

Overview N270 and successors

Functions / Products	Description	Processor family	Processor Gen.	Dimensions	LCD size	Brightness cd/m ²	Contrast Ratio	Max. Resolution	Display support	SBC	Memory	System Chipset	Power consumption	COM	USB 2.0	USB 3.0	HDMI	SATA	Ethernet	Expansion	Storage	Operating temperature	IRIS Remote module	TPM module	WLAN module	IP Protection	Heat sink / LCD functions	
Panel PCs																												
S12A/ASR (N270)	Marine Series	Atom	2nd	345x300x77mm	12.1"	500/1300	700/600:1	XGA: 1024x768			DDR2 400/533MHz max. 2GB	Intel® 945GSE +ICH7M	33W / 51W	M12 for 2	M12 for 2				M12 for LAN		2.5" SATA HDD bay SSD: CF Type II	(-)10°C~+50°C			x	IP67	sunlight readable via ambient light sensor	
UPC-V312 (D525)	Marine Series	Atom	3rd	339x276x63mm	12.1"	600	700:1	XGA: 1024x768		UPCMB-V312-D525-R10	DDR3 max. 2GB	Intel® ICH8M	52W	2	4				1 x LAN	PCIe Mini Card slot (WiFi) PCIe Mini Card slot	SSD: CF Type	(-)20°C~+60°C			x	Full IP65	Bluetooth	
PPC-3708A/3710A/3712A (N270)	Heavy Industrial Panel PC	Atom	2nd	244x178x80 up to 340x260x75mm	8.4" / 10.4" / 12.1"	450 / 400 / 500	600:1 / 700:1	SVGA: 800x600		Nano-945GSE-N270	DDR3 (200-pin) 800MHz max.2GB	Intel® 945GSE +ICH7M		3	2				2x LAN	PCIe Mini Card slot	2.5" SATA HDD bay SSD: CF Type II	(-)10°C~+50°C				up to IP66 front	fanless	
PPC-3708A/3710A/3712A (N26)	Heavy Industrial Panel PC	Atom	5th	244x175x87 up to 340x260x75mm	8.4" / 10.4" / 12.1"	450 / 400 / 500	600:1 / 700:1	SVGA: 800x600		Nano-CV-N26001	DDR3 (200-pin) 800MHz max.2GB	Intel®NM10		3	2	2	1		2x LAN	PCIe Mini Card slot	2.5" SATA HDD bay SSD: mSATA	(-)10°C~+50°C				up to IP66 front	fanless	
PPC-F06B-BT (N2807)	Heavy Industrial Panel PC	Celeron		136x178x56mm	5.7" (3:4)	550	800:1	VGA: 640x480			DDR3L 1600MHz max.4GB	SoC	24W	2	2	2			1x LAN	PCIe Mini Card slot (mSATA, PCIe/USB)	mSATA	(-)10°C~+50°C				IP65 front	fanless, multi touch	
PPC-F08B-I08-BT (J1900)	Heavy Industrial Panel PC	Celeron	5th	182x222x44mm/ 232x285x44mm	8" / 10.4"	500 / 400	500:1 / 700:1	SVGA: 800x600			DDR3L (204-pin) max. 8GB	SoC	38W / 40W	2	2	2			2x LAN	PCIe Mini Card slot (mSATA, PCIe/USB) PCIe Mini Card slot (WiFi Module)	mSATA 2.5" SATA HDD bay (F10B)	(-)10°C~+50°C			x	IP65 front	fanless, multi touch	
