

User's Manual

Version 1.0

3307538

**5.75" x 4.0" (146 mm x 101 mm) - All-In-One SBC with
embedded FANLESS 300 MHz NS Geode CPU, Flat
Panel/CRT SVGA, Dual 10/100 LAN, Audio, and Compact
Flash Interfaces**

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Chapter 1. Introduction

1.1 Product Overview

The 3307538 is a compact embedded mini-board Computer that has a low-power embedded NS Geode GX1 x86 compliant processor, flat panel / CRT interface, AC97 3D audio, dual 10/100BASE-Tx Fast Ethernet, PC/104 and Compact Flash embedded interface in the compact size of 3.5" drive size, or 146 x 101 mm of form factor.

The 3307538 integrated onboard Compact Flash interface offers the flexible option for embedded SSD (Solid State Disk). The PC/104 interface also provides the embedded expansive interface for 8/16-bit ISA-based peripheral modules. With the embedded GX1 CPU and 144-pin SO-DIMM, the 3307538 should be the ideal solution for low profile embedded computing application platform.

Based on the features of embedded GX1 CPU, SO-DIMM, flat panel VGA, dual LAN, audio, CF SSD and PC/104 interfaces, the 3307538 meets the embedded demand of compact computing platform like POS, POI, kiosk, panel PC, transaction terminal, wireless gateway station and other embedded platform with PC/104 interfaces. The 3307538 provides powerful embedded performance and integration, expansibility solutions including, but not limited to the following.

Compact Low Profile Board Size

The 3307538 is based on the compact size of 3.5" drive size or 146 x 101 mm and meets the demand of mini-size embedded computing platforms. The onboard GX1 x86 compliant CPU and low profile SO-DIMM also make the 3307538 the low profile solution for the embedded applications.

Embedded OS Support

NS GX1 offers the wide range of major embedded operating systems (OS) including DOS, Windows Embedded NT/XP, Win CE, embedded Linux, pSOS+, VxWorks, QNX, BE and more.

Compact Flash SSD Interface

The 3307538 offers a Compact Flash embedded flash disk interface and SSD (Solid State Disk), including CFC and IBM MicroDrive.

1.2 Specification

General Specification

CPU	Embedded NS GX1 300 MHz CPU Low power / fan free x86 compliant platform Optional GX1 200/233/266 MHz CPU for OEM
Chipset	NS Geode CS5530A
DRAM	One 144-pin SO-DIMM socket supports 256 MB SDRAM
BIOS	Phoenix-Award 2Mb PnP flash BIOS
Enhanced IDE	One PCI enhanced IDE interface channel supports dual ATAPI devices up to UltraDMA/33 mode
Green Function	Power saving mode supported in BIOS with DOZE, STANDBY and SUSPEND modes. ACPI version 1.0 and APM version 1.2 compliant
Real Time Clock	NS Geode chipset built-in RTC with lithium battery

Multi-I/O Ports

Chipset	Winbond W83977F-A super I/O controller
Serial Port	One RS-232 serial port COM1 and one jumper selectable RS-232/422/485 serial port COM2. Both with 16C550 compatible UART and 16 bytes FIFO
USB Port	Dual USB ports with USB version 1.1 compliant
Parallel Port	One bi-direction parallel port with SPP/ECP/EPP mode
FDD	One FDD port supports up to two FDD
IrDA Port	One IrDA compliant Infrared Tx/Rx interface
K/B & Mouse	PS/2 keyboard and mouse ports

Solid State Disk Interface

Flash Type	One Compact Flash Type-II for CFC (Compact Flash Card) or IBM MicroDrive
Capacity	Flash memory up to 1 GB with CFC or IBM MicroDrive

Display Interface

Chipset	NS Geode CS5530A chipset built-in flat panel / CRT VGA controller with 2D engine
Video Memory	Up to 4 MB of video memory shared with system
Display Type	Supports non-interlaced CRT and 18-bit TFT LCD displays, display both CRT and flat panel simultaneously

Ethernet Interface

Chipset	Dual PCI-based RTL8139C Fast Ethernet controller
Type	10/100Base-TX, auto-switching, IEEE802.3U compliant

Audio Interface

Chipset	NS Geode CS5530A chipset built-in AC97 3D audio
Interface	Line-in, line-out, CD-in, Microphone-out

Expansive Interface

PC/104	One 8/16-bit ISA-based PC/104 interface
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Power and Environment

