



Product Information

CompactPCI[®] Serial • SB3-TONE

Quad Port USB 3.0 Hostadapter

Document No. 7981 • 7 September 2016



General

The SB3-TONE is a peripheral slot board for CompactPCI® Serial systems, equipped with a quad port USB 3.0 compliant host controller. Four USB connectors are available from the front panel for attachment of USB devices.

The SB3-TONE can be installed into any PCI Express® enabled peripheral slot of a CompactPCI® Serial backplane. The front panel USB connectors deliver up to 1.5A V_{BUS} (+5V) each.



SB3-TONE

Feature Summary

General

- ▶ PICMG® CompactPCI® Serial standard (CPCI-S.0) peripheral slot card
- ▶ Single Size Eurocard 3U 4HP 100x160mm²
- ▶ CPCI-S backplane connector P1
- ▶ PCIe x 1 upstream - Gen2 (5.0Gbps) required for optimum performance

USB Interfaces

- ▶ Texas Instruments PCI Express® to quad-port USB 3.0 controller TUSB7340
- ▶ PCI Express® x 1 Gen2 interface for optimum performance
- ▶ USB 3.0 xHCI (eXtensible host controller interface) SuperSpeed supported
- ▶ USB 2.0 high-speed, full-speed, low-speed supported
- ▶ 4 x front panel Type A USB 3.0 host connectors
- ▶ V_{BUS} (+5V) 1.5A high current power switches assigned to front panel connectors

