

S4 Prodigy™ Logic Modules Series

The S4 Prodigy Logic Modules are S2C's fourth generation SoC/ASIC prototyping hardware that can be populated with one, two or four Altera Stratix IV 820E/530E FPGA devices to accommodate ASIC/SoC designs ranging from 5.3M to 32.8 million ASIC gates on one board. The S4 Prodigy Logic Module has enhanced power management, noise shielding and cooling mechanisms that enable system prototypes to attain higher performance and reliability. The S4 Prodigy Logic Module can run both DDR2 memory at up to 600MHz and DDR3 memory at up to 80Mbps using on-board SO-DIMM sockets. Users can easily download to FPGAs, generate programmable clocks and run self-tests on hardware from S2C's Prodigy Player Pro™ Software via a USB 2.0 port.

Large Capacity

- One, two or four Altera Stratix IV 820E/530E devices on one board
- On-board DDR2 and DDR3 SO-DIMM sockets
- Can stack or expand through the use of interconnection modules and/or mother board

High Performance

- Up to 60W of power for each FPGA
- Ample cooling mechanisms
- Equal trace length for all dedicated I/O connectors
- Pre-tested DDR2 memory at up to 600Mbps and DDR3 memory at up to 800Mbps

Flexible Clock and I/Os

- Each FPGA can access up to 870 external I/Os
- Up to 1,920 external I/Os on one board
- Global clocks - Multiple ways to generate and route clocks from OSC, SMB and on-board programmable clocks through a software GUI
- Dedicated I/O voltages can be individually adjusted to 1.5, 1.8, 2.5 or 3.0V per connector

High Reliability

- Self-tests-Isolate design issues from board issues conveniently with a software GUI
- Automatic shut down upon detection of over-current, over - voltage or over - temperature
- Separate power modules for each FPGA

