



LC8700 RETAIL HARDENED COMPUTER USER MANUAL



NOTICE

The manufacturer of the Industrial Computer makes no representations or warranties, either expressed or implied, by or with respect to anything in this manual, and shall not be liable for any implied warranties of fitness for a particular purpose or for any indirect, special or consequential damages. Information in this document is subject to change without notice and does not represent a commitment on the part of the manufacturer.

FCC NOTICE

This device complies with Part 15 of FCC Rules. Operations are subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

BEMATECH, International Division
355 Denton Ave
New Hyde Park, NY 11040
TEL: (516) 248-0400
FAX: (516) 248-0443
Email: lci@logiccontrols.com
www.bematech.com

TABLE OF CONTENTS

OVERVIEW 1

CARE AND HANDLING..... 2

PRODUCT FEATURES 3

INSTALLATION INSTRUCTIONS..... 4

 SAFETY TIPS:.....4

 COMPONENT PLACEMENT.....6

 MOUNTING INSTRUCTIONS.....6

 1) TOOLS/MATERIALS REQUIRED6

 2) PARTS7

 3) DEVICE LOCATION8

 4) ELECTRICAL & INSTALLATION REQUIREMENTS8

 5) MOUNT DEVICE.....9

BIOSSETTING 16

TROUBLESHOOTING..... 18

SPECIFICATIONS..... 20

OVERVIEW

The Bematech LC8700 provides unparalleled reliability by being a fanless unit with no moving mechanical parts. It is an ideal computer for use in harsh environments with high levels of dust or oil when fan noise is not desirable. For mass storage, compact flash memory provides true no-moving-part operation. In addition, all components and connectors reside on one PC board, thus no internal cables (sources of common loose connections) are required. The computer is housed in a rugged die cast case for extra protection. The LC8700 has a very compact form factor - only 2"H x 8"W x 6"L. Two mounting brackets enable these units to be mounted almost anywhere – on a wall, ceiling, table top or under a counter.

The LC8700 uses Intel Atom processors, so it can run Windows and Linux-based applications. Whether your application runs on Windows 7, Windows XP, Windows XP embedded, Windows PosReady 2009, Windows Embedded PosReady 7, or Linux*, your operating system needs are supported by the LC8700. This enables the unit to be used in a wide variety of applications – in a restaurant's kitchen system, in a POS workstation, in an auto ID workstation, etc. The LC8700 also provides a very impressive compliment of up-to-date I/O ports – Ethernet, parallel, PS/2 and multiple USB 2.0, RS232, SVGA and DVI ports are all included.

*Ask our Technical Support Team for more details on supported distributions.

CARE AND HANDLING

The following tips will help keep your LC8700 functioning at the optimal level:

- Remember to unplug the display unit from the power outlet before cleaning.
- Do not use alcohol (methyl, ethyl or isopropyl) or any strong dissolvent. Do not use thinner or benzene, abrasive cleaners or compressed air.
- To clean the LC8700 unit cabinet, use a cloth lightly dampened with a mild detergent. Do not immerse unit in water.
- Put the cleaner on the rag and wipe the LC8700. Never apply the cleaner directly on the LC8700.
- Avoid getting liquids inside the LC8700. If liquid does get inside, have a qualified service technician check it before you power it on again.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- We recommend all servicing done on this product be done by qualified service personnel.
- Aside from upgrades or swapping out the compact flash or hard-drive please refer all other servicing to the Bematech RMA Dept.

PRODUCT FEATURES

- Fanless ventless operation
- Intel Atom CPU 1.66GHz, 512KB L2 Cache
- Ultra compact – only 2”H x 8”W x 6”D
- Mass storage: Compact flash (no moving parts) or/and hard disk drive
- Enclosed in rugged die cast case
- up to 2GB DDR2 SODIMM RAM
- No internal connecting cables with all components mounted on single PC board for high reliability
- Large number of available I/O ports: 7 USB 2.0, 4 serial, 1 VGA, 1 DVI-I, 1
 - Ethernet, 1 PS/2 keyboard and mouse, speaker out, microphone in, power input
- Multimedia: VGA with 1400 x 1050 max resolution with 24-bit color, AC97 Audio CODEC,

Optional:

- DVI-I port with 1280 x 1024 resolution
- System boot from compact flash, hard-drive, network, or USB
- Custom configurations available
- Universal input (100 to 240VAC, 47 to 63Hz) switching power supply

