



**MODEL 155LCRH**

**SECTION I  
GENERAL INFORMATION**

**1.1 Introduction**

This manual supports the KALMUS, **Model 155LCRH**, Wideband RF Power Amplifier and accessory Low-Pass Filters. It provides operating instructions and technical information needed to test, adjust, maintain, troubleshoot and repair this product.

The outline and dimensions of the Model 155LCRH are shown on the Outline & Dimension Drawing, Drawing Number 1-60-558-000, page 8-2.

The Model 155LCRH is self-contained and the power cord is an integral part of the unit. The unit is to be connected to single-phase, 105-130 Volt, 50-60 Hz line only.

Specifications for the Model 155LCRH are listed in Figure 1-1, page 2.

Figure 1-1 also lists the accessory Low-Pass Filters which are supplied with the equipment. The outline and dimensions for these are shown on the Outline & Dimension Drawing 1-60-564-000, page 8-18.

Unit identification is contained on the Serial Number Label affixed to the rear panel. The serial number significance is as follows: the first six digits indicate the date of shipping in MMDDYY format. This sequence is followed by a 'dash' and a purely sequential number indicating item number of the total number of items shipped on that date. The accessory Low-Pass Filters are identified in a similar manner.

The weight of the instrument is 37 lbs which is marked on the rear panel.

**1.2 Equipment Required**

The Power Amplifier is to be used in conjunction with signal generating equipment and an RF power-stimulated apparatus to form a complete functional system. The multitude of the possible applications for which the Amplifier is suited make it impractical to list here equipment required with this product.

**1.3 Recommended Tools and Equipment**

No special tools are required in any phase of maintenance, repair or performance testing of the Amplifier. Figure 1-2, page 4, is a list of Test Equipment recommended for the performance testing, adjustment and troubleshooting of the Power Amplifier.

**1.4 Safety Considerations**

The Power Amplifier has been designed with reference to accepted safety standards. Components in the primary power supply circuit are UL and/or CSA listed.

Where applicable, this manual contains information, warnings and cautions that must be regarded for safe operation, maintenance and repair.

**SPECIFICATIONS**

Frequency Range	:	.1 - 10 MHz
Power Output	:	100 Watts CW minimum
Power Gain	:	50 dB minimum
Gain Flatness	:	± 1.5 dB
Input for Rated Output	:	2 mW maximum
Input/Output Impedance	:	50 Ohm Nominal, VSWR 2.5:1 maximum
Harmonic Distortion	:	-25 dBc minimum
Primary Power	:	105-130 Vac, 50/60 HZ
Protection	:	Temperature, VSWR
Front Panel Meter	:	Top scale - Forward 100 Watts @ 85% F.S. Bottom scale - Refl. 10 Watts @ 85% F.S.
Cooling	:	Forced Air, 2ea tube-axial fans on rear panel
Dimensions H X W X D	:	5¼" X 19" X 20" behind front panel, rackmount. 1.5" maximum extension in front of front panel
Weight	:	37 lbs
Connectors	:	Type "N" female
Primary Power Connector	:	Integral 6' UL listed power cord with NEMA type 5-15 vinyl plug
Fuses	:	5ASB ac line overload, 15A dc supply overload, frontpanel-mounted
ACCESSORIES	:	LOW PASS FILTERS
		Partnumber 1-60-564-001, $f_{cutoff}$ 0.6 MHz
		Partnumber 1-60-564-002, $f_{cutoff}$ 1.8 MHz
		Partnumber 1-60-564-003, $f_{cutoff}$ 3.0 MHz
		Partnumber 1-60-564-004, $f_{cutoff}$ 5.1 MHz

Specifications:

Stop Band Atten.	:	40 dB min. @ 1.3 X $f_{cutoff}$
Average Power	:	100 Watt
VSWR	:	1.3:1 maximum
Insertion Loss	:	.5 dB maximum
Impedance	:	50 Ohm nominal
Connectors	:	N-type female
Size H X W X D	:	2.9" X 3.0" X 9.75"

**Figure 1-1, Specifications**

## **1.5 Description**

The KALMUS, **Model 155LCRH**, is a general purpose, wideband RF power amplifier for signals in the .1 to 10 MHz frequency range. It is capable of power output in excess of 100 Watts into a 50 Ohm load. The amplifier has a minimum 50 db power gain which makes it compatible with drive power levels provided by most commercially available signal generators. The unit is intended for applications where relatively high levels of continuous wave or modulated rf power are required.

Four accessory Low-Pass Filters are supplied with the Model 155LCRH to reduce harmonic outputs to better than -40 dBc. Cut-off frequencies for these are .6, 1.8, 3.0 and 5.1 MHz. The desired filter is intended to be connected directly to the output connector of the amplifier with the output cable connected to the output of the filter.

The output power into 50 Ohm is indicated on a front panel mounted, analog meter movement. The top scale is calibrated in Watts incident power; the bottom scale in Watts reflected power. These power levels are selectively indicated as a function of the FWD/REF selector switch. Meter accuracy is typically  $\pm 5\%$  when the instrument is connected to a 50 Ohm load. For loads other than 50 Ohm the meter is for indication only.

The amplifier is protected against excessive VSWR conditions at the output by a fast acting reflected power sensing circuit. At VSWR condition exceeding 2:1 the amplifier output is interrupted until the condition is corrected. Operation will then automatically resume. An LED indicator shows the status of the protection circuit.

