Section 3 - Operation

Contents:

3.1 OPERATION

At startup, after initial image, the display shows the main screen with the RF powers as in Figure 1:
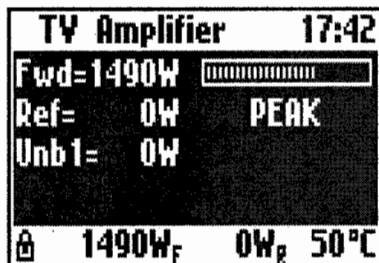

Figure 1: Main screen

The user may turn on and off the amplifier by means of the switch on the front panel. The control board turns on all the power supplies, the exciter (if any), and internal cooling fans. While the amplifier is working, the micro-controller monitors continuously the most important parameters: power supply voltages, absorbed currents, high power zone temperature, forward and reflected powers, unbalances (if any). Each measure is associated to a maximum threshold beyond which the amplifier is immediately put in protection status by turning off one or more power supply, depending on the failed block. In order to prevent a temporary problem to trigger a definitive protection status, the failed block is turned on again, after some seconds, for up to five times. If it goes beyond the protection threshold for more than five times, it is declared as FAILED and it will no longer be turned on. In this case, the amplifier will have to be turned off manually by means of the switch on the front panel, then turned on again after performing the needed maintenance.

On the front panel there are also three LEDs labelled ON, REMOTE and ALARM. Their meanings are explained in Table 1.

LED	COLOUR	MEANING	MEANING WHEN BLINKING
ON	Green	The amplifier is on	The amplifier has been turned on locally but it has been turned off by remote
REMOTE	Yellow	Remote control is enabled	It never blinks
ALARM	Red	An alarm is present	It never blinks

Table 1: Meanings of the three LEDs on the front panel

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[1] Screenshots in this manual are indicative, so they can be different from those on your equipment.

3.2 DISPLAY

The control board is provided with a modern pixels graphic display with blue background. Normally it always shows a title bar (on the top line) and a status bar (on the bottom line).

The title bar, see Figure 2, shows the name of the amplifier (TV Amplifier) and the current time. If the amplifier is a single unit coupled externally with other units in a high power transmitter, the title bar shows the amplifier number (slave address) too.

Figure 2: Title bar

The status bar (Figure 3) indicates the forward and reflected powers and the temperature. It also contains two symbols for the interlock (lock) and the alarm (bell).
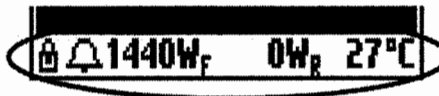

Figure 3: Status Bar

The bell symbol is continuously displayed in case of alarm. It blinks if there has been an alarm which has ended but has not yet been seen by the user. It stops blinking once the Log has been checked.

The interlock symbol is displayed only when this function is enabled. It may be either a close lock, as in Figure 3, when there is no alarm (interlock chain closed) or an open lock in case of alarm (interlock chain open).

Since the status bar is always showed on the display, regardless of the screen, the user may monitor at any time the most important parameters and the presence of alarms while moving between different screens.

3.3 MENUS

The user may see or modify locally some configuration parameters using the four buttons on the front panel. All screens are organized in a hierarchical menus and the user may move between them in a simple and intuitive way.

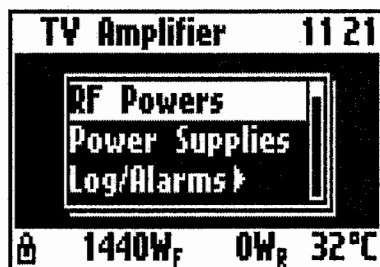To see the menu it's sufficient to press the ESC key (see Figure 4).