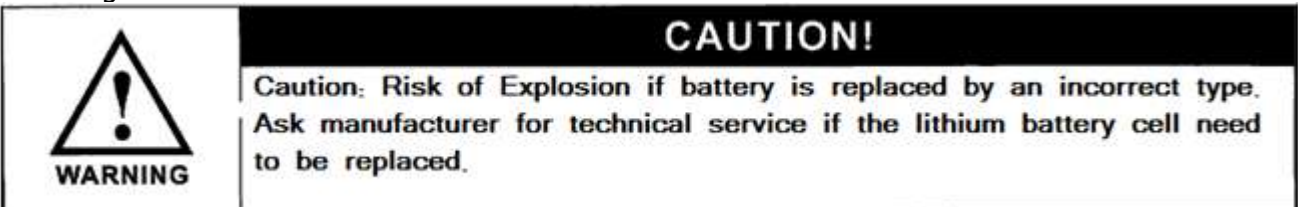
INSTALLATION INSTRUCTIONS

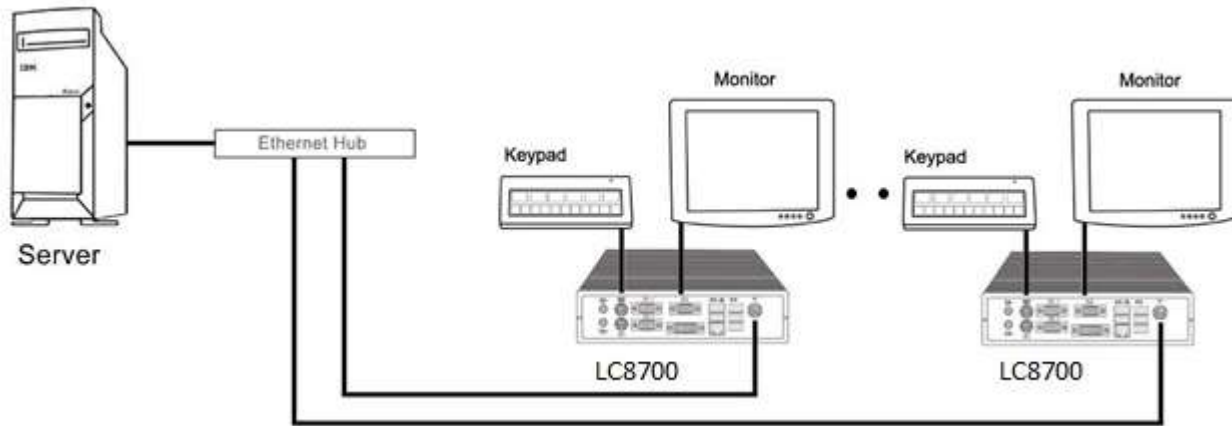
SAFETY TIPS:

Read these instructions carefully. Save these instructions for future reference.

- Install this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer
- Installation measures must be taken to prevent physical damage to the power supply cord, including proper routing of the power supply cord and provision of a receptacle (socket outlet) near the fixed ITE, or positioning the fixed ITE near a receptacle (socket outlet).
- Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes & standards, including fire-rated construction.
- Don't attach power supply cable to the building surface or through walls, ceilings, floors and similar openings.
- Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
- When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
- Install the system away from sun rays, vapor, gases, smoke, humidity and suspended particles.
- Allow at least 6 inches of space from the top of the unit and 3 inches from the sides to allow proper ventilation. (This will be explained in the mounting instructions)
- If any problem occurs, do not try to repair the equipment by yourself, nor allow any unauthorized person to fix. Contact the manufacture for assistance.

- As a safety measure, it is advised the use of a voltage stabilizer or UPS between the equipment and the line socket.
- This product should be operated from the type of power indicated on the power adaptor. If you are not sure of the type of power available, consult your dealer or local power company.
- The feeding line should be exclusive for the equipment, unless it is used for other compatible equipment and it should not overpass the maximum consumption of the line. Photocopy machines, electrical motors and any other high consumption equipment should be installed isolated from this equipment.
- If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.
- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 1. If the power cord or plug is damaged or frayed
 2. If liquid has been spilled into the product
 3. If the product has been exposed to rain or water
 4. If the product does not operate properly when the operating instructions are followed
 5. If the product has been dropped or the cabinet has been damaged
 6. If the product exhibits a distinct change in performance, indicating a need for service
- There is risk of electrical shock, even with the wire disconnected from the electrical network. Contact the Manufacture Service centers whenever necessary.
- Don't try to replace the lithium battery cell under any circumstances. There is risk of explosion if an incorrect type of lithium battery cell used. Dispose of used batteries according to the instructions.





COMPONENT PLACEMENT

The following is recommended when you plan the LC8700 setup:

- Place the LC8700 so that:
 1. The RESET button is accessible.
 2. The beeps from the speakers can be heard.
 3. The LED indicator on the front panel can be seen.
- Place the LC8700 above grill/counter level, out of the way of possible spills.

