NI-GPIB plug-in for REALbasic

Access National Instruments GPIB interfaces from within REALbasic!

The NI-GPIB plug-in is a REALbasic plug-in that offers access to nearly all the functions you know from your National Instruments GPIB manual. Now it is possible to use all GPIB interfaces supported by your installed NI GPIB driver directly from within REALbasic's IDE or a compiled REALbasic application.

Instead of declaring functions to shared libraries and missing access to global variables like "iberr" or "ibstat" it's now possible to call all GPIB functions directly from within REALbasic. Also, all globals are available e.g. to check for errors etc.

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System requirements

The NI-GPIB plug-in works under Mac OS X and 32 bit Windows (95, 98, NT, 2000, XP). Mac OS 9 is no longer supported. If you need the plug-in's functionality under OS 9 please use the last compatible version 1.2.0. still available on marinso's website.

The plug-in comes in two versions:

- the new REALbasic 5 plug-in format (recommended)
- the old plug-in format before version 5

The old format plug-in can't be used for the Windows version of REALbasic. This means you must have at least REALbasic version >= 5 to work with the GPIB plug-in and Windows.

Please install the appropriate one for the development environment you are working with. The version 5 plug-in also includes this help file directly accessible from REALbasic's help menu.

The plug-in works as a wrapper class between your application and the National instruments GPIB driver. Therefore *the National Instruments GPIB driver must be installed properly* on your computer.
In case of any problems first check the correct functionality of the National Instruments GPIB driver with the “Measurement Explorer” (Windows) or the “Troubleshoot” and/or “Explore GPIB” application on your Mac.

Please take into account that...

Due to the many different GPIB interfaces available from National Instruments and due to the many different GPIB functions and support of different operating systems I can not give any guaranties for the plug-in to work in every case.

Please test the plug-in thoroughly in demo mode before you buy a license!

I’m doing my best to eliminate possible errors, but I don’t have access to every NI GPIB interface available. If you are using some special measurement equipment it can be very hard or even impossible to reproduce your individual error. So again:

Please test the plug-in thoroughly in demo mode before you buy a license!

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Installing the plug-in

Put the NI-GPIB plug-in into REALbasic's plug-in folder and (re-)start REALbasic.
Important: the plug-in talks to the original National Instruments GPIB driver. So this driver has to be installed properly (Please refer to your GPIB manual for detailed information).
It may cause your application to crash if no GPIB driver is installed. Unfortunately I could not find a way to prevent this behaviour yet.

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Using the plug-in functions

The NI-GPIB plug-in adds a new class to your REALbasic's development environment, called "NiGpib".

After instantiating an object of this class it is possible to use the functionality. Please have a look at the demo application "GPIB example", part of the distribution, to learn how it works.

Use the GPIB functions as you used to do it in your "C" environment.
The names of the functions are almost identical to the ones in your GPIB user manual. REALbasic's auto completion feature makes it easy to find the correct ones. Simply type the first letters and REALbasic's TAB key will do the rest!
Attention: This will only work if you are in the name space of the plug-in!

Please refer to your GPIB manual to learn what functions require variables passed by reference! Some functions will pass back results in variables passed by reference. In such a case you must use variables instead of constants!

Don't worry about chars or integers, always use REALbasic's "Integer" type.

Some functions, like "FindLstn", expect arrays as input parameters and return results in arrays. Because of REALbasic's lack in implementing array passing out of a plug-in, I decided to use REALbasic's MemoryBlocks instead.
If REALbasic will support array passing into and out of a plug-in one day I'm planning to implement it, too.
Please have a look to the example project to see how it works.

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Useful Constants

All constants you know from your GPIB manual or from the #define(s) in the header file “ni488.h” are now included in the plug-in itself.
Only difference is the additional ending "_GPIB" to make them unique and easy to discern.
This means: Simply type the first letters of the constant you need, press the “TAB” key and REALbasic will offer you all possible completions.
I.e. think of needing the constant "CIC" (Controller In Charge). Simply start typing the first letters, press the "TAB" key and choose “CIC_GPIB”.
That's it!

The former "GpibConstants" module is no longer needed. If you want to reuse an older source code with the new NI-GPIB plug-in and don’t want to change all constant definitions to the new names simply import the old "GpibConstants" module like you did before. Please find it in the folder “Obsolete”.

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New variables

"StateString" gives you a brief text description of the “ibsta” and “iberr” variables.
For example if iberr is “ECIC” StateString will tell you: "Function requires GPIB board to be CIC".
Or if ibsta is “CMPL | CIC” you get: "I/O completed, Controller-In-Charge".

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New errors

EFNA (50): Function not available.
EPNR (51): Plug-in not registered.
ETMR (52): Too many registration trials.
ENCW (53): Name or code was wrong - Registration failed.

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Functions not supported

"iblock" and "ibunlock" are no longer supported by National Instruments. Use "iblck" instead.
"ibnotify" is not supported yet.

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Shareware

NI-GPIB is Shareware. You can give it a trial it in REALbasic's IDE, but have to pay for professional use. Without registration the plug-in only allows a limited number of function calls (50 times) in the IDE and will not work in a compiled application. Quit and restart your application to get 50 additional calls.

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Future plans

Using arrays instead of MemoryBlocks when calling functions like "FindLstn", that need to pass an undefined number of parameters in both directions. REALbasic (2006/r1) still only offers array passing in one direction (into the plug-in), but not back to the caller.
Implementation of „ibnotify“. Due to some technical problems this function is not working yet.

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Revision history

2.0.0 - 01/27/06
Release version
NF - Full support of National Instruments Mac OS X driver 2.3 (Ethernet and PCI card interfaces)
CH - OS 9 is no longer supported. Use version 1.2.0 of the GPIB plug-in if you need it.

BF = Bug fix
IP = Improvement
NF = New feature
CH = Change

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