

## ACCELERATE YOUR DEVELOPMENT!



## Miami Zynq 7000 System-on-Module

- Xilinx Zynq-7000® based System on Module (Z7012S/Z7015/Z7030)
- System-on-Module provides out-of-the-box high bandwidth connectivity and system integration capabilities with numerous I/O flexibility
- High-performance processing platform with superior performance/watt ratios
- Large parallel boot flash for very fast booting
- Dyplo ready, enabling operating system style of infrastructure on the FPGA
- Actively maintained and supported Linux BSP, bootloader and reference designs for processor and FPGA fabric
- Gigabit transceivers support for e.g. PCIe GEN2, USB 3.0, 10Gbit Ethernet, HDMI, etc.



### Overview

The Miami System on Module (SoM) is based on the Xilinx Zynq® 7015/7030 System on Chip (SoC). It is a highly integrated and compact off-the-shelf solution for today's high performance embedded systems.

The module combines a high performance (ARM-based) application microprocessor with FPGA logic in a single chip. It integrates all system components required to bring the system alive including memory, power supply, debugging and connectivity. Miami provides a best in class platform for balancing both performance and power, making a perfect solution for applications that require high processing power, high speed interfaces, a high level of reliability, the ability to optimize system interfaces, and perform real-time analytics and control. The module comes with an actively supported main-line Linux distribution, including a template FPGA implementation connecting to the carrier board connector. Typical application areas are any existing applications that use an applications processor together with an FPGA, including but not limited to (secure) communications, aerospace & defense, audio / video applications, medical and industrial imaging.

### What's included

- Xilinx Zynq®-7015/7030 based System on Module
- Single chip provides high bandwidth connectivity between PS and PL
- Low Power operation with 32-bit wide DDR3L 1 GB
- QSPI Flash, 64 MB
- NAND flash
- USB 2.0 high-speed On-the-Go/Host/Device interfaces
- Network connectivity: 10/100/1000M Ethernet controller

### Key Features

- Fast boot BSP with main-line Linux distribution support
- Selectable boot source
- Dimensions: 65x68.4 mm
- On-board highly efficient power supplies
- Software selectable carrier board I/O voltages
- High performance SAMTEC board-to-board connectors
- Support for SATA2 and 3
- Support for PCIe-Express (4 lanes)
- Support for Gigabit Ethernet (PHY)
- IEEE1588v2 and IEEE 802.3az support
- Serial I/O, including SPI, I2C, UART
- Debug support
- Industrial temperature range (-40 °C +85 °C)

### Optional

- Miami-Vice debug add-on containing console interface and JTAG to PL and PS

### Dsign

Topic provides a wide variety of development services:

- Customization services
- Development of customer specific designs
- Application Software Development
- Operating System Porting as well as BSP/ driver development
- FPGA content development and board design
- E.g. IEC60601, ISO13485 and ISO14971 related development services

MIAMI-SOM	XC7012S	XC7015	XC7030
<b>FPGA</b>			
Device*	XC7Z012S-CLG485-1	XC7Z015-CLG485-1	XC7Z030-SBG485-1
Technology	Artix®-7	Artix®-7	Kintex®-7
Logic cells	55K	74K	125K
Flip Flops	68.800	92.400	157.200
Block RAM	320KB	380KB	1.060MB
DSP slices	120	160	400
GTP/GTX transceivers	4x (6.25Gb/s each)	4x (6.25Gb/s each)	4x (6.6 Gb/s each)
<b>Processor System</b>			
CPU Architecture	ARM Cortex-A9 (single core)	ARM Cortex-A9 (dual core)	ARM Cortex-A9 (dual core)
CPU Performance*	666MHz	666MHz	800MHz
Co-Processor	1x ARM NEON™	2x ARM NEON™	2x ARM NEON™
<b>Memory</b>			
Cache	L1: 32KB instruction/core, 32KB data/core, L2: 512KB		
SDRAM*	DDR3/DDR3L @ 533MHz, 1 GB		
NOR*	Quad-speed SPI, 32MB		
NAND*	256 MB		
EEPROM	4 Kb for secure (SHA-256) storage / 4 Kb normal storage		
<b>User programmable/configurable interfaces on SoM connector</b>			
Gigabit transceiver links	4x (SATA-2/3, PCIe GEN3/4, 40Gb Ethernet, USB 3.0, CoaXPress, HDMI)		
Bank 500	26x PS controlled 1V8 I/O (MIO)		
Bank 13	49x programmable user I/O (HR)		
Bank 34, 35	47x + 45x programmable user I/O (HP)		
<b>Dedicated interfaces on SoM connector</b>			
Network	1000Mbps Ethernet		
USB	USB OTG 2.0		
CAN	Up to 2x CAN		
Gigabit transceivers	SATA-2/3, PCIe GEN2 4 lanes, Aurora, CoaXPress, HDMI, USB 3.0		
PCI-Express	GEN2 – 4 lanes		
Miscellaneous	GPIOs, SD/SDIO 2.0/MMC 3.31 compliant controllers		
JTAG	PL JTAG chain for carrierboard programming		
Debug	Debug UART, console		
Power supply input	3.3V/4A via connector On-board voltage regulation, current measurement for PL and PS		
Logic I/O supply output	Programmable I/O standards and voltages		
<b>Software support</b>			
Bootloader / BSP	U-Boot		
Boot resources	JTAG, NOR, (external) SD-Card		
Operating System	Topic maintained/managed Linux distribution on GitHub		
FPGA reference design	Vivado BSP and module configuration		
Dypl® compatible Platform	Yes		
<b>Mechanical and environmental</b>			
Dimensions	65mm x 68.4mm		
Connectors	2x 120 pin Samtec high performance mezzanine carrier board connectors 1x miniature pin header (JTAG IEEE 1149.1 TAP PS/UART + PL)		
Temperature*	Industrial graded, IEC 60068-2-38:2009		
<b>Qualification tests</b>			
Temperature and humidity	0%-95%, non-condensing, IEC 60068-2-38:2009		
EMC/EMI	EN 55032 / IEC 61132, EN 61326, IEC 55024		
Shock and vibration	MIL-STD-202F (method 204D), MIL-STD-202F (method 213B)		

\* Other configurations possible at higher volumes.

## Florida carrier boards

Miami System-on-Modules are supported by evaluation and reference boards and designs to accelerate your overall design cycle with commonly used peripheral functions. Visit [www.topicproducts.com/florida](http://www.topicproducts.com/florida) for an overview of applicable boards and board support packages for your Miami System-on-Module.