RF1100
RF1200
RF1300
RF1240

Power Amplifier

User Manual

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LAPLACE INSTRUMENTS LTD

Distributed by:
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Caution

This unit produces high RF-power. It must be assured that maximum radiation levels, which are stated by every country's laws, will not be exceeded if this unit is used together with antennas. It is suggested that the antenna (or any other load) is placed inside of an RF shielded enclosure. Any RF cable which is connected to the RF connectors of this unit must be double-shielded.

Operating Precautions

Before you plug in the power cord:

- Read this manual.
- Confirm that line voltage of your country and supply voltage of your unit are the same. THE SUPPLY VOLTAGE IS MARKED ON THE REAR PANEL OF THE UNIT. See section for the procedure for changing the supply voltage setting.

! This warning sign will be used whenever a fact must be considered very carefully.

Service

! No user serviceable parts are inside of this unit.

When replacing a fuse, same type and rating of fuse must be used. Opening modules will void warranty.

! Persons with a pace maker implant must not work in the vicinity of this amplifier, including signal source and load.

1 General Information

1.1 Concept of Design

LAPLACE power amplifiers are air cooled RF broad band amplifiers which are designed for a wide range of applications, where good linearity and wide bandwidth together with high gain is needed. The solid state booster stage is of type “Class A/B” (push-pull) which combines very good stability with good intermodulation behavior.

Special features:

- automatic amplification control (AVR);
- pulse response optimised;
- protection circuit for output stage;
- remote control input (e.g. door switch);
- Front panel BNC input connectors

1.2 Specification

Electrical

Bandwidth:	80MHz - 1GHz (RF1100) 1GHz – 2GHz (RF1200)
Output level:	43dBm (± 1.0dB) (RF1100) 40dBm (± 1.0dB) (RF1200) 37dBm (± 1.0dB) (RF1300)
Power level:	nom 24W (RF1100) max.: 12W (RF1200) 8W (RF1300)
Non linearity:	nom: ±1.0dB max.: ±1.5dB
Input for nom output power:	0dBm (1.0mW)
Max. gain:	43dB
Input Impedance:	50ohm
Input VSWR:	1.5 : 1
Input connector:	BNC on front panel
Output Impedance:	50ohm
Mismatch tolerance:	100%
Output connector:	N type on front panel
Operating mode:	A/AB
Modulation:	100%
Cooling:	Active (internal fan)
Interlocks:	External contact input. Front panel push button Status indication Output for system controller

General

Weight:	
Size:	300 x 96 x 240mm
Supply voltage	100-264VAC 50/60Hz
Total power:	100W nom, 150W max

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1.3 Power requirements

LAPLACE amplifiers are equipped with a switched-mode power supply, which supplies ±24V at a power rating of max. 500W.
The mains supply may be either 110V or 230V. An internal switch is provided to select the required voltage. The label on the rear panel indicates the set voltage.

1.4 Protection circuitry

All amplifiers are equipped with protection circuits against:

- power overload;
- over temperature;
- bias protection;
- bad SWR

1.5 Commissioning

Prior to installation, please check the outside of the amplifier for visible damage, which could have been caused by careless transportation. Also, read the following instructions about installation and putting into operation.

1.5.1 Where to Operate the Unit

Choose a location where good air ventilation is possible. Do not obstruct the air vents on the front and back panels.

> **!** Max. exhaust air temperature may exceed 32°C. Do not obstruct air vents of the unit.

1.5.2 Supply Voltage

LAPLACE amplifiers are designed for a supply line voltage of 110V or 230V AC, 50Hz...60Hz. Each unit is shipped with the supply voltage set to comply with the order instructions.

> **!** Confirm setting of mains voltage on the back panel. Change of input voltage may require change of protection fuses.

If changing the input voltage…

1. For 110V supply, the fuses fitted at the rear panel connector should be 4A anti-surge, For 230V supply the fuse rating should be 2A anti-surge.
2. Amend the existing label or fit new label stating supply voltage.

! Do not operate this amplifier unless it is correctly terminated. Although it is designed to withstand any load abnormality, this cannot be tolerated for extended periods, especially when the amplifier is used within a control loop (as when used with the RF1000 or RF2000) as this may cause the amplifier input to exceed maximum ratings.

2 Operating Instructions

2.1 General

Operating the amplifier is very simple. Connect the input to a signal generator and the output to a load (e.g. antenna or cell). The signal generator may provide a signal of constant frequency or a frequency swept signal, with or without AM/FM.

Turn on the main power using the power switch on the rear panel.

If a fuse blows, it may be easily replaced. The holder can be found on the back panel. Always check the reason why a fuse has blown.