PPC-F12B/15B/17B-BT (J1900)	Heavy Industrial Panel PC	Celeron	5th	262x322x47mm/ 303x378x46mm/ 341x408x52mm	12.1" / 15" (4:3) / 17" (5:4)	600 / 450 / 350	700:1 / 800:1 / 800:1	XGA: 1024x768 SXGA: 1280x1024 (F17B)			DDR3L (204-pin) max. 8GB	SoC	24W / 38W / 40W	3	2	2	1		2x LAN	PCIe Mini card slot (PCIe/USB) PCIe Mini card slot (mSATA)	2.5" SATA HDD bay mSATA	(-)10°C~+50°C	x		x	IP65 front	bluetooth wireless kit, multi touch	
AFL (N270)	Light Industrial Panel PC	Atom	2nd	226x140x41mm up to 394x309x61	7" / 8" 8.4" / 10.4" / 12.1" / 15"	250 up to 500	400:1 up to 700:1	VGA: 640x480 up to XGA: 1024x768	Dual		DDR2 (200-pin) max.2GB	Intel® 945GSE +ICH7M	23W up to 49W	2	2	2	4 (15")		1x External SATA	2x LAN	2.5" HDD drive bay (starting with 12.1") CF Type II or mSATA or none	(-)10°C~+50°C (-)10°C~+45°C with CF card or SATA SSD 0°C~+40°C with SATA HDD			x	IP64 front	fanless	
AFL (N2600)	Light Industrial Panel PC	Atom	5th	226x140x41mm up to 304x246x50	7" / 8.4" / 12.1"	250 up to 500	400:1 up to 700:1	VGA: 640x480 up to XGA: 1024x768	Dual		DDR3 800MHz (204-pin) max.2GB	Intel®NM10	23W / 29W / 32W	2	2	2	4 (12.1"/15")			2x LAN	internal PCIe Mini Card slot (wifi module)	2.5" HDD drive bay & mSATA SSD (starting with 12.1") CF Type II or mSATA or none	(-)10°C~+50°C			x	IP64 front	fanless
AFL3-BT (N2807)	Light Industrial Panel PC	Celeron		191x127x43mm	7" (16:9)	500	700:1	XGA: 1024x600	Dual		DDR3L 2GB / 4GB on board	SoC	12V @ 2.08A	2						2x LAN	mSATA	(-)20°C~+60°C			x	IP65 front	fanless, bluetooth	
AFL3-BT (J1900)	Light Industrial Panel PC	Celeron	5th	233x175x50mm up to 396x250x53mm	8.4" (4:3) / 10.1" (16:10) / 12.1" (4:3) / 15" (16:9)	300 up to 500	600:1 up to 800:1	SVGA: 800x600 / WXGA:1280x800/ XGA: 1024x768 / 1366x768	Dual		DDR3L 1333MHz (204-pin) max. 8GB	SoC	12V @ 2A up to 4.16A	2	2	2				2x LAN	mSATA	(-)10°C~+50°C			x	IP64 front	fanless, bluetooth, camera, microphone	
Embedded Box PC																												
ECW-281B/2 (N270) ECW-281BW/D (N270)	Embedded Box	Atom	2nd	229x132x64mm				WXGA: 1920x1200 XGA: 1024x768	Single	Wafer-945GSE-N270	DDR2 (200-pin) max. 1 GB	Intel® 945GSE +ICH7M	12V @ 1.25A	6; 5	4				2x LAN	PCIe Mini Card slot	2.5" SATA HDD drive bay CF Fast	(-)10°C~+60°C with CompactFlash*/SSD (-)10°C~+50°C with HDD					fanless MIL-STD-810F	
