BROADCAST tools ® INC

Installation and Operation Manual

GPI-32
General Purpose Input Interface

Firmware version: 1.06

Manual Update: 04/25/2011

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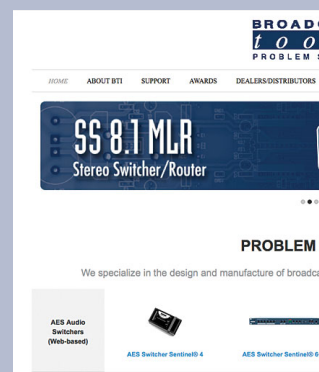*Visit our web site for product updates and additional information.*

INTRODUCTION

Thank you for your purchase of a Broadcast Tools® GPI-32, General Purpose Input Interface (referred to as the GPI-32 throughout this manual). We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the Broadcast Tools® GPI-32.

SAFETY INFORMATION

Only qualified personnel should install Broadcast Tools® products. Incorrect or inappropriate use and/or installation could result in a hazardous condition.

Broadcast Tools, Inc., is unable to support NON-Broadcast Tools software, hardware or NON-Broadcast Tools computer/hardware/software problems. If you experience these problems, please research your hardware/software instruction manuals or contact the manufacturers technical support department.

WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment.

If you would like more information about Broadcast Tools® products, you may reach us at:

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E-mail: support@broadcasttools.com

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Broadcast Tools is a Veteran Owned Business

Designed, Assembled and Supported in WA State, USA

CAUTION!

Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.
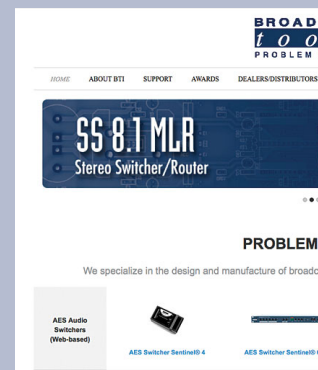
NOTE:

This manual should be read thoroughly before installation and operation.

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INTRODUCTION

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Product Description

The GPI-32 interfaces 32 optically isolated inputs to a users PC's RS-232 or USB port. The serial data conforms to our standard audio switcher PIP format. The GPI-32 is equipped with dual plug-in euroblock screw terminals and two independent DB-37 connectors that may be interfaced directly to the DB-37 connectors located on the StarGuide II/III, XDS OR WW1-MAX relay cards. Additional features; dual RS-232 connectors, one for daisy-chaining multiple units on the same legacy serial port and a DB-9 to interface to our supplied USB to RS-232 adapter; LED indicators for power and input activity; twin power connectors allowing up to four units to be driven off of one power transformer. The GPI-32 is supplied with USB-RS-232 adapter cable, RJ-11 cable and "S9" DB-9 female adapter and 9vac wall transformer. The GPI-32 is powered by a surge protected internal power supply. The GPI-32 may be rack mounted via the optional 1-RU, RM-3 mounting shelf.

Installation Guidelines

Please examine your GPI-32 carefully for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package contains the GPI-32, 9 VAC @ 1 amp wall power transformer, USB-RS-232 Smart adapter cable, RJ-11 cable and "S9" DB-9 female adapter, DB-9 straight-thru serial cable and this manual.

NOTE: All connections are noted on the top cover label.

Input connections:

The two plug-in euroblock screw terminals (TB-1 & 2) are labeled "Inputs" 1 thru 16 and "Inputs" 17 thru 32. The last two screw terminals (17 & 18) on each plug-in euroblock are the ground connections. Each input is optically isolated and internally power by 5 vdc. Connect your equipment to the appropriate screw terminal and either of the GND terminals. Contact closures, TTL logic and/or open collectors may be used to activate each input. A valid input must be 40ms or greater and is indicated by a "wink" on the "DATA' led.

NOTE: The two female DB-37 connectors are designed to directly mate to the StarGuide II/III relay card connector via the supplied cables. The pin-outs for the DB-37's are listed below.

J5, Inputs 1 thru 16	**J6, Inputs 17 thru 32**
Input 1, pin 1	Input 17, pin 1
Input 2, pin 2	Input 18, pin 2
Input 3, pin 3	Input 19, pin 3
Input 4, pin 4	Input 20, pin 4
Input 5, pin 6	Input 21, pin 6
Input 6, pin 7	Input 22, pin 7
Input 7, pin 8	Input 23, pin 8
Input 8, pin 9	Input 24, pin 9
Input 9, pin 11	Input 25, pin 11
Input 10, pin 12	Input 26, pin 12
Input 11, pin 13	Input 27, pin 13
Input 12, pin 14	Input 28, pin 14
Input 13, pin 16	Input 29, pin 16
Input 14, pin 17	Input 30, pin 17
Input 15, pin 18	Input 31, pin 18
Input 16, pin 19	Input 32, pin 19

Ground pins on both J5 & J6: Pins 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37
Pins not used on both J5 & J6: Pins 5, 10, 15, 24, 33

CAUTION!

