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# REVISION HISTORY

| REVISION | DESCRIPTION | DATE |
|----------|-------------|------|
| 0.1 | Preliminary version | Dec 06 |

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# 1. OVERVIEW

The 7700TPI-TRI2CDI module provides broadcast facilities that enable the ability to translate commonly used Emergency Alert Systems (EAS) protocols to a protocol that is accepted by their character generators.

Supported EAS protocol translations include:
- Input Trilithic and Output CODI
- Input Trilithic and Output Sage Generic
- Input Trilithic and Output TFT standard
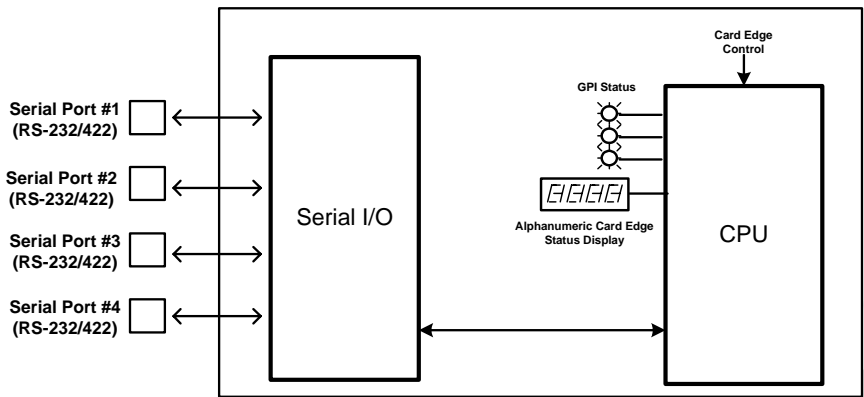
**Figure 1-1: 7700TPI-TRI2CDI Block Diagram**

## 2. INSTALLATION

The 7700TPI-TRI2CDI comes with a companion rear plate that occupies 2 slots in the frame. For information on inserting the module into the frame see section 3 of the 7700FR chapter.

| | | | |
|---|---|---|---|
| **1** | GPI 01 | GPI 02 | **2** |
| **3** | GPI 03 | GPI 04 | **4** |
| **5** | GPI 05 | GPI 06 | **6** |
| **7** | GPI 07 | GPI 08 | **8** |
| **9** | GPI 09 | GPI 10 | **10** |
| **11** | **GND** | **GND** | **12** |

**GENERAL PURPOSE IN / OUT**

| | | | |
|---|---|---|---|
| **1** | GPI 11 | GPI 12 | **2** |
| **3** | GPI 13 | GPI 14 | **4** |
| **5** | GPI 15 | GPI 16 | **6** |
| **7** | GPI 17 | GPI 18 | **8** |
| **9** | GPI 19 | GPI 20 | **10** |
| **11** | **GND** | **GND** | **12** |
| **13** | GPO:COM | **GND** | **14** |
| **15** | GPO1:NC | GPO2:NC | **16** |
| **17** | GPO1:NO | GPO2:NO | **18** |
| **19** | GPO3:NC | GPO4:NC | **20** |
| **21** | GPO3:NO | GPO4:NO | **22** |
| **23** | **GND** | **GND** | **24** |
| **25** | GPO5:NC | GPO6:NC | **26** |
| **27** | GPO5:NO | GPO6:NO | **28** |
| **29** | GPO7:NC | GPO8:NC | **30** |
| **31** | GPO7:NO | GPO8:NO | **32** |
| **33** | **GND** | **GND** | **34** |

**RS-232/422 DATA**

| | | | |
|---|---|---|---|
| **1** | TX A | RX A | **2** |
| **3** | TX+ A | RX+ A | **4** |
| **5** | **GND** | **GND** | **6** |
| **7** | TX B | RX B | **8** |
| **9** | TX+ B | RX+ B | **10** |
| **11** | **GND** | **GND** | **12** |
| **13** | TX C | RX C | **14** |
| **15** | TX+ C | RX+ C | **16** |
| **17** | --- | --- | **18** |
| **19** | --- | --- | **20** |
| **21** | **GND** | **GND** | **22** |
| **23** | TX D | RX D | **24** |
| **25** | **GND** | **GND** | **26** |
| **27** | --- | --- | **28** |
| **29** | --- | --- | **30** |
| **31** | **GND** | **GND** | **32** |
| **33** | --- | --- | **34** |

**Figure 2-1: 7700TPI-TRI2CDI Rear I/O Module and Pinout Assignments**

> **The 7700TPI-TRI2CDI rear plate will be screened as a 7700TPI. This is the correct rear plate that accompanies the 7700TPI-TRI2CDI module.**

## 2.1.  CONNECTING GPI/GPO, RS-232/422 INTERFACES

Three Terminal Block connectors are used to interconnect GPI, GPO, and serial communication lines to the 7700TPI-TRI2CDI module. The pins are identified in Figure 2-1 and defined in Table 2-1, Table 2-2 and Table 2-3. The input cables can be secured into the removable portion of the terminal strips using a small screwdriver.  The removable part of the terminal strip is then inserted into the rear panel and can be secured using the hold down screws.

| Pin Number | Pin Name | Pin Description |
|:---:|---|---|
| 1 | GPI 1 | General Purpose Input 1 |
| 2 | GPI 2 | General Purpose Input 2 |
| 3 | GPI 3 | General Purpose Input 3 |
| 4 | GPI 4 | General Purpose Input 4 |
| 5 | GPI 5 | General Purpose Input 5 |
| 6 | GPI 6 | General Purpose Input 6 |
| 7 | GPI 7 | General Purpose Input 7 |
| 8 | GPI 8 | General Purpose Input 8 |
| 9 | GPI 9 | General Purpose Input 9 |
| 10 | GPI 10 | General Purpose Input 10 |
| 11 | GPI 11 | General Purpose Input 11 |
| 12 | GPI 12 | General Purpose Input 12 |

