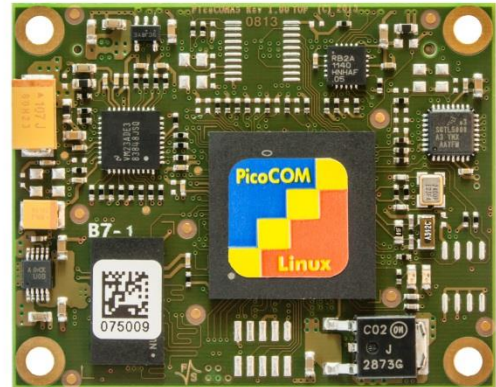


# PicoCOMA5

## Computer on Module with NXP Vybrid Processor

### Characteristics

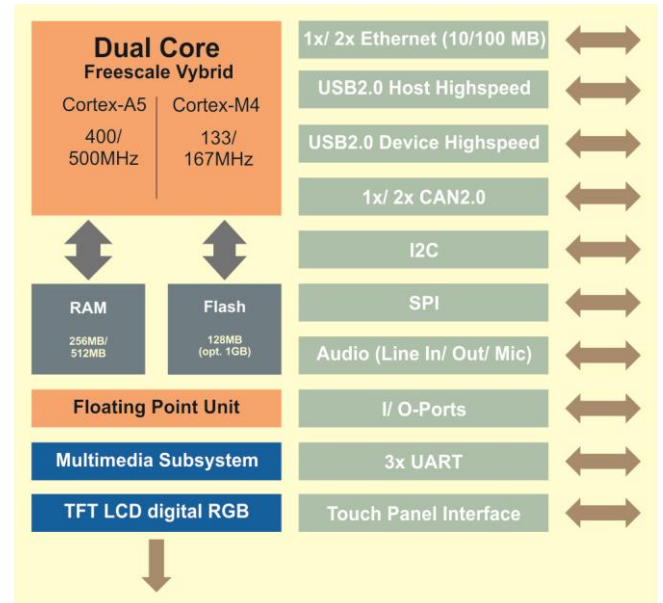
- NXP Dual-Core Vybrid CPU Cortex®-A5 - 500 (400MHz) and Cortex®-M4 -167MHz (opt.)
- up to 1GB SLC Flash, 512MB DDR3 DRAM
- LCD Interface for TFT up to SVGA resolution (800x600 Pixel)
- 1x (2x opt.) Ethernet 10/ 100MBit
- 2x Serial (opt. 3x RS232/ RS485 with 3,3V levels)
- 1x USB 2.0 Host
- 1x USB 2.0 Device
- 1x (2x opt.) CAN 2.0, 1x I<sup>2</sup>C, 1x SPI
- 1x SD-Card Slot (external)
- Audio (Line In/ Out)
- Resistive Touch Controller
- WCE 6.0 R3/ WEC 2013/ Linux
- 3,3V Low Power Design (1W typ.)



### Description

The PicoCOMA5 is another compact and very cost-efficient module. The PicoCOM form factor is perfectly suited for applications in medicine or industry. The board runs on a Freescale Dual-Core Vybrid CPU, which contains a Cortex®-A5, as well as a Cortex®-M4 CPU. One highlight is its long availability of at least 10 years. All common TFTs up to 800x600 Pixel can be controlled. The integrated operating system (Windows CE 6.0 R3/ WEC 2013 or Linux) supports all interfaces, which makes it easy to develop software without having bigger hardware knowledge. The module has many interfaces and also for resistive touch panels. Capacitive touch panels can be connected via I<sup>2</sup>C. The PicoCOMA5 can be used as a replacement to PicoCOM3 and PicoCOM4.

### Block Diagram



### On-Board Operating System



The customized WCE 6.0/ WEC 2013 (Boot-loader, Kernel, interface drivers, Silverlight, Mediaplayer, IE) is a powerful real-time operating system. It has Compact Framework 3.5 and is therefore the ideal base for software development.



