EKF

SYSTEM

Technical Information

SCS-TRUMPET
Mezzanine I/O Expansion Board
Multifunction CPU Side Card

Edition 12

Document No. 7662 • 6 August 2018

Contents

About this Manual

This manual is a short form description of the technical aspects of the SCS-TRUMPET, required for installation and system integration. It is intended for the advanced user only. The latest version of this document may be obtained from www.ekf.com/s/scs/scs_ti.pdf.

Edition History

Ed.	Contents/*Changes*	Author	Date
1	Technical Information SCS-TRUMPET, english, preliminary edition Text #7662, File: scs_ti.wpd	jj	19 November 2014
2	Added photos SCS-0101, SCS-0400	jj	18 February 2015
3	Added ordering information	mib	27 February 2015
4	Modified illustration 'Inter-Board Connectors' (SC2-PRESTO carrier card PCIE connector is configurable as PCIe 41 or 1x4)	jj	3 March 2015
5	Added photo of a SC2-SCS dual backplane system	jj	24 April 2015
6	Added photo of dual backplane front view	jj	4 May 2015
7	Added photos SCS with M.2 modules populated	jj	1 June 2015
8	Added photos SCS with CPCI PlusIO CPU	jj	17 June 2015
9	Added photos SCS in a sample dual backplane environment	jj	27 August 2015
10	Added MTBF	mib	4 September 2015
11	Added table 'M.2 Mounting Parts'	jj	18 January 2016
12	Mixup P-USB3 & P-USB4 revised - front panel USB connector numbering consistent now from bottom to top	jj	6 August 2018

SCS-TRUMPET over CPU Carrier Card

Related Documents

Related Information SCS-TRUMPET	
SCS-TRUMPET Home	www.ekf.com/s/scs/scs.html
SCS-TRUMPET Technical Information (PDF)	www.ekf.com/s/scs/scs_ti.pdf
CompactPCI® Serial CPU Cards	www.ekf.com/s/serial.html#SC
CompactPCI® Serial Home	www.ekf.com/s/serial.html
CompactPCI® Serial Concept (PDF)	www.ekf.com/s/smart_solution.pdf
CompactPCI® Serial Products Short Selection (PDF)	www.ekf.com/s/serial_concise.pdf

Nomenclature

Signal names used herein with an attached '#' designate active low lines.

Trade Marks

Some terms used herein are property of their respective owners, e.g.

▸ Core™ i7, Ivy Bridge, Haswell, Broadwell: Intel®
▸ CompactPCI®, CompactPCI® PlusIO, CompactPCI® Serial: PICMG®
▸ Windows: Microsoft®
▸ EKF, ekf system: ® EKF

EKF does not claim this list to be complete.

Legal Disclaimer - Liability Exclusion

This manual has been edited as carefully as possible. We apologize for any potential mistake. Information provided herein is designated exclusively to the proficient user (system integrator, engineer). EKF can accept no responsibility for any damage caused by the use of this manual.

Standards

Reference Documents		
Term	**Document**	**Origin**
CompactPCI® Serial	PICMG® CPCI-S.0 R. 1.0, R. 2.0 (pending as of 2014-10)	www.picmg.org
DisplayPort®	VESA DisplayPort Standard Version 1.2	www.vesa.org
HD Audio	High Definition Audio Specification Rev.1.0a 2010	www.intel.com/content/www/us/en/chipsets/high-definition-audio.html
LPC	Low Pin Count Interface Specification, Revision 1.1	www.intel.com/design/chipsets/industry/lpc.htm
M.2 Module	PCI Express M.2 Specification Revision 1.0 Formerly known as the Next Generation Form Factor (NGFF)	www.pcisig.com
PCI Express®	PCI Express® Base Specification 3.0	www.pcisig.com
RS-232	Telecommunications Industry Association TIA 232 Sometimes inaccurately referred to as DOS COM port, based on a hardware interface called UART (universal asynchronous receiver/transmitter)	www.tiaonline.org
SATA	Serial ATA Specifications (3.2 Gold)	www.sata-io.org
TPM 2.0	Trusted Computing Group TCG PC Client Platform TPM Profile (PTP) Specification	www.trustedcomputinggroup.org
USB	USB 3.0 Universal Serial Bus Specification USB 2.0 Universal Serial Bus Specification	www.usb.org

Related Information CPU Carrier Cards	
SC1-ALLEGRO	www.ekf.com/s/sc1/sc1.html
SC2-PRESTO	www.ekf.com/s/sc2/sc2.html
SC3-LARGO	www.ekf.com/s/sc3/sc3.html
PC1-GROOVE	www.ekf.com/p/pc1/pc1.html
PC2-LIMBO	www.ekf.com/p/pc2/pc2.html
PC3-ALLEGRO	www.ekf.com/p/pc3/pc3.html
PC4-PRESTO	www.ekf.com/p/pc4/pc4.html
PC5-LARGO	www.ekf.com/p/pc5/pc5.html

Features

Feature Summary

General

▸ Mixed function mezzanine side card for EKF *CompactPCI® Serial* CPU boards
▸ Provides additional front panel I/O, choice of on-board SATA storage solutions, and optional rear I/O capabilities
▸ Suitable e.g. for use with CPU cards SC1-ALLEGRO, SC2-PRESTO, SC3-LARGO
▸ 8HP assembly together with CPU card
▸ 12HP assembly in total with CPU card and C32-FIO mezzanine

Front Panel I/O

▸ Variety of front panel I/O options:
▸ 2 x USB 3.0 xHCI SuperSpeed F/P connectors
▸ DisplayPort F/P connector (standard type, latched)
▸ 2 x Analog audio F/P jacks 3.5mm In/Out
▸ USB 2.0 F/P connector option (replaces audio jacks when ordered)
▸ Either RS-232 D-Sub 9-pin (COM port) or 2 x USB 2.0 F/P connectors
▸ Secondary RS-232 (COM port) connector option (replaces USB 3.0 and DP connectors)
▸ Option C32-FIO legacy front panel I/O (2 x RS-232, PS/2 KB/MS)
▸ Integrated 8HP front panel for CPU card and SCS-TRUMPET (12HP when C32-FIO third floor mezzanine is installed in addition)

On-Board SATA Storage

▸ Option on-Board SATA 6G SSD/HDD 2.5-inch size drive or Half-Slim SATA SSD module
▸ Option 2 x M.2 (formerly known as NGFF) SATA 6G SSD modules up to 2280 size (2230, 2242, 2260 or 2280)

Security

▸ Trusted Platform Module (Option)
▸ TPM 2.0 for highest level of certified platform protection
▸ Infineon Optiga™ SLB 9665 cryptographic processor
▸ Conforming to TCG 2.0 specification
▸ Meets Microsoft Windows 8 boot time and performance criteria

Feature Summary

Rear I/O Options

- ▸ All rear I/O is optional - available on customers request
- ▸ Rear I/O connector types P1 .. P5 as defined by the CPCI Serial specification
- ▸ Suitable for usage with a rear I/O transition module
- ▸ Suitable for usage with a secondary CPCI Serial backplane
- ▸ Option 4 x SATA 6G
- ▸ Option 6 x USB 3.0
- ▸ Legacy interface rear I/O option KB/MS, 4 x UART, LPT, GPIO

Environmental, Regulatory

- ▸ Designed & manufactured in Germany
- ▸ ISO 9001 certified quality management
- ▸ Custom specific development available on request
- ▸ Long term availability
- ▸ Rugged solution
- ▸ Coating, sealing, underfilling on request
- ▸ RoHS compliant 2002/95/EC
- ▸ Operating temperature 0°C to +70°C (commercial temperature range)
- ▸ Operating temperature -40°C to +85°C (industrial temperature range) on request
- ▸ 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
- ▸ EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)
- ▸ MTBF
  SCS-0101: 34.0 years
  SCS-0400: 80.2 years
  SCS-0510: 59.4 years

General Information

Available as a mezzanine add-on expansion board (aka side board) to the SC1-ALLEGRO, SC2-PRESTO and SC3-LARGO CompactPCI® Serial CPU cards, the **SCS-TRUMPET** *provides a variety of frequently required I/O functions available via front panel connectors. Additional interfaces are available as an option via rear I/O. The SCS-TRUMPET can be equipped with an on-board 2.5-inch SATA 6G SSD/HDD, or two M.2 style SATA modules, up to the 2280 format, for miscellaneous mass storage needs.*

For dual- or triple-screen applications (in addition to the primary DP video connector(s) on the CPU carrier board), the SCS-TRUMPET front panel is equipped with a DisplayPort connector. Two USB 3.0 jacks allow for attachment of high speed peripheral devices. Audio and legacy signal support is provided in addition. As an option, 6 x USB 3.0 and 4 x SATA 6G are available via rear I/O, for use either with a RIO transition module, or secondary CPCI Serial backplane.

SCS-0101-TRUMPET

SCS-0400-TRUMPET

System Requirements

The SCS-TRUMPET is a mezzanine side card, to be fixed on top of a suitable CPU carrier board. The pitch between carrier PCB and mezzanine PCB is 4HP, resulting in a 8HP common front panel for the entire assembly. Up to four mezzanine inter-board connectors are in use, for distribution of legacy and high speed I/O signals from the CPU carrier to the side board. These are referred to as *HSE* (SATA & USB 2.0 High Speed Expansion), *EXP* (Legacy Expansion), *PCIE* (PCI Express® x 4), and *DP* (DisplayPort). The mezzanine connectors are situated on the bottom side of the SCS-TRUMPET, facing towards their mating CPU card connectors.

The SCS-TRUMPET also is a carrier board itself, which can accommodate two M.2 SATA SSD storage modules, or a 2.5-inch SATA drive, and a front panel I/O expansion card as an option.

It is recommended to use a CompactPCI® Serial backplane which provides the CPU card system slot on the right edge, in order to prevent loss of a peripheral slot (the SCS-TRUMPET is then positioned out of the backplane shape). Use of the rear I/O option requires either a custom specific rear transition module in addition, or a secondary CPCI Serial backplane, for front installed SATA or USB based CPCI Serial cards.

Bottom Side Mezzanine Connectors HSE, EXP, PCIE, DP (see-through PCB)

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
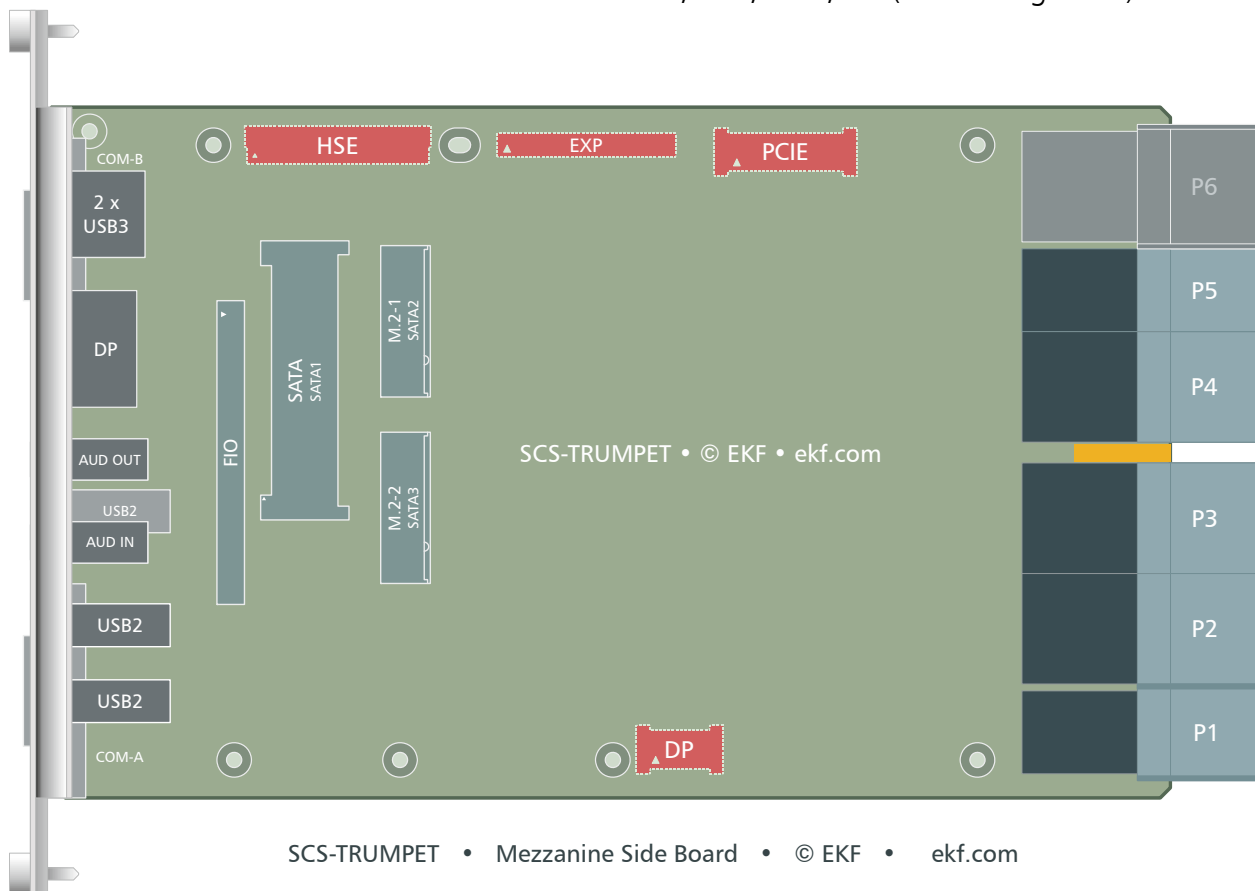
Storage Options

The SCS-TRUMPET can accommodate a 2.5-inch SATA drive (SATA docking connector), which is also suitable for a Half-Slim SATA SSD module as an alternate. The 6G SATA interface is derived from the mezzanine connector HSE (SATA1 channel).

In addition, the SCS-TRUMPET can be populated with two M.2 (NGFF) SATA based SSD storage modules, up to the 2280 size. The M.2 sockets are routed to the mezzanine connector HSE, SATA2 & SATA3. Software RAID may be established.

SCS-TRUMPET • on-Board SATA Storage Options

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
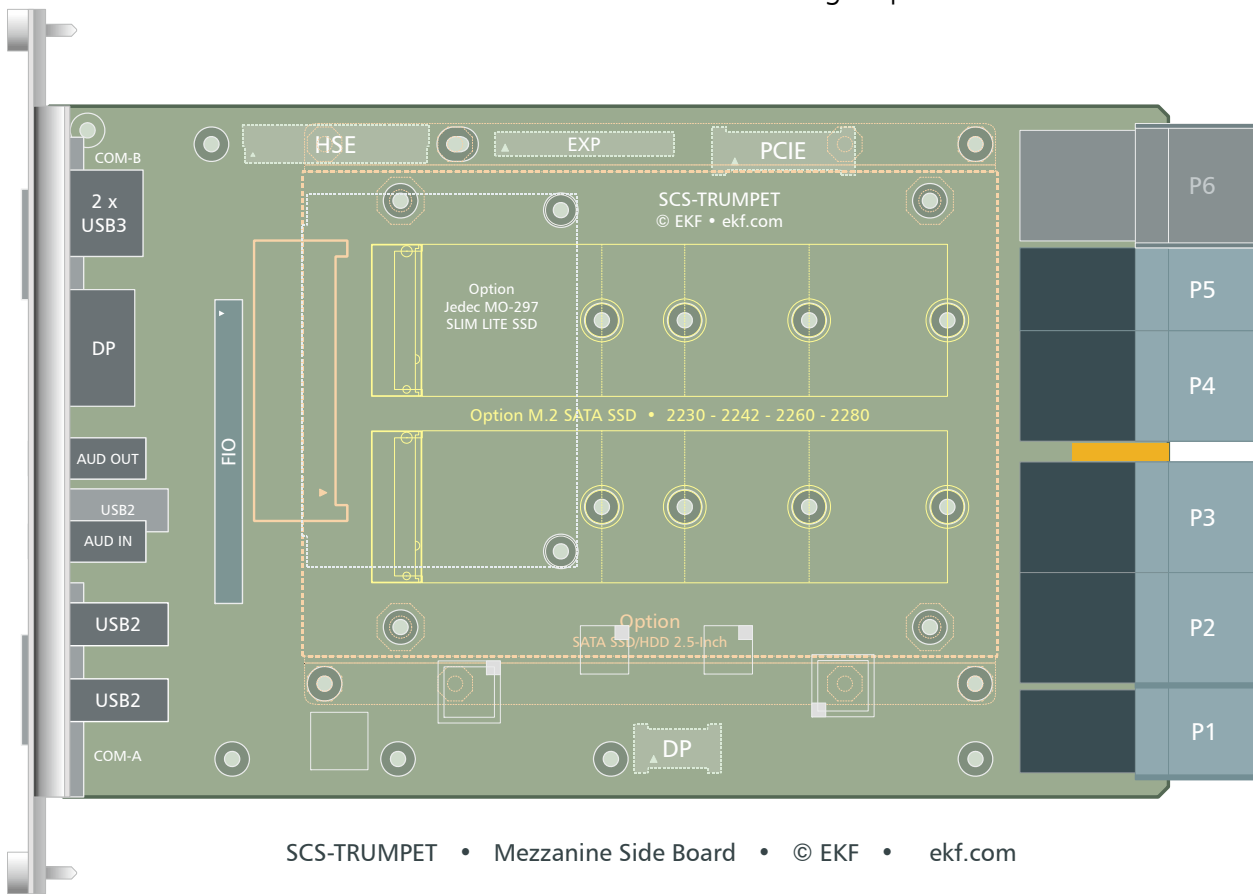
orange - 2.5-inch drive
white - half-slim SSD module
yellow - M.2 SSD modules 2230-2280

SCS-TRUMPET • Option on-Board 2.5-Inch SATA Drive

COM-B

2 x
USB3

DP

AUD OUT

USB2
AUD IN

USB2

USB2

COM-A

FIO

SATA
SATA1

Option on-Board
SATA SSD/HDD
2.5-Inch

DP

SCS-TRUMPET
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P6

P5

P4

P3

P2

P1

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
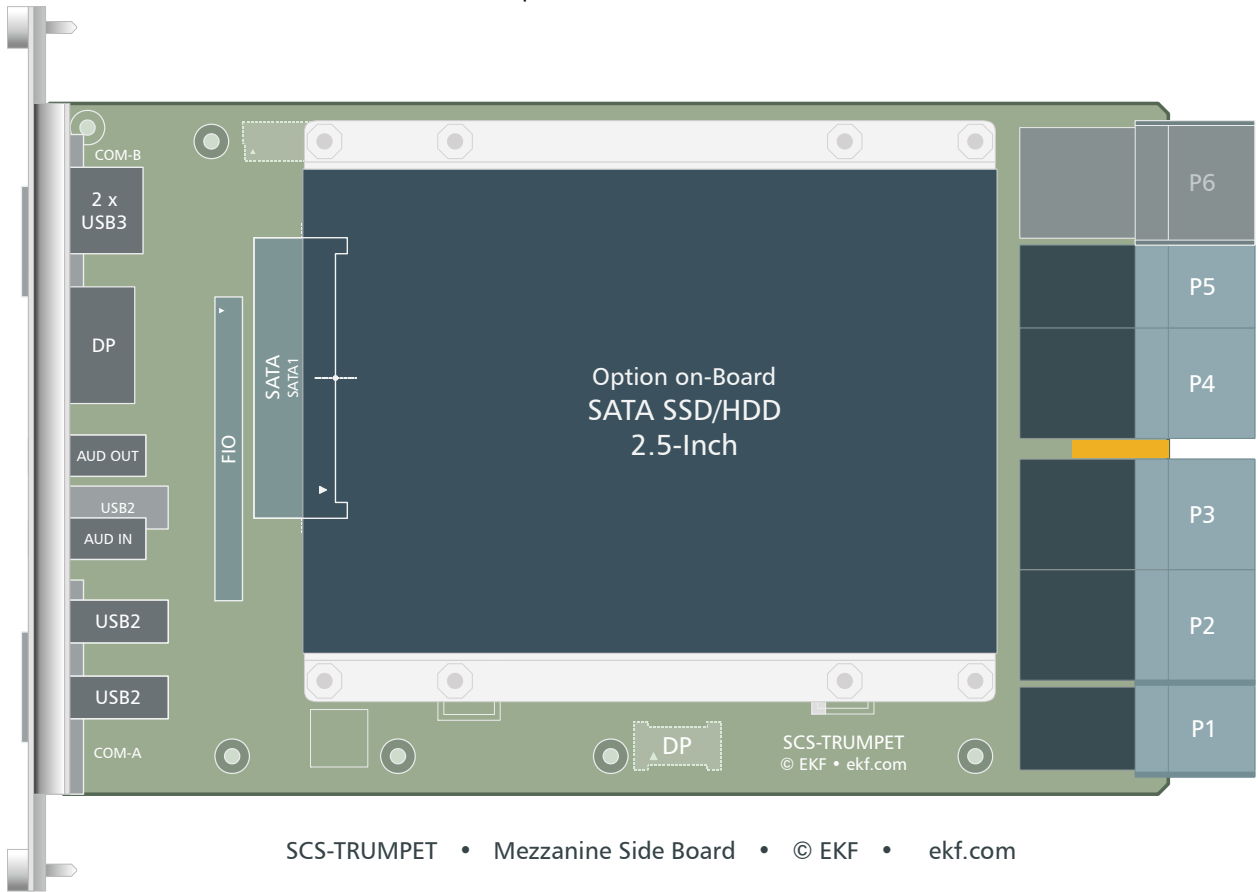
SCS-TRUMPET • Option on-Board Half-Slim SATA Module

COM-B

2 x
USB3

DP

AUD OUT

USB2
AUD IN

USB2

USB2

COM-A

FIO

SATA
SATA1

HSE

EXP

PCIE

SCS-TRUMPET
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Jedec MO-297
SLIM LITE SSD