The amplifier is protected against excessive heatrise of the amplifier module heatsink and the power supply regulator heatsink by temperature sensing switches. These interrupt the amplifier module supply when activated. Operation will resume automatically when temperature has returned to normal operating range.

## **1.6 Warranty Information**

The Power Amplifier and accessory Low-Pass Filters are covered under the KALMUS Standard Warranty Policy in force at the Date of Shipment of the equipment and is stated in full in the "LIMITED WARRANTY" document inserted in the front of this manual. The date of shipment of the Power Amplifier is contained in the first 6 digits of the serial number label affixed the rear panel; for the accessory Low-Pass filters likewise on the serial number tags affixed to them. The format is MMDDYY.

## **1.7 Shipping and Handling Precautions**

The Power Amplifier Cabinet is of rugged, formed aluminum sheet construction and will withstand general ground or air transportation shock and vibration environments without adverse effects to the mechanical and electrical performance, when commercially accepted packaging practices and materials are employed and no special precautions are recommended.

Typical packaging would consist of:

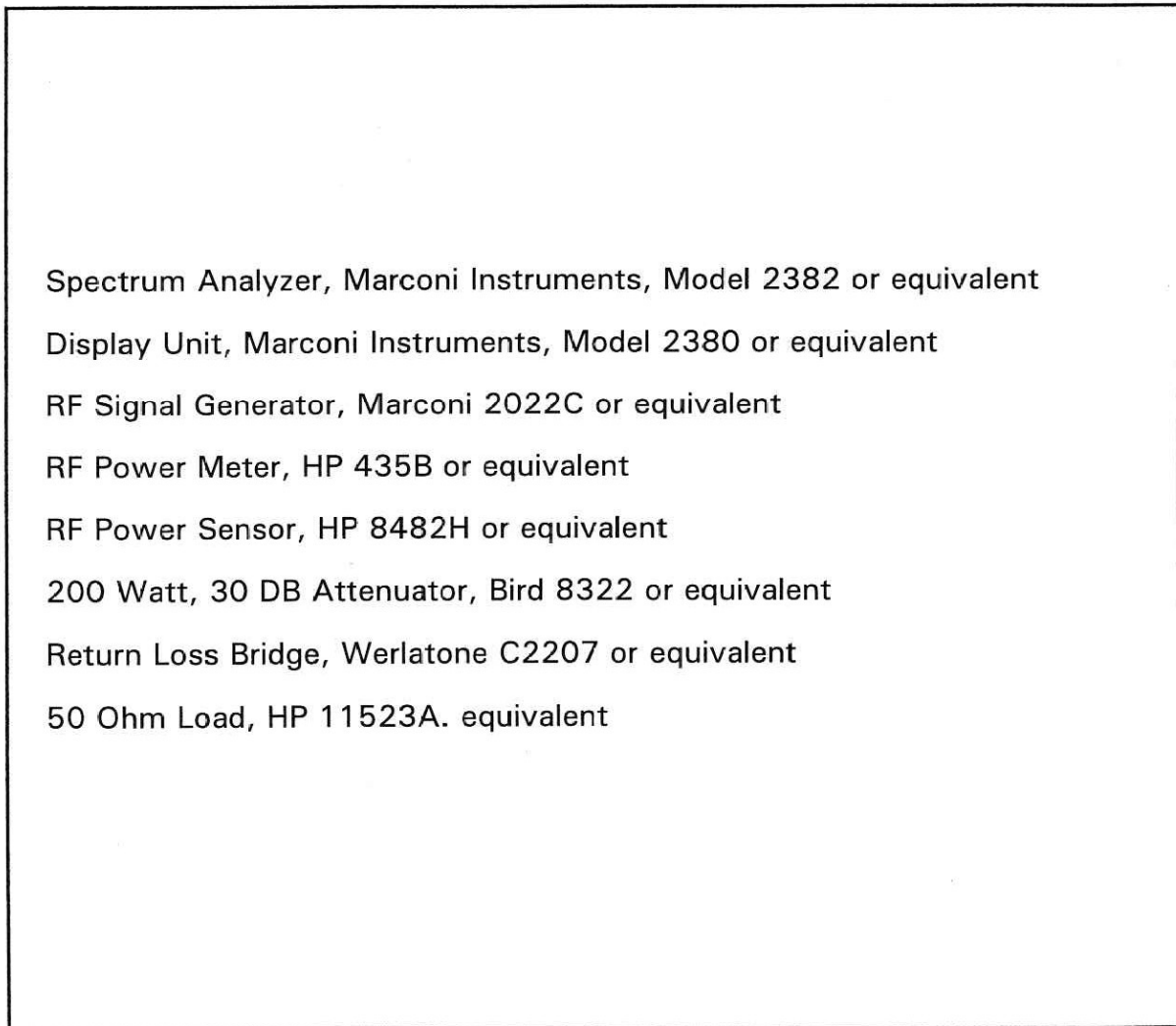
- a. 4-Mil plastic bag or wrap to cover this instrument completely.

- b. A strong shipping box of 275 lbs test, corrugated cardboard.
- c. 3 - 4 Inches of close-cell foam, shockabsorbing material surrounding the amplifier to prevent movement and provide cushioning.
- d. Plastic sealing tape or equivalent to seal all edges of shipping box.
- e. Appropriate shipping label and "FRAGILE" label(s).

### **1.8 Storage**

The Power Amplifier must be stored in a clean and dry environment. The following environmental limits must be observed in both storage and shipment.

Temperature: -40 Deg C. to 65 Deg C.  
Humidity: <95% relative



**Figure 1-2, Test Equipment**