



**USB-CTR-15**  
15 Channel Counter  
Timer Module 

**FEATURES**

- High-speed USB 2.0 device, USB 1.1 compatible
- Fifteen independent 16-bit counter/timers (5 x 82C54-10)
- Clock, gate, and output signals from all 15 channels buffered and accessed via one connector
- Standard configuration adaptor pre-configured for event counting, frequency measurement, pulse width measurement, or frequency generation
- User wiring adaptor board provided for flexible yet easy counter concatenation /configuration
- Removable screw terminal adaptor for easy wiring
- Custom high-speed function driver
- PC/104 module size and mounting compatibility
- Small (4"x4"x1.25") rugged industrial enclosure

**FACTORY OPTIONS**

- External power for high current capabilities
- DIN rail mounting provision
- Economy "E" version available without screw terminal board
- OEM (board only) version with PC/104 mounting holes and PCB footprint for added flexibility in embedded applications



**FUNCTIONAL DESCRIPTION**

The USB-CTR-15 is an ideal solution for adding portable, easy-to-install, counter/timer capabilities to any PC or embedded system with a USB port. This board is packaged in a small, rugged, industrial enclosure and features 15 independent 16-bit counter/timers. The unit is a true USB 2.0 device, offering the highest speed available with the USB bus. It is fully compatible with both USB 1.1 and USB 2.0 ports. The unit is plug-and-play allowing quick connect/disconnect whenever you need additional counter/timer devices on your USB port. The USB-CTR-15 can be used for a wide variety of measurement applications including event counting, frequency measurements, position measurement, pulse counting, pulse-width modulation and pulse generation. The OEM version provides just the board without the enclosure or external screw terminal board and is ideal for a variety of embedded OEM applications.

The USB-CTR-15 features five fully-undedicated industry standard 82C54 counter/timer chips. Each 82C54 provides three independent software programmable 16-bit counters. The maximum allowable input frequency is 10 MHz. I/O wiring connections are provided via an industry standard 50-pin IDC connector or via a removable screw terminal adapter board. A User Configuration Adapter board is also provided to assist in wiring the counters together. This allows for flexible yet easy counter concatenation/configuration.

The USB-CTR-15 is designed to be used in rugged industrial environments but is small enough to fit nicely onto any desk or testing station. The board measures just 3.550 by 3.775 inches and ships inside a steel powder-coated enclosure with an anti-skid bottom.

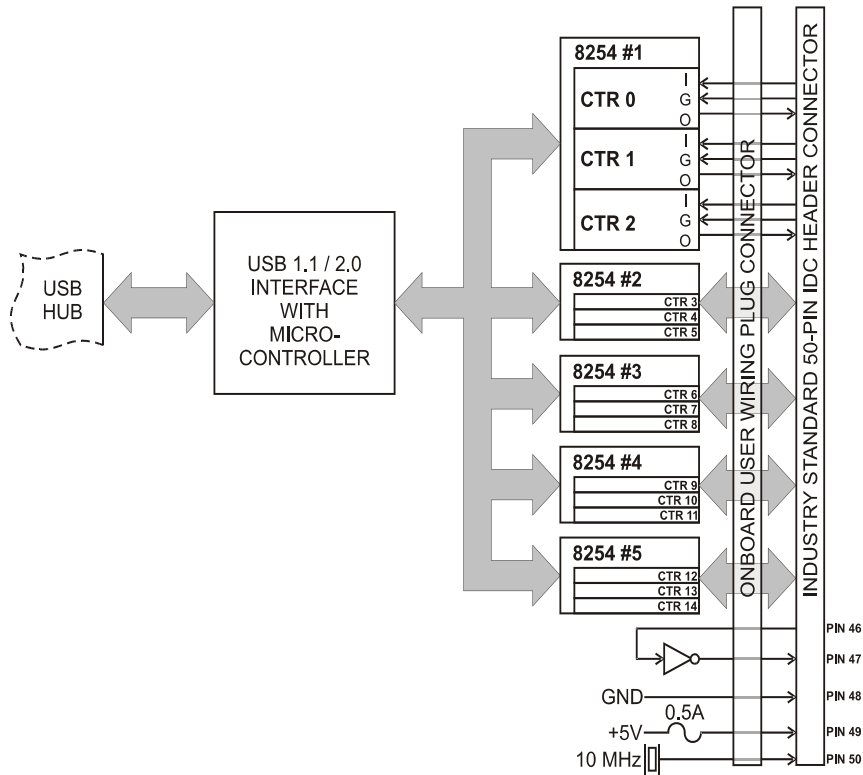
**ACCESSORIES**

The USB-CTR-15 is available with optional cable assemblies and screw terminal boards.

**SOFTWARE**

The USB-CTR-15 is plug-and-play which allows quick connect or disconnect whenever you need additional I/O on your USB port. The module utilizes a high-speed custom function driver optimized for a maximum data throughput that is 50-100 times faster than the USB human interface device (HID) driver used by many competing products. This approach maximizes the full functionality of the hardware along with capitalizing the advantage of high-speed USB 2.0. The USB-CTR-15 is supported for use in most USB supported operating systems and includes a free Linux and Windows 98se/Me/2000/XP/2003 compatible software package. This package contains sample programs and source code in Visual Basic, Delphi, C++ Builder, and Visual C++ for Windows. Also incorporated is a graphical setup program in Windows. Third party support includes a Windows standard DLL interface usable from the most popular application programs. Embedded OS support include Windows Xpe.

**BLOCK DIAGRAM**



**Specifications**

**Counter/Timers**

Type:	82C54-10 programmable interval counters
Output Drive:	2.0 VDC min., source 32 mA 0.55 VDC max., sink 64 mA
Maximum Input Frequency:	10MHz
Input Gate:	TTL/CMOS compatible
Clock:	On-board, 10 MHz crystal-controlled clock
Active Count Edge:	Negative edge
Minimum Clock Pulse Width:	(input characteristic) 30 ns high, 40 ns low
Minimum Divisor:	divide-by-2
Maximum Divisor:	divide-by-65536 (16-bits, load value "0")
Timer Range:	16 bits

**Bus Type**

USB 2.0 High-speed, USB 1.1 Full-speed compatible

**Power**

+5VDC provided via USB cable up to 500mA\*\*  
Basic unit: 60mA typical (no load); 12mA with max counter transitions  
+5VDC resettable fuse at 0.5A located on connector

\*\* Optional on-board external power circuitry and AC/DC adapter can be ordered ("-P" option) if current use is expected to be greater than what can be supplied by the USB bus. Please check to see how much current your USB port can supply and how much current you anticipate using.

**Environmental**

Operating Temperature Range:	0°C to 70°C
Storage Temperature Range:	-40°C to +85°C
Humidity:	5% to 95%, non-condensing
Board Dimension:	3.550 x 3.775 inches
Box Dimension:	4"x4"x1.25 inches

**Ordering Guide**

USB-CTR-15

Standard model with screw terminal board and enclosure

**Options**

-OEM	Board only version (no enclosure and screw terminal board)
-E	Economy model (no screw terminal board)
-DIN	DIN rail mounting provision
-P	External power and AC/DC adapter

**Accessories**

UTBK-50	External plug-in screw terminal board
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## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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