BROADCAST tools INC

Installation and Operation Manual

ICM-16/MHI

Intercom Monitor and Headphone Interface

Firmware version 1.15 and above

Manual update 1/09/2004

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

e-mail: support@broadcasttools.com **voice:** 360.854.9559 **fax:** 360.854.9479

INTRODUCTION

Thank you for your purchase of a Broadcast Tools® ICM-16/MHI, Intercom Monitor/Headphone Interface (referred to as the MHI throughout this manual). We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the Broadcast Tools® ICM-16/MHI.

SAFETY INFORMATION

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

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 USA
Voice: 360 . 854 . 9559
Fax: 360 . 854 . 9479

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

THANK YOU FOR CHOOSING
BROADCAST TOOLS® BRAND PRODUCTS!

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

DESCRIPTION

The ICM-16/MHI, Monitor Headphone Intercom station offers the ultimate in intercommunication among sixteen studios. No other system on the market at this price offers the functionality and features of the ICM-16/MHI. Each single rack space unit is a complete intercom/monitoring station that can communicate with up to 15 other units. Each unit may be inserted into both the monitor and headphone paths of most consoles and work in conjunction with your existing monitor and headphone amplifiers. The ICM-16/MHI also features a headphone amp with a front panel 1/4" T/ R/S jack, level control, selectable microphone and/or line amplifier with front and rear panel XLR connectors. Each intercom station key may call any of the other 15 stations, along with 3 work groups and all-call. Additional features include the ability to insert talkback audio into either or both of the headphone and/or monitor channels, and the ability to dim the audio along with muting of either monitor channel, Do Not Disturb option or numerous other features. The "B" version is equipped with a 2 input headphone switcher allowing the user to select between two different headphone sources. This could be useful when feeding headphones with air audio when using digital audio processors. Advanced options are programmed using a non-dedicated PC. Connection between the ICM-16/MHI and the ICM-16/controller is accomplished with standard Cat 5 cable.

FUNCTION TERMINOLOGY

Talkback Buttons:

Twenty front panel switches activate the talkback path for each destination studio. For example, when a talkback button for the desired destination studio is pressed, the following events occur:

- The origination and destination studio monitor speakers will dim if configured to a user-defined level, which may be adjusted using the rear panel left and right "Mon Dim" controls. Their operation may be further modified via menu and the DIP switch (SW25) for each channel. ALL monitoring functions are summed into monaural during talkback and the monitor speakers will mute if the mute function is active.
- The origination and destination headphones will dim if configured to a user-defined level, which may be adjusted using the rear panel left and right "Hdph Dim" controls. Their operation may be further modified via menu and DIP switch (SW25) for each channel. ALL monitoring functions are summed into monaural during talkback.
- A talk path from the originating studio to the destination studio is established. The originating studio may use the external Microphone/Line input as a talkback source. Talkback is active as long as the talkback button is being pressed and the destination studio is NOT using the DND function.
- The destination studio's front panel "CALL" LED will light for as long as the originating station is feeding audio. A SPDT "CALL" relay contact closure that may be connected to an optional external alerting device is also provided .

DND Switch and LED:
DND allows the operator to control interruptions during an open microphone ("MUTE") situation. Pressing this push button will activate the function and light the DND (Do Not Disturb) LED. Pressing it again turns the function and LED off. When the front panel DND LED is lit and the local MUTE input is active, talkback from any of the originating studios will be ignored. Any attempt to call the studio will light the called studio's front panel CALL LED, hereby visually signaling the operator using the DND mode that another studio is attempting an intercom call. The remote input is active low.

Mono switch and LED:
All source material is summed to monaural as long as this button is held down. This is very useful for checking stereo phase. The remote input is active low.

AC (All Call):
Allows the originating studio to initiate talkback to all other studios simultaneously. The remote input is active low.

Lt/Rt Mon Dim:
These level controls are used to adjust the amount of monitor speaker level reduction when a talkback function occurs. This feature may be turned on or off via the setup menu. Factory default is ON.

Lt/Rt Hdph Dim:
These level controls are used to adjust the amount of headphone level reduction when a talkback function occurs. This feature may be turned on or off via the setup menu. Factory default is ON.

