# BROADCAST tools® INC

## PROBLEM SOLVED

# *Installation and Operation Manual*



**DTD-16 + G2 NET**
**16 Channel DTMF Tone/Sequence Decoder with Ethernet**

Manual update: 6/12/2023
Firmware Version: 2.02
If you need a firmware upgrade, contact Broadcast Tools®

No part of this document may be reproduced or distributed without permission.
ALL SPECIFICATIONS AND FEATURES FOR THIS PRODUCT ARE SUBJECT TO
CHANGE WITHOUT NOTICE

NOTE: We recommend the use of Chrome, Firefox or Safari as your browser.

Due to the dynamic nature of product design, the information contained in this document is subject to change without notice. Broadcast Tools, Inc., assumes no responsibility for errors and/or omissions contained in this document. Revisions of this information or new editions may be issued to incorporate such changes.
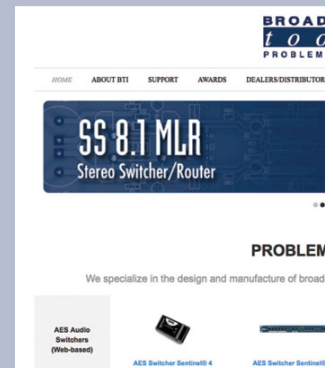
Visit **www.broadcasttools.com** for important product update information.

# Table of Contents

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

e-mail: support@broadcasttools.com   voice: 360.854.9559   fax: 866.783.1742

# INTRODUCTION

Thank you for your purchase of the DTD-16 + G2 NET DTMF Tone Decoder, which we will refer to throughout the manual as the DTD-16 + G2 NET. We are confident 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® DTD-16 + G2 NET.

# SAFETY INFORMATION

Only qualified technical personnel should install the DTD-16 + G2 NET. Any attempt to install this device by a person who is not technically qualified could result in a hazardous condition to the installer or other personnel or damage to the DTD-16 + G2 NET or other equipment. Please ensure that proper safety precautions have been taken before installing this device. If you are unfamiliar with this type of equipment, please contact a properly qualified engineer to handle the installation and setup of the DTD-16 + G2 NET. 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:

**Broadcast Tools, Inc.**
131 State Street
Sedro-Woolley, WA 98284-1503 USA
Voice:  360.854.9559
Fax:     866.783.1742

Internet Home Page:   www.broadcasttools.com
E-mail:support@broadcasttools.com

THANK YOU FOR CHOOSING
BROADCAST TOOLS® BRAND PRODUCTS!

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.
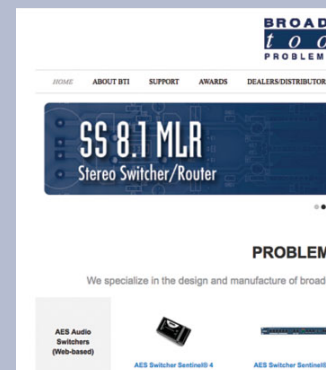
## NOTE:

This manual should be read thoroughly before installation and operation.

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

## Product Overview

The DTD-16 + G2 NET is a full-featured DTMF tone/sequence decoder that is user programmable to decode single tones or sequences up to six tones in length which can be assigned to any one of eight SPST normally open relays, eight open collectors, USB serial, RS-232 serial, and Ethernet.

The DTD's relay and open collector outputs can be programmed to close for the duration of tone, pulse immediately after completion of detection, wait a programmed (up to 9.99 seconds) length of time after detection, or latch/unlatch. Programming is performed using a non-dedicated PC via USB serial, RS-232 serial, or Ethernet (TCP or UDP) using a terminal program like PuTTY or HyperTerminal.

## Features/Benefits

- Decodes all 16 DTMF tones or user-programmed tone sequences.
- 8 SPST relay outputs and 8 open collector outputs triggered by tones or tone sequences.
- Front panel tone audio input level control with a range of -20 to +24dbu
- Adjustable tone detection time.
- Front panel relay status, power, tone activity, program mode, and activity LEDs.
- Programmed via USB serial, RS-232 serial, Ethernet (TCP or UDP) connection.
- Mode configuration via front panel dipswitches.
- Relay, open collector, and tone audio connections on removable euro-block screw terminal connectors to simplify wiring and service, mating plugs are supplied.
- Fully RFI proofed.
- Surge protected internal power supply, 9 VDC universal desktop power adapter with IEC inlet included.
- Up to three units may be mounted on the optional RA-1 rack shelf, using four supplied Velcro feet. Desktop and wall mounting are also possible.

## Inspection

Please examine your DTD-16 + G2 NET carefully for any damage that may have been sustained during shipping. If any damage is present, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the DTD-16 + G2 NET, a 9 VDC power supply, a USB-A/B cable, a "S9" RJ11-to-DB9 cable, a 7-foot BLUE straight-through CAT 5 cable, a 7-foot GRAY crossover CAT 5 cable. Manuals can be downloaded from our web site.

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

e-mail: support@broadcasttools.com   voice: 360.854.9559   fax: 866.783.1742
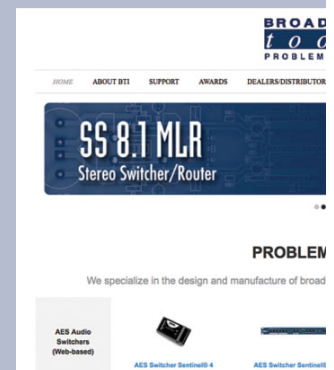
## Installation/Operation

**Power**
Connect the 2.1mm barrel type center positive power connector into the unit and the 9 VDC power supply with domestic connector into a 120 Vac 50-60 Hz power source.