MOUNTING INSTRUCTIONS

1) TOOLS/MATERIALS REQUIRED

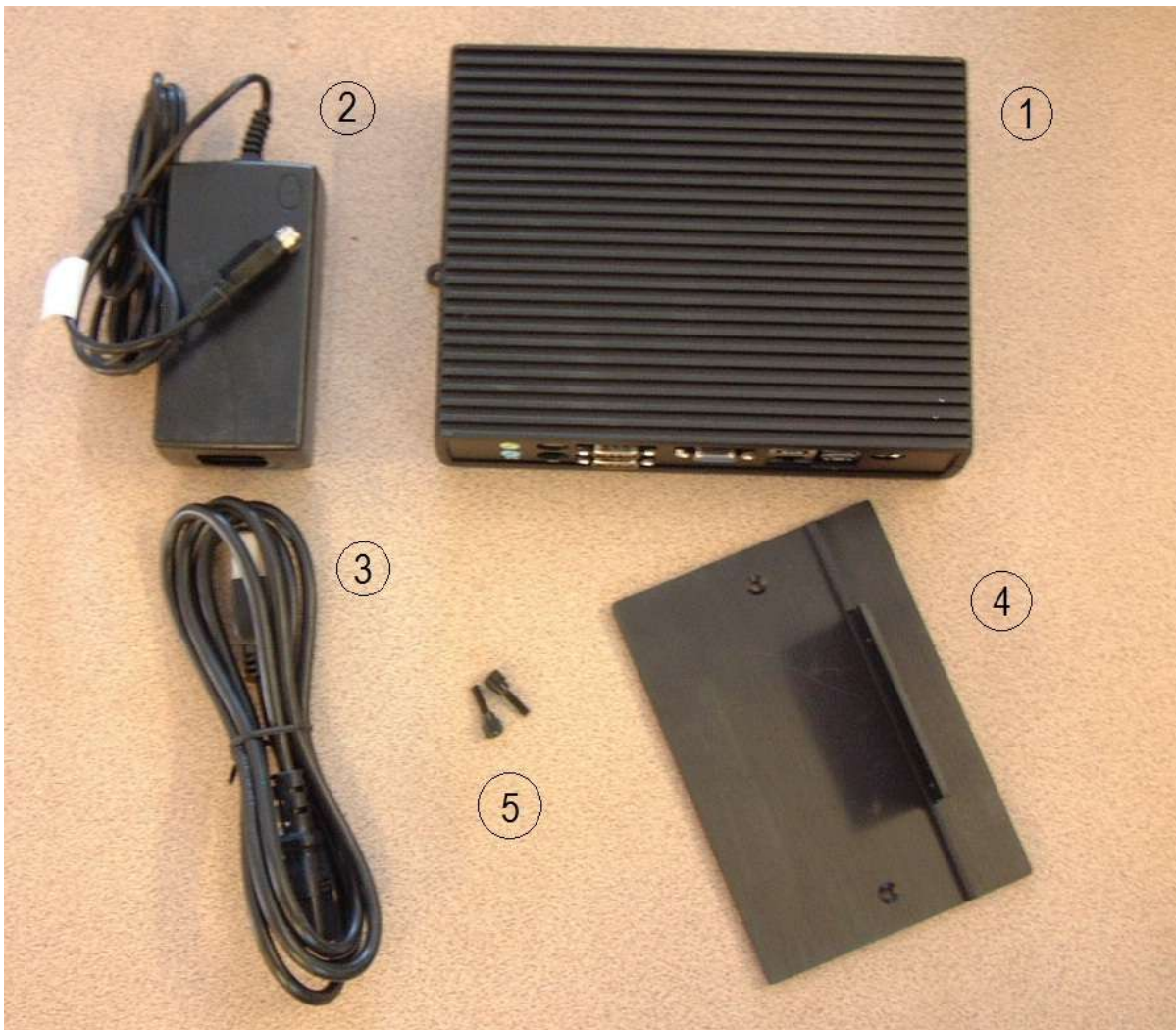
- Wood screws (2 pieces - 1/8" x 1" 1/2)
- Concrete wall anchors (2 pieces - 1/16" x 3/8")
- Measuring tape
- Electric drill with 5/16" and 3/8" Bits
- Phillips Screw driver
- Stud finder

2) PARTS

Parts included with the product package:

1. LC8700 set
2. AC – DC power adaptor
3. Power cord
4. Vertical mounting stand
5. Two screws

See the following picture.



Picture 1

3) DEVICE LOCATION

The place of installation should meet the following conditions:

- Have enough space for its operation and preventive and corrective maintenance.
- Advisably, the floor should not be wooden, in order to avoid electrostatic shocks on the equipment.
- Install the equipment in a stable place, with no vibrations. Do not install the equipment on a mobile table (with wheels).
- The video monitor should be placed strategically so that the lights of the room do not reflect the operator, disturbing the correct visibility of the screen.

4) ELECTRICAL & INSTALLATION REQUIREMENTS

Electrical requirements

It is the customer's responsibility to observe all governing codes and ordinances, and assure that the electrical installation is adequate and in conformance with National

Electrical Code:

ANSI/NFPA 70 — latest edition*, or CSA Standards

C22.1-94, Canadian Electrical Code, Part 1 and

C22.2 No.0-M91 - latest edition** and all local codes and ordinances.

Have an electrical network with a ground connection, with a three pin plug (2 poles and the ground) in order to be compatible with the cable of the equipment.

Check that the voltage selector is in the position corresponding to the electrical provision.

Electrical network power supply: 100–240 VAC~1.5A, 50/60 Hz

Before mounting the device, please make sure that:

Mounting brackets are provided to facilitate mounting the LC8700 to a wall.

Vertical mounting stand is used for mounting the LC8700 vertically on the counter top.