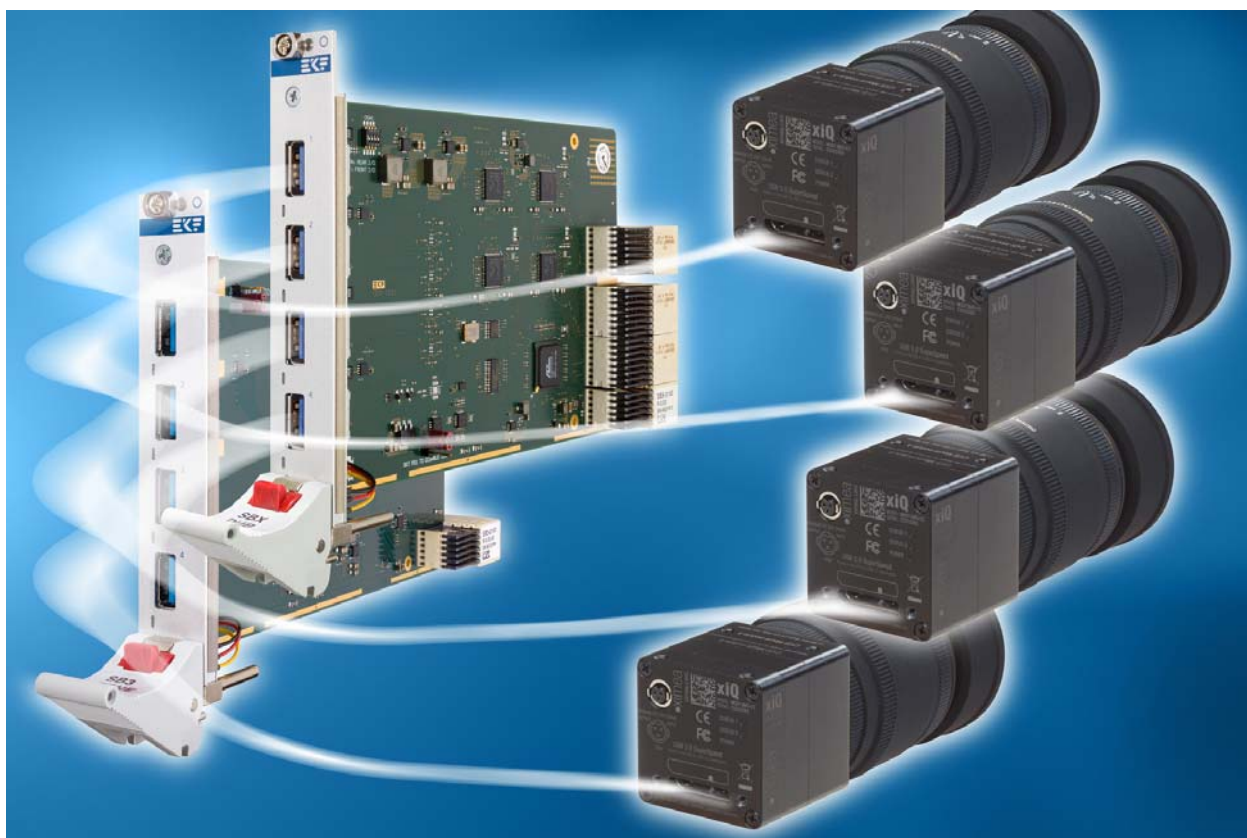
Environment & Regulation

- ▶ Designed & manufactured in Germany
- ▶ ISO 9001 certified quality management
- ▶ Long term availability
- ▶ Rugged solution (coating, sealing, underfilling on request)
- ▶ RoHS compliant
- ▶ Operating temperature: -40°C to +85°C (industrial temperature range)
- ▶ Storage temperature: -40°C to +85°C, max. gradient 5°C/min
- ▶ Humidity 5% ... 95% RH non condensing
- ▶ Altitude -300m ... +3000m
- ▶ Shock 15g 0.33ms, 6g 6ms
- ▶ Vibration 1g 5-2000Hz
- ▶ MTBF 66.7 years
- ▶ EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

Theory of Operation

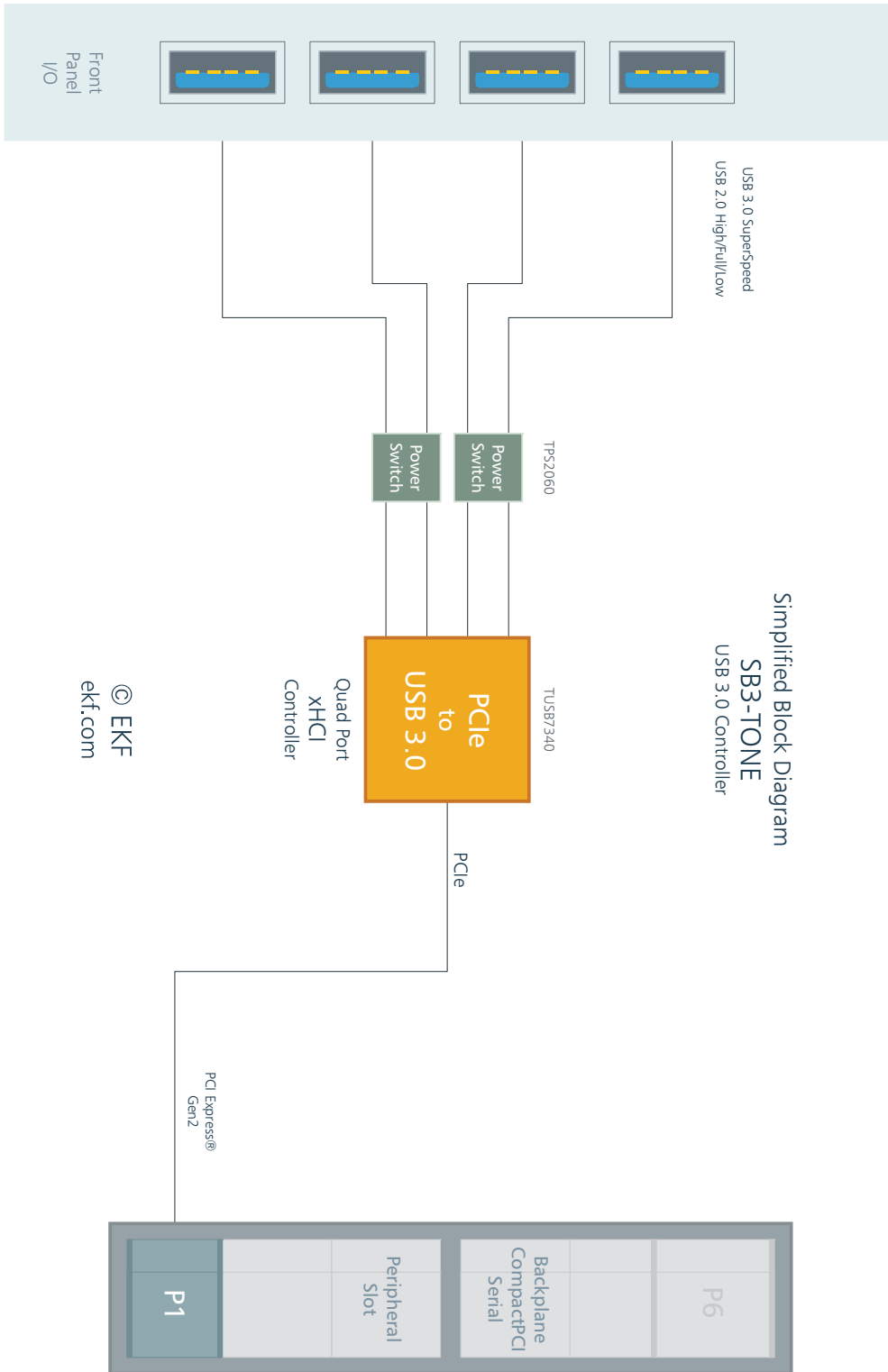
The SB3-TONE is equipped with a TUSB7340 (PCI Express® to USB 3.0 bridge). This xHCI (SuperSpeed) compliant host controller supports four downstream ports, all wired to front panel connectors. Each downstream port supports in addition USB 2.0 high-speed, full-speed, and low-speed.

