



Snell
Advanced
Media

User Manual

IQGPI00/01

General Purpose Control Interface
(IQGPI00/IQGPI01)

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1 Introduction

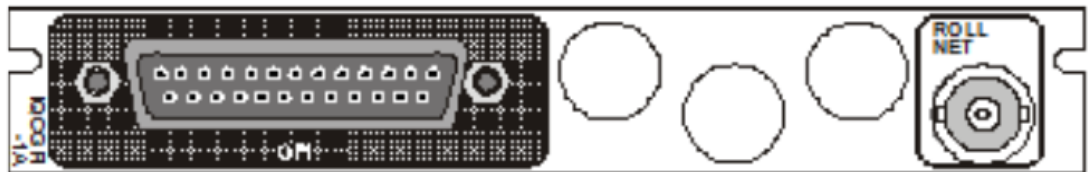
1.1 Module Description

The IQGPI is a configurable control module for external devices and all RollCall compatible products.

This module uses the latest SAM intelligent control software developed from RollPod technology. This will allow the GPI to become a central controller for the most demanding network configuration. GPIs can be assigned to RollCall commands as before, but now with the aid of a PC program the GPI can interact with the RollCall network environment, unleashing complex interactivity between external devices and/or other SAM products.

All IQGPI modules are configured by means of the RollPod Designer application. However, if the RollPod Designer cannot offer the functionality required by the IQGPI, its configuration can be customized by Snell.

1.2 Rear Panel View



Versions of the module cards are:

Product	Input/Output Type	Description	Module Width
IQGPI00	23 GND-referenced I/O	GPI to RollCall Translator with opto-isolators	Single width module
IQGPI01	11 isolated and one GND-referenced I/O	GPI to RollCall Translator with high impedance input	Single width module

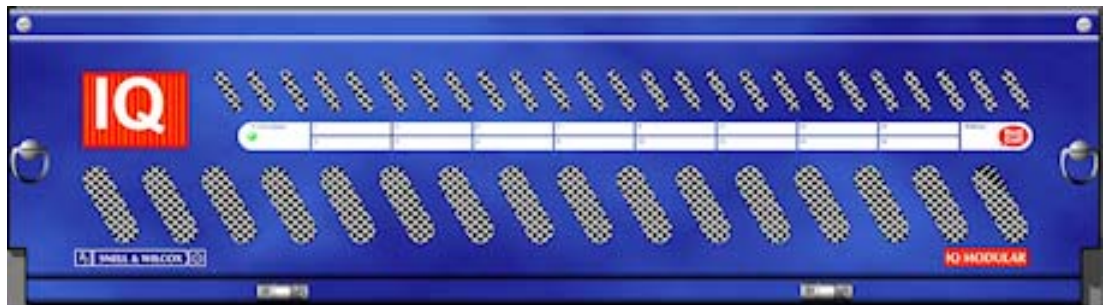
1.3 Enclosures

Rear panels with the suffix **A** can be fitted into A or B style enclosures as shown below.

1.3.1 'A' Style Enclosures



Enclosure order codes IQH3A-S-0, IQH3A-S-P



Enclosure order codes IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P



Enclosure order codes FGAN IQH1A-S-P



Older style front panel enclosure order code IQH1A-S-P

1.3.2 B Style Enclosure



Enclosure order codes FGAN IQH3B-S-0, FGAN IQH3B-S-P

1.4 Feature Summary

- 12 Port Versions offer 11 Isolated and one GND-referenced I/O (IQGPI01)
- 23 Port Version offers 23 GPI GND-referenced I/O interfaces (IQGPI00)
- Direct connection to the RollCall™ network
- Controls products on the RollCall™ Network via external events, or vice-versa
- Customizable solution allows programming of multiple events from a single trigger
- Outputs may drive Relays or LEDs
- 200mA +5V Power Supply available on connector

2 Technical Specification

Inputs/Outputs (IQGPI01 SIG 0:11) with Toggle Switches Open

Voltage isolation	2000VAC (applies to isolated GPIs only)	
Sink current	Output	< 70mA
Output voltage	Output	2.1 V at 50 mA sink current typical, and 1 V at 10 mA sink current typical
Input voltage	Input	Absolute max. rating -5V to +19V
Logic 1 input voltage	Input	+3V or greater
Logic 0 input voltage	Input	+1V or less
Input current	Input	at +5V 600 uA typical

Non-Isolated Inputs/Output (IQGPI00)

Sink current	Output	< 200mA
Input voltage	Input	Absolute max. rating -0.5V to +5.5V
Logic 1 input voltage	Input	+2V or greater
Logic 0 input voltage	Input	+0.8V or less
Input current	Input	<1.5mA (source current with input tied to GND)

Power Source

Voltage	5 V \pm 0.5 V
Maximum Current	200 mA. Foldback protected
Maximum Load	Short circuit to GND

Power Consumption

Module Power Consumption	4.35 W max
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EMC Performance Information

Environment	Commercial and light industrial E2
Peak Mains Inrush Current following a 5-second mains interruption	Not applicable to GPI card

2.1 Features

Inputs

GPI (IQGPI01)	12 via 25-way D-type, 11 isolated via an Opto-coupler and one non-isolated ground referenced
GPI GND-referenced (IQGPI00)	23 via 25-way D-type, all non-isolated ground-referenced

Outputs

GPI (IQGPI01)	12 via 25-way D-type, 11 isolated via an Opto-coupler and one non-isolated ground-referenced
GPI (IQGPI00)	23 via 25-way D-type, all non-isolated ground-referenced
User Power Supply	+5V, 200mA, foldback-protected via 25-way D-type

Communication

RollNet	Via BNC connector
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Indicators

Power rails	Green, +3V3, +5V, -5V
PSUERROR	Red, Overload. . To reset PSU power cycle the card.
GPI Input	Yellow, Input indicator
GPI Output	Yellow, Output indicator
RollCall TX	Green Activity LED
RollCall RX	Yellow Activity LED
RollCall Error	Red Warning LED

3 Connections

The IQGPI is an interface between a control panel and RollCall.

The IQGPI01 has 11 isolated and one GND reference interface, each configurable to input or output. The GND reference version (IQGPI00) has 23 GND-referenced interfaces, each configurable to inputs or outputs. A 25-way D-type connector interface is implemented. The IQGPI controls a RollNet network, enabling access with an array of push buttons, so producing a quick customized user interface.

The IQGPI controls a RollNet network, enabling access with an array of push buttons, so offering a quick customized user interface.

