

# PicoCOMA9X

## Computer on Module with NXP i.MX 6SoloX Processor

### Characteristics

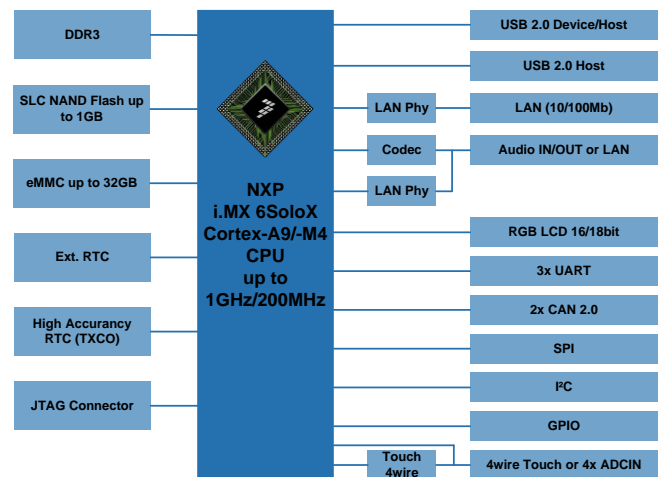
- NXP i.MX 6SoloX applications processor  
Cortex®-A9 – 1GHz und Cortex®-M4 -200MHz
- bis zu 1GB Flash, 512MB DDR3 RAM, 32GB eMMC
- LCD interface for TFT up to XGA resolution
- 1x (2x opt.) Ethernet 10/ 100MBit
- 2x SerIIL (opt. 3x RS232/ RS485 with 3,3V levels)
- 1x USB 2.0 Host
- 1x USB 2.0 Device
- 1x CAN 2.0 (2x opt.), 1x I<sup>2</sup>C, 1x SPI
- 1x SD Card Slot (extern)
- Audio (Line In/ Out)
- Resistive Touch Controller
- WEC 2013/ WEC7/ Linux
- 3,3V Low Power Design (2W typ.)



### Description

PicoCOMA9X is another compact and high-performance module in PicoCOM form factor. The PicoCOM form factor is perfectly suited for applications in medicine and industry with a compact design. PicoCOM has a size of 40 x 50mm only and fits even into a top-hat rail housing. PicoCOMA9X is based on a NXP single-core applications processor from the very successful i.MX 6 series and has a Cortex-A9 core, as well as a Cortex-M4 core. NEON, FPU and OpenGL are available, ensuring software compatibility to other i.MX 6 application processors. SoloX is the second processor in NXP's portfolio which supports Asymmetric Multiprocessing. Both cores (A9+M4) are connected to the internal bus fabric and have the possibility to access all peripherals. In addition to Vybrid, SoloX comes with Resource Domain Controller which makes it easier to protect memory or other peripherals from each other. Compared to other i.MX 6 application processors, SoloX offers much more bandwidth on the 2 GBit LAN interfaces. Another characteristic is the long-time availability to at least 2025. All common TFTs up to XGA (1024x768) pixels can be controlled.

### Block Diagram



### On-Board Operating System



The customized WEC 2013/WEC7 (Bootloader, Kernel, interface drivers, Silverlight, Mediaplayer, IE) is a real-time operating system. Together with Compact Framework it is ideal for software development.



The F&S Linux BSP (uboot, Yocto, QT, GStreamer) contains the customized kernel and all interface drivers, including source.

A Cross Compiler Toolchain is offered to create own bootloaders, kernels or other software. Android is available as well.

### Starterkit

PicoCOMA9X-SKIT is available in a WEC 2013 (WEC7 can be installed subsequently) and a Linux version. The SKIT includes a base board with plugged on PicoCOMA9X, a cable kit, access data to the download section (documentation and software) and 7" WVGA display with 4-wire touch panel. Our forum with 2000+ registered customers offers example programs and it is always online for your support requests. For a fast and easy start of development, you also have the possibility to book a workshop.



# Connector Assignment

## J1 – System-Connector (Standard Assignment)

1	TX- (Ethernet)	17	IO4 / TxD1 (Serial Port1)	33	IO13 / SCL (I <sup>2</sup> C)	49	IO28 / LCD6	65	IO42 / LCDCC (PWM)
2	RX- (Ethernet)	18	IO5 / RxD1 (Serial Port 1)	34	IO14 / DAT0 (SD-/MMC-Card)	50	IO29 / LCD7	66	IO43 / LCD Power On
3	TX+ (Ethernet)	19	HDP A (USB Host)	35	IO15 / DAT1 (SD-/MMC-Card)	51	IO30 / LCD8	67	IO44 / Backlight Power On
4	RX+ (Ethernet)	20	HDMA (USB Host)	36	IO16 / DAT2 (SD-/MMC-Card)	52	IO31 / LCD9	68	IO45 / LCD Enable
5	+3,3V (Power Supply)	21	DDP (USB Device)	37	IO17 / DAT3 (SD-/MMC-Card)	53	IO32 / LCD10	69	IO46 / RTS1
6	+3,3V (Power Supply)	22	DDM (USB Device)	38	IO18 / CLK (SD-/MMC-Card)	54	IO33 / LCD11	70	ELED0 (Ethernet)
7	GND (System Ground)	23	IO6 / USB CNX (USB Device)	39	IO19 / CMD (SD-/MMC-Card)	55	IO34 / LCD12	71	X+ (Touch)
8	GND (System Ground)	24	IO7 / USB PWR (USB Host)	40	IO20	56	IO35 / LCD13	72	GND (System Ground)
9	VBAT (+3V...3,6V/RTC Supply)	25	GND (System Ground)	41	IO21 / PWM	57	IO36 / LCD14	73	GND (System Ground)
10	nRES (Reset CPU)	26	IO8 / MISO (SPI)	42	GND (System Ground)	58	IO37 / LCD15	74	X- (Touch)
11	IO47 / CTS1	27	IO9 / MOSI (SPI)	43	IO22 / LCD0	59	IO38 / LCDCLK	75	Y+ (Touch)
12	IO48 / SD-CD (SD-/MMC-Card)	28	IO10 / SPCK (SPI)	44	IO23 / LCD1	60	IO39 / LCDDEN	76	Y- (Touch)
13	IO0 / TxD0 (Serial Port 0)	29	IO11 / PCS0 (SPI)	45	IO24 / LCD2	61	GND (System Ground)	77	LOUT (Line Out Left)
14	IO1 / RxD0 (Serial Port 0)	30	CAN-TX (CAN-Bus)	46	IO25 / LCD3	62	GND (System Ground)	78	ROUT (Line Out Right)
15	IO2 / RTS0 (Serial Port 0) / TxD2	31	CAN-RX (CAN-Bus)	47	IO26 / LCD4	63	IO40 / LCD16	79	LIN (Line In Left)
16	IO3 / CTS0 (Serial Port0) / RxD2	32	IO12 / SDA (I <sup>2</sup> C)	48	IO27 / LCD5	64	IO41 / LCD17	80	RIN (Line In Right)

