

# PowerBrick ATOM™

## User's Manual



*Small footprint rugged Intel® ATOM™*

*Industrial Computer*



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## 1. Overview

The PowerBrick - ATOM™ is an *Intel® Atom™* system with 1.60 GHz processor speed. This small, rugged and powerful computer is the premium choice when desktop computer performance is required in industrial computing applications. Small size does not necessarily mean limitations in computing power.

The state-of-the-art PowerBrick-ATOM™ comes loaded with an impressive video card, fast hard drive (optionally flash drive) and memory, all at a competitive price. It is designed and built for great performance in a variety of applications and environments. The design focuses on elements essential for industrial use while excluding unnecessary hardware. The architecture is modular which allows for easy upgrading and expansions.

Areas of applications include:

- Fire engines and rescue vehicles
- Security and patrol vehicles
- Other emergency or public safety vehicles
- Cash carriers
- Seaport terminal container yard management
- Fleet management
- Oil-rigs

The main features are:

- *Intel® Atom™* dual core processor (1.60 GHz)
- Standard 2.5" hard disk or 2.5" SSD hard disk
- DDR3 SO-DIMM RAM
- 1xVGA with Intel GMA 3600
- 3 x RS232 Port
- 4 x USB 2.0 Port
- 2 x On-board Gigabit Ethernet Port
- Audio Jacks with Realtek ALC662 HD Audio Codec
- Built-in 8~26 VOLT DC
- Embedded OS (optional)
- GSM/GPRS/WiFi/CDMA/CDPD options
- GPS/AVL options
- Dimensions: 7.6" x 4.25" x 2.15" (W x L x H)

For installation, mounting and cable connections please see Section 2. Technical information is available in Section 3.

## 2. Installation

### 2.1 Contents of the Computer Box



**Figure 2.1** Box major components

In the box you will find the following items: PowerBrick-ATOM™ computer, power plug, mounting plate, manual and drivers CD.

If you have purchased Windows or Linux operating system with your computer, these CD's should be included. Keep them in a safe place.

Please see your separate monitor packaging for installation and other information for the touch screen monitor.

**Do not turn power on until you have read the next section and all cables are connected.**

### 2.2 Connecting Cables and Getting Started

In order to get familiar with your system before mounting it at your vehicle (or final location), we suggest you look at the connections on both ends of the computer such as shown in Figs. 2.2 and 2.3, connect up the unit, and place it into operation.

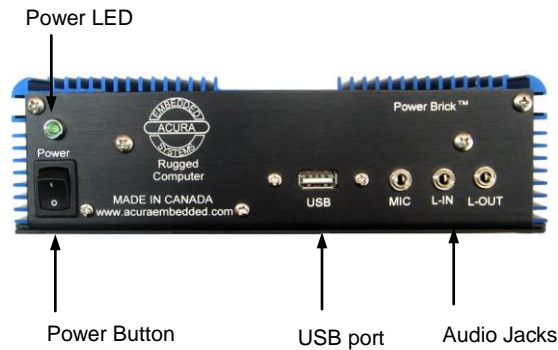


Figure 2.2: Front side of PowerBrick ATOM™

Connect all applicable cables such as:

- Keyboard
- Mouse
- Monitor
- Power supply cable

Optional device cables or units that you provide yourself could include the following:

- USB cable
- Speaker and microphone cables
- RJ45 Ethernet TP cable
- RS232 Serial port cable

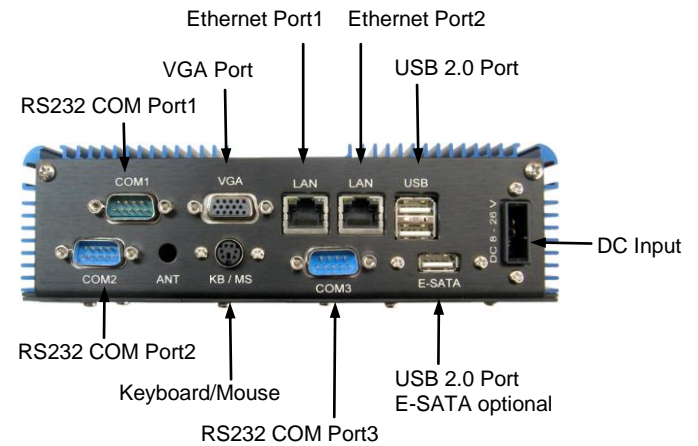


Figure 2.3 : Back side of PowerBrick ATOM™

After connecting all applicable cables it is safe to power-on the system. (Warning: use only DC from the dedicated power supply)

