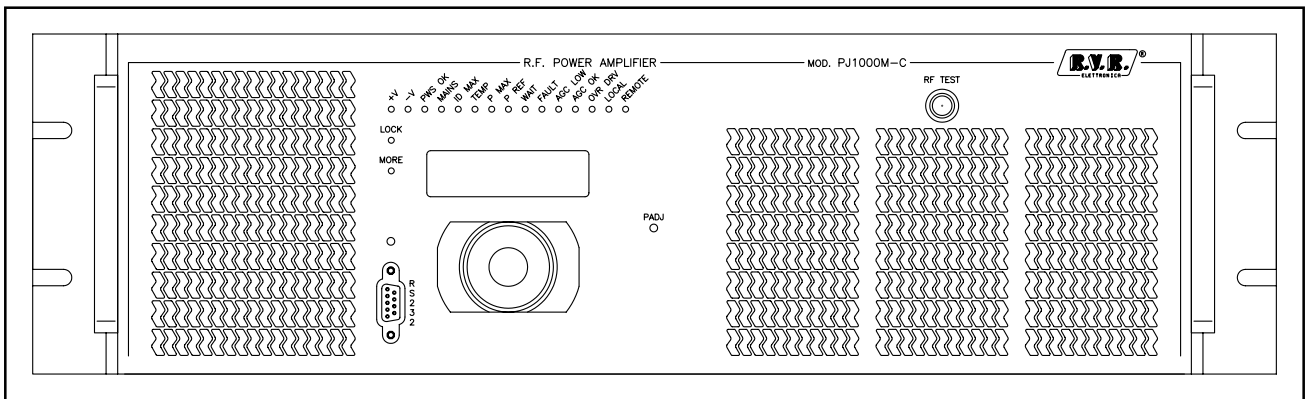


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# PJ1000M-C



## User Manual Volume 1

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Manufactured by



Italy



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Date	Version	Reason	Editor
30/06/03	1.0	New Version (only Italian version)	J. Berti
10/11/03	1.1	Upgrade to the software release 2.3	D. Canazza

PJ1000M-C - User Manual  
Version 1.1

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#### **Notification of intended purpose and limitations of product use**

This product is a FM transmitter intended for FM audio broadcasting. It utilises operating frequencies not harmonised in the intended countries of use. The user must obtain a license before using the product in intended country of use. Ensure respective country licensing requirements are complied with. Limitations of use can apply in respect of operating frequency, transmitter power and/or channel spacing.

#### **Declaration of Conformity**

Hereby, R.V.R. Elettronica SpA, declares that this FM transmitter is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.



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# 1. Preliminary instructions

This manual is written as a general guide for those having previous knowledge and experience with this kind of equipment, well conscious of the risks connected with the operation of electrical equipment.

It is not intended to contain a complete statement of all safety rules which should be observed by personnel in using this or other electronic equipment.

The installation, use and maintenance of this piece of equipment involve risks both for the personnel performing them and for the device itself, that shall be used only by trained personnel.

**R.V.R. Elettronica SpA** doesn't assume responsibility for injury or damage resulting from improper procedures or practices by untrained/unqualified personnel in the handling of this unit.

Please observe all local codes and fire protection standards in the operations of this unit.



**Warning:** always disconnect power before opening covers or removing any part of this unit.

Use appropriate grounding procedures to short out capacitors and high voltage points before servicing.



**Warning:** this device can irradiate radio frequency waves, and if it's not installed following the instructions contained in the manual and local regulations it could generate interferences in radio communications.

This is a "CLASS A" equipment. In a residential place this equipment can cause hash. In this case can be requested to user to take the necessary measures.

**R.V.R. Elettronica SpA** reserves the right to modify the design and/or the technical specifications of the product and this manual without notice.

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## 2. Warranty

Any product of **R.V.R. Elettronica** is covered by limited warranty. The warranty length depends on whether the purchaser is an end user or a reseller. If the purchaser is an end user, the warranty period is **two years**, and any defect shall be communicated to the manufacturer within two months from the discovery of the problem. If the purchaser is a reseller, the warranty length is **one year**, and any defect shall be communicated to the manufacturer within eight days from its discovery.

For components like tubes for power amplifiers, the original manufacturer's warranty applies.

**R.V.R. Elettronica SpA** extends to the original end-user purchaser all manufacturers warranties which are transferrable and all claims are to be made directly to R.V.R. per indicated procedures.

Warranty shall not include:

- 1 damages occurring during the transportation to R.V.R. Elettronica to perform servicing;
- 2 any unauthorized modification or repair;
- 3 Incidental/consequential damages as a result of any defect
- 4 Nominal non-incidentals defects
- 5 Re-shipment costs or insurance of the unit or replacement units/parts.