3.1 IQGPI01 On-Board Toggle Switch Control of Inputs and Outputs

On the IQGPI01, each SIGx has an option, under switch control, to pull up to +5V via a 4K7 Ohm resistor. Also, each RETx can be connected to GND by a switch. The switch for each I/O is identified in the tables below.

The example circuits shown below have all the toggle switches set in the open state, and show the option of using the +5V supply output to power external circuitry.

Input using switches: For SIGn and RETn, when both switches are closed, externally shorting SIGn to GND from open circuit will change the input state.

Output using switches: For SIGn and RETn, when both switches are closed, an external load can be controlled (drive strength 4K7 Ohm pull-up to +5V).

Note that these switches are not fitted to the IQGPI00 card.

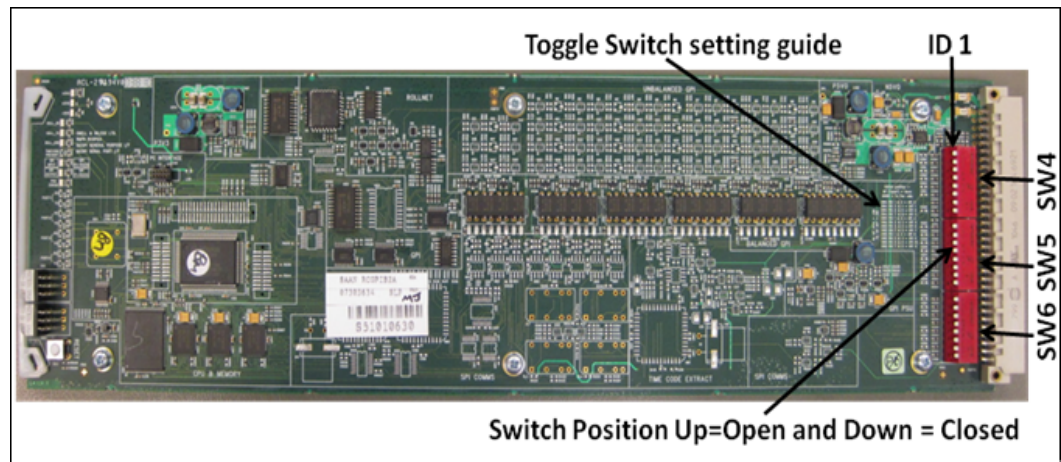


Figure 1 Toggle Switch Location on IQGPI01

3.2 IQGPI00 Connector Pinning

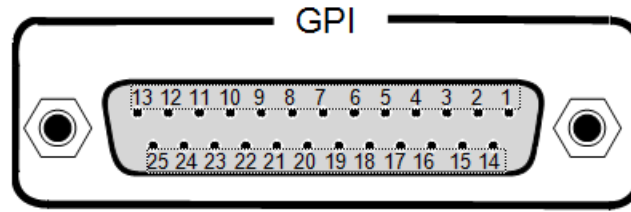


Figure 2 Female 25-way D-type Connector

Pin No	Pin No	Name	Description
1		VPP	+5V Power Supply
	14	SIG12	Signal 12
2		SIG0	Signal 0
	15	SIG13	Signal 13
3		SIG1	Signal 1
	16	SIG14	Signal 14
4		SIG2	Signal 2
	17	SIG15	Signal 15
5		SIG3	Signal 3
	18	SIG16	Signal 16
6		SIG4	Signal 4
	19	SIG17	Signal 17
7		SIG5	Signal 5
	20	SIG18	Signal 18
8		SIG6	Signal 6
	21	SIG19	Signal 19
9		SIG7	Signal 7
	22	SIG20	Signal 20
10		SIG8	Signal 8
	23	SIG21	Signal 21
11		SIG9	Signal 9
	24	SIG22	Signal 22
12		SIG10	Signal 10
	25	SIG11	Signal 11
13		GND	Ground

3.3 IQGPI01 Connector Pinning

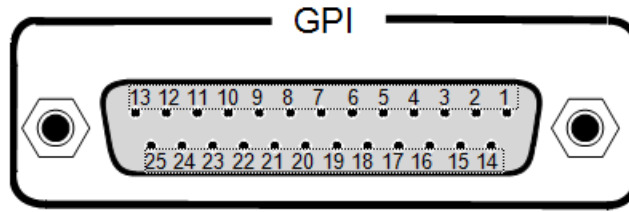


Figure 3 Female 25-way D-type Connector

Pin No	Pin No	Name	Description	Toggle Switch and ID	Toggle Switch Closed
1		VPP	+5V Power Supply		
	14	RET0	Return 0	SW4, ID2	GND
2		SIG0	Signal 0	SW4, ID1	Pull up
	15	RET1	Return 1	SW4, ID4	GND
3		SIG1	Signal 1	SW4, ID3	Pull up
	16	RET2	Return 2	SW4, ID6	GND
4		SIG2	Signal 2	SW4, ID5	Pull up
	17	RET3	Return 3	SW4, ID8	GND
5		SIG3	Signal 3	SW4, ID7	Pull up
	18	RET4	Return 4	SW4, ID2	GND
6		SIG4	Signal 4	SW4, ID1	Pull up
	19	RET5	Return 5	SW4, ID4	GND
7		SIG5	Signal 5	SW4, ID8	Pull up
	20	RET6	Return 6	SW4, ID8	GND
8		SIG6	Signal 6	SW4, ID8	Pull up
	21	RET7	Return 7	SW4, ID8	GND
9		SIG7	Signal 7	SW4, ID8	Pull up
	22	RET8	Return 8	SW4, ID8	GND
10		SIG8	Signal 8	SW4, ID8	Pull up
	23	RET9	Return 9	SW4, ID8	GND
11		SIG9	Signal 9	SW4, ID8	Pull up
	24	RET10	Return 10	SW4, ID8	GND
12		SIG10	Signal 10	SW4, ID8	Pull up
	25	SIG11	Signal 11, unbalanced	SW4, ID8	GND
13		GND	Ground (Ref for SIG11)	SW4, ID8	

