General Purpose GPA Driver

BNCS GPA Driver for Windows

Written by Adam Brocklesby

© Copyright 1993-2002 BBC Resources Ltd

Overview

This version 2 BNCS module complements the existing suite of GPA driver interfaces for BNCS by adding control for any Advantech Analog IO, including all the PCI and ISA cards. Particularly, this driver allows a GPI card to be fitted to a Windows NT or 2000 BNCS installation because it uses an Advantech-supplied kernel-mode virtual device driver to access the hardware ports. The PCI cards must be installed and configured before use with the Advantech-supplied card installation software. This provides the memory address and enumeration for each plug-and-play GPI card and stores the information in the Registry. This allows the driver to support any Advantech card, including any future designs.

The Driver appears as an infodriver, and doesn't require an external one to be run.

Configuration

All configuration information is supplied in the usual device file, DEV_nnn.ini. The *nnn* is the driver number, supplied to the GPI driver as a command line parameter. Start the driver using the command line GGPAv2.EXE nnn where nnn is the driver number required. If no other driver exists with this number it will run up minimised. When run, the driver checks the Advantech device list, and if create modify the DEV_nnn.ini file as appropriate. Thus, when it is run for the first time as a given device number, it will detect and configure all the cards installed to work as part of device nnn. This configuration may then be changed to suit individual systems. The dev_nnn.ini file takes the form.

[System]

UpdateOnStart=0	1 to send revertives for all configured indeces on startup
ButtonDisplay=0	selects button label, 0=BNCS index 1=card io, 2=display database name
DebugMode=0	1 selects programers debug mode
SaveDelay=10	no. of minutes between each tally table save
ReassertOnStart=1	set outputs to last save state, 0=leave outputs as they are
InitTallyDelay=100	delay in ms between each network revertive group (of 10 revertives) at startup

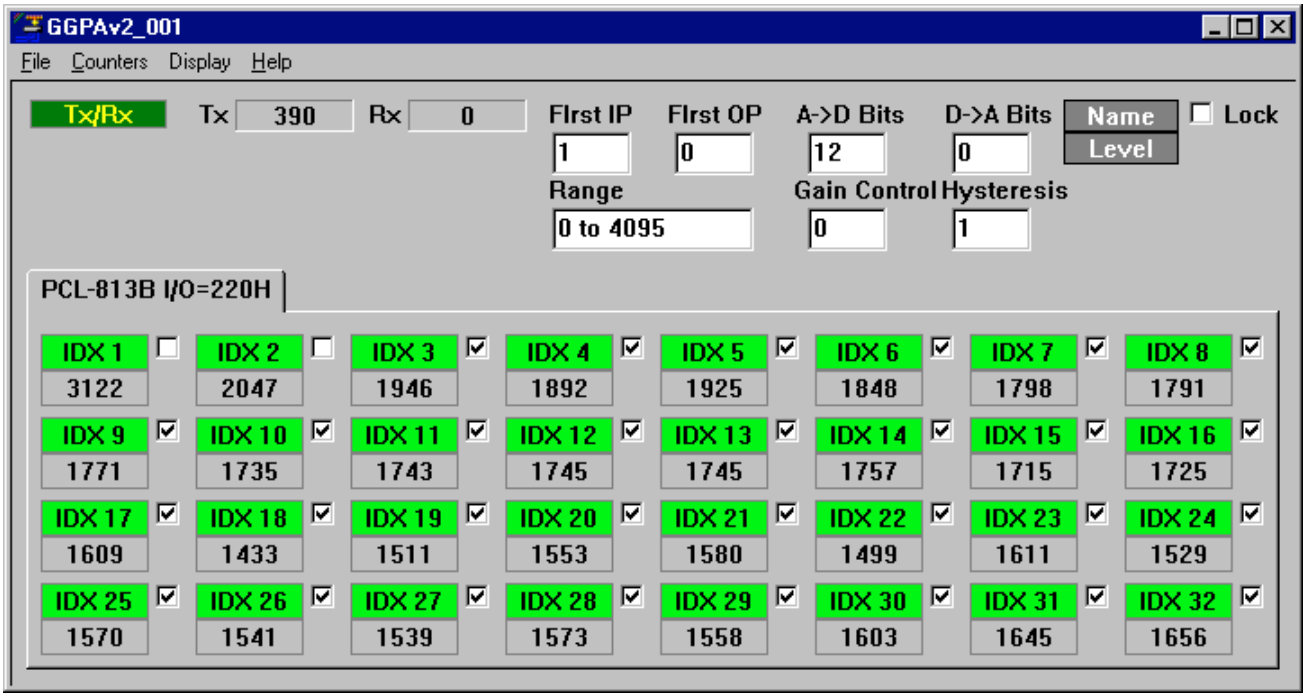
UpdateDelay=100	delay in ms between each poll of the inputs and outputs

