

**ALTRONIC RESEARCH, INC.**

**P.O. BOX 249**

**YELLVILLE, ARKANSAS 72687-0249**

**U.S.A.**

**MODEL 6401L**

**COAXIAL LOAD RESISTOR**



**MODEL 6401L  
RF COAXIAL LOAD**

# LIMITED WARRANTY

We take pride in manufacturing products of the highest quality and we warrant them to the original purchaser to be free from defects in material and workmanship for the period of one year from date of invoice. Additionally, products of our manufacture repaired by us are warranted against defects in material and workmanship for a period of 90 days from date of invoice, with the provisions described herein.

Should a product, or a portion of a product of our manufacture prove faulty, in material or workmanship, during the life of this warranty, we hereby obligate ourselves, at our own discretion, to repair or replace such portions of the product as required to remedy such defect. If, in our judgment, such repair or replacement fails to be a satisfactory solution, our limit of obligation shall be no more than full refund of the purchase price.

This warranty is limited to products of our own manufacture. Equipment and components originating from other manufacturers are warranted only to the limits of that manufacturer's warranty to us. Furthermore, we shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use, or misuse (by operation above rated capacities, repairs not made by us, or any misapplication) of the equipment. Before using, the user shall determine the suitability of the product for the intended use; and the user assumes all risk and liability whatsoever in connection therewith.

The foregoing is the only warranty of Altronic Research Incorporated and is in lieu of all other warranties expressed or implied.

Warranty returns shall first be authorized by the Customer Service Department and shall be shipped prepaid. **Warranty does not cover freight charges.**

# TABLE OF CONTENTS

## MODEL 6401

<u>SECTION</u>	<u>PAGE</u>
Warranty .....	3
Precautions .....	6
Introduction .....	7
I. Description and Leading Particulars	
1-1 Purpose and Application of Equipment .....	7
1-2 Equipment Supplied .....	7
1-3 Equipment Required But Not Supplied .....	7
1-4 General Description .....	7
1-5 Mechanical Description.....	7
1-6 General Principle of Operation.....	7
1-7 Operating and Adjustment Controls .....	7
1-8 Operator Training .....	8
II. Test Equipment and Special Tools	
2-1 Test Equipment Required.....	8
2-2 Special Tools Required.....	8
III. Preparation for Use and Reshipment	
3-1 Unpacking Equipment .....	9
3-2 Pre-Installation Inspection .....	9
3-3 Installation .....	9
3-4 Location .....	9
3-5 Mounting .....	9
3-6 Connections .....	10
3-7 Adjustments .....	10
3-8 Preparation for Reshipment .....	10
IV. Theory of Operation	
4-1 General .....	10
V. Maintenance	
5-1 Cleaning.....	11
5-2 RF Circuit (including resistor replacement) .....	11

**SECTION**

**PAGE**

VI. Diagrams  
    6-1 Outline and Dimensions .....12  
    6-2 Parts List .....13

VII. Specifications .....14

# PRECAUTIONS

## **⚡WARNING⚡**

Do not attempt any service or parts replacement without first disconnecting all RF power. Failure to do so may result in serious or *fatal electrical shock*.

## **CAUTION**

Do not block air grills or restrict airflow when ducting inlet and discharge air. Restrictions in airflow limit the load's ability to dissipate RF power and could damage and/or cause the unit to fail.

## **CAUTION**

Do not apply more than rated power to unit.  
Damage will occur if large overloads are applied.

## **☠CAUTION☠**

When using any cleaning solvents or solutions, assure that there is adequate ventilation to protect personnel from breathing any irritable or possibly toxic fumes.

## **OPERATING TEMPERATURE WARNING**

Care should be taken to operate unit below stated maximum ambient operating temperature.

**OPERATION ABOVE RATED AMBIENT TEMPERATURE  
MAY CAUSE DAMAGE TO UNIT.**

# INTRODUCTION

This handbook was prepared for skilled personnel as an aid in understanding and performing installation, service and maintenance procedures for the OMEGALINE® Model 6401L Air-Cooled Coaxial Load. Personnel are considered to be skilled if they have the necessary knowledge and practical experience of electrical and radio engineering to appreciate the various hazards that can arise from working on radio transmitters, and to take appropriate precautions to ensure the safety of personnel.

