard for further use.

Tip

Alternatively, you can save the support report to a text file by clicking the **Save Support Report to File** button.

8 Paste the Clipboard contents into an e-mail.

Tip

If you saved the support report to a text file, you can attach the generated file to the e-mail.

Result

A support report has been generated and attached to an e-mail.

Next steps

You can add the description of the problem and information on how to reproduce it to the e-mail, and provide the support request to dSPACE Support (www.dspace.com/go/supportrequest).

Note

If the problem occurred while you were working with ControlDesk, you should also copy the corresponding part of ControlDesk's log file to your support request.