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Touch-It Digital (TID)

Digital 8 or 16-Channel HD/SD-SDI Touch-Screen Multiviewer/Switcher

User Guide
Video Firmware Version: 1.93
Netburner Version: 2.10
Hardware Version: C

Part Number 821653, Revision F

panorama®

the video division of Wohler

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Customer Support

Wohler Technologies, Inc.
31055 Huntwood Avenue
Hayward, CA 94544
www.wohler.com

Phone: 510-870-0810
FAX: 510-870-0811
US Toll Free: 1-888-596-4537
(1-888-5-WOHLER)
Web: www.wohler.com
Sales: sales@wohler.com
Support: support@wohler.com

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Preface

Introduction

Overview

This preface describes the latest improvements to the Touch-It Digital Series multiviewer/switchers.

Topics

What's New?

Hardware Updates

We've updated the rear panel to simplify the number and function of output connectors. Instead of having one set for the 16-channel model and another set the for the 8-channel model, we now have one set of output BNCs for both. However, input connectors 9 through 16 are still non-functional on the 8-channel model.

We have removed the unused **Proc** and **Ref I/P** connectors, as well.

Software Updates

We have also improved the switching functionality and improved the channel switching response time.

CHAPTER 1

Using the Touch-It Digital

Introduction

Overview

Congratulations on your selection of a Touch-it Digital (TID) video touchscreen monitor and switcher/router system. All Touch-it Series products offer a simple and easy way to monitor digital SDI or HD-SDI multi-channel video, provide routing, and external screen output in a compact, versatile space-saving 3RU. They also feature dual high resolution 7" LCD panels with up to eight or 16 channels of video. Touching one of the "thumbnail" images on the **Touchscreen** (left monitor) selects that channel for full size display on the **Target** (right monitor) and sends the source signal to two output BNC connectors. The TID is ideal for multi-camera live shoots, machine rooms, and outdoor broadcasts. It is not intended for editing, transmission chain or other applications where synchronized switching is required.

Topics

Safety Instructions

1. Read, keep, and follow all of these instructions; heed all warnings.
2. Do not use this equipment near water.
3. Use only a dry cloth to clean the equipment.
4. Do not block any ventilation openings. Install only in accordance with the instructions in the section entitled, "Installation Recommendations" on page 6.
5. Do not install near any heat source such as a radiator, heat register, amplifier, or stove.
6. Do not expose the equipment to rain or moisture.
7. Do not attempt to plug the unit into a two-blade outlet (with only two prongs of equal width).

IMPORTANT: By design, these monitors will only plug into a three-prong outlet for your safety. If the plug does not fit into your outlet, contact an electrician to replace the obsolete outlet.

8. Protect the power cord from being walked on or pinched, particularly at plug's source on the equipment and at the socket.
9. Use only the attachments/accessories specified by the manufacturer.
10. Unplug the equipment during lightning storms or when unused for long periods of time.
11. Refer all servicing to qualified service personnel. Servicing will be required under all of the following conditions:
    - The equipment has been damaged in any way, such as when the power-supply cord or plug is damaged.
    - Liquid had been spilled or objects have fallen onto the equipment.
    - The equipment has been exposed to rain or moisture.
    - The equipment does not operate normally.
    - The equipment has been dropped.

Features

Overview

- The unit fits in a 3U standard 19″ rack space with shallow depth for installation in tight spaces.
- External universal AC to DC 24V (low power consumption) power supply attaches to the back panel. (Refer to Figure 1–4 on page 11.)

Monitors and Front Panel

- The unit has dual 7″ LCD high-resolution color video monitors.
- Aspect ratios on the **Target**:
  - SD signals can be displayed in:
    - Normal (4:3),
    - Full-screen (4:3 stretched to fit the 16:9 screen), or
    - Shadowbox (4:3 on a 16:9 screen without stretching).
  - HD signals are always 16:9.
- Aspect ratio for the **Touchscreen** is anamorphic (“stretch-to-fit”).
- The **Touchscreen** displays multi-image thumbnails:
  - 8-Channel Model: 4 or 8 thumbnails (with source labels) for up to 8 video sources
  - 16-Channel Model: 4, 8, 12, or 16 thumbnails (with source labels) for up to 16 video sources.
- The front panel provides controls for brightness, contrast, tint, and color of the **Target**.
- Video controls are set and memorized for each of the installed video inputs.

- The LCD backlight may be turned off to conserve power and increase backlight life, while all other functions remain powered.

Signal Routing and Back Panel

- A VGA output of the **Touchscreen** is available from a rear panel HD-15 connector.
- The embedded audio signal in the selected channel is passed through to the outputs unchanged.
- The TID has eight or 16 HD/SD-SDI multi-rate inputs.
- The back panel has eight or 16 general purpose GPI/O connectors to control the system with drive or driven functionality.
- All inputs are opto-isolated and outputs are relay-isolated allowing for a wide range of control interface options.
- All GPI/Os are individually user-programmable for either input or output functionality.

Specifications

The specifications for the TID are listed in Table 1–1 below.

Table 1–1 TID System Specifications

Specification	Value
Screen Treatments	Anti-glare 4H hardness
Active Viewing Area	6.102″ (H) x 3.43″ (V) [155.00 mm (H) x 87.12 mm (V)]
Resolution	854 W x 480 H
Pixel Response	25 ms Off-On-Off (Black to White to Black)
Luminance	400 cd/m2
Contrast	400:1
Viewing Angle	110° H x 130° measured edge-to-edge
Chromacity	72% CIE 1931 color gamut

Table 1–1 TID System Specifications

Specification	Value
Color Temperature	D65
Power Requirements	100 V to 240 V AC, 50/60Hz
Power Consumption	60 Watt (Approx.)
Space Requirements	17.25″ x 5.25″ x 5.25″ (439mm x 133.4 mm x 133.4 mm)
Weight	11.2 lbs / 5.08 kg
Supplied Accessories	AC power cord

The TID can operate with various SD and HD formats as shown in Table 1–2 and Table 1–3 below.

Table 1–2 Frame Rates 25 and 50 Hz

Type	Format	Frame Rate (Hz)
SMPTE 242M	1080i	50
		25
	1080SF	25
	720p	50
ITU-RBT.601-5	625i	50

Table 1–3 Frame Rates - 29.97, 30, 59.94 and 60 Hz

Type	Format	Frame Rate (Hz)
SMPTE 242M	1080i	60
		59.94
	1080SF	30
		29.97
SMPTE 240M	1035i	60
		59.94
SMPTE 264M		60
SMPTE 296M	720p	59.94
		60
SMPTE 259M	525i	59.94

Important: The **Touchscreen** source signals must all be listed in the same table, (i.e., either **all** of them must be 25 or 50 Hz [Table 1–2] or **all** of them must be 29.97, 30, 59.94, or 60 Hz [Table 1–3]). Mixing signal types from both of these two categories may not work.

Installation Recommendations

Mounting

The unit is designed to install into a standard 19" rack, but may be placed on a solid surface as well. The unit should be mounted at eye level for best visual observation of the monitor screens and within easy reach for convenient **Touchscreen** operation.

Heat Dissipation

The ambient temperature inside the mounting enclosure should not exceed 40° Celsius (104° Fahrenheit). Adjacent devices can be rack mounted (or stacked) in proximity to the unit if the above temperature is NOT exceeded. Allow a 1RU (1.75”/44.45mm) space above and below the unit for air circulation.

Important: To maintain proper internal cooling, it is very important to ensure that the cooling fans on the sides of the Touch-It Digital are not obstructed. The left fan is an air intake and the right one is an exhaust fan. If two or more Touch-It Digital units are installed next to each other, it is also important to prevent heat exhaust from one being blown into the cool air intake vent of an adjacent unit.

Power

The unit comes with a standard 24VDC/3.0A external power supply that clips onto a back panel bracket and then connects an A/C mains power source (100 to 240 VAC, 50/60Hz) to the connector provided on the rear panel of the unit.

Using the TID

After touching the thumbnail on the **Touchscreen**, the selected channel is also routed for output from the BNC connectors on the rear panel. The characteristics of the selected input source is passed to the outputs without alterations (i.e., the native format, aspect ratio, and other

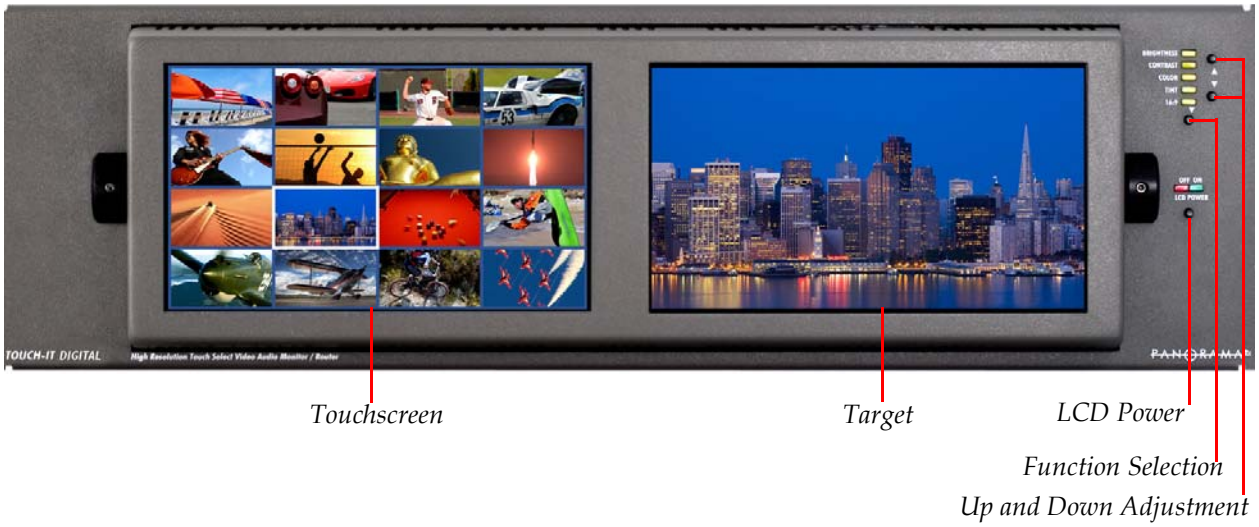
characteristics are not changed). Embedded audio is also passed through unchanged.

Note: Audio pops from switching channels are the result of asynchronous inputs with no master clock and are not an indication of a problem with the TID.

Front Panel

The descriptions of each of the front panel features follows Figure 1–1 below.

Figure 1–1 TID Front Panel



Touchscreen: Touching any of the thumbnails on the **Touchscreen** selects that video source for display on the **Target**. When the **Touchscreen** is disabled by turning the LCD backlight power off, the last selected source remains routed to the BNC outputs on the rear panel.

Note: The **Touchscreen** is designed to be used with your finger tip, not a sharp instrument.

Target: The **Target** is the primary monitor. To change the video source, simply touch the thumbnail image of your choice from the **Touchscreen**.

Note: On occasion, you may barely detect a slight flicker on the **Target**. This is the result of periodic, internal self-testing and has no effect on the selected SDI video output.

LCD Power: This switch toggles both of the video display backlights on or off. An LED above the switch glows green to indicate backlight power is on and another LED glows red to indicate backlight power is off. This switch affects only LCD backlight operation; the unit continues to be powered with all routing functions in full operation regardless of this switch setting, as long as the unit is connected to an active mains power.

Function Selection and Up and Down Adjustments: These buttons control the adjustments for the **Target** brightness, contrast, color, tint and aspect ratio (normal, full-screen, or shadowbox). Video controls are set and retained for each of the configured inputs in non-volatile memory.

Note: The unit always selects source one when it powers up. All changes to any source are saved after 10 seconds.

Adjusting LCD Display Parameters

Press the **Function Selection** button to cycle through each parameter (LEDs glow amber for selected parameter). When desired parameter is selected, use the **+** (up) and **-** (down) buttons to adjust the parameter as required.

Note: Aspect ratio selection is only available for SD inputs (normal, full-screen, or shadowbox). HD inputs default to 16:9 aspect ratio. Once the signal reverts back to SD, the aspect ratio becomes selectable.

Selecting the Thumbnail Quantity

To change the number of thumbnails displayed in the **Touchscreen**, cycle the control parameters to the default state (no LEDs are lit), press and *hold* the **Function Selection** button, and then press the **+** or **-** button to cycle up or down through the selections. Note that a change to the number of thumbnails does not change a previous source selection.

The thumbnail channel numbers increase from left to right and from top to bottom, as shown in Figure 1–2 below.

Figure 1–2 Thumbnail Numbering Schema

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

The thumbnail number is the same as the source ID number (i.e., Thumbnail 1 is from Source 1, and so on). The source ID for each channel (Source 1, Source 2, and so on) is displayed in the associated thumbnail display. The displayed source ID numbers can be toggled on and off using the display controls. Moreover, you can customize the text for these displays—they do not have to display the source ID numbers. (Refer to Table 1–12: Source Cfg. Menu Option Descriptions on page 22 for more information.)

Figure 1–3 Images Showing 4, 8, and 12 Thumbnails on the Touchscreen

4 Up

8 Up

12 Up

Turning Thumbnail Source ID Display On/Off

When the aspect ratio (16:9) control is selected (lit LED), press and *hold* the **Function Selection** button and then press the + button to toggle the **Touchscreen** source ID displays on and off.

Setting Selected Thumbnail to Blink

To set the selected thumbnail border to blink, press and hold both the + and - buttons together for a second and then release. Repeat to discontinue the blinking. The advantages of setting the thumbnail border to blink are:

- The blinking border attracts the eye, even when the video content would make the selection difficult to see.
- You can see the selected thumbnail from a greater distance away from the TID.

- The blinking border allows you to see the whole thumbnail image between blinks.

Calibrating the Touchscreen

1. Turn off the LCD Power button.

2. Press and hold the Function Selection button and then press the LCD Power button, releasing them together.

3. The touch screen will display a small, blue rectangle above the following message:

```
Calibrate the touch screen to your touch.
Using your finger, press and hold each square
Until you see the next one in sequence.

1 of 16
```

As you touch each rectangle, the counter will increase until you have touched the last one. Once the calibration is complete the system will display the following message for three seconds and then return to its normal operational mode.

```
Calibration Complete!
```

Restoring Factory Defaults

To return a control setting to the original factory default, select the desired parameter (LED lit), then press and *hold* the **Function Selection** button while pressing the Up (+) button.