Any damage to the goods must be reported to the carrier in writing on the shipment receipt.

Any discrepancy or damage discovered subsequent to delivery, shall be reported to **R.V.R. Elettronica** within **5** (five) days from delivery date.

To claim your rights under this warranty, you should follow this procedure:

- 1 Contact the dealer or distributor where you purchased the unit. Describe the problem and, so that a possible easy solution can be detected.

Dealers and Distributors are supplied with all the information about problems that may occur and usually they can repair the unit quicker than what the manufacturer could do. Very often installing errors are discovered by dealers.

- 2 If your dealer cannot help you, contact **R.V.R. Elettronica** and explain the problem. If it is decided to return the unit to the factory, **R.V.R. Elettronica** will mail you a regular authorization with all the necessary instructions to send back the goods.
- 3 When you receive the authorization, you can return the unit. Pack it carefully for the shipment, preferably using the original packing and seal the package perfectly. The customer always assumes the risks of loss (i.e., R.V.R. is never responsible for damage or loss), until the package reaches R.V.R. premises. For this reason, we suggest you to insure the goods for the whole value. Shipment must be effected C.I.F. (PREPAID) to the address specified by R.V.R.'s service manager on the authorization



DO NOT RETURN UNITS WITHOUT OUR AUTHORIZATION AS THEY WILL BE REFUSED

- 4 Be sure to enclose a written technical report where mention all the problems found and a copy of your original invoice establishing the starting date of the warranty.

Replacement and warranty parts may be ordered from the following address. Be sure to include the equipment model and serial number as well as part description and part number.



R.V.R. Elettronica SpA  
Via del Fonditore, 2/2c  
40138 BOLOGNA  
ITALY  
Tel. +39 051 6010506



### 3. First Aid

Il personale impegnato nell'installazione, nell'uso e nella manutenzione dell'apparecchiatura deve avere familiarità con la teoria e le pratiche di primo soccorso.

#### 3.1 Treatment of electrical shocks

##### 3.1.1 If the victim is not responsive

Follow the A-B-C's of basic life support

- Place victim flat on his back on a hard surface.
- Open airway: lift up neck, push forehead back (Fig. 3-1).
- clear out mouth if necessary and observe for breathing
- if not breathing, begin artificial breathing (Figure 3-2): tilt head, pinch nostrils, make airtight seal, four quick full breaths. Remember mouth to mouth resuscitation must be commenced as soon as possible

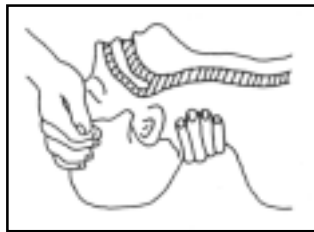


Figure 3-1



Figure 3-2

- Check carotid pulse (Fig 3-3); if pulse is absent, begin artificial circulation (Fig. 3-4) depressing sternum (Fig. 3-5)



Figure 3-3

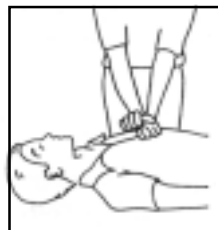


Figure 3-4

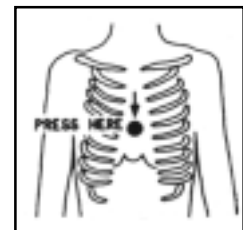


Figure 3-5

- In case of only one rescuer, 15 compressions alternated to two breaths.
- If there are two rescuers, the rythm shall be of one brath each 5 compressions.
- Do not interrupt the rythm of compressions when the second person is giving breath.
- Call for medical assistance as soon as possible.

### 3.1.2 If the victim is responsive

- Keep them warm
- Keep them as quiet as possible
- Loosen their clothing (a reclining position is recommended)
- Call for medical help as soon as possible

## 3.2 Treatment of electrical Burns

### 3.2.1 Extensive burned and broken skin

- Cover area with clean sheet or cloth
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
- Treat victim for shock as required.
- Arrange transportation to a hospital as quickly as possible.
- If arms or legs are affected keep them elevated

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (half a glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs



DO NOT give alcohol

### 3.2.2 Less severe burns

- Apply cool (not ice cold) compresses using the cleansed available cloth article.
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
- Apply clean dry dressing if necessary.
- Treat victim for shock as required.
- Arrange transportation to a hospital as quickly as possible
- If arms or legs are affected keep them elevated.

## 4. General Description

RVR Elettronica's PJ1000M-C is an extremely compact (just 3 U) 19" rack-mountable broadband MOSFET RF power amplifier for FM audio broadcasting.

It works without adjustment in the whole 87.5-108MHz FM band, its overall efficiency is about 70 %, so that its power consumption is just about 1450 W at its nominal 1000 W RF output.

The RF power section is based on four SD2932 MOSFET, able to deliver 300 W maximum each.