3.4 IQGPI00 Circuit Implementation

Iout max = 200mA, VinH min = +2V, Vabs max = 5.5V, Vabs min = -0.5V

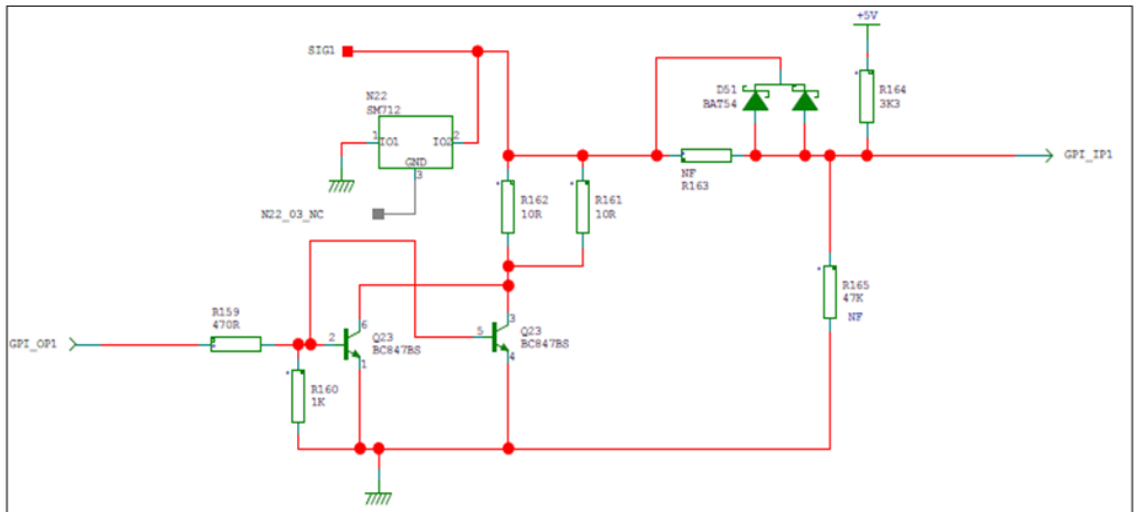


Figure 4 GND-Referenced Input/Output Circuit IQGPI00 for SIGNAL 0:22

3.5 IQGPI00 GND-Reference Input and Output Circuit Examples (SIGNAL 0:22)

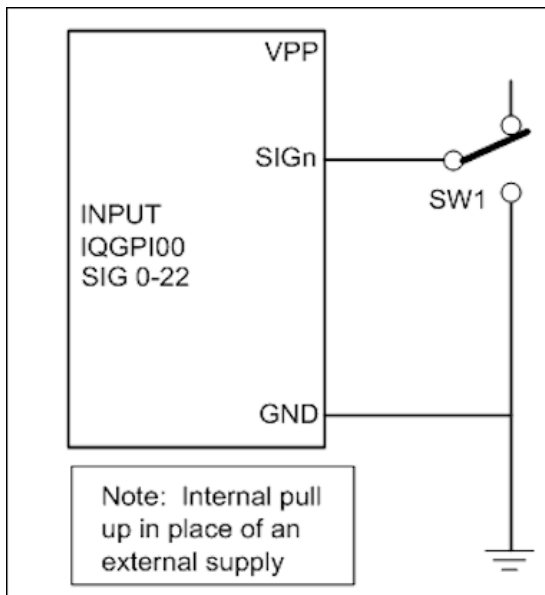


Figure 5 IQGPI00 GND-Referenced Input

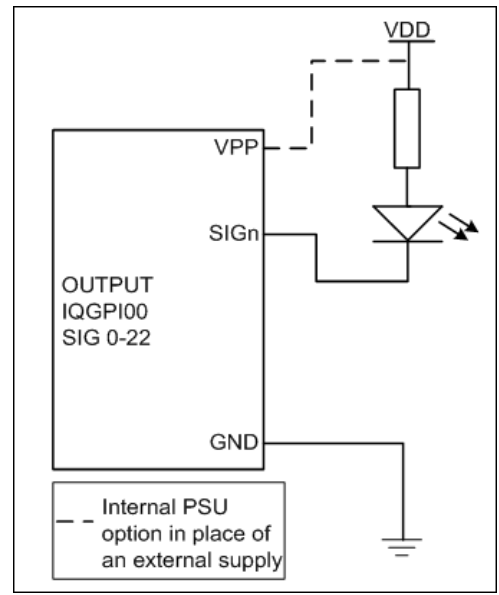


Figure 6 IQGPI00 GND-Referenced Output

3.6 IQGPI01 Isolated Inputs with Two External Circuit Examples

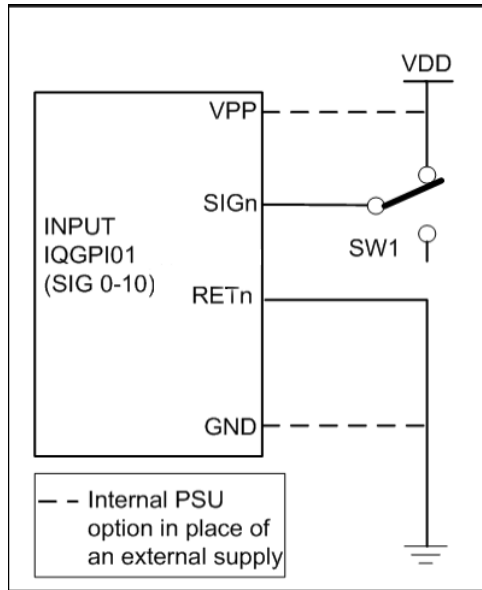


Figure 7 IQGPI01 SIG 0:10 Input with Signal Load

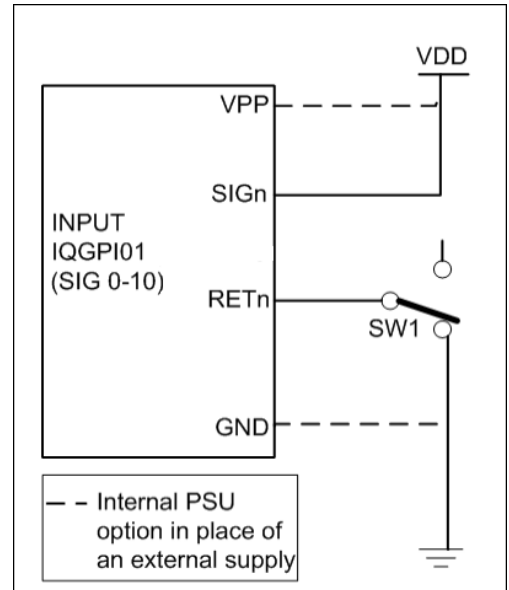


Figure 8 IQGPI01 SIG 0:10 Input with Return Load

See Figures 5 and 6 for the IQGPI01 12th port input and 12th port output.