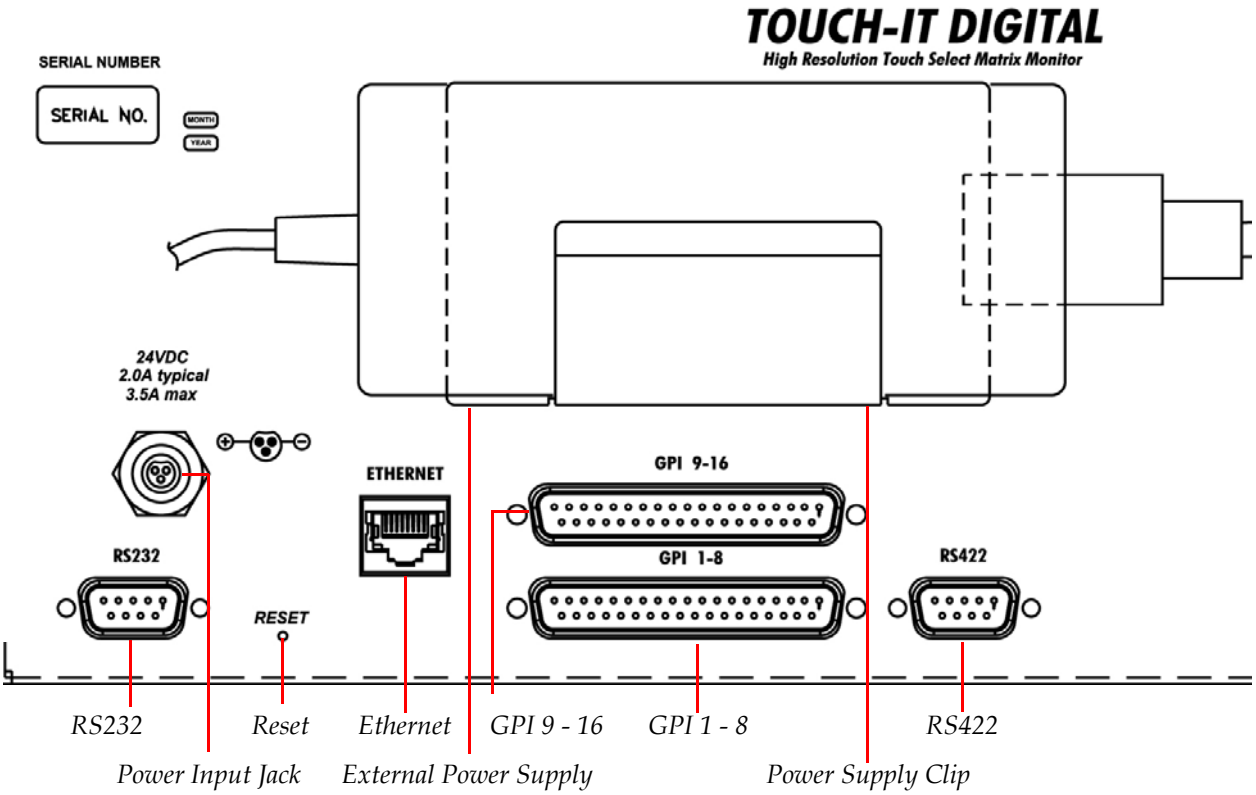
Rear Panel

The rear panel features 16 HD/SD-SDI inputs on BNC connectors. The selected source is output from two BNC connectors. Embedded audio for the selected channel is passed through the system unchanged.

The integrated RS232 connections provide full remote setup and control.

The descriptions of each of the rear panel features follows Figure 1–4 below.

Figure 1–4 Rear Panel (Left Side)



Power: To power the unit, attach the supplied 24VDC, 3.0A external power supply to the back panel and plug it into the mains power (100 to 240 VAC ± 10%, 50/60Hz). (A bracket on the rear panel is provided to hold the power supply securely in place.)The front panel power LED glows red or green to indicate the unit is receiving power.

RS232: Serial, terminal-based connectivity is provided at this DB-9 connector. A cable attached between this connector and a Windows computer serial interface will allow for remote setup of a number of parameters using the integrated Console application in the Touch-it Digital firmware. See Using the Console on page 16 for instructions to setup and use the integrated Console application.

Table 1–4 RS232 Pin Out Definitions

Pin	Signal
1	(NC)
2	Transmit Data (TD)
3	Receive Data (TD)
4	(NC)
5	Common Ground

Table 1–4 RS232 Pin Out Definitions (Continued)

Pin	Signal
6	(NC)
7	(NC)
8	(NC)
9	(NC)

Reset: To reset the entire unit and perform a cold start (equivalent to a power up) insert the end of a paper clip or some other small instrument.

Ethernet Network: This RJ45 connector is provided for software updates and future network and automation control functions. This connector is currently used to load upgrades (Chapter 2: Upgrading the Touch-It Digital) into the unit. Settings are entered using the Console application. See Using the Console on page 16 for instructions to setup and use the integrated Console application.

GPI (1 - 8 and 9 - 16): General purpose I/O is provided by one of two DB-37 connectors for output control over external equipment (tape machines, servers, and so on) and input control for selected unit functions (source select, screen configuration, and so on). Setup of these inputs/outputs is performed through the console application (See Using the Console on page 16).

Table 1–5 GPI/O Pin Out Definitions

Pin	GPI 1-8 Function	GPI 9-16 Function	Use
1	Ground	Ground	Common for Internal +5 VDC Power
2	GPI 1 (+)	GPI 9 (+)	Positive connection for each General Purpose Input
3	GPI 2 (+)	GPI 10 (+)	
4	GPI 3 (+)	GPI 11 (+)	
5	GPI 4 (+)	GPI 12 (+)	
6	GPO 1	GPO 9	NC/NO for each General Purpose Output
7	GPO 2	GPO 10	
8	GPO 3	GPO 11	
9	GPO 4	GPO 12	
10	+5 VDC	+5 VDC	Internal Power
11	GPI 5 (-)	GPI 13 (-)	Negative connection for each General Purpose Input
12	GPI 6 (-)	GPI 14 (-)	
13	GPI 7 (-)	GPI 15 (-)	
14	GPI 8 (-)	GPI 16 (-)	

Table 1–5 GPI/O Pin Out Definitions (Continued)

Pin	GPI 1-8 Function	GPI 9-16 Function	Use
15	GPO 5 (Com)	GPO 13 (Com)	Armature Contacts for each General Purpose Output
16	GPO 6 (Com)	GPO 14 (Com)	
17	GPO 7 (Com)	GPO 15 (Com)	
18	GPO 8 (Com)	GPO 16 (Com)	
19	+5 VDC	+5 VDC	Internal Power
20	GPI 1 (-)	GPI 9 (-)	Negative connection for each General Purpose Input
21	GPI 2 (-)	GPI 10 (-)	
22	GPI 3 (-)	GPI 11 (-)	
23	GPI 4 (-)	GPI 12 (-)	
24	GPO 1 (Com)	GPO 9 (Com)	Armature Contacts for each General Purpose Output
25	GPO 2 (Com)	GPO 10 (Com)	
26	GPO 3 (Com)	GPO 11 (Com)	
27	GPO 4 (Com)	GPO 12 (Com)	
28	+5 VDC	+5 VDC	Internal Power
29	+5 VDC	+5 VDC	
30	GPI 5 (+)	GPI 13 (+)	Positive connection for each General Purpose Input
31	GPI 6 (+)	GPI 14 (+)	
32	GPI 7 (+)	GPI 15 (+)	
33	GPI 8 (+)	GPI 16 (+)	
34	GPO 5	GPO 13	NC/NO for each General Purpose Output
35	GPO 6	GPO 14	
36	GPO 7	GPO 15	
37	GPO 8	GPO 16	

Note: All of the general purpose inputs and outputs may be configured to be normally open (N.O.) or normally closed (N.C.) in their function. See Table 1–10 for details.

RS422: This connector is reserved for future use.

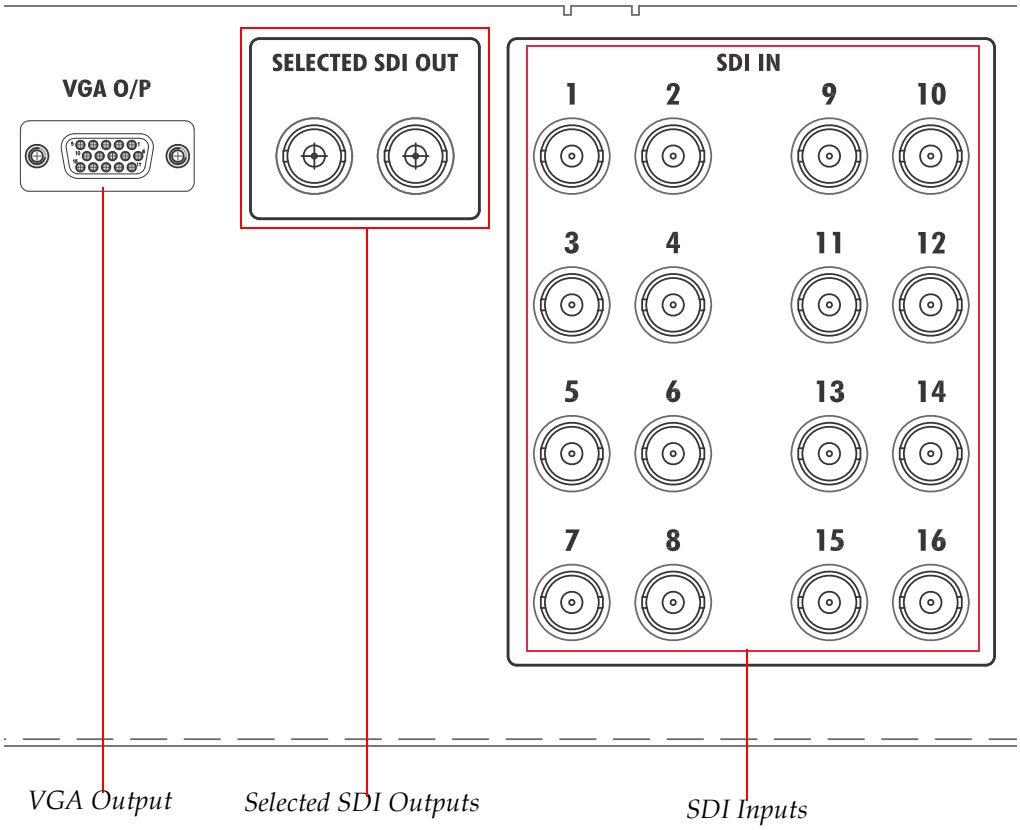
Table 1–6 RS422 Pin Out Definitions

Pin	Signal
1	Common Ground
2	Transmit Data Low (TXDL)
3	Receive Data Low (TXDL)
4	Common Ground
5	(NC)
6	Common Ground

Table 1–6 RS422 Pin Out Definitions (Continued)

Pin	Signal
7	Transmit Data High (TXDH)
8	Receive Data High (TXDH)
9	Common Ground

Figure 1–5 Rear Panel (Right Side)



VGA Output: This HD-15 connector outputs a VGA (PC-RGBHV) video signal of the **Touchscreen**.

The connector pinout is shown in Figure 1–6 and described in Table 1–7 below.

Figure 1–6 VGA Output Pinout Numbering Schema

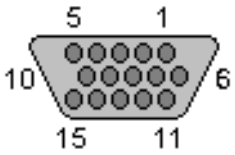


Table 1–7 VGA Output Pinout Descriptions

Pin	Name	Direction	Description
1.	Red	→	Red Video: 75ohm, 0.7 V p-p
2.	Green	→	Green Video: 75ohm, 0.7 V p-p
3.	Blue	→	Blue Video: 75ohm, 0.7 V p-p
4.	ID2	←	Monitor ID Bit 2
5.	GND	—	Ground
6.	RGND	—	Red Ground
7.	GGND	—	Green Ground
8.	BGND	—	Blue Ground
9.	Key	-	Key (No Pin)
10.	SGND	—	Synch Ground
11.	ID0	←	Monitor ID Bit 0
12.	ID1 or SDA	←	Monitor ID Bit 1
13.	HSYNC or CSYNC	→	Horizontal Sync (or Composite Sync)
14.	VSYNC	→	Vertical Sync
15.	ID3 or SCL	←	Monitor ID Bit 3

Selected SDI Outputs: The selected source signal routed to the **Target** is also output from these two connectors. Output signals are re-shaped copies of the selected source signal. If there is embedded audio in the selected source, it is passed-through unchanged to these outputs.

SDI Inputs: Eight or 16 separate channels of HD-SDI or SD-SDI video signals are accepted at these BNC input connectors.

Note: Both the 8-Channel and the 16-Channel models contain all of these connectors. However, only 1 through 8 are active on the 8-Channel model.

Using the Console

The **Console** is integrated into the TID firmware and is an important component in the flexible operation of the TID. Many parameters may only be set in the **Console**.

An overview of the **Console** menus follows. Note that some of the menus (**GPIO Settings**, **Source Setup**, **RS-422 Port**, and the **Touch-It Menu**) are accessed from more than one menu.

Console Port Setup

To set up and use the **Console**, follow the steps below:

1. Connect a modem serial cable between the RS232 connector on the TID and a standard computer running Microsoft Windows.

Note: Do not use a null modem cable to connect the TID to the PC. Instead, use a standard, 1-to-1 RS232 cable.

Note: You can use any terminal emulator (VT50 or VT100), however, we recommend using MTTTY.exe which you can download from the web and provides the best compatibility with the TID.

2. Set the serial communications properties to match the settings in the TID **Console**.

   - Baud rate: 115,200 bps
   - Data bits: 8
   - Parity: none
   - Stop bits: 1
   - Flow control (Handshake): off

   You can override the factory defaults by setting them through the TID **Wohler Set Up Menu** shown in the Example on the following page.

3. When the unit is powered up and if the serial port settings are correct, a boot sequence will be displayed.

4. To start the **Console**, press Ctrl-C on the terminal keyboard. The **Wohler Set Up Menu** should appear in the application window.

   Note: The options in the menus are not case-sensitive.

Important: You may press Ctrl + C a second time to abort (discard changes) and exit the **Console**.

To save your settings, you must select **(X) Exit & Save** to save changes and exit the application.

If you do not select a menu option within 60 seconds, the **Console** will automatically terminate. Press Ctrl + C to start it again. Settings made up until the timeout will be saved

Note: The time out interval (option **T** in the **Wohler Set Up Menu** shown below) is currently fixed at 60 seconds and so the **Time Out** selection in the menu is not operational.