### 2.3 Mounting in your vehicle or final location

This chapter provides you with the information of fixed system mounting. Prior to that, please prepare the installation tools and appropriate items. If you are not clear about the items, contact your dealer for information.

### 2.4 Mounting tools

For mounting your computer in a vehicle you need the following tools:

- Wrenches (as required)
- Star (Philips #2) Screw driver
- Drill (3mm or 1/8") Check behind surface before drilling!
- Bolts and nuts appropriate to mount the plate in your vehicle

### 2.5 Computer installation

Mounting screws or bolts and nuts for mounting to your specific vehicle are not provided, as there are many variations of thickness that the unit might be mounted to. If mounting in a vehicle that is subject to vibration and shock, It is important to use the mounting plate with attached shock absorbers where vibration could occur. The mounting plate should be fastened tightly with bolts and nuts. Please ensure that if you mount any bolts/nuts under the computer, that they do not touch the computer itself. Otherwise, the shock absorbers will not protect the computer properly.



**Figure 2.4: Rubber-Mounting plate**

Connect all final wiring in a neat way, fastening it down with tie straps or other means to ensure that it does not get caught and broken accidentally. Your car electrician will know appropriate ways to do this.

### 3. Technical Information

#### 3.1 BIOS Setup

The single board computer uses the AMI BIOS (Basic Input/Output System) for the system configuration. The AMI BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides critical low-level support for the system central processing, memory and I/O sub-systems. The BIOS setup program of the single board computer let the customers modify the basic configuration setting. The settings are stored in a dedicated battery-backed memory, NVRAM, retains the information when the power is turned off. If the battery runs out of the power, then the settings of BIOS will come back to the default setting. The BIOS section of the manual is subject to change without notice and is provided here for reference purpose only. The settings and configurations of the BIOS are current at the time of print, and therefore they may not be exactly the same as that displayed on your screen. To activate CMOS Setup program, press <DEL> key immediately after you turn on the system. The following message “Press DEL to enter SETUP” should appear in the lower left hand corner of your screen. When you enter the CMOS Setup Utility, the Main Menu will be displayed as in Table 3.2. You can use arrow keys to select your function, press <Enter> key to accept selection and enter the sub-menu.

BIOS SETUP UTILITY							
Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit
System Overview							Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
AMIBIOS							Use [+] or [-] to configure system Time.
Version	:08.00.15						
Build Date	:08/28/08						
ID	:B113MR17						
Processor							
Type	:Intel® Atom (TM) CPU N270 @ 1.60GHz						
Speed	:1600MHz						
Count	:1						
System Memory							←→ Select Screen
Size	:1016MB						↑↓ Select Item
System Time							+ - Change Field
System Date							Tab Select Field
[14:20:27]							F1 General Help
[Tue 05/06/2008]							F10 Save and Exit
							ESC Exit
v02.59 (C) Copyright 1985-2005, American Megatrends, Inc.							

**Table 3.1: AMI BIOS CMOS Setup Utility**

#### 3.2 Operating Systems

The PowerBrick will generally be provided with a preinstalled operating system such as Windows XP Professional, Embedded or Linux. To restore the operating system, follow the procedure outlined in 3.4. You can also use an external CD-ROM drive to change, reinstall or repair the operating system through a USB 2.0 port.

#### 3.3. Operating System Restore Process

1. Back up your existing drive C:\ files.
2. Restart the computer.
3. Hold down the F8 key to enter Windows Advanced Boot Menu options.
4. Select “Return to OS Choices” and press “Enter”.
5. Select “Quick Restore Option”, press “Enter” and follow the instructions.

