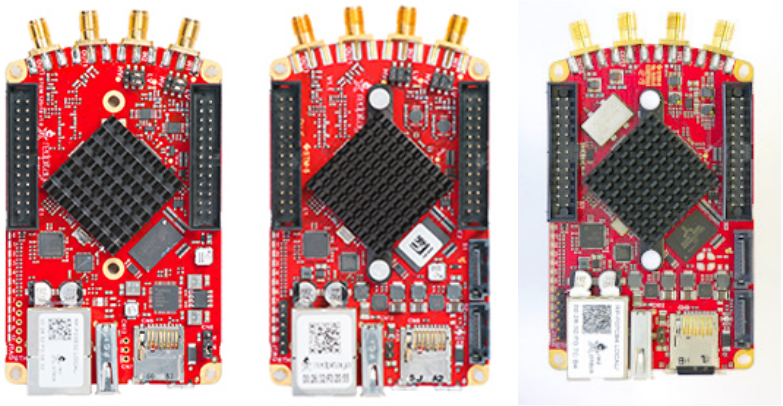
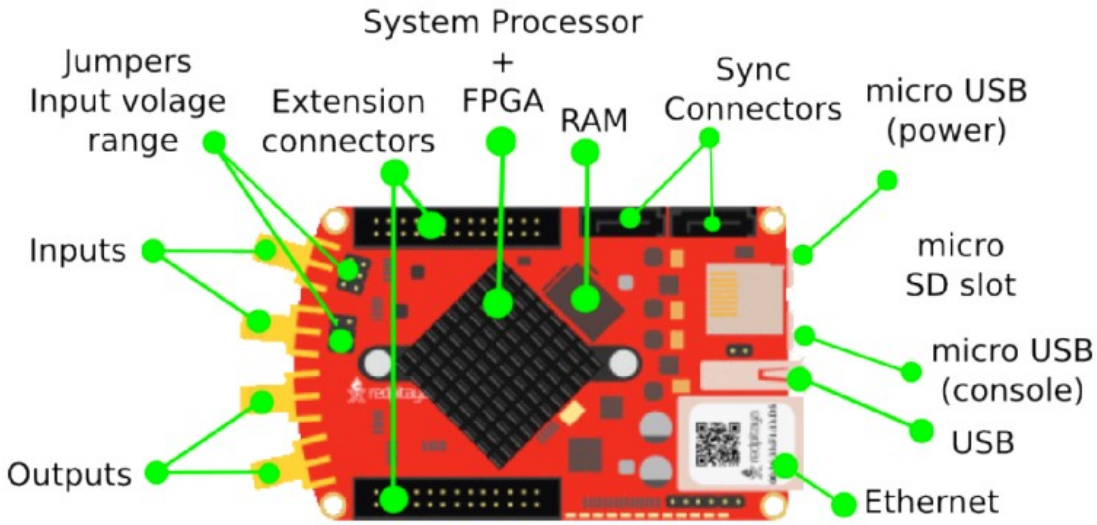
3.1.1. STEMlab boards comparison — Red Pitaya STEMlab 0.97 documentation

Red Pitaya STEMlab



STEMlab is available in three versions, all offer the same functions and features with the difference in technical specification of high-frequency inputs and outputs, RAM capacity some other differences (find more info in the comparison table bellow). They are addressed to target different groups and / or needs. Where STEMlab 14 has 14bit input / output channels for highly accurate measurement results in professional environment, STEMlab 10 has 10bit input / output channels and is perfect for universities,students and makers, STEMlab 122-16 is tailored for SDR applications.



Basic			
	STEMLAB 125-10	STEMLAB 125-14	STEMLAB 122-16
Processor	Processor DUAL CORE ARM CORTEX A9	Processor DUAL CORE ARM CORTEX A9	Processor DUAL CORE ARM CORTEX A9
FPGA	FPGA Xilinx Zynq 7010 SOC	FPGA Xilinx Zynq 7010 SOC	FPGA Xilinx Zynq 7020 SOC
RAM	256MB (2Gb)	512MB (4Gb)	512MB (4Gb)
System memory	Micro SD up to 32GB	Micro SD up to 32GB	Micro SD up to 32GB
Console connection	USB to serial converter required	micro USB	micro USB

Power connector	Micro USB	Micro USB	Micro USB
Power consumption	5V, 1,5A max	5V, 2A max	5V, 2A max

Connectivity			
	STEMLAB 125-10	STEMLAB 125-14	STEMLAB 122-16
Ethernet	1Gbit	1Gbit	1Gbit
USB	USB 2.0	USB 2.0	USB 2.0
WIFI	requires WIFI dongle	requires WIFI dongle	requires WIFI dongle
Synchronisation	/	Daisy chain connector (up to 500 Mbps)	Daisy chain connector (up to 500 Mbps)

RF inputs			
	STEMLAB 125-10	STEMLAB 125-14	STEMLAB 122-16
RF input channels	2	2	2
Sample rate	125 MS/s	125 MS/s	122.88 MS/s
ADC resolution	10 bit	14 bit	16 bit
Input impedance	1MOhm/10pF	1MOhm/10pF	50 Ohm
Full scale voltage range	±1V (LV) and ±20V (HV)	±1V (LV) and ±20V (HV)	0.5Vpp/-2dBm
Absolute max. Input voltage range	30V	30V	DC max 50V (AC-coupled) 1 Vpp for RF
Input ESD protection	Yes	Yes	Yes
Overload protection	Protection diodes	Protection diodes	DC voltage protection

RF outputs			
	STEMLAB 125-10	STEMLAB 125-14	STEMLAB 122-16
RF output channels	2	2	2
Sample rate	125 MS/s	125 MS/s	122.88 MS/s
DAC resolution	10 bit	14 bit	14 bit
Load impedance	50 Ohm	50 Ohm	50 Ohm
Voltage range	±1V	±1V	1Vpp/ +4 dBm
Ouput slew rate	200V/us	200V/us	N/A
Short circut protection	Yes	Yes	Yes
Connector type	SMA	SMA	SMA

Extension connector			
	STEMLAB 125-10	STEMLAB 125-14	STEMLAB 122-16
Digital IOs	16	16	16
Analog inputs	4	4	4
Analog inputs voltage range	0-3,5V	0-3,5V	7V
Sample rate	100kS/s	100kS/s	100kS/s
Resolution	12bit	12bit	12bit

Analog outputs	4	4	4
Analog outputs voltage range	0-1,8V	0-1,8V	0-1,8V
Communication interfaces	I2C, SPI, UART	I2C, SPI, UART	I2C, SPI, UART
Available voltages	+5V,+3,3V,-4V	+5V,+3,3V,-4V	+5V,+3,3V,-4V
external ADC clock	N/A	yes	yes