Example

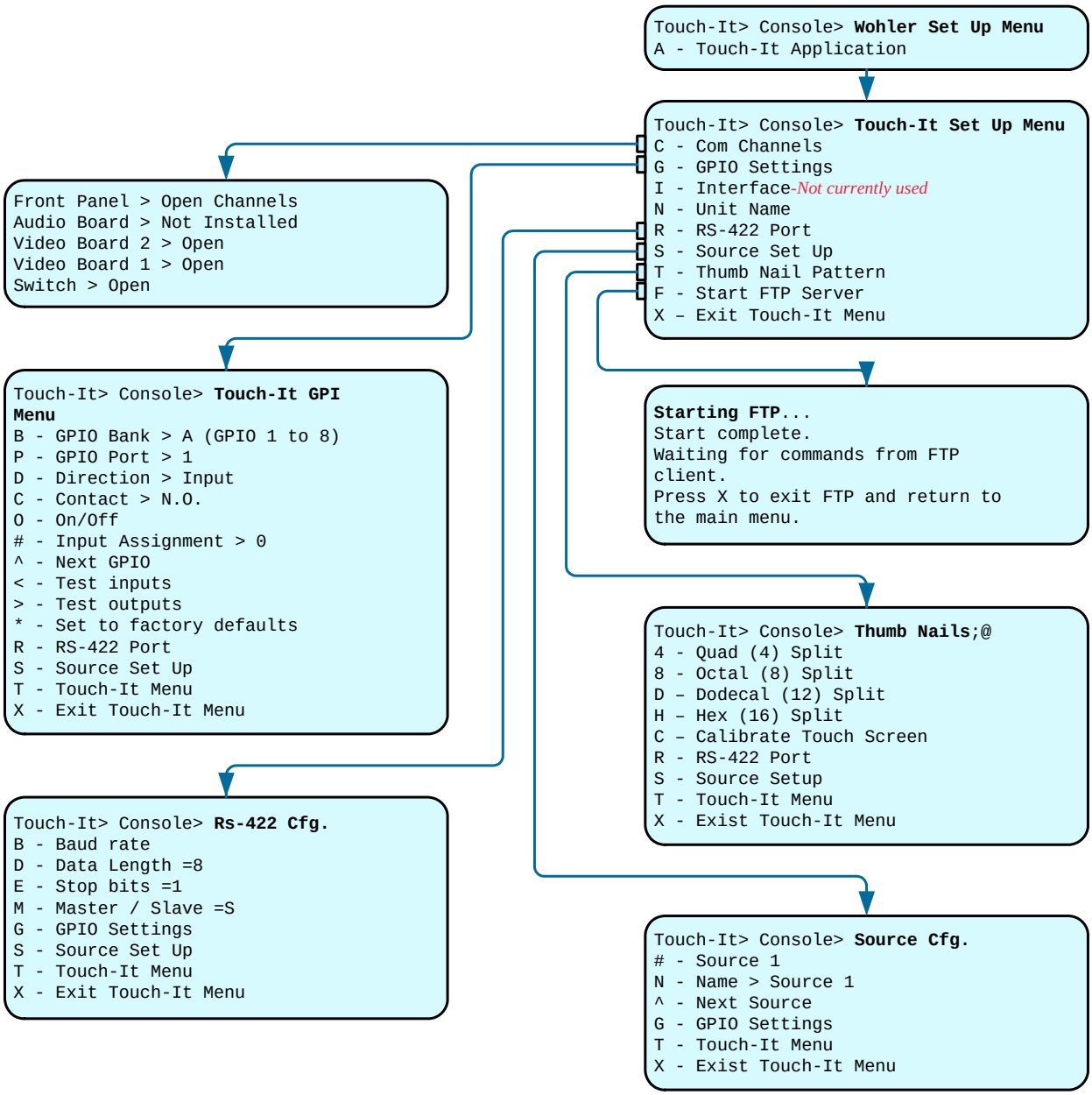
Type the letter corresponding to the setting you want to change and then press the Enter key. In the example below, we have selected **A - Touch-It Application**.

```
Touch-It> Console> Wohler Set Up Menu

A - Touch-It Application
B - Console Baud Rate
D - Display Info
G - Gateway
I - IP Address
M - Network Mask
N - Name Server, DNS
P - Network Port
R - Restart CTRL
S - Secure Address
T - Time Out - Not currently used
X - Exit & Save


CTRL-C to Abort> a
```

Figure 1–7 TID Menu Tree



Wohler Set Up Menu

You can modify the TID configuration and network information through the **Wohler Set Up Menu**. When entering network information, press the Enter key to accept the input values. See the chart below for a description of item selections in this menu. Note that currently, the unit is not capable of network functionality.

Table 1–8 Wohler Menu Option Descriptions

Option	Options Text	Option Description
A	Touch-It Application	Access the **Touch-It Set Up Menu**
B	Console Baud Rate	View/enter the console baud rate (changes the factory default)
D	Display Info	Displays the TID version information
G	Gateway	View/enter the network gateway address (Default: 0.0.0.0)
I	IP Address	View/enter the network IP address (Default: 0.0.0.0). Select DHCP address assignment at boot.
M	Network Mask	View/enter the network mask address (required for fixed IP address operations)
N	Name Server, DNS	View/enter the network name server, DNS (Default: 0.0.0.0)
P	Network Port	View/enter the network port (Default: Port 0, need for use with NETMon)
R	Restart Ctrl	Reboots the console application (settings changed will not take effect until the monitor is restarted).
S	Secure Address	View/enter the network secure address (Default: 0.0.0.0). The default address allows any client to connect to the HD-Mon. If an address is entered, only a client with the entered address will be able to connect.
T	Time Out	This selection is not currently used.
X	Exit & Save	Saves changes and exits the current menu.

TID Setup Menu

The **TID Setup Menu** described in Table 1–9 below is where the TID unit is configured.

Table 1–9 TID Setup Menu

Option	Options Text	Option Description
C	Com Channels	Reports which modules are installed in the unit
G	GPIO Settings	Configures the General Purpose Input and Output (GPIO) assignments

Table 1–9 TID Setup Menu (Continued)

Option	Options Text	Option Description
I	Interface	Currently not used
N	Unit Name	Assigns a unique user-determined name to the unit
R	RS-422 Port	Enter values for baud rate, data length, stop bits, and master/slave
S	Source Set Up	Assign names to input sources
T	Thumb Nail Pattern	Selects quantity (pattern) of thumbnail images to be displayed.
F	Start FTP Server	Starts the connection to the FTP client for upgrades. (**See important note below**.)
X	Exit Touch-It Menu	Saves your changes and returns to the previous menu.

Important: Be sure to obtain the latest upgrade instructions from Wohler that are appropriate for the TID model that you have. Inappropriate upgrades may cause damage to the unit.

Touch-It GPI Menu

The options on the **Touch-It GPI Menu** are explained in Table 1–10 below.

Table 1–10 Touch-It GPI Menu Option Descriptions

Option	Options Text	Option Description
B	GPIO Bank>A (GPIO 1 to 8)	Selects bank (toggles between bank 1to 8 and 9 to 16.
P	GPIO Port > 1	Select port to configure. Enter the port number at the prompt.
D	Direction > Input	Selects direction (toggles between in and out)
C	Contact > N.O.	Selects contact type (toggles between N.O. and N.C.)
O	On/Off	Enable or disable contact (toggles between On and Off)
#	Input Assignment > 0	Selects input assignment (enter source input number at prompt)
^	Next GPIO	Displays the next GPIO in the list.

Table 1–10 Touch-It GPI Menu Option Descriptions

Option	Options Text	Option Description
<	Test inputs	Assigns Source 1 to Port 1 (and Source 2 to Port 2, and so on) and sets all ports as inputs as normally open (N.O.).
>	Test Outputs	Assigns Port 1 to Source 1 (and Port 2 to Source 2, and so on) and sets all ports as outputs as N.O.
*	Set to Factory Defaults	Sets all GPI/Os as inputs as N.O. to Source 0 (off)
R	RS-422 Port	Displays the **Rs-422 Cfg.** menu
S	Source Set Up	Displays the **Source Cfg.** menu
T	Touch-It Menu	Displays the **Touch-It Setup Menu**
X	Exit Touch-It Menu	Returns to the **Wohler Set Up Menu**

Rs-422 Cfg. Menu

Table 1–11 explains the options on the **Rs-422 Cfg.** menu.

Table 1–11 Rs-422 Cfg. Menu Option Descriptions

Option	Options Text	Option Description
B	Baud rate	Sets the baud rate
D	Data Length =8	Sets the data length
E	Stop bits =1	Sets the stop bits
M	Master / Slave =S	Determines whether the unit is a master or slave (used during upgrading)
G	GPIO Settings	Displays the **Touch-It GPIO Menu**
S	Source Set Up	Displays the **Source Cfg.** menu
T	Touch-It Menu	Displays the **Touch-It Setup Menu**
X	Exit Touch-It Menu	Returns to the **Wohler Set Up Menu**

Source Cfg. Menu

Table 1–12 explains the options on the **Source Cfg.** menu.

Table 1–12 Source Cfg. Menu Option Descriptions

Option	Options Text	Option Description
#	Source 1	Selects the source for naming (Enter source1 at the prompt, and then press the Enter key.)
N	Name > Source 1	Assign name to selected source (Enter the name at the prompt, and then press the Enter key.)
^	Next Source	Moves to next source for naming
G	GPIO Settings	Displays the **Touch-It GPIO Menu**
T	Touch-It Menu	Displays the **Touch-It Setup Menu**
X	Exit Touch-It Menu	Returns to the **Wohler Set Up Menu**

Thumbnails Menu

Table 1–13 explains the options on the **Thumbnails** menu.

Table 1–13 Thumbnails Menu Option Descriptions

Option	Options Text	Option Description
4	Quad (4) Split	Sources 1 through 4 fill the **Touchscreen**
8	Octal (8) Split	Sources 1 through 8 fill the **Touchscreen**
D	Duodecal (12) Split	Sources 1 through 12 full the **Touchscreen**
H	Hex (16) Split	Sources 1 through 16 fill the **Touchscreen**
C	Calibrate Touchscreen	Runs the **Touchscreen** calibration and customization program
R	RS-422 Port	Displays the **Rs-422** menu
S	Source Set Up	Displays the **Source Cfg.** menu
T	Touch-It Menu	Displays the **Touch-It Setup Menu**
X	Exit Touch-It Menu	Returns to the **Wohler Set Up Menu**

Technical Functional Overview

Figure 1–8 below and 1–9 on page 24 illustrate the overall functionality of the TID.

Figure 1–8 TID 8-Channel Block Diagram

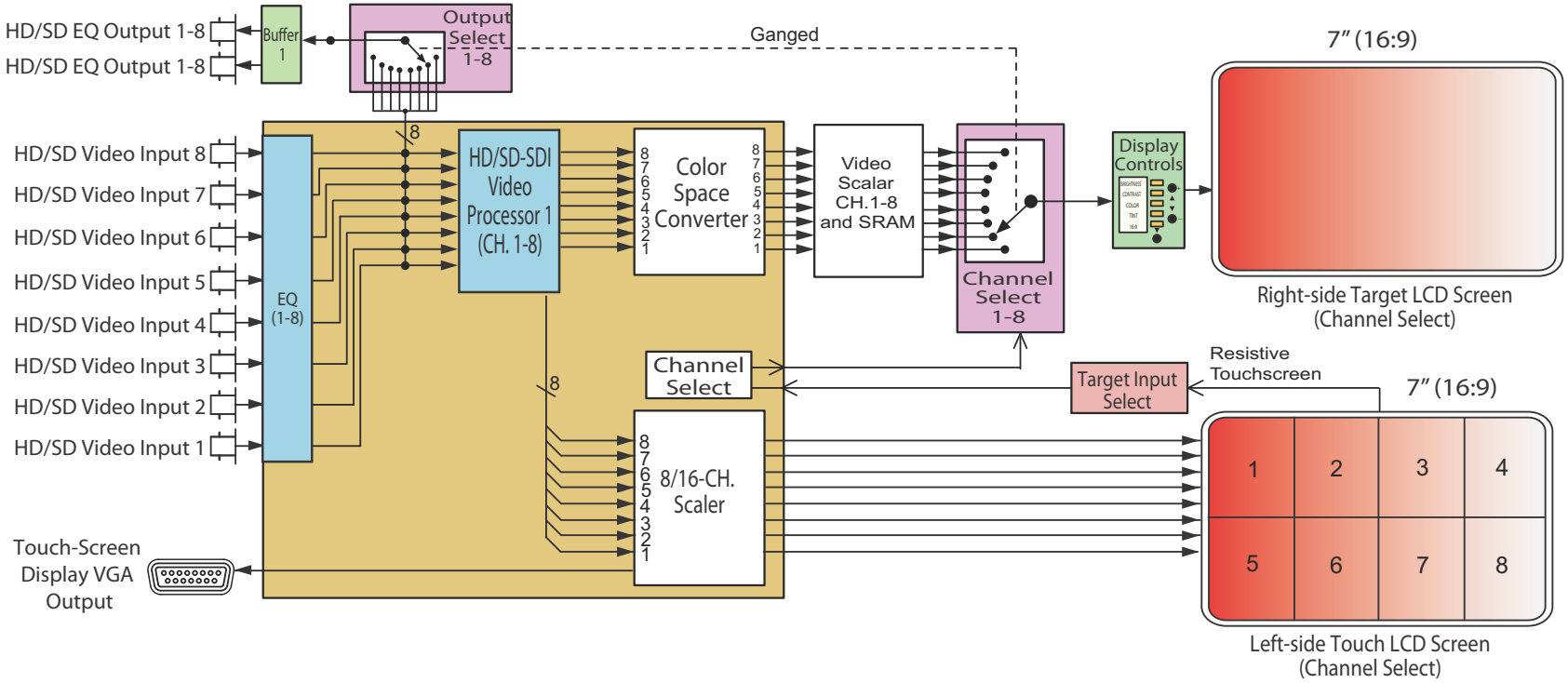
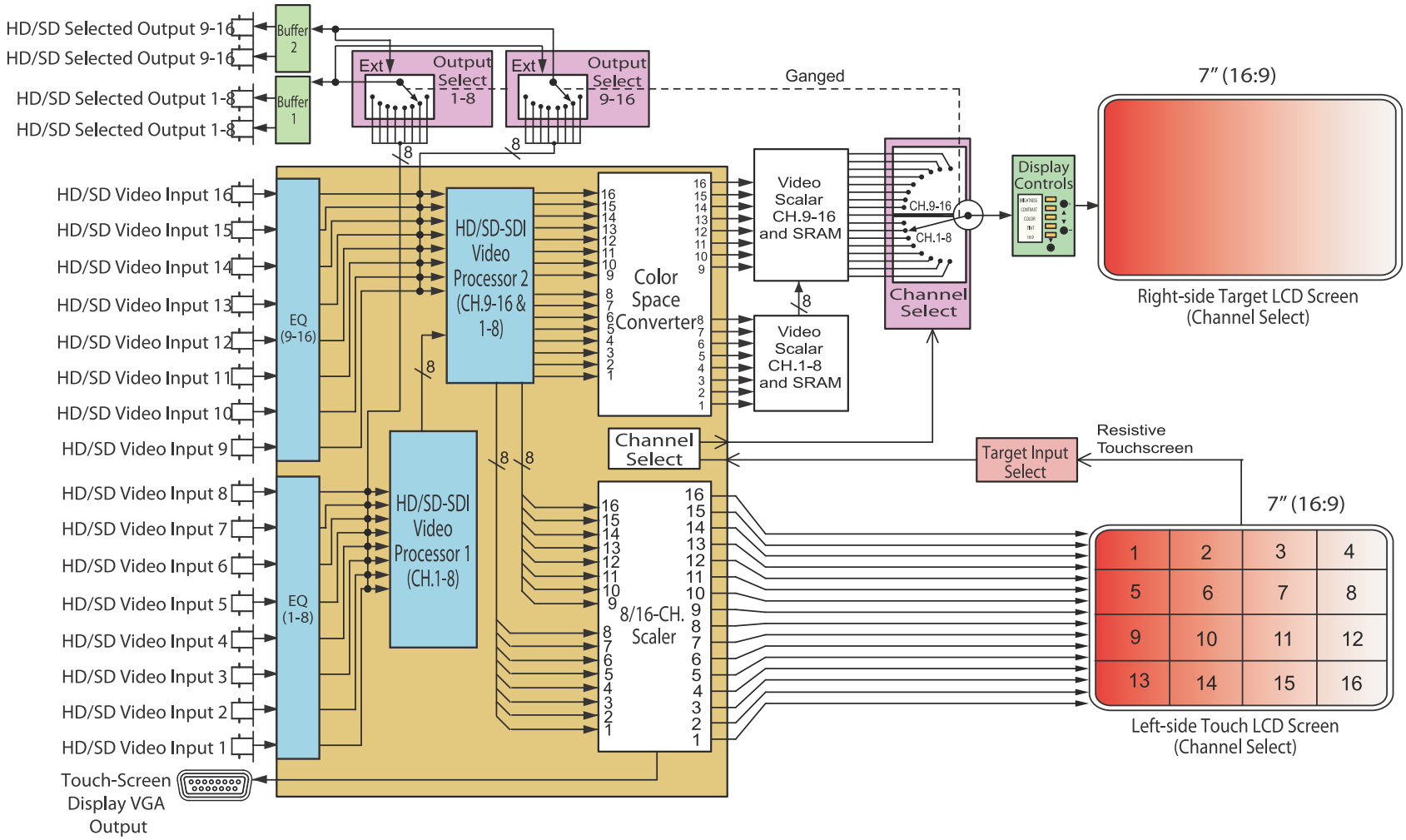


