

## i-PAN5 (Revision 2)

Documentation ver.1.0 (Preliminary)



### Introduction

The i-PAN5 is a 5.0 inch baseboard pcb for Keith & Koep SODIMM200 CPU-Modules called Trizeps. The baseboard is designed as full scalable embedded solution for quick and simple integration in customized equipments. With several display ports, industrial peripherals and connectors right onto the board and options for various CPU-Modules the i-PAN5 fits to every customer's needs. Additional software board support packages and mechanical support for metal frames or housings completes 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 and modify the onboard features through several assembly options.

### The device offers the following features:

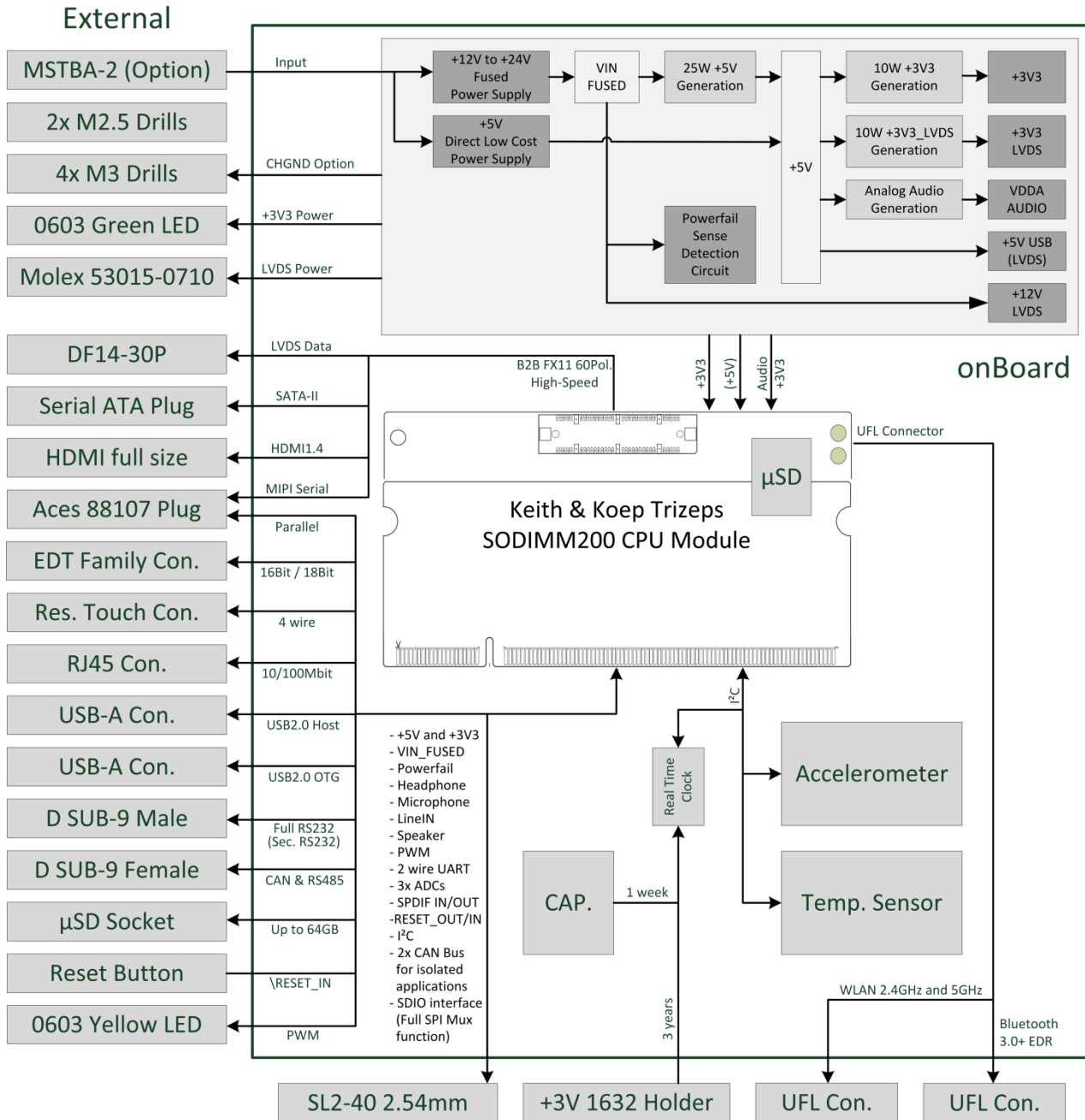
- Fits to Trizeps IV-M, Trizeps IV-WL, Trizeps V, Trizeps VI, Trizeps MX28, Trizeps VII Solo, Trizeps VII DualLite, Trizeps VII Dual and Trizeps VII Quad
- Support of the new Keith & Koep Trizeps VII high-speed board to board connector
- Support of WLAN and Bluetooth functionality with Trizeps IV-WL and VII
- EDT Family connector for 3.5", 4.3", 5.0", 5.7" and 7.0" displays, also with resistive or capacitive integrated touch panel
- Support for Displays starting with 7.0" through LVDS and Dual-LVDS up to WUXGA resolution
- HDMI1.4 display connector for WUXGA resolutions
- Industrial 25W power supply from +12V up to +24V or direct low cost supply with +5V
- 10/100 Mbit Ethernet RJ45 Connector
- Non isolated CAN and RS485 on one female D-SUB 9 connector
- Full function RS232 on male D-SUB 9 connector
- USB2.0-A Host and USB2.0-A OTG connector with switch through jumper pin header
- Additional µSD Card Socket for low priced memory expansion
- Keith & Koep LVDS camera connector with MIPI Serial and Parallel Camera interfaces
- Reset Button, Power and Status LEDs
- 40pol. SL2-40 2.54mm extension pin header
- Real Time Clock buffered through cap or +3V battery
- I<sup>2</sup>C Temperature IC
- I<sup>2</sup>C 12-bit/8-bit 3-Axis Digital Accelerometer