The power supply is a switching mode with a maximum power output of 2 kW. It includes PFC (Power Factor Correction) and its efficiency is more than 90 % with a power factor better than 95 %.

The PJ1000M is controlled by a microprocessor system including a LCD display, implementing the following functions:

- Measurement and display of the amplifier's working parameters
- activation and deactivation of the RF power output
- protection of the amplifier against dangerous situations like exceeding output power or SWR, overdrive or overtemperature
- Uper-fast protection agains excesses of reflected power, temperature, current, voltage and driving power
- Interaction with external devices using the telemetry connector.

The amplifier's management software is menu-based.

The user can navigate through the different menus and change the relevant parameters rotating the encoder left or right. The encoder will be pressed to enter into a submenu or to confirm and store into non volatile memory a parameter's new value.

The status of the machine is summarized by a row of LEDs on the front panel. The LEDs are red, yellow or green if they indicate respectively a fault, warning or correct working condition.

With the knob, it is possible to select LOCAL or REMOTE mode; the LOCAL status is also signalled by a LED on the front panel. LOCAL mode permits to control the machine using the buttons on the front panel, while remote control (that is using the telemetry connector) is disabled. In REMOTE mode, the menu system can be used only to read the parameters, but commands can only be given by the remote connector.

Different working parameters are made available for the user on the telemetry connector, as voltage levels that are proportional to the value of the parameter under consideration.

A built-in low-pass filter keeps the harmonic emission level below CCIR and FCC permitted levels.

## 5. Installation and Use

### 5.1 Preparation

Unpack the amplifier and before any other operation check the absence of any damage due to the transportation. In particular, verify whether all the controls and connectors on the front and rear panel are in good conditions.

The amplifier is designed to work on a **mains supply** of 230Vac  $\pm 10\%$ . Mains variations up to 15% are tolerated. Higher voltages (approx 265 V) will force the intervention of the protection system ("Mains" LED) and the immediate tripping of the machine.

If the mains supply falls below 190 V, the management system will reduce the power output to 500 W maximum. If the setting output power was under this value, no reduction will happen.

For mains supply below 165 V, the immediate tripping of the machine will happen, as for voltage above 265 V. The amplifier will perform automatic restart as soon as the problem in the mains supply will be removed.

The PJ1000M-C includes a mains switch on the rear panel, completely breaking the mains supply. Verify that it is in the "Off" position.

Connect to the RF Input the RF Output of a suitable exciter (for example the RVR Elettronica's PTX30) using a N-connectors terminated cable; the exciter shall be set for minimum power and OFF.

Link the "INTERLOCK OUT" connector of the amplifier to the interlock connector of the exciter, if available (it is in RVR Elettronica's exciters).

Connect the RF output to the **antenna** cable or to a suitable **dummy load**.

The apparatus is designed to work with a 50 Ohm nominal load, with low reflected power (suggested VSWR < 1.2:1). This kind of load will ensure better efficiency, lower working temperature, longer lasting life of the apparatus and less power consumption.

The antenna or dummy load feeder shall be correctly connected to the output coaxial connector of the amplifier. We suggest to do this operation "by hand", i.e. not using wrenches or other tools.



**Using cavity filters:** The device can work with high Q - narrow band cavity filters. The stability of the device is not guaranteed for all adaptation conditions and phase angles. When the cavity filter is well-tuned, it will offer a purely resistive impedance load only at its tuning frequency. Out of this band, the cavity is a reactive load with any phase angle at the different frequencies, and the reflection is practically infinite. The amplifier, on its side, is very wide-band (tens of MHz at - 3 dB), so that its load is "not correct" apart from the narrow tuning zone of the cavity filter. Furthermore, to obtain its high efficiency (class C..F) the output impedance of the amplifier is a function of the input power.



**It is extremely important to keep the PJ1000M-C in correct driving condition, so that the output impedance will be controlled by its microprocessor system.**

Connect a proper cable to the amplifier's mains input. A mains plug is delivered with the amplifier.



**WARNING:** It is essential that the unit is properly earthed to ensure both the safety of operator as well as the correct working of the equipment.

## 5.2 Use

Switch ON the amplifier and verify the green "PWS OK" LED being it. The LCD will show a screenful indicating the forward and reflected power.

Contrary to many analogous devices, the PJ1000M-C includes a featureful management and control system for the driving (input) power, independent from the kind and make of the exciter.

At start-up, the exciter is connected with an internal relay to a 50 Ohm / 50 W dummy load. Only if the input power level is inside the permitted window the start-up cycle will be triggered and the power output will be enabled. The driving condition is indicated by three LEDs on the front panel (yellow = not enough input power, green = input power OK, blinking red = too much input power, red = input power excess with disconnection of the driver and protection intervention). It's important to always operate with correct driving power, that is around 18 W.

