NCL-100/NCL-100+
RF Noise Canceller

Quick User Guide

SDL Ham Radio Accessories

1. Installation

- Install the MAIN antenna, AUX Antenna, Coax Jumper, PTT Cable (supplied), and DC cable (supplied).
- MAIN antenna is your transmitting antenna, meanwhile AUX antenna is any random antenna which installed at low height and is used to receive electrical origin local noise (QRM) as much as possible. Keep the installation of AUX antenna away from the MAIN antenna to keep the risk of AUX input overload to minimum.
- Coax Jumper is installed between RADIO jack and your transceiver.
- **PTT CABLE IS MANDATORY**. This cable is used to switch the NCL-100 to transmitt mode which the RF path is in bypassed mode. If you don't install it and the NCL-100 is ON, you will damage the NCL-100 when your radio is transmitting. Please consult to your transceiver's user manual for the proper connection to your radio. Usually this **PTT** jack is connected to **TX GND** or **SEND** of your transceiver.
- DC cable is connected to your power supply. Input voltage is anything between 10V to 14V. NCL-100 DC input is diode protected.
- NCL-100/NCL-100+ is rated for 200W PEP of absolute maximum. **Recommended is 100W for day-to-day use**. If you are using any linear amplifier, please **install NCL-100 between your radio and the linear amplifier's input**. In this case, install coax jumper between your transceiver and RADIO jack and another coax jumper between MAIN Antenna jack and linear amplifier's input. Your main antenna is connected to your linear amplifier.

2. Preliminary Test

- Install all cables and connections properly.
- Turn the **GAIN A** knob to fully **counter-clockwis**e (seven o'clock), **PHASE** knob to fully **counter-clockwise** (seven o'clock), and **GAIN B** knob to fully **clockwise** (five o'clock).
- Turn the NCL-100 ON. At this stage, your radio is only receiving using AUX antenna. You should see that the S-meter reading is about S-9 + 20dB or more and your radio is only receiving mainly of local electrical noise. If the S-meter reading is lower than that

or your AUX antenna not receiving much of your local electrical noise, then your AUX antenna is not installed at the optimum state. Try to re-position or even try another antenna to get the optimum result. You could even try random wire antenna connected directly to the AUX jack using a banana jack.

- Turn the NCL-100 OFF. At this stage, your radio is only receiving using MAIN antenna. Your MAIN antenna alone should receive less local noise than your AUX antenna. Approximately 20dB or even more, less than the AUX antenna.
- If all the conditions above satisfied, then you are ready to do noise cancellation.

3. How to Use NCL-100/NCL-100+

- Set GAIN A knob in any position between 1 o'clock and 5 o'clock. The more clockwise this knob setting will give you better sensitivity of signal reception.
- Set PHASE and GAIN B knob at initial position approximately 12 o'clock.
- Put your transceiver AGC at FAST setting to get more responsive S-meter reading (optional). After the NCL-100 setting finished, you can set the AGC at any setting you want.
- Turn PHASE knob either clockwise or counter-clockwise to get the minimum noise reading at your S-meter.
- Turn GAIN B knob as well, either clockwise or counter-clockwise to get the minimum noise reading at your S-meter.
- Alternately, turn PHASE and GAIN B to get the minimum noise reading at your S-meter.
- If your noise cancelation is not satisfying enough, try reduce or increase GAIN A to the minimum noise reading and repeat the PHASE and GAIN B setting.
- You should get the optimum noise cancelation with GAIN A knob not less than 1 o'clock position.

4. NCL-100 as an RX Antenna Preamplifier

You can use the NCL-100/NCL-100+ as an RX Antenna Preamplifier. Instead of connecting AUX antenna to the AUX jack, connect your RX antenna to it. The AUX connection will provide about 20dB of gain and not worse than 7dB of Noise Figure (NCL-100+). Turn the GAIN A fully counter-clockwise, PHASE fully counter-clockwise, and GAIN B knob fully clockwise to use NCL-100/NCL-100+ as an RX Antenna Preamplifier.

5. NCL-100/NCL-100+ Specs

Input DC Voltage	: DC 10 – 14 V
Working Freq	: 1.8 MHz – 14 MHz
VSWR	: less than 1:1.2
Power handling	: 200 Watt PEP max
MAIN ANT	: 50 Ohm
RADIO	: 50 Ohm
AUX ANT	: any impedance (50 – 75 Ohms recommended)
PTT IN	: RCA, TX GND mode