

TORNADO-HCX/8349

High-Performance Floating-Point Host Communication Controller DCM
for TORNADO-E2 DSP Controllers and TORNADO-PX PIOX DCM

General Information

- Plugs into HCX DCM site of TORNADO-E2 DSP controllers providing hosting and networking capability
- On-board PIOX2 DCM site for TORNADO-PX DCM
- 64/66 PCI DCM site for PMC modules
- High-performance double floating-point telecom CPU
- 1000/100/10 Ethernet, USB 2.0 Host/Device, UART, SPI, and I²C networking and communication interfaces
- external power supply control with scheduled wakeup
- monitoring of CPU and external temperatures with optional CPU and system chassis fan control
- modular system design with DCMs
- stand-alone capability
- Ideal for embedded DSP networking applications



Key Features

- Freescale MPC8349E PowerQUICC II Pro CPU featuring:
 - 533 MHz 32-bit double floating-point e300 PowerPC core with non-blocking coherent system bus
 - Dual 1000/100/10 Ethernet I/F (1GE)
 - Dual USB 2.0 Host/Device I/F
 - Dual UART, I²C, SPI and GPIO ports
 - 64-bit 66 MHz PCI I/F
 - Data encryption unit
- up to 256Mx64 (2 GByte) DDR
- 32Mx16 FLASH with boot sector protection
- up to 1Mx32 synchronous dual-port RAM (SDPRAM) for 'Slave' mode of HCX DCM I/F
- battery backup microcontroller (MC) featuring:
 - real-time clock/calendar (RTC) with multi-event alarm
 - NvRAM and EEPROM areas for CPU applications
 - external power supply control with scheduled wakeup
 - monitoring of on-board Vcc and Icc
 - monitoring of CPU and external (chassis) temperatures
 - CPU and external (chassis) fans control
 - RS232 I/F for user run-time console
- Low power consumption
- Built-in bootloader for remote system update

I/O Expansion

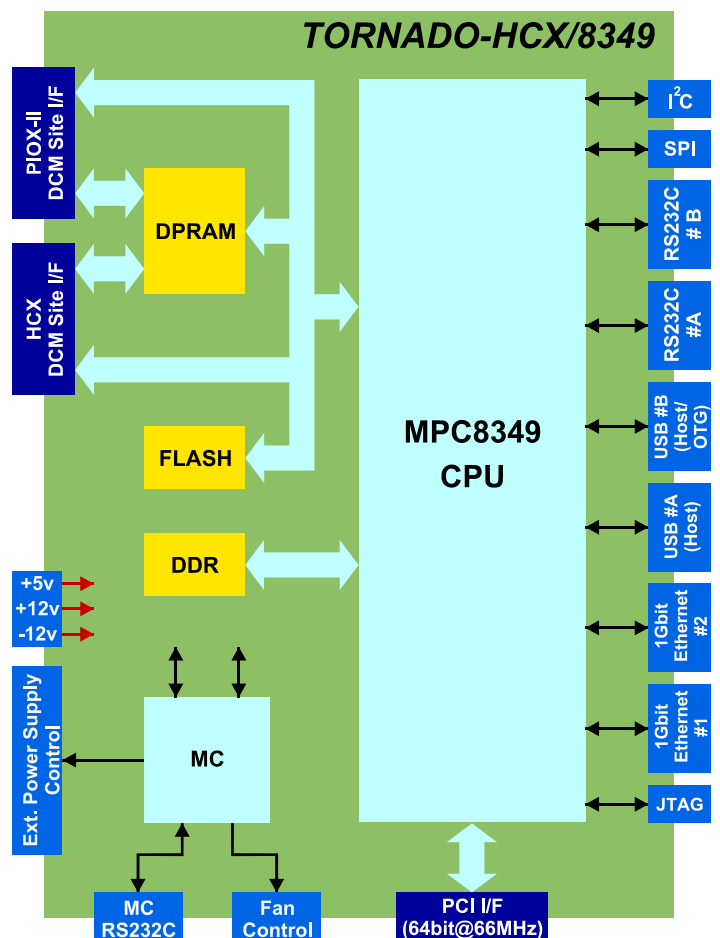
- HCX DCM site for hosting of TORNADO-E2 DSP controllers
- PIOX-2 DCM site for TORNADO-PX DCMs
- 64/66 PCI DCM site for PMC DCMs
- 'off-the-shelf' DCMs for digital radio, RF AD/DA, industrial and professional audio applications

Development Tools

- CodeWarrior IDE tools and JTAG USB TAP emulator
- Linux BSP
- API libraries and utilities for bare board and Linux applications

Applications

- embedded DSP with hosting & networking
- digital radio and RF signal processing
- instrumentation, industrial and security systems



Technical Specifications

CPU

Freescale MPC8349EA 32-bit double-floating point PowerQUICC II Pro CPU, 533 MHz e300 core with 32 kByte Program & Data caches, 266 MHz DDR, 133 MHz Local Bus.

On-board Memory

- 32M..256Mx64 (256Mbyte..2Gbyte) DDR.
- 32Mx16 (512 Mbit) FLASH.
- 256K..1Mx32 (1MB..4MB) SDPRAM for 'Slave' mode of HCX/SYNC DCM I/F. Can be used as SRAM if not used in HCX I/F.

External Communication and Control Interfaces via CPU

- Dual 1000/100/10 Ethernet I/F.
- Dual USB 2.0 Host/Device I/F/.
- Dual-channel UART with RS232C I/F, 384 kBaud maximum speed.
- SPI I/F (LVTTL).
- I²C I/F (LVTTL).
- 110-bit GPIO (LVTTL).

External Communication and Control Interfaces via Microcontroller (MC)

- UART with RS232C I/F, 384 kBaud maximum speed.
- CPU fan control (+5V@0.2A)
- External (chassis) temperature sensor with user calibrated transfer characteristics.
- External (chassis) fan control (+5v@0.2A).

High-speed HCX rev.A Host Control Expansion DCM site I/F for TORNADO-E2 DSP Controllers

- 32-bit Asynchronous I/F section ('Master'-only) for host control
- 32-bit 133 MHz SYNC I/F section with 'Master' and 'Slave' modes supported for high-performance data transfer.
- Plug-in detection, bidirectional IRQ.

High-speed PIOX-2 rev.D Parallel I/O Expansion DCM site I/F for TORNADO-PX DCMs

- 32-bit Asynchronous I/F section for low-speed PIOX DCMs (compatible with PIOX rev.C DCM site I/F for TORNADO-E6xxx G1 Controllers)
- 32-bit Synchronous 133 MHz I/F section for high-speed data transfer (PIOX-2 rev.D synchronous DCMs only).

PCI DCM I/F

- 64-bit 66 MHz PCI I/F meeting PCI 2.3 specs.
- 'Monarch' and 'non-Monarch' support.
- PMC modules support via HCX/PMC converter board.

Microcontroller (MC) and RTC/Calendar

- Battery backup: 45mAH on-board battery, connector for external battery.
- Battery Life in Standby mode: about 9000 hours.
- 2100 year calendar with four programmable alarms.
- 1 kByte NvRAM and 4 kByte EEPROM features for CPU.
- External power supply control.
- Remote user console via UART with RS232C I/F.
- Remote system update via 1GE (TCP/IP) and RS232C I/F.

Physical & Power

- Dimensions: 98mm x 82mm
- +5V @ 1.3Amax , ±12V optional (not used on-board; routed to PIOX-2, HCX and PCI DCM sites).