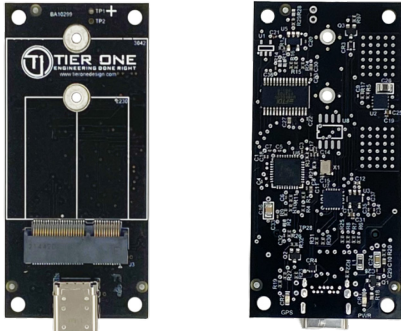# M.2 to USB Adapter

E-Key M.2 Adapter
Datasheet

M.2 to USB Adapter

An E-key M.2 to USB-C adapter, allowing users to test M.2 module interfaces

Operating Conditions	
Ambient Temperature	-40°C - 85°C
V_{USB} Current (Socket Unloaded)	20 mA
Socket 3.3V Range (200mA)*	3.24V - 3.46V (+/- 2%)
PERST# Asserted	2.94V
1.8V Range	1.76V -1.84V (+/- 2%)

*NOTE: Socket power can support up to 1A in peak bursts. Higher sustained currents are possible with a reduced MAX ambient temperature

Block Diagram

Breaking out M.2 low-speed interfaces is easy with the Tier One M.2 to USB Adapter. The adapter is ideal for hosting plug-in M.2 Type E communication modules where low power noise is crucial to optimizing receive data performance in wireless receivers.

Supported Interfaces: USB 2.0, I2C, and CMOS (1.8V) UART communication channels

M.2 Size Support: 2230, 3030, and3042
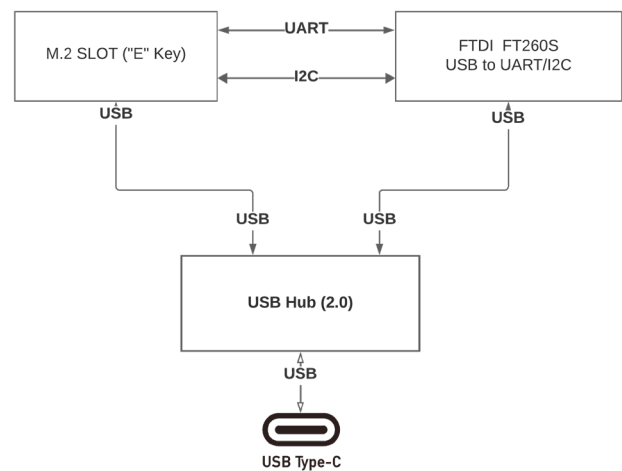
M.2 Key: Type E

Size Diagram

Features

- Made in the USA from globally sourced components.
- Ultra-low noise slot power to maximize receive sensitivity of modules
- USB Type C interface (USB 2.0 support)
- M.2 Module-controlled LED
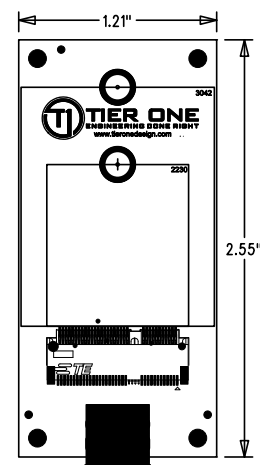- Optional trusted platform module (Microchip ATEC)

Pin Definitions and Supported Pins

All pinouts in this section are written from the adapter point of view when referencing signal direction.

Pin Types	Abbreviation	Definition
	U	USB Signaling
	I	Input from module
	I/O	Bidirectional signaling
	O	Output to module

SKT Pin#	M.2 Name	Type	Domain	Module Type
3	USB_D-	U		U
5	USB_D+	U		U
6	LED1#	I	3.3V	O
22	UART_RXD	I	1.8V	O
32	UART_TXD	O	1.8V	I
34	UART_CTS	I	1.8V	O
36	UART_RTS	O	1.8V	I
52	PERST#	O	3.3V	I
58	I2C_Data	I/O	3.3V	I
60	I2C_CLK	O	3.3V	I
62	ALERT#	I	3.3V	I

	Power Domain		Description	Min	Max	Unit
Level	1.8V	V_{IL}	Low-level Input		0.8	V
		V_{IH}	High-level Input	1.17		V
		V_O	Output Voltage ($I_{OUT} < 8mA$)	0	1.8	V
		$I_{OH/L}$	Output/Input Current		8	mA
	3.3V	V_{IL}	Low-level Input			V
		V_{IH}	High-level Input	2.0		V
		V_O	Output Voltage ($I_{OUT} < 8mA$)	0	3.3	V
		$I_{OH/L}$	Output/Input Current		4	mA

Reference Documents

The following documents are external reference documents and should be consulted when applicable:

- PCI Sig M.2 Electromechanical Specification Revision 5.1, Version 1.0 2023
- USB Specifications (www.usb.org)
- The I2C Specification, Version 2.1 January 2000, Philips Semiconductor (now NXP: www.nxp.com)
- FTDI FT260S HID class USB to UART/I2C Master (www.ftdichip.com)

TIER ONE
ENGINEERING DONE RIGHT