

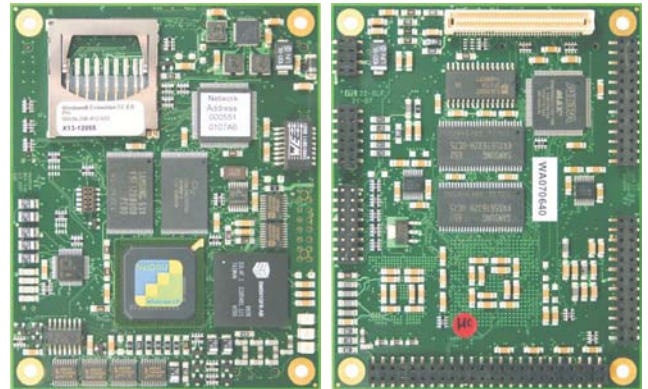
NetDCU9

Single Board Computer with Marvell XScale-CPU



Characteristics

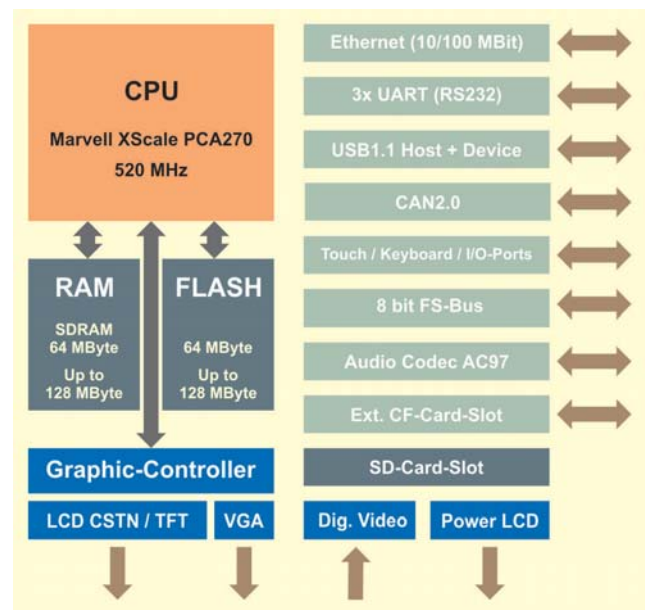
- Marvell PXA270 (520MHz)
- 64MB Flash, 64MB SDRAM
- LCD-interface to CSTN- and TFT-LCD's up to SXGA-resolution (1280 x 1024 Pixel)
- 2D-Graphic-Controller SM501 (Silicon Motion)
- 3x RS232
- Ethernet 10/100MBit
- 1x USB1.1 Host, 1x USB1.1 Host / Device
- Audio, Video, Touch-Controller, Matrix-keyboard
- CAN2.0 interface
- max. 21 I/O ports
- SD-Card-Slot, CF-Card-Slot (external)
- +5V single power supply



Description

High CPU power, many useful interfaces and an additional graphics processing unit are the benefits of the NetDCU9. Approved Marvell Xscale processor PXA270 with 520 MHz is used. The additional GPU offers a undisturbed image presentation (up to SXGA) even with high CPU usage. Parallel to the LCD-Display an analog VGA-Monitor can be connected. NetDCU9 furthermore comes with a digital Video-Input (YUV 4:2:2 CCIR-656). Videos can be scaled and displayed with an attached Overlay. Another distinctive feature is formed by a CAN2.0-Controller. The integration of CAN2.0-interface on board and the correspondig software driver of NetDCU9 reduce system-costs in a complete solution. Because of selected curcuitry and the resulting long term availability, the NetDCU9 is specifically suited for industrial and medical applications.

Block diagram



On-Board Operating System



The NetDCU9 uses the Windows Embedded CE 5.0 operating system, drivers for all available interfaces are included. It is a big advantage that all software can be developed and debugged in an MS-Windows environment. With Windows Embedded CE 5.0 it is possible to use the programming languages C++, C# and VisualBasic.NET. This makes porting software from PC to the embedded platform NetDCU9 an easy task. With TC/IP, DCOM and XML the board is also well equipped for future requirements.