**Surge Protection**
The DTD-16 + G2 NET has built-in resistance to voltage changes; we recommend that you use a power surge protector or line conditioner on the incoming AC line. Lightning strikes and/or other high voltage surges may damage your DTD-16 + G2 NET and connected equipment if it is not properly protected. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

**UPS Standby Power System**
We recommend that you connect your DTD-16 + G2 NET to a UPS standby power system. A UPS, like the BE600M1 from APC helps to minimize the risk to the DTD-16 + G2 NET and provides power during a power outage.
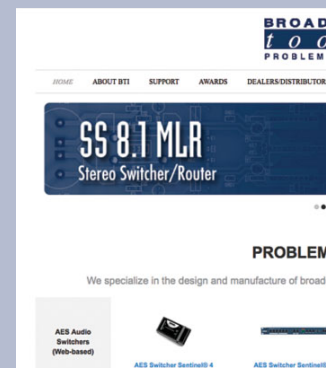
✏ **NOTE:**

*Never use any type of power supply other than the specified/supplied power supply. Check the power jack on the back of the unit to determine which power supply is required.*

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

**INSTALLATION**

**LED Indicators**
"PWR": Power LED (Green).
"DV" LED: Indicates valid DTMF tone detection (Yellow).
"PGM" LED: Flashes when in Programming Mode (Red).
"DAT" LED: Indicates serial data transfer (Red).
"K1"- "K8" Relay LEDs: Lit when the corresponding relay is on (Green).

**Program (PGM) button**
Used to toggle in and out of programming mode. See the "Programming" section of this manual for more information.

**"OPTIONS" Configuration Dip-switches**
The DTD's mode configuration is set via a four-position dipswitch, labelled" OPTIONS" (S2), located on the front panel of the unit. See the "Dip-switch Settings" section of this manual for more information.

**Audio Input Gain Adjustment**
The front panel "INPUT LVL" control may be used to adjust the DTMF tone detection sensitivity from –20dBu to +24dBu. This control should be adjusted for solid DV tone detection LED indication while normal DTMF tone audio being fed into the DTD.

**DTMF Tone Detection Jumper Settings**
JP1 = DTMF Tone detection jumper (Guard time)
The DTD is equipped with a 4-position jumper, labeled "JP1" on its PCB. This is used to adjust how quickly DTMF tones are detected. The settings are as follows:
Fast = 50ms ON / 50ms OFF
Medium = 100ms ON / 100ms OFF. (Default)
Slow = 150ms ON / 150ms OFF.

**USB PGM Port**
This type B USB port is used to connect the DTD-16 + G2 NET to a computer for configuration via a virtual COM port. See the "Programming" section of this manual for more information.

**RS-232 Serial PGM Port (RJ-11 Jack):**
This RJ-11 jack is used to connect the DTD-16 + G2 NET to a computer's COM port for configuration via RS-232 serial using the included reverse modular cable with 9-pin "S9" female D-sub adapter. See the "Programming" section of this manual for more information.

**LAN/NET Ethernet Port**
This 10/100 Ethernet port is used to connect the DTD-16 + G2 NET to a computer for configuration via telnet/TCP socket connections. See the "Ethernet" and "Programming" sections of this manual for more information.

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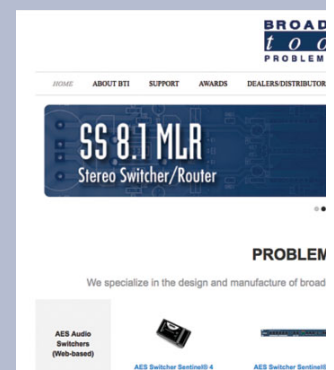


**INSTALLATION**

**Relay Outputs**

The eight relay outputs are SPST normally open/dry. Make your connections to the desired relays K1 A/B through K8 A/B. Front panel LEDs indicate when a relay is active.

(Top row, J01)

| K1A | K1B | K3A | K3B | K5A | K5B | K7A | K7B |
|-----|-----|-----|-----|-----|-----|-----|-----|
| K2A | K2B | K4A | K4B | K6A | K6B | K8A | K8B |

(Bottom row, J01)

**Open Collector Outputs**

The open collector outputs are labeled OC9 through OC16. Make your connection between the desired open collector and ground "GND". The open collector (OCx) output for the selected channel will go low to ground (GND) providing a return for a PIP/trigger input, TTL/CMOS logic, or external relay.  External pull-up resistors may be required in some installations. *NOTE: The open collectors are rated at up to 6 VDC @ 50 mA.*

(Top row, J04)

| OC9 | OC11 | OC13 | OC15 | AUD- | AUD+ |
|-----|------|------|------|------|------|
| OC10 | OC12 | OC14 | OC16 | GND | CGND |

(Bottom row, J04)

**Audio Input Connection**

Connect the audio feed supplying DTMF tone audio for your equipment to the "AUD-"and "AUD+" removable screw terminals on the J04 top terminal block connector. The cable shield should connect to the signal ground "GND"/ "SGND" terminal on the bottom J04 terminal block connector. See above for pinouts. The input is Hi-Z, active balanced and adjustable via the front panel "INPUT LVL" trim pot.

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



**INSTALLATION**
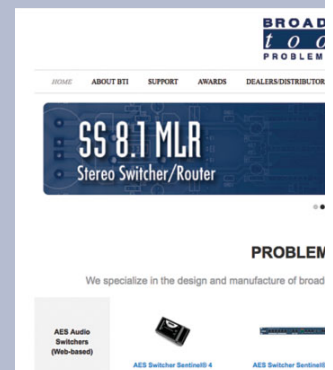
## Programming

The DTD can be programmed from a computer via its USB serial, RS-232 serial, or Ethernet interface. See the "Ethernet" section of the manual for Ethernet setup instructions.

**Connecting via the USB Serial "PGM" port:**

1. Connect the supplied USB A/B cable from the "USB PGM" jack on the DTD rear panel to an available USB port on your PC.  When you first plug the DTD into your PC, it should automatically install the correct FTDI USB Serial "Virtual COM port" drivers which will allow you to access the DTD on a COM port.

