

## SEI-USB Features

- USB 1.1 device communicates at 12 Mbit/sec
- Compatible with USB 2.0 hubs and host adapters
- Supports up to 15 total devices on the SEI bus
- Supports SEI bus lengths up to 1,000 feet, depending on the number of devices attached.
- USB port on the PC provides power for the SEI-USB and SEI bus devices (120mA max using USB port power).
- Short-circuit power protection between the USB port and the SEI bus.
- Includes two LED indicators: green for USB power-sense and red to indicate additional external power is required.



**CE Marking:** Starting July 22nd, 2014, some US Digital products will contain the CE Marking. The **SEI-USB** will not contain a CE Marking and will **not** be available for shipping to CE Mark required countries (for example, all countries within the European Union (EU)) **after July 10th, 2014**. See the Product Change Notification PCN 4464 ([https://www.usdigital.com/assets/pcns/PCN%20CE%20RoHS\\_4464.pdf](https://www.usdigital.com/assets/pcns/PCN%20CE%20RoHS_4464.pdf)) for more information, or contact a US Digital representative at [sales@usdigital.com](mailto:sales@usdigital.com) (<mailto:sales@usdigital.com>).

**Material Compliance Statement:** This product does NOT contain banned levels of substances as defined in European Directive 2011/65/EU. Specifically, Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent Chromium (CR+6), Poly Brominated Biphenyls (PBB), and Poly Brominated Diphenyl Ethers (PBDE) are not found above the threshold level given in the 2011/65/EU Directive.

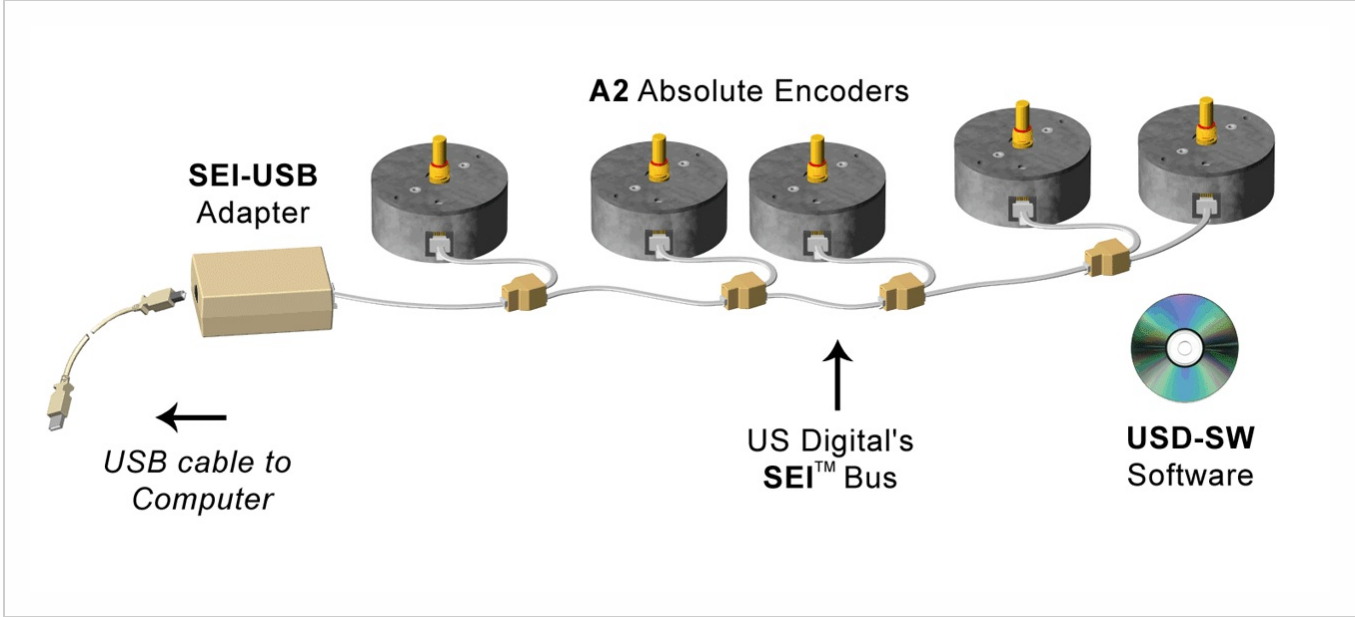
## SEI-USB Product Description

The SEI-USB is an interface module that connects US Digital's SEI compatible devices to a standard USB 1.1 / 2.0 port.