ATA SSD • 2230 - 2242 - 2260 - 2280

DP

P6

P5

P4

P3

P2

P1

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
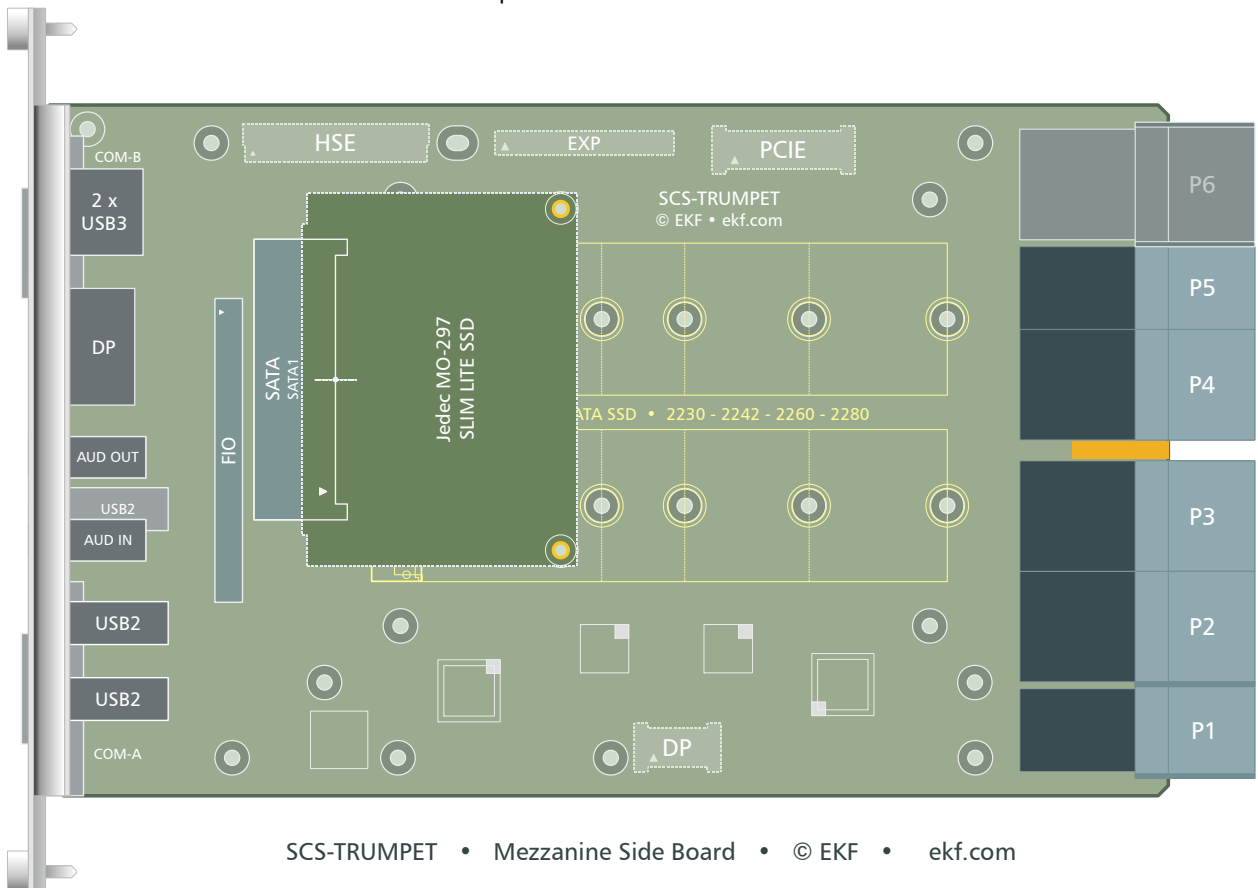
SCS-TRUMPET • Option on-Board M.2 SATA Modules

COM-B

HSE

EXP

PCIE

P6

2 x USB3

SCS-TRUMPET
© EKF • ekf.com

DP

M.2-1 SATA2

2230 2242 2260 2280

P5

P4

Option M.2 SATA SSD • 2230 - 2242 - 2260 - 2280

AUD OUT

FIO

USB2

AUD IN

M.2-2 SATA3

2230 2242 2260 2280

P3

USB2

USB2

Option
SATA SSD/HDD 2.5-Inch

P2

COM-A

DP

P1
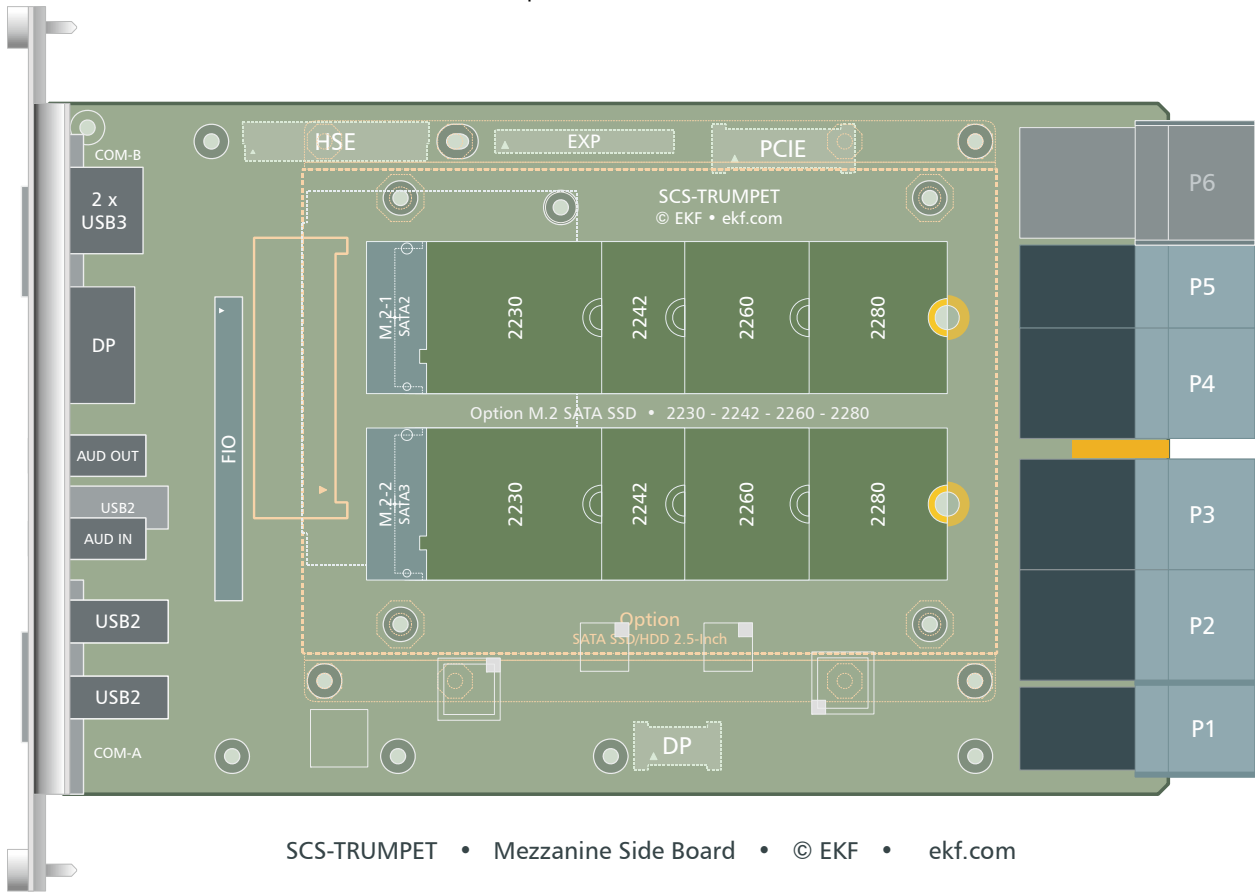
SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
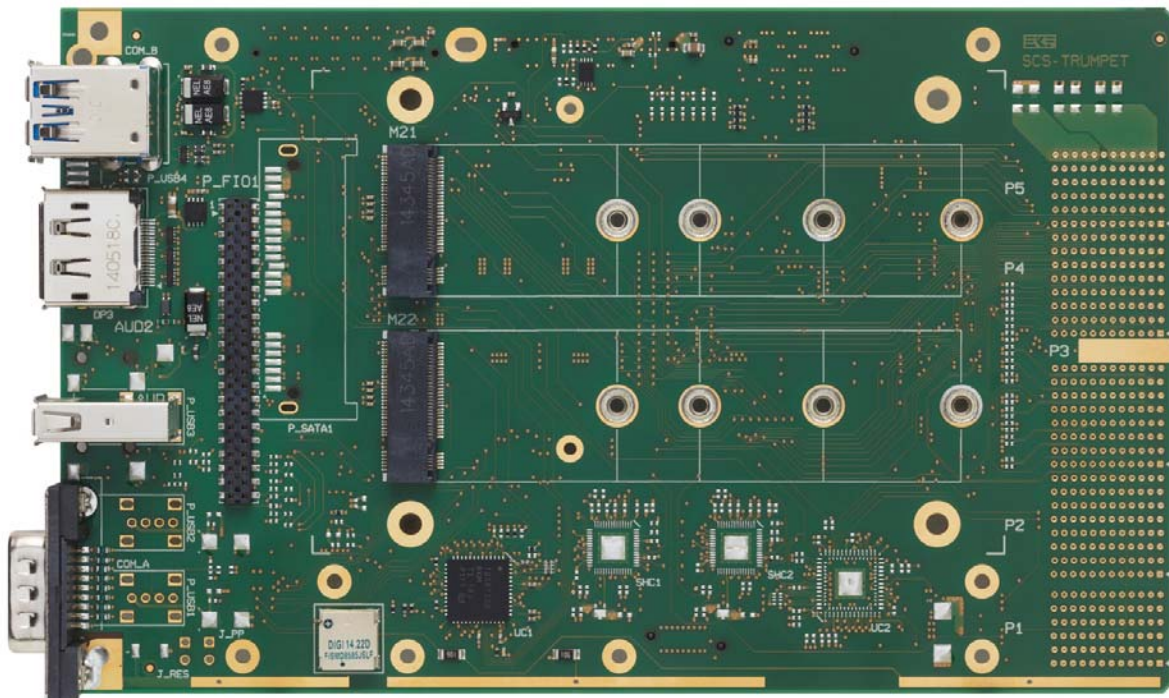
Front Panel I/O

The SCS-TRUMPET expands the suite of front panel connectors of a particular CPU carrier board by two USB 3.0 receptacles, a DisplayPort video output, 3.5mm Audio In/Out jacks, and a D-Sub connector with EIA-232 signal level COM port pin assignment. Alternatively, a second COM port connector or up to three additional USB 2.0 jacks are available on request.

In addition, the SCS-TRUMPET can accommodate the C32-FIO front panel I/O mezzanine module, for a total front panel width of 12HP. The C32-FIO provides another two RS-232 COM ports, two USB 2.0 receptacles and a PS/2 style keyboard/mouse Mini-DIN connector.

SCS-TRUMPET • Option C32-FIO Front I/O Module

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
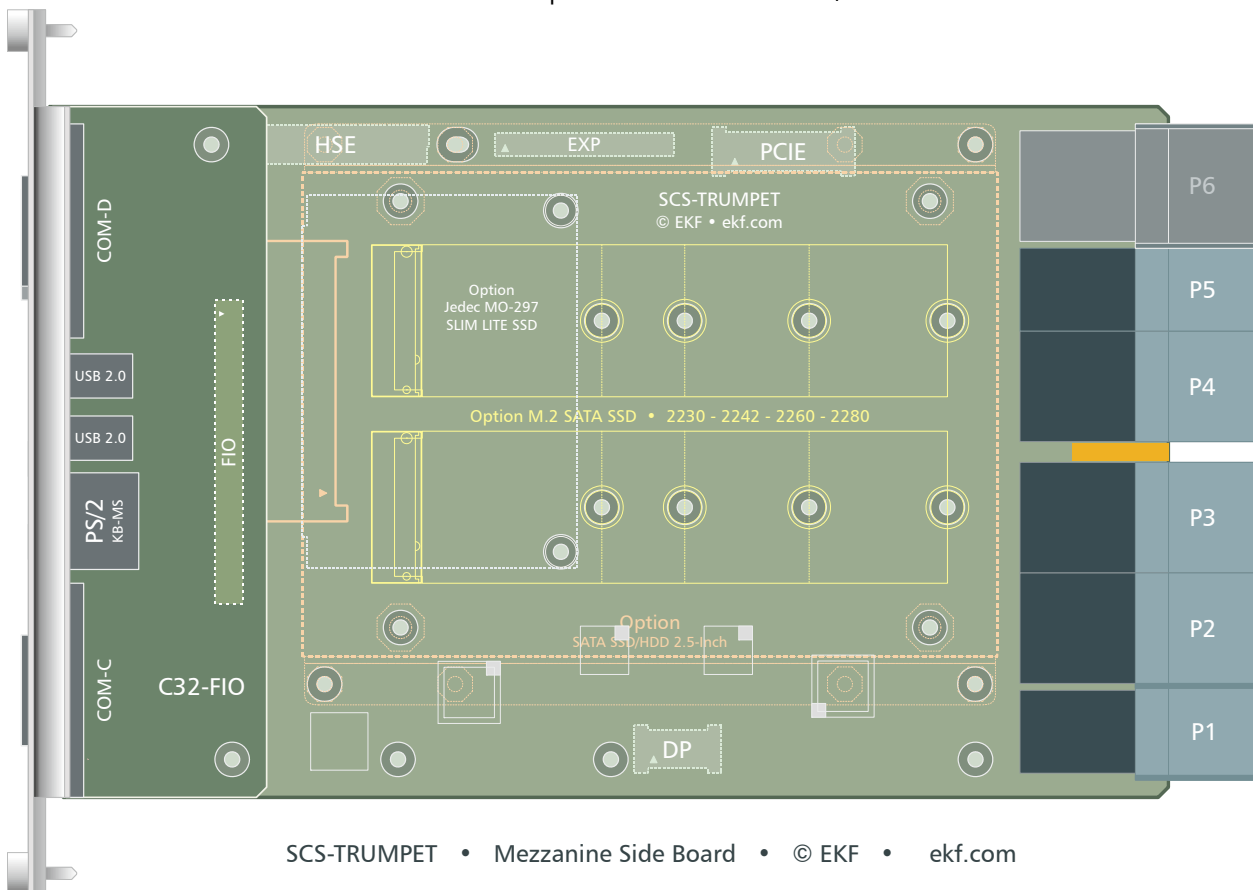
Related Documents	
C32-FIO Mezzanine Front I/O Module	www.ekf.com/c/ccpu/c32/c32_tie.pdf

Sample Front Panel Options 8HP

1	2	3	4
SC2-PRESTO Dual - mDP	SC2-PRESTO Dual - mDP	SC2-PRESTO Dual - mDP	SC2-PRESTO Dual - mDP
SCS-TRUMPET STD	SCS-TRUMPET 1 x RS-232	SCS-TRUMPET 2 x RS-232 / AUDIO	SCS-TRUMPET 2 x RS-232 / USB2
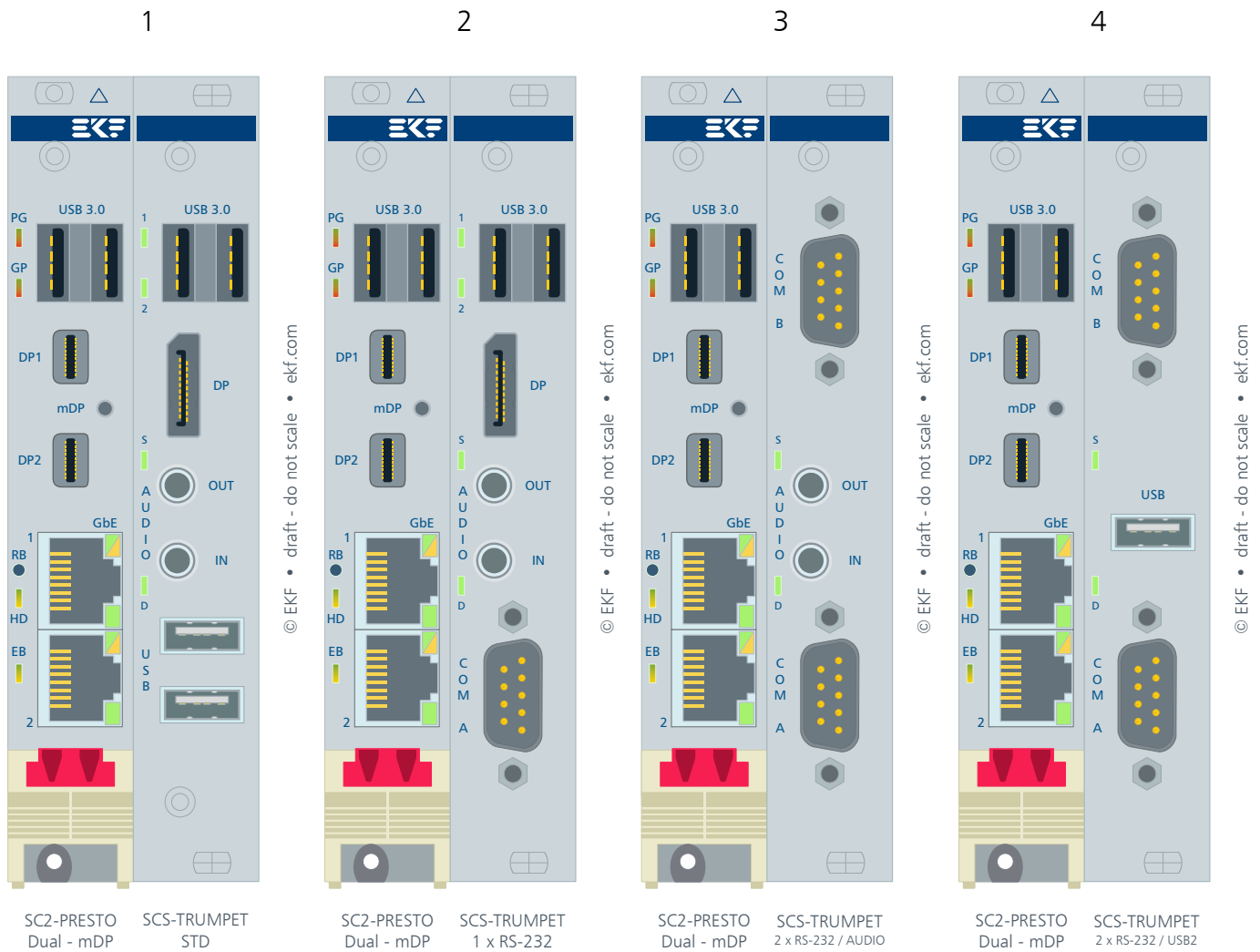
Illustrations based on a common 8HP front panel together with CPU carrier card. Not all possible configurations are shown here. From left to right:

1. Typical assembly, dual-USB 3.0, DisplayPort, 3.5mm stereo audio in/out, 2 x USB 2.0
2. Bottom RS-232 male D-Sub 9-pin (COM-A) replaces two USB 2.0 jacks
3. Top RS-232 male D-Sub 9-pin (COM-B) replaces dual-USB 3.0 and DisplayPort connectors
4. Center USB 2.0 receptacle replaces both 3.5mm stereo audio jacks

Please regard our ordering information.

Sample Front Panel Options 12HP

5   6

SC2-PRESTO
Dual - mDP   SCS-TRUMPET
STD   C32-FIO

SC2-PRESTO
Dual - mDP   SCS-TRUMPET
1 x RS-232   C32-FIO

Illustrations based on a common 12HP front panel together with CPU carrier card and C32-FIO. Not all possible configurations are shown here. From left to right:

5. Dual-USB 3.0, DisplayPort, 3.5mm stereo audio in/out, 4 x USB 2.0, 2 x RS-232 (COM-C/D)
6. Dual-USB 3.0, DisplayPort, 3.5mm stereo audio in/out, 2 x USB 2.0, 3 x RS-232 (COM-A/C/D)

Rear I/O

As an option, the SCS-TRUMPET can be equipped with up to five rear I/O connectors P1 to P5, as defined by the CompactPCI® Serial specification. Available for rear I/O are three signal groups, SATA, USB, and legacy I/O.

For a CompactPCI® Serial CPU board with side card assembly, it is recommended to employ a backplane which provides the system slot at the right edge. Through positioning the sid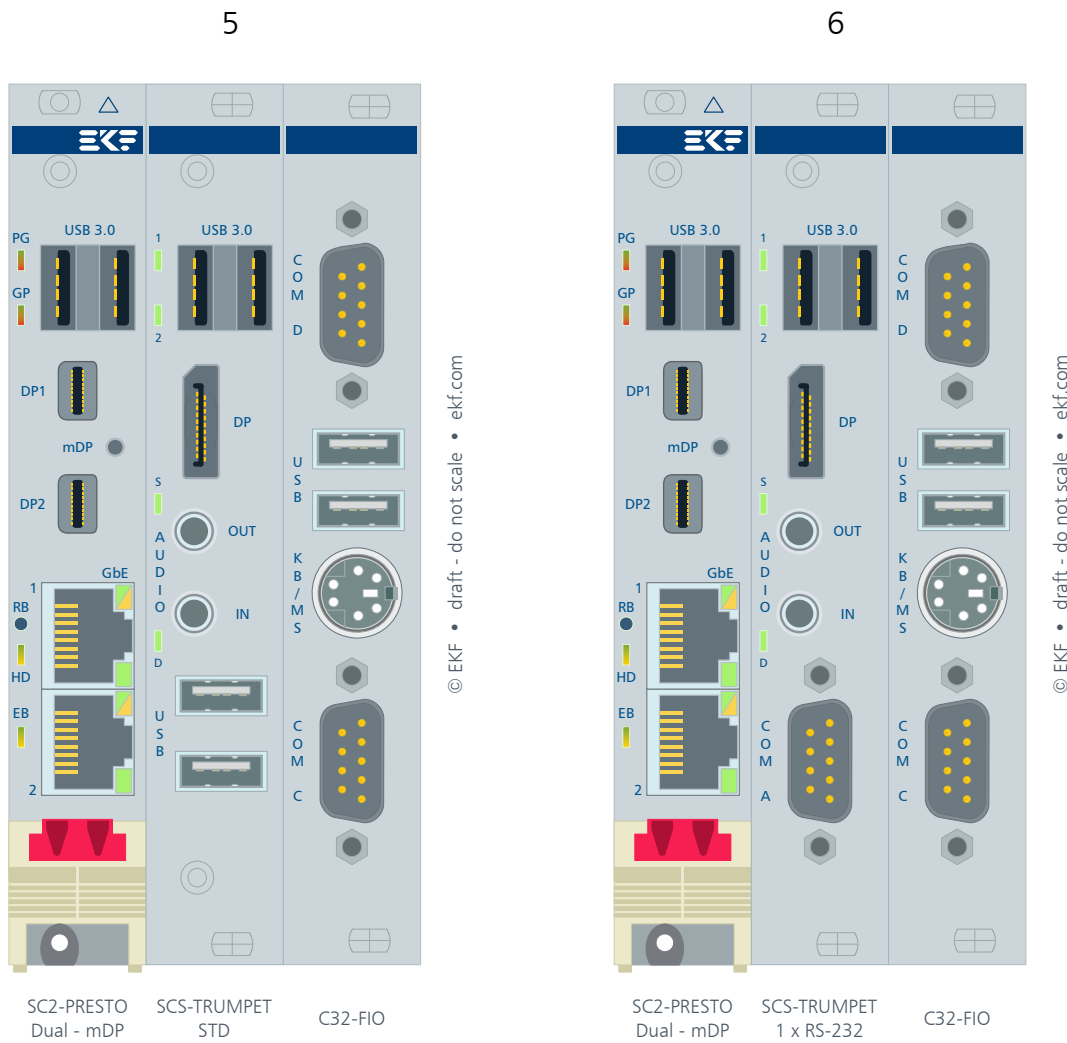e card out of the backplane shape, loss of a peripheral slot otherwise can be avoided. However, no damage will occur if the SCS-TRUMPET would be installed into a CPCI-S peripheral backplane slot, and this combination is definitely suitable for rear I/O across a transition module.

With respect to SATA and USB, the pin assignment for each rear I/O connector is similar to the CPCI-S system slot specification. Thereby these data ports can be used either via a custom specific rear I/O transition module, or by means of a secondary CompactPCI® Serial backplane as an alternate. For the additional backplane it would be mandatory to have the system slot aligned left, so that the CPU and side card assembly both will be installed into system slots of the associated backplanes, with a pitch of 4HP.

If ordered for rear I/O, the SCS-TRUMPET comes populated with 6G SATA and USB 3.0 controllers on-board, which are wired to the RIO connectors P2 and P3 (4 x SATA, 6 x USB 3.0). The pin assignment follows the CompactPCI® Serial system board specification. By means of a secondary backplane, which distributes these data channels to secondary peripheral slots, up to six USB driven CPCI-S peripheral cards could be installed, and/or up to four SATA based boards, in addition to the primary backplane slots.

