

asigN control panels and *I asigN* software

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History

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asigN controller

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1 Introduction

Hi Tech Systems has developed a system of highly configurable control panels, called "*asigN*", which can be connected to a wide range of equipment to provide push button switch control as an alternative to computer keyboards and mice. Using an intuitive Windows programme, buttons are assigned to the chosen functions of the connected hardware, and a variety of equipment can be connected to the same panel at the same time, via the various interface modules available.

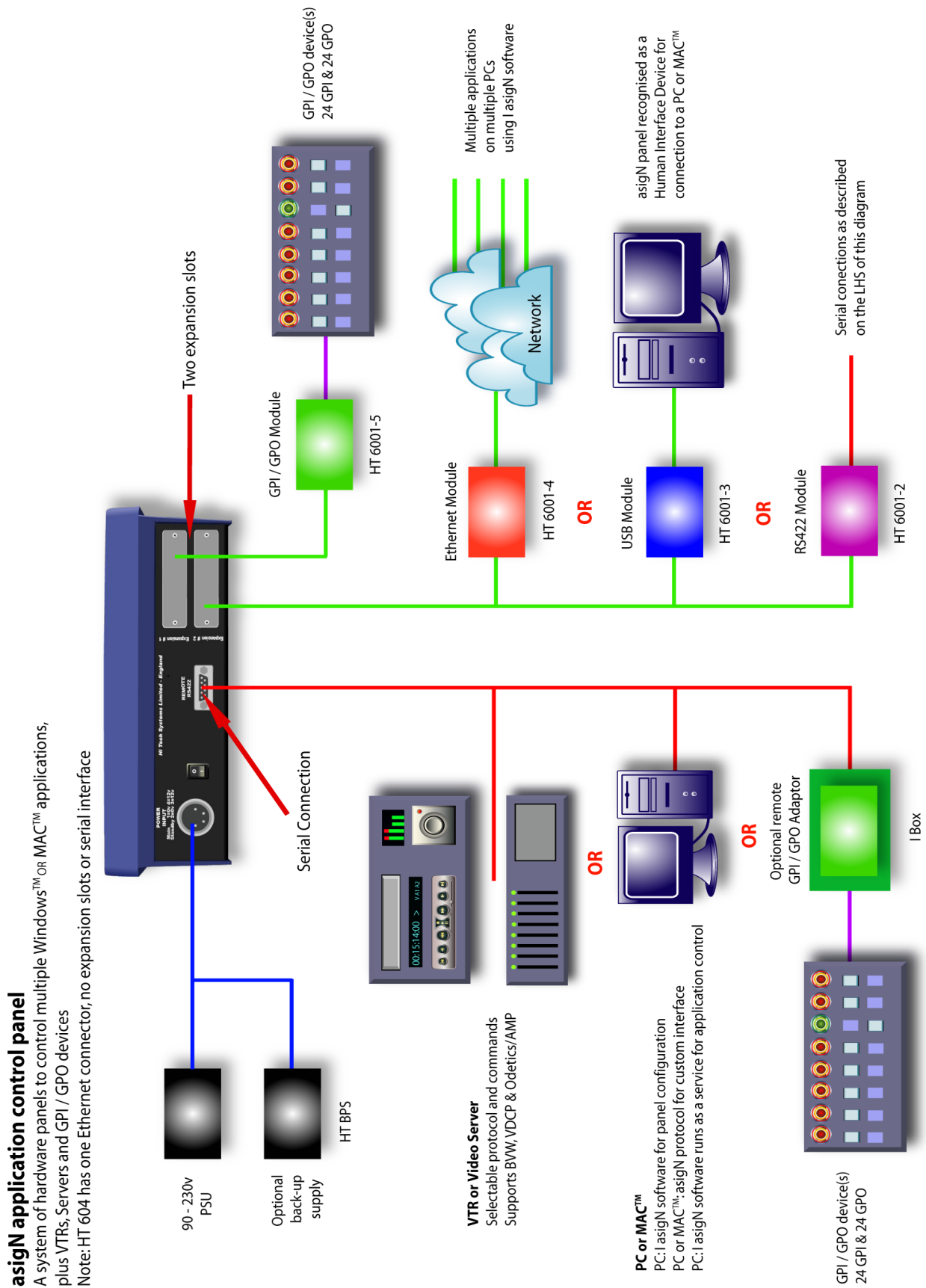
The basic product is equipped with a serial interface and *I asigN* configuration software (Windows OS only). The buttons can be programmed with text or graphical images, and can be assigned a range of colours. Additionally, the buttons can be configured to latch, make momentary contact, change colour and so on, as the user wishes or the connected equipment demands.

I asigN features a unique drag and drop function to allocate any Windows application button to any LCD button. The HT606, HT624 and HT634 panels have a wheel, which can be programmed to scroll, adjust levels or jog/shuttle. Additionally, equipment can be connected via the optional GPI module, or the panel can be connected as a Human Interface Device via USB to a PC or MAC.



1 Introduction

Interfaces



2 asigN panel Installation

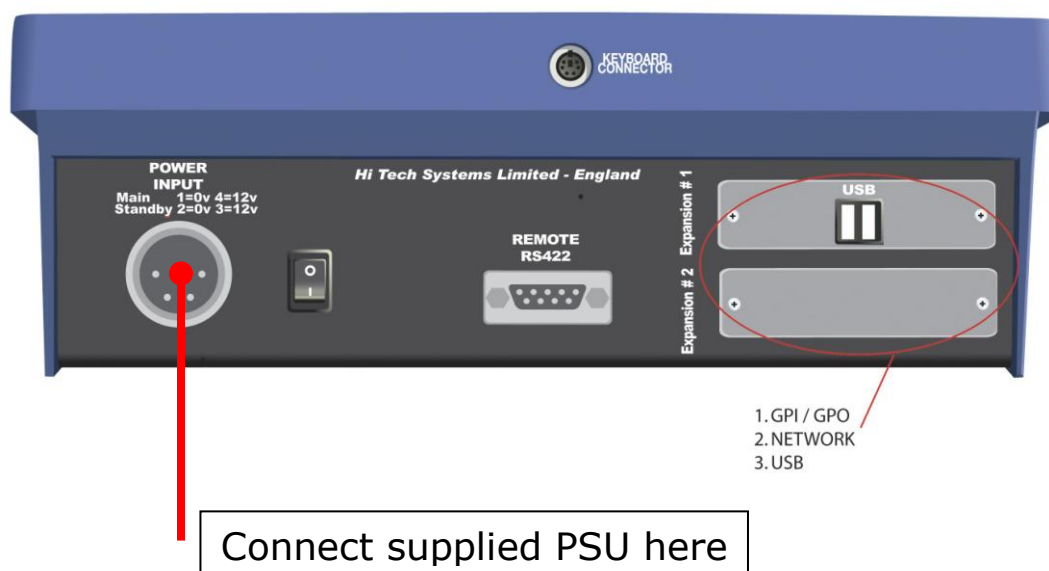
The asigN controller is designed as desk-top or rack mount unit.

Unpacking

The Hi Tech Systems asigN controller is shipped in a carton, which may contain other optional items within the packing, and care should be taken to ensure that these are not thrown away. The contents of the carton are as indicated on the delivery note. Carefully unpack and check for shipping damage and shortages. Report without delay, any damage or shortages to Hi Tech Systems Ltd.

Desk mounting

The *asigN* desk mounting controller requires no special fixings, but can be mounted into a desk as a 'drop through' unit.



2 asigN panel Installation

Warnings – read before installation or use

Only suitably qualified engineers should carry out maintenance.

The controller consists of electronic parts. Do not drop the controller or bump it against other objects or place the controller near heat sources such as radiators or air conditioning ducts.

Care should be taken so that solid objects or liquid do not fall into the controller enclosure.

Connecting the PSU

Connect the supplied external 12V PSU unit to the 4 pin connector on the rear of the panel. Use an IEC cable (not supplied) to connect the PSU to the mains supply. The PSU will work on all international mains supplies in the range 100 – 240V AC 50 – 60 Hz.

Connecting the serial cable

Connect a RS422 or RS232 serial cable (not supplied) to the 9 way connector on the rear of the panel to the PC to be controlled. Wiring information for both types of cable can be found in the Appendix of this manual.

Connecting a network cable

If connecting the asigN panel directly to the PC use a CAT5 “cross-over” cable, if connecting via a switch or hub use a CAT5 “straight” cable.