ECW-281B/B2 (D525)	Embedded Box	Atom	3rd	229x132x64mm				QXGA: 2048x1536 XGA: 1024x768	Single	Wafer-PV-D525	DDR3 (204-pin) 1GB	Intel® ICH8M	12V @ 1.79A	6; 6	4				2x LAN	PCIe Mini Card slot	2.5" SATA HDD drive bay CF Fast	(-)20°C~+65°C with CompactFlash*/SSD (-)10°C~+50°C with HDD					fanless MIL-STD-810F	
ECW-281B/BWD (D2550)	Embedded Box	Atom	5th	229x132x64mm				WUXGA: 1920x1200	Single	Wafer-CV-D25501	DDR3 (204-pin) max.2GB	Intel® ICH8M	12V @ 1.53A	4	4				2x LAN	PCIe Mini Card slot (mSATA) PCIe Mini Card slot	mSATA	(-)10°C~50°C (SSD)			x		fanless MIL-STD-810F	
ECW-281-BT (J1900)	Embedded Box	Celeron		229x132x64mm				WQXGA: 2560x1600	Single		DDR3L 1066/1333MHz max. 8GB	SoC	12V @ 1.45A	4	3	1			2x LAN	PCIe Mini card slot (mSATA) PCIe Mini card slot (IRIS)	mSATA	(-)20°C~+60°C (SSD)	x		x		fanless MIL-STD-810F	

Key	N270/945GSE/945G products
	Successors

Overview N270 and successors

Products/ Functions	Product group	Processor	Processor Gen.	Dimensions	Memory	System Chipset	Power consumption	COM	USB 2.0	USB 3.0	SATA	Ethernet	Expansion	Storage	Operating temperature	IRIS Remote module	TPM Module	WLAN module	Resolution	Display support	Heat sink
Mini-ITX Boards																					
KINO-945GSE/2/3 (N270)	Mini-ITX Board	Atom	2nd	170x170mm	DDR2 400/533MHz (200-pin) max. 2GB	Intel® 945GSE/ICH7M	12V @ 0.04A / 1.73A/ 0.43A	4,6,10	6		2x	up to 2x LAN	PCI, PCIe Mini	CF Type II	(-10°C~+60°C) / (110°C~+60°C) (-120°C~+70°C (N270W))				VGA integrated; up to HD1080	Dual	
KINO-PV (D425/D525)	Mini-ITX Board	Atom	2nd	170x170mm	2x DDR3 800MHz (204-pin) max. 4GB	Intel® ICH8M	12V @ 1.95A	6	8		2x 3Gb/s	2x LAN	PCI, PCIe Mini Card, PCIe x1	CF Type II	(-110°C~+60°C)				up to WXGA:1280x768	Dual	30mm higher
KINO-CV/R (D2550/N2600/N2800)	Mini-ITX Board	Atom	5th		DDR3 1066MHz max.4GB (D2550/N2800) DDR 800MHz max. 2GB (N2600)	Intel® NM10/ ICH10R	12V @2.8A/2.4A/N.A 12V @0.09A (CVR)	6 or 2	6	2	2x or 6x 3Gb/s	2x LAN	PCIe Mini Card (mSATA SSD), PCI	micro SD slot	D2550: (-120°C~+60°C / +70°C (forced air)) N2600, N2800: (-120°C~+70°C / +75°C (forced air))		x		up to QXGA:2048x1536	Dual	30mm higher
KINO-ABT (E38xx)	Mini-ITX Board	Atom	6th	170x170mm	2x DDR3L 1066/1333MHz (204-pin) max. 4GB/8GB	Soc		6	6	2	2x 3Gb/s	2x LAN	PCIe Mini Card (mSATA), PCIe x4	micro SD slot	(-120°C~+60°C)	x	x		up to 4K: 3860x2160	Dual	