The RIO connector P4 is used for legacy I/O derived from an on-board SIO, such as UART (COM), PS/2 type KB/MS, and parallel printer (LPT). Most pins can be operated as simple GPIO ports if required. Rear I/O usage via P4 would require in addition a custom specific rear I/O module.

P1 and P5 are mainly provided to supply an active rear I/O transition module with power, as required e.g. for USB connectors (V_{BUS}), or an SATA SSD module.

Depending on the customers requirements, not all rear I/O connectors P1 to P5 may be populated.

Theory of Operation

The SCS-TRUMPET fits on the top side of the CPU board, (the right side when viewing the common front panel). The side board communicates by means of four bottom mount expansion connectors with the host CPU: PCIE (PCI Express x 4), HSE (High Speed Expansion meaning SATA and USB), DP (DisplayPort), and EXP (multi-function legacy I/F such as LPC). Suitable CPU carrier cards e.g. are the SC1-ALLEGRO, SC2-PRESTO, or SC3-LARGO (CompactPCI® Serial).

The PCI Express interface mezzanine connector PCIE is comprised of 4 PCIe lanes. The CPU carrier must be configured for 4 links x 1 (by CPU card DIP-switch settings, consult CPU user guide). On the SCS-TRUMPET, two PE lanes are dedicated to two USB 3.0 host controllers. The other two lanes are in use for two on-board SATA 6G host controllers. Up to eight USB 3.0 SuperSpeed ports are available from the USB controllers (two front panel jacks, and as an option six rear I/O channels across P3). The optional on-board SATA controllers provide two channels each, for a total of up to four SATA ports wired to the rear I/O connector P3. If rear I/O is not required for the SCS-TRUMPET, the SATA 6G controllers would be entirely omitted, and a different USB 3.0 controller would be stuffed which provides only two ports, wired to the stacked USB 3.0 front panel jacks.

The DP mezzanine connector is provided for applications with need for a third DisplayPort front panel video connector, in addition to the dual-video outputs provided by the CPU carrier card. It is connected to a front panel receptacle.

The HSE mezzanine connector passes a maximum of 4 x SATA channels and 4 x USB 2.0 ports from the host CPU to the SCS-TRUMPET side board. All on-board mass storage solutions, the 2.5-inch SATA drive and/or two M.2 SSD modules are tied directly to the HSE mezzanine connector. The USB 2.0 ports are in use for optional F/P I/O. If available, the 4th SATA channel is wired for rear I/O across a redriver (P3 option).

The mezzanine connector EXP combines several side-band data channels: The HD Audio interface (aka Azalia) is a data path to the on-board audio codec. The LPC (Low Pin Count) enables the super-I/O (SIO) controller chip to emulate the legacy I/O interfaces; among these are the classic serial (COM) and PS/2 keyboard/mouse ports.

The SCS-TRUMPET can also be used with CompactPCI® PlusIO CPU cards such as the PC3-ALLEGRO or PC4-PRESTO. Other CPU cards may not support all functionality available on the PCS-BALLET, e.g. the DisplayPort.

SATA Controllers

A major goal of the SCS-TRUMPET is to provide versatile storage solutions. Up to four SATA channels are passed through from the CPU carrier card via the side card mezzanine connector HSE. These ports are in use for on-board storage options, i.e. the 2.5-inch SSD/HDD drive, and two M.2 standard mezzanine modules. The fourth HSE based SATA channel (to be supported by future CPU cards), is wired to the optional backplane connector P3. 6G SATA speed is consistently supported on the SCS-TRUMPET.

As an option for additional mass storage attachment, the SCS-TRUMPET can be equipped with up to two Marvell 88SE9170 PCI Express® to dual-port 6Gbps SATA controllers, dedicated to the rear I/O connector P3. Driver software must be installed prior to usage.

Via P3, these four SATA channels are available for usage on a custom specific rear I/O transition module, or by means of a CompactPCI® Serial backplane together with SATA based peripheral cards.

USB 3.0 Controller

The HSE and EXP side card mezzanine connectors comprise up to 6 USB 2.0 ports in total, passed through from the CPU carrier card to the SCS-TRUMPET. SuperSpeed USB however is provided by the on-board TUSB7320 controller, made available across two USB 3.0 front panel jacks for attachment of external devices. XHCI driver software is available.

As an option, the SCS-TRUMPET can be equipped with two quad-port TUSB7340 controllers. The additional six USB 3.0 ports are wired to the backplane connector P3 for optional rear I/O usage. In addition, some sideband signals are routed to P5, in order to control external electronic V_{BUS} power switches.

Super I/O Controller

The on-board SIO is accessed via the LPC interface provided by the EXP side card mezzanine connector. The SIO comprises legacy I/O circuitry such as UART (COM), PS/2 (keybord and mouse), and parallel printer (LPT). Most pins also also usable as universal GPIO ports. The legacy signal group is available for optional rear I/O via the backplane connector P4.

The four serial interfaces (UART) of the SIO are optionally available for front panel I/O (EIA-232 D-Sub), and alternatively for rear I/O usage (TTL-level). Do not use both options simultaneously in order to avoid signal interference. Suitable RS-232 or RS-485 transceivers for rear I/O must be externally supplied. The PS/2 port may be in use also on the C32-FIO front panel module.

HD Audio Codec

The SCS-TRUMPET is equipped with an ALC262 audio codec, which involves software configurable I/O cells. Two 3.5mm front panel audio jacks are provided, both input- and output-capable (headphones, line in(out). Additional audio channels would be available for use via the connector FIO (option).

Microphone (MIC) capable inputs provide a bias voltage. Headphone (HP) outputs are buffered, with lower output resistance compared to straight line outputs (to be considered also for long cables). Installation of the Realtek audio driver software is recommended.

	ALC262 Port Configurations				
Port	Name	LINE OUT / HP	LINE IN	MIC	Connector
A	HP	✓	✓		not available
B	MIC1			✓	FIO
C	LINE1		✓		FIO
D	LINE-OUT	✓	✓		not available
E	LINE2	✓	✓	✓	Audio Out
F	MIC2	✓	✓	✓	Audio In
	CD		✓		FIO
	S/PDIF				FIO

The illustration below shows the Realtek Audio Manager (Windows), menu "Audio I/O". It allows to setup most ports adequately. The D-SUB connector option is not available for the SCS-TRUMPET.

No Usage

Port A (D-SUB)
Line Out - HP - Line In

Port C (J-FIO)
Line In

Port D (D-SUB)
Line Out - HP - Line In

Port B (J-FIO)
MIC In

Port E (3.5mm OUT)
Line Out - HP - Line In - MIC In

Port F (3.5mm IN)
Line Out - HP - Line In - MIC In

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ekf.com
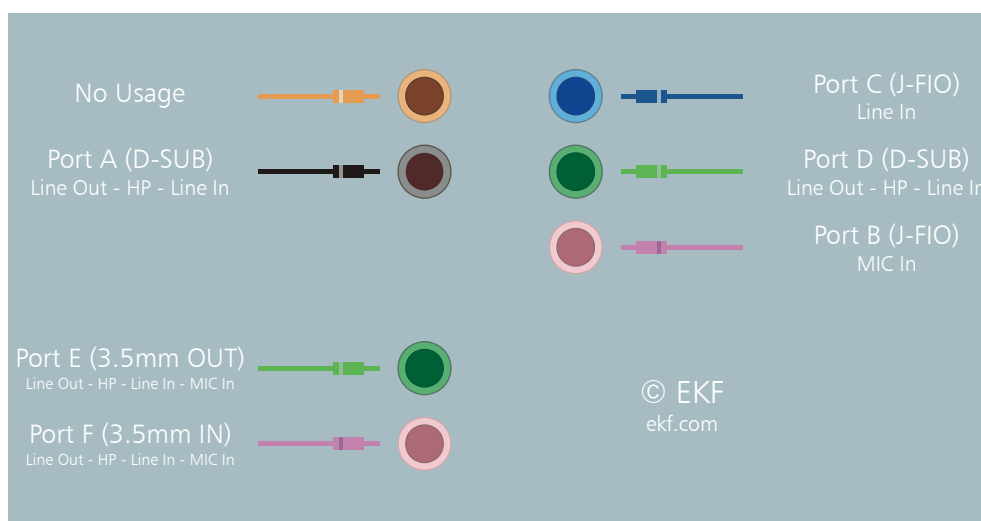
CCO-CONCERT
Realtek Audio Driver Analog Configurations

Block Diagram

Simplified Block Diagram
SCS-TRUMPET
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Front Panel I/O

Sheet 1
USB & DisplayPort

Front Panel I/O

USB2
COM
USB2
USB2
DP
COM-B
USB3
USB3

SATA 3
SATA 2
SATA 1
SATA 6G

M.2/NGFF 2280 SATA
M.2/NGFF 2280 SATA
Option 2.5-Inch on-Board SATA SSD/HDD

Mezzanine
Side Card I/O
HSE 3 x SATA

SATA Redriver
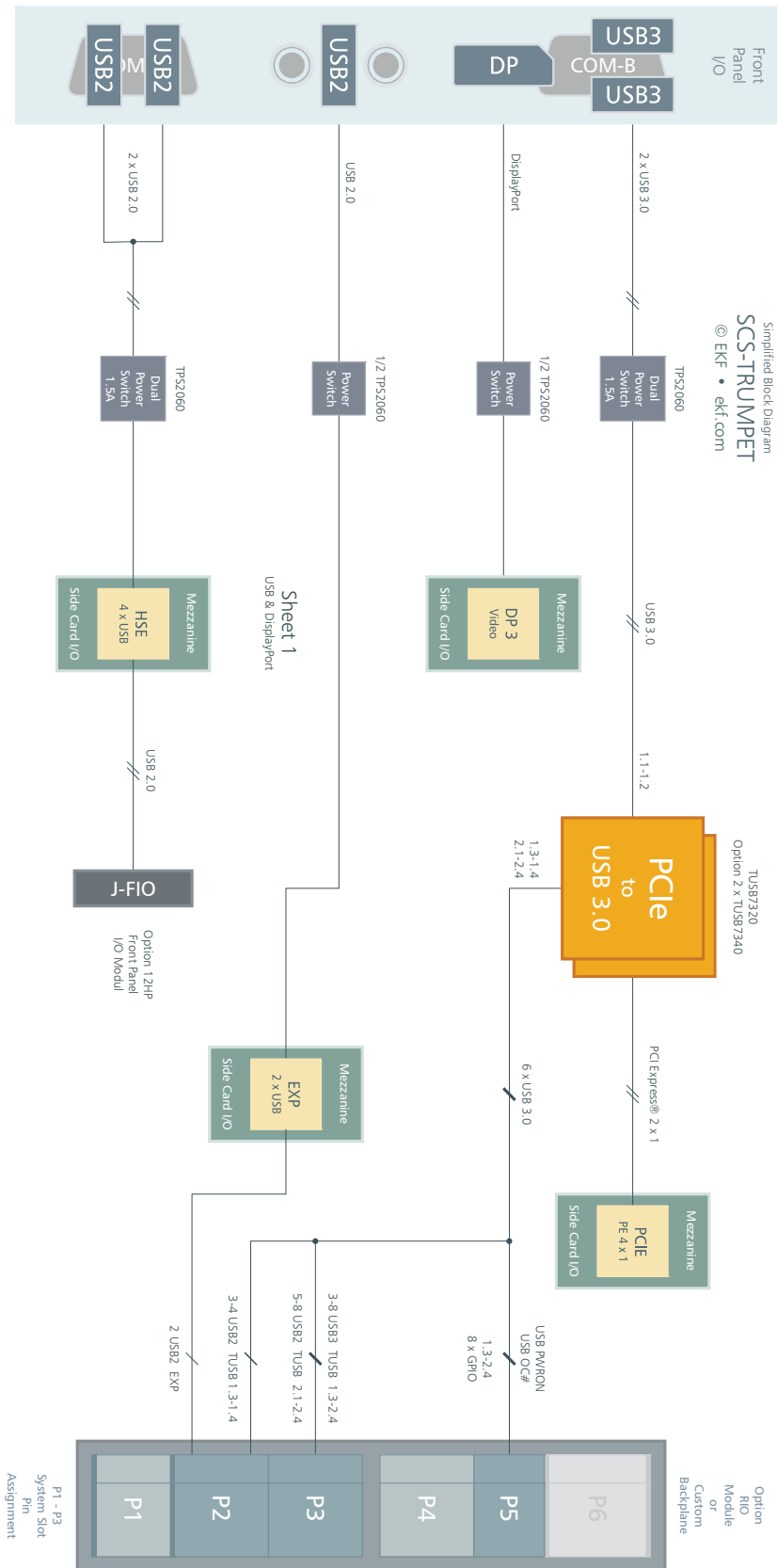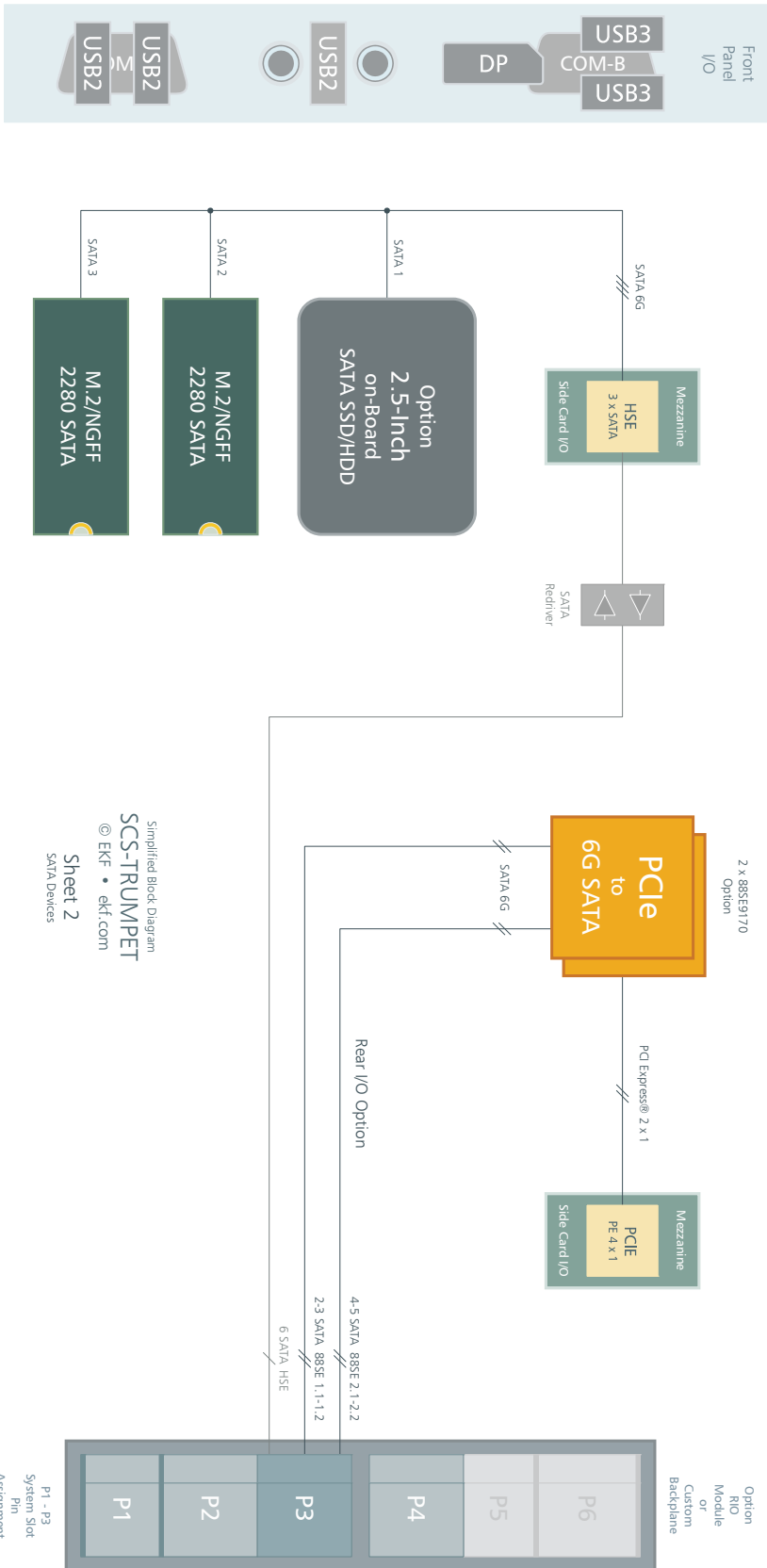
Simplified Block Diagram
SCS-TRUMPET
© EKF • ekf.com
Sheet 2
SATA Devices

2 x 88SE9170 Option

PCIe to 6G SATA

SATA 6G

PCI Express® 2 x 1

Mezzanine
Side Card I/O
PCIE PE 4 x 1

Rear I/O Option

6 SATA HSE
2-3 SATA 88SE 1.1-1.2
4-5 SATA 88SE 2.1-2.2

P1 – P3
System Slot
Pin Assignment

P1
P2
P3
P4
P5
P6

Option RIO Module or Custom Backplane

Simplified Block Diagram

SCS-TRUMPET
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Sheet 3
Legacy I/O

Front Panel I/O

COM-A

USB2 IN OUT

DP COM-B

USB3

Option RS-232 alternate to 2 x USB 2.0

MIC 2 LINE IN MIC IN LINE OUT HP OUT F

LINE 2 E

Option RS-232 alternate to 2 x USB3 & DisplayPort

EIA 232
Option MAX3243

HD-AUDIO CODEC
ALC262

BEEP

SER1-2 (TTL)

S/PDIF B/C/CD

J-FIO
Option 12HP Front Panel I/O Modul

SER3-4 (TTL) // 4 x

PS/2 (KB/MS)

EEPROM

I2C EEP

EXP LPC AUD
Side Card I/O
Mezzanine

HD AUDIO

Low Pin Count (LPC)

SIO
LPC Super I/O
UART • PS/2
SCH3114

LPC

LPC

TPM 2.0
9665
Option

SER1-4 (TTL) 4 x

GPIO/LPT

PS/2 (KB/MS)

P1 P2 P3 P4 P5 P6

P1 - P3 System Slot Pin Assignment

Option RIO Module or Custom Backplane

Summary of Connectors

Not all of the connectors or other elements listed below may be present or functional on your actual SCS-TRUMPET board. Assembly of these connectors is highly custom specific. Discuss your needs (target application) with EKF before ordering, for an optimum CPU & side card configuration.

Front Panel Connectors

AUDIO-IN	3.5mm stereo audio jack, analog audio, software configurable (default = MIC input)
AUDIO-OUT	3.5mm stereo audio jack, analog audio, software configurable (default = HP output)
COM-A	Male D-SUB 9-position, RS-232E (exclusive to 2 x USB 2.0 connectors)
COM-B	Male D-SUB 9-position, RS-232E (exclusive to dual USB 3.0 and DP connectors)
DP	DisplayPort video output connector, latching type
USB2	1 x USB 2.0 receptacle (exclusive to audio jacks)
USB2	2 x USB 2.0 receptacles (exclusive to COM-A connector)
USB3	USB 3.0 dual (stacked) receptacle

On-Board Connectors

FIO	Option, 12HP front panel I/O mezzanine card connector, suitable for the C32-FIO module (UART, USB, PS/2)
M.2-1, M.2-2	M.2 module sockets, suitable for on-board M.2 style SSD storage modules, SATA based, 2230-2280 module size, stuffing option, SATA signals derived from CPU via HSE (ports 2, 3)
SATA	SATA drive docking connector, suitable for on-board 2.5-inch SATA SSD/HDD, stuffing option, SATA signal derived from CPU via HSE (port 1)

Inter-Board Connectors (CPU Carrier)

EXP	Dual row socket, available from bottom of the SCS-TRUMPET PCB, mating with the corresponding socket on the CPU carrier board, connected through a board stacker (two sided pin header), comprised of: ▸ LPC Low Pin Count interface ▸ HD Audio (Azalia) ▸ 2 x USB ▸ SMB, Speaker, Reset
HSE	High speed mezzanine connector, available from bottom of the SCS-TRUMPET PCB, mating with the corresponding connector on the CPU carrier board, comprising of: ▸ Host CPU SATA01 to SATA03 ports (up to 6G depends on CPU card) ▸ Host CPU SATA04 (not supported by some CPU boards) ▸ Host CPU 4 x USB 2.0
PCIE	High speed socket edge card connector, available from bottom of the SCS-TRUMPET PCB, mating with the corresponding socket on the CPU carrier board, connected through a 2 x 20 pos. high speed strip line PCB (C22), comprising of: ▸ Host CPU PCI Express (PCIe) x 4 interface (must be configured as 4 links x 1 lane)
DP	High speed mezzanine connector, available from bottom of the SCS-TRUMPET PCB, mating with the corresponding DP connector on the CPU carrier board, connected through a 2 x 10 pos. high speed strip line PCB (C21 or C66, depending on the CPU board), comprising of: ▸ DisplayPort video out, from Intel chipset graphics

Rear I/O Connectors

| P1	Rear I/O Option, CompactPCI® Serial Backplane Connector Type A
	▸ External Power (not required for normal operation of the SCS-TRUMPET
	▸ Reset output, SMBus (I^2C)
P2	Rear I/O Option, CompactPCI® Serial Backplane Connector Type B
	▸ USB 2.0, backplane ports USB2 2 - 4 (port 2 derived from CPU card mezzanine connector, ports 3-4 from TUSB7340 controller)
P3	Rear I/O Option, CompactPCI® Serial Backplane Connector Type B
	▸ USB 2.0, backplane ports USB2 5 - 8 (ports derived from TUSB7340 controller)
	▸ USB 3.0, backplane ports USB3 3 - 8 (ports derived from TUSB7340 controllers)
	▸ SATA, backplane ports SATA 2 - 5 (ports derived from Marvell 88SE9170 SATA controllers)
	▸ SATA, backplane port SATA 6 (derived from CPU card mezzanine connector HSE, not supported by all CPU cards, via SATA redriver circuit)
P4	Rear I/O Option, CompactPCI® Serial Backplane Connector Type B
	▸ Legacy I/O from the on-board SIO (Super I/O controller)
	▸ 4 x UART (COM ports), TTL level, shared with optional F/P RS-232 D-SUB connectors
	▸ Parallel port (LPT)
	▸ PS/2 interface (keyboard, mouse)
	▸ GPIO lines
P5	Rear I/O Option, CompactPCI® Serial Backplane Connector Type C
	▸ Sideband signals from TUSB7340 controllers
	▸ USB PWRON (6 x) - enable outputs, from TUSB7340 to external USB power switches
	▸ USB OC# (6 x) - overcurrent signal inputs, from external USB power switches to TUSB7340
	▸ GPIO lines (8 x)
	▸ +3.3V +5V +12V power option for rear I/O transition module supply

Backplane Mounting

The SCS-TRUMPET will be used as an assembly together with a CompactPCI® Serial CPU board such as the SC1-ALLEGRO, SC2-PRESTO, or SC3-LARGO..

If the backplane is provided with a right aligned system slot, be sure to position the CPU carrier board to system slot (and not the SCS-TRUMPET). Consequently, the SCS-TRUMPET then occupies the next card cage slot to the right, outside of the system backplane shape.

This assembly order (right aligned system board slot) is recommended because no regular CompactPCI® Serial backplane peripheral slot would get lost. Otherwise, the SCS-TRUMPET would occupy a regular fat pipe slot.