Figure 1–9 TID 16-Channel Block Diagram



CHAPTER 2
Upgrading the Touch-It Digital

Introduction

Overview

Tis procedure details how to establish Ethernet connectivity and then how to upgrade the Touch-It Digital .

Note: It may prove useful to reprint this chapter every time you need to upgrade your TID, since a couple of sections provide space to record existing settings.

IMPORTANT: If you are not comfortable performing the upgrade yourself, or if you do **not** have a PC/laptop with Internet access, contact Wohler Customer support for shipping instructions and we'll do it for you. (Wohler's contact information is on page ii of this document.)

Topics

Requirements

To perform the software upgrade, you will need the following:

- A laptop or PC with a network connection and Internet access
- If both the PC and the TID are connected to a network, you will need the following:
  - Two standard Ethernet cables—not crossover cables
  - **NetBurner AutoUpdate V2.0** or later (**AutoUpdate.exe**) (Included as part of the download package under Downloading the Update Files on page 2)
- If either your PC or the TID are *not* connected to the network, you will need the following:
  - One Ethernet cross-over cable
  - One **Mttty** terminal emulator that can be downloaded from the Wohler web site or other download site on the web

Note: The **Mttty.exe** terminal program is self-contained and runs as is without hooking into windows on your computer.

Downloading the Update Files

1. Power up the laptop and log on if needed.
2. When the desktop is loaded, launch the web browser.
3. Navigate to the wohler web site: www.wohler.com.

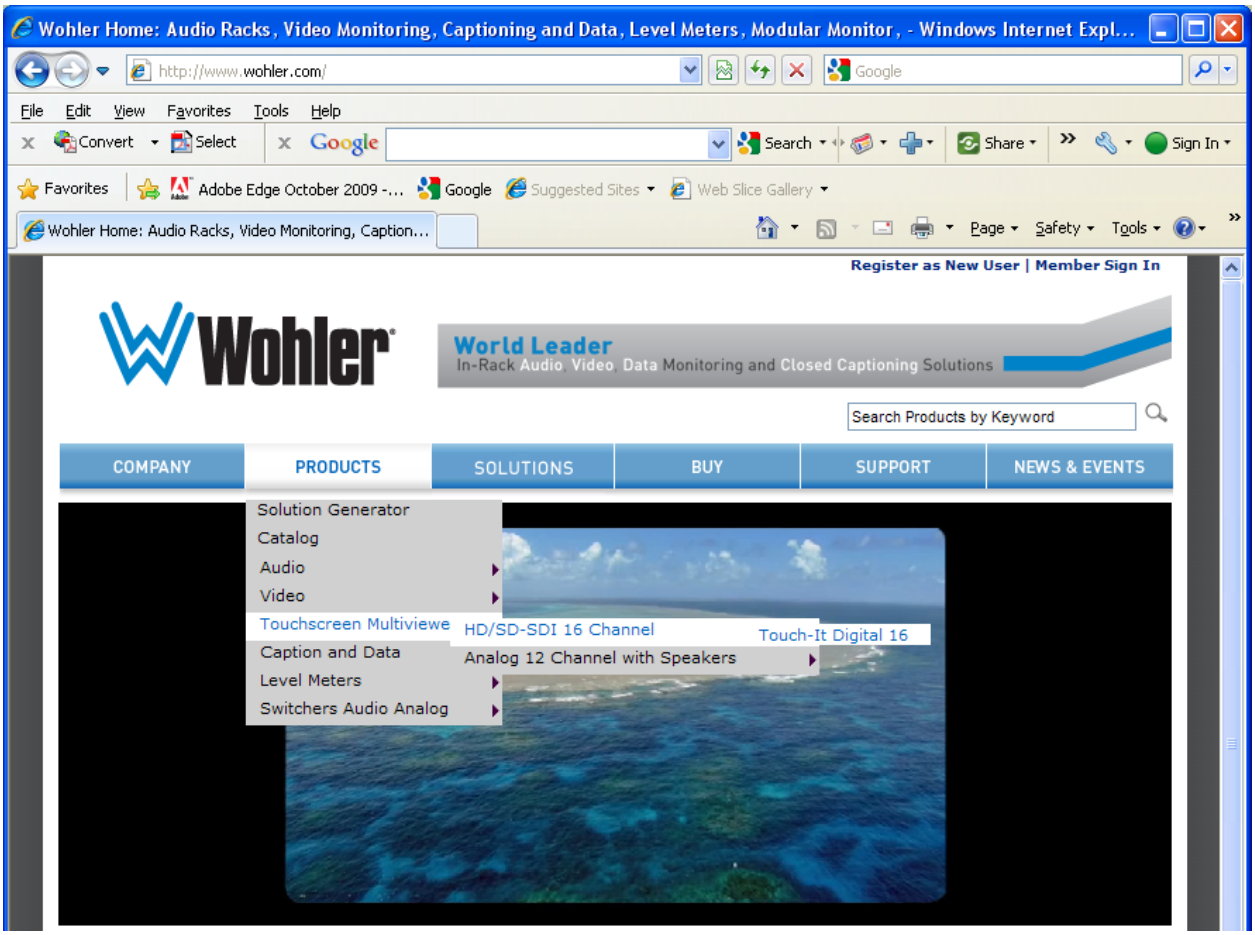
Decision Point:

If you already have a member user ID and password for the Wohler web site, then log in by clicking on the Member Sign In link at the top right hand corner of the home page and sign in.

Otherwise, if you do *not* already have a member user ID and password then you must click Register as New User at the top right hand corner of the home page, and enter the requested data. Remember to log in after you have created your account.

4. Once you have successfully logged into the Wohler web site, click **Products** from the home page menu bar as shown in Figure 1–9 below.

Figure 1–9 Wohler's Web Site



A. Move the cursor down the menu to highlight **Video.**

B. Then move the cursor to the sub-menu to highlight **Touchscreen**.

C. Finally, move the cursor to the third menu to click on **Touch-It Digital 16**.

5. When the **Touch-It Digital 16** page displays, click on the **Downloads** tab in the middle of the page.

6. Double-click **Touch-It upgrade files** to begin the download.

7. When the **File Download** dialog appears, click **Save**.

8. When the download dialog displays, navigate to save the compressed file to the desktop and click **Save**.

9. After the download is complete, right-click the compressed file on the desktop to display the pop-up menu, and select either **Extract files** or **Unzip files** (depending on your version of Windows and your file compression program). Click **OK**.

   Note: Windows XP and Vista have built-in .zip file extraction capabilities in the operating system. Please consult the Windows help system for information on how to use .zip file extraction tools, if needed.

10. Once the extraction is complete, the files will be in a folder on the desktop called **Touch-It upgrade files.** Double-click the folder to display its contents, and to verify it contains all of the following files:

    - **MTTTY.exe** terminal program
    - Controller upgrade software
    - FPGA upgrade firmware

Establishing Connectivity

To begin the upgrade procedure, you need to connect your laptop or PC to the TID. You can accomplish this in one of two ways: directly or through a local area network (LAN).

Decision Point:

If both the PC and the TID are connected to a LAN, then continue on to Connecting through a LAN on page 10.

Otherwise, if either the PC or the TID are *not* connected to a LAN (local area network) then continue on to Connecting Peer-to-Peer immediately below.

Connecting Peer-to-Peer

Setting the IP Address of the PC

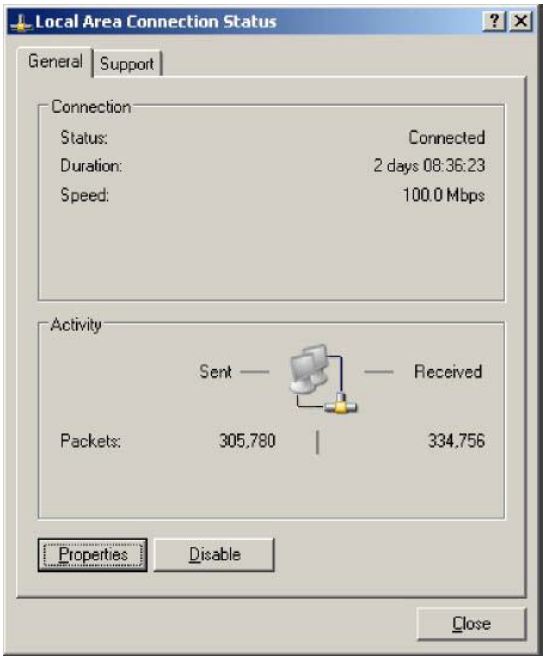
These instructions describe the procedure using a PC with the Windows XP operating system. Host computers running other operating systems may have these controls in slightly different locations.

1. Connect the crossover cable directly between the unit's Ethernet port and your host computer's Ethernet port.

2. On the host computer, go to the **Control Panel** and double-click on **Network Connections**.

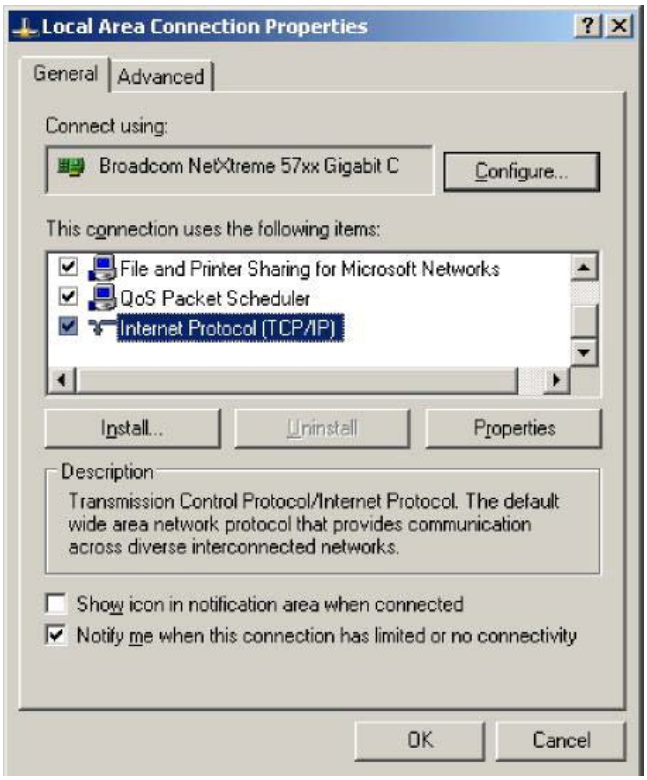
3. Open **Local Area Connection**. If you have more than one Network Interface Card (NIC) in the host machine, select the **Local Area Connection** that corresponds to the NIC connected to the unit. You should see a dialogue like the one in Figure 1–10 below.