Installation of the GPI-32 in high RF environments should be performed with care. It is recommended that all cables connected to the GPI-32 be looped through ferrite cores to suppress RF. Surge protection with RF filtering such as the Tripp-Lite "ISOBAR 4 or 6" is also suggested for the wall transformer. Shielded cable is suggested for all input connections. The shields and station ground should be tied to the "CHASSIS GROUND" screw terminal. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

INSTALLATION

RJ-11 Serial connector:

The GPI-32 is supplied with the "S9" RJ-11 to DB-9 female adapter and RJ-11 four conductor X-Over cable. We supply this cable for normal serial operation or in case multiple GPI-32's are used with the users PC.

DB-9 Female Serial connector:

The female DB-9 connector is provided for customers wanting the use a user provided straight-thru serial cable to connect to the COM port of their PC. The supplied USB-RS-232 adapter cable should be attached to this connector if USB operation is required.

USB-RS-232 Adapter Cable:

The Smart USB to RS-232 adapter cable is provided for customers needing to use the USB port supplied with their PC. Remove the smart adapter cable from the packaging and follow the installation instructions provide with the adapter cable. When the smart adapter is operating, connect the USB connector to the PC and the male DB-9 connector to J3 on the GPI-32.

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INSTALLATION

Set up Guidelines

Dipswitch 1 Set up:
NOTE: Dipswitches are read on power up or reset only (SW1-7 & 8 not used).
The GPI-32 address and baud rate is set using Dipswitch SW1, switches 1 through 4 in normal binary format:

1	**2**		**Unit ID**	
0	0	=	0 (master)	No polling is required for status.
1	0	=	1	Polling is required
0	1	=	2	Polling is required
1	1	=	3	Polling is required

DIP 3, 4

3	**4**		**Baud rate**	
0	0	=	9600	(default)
1	0	=	2400	
0	1	=	19200	
1	1	=	38400	

DIP 5 = OFF, event generates SUP,A,x,x,x,x,x.... <cr><lf>
DIP 5 = ON will cause inputs to generate *uiix<cr><lf> Where * is the start character, u is Unit ID 0 - 3, ii = Input number 01 - 32, x = On/Off state 1 = ON, 0 = OFF.
DIP 6 = OFF, commands *uSPii & *uSPA data is displayed as normal
DIP 6 = ON, commands *uSPii & *uSPA data sense is inverted in all cases
ASCII Information Retrieval Commands (unaffected by DIP 5) and Glossary of Command Notation.

Character String	**Meaning**	**Allowable Values**
u	Unit ID	0-3
ii	Input Number	01-32

*uSPii - Send status of input ii. Response is SuP,ii,x<cr><lf > where x is 0 if the corresponding input is high (OFF), 1 otherwise (ON).

*uSPA - Send status of all inputs. Response is SuP,A,x,x,x,x,x,x,x,x,x,x,x,x,x,x,x,x--> 32<cr><lf > where input 1 is first and input 32 is last. x is 0 if the corresponding input is high (OFF), 1 otherwise (ON).

*uU - Send Unit Information :<name(GPI-32)><version><cr><lf> (displayed at power-up).

*POLL - Respond with unit (ID) address in appropriate time slot. If there are multiple units on the line, each will respond with a different delay after receipt of this command.

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Specifications

Digital Inputs	32 - Optically Isolated inputs (5 vdc @ 8ma). 40ms min duration.
RS-232 Serial Port	9600, 2400, 19200, 38400 baud, 8 data bits, no parity, 1 stop bit. Other baud rates may be requested as a special order.
Interfacing	Inputs - Two plug-in euroblock screw terminals and/or female DB-37 RS-232 serial port - Female DB-9. Handshaking disabled. RS-232 serial port - RJ-11. S9 adapter compatible.
Logic	Microprocessor
Power	9 Vac @1 amp or 500 ma / 120 Vac 50-60 Hz, "Wall Wart" Supplied. One supply may power up to three additional GPI-32's.
Mechanical	16-5/16" x 4.00" x 1.00" (WDH)
Weight	2 pounds
Option	RM-3, rack shelf for mounting one unit in 1-RU. CE, 240 Vac 50-60 Hz wall wart
Ethernet Option	Ethernet Serial Server. Broadcast Tools® ESS-1

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Visit our web site for product updates and additional information.
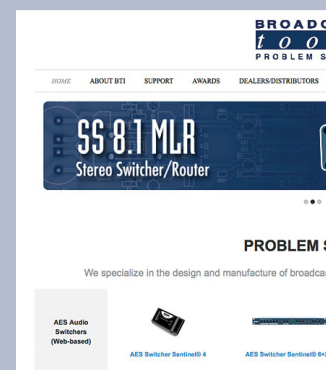
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The term "Buyer" as used in this document refers to and includes both (but only) (a) any person or entity who acquires such an item for the purpose of resale to others (i.e., a dealer or distributor of an item), and (b) the first person or entity who acquires such an item for such person's or entity's own use.