   *NOTE: If the DTD's FTDI USB Serial "Virtual COM port" drivers do not automatically install they may be downloaded here: http://www.ftdichip.com/Drivers/VCP.htm*

2. Start a serial terminal application like PuTTY, Tera Term or HyperTerminal configured for the connected COM port set to 9600 baud, 8, N, 1, flow control to NONE, Emulation set to ANSI, and local character echo enabled.

**Connecting via the RS-232 Serial "PGM" port:**

1. Connect the supplied "S9" RJ11 to DB9 adapter cable from the RJ11 PGM jack on the DTD rear panel to an available RS232 serial COM port on your PC.

2. Start a serial terminal application like PuTTY, Tera Term or HyperTerminal configured for the connected COM port set to 9600 baud, 8, N, 1, flow control to NONE, Emulation set to ANSI, and local character echo enabled.
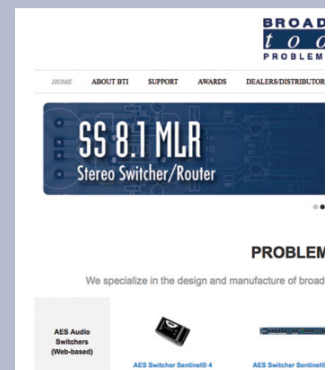
**"S9" RJ11 to DB9 adapter pinout:**

| RJ-11 Adapter Pin | DB-9 D-SUB Pin # | Product's point of view Function Name. |
|---|---|---|
| 4 | 3 | RS-232 Receive |
| 3 | 2 | RS-232 Transmit |
| 2 | 5 | Ground |
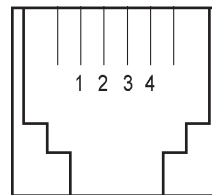
Modular connector's point of view.

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

**Programming Steps**

1. Press the recessed front panel PGM button or type "p" in the terminal to enter Program Mode. The red front panel PGM LED will blink to indicate the DTD is in Program mode and the Program Menu will be displayed in the terminal window:

```
DTD-16+ VER 2.02

OUT-CMD ON/OFF CODES
01-0-0.00-1111/
02-0-0.00-2222/
03-0-0.00-3333/
04-0-0.00-4444/
05-0-0.00-5555/
06-0-0.00-6666/
07-0-0.00-7777/
08-0-0.00-8888/
09-0-0.00-9999/
10-1-0.10-101/
11-0-0.00-****/
12-0-0.00-####/
13-0-0.00-AAAA/
14-0-0.00-BBBB/
15-0-0.00-CCCC/
16-0-0.00-DDDD/
SELECT 01-16 & ENTER 0=MOM, 1=LATCH, 2=XLATCH
DELAY 000-999 (0.00-9.99 SEC), MOM OR ON CODE / OFF
CODE :
```

2. Type the output channel number, 01 through 16, a "- "(dash) will be displayed after the number are entered along with a new line.
3. Type the single command digit to set the output mode: "0" for momentary, "1" for Latch or "2" for Exclusive Latch. A "- "(dash) will be displayed after the command digit and a new line will be displayed.
4. Enter a time delay value of 0.00 to 9.99 seconds as a three-digit value (000-999). Do not enter the ".", it will be entered automatically. This is the time that will elapse after a command is received and before the output is activated. The default time delay before activation is 0.00 seconds. A "- "(dash) will be displayed after the command digit and a new line will be displayed.
5. Enter the DTMF tone or string value(s) you want to use to operate the selected output. The default values are listed above.

To exit Program mode, press the ESC key. Program mode will be exited automatically after 60 seconds of inactivity. When Program mode is exited the DTD will list the current program values and perform a reset.

**WEBSITE:**
*Visit our web site for product updates and additional information.*
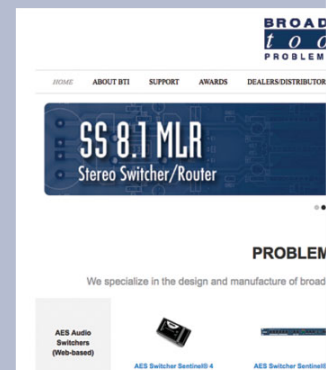
## Output Modes

### Momentary

If you have selected the momentary function for this output channel, you can program two codes up to 5 digits for the first code and 6 digits for the second code that can be used to activate that output. If your code is shorter than 5 digits enter a "/" at the end of the first data string. This will cause a new line to be displayed. Enter the second code you want to momentarily trigger. If the string is less than 6 digits press the "Enter" key. The codes for that output will now be saved and you can go on to programming another output. The momentary output closure duration is 1 second.

### Momentary Programming Example:

To program output 1 for momentary for code 123 and 321 with a time delay of 4.25 seconds before activation:

01
0
425
123/ 321(CR)

### Latch

For the Latch function, the first code will be used to latch the output on, and the second code to turn latch it off. Program the "ON" code, from 1 to 6 digits. If it is shorter than 5 digits, terminate with the "/" character. A new line will be displayed. Now enter the code you want to use to turn OFF that output. It must be from 1 to 6 digits long. If it is shorter than 6 digits terminate with the "Enter" key. You cannot enter the same code to latch an output on and turn it off.

### Latch Programming Example:

To program output 2 for 456 latch on, 654 latch off with no time delay:

02
1
0.00
456/654(CR)

### Exclusive Latch

For the Exclusive Latch function, the first tone/code will be used to latch the output on, and the second tone/code to turn it OFF, if desired. You do not need to enter an OFF code. In Exclusive latch mode, when any exclusive latch output is selected, all other exclusive latch outputs will be reset. Enter the "ON" code, from 1 to 5 digits. If it is shorter than 6 digits terminate with the "/" character. A new line will be displayed. Now enter the code you want to use to turn off that output. It must be from 1 to 6 digits long. If it is shorter than 5 digits terminate with the "Enter" key. You cannot enter the same code to latch an output on and turn it OFF.

