

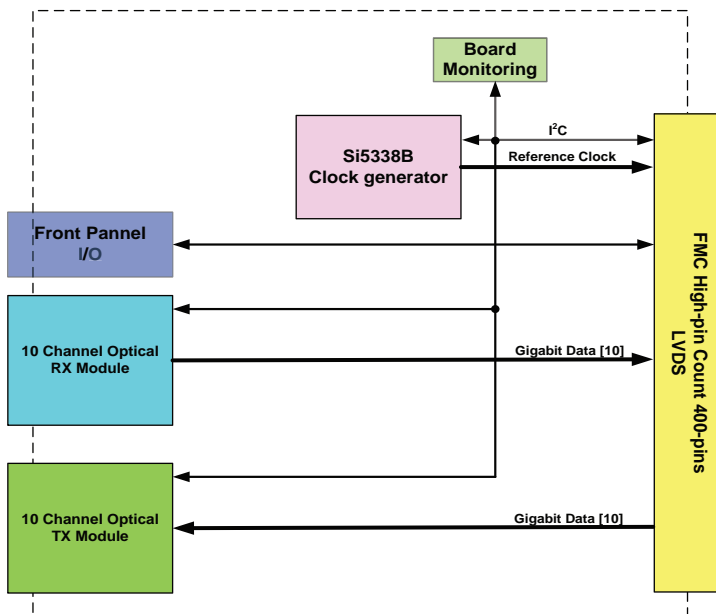
# FMC410 Optical Transceiver High-Pin Count FMC Card Ten Transmit & Ten Receive Channels

## Description

The FMC410 is an optical transceiver module in the FMC form factor that offers ten independent optical transmit and receive links with maximum data rates of either 6.25Gbps or 10Gbps. This COTS card provides high-speed optical input and output for telecommunications, data networking, data storage, and ultra-high-definition video applications. The FMC410 can also be used as a dual 10Gb or dual 40Gb Ethernet port.

The design is based on Avago Technologies' AFBR-776BEHZ / AFBR-810BEHZ optical transmitters and AFBR-786BEHZ / AFBR-820BEHZ optical receivers. The FMC410 offers a programmable reference clock that is controlled through serial I<sup>2</sup>C communication. It has a high-pin count (HPC) connector and six bidirectional front panel I/Os. The card is also equipped with power supply and temperature monitoring and can be used in a conduction-cooled environment.

The FMC410 is electrically and mechanically compliant to FMC standard (ANSI/VITA 57.1) except for its height. This daughter card is 3.4 mm higher than the maximum component height of 9.5 mm specified by the FMC standard. It is therefore equipped with a connector that provides a stacking height of 13.5 mm instead of the standard 10 mm. The card can still be used without issues on many FPGA carrier cards and FPGA development platforms.



## Features

- Ten independent transmit channels
- Ten independent receive channels
- High channel capacity: 6.25Gbps or 10Gbps per direction (TX/RX)
- High port density
- Separate transmitter and receiver modules
- 13.5 mm stacking height
- Low power consumption

## Applications

- Dual 10Gb or 40Gb Ethernet
- Telecommunications systems
- Data networking
- Data centers
- Enterprise data storage
- Video Surveillance
- Security
- High-performance computer/FPGA interconnects
- InfiniBand 10X DDR SX interconnects
- Telecom and datacom switch and router backplane connections
- Dense 4Gbps Fibre Channel compatible architectures
- Reach extensions for protocols including PCI Express, HyperTransport, and Serial RapidIO

Environmental	Air cooled EAC4	Conduction cooled ECC1
Operating temperature	0C to +55C	0C to +55C
Storage temperature	-40C to +85C	-40C to +85C
Humidity	95%	95%
Operating vibration	5Hz to 100Hz, PSD = 0.04g <sup>2</sup> /Hz; 100 Hz to 1000 Hz PSD = 0.04 gs <sup>2</sup> /Hz; 1000 Hz to 2000 Hz PSD decreasing at 6 dB/octave	5 Hz to 100 Hz PSD increasing at 3 dB/octave 100 Hz to 1000 Hz PSD = 0.1 g <sup>2</sup> /Hz; 1000 Hz to 2000 Hz PSD decreasing at 6 dB/octave
Operating shock	20g, 11 millisecond, half-sine; or 20g, 11 millisecond, terminal sawtooth shock pulses in all three axes	40g, 11 millisecond shock half-sine; or 40g, 11 millisecond, terminal sawtooth shock pulses in all three axes
Operating altitude	-1500 ft to 60,000 ft (with airflow)	-1500 ft to 60,000 ft
Conformal coating	Optional	Optional

## Support

- 4FM GUI offers multiple functions including the ability to monitor voltage and temperature; perform memory tests; measure the PCIe bandwidth; update FPGA firmware; and access StellarIP.
- StellarIP is available for this product. It provides a simple way to design FPGA firmware with automated code and bitstream generation.
- This module can be used on compatible VITA 57.1-compliant HPC carrier cards.
- User Manual
- Performance Report
- Support provided on 4DSP's support forum private boards
- Reference designs available for multiple FPGA carriers.

## Ordering information:

**Part Number: FMC410-2-1-1-1**