Power Req.	+5V (4.75V to 5.25V), 4-pin AT power connector
Dimension	146 x 101 mm (L x W)
Temperature	Operating within 0 ~ 60°C (32 ~ 140°F) Storage within -20 ~ 85°C (-4 ~ 185°F)

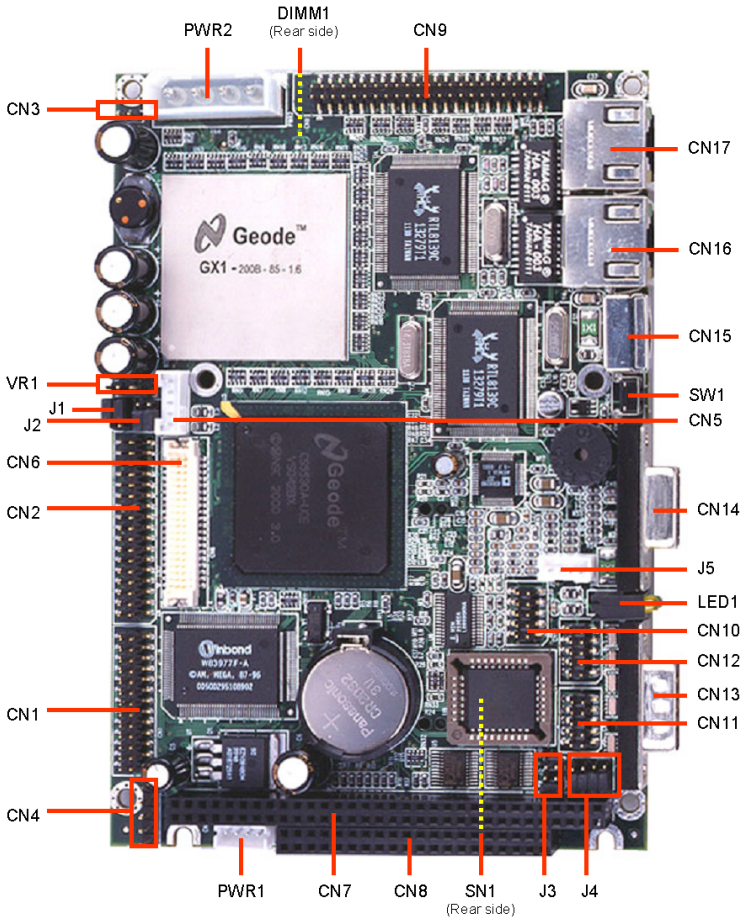
Ordering Code

3307538	With GX1 300 MHz CPU, Flat Panel / CRT SVGA. Audio, Dual LAN, PC/104 and Compact Flash Interfaces
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Chapter 2. Hardware Setup

This chapter contains information for installing hardware. The install procedure includes jumper settings, CPU and memory installation, fan, I/O and panel connections.

2.1 Jumpers and Connectors Location



Jumper and Connector List

Connectors on the board are linked to external devices such as hard disk drives, keyboard and floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your applications.

The following table lists the function of each of the board's jumpers and connectors.

Jumper

Jumper	Function	Note
J1	LCD driving & backlight voltage selection	3 x 2 header, pitch 2.0 mm
J2	COMS and LCD clock signal selection	3 x 2 header, pitch 2.0 mm
J3	COM2 RS232/422/485 mode selection	3 x 2 jumper, pitch 2.0 mm
J4	COM2 RS232/422/485 mode selection	4 x 3 jumper, pitch 2.0 mm

Connector

Connector	Function	Note
CN1	Parallel port connector	13 x 2 header, pitch 2.0mm
CN2	Floppy connector	17 x 2 header, pitch 2.0mm
CN3	System fan connector	2 x 1 header, pitch 2.0mm
CN4	IrDA connector	5 x 1 header, pitch 2.54mm
CN5	LCD inverter connector	5 x 1 wafer, pitch 2.0mm
CN6	TFT panel connector	HIROSE DF13-40DP-1.25V
CN7, CN8	PC/104 connector	
CN9	IDE connector	22 x 2 header, pitch 2.0mm
CN10	Audio connector	5 x 2 header, pitch 2.0mm
CN11	Serial port 2 connector	5 x 2 header, pitch 2.0mm
CN12	USB connector	5 x 2 header, pitch 2.0mm
CN13	Serial port 1 connector	DB-9 male connector
CN14	CRT connector	DB-15 female connector
CN15	Keyboard and PS/2 mouse connector	6-pin mini DIN
CN16	10/100Base-Tx Ethernet 1 connector	RJ-45
CN17	10/100Base-Tx Ethernet 2 connector	RJ-45
J5	CD-ROM audio input connector	4 x 1 wafer, pitch 2.0mm
PWR1	Auxiliary power connector	4 x 1 wafer, pitch 2.0mm
PWR2	Power connector	Molex A-8981-04V5
SN1	Compact Flash connector	
SW1	Reset button	
LED1	Power & HDD indicator	
VR1	LCD backlight brightness adjustment	
DIMM1	144-pin SODIMM socket	

2.2 Flat Panel Configuration

2.2.1 LCD Clock Signal Select

You can select the LCD control signal by setting J2. The following chart shows the available options.