**Table 2-1: Upper Left 2x6 Terminal Block Connector Pin Assignments**

| Pin Number | Pin Name | Pin Description |
|---|---|---|
| 1 | GPI 11 | General Purpose Input 11 |
| 2 | GPI 12 | General Purpose Input 12 |
| 3 | GPI 13 | General Purpose Input 13 |
| 4 | GPI 14 | General Purpose Input 14 |
| 5 | GPI 15 | General Purpose Input 15 |
| 6 | GPI 16 | General Purpose Input 16 |
| 7 | GPI 17 | General Purpose Input 17 |
| 8 | GPI 18 | General Purpose Input 18 |
| 9 | GPI 19 | General Purpose Input 19 |
| 10 | GPI 20 | General Purpose Input 20 |
| 11 | GND | Ground |
| 12 | GND | Ground |
| 13 | GPO:COM | General Purpose Output Common |
| 14 | GND | Ground |
| 15 | GPO1:NC | General Purpose Output 1 – Normally Closed |
| 16 | GPO2:NC | General Purpose Output 2 – Normally Closed |
| 17 | GPO1:NO | General Purpose Output 1 – Normally Open |
| 18 | GPO2:NO | General Purpose Output 2 – Normally Open |
| 19 | GPO3:NC | General Purpose Output 3 – Normally Closed |
| 20 | GPO4:NC | General Purpose Output 4 – Normally Closed |
| 21 | GPO3:NO | General Purpose Output 3 – Normally Open |
| 22 | GPO4:NO | General Purpose Output 4 – Normally Open |
| 23 | GND | Ground |
| 24 | GND | Ground |
| 25 | GPO5:NC | General Purpose Output 5 – Normally Closed |
| 26 | GPO6:NC | General Purpose Output 6 – Normally Closed |
| 27 | GPO5:NO | General Purpose Output 5 – Normally Open |
| 28 | GPO6:NO | General Purpose Output 6 – Normally Open |
| 29 | GPO7:NC | General Purpose Output 7 – Normally Closed |
| 30 | GPO8:NC | General Purpose Output 8 – Normally Closed |
| 31 | GPO7:NO | General Purpose Output 7 – Normally Open |
| 32 | GPO8:NO | General Purpose Output 8 – Normally Open |
| 33 | GND | Ground |
| 34 | GND | Ground |

**Table 2-2: Lower Left 2x17 Terminal Block Connector Pin Assignments**

| Pin Number | Pin Name | Pin Description |
|------------|----------|----------------|
| 1 | TX A | Serial Port A Transmit |
| 2 | RX A | Serial Port A Receive |
| 3 | TX+ A | Serial Port A Transmit (RS-422) |
| 4 | RX+ A | Serial Port A Receive (RS-422) |
| 5 | GND | Ground |
| 6 | GND | Ground |
| 7 | TX B | Serial Port B Transmit |
| 8 | RX B | Serial Port B Receive |
| 9 | TX+ B | Serial Port B Transmit (RS-422) |
| 10 | RX+ B | Serial Port B Receive (RS-422) |
| 11 | GND | Ground |
| 12 | GND | Ground |
| 13 | TX C | Serial Port C Transmit |
| 14 | RX C | Serial Port C Receive |
| 15 | TX+ C | Serial Port C Transmit (RS-422) |
| 16 | RX+ C | Serial Port C Receive (RS-422) |
| 17 | --- | No Connect |
| 18 | --- | No Connect |
| 19 | --- | No Connect |
| 20 | --- | No Connect |
| 21 | GND | Ground |
| 22 | GND | Ground |
| 23 | TX D | Serial Port D Transmit |
| 24 | RX D | Serial Port D Receive |
| 25 | GND | Ground |
| 26 | GND | Ground |
| 27 | --- | No Connect |
| 28 | --- | No Connect |
| 29 | --- | No Connect |
| 30 | --- | No Connect |
| 31 | GND | Ground |
| 32 | GND | Ground |
| 33 | --- | No Connect |
| 34 | --- | No Connect |

**Table 2-3: Lower Right 2x17 Terminal Block Connector Pin Assignments**

## 2.2.   GENERAL PURPOSE INPUTS & OUTPUTS

The GPI inputs are active low with internal pull-ups. If an input is left floating (not connected) it will not be activated.   Lowering the GPI input to a voltage below 0.8 volts will activate the input. GPIs can be activated by simply connecting the GPI input pins to ground using a button, switch, relay, or an open collector transistor.   The inputs are internally pulled up to either +5 or +12 volts DC set by jumper J10 (refer to Figure 7-1).
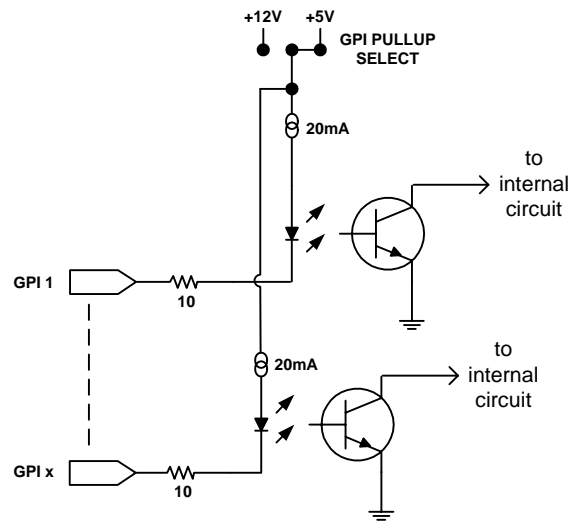
**Figure 2-2: Typical GPI Circuitry**

