

DS4201 Prototyping Board

RTI Reference

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About This Reference

Content

This RTI Reference provides a full description of the Real-Time Interface (RTI) software support for the DS4201 Prototyping Board, which can be controlled by the DS1006 Processor Board and the DS1007 PPC Processor Board.

Symbols

dSPACE user documentation uses the following symbols:

Symbol	Description
	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
	Indicates a hazard that, if not avoided, could result in property damage.
	Indicates important information that you should take into account to avoid malfunctions.
	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.

Examples:

- Where you find terms such as `rti<XXXX>` replace them by the RTI platform support you are using, for example, `rti1007`.
- Where you find terms such as `<model>` or `<submodel>` in this document, replace them by the actual name of your model or submodel. For example, if the name of your Simulink model is `smd_1007_s1.slx` and you are asked to edit the `<model>_usr.c` file, you actually have to edit the `smd_1007_s1_usr.c` file.

RTI block name conventions All I/O blocks have default names based on dSPACE's board naming conventions:

- Most RTI block names start with the board name.
- A short description of functionality is added.
- Most RTI block names also have a suffix.

Suffix	Meaning
B	Board number (for PHS-bus-based systems)
M	Module number (for MicroAutoBox II)
C	Channel number
G	Group number
CON	Converter number
BL	Block number
P	Port number
I	Interrupt number

A suffix is followed by the appropriate number. For example, `DS2201IN_B2_C14` represents a digital input block located on a DS2201 board. The suffix indicates board number 2 and channel number 14 of the block. For more general block naming, the numbers are replaced by variables (for example, `DS2201IN_Bx_Cy`).

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.

General Information on the DS4201 Blockset

Overview of the DS4201 Blockset

About the board

The DS4201 Prototyping Board is designed to integrate customized user hardware. It is the interface between custom I/O devices that can be mounted directly on the board and the dSPACE PHS bus, thus enabling the connection to the dSPACE system.

Partitioning the PHS bus with the DS802 With the DS802 PHS Link Board you can spatially partition the PHS bus by arranging the I/O boards in several expansion boxes.

The DS802 can be used in combination with many types of available dSPACE I/O boards. However, some I/O boards and some functionalities of specific I/O boards are not supported.

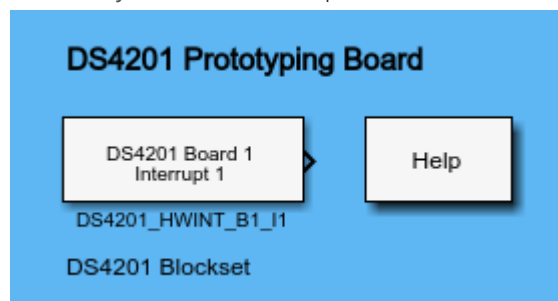
The I/O board support depends on the dSPACE software release which you use. For a list of supported I/O boards, refer to [DS802 Data Sheet \(PHS Bus System Hardware Reference\)](#).

RTI blockset

Due to the DS4201's capability to offer an access for a wide range of custom I/O devices to the dSPACE system, the support for the board provided by the Real-Time Interface (RTI) is restricted to some basic features.

DS4201

After you double-click the corresponding board library icon in the library rtlibm the Library: rtlibm/DS4201 opens:



The following I/O unit can be accessed by the RTI blockset for the DS4201:

- [Interrupts](#) on page 11

Interrupts

Objective

The Library: rtilibm/DS4201 provides access to the hardware interrupts of the DS4201.

DS4201_HWINT_Bx_Iy

Where to go from here

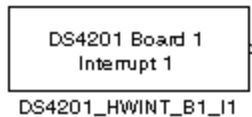
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Block Description (DS4201_HWINT_Bx_Iy)

Block

Gives you information on the appearance and purpose of the block.



Purpose

To make the interrupts of the DS4201 board's slave interrupt controller available as trigger sources in a block diagram.

Description

All interrupts of the DS4201 board are custom specific and thus no interrupt table can be given.

Note

The master interrupt line 0 is reserved for boards operating in polling mode. If selecting line 0 for DS4201 interrupts, no other boards can operate in polling mode at the same time.

I/O mapping

For details on the I/O connector pinouts of the DS4201, refer to [DS4201 Components](#) (PHS Bus System Hardware Reference).

Dialog pages

The dialog settings can be specified on the following pages:

- [Unit Page \(DS4201_HWINT_Bx_Iy\)](#) on page 13

Related RTLib functions

This RTI block is implemented by using the RTLib functions, which are described in the *DS4201 RTLib Reference*.

- ds4201_init

Unit Page (DS4201_HWINT_Bx_Iy)



Purpose

To specify the interrupts of the DS4201.

Dialog settings

Board number Lets you select the board number in the range 1 ... 16. If your system contains several boards of the same type, RTI uses the board number to distinguish between them.

Note

If you use the DS4201 Prototyping Board together with a DS4201-S Serial Interface Board in a Simulink model, choose different numbers for these boards. To determine the correct board numbers, please refer to [DS1006 Hardware Installation and Configuration Guide](#)  or [DS1007 Hardware Installation and Configuration Guide](#) .

Interrupt number Lets you specify the interrupt number within the range 1 ... 8.

Interrupt select line The entry must match the master interrupt line used for interrupt expansion. In most cases the master interrupt line will be hard-wired on the DS4201 board. If the line is selectable by register access, the user must write the code in order to program the specified line.

Related topics**References**

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