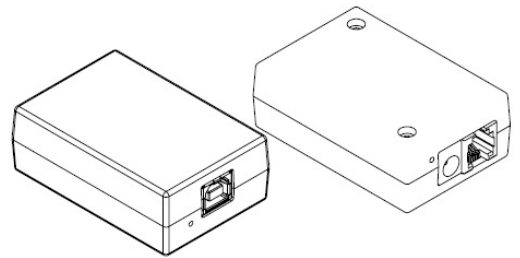
The SEI (Serial Encoder Interface) bus is a network that connects up to 15 addressable SEI devices using a single 6-wire telephone-type cable up to 1000 feet long. The SEI bus uses two differential signaling pairs, one for busy flow control and the other for bi-directional serial data.

The SEI-USB will supply power from the USB port to several SEI devices on the bus (for example, five A2 (<https://www.usdigital.com/products/encoders/absolute/shaft/a2/>) encoders at a distance of 250 feet). The SEI-USB limits the power to the maximum design spec of the USB port. A red LED next to the SEI connector will be lit when additional power is required, and you should then use the included PS-12 (<https://www.usdigital.com/products/accessories/power-supplies/ps-12/>) power supply. A green LED next to the USB connector is lit when the USB connection is established with the host.

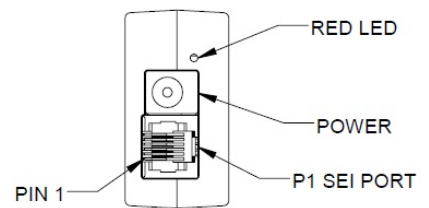
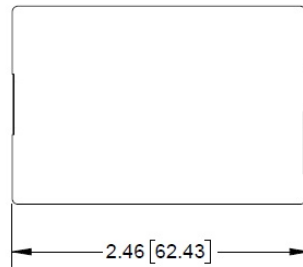
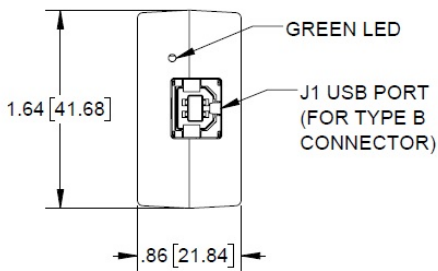
## Mechanical Drawings



**SEI-USB SEI to USB Adapter Drawing**



RELEASE DATE: 05/30/2017



## Specifications

**ENVIRONMENTAL**

PARAMETER	MIN.	TYP.	MAX.	UNITS
Operating Temperature	0		70	C
Electrostatic Discharge, USB pins		± 15		kV Human Body Model

**ELECTRICAL**

PARAMETER	MIN.	TYP.	MAX.	UNITS	PORT / PIN	NOTES
External Supply Voltage (optional)	8.5	12	16.0	V	J3	The external supply is used when the USB port power (J1) is not adequate to provide sufficient power when a large number of SEI devices are connected to the <b>SEI-USB</b> .
External Supply Current (optional)	-	-	1500	mA	J3	-
SEI-USB PWR Pin Voltage	8.0	9.5	10.5	V	P1 / 4	Generated by the <b>SEI-USB</b> using the USB port power (J1). Assumes that the USB PWR pin is not in a current limit mode as indicated by the red power-fault LED.
SEI-USB PWR Pin Current	-	-	120	mA	P1 / 4	Adequate to directly power five A2 encoders at a distance of 250 feet.
USB Port PWR Current, No Devices	<0.5	17	20	mA	J1 / 1	<b>SEI-USB</b> device load only, no devices attached.
USB Port PWR Current, 5 A2 Devices	-	275	480	mA	-	With 5 A2 devices attached.
Differential SEI Output Voltage	2.0	3.2	5.0	V	P1 / 5, 6	-
Differential SEI Input Voltage	0.2	-	5.0	V	P1 / 2, 3 and P1 / 5, 6	-
Common-mode SEI Output Voltage	2.0	2.5	3.0	V	P1 / 5, 6	-
Common-mode SEI Input Voltage	-4.5	-	3.0	V	P1 / 2, 3 and P1 / 5, 6	-
SEI Input Current (In=0-5V)	-15	-	15	mA	P1 / 2, 3 and P1 / 5, 6	-

## TIMING

PARAMETER	MIN.	TYP.	MAX.	UNITS	PORT / PIN	NOTES
Data Rate	1.2	-	115.2	kBaud	P1 / 5, 6	Virtual COM port speed.