The installer should insure that the wall anchors used with the mounting brackets have the capacity to support 5.5 kg (12 lb.). This weight is determined by adding a safety

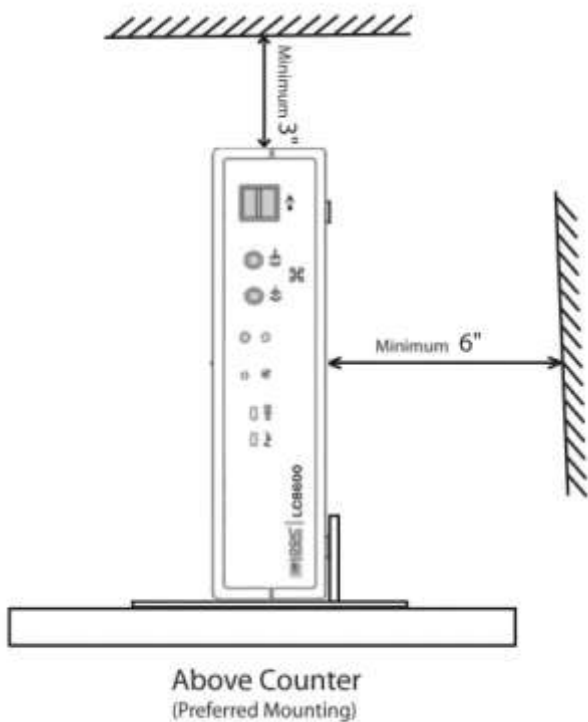
margin weight to the weight of the unit. Wall anchors with specified weight capacity are available commercially.

The power outlet socket is located near to the desired mounting location for the LC8700.

5) MOUNTING THE DEVICE

Mount the LC8700 vertically on with provided stand

Allow at least 3 inches of space from the top of the unit and 6 inches from the sides to allow proper ventilation. See the picture below:



Picture 2

- 1)** Drill the mounting stand on the counter top. This step is **OPTIONAL**, only for those who want the unit to be vertically fixed on a horizontal surface. **The stand is designed to provide stable balance to the unit.**



Picture 3

2) remove one mounting bracket from the LC8700



Picture 4

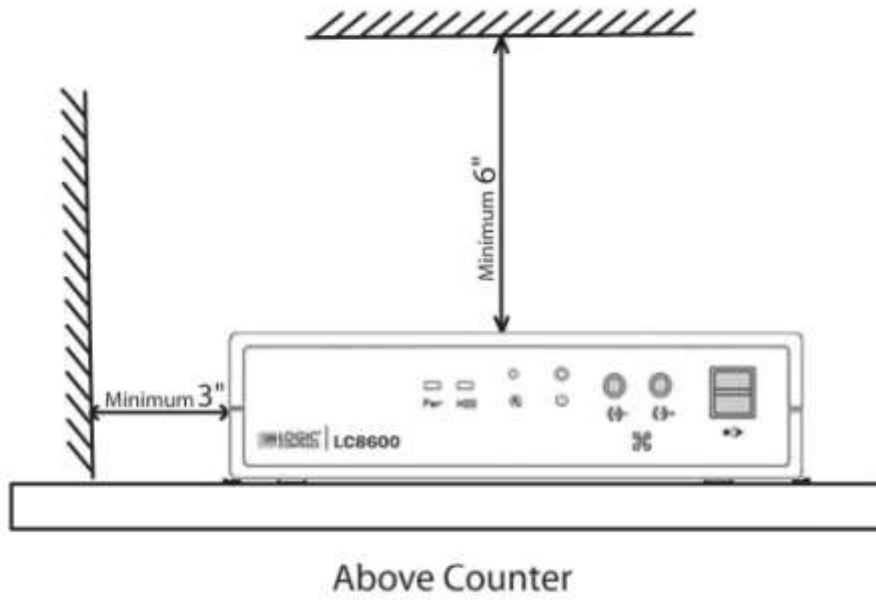
3) tighten the screws to mount the LC8700 on the vertical mounting stand



Picture 5

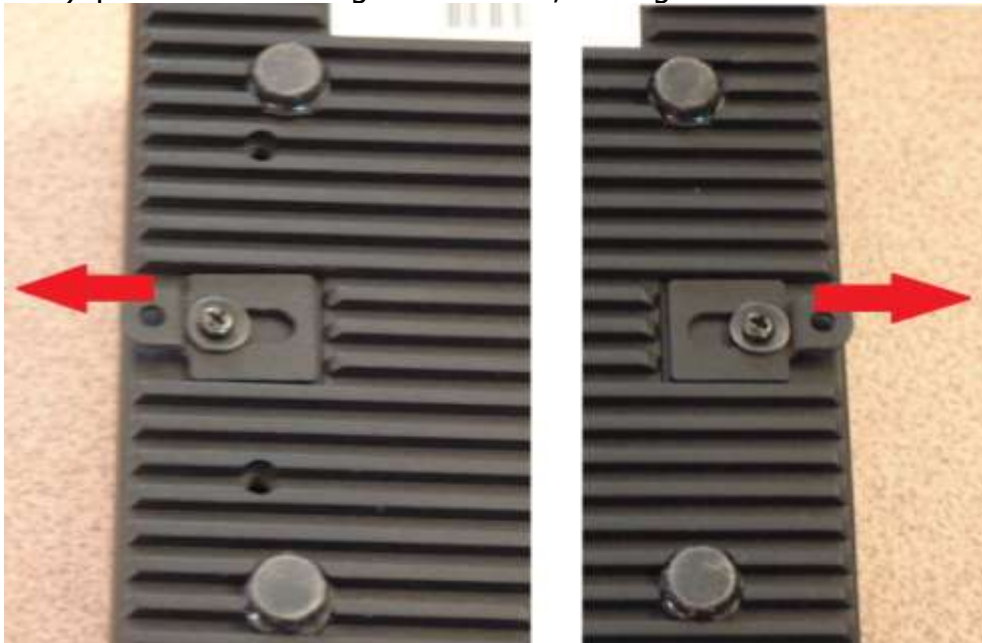
Mount the LC8700 horizontally with the mounting brackets

