SECO S.p.A.
Via A. Grandi 20
52100 Arezzo – Italy
Ph: +39 0575 26979
Fax: +39 0575 350210
P.IVA – VAT IT 00325250512
www.seco.com

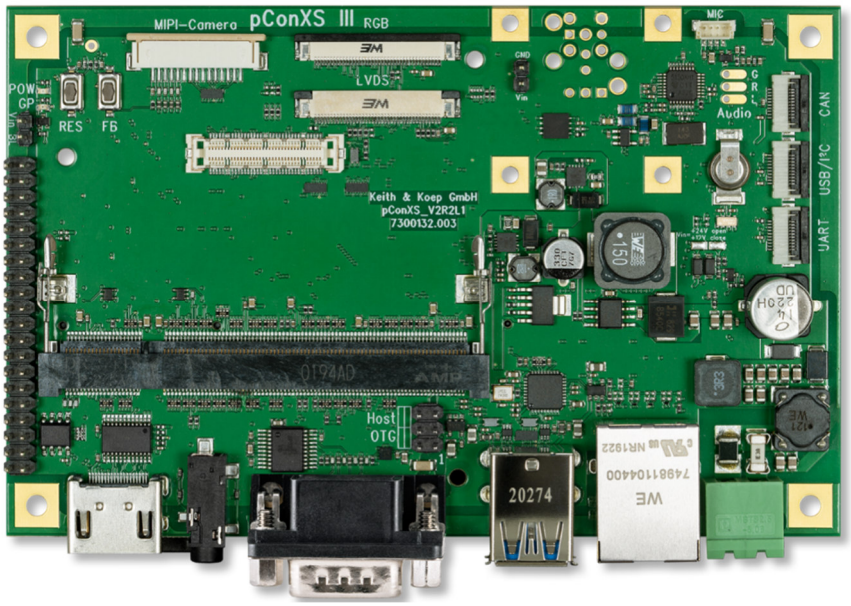
CARRIER-TRIZEPS-PCONXS-III

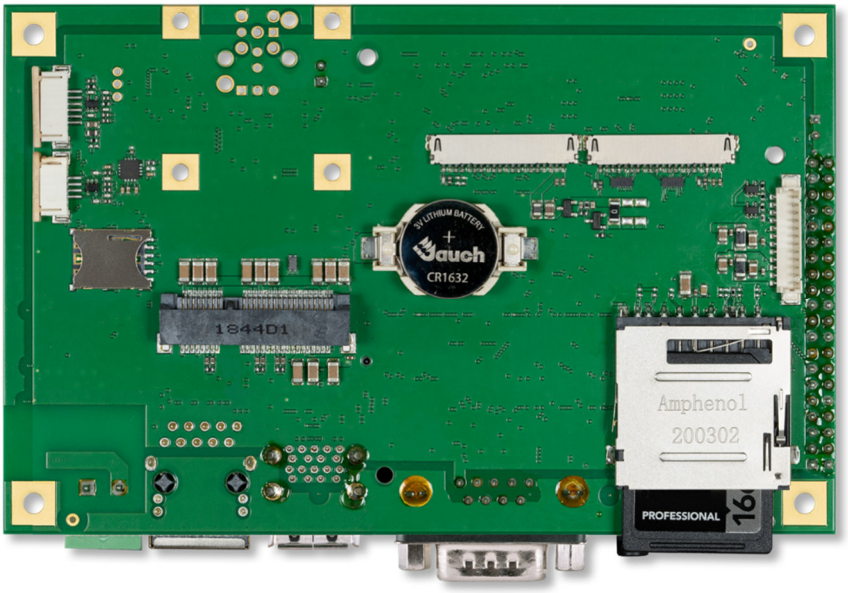
Documentation version 2.1

1 Introduction

The Carrier-Trizeps-pConXS-III is a 5.5-inch baseboard for SECO SOM-Trizeps-VII-MX6, SOM-Trizeps-VIII-MX8M, SOM-Trizeps-VIII-MX8M-Mini, SOM-Trizeps-VIII-MX8M-Plus, Trizeps VIII Nano SODIMM 200 CPU-Modules. The baseboard is designed as full scalable embedded solution for quick and simple integration in customized equipment. It supports most of the SOM-Trizeps functionalities. In addition to numerous standard interfaces, an analog camera interface and a Mini PCI Express card edge connector are available. The baseboard supports a lot of LCD displays thanks to the HDMI®, Single LVDS, Dual LVDS and touchscreen LCD interfaces. Additional software board support packages complete the eased design in process to a fix time to market solution for every customer's product. For special needs it is simple to connect additional hardware through the extension connector. It is available as a low cost and a full function version.