The GPO outputs are normally closed and normally open dry relay contacts and share a common connection, which can be tied to the module ground or to another reference voltage.
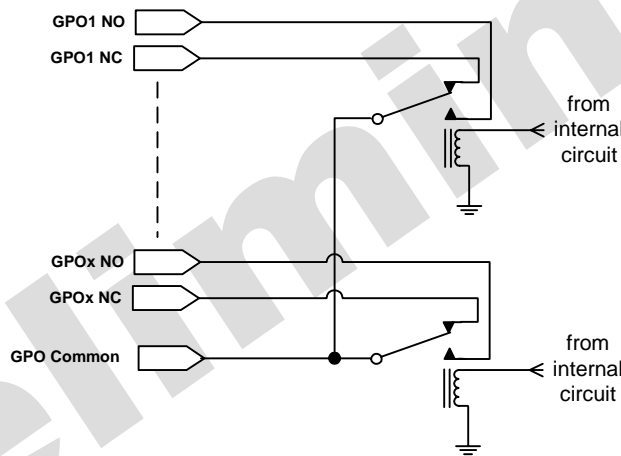


**Figure 2-3: Typical GPO Circuitry**

## 2.3. CONFIGURING THE MODULE OVER AN RS-232 SERIAL CONNECTION

Through the card-edge's serial port, and using the serial 7700 upgrade cable connected to a PC's serial port running HyperTerminal (or equivalent), the 7700TPI-TRI2CDI module's IP address, subnet, and SNMP TRAP destination address are identified. The 7700 upgrade cable supplied with the 7700FR-C frame is a multi-colored ribbon cable with a six pin header socket on one end and a female 9 pin D connector on the other end, (Evertz part number WA-S76) is normally in the vinyl pouch at the front of the manual binder. Configure the port settings of the terminal program as follows:

| Baud | **115200** |
|---|---|
| Data bits | **8** |
| Parity | **None** |
| Stop bits | **2** |
| Flow Control | **None** |

**Table 2-4: 7700TPI-TRI2CDI Configuration COM Settings**

Press the <Enter> key to see the main Menu.  In the Main Menu, the following options are present for module configuration. Once changes are completed and saved, the 7700TPI module should be power-cycled for the changes to take effect.
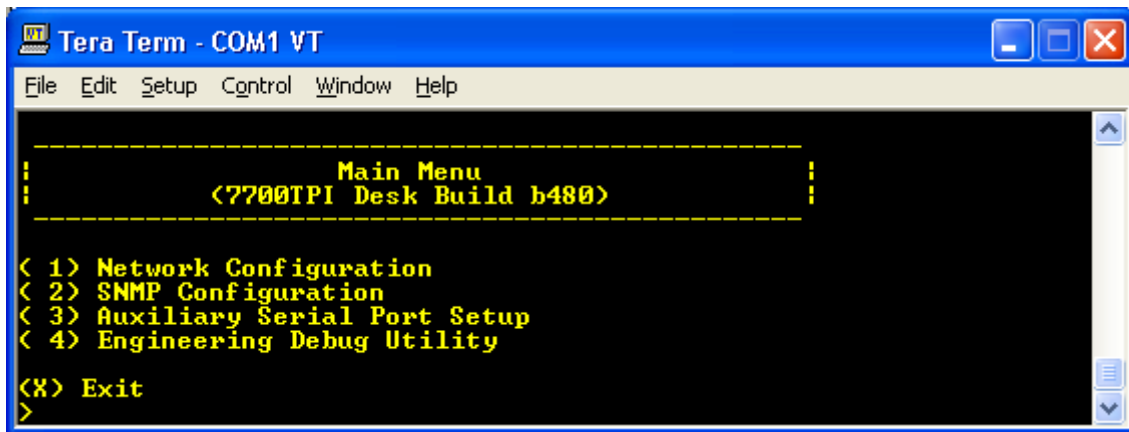


