4-3. Operation with an external antenna tuner

At antenna SWR over 1.5:1, it is advisable you use an external tuner. The ACOM 04AT Remote Automatic Antenna Tuner is designed to work with the ACOM 700S. Use of other antenna tuners is not recommended.

4-4. Automatic protection system

The control unit (S. 7-3(b)) keeps track of most amplifier analogue and logic signals in all modes. Those are the receive/transmit control signal, the output relay contact state and switching times, the RF drive frequency and drive power (the input power), the final transistors DC current and DC voltage on the drains as well as, the gates bias voltage and the heat sink temperature, the main power supply components temperature, the RF output forward and reflected power, and others. Some derivative parameters, as the power gain, the SWR, the heat power dissipated by the final transistors dynamically and others, are watched too.

In the event a parameter maximum is exceeded, the amplifier will assess the risk and will trigger one of the three levels of protection, as described in items (a) to (c) below. Every event is accompanied by a warning text on the screen (Fig. 4-1). A sound alarm will be also produced, if set on in the “USER PREFERENCES”– fig. 5-4.

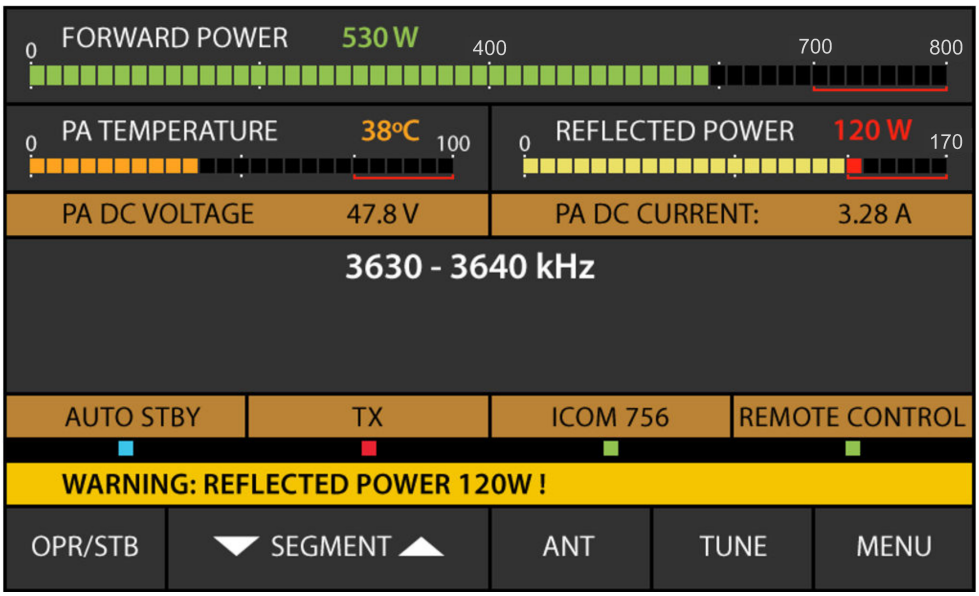

Fig. 4-1 – Appearance of an alarm message

a) The first protection level is WARNING. When a value watched by the control unit approaches the protection threshold, the transmission is not interrupted, but a message appears – for example “Drive Power too High”, “Drain Current too High”, or another – Fig. 4-1.

You can continue to transmit in these conditions, but you have to take some measures, for example, to reduce a bit the drive power from the transceiver. The warnings remain on the screen for at least three seconds so that they can be read through and will disappear after the reason has dropped off.

b) The second protection level is a SOFT FAULT – when a value exceeded the safe level, but does not put the amplifier in a danger of a failure.

At the second level (SOFT FAULT) the amplifier reverts to Stand-by mode for four seconds or permanently

depending on whether the “AUTO OPERATE” option had been activated. A respective message is shown on the screen, for example “Excessive Reflected Power”, “Excessive Drain Current”, and others, as well as with a sound alarm (unless the sound had not been muted – S. 5-4).

Unlike those for a WARNING, the SOFT FAULT messages remain on the screen and persist until the operator pushes any button - in order to confirm that the message is read - or until the OPERATE mode will be resumed automatically when the AUTO OPERATE is active – S. 5-4).

SOFT FAULT’s call for fast and simple correcting actions by the operator, such as, for example, reducing the drive power, improving of load SWR through retuning the antenna tuner, antenna change, etc.

c) The third and most serious protection level is a HARD FAULT. The amplifier will be turned off automatically to avoid possible further damages.

When the protection trips off, the data about the fault is stored in the memory and the front panel screen is blanked. There is also a sound alarm - a series of CW letter F.

If the reason for tripping the protection is not obvious, you can try to turn on the amplifier. If the amplifier allows it after the fault, a fault message will appear with information about the reason for the latest automatic shutdown (for example, overheating of the power supply unit or of the PA stage).

After pushing any button, the fault message will disappear, and if there are no current problems (for example, the overheated unit has already cooled down), the amplifier operation will be restored. In the event a parameter maximum is exceeded again, a new message will appear on the screen, or the protection will trip again immediately after the recovery attempt.

If the problem persists, contact your dealer – S. 1-2.

At each “HARD FAULT” shutdown the amplifier stores data, concerning the controls and values, the trip time, and others. Your dealer or his service may ask you to read this data out from the amplifier screen or by RS232 interface and store it in a computer file – see menu FAULTS LOG, Sections 5-5 and 7-4.

5. MENUS – SETTINGS AND OPTIONS

By pushing the MENU button (the rightmost) the user invokes the menu selection screen (Fig. 5). Each menu can be selected by the ITEM (up and down) buttons and SELECT.

The items in each menu are selected and controlled by the same six buttons as in the basic screen, but they have new functions.