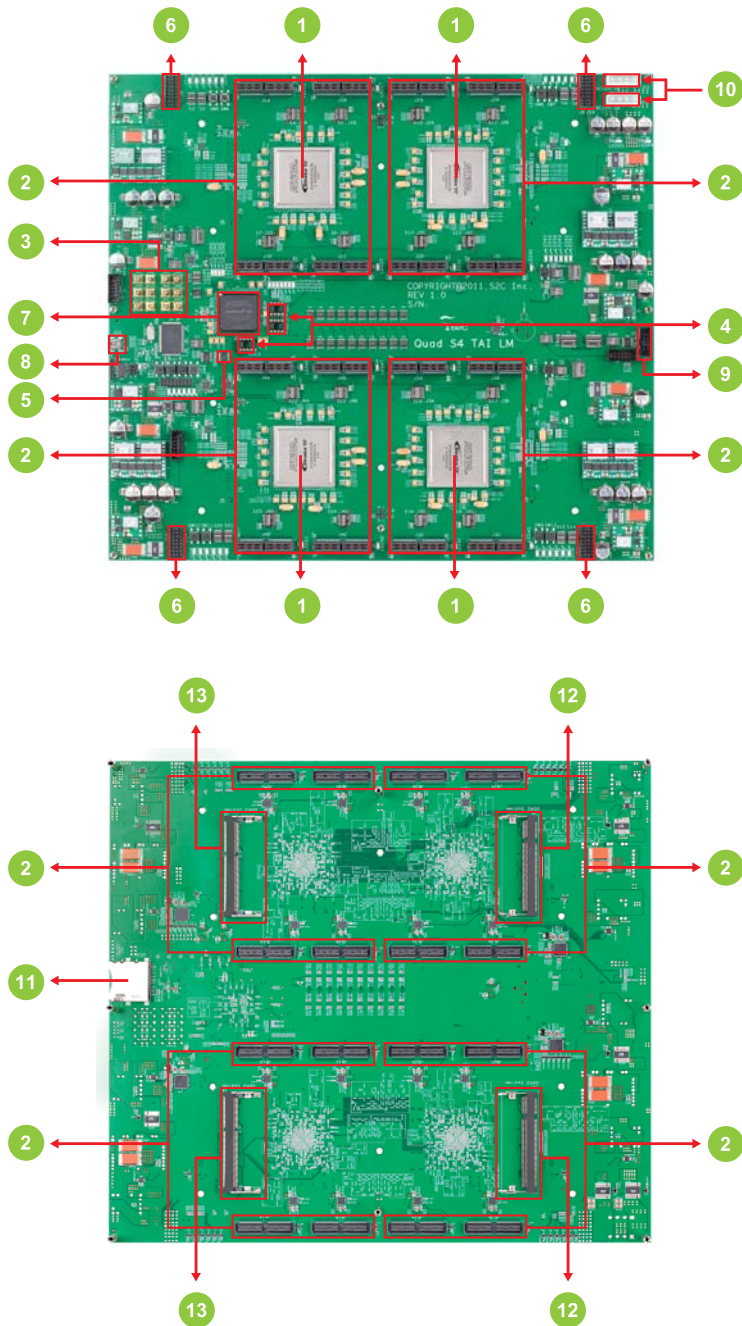
Ease-of-Use

- Multiple FPGA configuration options including JTAG, USB and SD Card
- User Test Area - LEDs, Push Buttons, Switches and GPIO Header for test and debug
- Design Implementation - Prodigy Player Pro supports design partition across 4 FPGAs
- Design Debug - Set probes at the RTL level and bring signals to top level
- Use many off-the-shelf pre-tested daughter boards

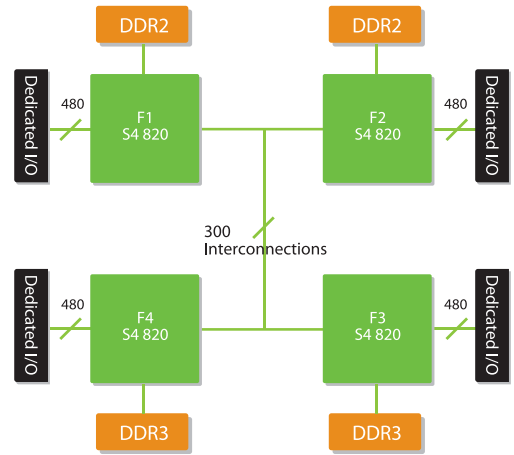
Stratix-4 TAI Logic Module Product Table							
	Quad	Dual		Single			
	4S820	4S820	4S530	4S820A	4S530A	4S820B	4S530A
Logic Capacity (ASIC Gates)	32.8 M	16.4 M	10.6 M	8.2 M	5.3 M	8.2 M	5.3 M
FPGA Memory	132 Mbits	66 Mbits	54 Mbits	33 Mbits	27 Mbits	33 Mbits	27 Mbits
DDR3 SO-DIMM Slot	2	1	1	1	1	N/A	N/A
DDR2 SO-DIMM Slot	2	1	1	N/A	N/A	1	1
External User I/O	1,920	1,286	1,102	870	742	870	742
Inter-FPGA Nets	300	454	382	N/A	N/A	N/A	N/A
User Clocks	19	20	20	20	20	20	20
On-Board Programmable Clocks	6	3	3	3	3	3	3

Quad S4 Prodigy Logic Module

- Up to 32.8M gates with four Altera Stratix IV 820E FPGAs on one board
- Each FPGA has 480 I/Os on 4 Logic Module connectors for a total of 1.920 I/Os available on 16 connectors
- The I/O voltage on each connector can be individually adjusted to 1.5/1.8/2.5/3.0V
- Features a 300 interconnect bus between the 4 FPGAs for SoC bus architecture
- Additional interconnects are available through use of interconnection accessory modules