In order to use the rear I/O enabled SCS-TRUMPET version, a custom specific transition module (rear board) can be installed from behind. Typically a single slot backplane would be placed between the SCS-TRUMPET and the transition module, in addition.
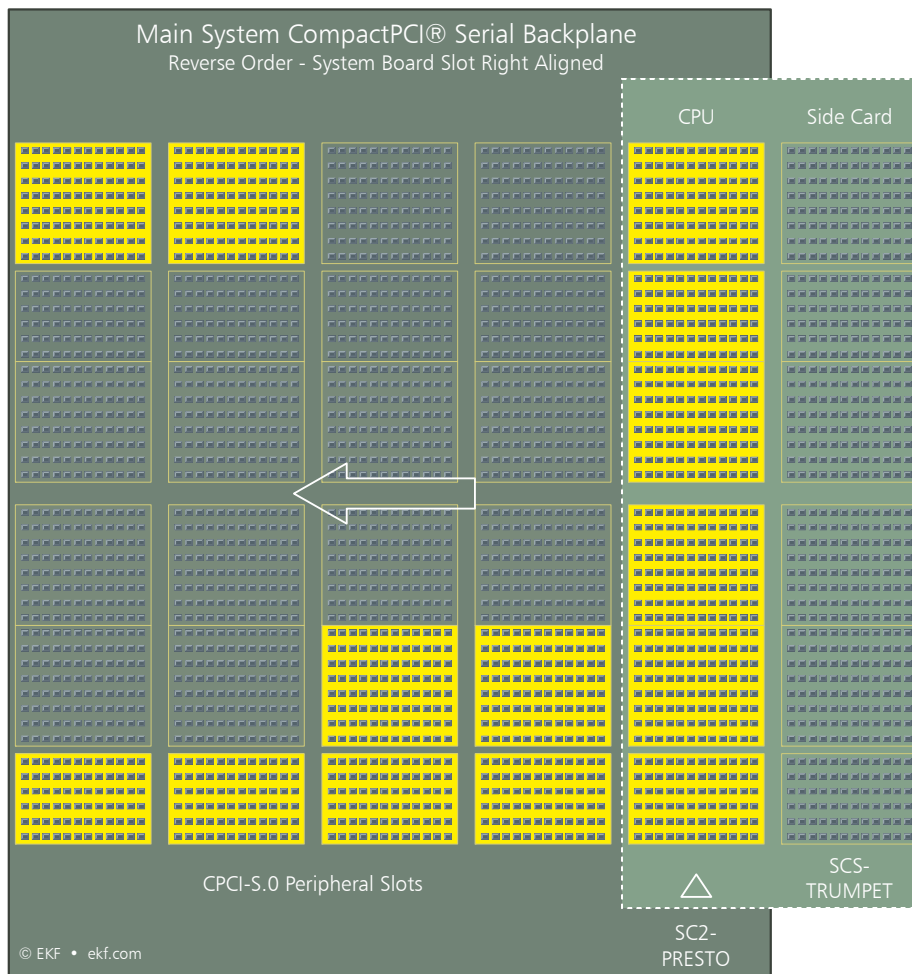
Reverse Order Backplane Saves a Fat Pipe Slot
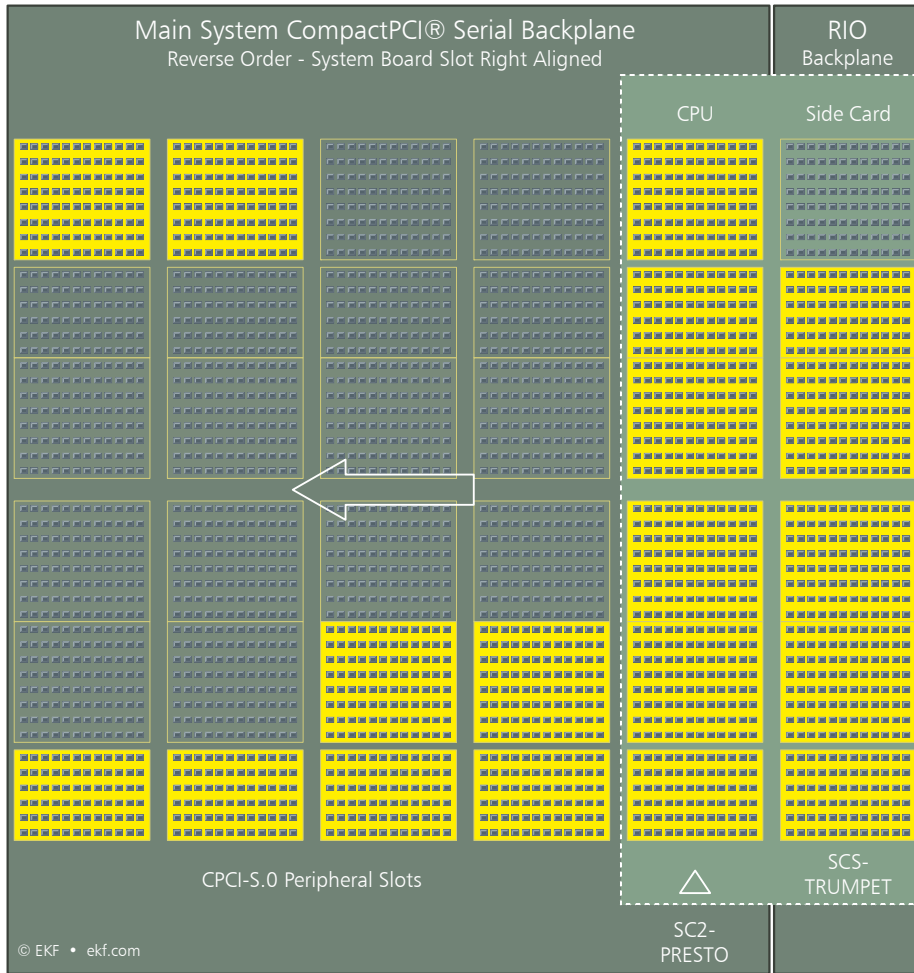
System Configuration for a Rear I/O Transition Module

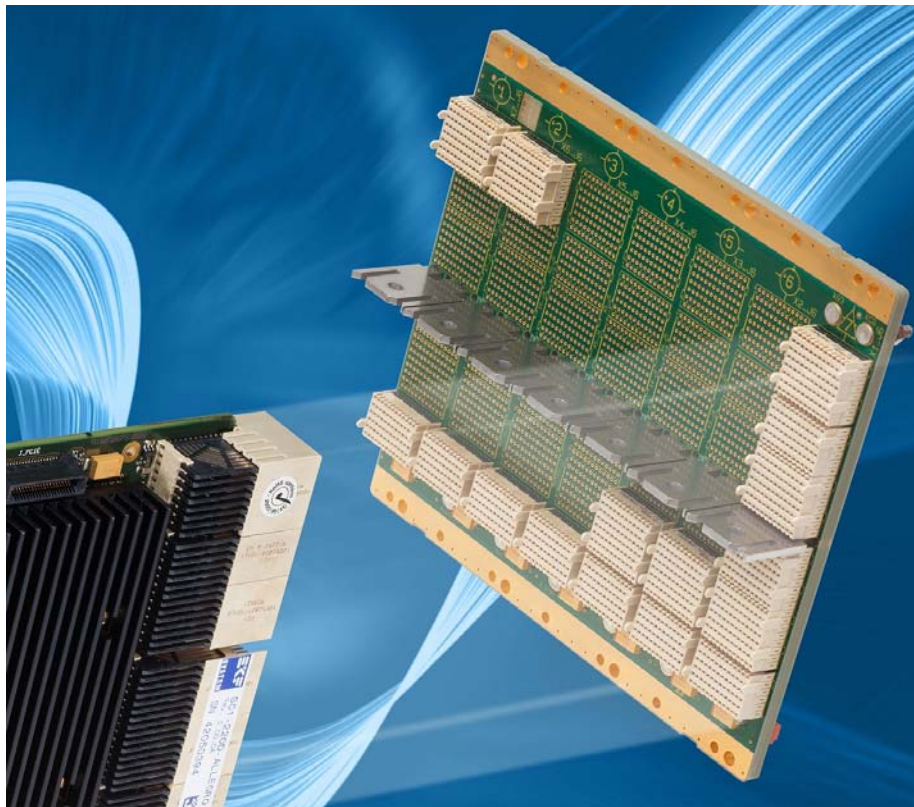Sample Backplane w. System Slot Right Aligned

As an alternate for the rear I/O enabled version, the SCS-TRUMPET can be used together with a secondary CompactPCI® Serial backplane (not suitable for legacy signals, SATA and USB only). This additional backplane must have its system board slot left aligned in order to match the SCS-TRUMPET.

The expansion backplane can then be combined with SATA or USB based regular CompactPCI® Serial peripheral boards, to be installed from the front side of the system - rear I/O will be front I/O for this configuration. No custom specific rear board design would be required in addition.
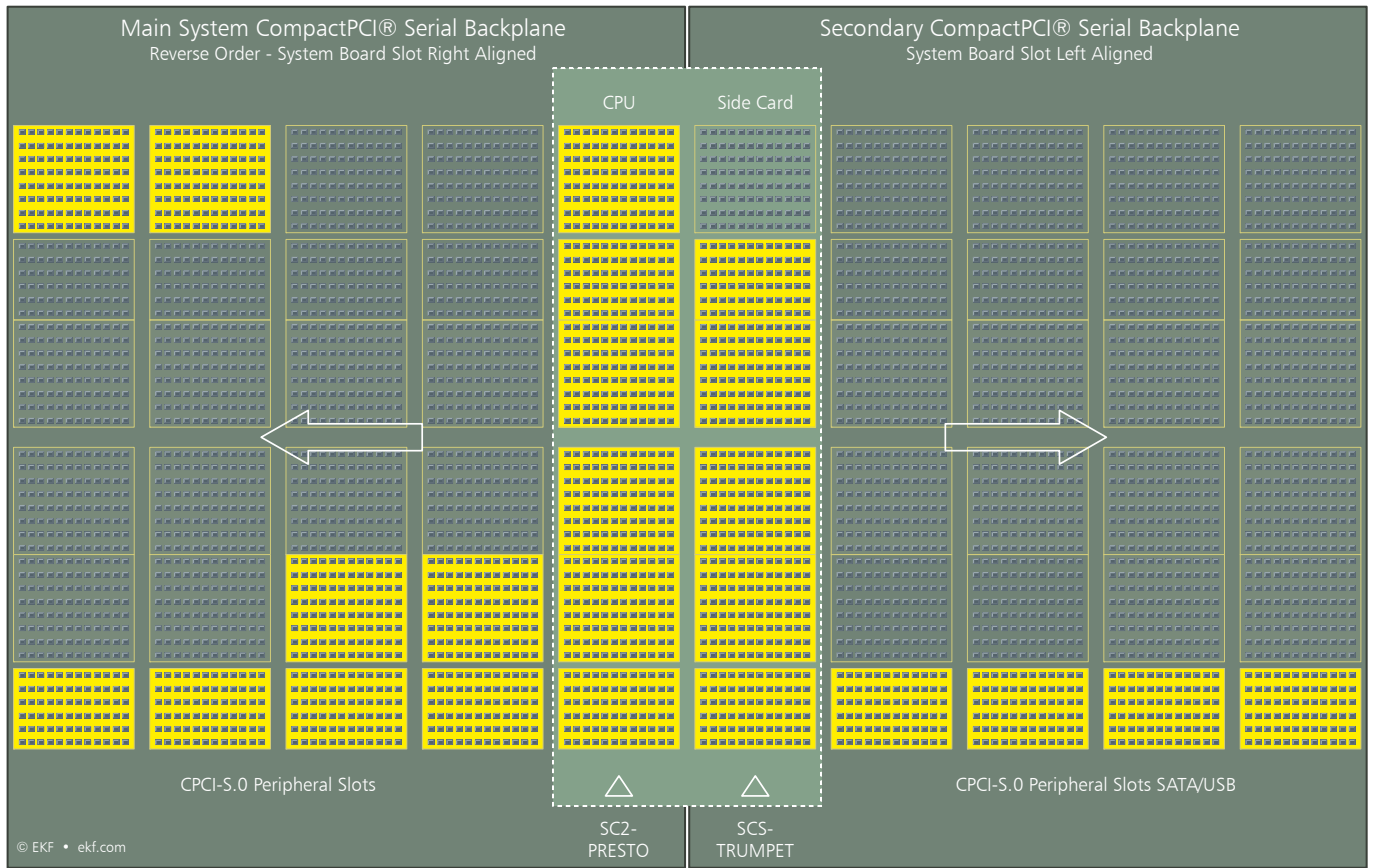
Rear I/O Ports Routed Across Secondary Backplane
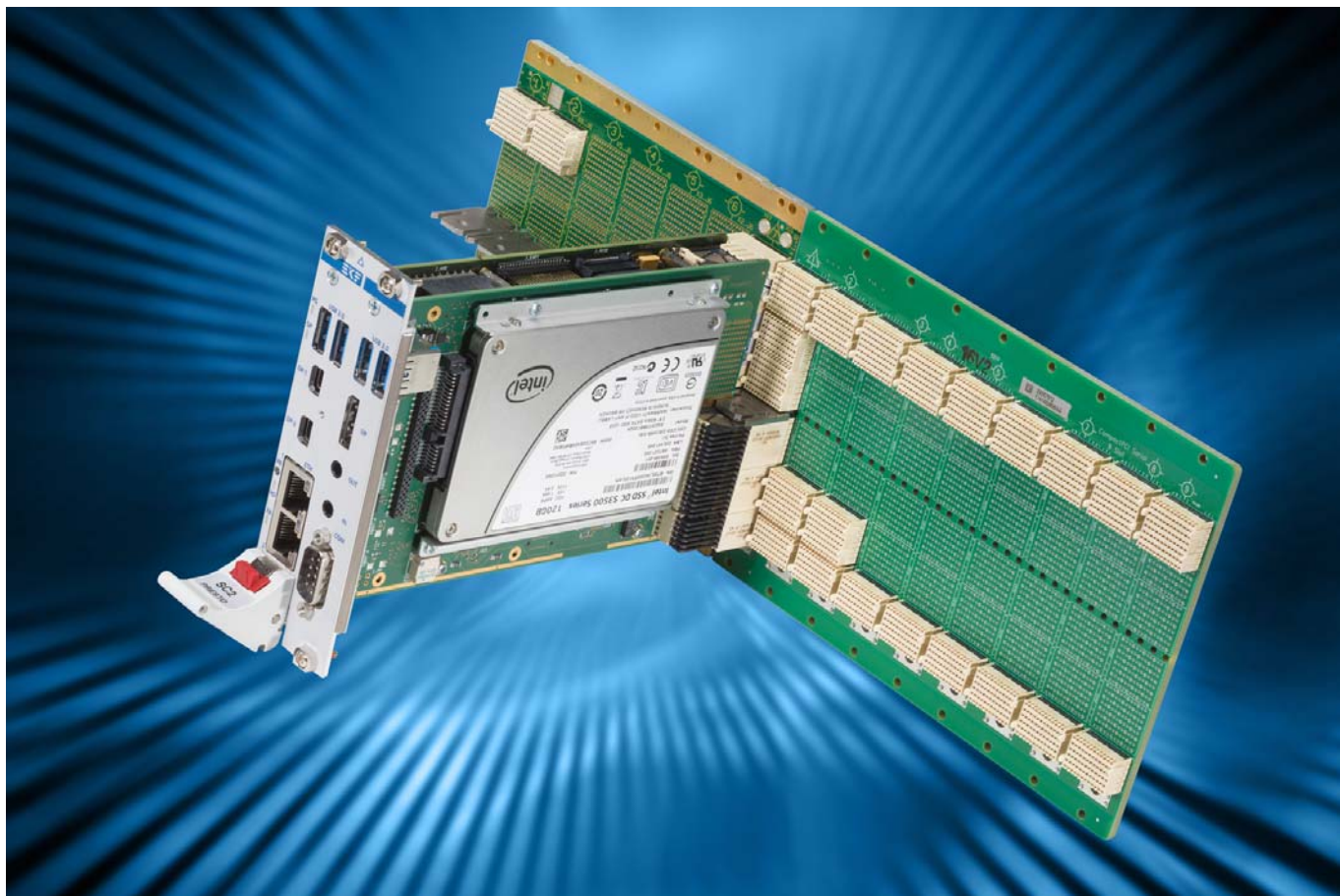
SC2-PRESTO & SCS-TRUMPET Dual Backplane Configuration
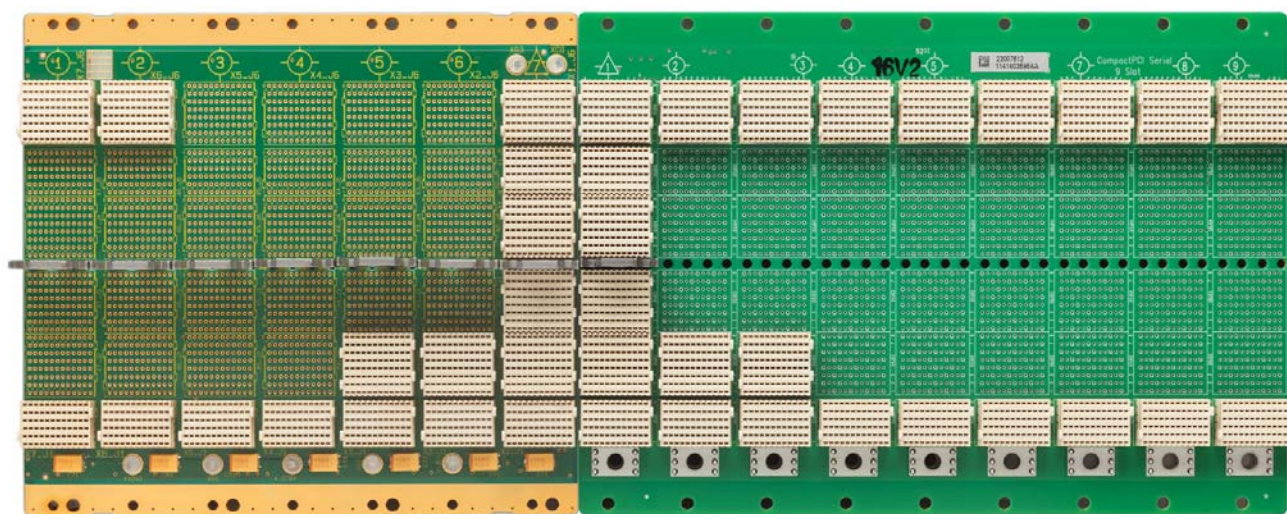
SCS-TRUMPET • Resources w. 1+8 Slots Backplane

	P1	P2	P3	P4	P5	P6	
SCS-TRUMPET	Power / I2C	6 x USB3 / 1 x USB2	1 x SATA (HSE) / 4 x SATA 6G (2 x 9170)			SYS	⚠ 1
			C32-FIO Option 12HP F/P				2
Fat Pipe Slot	SATA 6G / USB2		PER 2				3
Peripheral Slot	SATA 6G / USB3		PER 3				4
Peripheral Slot	SATA 6G / USB3		PER 4				5
Peripheral Slot	SATA 6G / USB3		PER 5				6
Peripheral Slot	SATA (HSE) / USB3		PER 6				7
Peripheral Slot	USB3		PER 7				8
Peripheral Slot	USB3		PER 8				9
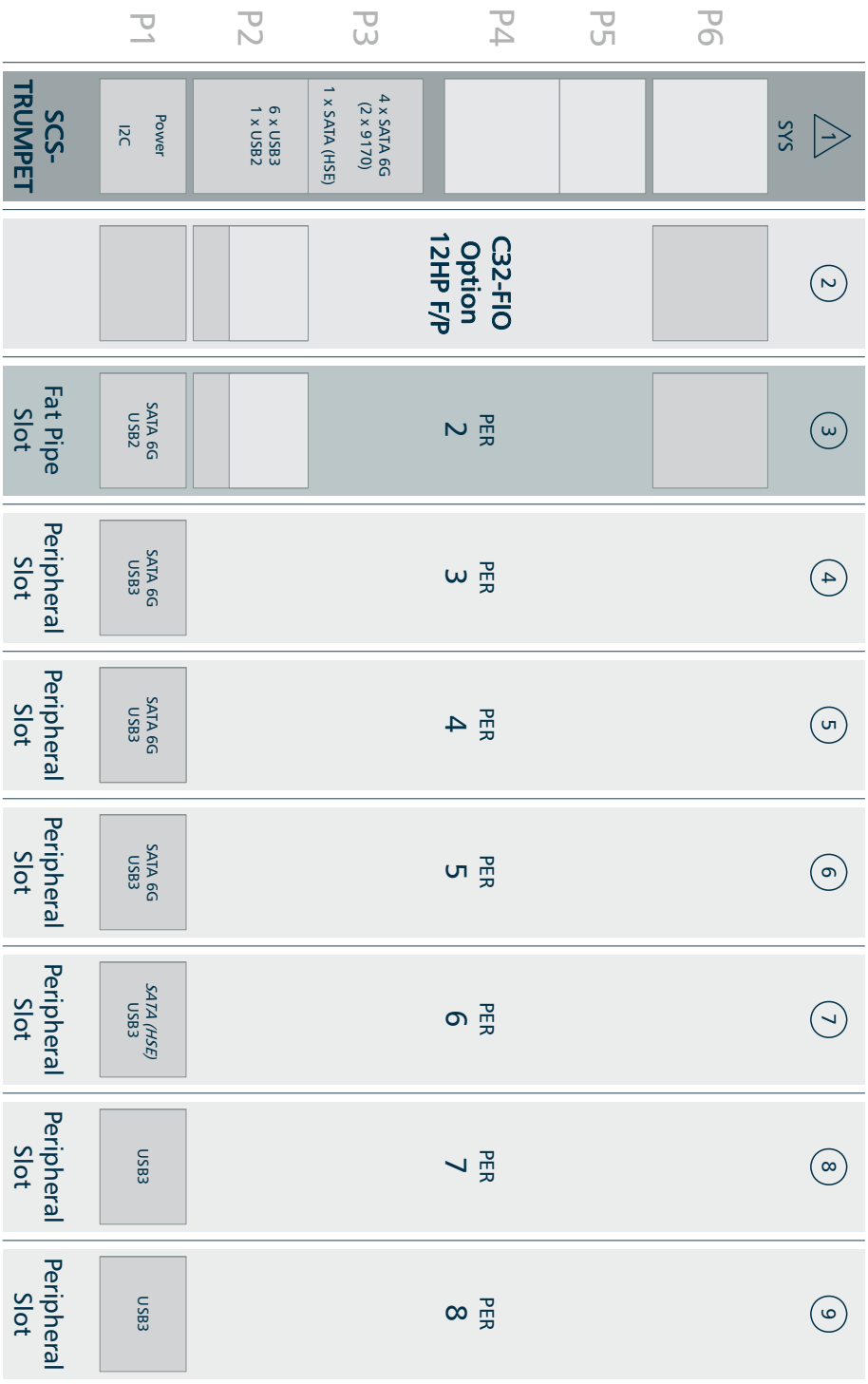
© EKF • ekf.com
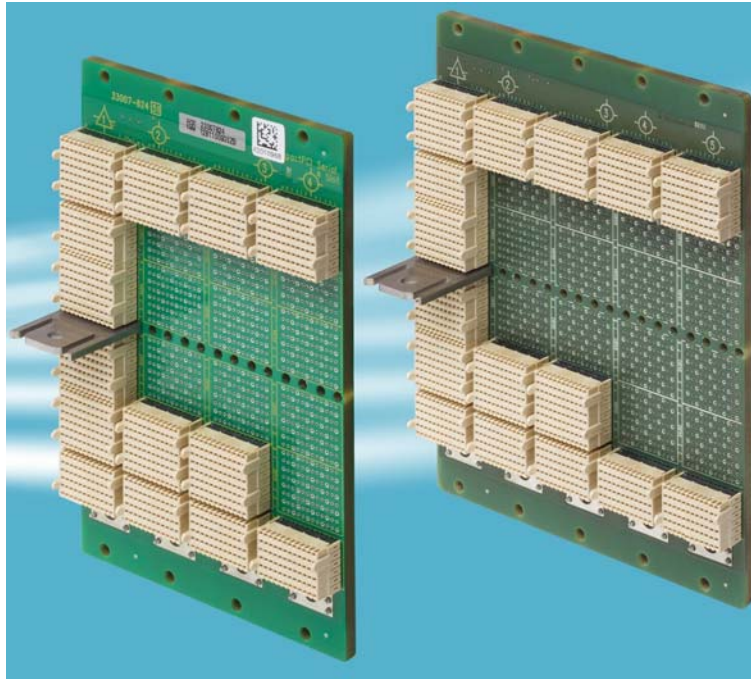
Sample Backplanes System Slot Left Aligned

The SCS-TRUMPET may be also used as an assembly together with a CompactPCI® PlusIO CPU board such as the PC3-ALLEGRO or PC4-PRESTO.