The F&S Linux BSP (3.3, uboot, Buildroot, QT, GStreamer) contains the customized kernel and all interface drivers including Source. A Cross Compiler Toolchain to create own bootloaders, kernels or additional software is available.

### Starterkit

The PicoCOMA5-SKIT is available in a WCE 6.0 R3 and also in a Linux version. The SKIT contains a base board with plugged-on PicoCOMA5, a cable kit, access data to the download area (documentation and software), as well as a 7" WVGA display with 4-wire touch panel. The forum with 2000+ registered customers offers example programs and is always online for free support. You also have the possibility to book a workshop for an even faster and easier start of development.

# 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	HDPA (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		
LCDCC	PWM (Backlight Dimming)		

## Technical Data

Power Supply: +3.3V<sub>DC</sub> ±5%  
 Power Consumption: 1W 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 Serial (3x opt.; RS232/ RS485 with 3.3V levels)  
 1x USB 2.0 Host  
 1x USB2.0 Device  
 1x I<sup>2</sup>C (2x opt.)  
 1x SPI  
 1x CAN2.0 (2x opt.)  
 1x SD-Card Slot (external)  
 1x Audio (Line In/ Out)

LCD Interface: TFT up to 800x600 Pixel, 65536 colors

RAM: 256MB (up to 512MB opt.)  
 Program Memory: 128MB (up to 1GB opt.)  
 Processor: Hybrid Cortex<sup>TM</sup>-A5 - 500 (400MHz opt.) and Cortex<sup>TM</sup>-M4 -167MHz (opt.)

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

### PCOMA5-V2-W13

256MB DDR RAM, 256MB Flash, Ethernet, CAN2.0, Audio, Touch, Cortex<sup>®</sup>-A5 - 500MHz + Cortex<sup>®</sup>-M4 - 167MHz, WEC 2013

### PCOMA5-V2-WCE

256MB DDR RAM, 256MB Flash, Ethernet, CAN2.0, Audio, Touch, Cortex<sup>®</sup>-A5 - 500MHz + Cortex<sup>®</sup>-M4 - 167MHz, WCE 6.0

### PCOMA5-V2-LIN

256MB DDR RAM, 256MB Flash, Ethernet, CAN2.0, Audio, Touch, Cortex<sup>®</sup>-A5 - 500MHz + Cortex<sup>®</sup>-M4 - 167MHz, Linux

### PCOMA5-V1-W13

Cortex<sup>®</sup>-A5 - 500MHz, 256 MB RAM, 128 MB Flash, Audio, Ethernet, CAN, Touch, WEC 2013

### PCOMA5-V1-LIN

Cortex<sup>®</sup>-A5 - 500MHz, 256 MB RAM, 128 MB Flash, Audio, Ethernet, CAN, Touch, Linux

**Minimum Order Quantity for Special Versions: 500 pieces**

## Standard Versions/ Order Notations

### PCOMA5-V1-WCE

Cortex<sup>®</sup>-A5 - 500MHz, 256 MB RAM, 128 MB Flash, Audio, Ethernet, CAN, Touch, WCE6.0

### PCOMA5-V3-W13/WCE

Cortex<sup>®</sup>-A5 - 500MHz, 256 MB RAM, 128 MB Flash, 2x Ethernet, CAN, Touch, WEC 2013/ WCE 6.0

### PCOMA5-V3-LIN

Cortex<sup>®</sup>-A5 - 500MHz, 256 MB RAM, 128 MB Flash, 2x Ethernet, CAN, Touch, Linux

### PCOMA5-SKIT-WCE

Starterkit with PCOMA5-V2-WCE, base board, cable kit, 7" TFT-LCD, access data to SDK and documentation

### PCOMA5-SKIT-LIN

Starterkit with PCOMA5-V2-LIN, base board, cable kit, 7" TFT-LCD, access data to BSP and documentation

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 State: February 2016

