

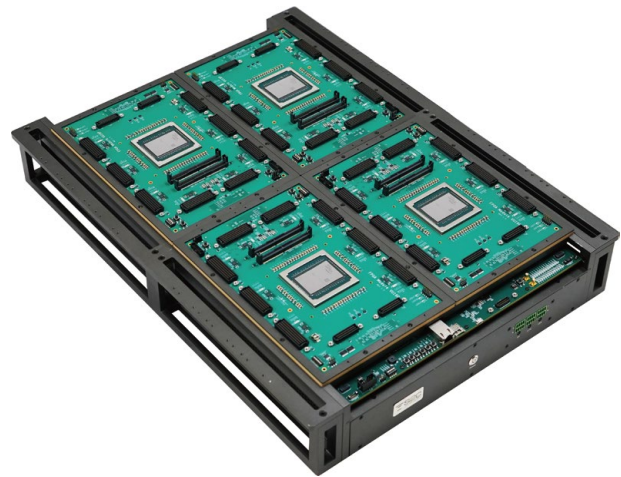
# Prodigy™ S7-19PQ Logic System

The Prodigy™ S7-19PQ Logic System delivers an efficient and high-performance solution for early firmware/software development and system validation. The S7-19PQ is a compact and all-in-one system that includes all components - FPGA modules, power control module, and power supply - for maximum flexibility, durability and portability. The S7-19PQ is based on Xilinx's Virtex UltraScale + VU19P FPGA and provides 4,736 general purpose I/Os and 176 high-speed transceivers on 88 high performance connectors.

The Prodigy™ S7-19PQ Logic System is part of the S2C Prodigy Complete Prototyping Solutions, which consists of industry-leading design partition, debug solutions and remote capabilities that ensures users FPGA-based prototype comes up quickly. Users also have access to a rich portfolio of Prototype Ready IP in the form of plug-play daughter cards to quickly build prototyping targets.

## Highlights

- Delivers up to 196M equivalent ASIC gates
- 5,288 high-performance I/Os for peripheral expansions & multi-system connectivity
- 176 high-speed transceivers at 16Gbps
- 8 on-board DDR4 SODIMMs at up to 2,400Mbps totaling 128GB
- Compatible with over 90 Prototype Ready IPs
- Feature-rich remote management and runtime controls



## Features

### Large Capacity & Scalability

- 35.76M System Logic Cells and 663.6Mb of internal memory
- 15,360 DSP Slices
- Four 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

### Flexible & Powerful I/Os

- 4,608 I/O pins and 112 high-speed transceivers through 32 Prodigy connectors
- 64 high-speed transceivers and 128 GPIOs through 8 PGT I/O connectors
- I/O voltage can be adjusted between 1.2V, 1.35V, 1.5V or 1.8V through runtime software in GUI
- 138 fixed inter-FPGA connections between F1 and F2, between F2 and F3, between F3 and F4, and between F4 and F1

### High Performance

- 88 high-speed transceivers can run up to 16Gbps
- On-board support of DDR4 memory can run up to 2,400 Mbps
- Demanding length matched and impedance controlled
- Up to 200W of power for each FPGA

## 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 internal programmable clock sources (0.16 ~ 350MHz)
  - 8 external clock sources
- 3 feedback clocks can be output to global clock sources
- 2 global reset 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 the transaction-level
- Optional Prodigy Multi-Debug Module (MDM) Pro for the concurrent deep trace debugging of multiple FPGAs
- Compatible with S2C's off-the-shelf pre-tested daughter boards

## Specifications