Figure 1–10 Local Area Connection Status Dialog



4. Click the **Properties** button. You should see another dialogue box open like the one in Figure 1–11 below.

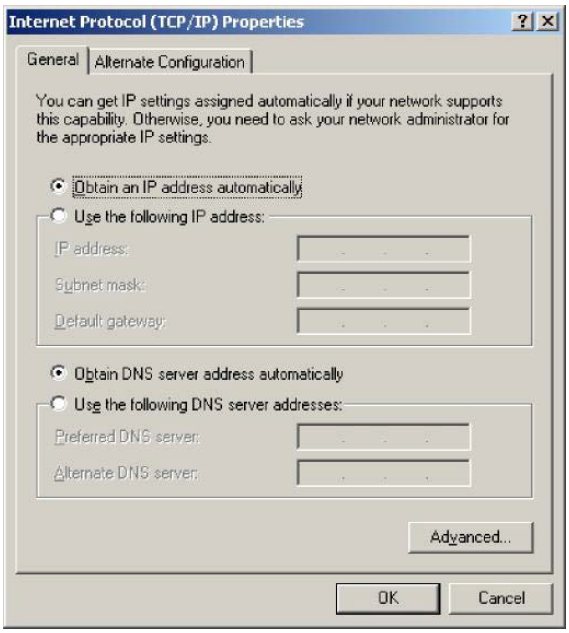
Figure 1–11 Local Area Connection Properties Dialog



5. Highlight the **Internet Protocol (TCP/IP)** check box.

6. Click the **Properties** button. You should see another dialogue box like the one shown in 1–12 on page 7

Figure 1–12 Internet Protocol (TCP/IP) Properties Dialog - Unconfigured



7. Record any current settings in this dialogue box, because they may need to be changed.

   IP Address: _____

   Subnet Mask: _____

   Default Gateway: _____

   Preferred DNS: _____

   Alternate DNS: _____

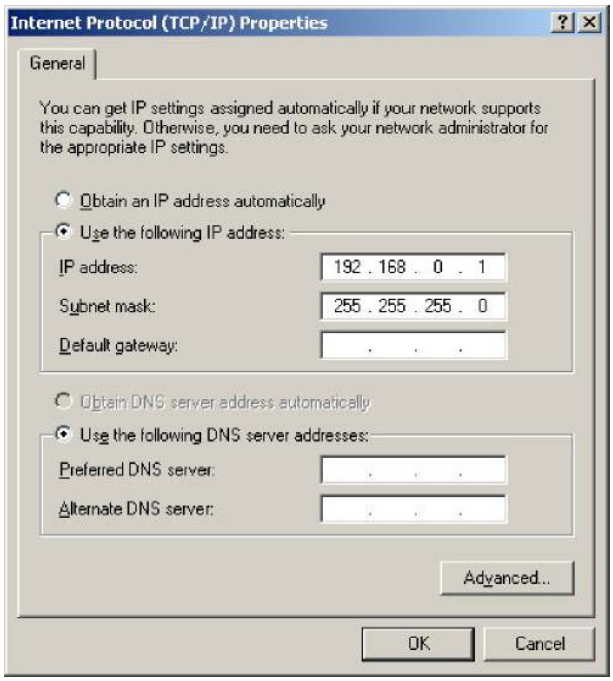
8. Click the **Use the following IP address** radio button.

9. Type in the address `192.168.0.1`.

10. Type in the subnet mask `255.255.255.0`.

11. You can leave the DNS server address fields blank. The dialogue box should now look like the one in Figure 1–13 on page 8.

Figure 1–13 Internet Protocol (TCP/IP) Properties Dialog - With IP and Subnet Mask



12. Click **OK** and close any LAN or IP setup dialogs you have open.

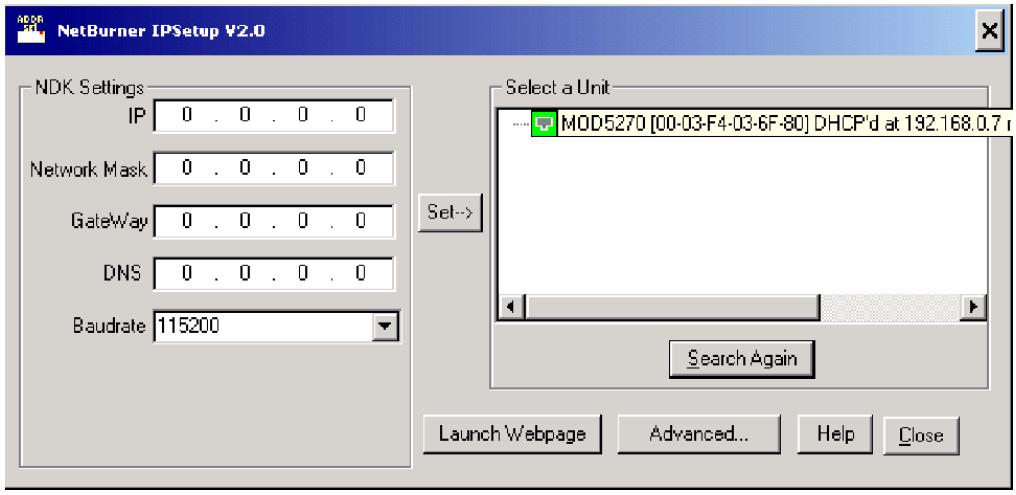
13. Verify the cross-over cable is connected securely from the Ethernet port of the TID to the Ethernet port of the PC/laptop.

Setting the IP Address of the TID

1. Launch the **NetBurner IP Setup Tool** from the desktop.

2. You should see something similar to the dialog shown in Figure 1–14 on page 9. This dialog shows a NetBurner module fresh from the Wohler factory.

Figure 1–14 NetBurner IPSetup Dialog - Unconfigured

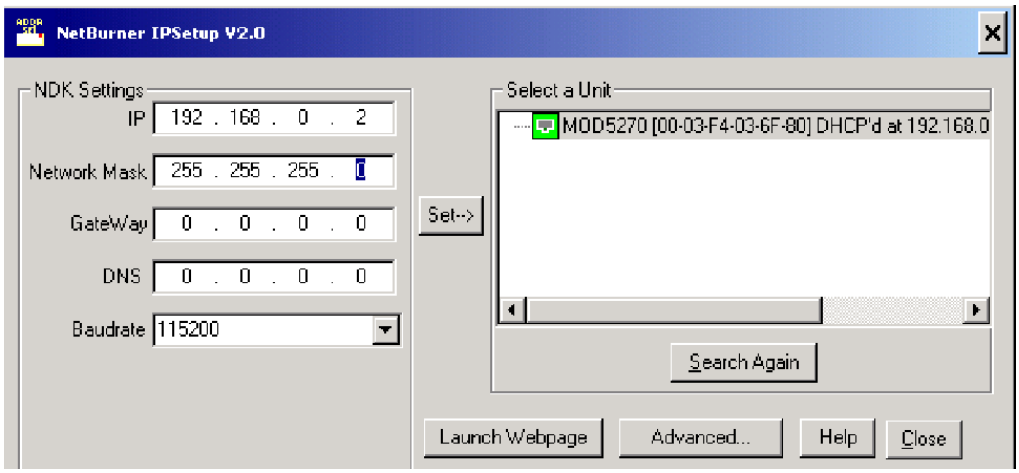


3. If multiple NetBurner modules appear in the **Select a Unit** box, be sure to highlight the unit you are working with.

   An IP address of `0.0.0.0` means the Netburner is using DHCP addressing, and the network will give the module its address (as it has in the example in Figure 1–17 above: `192.168.0.7`. With these procedures, you can also enter a fixed network address and mask if desired. You can use any network address and mask approved by your network administrator. For our example, we'll be using the address `192.168.0.2` with the network mask of `255.255.255.0`.

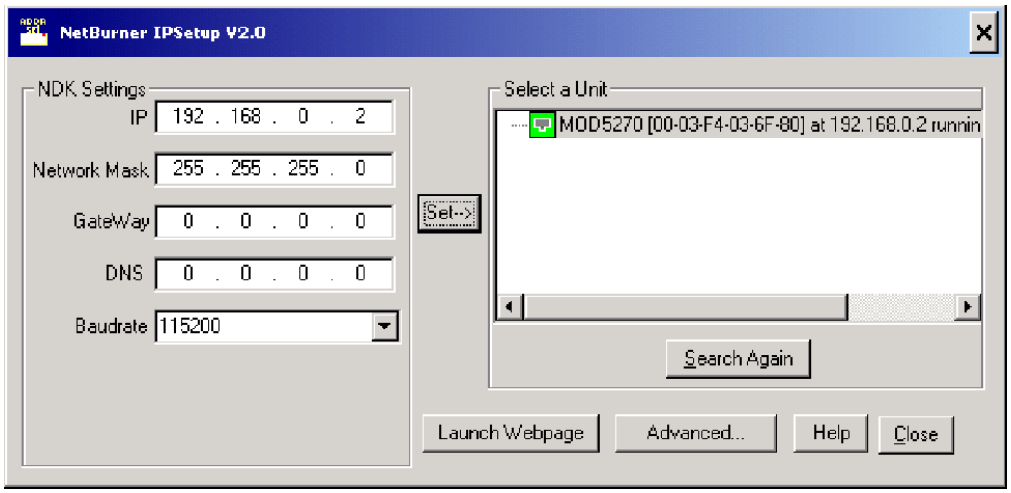
4. Simply type the IP address into the **IP** field and the network mask into the **Network Mask** field.

Figure 1–15 NetBurner IPSetup Dialog - With IP Address and Net Mask



5. Press the **Set** button and wait approximately 30 seconds. If the NetBurner module does not appear with the new address, press the **Search Again** button. The window should now look like the one shown in Figure 1–16 below.

Figure 1–16 NetBurner IPSetup Dialog - New Address Accepted



6. Close the **NetBurner IPSetup** utility by pressing the **Close** button.

Important: This concludes the procedure for establishing network connectivity from the PC/laptop to the TID.

Connecting through a LAN

Note: If you are connecting your PC/laptop to the TID through a LAN, we assume the PC/laptop is already connected and using a valid IP address.

Connect the TID to a router to the LAN (local-area network) with an Ethernet cable.

Decision Point:

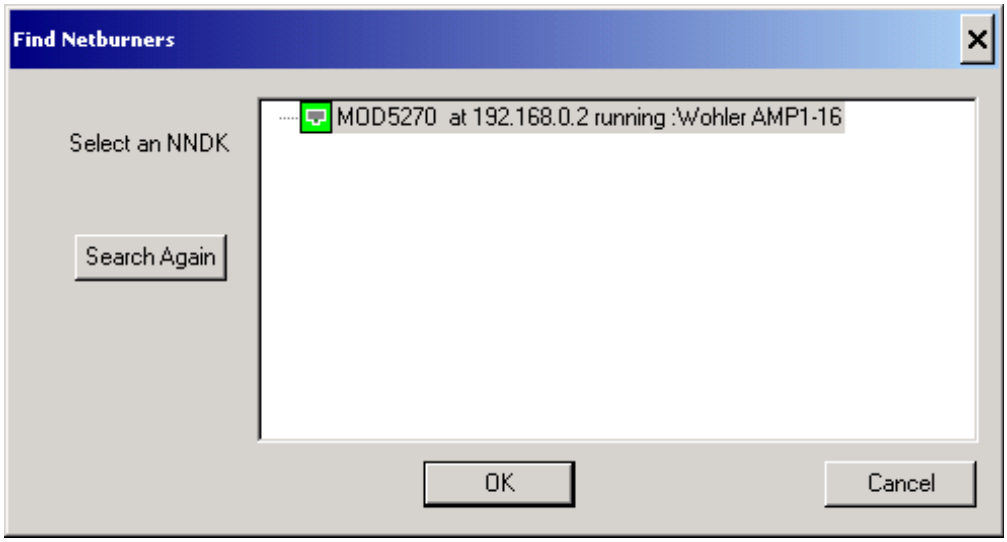
If your network administrator wants to assign a specific IP address to the TID, follow the steps in Setting the IP Address of the TID on page 8.

Otherwise, if the IP address the DHCP assigned to the TID is adequate, continue on to Upgrading the Netburner Software on page 11.

Upgrading the Netburner Software

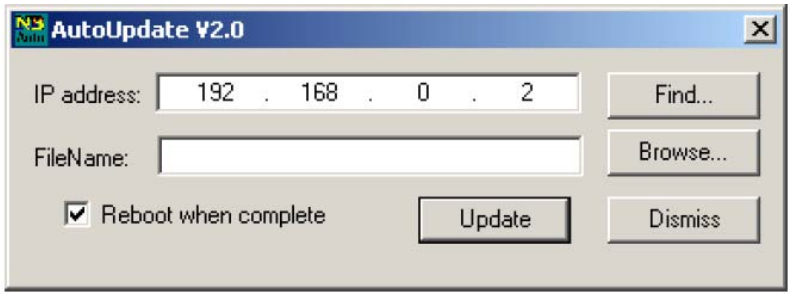
1. Launch the **NetBurner AutoUpdate** utility. Click on the **Find** button. You should see something similar to Figure 1–17 below.

Figure 1–17 Find Netburners Dialog



2. Click to highlight the NetBurner module you want to update, and click **OK**.

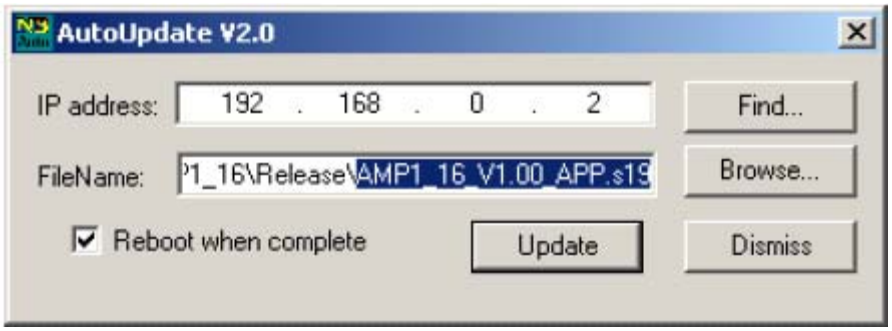
Figure 1–18 AutoUpdate IP Address Input Dialog - Incomplete



3. Click **Browse** and locate the **AMP1_16_Vx.xx_APP.s19** file. (The x's will be replaced with the software version.)

4. Check the **Reboot when complete** check box. The **Autoupdate** dialog box should look like the one in Figure 1–19 on page 12.

Figure 1–19 AutoUpdate IP Address Input Dialog - Complete



5. You have a small window of opportunity as the unit reboots during which the existing program will allow the software update: the first three seconds of program operation. To being the update process, unplug the unit.

6. Press the **Update** button on the dialog in Figure 1–19. Quickly apply power to the unit. If all goes well, you should see the dialog box shown in Figure 1–20 below.

   If either of the dialog boxes in Figure 1–21 or Figure 1–22 appear (page 13), you missed your window of opportunity. Try again starting at Step 5 above.