KINO-ABT (I1900, N2930, N2807)	Mini-ITX Board	Celeron		170x170mm	2x DDR3L 1066/1333MHz (204-pin) max. 4GB/8GB	Soc	12V @ 0.08A	6	6	2	2x 3Gb/s	2x LAN	PCIe Mini Card (mSATA), PCIe x4		(-120°C~+60°C)	x	x		up to 4K: 3860x2160	Dual	
KINO-DBT (E38xx)	Mini-ITX Board	Atom	6th	170x170mm	2x DDR3L 1066/1333MHz (204-pin) max. 8GB	Soc		6	6	2	2x 3Gb/s	2x LAN	PCIe Mini Card, PCIe x4, mSATA	micro SD slot	(-120°C~+60°C)		x		up to Full HD: 1920x1080	Dual	
KINO-DBT (I1900, N2930, N2807)	Mini-ITX Board	Celeron		170x170mm	2x DDR3L 1066/1333MHz (204-pin) max. 8GB	Soc	12V @ 1.64A	6	6	2	2x 3Gb/s	2x LAN	PCIe Mini Card, PCIe x4, mSATA		(-120°C~+60°C)		x		up to Full HD: 1920x1080	Dual	
Embedded Boards																					
NOVA-945GSE (N270)	5.25" SBC Embedded Board	Atom	2nd	203x146mm	DDR2 300/533MHz (200-pin) max. 2GB	Intel® 945GSE/ ICH7M	5V @ 3.49A	4	6		2x	2x LAN	PC/104+ (ISA + PCI bus) 2x PCIe Mini Card PCI	SSD: CF Type II	0°C~+60°C		x		up to HD1080		
NOVA-PV (D525)	5.25" SBC Embedded Board	Atom	3rd	203x146mm	DDR2 800MHz (204-pin) max. 4GB	Intel® ICH8M	12V @ 1.46A	5	6	8	2x 3Gb/s	4x PCIe LAN1	PC/104+ (ISA + PCI bus) 2x PCIe Mini Card PCI	SSD: CF Type II	(-110°C~+60°C)		x		VGA	Dual	30 mm higher
NANO-945GSE/2 (N270)	EPIC SBC	Atom	2nd	146x102mm	DDR2 533MHz (200-pin) max. 2GB	Intel® 945GSE/ 82801GBM/ICH7M	5V @ 1.53A/1.45A	4	6		2	2x LAN	PCIe Mini Card; PC-104 / PC-104+	CF Type II	0°C~+60°C (-120°C~+70°C (N270W)) (-140°C~+85°C (N270W2))				VGA integrated; up to HD1080	Dual	
NANO-PV (D525/D425/N455)	EPIC SBC	Atom	3rd		DDR3 800MHz (204-pin) max. 4GB/8GB/2GB	Intel® ICH8M	12V @ 2.21/ 2.11/ 2.00A (1) 12V @ 2.16 / 2.08/ 1.99A (2)	5	8		2x 3Gb/s	up to 2x LAN	PCI-104; PCIe Mini Card	up to 1 CF Type II	(-110°C~+60°C)		x		up to WXGA:1280x768		30 mm higher
NANO-CV (D2550/N2600)	EPIC SBC	Atom	5th	115x165mm	DDR3 1066/800MHz max. 4GB/2GB	Intel®NM10	12V @ 2.14A / 1.72A	4	4	up to 6	0 up to 2	2x 3Gb/s mSATA	2x LAN	PCIe, PCI-104 (ISA), PCI-104 (PCI) or 2x PCI-	(-120°C~+60°C / (-120°C~+70°C)				up to WUXGA: 1900x1200	Dual	30mm higher (D2550) / N2600)
NANO-BT (E38xx)	EPIC SBC	Atom	6th	115x165mm	DDR3L 1066/1333 MHz (204-pin) max. 4GB/8GB	Soc		4	6		2x LAN	2x LAN	PCIe Mini, PCI-104 (PCI)	MicroSD socket	(-120°C~+60°C)	x			up to WQXGA:2560x1600	Dual	