## LCD Connection

Pico-COMA5	TFT		
	12 bit	16 bit	18 bit
LCD0		R0	R1
LCD1	R0	R1	R2
LCD2	R1	R2	R3
LCD3	R2	R3	R4
LCD4	R3	R4	R5
LCD5		G0	G0
LCD6		G1	G1
LCD7	G0	G2	G2
LCD8	G1	G3	G3
LCD9	G2	G4	G4
LCD10	G3	G5	G5
LCD11		B0	B1
LCD12	B0	B1	B2
LCD13	B1	B2	B3
LCD14	B2	B3	B4
LCD15	B3	B4	B5
LCD16	HSYNC		B0
LCD17	VSYNC		R0
LCDDEN	DE		
LCDCLK	DCLK		
LCDC	PWM (Backlight Dimming)		

## Technical Data

Power Supply:	+3.3V <sub>DD</sub> ±5%
Power Consumption:	2W typ.
Digital I/O:	max. 48 I/O, alternatively allocated with interfaces
Touch Panel:	4-wire, analogue resistive, PCAP-Touch via I <sup>2</sup> C
Interfaces:	1x Ethernet 10/ 100MBit (2x opt.) 2x Serial (3x opt.; RS232/ RS485 with 3.3V levels) 1x USB 2.0 Host 1x USB2.0 Device 1x I <sup>2</sup> C 1x SPI 1x CAN2.0 (2x opt.) 1x SD-Card Slot (extern) 1x Audio (Line In/ Out)
LCD Interface:	TFT up to 1024x768 Pixel, 18 Bit colors
RAM:	256MB (up to 512MB opt.)
Program Memory:	256MB (up to 1GB opt.)
Flash Memory:	2GB (up to 32GB opt.)
Processor:	Cortex-A9 – 1GHz Cortex-M4 -200MHz
Temperature Range:	0°C - +70°C (-25°C - +85°C opt.)
Size:	50 x 40 x 10 mm
Weight:	about 15 g

## Standard Versions/ Order Notations

### PCOMA9X-V1-W13

SoloX - Cortex®-A9 – 1GHz + Cortex®-M4 – 200MHz  
256MB DDR RAM, 128MB Flash, Ethernet, CAN2.0, RGB, 0°C - +70°C, WEC 2013

### PCOMA9X-V1-LIN

SoloX - Cortex®-A9 – 1GHz + Cortex®-M4 – 200MHz  
256MB DDR RAM, 128MB Flash, Ethernet, CAN2.0, RGB, 0°C - +70°C, Linux

### PCOMA9X-V2-W13/WEC7

SoloX - Cortex®-A9 – 1GHz + Cortex®-M4 – 200MHz  
512MB DDR RAM, 256MB Flash, Ethernet, CAN2.0,  
Audio, Touch, RGB, 0°C - +70°C, WEC 7/2013

### PCOMA9X-V2-LIN

SoloX - Cortex®-A9 – 1GHz + Cortex®-M4 – 200MHz  
512MB DDR RAM, 256MB Flash, Ethernet, CAN2.0,  
Audio, Touch, RGB, 0°C - +70°C, Linux

## Standard Versions/ Order Notations

### PCOMA9X-V3-W13

SoloX - Cortex®-A9 – 1GHz + Cortex®-M4 – 200MHz  
512MB DDR RAM, 256MB Flash, 2x Ethernet, CAN2.0, Touch,  
RGB, 0°C - +70°C, WEC 2013

### PCOMA9X-V3-LIN

SoloX - Cortex®-A9 – 1GHz + Cortex®-M4 – 200MHz  
512MB DDR RAM, 256MB Flash, 2x Ethernet, CAN2.0, Touch,  
RGB, 0°C - +70°C, Linux

### PCOMA9X-SKIT-W13

Starterkit with PCOMA9X-V2-W13, base board, cable kit, 7" TFT-LCD, access data to SDK and documentation

### PCOMA9X-SKIT-LIN

Starterkit with PCOMA9X-V2-LIN, base board, cable kit,  
7" TFT-LCD, access data to BSP and documentation

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State: March 2016

