Broadcast Electronics
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AM OUTPUT MATCHING NETWORK

Instruction Manual

597-1000-002
Rev B
9/13/11

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Broadcast Electronics
Product Warranty (Two-Year Limited)

BE hereby warrants all new products manufactured by BE against any defects in material or workmanship at the time of delivery thereof, or that develop under normal use within a period of two (2) years from the date of shipment.

BE reserves the right to repair equipment under warranty with new or refurbished equipment or parts. BE's sole responsibility with respect to any equipment or parts not conforming to this warranty is to replace or repair such equipment upon the return thereof F.O.B. to BE's factory in Quincy, Illinois, U.S.A. In the event of replacement pursuant to the foregoing warranty, only the unexpired portion of the warranty from the time of the original purchase will remain in effect for any such replacement.

This warranty shall exclude the following products, component parts and/or assemblies:

(a) Transmitter power output tubes shall only carry the original manufacturer's or supplier's standard warranty in effect on their original shipment date.

(b) All computers, computer peripherals, cables, hard disk drives, etc., shall only carry the manufacturer's or supplier's standard warranty in effect on their original shipment date.

(c) "Components", defined as separate and individual parts (e.g. transistors, integrated circuits, capacitors, resistors, inductors, fans, etc), resold by BE from another manufacturer or supplier, shall only carry a 90 day warranty, effective the date of shipment. Any such 'Components' being returned for warranty claim must be (1) returned in their original packaging and (2) must be in new, unused condition.
BE is unable to process or resolve component defects or performance concerns on components that have been soldered, installed, wired or in any way altered from new their new condition.

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This warranty shall not extend to claims resulting from any acts of God, terrorism, war, defects or failures caused by Purchaser or user abuse or misuse, operator error, or unauthorized attempts to repair or alter the equipment in any way.

Under no circumstances shall BE be responsible for indirect, incidental or consequential damages, including, but not limited to transportation costs, non-authorized repair or service costs, downtime costs, costs for substituting equipment or loss of anticipated profits or revenue, incurred by Purchaser, whether based in contract, tort or for negligence or breach of statutory duty or otherwise.
The terms of the foregoing warranty shall be null and void if the equipment has been altered or repaired without specific written authorization from BE, or if not installed according to BE's instruction manuals, including, but not limited to, the absence of proper grounding, surge (TVSS) protection on the AC circuit panel or proper lightning protection/grounding on all output circuits, or if equipment is operated under environmental conditions or circumstances other than those specifically described in BE's product literature or instruction manual which accompany the equipment. The warranty shall be voided if the product or subassembly is equipped with a tamper seal and that tamper seal is broken. BE shall not be liable for any expense of any nature whatsoever

incurred by the original user without prior written consent of BE. The warranty provided herein shall terminate at the end of the period set forth above. **This warranty extends only to the original Purchaser and is not transferable.** There are no third party beneficiaries of any of the provisions of this warranty. If the equipment is described as "used" equipment, it is sold as is and where is and no warranty applies unless authorized in writing. .

EXCEPT AS SET FORTH HEREIN, AS TO TITLE AND AS SPECIFICALLY REQUIRED BY LAW, THERE ARE NO OTHER WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY BE, WITH REFERENCE TO THE EQUIPMENT, OR TO MERCHANTABILITY, FITNESS FOR A PARTICULAR APPLICATION, SIGNAL COVERAGE, INFRINGEMENT, OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION OF THE EQUIPMENT ON THE FACE HEREOF.

IMPORTANT INFORMATION

EQUIPMENT LOST OR DAMAGED IN TRANSIT -

When delivering the equipment to you, the truck driver or carrier's agent will present a receipt for your signature. Do not sign it until you have:

1) Inspected the containers for visible signs of damage and 2) Counted the containers and compared with the amount shown on the shipping papers. If a shortage or evidence of damage is noted, insist that notation to that effect be made on the shipping papers before you sign them.

Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Claims for loss or damage will not be honored without proper notification of inspection by the carrier.

RF PRODUCT TECHNICAL ASSISTANCE, REPAIR SERVICE, PARTS -

Technical assistance is available from Broadcast Electronics by letter, prepaid telephone or E-mail. Equipment requiring repair or overhaul should be sent by common carrier, prepaid, insured, and well protected. If proper shipping materials are not available, contact the RF Technical Services Department for a shipping container. Do not mail the equipment. We can assume no liability for inbound damage, and necessary repairs become the obligation of the shipper. Prior arrangement is necessary. Contact the RF Technical Services Department for a Return Authorization.

Emergency and warranty replacement parts may be ordered from the following address. Be sure to include the equipment model number, serial number, part description, and part number. Non-emergency replacement parts may be ordered directly from the Broadcast Electronics stock room at the number shown below.