Switch the exciter on (to minimum power level) and wait for it to lock on the working frequency. When the locked condition is reached, progressively increase its output power, while checking the LEDs on the front panel of the amplifier. At low input power, the yellow "AGC LOW" LED is on and the green "AGC OK" LED is off. Keep increasing the exciter output: the two LEDs will start blinking alternatively. In this status, the amplifier starts emitting RF power, and on the machine's display the FWD power increases up to the value stored in the filed "PWRSET".

Increase the exciter's output power until the LED "AGC LOW" goes off and "AGC OK" is lit. This is the optimum driving condition.

The PJ1000M-C is normally delivered with the output power set low (approx 50 W). The power setting can be performed directly or indirectly, depending on the exciter being connected ad active or not.

The default screenful reports two power indications: on the upper line, PWRSET indicates the setting value, while on the bottom line the current output power (both forward and reflected) is given. Pushing the knob, the indication "PWRSET" starts blinking, and rotating the encoder the setting value will be modified as needed. If the exciter is on and the amplifier's output power is enabled, the actual emitted power will follow in real-time the setting value. Pushing again the knob the new value will be stored. If the exciter is off, as soon as it will be switched on the output power will reach the setting value with a ramp (soft-start).



Adjusting the output power of the amplifier acting on the output power of the exciter is not possible: when the input power goes below the minimum threshold the amplifier's power output is disabled. This kind of regulation would in fact change the amplifier's class, with bad consequences on gain, efficiency and stability.

At this point, it is possible for the user to verify all the working parameters of the amplifier using the management software.

Normally, the device doesn't require any human supervision for its normal operation. If any alarm condition arise, these are automatically managed by the **embedded protection system**, and notified to the user with the LEDs on the panel or via messages on the LCD display. When an alarm condition arises, a temporary deactivation of the output power is performed. If the alarm condition is still there at the reactivation of the power output, a new deactivation/reactivation cycle will be performed. After 9 such cycles, the amplifier is definitively switched off, and the red LED "fault" on the front panel is lit. The cause of the fault is stored in memory. The alarms counters are reset if no alarm arises for 45'.

For example, **reflected power** above 100 W causes an immediate intervention of the protection system. The machine will be deactivated and reactivated up to 9 times. After this cycles number, the amplifier will be definitely blocked (LED "Fault" lit) with the indication of the cause of the fault (LED "P. REF" lit). A manual reset by the operator, local or remote, is required for the machine to restart.



**NOTE: If the amplifier is in "remote" mode, no local modification is possible. Remote mode is prioritaire. Before resetting the alarms, it's necessary to pass in "local" mode!**

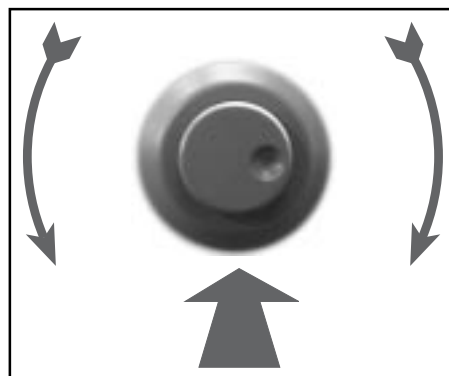
### 5.3 Encoder

The PJ1000M-C's control system is based on a LCD and a knob ("encoder"). With this system the user can check and modify all the configurations, like powerlevel, power output activation, local or remote mode.

The interaction between the user and the exciter's control software is performed using the encoder.

The operations supported by the encoder are:

- **rotating:** scrolls the submenus, modifies the parameters
- **pushing:** selects the parameter to be modified, stores the value and accepts a selection



## 6. Software

The amplifier is fitted with a two lines LCD showing a set of menus. In some cases, the menu reports the indication “Push to Program”: in this case, pushing the encoder will enable the modification of the parameter, if necessary.

This chapter gives the description of all the menus as they are displayed on the LCD, starting from the main menu and rotating the encoder clockwise.

### 6.1 Main Menu




```
PWRSET: 1003W
FWD: 1003 REF: 0
```

This is the default screenful, displayed at start-up. The information given herein are:

- Power setting
- Forward power in Watts (FWD)
- Reflected power in Watts (REF)

The desired output power level is set in this menu. To perform this operation, press the encoder knob for a few seconds, that is until the “PWRSET” indication starts blinking. Then turn the encoder until the PWRSET value matches the desired level and finally press the encoder to store the setting.

### 6.2 RF Power in menu



```
RF POWER IN (W)
FWD: 15.0 REF: 0
```

This informational screenful reports the details about the amplifier’s input power:

- Forward power (FWD)
- Reflected power (REF)

These values are measured inside the amplifier by a directional coupler board.

