Manuals+ — User Manuals Simplified.

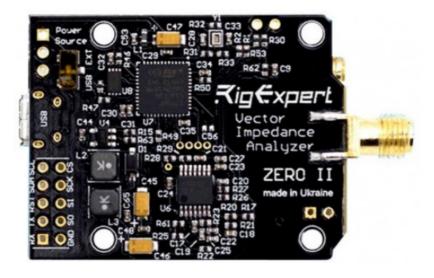**RigExpert**

Zero II Project Boards

RigExpert Zero II Project Boards Instructions

Contents

RigExpert

RigExpert Zero II Project Boards

Specifications:

- **Model:** XYZ-2000
- **Dimensions:** 10 x 5 x 3 inches
- **Weight:** 2.5 lbs
- **Power:** 120V AC
- **Capacity:** 1.5 liters

Product Usage Instructions

1. **Setup**: Before using the XYZ-2000, ensure that it is placed on a flat, stable surface near a power outlet.
2. **Filling the Reservoir**: Open the lid of the product and fill the reservoir with water up to the maximum capacity indicated.
3. **Power On**: Plug the XYZ-2000 into a 120V AC power outlet and press the power button to turn it on.
4. **Selecting Mode**: Choose your desired mode (e.g., low, medium, high) using the control panel.
5. **Operation**: Once the mode is selected, the XYZ-2000 will start operating. Allow it to run until the desired humidity level is reached.
6. **Maintenance**: Regularly clean the reservoir and filters as per the user manual to ensure optimal performance and longevity of the product.

ZeroII Vector Antenna Analyzer

Short communication interfaces description. The ZeroII in measurement mode supports communication with the host controller via SPI, I2C, UART. I2C interface use 7-bit slave address 0x5B. The firmware is updated via the USB interface using the RigExpert Flash Tool utility.

Commands supported by SPI, I2C, and UART interfaces:
ZEROII_GET_STATUS (0x5A) – ask for the ZeroII status. (Except SPI – you can read the status after setting CS low without prompting).

Possible answers:

- ZEROII_STATUS_BUSY_USB (0x01) – the device is busy with a task for the USB interface;
  ZEROII_STATUS_BUSY_SPI (0x02) – the device is busy with a task for the SPI interface;
  ZEROII_STATUS_BUSY_I2C (0x03) – the device is busy with a task for the I2C interface;
- ZEROII_STATUS_BUSY_UART (0x04) – the device is busy with a task for the UART interface;
  ZEROII_STATUS_IDLE (0x05) – the device is idle, ready for new tasks;
- ZEROII_STATUS_READY (0x06) – measurement results are ready;
- ZEROII_STATUS_ERROR (0x07) – an error occurred while executing the task;

1. **Example request:** [(uint8_t)CMD, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0x5A, 0x81, 0x7E
2. **Response (immediate):** [(uint8_t)Status = IDLE, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0x05, 0x1B, 0xE4

ZEROII_SET_SYSTEM_Z0 (0xF2) – set the system impedance value (Z0). The default is 50 ohms.

- **Example request:** [(uint8_t)CMD, (uint32_t)Z0=50000 mOhm, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0xF2, 0x50, 0xC3, 0x00, 0x00, 0x01, 0xFE

- **Response**: NONE

ZEROII_GET_SYSTEM_Z0 (0xC4) – get the system impedance value (Z0).

- **Example request:**

  [(uint8_t)CMD, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0xC4, 0x52, 0xAD
- **Response (immediate):** [(uint32_t)Z0=50000 mOhm, (uint8_t)CRC *2, (uint8_t)INV_CRC *1] 0x50, 0xC3, 0x00, 0x00, 0xCC, 0x33

ZEROII_SET_FQ_GET_RX (0x6D) – set the measurement frequency, get the results as R (resistance), X (reactance).

- **Example request:**

  [(uint8_t)CMD, (uint32_t)FQ=14 720 000, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0x6D, 0x00, 0x9C, 0xE0, 0x00, 0x48, 0xB7
- **Response (delayed *3):**

  [(float)R=50.1416, (float)X=0.314159, (uint8_t)CRC *2, (uint8_t)INV_CRC *1] 0xFD, 0x90, 0x48, 0x42, 0x7A, 0xD9, 0xA0, 0x3E, 0x88, 0x77

ZEROII_SET_FQ_GET_RXSWRRL (0xA3) – set measurement frequency, get results as R (resistance), X (reactance), SWR (standing wave ratio), RL (return loss).