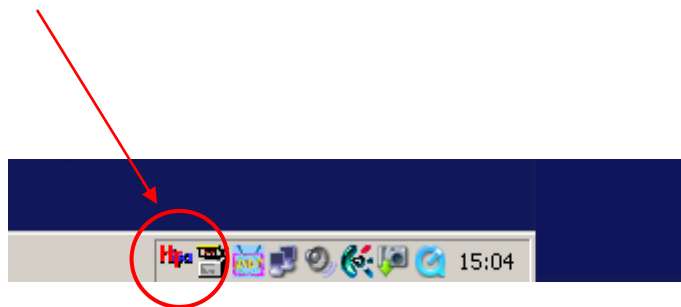


Checking asigN communicating with PC



Following assumes *I asigN* has already been installed. If not then please refer to the Appendix section of this manual.

When *I asigN* is executed, it runs as a service and can be seen in the Windows task bar.

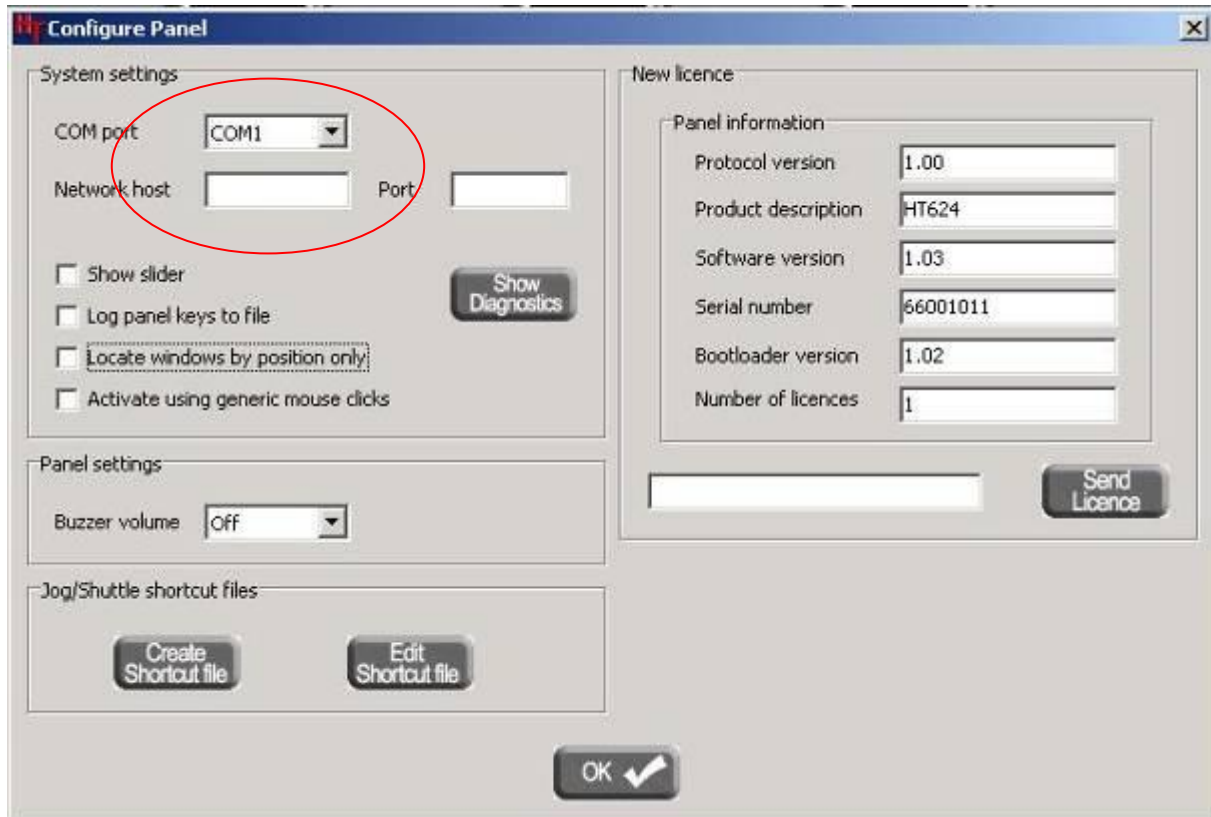


1. Right click the icon in the task bar and launch *I asigN*.
2. Enter password "password" This can be changed at anytime.
3. Select the panel type you are using from the images down the left hand side of the screen.



2 asigN panel Installation

4. Select SETTINGS -> SYSTEM

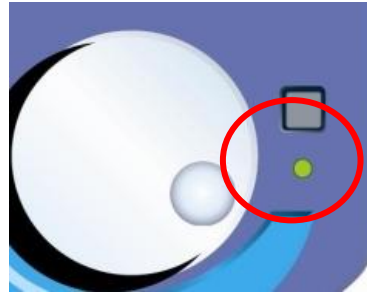


5. Select the correct COM port you are using on this PC from the pull down settings. OR enter the IP address for the asigN panel. Refer to the appendix for setting the network address on the asigN panel.

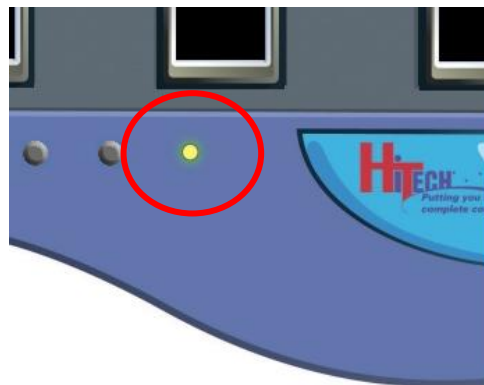
6. Press the OK button, after a few moments if the communication settings are correct then the "communications present" led will turn on.



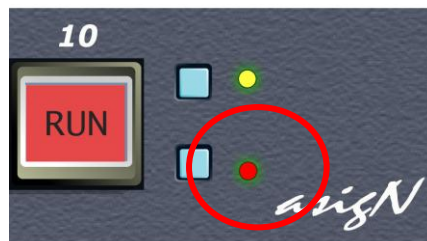
HT604



HT614 and HT624



HT634



Serial connectors

Some computers, particularly laptops have odd earth arrangements on the serial connector, making the download problematic.

3 Getting Started with I asigN

Programming the visual appearance and button function -> press the LCD button to be programmed.

Testing the visual appearance and button function -> press the LCD buttons to test their function.

Select the serial port to download configuration to the *asigN* panel.

Turn on/off the button function view.

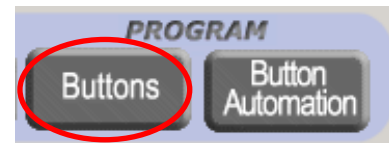


asigN control panel have 2 “pages” (5 in the case of the HT604) of buttons effectively doubling the number of buttons that can be programmed. Pages are selected from the page button on the panel, both on the configuration screen, and on the physical panel once programmed.



Program -> Buttons

Programming button options.



Button appearance

The visual appearance of the button can be programmed for the up or OFF state and the down or ON state.

Button function - Type

Toggle (on only)	Press the button to turn ON
Toggle (off + on)	Press the button once to turn ON, press again to turn OFF
Latch	Two or more buttons may be put into a group of button. If a button is pressed then the ON button in the same group is turned OFF.
Following	Press the button to turn ON, release to turn OFF.

Button function - State from

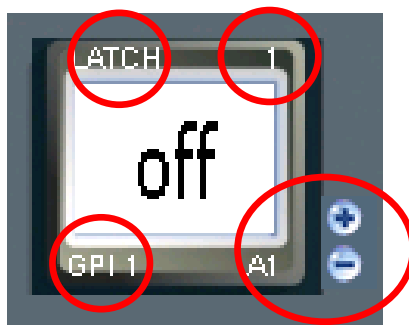
Either set the button to operate in its own right, and/or assign a GPI input from the drop down list, if the optional GPI/O module is installed. GPI/O configuration is detailed in the module's manual.



3 Getting Started with I asigN

Function

Controlled
from GPI



Latch Group

Number of
button
automations,
maximum of 3

Launch Application/Shortcut/Script

Enter a name, or browse to the relevant .exe file.

GUI function

If a button is being programmed then *I asigN* will automatically assign the button with the "Mouse click" option. For other Windows controls there are options for a "Trackbar", "Scrollbar" "Click Scrollbar" Drag Scrollbar or "Jog/shuttle shortcuts".

The sequence of configuration to enable use of the control wheel is 1) programme the button, 2) use button automation to assign the slider function to the button and 3) return to button programming to set the operation of the wheel. The slider controlled by the wheel is accessed by selecting the assigned button and then by using the wheel.



Keyboard shortcuts

To use the keyboard shortcut, type the required combination in the shortcut box (Unusual keys are shown as [Key xx])

You also need to tell the button which window to use, use the Program Button Automation for that, drag to anywhere in the window.

If a keyboard shortcut is set for a button, then this overrides any button automation. i.e. *I asigN* will not do both.

Network UDP/Comms activation

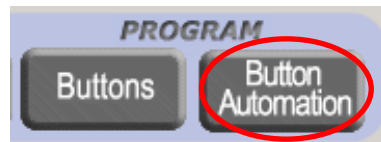
Text strings can be sent from the control panel to an IP address of a PC, it is up to the application running on that PC to "listen" on the given Port number to receive the string.



