



## *Installation and Operation Manual*



### **ICM-16 ToolBox II** ***Intercom Interface***

Firmware version 10.12.97

Manual 03-25-2002

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](http://www.broadcasttools.com) for important product update information.

## Table of Contents

<b>Section Title</b>	<b>Page #</b>
Introduction . . . . .	3
Safety Information . . . . .	3
Who to Contact for Help . . . . .	3
Product Description . . . . .	4
Applications . . . . .	4
Inspection . . . . .	4
Connectors, Jumpers and Level Adjustments . . . . .	4
Levels . . . . .	5
Mounting . . . . .	5
Specifications . . . . .	6
Warranty . . . . .	7

## INTRODUCTION

Thank you for your purchase of a Broadcast Tools® ICM-16 Tool Box II Intercom Interface (referred to as the TBII throughout this manual). 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 unit.

## 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](http://www.broadcasttools.com)  
E-mail: [support@broadcasttools.com](mailto: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 ICM-16/Tool Box II offers a convenient way of interfacing codec, IFB, overhead paging, two-way radio, telco couplers, etc. to the ICM-16 Intercom system. Access to the send and receive balanced talk-back audio along with the Call and Key relays are provided. Other features include; 5 x 4 matrix connection for remote station selection; two AC coupled isolation transformers with variable H-Pads. Screw terminals are provided for all I/O connections. Connection between the ICM-16/Tool Box II and controller is accomplished with standard CAT 5 cable.

## APPLICATIONS

Applications for the ICM-16 ToolBox II include: Interfacing codec, IFB, overhead paging, two-way radio, telco couplers, etc.

## INSPECTION

Please examine your ICM-16/TB II carefully for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately. Retain the packaging for inspection by the shipper. The package should contain the ICM-16/TB II, this manual, 9vac, 500 ma wall power transformer and a 9-pin female D-Sub connector/shell.

## CONNECTORS, JUMPERS AND LEVEL ADJUSTMENTS

- JP4 RS-485 termination
- J5 AC power transformer connector. 9 VAC @ 500ma; supplied
- J6 Switch Matrix Connector. (See Drawing on page 9)
  - 1 Column 4
  - 2 Column 3
  - 3 Column 2
  - 4 Column 1
  - 5 Row 1
  - 6 Row 2
  - 7 Row 3
  - 8 Row 4
  - 9 Row 5

**Example: Shorting pin 4 and pin 5 would call station ONE**

### NOTE:

*Only use dry, normally open contacts, using one column and one row at a time.*

### WEBSITE:

*Visit our web site for product updates and additional information*



### DESCRIPTION

## CONNECTORS, JUMPERS AND LEVEL ADJUSTMENTS

- J7 RJ-45, CAT 5 connector. Connect to the ICM-16 Controller.
- J8 Screw terminal access to relays and pads.
- R59 Pad 1 level adjustment.  
**NOTE: This pot is backwards in operation.**
- R65 Pad 2 level adjustment. **NOTE: This pot is backwards in operation.**
- R35 Call-1 relay and indicator audio trip level adjustment.  
**NOTE: This pot is backwards in operation.**
- R45 Call-2 relay and indicator audio trip level adjustment.  
**NOTE: This pot is backwards in operation.**

## LEVELS

Send levels should be kept between  $-10$  and  $+24$ dbu. The controller is configured for unity. Adjust the send level trimmer on the controller for the desired send level. The controller receive audio is active balanced. The receive level adjustment is from off to unity gain. Unbalanced inputs should be tied to the + terminal and ground. Never ground either of the receive terminals.

## MOUNTING

Mount the unit in a rack, rack panel, shelf or desktop, allowing adequate airflow for cooling. The optional RM-2 & RM-3 are available for this use.

## SPECIFICATIONS

Control:	Microprocessor
Relays (Call-1, Call-2 & Key):	Three, SPDT contacts, 50 Vdc @ 1 Amp with LED indicators.
Switch Matrix:	Dry, normally open contacts. 5 volt CMOS/TTL compatible.
Data Format:	9600 baud, RS-485 Half Duplex.
Balanced audio output/input:	Pass-through. See Controller.
Isolation Transformers (2):	600 ohms. AC coupled, Adjustable.
Connectors:	Control: RJ-45 UTP, Category 5 (568A) Key matrix: DB-9 male, Mate supplied I/O: Screw Terminals
Power:	9 Vac @ 500 ma. / Transformer supplied. Optional 220 Vac (CE) available.
Size:	7.75" x 4.00" x 1.00", Aluminum Chassis.
Weight:	2 pounds
Options:	RM-2, Rack Panel or RM-3 Rack Shelf.

## WEBSITE:

*Visit our web site for product updates and additional information*



## SPECIFICATIONS

## 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**