3.7 IQGPI01 Isolated Outputs with Two External Circuit Examples

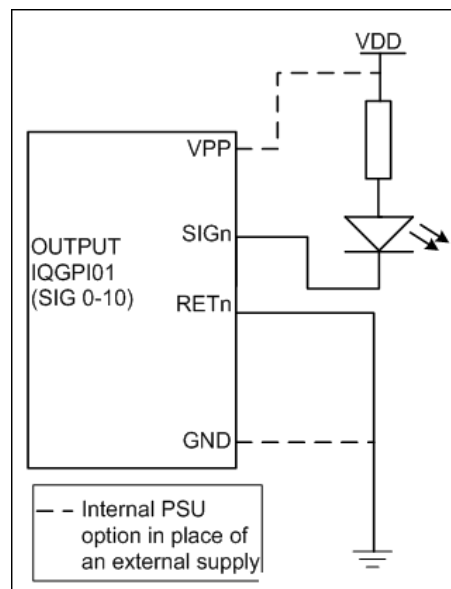


Figure 9 IQGPI01 SIG 0:10 Output with Signal Load

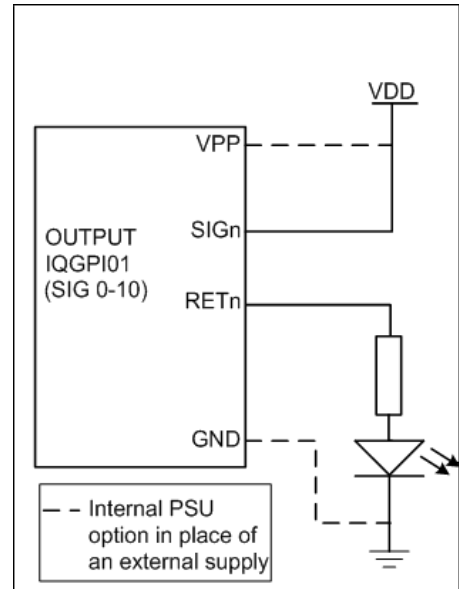


Figure 10 IQGPI01 SIG 0:10 Output with Return Load

3.8 IQGPI01 GND Ref (SIGNAL 11) Input and Output Circuit Examples

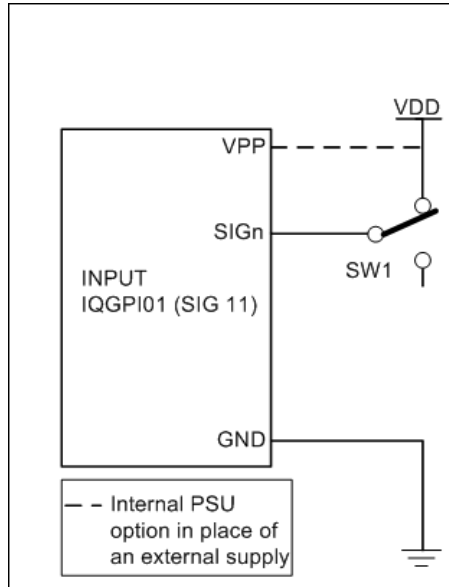


Figure 11 IQGPI01 SIG 0:11 GND-referenced Input

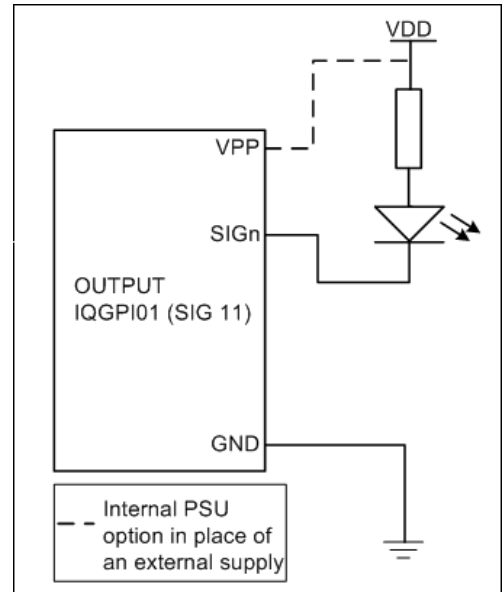


Figure 12 IQGPI01 SIG 0:11 GND-referenced Output

3.9 IQGPI01 Internal Circuit Implementations

The IQGPI01 SIGNAL and RETURN signals are isolated when both toggle switches are open.

Iout max = 70mA, VinH min = +2V, Vabs max = 19V, Vabs min = -5V

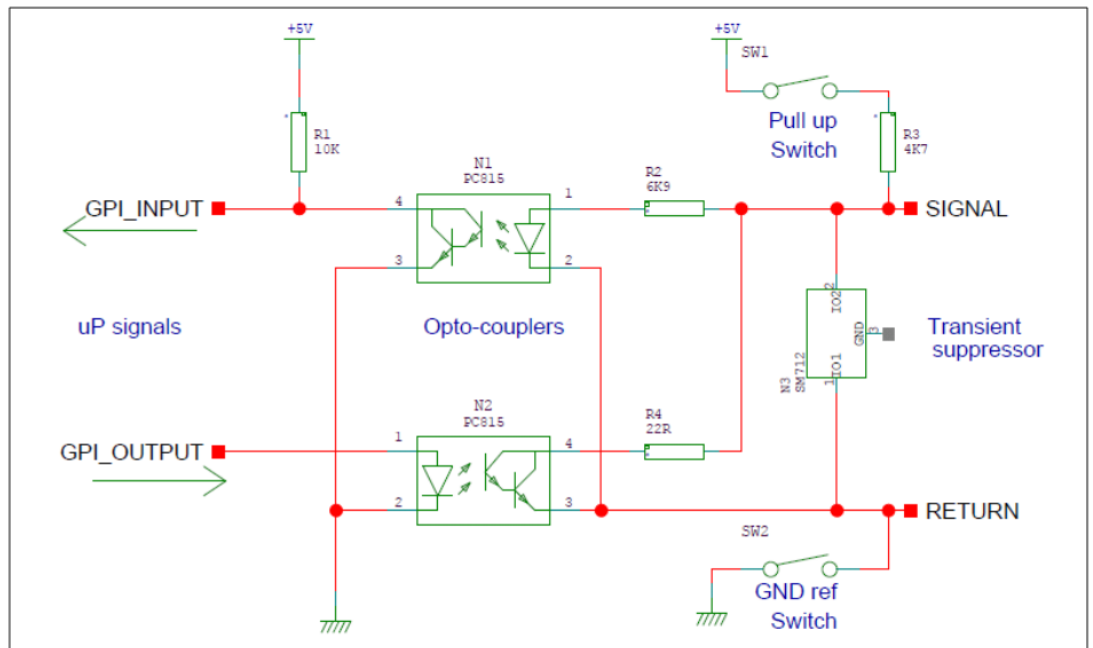


Figure 13 GPI Isolated Input/Output Circuit IQGPI01 for SIGNAL 0:10

The IQGPI01 SIG 11 uses the reference GND in place of the return signal.