### 6.3 Power Amplifier menu

```
VPA: 50.2V
IPWS: 26.9A
```

This screenful reports the power supply status of the RF amplifier:

- Voltage (VPA)
- Current (IPWS)

VPA is the voltage at the input of the RF modules. Note that the output power level of the amplifier is controlled varying this voltage.

IPWS is the current at the output of the power supply, that is the sum of the currents absorbed by the modules..

### 6.4 Power modules current menu

```
AMPLI CURRENT(A)
IR:13.3 IL:13.5
```

This screenful reports the current absorbed by the “Right” couple of RF modules (IR) and the “Left” couple (IL). This can be useful for diagnostic purposes.

### 6.5 Temperature menu

```
RF BLOCK TEMP:
33 C
```

This screenful reports the temperature of the RF section of the amplifier. This value is useful to check the correct working of the machine and of the air flow.



## 6.6 Alarms menu

ALARMS HISTORY  
LAST TEN EVENTS

This menu gives to the user all the information related to the embedded protection system of the amplifier..

It comprises a number of sub-menus, each containing the name of the variable checked by the protection system and the number of the protection interventions, due to this variable, performed by the system.

Chapter 6.1.7 describes all the monitored variables.

To access the submenus, first push the encoder. Than, rotating the knob will display the pages related to the different variables.

MAX RFOUT FWD  
LOG: 0 of 9

The first line describes the kind of alarm, the second indicates the number of the related protection interventions. When the number of the protection interventions of a single variable reaches the configured maximum of 9, the amplifier goes in permanent protection mode: the power supply and thus the power output is disabled and the LED "Fault" on the front panel is lit. The display will show the following screenful:

SEE ALARMS  
OR PUSH TO RESET

To let the machine restart, remove the cause of the malfunctioning (for example the antenna feeder is badly connected) and push the encoder.

The last of the submenus of the alarm menu is used to get back to the main menu:

END OF FILE  
PUSH TO EXIT

## 6.7 Alarms sub-menus

<p>MAX RFOUT REF LOG: 0 of 9</p>	Maximum permitted reflected power
<p>MAX RFOUT FWD LOG: 0 of 9</p>	Maximum permitted forward power
<p>OVERDRIVE &gt;25W LOG: 0 of 9</p>	Maximum input power
<p>MAX RF TEMP.: LOG: 0 of 9</p>	Maximum permitted temperature at the RF amplifier section
<p>MAX PWS TEMP.: LOG: 0 of 9</p>	Maximum permitted temperature at the power supply section
<p>ID-MAX (RIGHT) LOG: 0 of 9</p>	Maximum permitted current for the right couple of MOSFET modules
<p>ID-MAX (LEFT) LOG: 0 of 9</p>	Maximum permitted current for the left couple of MOSFET modules
<p>MAINS: VAC-MIN LOG: 0 of 9</p>	Minimum permitted power supply voltage

<p>EXT ALARM 1: LOG: 0 of 9</p>	<p>External alarm generated on the connector "External Set".</p>
<p>EXT ALARM 2: LOG: 0 of 9</p>	<p>External alarm generated on the connectors "External Set" e "Interlock In"</p>

## 6.8 Mode Selection menu

MODE SELECTION  
PUSH TO ENTER

This menu configures the remote control features of the power amplifier.

Pushing the encoder, the external interlock configuration menu is displayed.

EXT INTERLOCK  
ENABLE - DISABLE

Rotating the encoder, put the cursor on the desired choice.

The external interlock permits to an external device, for example a telemetry system, to inhibit the power output of the PJ1000M-C, using the connectors "EXT SET" and "INTRLK IN" on the back of the machine.



**If you enable this feature but you dont provide to the external connectors the required signals, the PJ1000M-C will find itself in an alarm condition and will quickly go to the "Fault" state. Never enable this feature if you don't know exactly what you do.**

Pushing the encoder the performed choice will be stored, and the display will show the following page:

SETTING  
REMOTE - LOCAL

In this page the user can select to enable or disable the remote control of the amplifier, that is performed using the plug “TLC-TLS” on the rear panel.



**In REMOTE mode, the machine will not be controlled by the encoder anymore. In particular, it's not possible to switch the power ON and OFF, nor to adjust the output power. Never put the PJ1000M-C in Remote mode if you don't know exactly what you do.**

Pushing the encoder you will confirm your choice and pass to the next screen:

END OF FILE  
PUSH TO EXIT

Pushing the encoder you will go back to the main menu.

## 6.9 Power menu

POWER  
PUSH TO TURN-OFF

This screenful permits to switch ON and OFF the RF power of amplifier. When the amplifier is switched off from this menu, the power supply to the RF amplifier modules is cut and the input relay connects any exciter power to an internal dummy load, so that no RF power will be emitted on air. Pushing once the encoder knob, you will be given the chance to confirm or refuse the operation:

ARE YOU SURE  
NO/YES

Rotate the knob to make your choice and press the encoder to confirm.

