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# ***HUNT ENGINEERING***

## ***Reads API Example***

### ***Description and Reference***

***With Borland C++ Builder***

***Document Rev A***  
***API Reads Example Rev 1.0***  
***J.Thie 05-03-01***

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The reads example is an example program that tests the PCI FIFO and HSB interface of a HERON carrier board. The example will try to boot a small and simple program onto the first processor (on the module in slot 1). This program will send a stream of known data to the host, via the PCI interface. The host example program will read the stream of data, verify the data is as expected, and tell you if everything worked or not. It will also give a very rough estimate of the transfer speed.

## Compiling, Linking and Running the example

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### Compiling/Linking the Example

To compile/link the example, please create a new project with your Borland C++ Builder compiler ('Console application'). After you created a new project, you need to set the path to the Hunt Engineering API include file ("heapi.h") and library ("hendrv.lib"). There is an environment variable "HEAPI\_DIR" that points to the directory where you installed the Hunt Engineering API.

Include directory:     \$(HEAPI\_DIR)

Add library file:     \$(HEAPI\_DIR)\hendrv.lib

How to create and start a new project (Borland C++ Builder)

#### **In Borland C++ Builder, create a new workspace**

1. Make a directory on the hard disk where you want to keep the new project.
2. File → New Application.
3. View → Project Manager.
4. Remove 'Unit1.cpp' from the project. (Select 'Unit1.cpp' in the 'Project Manager' window. Click the button marked with a folder and a minus sign. Answer 'no' when asked if you would like to save changes to 'Unit1.cpp').
5. Close the Project manager window by clicking on the 'x' in the top right hand corner.
6. File → Save Project As. Navigate to the directory where you want to keep this project. Next, enter a name for the project, and click the 'save' button. (Note that with C++ Builder you cannot give the project the same name as the name of the main CPP file that you want to include.)

#### **Add files and libraries to the project**

7. View → Project Manager. Add 'testint.c' located in the testint example directory: click on the button that shows a folder and a plus sign. Change 'Files of Type' to 'C file (\*.c)'. Browse to the 'testint' example directory. Select 'testint.c'. Click 'Open'.
8. Go back to the 'Project Manager' window. Click on add again and change 'Files of type' to 'Library file (\*.lib)'.
9. Navigate to the directory that contains 'hebdrv.lib' (usually 'c:\heapi') and include it.
10. Close the Project Manager window.

#### **Include files**

11. Options → Project.
12. Select 'Directories/Conditionals' tab from the window that pops up ('Project Options').

13. Add to the end of the line of text in the box marked Include Paths the location of the include files from the HUNT ENGINEERING CD (usually 'c:\heapi').
14. Add to the end of the line of text in the box marked Library Paths the location of the library files from the HUNT ENGINEERING CD (usually 'c:\heapi').
15. Click 'OK'.

### Linker

16. Options → Project.
17. Select the Linker tab from the window that pops up ('Project Options').
18. Change the Application Type to Console application and click 'OK'.

### Compile and Link

19. File → Save All (save all the changes you have made to the new project).
20. Select Build All from the Project Menu.

### Running the example

Open a DOS box and browse to the reads example directory. Change directory to your project's directory. Assuming that your executable is called 'reads.exe', and you use an HEPC8 carrier board, type:

```
reads hep8a 0 a 1000 1000 10000
```

The output should be something like:

```
Start at 1000, inc 1000, end at 10000, BlockSize=250 on hep9a (0: Compo
Resetting...
Serial bus: slot 1: HERON1-C6201, rom version 4.
Booting M:\TMP\HOST_A~1\C6X\EXAMPLES\READS\reads.out...
Testing...
Reads Transfer size 1000 DWORDS in 100 ticks, Speed: 39.06 KBytes/sec
Reads Transfer size 2000 DWORDS in 1 ticks, Speed: 7812.50 KBytes/sec
Reads Transfer size 3000 DWORDS in 1 ticks, Speed: 11718.75 KBytes/sec
Reads Transfer size 4000 DWORDS in 5 ticks, Speed: 3125.00 KBytes/sec
Reads Transfer size 5000 DWORDS in 1 ticks, Speed: 19531.25 KBytes/sec
Reads Transfer size 6000 DWORDS in 6 ticks, Speed: 3906.25 KBytes/sec
Reads Transfer size 7000 DWORDS in 4 ticks, Speed: 6835.94 KBytes/sec
Reads Transfer size 8000 DWORDS in 5 ticks, Speed: 6250.00 KBytes/sec
Reads Transfer size 9000 DWORDS in 4 ticks, Speed: 8789.06 KBytes/sec
Reads Transfer size 10000 DWORDS in 5 ticks, Speed: 7812.50 KBytes/sec
Check whether any interrupts were used: read 1, write 0, master mode 0.
```

### Out file

The reads example uses a DSP executable to load onto the HERON module's processor. The executable is 'reads.out' for a HERON1 module and 'reads4.out' for a HERON4 module. The reads example uses 'argv[0]' and to try to find the out file. First it looks in the full path; if the out file isn't there, it looks one directory up (or down, depending on your viewpoint). It will walk all the way down the 'argv[0]' path until it finds the out file. As long as your Visual C/C++ project was created in the reads example directory, the out file should be found.

The code for the out files is in the reads example's 'dsp' sub-directory. The out file code is very simple and makes no use of DSP/BIOS or Code Composer Studio features. The code in the 'dsp' directory should not be used as an example to build your DSP projects on. It is used solely for the purpose of this example. This example focuses on the HUNT ENGINEERING API and how to use it. For examples that use DSP/BIOS projects, please have a look at Server/Loader examples or HERON-API examples.

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