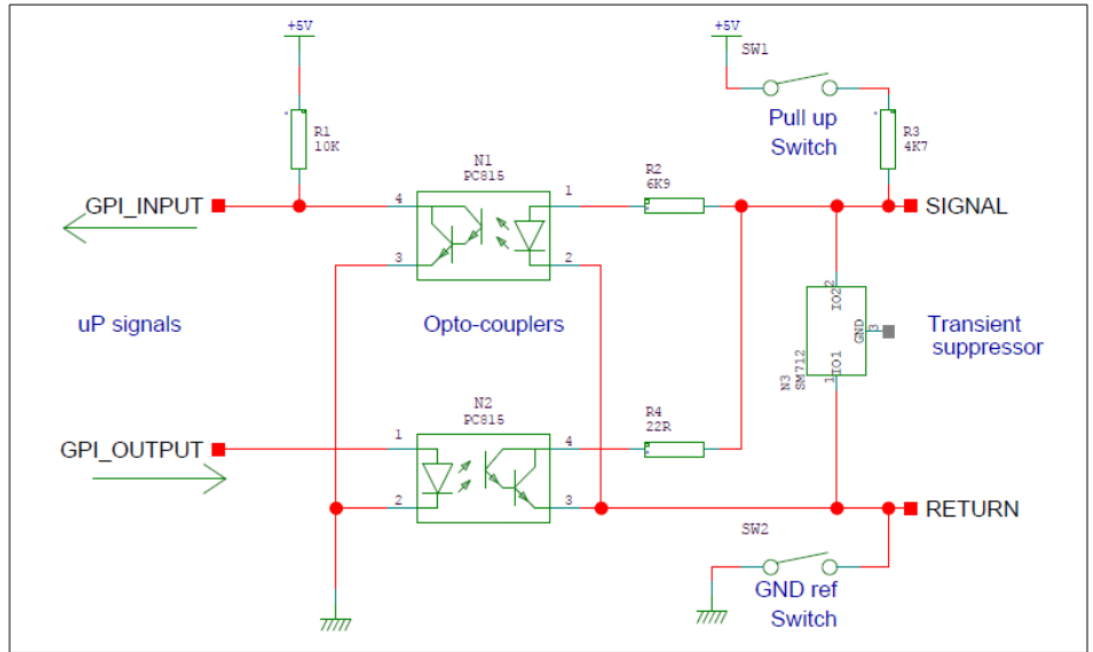
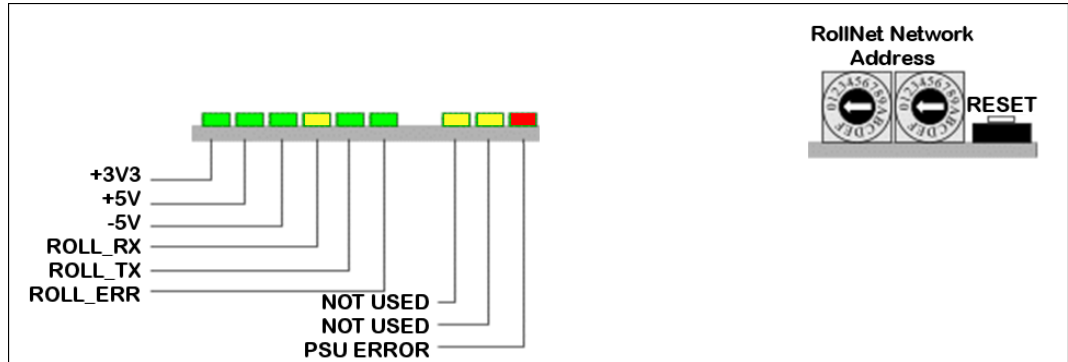


Figure 14 GPI GND-Referenced Input/Output Circuit IQGPI01 for SIGNAL 11

4 Card Edge LEDs

LEDs are mounted on the front edge of the module, and indicate its operating status.



LED	Color	Label	Indicates
1	Green	+3V3	3.3 V power supply is present.
2	Green	+5V0	Positive power supply is present.
3	Green	-5V0	Negative power supply is present.
4	Yellow	Roll_RX	RollNet data is being received.
5	Green	Roll_TX	RollNet data is being transmitted.
6	Red	Roll_ERR	A RollNet error has occurred.
7	Yellow	GPI INPUT	Not used.
8	Yellow	GPI OUTPUT	Not used.
9	Red	PSU_ERR	PSU overload warning.*

* If a PSU Overload warning is received, power-cycle the module to reset the PSU.

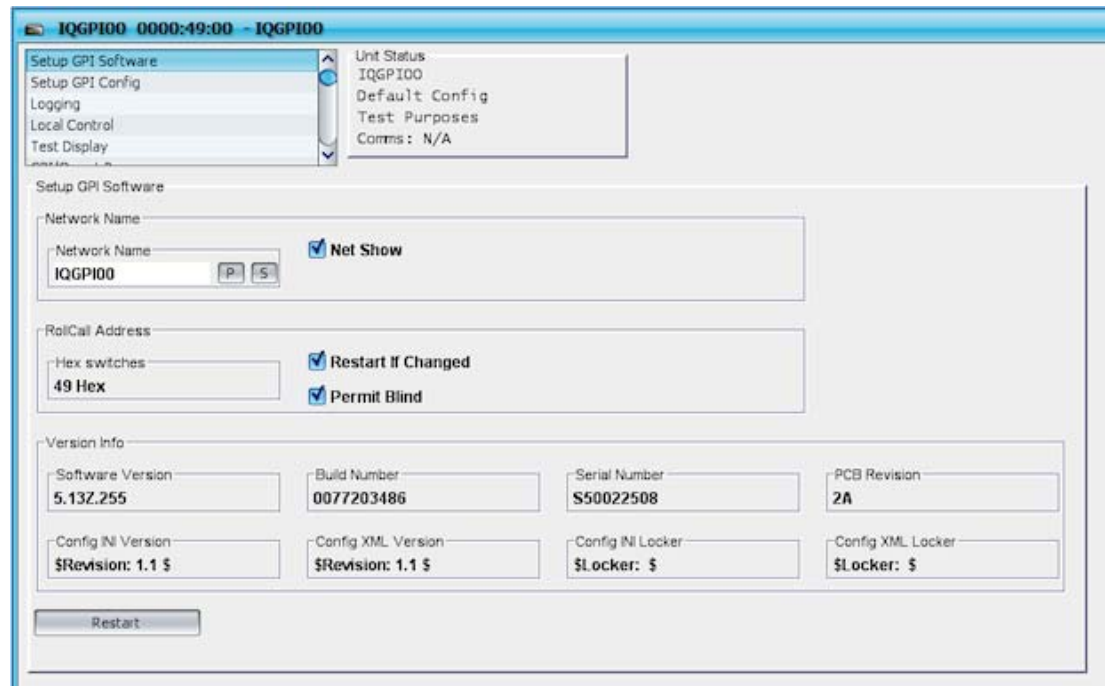
5 RollCall

The RollCall Control Panel enables you to set up and control IQ modules through various different screens.