Similar to CompactPCI® Serial CPU cards, rear I/O functions of the SCS-TRUMPET can be used by means of a secondary backplane or a transition module.
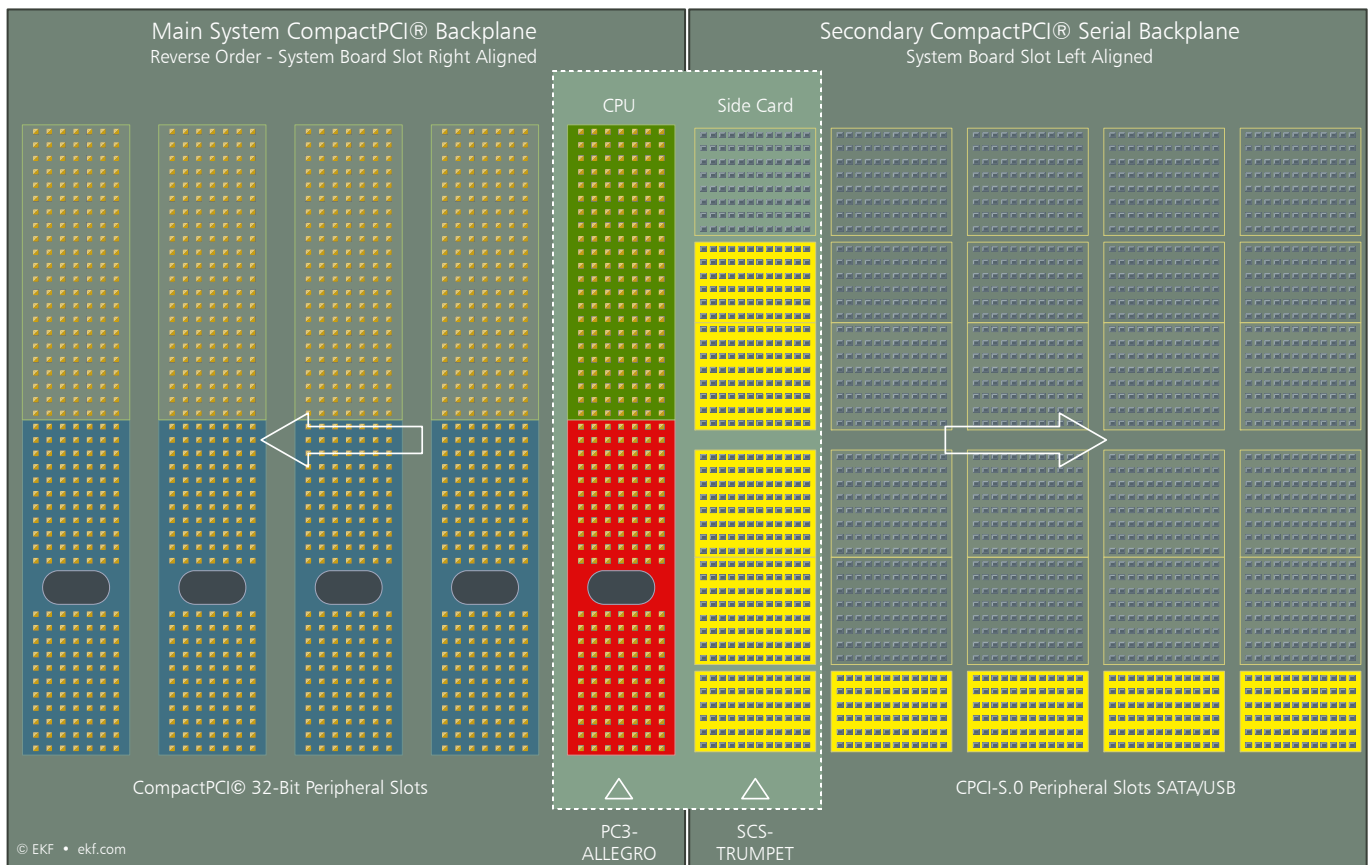
Hybrid System
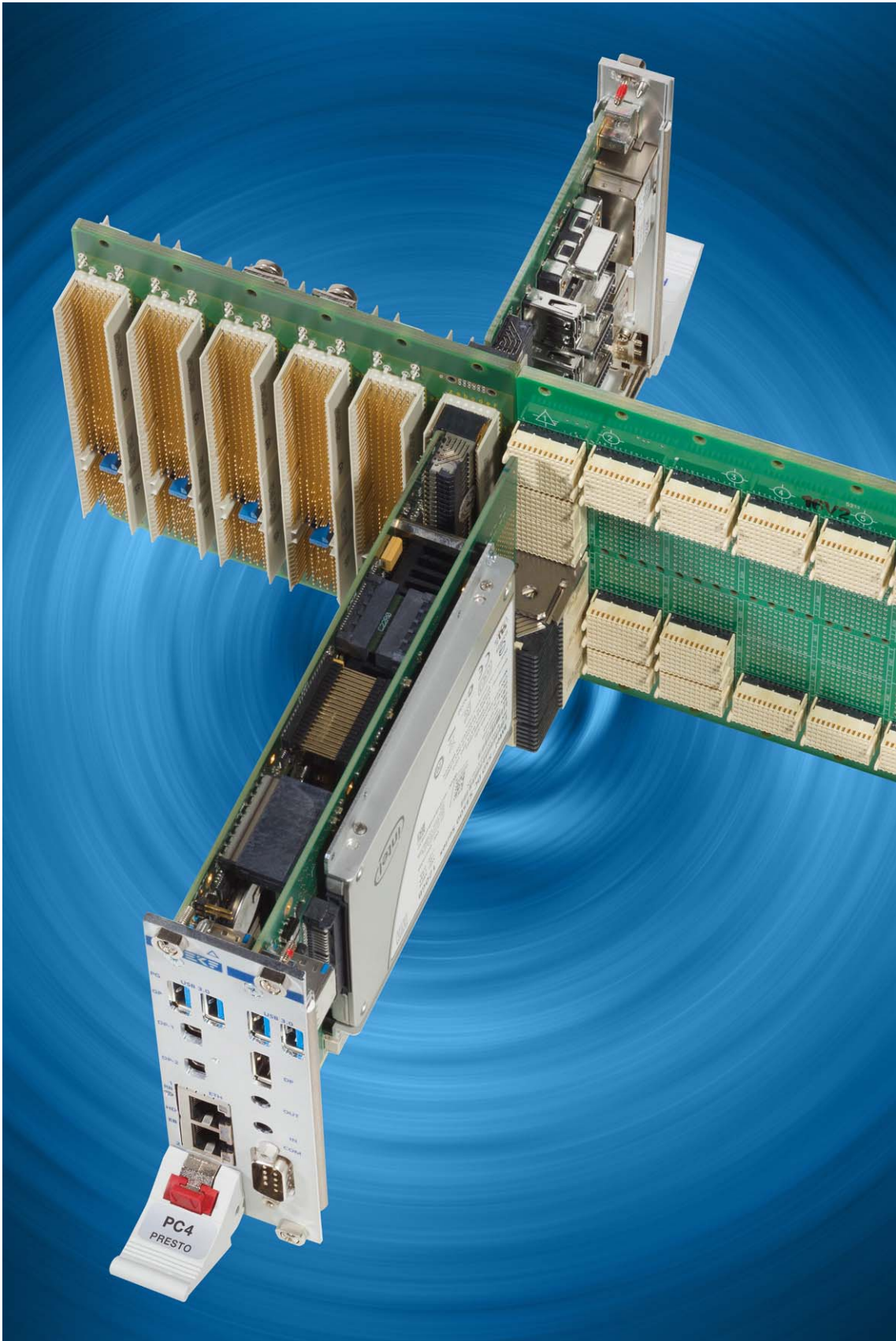
SCS-TRUMPET as System Slot Card for a Secondary CPCI-S Backplane

SCS-TRUMPET in a Sample System w. Dual CPCI-S Backplane
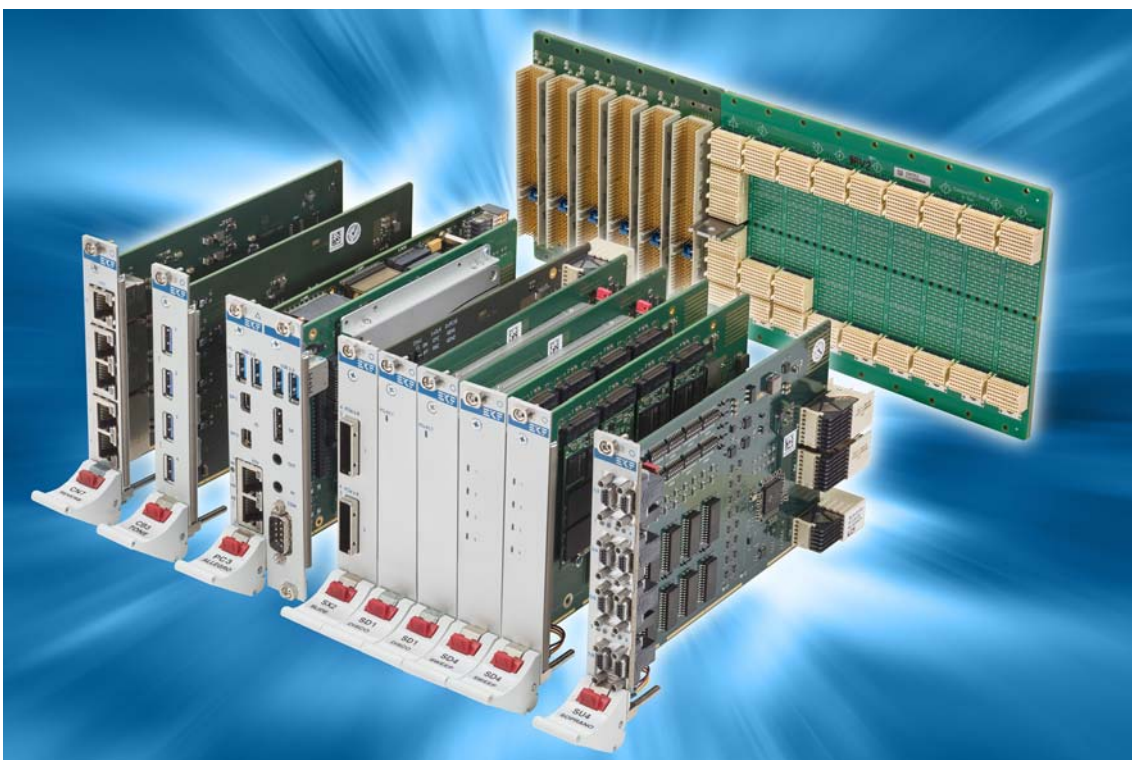
SCS-TRUMPET in a Sample Hybrid System w. CPCI-PlusIO & Serial Backplanes

Installing and Replacing Components

Before You Begin

Warnings

The procedures in this chapter assume familiarity with the general terminology associated with industrial electronics and with safety practices and regulatory compliance required for using and modifying electronic equipment. Disconnect the system from its power source and from any telecommunication links, networks or modems before performing any of the procedures described in this chapter. Failure to disconnect power, or telecommunication links before you open the system or perform any procedures can result in personal injury or equipment damage. Some parts of the system can continue to operate even though the power switch is in its off state.

Caution

Electrostatic discharge (ESD) can damage components. Perform the procedures described in this chapter only at an ESD workstation. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis or board front panel. Store the board only in its original ESD protected packaging. Retain the original packaging (antistatic bag and antistatic box) in case of returning the board to EKF for repair.

Installing the Board

Warning

This procedure should be done only by qualified technical personnel. Disconnect the system from its power source before doing the procedures described here. Failure to disconnect power, or telecommunication links before you open the system or perform any procedures can result in personal injury or equipment damage.

Typically you will perform the following steps:

- Switch off the system, remove the AC power cord

- Attach your antistatic wrist strap to a metallic part of the system

- Remove the board assembly packaging, be sure to touch the board only at the front panel

- Identify the related CompactPCI slot (peripheral slot for I/O boards, system slot for CPU boards, with the system slot typically most right or most left to the backplane)

- Insert card carefully (be sure not to damage components mounted on the bottom side of the board by scratching neighboured front panels)

- A card with onboard connectors requires attachment of associated cabling now

- Lock the ejector lever, fix screws at the front panel (top/bottom)

- Retain original packaging in case of return

Removing the Board

Warning

This procedure should be done only by qualified technical personnel. Disconnect the system from its power source before doing the procedures described here. Failure to disconnect power, or telecommunication links before you open the system or perform any procedures can result in personal injury or equipment damage.

Typically you will perform the following steps:

• Switch off the system, remove the AC power cord

• Attach your antistatic wrist strap to a metallic part of the system

• Identify the board, be sure to touch the board only at the front panel

• Unfasten any front panel screws (top/bottom), unlock the ejector lever

• Remove any onboard cabling assembly

• Activate the ejector lever

• Remove the card assembly carefully (be sure not to damage components mounted on the bottom side of the board by scratching neighboured front panels)

• Store board in the original packaging, do not touch any components, hold the board at the front panel only

Warning

Do not expose the card to fire. Battery cells and other components could explode and cause personal injury.

EMC Recommendations

In order to comply with the CE regulations for EMC, it is mandatory to observe the following rules:

- The chassis or rack including other boards in use must comply entirely with CE

- Close all board slots not in use with a blind front panel

- Front panels must be fastened by built-in screws

- Cover any unused front panel mounted connector with a shielding cap

- External communications cable assemblies must be shielded (shield connected only at one end of the cable)

- Use ferrite beads for cabling wherever appropriate

- Some connectors may require additional isolating parts

Technical Reference

Caution

Some of the connectors may provide operating voltage (e.g. +12V, +5V and +3.3V) to devices inside the system chassis, such as internal peripherals. Not all of these connectors are overcurrent protected. Do not use these connectors for powering devices external to the computer chassis. A fault in the load presented by the external devices could cause damage to the board, the interconnecting cable and the external devices themselves.

Please Note

The SCS-TRUMPET mezzanine module may be equipped with several on-board connectors for system internal usage. Not all of these connectors may be present on a particular board. Be sure to specify your individual needs when ordering the SCS-TRUMPET board. Characteristic features and the pin assignments of each connector are described on the following pages (connector designation in alphabetical order within the groups 'front panel connectors', 'on-board connectors', 'inter-board connectors', and 'rear I/O connectors').

Front Panel Elements

As of current, suitable CPU carrier boards for use together with the SCS-TRUMPET side card are the SC1-ALLEGRO and SC2-PRESTO. The SCS-TRUMPET side board mounts on top (at the right side) of the CPU card. By default, the SCS-TRUMPET shares an 8HP (~40.6mm) front panel with the CPU. When combined with the C32-FIO mezzanine module, the assembly width would be 12HP (~61mm) in total. Further more, custom specific front panel options are available on request. Shown below is a popular variant of the SCS-TRUMPET front assembly.

SC2-PRESTO
Dual - mDP

SCS-TRUMPET
STD

AUDIO-IN	3.5mm stereo audio jack, analog audio, software configurable (default = MIC input)
AUDIO-OUT	3.5mm stereo audio jack, analog audio, software configurable (default = HP output)
COM-A	Male D-SUB 9-pin, RS-232E (exclusive to 2 x USB)
COM-B	Male D-SUB 9-pin, RS-232E (exclusive to DP and USB 3.0)
DP	DisplayPort front panel video connector
LED 1, 2	V_{BUS} power good USB 3.0 stacked connector
LED D	Device Activity Signal (SATA DAS), indicates activity of on-board 2.5-inch drive, or M.2 modules (if supported by drive or modules)
LED S	SATA controller activity signal, indicates activity of either one of the on-board SATA controllers (reflects traffic over the rear I/O SATA channels)
USB	USB 2.0 receptacles 2 x
USB	USB 2.0 receptacle 1 x (exclusive to audio jacks)
USB 3.0	USB 3.0 dual-jack (associated LEDs 1 & 2 indicate power-on)
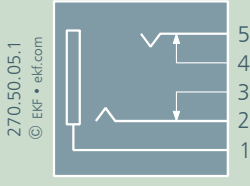
grey: alternate front panel elements available
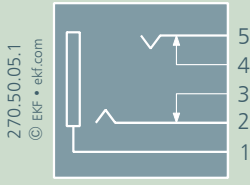
AUDIO IN/OUT Audio Jacks

The SCS-TRUMPET is equipped with an ALC262 HD Audio Codec, controlled by the PCH (Platform Controller Hub) on the CPU carrier board via the Intel Azalia HDA link. Two 3.5mm stereo audio jacks are available from the SCS-TRUMPET front panel for attachment of audio devices such as audio power amplifier, headphones, microphone.

The particular function of each audio jack is controlled by the driver software (e.g. Realtek). By default, the AUDIO IN audio jack is configured as microphone input, and the AUDIO OUT jack is suitable for headphones $\geq$32 Ohms. Other configurable options are line in and line out. The typical full scale input voltage is $1.5V_{rms}$ (input resistance $\geq$10kOhm), and the typical full scale output voltage is $1.4V_{rms}$ (10 kOhm / 50pF external load).

The difference between headphones out mode and line out mode is mainly the low output impedance of 1 Ohm when in HP mode, compared to 200 Ohms in line out mode. This is also useful for noise immunity when long external audio cables are required. For optimum THD however chose line out mode.

AUDIO OUT • Stereo Audio Jack 3.5mm (270.50.05.1)		
		HeadPhones Out
	1	AGND
	2	ALC262 Port E Input/Output Signal Right
	3	AGND
	4	AGND
	5	ALC262 Port E Input/Output Signal Left

Stereo Audio Jack 3.5mm

AUDIO IN • Stereo Audio Jack 3.5mm (270.50.05.1)		
		MIC In
	1	AGND
	2	ALC262 Port F Input/Output Signal Right
	3	AGND
	4	AGND
	5	ALC262 Port F Input/Output Signal Left

Stereo Audio Jack 3.5mm

ALC262 Port Configuration - 3.5mm Audio Jacks					
Port	Name	LINE OUT / HP	LINE IN	MIC	Connector
E	LINE2	✓	✓	✓	Audio Out
F	MIC2	✓	✓	✓	Audio In

The assignment of input or output to the audio jacks is highly ambiguous, due to the software configurable ports E and F of the ALC262. For details of the ALC262 and latest HD Audio driver software, please refer to www.realtek.com.tw.
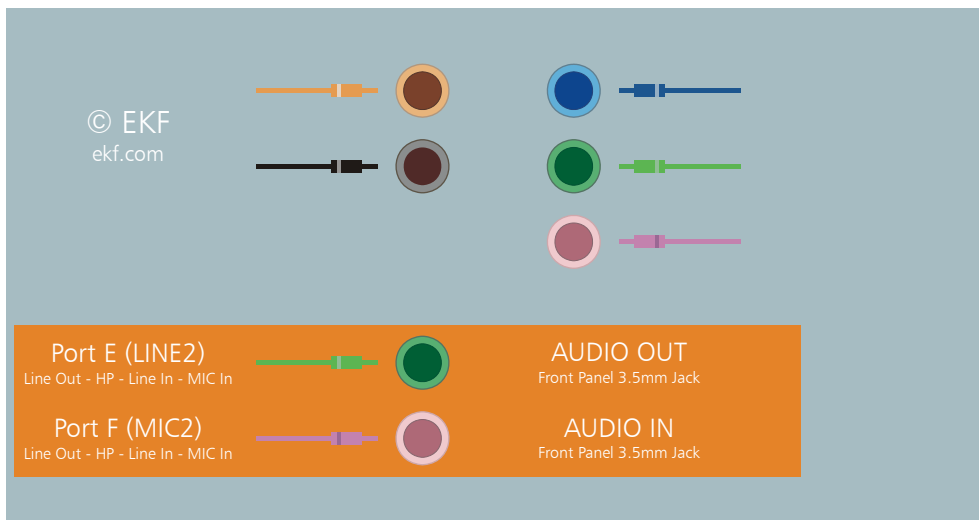
CCO-CONCERT
Realtek Audio Driver Analog Configurations - Front Panel Stereo Jacks 3.5mm

COM-A/B

The on-board Super-I/O (SIO) on the SCS-TRUMPET provides four asynchronous serial interfaces, one or two of them optionally available from the front panel (EIA/TIA 232). The other two (TTL-level) are available for rear I/O via P4 as an option, or can be used across the mezzanine connector FIO by means of the C32-FIO mezzanine board (12HP front panel assembly).

Due to another (primary) SIO potentially available on the CPU host board, the serial interfaces are not necessarily dedicated to the COM-1/COM-4 ports of a typical Windows PC. Verify or modify the accompanying CPU BIOS settings for mapping of physical asynchronous serial I/O ports to the logical COM port order. Being ignorant of the actual port mapping, the serial port front panel connectors are marked neutrally as COM-A and COM-B (COM-C and COM-D in addition when using the optional C32-FIO mezzanine board).

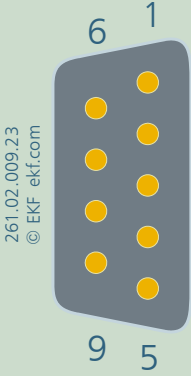| COM-A/B • RS-232 Male D-Sub 9 (261.02.009.23)					
				1	DCD
	DSR	6			
				2	RXD
	RTS	7			
				3	TXD
	CTS	8			
				4	DTR
	RI	9			
				5	GND

The COM-A male D-SUB connector is a manufacturing option, exclusive to 2 x USB 2.0 receptacles. The COM-B male D-SUB connector is exclusive to the dual USB 3.0 stacked jack. Two on-board ESD protected RS-232E transceivers on the SCS-TRUMPET will allow a bit rate of up to 250kbps via COM-A/B.
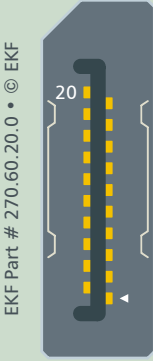
As mentioned, serial ports (TTL level) are also available for rear I/O across P4, as an option. When using the serial port 1 and 2 for front panel I/O, there is a conflict with the on-board EIA-232 transceivers related to COM-A/B. Hence, in order to avoid signal interference, the on-board MAX3243E serial transceivers must not be stuffed or disabled, for signal usage of the serial ports 1/2 on a rear I/O transition module. Consider usage of the serial ports 3 and 4 as an alternate to the serial port 1 and 2 for rear I/O. However, if the C32-FIO mezzanine module is engaged on the SCS-TRUMPET, the serial ports 3/4 are also in use for additional EIA-232 transceivers and C32-FIO front panel D-SUB connectors (COM-C, COM-D). If in doubt, please discuss your individual requirements with sales@ekf.de before ordering.