- **Example request:**

  [(uint8_t)CMD, (uint32_t)FQ=14 720 000, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0xA3, 0x00, 0x9C, 0xE0, 0x00, 0x45, 0xBA
- **Response (delayed *3):**

  [(float)R=50.1416, (float)X=0.314159, (float)SWR=1.03742, (float)RL=34.5816, (uint8_t)CRC *2, (uint8_t)INV_CRC *1] 0xFD, 0x90, 0x48, 0x42, 0x7A, 0xD9, 0xA0, 0x3E, 0x2E, 0xCA, 0x84, 0x3F, 0x8F, 0x53, 0x0A, 0x42, 0x38, 0xC7

ZEROII_GET_RX_DATA (0x7C) – repeat the measurement at the previous frequency, get the results as R (resistance), X (reactance).

- **Example request:**

  [(uint8_t)CMD, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0x7C, 0x73, 0x8C
- **Response (delayed *3):**

  [(float)R=50.1416, (float)X=0.314159, (uint8_t)CRC *2, (uint8_t)INV_CRC *1] 0xFD, 0x90, 0x48, 0x42, 0x7A, 0xD9, 0xA0, 0x3E, 0x88, 0x77

ZEROII_GET_RX_SWR_RL (0x9A) – repeat the measurement at the previous frequency, get the results as R (resistance), X (reactance), SWR (standing wave ratio), RL (return loss).

- **Example request:**

  [(uint8_t)CMD, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0x9A, 0xCF, 0x30
- **Response (delayed *3):**

[(float)R=50.1416, (float)X=0.314159, (float)SWR=1.03742, (float)RL=34.5816, (uint8_t)CRC *2, (uint8_t)INV_CRC *1] 0xFD, 0x90, 0x48, 0x42, 0x7A, 0xD9, 0xA0, 0x3E, 0x2E, 0xCA, 0x84, 0x3F, 0x8F, 0x53, 0x0A, 0x42, 0x38, 0xC7

ZEROII_GET_FW_VERSION (0xE5) – ask the current firmware version, hardware revision, serial number of the device.

1. **Example request:**

   [(uint8_t)CMD, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0xE5, 0xB5, 0x4A

2. **Response (immediate):**

   [(uint8_t)MAJOR_VER = 1, (uint8_t)MINOR_VER = 1, (uint8_t)HW_REV = 1, (uint32_t)SN = 400107968, (uint8_t)CRC *2, (uint8_t)INV_CRC *1] 0x01, 0x01, 0x01, 0xC0, 0x29, 0xD9, 0x17, 0x25, 0xDA

   - used for UART only (INV_CRC = CRC ^ 0xFF).
   - used for SPI and UART.
   - before receiving delayed response you need at least once ask for STATUS and get ZEROII_STATUS_READY. Until the measurement is completed, STATUS will correspond to ZEROII_STATUS_BUSY_x.

For upgrade of Zero II FirmWare you need

1. To setup the FlashTool SW for PC
   - **https://rigexpert.com/files/software/FlashTool/FlashToolForWindows/** for Windows OS or
   - **https://rigexpert.com/files/software/FlashTool/FlashToolForMacOS/** for MacOS
2. To connect Zero II unit to the PC (microUSB – Type-A USB cable)
3. To run the FlashTool SW
4. In opened Dialog window to push "Next" → Choose "Update from Internet"
5. Push the "Next"
6. Wait the FW update will be done
7. Push "Finish"
8. Disconnect the Zero II from PC.

FAQ

Q: Can I use essential oils with the XYZ-2000?
A: No, it is not recommended to use essential oils with this product as it may damage the internal components.

Q: How often should I clean the filters?
A: It is recommended to clean the filters every two weeks to maintain the efficient operation of the XYZ-2000.

Documents / Resources

RigExpert Zero II Project Boards [pdf] Instructions
Zero II Project Boards, Zero II, Project Boards, Boards

References

- ⌇ **Index of /files/software/FlashTool/FlashToolForMacOS**
- ⌇ **Index of /files/software/FlashTool/FlashToolForWindows**
- **User Manual**