

PicoMOD1

Single Board Computer with Samsung ARM9-CPU



Characteristics

- Samsung S3C2440-400
- 32MB Flash, 32MB SDRAM
- LCD-interface to STN-, CSTN- and TFT-LCD's up to QVGA-resolution (VGA resolution restricted useable)
- Ethernet 10/100MBit
- 3x Serial (RS232 with 3,3V-level)
- 1x USB1.1 Host, 1x USB1.1 Host / Device
- 1x I²C-interface
- external SD-Card-Slot
- max. 54 I/O lines
- Windows CE 5.0 ready-to-run, incl. licence
- 3,3V low power design (<1,5W at operation)

Description

Credit card sized (80x50mm) and very low priced – depending on the overall task load of the CPU these are the main attributes of the PicoMOD1. The core of the board is the Samsung ARM9 CPU S3C2440, clocked at 400MHz. Equipped with 32MB flash memory and SDRAM each, network controller and operating system, the PicoMOD1 represents a compact multi-purpose CPU module. By having these many interfaces in hard- and software already integrated on the board, you can cut down your own design costs considerably. And, as it is common at F&S, all types of QVGA displays can directly be driven without problems. Even VGA resolution is possible, depending on the overall task load of the CPU. Applications not requiring any display can use the display signals as additional input/output lines. The design of your base board is also very straightforward, as you only have to provide the required driver chips and the SD-card slot respectively. PicoMOD1 – an ideal concept for compact or portable devices.

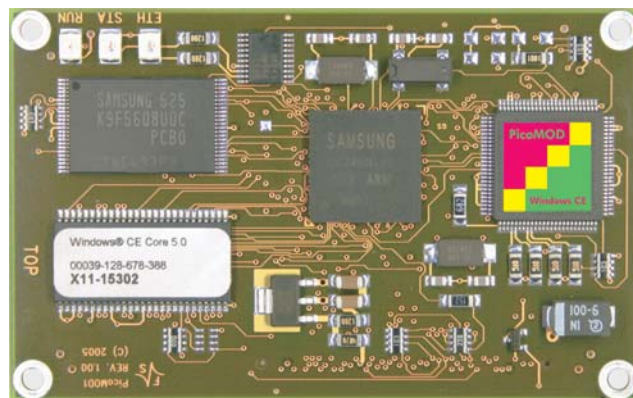
On-Board Operating System



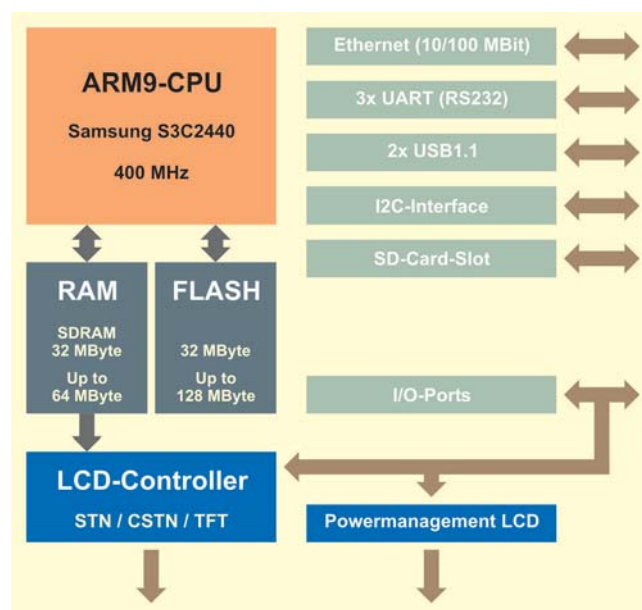
Continue using your Windows know-how!

Build your software with Visual Studio .NET in the languages C++, C#, or VB.NET. Windows CE 5.0, the Compact Framework and PicoMOD1 build the basis for your software development. Use interfaces like I²C in the same way as RS232, without having to deal with the underlying hardware. Configure external interrupts (level/edge) or the display with the F&S configuration tool. With PicoMOD1, Windows CE is just simple. Start now!

Full-Scale Representation



Block Diagram



Starter Kit

The Starter Kit of the PicoMOD1 contains a base board, three PicoMOD1 modules, a power supply, all connection cables, external storage media, a CD with documentation (schematics, specifications) and software (Windows CE kernel, drivers, Embedded Visual C++, and the BSP to generate additional kernels). The supplied base board offers: 1x TP Ethernet, 1x USB hub (=4x host), 1x USB device, 2x RS232, 1x RS232/RS485, 1x SD-Card slot, I²C, LCD interface and touch controller (4- and 5-wire capable). The board suits industrial needs and is built EMC-compatible. For a fast and trouble-free introduction of the board and software we recommend our 4-hour workshop.

