

Congratulation

On your choice of miniRadioSolutions analyzer.
This is the hardware reference manual.

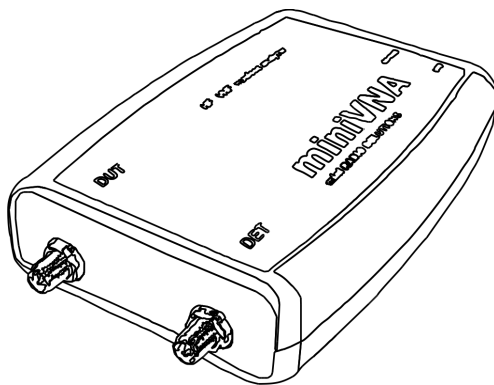
Safety

Please carefully read the safety instruction included in this manual.
The Software for Mini-VNA Pro BT is continuously developed. For this reasons a CD ROM is not included in shipment anymore. The current software is always downloadable from the internet.
For the latest software and updates, visit www.miniradiosolutions.com.

The new **miniVNA**, the big brother of the well-known miniVNA, is an extraordinary and unique handheld vector network analyzer that makes available a multitude of new features and capabilities which are perfect for checking antennas and RF circuits for hams and commercial users. Together with your PC/Laptop, you can add to your laboratory the further advantages of having this first-class VNA instrument.

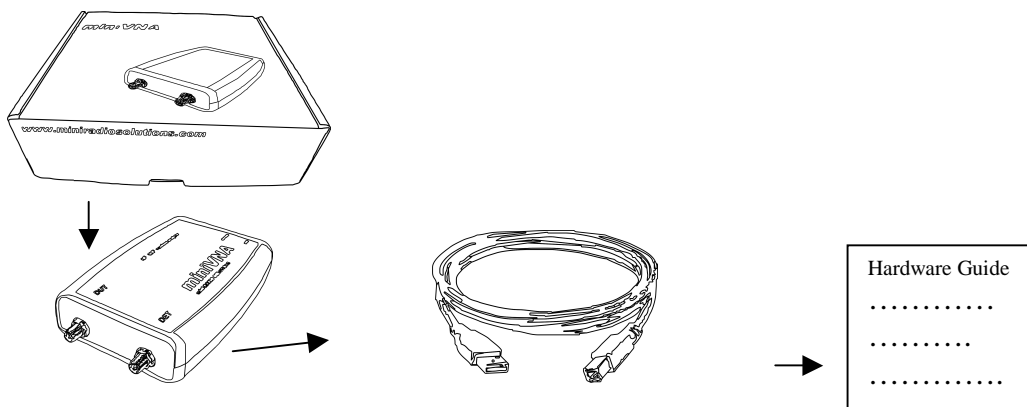
This is the first world's wireless analyzer able of scanning and sending the data using an integrated Bluetooth module to a remote PC/Notebook up to 100 meters from the **miniVNA PRO**'s location. This makes real-time antenna setup easy!

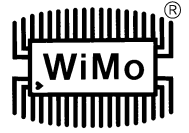
Specifications



- Frequency range 0.1-200 MHz
- Calibration using open-short-load for accurate results
- Range of Z from 1 to 1000 ohm
- Two ports VNA with S11 and S21; displayed and save results
- I/Q DDS Generator with output power of 0 dBm
- Two separate RF output I/Q for SDR experiment and IMD test with independent 0-55 dB attenuator; Phase adjustment resolution of 1 degree
- Built in Bluetooth Class 1 for remote measurements
- Internal Battery Li-ion with 1000 mA/h (4 hours full- scan operation)
- Built-in battery charger (up to 400 mA)
- Accessory port for future optional interfaces and frequency extenders
- Low power consumption, 220 mA @ 3.7 V (analyzer mode using USB port)
- Power-saver mode
- SMA connectors for better isolation
- Extended dynamic range – up to 90 dB in Transmission & 50 dB in Reflection
- Boot loader for future firmware upgrades
- User friendly interface for PC Windows, Linux and Mac
- Integrated Smith chart in software
- Optional extender for UHF and SHF band (under development)
- Mobile Phone software (under development)
- Measurements of motional crystal parameters, cable length, & more
- Export data in several formats – JPEG, EXCEL, ZPLOT, S2P, PDF

Basic Carton Content





! Caution

Safety Instructions – which must be strictly observed

Hazardous Environments

Do not operate the analyzer in hazardous environments. This equipment is intended to be used for maintenance, research, evaluation, simulation and other analytical or scientific applications in areas such as industrial plants, public utilities, hospitals, universities, laboratories, automotive service centers and electronic repair shops. We are not liable for any problems resulting from the use of the analyzer in hazardous environments and misuse.

