NISSEI

INSTRUCTION MANUAL

Vector Impedance Antenna Analyzer

Model:
NS-60A (HF)
NS-520A (VHF/UHF)

RADIO COMMUNICATION EQUIPMENT

Caution:
Read all instructions before operation equipment

Features and Functions:

The analyzer breaks the size barrier for RF-analyzers by delivering user-friendly convenience top-notch accuracy. And a vivid TFT multi-color display in an ultra-compact package.
This unit is loaded with a great selection of *Single-Frequency* and *Swept-Frequency* VNA functions.

Use the ***single-Frequency*** mode to view *Standing Wave Ratio (SWR), Resistance (R), Reactance (X),* and *Interference Levels (S)* Simultaneously on a high-resolution analog bar-graph display. Allows you to use your analyzer as a precision signal generator.

Use the ***Scan-Frequency*** **Mode** to graphically plot SWR,R,X,and Z. All four plots are captured as a sequence of sharply defined color graphs. Simply toggle through each screen for a complete visual analysis.

There's also a tunable marker on each screen you can use to call up precise numerical values for SWR, R, X, and Z, at any point along the plot. The analyzer has internal memory, so there's no need to worry about lost data,
If you turn your unit off, the last measurement will still be there when you turn it on again.

The analyzer has the advanced DDS stimulus generator delivers rock-solid stability, smooth skip-free tuning.

There's also a built-in *Field-Strength Indicator* to warm when high interference levels are present. This unit long-rinning lithium-polymer power source is built right in.
Simply connect to any available USB port on your computer or USB wall charger to recharge.

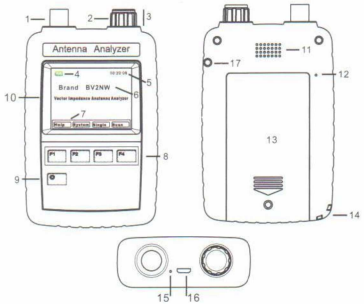
We strongly recommend reading through the manual before turning your analyzer on for the first time.

Specifications:

1.Screen:
2-inch high-output color TFT.
2.Measurement range:
VSWR range: 1 : 1.00 - 1 : 99.99
Lord Resistance (R): 0.1 - 999.9 ohms
Lord Reactance (X): 0.1 - 999.9 ohms
Impedance Magnitude (Z): 0.1 - 999.9 ohms
3.Frequency range:
NS-60A: 0.5-60 MHz
NS-520A: 133-177 / 195-280 / 395- 520 MHz
4.Frequency Stability:
NS-60A: <3PPM
NS-520A: <0.5PPM
5.Frequency step:
NS-60A: 100Hz
NS-520A: 1000Hz
6.Output Power:
NS-60A: 1dBm (at 14 MHz)
NS-520A: 3dBm (at 438.5MHz)
7.Sweep Widths:
NS-60A: 150KHz/300KHz/600KHz/1.2MHz
2.4MHz/6MHz/12MHz/24MHz/48MHz
NS-520A: 300KHz/1.5MHz/3MHz/6MHz
12MHz/24MHz/42MHz/75MHz.
(75MHz is only valid in the 395-520MHz)
8.Maker Steps:
NS-60A: 500Hz/1KHz/2KHz/4KHz/8KHz
20KHz/40KHz/80KHz/160KHz
NS-520A: 1KHz/5KHz/10KHz/20KHz
40KHz/80KHz/140KHz/250KHz.
(250KHz is only valid in the 395-520MHz)

9.Power Source:
Built-in 3.7-V,1900-mAH Lithium Polymer battery.
10.Charge source:
Any USB port,Analyzer accepts Micro-USB plug.
AC power adapter output voltage is 5.0-5.5VDC,
and the current output capacity > 500mA.
11.Charge indicator:
RED LED signals normal charging,
Green LED indicates when charging is complete.
12.RF Connector:
BNC-female.
13.Weight and Dimensions:
Size : 7.0 cm (W) x 11.5 cm (H) x 2.6 cm (D)
Weight: 140 grams