The SB3-TONE is based on PCI Express® technology. For optimum performance the board requires a 5Gbps PCI Express® Gen2 sourced backplane slot. The TUSB7340 contains a single xHCI controller combined with a quad port USB 3.0/2.0 hub, hence a PCIe x 1 peripheral slot is sufficient for operation.



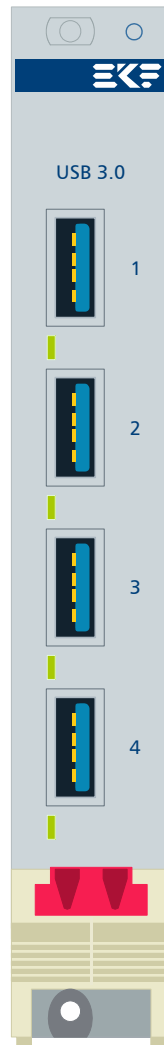
SB3-TONE Application Example

Block Diagram



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Front Panel



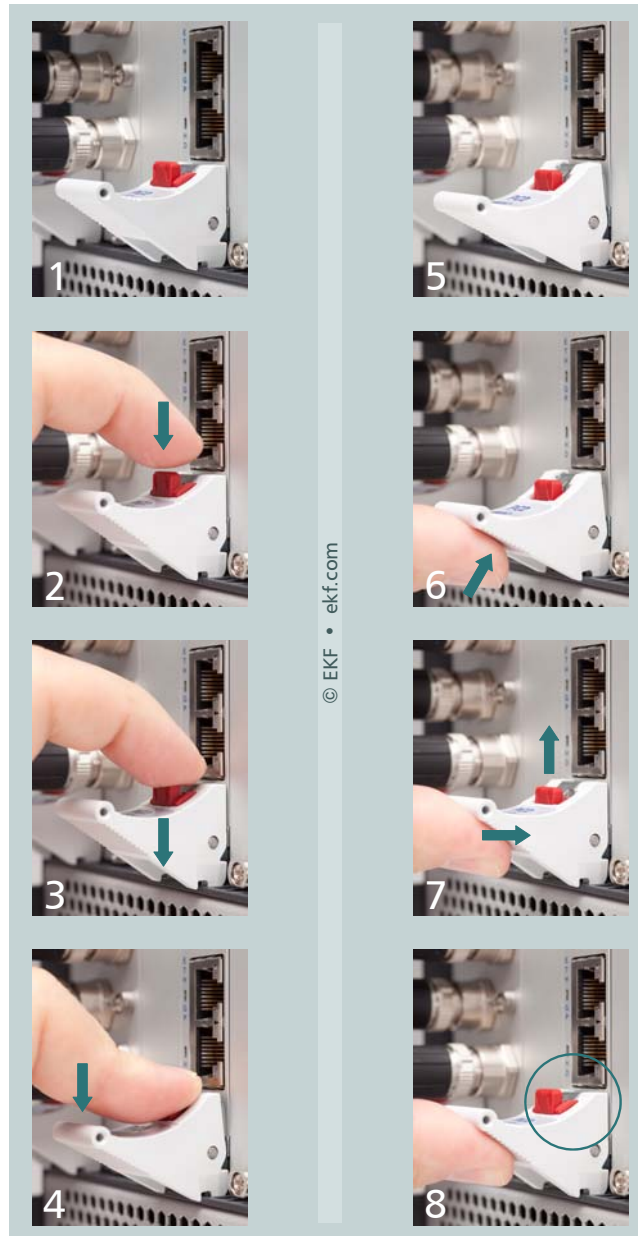
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SB3-TONE