3 Getting Started with I asigN

Program -> Button Automation.

Programming a Windows button



Use *I asigN* software to programme any Windows application button or slider for control from the *asigN* panel.

- 1.** Programme the buttons with labels as described in the previous section.
- 2.** Make sure the application or applications are running on the PC.
- 3.** Choose the button to programme on *I asigN*, click (press and hold the mouse button), drag the target to the Windows button and release.

The example on the next page shows this in practice. Note *I asigN* will minimise while the target is dragged to the Windows button.



3 Getting Started with I asigN

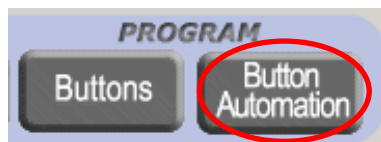


Drag to button



3 Getting Started with I asigN

Programming a Windows slider



- 1.** Programme the buttons with labels as described in the previous section.
- 2.** Make sure the application or applications are running on the PC.
- 3.** Choose the slider to programme on *I asigN*, click (press and hold the mouse button), drag the target to the Windows button and release.
- 4.** Go back to program button and select the appropriate slider control.



3 Getting Started with I asigN



3 Getting Started with I asigN

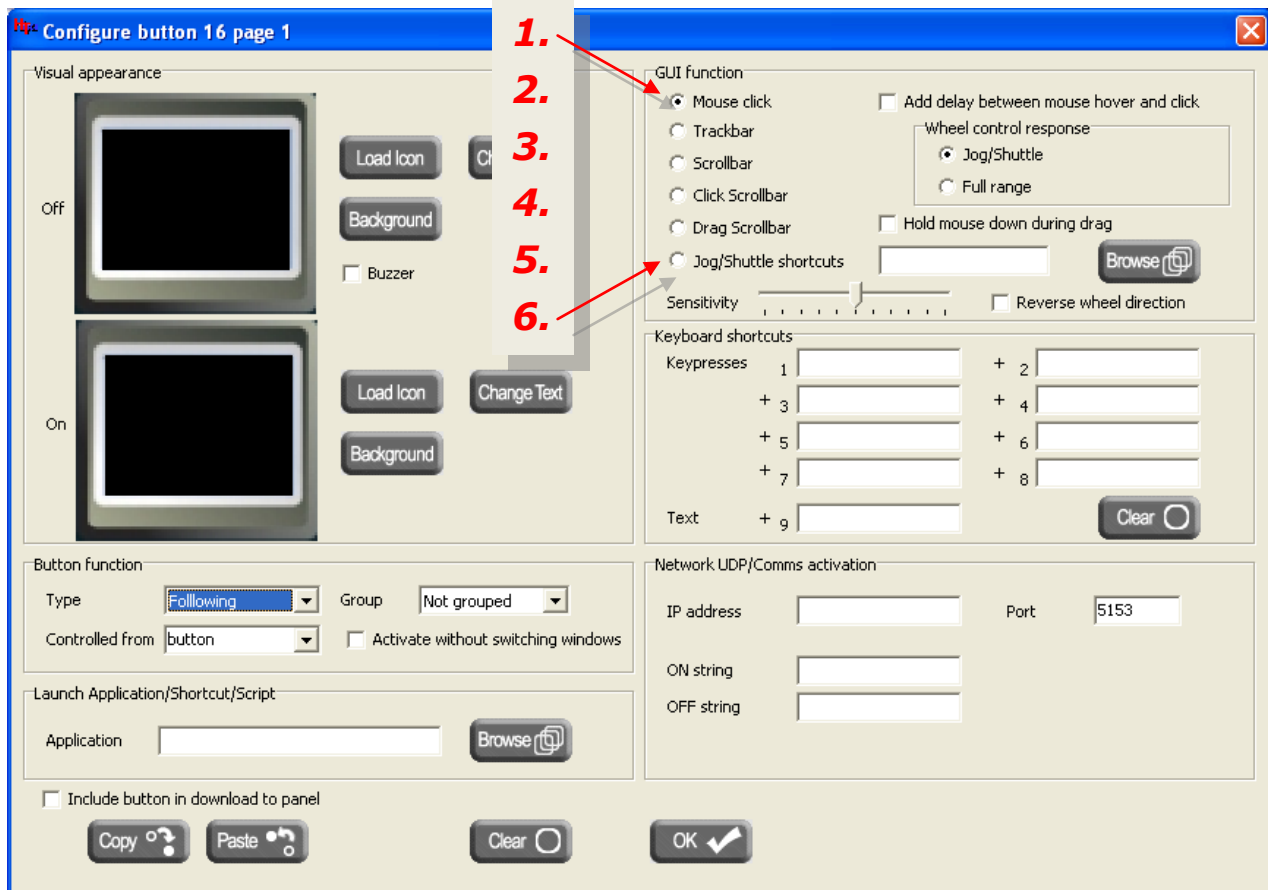


Up to three Windows buttons can be programmed to one *I asigN* button. Drag the "+" button to any additional Windows buttons that are required to be programmed. Press the "-" button to remove the last programmed Windows button.





4 GUI Function - Buttons and Sliders



1. Mouse click

Default GUI function used to activate Windows buttons.

Add delay between mouse hover and click

Some button controls require a delay to be set, the duration is set in SYSTEM.



Activate without switching windows

Some applications will only respond to mouse clicks when they are the current application. Therefore when issuing a mouse click, I asigN will switch to that application and this can take a significant time.

Other applications do not need to be the current application, and the “activate without switching windows” option can be used in these cases to provide greater responsiveness.

Activate using generic mouse clicks (in SYSTEM)

This affects the Mouse Click activations only. The standard method is to use Windows messages to activate buttons, but some applications do not use standard Windows controls. In this case it is necessary to use “Activate using generic mouse clicks” to trigger the buttons.

Locating windows by position only (in SYSTEM)

When either the target application of I asigN has been closed and restarted, the window reference for target is no longer valid, and needs to be re-located by I asigN. This is achieved by searching all windows, and choosing the best match for process, title and position.

When running multiple versions of a program, or controlling multiple windows of one program, I asigN will ensure that the correct number of windows are present for the program(s) before allowing any



4 GUI Function - Buttons and Sliders

activation to take place. This prevents incorrect selection of the target window.

The window title will normally take precedence over position, but this can be altered by selecting the "Locate windows by position only" option, which ignores titles.

2. Trackbar

A standard Windows control and can be either

horizontal  or vertical 

3. Scrollbar

A standard Windows control that looks like the scrollbars down the edges of a window, but is in fact a separate control. Note there is no control over scrollbars at the edges of windows.

4. Jog/Shuttle Shortcuts

Used for applications that support shortcut control of the slider.

Special Slider controls

Many applications use (such as those written in Java) non-standard controls to achieve extra functionality over the standard Windows controls. These can be controlled using one of the special control types below.



5. Click Scrollbar

Uses mouse clicks to simulate clicking at various places along the slider. You must define the two end points of the slider so that I asigN knows where to click. The current position of the slider is located automatically. Preferred over Drag Scrollbar as there is less overhead on application being controlled.

6. Drag Scrollbar

For applications where the slider control must be held and dragged to the required position. For some sliders that spring back to their start position, it is also necessary to hold the mouse down continually until the final position is reached. Use the "Hold mouse down during drag" to achieve this. Press any button on the panel to release the mouse after the drag is complete.



4 GUI Function - Buttons and Sliders

How movement of a window affects I asigN

	Windows movements		
	Move	Resize	Minimize
Mouse click	OK	Depends on target application and target control position. More tolerant than below.	OK if not "Activate without switching windows"
Mouse click with "Activate using generic mouse clicks"	OK	Depends on target application and target control position	OK if not "Activate without switching windows"
Trackbar	OK	OK	OK
Scrollbar	OK	OK	OK
Click Scrollbar	OK	Depends on target application and target control position	NO
Drag Scrollbar	OK	Depends on target application and target control position	NO
Drag Scroll with "Hold mouse down during drag"	OK	Depends on target application and target control position	NO
Jog Shortcuts	OK	OK	Depends on target app



Precedence of the different activation types

All of the selected activations occur at nominally the same time. It then depends on Windows as to which actually occur first. These include:

GUI function or Keyboard shortcuts

Launch application/script

Network UDP

If any keyboard shortcuts are defined, then this overrides any selected GUI function.

When using the panel without I asigN, Comms strings are entered without a UDP IP address, and these are then sent by the panel itself.



5 Testing I asigN (simulation)

Test -> Button display

Press the buttons and note the text, background colour and/or graphic image change. If the buttons have been programmed in a group you can see the interaction working.

Test -> Button Automation

Make sure the application you are controlling is running and in view. Press the buttons or move the slider (if the slider isn't visible it can be turned on in the System settings) to see the effect on the application.