LCD Clock Signal Selection

Jumper: J2 / pin 2, 4, 6

Type: onboard 6-pin header

J2	LCD Clock Signal Selection
2-4	SHFCLK
4-6	-SHFCLK

Default Setting

2.2.2 LCD Driving & Backlight Voltage Select

You can select the TFT connector CN6 driving (pin 5 and pin 6) and backlight (pin 1 and pin 2) voltage by setting J1. The configurations are as follows.

LCD Driving Voltage Selection

Jumper: J1 / pin1, 3, 5

Type: onboard 6-pin header

J1	LCD Driving Voltage Selection
1-3	+5V
3-5	+3.3V

Default Setting

LCD Backlight Voltage Selection

Jumper: J1 / pin 2, 4, 6

Type: onboard 6-pin header

J1	LCD Backlight Voltage Selection
2-4	+5V
4-6	+12V

Default Setting

2.3 CMOS Setting

You can use J2 to clear the CMOS data if necessary. To reset the CMOS data, set J2 to 3-5 closed for a few seconds and then move the jumper back to 1-3 closed.

CMOS Setting

Jumper: J2 / pin 1, 3, 5

Type: onboard 6-pin header

J2	CMOS Mode
1-3	Normal Operating
3-5	Clear CMOS
Default Setting	

2.4 COM2 RS-232/422/485 Mode Setting

The board's COM2 serial port can be setup as RS-232, 422 or 485 mode for applications. Set the jumpers J3 and J4 as following.

COM2 Mode Setting

Jumper: J3, J4

Type: onboard 6-pin (J3) and 12-pin (J4) header

COM2 Mode	J3			J4			
	1-2	3-4	5-6	1-3	4-6	7-9	10-12
RS-232	ON	OFF	OFF	1-2	4-5	7-8	10-11
RS-422	OFF	ON	OFF	2-3	5-6	8-9	11-12
Rs-485	OFF	OFF	ON	2-3	5-6	8-9	11-12

Default Setting

2.5 Connector Pin Assignment

Parallel Port Connector (CN1)

Signal	PIN		Signal
STB#	1	2	AFD#
PD0	3	4	ERR#
PD1	5	6	INIT#
PD2	7	8	SLIN#
PD3	9	10	GND
PD4	11	12	GND
PD5	13	14	GND
PD6	15	16	GND
PD7	17	18	GND
ACK#	19	20	GND
BUSY	21	22	GND
PE	23	24	GND
SLCT	25	26	GND

System Fan Connector (CN3)

Signal	PIN
VCC	1
GND	2

IrDA Connector (CN4)

Signal	PIN
VCC	1
CIRRX	2
IRRX	3
GND	4
IRTX	5

LCD Inverter Connector (CN5)

Signal	PIN
+12V	1
GND	2
ENBKL	3
VR	4
VCC	5

Note: For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal (pin 4) controlled by **VR1**. Please see the VR1 section for detailed circuitry information.

TFT Panel Connector (CN6)

Signal	PIN		Signal
VDDSAFE5	2	1	VDDSAFE5
GND	4	3	GND
VDDSAFE3	6	5	VDDSAFE3
GND	8	7	NC
NC	10	9	NC
P3	12	11	P2
P5	14	13	P4
P7	16	15	P6
NC	18	17	NC
P11	20	19	P10
P13	22	21	P12
P15	24	23	P14
NC	26	25	NC
P19	28	27	P18
P21	30	29	P20
P23	32	31	P22
GND	34	33	GND
FLM	36	35	SHFCLK
LP	38	37	M
ENVEE	40	39	ENBKL

Signal Description – TFT Panel Connector (CN6)