Layout and Controls:



1	RF Connector	9	Power-Key
2	Rotary Encoder	10	TFT-LCD
3	Multi-Switch	11	Buzzer
4	Battery Status	12	Reset-key hole
5	Elapsed Time	13	Battery cover plate
6	Personalized ID	14	Hang rope hole
7	Soft-key Switch Labels	15	Charge indicator LED
8	Multi-key	16	The charging hole

17 Undefined

1. RF Connector: BNC-female.
2. Rotary Encoder: Tunes DDS frequency when setting up tests,positions marker and scrolls for some system set-up functions.
3. Multi-Switch: Selects tuning steps, and scrolls through some setup menu choices.
4. Battry Status: Indicates battery power remaining, Warms when the battery is running low.
5. Elapsed Time: Displays running time for the current operating session.
6. Personalized ID: Displays owner's call letters or name.
7. Soft-Key Switch Labels: Displays the analyzer command-key assignments.
8. Multi-Key: Enters command instructions into the analyzer's processor.
9. Power-Key: Turns analyzer ON / OFF.
10. TFT-LCD: 2-inch high-output color TFT

11. Buzzer: Audio modulated tone buzzer.
12. Reset-Key: If system crash,can reset processor.
13. Battery cover plate.
14. Hang rope hole.
15. Charge indicator LED.
16. Micro USB: For charging use.
17. Undefined.

Power Source and Initial Setup:

1. **Charging the battery:**
   The analyzer is powered by a 3.7-V,1900-mAH Lithium Polymer battery.
   To monitor the charge cycle, *Red LED* signals normal charging,*Green LED* indicates when charging is complete,
   And *Flashing LED* warms of charging fault.

> **Importance Charging Note:** Charge the battery before operating your analyzer for the first time,before storing, and at 2-3 month intervals while in storage.

2. **Processor Reset:**
   In case of strong interference caused by system crashes,you can use the stiff wire, gently press the reset hole, so that the system is reset.
3. **Turning Analyzer On and Off:**
   Press the "Power-Key" switch "down" for 2-5 seconds to "power-on" / "Power-off" the machine.
4. **Enter Call Sign or Name:**
   You may personalize your call sign or name (up to 8 characters) on the *Boot Screen.*
   And follow the procedure below:

- Press the switch labeled "*System*"
- Press *Select* to toggle between *Auto-off and Callsign*, Select *Callsign*.
- Press the *Encoder Knob* to toggle the curser to the start (or left) position.
- Rotate the *Encoder* to scroll in your first character.
- Press the *Encoder* and move to the second character.
- Continue building the sequence until finished.
- Press *Exit* to return to the *Boot-Screen* and view your entry.
  If you don't wish to enter a callsign, simply leave the field blank.

Select Band: (NS-520A only)

- In the *Boot Screen* , press the "System" to enter into -System- interface.
- Press *Band* to select the band you needed.

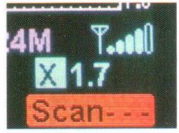
Auto-Off Function:

This unit has an optional automatic-shutdown timer. (About 10 minutes)
Your data current remains in memory when the analyzer shuts down.
The following procedure:

- Press the switch labeled *System*
- Press *Select* to toggle between *Auto-off* and *Callsign*, select *Auto-off.*
- Rotate *Encoder Knob* clockwise to activate it. Counterclockwise to deactivate it.
- Press *Exit* to return to the *Boot Screen*.