FF-Version (Full Function)





2 Carrier-Trizeps-pConXS-III FF and LC versions

Differences between the Carrier-Trizeps-pConXS-III FF (Full Function) and Carrier-Trizeps-pConXS-III LC (Low Cost)

Carrier-Trizeps-pConXS-III FF

SOM-Trizeps-VII-MX6
SOM-Trizeps-VIII-MX8M
SOM-Trizeps-VIII-MX8M-Mini
SOM-Trizeps-VIII-MX8M-Plus
Trizeps VIII Nano

USB 2.0 4-Port Hub	
T-VII, T-VIII, T-VIII Mini + Plus	
USB 2.0 Host Type A Connector	USB 2.0 Host For PCIe
USB 2.0 For i-MOD Con	USB 2.0 For KuK Modis LVDS

USB OTG	
Jumperfield for Host/Slave	
T-VII, T-VIII Mini + Nano	T-VIII, T-VIII Plus
USB 2.0	USB 3.0

Ethernet	
T-VII	T-VIII T-VIII Mini/Nano/Plus
10/100Mbit	10/100/1000Mbit

- Green Power-LED and Yellow GPIO-LED
- Generation +3V3/3A (2x) and +5V/5A

Extension Header
Headphone, Microphone, Line-In, Speaker, ADC, RESET, I²C, SPI, SDIO

KuK i-MOD Connectors (3x)
USB, I²C, GPIO, RESET, UART, 2xCAN

- +12V to +24V Power Supply
- RTC with GoldCAP or +3V Battery
- HDMI® 1.4a
- MIPI Camera
- KuK Modis LVDS Connector
- 18Bit RGB EDT Family Connector
- RS232 4-wire (RX/TX/RTS/CTS)
- 3.5mm Stereo Headphone Jack
- Digital Microphone Connector
- Reset and FastBoot Tactile Switch
- Secure Element
- Analog Camera BNC/MiniBNC

MiniPCIe Half-/Full-Size
SIM Socket for PCIe Modem
T-VII, T-VIII, T-VIII Mini + Plus

- Dual-LVDS Connectors
- Resistive Touch Connector
- Capacitive Touch Connector
- SD-Card Socket
- Temperature Sensor

Carrier-Trizeps-pConXS-III LC

SOM-Trizeps-VII-MX6
SOM-Trizeps-VIII-MX8M
SOM-Trizeps-VIII-MX8M-Mini
SOM-Trizeps-VIII-MX8M-Plus
Trizeps VIII Nano

USB 2.0 4-Port Hub	
T-VII, T-VIII, T-VIII Mini + Plus	
USB 2.0 Host Type A Connector	USB 2.0 Host For PCIe
USB 2.0 For i-MOD Con	USB 2.0 For KuK Modis LVDS

USB OTG	
Jumperfield for Host/Slave	
T-VII, T-VIII Mini + Nano	T-VIII, T-VIII Plus
USB 2.0	USB 3.0

Ethernet	
T-VII	T-VIII T-VIII Mini/Nano/Plus
10/100Mbit	10/100/1000Mbit

- Green Power-LED and Yellow GPIO-LED
- Generation +3V3/3A (2x) and +5V/5A

Extension Header
Headphone, Microphone, Line-In, Speaker, ADC, RESET, I²C, SPI, SDIO

KuK i-MOD Connectors (3x)
USB, I²C, GPIO, RESET, UART, 2xCAN

- +12V to +24V Power Supply
- RTC with GoldCAP
- HDMI® 1.4a
- MIPI Camera
- KuK Modis LVDS Connector
- 18Bit RGB EDT Family Connector
- RS232 4-wire (RX/TX/RTS/CTS)
- 3.5mm Stereo Headphone Jack
- Digital Microphone Connector
- Reset and FastBoot Tactile Switch
- Secure Element