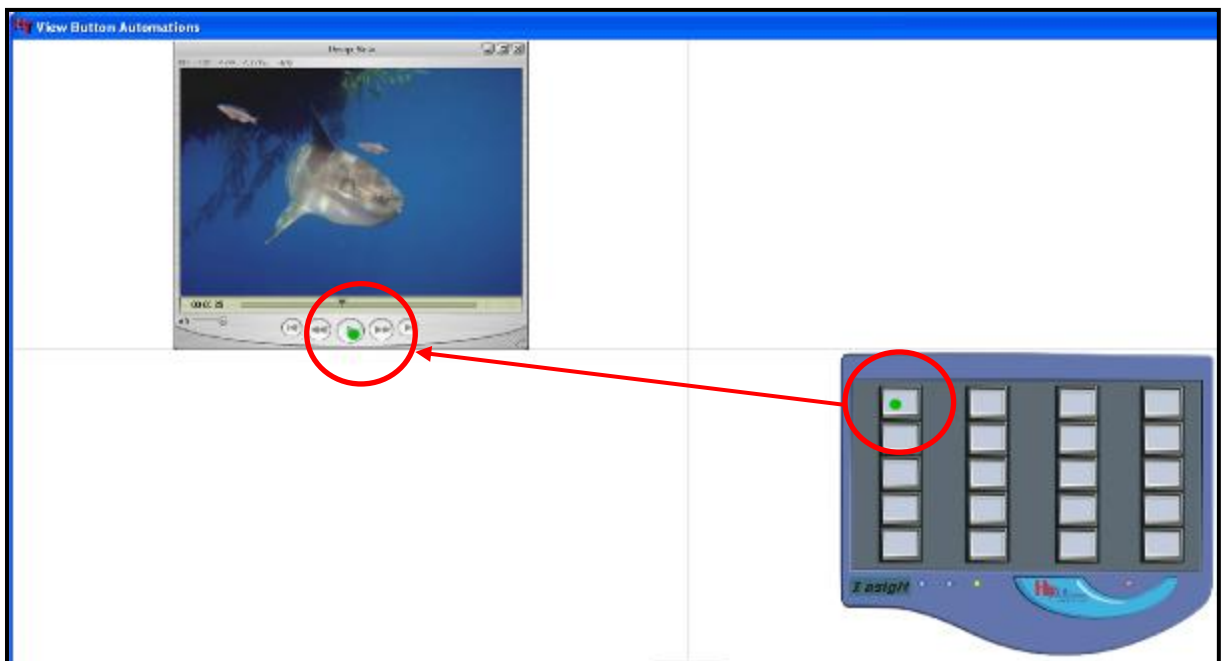
The simulation mode is not able to test some functionality like keyboard shortcuts because of the interaction whilst *I asigN* is running. This is not the case when controlling the application from an *asigN* control panel.



View -> Button Automation.



Press the View - Button Automation button to display the programmed Windows buttons.



Pressing the small circles on the control panel displays the corresponding programmed button on the Windows application. Hover the mouse over any button to see more detail.



5 Testing I asigN (simulation)

General -> Download to panel

Downloading configuration files.



Before downloading configuration files to the *asigN* control panel, a suitable cable will need to have been connected from the PC to the *asigN* panel. See the chapter on Installation.



Connect download cable here to computer

To download the configuration, press "download to panel" on the *I asigN* screen.

During the download a progress display will show on the *I asigN* screen. When complete, the panel will display the new configuration, *I asigN* can be minimised and the panel put into use.

Note:- Only colour, text/icon, beeper and button behaviour are downloaded to the panel.



Storing and recalling configurations

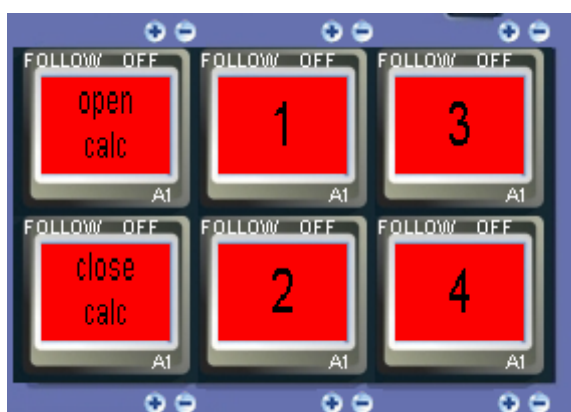
Configurations of the panel can be saved and recalled using the “save file” and “load file” keys on the *I asigN* configuration screen.



6 Multi Function Button

It is possible for one button to perform up to four actions simultaneously.

When 'Program Button Automation' is selected, each button of the asigN panel will display a + symbol.



A + and - symbol indicates that the button has a function already assigned to it and another function can be added.

Click on the + Symbol, hold down the mouse button and drag the crosshair to the new GUI function.

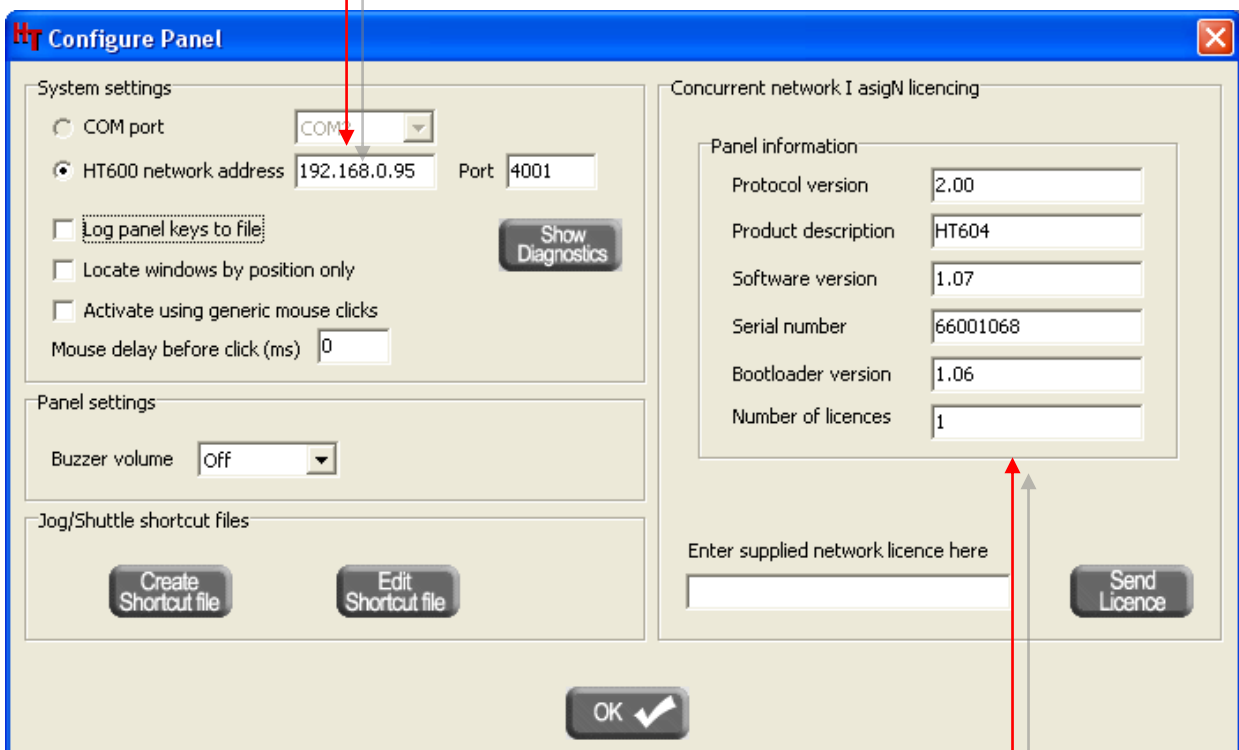
The button is now assigned to perform two functions. Repeat to add more functions until no more can be added. Only a - symbol will appear next to the button.



7 Multi Machine Control

It is possible to control multiple functions on multiple machines (up to four) with a Network connected asigN controller. Each machine must be running the iasigN application.

Configure each iasigN to the same network address that the controller has been set to.



The Panel Information should indicate successful connection to the control panel.

8 Interface options

HT600 GPIO Electrical Interface

INPUT specification

3 to 24 V DC operation, polarity sensitive.

Opto-isolated: 4k7 resistor in series with opto diode.

Common anode (+ve) connection for all inputs – connect to supply +ve.

User switches each input to supply –ve to activate.

12v supply from HT600 available on connector for local powering if required.

Suitable for direct drive from:

Buttons/switches

Volt-free relay contacts

Solid state FET or bipolar low-side drivers

Equipment using high-side drivers (sourcing current from +ve supply) must be interfaced via interposing relays/opto isolators.