**Figure 2-4: 7700TPI-TRI2CDI Main Menu**

### 2.3.1.  Network Configuration Menu

This menu option is used to configure the network IP settings of the module.  Refer to Figure 2-5.
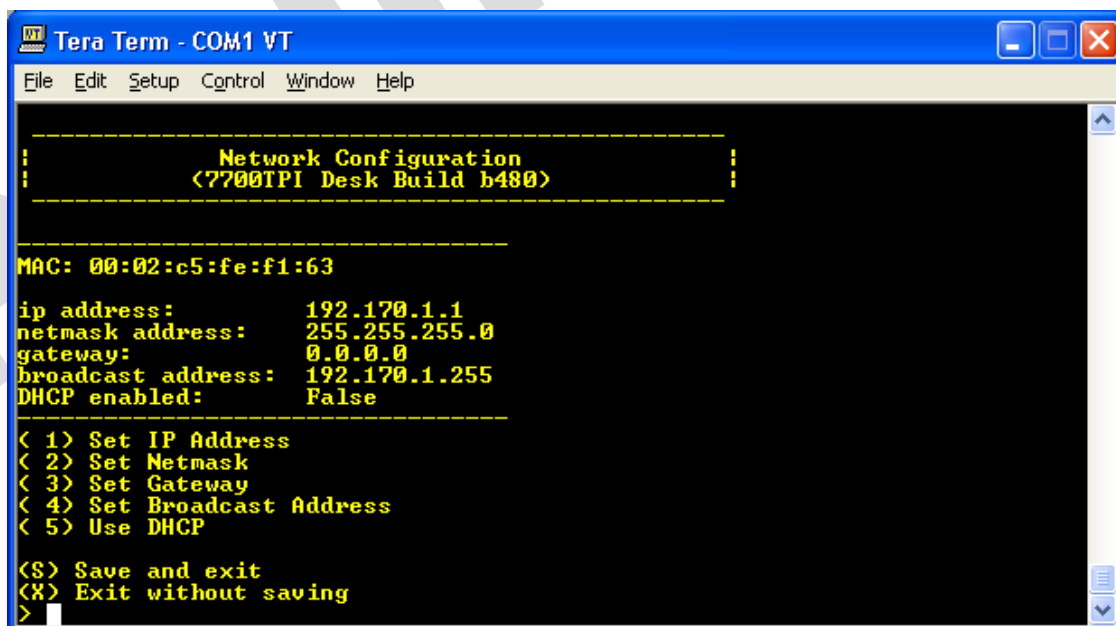


**Figure 2-5: 7700TPI-TRI2CDI Network Configuration Menu**

### 2.3.2. SNMP Configuration Menu

This menu option is used to configure the SNMP settings of the module. A maximum of 5 SNMP trap destinations can be configured. Refer to Figure 2-6.
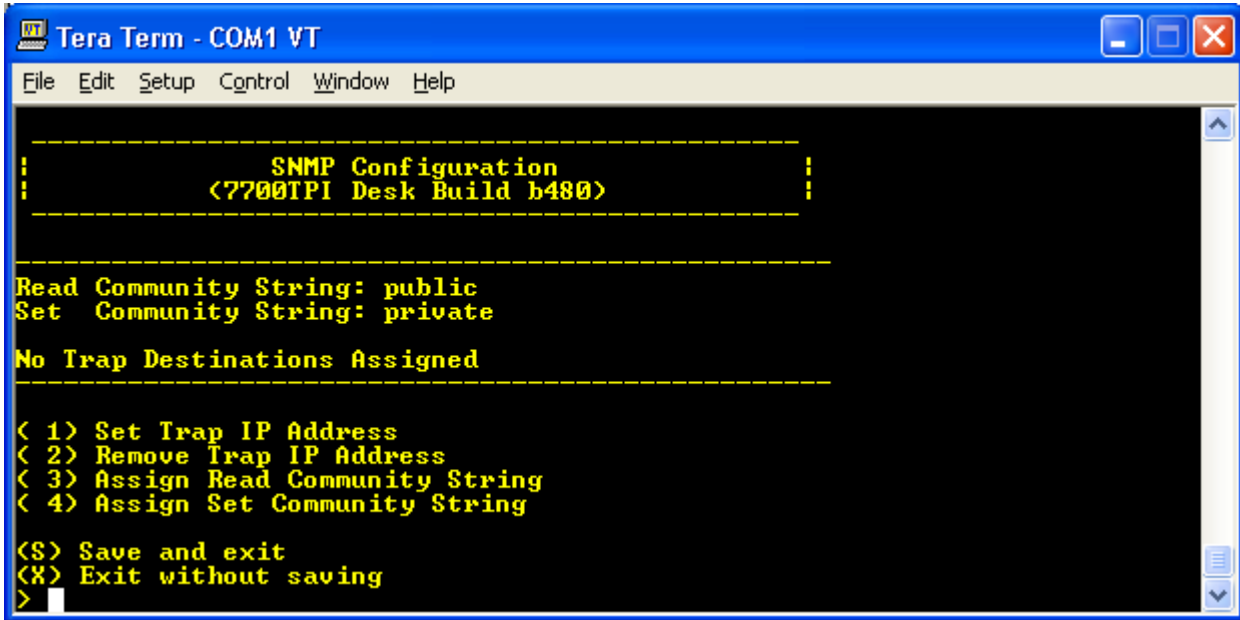


**Figure 2-6: 7700TPI SNMP Configuration Menu**

> **The 7700TPI-TRI2CDI firmware build version 492 and older does not support SNMP communication.**

### 2.3.3. Auxiliary Serial Port Configuration Menu

This menu option is used to configure the serial port settings of the module. Refer to Figure 2-7.