DisplayPort

As of current, the Intel graphics processing unit (GPU) on the CPU carrier card incorporates up to three external DisplayPort video channels. At least one video output is available via the CPU card front panel DisplayPort connector. The PC1-GROOVE is equipped with a single standard DisplayPort front panel receptacle, while the SC1-ALLEGRO and other CPU cards offer two mDP (Mini DisplayPort) connectors.

For applications with need for a second or even third independent DisplayPort video output, the SCS-TRUMPET is equipped with a standard DisplayPort front panel receptacle, in addition to the CPU card front panel video connector(s). The related SCS-TRUMPET DisplayPort video signals are passed from the CPU carrier board through an inter-board mezzanine connector to the side card.

Independent operation of multiple displays (e.g. Windows® Expanded Desktop) is enabled by the Intel graphics drivers (for the Intel download link please refer to the respective CPU card homepage at www.ekf.com). You can also check your drivers for latest updates by the Intel® Driver Update Utility www.intel.com/p/en_US/support/detect/?wapkw=(driver+update).

DP • DisplayPort Video Standard DisplayPort Receptacle, 20-lead (270.60.20.0)				
20	Power +3.3V 0.5A 1)	19	Return
18	Hot Plug Detect	17	AUX(N)
16	GND	15	AUX(P)
14	CONFIG2 (GND)	13	CONFIG1
12	LANE3(N)	11	GND
10	LANE3(P)	9	LANE2(N)
8	GND	7	LANE2(P)
6	LANE1(N)	5	GND
4	LANE1(P)	3	LANE0(N)
2	GND	1	LANE0(P)

EKF Part # 270.60.20.0 • © EKF

1) sourced via electronic power switch (back driving protected), maximum current for short circuit detection >1.5A

The DP inter-board mezzanine connector on the SCS-TRUMPET mates with the SDVO2 connector on the PC1-GROOVE, or the SDVO/DP connector on the SC1-ALLEGRO and PC3-ALLEGRO. Consult the respective CPU user guide manuals in order to achieve the suitable configuration for DisplayPort operation across this mezzanine connector. The SDVO mode is suitable only for side cards with DVI video connectors. For the SC2-PRESTO and SC3-LARGO CPU cards this connector is named DP - the name says it all.

For attachment of either a classic style analog RGB monitor or DVI type display to the DP front panel receptacle, there are both adapters and also adapter cables available, from DisplayPort to the VGA or DVI connector.

Plug Style DP to DVI Adapter

Cable Adapter DP to VGA

Cable Adapter DP to DVI
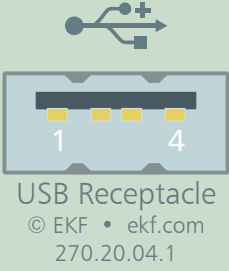
Specified by the VESA DisplayPort connector standard is a dedicated power pin 20 (+3.3V 0.5A). Both the SCS-TRUMPET (source side) and a DP monitor (sink side) must provide power via this pin. A VESA specified standard DisplayPort cable however must not connect the pins 20 of both cable ends, in order to avoid a back driving conflict. Unfortunately there are cable assemblies available with pin 20 passed through, with unpredictable results on the system behaviour, e.g. for CPU sleep states. Therefore the SCS-TRUMPET is equipped with a power switch in order to protect the CPU and side card assembly from back driving effects caused by non VESA style cables.

Sample VESA Compliant DisplayPort Cable Assemblies 2.0m Plug to Plug, w. Latches • EKF Part. #270.66.1.02.0	
Manhattan	307116, 391931
Molex	68783-0007
TE (Tyco)	2040687-2, 2040638-2

USB

The host CPU board passes through up to 6 x USB 2.0 ports via the mezzanine connectors HSE (4 x) and EXP (2 x). Two of these USB interfaces are available at the bottom of the SCS-TRUMPET front panel (exclusive to the COM-A connector option). Another USB 2.0 receptacle would be available in the middle of the front panel, if the audio jacks would be omitted. All USB power lines (V_{BUS} +5V) are individually protected from an external short circuit condition or back driving conflict by a electronic power switches (TPS2060).
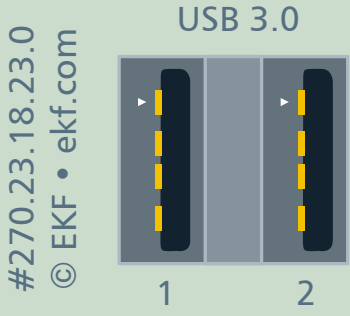
USB 2.0 Receptacles 270.20.04.1		
USB Receptacle © EKF • ekf.com 270.20.04.1	1	+5V V_{BUS} 1)
	2	DATA-
	3	DATA+
	4	GND

1) sourced via electronic power switches, maximum current for short circuit detection >1.5A

USB 3.0

The SCS-TRUMPET is equipped with a dual front panel receptacle, which can accommodate two 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 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.

The front panel USB jacks are tied to an on-board PCI Express® to USB 3.0 controller (TUSB7320 or TUSB7340). For older operating systems e.g. Windows® 7, installation of a xHCI driver would be required to enable the SuperSpeed mode (download via www.ti.com).

USB • Dual USB 3.0 Receptacle		
USB 3.0 dual type A receptacle, stacked, 18-position (270.23.18.2)		
USB 3.0 #270.23.18.23.0 © EKF • ekf.com 1 2	1	V_{BUS} +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 connector provides +5V (V_{BUS}) for powering external devices. A dual-channel electronic power switch (TPS2060) is used on the SCS-TRUMPET which limits the maximum output current of each individual USB connector to a safe level. The USB power switch is rated at >2A current limit typically, which is suitable even for applications where heavy capacitive loads are likely to be encountered, e.g. V_{BUS} powered USB disk drives. The electronic switch is enabled by the on-board USB controller (i.e. it is managed by the driver software). Front panel LEDs labelled 1 and 2 signal the power-on state individually for each USB receptacle.

On-Board Connectors

The SCS-TRUMPET can be equipped with several on-board connectors, for I/O and mezzanine module expansion. Some of these connectors are available as an option only or exclusive to each other, and therefore may not be functional or even present on your actual board.

Assembly of these connectors is highly custom specific. Discuss your needs with EKF before ordering, so that the optimum board configuration for your application will be chosen.

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
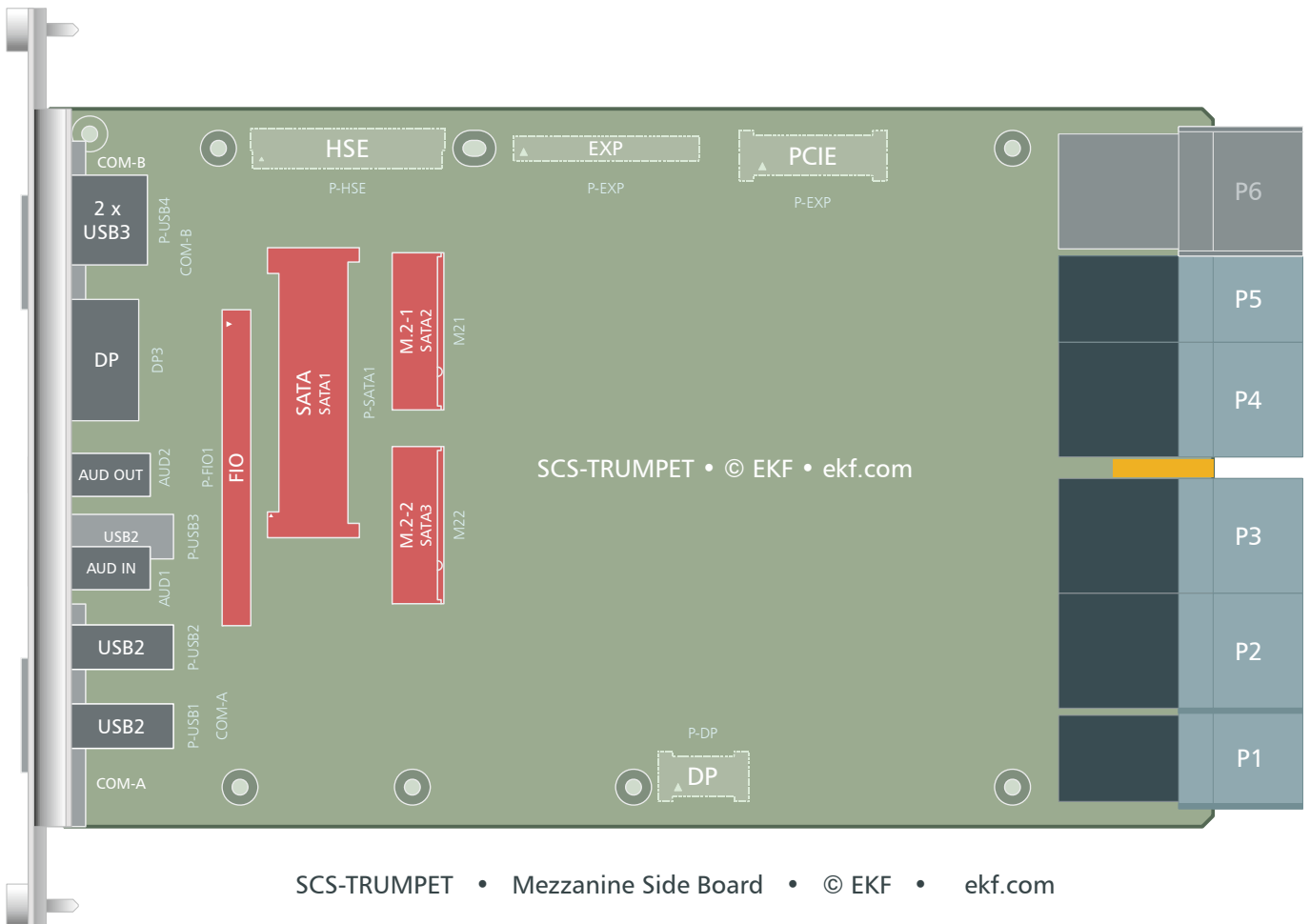
FIO (Mezzanine Expansion Module C32-FIO)	
I/F Type	SOURCE
AUDIO Analog (2 x)	Codec ALC262
AUDIO S/PDIF (Option)	Codec ALC262
PS/2 KB/MS	SIO2
Serial (UART) SP3/SP4	SIO2
USB1 - USB2	CPU Carrier (HSE)

M.2 (2 x Sockets for M.2 Style SSD)	
I/F Type	SOURCE
SATA02 - SATA03	CPU Carrier (HSE)

SATA (Host Connector for 2.5-Inch on-Board Drive)	
I/F Type	SOURCE
SATA01	CPU Carrier (HSE)

FIO

As an option, the SCS-TRUMPET can be expanded by a small front panel I/O mezzanine module, the C32-FIO. This requires a 12HP front panel in total (CPU carrier, SCS-TRUMPET, C32-FIO). The C32-FIO provides additional COM-Ports, USB, and a PS/2 legacy Mini-DIN connector (on request only, not populated by default).
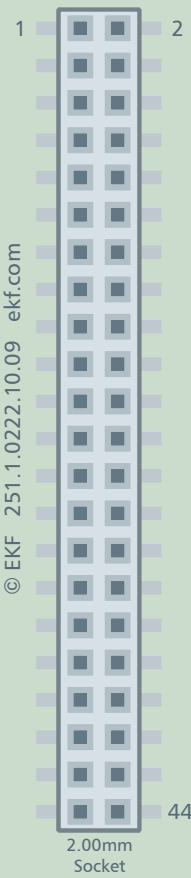
FIO is a 2mm pitch dual row socket on top of the SCS-TRUMPET, which connects to the C32-FIO by means of a board stacker element.

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
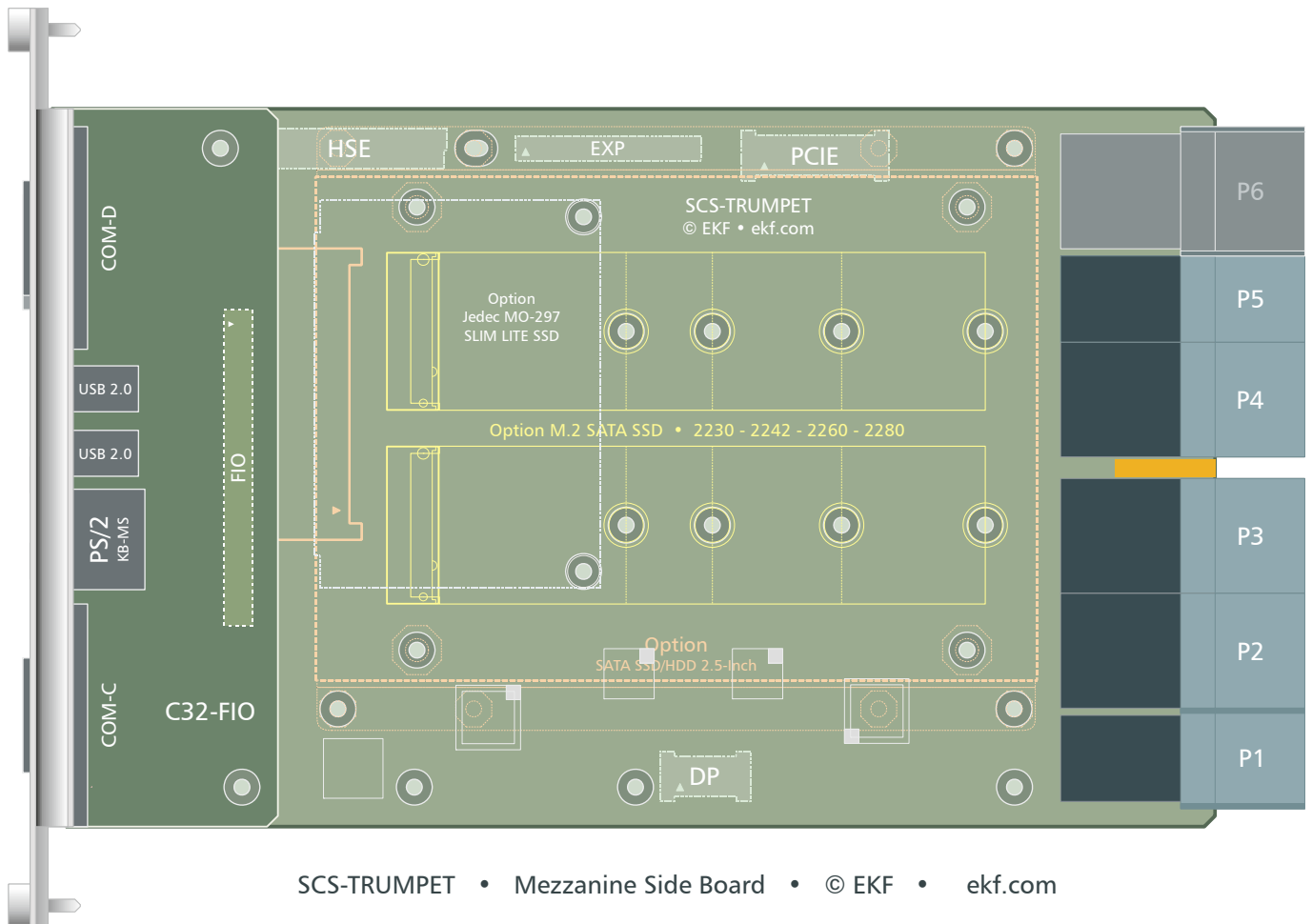
For a description of the C32-FIO mezzanine module refer to www.ekf.com/c/ccpu/c32/c32_tie.pdf.

FIO • Secondary I/O Mezzanine Expansion Interface (Audio - COM - PS/2 - USB)
2.00mm Socket 2 x 22 (251.1.0222.10.09)

Signal (odd)	Pin	Pin	Signal (even)
GND	1	2	+3.3V_CR *
SP4_RI#	3	4	SP4_DSR#
SP4_TXD	5	6	SP4_RXD
SP4_RTS#	7	8	SP4_DTR#
SP4_DCD#	9	10	SP4_CTS#
GND	11	12	+3.3V_CR *
SP3_RI#	13	14	SP3_DSR#
SP3_TXD	15	16	SP3_RXD
SP3_RTS#	17	18	SP3_DTR#
SP3_DCD#	19	20	SP3_CTS#
GND	21	22	+5V_CR *
USB_2N 1)	23	24	USB_1N 1)
USB_2P 1)	25	26	USB_1P 1)
USB_OC2# 1)	27	28	USB_OC1# 1)
PS/2 Clock Keyboard	29	30	PS/2 Clock Mouse
PS/2 Data Keyboard	31	32	PS/2 Data Mouse
GND	33	34	+5V_A **
S/PDIF _IN	35	36	S/PDIF _OUT
CD_L	37	38	CD_ R
LINE1_L	39	40	MIC1_L
AGND	41	42	CD_GND
LINE1_R	43	44	MIC1_R

1)   from CPU carrier card mezzanine connector HSE

*   switched power supply lines from CPU carrier board according to Sx state
**   mostly on power supply line from CPU carrier board according to Sx state

The SP3/SP4 serial port signals (UART TTL-level) are shared with the rear I/O option connector P4, and must be used for one destination only in order to avoid signal interference. In addition, the PS/2 KB/MS signals are also shared with the rear I/O option connector P4, and must also be used for one destination only. The audio signals (pins 35-44) are not in use on the C32-FIO mezzanine module.

ALC262 Analog Port Configuration - FIO					
Port	Name	LINE OUT / HP	LINE IN	MIC	Connector
B	MIC1			✓	J-FIO
C	LINE1		✓		J-FIO
	CD		✓		J-FIO
	S/PDIF				J-FIO
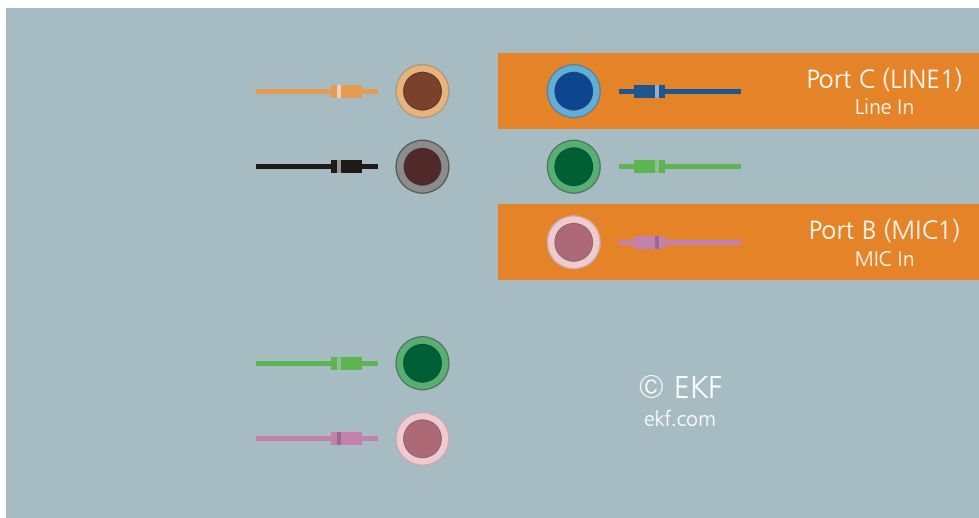
CCO-CONCERT
Realtek Audio Driver Analog Configurations - J-FIO Mezzanine Connector

M.2 Connectors

The SCS-TRUMPET is provided with two M.2 module host connectors Type B. After inserted, each M.2 module must be locked manually by a screw, in order to withstand shock and vibration. With two identical M.2 solid-state drives engaged, the SCS-TRUMPET can be used for software RAID level 0/1 operation.

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
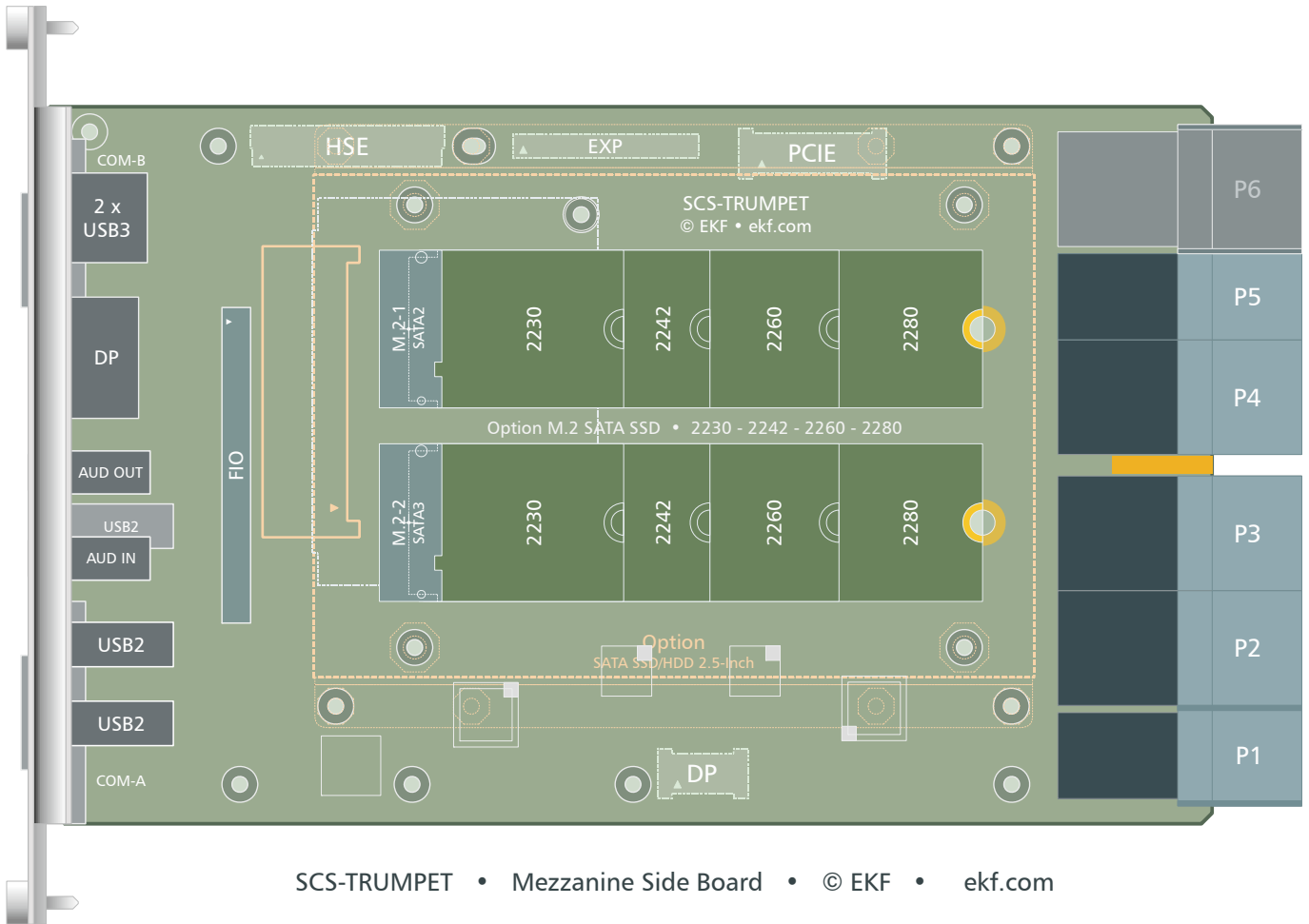
M.2 Module Fixation (Picture Similar)

Mounting Parts for M.2 SSD Modules	
440.08.025.006	Screw M2.5 x 6mm (supplied together with board)
442.0.02502.5	Spacer sleeve M2.5 x 2.5mm (supplied together with board)
440.45.025.015	M2.5 PCB nut, bottom mount threaded inserts (populated on-board by default)

SCS-TRUMPET w. M.2 SATA SSD Modules

M.2 1-4 • Pin 1 - 38			
EKF Part #255.50.1.2242.10			
CFG-3 *	1	2	+3.3V
GND	3	4	+3.3V
GND	5	6	NC
NC	7	8	NC
NC	9	10	DA/DSS
GND	11	12	B Key
B Key	13	14	B Key
B Key	15	16	B Key
B Key	17	18	B Key
B Key	19	20	NC
CFG-0 *	21	22	NC
NC	23	24	NC
NC	25	26	NC
GND	27	28	NC
NC	29	30	NC
NC	31	32	NC
GND	33	34	NC
NC	35	36	NC
NC	37	38	DEVSLP

M.2 1-4 • Pin 39 - 75			
GND	39	40	NC
SATA B+ (SSD OUT)	41	42	NC
SATA B- (SSD OUT)	43	44	NC
GND	45	46	NC
SATA A- (SSD IN)	47	48	NC
SATA A+ (SSD IN)	49	50	NC
GND	51	52	NC
NC	53	54	NC
NC	55	56	NC
GND	57	58	NC
NC M-Key	59	60	NC M-Key
NC M-Key	61	62	NC M-Key
NC M-Key	63	64	NC M-Key
NC M-Key	65	66	NC M-Key
NC	67	68	NC
CFG-1 *	69	70	+3.3V
GND	71	72	+3.3V
GND	73	74	+3.3V
CFG-2 *	75		

* 10k pull-up +3.3V

SATA

The SCS-TRUMPET can be equipped with a SATA host receptacle (docking connector), suitable for attachment of an on-board 2.5-inch SATA HDD/SSD. The connector SATA has a reasonable standoff for stuffing components below the drive, which requires 2 mounting rails in order to fix and carry the drive.