Allow at least 6 inches of space from the top of the unit and 3 inches from the sides to allow proper ventilation. See the picture below:

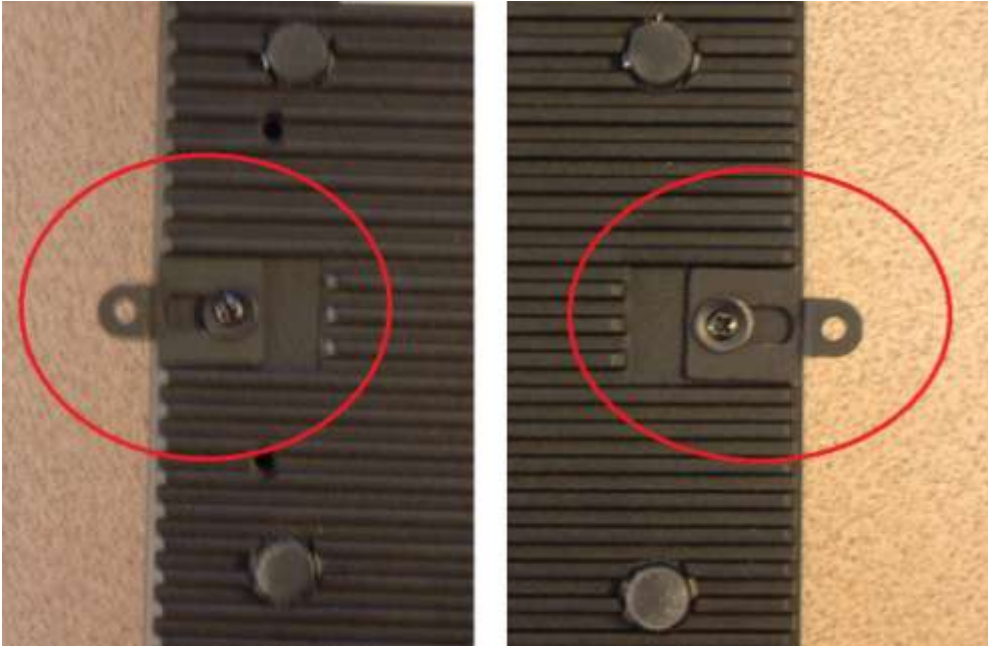


Picture 6

1) push two mounting brackets out, and tighten the screws

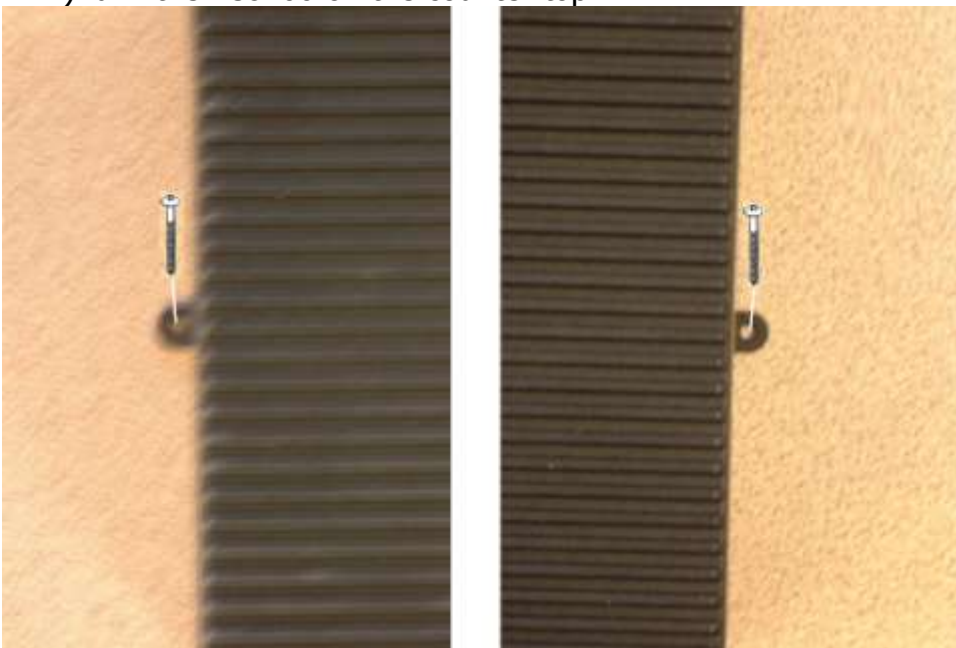


Picture 7



Picture 8

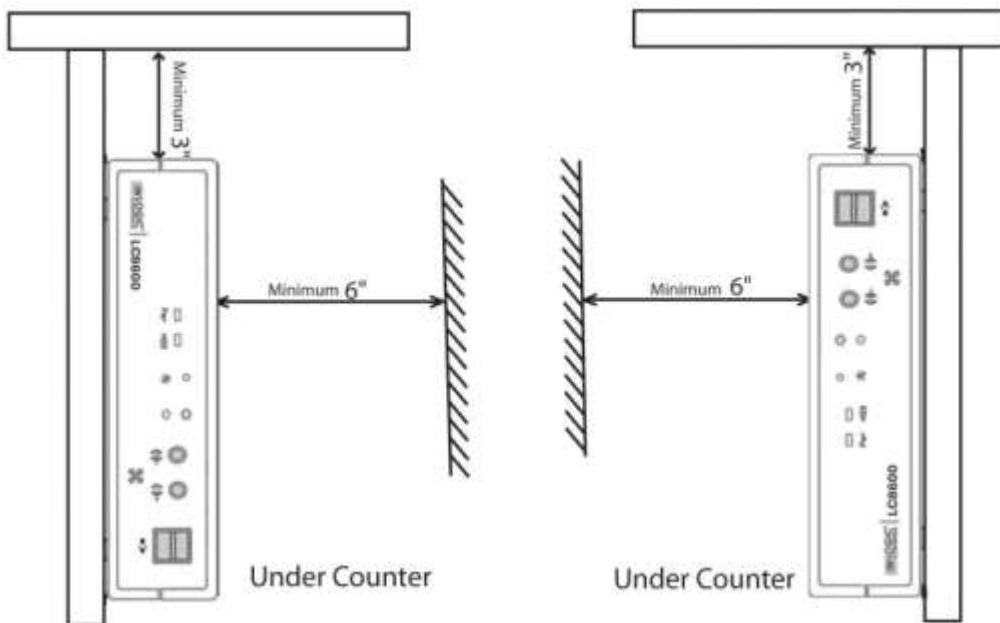
2) drill the LC8700 on the counter top



Picture 9

Mounting the LC8700 to the wall with the mounting brackets

Allow at least 3 inches of space from the top of the unit and 6 inches from the sides to allow proper ventilation. See the picture below:



1. push two mounting brackets out
 - See Picture 7 – 8.
2. drill the LC8700 on with wood screws (2 pieces - 1/8" x 1" 1/2)
