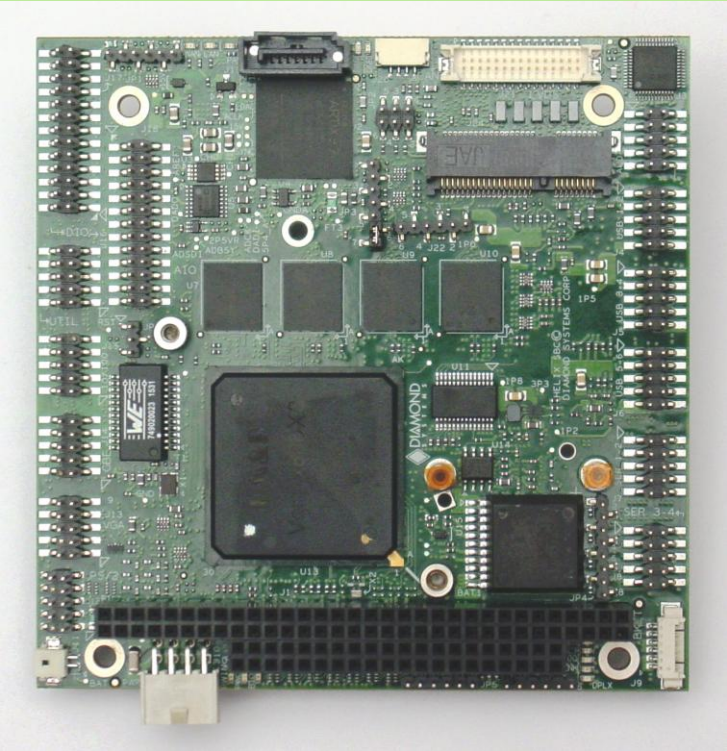
HELIX PC/104 SBC

Rugged SBC with DMP Vortex86DX3 CPU, Soldered Memory and Data Acquisition



- 1GHz DMP Vortex86DX3 dual core SoC
- Up to 2GB DDR3 SDRAM soldered on board
- I/O Support:
  - 3 or 6 USB 2.0 ports (model dependent)
  - 2 RS-232/422/485 & 2 RS-232 ports
  - 1 10/100Mbps Ethernet port
  - 1 Gigabit Ethernet port
  - 1 SATA port for disk-on-module or external drive
  - 1 mSATA socket
  - 24-bit dual channel LVDS LCD display
  - VGA CRT
  - HD audio
  - PCIe MiniCard socket
- Data Acquisition:
  - 16 16-bit analog inputs
  - 100KHz max sample rate
  - 4 16-bit analog outputs
  - Up to 27 digital I/O lines with programmable direction
  - 8 counter/timers
  - 4 pulse width modulators
- PC/104 stackable I/O expansion capability
- PC/104 extended form factor (4.0" x 4.0")
- Extremely rugged with soldered RAM and -40°C to +85°C (-40°F to +185°F) operating temperature

Rugged Mid-Range SBC

Helix is a compact, rugged, single board computer that features the DMP Vortex86DX3 system on chip (SoC) in an extended PC/104 form factor. The full rectangular shape provides more coastline for I/O connectors than other boards its size. In this compact form factor, Helix includes a wide range of I/O plus data acquisition functionality, meeting the majority of today's connectivity requirements in a single board.

Flexible I/O Expansion

Helix supports stackable I/O expansion with PC/104 I/O modules and provides a PCIe MiniCard socket for additional I/O expansion. I/O modules featuring WiFi, Ethernet, analog I/O, digital I/O, and CAN are available in the PCIe MiniCard form factor, providing compact expandability without increasing the total height of the system.

Rugged Design

The Helix SBC was designed with rugged applications in mind. With an operating temperature of -40°C to +85°C, soldered on-board memory, and thicker PCB, Helix is an excellent choice for vehicle and other harsh environment applications.

Feature Overview

Diamond's family of Helix PC/104 SBCs combines mid-range CPU performance, standard PC I/O, and on-board data acquisition circuitry at a competitive price. Available PC I/O includes up to 6 USB 2.0, 4 serial ports (2 RS-232/422/485 and 2 RS-232), 1 10/100Mbps Ethernet, 1 Gigabit Ethernet port, and a SATA port. The data acquisition circuit includes 16 16-bit analog inputs, 4 16-bit analog outputs and 27 digital I/O lines configurable as counter/timers and pulse width modulators.

Software Support

Helix SBCs run Linux and Windows Embedded Standard 7. Both Linux and Windows Embedded 7 Software Development Kits are available with bootable images and drivers to get you started on your design project right out of the box.

Development Kits

Complete Development Kits with a bootable operating system are available with all the components you need to get started on your embedded design project. The kit contains a Helix SBC, 32GB MLC SATA-DOM flashdisk with your choice of Windows Embedded 7 or Linux pre-loaded, cable kit, AC adapter, and software CD.