### Exclusive Latch Programming Example:

To program output 2 for 789 x-latch on with time delay of .10 second:

02
2
010
789(CR)
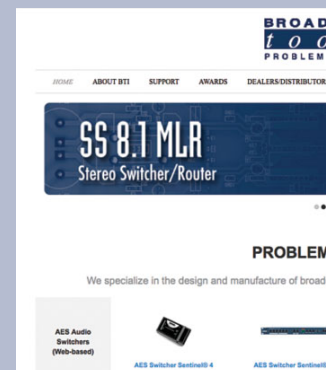
**Dip-switch Settings**

By default, all four dipswitches are in the up/off position which sets the DTD to its normal operating mode and programming. The following alternate operating modes are available via the front panel configuration dipswitches:

DIP-1

If DIP-1 is turned ON; all momentary outputs will become key-follow outputs. This means that the selected output will turn ON when the last digit of the momentary code is decoded and stay on for as long as that digit is being decoded. This is useful for remote pan-tilt camera control.

DIP-2

When DIP-2 is ON, the "#" character will be translated to a CR/LF (0Dh 0Ah) on the ASCII RS-232 output. This allows you to use the "#" as an "Enter" key and is useful for using DTMF to remotely control equipment that requires a CR/LF termination.

DIP-3

When DIP-3 is ON, codes programmed into odd channels, 1,3,5,7, etc., will operate relay one. Even channels 2,4,6,7, etc., will operate relay 2. Relays 1 and 2 can be programmed to any mode; momentary, latching, or exclusive latching.

DIP-4

When DIP-4 is ON, Relays will be engaged on the trailing edge of the DTMF signal in both momentary and latching modes.

**Restoring to factory defaults:**

The default program values may be reloaded at any time by removing power from the DTD-16 + G2 NET, holding down the PGM button and plugging in the power and then releasing the PGM button after a few seconds. The PGM LED will blink once after the defaults are loaded.)

Ethernet settings defaults may be restored by depressing the recessed front panel Def. (Defaults) push button, applying power to the unit, and holding down the push button for five seconds after power up.

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



**PROGRAMMING**
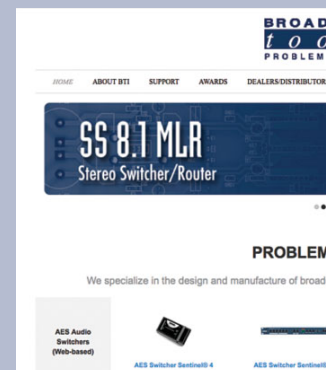
## Ethernet Setup and Operation

### Ethernet "Quick Start" Guide
*CAUTION! NEVER DOWNLOAD FIRMWARE UPDATES OR CHANGES TO THE WEB SERVER UNLESS INSTRUCTED TO DO SO BY BROADCAST TOOLS®. DOING SO DELETES ALL SOFTWARE AND VOIDS ALL WARRANTIES FROM BROADCAST TOOLS, INC.*

Instructions for changing the IP address of the computer that will be used for the configuration of this product are given here. Note that these instructions are specifically for computers with the Windows 10 operating system but will also work with Windows 7. For setup using other operating systems, refer to the appropriate OS user's manual.

Step 1: Open the control panel by clicking on the Start Menu, click on Settings, then click on Network & Internet.
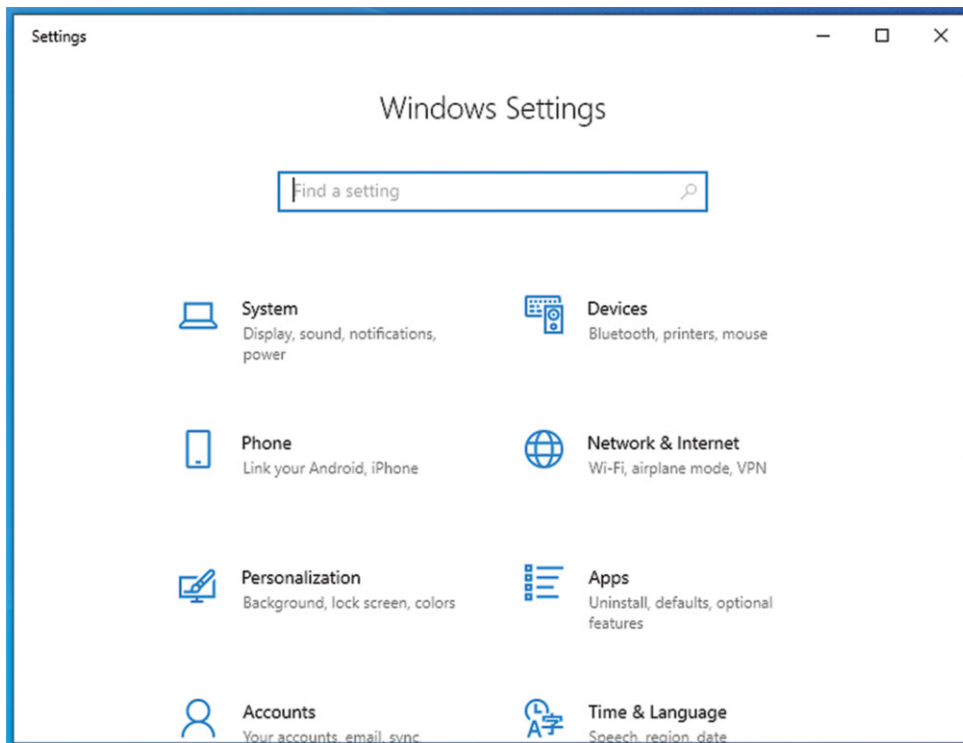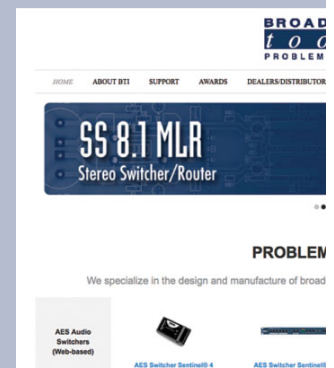