The SATA signals are passed over from the CPU card via the inter-board mezzanine connector HSE.

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
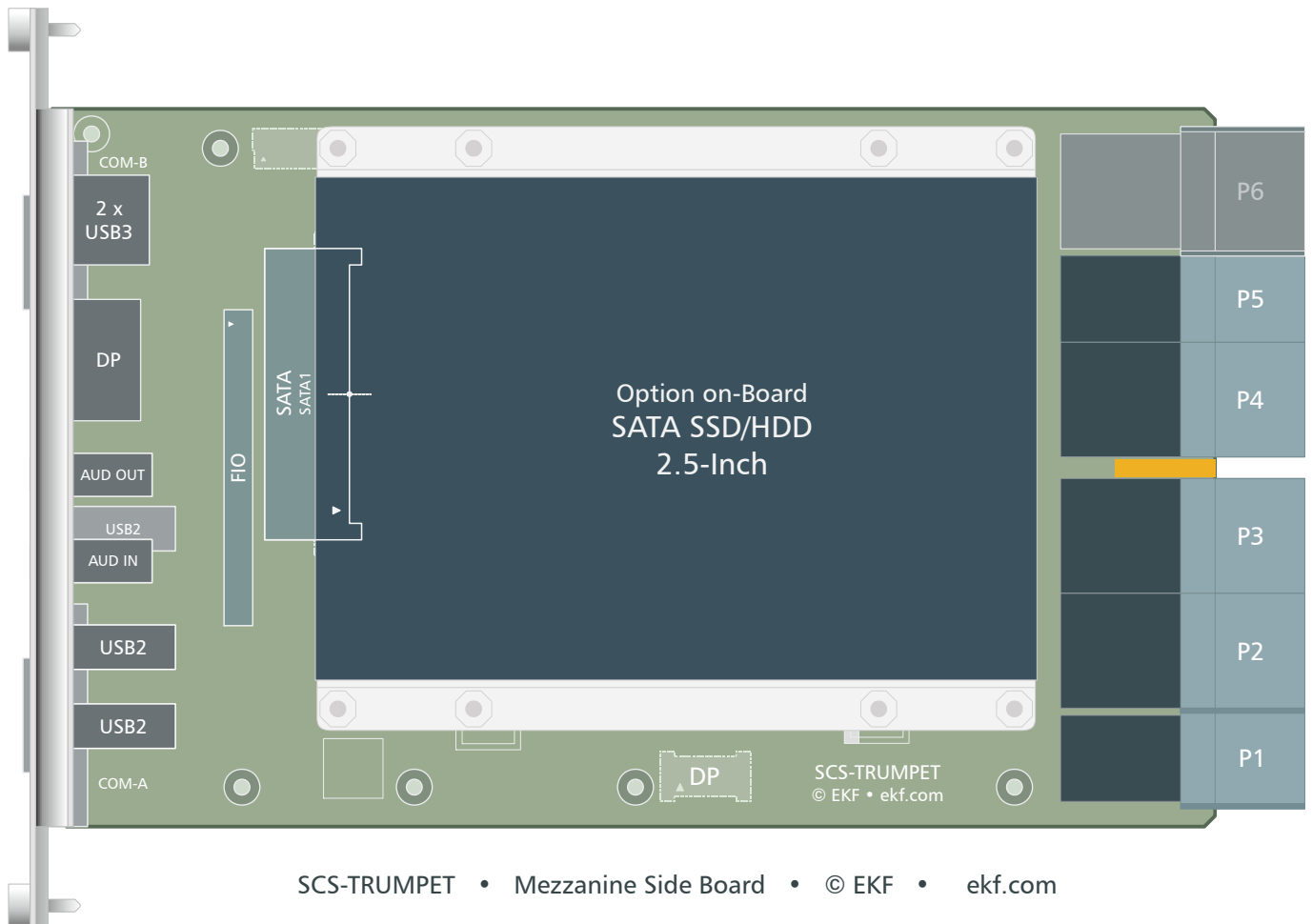
Signal designations RX/TX are shown with respect to the SATA host controller. Typical SATA devices are powered from the +5V rail.

SATA • Serial ATA Docking Connector	
Serial ATA host receptacle (256.022.10.02)	
Part No. 256.022.10.02 • SATA Host Receptacle • © EKF • ekf.com	
S1	GND
S2	SATA01 TXP
S3	SATA01 TXN
S4	GND
S5	SATA01 RXN
S6	SATA01 RXP
S7	GND
P1	+3.3V_SATA
P2	+3.3V_SATA
P3	+3.3V_SATA
P4	GND
P5	GND
P6	GND
P7	+5V_SATA
P8	+5V_SATA
P9	+5V_SATA
P10	GND
P11	DAS (Drive Activity)
P12	GND
P13	+12V_SATA
P14	+12V_SATA
P15	+12V_SATA

DAS (P11) is used to control the SCS-TRUMPET front panel LED labelled 'D'. Please note, that not all drive types support this drive activity signal accordingly. SATA host controller activity can also be observed from a CPU card front panel indicator LED.

+12V_SATA (P13-P15) may not be available from the docking connector SATA (left unconnected by default).

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
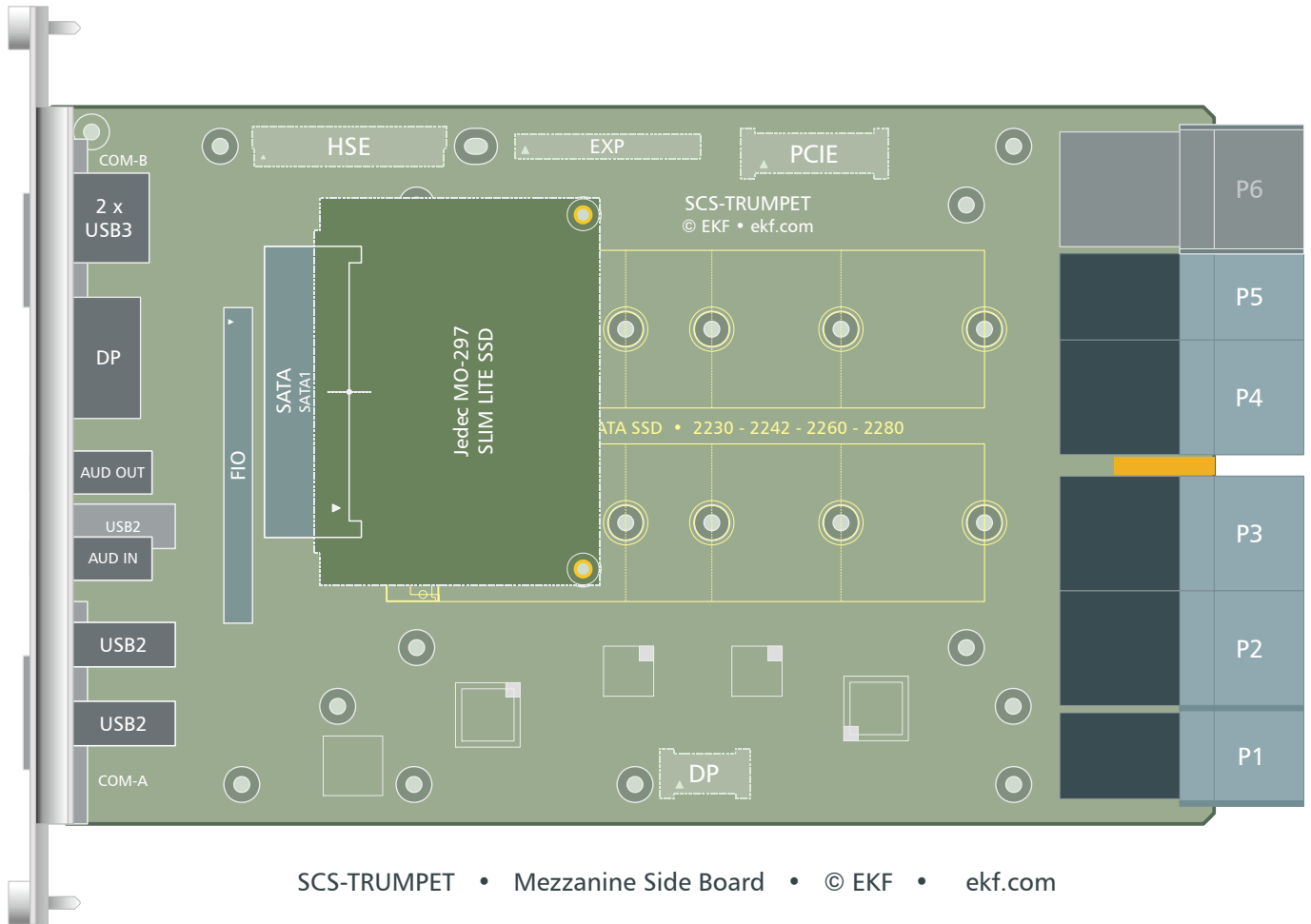
As an alternate option, the SATA docking connector can be used together with a Slim-Lite SSD, as specified by Jedec MO-297. The SSD should be fixed in addition by screws (lower mounting hole not available if second M.2 SSD module is also installed).

On-Board Jumpers

J-RES Reset

Provided as an option, the pin header J-RES can be used for resetting the CPU host board (processor reset) if wired to additional circuitry (e.g. watchdog or manual pushbutton). Tie reset# to GND with an open collector output. While debugging the system, a 2.54mm jumper may be used to force a manual reset.

J-RES

1=RST# 2=GND
© EKF 240.1.02 ekf.com

Inter-Board Connectors

The SCS-TRUMPET is equipped with 4 inter-board connectors. These are the EXP (LPC and mixed signals), the HSE (SATA & USB), the PCIE (4-Lane PCI Express®), and the DP (DisplayPort) connectors. All host CPU inter-board connectors are situated at the bottom of the SCS-TRUMPET and establish the data path and power link to the carrier board CPU.

As the SCS-TRUMPET comes typically mounted as a unit together with the SC2-PRESTO or PC3-ALLEGRO (or other carrier board), there is normally no need for the user to get access to any of the inter-board connectors. They are described here as a reference only and for better understanding of the SCS-TRUMPET.
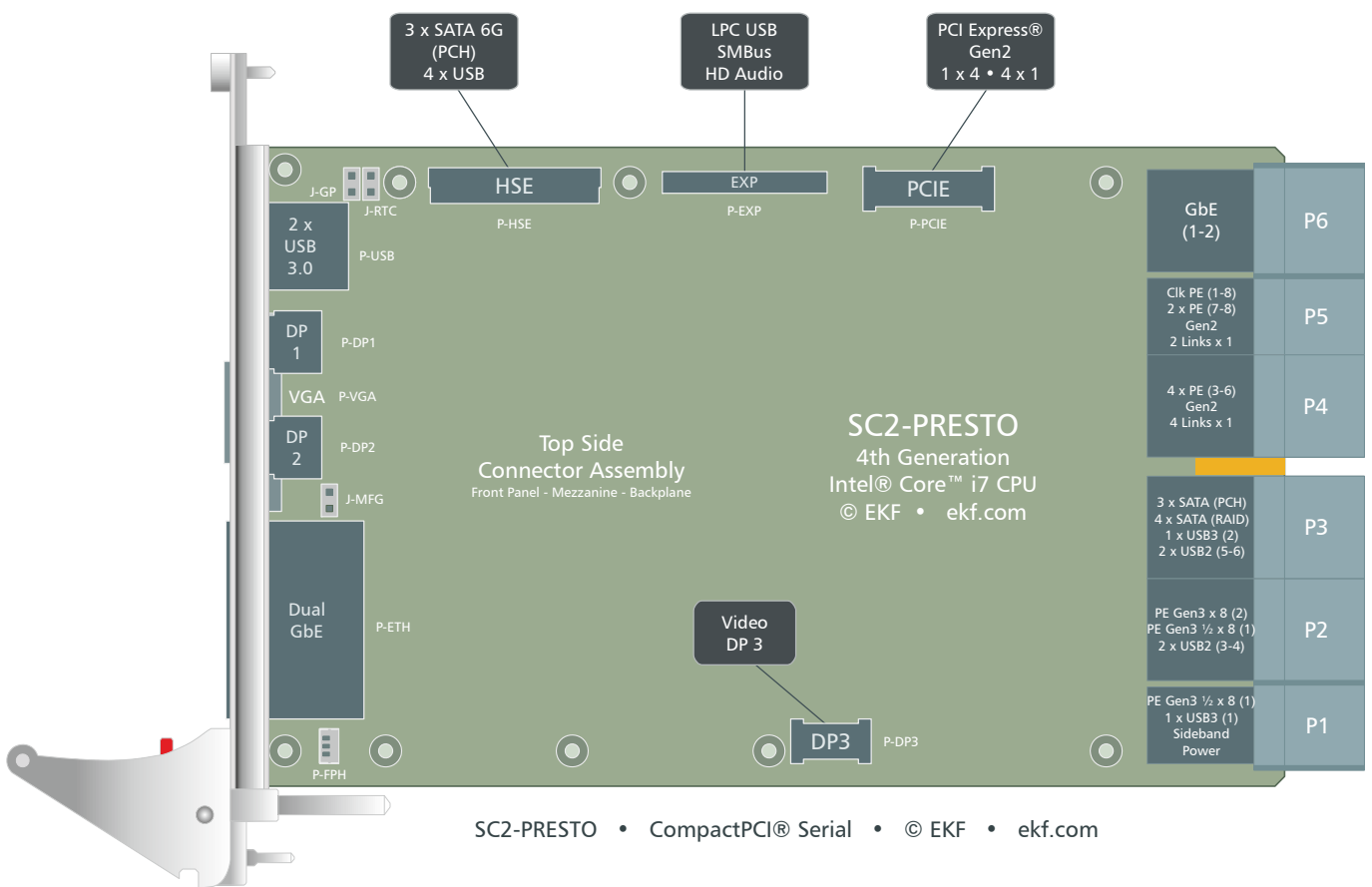
DP	
I/F Type	SC2-PRESTO
DisplayPort	4th Generation Intel® Core™ CPU

EXP	
I/F Type	SC2-PRESTO
LPC (Low Pin Count)	PCH (Platform Controller Hub)
HD Audio	PCH (Platform Controller Hub)
SMBus	PCH (Platform Controller Hub)
2 x USB 2.0	PCH (Platform Controller Hub)

HSE	
I/F Type	SC2-PRESTO
SATA01-SATA03 (6G)	PCH (Platform Controller Hub)
4 x USB 2.0	PCH (Platform Controller Hub)

PCIE	
I/F Type	SC2-PRESTO
PCI Express®	Gen2 PCIe® Switch must be configured on CPU card as 4x1

CPU Carrier to Mezzanine Side Card Connector Suite
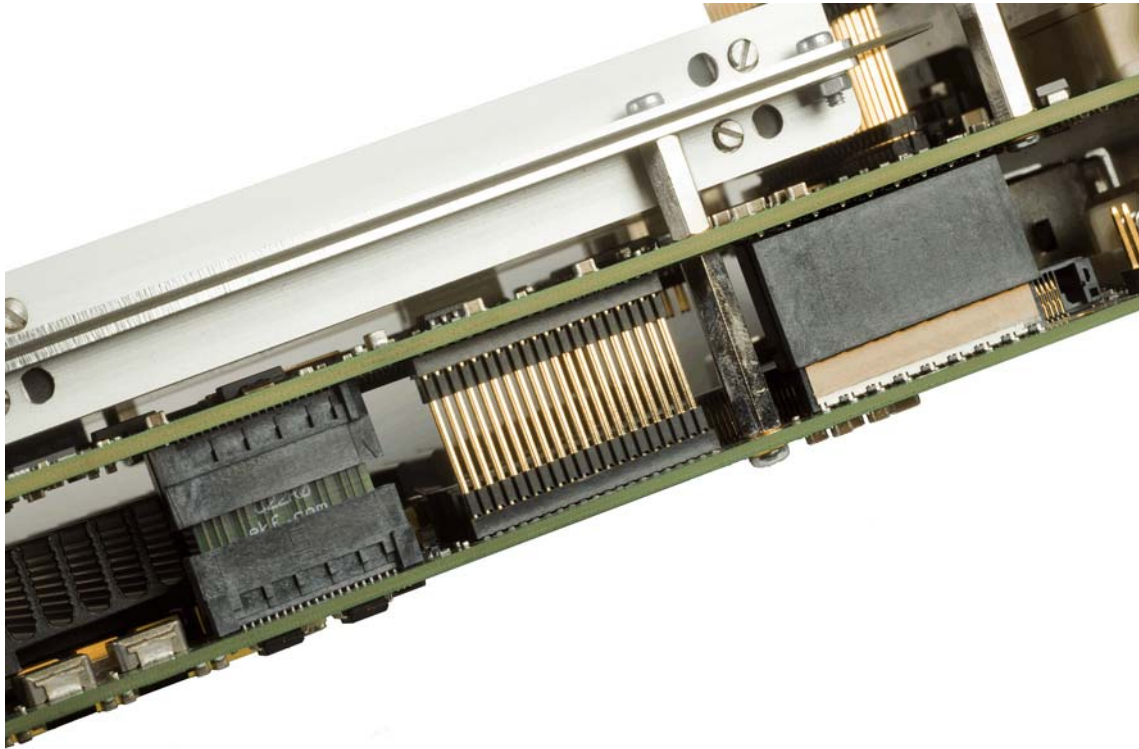
PCIE   EXP   HSE
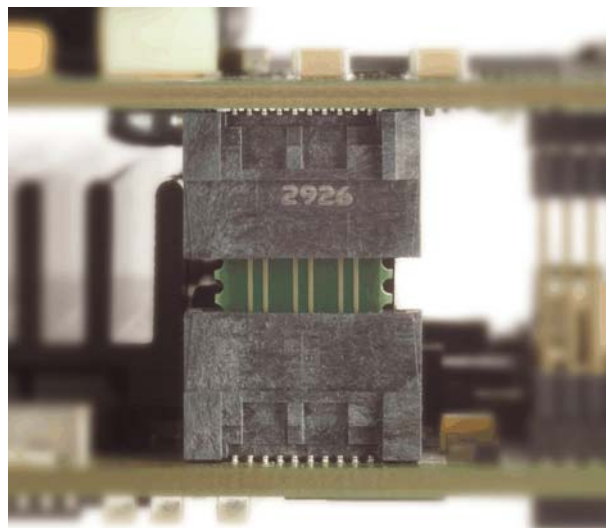
DP

DP

The high speed expansion socket DP is mounted on bottom of the SCS-TRUMPET. This allows to attach the mezzanine companion card on top of the CPU carrier board. A mating strip line PCB (C21-PCIEX1 with respect to the SC1-ALLEGRO CPU carrier card, and C66-DP for the PC1-GROOVE CPU) is used in addition to bridge the gap between the two boards, which results from the horizontal 0.8-inch (20.32mm) card slot pitch.

DP • DisplayPort Video				
High Speed Dual Row Socket 0.8mm Pitch (290.1.020.080)				
GND	1	2	GND
DP0+	3	4	DP3+
DP0-	5	6	DP3-
GND	7	8	GND
DP1+	9	10	DP_AUX+
DP1-	11	12	DP_AUX--
GND	13	14	GND
DP2+	15	16	DP_HPD
DP2-	17	18	DP_CFG
GND	19	20	GND

SDVO Video
High Speed Socket Connector
Top View on CPU Carrier Board

290.1.020.080
© EKF ekf.com

pin orientation shows
CPU carrier board top view

With respect to the particular CPU carrier card, the DP connector (AKA SDVO/DP) may be also configurable for SDVO video. Be sure to setup the CPU board for DisplayPort technology via the DP inter-board mezzanine connector, when combined with the SCS-TRUMPET.