RF TECHNICAL SERVICES -

Telephone: +1 (217) 224-9617
E-Mail: rfservice@bdcast.com
Fax: +1 (217) 224-6258

FACILITY CONTACTS -

Broadcast Electronics, - Quincy Facility
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Fax: +1 (217) 224-6258
General E-Mail: bdcast@bdcast.com
Web Site: www.bdcast.com

PARTS -

Telephone: +1 (217) 224-9617
E-Mail: parts@bdcast.com

RETURN, REPAIR, AND EXCHANGES -

Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. All returned merchandise must be sent freight prepaid and properly insured by the customer.

MODIFICATIONS -

Broadcast Electronics, reserves the right to modify the design and specifications of the equipment in this manual without notice. Any modifications shall not adversely affect performance of the equipment so modified.

SAFETY PRECAUTIONS

PLEASE READ AND OBSERVE ALL SAFETY PRECAUTIONS//

ALL PERSONS WHO WORK WITH OR ARE EXPOSED TO POWER TUBES, POWER TRANSISTORS, OR EQUIPMENT WHICH UTILIZES SUCH DEVICES MUST TAKE PRECAUTIONS TO PROTECT THEMSELVES AGAINST POSSIBLE SERIOUS BODILY INJURY. EXERCISE EXTREME CARE AROUND SUCH PRODUCTS. UNINFORMED OR CARELESS OPERATION OF THESE DEVICES CAN RESULT IN POOR PERFORMANCE, DAMAGE TO THE DEVICE OR PROPERTY, SERIOUS BODILY INJURY, AND POSSIBLY DEATH.

DANGEROUS HAZARDS EXIST IN THE OPERATION OF POWER TUBES AND POWER TRANSISTORS -

The operation of power tubes and power transistors involves one or more of the following hazards, any one of which, in the absence of safe operating practices and precautions, could result in serious harm to personnel.

A. **HIGH VOLTAGE -** Normal operating voltages can be deadly. Additional information follows.

B. **RF RADIATION -** Exposure to RF radiation may cause serious bodily injury possibly resulting in Blindness or death. Cardiac pacemakers may be affected. Additional information follows.

C. **HOT SURFACES** Surfaces of air-cooled radiators and other parts of tubes can reach temperatures of several hundred degrees centigrade and cause serious burns if touched. Additional information follows.

D. **RF BURNS** Circuit boards with RF power transistors contain high RF potentials. Do not operate an RF power module with the cover removed.

HIGH VOLTAGE –

Many power circuits operate at voltages high enough to kill through electrocution. Personnel should always break the primary AC Power when accessing the inside of the transmitter.

RADIO FREQUENCY RADIATION

Exposure of personnel to RF radiation should be minimized, personnel should not be permitted in the vicinity of open energized RF generating circuits, or RF transmission systems (waveguides, cables, connectors, etc.), or energized antennas. It is generally accepted that exposure to "high levels" of radiation can result in severe bodily injury including blindness. Cardiac pacemakers may be affected.

The effect of prolonged exposure to "low level" RF radiation continues to be a subject of investigation and controversy. It is generally agreed that prolonged exposure of personnel to RF radiation should be limited to an absolute minimum. It is also generally agreed that exposure should be reduced in working areas where personnel heat load is above normal. A 10 mW/cm^2 per one tenth hour average level has been adopted by several U.S. Government agencies including the Occupational Safety and Health Administration (OSHA) as the standard protection guide for employee work environments. An even stricter standard is recommended by the American National Standards Institute which recommends a 1.0 mW/cm^2 per one tenth hour average level exposure between 30 Hz and 300 MHz as the standard employee protection guide (ANSI C95.1-1982).

RF energy must be contained properly by shielding and transmission lines. All input and output RF connections, such as cables, flanges and gaskets must be RF leak proof. Never operate a power tube without a properly matched RF energy absorbing load attached. Never look into or expose any part of the body to an antenna or open RF generating tube or circuit or RF transmission system while energized. Monitor the tube and RF system for RF radiation leakage at regular intervals and after servicing.

HOT SURFACES –

The power components in the transmitter are cooled by forced-air and natural convection. When handling any components of the transmitter after it has been in operation, caution must always be taken to ensure that the component is cool enough to handle without injury.

