

LS8000

*Kitchen Display
Station Controller*

with Android™

USER MANUAL



NOTICE

The manufacturer of the kitchen video controller 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.

EUROPEAN COMMUNITY (CE) MARK OF CONFORMITY

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Bematech cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product. This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Warning:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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IMPORTANT SAFETY INSTRUCTIONS

Please read the following instructions carefully and save these instructions for future reference.

1. Follow all warnings and instructions for installation and operation of the product.
2. Unplug this product from the wall outlet before cleaning. Use only mild cleaning agents and do not immerse in water.
3. Do not use this product near water.
4. 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.
5. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
6. 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.
7. We recommend all servicing done on this product be done by qualified service personnel. Aside from upgrades or swapping out the compact flash please refer all other servicing to the Bematech RMA Dept or a repair provider that has been certified by Bematech.
8. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a) When the power cord or plug is damaged or frayed
 - b) If liquid has been spilled into the product
 - c) If the product has been exposed to rain or water
 - d) If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal condition.
 - e) If the product has been dropped or the cabinet has been damaged
 - f) If the product exhibits a distinct change in performance, indicating a need for service.

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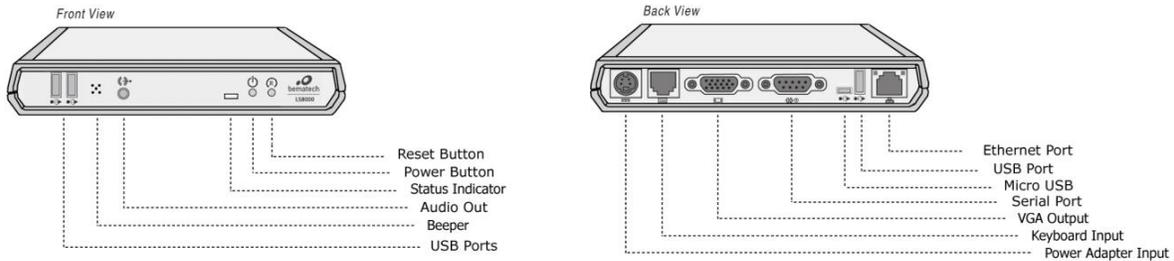
FEATURES

The LS8000 is an advanced compact kitchen display station controller with Android operating system. The controller is designed and manufactured for reliable uninterrupted operations in the harsh kitchen environment. The LS8000 supports legacy peripherals such as the Bematech industrial standard PS2 bumpbars, VGA monitors and Bematech touch monitors. The robust unit continues to be one of the most cost effective and reliable KDS hardware on the market with heavy-duty die cast case, snap-to-lock connectors, low power, no moving mechanical parts and no internal cables.

- Efficient Dual-core Processor
- Android operating System
- Durable die cast housing
- Compact 1.0" x 6.3" x 5.1" (25mm x 160mm x 130mm) form factor
- Highly reliable, rugged and fanless operation
- I/O ports to connect bump bar, serial printer, VGA monitor or touch screen monitor
- Simple to install, maintain and update
- Low power operation, low internal temperature rise
- No mechanical moving parts
- Reliable latched interface connections
- Flexible Mounting: Table Mount, Wall Mount, Display Bracket Mount, and Under-the-Counter Mount
- Universal input (100 to 240VAC, 47 to 63Hz) switching power supply

PRODUCT DESCRIPTION

A typical system consists of a host server or POS terminals where the POS application software is installed and a number of LS8000 kitchen station units. Each LS8000 unit can be connected to a VGA monitor, PS/2 or USB keyboard, serial interface and USB interface devices. KDS application installed on the LS8000 communicates with POS software or KDS router via Ethernet to display kitchen orders on VGA monitor and control operation of the station with bumpbar or touch monitor.



Speaker/Beeper

The beeper function is controlled by the software applications, including pitch and duration.

Keyboard

An RJ-11 to PS2 adapter will connect the LS8000 to a standard PS/2 interface device such as a keyboard. The Bematech KB1700/KB9000 bumpbars can be directly connected to RJ11 connector of LS8000. These Bematech industry standard bumpbars are specially designed for use in the kitchen. Refer to the KB1700/KB9000 manual for more information on the bumpbars.

Displays

LS8000 supports standard color VGA LCD displays with a standard 15-pin DSUB VGA connector. Maximum resolution is 1920x1080.

RS232 Devices

The RS232 port on the LS8000 supports connections to serial printers, barcode scanners, and other serial interface I/O devices. Pin 9 of the connector supports optional +5VDC output.