> **Any changes made to the serial port configuration settings will require a *(S) Save and Exit* to be applied followed by a reboot of the 7700TPI-TRI2CDI module.**
>
> **The save and reboot of the system can be done once all the serial port configurations have been made.**
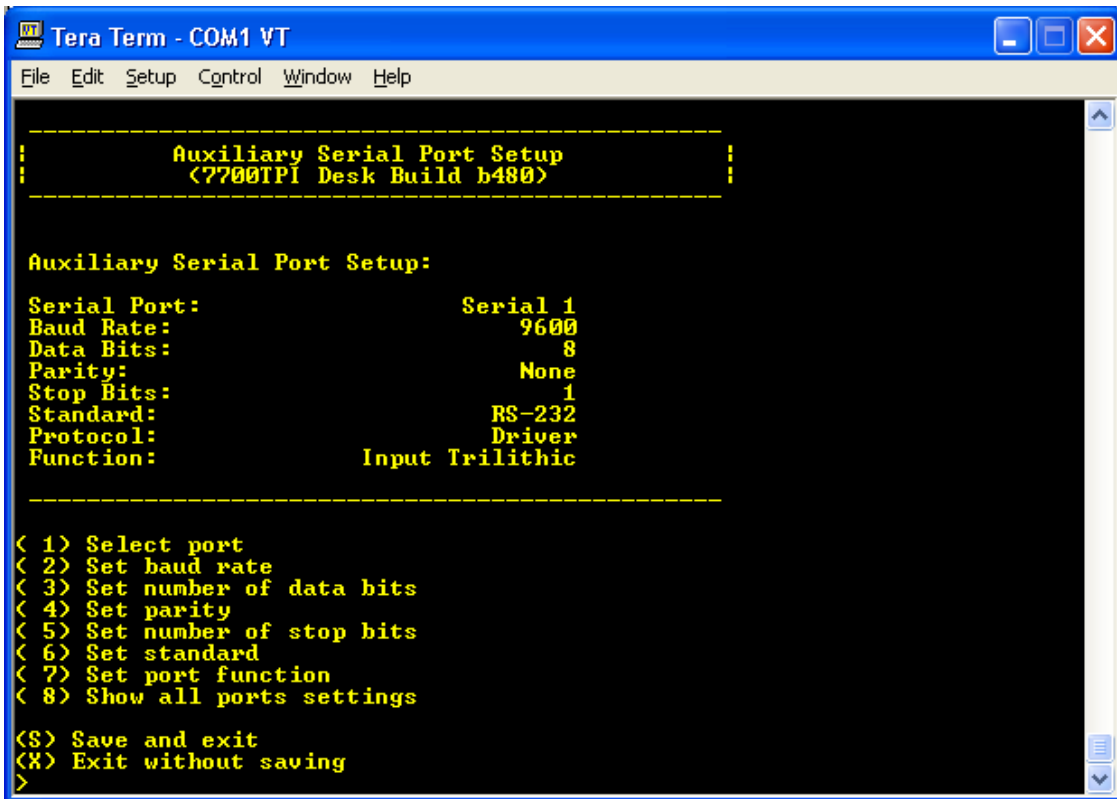
**Figure 2-7: 7700TPI-TRI2CDI Auxiliary Serial Port Configuration Menu**

### 2.3.3.1 Select Port

The *Select Port* menu option is used to set the current port that is to be configured. For example from Figure 2-7 above, the "Serial Port:" shows a value of "Serial 1". This indicates that any changes made to the baud rate, data bits, parity, etc, will be applied to Serial Port 1. To make changes to other serial ports, enter the *Select Port* menu option by entering a "1" at the prompt and then followed by an "enter" keystroke. The menu will then prompt for a new serial port to be entered (refer to Figure 2-8).



**Figure 2-8: 7700TPI-TRI2CDI Auxiliary Serial Port Configuration Menu**

Select a serial port followed by an enter keystroke.  The new serial port will then be updated in the setup banner (for example, if *Serial 3* was selected, then the "Serial Port:" will display a value of "Serial 3").

### 2.3.3.2  Set Baud Rate
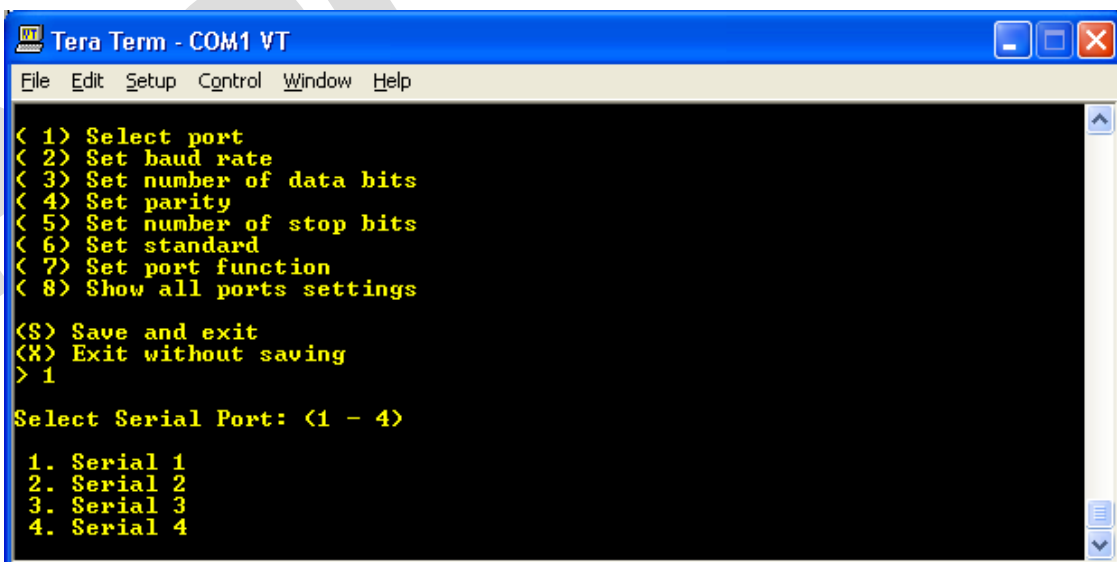
The *Set baud rate* menu option is used to set the baud rate for the current selected serial port.  The factory default setting for this option is **9600**bps.

