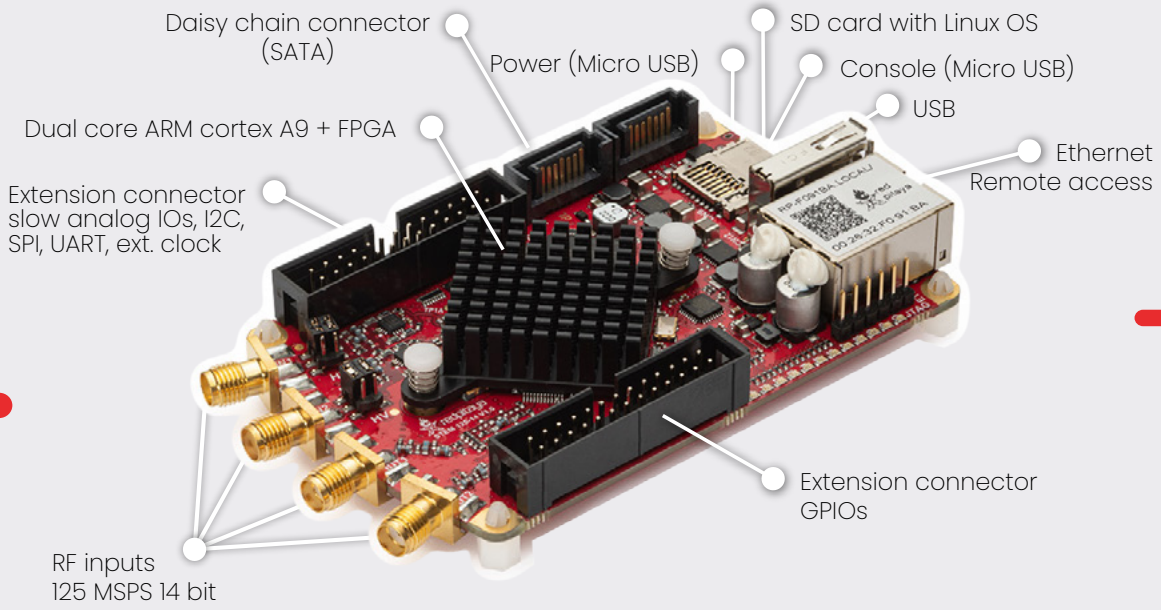
STEM^lab 125-14



redpitaya

STEMlab 125-14 is our most versatile and popular product, which was introduced to the market in 2013 when Red Pitaya was established. Since then it has been used in wide variety of contexts, from hobbyists and ham radio operators to industry, research and space applications.

It has two 125Msps 14-bit inputs and two 14-bit outputs, Xilinx Zynq 7010 FPGA and offers remote access, with an online app user interface accessible through Ethernet or Wi-Fi.

Key features

- Credit-card sized RF signal acquisition & generation platform
- Ethernet connectivity
- Xilinx SoC (CPU & FPGA)
- Two fast analog inputs & two outputs
- Possibility of integration into own system/ product Open software source code available
- Works with a Linux or Windows PC
- Can be used as an oscilloscope & signal generator, spectrum, bode analyzer, logic analyzer, LCR meter*, streaming, SDR, or vector network analyzer*
- Can be controlled remotely using LabVIEW, MATLAB, Python, or Scilab
- Can be re-programmed to suit user's needs Supported by an app marketplace with several free apps available

** Requires an extension module.*

Technical Specifications

BASIC	
Processor	DUAL CORE ARM CORTEX A9
FPGA	FPGA Xilinx Zynq 7010 SOC
RAM	512 MB (4 Gb)
System memory	Micro SD up to 32 GB
Console connection	Micro USB
Power connector	Micro USB
Power consumption	5 V, 2 A max
CONNECTIVITY	
Ethernet	1 Gbit
USB	USB 2.0
WIFI	Requires WIFI dongle
Synchronisation	Daisy chain connector (up to 500 Mbps)
RF INPUTS	
RF input channels	2
Sample rate	125 MS/s
ADC resolution	14 bit
Input impedance	1 MOhm/10 pF
Full scale voltage range	±1 V (LV) and ±20 V (HV)
Input coupling	DC
Absolute max. input voltage range	30 V
Input ESD protection	Yes
Overload protection	Protection diodes
Bandwidth	DC-60 MHz
RF OUTPUTS	
RF output channels	2
Sample rate	125 MS/s
DAC resolution	14 bit
Load impedance	50 Ohm
Voltage range	±1 V
Short circuit protection	Yes
Connector type	SMA
Output slew rate	2 V / 10 ns
Bandwidth	DC-60 MHz
EXTENSION CONNECTOR	
Digital IOs	16
Analog inputs	4
Analog inputs voltage range	0-3,5 V
Sample rate	100 kS/s
Resolution	12 bit
Analog outputs	4
Analog outputs voltage range	0-1,8 V
Communication interfaces	I2C, SPI, UART
Available voltages	+5 V, +3,3 V, -4 V
External ADC clock	Yes
SYNCHRONIZATION	
Trigger input	Through extension connector
Daisy chain connection	Over SATA connection (up to 500 Mbps)
Ref. clock input	N/A