 - See picture 9.

The screws must be driven on the wood studs if it is a dry wall.

Using concrete wall anchors (2 pieces - 1/16" x 3/8") if it is a concrete wall.

The LC8700 is a fanless and ventless unit and heat is dissipated through the metal case. So, allow at least 6 inches of space from the top of the unit and 3 inches from the sides to allow proper ventilation. It's recommended to mount the unit vertically to maximize ventilation effect. Vertical mounting stands are available from Bematech.

Connections and Turning on Power

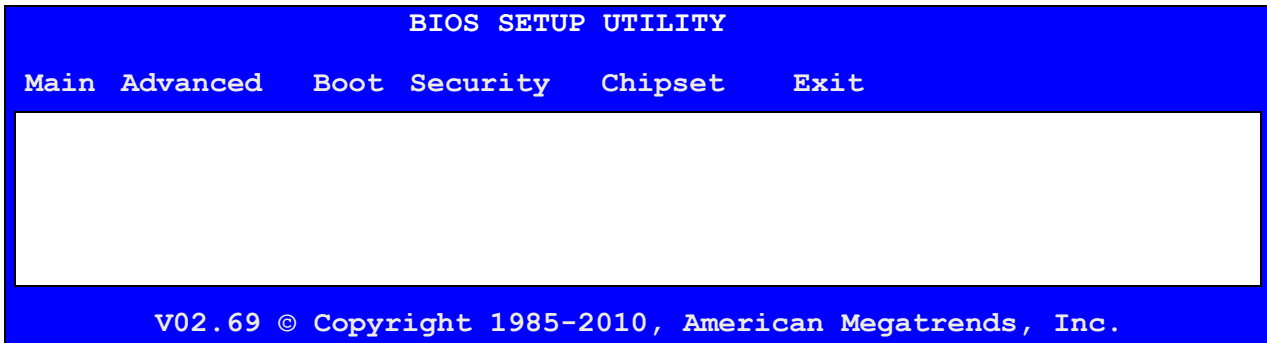
Make sure that all systems are powered off before making or removing any connections to the

LC8700 unit. Follow the steps below in connecting the devices:

1. Connect the VGA cable of the display monitor to the LC8700.
2. Connect the RS232 cables of serial devices to the LC8700.
3. Connect the parallel cable of parallel device to parallel port of LC8700.
4. Connect the PS/2 keyboard (or bump bar) and mouse to the LC8700. Note that the bump bar cable connector has connector locking feature to prevent connector from being pulled out by pulling the cable. When plugging in the connector, grab the connector at the end of the plug and push in tightly until it is fully snapped into the socket.
5. Connect the Ethernet cable from Ethernet hub or switch to the LC8700.
6. Connect other peripherals such as speakers and USB devices to the LC8700.
7. Connect power to all peripheral devices and turn on power.
8. Connect power adapter to the LC8700. Make sure that the flat side of power plug is oriented upwards. Reversing the orientation and forcefully plugging into the power socket will result in damage to the connector. (When unplugging power adapter from LC8700, do not pull the cable. The connector has a locking function that is released by holding the plug and pulling backwards. If the connector is forced out by pulling the cable, it may result in damage to the connector.)
9. Connect power cord to the power adapter and plug the power cord into AC power outlet. (The power adapter must be connected to the LC8700 first before it is connected to AC power outlet. Do not connect AC power before connecting to LC8700).
10. By default, the unit is set to turn on power automatically when power is connected. If it does not power up, press the on/off switch on the front panel to turn on power and check for correct CMOS configuration settings.
11. If the LC8700 had been shutdown from the operating system, it may be restarted by pressing the power on/off switch on the front panel of the LC8700. To turn off power to the unit, press and hold the power on/off switch for 5 seconds.

BIOS SETTING

Each time the LC8700 is powered on, it will run a self diagnostic and continue booting from storage media. BIOS settings are stored in a CMOS memory. To enter BIOS setup, as soon as you hear the system beep, just before LCI logo splash screen appears, quickly press the [Delete] key on the keyboard.



Use left and right arrows to select the setup menu. Use arrow keys to navigate to different menu items and press [Enter] to select menu. Use -/+ keys to change the field value or press [Enter] to go to sub screen. When configuration is finished, press [F10] key to save the settings and exit setup.

In most of the applications, parameters are detected automatically the default configuration will be suitable. There are only a few parameters that might need to be customized for some applications. Examples of such cases are shown below:

Boot Device Priority Sequence

To specify the boot sequence from available devices, enter the [Boot] menu. Then setup [Boot Device Priority] to choose the priority desired for the booting process (Hard Disk Drives or USB Drives); If more than one hard disk or more than one USB Drive go to [Hard Disk Drives] and [USB Drives].

I/O Configuration: Serial and Parallel Ports

To configure the serial ports go to [Advanced] menu. Select <SuperIO Configuration> and then you will be able to choose / change the address and IRQ for all the ports.

For Serial COM1 and Serial port COM2 it is possible to select the port Pin9 function:

- Ring (default)
- +5V
- +12V

Video Configuration

To configure the Video output, select [Chipset] in the main menu. Then select [North Bridge Configuration] and go to [Video Function Configuration].

1. The Option "Boot Display Device" allows you to select video output behavior during booting procedure (before OS takes over):
 - VBIOS-Default
 - CRT → VGA only
 - LVDS → output to DVI-I
 - CRT + LVDS → output to VGA/DVI-I
2. The Option "DVI Resolution Select" allows you to choose the maximum resolution for the DVI-I output

Networking booting

If you desire to enable your system to boot from a network go to [Chipset] in the main menu. Then select <South Bridge Configuration] and enable the option "LAN Option ROM".

Restore to Optimized Defaults

If the BIOS settings are accidentally changed and it's necessary to restore setting to the optimal default values, select menu [Load Optimized Defaults] and select [OK] on the confirmation dialog box. Then select [Save Changes and Exit] (or press [F10]) to save the changes.

TROUBLESHOOTING

There are no user serviceable components inside the LC8700. Service should be performed only by Bematech or qualified personnel certified by Bematech. The following guide lines will help in identifying the source of a problem:

VGA monitor display is blank

1. If the power LED on the monitor is off, check that the monitor is properly connected to its power supply and the power supply is properly plugged into a functioning AC outlet.
2. Adjust the contrast controls on the monitor display.
3. Check that the VGA cable is plugged in properly on both the monitor and the LC8700.
4. If the power LED on LC8700 is off, check that the LC8700 is properly connected to its power supply adapter and the power adapter is properly plugged into a functioning AC outlet.
5. If the LC8700 is connected to a power supply but the power LED is off, press the power button to turn on the unit. If it does not turn on, try replacing the power supply.
6. Replace the LC8700 if necessary.

VGA monitor display is blue or frozen

1. Reset the LC8700 and check the system information on the screen during boot up.
2. If unit reboots correctly, try running application again. If same problem occurs, try reinstalling the application software.
3. If unit cannot reboot correctly, try replacing the hard disk drive (or compact flash).

Station is not communicating with server Application

1. Check that the LC8700 s' IP addresses are correct and unique (no conflict) and the port number matches application software setup.
2. Check the Ethernet cable connections at the problem LC8700 s and at the Ethernet hub or switch.
3. Check that host server IP address matches the LC8700 IP address group. Try pinging one of the LC8700 IP address from the host.
4. Check host server application software setup. Restart software if necessary and test again.
5. Reboot the host server and test again.
6. Replace Ethernet hub or switch and test again.