Connector Assignment

J1 - System-Connector									
1	TX- (Ethernet)	17	IO6 / RxD3 (Serial Port 3)	33	GND (System Ground)	49	IO27 (LCD BUFENA)	65	VIO9 (LCD VD13)
2	RX- (Ethernet)	18	IO7 / TxD3 (Serial Port 3)	34	GND (System Ground)	50	IO28 (LCD DEN)	66	VIO10 (LCD VD14)
3	TX+ (Ethernet)	19	DN0 (USB Host)	35	IO13	51	IO29 (LCD POWON)	67	VIO11 (LCD VD15)
4	RX+ (Ethernet)	20	DN1 (USB Device)	36	IO14	52	IO30 (LCD CFLON)	68	VIO12 (LCD VD18)
5	+3,3V (Power Supply)	21	DP0 (USB Host)	37	IO15	53	IO31 (LCD PWM)	69	VIO13 (LCD VD19)
6	+3,3V (Power Supply)	22	DP1 (USB Device)	38	IO16	54	GND (System Ground)	70	VIO14 (LCD VD20)
7	GND (System Ground)	23	IO8 (USB Host Power On)	39	IO17	55	GND (System Ground)	71	VIO15 (LCD VD21)
8	GND (System Ground)	24	IO9 (USB Host Overcurrent)	40	IO18 (SD-CARD SDCLK)	56	VIO0 (LCD VD0)	72	VIO16 (LCD VD22)
9	VBAT (RTC Supply)	25	IO10 (USB Device Connect)	41	IO19 (SD-CARD SDCMD)	57	VIO1 (LCD VD1)	73	VIO17 (LCD VD23)
10	nPONRES (Reset CPU)	26	IO11 / SDA (I2C-Interface)	42	IO20 (SD-CARD SDD0)	58	VIO2 (LCD VD2)	74	VIO18 (LCD VLINE)
11	IO0 / RxD2 (Serial Port 2)	27	IO12 / SCL (I2C-Interface)	43	IO21 (SD-CARD SDD1)	59	VIO3 (LCD VD3)	75	VIO19 (LCD VFRAME)
12	IO1 / TxD2 (Serial Port 2)	28	TCK (JTAG-Interface)	44	IO22 (SD-CARD SDD2)	60	VIO4 (LCD VD4)	76	VIO20 (LCD VM)
28	IO2 / CTS2 (Serial Port 2)	29	TDI (JTAG-Interface)	45	IO23 (SD-CARD SDD3)	61	VIO5 (LCD VD5)	77	GND (System Ground)
14	IO3 / RTS2 (Serial Port 2)	30	TDO (JTAG-Interface)	46	IO24 (SD-CARD SDCCD)	62	VIO6 (LCD VD6)	78	GND (System Ground)
15	IO4 / RxD1 (Serial Port 1)	31	TMS (JTAG-Interface)	47	IO25	63	VIO7 (LCD VD7)	79	VIO21 (LCD VCLK)
16	IO5 / TxD1 (Serial Port 1)	32	TRST (JTAG-Interface)	48	IO26 (SD-CARD SDWP)	64	VIO8 (LCD VD12)	80	GND (System Ground)

LCD-Connection

Pico-MOD1	Mono STN		Color STN		TFT	
	4 bit	8 bit	Single	Dual	12 bit	18 bit
VD0	D0	D4 (UD0)	D0	UD0		G0
VD1	D1	D5 (UD1)	D1	UD1		G1
VD2	D2	D6 (UD2)	D2	UD2		B0
VD3	D3	D7 (UD3)	D3	UD3		B1
VD4		D0 (LD0)	D4	LD0	B0	B2
VD5		D1 (LD1)	D5	LD1	B1	B3
VD6		D2 (LD2)	D6	LD2	B2	B4
VD7		D3 (LD3)	D7	LD3	B3	B5
VD12					G0	G2
VD13					G1	G3
VD14					G2	G4
VD15					G3	G5
VD18						R0
VD19						R1
VD20					R0	R2
VD21					R1	R3
VD22					R2	R4
VD23					R3	R5
VCLK	CL2	CL2	CP		DCLK	DCLK
VLINE	CL1	CL1	LOAD		HSYNC	HSYNC
VFRAME	FLM	FLM	FRM		VSYNC	VSYNC
VM	M	M	M		DE	DE
DEN	nDISPOFF	nDISPOFF	nDISP		---	---

Technical Data

Power supply:	+3,3V _{DC} / ±5%
Power consumption:	< 450mA
In-/Outputs:	max. 54 I/O-lines (alternatively with interfaces occupied)
Interfaces:	1x Ethernet 10/100 MBit 3x Serial (1x with RTS/CTS) 1x USB1.1 Host 1x USB1.1 Host/Device 1x I ² C 1x SD-Card-Slot (external)
LCD-interface:	STN: up to 640 x 480 pixels, single/dual 16 shades of gray CSTN: up to 320 x 240 pixels, single/dual 16/256 colours of 65536 TFT: up to 640 x 480 pixels* 256/65536 colours
RAM:	32 MByte SDRAM opt. 64 MByte
Program memory:	32 MByte Flash opt. 64/128 MByte
Processor:	Samsung S3C2440-400
Betriebstemperatur:	0°C ... 70°C opt. -25°C ... 85°C
Abmessungen:	80mm x 50mm x 9mm (l x w x h)
Gewicht:	ca. 20 gr

*VGA-resolution for TFT-displays depending on the overall task load of the CPU!

Order Notation

PicoMOD1-WCE50

32MB SDRAM, 32MB Flash, Windows CE 5.0

PicoMOD1-N-WCE50

32MB SDRAM, 32MB Flash, Ethernet, Windows CE 5.0

PicoMOD1-SKIT-WCE50

Starter kit with 3 PicoMOD1-N-WCE50, base board, cables, 128MB SD-Card, 128MB USB-Stick, Multi-Card-Reader, SDK, Documentation

NetDCU-WS

Quickstart-Workshop for PicoMOD and Windows CE

Order Key

PicoMOD1-64D64FN-WCE50

Typ	SDRAM	Flash	Ethernet	System
PicoMOD1	16D 16 MByte	blank 32 MByte	blank no Ethernet	WCE50 Windows CE 5.0
	blank 32 MByte	64F 64 MByte	N Ethernet	LIN2.4 Embedded Linux
	64D 64 MByte	128F 128 MByte		

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