

WIRELESS TEMPERATURE MEASUREMENT WITH LABVIEW FPGA

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The goal of this project is the creation of a wireless temperature measurement system. For reaching this goal the Xilinx Spartan-3E starter board is used that contains a FPGA (Field Programmable Gate Array). Normally this kind of silicon is programmed and reprogrammed in VHDL (VHSIC Hardware Description Language) but for this project we used a brand new design tool for this board: "National Instruments LabVIEW FPGA".

LabVIEW FPGA is a data flow language that let you create programs by connecting blocks by use of wires. For us technical engineers this is a programming methodology that is not far away from our block diagrams that we use for representing technical solutions and systems.

The temperature sensor in this wireless system is a PT-100 (EI-1022) analog sensor so we did use an ADC (Analog Digital Converter) to get the voltage across this sensor in digital form on the chip. This ADC is connected to the FPGA with an SPI-interface.

Once the value is in digital form into the FPGA we need to send over the value of the temperature to the target of this wireless temperature measurement system. The target of the system was a standard Host PC. The communication between this HOST PC and the Xilinx Spartan-3E board is implemented by mean of a Zigbee interface.