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PRODUCTIVITY ENGINEERING

Frequently Asked Questions

PE3001

Frequently Asked Questions (FAQ) about PE3001 and Evaluation KIT EVA3001.

It keeps on growing as customers come up with good questions.

So ask us!

Table of Content

1 What is the communication range of the EVA3001?

a. The PE3001 on the EVA3001 Board in default configuration was tested with a FEIG Reader (MRU200). At 300mW transmission power a distance of 10cm can be achieved. The antenna is not optimized for performance since it is an Evaluation Kit to get to know and understand the PE3001 chip.

b. It is possible to boost the distance by supporting the tag RF front end with the on-board battery (JP2 on EVA3001). In this case a communication distance with the MRU200 of approximately 50cm can be achieved.

c. Customers reported stable communication with a 2Watt reader and a matched antenna over 2.5 meters without battery support.

2 Which reader are implemented in EVA3001 software?

a. EVA3001 software is designed in object modules so it is possible to add new reader. The first used reader are FEIG MRU200 (USB, our standard reader), LRU1000, LRU2000, LRU3000, LRU3500 with a new firmware (see point 4).

b. A SCEMTEC SIH900 would be added via RS232 standard driver (Bluetooth, USB).

c. Deister/Harting UDL500 with debus protocol (USB).

d. CAEN A828EU and A829EU (USB).

e. Metratec DESKID UHF (USB).

3 Why is there no communication between the reader and PE3001 (EVA3001)?

a. Make sure the distance between reader and EVA3001 is not more than 10cm. (later it is possible to enlarge the range)

b. Check the orientation of EVA3001 to the reader antenna. The EVA3001 top side should face the reader.

c. Make sure that you have not changed TID-address 05h.

4 Why I can read Inventory and TID and not start the logging function?

a. It is possible that the maximum address range of Reader is set to 07Fh (default). In this way it is not possible to read the RESERVED-Bank and the logging function does not start. Make sure that a firmware update set the address range to 1FFh or fix the variable “MAX_RESERVED” in file tgadefs.h to 0x07F.

5 Which registers in the TID Bank are better not to touch?

a. Make sure that there are no changes in trim register (TID-Bank address 03h … 08h). Any changes in these registers may lead to malfunction in communication or unreliable measurement results. If you made changes here and did not note the values prior to these changes to restore them, you will have to change the chip. They differ from chip to chip. The old chip was trimmed in production and can not easily be re-trimmed (frequency matching of the internal oscillator, temperature calibration).

b. Do not change TID-Bank address 00h..01h. These register values are fixed by EPC Specification.

c. The TID-Bank addresses 09h .. 0Fh configure the data monitor and can be changed by the user.

d. For a start it is best to use the available source code or start with the compiled code for the GUI. Otherwise you might screw the TID bank before you get really started.

6 Why the graphic plot is erased after tab change?

a. The information for graphic plot is only a memory map from RESERVED Block. The internal memory map will be erased after tab change. In this way it is necessary to safe data again from tag with “Data Monitor” -> “Read Monitor Data”.

7 What is the impedance of the PE3001?

a. The PE3001ES with package SOIC16 has an impedance of 4Ohm – j60Ohm at a frequency of 865MHz.

b. The PE3001ES with package TSSOP16 has an impedance of 7.6Ohm – j76Ohm of 865MHz.

8 Why does the SPI not respond on requests?

a. Test signals need to be activated. SPI_SEL signal has to turn low for every transmitted command. See the data sheet of the PE3001 for reference.

b. Make sure that the clock signal starts with a “0” level.

9 Which function is defined for pin TESTEPC and pin TESTMON?

a. TESTEPC set the RFID-component in test mode and no RFID communication is possible. In normal function this pin can be set to low or open (internal pull down).

b. TESTMON set the monitor in test mode. With this pin at high level it is possible to communicate to EEPROM or TMS via SPI. For detailed information see Data Sheet or contact the technical support.

10 Why the PE3001 does have high power consumption after SPI communication?

a. At the initialization the PE3001 use a charge pump to shift the battery level in the IC (0x3A 0x0080). This has a power consumption of 620µA. Between SPI commands it is possible to reduce the power consumption with a disable command of charge pump (0x3A 0x0000).

b. For a new communication with EEPROM it is necessary to enable the charge pump (0x3A 0x0080).

c. For more Information see DS_PE3001.pdf or DS_PE3001_spi.pdf.

11 Can the memory be extended?

a. The integrated memory has a size of 8kbit. If larger amounts of data need to be stored it is recommended to use an external MCU with larger EEPROM/Flash and poll the data from the chip. The SPI is not designed to directly support SPI EEPROMs.

12 Where can I find the software source code and what is the programming language?

a. After installation of software the complete source code for EVA3001Kit is copied executable program independent into folder “source”.

b. The programming language is C++ based on wxWidgets.

13 Why the EVA3001 battery does not constantly work at temperatures below -2 °C?

a. The EVA3001Kit is an application to show the general functionality. The workspace is defined in normal temperature range (from 0°C to 60°C).

b. The battery (CR1220) has not the capacity to work generally under -5°C.

c. The PE3001 is generally working in the location at temperatures below -5°C. To work in lower temperature ranges it is necessary to use a battery with higher capacity and parameters for the low temperature range.

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