Use of the internal powering option is only recommended when driving equipment local to the controller and in a relatively quiet electrical environment. In the case of long signal runs or any



other situation which may give rise to interference or signal ground conflicts, external power should be provided to ensure complete isolation from the controller's internal circuitry and power supply.

OUTPUT specification

24V/2A DC operation, polarity sensitive

MOSFET outputs, 47k bias to internal +5v for direct logic drive.

Common 0v connection to system internal 0v – connect to supply -ve

User connects load between each output and supply +ve.

MOSFET body diode will conduct if reverse polarity applied .

5v OR 12v supply from HT600 available on connector for local powering if required.

Suitable for direct drive to:

LED/incandescent bulb indicators

Relay coils (should have local fly back diodes)

Opto-isolated inputs

5v direct logic inputs (nearby equipment)



8 Interface options

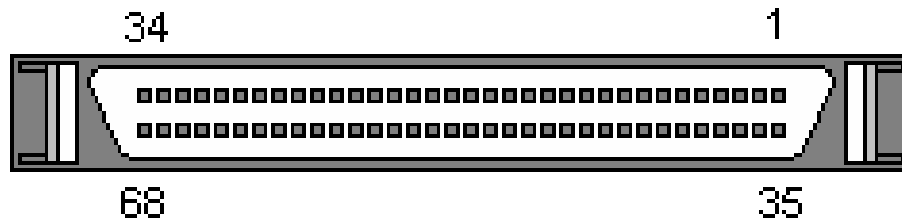
Equipment requiring high-side drive (sourcing current from +ve supply) must be interfaced via interposing relays/opto isolators.

In the case of long signal runs or any other situation which may give rise to interference or signal ground conflicts, external power and isolation should be provided to ensure complete isolation from the controller's internal circuitry and power supply.



GPI and GPO connector

SCSI (small computer system interface) 68 pin socket



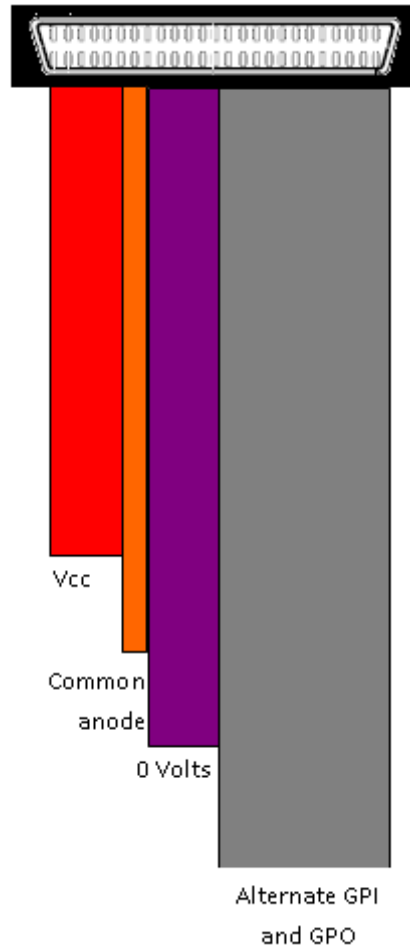
PIN NUMBER	FUNCTION	PIN NUMBER	FUNCTION
1	VCC	35	VCC
2	VCC	36	VCC
3	VCC	37	VCC
4	VCC	38	VCC
5	COMMON ANODE	39	COMMON ANODE
6	0 VOLTS	40	0 VOLTS
7	0 VOLTS	41	0 VOLTS
8	0 VOLTS	42	0 VOLTS
9	0 VOLTS	43	0 VOLTS
10	0 VOLTS	44	0 VOLTS
11	GPO 24	45	GPI 24
12	GPO 23	46	GPI 23
13	GPO 22	47	GPI 22
14	GPO 21	48	GPI 21
14	GPO 20	49	GPI 20
16	GPO 19	50	GPI 19



8 Interface options

17	GPO 18	51	GPI 18
18	GPO 17	52	GPI 17
19	GPO 16	53	GPI 16
20	GPO 15	54	GPI 15
21	GPO 14	55	GPI 14
22	GPO 13	56	GPI 13
23	GPO 12	57	GPI 12
24	GPO 11	58	GPI 11
25	GPO 10	59	GPI 10
26	GPO 9	60	GPI 9
27	GPO 8	61	GPI 8
28	GPO 7	62	GPI 7
29	GPO 6	63	GPI 6
30	GPO 5	64	GPI 5
31	GPO 4	65	GPI 4
32	GPO 3	66	GPI 3
33	GPO 2	67	GPI 2
34	GPO 1	68	GPI 1

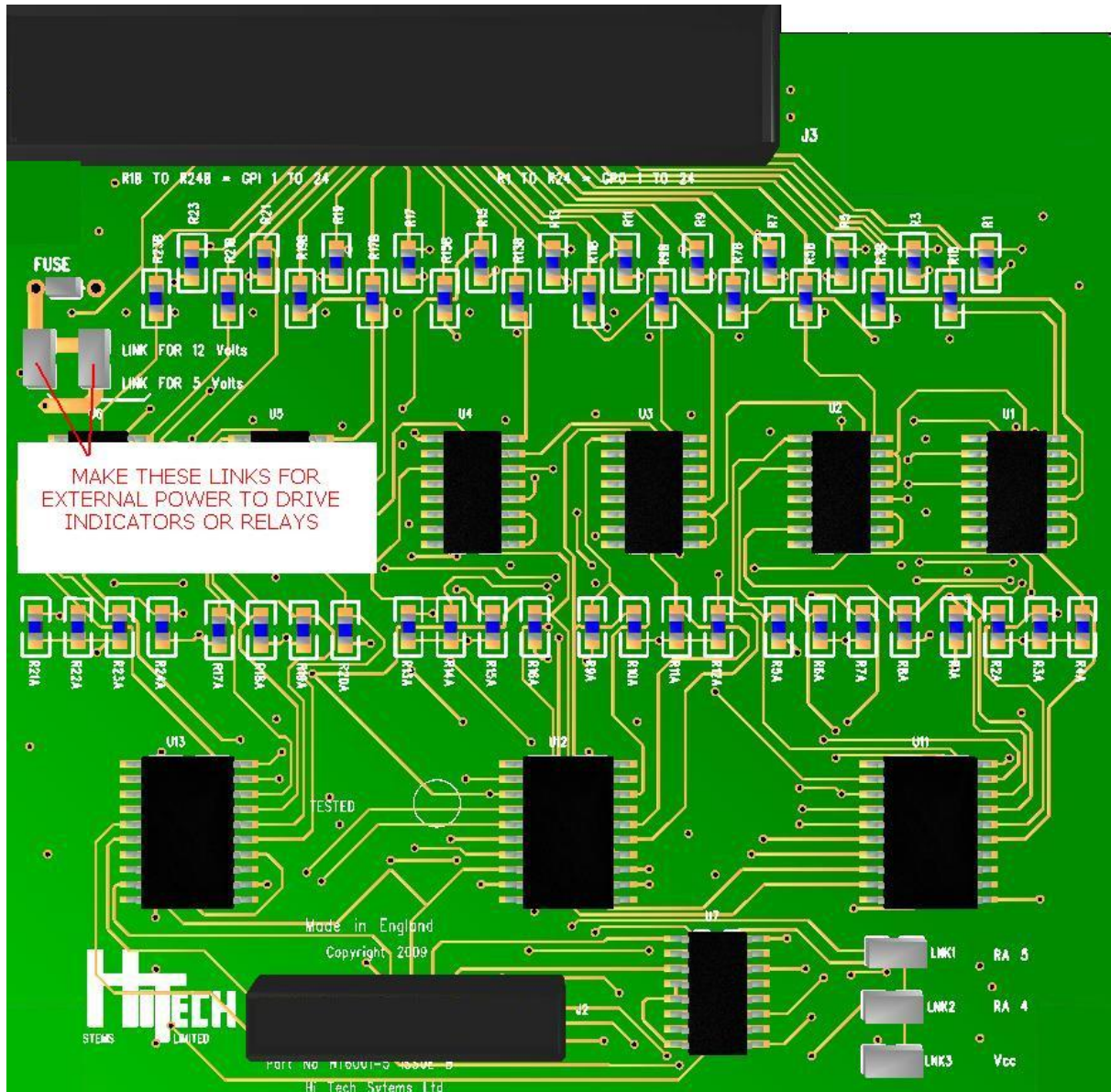




Picture above shows position of functions in a high-density ribbon cable fitted to a mating SCSI connector.



