features

- 60 MFLOPS floating-point TMS320C31 DSP
- up to 512Kx32 static RAM (SRAM)
- up to 1Mx8 FLASH/EPROM
- dual-channel 10 Mbps universal receiver/transmitter (USART) with synchronous (HDLC/X.25, SDLC, MONO, BISYNC) and asynchronous protocols and 115kBaud RS232 and 10Mbps RS422 external interfaces
- 8-bit digital I/O
- watch-dog timer and reset monitor
- modular design with daughter-card modules (DCM)
- industry standard 3U form-factor

I/O expansion

- one site for serial I/O expansion (SIOX rev.B) DCM
- one site for parallel I/O expansion (PIOX-16) DCM
- a variety of AD/DA/DIO DCM
- a variety of application specific SIOX and PIOX-16 I/O coprocessor DCM

software development tools

- MPSD port for TI XDS510 and MicroLAB Systems *MIRAGE-510D* emulators with Code Composer IDE
- TI Floating-point DSP C/Assembler Compiler

application software

- Hypersignal tools for DSP algorithm development
- Virtuoso and Nucleus real-time OS tools
- DSP, math, vector and communication functions
- vocoder/fax/modem function libraries

applications

- vocoders, fax and modems
- telecommunication and telephony
- multimedia and audio processing
- embedded instrumentation and industrial
- digital radio
- biomedical
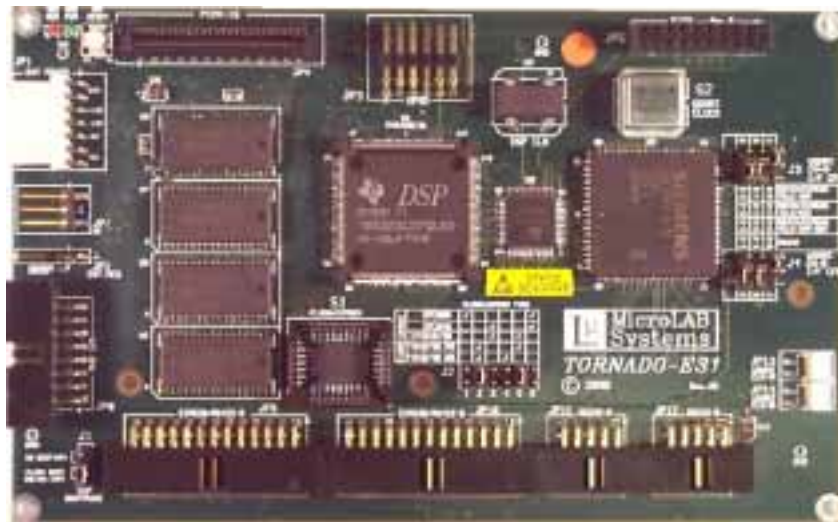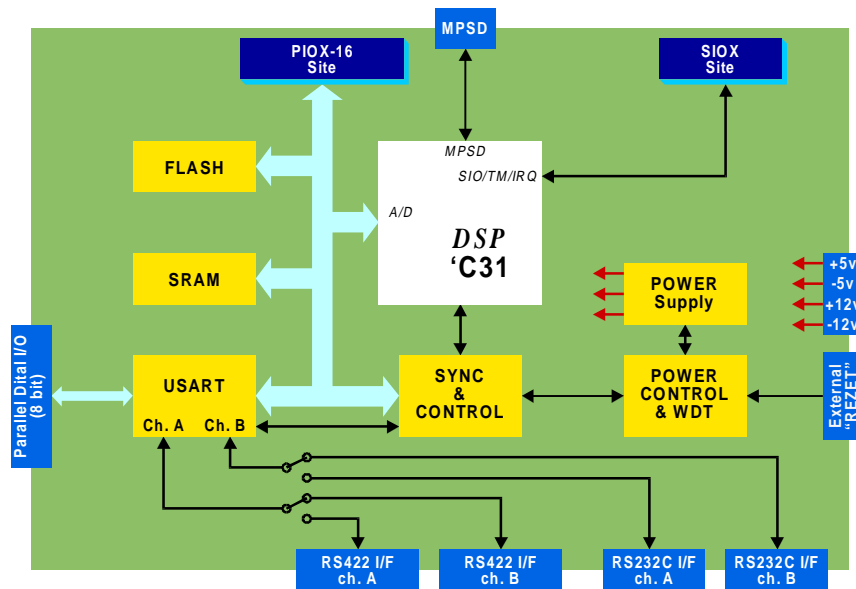
TORNADO-E31 is a high performance floating-point embedded DSP controller for real-time data acquisition and DSP. Compact size, flexible modular construction and a variety of "off-the-shelf" AD/DA/DIO and I/O coprocessor expansion daughter card modules make *TORNADO-E31* an ideal selection for embedded telecommunication, telephony, multimedia, acoustics, instrumentation, digital radio and many more application.

TORNADO-E31 is based around the industry standard TI floating-point TMS320C31 DSP, which delivers 60 MFLOPS peak performance and 2Kx32 on-chip memory. The on-board memory of *TORNADO-E31* comprises of static RAM (SRAM) and FLASH/EPROM.

On-board dual-channel 10 Mbit/s USART (universal synchronous/asynchronous receiver/transmitter) with 10 Mbit RS422 and 115 kBaud RS232C interfaces deliver outstanding flexibility for networking of multiple *TORNADO-E3x/E6x/E54x* controllers and/or interfacing to external networks, peripherals and host computers. Each channel of USART can be independently configured for either synchronous (HDLC/X.25, SDLC, MONO, BISYNC) or asynchronous protocol with either RS422 or RS232C external interface.

An ultimate benefit of *TORNADO-E31* is a modular construction with daughter-card module options, which allows quick "off-the-

shelf" system arrangement and to meet requirements of different DSP applications with real-time data acquisition. *TORNADO-E31* features one serial (SIOX rev.B) and one parallel (PIOX-16) I/O expansion interface sites compatible with a variety of AD/DA, digital I/O, application specific I/O coprocessors and more.. daughter-card modules.

On-board reset monitor and watch-dog timer facilities provide reliable system functionality as stand-alone controller.

On-board 10-bit digital I/O allows control of external power switches, relays, etc and/or input from digital sensors or switches with minimum hardware.

TORNADO-E31 on-board MPSD emulation port is compatible with TI XDS510 and MicroLAB Systems *MIRAGE-510D* scan-path emulators and is used to debug the on-board TMS320C31 DSP software using TI HLL Debuggers and Code Composer IDE.

TORNADO-E31 resident software can be developed with the TI Floating-point DSP C/Assembly tools, a variety of compatible real-time operating systems, DSP algorithm development tools, vocoder/fax/modem and DSP/vector/math function libraries, which are available from multiple software vendors.

Technical Specifications

DSP
TMS320C31 floating-point DSP, 32 bits, 60 MFLOPS, 2Kx32 on-chip memory

on-board memory
- up to 512Kx32 0ws SRAM
- up to 1Mx8 FLASH/EPROM

external interfaces
- dual-channel 10 Mbit/s USART synchronous/asynchronous protocols and 10 Mbit/s RS422 and 115kBaud RS232C I/F

on-board digital I/O
10-bit digital I/O with individual direction control and DSP interrupt mask

serial I/O expansion interface (SIOX)
One SIOX rev.B site for daughter card modules.

parallel I/O expansion interface (PIOX)
One PIOX-16 site for daughter card modules.

physical/power
Dimesions: 3U (100x160mm). Maximum power consumption (with 128Kx32 SRAM): 5V@1.4A

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