Care and Safety

To clean the analyzer, use a soft cloth dampened with water. Do not use cleaners or solvents because they can harm the body of the unit and leak inside, causing permanent damage. Do not submerge the unit in water or use it on a wet environment. If the unit gets wet, turn it off and remove the battery immediately. Dry the battery and the battery compartment with a soft cloth to minimize potential water damage. Allow the unit to fully dry before installing the battery or using the units.

Li-ion Battery Operation / Wasting

Dispose of battery in the proper manner, according to federal, state and local regulations that apply in your area. A battery may leak electrolyte if it is mixed with a set with different battery types, if inserted incorrectly, if disposed of in fire, or if an attempt is made to charge a battery not intended to be charged. Discard leaky batteries immediately. Leaking batteries can cause skin burns or other personal injury.

- Lithium-Ion batteries are subject to disposal and recycling regulations that vary by country and region. Always check and follow your applicable regulations before disposing of any battery.
- Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles.
- Place only discharged batteries in a battery collection container. Use electrical tape or other approved covering over the battery connection points to prevent short circuits.

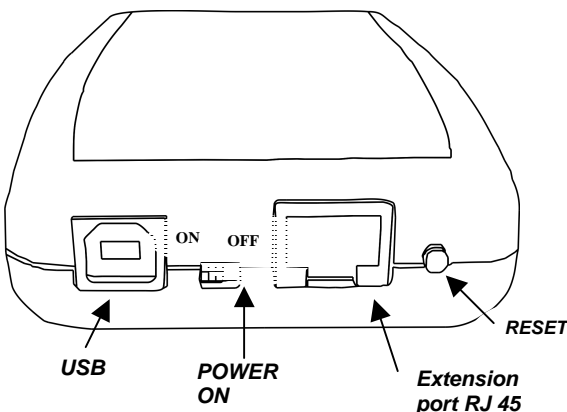
Warning !

The use of this device may be subject to national restrictions or regulations. Check your local authority or dealer before purchasing and using this product.

User Information

In accordance with 13 of the Legislative Decree of 25th July 2005, no. 15 "Implementation of Directives 2002/95/EC, 2002/96/EC and 2003/108/EC, relative to reduction of the use of hazardous substances in electrical and electronic equipment, in addition to waste disposal". The crossed bin symbol shown on the equipment indicates that at the end of its working life the product must be collected separately from other waste. The user must therefore take the above equipment to the appropriate differentiated collection centres for electronic and electro technical waste, or return it to the dealer when purchasing a new appliance of equivalent type, in a ratio of one to one. Appropriate differentiated waste collection for subsequent recycling, treatment and environment-friendly disposal of the discarded equipment helps to prevent possible negative environmental and health effects and encourages recycling of the component materials of the equipment. Illegal disposal of the product by the user will be punished by application of the administrative fines provided for by the legislative decree no. 22/1997 (50 and following of the legislative decree no. 22/1997).

Connections



Connections from USB side.

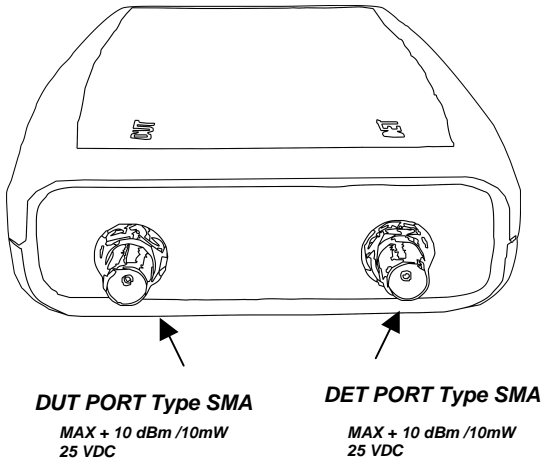
- The **USB** connection is required if you prefer to use power (+5V/USB) and communication to the PC via USB cable (included in the package).

! Caution

DO NOT Use Any Voltage Source Not Specified Herein

- When connecting the analyzer via the USB cable, you need to install the FTDI drivers at the time of first use. A pop up window will ask for a new USB driver device. Have the PC search for them in the CD-ROM under the directory FTDI and complete the installation process as instructed. Next go to the Control Panel → System and search in Hardware for a newly added COM port. Record the number of the new COM port which will be used in the miniVNA PRO software setup later on.
- The **Power-On** is used to supply the analyzer from the internal battery or when the USB is connected to the PC to charge the battery till the charge led is ON. If the unit is battery operated, it is mandatory to use the Bluetooth to communicate with the PC. The battery has a capacity of 1000 mAh and the charging time is about 3 hours. The PC must also be Bluetooth capable to use the wireless feature.
- The **extension connector type RJ45** is used for connection to future product.
- The **reset switch** is relevant to the main CPU and is also used to upload firmware upgrades. Firmware upgrade is performed using the software named MEGALOAD from the web site microsysl.com. Load new firmware upgrades that may available in the future at www.miniradiosolutions.com periodically.