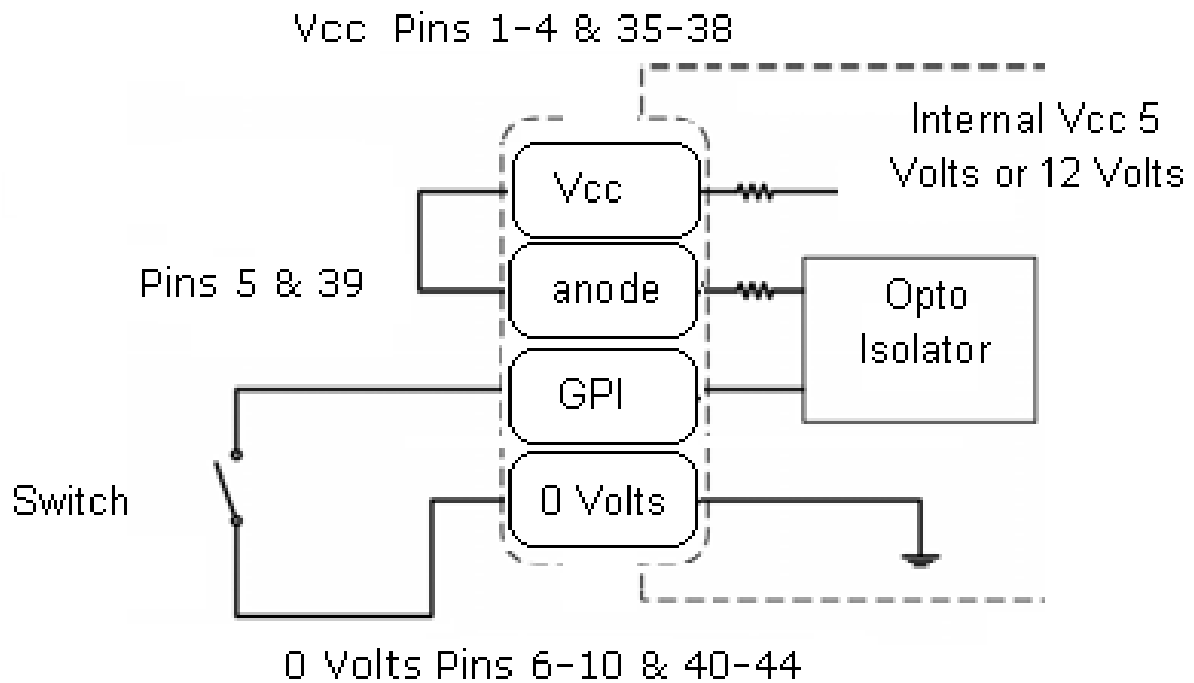
8 Interface options



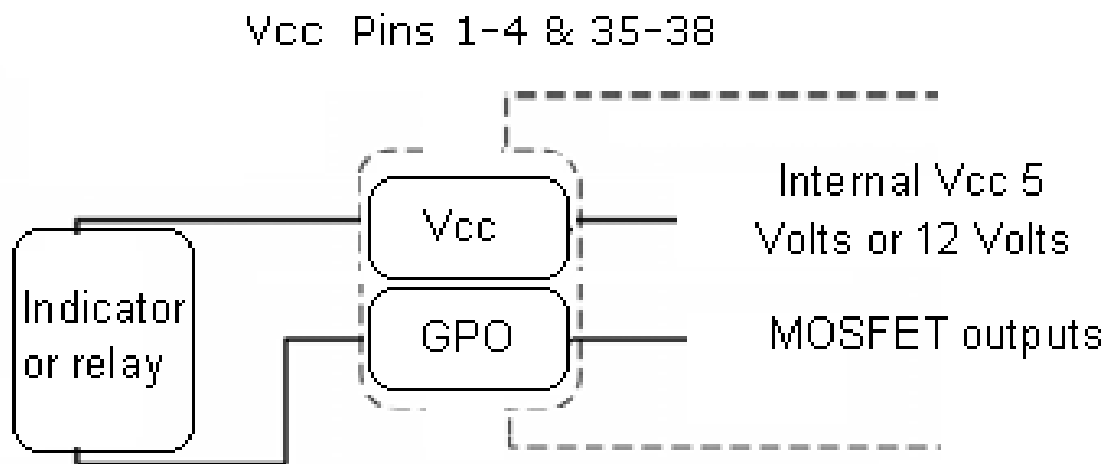
Picture above shows the links to put either 5 volts OR 12 volts onto the connector pins 1-4 and 35 - 38 for local powering if required.

General connection arrangements

GPI scheme

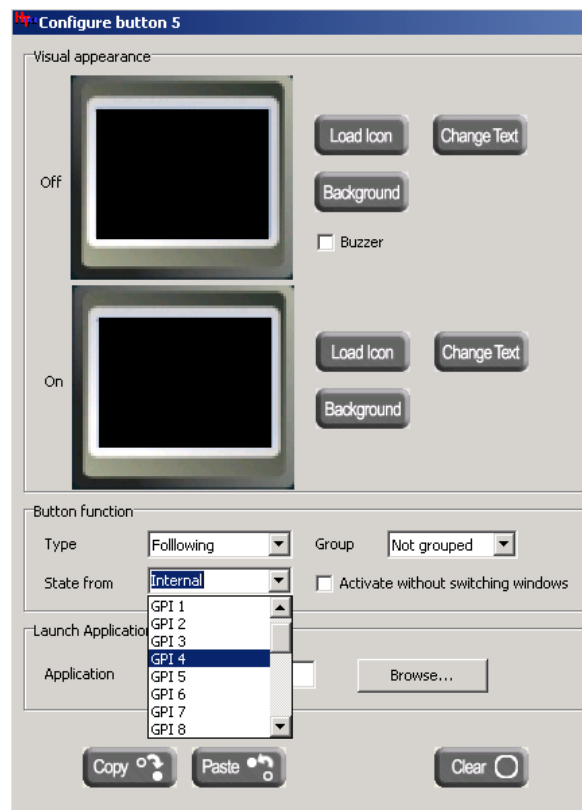


GPO scheme



8 Interface options

Programming using the I asigN software:



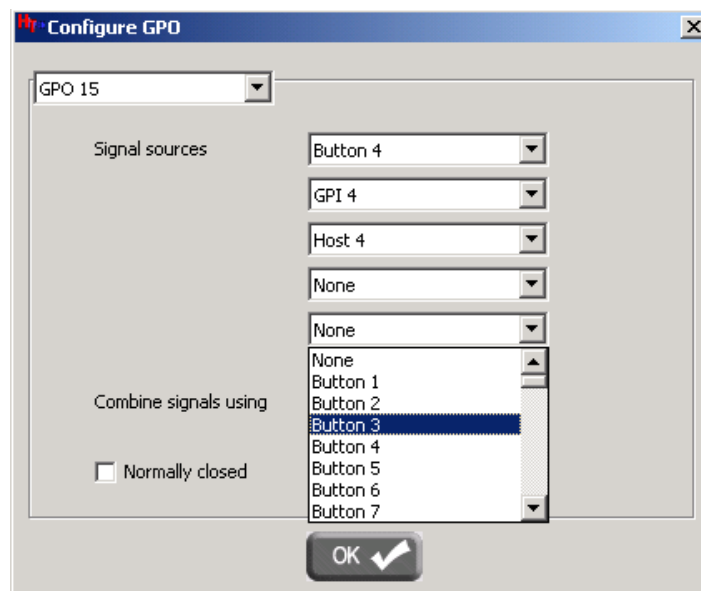
Any of the panel buttons can be programmed to accept a GPI trigger, for example to change the text on the button cap and/or colour. The button type can be set to follow, latch or toggle modes.