### CAUTION!

*If you are not familiar with Ethernet enabled equipment, it may be useful to contact your IT department, network administrator or network consultant for assistance. Assigning an IP address already in use by another device may cause problems with your network!*
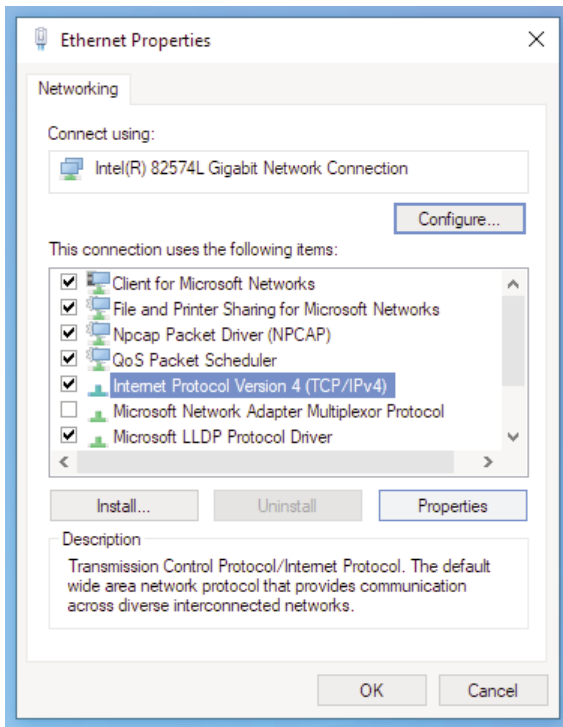
### WEBSITE:
*Visit our web site for product updates and additional information.*



**OPERATION**

Step 2: Under Advanced Network Settings click Change adapter settings. The Network Connections windows will pop up, as shown below.
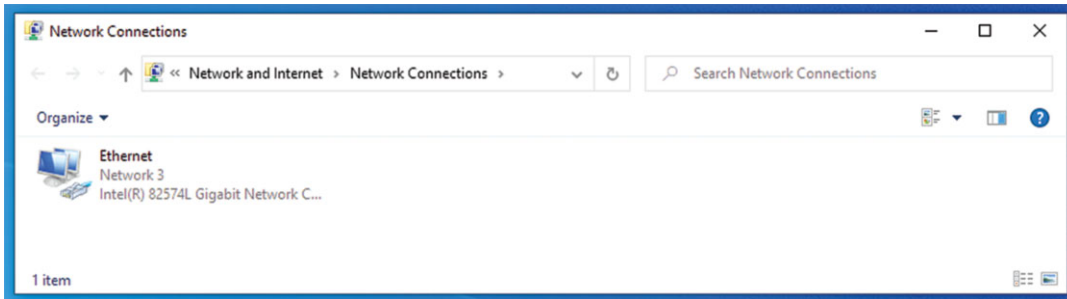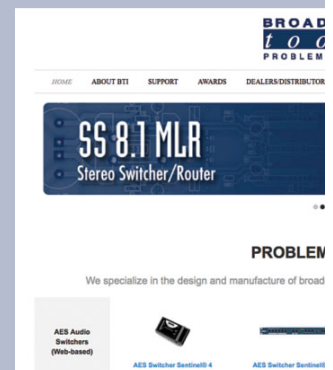


Step 3: Right click on the icon labeled Local Area Connection or Ethernet. A menu will appear. Select the option at the bottom of the menu labeled Properties. The Ethernet Properties window will appear.
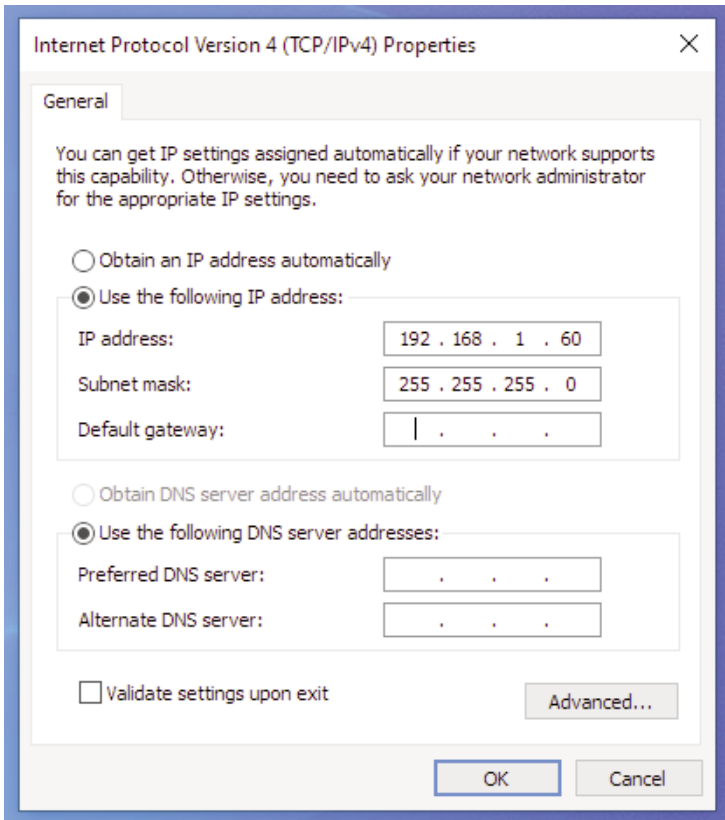


**WEBSITE:**
*Visit our web site for product updates and additional information.*



**OPERATION**

**13**

Step 4: On the Local Area Connection Properties page, double click on Internet Protocol (TCP/IPv4) to display properties.