Table of Contents

1 AM MATCHING NETWORK

2 INTRODUCTION

The AM matching network provides antenna matching for AM transmitters not equipped with an output tuning system (refer to Figure 1). The matching network consists of 2 adjustable inductors and a capacitor. The inductors are used to tune the antenna impedance to the transmitter:

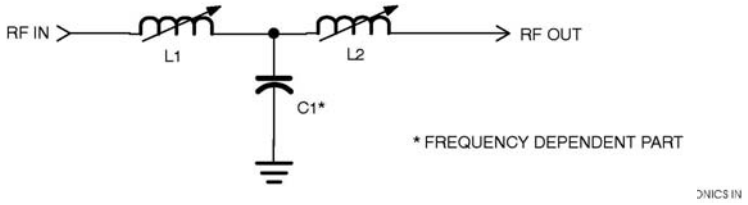

Figure 1 – SCHEMATIC - AM MATCHING NETWORK

3 INSTALLATION

The matching network is housed in a chassis designed for installation in a 19 inch rack. The chassis requires 8.75 inches of rack space. Mount the unit in the rack as follows:

1. Mount the unit in the rack directly below the transmitter.
2. Connect the Type N elbow to the transmitter RF OUT receptacle.
3. Connect the Type-N cable located in the accessory kit between the transmitter RF OUT receptacle and the RF IN connector on the matching network.
4. Connect the Type-N connector antenna cable to the RF OUT on the matching network.

4 OPERATION

The matching network is equipped with TUNE and LOAD controls. The controls are adjusted at the factory for a 50 Ohm load. To adjust the TUNE and LOAD controls, operate the transmitter at the normal output power and adjust the controls for a minimum reflected power indication on the transmitter reflected power meter.

5 INTERNAL ASSEMBLY

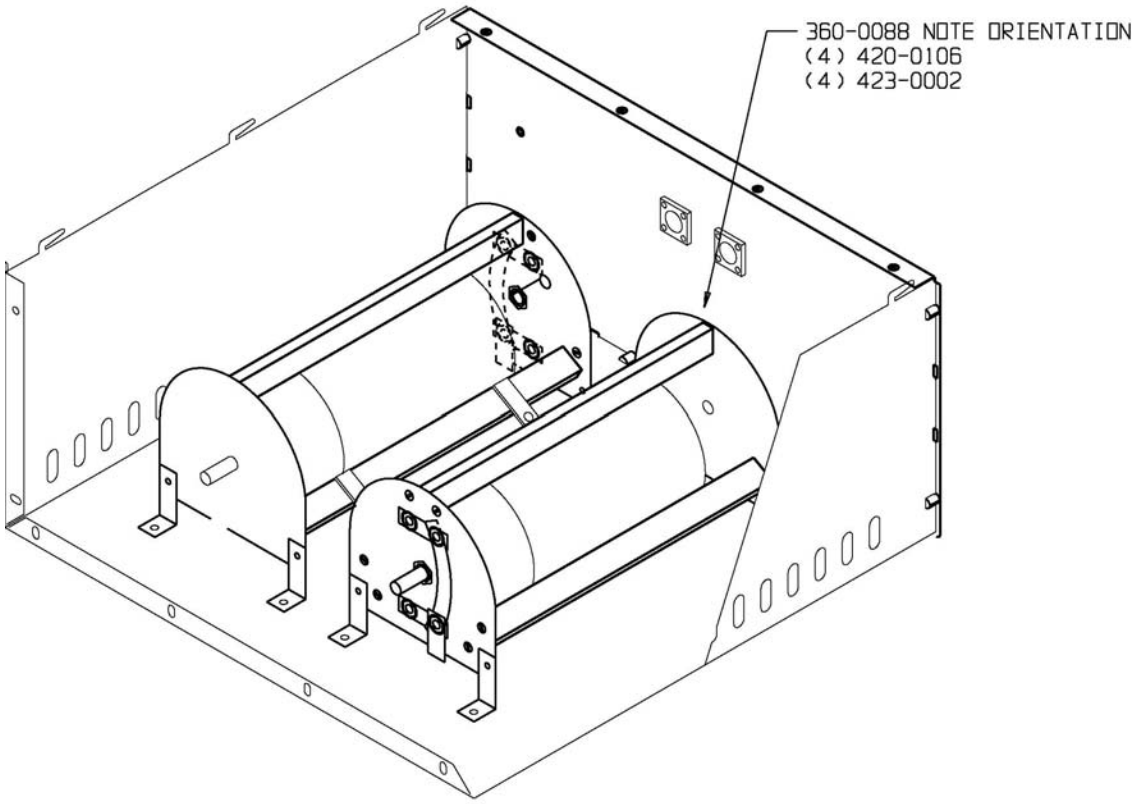

Figure 2 – INTERNAL ASSEMBLY

6 PARTS LIST

This section provides parts lists for the AM Matching Network. The parts lists provide descriptions and part numbers of electrical components, assemblies and selected mechanical parts required for maintenance. Each parts list entry in this section is indexed by reference designators appearing on the applicable schematic diagrams.

This bill of material uses an indented structure to show relationships of parts into sub assemblies. Example; all BOM LEVEL 2 parts are contained in the BOM LEVEL 1 part immediately above it.