### 2.3.3.3  Set Number of Data Bits

The *Set number of data bits* menu option is used to set the number of data bits for the current selected serial port.  The factory default setting for this option is **8***.*

### 2.3.3.4  Set Parity

The *Set parity* menu option is used to set the parity for the current selected serial port.  The factory default setting for this option is ***None.***

### 2.3.3.5  Set Number of Stop Bits

The *Set number of stop bits* menu option is used to set the number of stop bits for the current selected serial port.  The factory default setting for this option is **1***.*

### 2.3.3.6  Set Standard

The *Set standard* menu option is used to set the serial standard mode of operation for the current selected serial port.  The factory default setting for this option is **RS-232***.*

> ✍ **Serial Port #4 of the 7700TPI-TRI2CDI module is a dedicated RS-232 serial communication port and cannot be configured for RS-422 mode of operation.**

### 2.3.3.7  Set Port Function

The *Set port function* is used to define the function for the current selected port.  The 7700TPI-TRI2CDI provides the flexibility to define a single port as either an input or output.  The factory default setting for the serial ports 1 through 4 are defined in Table 2-5.

| Serial Port | Function |
|:---:|:---:|
| 1 | Input Trilithic |
| 2 | Output CODI (Direct) |
| 3 | Output TFT (Standard) |
| 4 | Output Sage (Generic) |

**Table 2-5: 7700TPI-TRI2CDI Factory Default Serial Port Functionality**

> ✍ **It is good practice to define which serial port will be the input port(s) before defining the output serial port(s).**

When defining a serial port to function as an output port, the 7700TPI-TRI2CDI will prompt for a mapping to an input port. For example, both serial ports 1 and 2 are defined as input ports to accept the Trilithic protocol. When defining serial port 3 as an output port to either Sage Generic, CODI Direct or TFT standard, the serial port will need to be mapped to either serial port 1 or 2 (ie. Should serial port 3 listen to serial port 1 or 2). This provides the flexibility to define more than 1 input serial port, effectively driving multiple systems with a single 7700TPI-TRI2CDI module.

> ✎ **The *Local Echo* mode is used strictly as a diagnostic mode of operation. This mode is useful to ensure that the wiring has been installed correctly. To use this feature, set the port function to *Local Echo,* Save and Exit, then reboot the 7700TPI-TRI2CDI module. Once rebooted use HyperTerminal (or equivalent), and begin typing random characters in the session. The data will be sent from the PC to the 7700TPI-TRI2CDI module and immediately be echoed back to the PC. The characters should appear in the terminal session. If the characters are not visible, then wiring may be faulty (refer to Figure 2-1 for the pinout assignments).**

### 2.3.3.8 Show all Port Settings

The *Show all port settings* can be used to view all the current settings for all 4 serial ports (refer to Figure 2-9).
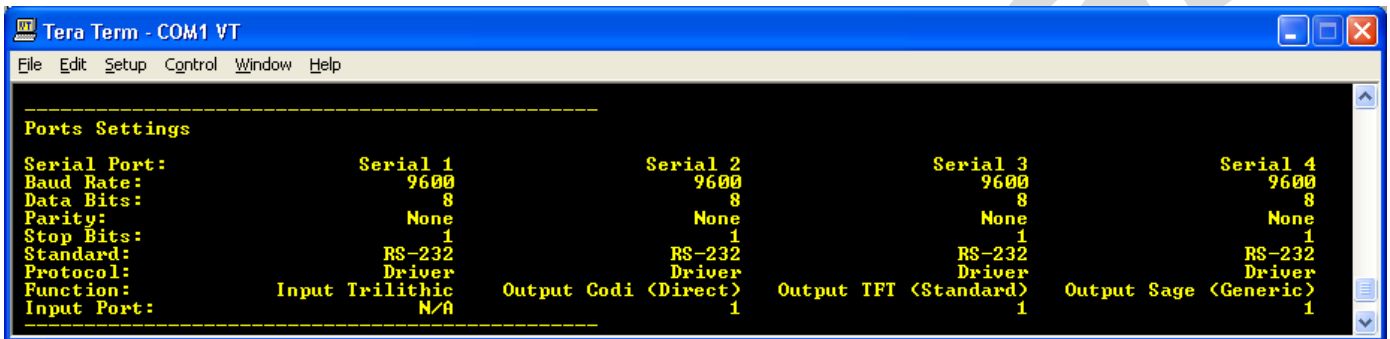


**Figure 2-9: 7700TPI-TRI2CDI Show All Serial Port Configurations**

### 2.3.4. Engineering Debug Utility

This menu option is used strictly as a diagnostic tool. This menu option may be accessed when working with the Evertz Service Department.

## 3. FACTORY RESET

To apply a factory reset to the 7700TPI-TRI2CDI module, apply the toggle switch in the upright position (towards the top edge of the module when installed in a 7700FR-C frame, or towards the left edge of the module when installed in a 7701FR), and reboot the module. The toggle switch must be held in the upright position for the entire duration of the boot sequence.