8 Interface options



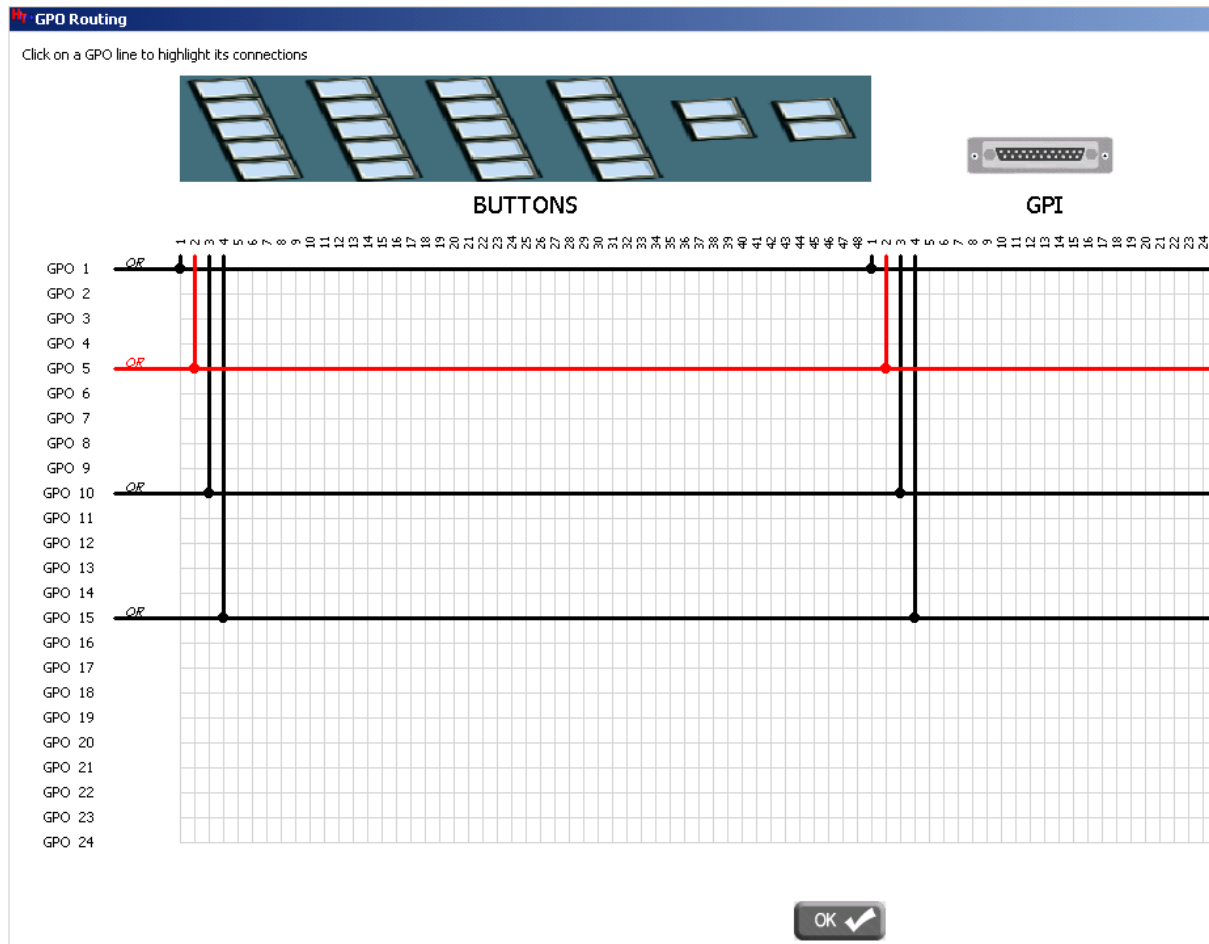
Each GPI trigger can be configured as normally open or closed.



Each GPO can be controlled from 5 sources simultaneously -> any of the panel buttons, any of the GPI and any input from the host controller.



8 Interface options



GPI and GPO routing displayed in the interactive GPI / GPO routing screen.



9 Appendix

***asigN* control panel software updates**

Download the software update wizard actiV8 from the Hi Tech Systems support web site or contact Hi Tech Systems for the latest software version.

Viewing control panel software without I asigN software

Firmware - with the control panel turned on, press and hold the 2 small blue buttons and LCD button 2.

Bootloader – Turn of the controller. Press and hold the first 2 LCD keys and turn on the power.



Firmware



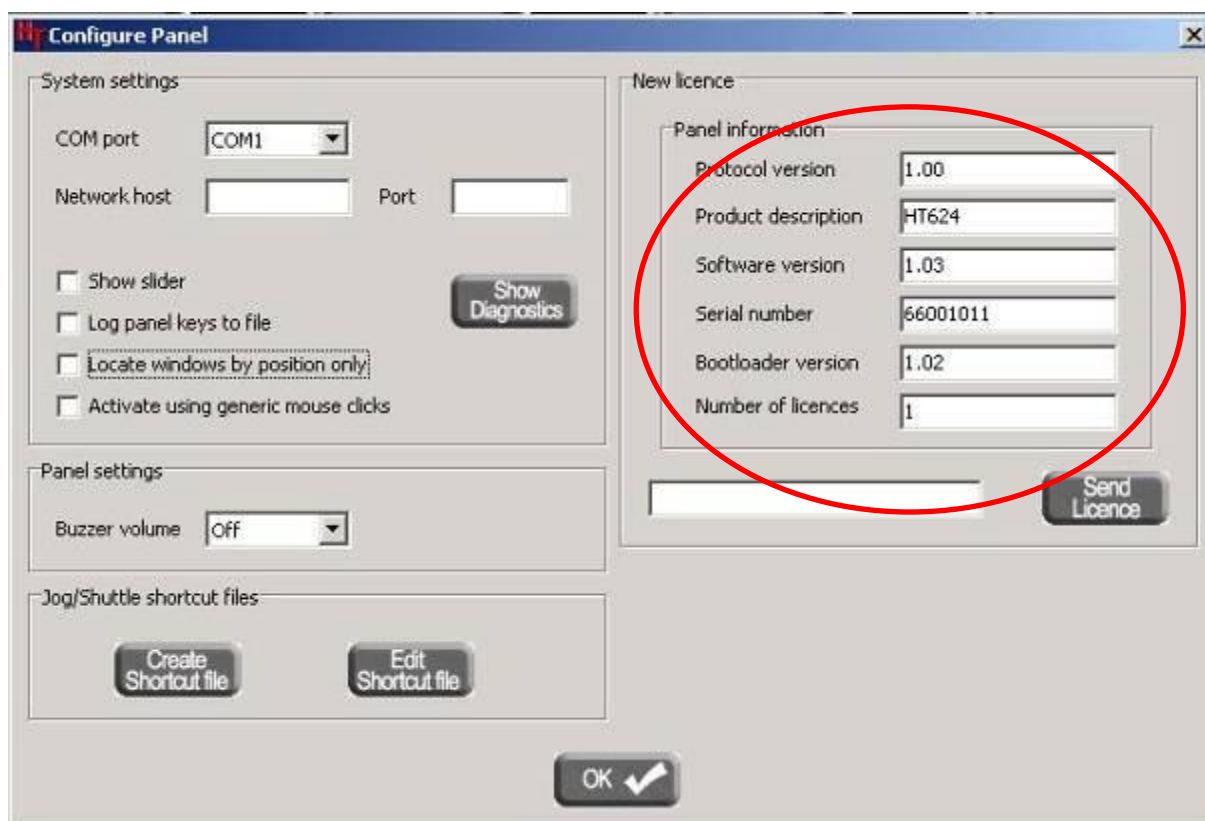
Bootloader



9 Appendix

Viewing control panel information with I asigN software

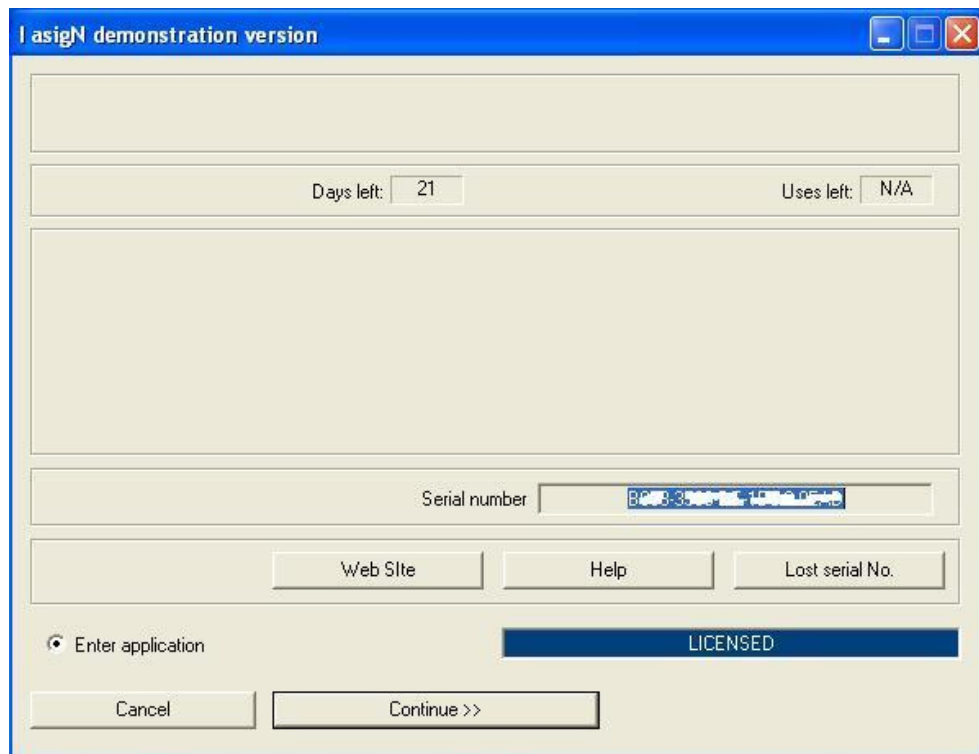
Press the SYSTEM button.