3 Features and Interfaces

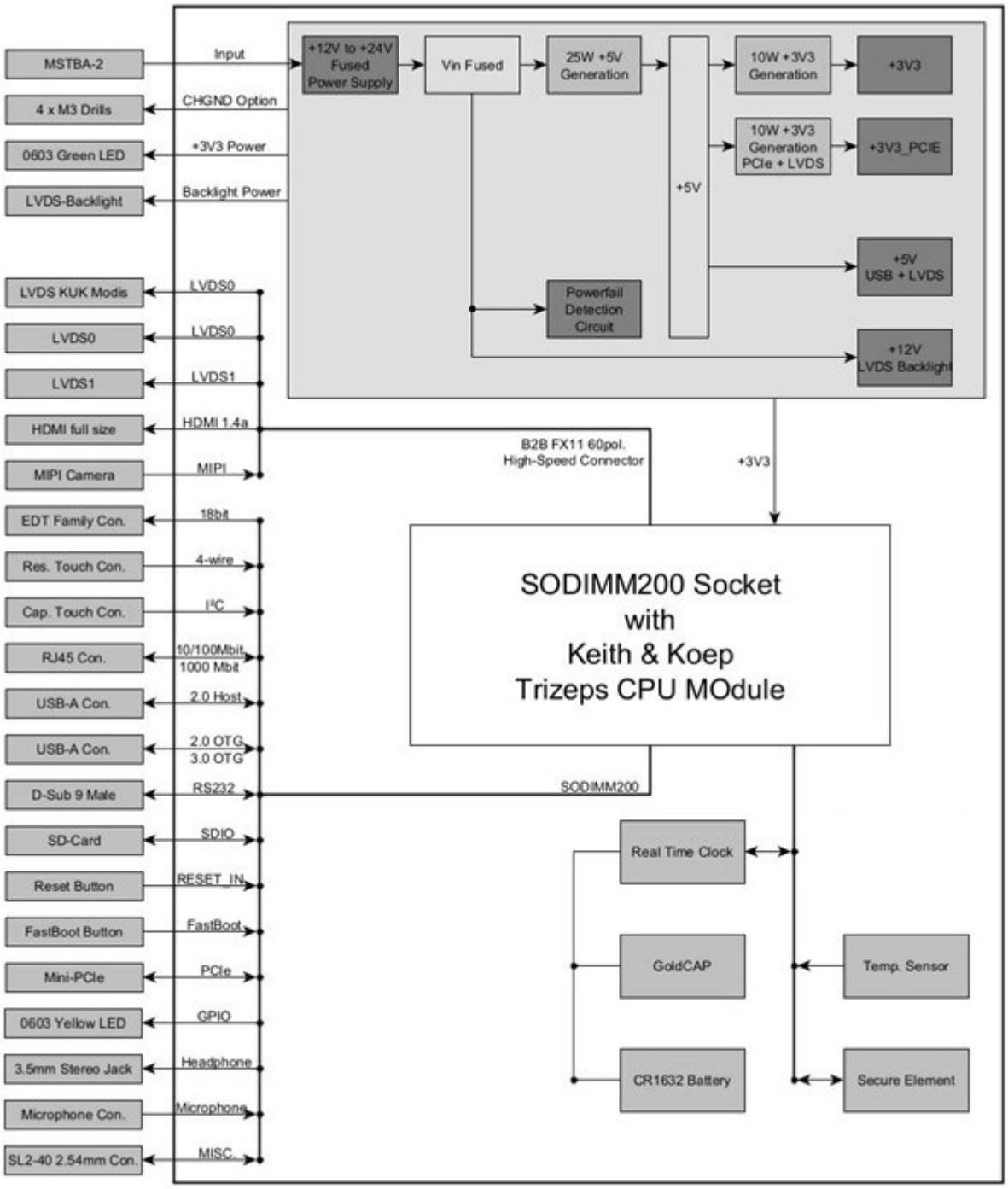
3.1 Features

- Fits to SOM-Trizeps-VII-MX6, SOM-Trizeps-VIII-MX8M, SOM-Trizeps-VIII-MX8M-Mini, SOM-Trizeps-VIII-MX8M-Plus, Trizeps VIII Nano
- Support of the SECO Trizeps high-speed board to board connector (Hirose FX11A)
- Single LVDS connector (KuK Modis Standard)
- EDT Family connector for 3.5", 4.3", 5.0", 5.7" and 7.0" displays, optional with resistive or capacitive integrated touch panel
- Support for Displays starting with 7.0" through LVDS and Dual-LVDS up to WUXGA resolution
- HDMI®1.4 display connector for WUXGA resolutions
- Industrial 25W power supply from +12V up to +24V
- 10/100/1000 Mbit Ethernet RJ45 Connector
- RS232 with Handshake (RTS, CTS) on male D-SUB 9 connector
- 1 x USB 2.0-A Host connector
- 1 x USB 3.0-A OTG connector (switchable through jumper pin header)
- Reset and Fast Boot Button, Power and Status LEDs
- 40pol. SL2-40 2.54mm extension pin header
- Real Time Clock buffered through cap or optional +3V battery
- I²C Temperature IC
- Optional BNC or Mini-BNC for analog camera input
- Headphone out (3.5mm Stereo Jack)
- Digital microphone in
- Secure Element
- 3 x SECO i-MOD connectors (UART, 2 x CAN, USB/I²C)
- Optional Dual-LVDS display connector on bottom side (2 headers)
- Optional Mini PCIe Half-/Full Size Card Edge Connector on bottom side
- Optional Nano-SIM Card Connector on bottom side
- Optional SD/MMC Card Connector on bottom side