Figure 1–20 Autoupdate Confirmation Dialog

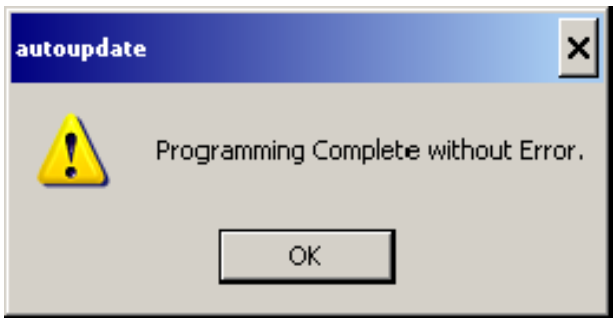


Figure 1–21 Autoupdate Failure 1

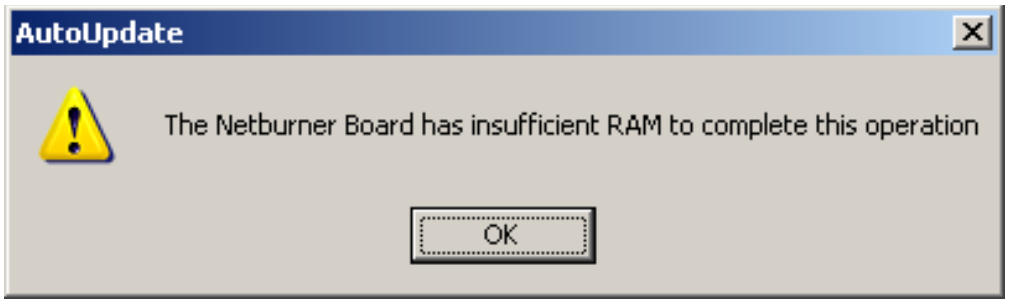
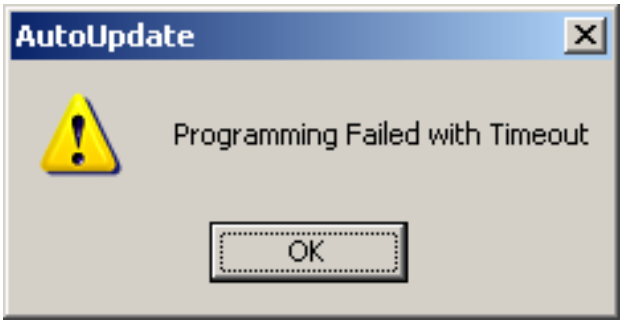


Figure 1–22 Autoupdate Failure 2



7. Click **OK** and both the dialog box and the **AutoUpdate** utility will close, and the unit will reboot and run the new software.

.

Important: This concludes the upgrade procedure for both the NetBurner.

Updating the Controller Software Through the RS-232 Port

1. Connect the laptop's RS-232 port to the TID RS-232 port, located on the back panel in the lower left hand corner.

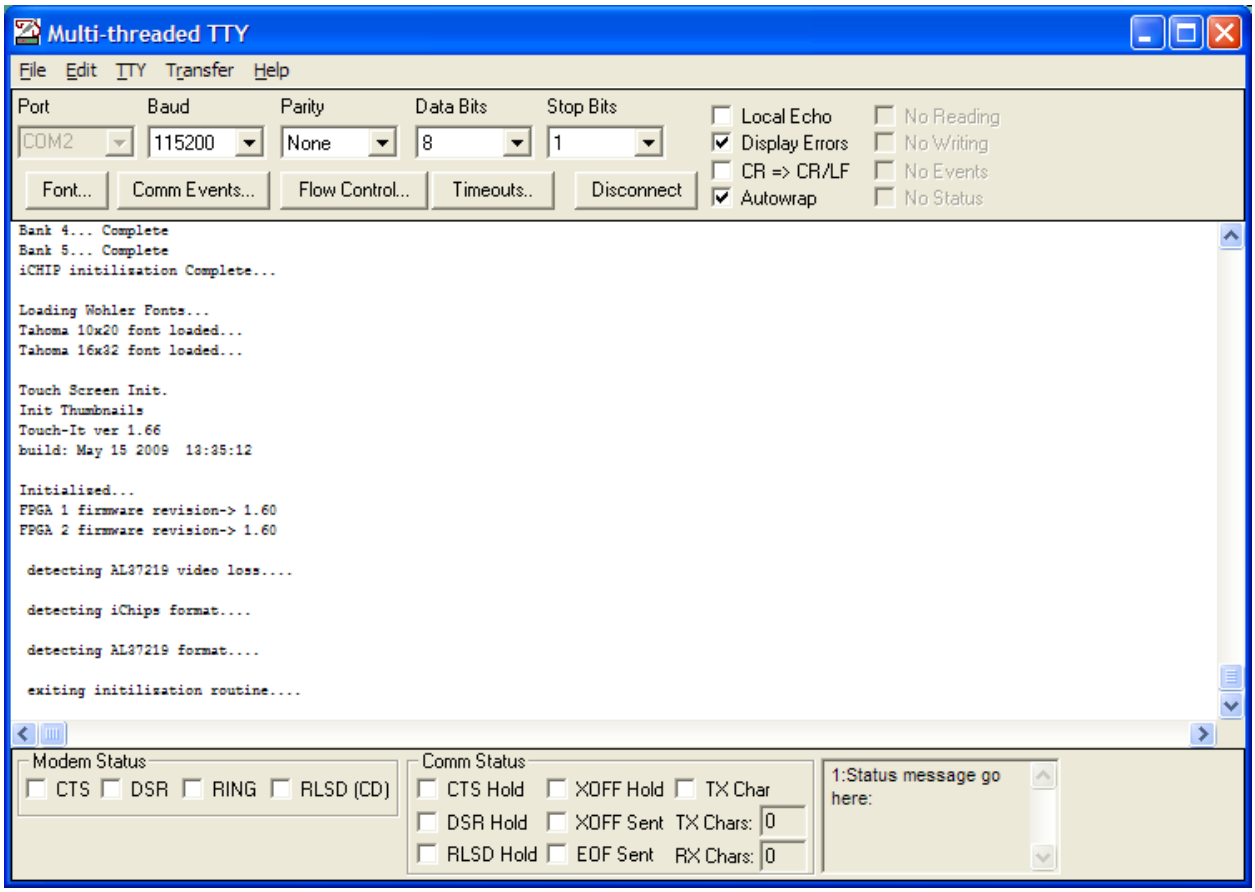
2. Connect the TID unit to power and power up the unit.

3. Start the Mttty program (terminal emulator) mentioned in Step 1 above, and click on the **Connect** button.

   Note: If text does not immediately begin to scroll down the screen, you may need to change the COM port to an available port using the **Port** drop-down list at the top left corner of the application.

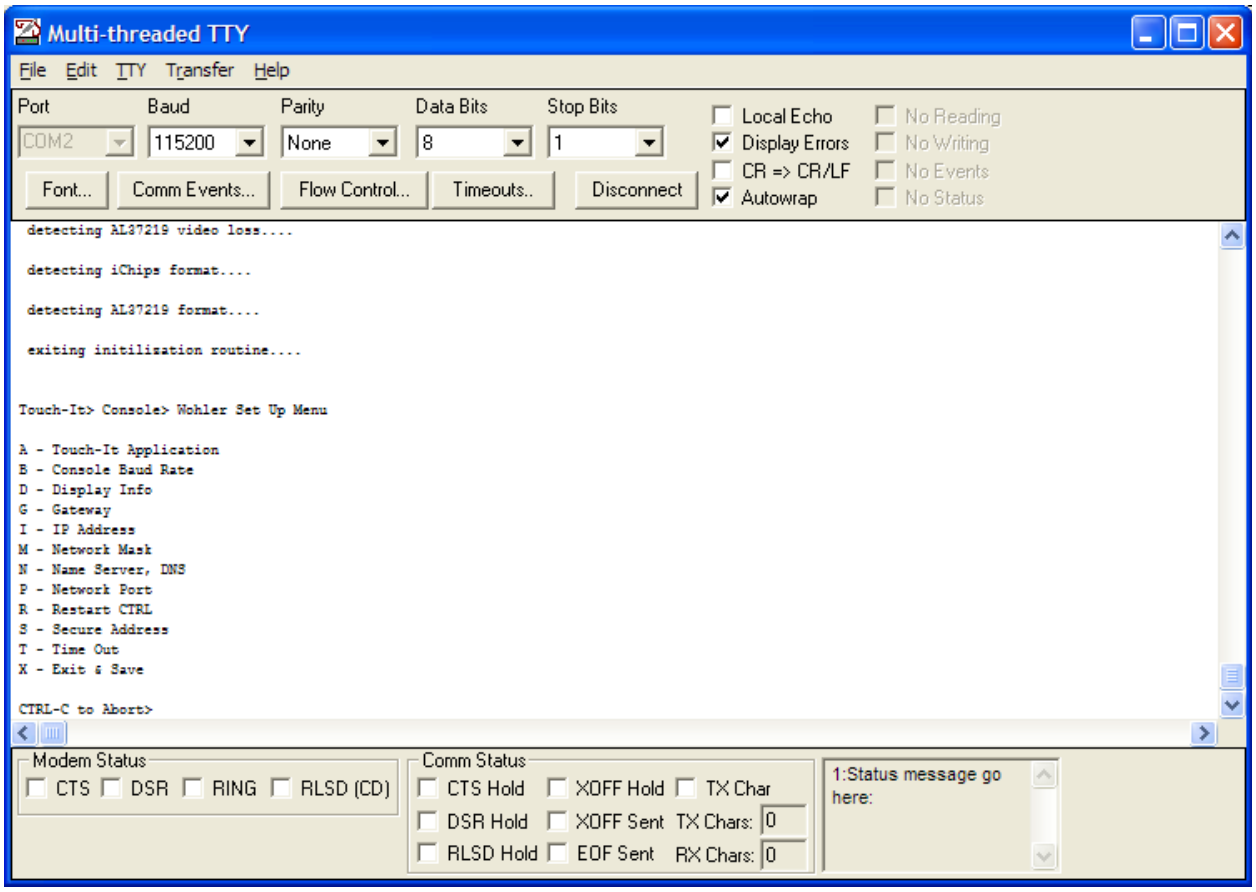
4. If all is okay, you will see set up information scroll through as the TID is starting up as shown in Figure 1–23 below.

Figure 1–23 Multi-Threaded TTY Interface



5. Once the TID has finished its start up and the scrolling has stopped, press and hold down the Ctrl key and press the C key on laptop keyboard. This will bring up the **Wohler Set Up Menu** as shown in Figure 1–24 below.

Figure 1–24 TID Console Menu



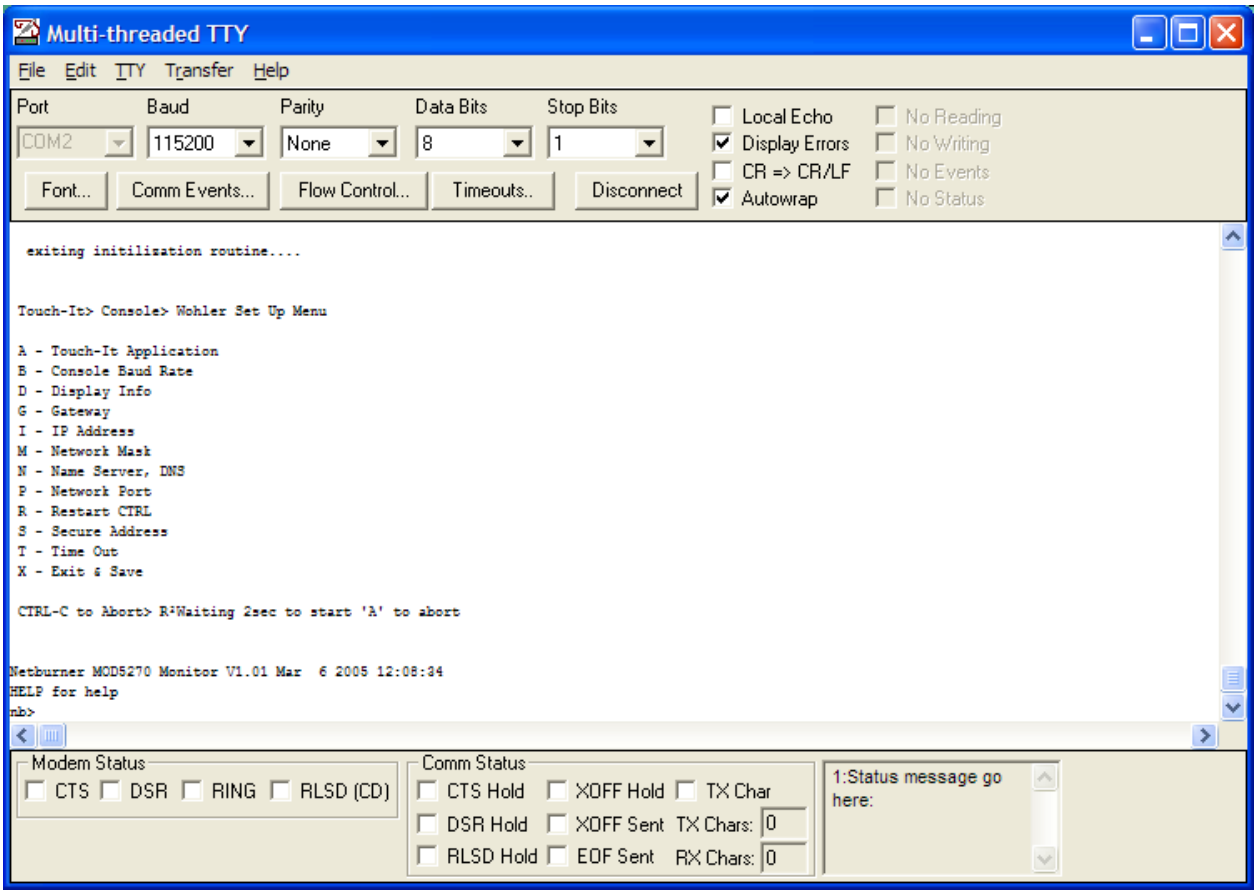
Note: The following commands are case-sensitive.

6. To place the controller into programming mode, restart the controller using menu command (capital) **R** and then press the capital **A** key within 2 seconds.

   Note: If you do not press the A key quickly enough after pressing the **R** key, the TID will continue on to the start up sequence. If this happens just repeat from Step 5.