See the *RollCall Control Panel Installation & Operator's Manual* for information about installation and setup of the RollCall Control Panel.

Note: The content and order of the screens shown here are for guidance and reference only, and may be slightly different to what you see with your module. The look and functions may also differ slightly from other modules in the range.

5.1 Set Up GPI Software



5.1.1 Network Name

The edit string sets the name of the IQGPI as seen from a RollCall network browser such as Shoebox or RollCall PC Control Panel.

To change the name, type the new name in the text area and then press ENTER.

P (Preset) returns to the default name.

5.1.2 Net Show

When selected, the module will appear in the Module List of other control panels.

If the **Net Show** checkbox is cleared, the IQGPI will continue to operate normally, but it will be hidden in network browsers. From a RollCall PC, a connection may be made to a hidden device by entering the address manually, as opposed to browsing.

5.1.3 RollCall Address

There is a display showing the current position of the hex switches that defines the RollCall address of the IQGPI. By default, the **Restart if Changed** checkbox is selected, which means that the module will automatically restart and use the new address when the hex switches are moved.

5.1.4 Permit Blind

Blind Control is the ability to control a unit without a connection. Active Front Panels and RollCall PC programs use a RollCall connection to control a module. RollTrack (used for setting, for example, audio delay times to track video delays) does not use a connection, but just sets the delay.

If a chassis fitted with modules which will be controlled by Blind Control (RollTrack and some third-party remote control systems) then Permit Blind control must be enabled.

If blind control is not be used, then **Permit Blind** control can be disabled, giving protection against incorrectly set-up RollTrack source modules.

5.1.5 Restart

Selecting this function will reboot the module with any changes incorporated. This provides an easier alternative to a power-down/power-up operation.

5.1.6 Version Info

The serial number, software version, and software build number of the unit is shown here. Also shown is version information about the configuration.

5.1.7 Software version

This item shows the version of the software fitted in the module.

5.1.8 Serial Number

This item shows the serial number of the module.

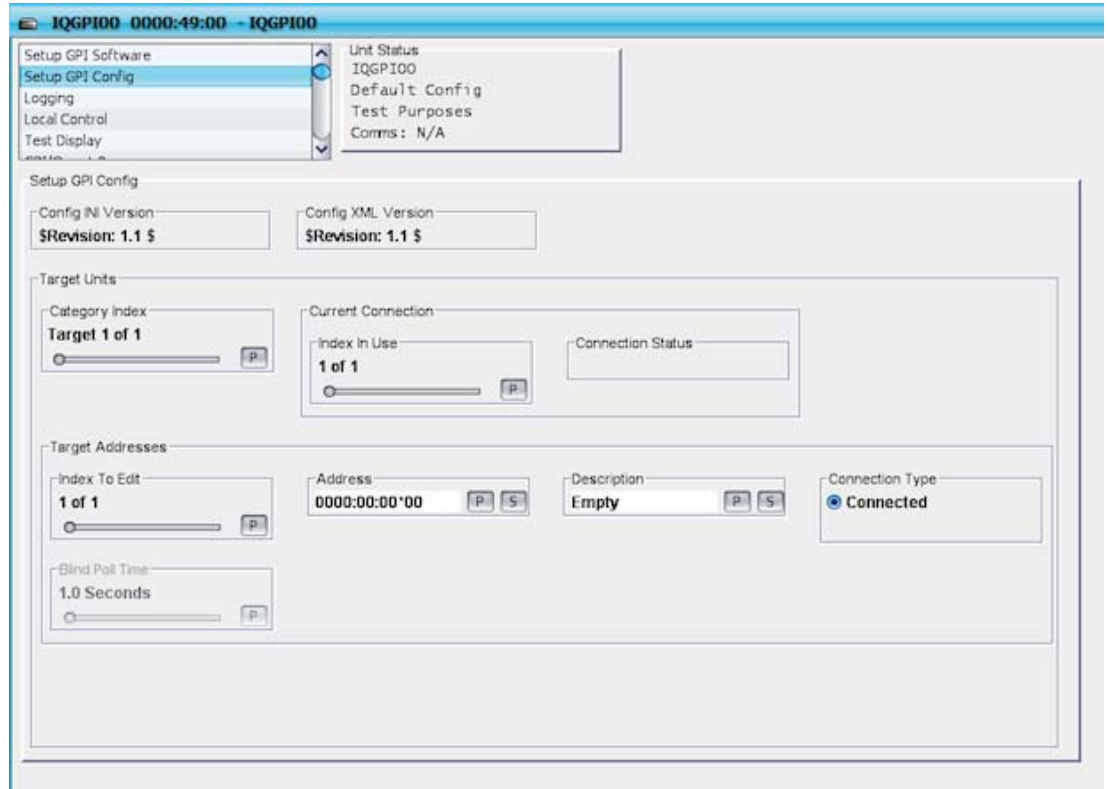
5.1.9 Build Number

This will indicate the factory build number. This number defines all parameters of the unit (software versions, build level etc) for identification purposes.

5.1.10 Config INI Version/Config XML Version/Config INI Locker/Config XML Locker

These show the version of the user configurations.

5.2 Set Up GPI Config



There are a number of controls and displays, which all apply to one of the IQGPI's "targets", i.e. the units which are being controlled or monitored by the IQGPI. Depending on the method used to develop the configuration and on the task to be accomplished, the GPI card's RollCall template will show different controls and menus as being available. In this example of a customized configuration, there is a **Target Index** control scroll bar, which allows the selection of one of the targets at a time. All the other controls and displays then apply to the selected target.



For example, the configuration shown above has 12 targets, numbered 0 to 11. The target index is currently selecting Target 7. Therefore the target controls **Address**, **Connection Status** etc. currently apply only to this target.