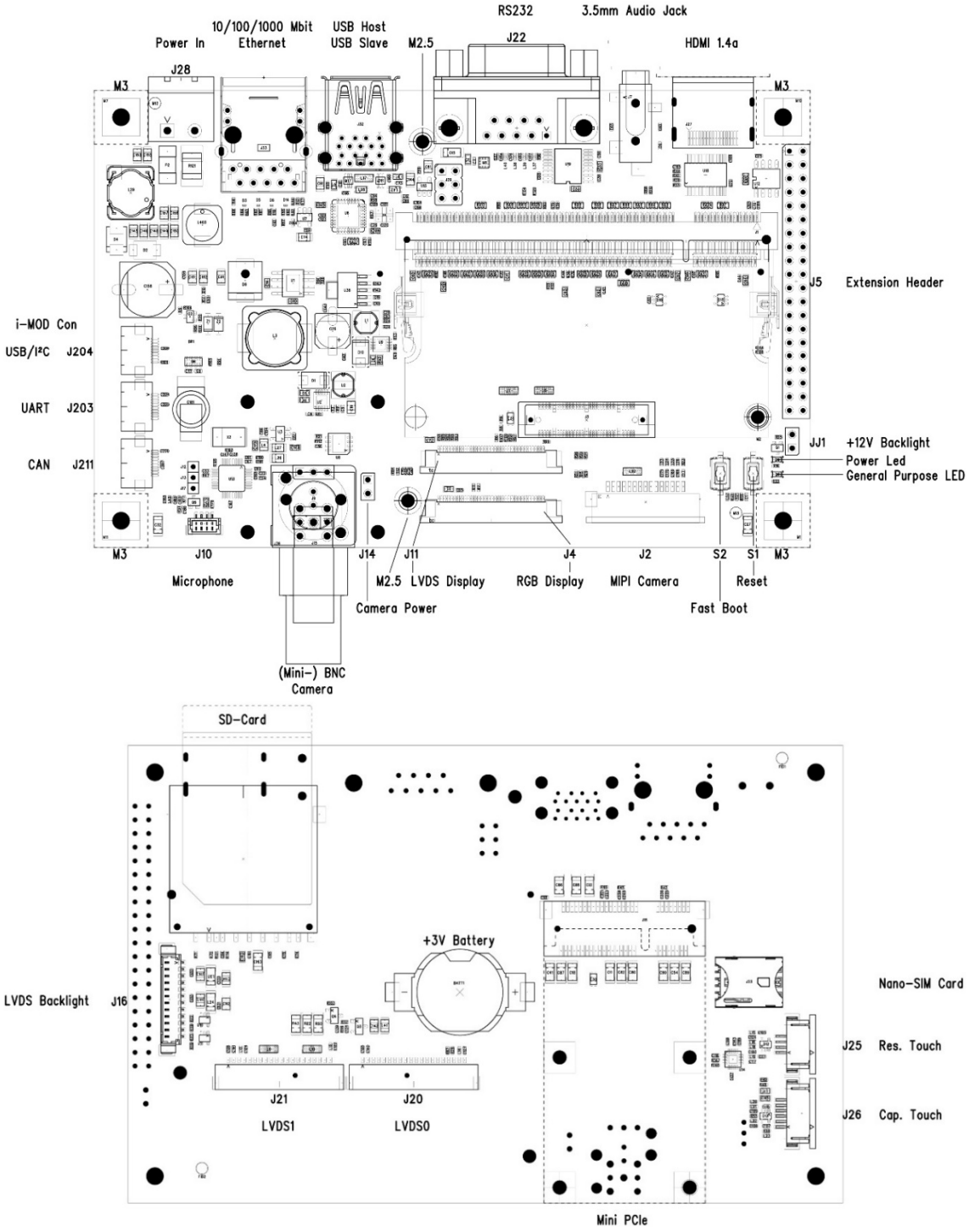
3.2 Interfaces / Signals accessible over extension connector

- +5V Power Supply
- +3V3 Power Supply
- VIN_FUSED Supply and Power failure GPIO for USV
- Stereo Headphone
- Microphone
- LINEIN
- Speaker Output
- 2 wire UART
- 3x ADCs
- SPDIF IN/OUT
- \RESET_OUT and \RESET_IN
- I²C
- 2x CAN Bus for isolated applications
- SDIO interface (Full SPI Mux function)

4 Simplified Block Diagram



5 Connectors



5.1 J1: SODIMM200 Connector (TE 1473005-1)

5.2 J2: Raspberry PI Camera Connector (MOLEX 52271-1579)

Pin	Signal
1	GND
2	CSI_D0N
3	CSI_D0P
4	GND
5	CSI_D1N
6	CSI_D1P
7	GND
8	CSI_CLK0N
9	CSI_CLK0P
10	GND
11	CAM_PWDN
12	\CAM_RESET
13	I2C1_SCL
14	I2C1_SDA
15	+3V3