Connection from - RF side

- **DUT Port** is typically connected to the antenna under test when the analyzer is set by the software interface to work in Reflection mode.

! Caution

Not apply to this port DC signals over 25 VDC and RF signals over 10 mW. (Voids Warranty)

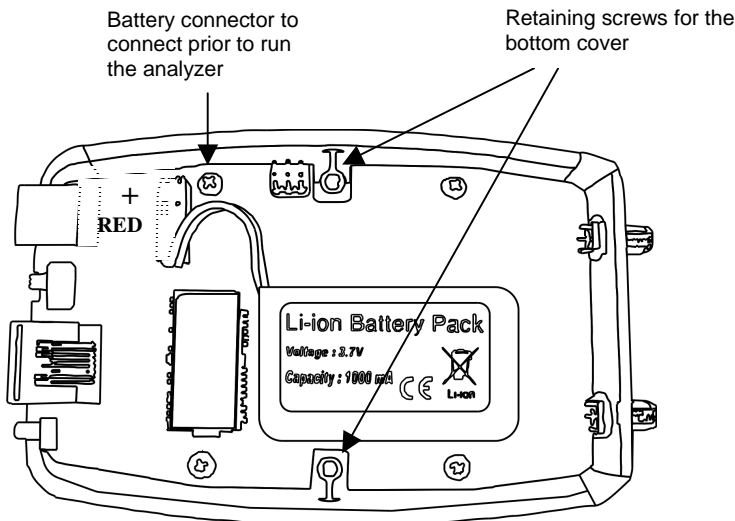
- **DET Port** is used to check filters and amplifiers when the analyzer is set by the software interface to work in Transmission mode.

! Caution

Not apply to this port DC signal over 25 VDC and RF signal over 10 mW. (Voids Warranty)

Battery Connection and/or Replacement.

! For safety, the unit is shipped with the battery disconnected. It is necessary to connect the battery to the relative PCB connector for operation of the unit:

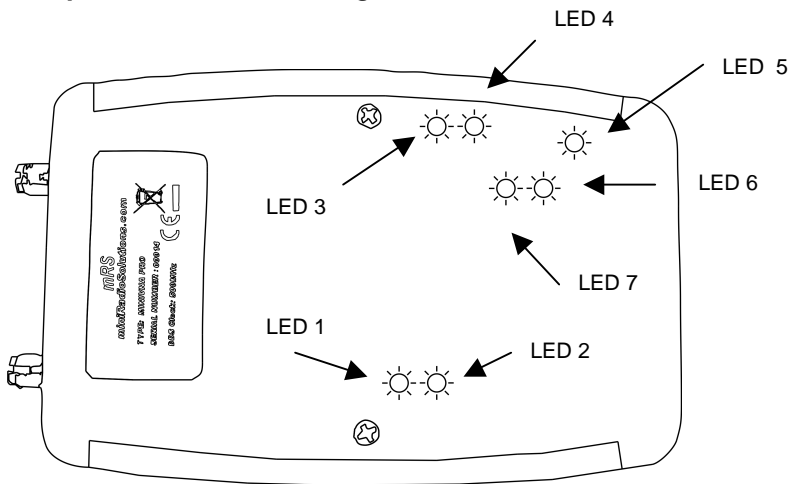


How to connect the battery

Proceed as follow:

1. Remove the bottom cover (side where the serial number label is present) and remove the two screws shown in the drawing below. Retain these screws.
2. Connect the battery connector as shown in the drawing below while assuring the polarity is correct.
3. Reassemble the bottom cover using the two screws previously removed in Step 1.

LED placement and meaning.



- LED 1 / blue
When flashing indicate the BT module is discoverable, when lit on the BT is connected.
- LED 2 / blue
Indicates flow of data.
- LED 3 / green
Spare
- LED 4 / green
Power is applied
- LED 5 / yellow
Battery under charging
- LED 6 / yellow
RX of data over USB
- LED 7 / yellow
TX of data over USB

BT operation

The BT module is enabled after resetting the units and the main switch is set to ON position, the blue led 1 will blink indicating that the BT is in searching mode. Run the pairing software from PC side and search for a new device. The default password for pairing is 1234.

Suggested option



Calibration kit, containing SMA open/short/50 Ohm termination.
Part no. 21010.SMA