DIM Switch and LED:
This switch activates the DIM function. This may be configured for either a momentary or toggle mode via the setup menu. If toggle mode is programmed, it acts as an alternate action input and configured to reset the undimmed mode whenever a mute function is initiated. The remote input is active low. Factory default is momentary.

Headphone Level:
The front panel level control adjusts the headphone level to the front panel T/R/S jack and the removable screw terminals (J8) on the rear panel.

Talkback "T/B Send":
Adjustable SEND talkback level to the destination studio. This input may be balanced microphone or line level. Rear panel SW-24 selects this input function. 24 vdc phantom power is available by installing JP3.

WEBSITE:

Visit our web site for product updates and additional information

e-mail: support@broadcasttools.com voice: 360.854.9559 fax: 360.854.9479

Remote Control Mute:

One 3 to 28 vdc wet or dry optically isolated input and one 5-volt TTL/CMOS compatible momentary input are provided. This feature notifies the MHI that a microphone is in use in conjunction with the DND function and also instructs the monitor output to mute, if configured to mute. A SPDT relay is provided for external use. JP2 is used to configure the opto-isolated mute input for either wet or dry operation.

Remote Control Station Talkback:

Remote station talkback requires an active low input for any of the 20 inputs. Access is provided via J3 and duplicates the front panel switch functions, which include station selection 1 through 16, WG-1, WG-2, WG-3 and AC.

NOTE: "WG", refers to Workgroups, while AC refers to "ALL-CALL". WG-1 will call stations 1 through 5, minus itself. WG-2 will call stations 6 through 10, minus itself and WG-3 will call stations 11 through 16, minus itself.
ALL-CALL calls all stations, minus itself.

REMOTE CONTROL TERMINOLOGY

J3 "Remote Switches" pin numbers	J3 Functions	J2 "Aux Remote" pin numbers	J2 Functions
1	Station Call 1	1	K2 N.O. (Mute)
2	Station Call 2	2	K2 Com (Mute)
3	Station Call 3	3	K2 N.C. (Mute)
4	Station Call 4	4	K1 N.O. (Call)
5	Station Call 5	5	K1 Com (Call)
6	Station Call 6	6	K1 N.C. (Call)
7	Station Call 7	7	Mute Opto (Anode)
8	Station Call 8	8	Mute Opto (Cathode)
9	Station Call 9	9	Ground
10	Station Call 10	10	Ground
11	Station Call 11	11	Ground
12	Station Call 12	12	Ground
13	Station Call 13	13	K3 N.O. (Key)
14	Station Call 14	14	K3 Com (Key)
15	Station Call 15	15	K3 N.C. (Key)
16	Station Call 16		
17	WG-1		
18	WG-2		
19	WG-3		
20	"AC" All-Call		
21	MONO		
22	DIM		
23	DND		
24	TTL "MUTE"		
25	Ground		

e-mail: support@broadcasttools.com voice: 360.854.9559 fax: 360.854.9479

INSTALLATION GUIDELINES

Our first recommendation is to bench test the full system. Seven foot Cat 5 cables are provided to handle this procedure. We also suggest that a PC running Windows 95 or greater be available to access the Menu program. Follow the instructions starting on Page 14 to configure HyperTerminal. After HyperTerminal is running Type the following:

*m then press the **"ENTER"** key.

The setup menu will display, allowing you to configure the listed functions.

Notice what types of connectors are used on the MHI: there are XLR, removable screw terminals, male, DB-15, DB-25, and a Cat-3 through 6 (RJ-45) connector. On the front panel are all controls described in the section Function Terminology.

The following is a list of areas that you need to address first.

1. Placement of your Broadcast Tools® ICM-16/MHI
In some situations, the MHI can be placed in a countertop rack next to the console and you won't need to worry about out boarding the controls via the remote connectors. The operator can use the front panel switches to accomplish any function. Since the MHI is only one rack space tall (1 3/4"), it doesn't take up much room, but as with any equipment, proper ventilation should be considered. We recommend a blank panel or better yet, a vented panel between the MHI and any other piece of gear.

2. Remote Control Operation
In On-Air studios, you may want to consider mounting the close to the talent.
We have provided connections for the major controls and indicators on the back for remote operation. You may choose to have only your studio talkback switches installed in or near the console, which makes the intercom easy to use without having to look at all the other controls on the front of the unit. Most console manufacturers are able to supply remote control panels MHI when supplied with the remote control information in this manual.