5.3 J3: Highspeed Connector (Hirose FX11A-60S/6 SV(71))

For pin information on J1 + J3 see the latest SOM-Trizeps documentations on https:// seco.com/

5.4 J4: RGB Display Connector – EDT Family Concept (Wuerth 68714014522)

Signal	Pin		Pin	Signal
TSPX	1		21	LCD_D14
TSMY (I2C2_SDA)	2		22	LCD_D15
TSMX	3		23	LCD_D16
TSPY (I2C2_SCL)	4		24	LCD_D17
PWM	5		25	GND
\INT	6		26	LCD_D06
+3V3	7		27	LCD_D07
+3V3	8		28	LCD_D08
GND	9		29	LCD_D09
GND	10		30	LCD_D10
+3V3	11		31	LCD_D11
BL_EN	12		32	GND
LCD_DE	13		33	LCD_D00
LCD_VSYNC	14		34	LCD_D01
LCD_HSYNC	15		35	LCD_D02
\WAKE	16		36	LCD_D03
LCD_PCLK	17		37	LCD_D04
GND	18		38	LCD_D05

LCD_D12	19		39	\RESET_OUT (GND)
LCD_D13	20		40	\RESET_OUT

5.5 J5: SL2-40 2.54mm extension pin header

Signal	Pin		Pin	Signal
GND	1		2	GND
+5V	3		4	+5V
VIN_FUSED	5		6	VIN_FUSED
+3V3	7		8	+3V3
LED_GPIO	9		10	HEADPHONE_R
HEADPHONE_L	11		12	HEADPHONE_GND
LINEIN_L	13		14	LINEIN_R
MIC_OUT	15		16	MIC_GND
UART3_TXD	17		18	UART3_RXD
GP_POWERFAIL	19		20	AD3
AD0	21		22	AD1
SPEAKER_L	23		24	SPEAKER_R
SPDIF_IN	25		26	SPDIF_OUT
\RESET_OUT	27		28	\RESET_IN
I2C2_SCL	29		30	I2C2_SDA
CAN1_TX	31		32	CAN1_RX
CAN2_TX	33		34	CAN2_RX
SDIO3_DATA0__SPI2_MISO	35		36	SDIO3_DATA1__SPI2_SSO
SDIO3_DATA2__SPI2_SS1	37		38	SDIO3_DATA3__SPI2_SS2
SDIO3_CLK__SPI2_SCLK	39		40	SDIO3_CMD__SPI2_MOSI

5.6 J10: Digital Microphone Connector (JST JST BM04B-SRSS-TB(LF)(SN))

Pin	Signal
1	+3V3
2	PDM_CLK
3	PDM_DATA
4	GND

5.7 J11: LVDS KuK Modis Standard Connector (Wuerth 68714014022)

Pin	Signal		Pin	Signal
1	-		21	LVDS0_3P
2	+3V3		22	GND
3	+3V3		23	GND
4	+3V3		24	GND
5	I2C2_SCL		25	GND
6	I2C2_SDA		26	BL_LVDS_EN

7	GND		27	PWM
8	LVDS0_0N		28	LVDS_EN
9	LVDS0_0P		29	\INT
10	GND		30	\WAKE
11	LVDS0_1N		31	VIN_FUSED
12	LVDS0_1P		32	VIN_FUSED
13	GND		33	VIN_FUSED
14	LVDS0_2N		34	+5V
15	LVDS0_2P		35	+5V
16	GND		36	+5V
17	LVDS0_CLKN		37	USB1_DN
18	LVDS0_CLKP		38	USB1_DP
19	GND		39	-
20	LVDS0_3N		40	GND

5.8 J14: Camera Power Supply

Pin	Signal
1	VIN_FUSED
2	GND

5.9 J16: LVDS Backlight Connector (MOLEX 53398-1271)

Pin	Signal
1	VIN_FUSED
2	VIN_FUSED
3	VIN_FUSED
4	+5V
5	+5V
6	GND
7	GND
8	GND
9	PWM (+3V3)
10	BL_PWM_5V (+5V)
11	BL_LVDS_EN (+3V3 active high)
12	BL_EN_5V (+5V active high)