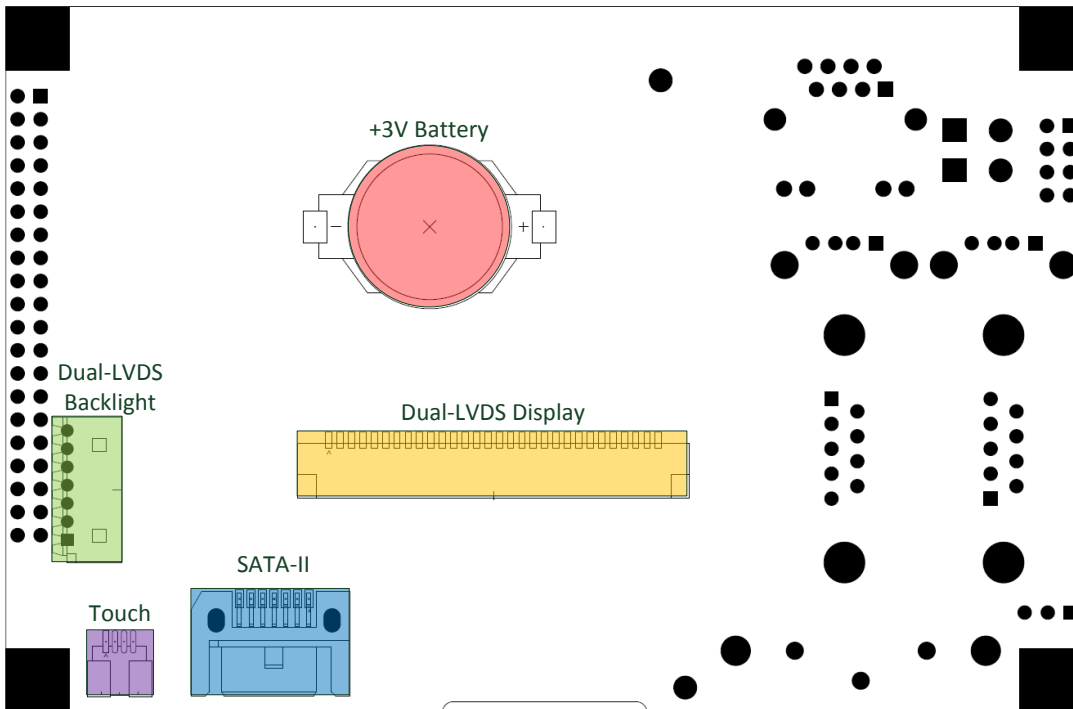
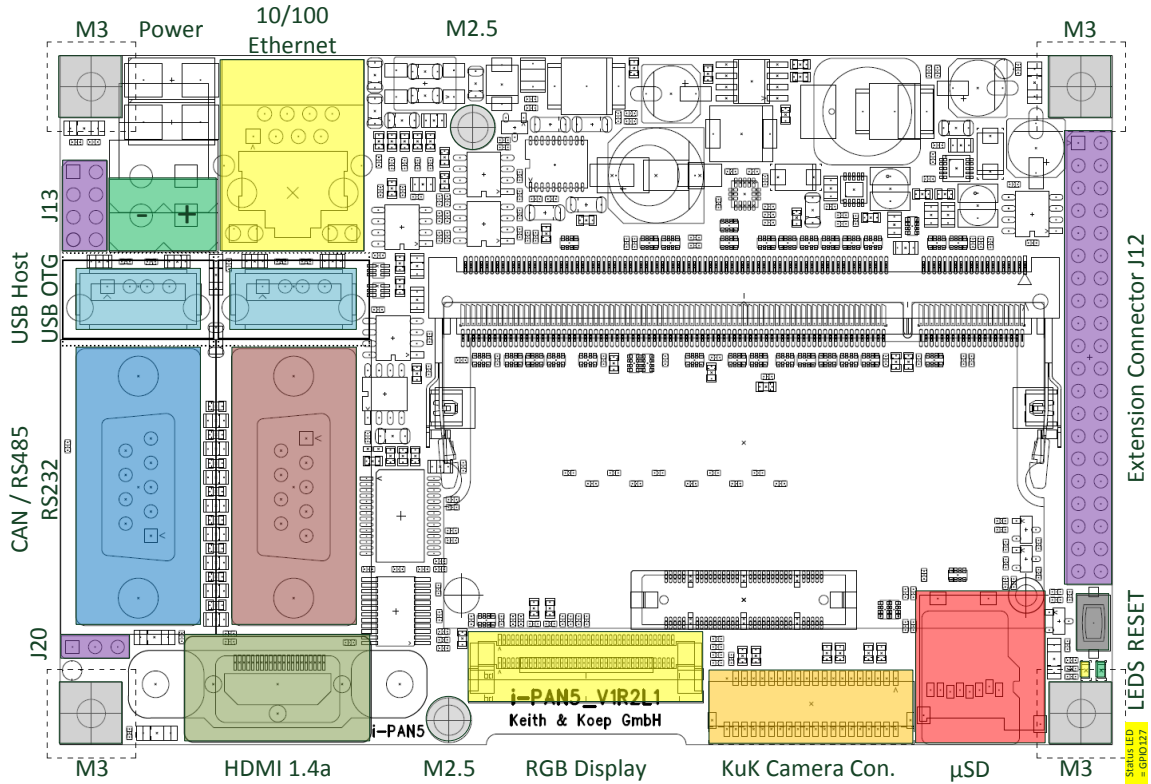
**Interfaces / Signals accessible over extension connectors:**