**Data Latency:** The USB data latency timer is preset to a default value of 16ms by the driver manufacturer. This means that data could be sitting in the FIFO buffer up to 16ms before it is forced to transmit. If Windows is allowed to search the internet for the device drivers when the "Found New Hardware" wizard is displayed, then the latency timer will be set to 16ms. The latency timer can be set to a minimum of 1ms using USBSpeedBoost software found on the US Digital website.

## PIN-OUTS

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### SEI PORT (P1)

PIN	NAME	DESCRIPTION
1	GND	Ground, common for power, data and busy pairs
2	Busy+	Differential input line, active high, has 330 $\Omega$ pull down
3	Busy-	Differential input line, active low, has 330 $\Omega$ pull up
4	PWR	Power supply output to encoder bus (USB or external)
5	Data L	Bidirectional differential data line, has 330 $\Omega$ pull up
6	Data H	Bidirectional differential data line, has 330 $\Omega$ pull down

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## PRODUCT CHANGE NOTIFICATIONS

Title	Date	Description	Download
PCN 1011	9/21/2011	The AD2B, AD4B, AD7, EADAPT, EDAC2, EDIVIDE, EPOT, EQUAD, ESUM, ESWITCH, ETACH2, SEI-USB, USB-232 currently utilizes a printed thermal transfer label. This label will no longer be used and will be replaced by laser marking directly onto the housing of the product. The purpose for this change is to create a more durable solution, and eliminate the possibility of the label being inadvertently removed from the housing.	Download ( <a href="https://www.usdigital.com/support/resources/product-change-notifications/pcn-1011-interface-product-laser-marking/">https://www.usdigital.com/support/resources/product-change-notifications/pcn-1011-interface-product-laser-marking/</a> )
PCN 4464 - CE - RoHS	6/30/2014	<p>US Digital is aware of the increasing attention to world-wide environmental regulations, specifically with regard to the need for hazardous substance restrictions in electronic components and systems. As of July 10th, 2014 US Digital will now be CE Marking certain products inline with compliance under RoHS Directive (2011/65/EU). In order to achieve RoHS Compliance, the products will not contain more than the acceptable levels of the listed restricted substances within the RoHS 2011/65/EU directive.</p> <p>Part Numbers Affected:</p> <ul style="list-style-type: none"> <li>• ED3</li> <li>• USB4</li> <li>• QSB</li> <li>• SEI-USB</li> <li>• MD2S</li> <li>• PS-5, PS-12, PS-24, PS-48 (Power Supplies)</li> <li>• PE</li> </ul> <p>For the part numbers listed above, US Digital <b>cannot confirm</b> that they meet Low-Voltage and EMC Directives and for that reason <b>US Digital cannot support shipping those products / product families into the CE required countries</b> (For Example countries in the EU). Those products can still be shipped to Non-CE required countries with a Statement of Material Conformance to the RoHS Directive 2011/65/EU, in place of a RoHS Compliance Declaration.</p>	Download ( <a href="https://www.usdigital.com/support/resources/product-change-notifications/pcn-4464-ce-rohs/">https://www.usdigital.com/support/resources/product-change-notifications/pcn-4464-ce-rohs/</a> )
PCN 5514	10/7/2015	US Digital is changing the case color and label type of the SEI-USB. This change does not affect form, fit or function.	Download ( <a href="https://www.usdigital.com/support/resources/product-change-notifications/pcn-5514-sei-usb-case-revision/">https://www.usdigital.com/support/resources/product-change-notifications/pcn-5514-sei-usb-case-revision/</a> )

## INCLUDED ACCESSORIES

PS-12 Power Supply (<https://www.usdigital.com/products/accessories/power-supplies/ps-12>)

## Notes

- US Digital® warrants its products against defects in materials and workmanship for two years. See complete warranty (<https://www.usdigital.com/company/warranty>) for details.

