

Features:

- Real-Time tracking of one to four incremental encoders and 8 digital inputs
- History buffer has programmable sample frequency from once per day to 1 kHz
- DIN rail mounting is available
- 8 relay driver outputs
- LEDs show status of each encoder and bus activity
- Available with single-ended or differential encoder inputs
- Includes serial encoder interface (SEI) port for reading our absolute encoders
- Easy to use Windows drivers and demo software
- US Digital warrants its products against defects in materials and workmanship for two years. See complete warranty for details.

Description:

The **USB1** is a data acquisition device designed to track up to 4 incremental encoders and 8 digital inputs. Each of the 4 external encoders has a dedicated 24-bit real-time hardware up/down counter. The internal microcontroller then reads and stores the value of all four counters, the 8 digital inputs, and a 32-bit time stamp at a rate configured by the user. This historical buffer can be downloaded to the PC using the USB interface at any convenient time, even while continuing to store more samples in the internal circular buffer. The **USB1** also includes the capability to use either encoder position changes or combinations of digital inputs as triggering and/or storage qualification events.

Eight relay driver type digital outputs are provided along with an **SEI** port that can read up to 15 US Digital absolute encoders per device. The **USB1** takes advantage of the robustness, speed, and easy configurability of the Universal Serial Bus architecture while providing a simple and consistent software interface for the encoders and inputs that it is tracking. The **USB1** is intended for use with computers that have at least one free USB port and are running the Windows 98 or Windows 2000 operating systems. The **USB1** is fully compatible with USB expansion hubs, allowing multiple **USB1** units to be used on a single computer.

The **USB1** is powered by a standard US Digital unregulated DC power supply (**PS-9V**). The **USB1** provides 5VDC power to the encoders and digital I/O connectors. The **USB1** may be instructed to retain configuration settings (but



not count values) when power is removed. If power is lost, the incremental counters reset to zero.

The **USB1** supports both indexed and non-indexed encoders in QUAD1, QUAD2 or QUAD4. It provides independent, bi-directional counts on each of its four incremental encoder channels, with counts from -8,388,608 to 8,388,607 at rates of up to 230 KHz in quadrature mode. The **USB1** command protocol provides access to a control register for each channel, allowing individually programmable count modes of Normal Count, Modulo-N, Non-recycle, and Range Limit for each channel. The **USB1** may be configured in software to zero a channel's counter when an encoder index signal is asserted.

The **SEI** port on the **USB1** is designed for US Digital's **SEI**-based products, such as our **A2** absolute encoders. The baud rate of the **SEI** port is fully programmable, and supports baud rates from 2400 to 57,600.

D-option Encoder Connector Pin-out:

Pin	Description
1	Ground
2	Ground
3	Index-
4	Index+
5	A- channel
6	A+ channel
7	+5VDC power
8	+5VDC power
9	B- channel
10	B+ channel

S-option Encoder Connector Pin-out:

Pin	Description
1	Ground
2	Index
3	A channel
4	+5VDC power
5	B channel

Absolute Maximum Ratings:

Parameter	Min.	Max.	Units
Storage temperature	-40	100	°C
Operating temperature	0	70	°C
Humidity (non-condensing)	0	95	%

Ordering Information:

Price:

\$350 / 1
\$315 / 10
\$285 / 50
\$255 / 100
\$230 / 500
\$210 / 1K

Part #:

USB1 -

Interface:
S = Single-ended
D = Differential

Options:
R = DIN rail (35mm wide) mounting
NP = No power supply

Cost Modifiers:

Add \$10 for **R**-option
Subtract \$5 for **NP**-option (no PS-9V)

Includes:

- PS-9V (power supply)
- USD-SW (software)

Technical Data, Rev. 09.04.01, September 2001
All information subject to change without notice.