In this case, a description has been assigned to the target, Ch2 BSFR Shuffler 1 and the current status is **Connection OK** to address 0000:12:07. As the target index is scrolled to the other values, the entry fields and status will be seen for each target.

5.2.1 Controls Applying to the Currently Selected Target

5.2.1.1 Address

This edit string sets the RollCall address of the target unit, in the form "nnnn:uu:pp" where nnnn is the network route, or "0000" in a simple non-bridged network; uu is the unit address, normally set by hex switches; pp is the port address, which corresponds to the slot number in modular systems, or "00" for non-modular products.

To change the address, type the new address in the text area and then click **S**.

P (Preset) returns to the default address.

5.2.1.2 Description

This edit string has no effect on the communications, but allows the user to differentiate the targets.

5.2.1.3 Connection Type

There are 2 methods of connecting to a target: true connected or blind polled. True connected is preferred, because it provides immediate updates to the IQGPI when a control is changed from a different panel, unit card edge controls, or in response to other events.

In current IQGPI versions, connected control is the only mode supported. The only benefit of the blind control mode, (currently not supported in the IQGPI), is that this does not take a true control session, which allows other control panels to access single-session units such as IQ modules at the same time as the IQGPI is connected. This mode will be enabled in a future IQGPI software release.

5.2.1.4 Blind Poll Time

This control is ignored when in connected control mode. In Blind control mode, it affects the rate at which the IQGPI polls the target to check for changed values. This affects the speed of updates appearing on the IQGPI when changed externally, e.g. on the unit card edge controls.

Note: This has no effect on the speed of actioning a control made on the IQGPI, which always occurs immediately in either connected or blind control mode

5.2.1.5 Connection Status

This display shows a short text message describing the current (live) status of the IQGPI connection to this target.

The possible values and their meanings are listed here:

- **Connection OK:** The IQGPI has a live true connection to the target unit, with no errors detected. In this state, the IQGPI should action changes made immediately, and also immediately responds to any changes occurring on the target unit.
- **Blind Poll OK:** The IQGPI has a live blind-polled connection to the target unit, with no errors detected. In this state, the IQGPI should action changes made immediately, and also responds to any changes occurring on the target unit within the configured blind poll time.
- **Bad Address:** The IQGPI is not attempting to connect to this target, because the address entered is invalid, e.g. all zeros. The IQGPI will not try communication until a valid address is entered.
- **Conn. Fail: Timeout:** The IQGPI is not connected to the target unit, and connection attempts time out. This indicates either a wrong address entered, or that the target unit is not connected to the network. The IQGPI will retry to connect indefinitely.
- **Conn. Fail: Busy:** The IQGPI is not connected to the target unit because the target returned busy, indicating that it had reached the maximum allowed number of controllers,

e.g. 1 controller on a single session IQ modular system. The IQGPI will retry to connect indefinitely, so as soon as the existing control panel is disconnected from the target, the IQGPI will connect.

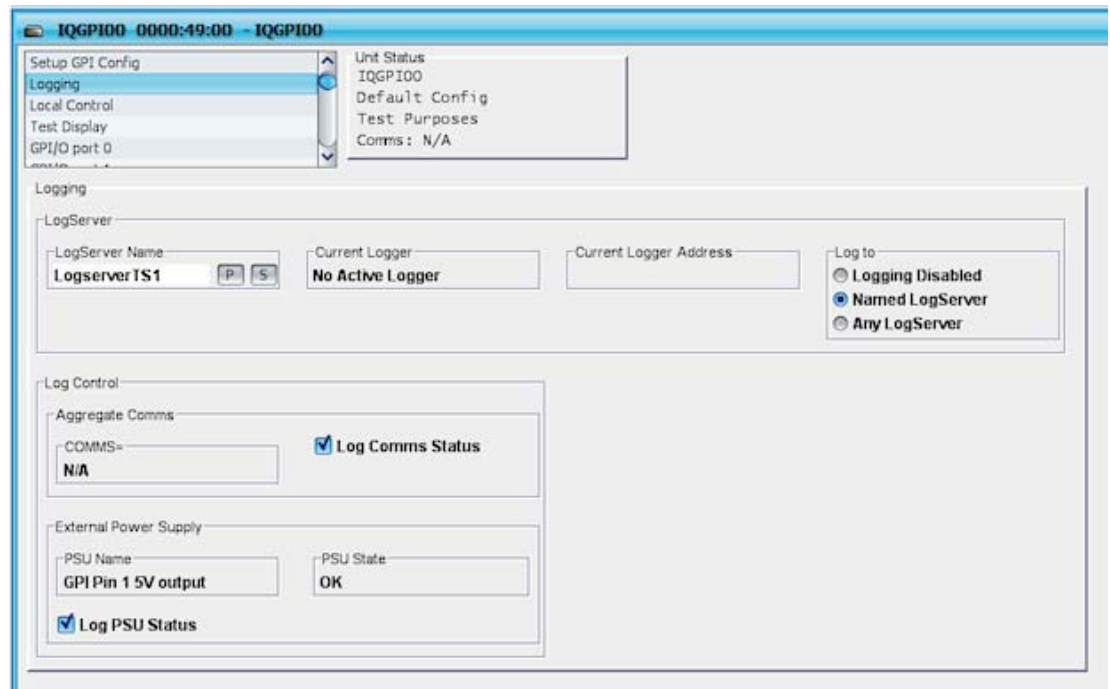
- **Connection Failed:** The IQGPI is not connected to the target unit, for an unknown reason, (i.e. neither time out nor Busy). The IQGPI will retry to connect indefinitely.
- **Blind Poll Failed:** The IQGPI's attempt at a blind-pollled connection to this target has not been successful. The IQGPI will retry indefinitely.
- **Bad Config:** The currently loaded user configuration is not valid, so no communication will be attempted until a valid config is downloaded.
- **Trying... :** The IQGPI is making the first attempt at establishing communications with the target. If the most recent attempt fails, then an error will be reported, e.g. "Conn. Fail: Busy", replacing the "Trying..." message.

Note that the IQGPI will continue to try, even if the message "Trying..." is no longer displayed. Therefore the "Trying..." message should only occur transiently.

- **Initializing:** The IQGPI has established a successful communication with the target, and is retrieving the current values of all controls required for the configuration. This message should only occur transiently, being replaced with the appropriate OK or failure message.
- **Remote Disconnected:** The IQGPI did have a valid true connection to the target, but this was terminated by the target unit. (This can occur, for example, when a Supervisor-level RollCall PC Control Panel remotely disconnects the current controller to allow itself to control a single-session unit). This message should only occur transiently, being replaced with the appropriate OK or failure message as the IQGPI would retry the connection indefinitely.