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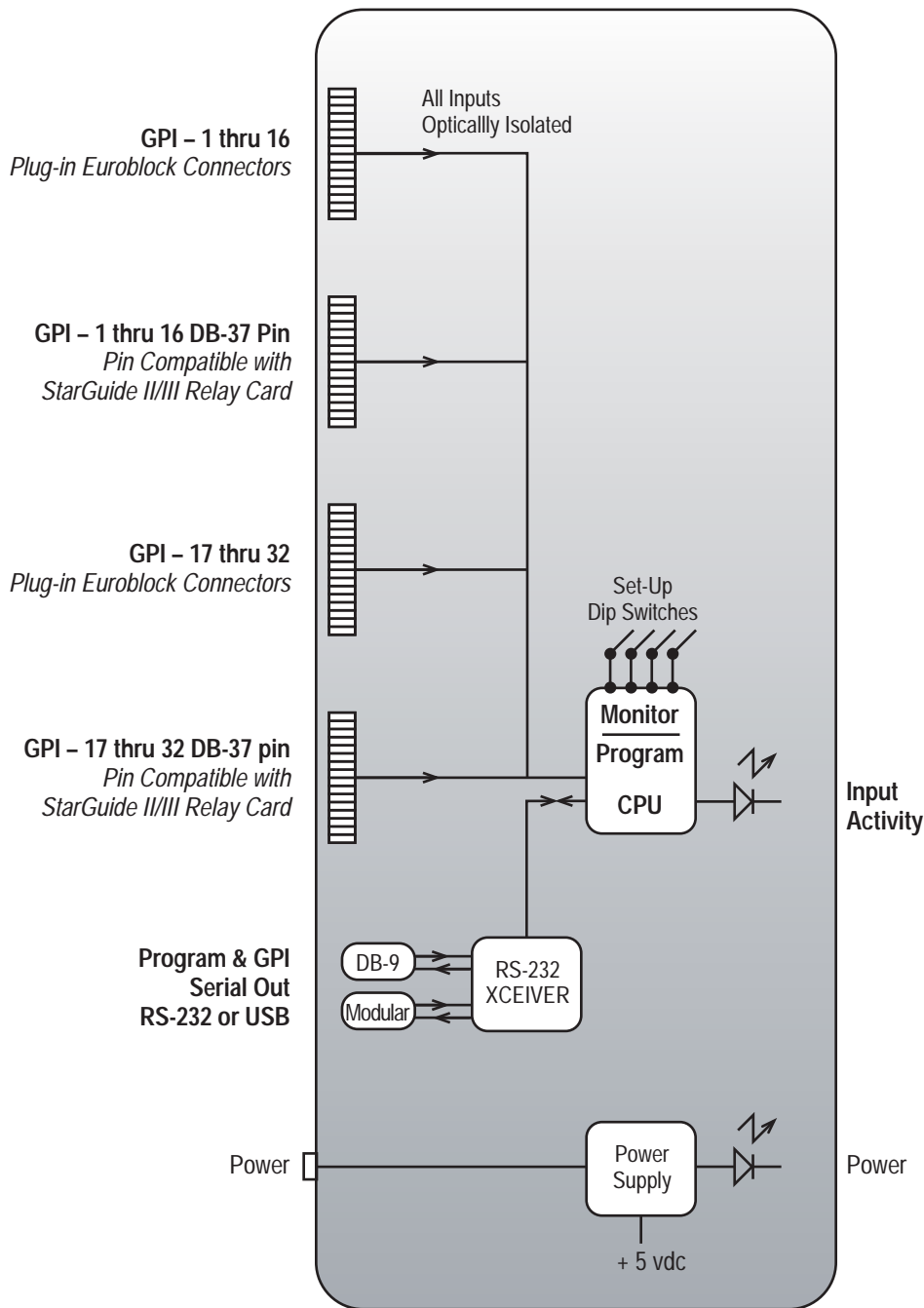
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APPENDIX

Functional Diagram

GPI – 1 thru 16
Plug-in Euroblock Connectors

All Inputs
Opticallly Isolated

GPI – 1 thru 16 DB-37 Pin
*Pin Compatible with
StarGuide II/III Relay Card*

GPI – 17 thru 32
Plug-in Euroblock Connectors

Set-Up
Dip Switches

Monitor

GPI – 17 thru 32 DB-37 pin
*Pin Compatible with
StarGuide II/III Relay Card*

Program

CPU

**Input
Activity**

**Program & GPI
Serial Out
RS-232 or USB**

DB-9

Modular

RS-232
XCEIVER

Power

Power
Supply

Power

+ 5 vdc

Broadcast Tools® GPI-16
RS-232, Power, LED and Connector Layout

The 16 status/logic inputs may be activated either by pulling the input to ground or releasing the input to a high state. External sources can be contact closures, open collectors or 5, 12, 15, and 24-volt logic-level sources. The input impedance of each input is 22 K ohms. Supplied with plug-in Euroblock connectors.

BROADCAST TOOLS, INC.
GPI-16 PCB
334201 REV 0

J1
GND GND 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Power 7.5–9.0 volts D.C.
Power/Heartbeat LED
RS-232 Serial Port
13–16 9–12 5–8 1–4
Input Status LEDs