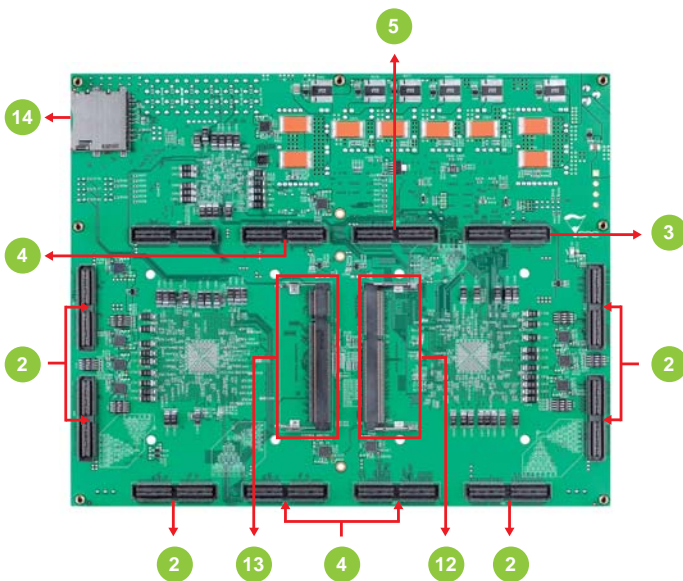
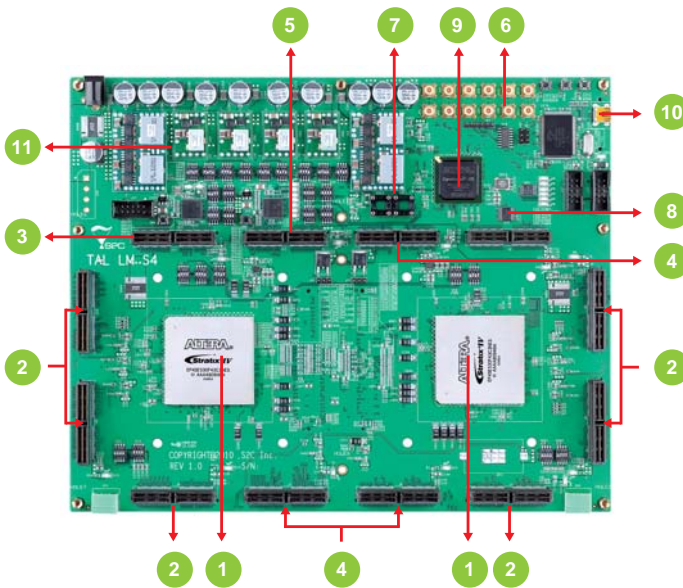
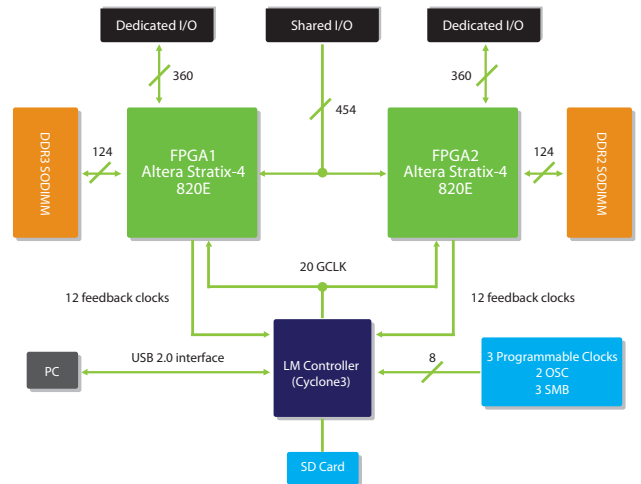
Block Diagram



- 1 Altera Stratix-4 FPGA
- 2 Dedicated I/O
- 3 12 SMB Connectors
- 4 3 Oscillator Sockets
- 5 Programmable Clock Generator
- 6 32 Pin GPIO
- 7 LM Controller (Cyclone3)
- 8 USB Interface to PC
- 9 JTAG Port
- 10 Desktop Power Input
- 11 SD Card Socket
- 12 DDR2 SODIMM Socket
- 13 DDR3 SODIMM Socket