© 1999 BBC Resources Ltd

[GPI_CARD_X]	where X is different for each installed card.
DeviceType=ADVANTECH	Installed Card type
DeviceNumber=0	Advantech device number
DeviceName=PCL-813B I/O=22H	Name of the card
Exclude=0	card is included in this driver =1, card is excluded from this driver
FirstInput=1 appropriate	BNCS index of the first card input, change as
NumberOfInputs=32	number of inputs on this card
FirstOutput=33	BNCS index of the first card output, change as appropriate
NumberOfOutputs=0	number of outputs on this card
Simulate=0	=1 to simulate card. (NB card must still be installed in Advantech setup, which will only work for ISA cards)
OutputFormatString=%0.0f	this sets the format of the data that appears in the Infodriver slots assosiated with each card. The number before the . is the minimum number of noughs before the decimal point, and the number after is the number of decimal places to display. The % and . and f should not be changed.
MinInput=0	This is the minimum that can be displayed by the driver, and it will be displayed when the analog input is at its lowest allowable value in the current input range. May be any decimal value eg –2.5,–5, –100 etc.
MaxInput=4095	This is the maximum that can be displayed by the driver, and it will be displayed when the analog input is at its highest allowable value in the current input range. May be any decimal value eg 2.5,5,10 etc.
GainControl=0	This sets the gain control bits in the card. The value of these can be found in the manual, but as an example, in the 813 card, 0=x1, 1=x2, 2=x4 and 3=x8. Any value outside the range will be ignored.
NumberOfInputBits=12	Resolution of the A->D
NumberOfOutputBits=12	Resolution of the D->A
Hysteresis=1	This number sets the number of bits that must happen in the opposite direction to the last move in the input voltage in order to change the reading. For example, if the readings were 5,7,8,9,8,7,6,3,0, the actual output would be 5,7,8,9,7,6,3,0. This noise on the input to be removed from the BNCS network.

© 1999 BBC Resources Ltd

User Interface



The interface is very similar to most BNCS driver panels, so only the non-standard parts will be described here.

The Display selection on the file menu sets the ButtonDisplay line of the dev_ini file, and has the effect described there.

The Tx/Rx box shows the Driver state as regards CSI and BNCS. It may show

Tx/Rx Driver connected to CSI and transmitting revertive

Rx Only Driver connected to CSI, in Receive only mode (can switch to Tx as necessary)

NO CSI Driver has run without CSI being found

If the card is in simulate, a label will appear below the Tx/Rx label saying simulate

The rest of the labels are indications af values set in the DEV_XXX.INI file

© 1999 BBC Resources Ltd

Installation Notes

The driver is a 32 bit program, and requires V2.5 or 3.5 csi to work. It also requires BNCS_CC.dll and BNCSIF32.dll. In addition a number of advantech support dlls are required, which will be installed by the advantech setup program (supplied with every card, but only requires installing once on each system). It may be possible to avoid running the setup programs, and just copy the dlls for your hardware and the setup program. After the Advantech software is installed, goto start->programs->Advantech Drivers (or similar)->setup/install. When this runs select setup, and then add device. Select from the list supplied, the appropriate card. When all the cards are installed, GGPAv2 should be run.

Versions

4.4.2002 Complains if can't find BNCS_CC.DLL, and CSI 1.17+ complains if it can't find CSI

© 1999 BBC Resources Ltd