3. Other Broadcast Tools® ICM-16/MHI Options
In simple news rooms and voice booths, you probably only want to use the MHI for intercom features. However, in the on-air studio, master control, etc., you may want to use the following enhancements. A full description of each of these features is described in the section Function Terminology.

! TIP

After each unit is configured, we suggest you label the top or rear of each Broadcast Tools® ICM-16/MHI with the studio name of its destination. You may end up changing jumpers and/or switches inside, and you'll need to know which Broadcast Tools® ICM-16/MHI has been modified.

WEBSITE:

Visit our web site for product updates and additional information

INSTALLATION GUIDELINES

1) SPLIT HEADPHONES

This is the ability to put the Talkback signal into either, both or none of the channels and adjust the amount of dimmed monaural air signal. This is selectable by Dipswitch SW25.

2) DND (Do Not Disturb)

This is an important feature to consider. You can leave DND on or off. In the off mode, all other stations may come across the headphones, while the microphone is open. In some situations, this could be useful for queuing between production rooms, etc. In other situations, it could be annoying for instance, if someone does an "ALL CALL" trying to locate someone. This kind of distraction most likely would be bothersome to talents that are talking on the air. In the DND ON mode, the studio is protected from any intercom calls while the microphone is on.

3) MONO

This feature can be out boarded or used on the front panel so that an operator can check "STEREO" source material for phasing problems. The nice thing about this is that it only affects the local studio's monitors.

4) AC (ALL CALL)

This feature is exactly how it sounds. It opens a talk path from the originating studio to all other studios that you have on the system. This feature can be useful in emergency situations, but it also can be abused to the point that it disrupts people.

e-mail: support@broadcasttools.com voice: 360.854.9559 fax: 360.854.9479

INTERFACING TO THE STUDIOS

Most likely you have different consoles, headphone amps, and other associated equipment in each of your studios. By preparing a setup form, you can help prepare yourself for the installation.

Using Electronically Balanced Inputs and Outputs

- Electronically balanced inputs and outputs must sometimes be treated differently from transformer coupled inputs and outputs.
- With balanced equipment:
  - When the MHI is used with equipment with balanced inputs and outputs of any type:
  - Be sure polarities are matched (if desired), then connect:
    - (+) to hi (+)
    - (-) to low (-) ground

- With unbalanced equipment:
  - When the MHI is used with equipment having unbalanced inputs and/or outputs:

- To use the MHI inputs with unbalanced outputs, connect:
  - to hi (+)
  - ground (-) input
  - ground

- The polarity may be changed by reversing the (+) and (-) connections.

- To use the MHI output with unbalanced inputs, connect:
  - (+) to (+) ground

CAUTION!

DO NOT CONNECT THE LOW (-) OUTPUT TO GROUND!

NOTE:

The polarity may be changed by reversing the (+) and (-) connections. Tie the shield at one end only. Never tie each end of the cable (there are always exceptions).

WEBSITE:

Visit our web site for product updates and additional information

e-mail: support@broadcasttools.com voice: 360.854.9559 fax: 360.854.9479

INTERFACING TO THE STUDIOS

The first concern is how you will insert the MHI in the monitor path. Most consoles have a control room monitor output, which will directly feed into the MHI monitor input terminals. From the MHI monitor output terminals, you will feed your power amplifier. You need to pay attention to the balanced and unbalanced connections on the MHI.

Next is the interfacing of your headphone system. The MHI has one built-in headphone amplifier. It is capable of powering any low impedance headphones (8-600 ohms). However, you may use the MHI headphone outputs to feed your own headphone amp. In this case, you will hook it up similar to the way you do the monitor path.

The MHI is equipped with a selectable microphone/line talkback input. If your microphone pre-amp (insert point) feeds a line level DA, you could take one output and feed the Broadcast Tools® ICM-16/MHI. In this case, you would set-up the ICM-16/MHI's microphone/line talkback input for line level ("Mic/Line switch SW24 IN"). Use R99 (line level) 15 turn pot to adjust the gain. For final adjustments, use the "T/B SEND" pot. If your plan is to use a microphone with the unit, release SW24 (OUT) for microphone level. Consumer level devices (-10dbv) may be used for talkback sources by pressing SW24 in and removing R95 (2.2k).