- +5V Power Supply
- +3V3 Power Supply
- VIN\_FUSED Supply and Powerfail GPIO for USV
- Stereo Headphone
- Microphone
- LINEIN
- Speaker Output
- PWM
- 2 wire UART
- 3x ADCs
- SPDIF IN/OUT
- \RESET\_OUT and \RESET\_IN
- I<sup>2</sup>C
- 2x CAN Bus for isolated applications
- SDIO interface (Full SPI Mux function)

**Simplified Block Diagram**



2.0 Connectors





**J12: SL2-40 2.54mm extension pin header**

For dimensions of an adapterpcb board please refer to ANXXX.

Signal	Pin	Pin	Signal
GND	1	2	GND
+5V	3	4	+5V
VIN_FUSED	5	6	VIN_FUSED
+3V3	7	8	+3V3
PWM1	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__PSWICHTH_EN	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

**J13: USB OTG Mode**

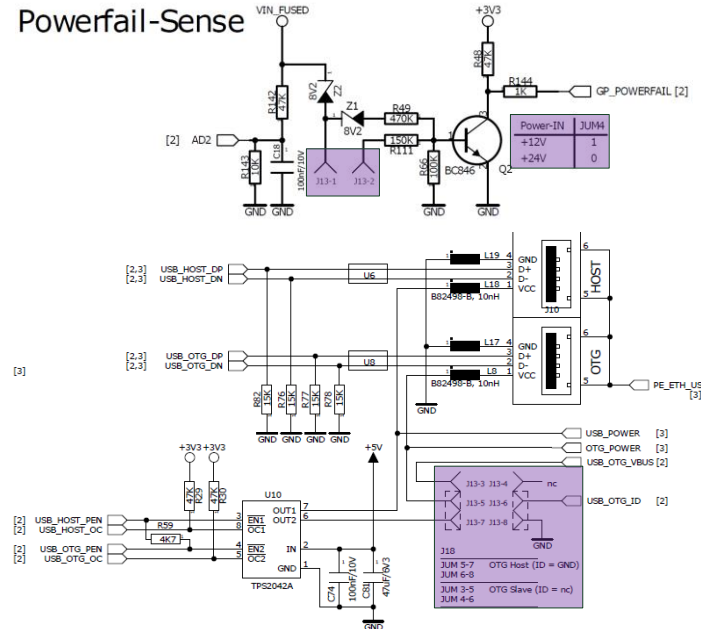
Jumper	Mode
5-7 && 6-8	USB-Host
3-5 && 4-6	USB-Slave
1-2 Set	Power Fail @9V
1-2 Open	Power Fail @ 17V

**J13: (jumperoptions continued...)**

J20 1-2 = +12V for LVDS

J20 2-3 = +5V for LVDS

**Powerfail-Sense**



**J21: Keith & Koep LVDS Camera Connector**

Signal	Pin	Pin	Signal
NC1	1	2	GND1
\RESET	3	4	CSI_D1P
P_SDA	5	6	CSI_D1N
P_SCL	7	8	GND2
MCLK	9	10	CSI_CLKP
PIXCLK	11	12	CSI_CLKN
VSYNCH	13	14	GND3
HSYNCH	15	16	CSI_D0P
CIF_DAT7	17	18	CSI_D0N
CIF_DAT6	19	20	GND4
CIF_DAT5	21	22	PWDN
CIF_DAT4	23	24	I2C1_SDA
CIF_DAT3	25	26	I2C1_SCL
CIF_DAT2	27	28	GPIO_IN_1
CIF_DAT1	29	30	GPIO_IN_2
CIF_DAT0	31	32	GPIO_OUT_1
VDD1 (+3V3)	33	34	GPIO_OUT_2
VDD2 (+3V3)	35	36	RESERVED1
VDD3 (+3V3)	37	38	RESERVED2
VDD4 (+3V3)	39	40	NC2



**J33: D SUB-9 Female (CAN & RS485)**

Pin	Signal
1	RS485-L
2	CAN0_L
3	GND
4	NC
5	NC
6	RS485-H
7	CAN0_H
8	NC
9	(+12V)-Option

**J35: D SUB-9 Male (RS232)**

Pin	Signal	Options
1	FF_DCD_V24X	
2	FF_RXD_V24X	
3	FF_TXD_V24X	
4	FF_DTR_V24X	UART3_TXD_V24X
5	GND	
6	FF_DSR_V24X	UART3_RXD_V24X
7	FF_RTS_V24X	
8	FF_CTS_V24X	
9	FF_RI_V24X	+5V@1A with Polyfuse

**J16: LVDS Data Signals (Hirose DF14-30P-1.25H)**

Pin	Signal	Pin	Signal
1	GND	16	LVDS0_CLK_N
2	LVDS1_TX3_P	17	LVDS0_TX2_P
3	LVDS1_TX3_N	18	LVDS0_TX2_N
4	LVDS1_CLK_P	19	LVDS0_TX1_P
5	LVDS1_CLK_N	20	LVDS0_TX1_N
6	LVDS1_TX2_P	21	LVDS0_TX0_P
7	LVDS1_TX2_N	22	LVDS0_TX0_N
8	LVDS1_TX1_P	23	GND
9	LVDS1_TX1_N	24	GND
10	LVDS1_TX0_P	25	GND
11	LVDS1_TX0_N	26	NC
12	GND	27	+3V3_LVDS (+3V3)
13	LVDS0_TX3_P	28	+3V3_LVDS (+3V3)
14	LVDS0_TX3_N	29	+3V3_LVDS (+3V3)
15	LVDS0_CLK_P	30	+3V3_LVDS (+3V3)