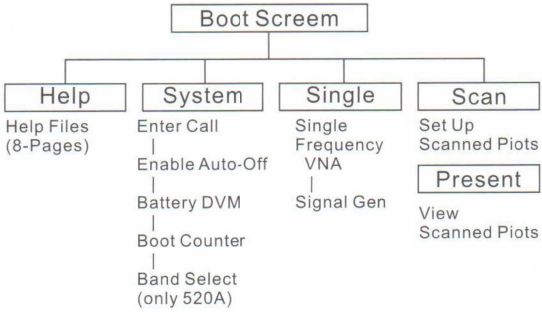
Other notes:

1. In the lower right of the screen, there is a measure SCAN antenna signal strength indicator.
   No test operation, the display case of the antenna interference field strength induced. During the test, the case represents the measured excitation power output.



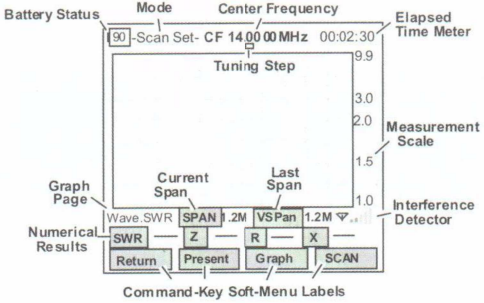
2. Single measurement interface, there is a S-Antenna signal strength indicator, which is a rough indication of the antenna sensing field. Scan measurement function with the interface, the same antenna signal strength indicator.

Measurements:



A.SACN mode:

1.From the Boot Screen, press the Scan key,
The screen is shown in figure below:

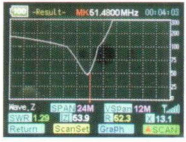


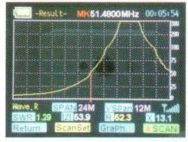
- Press the scan key (SPAN),select the appropriate SACN measurement bandwidth.
- Rotary encoder potentiometer
  (by pressing the encoder switch at the top of the cycle to select the input bits,
  at the bottom with a yellow indicator)
  entering the center frequency

- Press the SCAN button enter the scan operation.

2. After the end of the measurement, automatically enters - Present- interface In this interface, you can perform 3 operations:

◆ Press "Graph" icon mode button to switch the scan results of the curve display, in addition to standing SWR curve, as well as Z curve, R curve, X curve.





◆ Move the cursor, view the scan frequency point on the curve on each scan of the specific parameters of the measurement results.

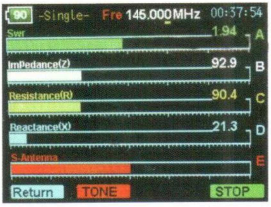
◆ Move the cursor to view the scan results in the data in the process, you can press the "▼RUN" button, from the current cursor position to re-scan to scan if you need to change the new bandwidth, you can press the "Scan Set" button to enter the measurement setup interface, at this point the cursor frequency parameters automatically into the measurement interface, after setting the-Scan Set- screen,press the "SCAN" button to scan to, You can return -Present- interface operation.

3.Scan data save and read:
When unit is shutdown, it will automatically save the last set of scan data into memory.
When power on:

- Press the "Scan" (scanning)function selection key, enter Scan-Set interface.
- Press "Graph" (scan curve) icon mode selection key, it will automatically transfer the stored scan data.

B. Single-Frequency mode:

1.From the *Boot Screen*,press the Single key,
The screen is shown in the figure below:



- Rotary encoder potentiometer enter the Center frequency. The specific reference to the above operation "SCAN" sweep measurement mode descriptions.
- Press the "RUN/STOP", to start and stop the scan.
- "TONE": (NS-520A only)
The " Audio modulated tone"
Adjustment function operation:
There is a "Start audio"(TONE) button, you can set an audio modulated tone of 1KHz frequency generator easy radio reception.

2. Single frequency mode provides a single
frequency impedance measurement.
The measured frequency of the basic parameters
are displayed on the screen.
And to indicated the form of bars and numbers
Displayed on the screen quickly.
the scanning will not stop,
until you press the Stop button.

3. In this mode,there is a S-Antenna
signal strength indicator.
Which is a rough indication of
the antenna sensing field.
scan measurement function with the interface.
the same antenna signal strength indicator.