NANO-BT (I1900/N2930/N2807)	EPIC SBC	Celeron		115x165mm	DDR3L 1066/1333 MHz (204-pin) max. 4GB/8GB	Soc	12V @ 1.52A	4	3	1	2x 3Gb/s	2x LAN	PCIe Mini, PCI-104 (PCI)		(-120°C~+60°C)	x			up to WQXGA:2560x1600	Dual	
NANO-BTW2 (E38xx)	EPIC SBC	Atom	6th	115x165mm	DDR3L 1066/1333 MHz (204-pin) max. 4GB/8GB	Soc		4	3		2x LAN	2x LAN	PCIe Mini, PCI-104 (PCI)	mSATA (SATA port 2)	(-140°C~+85°C)	x			up to WQXGA:2560x1601	Dual	
NANO-LJ13 (I7-6500U, I5-6300U, I3-6100U, 3955U)	EPIC SBC	Mobile Core/ Celeron ULT	6th	115x165mm	2x DDR4 2133/1866 MHz (260-pin) max. 32GB	Soc	12V @ 2.48A	3	3	4	2x 6Gb/s	2x LAN (RAID 0,1)	2x PCIe Mini (SIM, mSATA)	eMMC 8GB	(-120°C~+60°C)				up to 4K: 3860x2160	Triple	heat spreader
Wafer-945GSE/2	3.5" SBC	Atom	2nd	146x102mm	DDR2 400/533MHz, max. 2GB	Intel® 945GSE/ 82802GBM/ICH7M	5V @ 2.94A/2.36A	6,2	6		2	2x LAN	PCIe Mini Card/ PC-104		0°C~+60°C (-120°C~+70°C (N270W)) (-140°C~+85°C (N270W2))					Dual	
Wafer-PV (D425/N455/D525)	3.5" SBC	Atom	3rd	146x102mm	DDR3 800 MHz max. 2GB/4GB	Intel® ICH8M	12V @ 1.52/1.33/1.79A	6	8		2x 3Gb/s	2x LAN	PCIe Mini Card		(-110°C~+60°C)				QXGA:2048x1536 SXGA+: 1400x1050 (N455)	Dual	30mm higher
Wafer-CV (D2550/2600)	3.5" SBC	Atom	5th	146x102mm	DDR3 1066/800MHz max.4GB/2GB	Intel® NM10	12V @ up to 1.53/1.15A	4,6	4,6		2x 3Gb/s	2x LAN	PCIe Mini Card/ PC-104		(-110°C~+60°C)				up to HD1080	Dual	
WAFFER-BT (E38xx)	3.5" SBC	Atom	6th	146x102mm	DDR3L 1066/1333 MHz (204-pin) max. 4GB/8GB	Soc		4	5	1	2x 3Gb/s	2x LAN	PCIe Mini Card (mSATA)		(-120°C~+60°C)	x			up to WQXGA: 2560x1598	Dual	
WAFFER-BT (I1900/N2930/N2807)	3.5" SBC	Celeron		146x102mm	DDR3L 1066/1333 MHz (204-pin) max. 4GB/8GB	Soc	12 @ 1.45A	4	5	1	2x 3Gb/s	2x LAN	PCIe Mini Card (mSATA)		(-120°C~+60°C)	x			up to: WQXGA: 2560x1599	Dual	
WAFFER-BTW2 (E38xx)	3.5" SBC	Atom	6th	146x102mm	DDR3L 1066/1333 MHz (204-pin) max. 2GB/4GB	Soc	12V @1.32A	3	5	1	2x 3Gb/s	2x LAN	2x PCIe Mini Card	on-board SSD 4G mSATA, microSD	(-140°C~+85°C)				up to WQXGA: 2560x1600	Dual	
WAFFER-BW (N3710)	3.5" SBC	Pentium		146x102mm	DDR3L 1333/1600 MHz (204-pin) max. 8GB	Soc	12 @ 1.52A	6	4	2	mSATA	2x LAN	2x PCIe Mini Card (1 SIM holder)		(-120°C~+60°C)				up to 4K: 3860x2160	Triple	
WAFFER-BW (N3160/N3060/N3101)	3.5" SBC	Celeron		146x102mm	DDR3L 1333/1600 MHz (204-pin) max. 8GB	Soc		6	4	2	mSATA	2x LAN	2x PCIe Mini Card (1 SIM holder)		(-120°C~+60°C)				up to 4K: 3860x2160	Triple	