Recent Intel graphics drivers should be installed in your system; if in doubt verify your drivers by the Intel® Driver Update Utility: www.intel.com/p/en_US/support/detect/?wapkw=(driver+update)
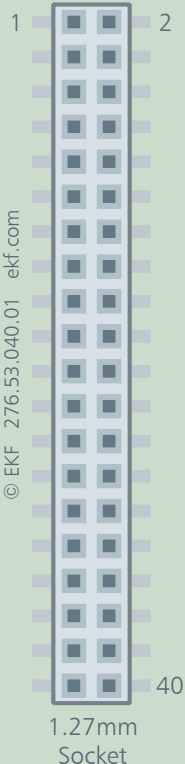
C21 use with
SC1-ALLEGRO
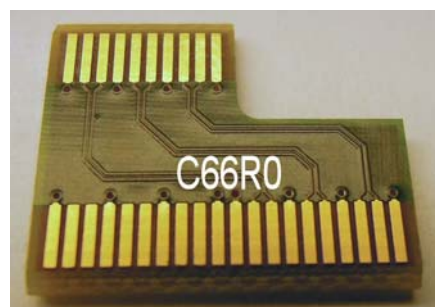
C66 use with
PC1-GROOVE

EXP

The inter-board connector EXP is mounted on bottom of the SCS-TRUMPET PCB. This allows to attach the SCS-TRUMPET mezzanine companion card on top of the CPU carrier board. A suitable board stacker is used in addition to bridge the gap between the two boards (exactly 4HP distance between PCBs). EXP is used to pass the Low Pin Count I/F to the SCS-TRUMPET, besides two USB channels and some sideband signals.
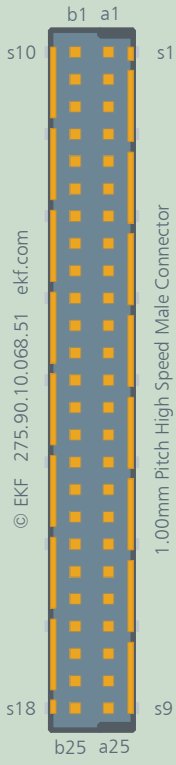
EXP • Expansion Board Interface (LPC/HD-Audio/USB)			
1.27mm Socket 2 x 20 (276.53.040.01)			
GND	1	2	+3.3V_CR *
CLK_33MHZ	3	4	PLTRST#
LPC_AD0	5	6	LPC_AD1
LPC_AD2	7	8	LPC_AD3
LPC_FRAME#	9	10	LPC_DRQ#
GND	11	12	+3.3V_CR *
SERIRQ	13	14	PME#
SMI#	15	16	CLK_14MHZ
FWH_ID0	17	18	FWH_INIT#
KBD_RST#	19	20	A20GATE
GND	21	22	+5V_CR *
USB2_DN	23	24	USB1_DN
USB2_DP	25	26	USB1_DP
USB_OC#	27	28	DBRESET#
SMB_CLK	29	30	SMB_DAT
GND	31	32	+5V_CR *
HDA_SDOUT	33	34	HDA_SDIN0
HDA_RST#	35	36	HDA_SYNC
HDA_BITCLK	37	38	HDA_SDIN1
SPEAKER	39	40	+12V_A

1 — 2

© EKF 276.53.040.01 ekf.com

40

1.27mm Socket

pin orientation shows CPU carrier board top view

* switched power supply lines from CPU carrier board according to Sx state

HSE

The connector HSE is a 10mm height shielded male pin header. Its counterpart on the CPU carrier board is a 8mm height receptacle, for a nominal headroom of 18.72mm between the boards (equivalent to 4HP board to board CL pitch). The SATA transfer speed may vary with the carrier board (6G SATA consistently from SC2-PRESTO off).

HSE • SATA & USB Mezzanine Interface			
1.00mm Pitch Male Connector 10mm Height (275.90.10.068.51)			
GND	b1	a1	GND
SATA03_TXP 4)	b2	a2	SATA01_TXP 3)
SATA03_TXN 4)	b3	a3	SATA01_TXN 3)
GND	b4	a4	GND
SATA03_RXN 4)	b5	a5	SATA01_RXN 3)
SATA03_RXP 4)	b6	a6	SATA01_RXP 3)
GND	b7	a7	GND
SATA04_TXP 3)	b8	a8	SATA02_TXP 4)
SATA04_TXN 3)	b9	a9	SATA02_TXN 4)
GND	b10	a10	GND
SATA04_RXN 3)	b11	a11	SATA02_RXN 4)
SATA04_RXP 3)	b12	a12	SATA02_RXP 4)
GND	b13	a13	GND
USB3_P	b14	a14	USB1_P
USB3_N	b15	a15	USB1_N
GND	b16	a16	GND
USB4_P	b17	a17	USB2_P
USB4_N	b18	a18	USB2_N
GND	b19	a19	GND
USB3_OC#	b20	a20	USB1_OC#
USB4_OC#	b21	a21	USB2_OC#
+5V_CR 2)	b22	a22	+3.3V_CR 1)
+5V_CR 2)	b23	a23	+3.3V_CR 1)
+5V_A	b24	a24	+3.3V_A
+12V_A	b25	a25	+12V_A

1) 2) Switched voltages from carrier board, according to CPU sleep state S0
3)   3Gbps SATA (SC1-ALLEGRO)
4)   6Gbps SATA (SC1-ALLEGRO)

Notes:

▸   All s# connector pins (shield) are tied to GND
▸   All TX/RX designations with respect to SATA controller (TX controller = RX drive, RX controller = TX drive)

PCIE

The high speed expansion socket PCIE is mounted on bottom of the SCS-TRUMPET. This allows to attach the mezzanine companion card on top of the CPU carrier board. A mating strip line spacer PCB (C22-PCIEX2) is used in addition to bridge the gap between the two boards, which results from the horizontal 0.8-inch (20.32mm) card slot pitch.

PCIE must be organized as 4 links by 1 lane each (i.e. 4 single PCI Express® lanes). Check the CPU carrier card PCIE DIP-switch settings for proper configuration (DSW1.1 = OFF, DSW1.2 = ON).

160.15.02.0
© EKF • ekf.com

PCIE • PCI Express x 4 High Speed Dual Row Socket 0.8mm Pitch 290.1.040.080				
GND	1	2	GND
+5V_CR [1]	3	4	+3.3V_CR [1]
+5V_CR [1]	5	6	+3.3V_CR [1]
GND	7	8	GND
PE_CLKP	9	10	PLTRST#
PE_CLKN	11	12	*PE_WAKE#*
GND	13	14	GND
PE0_TP	15	16	PE0_RP
PE0_TN	17	18	PE0_RN
GND	19	20	GND
GND	21	22	GND
PE1_TP	23	24	PE1_RP
PE1_TN	25	26	PE1_RN
GND	27	28	GND
PE2_TP	29	30	PE2_RP
PE2_TN	31	32	PE2_RN
GND	33	34	GND
PE3_TP	35	36	PE3_RP
PE3_TN	37	38	PE3_RN
GND	39	40	NC

PCI Express x 4
High Speed Socket Connector
Top View on CPU Carrier Board
290.1.040.080 © EKF ekf.com

pin assignment shows CPU carrier board top view (see-trough mezzanine side board PCB)

[1] switched on/off power lines on CPU carrier boards according to S3 state

[1] Supply voltages from carrier board, switched on/off according to sleep state

The CPU card PC2-LIMBO provides only one PCIe® lane via this mezzanine connector. For this case, rear I/O dedicated PCIe® devices (2 x SATA, 1 x USB controllers) are not connected to the CPU. Nevertheless the front panel USB 3.0 jacks can be used in this configuration since the associated USB controller is wired to to the single available PCIe® lane.

Rear I/O Connectors

As an option, the SCS-TRUMPET can be equipped with the backplane connectors P1 to P5. A single slot rear I/O backplane (directly adjoining the CompactPCI® Serial backplane) would be required for handing over the available signal lines to a suitable rear I/O transition module. As an alternate, a secondary CompactPCI® Serial backplane can be used for distributing the rear I/O USB and SATA channels (please refer to chapter 'Backplane Mounting'). In some applications, P1, P2, P4 and P5 are not required. Please discuss manufacturing options with sales@ekf.com before ordering.

Rear I/O SATA channels (P3) require the associated SATA controllers to be populated (2 x Marvell 88SE9170 dual-channel). USB 3.0 ports available via P3 require 2 x quad-port USB 3.0 controllers (TI TUSB7340) to be stuffed. Please follow the related links on the SCS-TRUMPET homepage for Marvell SATA and TI XHCI (USB 3.0 SuperSpeed) software driver download.

The P4 connector is used for legacy I/O, derived from the on-board SIO. Signal names in the P4 table hereafter are associated with their main function. However, the Super I/O controller allows a number of signals also be used as general purpose I/O. Please consult the SMSC SCH3114 datasheet for details (www.microchip.com). Please note, that serial port signals (UART) may be also in use for front panel I/O (stuffing options). Be sure to have connected any signal only once, in order to avoid interference/malfunction or even damage.

SCS-TRUMPET • Mezzanine Side Board • © EKF • ekf.com
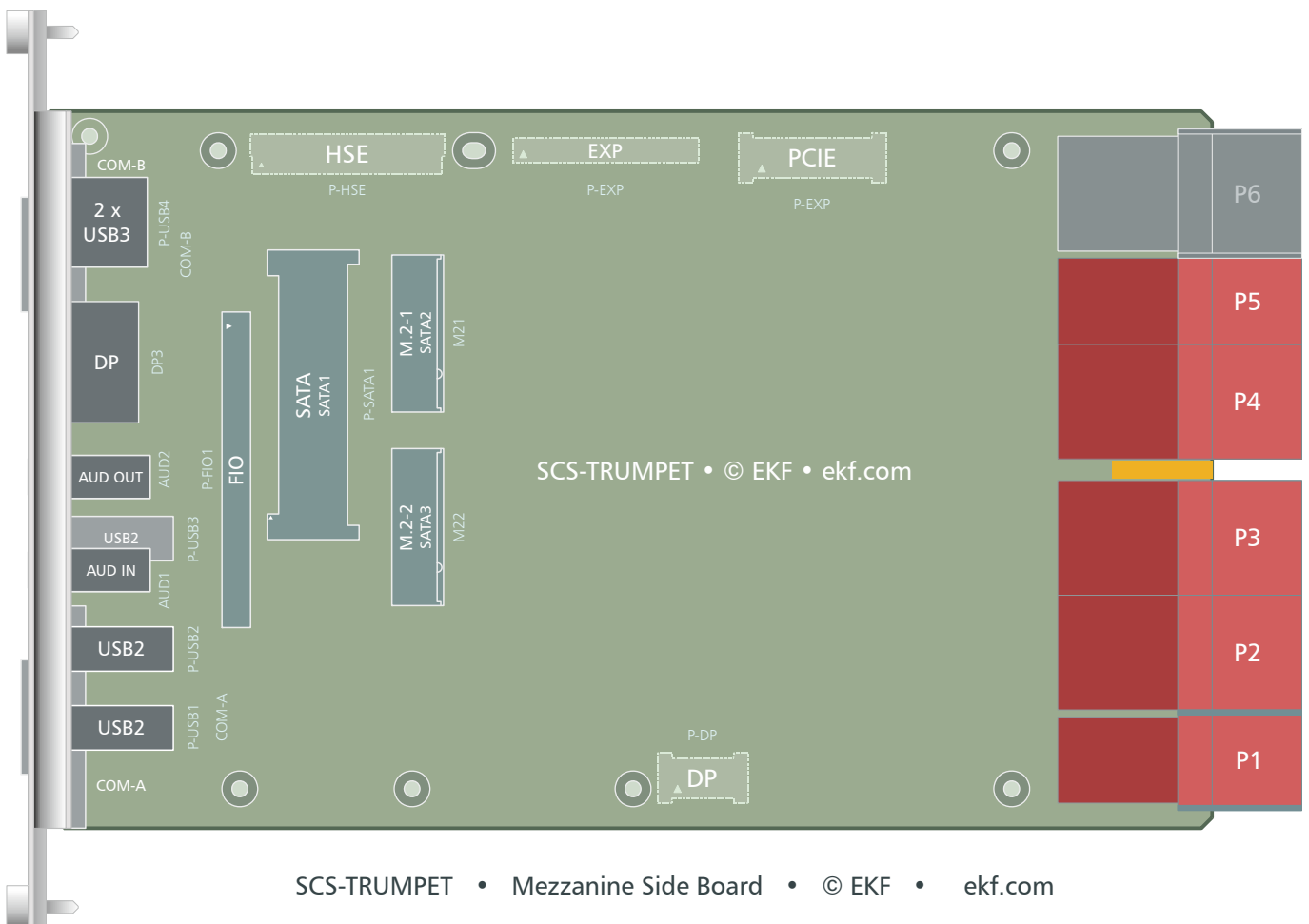
P5

| P5 CompactPCI® Serial Peripheral Slot Backplane Connector Type C |||||||||||||
| EKF Part #250.3.1208.20.00 • 96 pos. 12x8, 16mm Width |||||||||||||
P5	A	B	C	D	E	F	G	H	I	J	K	L
6	GND	V_OUT +12V	V_OUT +12V	GND	V_OUT +12V	V_OUT +12V	GND	V_OUT +5V	V_OUT +5V	GND	V_OUT +5V	V_OUT +5V
5		GND			GND			GND			GND	
4	GND			GND			GND			GND		
3	1 TUSB GPIO0	1 TUSB GPIO1	GND	1 TUSB GPIO2	1 TUSB GPIO3	GND	2 TUSB GPIO0	2 TUSB GPIO1	GND	2 TUSB GPIO2	2 TUSB GPIO3	GND
2	GND	2.1 USB PWRON	2.1 USB OC#	GND	2.2 USB PWRON	2.2 USB OC#	GND	2.3 USB PWRON	2.3 USB OC#	GND	2.4 USB PWRON	2.4 USB OC#
1			GND		EXP USB OC#	GND	1.3 USB PWRON	1.3 USB OC#	GND	1.4 USB PWRON	1.4 USB OC#	GND

all side band signals TTL level compliant, +3.45V maximum input voltage

The P5 V_{OUT} power pins are provided to supply active components on an optional rear I/O module, e.g. RS-232 transceivers. These pins are not connected by default, but can be configured as described below on customers request:

V_{OUT} +12V is not available by default. On customers request, the V_{OUT} +12V pins can be connected either to the CPU carrier board voltage +12V_A, or to the P1 backplane connector power pins +12V, fused via a pair of resettable PTCs, 0.5A each (1A in total) nominal hold current. Please note that the CPU voltage +12V_A may not be available, dependent on the CPU carrier card and optional presence of a +12V power supply in CPCI classic systems. In order to be used as +12V source, the P1 connector power pins would require a suitable power supply connected to P1, e.g. via a secondary CPCI Serial backplane.

V_{OUT} +5V is not available by default. On customers request, the V_{OUT} +5V pins can be connected to the CPU carrier board voltage +5V_CR, via a pair of resettable PTC fuses, 1.5A each (3A in total) nominal hold current. This voltage is controlled by the CPU card according to the current sleep state.

P4

| P4 CompactPCI® Serial Peripheral Slot Backplane Connector Type B | | | | | | | | | | | |
| EKF Part #250.3.1208.20.00 • 96 pos. 12x8, 16mm Width | | | | | | | | | | | |
P4	A	B	C	D	E	F	G	H	I	J	K	L
8	GND	SIO SER4 RXD	SIO SER4 DSR#	GND	SIO SER4 CTS#	SIO SER4 DCD#	GND	SIO SER4 RI#	SIO SER4 TXD	GND	SIO SER4 RTS#	SIO SER4 DTR#
7	SIO SER3 RXD	SIO SER3 DSR#	GND	SIO SER3 CTS#	SIO SER3 DCD#	GND	SIO SER3 RI#	SIO SER3 TXD	GND	SIO SER3 RTS#	SIO SER3 DTR#	GND
6	GND	SIO SER2 RXD	SIO SER2 DSR#	GND	SIO SER2 CTS#	SIO SER2 DCD#	GND	SIO SER2 RI#	SIO SER2 TXD	GND	SIO SER2 RTS#	SIO SER2 DTR#
5	SIO SER1 RXD	SIO SER1 DSR#	GND	SIO SER1 CTS#	SIO SER1 DCD#	GND	SIO SER1 RI#	SIO SER1 TXD	GND	SIO SER1 RTS#	SIO SER1 DTR#	GND
4	GND	SIO LPT INIT#	SIO LPT SLCTIN#	GND	SIO LPT SLCT	SIO LPT PE	GND	SIO LPT BUSY	SIO LPT ACK#	GND	SIO LPT ERROR#	SIO LPT ALF#
3	SIO LPT PD0	SIO LPT PD1	GND	SIO LPT PD2	SIO LPT PD3	GND	SIO LPT PD4	SIO LPT PD5	GND	SIO LPT PD6	SIO LPT PD7	GND
2	GND	SIO KBD DAT	SIO KBD CLK	GND	SIO MS DAT	SIO MS CLK	GND	RST# (Output)	SIO LPT STROBE#	GND	SIO TACH 1	SIO PWM 1
1	SIO GP 40		GND	SIO GP 44	SIO GP 45	GND	SIO GP 46	SIO GP 47	GND	SIO GP 60	SIO GP 61	GND

all signals TTL level compliant, +3.45V maximum input voltage

P3

P3	A	B	C	D	E	F	G	H	I	J	K	L
	P3 CompactPCI® Serial Backplane Connector Type B											
	EKF Part #250.3.1208.20.00 • 96 pos. 12x8, 16mm Width											
8	GND	7 SATA TX+	7 SATA TX-	GND	7 SATA RX+	7 SATA RX-	GND	8 SATA TX+	8 SATA TX-	GND	8 SATA RX+	8 SATA RX-
7	5 (2.2) SATA TX+	5 (2.2) SATA TX-	GND	5 (2.2) SATA RX+	5 (2.2) SATA RX-	GND	6 (HSE) SATA TX+	6 (HSE) SATA TX-	GND	6 (HSE) SATA RX+	6 (HSE) SATA RX-	GND
6	GND	3 (1.2) SATA TX+	3 (1.2) SATA TX-	GND	3 (1.2) SATA RX+	3 (1.2) SATA RX-	GND	4 (2.1) SATA TX+	4 (2.1) SATA TX-	GND	4 (2.1) SATA RX+	4 (2.1) SATA RX-
5	8 (2.4) USB3 TX+	8 (2.4) USB3 TX-	GND	8 (2.4) USB3 RX+	8 (2.4) USB3 RX-	GND	2 (1.1) SATA TX+	2 (1.1) SATA TX-	GND	2 (1.1) SATA RX+	2 (1.1) SATA RX-	GND
4	GND	6 (2.2) USB3 TX+	6 (2.2) USB3 TX-	GND	6 (2.2) USB3 RX+	6 (2.2) USB3 RX-	GND	7 (2.3) USB3 TX+	7 (2.3) USB3 TX-	GND	7 (2.3) USB3 RX+	7 (2.3) USB3 RX-
3	4 (1.4) USB3 TX+	4 (1.4) USB3 TX-	GND	4 (1.4) USB3 RX+	4 (1.4) USB3 RX-	GND	5 (2.1) USB3 TX+	5 (2.1) USB3 TX-	GND	5 (2.1) USB3 RX+	5 (2.1) USB3 RX-	GND
2	GND	2 USB3 TX+	2 USB3 TX-	GND	2 USB3 RX+	2 USB3 RX-	GND	3 (1.3) USB3 TX+	3 (1.3) USB3 TX-	GND	3 (1.3) USB3 RX+	3 (1.3) USB3 RX-
1	5 (2.1) USB2 D+	5 (2.1) USB2 D-	GND	6 (2.2) USB2 D+	6 (2.2) USB2 D-	GND	7 (2.3) USB2 D+	7 (2.3) USB2 D-	GND	8 (2.4) USB2 D+	8 (2.4) USB2 D-	GND

▸ Rear I/O USB 3.0 ports available with 2 x TUSB7340 option only (default 1 x TUSB7320)

▸ Rear I/O SATA ports 2 - 5 require 2 x 88SE9170 SATA host controllers to be stuffed (option)

▸ Rear I/O SATA port 6 is derived from mezzanine connector HSE (4th HSE SATA channel), routed via on-board SATA redriver, option only, not available with any CPU carrier card

pin positions printed white: system slot signals - not connected

all connectors optional - custom specific assembly

P2

P2 CompactPCI® Serial Backplane Connector Type B											
EKF Part #250.3.1208.20.00 • 96 pos. 12x8, 16mm Width											
P2	A	B	C	D	E	F	G	H	I	J	K	L
8	GND	IO	IO	GND	2 (EXP) USB2 D+	2 (EXP) USB2 D-	GND	3 (1.3) USB2 D+	3 (1.3) USB2 D-	IO	4 (1.4) USB2 D+	4 (1.4) USB2 D-
7	IO	IO	GND	IO	IO	GND	IO	IO	GND	IO	IO	GND
6	GND	2 PE TX06+	2 PE TX06-	GND	2 PE RX06+	2 PE RX06-	GND	2 PE TX07+	2 PE TX07-	GND	2 PE RX07+	2 PE RX07-
5	2 PE TX04+	2 PE TX04-	GND	2 PE RX04+	2 PE RX04-	GND	2 PE TX05+	2 PE TX05-	GND	2 PE RX05+	2 PE RX05-	GND
4	GND	2 PE TX02+	2 PE TX02-	GND	2 PE RX02+	2 PE RX02-	GND	2 PE TX03+	2 PE TX03-	GND	2 PE RX03+	2 PE RX03-
3	2 PE TX00+	2 PE TX00-	GND	2 PE RX00+	2 PE RX00-	GND	2 PE TX01+	2 PE TX01-	GND	2 PE RX01+	2 PE RX01-	GND
2	GND	PE TX06+	PE TX06-	GND	PE RX06+	PE RX06-	GND	PE TX07+	PE TX07-	GND	PE RX07+	PE RX07-
1	PE TX04+	PE TX04-	GND	PE RX04+	PE RX04-	GND	PE TX05+	PE TX05-	GND	PE RX05+	PE RX05-	GND

P1

| P1 CompactPCI® Serial Backplane Connector Type A | | | | | | | | | | | |
| EKF Part #250.3.1206.20 Type.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	1 USB2 D+	1 USB2 D-	GND	PE CLK+	PE CLK-	GND	1 SATA TX+	1 SATA TX-	GND	1 SATA RX+	1 SATA RX-
3	1 USB3 TX+	1 USB3 TX-	PWR BTN# (GA0)	1 USB3 RX+	1 USB3 RX-	PWR FAIL# (GA1)	SATA SDI	SATA SDO	GND (GA2)	SATA SCL	SATA SL	GND (GA3)
2	GND	I2C SCL	I2C SDA	GND	PS ON# (GND)	RST#	GND	PRST#	WAKE#	GND	RSV	SYS EN#
1	+12V	STBY	GND	+12V	+12V	GND	+12V	+12V	GND	+12V	+12V	GND

Additional Functions

SMBus EEPROM

The SCS-TRUMPET is provided with a 24C02 2Kbit I^2C EEPROM, for storing board configuration data. The EEPROM is accessed via the SMBus.

If required, the SMBus EEPROM address A1 can be optionally controlled (stuffing option) by SIO GP34 (serial port 4 DTR#), and the SMBus EEPROM WP is likewise tied to GP67 (serial port 4 RTS4#).

Schematics

Complete circuit diagrams for this product are available for customers on request. Signing of a non-disclosure agreement would be needed. Please contact sales@ekf.de for details.

EKF reserves the right to refuse distribution of confidential information material for any reason that EKF may consider substantial.

Ordering Information

SCS - 0 X Y Z - Trumpet

Front Panel Interfaces

- 2x USB 3.0 + DP	+	Audio	+	COM-A	: '1'
- 2x USB 3.0 + DP	+	Audio	+	2x USB 2.0	: '2'
- COM-B	+	Audio	+	COM-A	: '3'
- COM-B	+	USB 2.0	+	COM-A	: '4'
- 2x USB 3.0 + DP	+	USB 2.0	+	COM-A	: '5'
- 2x USB 3.0 + DP	+	USB 2.0	+	2x USB 2.0	: '6'

On Board SATA Devices

- 2.5" HDD/SSD: '0'
- M2 Module: '1'

Rear I/O

- no Rear I/O: '0'
- Serial System Slot: '1'   (CPU Carrier:1st Backplane , SCS: 2nd Backplane)
- Fat Pipe slot: '2'

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