## SECTION I

### DESCRIPTION AND LEADING PARTICULARS

**1-1. Purpose and Application of Equipment.** The OMEGALINE® Model 6401L Coaxial Load is designed to safely dissipate a maximum of 1,000 watts of electrical energy over a frequency range of DC to 240 MHz.

**1-2. Equipment Supplied.** The Model 6401L Coaxial Load is supplied with standard RF connectors. Their designations are:

1-5/8" EIA Swivel flange:	Model # 6401LE1
1-5/8" Unflanged flush:	Model # 6401LF1
1-5/8" Unflanged recessed:	Model # 6401LR1
Type 'N' Female:	Model # 6401LN
1/4-20 Stud:	Model # 6401LSB

**1-3. Equipment Required But Not Supplied.** The Model 6401L Coaxial Load is complete as supplied, but the user must furnish RF input.

**1-4. General Description.** The Model 6401L Coaxial Load is enclosed in a single aluminum case which is coated with a chromic acid conversion coating. The RF connector is located in the end panel of the load proper.

**1-5. Mechanical Description.** The Model 6401L RF Coaxial Load is a 50 ohm non-reactive resistor assembly which is cooled by ambient air.

**1-6. General Principle of Operation.** After ascertaining that the Model 6401L is correctly connected to the RF source, operate transmitter as desired.

**1-7. Operating and Adjustment Controls.** No field adjustments are necessary or possible.

**1-8. Operator Training.** The operator of this equipment must have the following skills/knowledge:

- An understanding of the purpose of the equipment;
- An understanding of the principles of operation of the equipment;
- An understanding of the normal operating procedures for the equipment;
- An understanding of the normal and abnormal indications which may be presented at the control point;
- The proper procedures for starting, using and stopping the equipment under normal conditions;
- The proper procedure for stopping the equipment under abnormal or emergency conditions;
- The proper procedure to lock out and mark controls prior to allowing or commencing maintenance on the equipment;
- The proper procedure to obtain clearance to remove lockouts and out-of-service marks and return the equipment to normal service.

## **SECTION II**

### **TEST EQUIPMENT AND SPECIAL TOOLS**

**2-1. Test Equipment Required.** No test equipment is required for routine maintenance. In some circumstances it may be desirable to determine the temperature differential (outlet air minus inlet air) and ambient air temperature which the equipment is experiencing. We recommend the John B. Fluke Mfg. Co. Model 52 or equivalent instrument for this function.

**2-2. Special Tools Required.** Although no non-standard tools are required for routine maintenance, we recommend the technician have the following specialized tools available:

- 1 Torx T-15 driver
- 1 Tee handle hex key, 1/8" bit
- 1 Power screwdriver with 1/8" hex key & torx T-15 bit

# SECTION III

## PREPARATION FOR USE AND RESHIPMENT

**3-1. Unpacking Equipment.** The units should be handled and unpacked with care. Inspect outer cartons for evidence of damage during shipment. *Claims for damage in shipment must be filed promptly with the transportation company involved.* No internal packaging or bracing is used for shipments and the units should not rattle when being unpacked.

**3-2. Pre-installation Inspection.** Conduct a thorough inspection of the units, paying particular attention to the following items:

- a. Screws in place and tight.
- b. All panels and grills free of dents and scratches.
- c. RF connector visually OK.

While inspecting RF connector, measure DC resistance of the unit by reading from the center conductor to the outer conductor. Compare this reading to that on the specification sheet at the end of this manual. Reading should be  $\pm 1$  ohm. If not, consult factory.

**3-3. Installation.** The Model 6401L must be installed in a location convenient for servicing. Consideration should be given to adequate accessibility for maintenance and unit replacement. No attempt is made in this handbook to present complete installation instructions, since physical differences in plant will determine the installation procedure. General guidelines are outlined in subsequent paragraphs.

