

## POWER SUPPLY

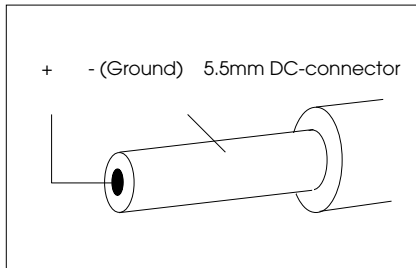
Portable operation is possible due to the built-in lead acid battery (accumulator).

For charging and operation an external power supply is needed.

It must deliver 9-12V DC and a minimum current of 0.5A.

The power supply is connected at rear panel plug „**EXT. SUPPLY**“ and the green LED „**CHARGE**“ lights up simultaneously.

Connection to the EXT. SUPPLY-plug:



Charging time is about 2 hours; but the power supply can be connected also over a longer period (e.g. overnight) to the device because the charging current is reduced automatically when reaching the end of charging.

When the accumulator voltage drops down under a value of 5.7V during operation; a warning message „**LOW BAT**“ appears.

To prevent the accumulator from irreparable damages; measurement operation should be finished and the device should be switched off or connected to an external power supply.

## TECHNICAL DATA

Input Frequency Range: 1500 - 2500MHz  
Input Connector: IEC/75Ω  
Maximum DC Level: +/- 30V

Measurement Range LOW: 20/30 - 80dBuV  
Measurement Range HIGH: 50 - 100dBuV  
Amplitude Scaling: 2-5-10dB/DIV  
Measurement Tolerance: max. +/- 3dB  
Frequency Accuracy: max. +/- 3 x 10E-6  
Frequency Scaling/DIV: 100-50-20-10-5-2-1-0MHz  
Resolution Bandwidth(RBW): 2MHz / 200KHz  
Detection: Quasi-peak-level detection  
Measuring Principle: Homodyne/DC

Supply Voltage: 9 - 12V / 300mA  
Built-in Lead-acid Battery: 6V / 1.2Ah  
Serial Interface: RS 232 (DS9)  
Operating Temperature: 0 - 45°C  
Storing Temperature: -10 - 55°C  
Do not expose to moisture!

Dimensions: 113 x 32 x 170mm  
Weight (excl. accumulator): 0.45kg

## LEVEL CORRECTION

The according level value is correct if the occupied signal bandwidth is  $\leq$  than the resolution bandwidth (RBW).

For signals occupying higher bandwidths like FM-modulation (analogue satellite TV) or QPSK (DVB-S) and according correction value has to be added:

**Correction Value =  $10 \times \log(\text{RBW} : \text{Signal BW})$**

For FM-signals the system bandwidth (e.g. ASTRA: 27MHz) is in accordance with the resulting signal BW.

For QPSK-signals one can assume:

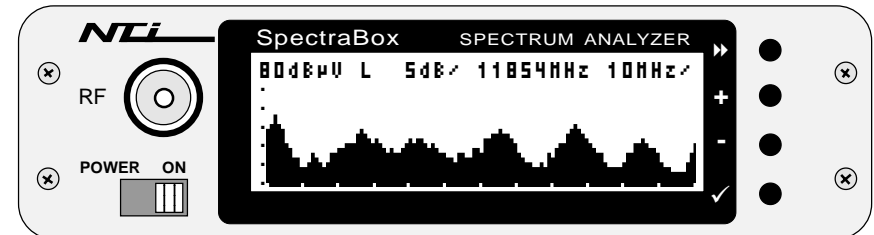
**Signal BW = Symbol Rate : 1.6**  
(e.g. 27.500Ms/s : 1.6 = 17.18MHz)

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Edition 02/2009

# SpectraBox ISM DX Spectrum Analyzer

## Instruction Manual Version DX1.0



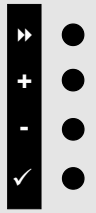
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## OPERATION

Besides the power switch only four buttons are all the device needs:

- Select menu
- Change parameters
- Acknowledgement



The chosen parameters are visible in a field above the spectral display.

## STARTING

After switching on the start menu appears. First the current software version number shown; this information is important for later software upgrades.

A few seconds later the following message appears:

```
CHANGE SETTINGS ?
NO / YES
```

Confirming with “NO” (no changes) leads immediately to the spectral display mode. By confirming with “YES” several sub-menus are available.

Selection is done with the “+/-” keys.

All input values are stored automatically but can be over-written later.

### • Sub-menu LIGHT

Here it is possible to switch the display illumination on/off. For reducing power consumption the light should only be switched on if necessary.