# 4. SPECIFICATIONS

## 4.1. GENERAL PURPOSE INTERFACE INPUTS

**Number of Inputs**    20
**Type**    Opto-isolated, active low with jumper selectable +5V or +12V supplied voltage
**Connector**    Terminal Block
**Signal Level**    Jumper selectable +5V or +12V

## 4.2. GENERAL PURPOSE INTERFACE OUTPUTS

**Number of Outputs**  8
**Type**    "Dry Contact" relay closure
**Connector**    2 pins per output on Terminal Block
**Signal Level**    Normally Closed and Normally Open

## 4.3. DATA INPUT SERIAL PORT

**Number of Ports**    4 RS-232 or 3 RS-422
**Connector**    Terminal Block
**Baud Rate**    User selectable, up to 115200 bps

## 4.4. ELECTRICAL

**Voltage**    +12VDC
**Power**    < 6W
**EMI/RFI**    Complies with FCC Part 15, Class A EU EMC Directive

## 4.5. PHYSICAL

**7700 frame mounting:**
  **Number of slots:**  2

**7701 frame mounting:**
  **Number of slots:**  1

**Stand Alone Enclosure:**
  **Dimensions:**    14 " L x 4.5 " W x 1.9 " H
                   (355 mm L x 114 mm W x 48 mm H)
  **Weight:**    approx. 1.5 lbs. (0.7 Kg)

# 5.  STATUS INDICATORS

The 7700TPI-TRI2CDI modules have a number of LED Status indicators on the card edge of the board to show operational status of the card at a glance.  Refer to Figure 5-1.
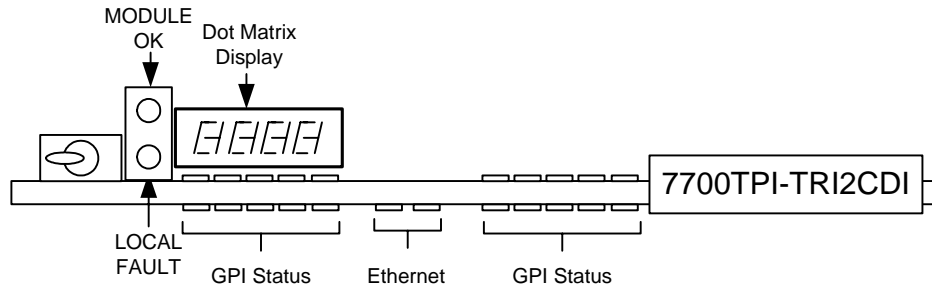


**Figure 5-1: LED Status Indicators and Card Edge Controls**

Two large LEDs on the front of the board indicate the general health of the module.

**LOCAL FAULT:**    This red LED indicates poor module health and will be ON during the absence of a valid input signal or if a local input power fault exists (i.e.: a blown fuse). The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

**MODULE OK:**    This green LED indicates good module health. It will be ON when a valid input signal is present on both inputs, and the board power is good.

**DOT MATRIX:**    This display will provide high level system information, such as product ID, firmware version and IP address.  This information will be scrolling across the display.

**GPI STATUS:**    These green LEDs indicate when a GPI has been asserted.  There are 20 LEDs, each mapping to a unique GPI.

**ETHERNET:**    These 2 green LEDs indicate when Ethernet activity is detected.

# 6.  CARD EDGE CONTROLS

The 7700TPI modules are equipped with a toggle switch.  This control can be found towards the top of the module when inserted within a 7700FR-C frame.  Refer to Figure 5-1.



**Figure 5-1: Card Edge Controls**

**TOGGLE SWITCH:**    This control is used to factory reset the module during the boot sequence.

# 7. LOCATION OF LEDS AND JUMPERS



**Figure 7-1: LED and Jumper Locations**

## 7.1. SELECTING WHETHER LOCAL FAULTS WILL BE MONITORED BY THE GLOBAL FRAME STATUS
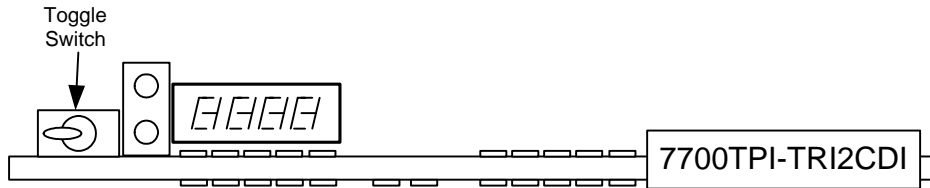
**FRAME STATUS**    The FRAME STATUS jumper located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR-C frame's global status bus.

To monitor faults on this module with the frame status indicators (on the PS FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position. (Default)

When this jumper is installed in the Off position, local faults on this module will not be monitored.

## 7.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

The 7700TPI-TRI2CDI module contains firmware that is contained in a FLASH EPROM device. From time to time firmware updates will be provided to add additional features to the unit.

There are two methods of updating the firmware in the 7700TPI-TRI2CDI: File Transfer Protocol (FTP) and Serial Upload. To minimize upgrade wait time, the FTP method is the preferred method of updating the firmware.

Prior to initiating the upgrade process
- Confirm the version of code currently installed on the unit by using the front panel display.
- Download the new application code from the Evertz FTP site (www.evertz.com) Unzip the file into a temporary working folder on your PC.

You will need the following equipment in order to update the Firmware
- PC with available communications port and Ethernet network port.
- "Straight-thru" serial extension cable (DB9 female to DB9 male) or (DB25 female to DB9 male).
- Special upgrade cable supplied with the 7700FR-C frame. This multi-colored ribbon cable with a six pin header socket on one end and a female 9 pin D connector on the other end, (Evertz part number WA-S76) is normally in the vinyl pouch at the front of the manual binder.
- Appropriate Ethernet cable as outlined in section 7.2.1.2
- Terminal program such as HyperTerminal
- New firmware supplied by Evertz.

### 7.2.1.  Upgrading the Firmware Using FTP

#### 7.2.1.1   Determine the IP Address Of The Module

Before any FTP (file transfer protocol) upgrades can be initiated, the user must determine the IP address of the module.  The IP address can be found scrolling across the card edge dot matrix display, or alternatively refer to section 2.3.1 to recall the IP address.

