

eBox

Ethernet to Serial & GPI Interface



Users Manual



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Introduction

The eBox is a general purpose interface box that converts 4 serial communication ports and 24 GPI (General Purpose Interface) inputs and outputs to 100/10baseT Ethernet. The serial ports can be configured in the field to appear as EIA/TIA RS-232E and CCITT V.28 or as EIA/TIA RS-422A, RS-423 and Federal Standards 1020 & 1030 ports. Additionally, the port direction can be configured as DTE or DCE on each port independently.

The eBox communicates over standard TCP/IP which allows it to be used with any host computer running any operating system that uses TCP/IP protocol. The eBox can also be connected to other eBoxes to allow longer runs than traditional serial and GPI cables. Since the eBox uses TCP/IP, traffic can be routed over internal LANs, wireless LANs, MANs, WANs and even over the public Internet.

Most configuration can be accomplished through a web page server built into the eBox. Items such as port speed, parity, IP address, remote IP address and TCP port are set using a standard web browser. Settings are stored in nonvolatile memory.

Setup

Unpacking

The eBox package will contain the following items:

- EBox
- Power Supply
- This Users Manual
- Four rubber feet

Connections

The eBox connections are straightforward:

1. Plug the power supply into the eBox.
2. Plug a network cable into the Ethernet jack.
3. Connect serial cables into ports 1-4.
4. Connect GPI cables into GPI ports.

Ethernet

The eBox port is just like an Ethernet port on a computer, to connect it to a hub, switch or router, use a straight through cable. To connect it to another eBox or computer, use a crossover cable.

The eBox supports IEEE 802.3u clause 28 Auto-Negotiation which automatically senses the Ethernet port speed & duplex operation and chooses the highest performance settings.

In addition, four LEDs on the front panel that indicate various operating conditions of the Ethernet port. These LEDs are:

- Link
- 100BaseT activity
- 10BaseT activity
- Collision

Serial

The four serial ports along the top of the rear panel are 9 pin D-Sub connectors which can be configured for RS-232C or RS-422A operation. In RS-422 mode, the eBox direction can be configured to appear as a Controller or a Device. In RS-232 mode, the eBox appears as a DCE or modem.

Mode	RS-232C	RS-422A	RS-422A
Direction	To Computer	To Deck	To Controller
SW1	On	Off	Off
SW2	X	On	Off
Pin 1	not used	not used	not used
Pin 2	Transmit	Receive A	Transmit A
Pin 3	Receive	Transmit B	Receive B
Pin 4	not used	Ground	Ground
Pin 5	Ground	Ground	Ground
Pin 6	not used	Ground	Ground
Pin 7	not used	Receive B	Transmit B
Pin 8	not used	Transmit A	Receive A
Pin 9	not used	not used	not used

X = Don't Care

Serial Port Configuration

GPI

The GPI ports on the rear of the eBox are 25 pin D-sub connectors. The GPI In connector has 24 TTL/CMOS compatible inputs with internal pull-ups to +5 volts. The GPI Out connector has 24 TTL/CMOS compatible outputs. On both connectors, pin 1 is the ground reference and pins 2-25 are the GPI signals.

When eBoxes connected together in a client/server manner establish a connection, both client and server eBoxes will send the state of its GPI In ports to each other so it can be shown on the GPI Out port on the remote eBox. After that, only changes to a GPI In port will cause an eBox to send a GPI message to the remote eBox.

A packet is sent whenever a change to the GPI In is sensed. At present, it is sampled about every 20 milliseconds. This can be changed via the configuration web page.

Configuration

Operating Mode

The eBox has 3 different modes of operation which are set by the rear panel DIP switches. The DIP switches are read only at power on so the eBox must be power cycled for the changes to take effect.

SW8	SW7	
On	X	Access web page at 192.168.254.102
Off	Off	eBox is server at address specified on next page
Off	On	eBox is client at address specified on next page

X = Don't Care

Mode Configuration

Ebox Security

The eBox contains a simple security mechanism that prevents unintended hosts or eBoxes from accessing a secured eBox. An eBox can be protected with password that is set on the configuration web page. The password is stored in nonvolatile memory and, is read upon power up.

When password protection is enabled, the eBox embeds the password in the transmitted IP packet. At the remote end, the receiving eBox must have password protection enabled AND have a matching password.

SW6	
On	Disable password protection
Off	Enable password protection

Security Configuration

EBox IP Address

The IP address of the eBox can be set by the rear panel DIP switches or by the internal web page. As above, the DIP switches are read only at power on so the eBox must be power cycled for the changes to take effect.