> **!** The design concept of LAPLACE RF-amplifiers is such that the output may be terminated with any load impedance (any SWR). Output power rating is relative to OdBm (1mW). Higher input levels and transients with high voltage peaks can damage the amplifier.
> Do not feed more than 109dBµV@50ohm = 2dBm into amplifier input.
> Also, connecting input to output or accidentally changing input and output by mistake will damage the amplifier.

2.2 Buttons, Switches and Indicators

2.2.1 Power Switch

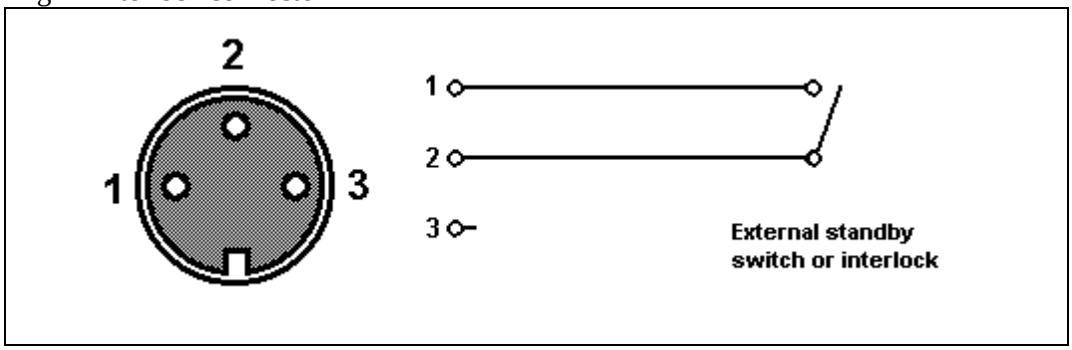
The power switch turns on the main power of the unit. An indicator on the front panel indicates the power condition of the amplifier.

2.2.2 Standby

Putting the amplifier into stand-by mode can be accomplished in three ways:

1. Push the stand-by button on the front panel. The built-in lamp is on if the unit is in stand- by condition.
2. Connect a remote control cable to the socket marked ‘CELL on the front panel Closing the connection between pins 1 and 2 puts the RF1100 in to standby mode.

Fig 1 Interlock connector



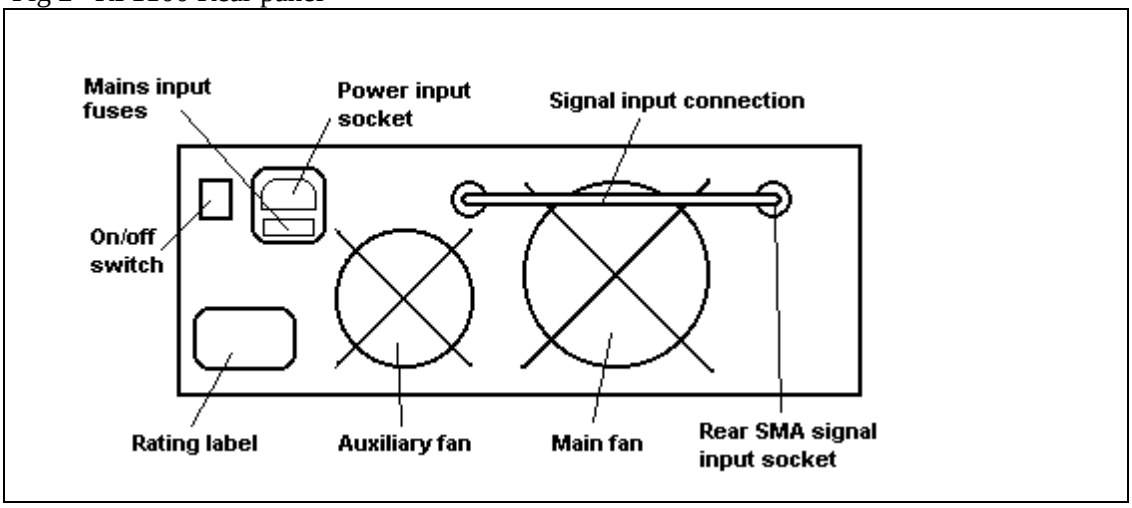
3. Connect a cable from the 4 way socket marked PA and short between pins 1 and 2. This will cause the amplifier to go to standby mode. NOTE this connection is normally used to signal the status of the power amplifier to a remote controller.

2.3 Connectors

2.3.1 Input

A BNC connector is provided on the front panel and at the back, an SMA connector is available. To use the SMA connector, remove the link across the back of the unit and apply the signal to the right hand SMA as shown in fig.2

Fig 2 RF1100 Rear panel



2.3.2 Output

The output from the amplifier is taken from the front panel N type connector. Connect this socket to an RF load. Never leave this socket unconnected when the amplifier is in use.

! Never disconnect the load from the amplifier during operation. Exposure to RF energy could lead to serious health problems.

For support, warranty and advice, contact your local LAPLACE INSTRUMENTS LTD supplier:

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