Dual S4 Prodigy Logic Module

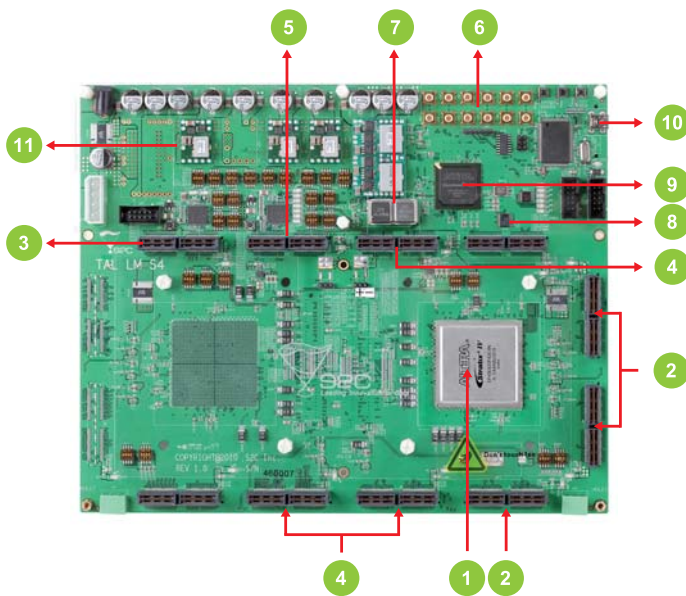
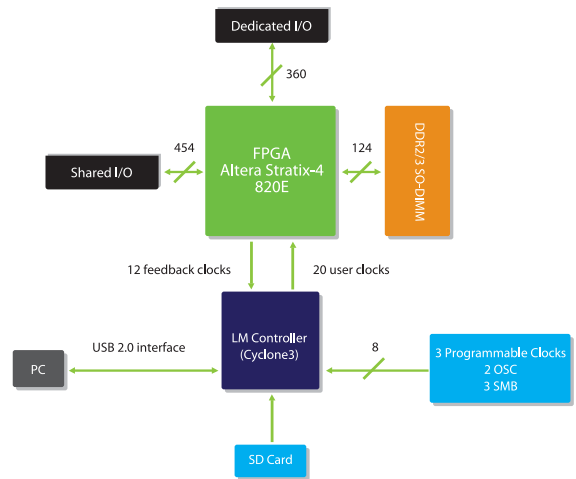
- Up to 16.4M gates with two Altera Stratix IV 820E or 530E FPGAs on one board
- One DDR2 and one DDR3 SODIMM socket
- Up to 360 dedicated I/Os per FPGA on 3 Logic Module connectors
- Voltage on each dedicated I/O connector can be individually adjusted to 1.5/1.8/2.5/3.0V
- Up to 454 shared nets and I/Os between the 2 FPGAs



- 1 Altera Stratix-4 FPGA
- 2 Dedicated I/O
- 3 Dedicated I/O (820 Only)
- 4 Shared I/O
- 5 Shared I/O & Feedback CLK
- 6 SMB CLK In & Out
- 7 2 Oscillator Sockets
- 8 Programmable Clock Generator
- 9 LM Controller (Cyclone3)
- 10 USB Port to PC
- 11 Power Module
- 12 DDR2 SODIMM Socket
- 13 DDR3 SODIMM Socket
- 14 SD Card Socket

Single S4 Prodigy Logic Module

- Up to 8.2M gates with either an Altera Stratix IV 820E or 530E FPGA
- User can access up to 870 FPGA I/Os from 7 Logic Module I/O connectors
- I/O voltage on most connectors can be individually adjusted to 1.5/1.8/2.5/3.0V
- SingleA version supports an on-board DDR3 SODIMM
- SingleB version supports an on-board DDR2 SODIMM



- 1 Altera Stratix-4 FPGA
- 2 Dedicated I/O
- 3 Dedicated I/O (820 Only)
- 4 Shared I/O
- 5 Shared I/O & Feedback CLK
- 6 SMB CLK In & Out
- 7 2 Oscillator Sockets
- 8 Programmable Clock Generator
- 9 LM Controller (Cyclone 3)
- 10 USB Port to PC
- 11 Power Module
- 12 Cooling Fan
- 13 Acrylic Board