LED Function

Green - USB Power

Please note: The front handle is provided with a built-in microswitch, which is used to disable the on-board power circuit when released. Vice versa, the *on-board devices are enabled not before the handle gets locked*. Please refer to the illustration below and make sure that the eject lever has reached its final position for proper board operation, as shown in picture 8. A gentle click should be audible, when the red actuator pin moves into its raised position, indicating that the board is locked and ready for use.



1 - 4: remove board

5 - 8: install board

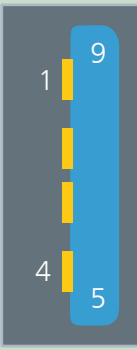
1 & 8: on-board power enabled

2-7: on-board power disabled

Front Panel Connectors

The SB3-TONE is equipped with four front panel receptacles for USB 3.0 or USB 2.0 type A cable connectors (USB root hub). When connected to USB 2.0 compliant devices, only the classic 4 contacts (data pair, +5V V_{BUS} and GND) are in use. USB 3.0 devices in addition communicate via the SuperSpeed differential transmit and receive signal pairs, available across another 5 contact pins.

Since the SB3-TONE USB ports share a common SuperSpeed xHCI controller, do not expect the maximum USB 3.0 data transfer rate to be available on all connectors simultaneously. For demanding applications consider the SBX-DUB (www.ekf.com/s/sbx/sbx.html) as an alternate, which is provided with 4 x TUSB7340. Each F/P connector is assigned to an individual xHCI controller on the SBX-DUB, for a maximum concurrent throughput when operated in a CompactPCI® Serial PCIe x 4 or fat pipe peripheral slot.

USB 3.0 Receptacles		
	1	VBUS +5V 1.5Amax
	2	USB D-
	3	USB D+
	4	GND
	5	SS RX-
	6	SS RX+
	7	GND
	8	SS TX-
	9	SS TX+

Each SB3-TONE USB connector provides +5V (VBUS) for powering external devices. Electronic switches limit the maximum output current of each individual USB connector to a safe level. Front panel LEDs are provided to indicate the power state and initialization status of each F/P USB port.

CompactPCI® Serial Backplane Connector

P1 CompactPCI® Serial Peripheral Slot Backplane Connector												
EKF Part #250.3.1206.20.02 • 72 pos. 12x6, 14mm Width												
P1	A	B	C	D	E	F	G	H	I	J	K	L
6	GND	PE TX02+	PE TX02-	GND	PE RX02+	PE RX02-	GND	PE TX03+	PE TX03-	GND	PE RX03+	PE RX03-
5	PE TX00+	PE TX00-	GND	PE RX00+	PE RX00-	GND	PE TX01+	PE TX01-	GND	PE RX01+	PE RX01-	GND
4	GND	USB2+	USB2-	GND	PE CLK+	PE CLK-	GND	SATA TX+	SATA TX-	GND	SATA RX+	SATA RX-
3	USB3 TX+	USB3 TX-	GA0	USB3 RX+	USB3 RX-	GA1	SATA SDI	SATA SDO	GA2	SATA SCL	SATA SL	GA3
2	GND	I2C SCL	I2C SDA	GND	RSV	RSV	GND	RST#	WAKE#	GND	PE EN#	SYS EN#
1	+12V	STBY	GND	+12V	+12V	GND	+12V	+12V	GND	+12V	+12V	GND

pin positions printed white: not connected

SB3-TONE Links

SB3-TONE Home	www.ekf.com/s/sb3/sb3.html
CompactPCI® Serial Overview	www.ekf.com/s/smart_solution.pdf

Driver Software

USB 3.0 TUSB7340 xHCI Driver	www.ti.com/product/tusb7340#toolssoftware
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Ordering Information

For popular SB3-TONE SKUs please refer to
www.ekf.com/liste/liste_21.html#SB3

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