5.10 J18: Mini PCIe Half-/Full Size Card Edge Connector (MOLEX 6710-001)

Signal	Pin		Pin	Signal
nPCIE_WAKE	1		2	+3V3_AUX
-	3		4	GND
-	5		6	+1V5
nPCIE_CLKREQ	7		8	UIM_PWR
GND	9		10	UIM_DATA
PCIE_CLKN	11		12	UIM_CLK
PCIE_CLKP	13		14	UIM_RESET
GND	15		16	UIM_VPP
-	17		18	GND
-	19		20	nW_DISABLE1 (PU 100K)
GND	21		22	nPCIE_RESET
PCIE_RXN	23		24	+3V3_AUX
PCIE_RXP	25		26	GND
GND	27		28	+1V5
GND	29		30	I2C1_SCL
PCIE_TXN	31		32	I2C1_SDA
PCIE_TXP	33		34	GND
GND	35		36	USB3_DN
GND	37		38	USB3_DP
+3V3_AUX	39		40	GND
+3V3_AUX	41		42	-
GND	43		44	-
-	45		46	-
-	47		48	+1V5
-	49		50	GND
nW_DISABLE2 (PU 100K)	51		52	+3V3_AUX

5.11 J20 + J21: Dual LVDS Connectors (HIROSE DF19G-20P-1H(54))

J20			J21	
Pin	Signal		Pin	Signal
1	VDD_LCD (+3V3 or +5V)		1	VDD_LCD (+3V3 or +5V)
2	VDD_LCD (+3V3 or +5V)		2	VDD_LCD (+3V3 or +5V)
3	GND		3	I2C2_SDA
4	GND		4	GND
5	LVDS0_0N		5	LVDS1_0N
6	LVDS0_0P		6	LVDS1_0P
7	GND		7	GND
8	LVDS0_1N		8	LVDS1_1N
9	LVDS0_1P		9	LVDS1_1P
10	GND		10	GND

11	LVDS0_2N		11	LVDS1_2N
12	LVDS0_2P		12	LVDS1_2P
13	GND		13	GND
14	LVDS0_CLKN		14	LVDS1_CLKN
15	LVDS0_CLKP		15	LVDS1_CLKP
16	GND		16	GND
17	LVDS0_3N		17	LVDS1_3N
18	LVDS0_3P		18	LVDS1_3P
19	GND		19	GND
20	SEL6/8		20	I2C2_SCL