Helix: 1GHz Vortex86DX3 PC/104 SBC

Specifications

Processor	1.0GHz dual core DMP Vortex86DX3
Memory	Up to 2GB onboard 64-bit DDR3 SDRAM
Display type	24-bit dual channel LVDS LCD flat panel VGA CRT
Display resolution	LVDS: 1920 X 1080 maximum VGA: 1920 X 1080 maximum 1280 x 1024 maximum in dual display mode
USB ports	3 USB 2.0 (D model); 6 USB 2.0 (A model)
Serial ports	2 RS-232/422/485 & 2 RS-232 ports
Networking	1 10/100Mbps Ethernet 1 Gigabit Ethernet port
Mass storage	1 SATA 1.5Gbps port for external hard drive or SATA DOM 1 mSATA port shared with PCIe MiniCard
Analog inputs	16 16-bit
Input ranges	±10V, ±5V, 0-10V, 0-5V programmable
Sample rate	100KHz maximum
On-board FIFO	2048 samples, programmable threshold
DAQ calibration	Autocalibration values stored in EEPROM
Analog outputs	4 16-bit
Output ranges	0-5V, 0-2.5V programmable
Digital I/O	27 programmable lines (A model) 16 programmable lines (D model)
PWMs	4 24-bit pulse width modulators
Counter/timers	8 32-bit counter/timers
Keyboard/mouse	PS/2
Audio	HD Audio ALC892 CODEC with stereo line out, line in and microphone
WDT	Programmable watchdog timer 0-255 seconds
Expansion socket	PCIe MiniCard socket shared with mSATA
Expansion bus	PC/104 (ISA) stackable I/O expansion
Input power	+5VDC +/-5%
Power consumption	7.5W idle (without DAQ) 10.5W idle (with DAQ)
Operating temp	-40°C to +85°C (-40°F to +185°F)
Shock	MIL-STD-202G compatible
Vibration	MIL-STD-202G compatible
Dimensions	4.0" x 4.0" (102mm x 102mm)
Weight	2.5oz (70.8g) with heat sink
RoHS	Compliant

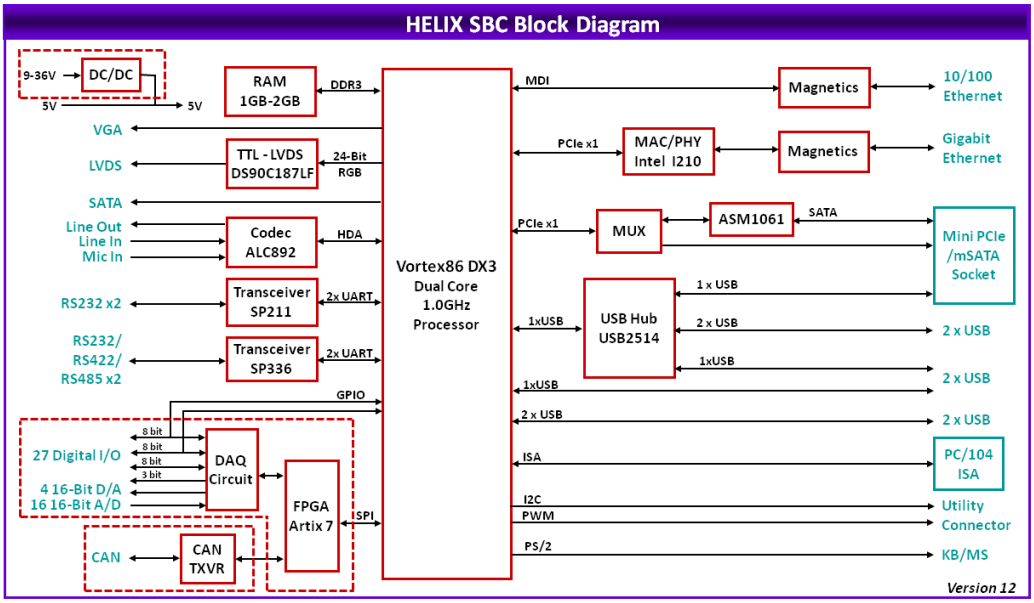
Ordering Information

HLX1000-2GA	Helix SBC, 1.0GHz Vortex86DX3 CPU, 2GB DDR3 SDRAM, analog I/O, digital I/O, extended temperature
HLX1000-1GD	Helix SBC, 1.0GHz Vortex86DX3 CPU, 1GB DDR3 SDRAM, digital I/O, extended temp
HLX1000-2GD	Helix SBC, 1.0GHz Vortex86DX3 CPU, 2GB DDR3 SDRAM, digital I/O, extended temp (minimum order quantities apply)
DK-HLXA-WE7	Helix Development Kit with HLX1000-2GA SBC, cables and Windows Embedded 7 OS
DK-HLXA-LNX	Helix Development Kit with HLX1000-2GA SBC, cables and Linux
DK-HLXD-WE7	Helix Development Kit with HLX1000-1GD SBC, cables and Windows Embedded 7 OS
DK-HLXD-LNX	Helix Development Kit with HLX1000-1GD SBC, cables and Linux
SDK-HLX-WE7	Helix Windows Embedded 7 Software Development Kit
SDK-HLX-LNX	Helix Linux Software Development Kit
CK-HLX-01	Helix Cable Kit for most on board I/O

Customization Options

The following customization options are available for the Helix single board computer. Minimum order quantities apply.

- 2GB on-board RAM instead of 1GB
- 1 CANbus 2.0 port
- 9-36V 50W DC/DC wide voltage power input
- Latching connectors instead of pin headers
- Extended life backup battery
- Replace configuration jumpers with 0 ohm resistors
- Low profile heatsink
- Conformal coating
- Custom BIOS
- Custom FPGA code



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