

# Prodigy™ S7-19PS Logic System

The Prodigy™ S7-19PS Logic System is a compact, sleek, all-in-one system that includes all components - FPGA module, extendable power control module, and power supply for maximum flexibility, durability and portability. The system is based on Xilinx's Virtex UltraScale+ VU19P FPGA and provides 1,184 general purpose I/Os and 44 GTY transceivers on 10 high-speed connectors. Utilizing the 7th generation Prodigy Player Pro™ technology, user can perform an array of runtime features remotely through both Ethernet and USB. User also have access to S2C's vast library of over 90 daughter cards to quickly build prototyping targets.

## Highlights

- Delivers up to 49M equivalent ASIC gates
- 1,184 high-performance I/Os for peripheral expansions & multi-system connectivity
- 44 high-speed transceivers at 16Gbps
- 2 on-board DDR4 SODIMMs at up to 2,400Mbps totaling 32GB
- Compatible with over 90 Prototype Ready IPs
- Feature-rich remote management and runtime controls



## Features

### Large Capacity & Scalability

- 8.94M System Logic Cells and 165.9Mb of internal memory
- Two on-board DDR4 SO-DIMM sockets can hold up to 72-bit 16GB DDR4 in each socket
- Multiple Logic Systems can be conveniently connected together to expand capacity

### High Reliability

- Screw-lock design to high-speed I/O connectors
- Self-Tests - Isolate design issues from board issues conveniently with a software GUI
- Monitoring of on-board voltage, current, and temperature with a software GUI
- Automatic shut-down upon detection of over-current, over-voltage, or over-temperatures

### High Performance

- Equal trace length for all the Prodigy I/O connectors
- Up to 200W of power for an FPGA
- On-board support of DDR4 memory can run up to 2,400 Mbps
- High-speed transceivers can run up to 16Gbps

### Flexible & Powerful I/Os

- 1,152 I/Os and 28 high-speed transceivers through 8 Prodigy connectors
- 16 high-speed transceivers and 32 GPIOs through 2 PGT I/O connectors
- I/O voltage can be adjusted to 1.2V, 1.35V, 1.5V or 1.8V through runtime software in GUI with 4 status LEDs on-board to indicate I/O voltage

## Features

### Advanced Clock Management Standalone Mode

- 8 global clocks to be selected from
  - 8 programmable clock sources (0.16 ~ 350MHz)
  - 5 pairs of external clocks through MMCX connectors
  - 1 OSC socket
- 3 design clock outputs through 3 pairs of MMCX connectors
- 3 global resets to be selected from
  - 3 from on-board push buttons
  - 2 from Clock Module Type D
  - 2 from runtime software in GUI

### Multi-System Mode

- 8 global clocks to be selected from
  - 8 local programmable clock sources (0.16 ~ 350MHz)
  - 8 global clock sources
- 3 feedback clocks can be output to global clock sources
- 2 global resets sourced from global reset sources

### Ease-of-Use

- Multiple FPGA configuration options through Ethernet port, USB port, JTAG, and micro SD card
- Remote power on/off/recycle through Ethernet
- Auto detection of daughter cards and cables
- Virtual SWs & LEDs for simple tasks such as changing a setting or indicating a condition remotely
- Virtual UART for firmware debugging
- User Test Area - LEDs, Push Buttons, Switches, and Pin Headers for testing and debugging
- On-board battery charging circuit makes FPGA bin file encryption easy (battery not included)
- Optional ProtoBridge™ AXI software to co-model with software/simulation models at transaction-level
- Optional Prodigy Multi-Debug Module (MDM) for the concurrent deep trace debugging of multiple FPGAs
- Compatible with S2C's off-the-shelf pre-tested daughter cards

## I/O Architecture

