

AMC-V5F-10G

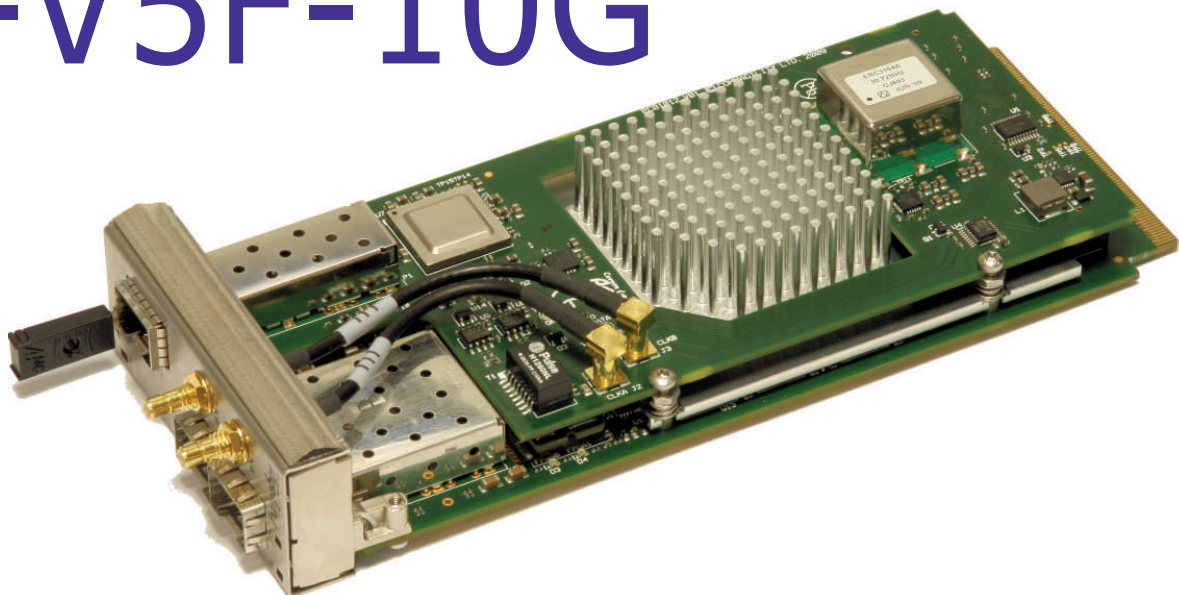
DATASHEET

A high performance FPGA based interface and processing card for wireless baseband and other applications

SFP+ socket for 10G optical interfaces including 16x CPRI antenna links and XAUI Ethernet

Optical SFP sockets for CPRI RE/REC and OBSAI RP3-01 antenna interfacing. Flexible sync options including a 1 PPS GPS clock

10Gbps Serial RapidIO, PCI Express or XAUI, and multiple Gigabit Ethernet connections for system expansion



KEY FEATURES

- ♦ Xilinx Virtex-5 LX110T FPGA, customer programmable (alternatives also possible)
- ♦ Front panel SFP+ interface from FPGA for a 10Gbps optical data link, using Vitesse VSC8486 XAUI to XFI transceiver
- ♦ SFP+ data rates of 10Gbps (Ethernet) or 9.8304Gbps (synchronised 16x CPRI) via build options
- ♦ Dual SFP interfaces from FPGA for antenna or other high speed data links
- ♦ Advanced CPRI/OBSAI clock recovery with synchronisation OCXO; clock I/O from front panel or AMC backplane
- ♦ Build options for Serial RapidIO or PCI Express from FPGA to AMC backplane
- ♦ Full Gigabit Ethernet infrastructure
- ♦ Single width, full-size PICMG AMC.0 R2.0 Advanced Mezzanine Card
- ♦ Software and firmware library support
- ♦ Developed for use in OEM products

RESULTING BENEFITS

- + High performance FPGA resource for wireless baseband or customer applications
- + Enables use in systems requiring very high speed optical links
- + Enables advanced wireless applications at 4x the normal CPRI rate, as well as more standard telecom applications
- + Additional optical data interfacing
- + Covers multiple requirements for Base Stations and Test Equipment;
- + High-bandwidth interconnect to other AMCs at up to 10Gbps per link
- + Industry standard interconnect
- + Works with Industry standard MicroTCA and AdvancedTCA systems
- + Fast route to application integration
- + Reduces risk and speeds time to market

The CommAgility AMC-V5F-10G is a single width, full-size Advanced Mezzanine Card. It is aimed at the latest wireless baseband applications as well as other high performance FPGA processing and optical data interfacing applications.

The 10Gbps SFP+ optical interface is a key feature of the AMC-V5F-10G. As well as supporting standard XAUI links this interface can uniquely be configured to support CPRI at a 16x rate of 9.8304Gbps for advanced multi-rate LTE applications, giving clock synchronisation through the optical link. In addition there are two standard SFP interfaces which can be configured for a range of interfaces such as CPRI, OBSAI, Gigabit Ethernet or RapidIO. Clock stability and synchronisation for wireless applications is achieved through an on-board OCXO based PLL.

A Xilinx Virtex-5 LX110T FPGA provides the main processing. This configures and boots from FLASH on reset, using one of 4 selectable configuration images which are customer programmable and can be updated over Ethernet. The FPGA is fully customer configurable.

A range of build options and other changes are possible for volume OEM customers.