**J19: LVDS Backlight Connector (Molex 53015-0710)**

Pin	Signal
1	GND
2	GND
3	GND
4	BL_PWM (0V to +3V3)
5	BL_EN (+5V active high)
6	VIN (+5V or +12V)
7	VIN (+5V or +12V)

**J20: Backlight Voltage SL1-3 2.54mm (jumperoption)**

J20 1-2 = +12V for LVDS

J20 2-3 = +5V for LVDS

**J25: Resistive Touch Connector (JST 04FMS-1.0SP-TF)**

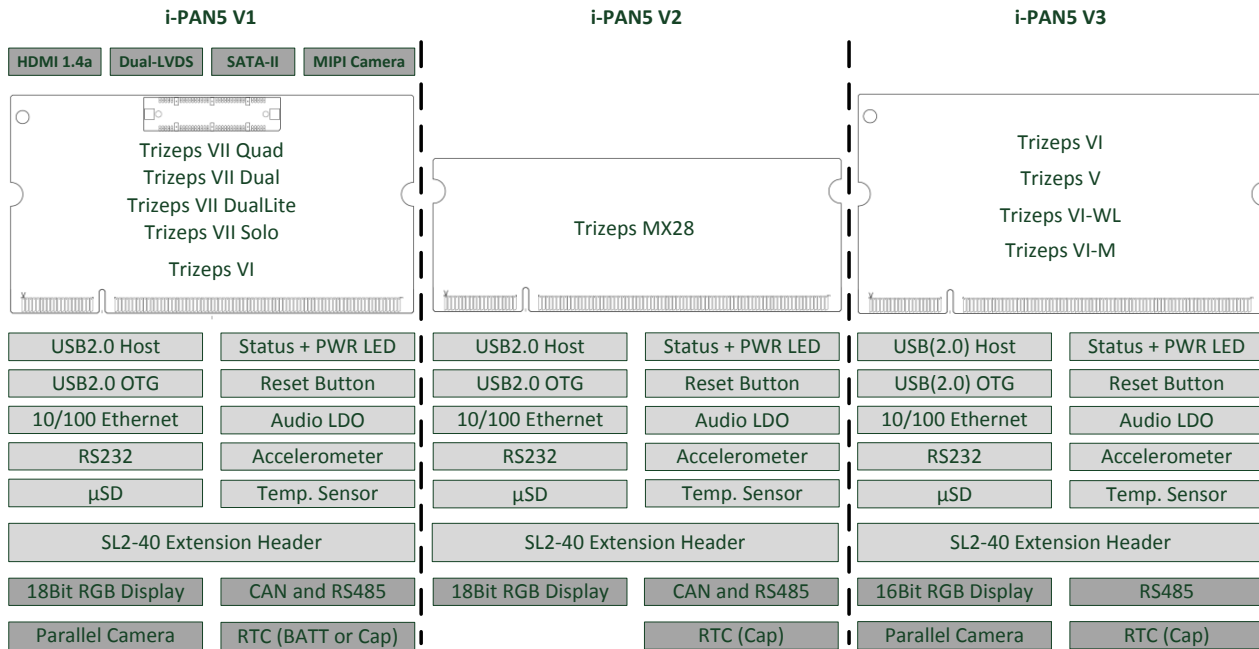
Pin	Signal
1	LVDS_TSPX
2	LVDS_TSPY
3	LVDS_TSMX
4	LVDS_TSMY

**3.0 i-PAN5 Versions for different Modules**

For maximum utilization of the different Trizeps CPU Modules there will be shipped three different assembled versions of i-PAN5\_V1R2:

In the following figure there is explained which Trizeps Module fits to which version and which peripherals are supported in this combination. For more detailed information please refer to the proximate figure:









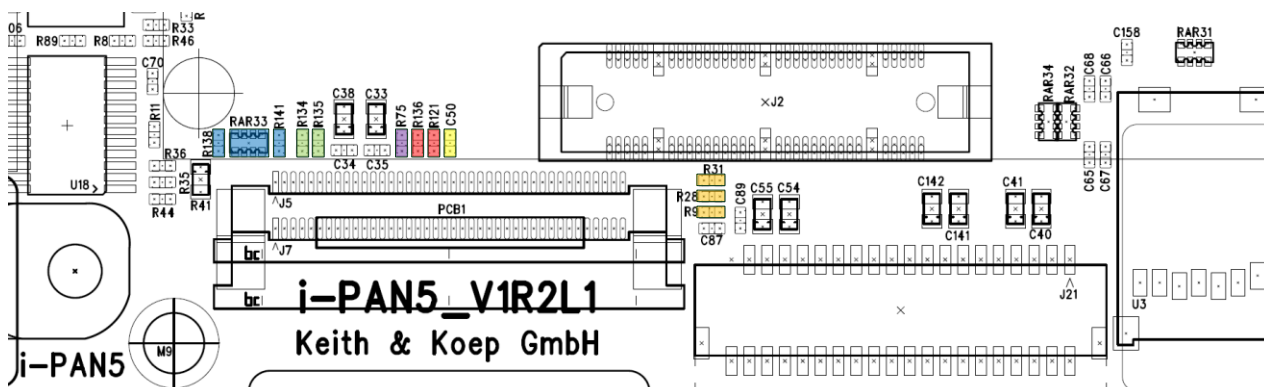
#### 4.0 EDT Display Support

For various display support, the i-PAN5 pcb has the EDT Family Connector. With several assembly options it is possible to connect every EDT Family Display to the i-PAN5. Following figures are showing