Step 5: Before making any changes to the network settings, write down the current settings (or screen capture the page and print) so that they can be restored once the unit is configured.  Next, select the radio button labeled "Use the following IP address" and type in the IP address 192.168.1.60.  Type in the subnet mask of 255.255.255.0.  Leave the default gateway field blank.  Click OK to apply the new settings.
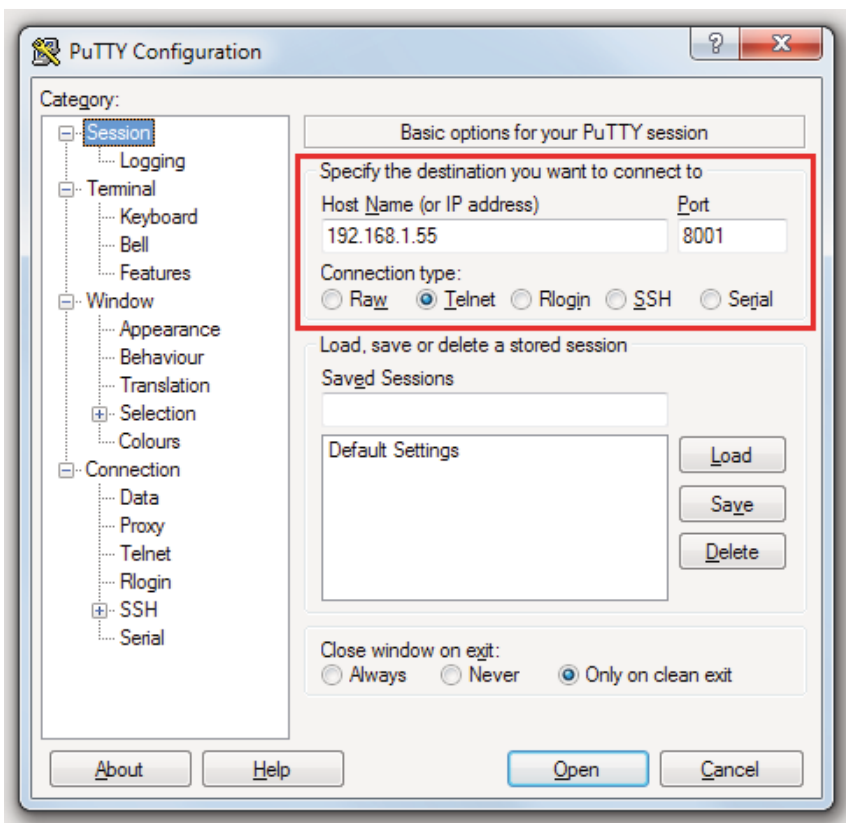
**WEBSITE:**
*Visit our web site for product updates and additional information.*



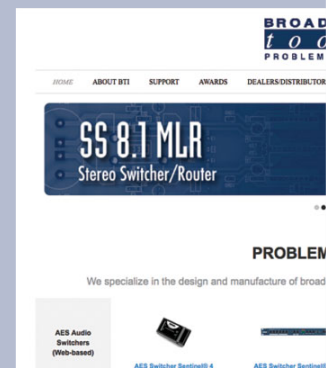**OPERATION**
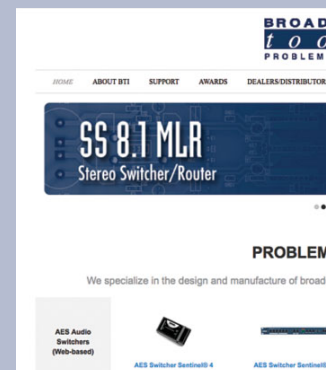
**Connecting via the Ethernet "LAN/NET" port:**

1. Connect the supplied GRAY colored XOVER cable between the PC's Ethernet port and the products "LAN/NET" network RJ45 jack.

2. Connect the included power supply to the DTD. Verify that the green PWR LED is lit and the green "LINK" LED to the left of the "LAN/NET" Network RJ45 jack is illuminated

3. Open terminal application PuTTY configured for a Telnet connection type to host 192.168.1.55 port 8001.

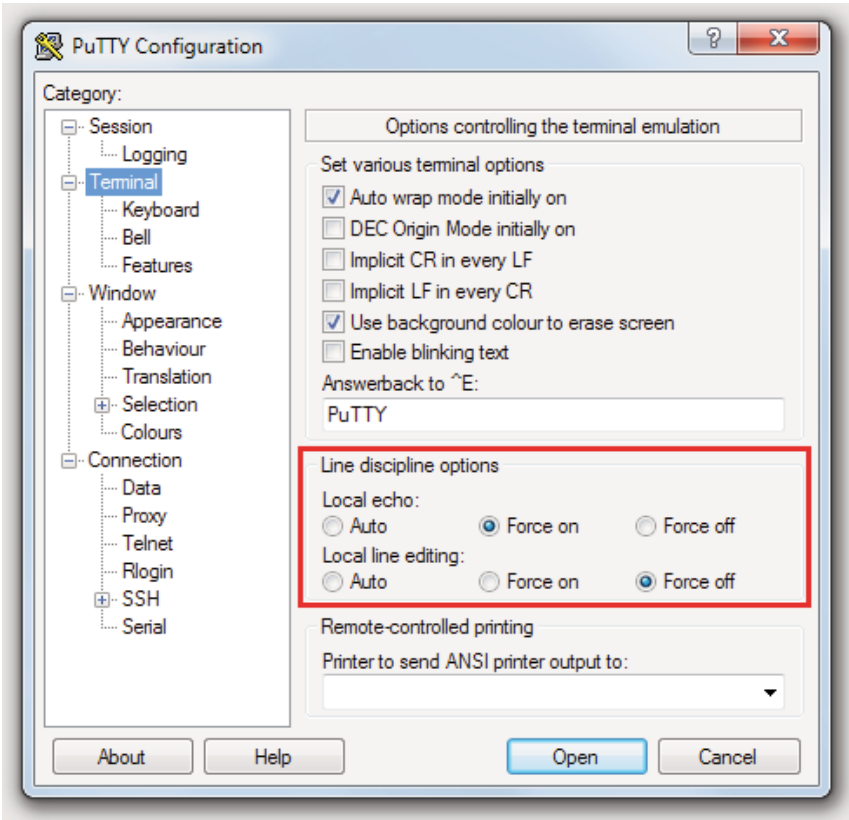

4. In PuTTY configuration > Terminal > Line discipline options set Local echo "Force on" and Local line editing to "Force off".