7. If all went well, you should see the following screen with the controller waiting for the next command.

Figure 1–25 nb> Prompt

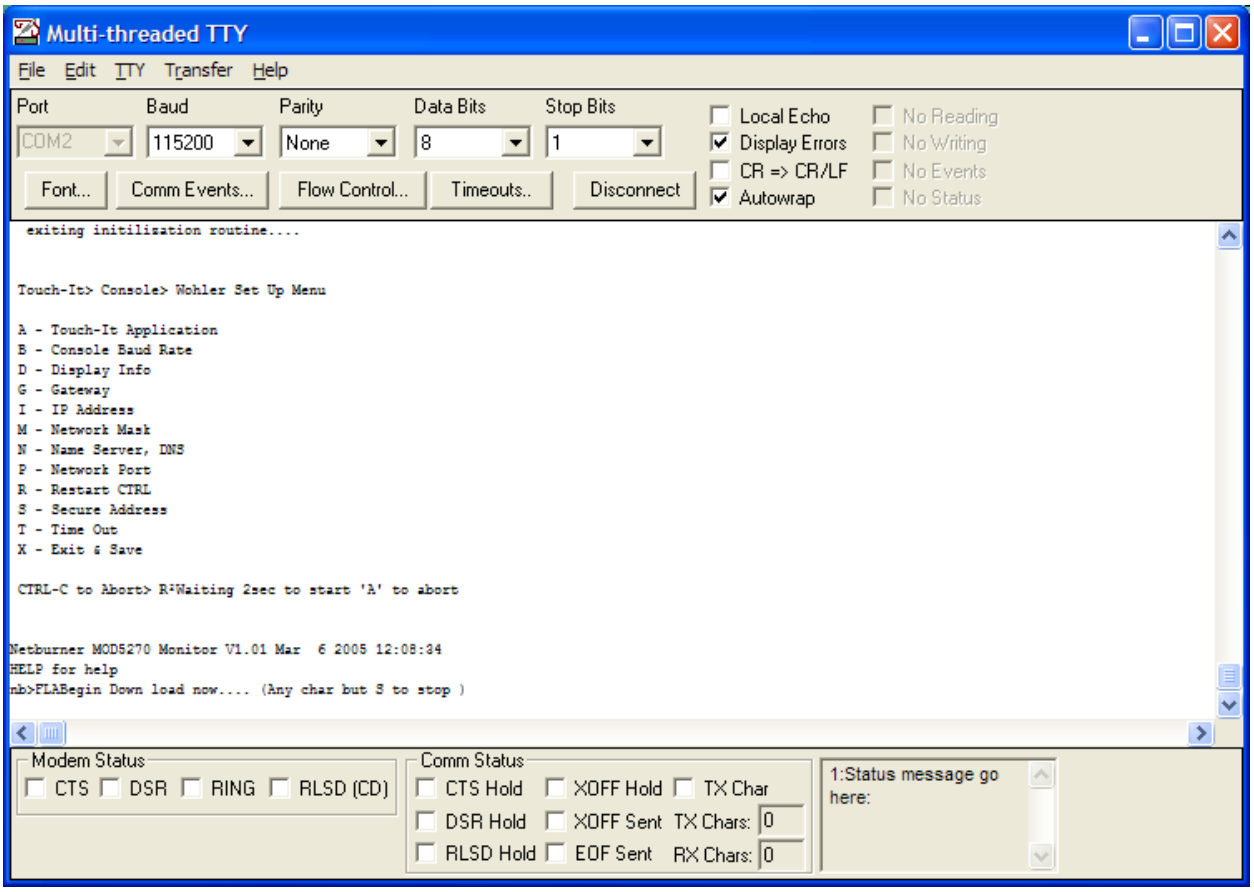


Note: The following commands are *not* case-sensitive.

8. From the **nb>** prompt, type in the command FLA and press the Enter key to upload the file to the controller.

   You will see the controller respond with "…download now…." Refer to Figure 1–26 below.

Figure 1–26 Initiating File Transfer



9. To initiate the file transfer press the F5 key to display a standard Windows file selection menu.

10. Navigate to the desktop and double-click on the **TID upgrade files** folder.

11. Double-click the **TouchitDig_APP.s19** file. The upload process will begin. A series of asterisks will show the loading progress and take approximately one minute to complete, after which the TID will restart and initialize.

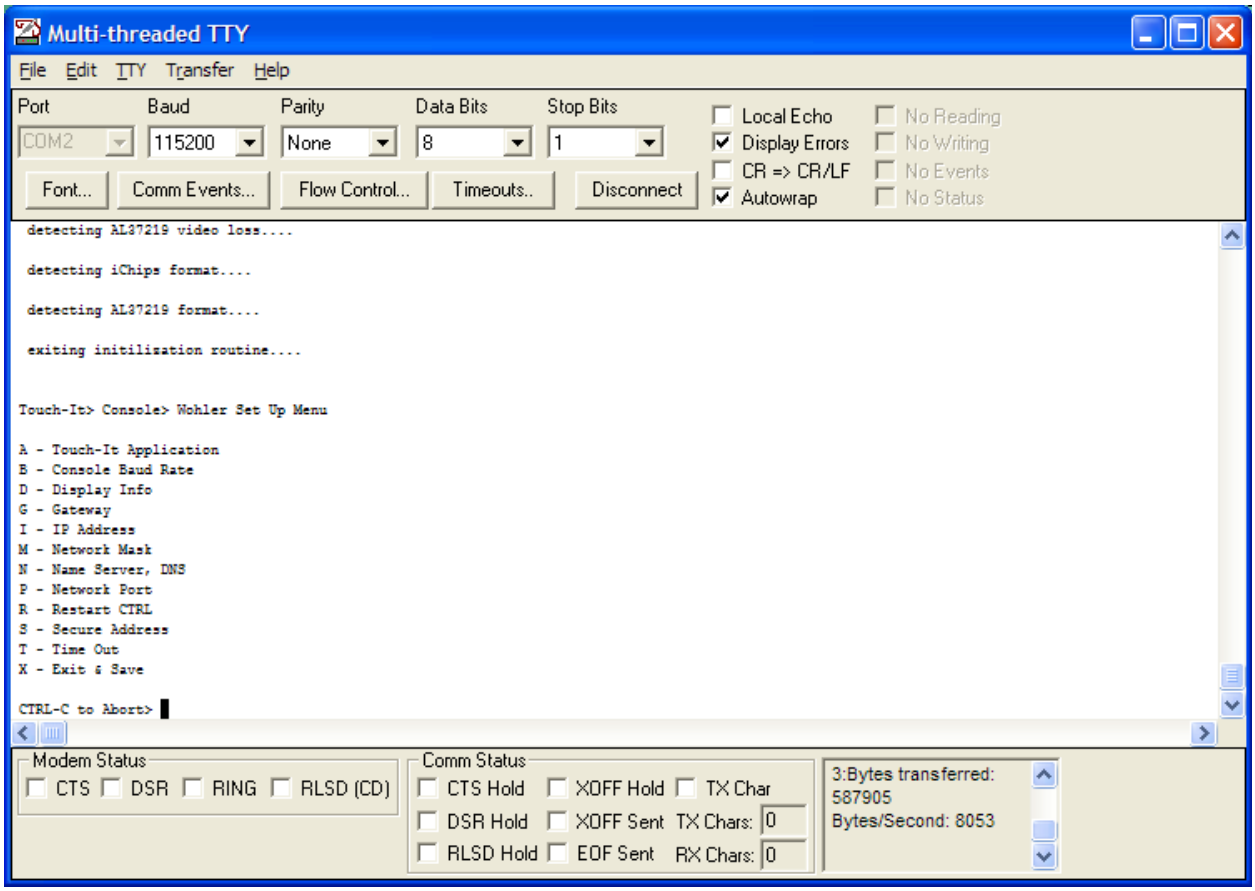
Note: If the upgrade is successful, you should see "Touch-It Ver 2.00" (or whatever the latest version is) on the screen. Otherwise, if the upgrade was not successful, you will see "Errors were encountered in the download." In this event, type "reset" (not case-sensitive) press the Enter key, and start over again from Step 5.

Uploading the Video Board Files

Next we need to update the two files to the video boards through an FTP transfer. We do not use the serial port for uploading these files because the file sizes are too large (resulting in an upload time of several hours).

1. Leave the RS232 port connected and Mttty running. Hold the Ctrl key down and press the C key on the laptop to bring up the **Wohler Set Up Menu** as shown in Figure 1–27 below.

Figure 1–27 Wohler Set Up Menu

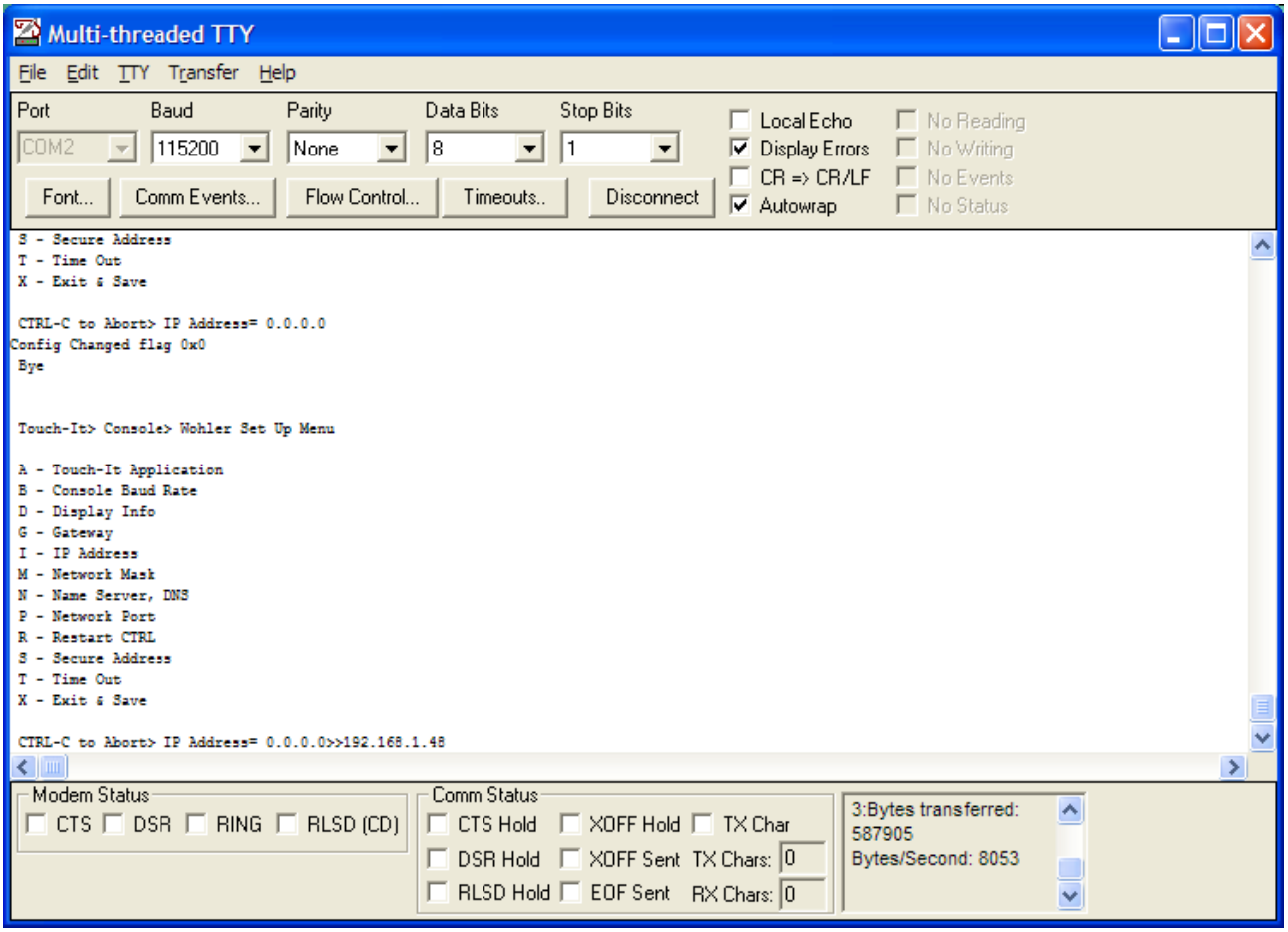


Important: You may need to consult with your local IT support person to assist you with the next step if you are not familiar with finding and setting IP addresses.

2. To set an IP address on the TID, press the letter (capital) I key as per the menu selection to bring up current default IP, most likely 0.0.0.0 on your unit. Ask your IT professional for a known IP address for the laptop that is on the same subnet as the FTP server. For example, if the laptop is on 192.168.1.xxx, then the TID needs an available IP address on the same subnet address, 192.168.1.1 to 255.

3. From here, type in your desired IP address and press the Enter key to accept the new address. In the example below (Figure 1–28) we have changed the unit from 0.0.0.0 to 192.168.1.48.

Figure 1–28 Entering the IP Address



4. Now that we have a known IP address, we can use a standard web browser to upload the new file to the video boards. Connect your

Ethernet crossover cable from the laptop to the TID Ethernet port on the rear panel.

Important: If the connection is through a router or hub, then use a standard cable.

5. To initiate the FTP connection, press and hold the Ctrl key down, and press the C key on the laptop to bring up the **Wohler Set Up Menu**.

6. As instructed in the menu selections below, press the A key followed by the F key to start the FTP client. Refer to Figure 1–29 and Figure 1–30 below.