Starter-kit

To make your start up even easier, there is offered a starter-kit. It contains a carrier board with standard connectors so the NetDCU9 can easily be connected to the development computer or the LAN network. The starter-kit also includes a 512MB SD-Card, 512MB USB-Stick, multi-card-reader for PC, all necessary cables and a CD-ROM with documentation, tools and driver (Windows Embedded CE). For an simpler start up you can also take advantage of our workshop (4 hours in Stuttgart). You will get all information about hard- and software of NetDCU9, Ethernet, Telnet, Ping, Arp & Co and debugging to start development immediately.

Connector assignment

J1 Power		J2 RS232		J3 LCD			J4 FS-Bus		J5 Keyboard I/O			J6 Extension Port				J7 Touch / Codec / USB											
1	VCFL (In)	1	+RxD Ethern.	1	RE0	21	B5	41	GND	1	DB0	1	GPIO8 (nIRQ)	21	IP3 (C4)	1	VDD (+3.3V)	21	VD3	41	D14	61	A17	1	LINEOUT L	21	HDM0 USB0
2	VCC (+5V)	2	-RxD Ethern.	2	RE1	22	B4	42	GND	2	DB1	2	GPIO7 (R7)	22	IP2 (C5)	2	GND	22	VD2	42	D13	62	A16	2	LINEOUT R	22	HDP0 USB0
3	VBAT (+3V)	3	RxD1 RS232	3	GE0	23	GND	43	AREF	3	DB2	3	GPIO6 (R6)	23	IP1 (C6)	3	VDD (+3.3V)	23	VD1	43	D12	63	A15	3	AGND	23	HDM1 USB1
4	GND	4	RTS1 RS232	4	GE1	24	VEEK	44	AGREEN	4	DB3	4	GPIO5 (R5)	24	IP0 (C7)	4	RD/nWR	24	VD0	44	D11	64	A14	4	LINEIN L	24	HDP1 USB1
		5	TxD1 RS232	5	BE0	25	CLP	45	ABLUE	5	DB4	5	GPIO4 (R4)	25	VCC (+5V)	5	VDD (+3.3V)	25	VVSYNC	45	D10	65	A13	5	LINEIN R	25	HPW0 USB0
		6	CTS1 RS232	6	BE1	26	FRP	46	AHCRT	6	DB5	6	GPIO3 (R3)	26	VDD (+3.3V)	6	nWE	26	VHREF	46	D9	66	A12	6	AGND	26	HPW1 USB1
		7	+TxID Ethernet	7	GND	27	M	47	AVCRT	7	DB6	7	GPIO2 (R2)			7	nOE	27	VCLK	47	D8	67	A11	7	MICIN		
		8	-TxID Ethernet	8	R1	28	LIP	48	NC	8	DB7	8	GPIO1 (R1)			8	EC-CLK	28	PSKTSEL	48	D7	68	A10	8	MICGND		
		9	GND	9	R0	29	DEN			9	VDD	9	GPIO0 (R0)			9	EC-DAT	29	nPREG	49	D6	69	A9	9	RxD3 RS232		
		10	VCC (+5V)	10	G5	30	GND			10	RD	10	GPIO9 (C8)			10	GND	30	GND	50	GND	70	GND	10	TxD3 RS232		
		11	CAN-RxD	11	G4	31	VLCD			11	nCS	11	GPIO10 (C9)			11	PCMIOS	31	nPWAIT	51	D5	71	A8	11	AD0		
		12	CAN-TxD	12	G3	32	NC			12	ADE	12	RxD2 RS232			12	PCMIO4	32	nOIS16	52	D4	72	A7	12	AD1		
				13	G2	33	NC			13	nIRQ	13	GPIO11 (C10)			13	PCMIO3	33	nPCE2	53	D3	73	A6	13	VCC (+5V)		
				14	GND	34	GND			14	nRES (In)	14	TxD2 RS232			14	PCMIO2	34	nPCE1	54	D2	74	A5	14	GND		
				15	B3	35	NC			15	NC	15	GPIO12 (C11)			15	PCMIO1	35	nPIOW	55	D1	75	A4	15	TOUCH-X+		
				16	B2	36	VCFL (Out)			16	GND	16	GND			16	VD7	36	nPIOR	56	D0	76	A3	16	TOUCH-Y+		
				17	B1	37	R2			17	IP7 (C0)			17	VD6	37	nPWE	57	A20	77	A2	17	TOUCH-X-				
				18	B0	38	R3			18	IP6 (C1)			18	VD5	38	nPOE	58	A19	78	A1	18	TOUCH-Y-				
				19	G1	39	R4			19	IP5 (C2)			19	VD4	39	D15	59	A18	79	A0	19	VDD (+3.3V)				
				20	G0	40	R5			20	IP4 (C3)			20	GND	40	GND	60	GND	80	GND	20	GND				