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



**OPERATION**

5. Click okay to connect to the DTD and type "p" into the terminal window and press return to enter programming mode. See: "Programming Steps" section of this manual.

**Changing network settings on the Ethernet "LAN/NET" port:**

*NOTE: We recommend the use of Chrome, Firefox, or Safari for as your browser.*

1. Connect the supplied GRAY colored XOVER cable between the PC's Ethernet port and the products "LAN/NET" network RJ45 jack.

2. Connect the included power supply to the DTD. Verify that the green PWR LED is lit and the green "LINK" LED to the left of the "LAN/NET" Network RJ45 jack is illuminated.

3. Open a web browser window and navigate to the DTD's default IP address: http://192.168.1.55

4. When prompted to login, use the default login and password. Login: admin Password: 1234

**WEBSITE:**
*Visit our web site for product updates and additional information.*
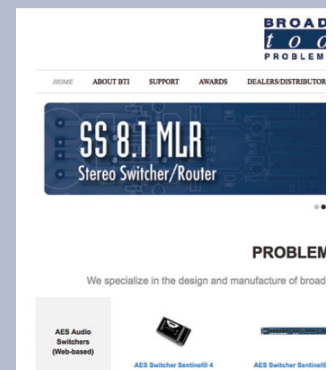
5. To change the network settings, choose "Local IP Config" from the side bar:



6. The default work mode is TCP Server, TCP Client, UDP Server and UDP Client are also available. To change the TCP port choose "Serial Port" from the side bar and change the "Local Port Number" setting



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



7. To save changes click "Save" then when prompted click "Restart Module" and "Ok" to reboot the web server module and allow the changes to take effect.

**OPERATION**
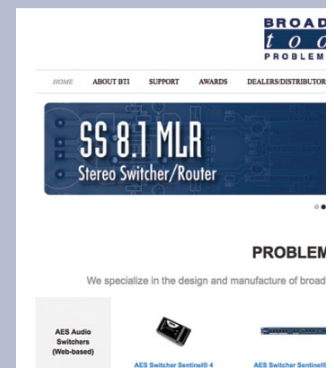
## Specifications

| | |
|---|---|
| Input Level: | -20dBu to +24dBu. |
| Input Impedance: | 200K Ω balanced, 100K Ω unbalanced. |
| Relay Outputs: | Eight SPST, normally open dry contacts. 30 VDC @ 1 amp max. |
| Open Collector Outputs: | Eight, sinking up 6 VDC / 50 mA max to ground. |
| RS-232 Serial: | 9600, 8, N,1 / RJ11 jack. Reverse module cable and RJ11 to DB9 adapter (S9) included. |
| USB Serial: | 9600, 8, N,1 / USB type B female. FTDI Chipset. |
| Ethernet Interface: | RJ-45, 10base-T or 100base-TX, auto sensing with link & activity LED indicators - Full/half duplex. |
| Supported Protocols: | TCP/IP, UDP/IP, ARP, ICMP, HTTP, TELNET. |
| I/O Connectors: | Audio Inputs, relays, and open collector outputs. Removable screw terminal blocks. |
| Power: | 9-12 VDC, greater than 500 mA. 2.1mm ID x 5.5mm OD coaxial connector, center positive, surge protected. Universal switching power supply with IEC AC inlet supplied. |
| Operating Environment: | 32°F/0°C-122°F/50°C; 0%-95% non-condensing relative humidity; 10,000ft/3048m. |
| Dimensions: | 6 x 5.25 x 1.63 in (W x L x H) |
| Options: | RA-1 Rack Shelf. 1 RU. Accommodates up to 3 units, filler panels supplied. Note: Velcro is provided to secure the product to the     RA-1 shelf. |
| | DBM-1 DIN rail mounting bracket. |

**WEBSITE:**
*Visit our web site for product updates and additional information.*
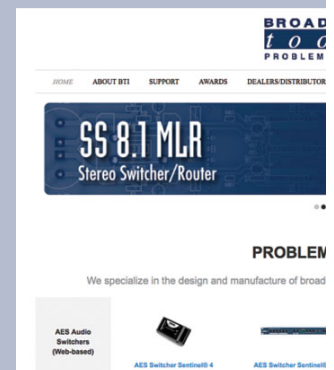
## LIMITED WARRANTY

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.

Broadcast Tools warrants to each Buyer of any item manufactured by Broadcast Tools that the item will be free from defects in materials and workmanship at the time it is shipped by Broadcast Tools if the item is properly installed, used and maintained.

## EXCLUSIVE REMEDIES

If Broadcast Tools is notified, in writing, of a failure of any item manufactured by Broadcast Tools to conform to the foregoing Limited Warranty within one (1) year following the date of the Buyer's acquisition of the item, and if the item is returned to Broadcast Tools in accordance with Broadcast Tools' instructions for confirmation by inspection of the defect (which at Broadcast Tools' election may include, without limitation, a requirement that the Buyer first obtain a Return Authorization number from Broadcast Tools, that the Buyer furnish proof of purchase in the form of an invoice and/or receipt, and that the Buyer prepay all freight charges associated with any return of the item to Broadcast Tools using such freight service as Broadcast Tools reasonably may specify), Broadcast Tools will repair or replace the defective item, or will refund the purchase price paid by the Buyer for the item.  Broadcast Tools shall have the exclusive right to choose between these alternative remedies.