## 6.10 Software release menu

```
ABOUT.. SW: 2.3  
PRT:1.0 TLC: 1.1
```

This screenful gives the release numbers of the different parts of the firmware controlling the amplifier, that is:

- SW Overall management
- PRT Protection section
- TLC Telecontrol section

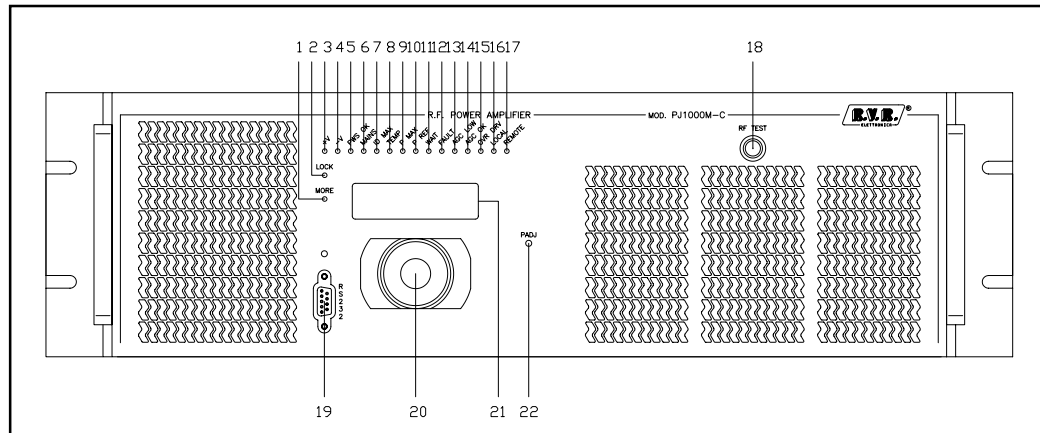
These data will help the maintenance personnel to correctly identify your piece of equipment.

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## 7. External description

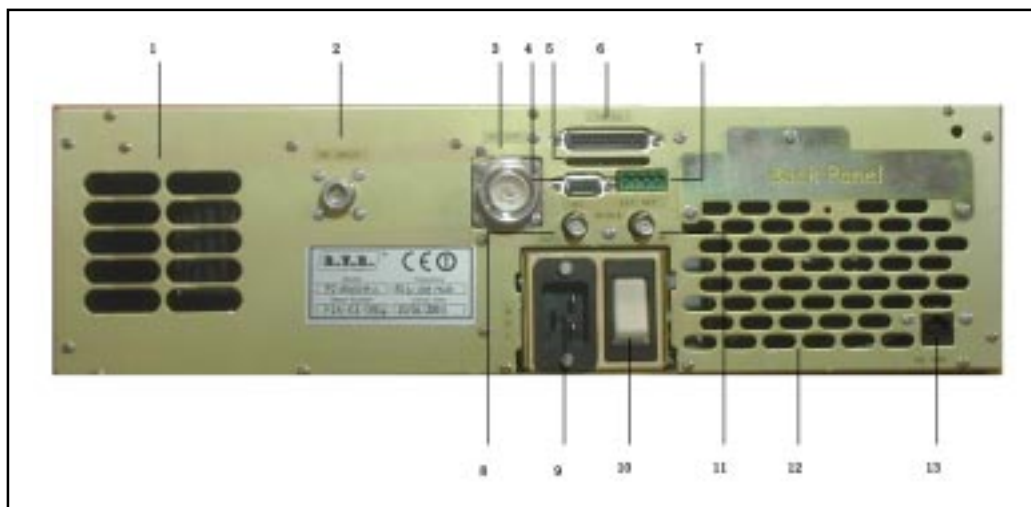
This chapter enumerates the items on the front and rear panels of the PJ1000M-C and gives a brief description of each of them.