SW1	SW2	SW3	SW4	Mode	IP Address	Port
Off	Off	Off	Off	Server	192.168.254.102	23
Off	Off	Off	On	Client	192.168.254.103	23
Off	Off	On	Off	Server	192.168.254.104	23
Off	Off	On	On	Client	192.168.254.105	23
Off	On	Off	Off	Server	192.168.254.106	23
Off	On	Off	On	Client	192.168.254.107	23
Off	On	On	Off	Server	10.0.0.128	23
Off	On	On	On	Client	10.0.0.129	23
On	Off	Off	Off	Server	10.0.0.130	23
On	Off	Off	On	Client	10.0.0.131	23
On	Off	On	Off	Server	10.0.0.132	23
On	Off	On	On	Client	10.0.0.133	23
On	On	Off	Off	Server	172.16.0.128	23
On	On	Off	On	Client	172.16.0.129	23
On	On	On	Off	Server	Set on web page	
On	On	On	On	Client	Set on web page	

IP Address Configuration

Technical Reference

Electrical Connections

Power

The MIDI version of the eBox requires a 9 volt DC supply capable of delivering at least 500 milliamps. The unit comes with a power supply appropriate for the country in which the unit was sold. If you need a power supply specific to your location, please contact your local distributor or JLCooper Electronics.

Location	JLCooper Part Number
North America	PSDC117
Europe	PSDC230

Approved Power Supplies

Warning: Using a power supply other than the units specified in the above table can result in damage to the eBox and/or other equipment which is not covered by the JLCooper Factory Warranty.

Troubleshooting

If for some reason the eBox does not give you the expected results, take a moment to do some investigating. The most important concept is that you have your eBox connected properly as outlined in *Installation and Use*. Take a moment to double check your setup.

A common problem is forgetting to turn the power switch on or turning the unit on after the software application has launched.

In addition, the JLCooper website (www.jlcooper.com) will contain up to date information on drivers, applications and troubleshooting.

If all else fails, you can contact the JLCooper Service Department at: service@jlcooper.com.

Care and Service

If properly cared for, your eBox should provide years of troublefree performance. While the eBox is built in a rugged metal enclosure, please avoid dropping the eBox.

Clean with a soft, damp cloth. Do not allow liquids, dust or other foreign matter to get inside the unit.

There are no user-serviceable parts in the eBox. Please refer to the JLCooper Electronics Limited Factory Warranty on the following page for detailed warranty and service information.

JLCooper Electronics Limited Factory Warranty

JLCooper Electronics ("JLCooper") warrants this product to be free of defects in materials or workmanship for a period of 12 months from the date of purchase. This warranty is non-transferable and the benefits apply only to the original owner. Proof of purchase in the form of an itemized sales receipt is required for warranty coverage. To receive service under this warranty, customers in the United States should contact the JLCooper factory at (310) 322-9990 and talk to a service technician. If necessary, a Return Authorization number may be issued. For our customers outside the United States, it is recommended that you first contact your Dealer or Distributor, since they may offer their own service or support policy. If local support is not obtainable, please send a FAX to JLCooper's Service Department at +1 310 335 0110 with a detailed description of the service required. Upon issuance of return authorization, the product should be packed in the original shipping materials and shipped prepaid and insured to: Service Department, JLCooper Electronics, 142 Arena Street, El Segundo, CA 90245. Please include the following: copy of the sales receipt, your name and address (no P.O. Boxes, please), a brief description of the problem, and any other related items discussed with the service department and considered necessary to evaluate the product or effect a repair. The return authorization number must be clearly written on the outside of the package. JLCooper will at its option, without charge for parts or labor, either repair or replace the defective part(s) or unit. Shipping costs are not covered by this warranty. JLCooper's normal repair turn around time at the factory is approximately 15 business days from receipt of product to shipping. Your actual turn around time will include return shipping. Actual turn around time will vary depending upon many factors including the repeatability of the customer's reported complaint, the availability of parts required for repair, the availability of related products needed to evaluate the product if necessary. Priority services are available at additional cost. These should be discussed with the service technician at the time the return authorization is issued. This warranty provides only the benefits specified and does not cover defects or repairs needed as result of acts beyond the control of JLCooper including but not limited to: abuse, damage by accident/negligence, damage from using incorrect power supply, modification, alteration, improper use, unauthorized servicing, tampering, or failure to operate in accordance with the procedures outlined in the owner's manual; nor for natural or man-made events such as, but not limited to flooding, lightning, tornadoes, earthquakes, fire, civil unrest, war, terrorism, etc.

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