LCD-connection

NetDCU9	Color STN		TFT	
	8 bit	18 bit	18 bit	24 bit
BE0				B0
BE1				B1
B0			B0	B2
B1			B1	B3
B2			B2	B4
B3			B3	B5
B4			B4	B6
B5			B5	B7
GE0				G0
GE1				G1
G0	D0		G0	G2
G1	D1		G1	G3
G2	D2		G2	G4
G3	D3		G3	G5
G4	D4		G4	G6
G5	D5		G5	G7
RE0				R0
RE1				R1
R0	D6		R0	R2
R1	D7		R1	R3
R2			R2	R4
R3			R3	R5
R4			R4	R6
R5			R5	R7
CLP	CP		DCLK	
LIP	LOAD		HSYNC	
FRP	FRM		VSNC	
M	M		DE	
DEN	nDISP		--	

Technical data

Power supply: +5V_{DC} / ±5%
 Power consumption: < 1A (without display)

Touch-Screen: 4 wire, analog resistive touchpanel
 Keyboard: Matrix-keyboard 8 x 12
 Digital I/O: max. 21 I/O-port lines, alternative matrix-keyboard
 8 bit FS-BUS (extension bus)
 1x SD-Card-Slot
 AC97 Audio Codec
 Video In (YUV 4:2:2 CCIR-656, 8 bit)
 3x RS232 (1x with RTS/CTS)
 2x USB1.1 (1x Host/Device)
 1x Ethernet 10/100 MBit
 1x CAN2.0

Interfaces:

LCD-interface: CSTN: up to 800 x 600 Pixel, single scan
 256 colours of 65536
 TFT: up to 1280 x 1024 Pixel
 256 / 65k / 16 mio. colours

RAM: 64 MByte SDRAM Opt. 128 MByte
 Program memory: 64 MByte Flash
 Prozessor: Marvell PXA270-520 (520MHz)
 Temperature range: 0°C ... 70°C Opt. -25°C ... 85°C
 Dimension: 100mm x 80mm x 11mm (l x b x h)
 Weight: ca. 60 gr

Order notation

NetDCU9-NCG-WCE

64MB SDRAM, 64MB Flash, Ethernet, CAN2.0, Grafic-Controller, Windows Embedded CE 5.0

NetDCU9-NC-WCE

64MB SDRAM, 64MB Flash, Ethernet, CAN2.0, Windows Embedded CE 5.0

NetDCU9-SKIT-WCE

Starter kit with NetDCU9-NCG-WCE, carrier-board, cables, 512MB SD-Card, 512MB USB-Stick, multi-card-reader, SDK, documentation

NetDCU-WS

Quick-start-workshop for NetDCUx and Windows Embedded CE

Order key

NetDCU9-128D32FNCG-WCE

Typ	SDRAM	Flash	Ethernet	CAN	Graphic	System
NetDCU9	32D 32 MByte	32F 32 MByte	blank no Ethernet	blank no CAN	blank no Controller	WCE Windows CE 5.0
	blank 64 MByte	blank 64 MByte	N Ethernet	C CAN2.0	G Controller	
	128D 128 MByte					

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