### 7.1 Front Panel



[1] MORE	Green LED, reserved for future use
[2] LOCK	Green LED, reserved for future use
[3] +V	Green LED, lit when the power supply generates correct positive voltage
[4] -V	Green LED, lit when the power supply generates correct negative voltage
[5] PWS OK	Green LED, lit when the main power supply is OK
[6] MAINS	Yellow LED, lit when there is a problem in the mains supply
[7] ID MAX	Yellow LED, lit in case of excessive current in the RF power modules
[8] TEMP	Yellow LED, lit in case of internal overheating
[9] P MAX	Yellow LED, lit when the RF power emitted passes the alarm threshold
[10] P REF	Yellow LED, lit when the reflected RF power passes the alarm threshold
[11] WAIT	Yellow LED, indicating that the amplifier is waiting for an alarm condition to be removed or that it is performing a deactivation/reactivation cycle
[12] FAULT	Red LED, indicates the presence of a problem that cannot be solved automatically (the problem shall be removed and the system shall be manually reset)
[13] AGC LOW	Yellow LED, lit when the driving power is below the minimum threshold
[14] AGC OK	Green LED, lit (fixed) for correct driving power. It blinks alternatively with [13] when the driving power is enough for the amplifier but sub-optimum
[15] OVR DRV	Red LED, lit when the driving power surpasses the maximum threshold. This can lead to the driver's disconnection and the protection system intervention
[16] LOCAL	Yellow LED, lit when the amplifier is in local control mode. <b>This is the standard mode if non remote control system is connected to the amplifier</b>
[17] REMOTE	Green LED, lit when the amplifier is in remote control mode
[18] RF TEST	RF Test BNC connector: <b>this output shall be used for modulation analysis, not for spectrum analysis</b>
[19] RS232	Serial DB9 connector for factory firmware programming
[20] ENCODER	Knob/Push button to control the software
[21] DISPLAY	Liquid Cristal Display
[22] PADJ	RF power adjustment ( <b>Not used, the power output is controlled via software</b> )