Figure 4: Main menu

The display only shows three items at a time: all the items can be scrolled by the UP and DOWN arrow keys. Any item can be chosen by selecting it and pressing the RET key. Menu entries with an arrow on the right ▶ open sub-menus when chosen. Thus there is a hierarchical structure as in Figure 5. To go back from a sub-menu to the previous menu, press the ESC key. If the ESC key is pressed in the main menu, the RF powers screen is accessed.
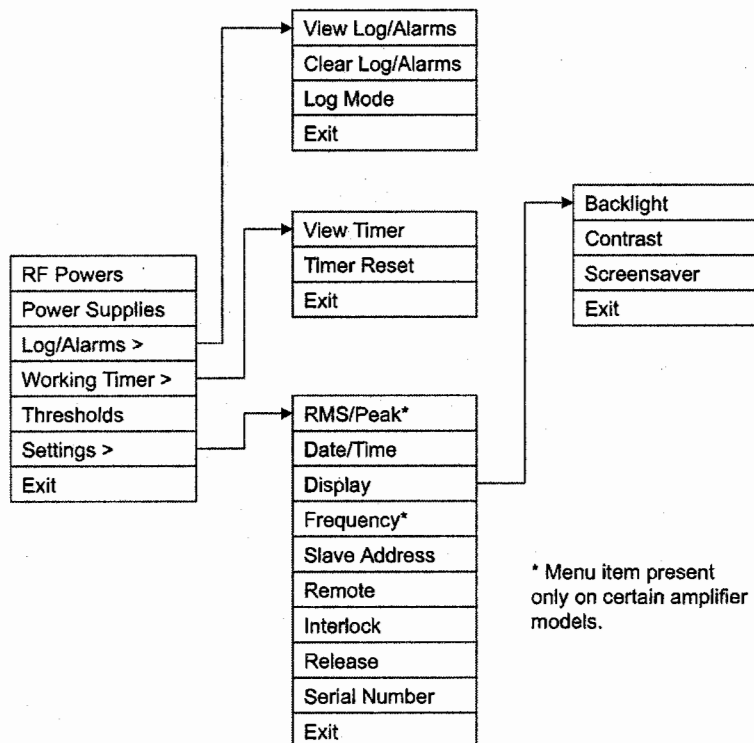

Figure 5: Hierarchical menu structure

All menu items are described in detail below.

- RF Powers

This is the main screen showing the RF powers of the amplifier: forward power, reflected power, unbalances, if any. For forward power a level bar is displayed. See an example in Figure 1.

- Power Supply

This screen shows all the signals coming from two power supply. To check the next (previous) power supply press the UP (DOWN) key. For each power supply, the voltage, the absorbed current and the status (ON or OFF) are shown.
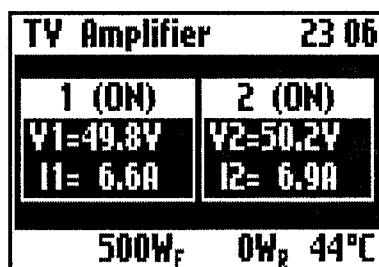

Figure 6: Power supply screen

- Log/Alarms

The control board is provided with an external EEPROM and a clock. Any alarm or switching event with the time at which it occurred is saved in the EEPROM. The Log/Alarms sub-menu allows to manage this log. It is possible to see the events stored in the log by selecting Log/Alarms ⟶ View Log/Alarms. All events can be scrolled by pressing the UP and DOWN keys. For example, the event shown in Figure 7 is the turning on of the amplifier by means of the local switch. For every event/alarm a short description and the date and time at which it occurred is displayed.
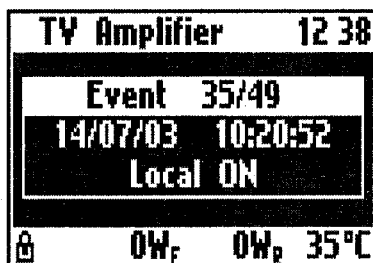

Figure 7: Event stored in the log

In case of alarm, the value of the measure which caused the alarm is saved into the log. In case of alarm still existing after five turning-on attempts, the parameter is marked as FAILED. Table 2 is the list of all the events which can be logged.

EVENT	DESCRIPTION
Local ON	Amplifier turned on by means of the local switch
Local OFF	Amplifier turned off by means of the local switch
Remote ON	Amplifier turned on remotely
Remote OFF	Amplifier turned off remotely
Interlock open	Interlock chain open
Interlock closed	Interlock chain closed
Power Supply ON	Power supply on
Fwd Pwr xxxxW	Alarm for forward power
Ref Pwr xxxxW	Alarm for reflected power
UnbY xxxxW	Unbalancing alarm
V1 xx.xV	Power supply voltage alarm
I1 xx.xA	Power supply current alarm

Table 2: Events managed and logged by the control board

The log may be completely deleted by selecting Log/Alarms ⟶ Clear Log/Alarms.
Amplifier can store in the log details about alarms and generic events. You can change this behaviour selecting Log/Alarms ⟶Log/Mode menu item.

