

Instruction Manual

MATLAB driver



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Warning

The following risks result from improper implementation and from use of the product contrary to the regulations:



Personal injury



Damage to the module, PC and peripherals



Pollution of the environment

- Protect yourself, the others and the environment!
- Read carefully the safety precautions (yellow leaflet).

If this leaflet is not with the documentation, please contact us and ask for it.

- Observe the instructions of the manual.

Make sure that you do not forget or skip any step. We are not liable for damages resulting from a wrong use of the product.

- Used symbols



IMPORTANT!

Designates hints and other useful information.



WARNING!

It designates a possibly dangerous situation.

If the instructions are ignored the module, PC and/or peripheral may be **destroyed**.



WARNING!

It designates a possibly dangerous situation.

If the instructions are ignored the module, PC and/or peripheral may be destroyed and persons may be injured or killed.

Contents

1	Preparation	6
2	Call of a MATLAB sample	7
3	Call of a MEX-file alone	8
4	Finding out information about a function	10
5	Contact and support.....	11

1 Preparation

The first thing you have to do to use the MATLAB samples, is to indicate in the current directory the path of the working folder which should be “*..\PCI(e)xxxx\Samples\Matlab*”. To do this, you have to click on the “Browse for folder” icon:



Figure 1: “Browse for folder” icon

For example, if your folder is named test and is in your desktop, the following path should appear:



Figure 2: Current directory

So, normally you should see all the MATLAB samples in the current folder (example for the PCI1710 board):



Figure 3: Current folder

This first part is very important because MATLAB can't execute a file which is not in its current folder.

2 Call of a MATLAB sample

As in C or C#, some samples have been written within MATLAB to show you how to use the different functions of the board.

To call a sample file, you have two possibilities.

The first way to do this is write the name of the sample in the command window of MATLAB:



Figure 4: Call of a sample, way one

The second way consists in double clicking on the file (from the current folder). This will open the file in a MATLAB editor window. After that, you just have to click on the “Run” icon:



Figure 5: Call of a sample, way two

3 Call of a MEX-file alone

You can also use the different functions of your board without calling a sample.

To do this, the first thing to know about calling a MEX-file is the syntax to use. Please note: according to its number of inputs and outputs, this syntax is not the same:

		Outputs		
		No output	One output	Many outputs
Inputs	No input	function or function()	out = function or out = function() or [out] = function or [out] = function()	[out1, out2, ...] = function or [out1, out2, ...] = function()
	One input	function(in)	out = function(in) or [out] = function(in)	[out1, out2, ...] = function(in)
	Many inputs	function(in1, in2, ...)	out = function(in1, in2, ...) or [out] = function(in1, in2, ...)	[out1, out2, ...] = function(in1, in2, ...)

Table 1: Syntax for calling a function

So, if you want to call a function with MATLAB, you just have to write it with the correct syntax in the command window. For example, if you want to call the open board function of the PCIe1516 board, you have to write in the command window:

```

Command Window

Trial>> [returnError, handle] = i_PcIe1516_mexOpenBoardViaIndex(0)

returnError =

    0

handle =

    5400

fx Trial>>

```

Figure 6: Calling a function

Another thing which is interesting to know is that all the variables used in the command window are saved in the workspace:

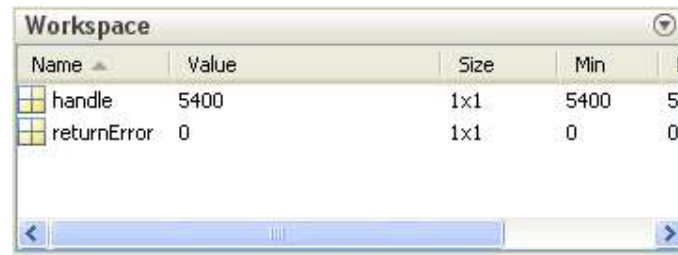


Figure 7: Workspace

Moreover, you have the possibility to save the workspace, if for example you need to use these data later or in another computer which has MATLAB.

To save this workspace, you just have to click on the “Save Workspace” icon:



Figure 8: “Save Workspace” icon

You can also do a right click on the workspace and then click on “save”. The data will be saved as a .mat file.

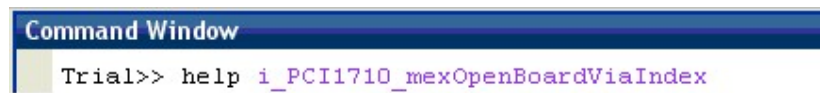
After that, if you want to import these variables, you can click on the “Import Data” icon:



Figure 9: “Import data” icon

4 Finding out information about a function

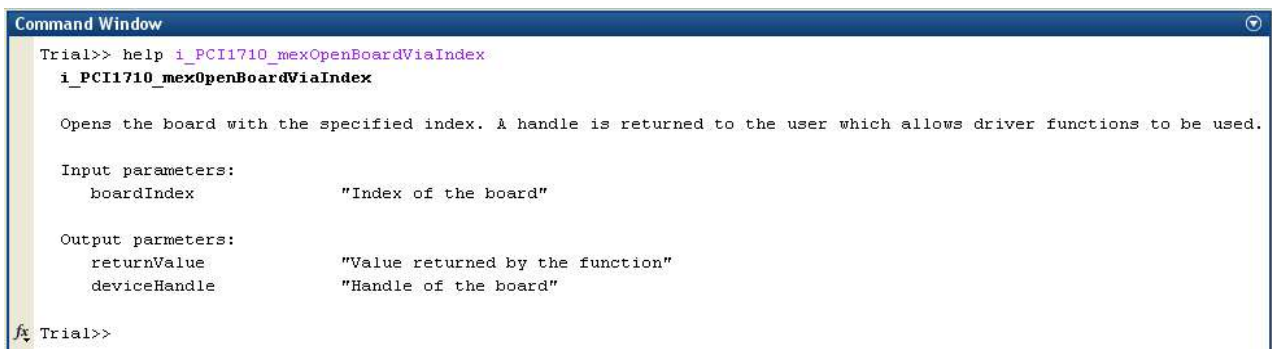
If you have forgotten information about a function, you have the possibility to find it by writing on the command window of MATLAB the key word “help” followed by the name of the function, as showed below (example with the `i_PCI1710_mexOpenBoardViaIndex`):



```
Command Window
Trial>> help i_PCI1710_mexOpenBoardViaIndex
```

Figure 10: Example of help command

Then, the following information appears:



```
Command Window
Trial>> help i_PCI1710_mexOpenBoardViaIndex
i_PCI1710_mexOpenBoardViaIndex

Opens the board with the specified index. A handle is returned to the user which allows driver functions to be used.

Input parameters:
    boardIndex      "Index of the board"

Output parameters:
    returnValue     "Value returned by the function"
    deviceHandle    "Handle of the board"

fx Trial>>
```

Figure 11: Information about the `i_PCI1710_mexOpenBoardViaIndex` function

So you can see what does the function and which parameters it needs as inputs and outputs.

5 Contact and support

If you have any problems or questions concerning MATLAB, you can watch its help which is very rich and complete by clicking on the “Help” icon:



Figure 12: “Help” icon

You can also contact the MATLAB support.

If you have any questions about the files we provided you, don’t hesitate to contact us:

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