One last connection is necessary in each of your studios. The MHI needs to know when the microphone is on and the monitor speakers are muted. Regardless of the output your console feeds to (i.e. the on-air light, air check machine, etc.), it needs to go to the MHI. This can be any "WET" DC input between 3 and 28 volts or (DRY) contact closure on J2. We also provide a 5 volt TTL/CMOS (active low) input available on J3. This signal will tell the MHI to mute the monitor path (if active), as well as to invoke the DND feature, if used.

Making Provisions for Bypassing the Broadcast Tools® ICM-16/MHI

Once you have figured out how your interconnects will be installed, you should make provisions for keeping your monitor and headphone systems working in the event you need to remove an MHI for calibration or repair. It is strongly suggested that you clearly mark all cables that go in and out of the MHI so that patching around it is possible.

Connecting Broadcast Tools® ICM-16/MHI to the Controller

The connection between each MHI and the Broadcast Tools®ICM-16/Controller uses category 3 to 6 cabling. Plug one end of the cable into the RJ-45 on the MHI and the other into the desired station number on the Broadcast Tools® ICM-16 Controller's RJ-45 connector.

Where to Mount the Broadcast Tools® ICM-16/Controller

Try to find a location that is central to all of your studios so that you can keep your cable runs as short as possible. We also recommend keeping the interface easily accessible for troubleshooting. This unit can easily be mounted in any standard 19" rack. We suggest keeping the cable between each workstation and the controller less than 1000 feet.

e-mail: support@broadcasttools.com voice: 360.854.9559 fax: 360.854.9479

CALIBRATION

1. Talkback "Microphone/Line In" Input

The first step is to adjust the TB Send level leaving each MHI to your facility's particular reference level. A good rule of thumb would be from -10 to +4 dbu. By speaking into the talkback source, such as a microphone, press the station 1 button and adjust the TB Send rear panel trimmer pot to read your reference level on pins 4 & 5 on J9 (T/B SND). You should have your voice peaks reach your reference level. This needs to be set on all of the Broadcast Tools® ICM-16/MHI units so levels match each other.

2. Receive Talkback Level

Choose one particular intercom to work on for the rest of these calibrations. Turn the monitor pot on the MHI all the way down. Now set your power amplifiers level to its normal position. Have someone go to another MHI that has its talkback TB SEND output calibrated and have him or her talk into the microphone while depressing your station's talkback button. At the Broadcast Tools® ICM-16 Controller, adjust the CHx OUT control to a comfortable listening level in your monitor speakers and headphones. Particular care should be used when calibrating, as the talkback level will remain constant.

3. Hdph level

There are two ways of setting up the headphone level through the MHI. One is to actually use the Hdph level pot on the front of the MHI and feed it with line level from your headphone selector on the console, bypassing the console's headphone pot. In this case, the talent uses the Hdph level pot on the MHI to control the headphone level. The other way is to feed the MHI with the output from your headphone pot on the console. To calibrate, turn up the console's headphone pot to maximum and adjust the MHI's Hdph level control to your loudest listening level in your headphones. The console's headphone pot is now in control of the level.

4. Monitor Dim:

The left and right monitor dim level is adjustable on the rear panel.

5. Hdph Dim:

The left and right headphone dim level is adjustable on the rear panel. Repeat steps 2 through 7 for each studio intercom. Some fine-tuning may be necessary once they're installed.

MENU Setup

The setup menu is used to configure advanced features of the MHI. Follow the procedure below to configure HyperTerminal. When you have finished configuring HyperTerminal, move to Page 13 to resume MHI Set Up.

NOTE:

Ear protection procedures should be observed.

WEBSITE:

Visit our web site for product updates and additional information

e-mail: support@broadcasttools.com voice: 360.854.9559 fax: 360.854.9479

HYPERTERMINAL SETUP ON YOUR COMPUTER

NOTE: The following instructions are for use with Windows 95/98/ME/NT/XP/2000 HyperTerminal.