BOM LEVEL	PART NO.	DESCRIPTION	QTY
0	907-1000-002	MATCHING NETWORK	
..1	360-0088	COIL,VARIABLE,16UH,20A,AM XMTR	2
..1	410-0060	LUG,TERM,#10 RING CRIMP 10-12G	1
..1	410-7105	LUG,TERM 1/4	5
..1	417-0105	ADAPT,PLUG-JACK ANGLE N UG27CU	1
..1	417-0204	RECP,UG/58 TYPE	2
..1	420-0106	SCREW,10-32X.375,S.S. PHH	8
..1	420-0705	SCREW,10-32X.312,BR PH PA	2
..1	420-4106	SCREW,4-40X.375,S.S. PH	8
..1	420-6106	SCREW,6-32X.375,S.S. PH	4
..1	421-0102	10-32 KEP NUT	8
..1	421-1003	1/4-20 HEX NUT	1
..1	421-4008	4-40 KEP NUT	8
..1	421-6908	SHEET EDGE CONNECTOR 6-32	8
..1	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	8
..1	423-0002	#10 LOCK SPLIT	8
..1	423-0005	#10 LOCK SPLIT (BRONZE)	2
..1	423-0006	#10 FLAT .44 X .20 X .034	1
..1	423-1003	1/4-20 LOCK SPLIT	1
..1	423-6002	#6 LOCK SPLIT	8
..1	442-0243	BUSHING,POP-IN,FOR 3/8	2
..1	446-0075	SHAFT,SHORT,OUTPUT NET,AM XMTR	2
..1	447-0032	COUPLING,FLEX,INTEGRAL CLP,3/8	2
..1	471-5065	PANEL,FRONT AM-1A MATCHING NETWORK	1
..1	471-5066	PANEL,REAR,AM-1A MATCHING NETWORK	1
....2	471-5066-009	PNL,REAR,AM1A MATCHING NETWORK(UNSS	1
..1	471-5067	CHASSIS,AM-1A MATCHING NETWORK	1
..1	471-5068	COVER,TOP,AM-1A MATCHING NETWORK	1
..1	482-0031	KNOB,RB-67-5-M,BL MATTE,3/8	2
..1	597-1000-002	INSTRUCTION MANUAL, AM MATCHING NETWORK	1
..1	601-1220	WIRE,AWG12,19/25,TFE INS,BLU	1.813
..1	947-0180	CABLE,MATCHING NETWORK	1
....2	417-0120	PLUG,STRAIGHT N	2
....2	621-1361	CBL,COAX,RG393/M17-127 50 OHM	4.55

7 FREQUENCY KITS

REPLACEABLE PARTS LIST INDEX – FREQUENCY DEPENDENT PARTS 957-0015-001			
REF DES	*PART NUM*	*DESCRIPTION*	*QTY*
C1	*044-3923-272*	*Capacitor, Mica, 3900 pF ±5%, 3kV, 7.5 A, 530 kHz to 650 kHz*	*1*

REPLACEABLE PARTS LIST INDEX – FREQUENCY DEPENDENT PARTS 957-0015-002			
REF DES	PART NUM	DESCRIPTION	QTY
C1	044-3323-272	Capacitor, Mica, 3300 pF ±5%, 3kV, 6.8 A, 651 kHz to 770 kHz	1

REPLACEABLE PARTS LIST INDEX – FREQUENCY DEPENDENT PARTS 957-0015-003			
REF DES	PART NUM	DESCRIPTION	QTY
C1	044-2723-272	Capacitor, Mica, 2700 pF ±5%, 3kV, 6.8 A, 771 kHz to 920 kHz	1

REPLACEABLE PARTS LIST INDEX – FREQUENCY DEPENDENT PARTS 957-0015-004			
REF DES	PART NUM	DESCRIPTION	QTY
C1	044-2223-272	Capacitor, Mica, 2200 pF ±5%, 3kV, 6.2 A, 921 kHz to 1080 kHz	1

REPLACEABLE PARTS LIST INDEX – FREQUENCY DEPENDENT PARTS 957-0015-005			
REF DES	PART NUM	DESCRIPTION	QTY
C1	044-1823-272	Capacitor, Mica, 1800 pF ±5%, 5kV, 5.6 A, 1081 kHz to 1300 kHz	1

REPLACEABLE PARTS LIST INDEX – FREQUENCY DEPENDENT PARTS 957-0015-006			
REF DES	PART NUM	DESCRIPTION	QTY
C1	044-1623-272	Capacitor, Mica, 1600 pF ±5%, 5kV, 5.6 A, 1301 kHz to 1580 kHz	1

REPLACEABLE PARTS LIST INDEX – FREQUENCY DEPENDENT PARTS 957-0015-007			
REF DES	PART NUM	DESCRIPTION	QTY
C1	044-1323-272	Capacitor, Mica, 1300 pF ±5%, 5kV, 5.1 A, 1581 kHz to 1705 kHz	1

8 RF TECHNICAL SERVICES CONTACT INFORMATION

RF Customer Service -

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