LC8700 does not respond to keyboard commands

1. Check the keyboard cable connections at both the keyboard and the LC8700. Unplug the cable and re-insert fully. Check whether it snaps in correctly. Note that it's necessary to hold the back end of the PS2 connector near the cable exit and push in hard to get the locking connector into place.
2. Test with known good keyboard and cable. If it works, replace the cable and/or keyboard.

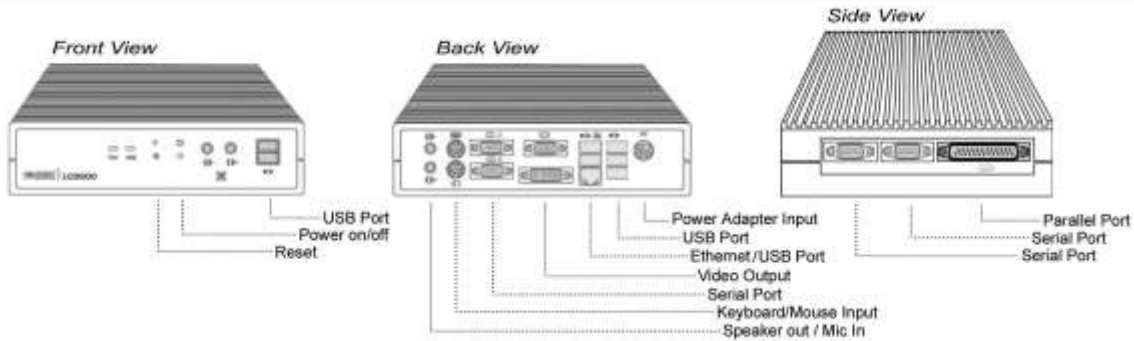
Attached RS-232 device is not working

1. Check that the device and LC8700 have power.
2. Check RS-232 connections at the device and LC8700.
3. Check whether baud rate and data format settings of application is matching with the device.
4. Attach the wrap plug to the device end of the RS-232 cable and run an RS232 port test program. If the test passes, replace the serial device. If the test fails, go to step 5.
5. Attach a wrap plug to the RS-232 port of the LC8700 and rerun the RS-232 loop test. If the test passes, replace the RS-232 cable. If the test fails, replace the LC8700.

LC8700 does not boot from internal compact flash

1. Check in BIOS setting whether the boot device priority is set to boot from the compact flash (note that the compact flash is installed as IDE hard disk drive).
2. Check if the operating system on the compact flash is corrupted. If so, try reinstalling the operating system or replace the compact flash.

SPECIFICATIONS



SYSTEM	
Processor	Intel Atom Processor N450 1.66GHz, 667MHz FSB, 512KB 8-way L2 Cache
Memory	Up to 2GB DDR2 SODIMM, support for DDR2 667MHz
Mass Storage	1 interface for Compact Flash Storage (50 pins) 2 SATA Controller with independent DMA option for both ports: Support SATA II; 15+7 pin SATA connector. Single channel integrated (IDE) controller (2.5" HDD). Supports Ultra ATA 100/66/33; Master and slave configuration selectable
Video	Up to 1400x1050 pixels (SXGA+); optional secondary DVI-I interface 1280x1024 (SXGA)
Network Interface	1 10/100/1000 Mbps interface Ethernet with standard RJ45 connector;
USB Port	7 USB 2.0 ports; 1 USB 2.0 with pin header in back side (terminal)
Serial Port	4 DB9 male ports with RS-232C port interface; full duplex; baud rate of 75 bps up to 128K bps; Power serial (pin 9) selected by BIOS (1&2) and jumper (3&4) and independent for each port. The following configurations should be possible: +12 V, +5 V, or Signal Ring
Parallel Port	1 interface with connector DB25 female in the left side (in the border)
Audio	Realtek high definition CODEC; double deck Jack on back side (one input for microphone and one output for speaker); onboard buzzer
Expansion slot	Support Mini-PCIE cards such as Wifi card
ELECTRICAL (External Switching Power Adapter -	
Input voltage	100 to 240VAC
Input frequency	50/60 Hz
Input current	~1.5A
Output voltage	+12VDC / 5.0A(+/-
15%) Ripple voltage	< 120mVp-p
MECHANICAL	
Weight	3.0lbs
Dimension (inches)	8.0W x 6.3D x 2.0H
Housing	Die Cast
ENVIRONMENT	
Operating temperature	5°C to 40°C
Relative humidity	8 to 80%, non-condensing
Storage temperature	0°C to 60°C
Relative humidity	5 to 80%, non-condensing
CONNECTORS	
VGA	Standard, DB15 male connector
DVI-I	Standard DVI-I connector
Keyboard & Mouse	PS2 mini-DIN6 female connectors
RS232	Standard DB9 male connectors
USB	Standard USB type-A connectors
Ethernet	RJ45 8-pin female connector
Audio	Speaker-out / Mic-in phone jacks
Parallel	Standard DB25 female connector
DC Power	Shielded snap lock mini-DIN with EMI/RFI suppression, 3-pin female connector