the different assembly options to have a wide range of supported resistive or capacitive displays.

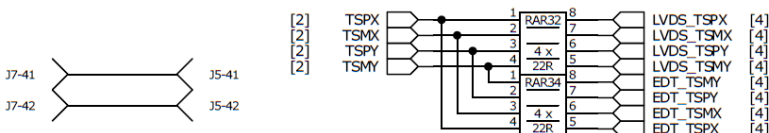
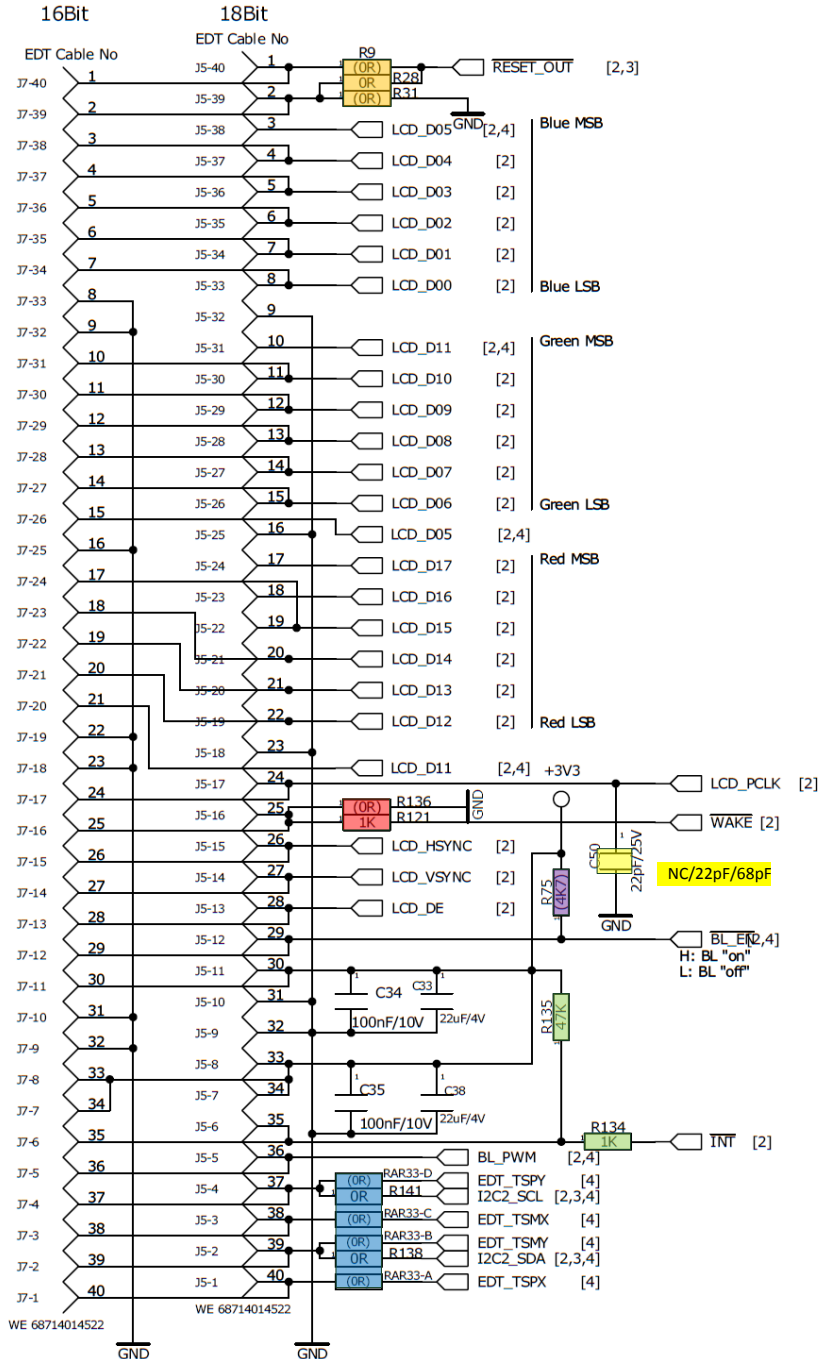
The three i-PAN5 Versions are shipped with the 7.0" inch capacitive assembly variant.

