

SUGGESTED EOC HF ANTENNA TUNER / ICOM 7300 OPERATION

by Gordon Gibby KX4Z Nov 9 2020

I would like to suggest a somewhat different operating technique for the LDG AT-1000 (1 kw rating) automated antenna tuner, used in conjunction with the ICOM-7300 transceiver and a linear amplifier. This document is to explain the suggestion. Each operator can choose their own practices; this is just friendly suggestion.

At first, I had tried to operate the AT-1000 tuner the same what I operate tuners with automatically operating radio message server (RMS) stations at my house: in AUTO mode, so that whenever it sensed RF and found a higher SWR, it would automatically re-tune.

However, I ran into two difficulties and then discovered a key trait of the ICOM-7300, that caused me to switch my preference, as follows:

Difficulty #1: The LDG tuner frequently gets confused by rapidly varying RF strengths during digital operation (and might also during voice operation) and inappropriately begins a RE-TUNE when it had already found a good match.

Difficulty #2: Inexplicably we blew a 2A high voltage fuse in the refurbished SB-200 amplifier. Blowing a 2A fuse in a 2100VDC plate circuit simulates suddenly drawing over 4,000 watts from the power supply! This just doesn't make sense --- unless the amplifier saw a sudden change in its load impedance, resulting in a massive out-of-tune situation for a moment. And such a situation could easily occur if the AT-1000 began a RE-TUNE while the SB-200 amplifier was producing high power digital or SSB output.

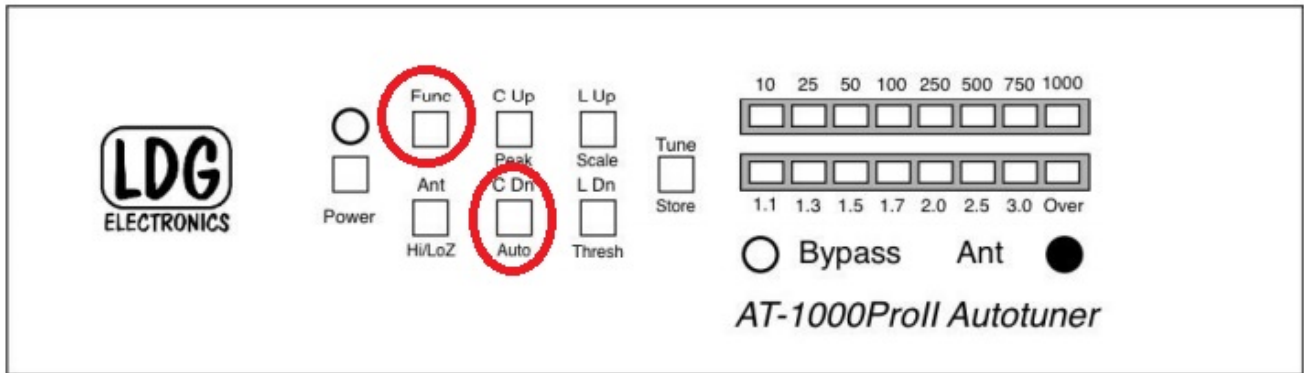
ICOM-7300 Key Trait: It turns out that the ICOM-7300 senses the supply current drawn by an external auto-tuner, when that autotuner is connected to, and powered by the ICOM-7300. As a result, it disables its internal tuner and properly utilizes the external tuner – and by merely pressing the TUNE button on the ICOM-7300, one can auto-generate a low power signal that is enough for the LDG AT-1000 to auto tune. (Watch: <https://www.youtube.com/watch?v=rj16J6xX8o>)

These three facts suggest that it may be a much better plan to

1. Keep the LDG AT-100 in SEMI-auto tune; so that it only tunes when requested by the ICOM 7300
2. Force a tune manually by pressing the ICOM-7300 tune button whenever you significantly change frequencies or bands.

If you wish to utilize this suggested auto-tuning plan, you'll need to know how to set the auto/semi-auto setting on the LDG AT-1000 tuner....and it has a less-than-intuitive user interface, so here is information:

First, the LDG Panel: It has several push-buttons, and they have a SECOND FUNCTION that is activated by first pressing the “Func” button briefly AND RELEASING, and then briefly pressing the desired button to obtain its SECOND FUNCTION.

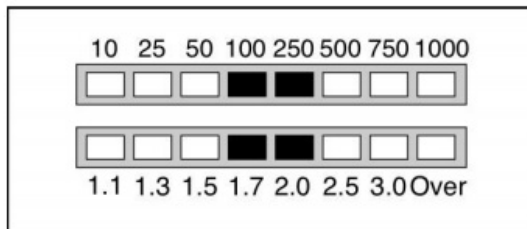


The C-Dn key’s second function is to switch the operation of the AT-1000 from “semi-auto” to “full auto” tuning.

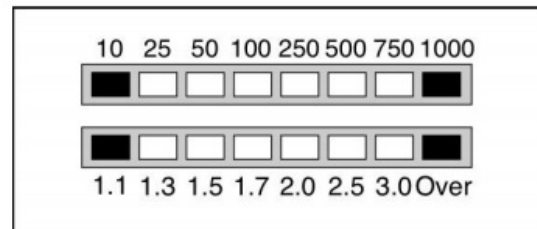
Here are the instructions for how to switch back and forth, and how to recognize the LED display’s response to your choice (because it toggles back and forth with each choice; so you have to watch the LED’s to know what you’ve chosen.

Automatic Tuning Mode: The AT-1000ProII may be set for either semi-automatic tuning or fully automatic tuning. In semi-automatic tuning mode, a tuning cycle will not begin unless specifically requested by pressing the **Tune** button. In fully automatic tuning mode, a tuning cycle will begin any time there is RF present and the SWR exceeds a pre-set level. The default setting is fully automatic tuning mode.

To toggle between semi- and fully automatic modes, press **Func -> C Dn**. The LED display will show one of the two patterns to indicate which mode has been selected:



Auto Mode



Semi Mode

Using this proposed technique, and pressing TUNE on the ICOM-7300 before using a new frequency, has worked quite well for me so far. I think this procedure will protect the newer solid state amplifier as well, which might have problems if unexpected auto-tuning occurred while producing high power.