#### 7.2.1.2   Establishing a Valid Network Connection

Before upgrading the unit, a valid network connection must be determined

1. Connect a PC/Latop to the same network the 7700TPI-TRI2CDI module resides.  If connecting directly to the module then a crossover network cable must be used.

2. Open a DOS window.  This can be accomplished by using the run command under the start button, type "cmd"; see the figure below for an example:
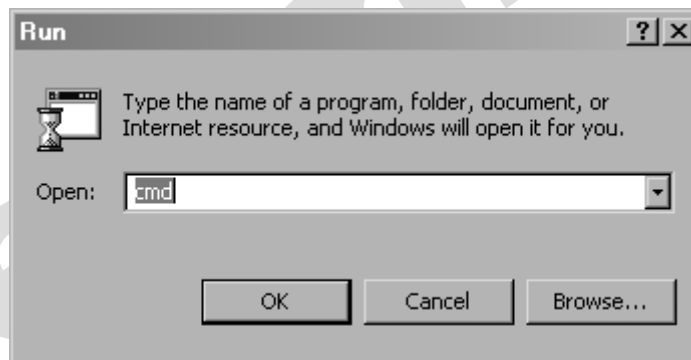


**Figure 7-2: Opening a DOS Command Window**

3.  "Ping" the IP address of the module being upgraded to confirm that you have a valid network connection. In the command prompt window type: `ping xxx.xxx.xxx.xxx <Enter>` (IP address of the module)

If a proper network connection has been established, a "reply" is displayed on the DOS window. If there is a faulty network connection, a "Destination Host Unreachable" message is provided. If this occurs, both the IP addresses of the nodes should be verified or the network (Ethernet) cable may be faulty.

**Figure 7-3: Pinging a 7700TPI-TRI2CDI Module**

#### 7.2.1.3  FTP Upgrade

Using the same DOS command prompt from the previous section, apply the following steps to upgrade the 7700TPI module.

1. Obtain the new application code and place it on the local drive of the PC.

2. In the command prompt window type: ftp xxx.xxx.xxx.xxx (IP address of the module).

3. Press the <Enter> key when prompted for a "Username".

4. Press the <Enter> key when prompted for a "Password".  A message indicating that you logged in is displayed.

5. At the "FTP>" prompt type hash to turn on the progress indicator during the ftp upload.

6. At the "FTP>" prompt type quote site upgrade to put the unit in upgrade mode.  A message indicating that you are in upgrade mode is displayed.

7. At the "FTP>" prompt type: put "the name of the file.bin" to send the firmware to the unit. (For example: put 7700tpi-1.0.0.bin)

> **If the application file is not local to where you are performing the ftp, then include the path with the name (For example: put  c:\firmware\  7700tpi-tri2cdi-1.0.0.bin)**

> **During this time it is mandatory that all power cycles of the unit be avoided. The figure below displays a successful FTP session.**

8. A message indicating the successful connection to the module is displayed.

9. File transfer occurs in several seconds, and the DOS window displays the "FTP>" prompt again.

10. At the "FTP>" prompt type quit to exit the FTP procedure.

```
C:\WINNT\System32\command.com                                    _|□|×|
Microsoft(R) Windows DOS
(C)Copyright Microsoft Corp 1990-1999.

C:\>ftp 192.168.8.212
Connected to 192.168.8.212.
220-Evertz FTP Server.
   Copyright 2001 Evertz Microsystems Ltd.  All rights reserved.
   VIP version Desk Build.
220 Type QUOTE HELP for information.
User (192.168.8.212:(none)):
331 User name okay, need password.
Password:
230 User logged in, proceed.
ftp> hash
Hash mark printing On  ftp: (2048 bytes/hash mark) .
ftp> quote site upgrade
200 FTPD is in upgrade mode
ftp> put c:\firmware\hd9690_1v0b123.bin
200 PORT command successful.
150 Opening data connection.
############################################################################
############################################################################
############################################################################
############################################################################
############################################################################
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############################################################################
############################################################################
#############################################################
226 Upgrade successful.
ftp: 5554912 bytes sent in 65.52Seconds 84.79Kbytes/sec.
ftp> quit
221 Goodbye.

C:\>_
```

**Figure 7-4: FTP Upgrading a 7700TPI-TRI2CDI Module**

### 7.2.1.4  Completing the FTP Upgrade

At this point the firmware has been accepted by the 7700TPI-TRI2CDI module.  For the new firmware to take affect, and reboot of the module is required.  This can be done by removing the module from the 7700FR-C frame and re-inserting the module.  Please ensure that the 7700TPI-TRI2CDI module has been firmly seated into place and proper contact has been made with the rear plate.

### 7.2.2. Upgrading The Firmware Over An RS-232 Serial Connection

**UPGRADE**        The UPGRADE jumper J2 located at the front edge of the module, near the serial port header, is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* section in the front of the binder for more information.

To upgrade the firmware in the module pull it out of the frame. Move Jumper J2 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J1 near the card ejector. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* section in the front of the binder. Once the upgrade is completed, remove the module from the frame, move J2 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

> **Note that the baud rate for serial firmware upgrades is 115200 baud.**

## 7.3. CONTROLLING GPI PULL-UP VOLTAGE

Jumper J10, located at the rear of the module, controls whether the GPI inputs and outputs are pulled up to 5 volts or 12 volts.

**GPI SELECT:**      To pull the GPI inputs and outputs up to 12 volts install this jumper in the position closest to the rear edge of the module.

To pull the GPI inputs and outputs up to 5 volts install this jumper in the position closest to the front edge of the module.