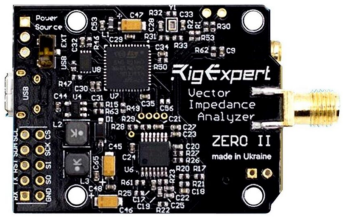


# RigExpert ZeroII Vector Antenna Analyzer Instructions



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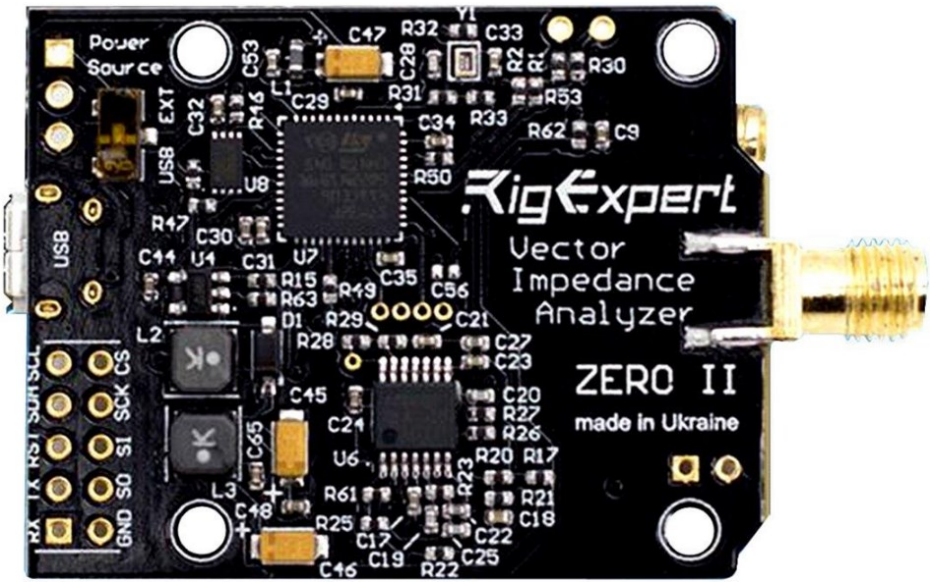


The ZeroII in measurement mode supports communication with the host controller via SPI, I2C, UART. I2C interface use 7-bit slave address 0x5B. The firmware is updated via the USB interface using the RigExpert Flash Tool utility. Commands supported by SPI, I2C, UART interfaces:

**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;

**Example request:**

[(uint8_t)CMD, (uint8_t)CRC *1, (uint8_t)INV_CRC *1] 0x5A, 0x81, 0x7E

**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 * ):**

[(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 * ):**

[(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 ***

[(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 ***

[(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.

**Example request:**

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

**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

1. – used for UART only (INV_CRC = CRC ^ 0xFF).
2. –used for SPI and UART.
3. –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.

## Documents / Resources

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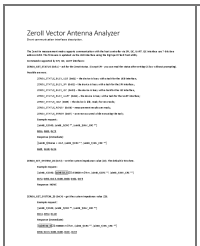
|---|---|
|  | **RigExpert ZeroII Vector Antenna Analyzer** [pdf] Instructions<br>ZeroII Vector Antenna Analyzer, ZeroII, Vector Antenna Analyzer, Antenna Analyzer, Analyzer |