MENU Setup

1) You can start HyperTerminal by
   a) clicking **Start**,
   b) pointing to **Programs**,
   c) pointing to **Accessories**,
   d) pointing to **Communications**,
   e) clicking **HyperTerminal** and then
   f) double-clicking on the icon labeled Hypertrm or Hypertrm.exe.
2) A new window will open labeled **"CONNECTION DESCRIPTION".**
3) In this window, type a name that describes the connection (We suggest BTI96), click the appropriate icon, if desired (this is not required), and then click OK.
4) A new window will open labeled **"CONNECT TO".**
5) At the **"CONNECT TO"** screen:
   a) Move your cursor to the **"CONNECT USING"** box
   b) Press the down arrow on the right of the box to select the available com port ("Direct to com x"), where "x" (usually a number from 1 through 4) is an operating com port.
   c) Then click the **OK** button.
6) The PORT SETTING window will appear.
7) At the PORT SETTING window:
   a) Change the baud rate to **9600**
   b) Flow control to **NONE**
   c) Then click **OK** button.
8) You will have a new window open labeled with the connection description you typed in earlier (in our example, BTI96).
9) At this window:
   a) Click on the word **FILE** at the upper left portion of the menu bar and click on Properties.
   b) Click the **SETTINGS TAB**
   c) and then change the **EMULATION to ANSI**
   d) Then click the **OK** button.
10) Click on **FILE**, click Save.
11) Click on **FILE**, click Exit.
12) Click **YES** when asked to disconnect. This will place you back at the HyperTerminal screen.
13) At the HyperTerminal screen, find the **Icon and/or file** you named and double click on it.

e-mail: support@broadcasttools.com **voice:** 360.854.9559 **fax:** 360.854.9479

MENU SET UP

Plug one end of the supplied serial cable into J1 on the MHI and the other end into your computer's serial (COM) port. Type (in the blind) the following command to access the menu: *m enter. The screen below will be displayed. Select which function you need to change. Function explanations can be found starting on Page 4.

Broadcast Tools
Broadcast Tools® ICM-16/MHI
S E T U P M E N U

A - Mute Monitor (Off)
B - Dim HDPH (Off)
C - Dim Monitor (Off)
D - Mute on call (Off)
E - DIM-Is-Toggle (Off)
F - Factory Defaults

Q - Exit Menu

Select the desired features and then press Q.

You may disconnect your PC from the MHI.

WEBSITE:

Visit our web site for product updates and additional information

e-mail: support@broadcasttools.com voice: 360.854.9559 fax: 360.854.9479

SPECIFICATIONS

Talkback Microphone Input Type:	Balanced, Transformerless
Input impedance:	< 2k ohms
Maximum input level:	-30 dbu
Gain:	> 55 db /
Phantom voltage:	Approximately 24Vdc
Connectors:	Front and rear panel female XLR's
Talkback Line Input Type:	Balanced, Transformerless
Input impedance:	> 20k ohms
Maximum input level:	24dBu
Gain:	< 6 db / Adjustable with rear panel trimmer
Connectors:	Front and rear panel female XLR's
Monitor and Headphone Inputs Type:	Balanced, Transformerless
Input impedance:	< 20k ohms
Maximum input level:	27dBu, maximum
Gain:	Unity or 6db
Connectors:	Removable screw terminals
Monitor and Headphone Outputs Type:	Balanced, Transformerless
Maximum output level:	27dBu, maximum
Output impedance:	100 ohms
Output gain:	Unity
Noise:	<-85db
THD:	.001 %
Connector:	Removable screw terminals
Headphone Maximum output level:	< 1 volt
Output impedance:	47 ohms, unbalanced
Output gain:	6 db
Noise:	< - 80 db
THD:	.01 %
Connectors:	Removable screw terminals on rear panel
Connector:	T/R/S, 1/4" jack on front panel
Computer Interface:	RS-232, 8N1 / 9600 baud.
Auxiliary Relays:	SPDT 1 amp @ 24 vdc.
Remote control inputs:	5 volt logic, Active low and Opto-isolated wet/dry 5 to 24vdc. DB-25 male. Mate supplied.
Power Requirement:	16.5 Vac @ 600 ma. Supplied. Optional 220v (CE)
Weight:	3.0 lbs.
Size:	19" w x 9.25" d x 1.75" h
Switching Devices:	Analog switches and gold contact relays
Logic Device:	Flash Microprocessor with non volatile memory

e-mail: support@broadcasttools.com **voice:** 360.854.9559 **fax:** 360.854.9479

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 MERCHANTABILITY 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 WHATSOEVER (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** • 360.854.9479 **fax**
support@broadcasttools.com **e-mail**
www.broadcasttools.com **website**