### • Sub-menu DX MODE

The guaranteed minimum sensitivity level is 20-30dBuV (LOW range) depending on the chosen resolution bandwidth (RBW) and 50dBuV (HIGH range).

Activating the DX mode extends the sensitivity to the tuner's individual noise floor. Typical increase is about 5-10dB depending on the individual tolerances.

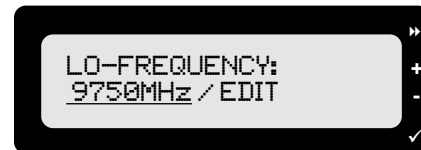
### • Sub-menu FREQUENCY

Besides the direct frequency reading of the center frequency is also possible to show the real input frequency when using a converter unit in front of the analyzer.

Therefore the local oscillator (LO) frequency of the converter has to be considered.



When choosing “CONVERTER” a further sub-menu for editing the LO frequency (2150 - 63385MHz) appears:



The last selected LO frequency is shown at the lower line.

If necessary this LO frequency can be edited. The edit mode “EDIT” is chosen by the “-” key.

The upper “>>>” key allows the selection of the corresponding digit, while the “+/-” keys allow the variation.

Confirmation is done by pressing the “✓” key. Before finally jumping back the query

“ADD/SUBTRACT ?” appears.

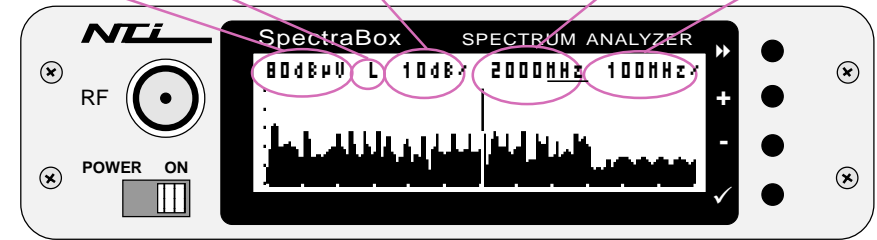
Here it is possible to choose whether the analyzer input frequency (1500 - 2500MHz) has to be added to the LO frequency or subtracted.

Jumping back to the spectral mode is possible by pressing the “✓” key.

## SPECTRAL DISPLAY & ADJUSTMENTS

• **Parameter Settings:** Selection via “>>>” key; the selected parameter field appears underlined; changes via “+/-” keys; confirmation via “✓” key.

Reference Level L/H Amplitude Scaling/DIV Center Frequency Frequency Scaling/DIV



### LEVEL ADJUSTMENTS

#### • Reference Level

The chosen value represents the maximum level (Peak Level).

#### • Measurement Ranges (DX mode OFF)

LOW (L): 20/30 - 80dBuV (RBW 0.2/2MHz)

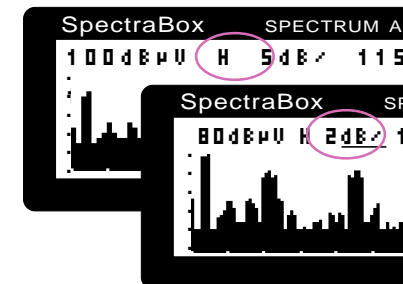
HIGH (H): 50 - 100dBuV (RBW 0.2/2MHz)

Activating the DX mode accordingly extends the minimum noise floor.

#### • Amplitude Scaling/DIV

Within the selected level range the amplitude scaling is selectable in 10-5-2 dB/DIV steps

The reference scaling grid/dotted line is visible at the left side of the display.



### FREQUENCY ADJUSTMENTS

#### • Center Frequency

When choosing this menu a frequency cursor appears. The marker position can be varied with the “+/-” keys while the actual frequency position is shown at the upper line (Center Frequency).

This allows also the frequency determination of an unknown signal simply by tuning the cursor to its position.

Confirming with the “✓” key replaces the center frequency by the actual cursor frequency.

#### • Frequency Scaling/DIV

A frequency scaling grid line is visible at the bottom of the display.

The space between two negative dots defines the chosen frequency scaling/DIV.

Frequency scaling is selectable in 100-50-20-10-5-2-1-0 MHz steps/DIV related to the center frequency. This allows comfortable frequency zooming of an interesting signal area e.g. for analysis of small bandwidth signals.

The resolution bandwidth (RBW) is automatically coupled with the chosen frequency scaling:

**Frequency Span/DIV ≥ 20MHz: RBW = 2MHz**  
**Frequency Span/DIV ≤ 10MHz: RBW = 0.2MHz**