### 3.4 Windows XP Professional

If a **Hard Boot** is required then you must enter the BIOS by restarting the computer while continuing to push “delete” until BIOS Main Menu appears. Toggle over to [BOOT] push “Enter” and toggle down to [Device Driver] push “Enter” toggle down to the [Device] that you want to boot from [**external drive..**] and press “Enter” back out and check to see that your device is recognized as #1 (**then save your changes**) before exiting. Restart your computer and it should recognize the external drive and boot from backed up OS and then follow the prompts.

### 3.5 Linux Embedded

If you want to install Linux, boot the computer, place the CD-ROM labeled “Acura Embedded Linux” into the external CD-ROM drive, press RESET and follow the instructions on the screen. Note: this should only be done by an advanced user who has experience with Linux.

### 3.6 Application Software

You should be able to run all normal/generic application software such as Microsoft Word, Excel, PowerPoint, Adobe software etc. if you have Windows installed. See the relevant manual/help guides for the specific software. For Linux you will have to specifically select software designed for Linux. Acura is not responsible for failure of any software on your computer but if you have any particular software needs, please call Acura Technical Support or email [support@acuraembedded.com](mailto:support@acuraembedded.com).

### 3.7. Specifications for Power Brick

**Table 3.2: Input/Output**

15 Pin VGA	1
PS/2 Keyboard & Mouse	1
RS232 Serial Port	3
USB 2.0	4
RJ45 Gigabit Ethernet Port	2
Audio Jacks	1
GPS/WiFi/CDMA antenna (optional)	1
8 ~ 26V DC Power Jack	1

**Table 3.3: System Features**

Processor	Intel® Atom™ dual core processor (1.60 GHz)
System FSB	533 MHz
Memory	533MHz DDR3 SO-DIMM up to 4GB
Video	Integrated Intel® Extreme 945GM Graphic, support both 18bit and 36bit single channel LVDS screens.
Audio	Audio Jacks
Hard Disk	Standard 2.5” SATA hard disk or SSD hard disk
LAN	Two Broadcom PCIe GbE controllers
USB 2.0	Integrated 4 independent OHCI controller supporting USB 1.1 ports; Integrated 1 EHCI controller supporting USB 2.0 ports; Dynamic connection support to USB 2.0 or USB 1.1 devices
Hardware Monitor	System temperature, voltage and fan speed monitor.
Power Management	AT power is standard
Dimensions	7.60” x 4.25” x 2.15” (W x L x H)
Power	8 ~ 26V DC

### 3.8 Operation and maintenance

This module requires no routine maintenance. The green LED indicator when lit indicates proper operation and health.

The power supply must be protected by a **7A** auto fuse on the input line from the vehicle battery.

**3.9 Warning**

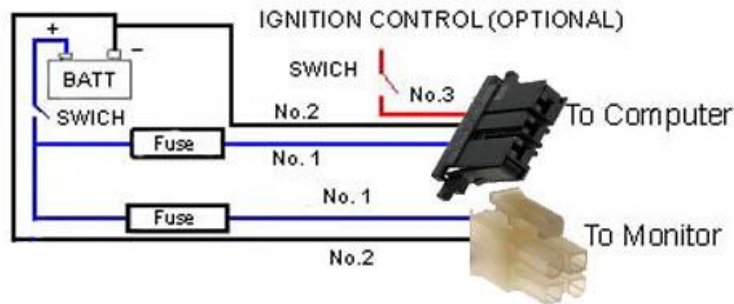
Before power up the computer, make sure all cables connected to the computer and the monitor.

**WARNING**

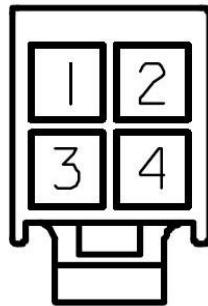
**First hookup all cables then turn on computer powerSwitch.**

**Make sure monitor power led on or blinking .**

**3.9A Power Brick Wiring Diagram**



**Computer connector**



**Monitor Power connector**

With the unique set of products, Acura Embedded Systems remains committed to its goal of providing trouble-free and customer-friendly service. A special customer service unit has been set up specifically to cater to our esteemed customers' needs.

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