**3-4. Location.** The location selected for the Model 6401L should be dry, free of excessive dust and have an ambient temperature below 110°F (40°C). The room should be well ventilated to prevent excessive temperature rise and consequent derating of the unit. The maximum dissipation of the unit is 1,000 watts. This is equal to 3415 Btu/hr., which may be ducted out of the building envelope.

The unit should be oriented to provide a short, direct duct run in order to avoid high static pressure and loss of cooling efficiency. The assistance of a competent heating and air conditioning installer will help avoid over-or-under-specifying the duct system.

- 3-5. Mounting.** The Model 6401L is designed to be floor, wall or bench mounted and should be securely attached to the mounting surface. The enclosure rests on two fixed aluminum feet. These are drilled for 1/4-20 machine screws.
- 3-6. Connections.** There is one connector on the Model 6401L, the RF connector, located on the front panel of the unit. Connect to the appropriate RF line from the transmitter.
- 3-7. Adjustments.** No field adjustments are necessary or possible.
- 3-8. Preparation for Reshipment.** No special measures are required to prepare the Model 6401L for reshipment. Care must be taken to protect the RF connector and to immobilize the swivel flange. Packaging should provide protection against abrasion and impact. Special containers are available from the factory. Please inquire.

## SECTION IV

### THEORY OF OPERATION

- 4-1. General.** The Model 6401L contains a 50 ohm non-reactive resistor assembly (4 @ 200 ohms) which is cooled by static air.

# SECTION V

## MAINTENANCE

### **WARNING!!**

***PERSONNEL WORKING ON THIS LOAD MUST BE  
CONSIDERED SKILLED AS DEFINED BY  
EN60215 SECTION 3.1 AND APPENDIX D***

#### **BEFORE PERFORMING ANY MAINTENANCE:**

- 1. DISCONNECT RF CONNECTOR ASSEMBLY.**
- 2. DISCONNECT TRANSMITTER INTERLOCK LINE.**

**FAILURE TO FOLLOW THESE DIRECTIONS  
MAY CAUSE FATAL ELECTRICAL SHOCK!**

**5-1. Cleaning.** The enclosure of the Model 6401L is finished with an acrylic finish or other durable coating system. It should be cleaned with a neutral plastic and glass cleaner such as Windex or Glass Plus. The RF connector should be cleaned with a non-residue contact cleaner such as Miller-Stephenson MS-171/CO<sub>2</sub>.

**5-2. RF Circuit.** The RF Load Resistor does not require any periodic maintenance and the only repairs possible are the replacement of parts in the connector, quick-step or support portions of the resistor assembly or the replacement of resistors.

To replace resistors it is necessary to remove the side panels of the unit:

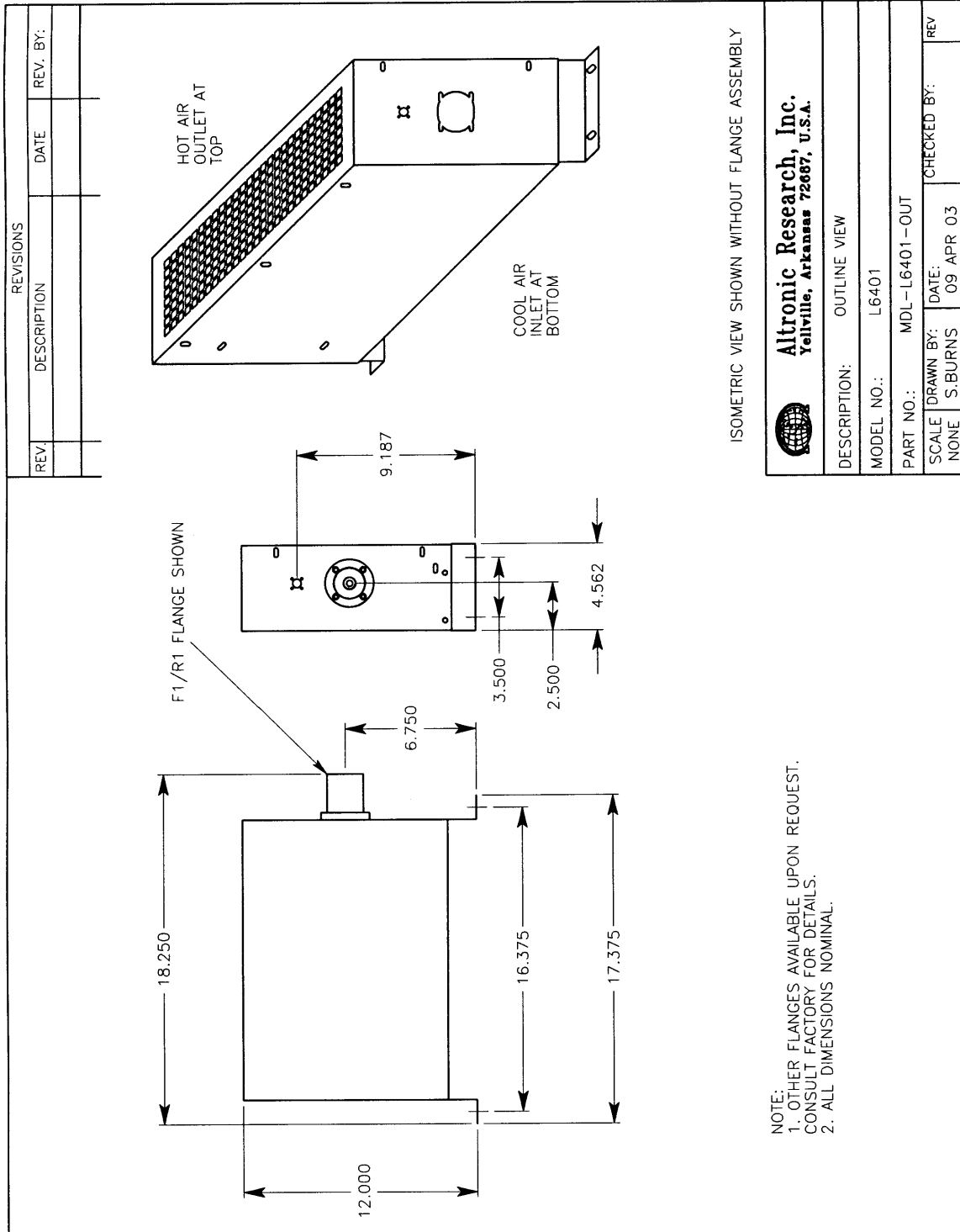
1. Remove the 8-32 x 1/2" torx head screws holding the outer half of the enclosure.
2. Remove the lower 1/8" hex socket head screw from each side of the enclosure.
3. Slide the two sheet metal assemblies apart.
4. Reverse procedure to reassemble.

### **CAUTION!**

**Take care when tightening the 1/4-20 x 2" screws securing the lower resistor bracket to the flex panel. Overtightening can fracture the resistors. The resistors are hard, brittle ceramic material. Avoid impact and excessive force when installing or removing them.**

# SECTION VI

## 6-1 OUTLINE AND DIMENSIONS



## **6-2 REPLACEMENT PARTS LIST**

**(CONSULT FACTORY)**

# SPECIFICATIONS

## Model 6401L

**Impedance ----- > 50 ohms nominal**

**VSWR @ DC to 240MHz ----- > 1.15:1 max.**

**Connectors:**

**Model 6401LE1 ----- > 1-5/8" EIA swivel flange**

**Model 6401LF1 ----- > 1-5/8" unflanged flush**

**Model 6401R1 ----- > 1-5/8" unflanged recessed**

**Model 6401N ----- > Type N Female**

**Model 6401SB ----- > 1/4-20 X 1/2 Stub**

**Power Rating @ Sea Level ----- > 1 KW**

**Frequency Range ----- > DC to 240 MHz**

**Cooling Method ----- > Static air**

**Ambient Temperature ----- > -30°C to 43°C**

**Finish ----- > Chromate conversion coating**

**Serial No. \_\_\_\_\_ Frequency \_\_\_\_\_ Resistance \_\_\_\_\_ dBA @ 3' 0**

**Model \_\_\_\_\_ Inspected by \_\_\_\_\_ Date \_\_\_\_\_**



***CRAFTED WITH PRIDE IN ARKANSAS, U.S.A.***