5.12 J22: RS232 (D-SUB 9 Male)

Pin	Signal
1	-
2	FF_RXD_V24X
3	FF_TXD_V24X
4	-
5	GND
6	-
7	FF_RTS_V24X
8	FF_CTS_V24X
9	-

5.13 J25: Resistive Touch Connector (MOLEX 52271-0479)

Pin	Signal
1	TSPY
2	TSMX
3	TSMY
4	TSPX

5.14 J26: I²C Touch Connector (MOLEX 52271-0669)

Pin	Signal
1	\INT
2	\WAKE
3	GND
4	I2C2_SCL
5	I2C2_SDA
6	+3V3/+5V

5.15 J28: Power Supply

Pin	Signal
1	VIN (12V to 24V)
2	Ground

5.16 J29: USB OTG Mode

Jumper	Mode
3-5 && 4-6	USB-Host
1-3 && 2-4	USB-Slave

5.17 J203: i-MOD Connector: USB/I²C (Wuerth 687110149022)

Pin	Signal
1	+5V
2	USB4_DN
3	USB4_DP
4	GND
5	+3V3
6	I2C2_SCL
7	I2C2_SDA
8	GP00
9	GPIO_AUX
10	\RESET_OUT

5.18 J204: i-MOD Connector: UART (Wuerth 687110149022)

Pin	Signal
1	-
2	-
3	-
4	GND
5	+3V3
6	UART2_RTS
7	UART2_CTS
8	UART2_TXD
9	UART2_RXD
10	GND

5.19 J2: i-MOD Connector: CAN (Wuerth 687110149022)

Pin	Signal

1	+5V
2	CAN_GPIO2
3	CAN_GPIO3
4	GND
5	+3V3
6	CAN2_TX
7	CAN2_RX
8	CAN1_TX
9	CAN1_RX
10	CAN_GPIO0

5.20 JJ1: LVDS Backlight Power Supply

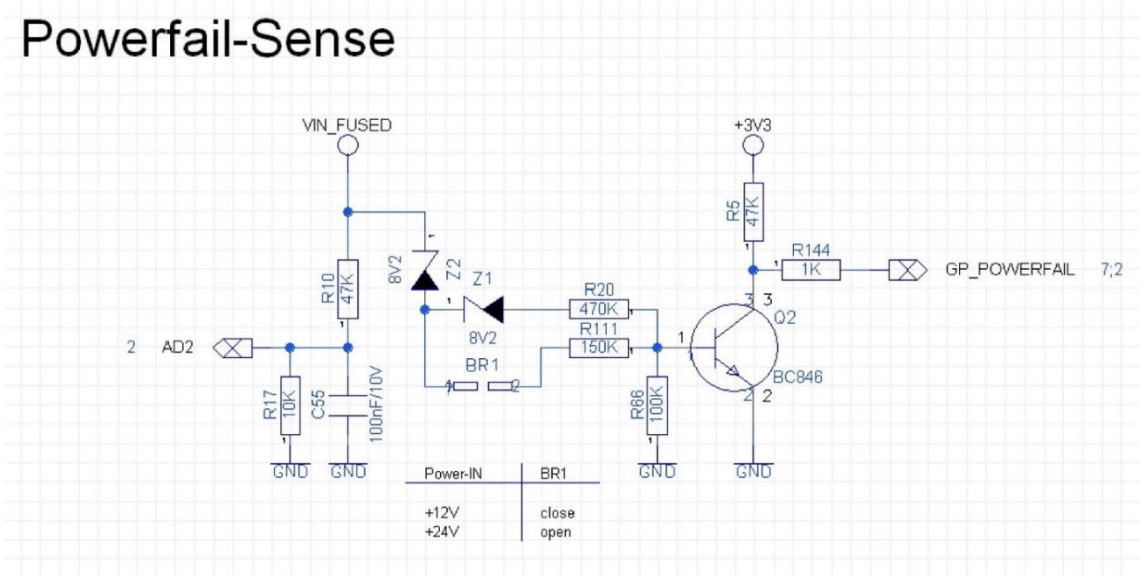
Jumper	Mode
1-2	VIN-Fused (use only, if Power Supply is +12V !!)

5.21 Audio Signal Soldering Pads

Pad	Signal
J12	HEADPHONE_L
J13	HEADPHONE_R
J17	HEADPHONE_GND

5.22 Powerfail

For a proper function solder bridge BR1 must be closed (+12V) or open (+24V) according to the supply voltage attached on connector J28. Supply voltages with other values may cause a malfunction of the powerfail-signal and should be avoided.



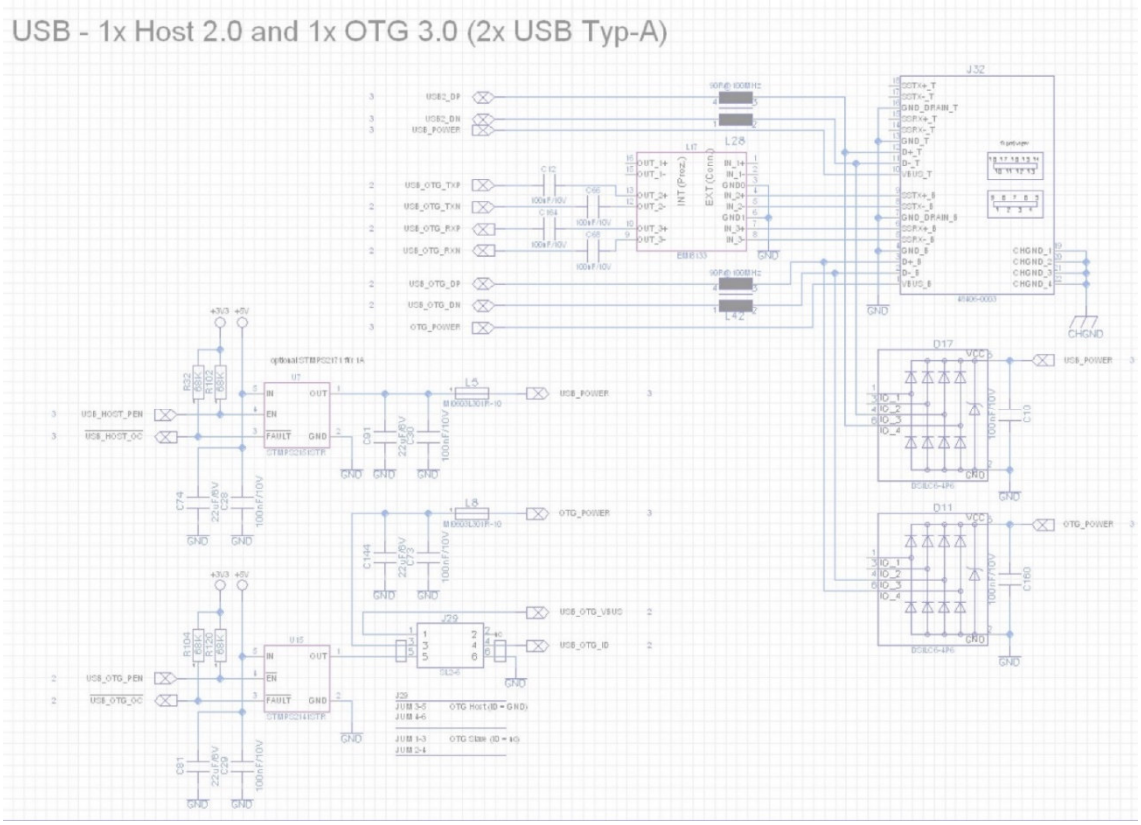
5.23 USB

The lower port of the double stacked USB header supports USB 3.0 if the Carrier-Trizeps-pConXS-III is provided

with a SOM-Trizeps-VIII-MX8M or a SOM-Trizeps-VIII-MX8M-Plus. All other SOM-Trizeps variants only support USB 2.0.