WAFFER-ULT/2 (I7-4650U/5650U, I5-4300U/5350U, I3-4100U/5010U, 2980U/3765U)	3.5" SBC	Mobile ULT	4th/5th	146x102mm	2x DDR3L 1600/1333 MHz (204-pin) max. 16GB	Soc	12 @ 2.72A	4	2	2	2x 6Gb/s	2x LAN	PCIe Mini Card		(-110°C~+60°C)	x			up to 4K: 3860x2160	Triple	
ETX Module																					
EM-945GSE (N270)	ETX 3.0 CPU Module	Atom	2nd	95x114mm	DDR2 533/400MHz (200-pin) max. 2GB	Intel® 945GSE/ 82801GBM/ICH7M	5V @ 2.9A	2	4		2	PCIe	4x PCI (ISA support)		0°C~+60°C, (-140°C~+85°C (N270W))				VGA: 640x480	One	x
CPU Karten																					
WSB-945GSE (N270)	Full-size PICMG 1.0 CPU Karte	Atom	2nd	338x122mm	DDR2 400/533MHz (240-pin) max. 2GB	Intel® 945GSE/ ICH7M	5V @ 2.55A	2	7		2	2x LAN			0°C~+60°C				VGA		
WSB-9454/2 (N270)	Full-size PICMG 1.0 CPU Karte	Atom	2nd	338x122mm	4/2x DDR2 667/533/400MHz (240-pin) max. 4GB	Intel® 945G/GM/ ICH7M	5V @ 7.68A	2	7		4	4 x 3Gb/s	2x LAN		0°C~+60°C				up to HD1080	Dual	
WSB-PV (D425/D525)	Full-size PICMG 1.0 CPU Karte	Atom	3rd	338x122mm	DDR3 800MHz (204-pin) max. 4GB	ICH8M	5V @ 5.16A	4	7		3	3 x 3Gb/s	2x LAN		(-120°C~+60/65°C)				up to QXGA:2048x1536		
PICo-945GSE (N270)	Half-size PCIe CPU Karte	Atom	2nd	185x122mm	DDR2 533MHz (512 MB on board) + DDR2 533/400MHz (200-pin) max.2GB	Intel® 945GSE/ ICH7M	5V @ 2.89A	2	7		2	2x LAN			0°C~+60°C				up to HD1080	Dual	
PICo-PV (D525)	Half-size PCIe CPU Karte	Atom	3rd	185x122mm	2x DDR3 800MHz (240-pin), max. 4GB	Intel® ICH8M	5V @ 3.38A	4	7		3	3 x 3Gb/s	2x LAN	4x PCI; 4x PCIe x1/x4	(-120°C~+60°C)				up to HD1080	Dual	30mm higher
PICSA-945GSE (N270)	Half-size CPU Karte	Atom	2nd	185x128mm	DDR2 533MHz (512 MB on-board) + DDR2 533MHz (200-pin) max.2GB	Intel® 945GSE/ ICH7M	5V @ 2.89A	2	6		2	2x LAN	Dual PCIe		0°C~+60°C				QXGA:2048x1536 SXGA+: 1400x1050 (N455)		
PICSA-PV (D525)	Half-size CPU Karte	Atom	3rd	185x128mm	DDR3 800MHz (204-pin) max. 4GB	Intel® ICH8M	5V @ 3.36A	4	6		3	3 x 3Gb/s	2x LAN	4x PCI plus ISA support	(-120°C~+60°C (free air) /-70°C (force air))				up to WXGA:1280x768 or XGA:1024x768		30 mm higher
PICSA-BT (E38xx)	Half-size CPU Karte	Atom	6th	185x128mm	DDR3L 1066/1333 MHz (204-pin)	Soc	5V @ 1.55A	3	5	1	2x 3Gb/s	2x LAN	PCIe Mini	MicroSD socket	(-120°C~+60°C)		x		up to XGA:1024x768	Dual	

Key N270/945GSE/945G products
Successor