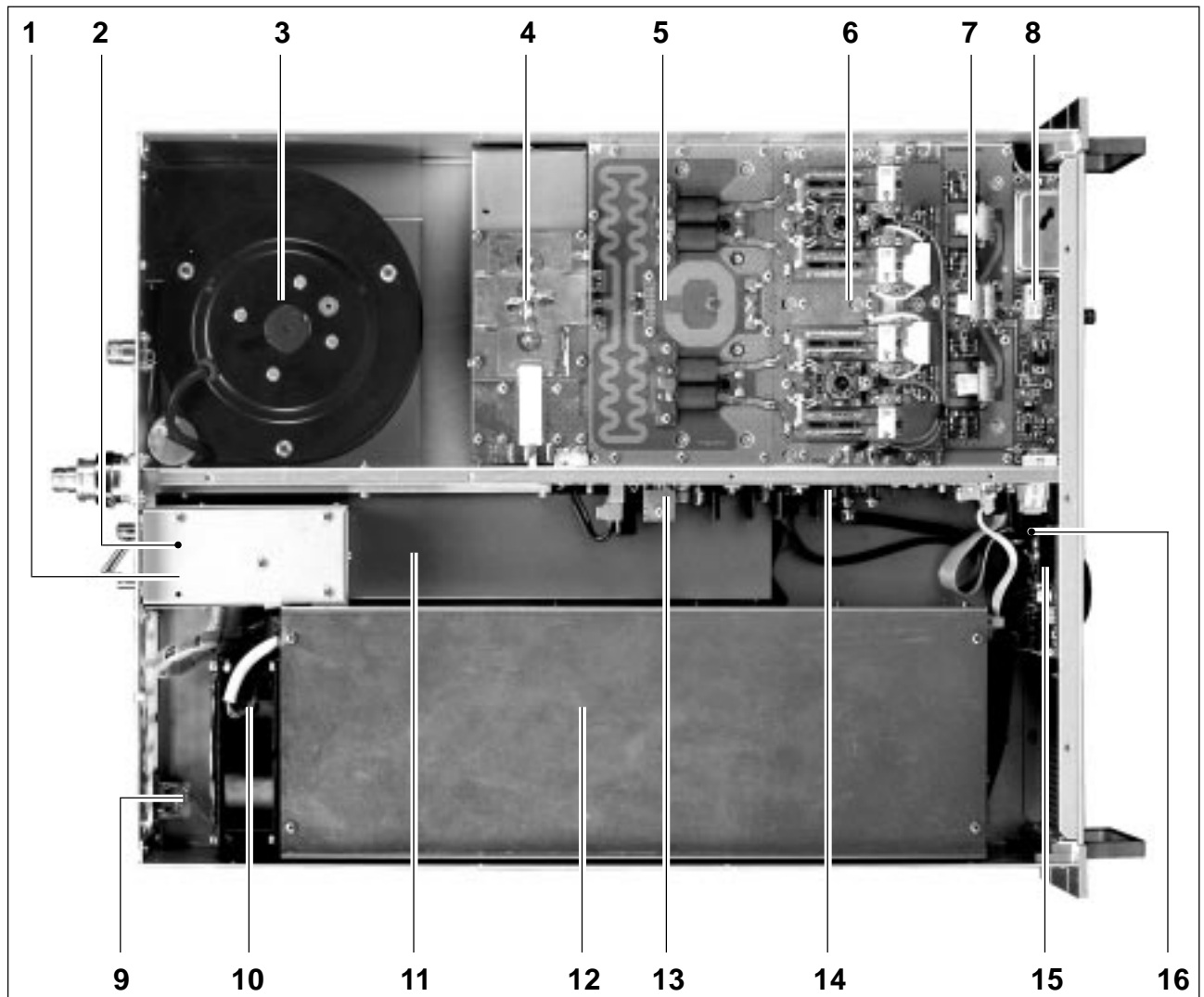
## 7.2 Rear Panel



[1] AIR FLOW	Output for the RF amplifier airflow
[2] RF INPUT	Input RF connector ("N" type)
[3] RF OUTPUT	Output RF connector (7/16" EIA)
[4] I <sup>2</sup> C	DB9 connector for I <sup>2</sup> C communications
[5] TM/TC CONFIGURATION	Telemetry configuration jumpers
[6] TM/TC	DB25 telemetry connector
[7] EXT SET	Phoenix-type connector for "External Interlock" input
[8] INTRLK OUT	BNC output connector, used to lock exciter. In case of interlock (i.e. during a deactivation/reactivation cycle, when the amplifier is in fault state or when it is OFF) the inner conductor is grounded. This is enabled with the menu "EXT INTERLOCK".
[9] MAINS VOLTAGE SOCKET	Mains inlet
[10] MAIN SWITCH	Mains switch
[11] INTRLK IN	BNC input connector to disable the PJ1000M-C in case of alarm. This is enabled with the menu "EXT INTERLOCK"
[12] AIR FLOW	Output for the power supply airflow
[13] RS 485	RJ45 connector - reserved for future use



### 7.3 Modules identification

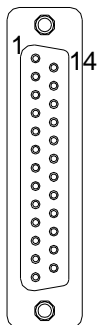


- [1] Telecontrol/Telesignalling board
- [2] Blower control board
- [3] Blower - RF section
- [4] Low pass filter and directional coupler
- [5] 4 - ways combiner
- [6] RF amplifier modules
- [7] 4 - ways splitter
- [8] RF input and alarms board
- [9] RJ45 board
- [10] Power supply fan
- [11] Mains input and protection section
- [12] Power supply
- [13] Interface board
- [14] EMI filter board
- [15] Led board
- [16] CPU board

## 7.4 Connectors description

### 7.4.1 Telemetry connector

Type: DB25 Female



- |    |   |
|----|---|
| 1  | Inpute reflected power measurement  |
| 2  | Power supply voltage measurement  |
| 3  | GND   |
| 4  | Reflected power measurement   |
| 5  | Interlock output  |
| 6  | Not used (reserved)   |
| 7  | GND   |
| 8  | “On” command, available when in “remote” mode. Pulse 100 ms to ground to give the command                                     |
| 9  | Power good output (Active when the emitted power is above 80 % of the set power)  |
| 10 | “Wait” output (active when the Wait LED on the front panel is lit)  |
| 11 | “Alarms reset” command, available when in “remote” mode. Pulse 100 ms to ground to give reset the machine from a Fault status |
| 12 | OFF Output  |
| 13 | External interlock input  |
| 14 | RF section temperature measurement  |
| 15 | RF section current measurement  |
| 16 | Forward power measurement   |
| 17 | “Fault” output (active when the Fault LED on the front panel is lit)  |
| 18 | Reflected power warning (RFL > 50 W)  |
| 19 | Input power measurement   |
| 20 | “Off” command, available when in “remote” mode. Pulse 100 ms to ground to give the command                                    |
| 21 | GND   |
| 22 | Power good output (Active when the emitted power is above 50 % of the set power)  |
| 23 | “Local” output. Active when the machine is in local mode  |
| 24 | +12 Vcc output  |
| 25 | ON output   |



**Warning:** the analog measurement output have 3.9 V nominal level. Full scale level is 4.3 V. The digital input require an impulse to ground at least 100 ms long. ON and OFF are exclusive, that is after a ON command only a OFF command can be accepted, and only after the former command is finished.

## 8 Technical Specifications

### 8.1 Physical specifications

Size	132 mm H (3HE) 483 mm W (Standard 19") 600 mm D
Weight	< 20 Kg
Temperature range	-10 °C ÷ 50 °C

### 8.2 Electrical specifications

AC power supply	230 Vac +/- 10%, 50-60 Hz, with PFC
Frequency range	87.5 – 108 MHz
Maximum output power	1000 W
RF output connector	7/16" female
Output impedance	50 Ohm
Input RF connector	N-type
Input impedance	50 Ohm
Power consumption	approx 1450 W
Efficiency	about 70%
Harmonics and spuriousemissions	Meets or exceeds all FCC and CCIR requirements
Cooling	Forced ventilation
Serial interface	RS232 (DB9 female connector) IIC (DB9 female connector for IIC bus networking)
Telemetry interface	DB25 female connector

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