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HARDWARE SPECIFICATIONS

FPGA: Xilinx Virtex-5™ FPGA. Standard configuration is LX110T-2, options include LX155T, SX95T. With:

- ♦ 2 banks x 128Mbytes x16 DDR2 SDRAM
- ♦ 128Mbytes of parallel FLASH
- ♦ 10Gbps 4x SRIO or PCI Express
- ♦ 2 Full-duplex Gigabit Ethernet ports

10G Interface: SFP+ socket driven from 4 FPGA GTPs via Vitesse VSC8486 with XAUI (10Gbps) or synchronised 16x CPRI (9.8304Gbps) data rates, by build option.

SFP Interface: 2 SFP sockets connected to FPGA RocketIO. Can be used for optical CPRI RE/REC and OBSAI RP3-01 compliant antenna interface links, or other optical links such as SRIO, GigE or Aurora. Data rate up to 4 Gbps per link.

Clock Synchronisation: Low-jitter OCXO based PLL, digitally controlled from the FPGA. Allows clock synchronisation and distribution from an external 30.72 MHz or 1PPS GPS clock via AMC backplane, front panel or SFP SERDES.

Serial RapidIO / PCI Express / XAUI: 10Gbps 4x link from FPGA to AMC ports 4-7, with build options of:

- ♦ SRIO using Tsi578™ to give two 4x links to AMC ports 4-7 and 8-11; or
- ♦ PCI Express or XAUI using direct connection from FPGA to AMC ports 4-7

Ethernet: Gigabit Ethernet infrastructure using Broadcom BCM5389™ switch:

- ♦ AMC.2 (1000BASE-BX) compliant connections to AMC Ports 0 & 1
- ♦ Full-duplex 1Gbps links

IPMI: ATmega128 IPMI controller:

- ♦ AMC.0 IPMB_L interface
- ♦ FRU EEPROM data
- ♦ Power and reset control
- ♦ Real-time health monitoring

Form Factor: Advanced Mezzanine Card

- ♦ AMC.0 Rev 2.0 compliant
- ♦ Full-size, single-width
- ♦ For AdvancedTCA™ and MicroTCA™
- ♦ AMC.2 GigE and AMC.4 4x SRIO
- ♦ Hot swap support

CONFIGURATION AND DEBUG

- ♦ FPGA and MicroBlaze boot from FLASH.
- ♦ Choice of 4 boot images, controlled by MMC. Allows 3 user images plus one fallback in case of boot failure.
- ♦ FLASH update utility allows new images to be downloaded over Ethernet.
- ♦ On-board debug LEDs for FPGA, power, Ethernet and SFP ports.
- ♦ Debug connector and breakout board for Xilinx JTAG and FPGA/MMC serial ports.

ENVIRONMENTAL/EMC/SAFETY

- ♦ Operating temperature: 0-40 °C ambient
- ♦ Power consumption: up to 28W max, dependent on SFPs used and FPGA load
- ♦ Designed for NEBS and ETSI compliance when used in appropriate chassis
- ♦ 2004/108/EC and FCC EMC compliant
- ♦ 2002/95/EC RoHS, 2002/96/EC WEEE and 2006/95/EC Low Voltage Directive compliant

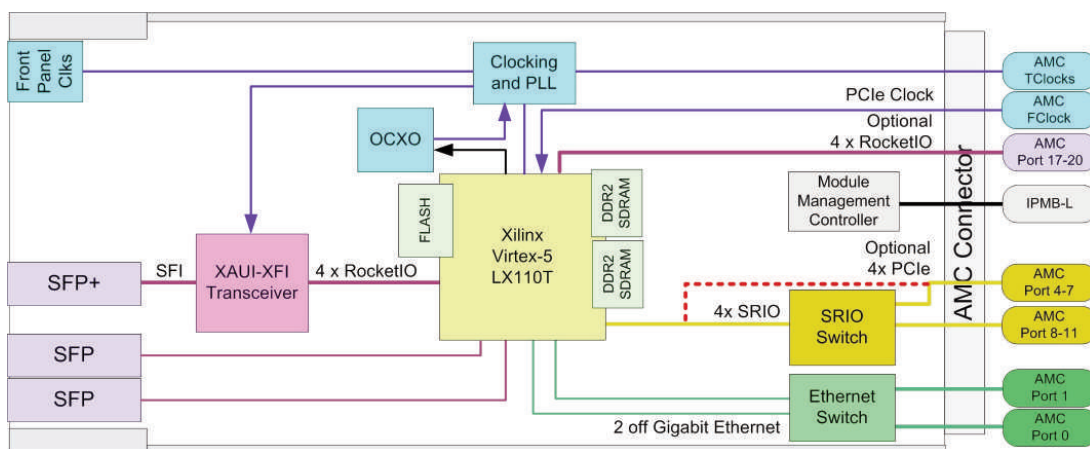
SOFTWARE SPECIFICATIONS

FPGA: to demonstrate configuration and functionality; Xilinx ISE and EDK project

MicroBlaze Board Support Library

(BSL): support for board setup and interfaces, self test and FLASH update

MMC: full management suite based on PigeonPoint BMR software



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Datasheet describes products in development by CommAgility. Information may be subject to change. AMC-V5F P2/0908

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OEM PARTNERSHIP SERVICES:

IN DEVELOPMENT support and training; hardware customisation; software and FPGA development.

IN MANUFACTURE leadtime reduction; extended warranty and repair; quick turn repairs and/or spares stocking. Licensing of designs considered for high volumes.

DURING LIFECYCLE obsolescence management; guaranteed lifecycle; Escrow.