## NO OTHER WARRANTIES OR REMEDIES

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, BROADCAST TOOLS AND ITS SUPPLIERS DISCLAIM ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABIL-ITY OR FITNESS FOR A PARTICULAR PURPOSE; AND THE FOREGOING ALTERNATIVE REMEDIES SHALL BE EXCLUSIVE OF ALL OTHER REMEDIES.  THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS.  YOU MAY HAVE OTHER RIGHTS, WHICH VARY FROM STATE/JURISDICTION TO STATE/JURISDICTION.
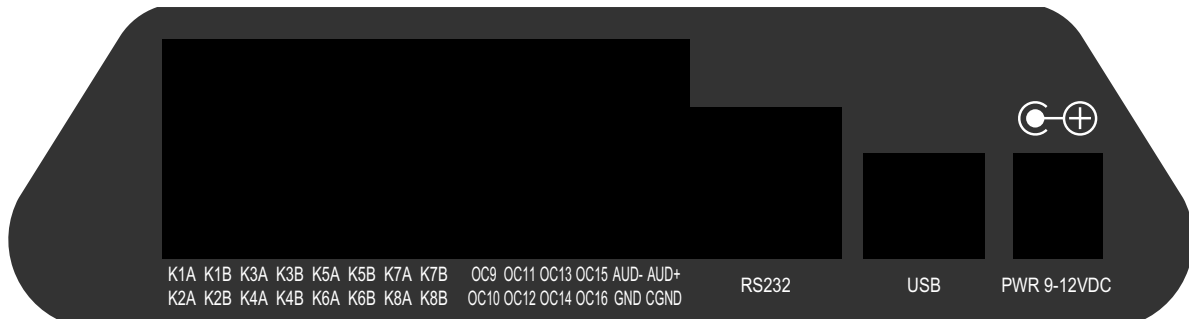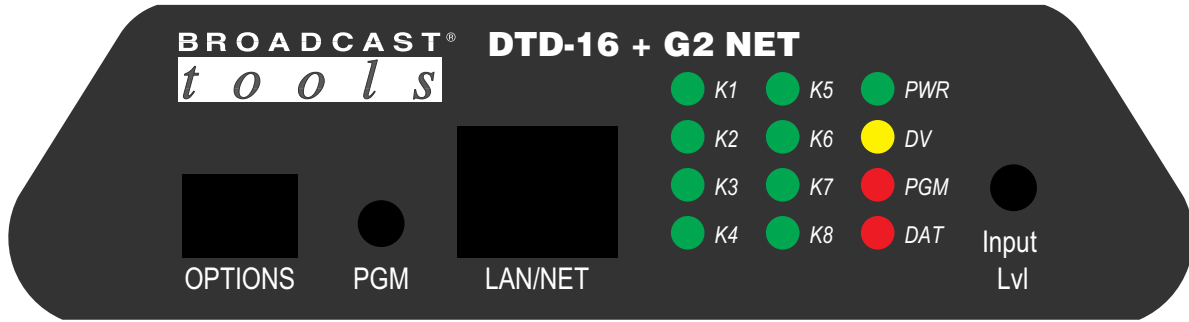
## NO LIABILITY FOR CONSEQUENTIAL DAMAGES

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, NEITHER BROADCAST TOOLS NOR ANY OF ITS SUPPLIERS SHALL HAVE ANY LIABILITY FOR ANY SPECIAL, INCIDENTAL, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES WHATSO-EVER (INCLUDING, WITHOUT LIMITATION, ANY DAMAGES FOR LOST PROFITS, BUSINESS INTERRUPTION, LOSS OF DATA OR INFORMATION, COST OF CAPITAL, CLAIMS OF CUSTOMERS, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR THE INABILITY TO USE ANY ITEM SUPPLIED BY BROADCAST TOOLS, EVEN IF BROADCAST TOOLS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES HAVE ANY LIABILITY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES.  THIS LIMITATION OF LIABILITY APPLIES WHETHER A CLAIM IS ONE ALLEGING BREACH OF A CONTRACT OR WARRANTY, NEGLIGENCE OR OTHER TORT, FOR THE VIOLATION OF ANY STATUTORY DUTY, THE FAILURE OF ANY LIMITED OR EXCLUSIVE REMEDY TO ACHIEVE ITS ESSENTIAL PURPOSE, OR ANY OTHER CLAIM OF ANY NATURE.  BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, THIS LIMITATION MAY NOT APPLY TO YOU.

**Broadcast Tools, Inc.**
131 State Street
Sedro-Woolley, WA 98284 • USA

360.854.9559 **voice** • 866.783.1742 **fax**
support@broadcasttools.com **e-mail**
www.broadcasttools.com **website**

**BROADCAST®**
*t o o l s*
**DTD-16 + G2 NET**

K1  K5  PWR
K2  K6  DV
K3  K7  PGM
K4  K8  DAT

OPTIONS    PGM    LAN/NET    Input Lvl

K1A K1B K3A K3B K5A K5B K7A K7B    OC9 OC11 OC13 OC15 AUD- AUD+
K2A K2B K4A K4B K6A K6B K8A K8B    OC10 OC12 OC14 OC16 GND CGND    RS232    USB    PWR 9-12VDC

# BROADCAST tools®

## DTD-16 + G2 Net

# Component Layout



Power
9-12VDC

USB
Port

RS-232
Serial

Tone
Audio
Input

Open Collector
Outputs 9-16

Relay Outputs
K1-K8

**DTMF Tone
Detection Jumper**
F = 50ms/50ms
M = 100ms/100ms (default)
S = 150ms/150ms

JP1 – F
JP1 – M
JP1 – S

Options Mode
Config

Program
Switch

LAN/Net
RJ45 Jack

LED
Indicators

Input Level
Trimmers