5.2.2 Set up Configuration: Configuration-Specific Controls

Some configurations require additional setup controls that are global, i.e. are not affected by the target index selection.



5.3 Logging

5.3.1 LogServer Name

The Logging Server to be used can be named by editing the text string in the text window.

5.3.2 Current Logger/Current Logger Address

Display the name and address of the current logger.

5.3.3 Log to

Use the radio buttons to specify one of the following options:

- **Logging Disabled:** If selected, the logging functions will be disabled.
- **Named LogServer:** If this item is checked Logging information will only be sent to the server named in the name window. *Note: matching of the name is case sensitive.*
- **Any LogServer:** If this item is checked Logging information will be sent to any Logger on the system. *It is suggested that if there is only one server on the system, this option should be chosen.*

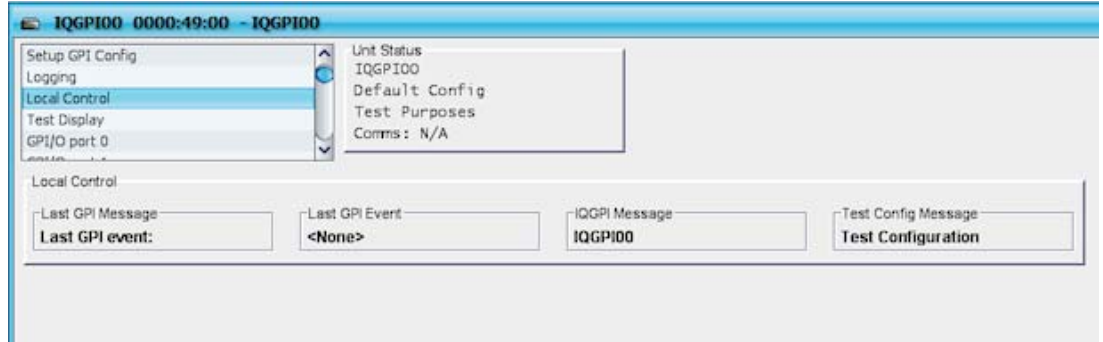
5.3.4 Log Comms Status

Select this option to log communication status.

5.3.5 External Power Supply

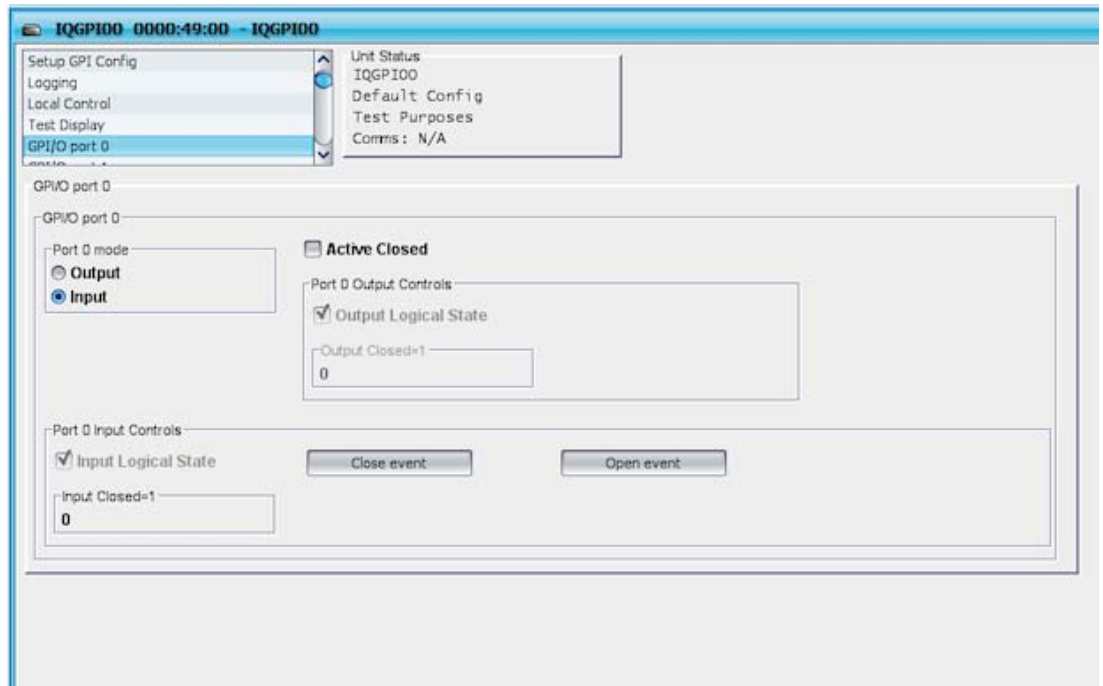
Select this option to log the status of the external power supply.

5.4 Local Control



This screen is completely defined by the user configuration. It typically includes all the controls and pages which may appear on the IQCGPI. The remote user may therefore action any control with the same effect as if the control was made locally on the IQCGPI.

5.5 GPI/O Port



This screen shows an example of a port setup.

5.5.1 Port 0 mode

This function allows the port to be configured as either an Output or an Input.

5.5.2 Active Closed

This item toggles the sense of the GPI port, to input or output.

5.5.2.1 Port Configured as an Input

If the **Active_Closed** item is **enabled**, the port is logically active when current flows between the signal and return pins, and logically inactive if no current flows.

In circuit examples 1 and 2 current flows when the external switch SW1 is closed and the port will be active. When SW1 is open the port will be inactive.

If the **Active_Closed** item is **disabled**, the sense is reversed. The port is logically active when no current flows between the signal and return pins, and logically inactive when current flows.

5.5.2.2 Port Configured as an Output

If the **Active_Closed** item is **enabled**, the output pins are closed when the port is logically active, and the outputs are open when the port is logically inactive.

In the circuit examples 3 and 4 the LED is illuminated when the signal and return are closed. The LED is illuminated when the port is active.

If the **Active_Closed** item is **disabled**, the sense is reversed. The outputs are open when the port is active and closed when the port is inactive.

Port Config	Active Closed Function	Logically Active	Logically Inactive
Input	Enabled	Current Flow	No Current Flow
	Disabled	No Current Flow	Current Flow
Output	Enabled	Pins Closed	Pins Open
	Disabled	Pins Open	Pins Closed

5.6 Menu Structure for the IQGPI