assembly options for different EDT displays

Display size	5.0"	5.7"	5.7"	7.0"	7.0"
Touch variant	res	res	cap	res	cap
populate	R9 R31 R136 RA33	R9 R31 R136 RA33	R9 R28 R121 R135 R134 R138 R141	R31 R136 RA33	R28 R121 R134 R135 R138 R141
DNP	R28 R75 R121 R134 R135 R138 R141	R28 R75 R121 R134 R135 R138 R141	R28 R75 R136 RA33	R9 R28 R75 R121 R134 R135 R138 R141	R9 R31 RA33 R75 R136



## EDT\_Family\_Concept (resistive and capacitive) 3.5", 4.3", 5.0", 5.7", 7.0"





Pin	7.0	5.7	4.3	7.0	5.7	5.0	4.3	7.0	5.7	5.0	4.3	ohne	ohne	ohne	ohne
1	ETM070060DH6	ETM057062ZDH6	ETM043060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6	ETM035060DH6
2	NC	\RESET	NC	\RESET	NC	\RESET	NC	NC	\RESET	NC	\RESET	NC	NC	NC	NC
3	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5
4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4
5	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3
6	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2
7	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1
8	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0
9	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1
10	G5	G5	G5	G5	G5	G5	G5	G5	G5	G5	G5	G5	G5	G5	G5
11	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4
12	G3	G3	G3	G3	G3	G3	G3	G3	G3	G3	G3	G3	G3	G3	G3
13	G2	G2	G2	G2	G2	G2	G2	G2	G2	G2	G2	G2	G2	G2	G2
14	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1
15	G0	G0	G0	G0	G0	G0	G0	G0	G0	G0	G0	G0	G0	G0	G0
16	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND
17	R5	R5	R5	R5	R5	R5	R5	R5	R5	R5	R5	R5	R5	R5	R5
18	R4	R4	R4	R4	R4	R4	R4	R4	R4	R4	R4	R4	R4	R4	R4
19	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3
20	R2	R2	R2	R2	R2	R2	R2	R2	R2	R2	R2	R2	R2	R2	R2
21	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1
22	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0	R0
23	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND
24	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK	PCLK
25	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE	WAKE
26	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC
27	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC
28	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN	Data_EN
29	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH	PWRCTRLH
30	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3
31	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND
32	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND
33	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3
34	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3	3V3
35	\INT	\INT	\INT	\INT	\INT	\INT	\INT	\INT	\INT	\INT	\INT	\INT	\INT	\INT	\INT
36	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL	LEDCTRL
37	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL	I2C_SCL
38	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
39	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA	I2C_SDA
40	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC



#### 4.0 Ordercodes for i-PAN5 and serial numbers

