Quick Reference Guide

EES-3412/3412L

AMD Geode GX1 Micro PC

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Part No. 2017341261R

FCC STATEMENT

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTATLLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice:

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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In addition, free technical support is available from Evalue's engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

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This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Evalue, or which have been subject to misuse, abuse, accident or improper installation. Evalue assumes no liability under the terms of this warranty as a consequence of such events. Because of Evalue's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of Evalue's products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, Evalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Packing List

Before you begin installing your Micro PC, please make sure that the following materials have been shipped:

- 1 EES-3412/3412L AMD Geode GX1 Micro PC (with ECM-3412/3412L inside)
- 1 Quick Reference Guide
- 1 DVD-ROM (or CD-ROM) contains the followings:
  - User's Manual in PDF format
  - Ethernet driver and utilities
  - VGA drivers and utilities
  - Audio drivers and utilities
- Cable set includes the followings:
  - 1 PS/2 keyboard and mouse Y cable (6-pin, Mini-DIN)
  - 1 IDE HDD cable (44-pin, pitch 2.0mm)
  - 1 AC to DC adapter
  - Power Cord

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

1. Safety Precautions

1.1 Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

1.2 Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

2. Specifications

- Palm size (106 x 178 x 65 mm)
- NS Geode GX1-300MHz Low-power CPU Board
- Rugged Aluminum Alloy Chassis w/ 2.5" HDD Mounting Kit
- Dual RJ-45 10/100Base-Tx Interfaces (Single RJ-45 for EES-3412L)
- DB-15 VGA Interface
- Mic-In / Line-In / Line-Out Audio Jacks
- CF+ Type I/II Socket with Ejector
- 2 COMs / 2 USB / 1 Parallel Port
- AC input: 90 ~264; VAC/47~63 Hz
- DC output: 5 V_{DC} +/- 5% rated at 5 A with I peak rated at 6.0 A
- AC plug: IEC 320, 3 Blades (desk-top type)
- DC plug: 3Ft with 5.5*2.1*9.5 mm
- Adapter size: 121(L)*61(W)*35(H) mm
- Adapter safety approvals: UL, CUL, TUV, CE

3. System Overview

3.1 Front Panel

Label	Function	Note
Power OFF/ON	System Power Switch	
LED	System Power Indicator	

3.2 Rear Panel

Label	Function	Note
COM1	Serial port 1	DB-9 male connector
COM2	Serial port 2	DB-9 male connector
Compact Flash	CF + Type I/II socket with ejector	
DC-IN	DC power-in plug	
HDD	HDD activity indicator	
KB/MS	Keyboard and PS/2 mouse connector	p-pin mini DIN
LAN1	10/100Base-Tx Ethernet 1 connector	RJ-45 (EES-3412 only)
LAN2	10/100Base-Tx Ethernet 2 connector	RJ-45
LINE IN	Line-in audio jack	
LINE OUT	Line-out audio jack	
MIC IN	Mic-in audio jack	
PRINT	Printer port	DB-25 female connector
PWR	System power indicator	
RESET	Reset button	
USB	Universal serial bus connectors	
VGA	CRT connector	DB-15 female connector

4. Hardware Configuration for ECM-3610 Micro Module

4.1 Installation Procedure

1. Unplug the power adapter from EES-3412/3412L.
2. Make sure all external cables are unattached.
3. Unscrew the front panel.
4. Disassemble the top cover for HDD installation, or
5. Disassemble the bottom cover for memory and/or CF card installation.

4.2 Installing DRAM (SODIMM)

4.2.1 System Memory

The reverse side of the ECM-3412/3412L contains a socket for 144-pin dual inline memory module (SODIMM). The socket uses 3.3 V unbuffered synchronous DRAM (SDRAM). SODIMM module is available in capacities of 32, 64, 128, or 256 MB. The socket can be filled in the SODIMM of any size, giving your ECM-3412 single board between 32 and 256 MB of memory.

4.2.2 Supplementary Information About SODIMM

Your ECM-3412 accepts both regular and PC-100 SDRAM SODIMM Module (with or without parity). Single-sided modules are typically 64 MB; double-sided modules are usually 32 or 128 MB.

4.2.3 Memory Installation Procedures

Press the SODIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the SODIMM socket. (See Figure below) To take away the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

4.3 Jumper & Connector

4.3.1 Jumper & Connector Layout

4.3.2 Jumper & Connector List

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

The following tables list the function of each of the board's jumpers and connectors.

Jumpers		
Label	**Function**	**Note**
J1	LCD driving & backlight voltage select	3 x 2 header, pitch 2.0mm
J2	Clear CMOS / LCD clock signal select	3 x 2 header, pitch 2.0mm
J3, J4	COM2 RS-232/422/485 select	3 x 2 header, pitch 2.0mm 4 x 3 header, pitch 2.0mm (J4)

Connectors		
Label	**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 2 connector	RJ-45
CN17	10/100Base-Tx Ethernet 1 connector	RJ-45 (ECM-3412 only)
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 connector	
DIMM1	144-pin SODIMM socket	

4.4 Jumper Settings

4.4.1 LCD Driving & Backlight Voltage Select (J1)

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 Select (J1 / Pin 1,3,5)

	+3.3V*	+5V
J1		

* default

LCD Backlight Voltage Select (J1 / Pin 2,4,6)

	+12V	+5V*
J1		

* default

4.4.2 Clear CMOS (J2 / Pin 1, 3, 5)

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

Clear CMOS (J2 / Pin 1, 3, 5)

	Clear CMOS	Protect*
J2		

* default

4.4.3 LCD Clock Signal Select (J2 / Pin 2, 4, 6)

You can select the LCD control signal by setting J2. The following charts show the available option.

LCD Clock Signal Select (J2 / Pin 2, 4, 6)

	-SHFCLK	SHFCLK*
J2		

* default

4.4.4 COM2 RS-232/422/485 Select (J3, J4)

The ECM-3412 COM2 serial port can be selected as RS-232, RS-422, or RS-485 by setting J3 & J4.

COM2 RS-232/422/485 Select (J3, J4)

	RS-232*	RS-422	RS-485
J3			
J4			

* default

4.5 Connector Definitions

4.5.1 IrDA Connector (CN4)

Signal	PIN
+5V	1
NC	2
IRRX	3
GND	4
IRTX	5

4.5.2 LCD Inverter Connector (CN5)

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

Note:

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

4.5.3 TFT Panel Connector (CN6)

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

4.5.4 Signal Description – TFT Panel Connector (CN6)

Signal	Description
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

4.5.5 Signal Configuration – TFT Panel Displays (CN6)

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 principle of attachment of 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.

4.5.6 Audio Connector (CN10)

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

4.5.7 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

4.5.8 Serial Port 2 with External DB9 Connector (CN11)

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

4.5.9 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

4.5.10 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

4.5.11 USB Connector (CN12)

Signal	PIN CH2	PIN CH1	Signal
+5V	10	9	GND
D2-	8	7	GND
D2+	6	5	D1+
GND	4	3	D1-
GND	2	1	+5V

4.5.12 CD-ROM Audio Input Connector (J5)

Signal	PIN
CD_R	4
GND	3
CD_L	2
GND	1

4.5.13 LCD Backlight Brightness Adjustment Connector (VR1)

Signal	PIN
GND	1
VR	2
+5V	3

Variation Resistor (Recommended: 4.7KΩ, >1/16W)

5. Mechanical Drawings

5.1 Dimension Drawing

5.2 Explode Drawing A (with HDD Installed)

5.3 Explode Drawing B (without HDD Installed)