



Installation and Operation Manual



TT-1 ***Telephone Line Powered Auto-Answer Hybrid/Coupler***

Manual update 07/16/2005

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.

*Broadcast Tools® is a registered trademark of Broadcast Tools, Inc.
Copyright, 1989 - 2005 by Broadcast Tools, Inc. All rights reserved.
No part of this document may be reproduced or distributed without permission.*

Visit www.broadcasttools.com for important product update information.

INTRODUCTION

Thank you for your purchase of the tiny TOOLS™ TT-1, Telephone Line Powered Auto-Answer/Auto-disconnect Hybrid/Coupler, which we will refer to throughout the manual as the TT-1. We're 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 product.

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



PRODUCT DESCRIPTION

The tiny TOOLS TT-1 is more than just an ordinary telephone line coupler. The TT-1 is a rack-able compact telephone line powered auto-answer and auto-disconnect hybrid/coupler. The TT-1 utilizes dual-hybrid transformers providing full duplex audio at a plain old coupler price. We provide a rear panel multi-turn hybrid NULL trimmer to allow the user to achieve approximately 20db separation figures. Additional TT-1 features include front panel line seize button, call drop button, auto-answer/monitor-TAP switch, audio mute switch, and off-hook and ring indicators. A rear panel RJ-11 is provide for connection to a POTS line along with a second RJ-11 loop-thru jack that may be configured to disconnect attached devices when the TT-1 goes off-hook. Screw terminals are provided for balanced send and caller audio; remote optically isolated seize and drop inputs and the SPDT off-hook dry relay contacts. The TT-1 may be set on a desktop, mounted on a wall or up to four units mounted on the RA-1, Rack-Able mounting shelf.

INSTALLATION

Please examine your TT-1 carefully for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package contains the TT-1, modular cable and this manual.

Installation of the TT-1 in high RF environments should be performed with care. Shielded cable is suggested for all audio connections. All shields should be tied to the “C-GND” Chassis GrouND terminals. The station ground should be connected to the chassis ground screw located on the far right side of the TT-1 as viewed from the rear. It is recommended that all cables connected to the TT-1 be looped through ferrite cores to suppress RF.

Telco line jack: Connect your telephone line to this modular RJ-11 jack. To have the TT-1 automatically disconnect when a caller hangs up, verify that the telephone company has enabled the “CPC” calling party disconnected (wink) feature.

TIP: *If you have trouble seizing the telephone line, try reversing the line tip and ring.*

Loop line jack: Connect your telephone set or other telephone type equipment to this jack. When the internal “BYPASS” jumper JP1 is removed, the device connected to this jack will be disconnect when the TT-1 answers the line. To bypass this feature, place a jumper over JP1 (factory default).

Send Input: Low Z, transformer balanced. Connect your (send to telephone line) equipment’s output to the SEND + and SEND - rear panel screw terminals. The level should be limited to -9dBu.

Caller Output: Low Z, transformer balanced. Connect your (caller audio from telephone line) equipment’s input to the CALLER + and CALLER - rear panel screws. The caller audio level may vary from -9dBu to -20dBu.

Note: *Additional external amplification may be required.*



NOTE:

Some features may require the removing of the chassis cover. Caution should be observed, as hazardous voltages may be present on the printed circuit board. Be sure to reinstall the cover before using the TT-1.

Relay connections: The “OFF-HOOK” relay may be connected to either the K1-CM (wiper) and K1-NO (normally open) terminals or the K1-NC (normally closed) terminal. When the line is answered (seized), the normally open contacts will close and the front panel “HOOK” LED will light.

Remote Seize: Connect a positive voltage (no greater than 9 vdc) to the Seize + terminal and ground to the Seize – terminal to seize (answer) the (call) line.

Remote Drop: Connect a positive voltage (no greater than 9 vdc) to the Drop + terminal and ground to the Drop – terminal to drop (disconnect) the (call) line.

Ring LED: Front panel LED will light when the coupler is called. The TT-1 will go off-hook during or after the first ring.

Hook LED: Lights when the TT-1 has seized the telephone line.

Mute Switch: Used to disconnect the SEND & CALLER audio from the hybrid with the switch IN. This feature may be disabled on the CALLER side by installing JP2 & JP3 (factory default).

Monitor (TAP) Switch: Used to select between the auto-answer mode and the TAP mode. When this switch is IN, the TT-1 will TAP (monitor) a telephone line without seizing the line. When the switch is OUT, the TT-1 will auto-answer any call on the first ring.

Null adjustment pot: Used to adjust the null between the send and caller audio. To adjust the TT-1 null, follow the steps:

- 1 - Connect a telephone line to the RJ-11 line jack.
- 2 - Connect an audio source to the SEND +/- terminals. Use a 700 hz tone at -9dBm.
- 3 - Connect a dB meter to the CALLER +/- terminals. Be sure to terminate with 600 ohms.
- 4 - Make a call to the TT-1. After the TT-1 answers, adjust the NULL trimmer for minimum (NULL) level on the (CALLER) dB meter.

The TT-1 is now ready for normal operation.

WEBSITE:

Visit our web site for product updates and additional information



INSTALLATION

SPECIFICATIONS

| | |
|--------------------|--|
| Input Level | -9dBu. |
| Input Impedance | 600 ohms, transformer balanced. |
| Output Level | -9dBu to -20dBu. |
| Output Impedance | 600 ohms, transformer balanced. |
| Relay | SPDT, 30Vdc / 1 amp. |
| NOTE: | For safety, never connect 120 Vac circuits to these relays! |
| FCC information | Complies with FCC parts 15 & 68. |
| Ringer equivalence | 0.4B |
| Connectors | Modular RJ-11 and screw terminals. |
| Size | 1/4" rack space, 4.20" x 6.00" x 1.55", painted chassis w/ 4 - mounting holes. |
| Weight | 2.0 lb. |
| Options | RA-1, Rack Shelf. 1 RU. |

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**

APPENDIX A