Figure 1–29 Launching the FTP Client

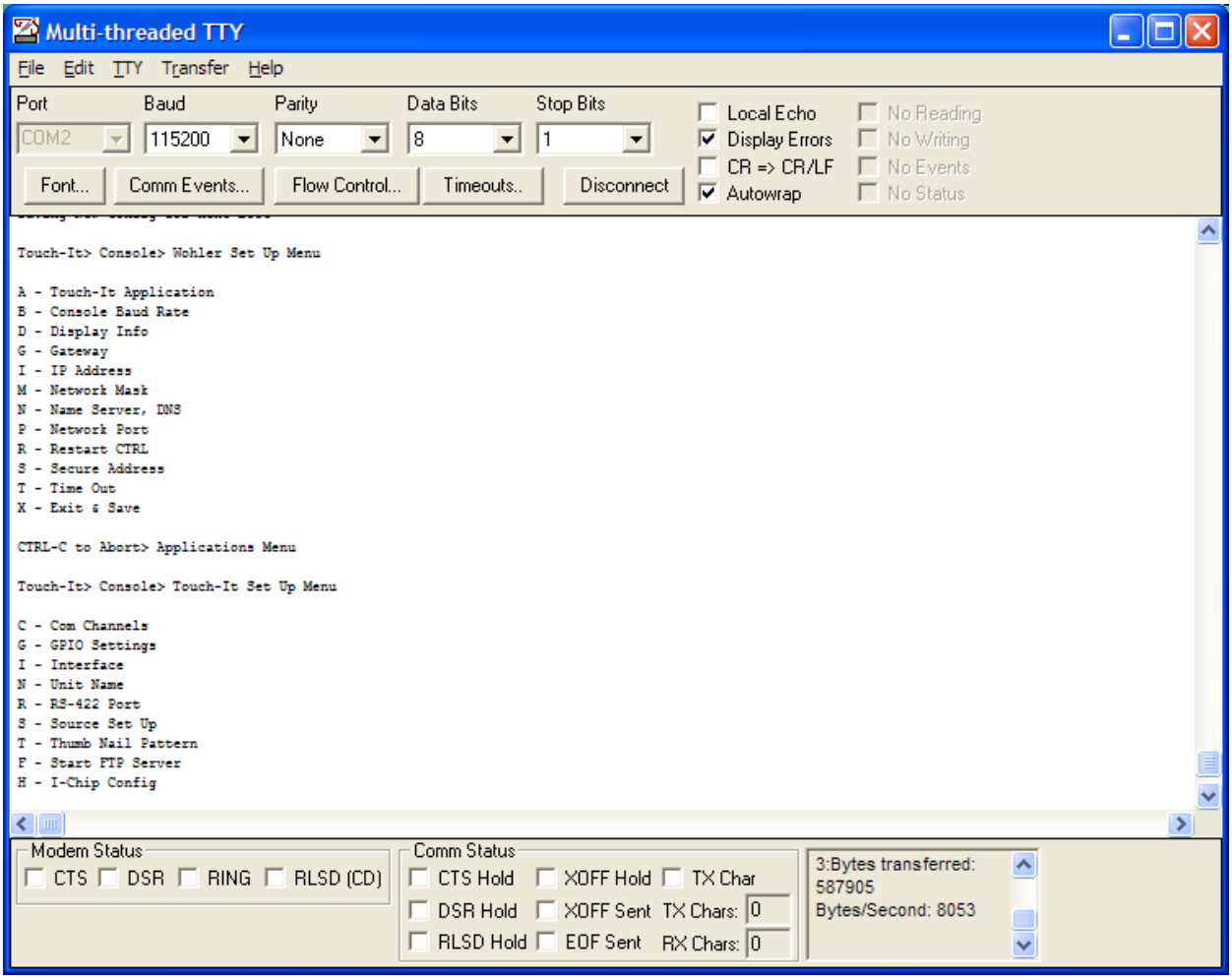
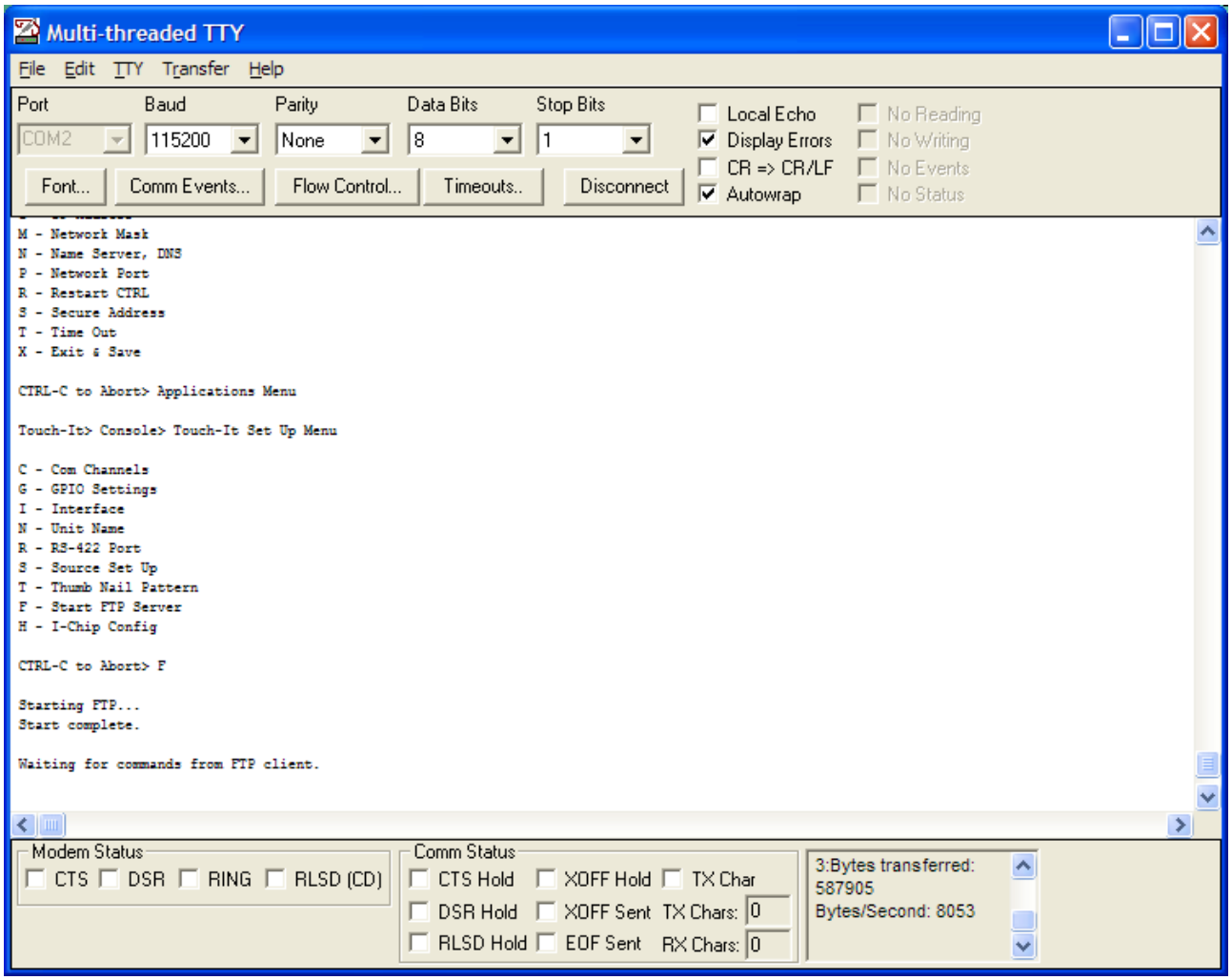


Figure 1–30 Initiating FTP Connection



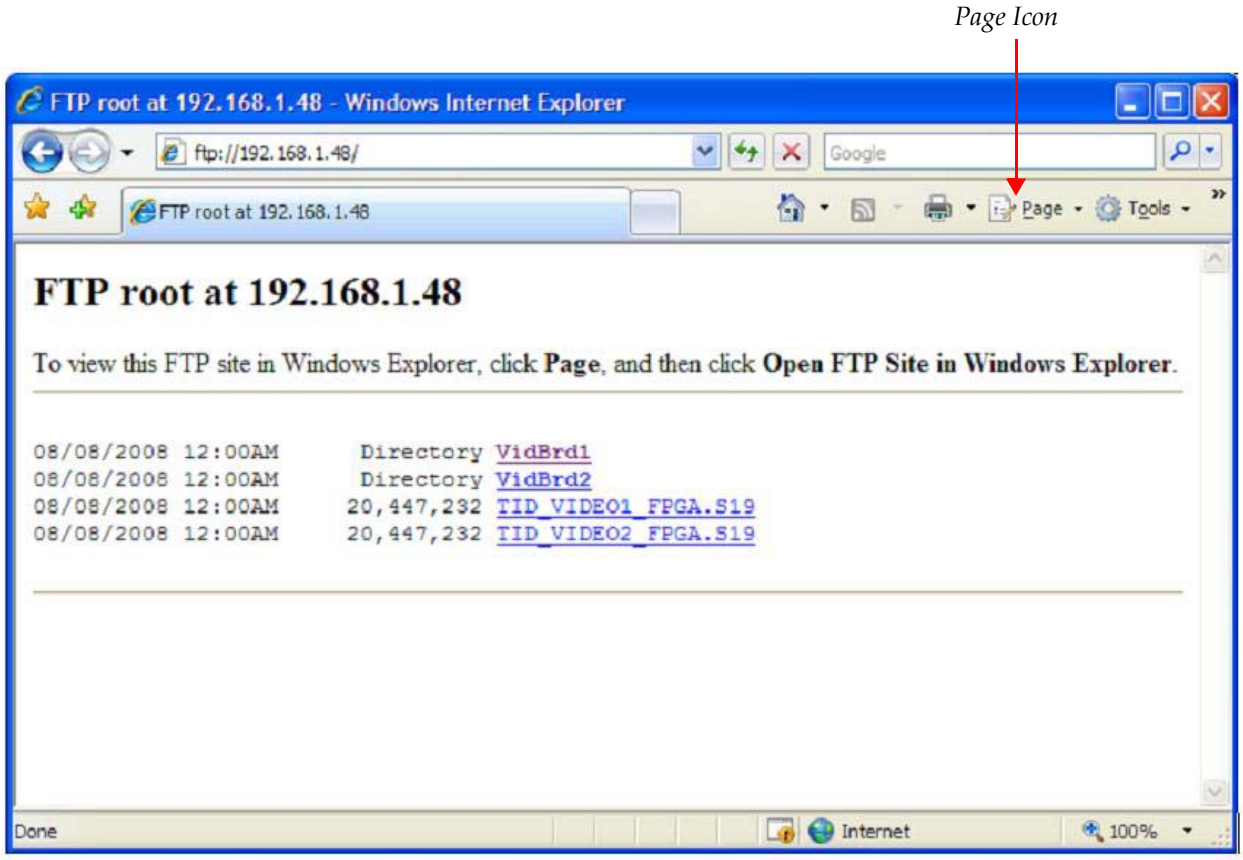
7. From the screen shot above, you can see that the TID is waiting for an FTP connection.

8. Launch **Internet Explorer** and type the following IP address into the address bar: `ftp://192.168.1.48`

   Note: Remember to enter the IP address you entered in Step 2, instead of 192.168.1.48 that we have used in this example.

9. If all is well, you will see the following screen (Figure 1–31) on your web browser. From here you will need to go to the **Page** icon and select **Open FTP Site in Windows Explorer**.

Figure 1–31 Internet Explorer FTP Interface



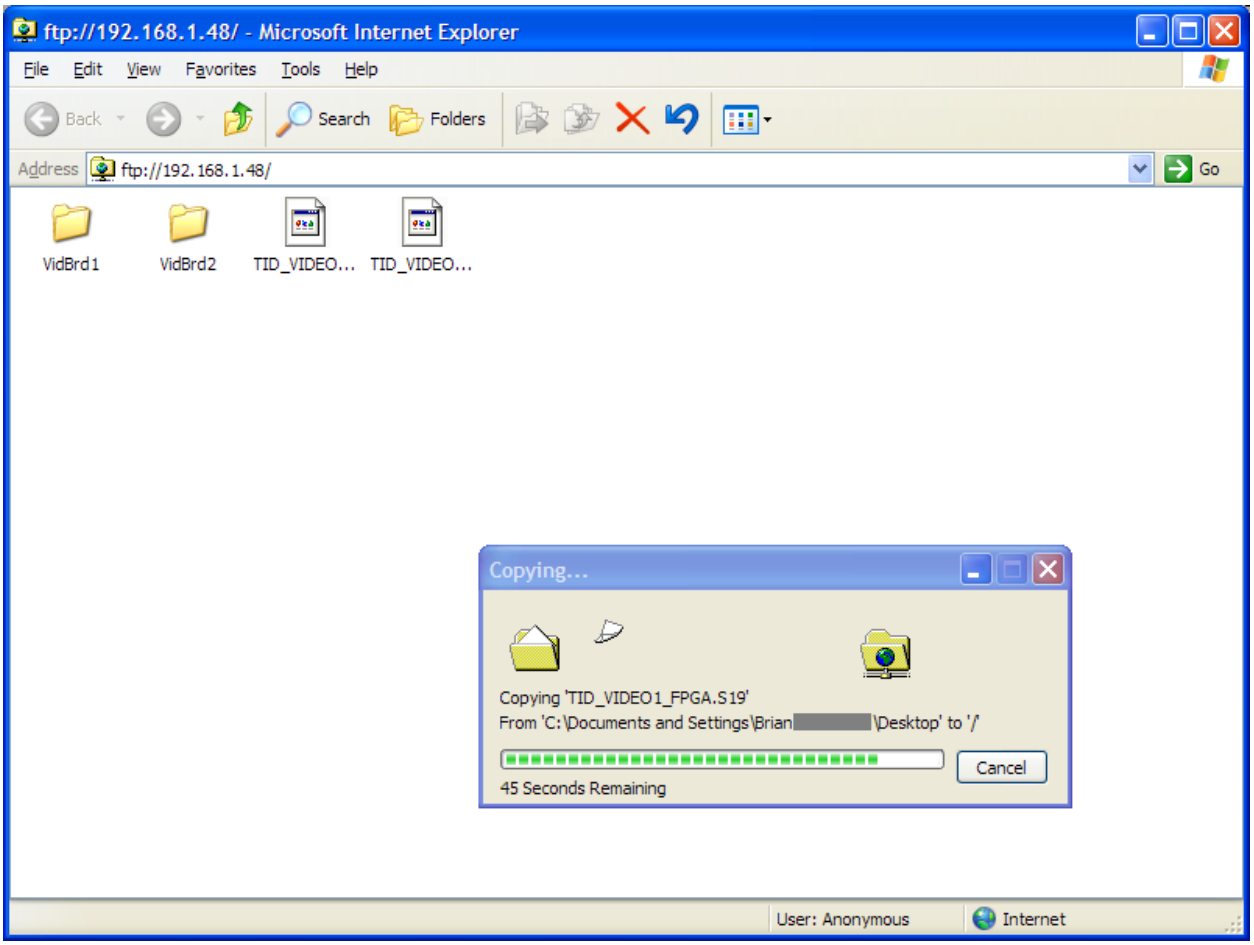
10. This will open an FTP window in **Internet Explorer** to which you can upload the new files for the video boards.

11. Open the **TID upgrade files** folder on your desktop (if it is not already open).

12. From here drag the new file **TID_VIDEO1_FPGA.S19** from the folder on your desktop to the **Internet Explorer** FTP window.

13. You will receive a warning that you are about to overwrite the files. Click **OK**. Refer to Figure 1–32 below.

Figure 1–32 Overwriting the Existing Files



14. Once the upload is completed (approximately 5 to 6 minutes) copy **TID_VIDEO2_FPGA.S19** as in the previous step.

    Note: If your browser's FTP link is no longer connected, then reboot the unit (press Ctrl+C and then type "reset") and repeat Steps 6 through 14 but upload **TID_VIDEO2_FPGA.S19** instead. Otherwise, if your browser FTP link is still connected, you should be able to go directly to Step 12 rather than restarting from Step 6.

15. Once the upload is completed, enter X at the terminal emulator and the TID will restart. If all is well, both video boards will have been updated.

16. Anytime new firmware and/or control software is installed, power the TID unit off and then back on to ensure that all the

registers on the video boards are preloaded with the correct values.

Important: This completes the TID software upgrade instructions.