P [23:18] P [15:10] P [7:2]	Flat panel data output for 9, 12, or 18 bit TFT flat panels. Refer to table below for configurations for various panel types. The flat panel data and control outputs are all on-board controlled for secure power-on/off sequencing
SHFCLK	Shift Clock. Pixel clock for flat panel data
LP	Latch Pulse. Flat panel equivalent of HSYNC (horizontal synchronization)
FLM	First Line Marker. Flat panel equivalent of VSYNC (vertical synchronization)
M	Multipurpose signal, function depends on panel type. May be used as AC drive control signal or as BLANK# or Display Enable signal
ENBKL	Enable backlight signal. This signal is controlled as a part of the panel power sequencing
ENVEE	Enable VEE. Signal to control the panel power-on/off sequencing. A high level may turn on the VEE (LCD bias voltage) supply to the panel
VDDSAFE5	LCD Backlight Voltage +5V or +12V selected by J1 / Pin 2, 4, 6
VDDSAFE3	LCD Driving Voltage +5V or 3.3V selected by J1 / Pin 1, 3, 5

Signal Configuration – TFT Panel Displays

Pin name	18 Bit TFT	12 Bit TFT	9 Bit TFT/ 640 x 480	9 Bit TFT/ 1024 x 768
P23	R5	R5	R5	R5 (Even)
P22	R4	R4	R4	R4 (Even)
P21	R3	R3	R3	R3 (Even)
P20	R2	R2	-	R5 (Odd)
P19	R1	-	-	R4 (Odd)
P18	R0	-	-	R3 (Odd)
P15	G5	G5	G5	G5 (Even)
P14	G4	G4	G4	G4 (Even)
P13	G3	G3	G3	G3 (Even)
P12	G2	G2	-	G5 (Odd)
P11	G1	-	-	G4 (Odd)
P10	G0	-	-	G3 (Odd)
P7	B5	B5	B5	B5 (Even)
P6	B4	B4	B4	B4 (Even)
P5	B3	B3	B3	B3 (Even)
P4	B2	B2	-	B5 (Odd)
P3	B1	-	-	B4 (Odd)
P2	B0	-	-	B3 (Odd)

Note: The principles of attaching TFT panels is that the bits for red, green, and blue use the most significant bits and skip the least significant bits if the display interface width of the TFT panel is insufficient.

Audio Connector (CN10)

Signal	PIN		Signal
NC	10	9	NC
Microphone Bias	8	7	Microphone
Line-In L	6	5	Line-In R
GND	4	3	GND
Line-Out L	2	1	Line-Out R

Pin Header Serial Port 2 Connector in RS-232 Mode (CN11)

Signal	PIN		Signal
DCD	1	2	RxD
TxD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

Pin Header Serial Port 2 Connector in RS-422 Mode (CN11)

Signal	PIN		Signal
Tx-	1	2	Rx+
Tx+	3	4	Rx-
NC	5	6	NC
NC	7	8	NC
NC	9	10	NC

Pin Header Serial Port 2 Connector in RS-485 Mode (CN11)

Signal	PIN		Signal
DATA-	1	2	NC
DATA+	3	4	NC
NC	5	6	NC
NC	7	8	NC
NC	9	10	NC

CD-ROM Audio Input Connector (J5)

Signal	PIN
CD_R	4
CD_GND	3
CD_L	2
CD_GND	1

Power Connector (PWR1)

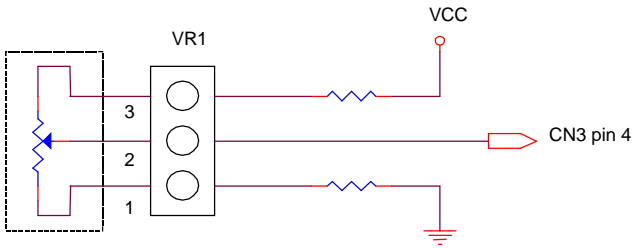
Signal	PIN
VCC	4
GND	3
GND	2
+12V	1

Auxiliary Power Connector (PWR2)

Signal	PIN
-12V	4
GND	3
GND	2
NC	1

LCD Backlight Brightness Adjustment Connector (VR1)

Signal	PIN
GND	1
VR	2
VCC	3



Variation Resistor (Recommended: $4.7K\Omega$, $>1/16W$)



Contact Information

Thank you for purchasing our fine Products. Please do not hesitate a bit to contact us if we could be of any further help to you in enhancing your design.

Address: 17 Hampshire Drive
Hudson, NH 03051

TEL: (800) 833 8999

FAX: (603) 886 4545

Website: <http://www.globalamericaninc.com>

E-mail: salesinfo@globalamericaninc.com (sales)
support@globalamericaninc.com (tech supports)

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