- *Working Timer*

The control board has a working timer which is always enabled while the amplifier is working (i. e. there is at least one power supply working). The menu entry Working Timer ⟶ View Timer allows to check the hours for which the timer has been enabled. Working Timer ⟶ Timer Reset resets the timer.

- *Thresholds*

This is a screen showing the alarm threshold of each signals monitored by the control board. The list can be scrolled by means of the UP and DOWN keys.

- RMS/Peak

The control board can monitor both the RMS and peak powers, the first used in digital systems. The menu entry Settings ⟶ RMS/Peak allows to choose the power to be displayed and monitored. This menu is present only in certain amplifiers.

- Date/Time

This screen allows to set the current date and time. The setting is changed by pressing the arrow keys, then pressing the RET key to move to the following value and eventually save the changes. To go back to the previous menu and discard any change made, press the ESC key. Figure 8 shows an example of this screen.
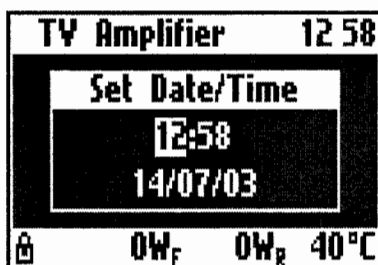

Figure 8: Date and time setting screen

- Display

The menu entry Settings ⟶ Display allows to change some settings of the display, such has back light, contrast and screensaver. The back light and the contrast are set by means of the UP and DOWN arrow keys. The changes made are saved by pressing the RET key or discarded pressing the ESC key. Figure 9 shows an example of this screen.
With Settings ⟶ Display ⟶ Screensaver you can set an interval time after which display backlight is turned off. When display backlight is off, press any key to switch it on.
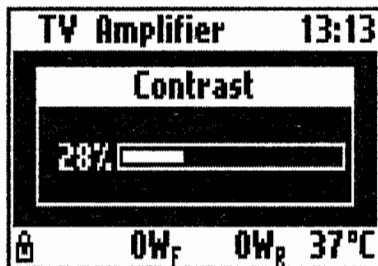

Figure 9: Display contrast setting screen

- Frequency (only for some Amplifiers)

The forward and reflected RF powers is measured by means of a directional coupler. In order to compensate for the effect due to the sampling made by the coupler, it is possible to set the frequency by menu entry Settings ──▶Frequency. The setting can be changed by pressing the arrow keys. The changes made are saved by pressing the RET key or discarded pressing the ESC key. Set the video carrier frequency.

- Slave Address

The amplifier may be used either in stand-alone mode or as a slave of a master in a high power multiple units transmitter. In the latter case an unique address for each amplifier has to be specified, in order for all of them to communicate with the master on the same RS485 bus. The menu entry Settings ──▶ Slave Address allows to choose the stand-alone mode or set a slave address by means of the UP and DOWN arrow keys. The changes made are saved by pressing the RET key or discarded pressing the ESC key. An example of this screen is shown in Figure 10.
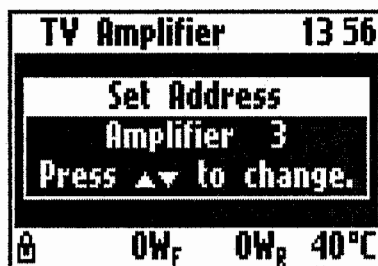

Figure 10:Slave address setting screen

- Remote

The amplifier may be controlled either locally, by means of the keys and display, or remotely. There are three possibilities for remote control:
- using a direct serial connection between amplifier RS232 connector and a PC RS232;
- using the remote control device manufactured by NicomUsa, Inc (RCU), on the RS485;
- using a general-purpose control system connected to telemeasures.
You can enable / disable remote control choosing menu item Settings ──▶ Remote. When remote control is enabled, the yellow REMOTE LED on the front panel is lit.

- Interlock

One of the pins of the telemeasure connector, located on the rear panel, is used for the interlock alarm. It is an input line which turns off the amplifier in case of alarm. The interlock check can be enabled or disabled using

menu item Settings→ Interlock. When it is enabled, the status bar shows the lock symbol (see Figure 3), which is close if the interlock chain is closed (no alarm) or open if it is open (alarm).

- *Firmware Release*

The menu entry Settings ——→ Firmware Release allows to display the firmware version number and the hardware release of the amplifier.

- *Serial Number*

The menu entry Settings ——→ Serial Number allows to display the serial number of the apparatus.