***I asigN* software installation and updates**

Demonstration version

You are required to enter the supplied serial number when you first start *I asigN*, as shown below

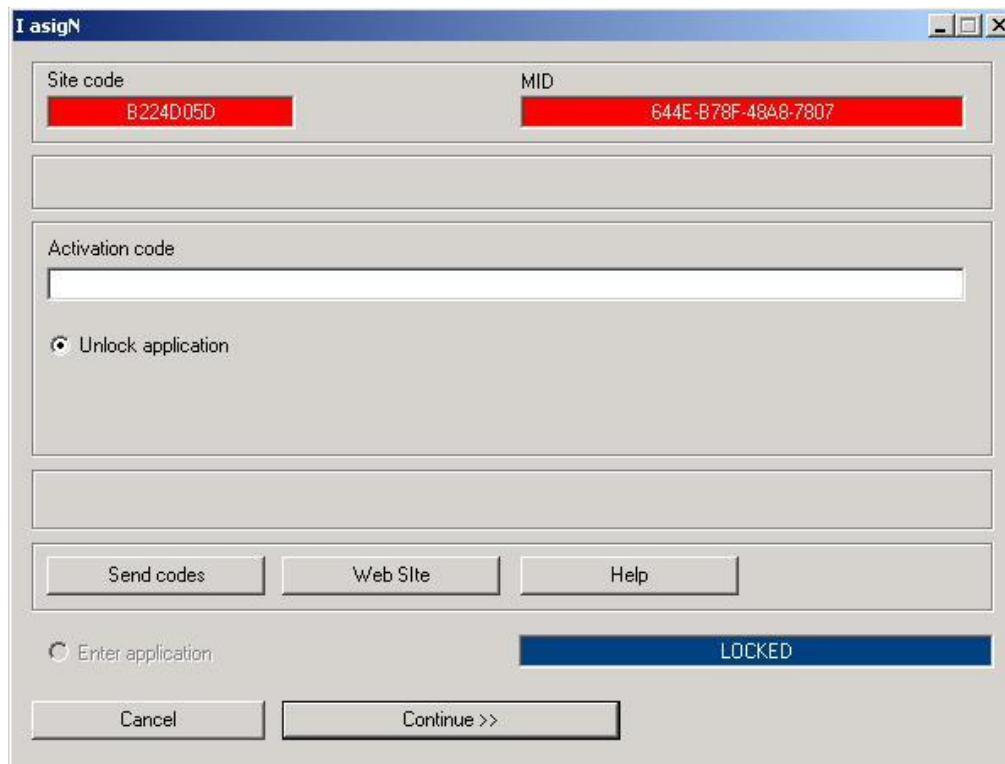


The demonstration version is time limited to 60 days.

9 Appendix

Activating full version of I asigN

You are required to send your Site code and MID in order to get an Activation code from Hi Tech Systems.



The screenshot shows a Windows-style dialog box titled "I asigN". It contains the following elements:

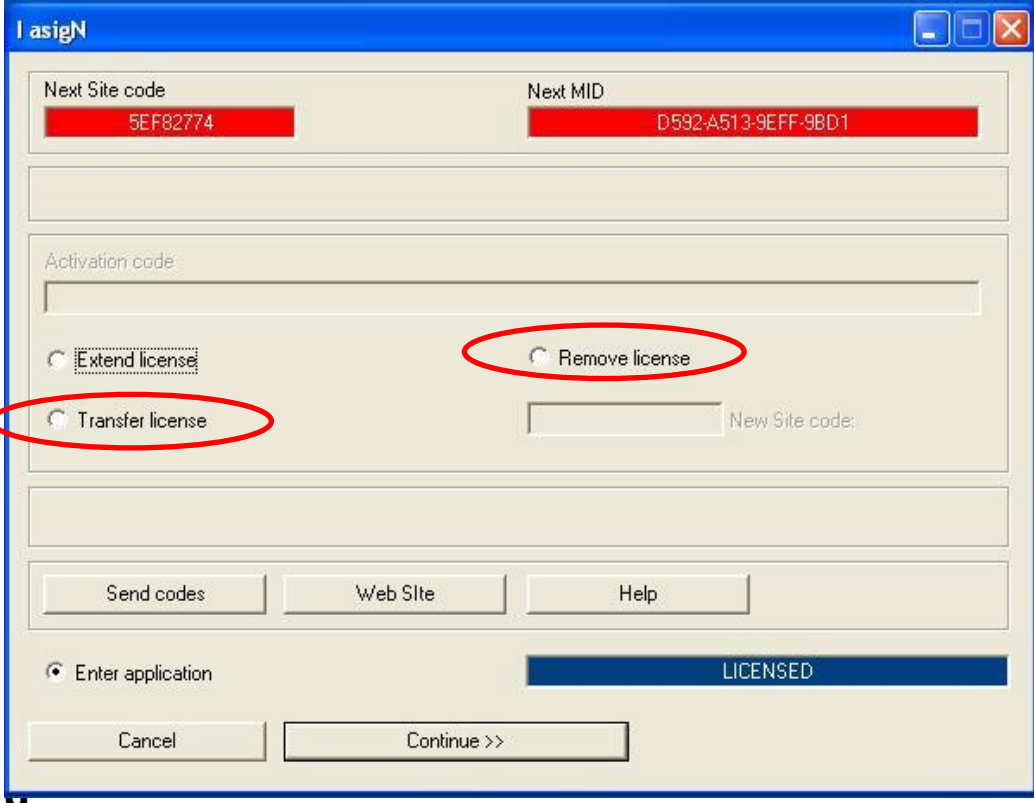
- Two text boxes at the top: "Site code" containing "B224D05D" and "MID" containing "644E-B78F-48A8-7807".
- A large empty text box labeled "Activation code".
- A radio button labeled "Unlock application" which is selected.
- A row of three buttons: "Send codes", "Web Site", and "Help".
- A radio button labeled "Enter application" which is unselected.
- A blue bar on the right side of the dialog with the text "LOCKED".
- Two buttons at the bottom: "Cancel" and "Continue >>".



Licence information

Viewing licence information

It may be necessary to send the site code and MID information to Hi Tech Systems to either **Remove** or **Transfer** the Licence. To display this information press and hold the SHIFT key on your keyboard while launching the *I asigN* application. Note: The Licence information might be hidden under an active window.



The screenshot shows the 'I asigN' application window. At the top, there are two fields: 'Next Site code' with the value '5EF82774' and 'Next MID' with the value 'D592-A513-9EFF-9BD1'. Below these is an 'Activation code' field. There are three radio button options: 'Extend license', 'Transfer license', and 'Remove license'. The 'Remove license' option is circled in red. Below the radio buttons is a 'New Site code:' field. At the bottom, there are buttons for 'Send codes', 'Web Site', and 'Help'. A 'LICENSED' status bar is visible. At the very bottom, there are 'Cancel' and 'Continue >>' buttons.

MID information

IasigN.ini

This file includes information about the password, and the location of the keylog file.

Logging button presses

Should there be any doubt about which and when a button was pressed, all button presses are stored in a file called keylog.txt.

Creating Icons

To help you start adding icons to the buttons we have supplied a program called IcoFX.

To un-install I asigN

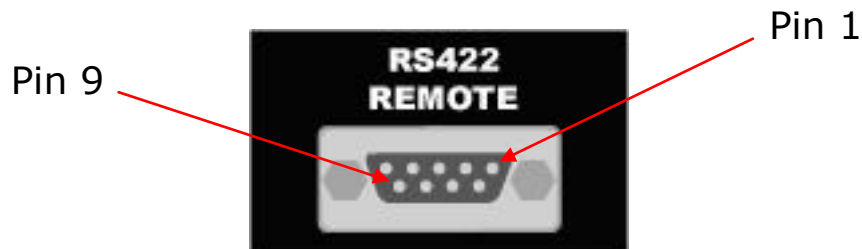
To remove *I asigN* from a PC click "Uninstall *I asigN*" from Windows program manager.

OR locate the directory it was installed and click "unins000.exe"



RS422 remote connections

Chassis connector 9 pin D type female



Pin	Description
1	Chassis Gnd
2	Rx A data
3	Tx B data
4	0v
5	no connection
6	0v
7	Rx B data
8	Tx A data
9	Chassis Gnd

9 Appendix

RS422 to RS422 cable wiring

asigN panel		Computer	
Pin	Description	Pin	Description
1	Chassis Gnd		Chassis Gnd
2	Rx A data	8	Tx A data
3	Tx B data	7	Rx B data
4	0v		0v
5	no connection		
6	0v		0v
7	Rx B data	3	Tx B data
8	Tx A data	2	Rx A data
9	Chassis Gnd		Chassis Gnd



RS422 to RS232 cable wiring

You can make a simple cable to connect the RS422 serial connector on the panel to a RS232 connector on a computer. This will only be good for short cable runs, and the user should satisfy themselves with this arrangement.