In All cases the lower port can be used as a host or a slave type by setting jumpers on J29.

For correct settings pay attention to the J29 description above.

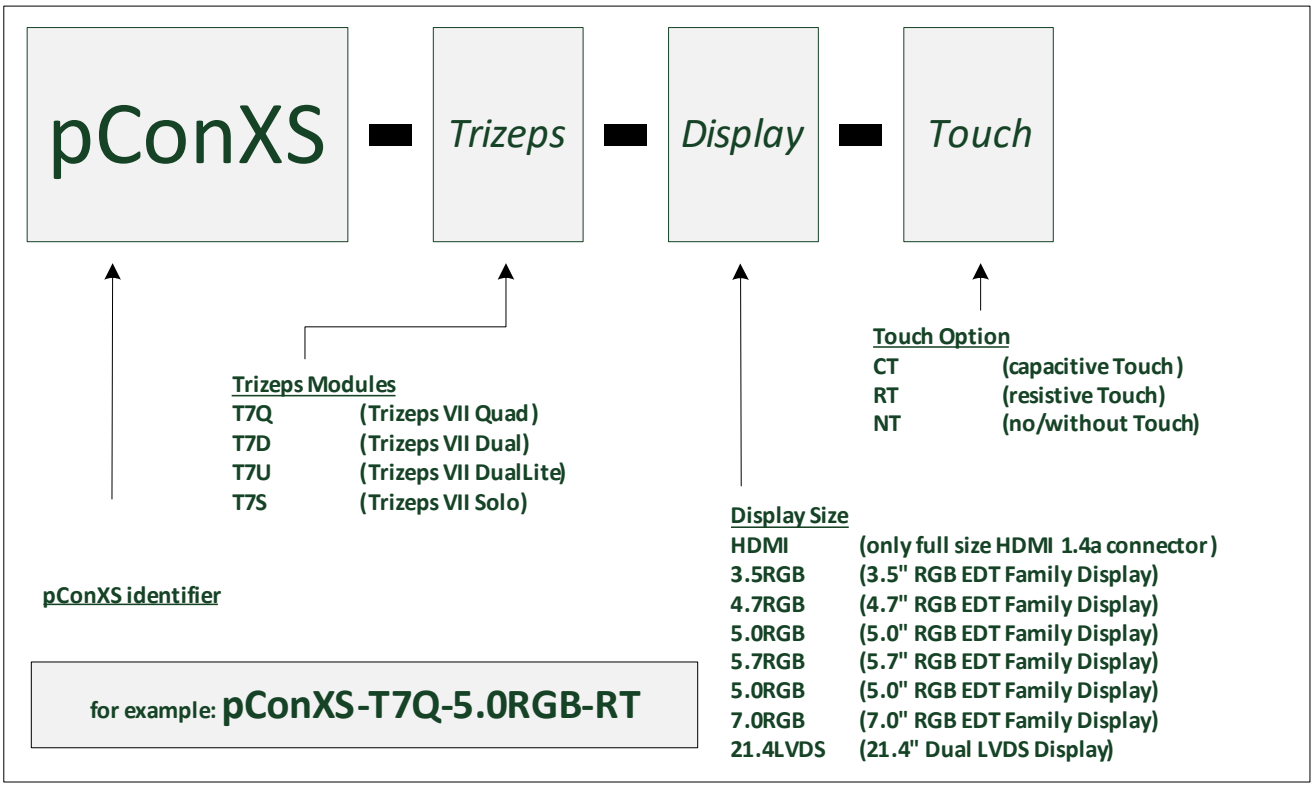


6 EDT Display Support

For various display support, the Carrier-Trizeps-pConXS-III PCB has the EDT Family Connector. With several assembly options it is possible to connect every EDT Family Display to the Carrier-Trizeps-pConXS-III. Following figures are showing the different assembly options to have a wide range of supported resistive or capacitive displays.

The Carrier-Trizeps-pConXS-III is usually shipped with the 7.0" inch capacitive assembly variant.

7 Ordercodes for Carrier-Trizeps-pConXS-III



8 Important Notice

9 Document History

Rev.	Date	Author	Changes
1.0	10.08.2021	JP	Initial version
2.0	21.11.2022	MP	Update new CI
2.1	27.06.2024	MS	Update new CI, Removed 3-D Axis-DA

SECO Northern Europe GmbH

Schlachthofstraße 20
21079 Hamburg

E-Mail: north@seco.com
https://north.seco.com