Power Requirements

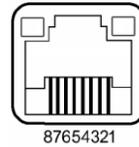
The power supply accepts a wide input range that does not require intervention to change between low and high voltage AC. Operation at any voltage within these ranges will meet the output requirements and will not cause damage to the power supply. The power supply output is connected to the LS8000 with locking connectors. To disconnect, grab the connector barrel and pull back to release the lock.

Nominal Voltage: 100–240 V AC
Voltage Variation: 90–265 V AC
Frequency: 47–63 Hz

CONNECTOR PINOUTS

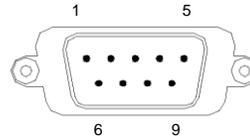
Ethernet interface (8 pin RJ45 connector with 2 LED indicators)

- 1 TX-
- 2 TX+
- 3 RX-
- 6 RX+



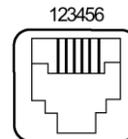
RS-232 interface (9 pin DSUB male connector)

- 1 DCD
- 2 RX
- 3 TX
- 4 DTR
- 5 GND
- 6 DSR
- 7 RTS
- 8 CTS
- 9 5V Power output (optional)



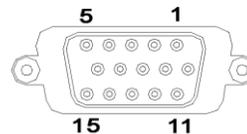
Keyboard interface (6 pin RJ-11 connector)

- 1 CLK
- 2 DATA
- 3 No connection
- 4 Signal GND
- 5 +5 V DC
- 6 No connection



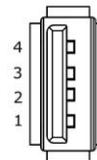
VGA interface (15 pin DSUB female connector)

- 1 Red
- 2 Green
- 3 Blue
- 5,6,7,8 & 10 GND
- 13 H-Sync
- 14 V-Sync



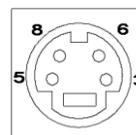
USB (4 pin USB type A connector)

- 1 V+
- 2 D-
- 3 D+
- 4 GND

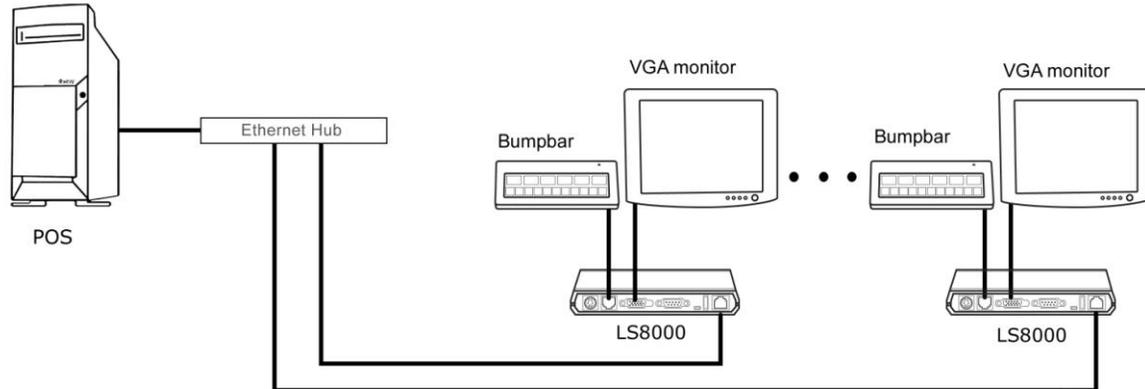


DC Power (Shielded snap lock mini-DIN connector)

- 5 +5 V DC
- 8 +5 V DC
- 3 GND
- 6 GND



HARDWARE INSTALLATION



Component Placement

The following is recommended when you plan the Logic Net setup:

- Place the LS8000 so that you can use the mounting brackets located at the bottom of the unit.
- Place the LS8000 so that the RESET button is accessible.
- Place the LS8000 so that the beeps from the speakers can be heard.
- Place the LS8000 so that the LED indicator on the front panel can be seen.
- Place the LS8000 above grill/counter level, out of the way of possible spills.

Mounting Instructions

Mounting brackets are provided to facilitate mounting the LS8000 to a wall, ceiling or display monitor mounting arm. The installer should insure that the wall anchors used with the mounting brackets have the capacity to support 4.3 kg (9.5 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.

Connections

Make sure that all systems are powered off before making or removing any connections to the LS8000 unit. Follow the steps below in connecting the devices:

1. Connect the VGA cable of the display monitor to the LS8000.
2. Connect the RS232 cable of serial devices to the LS8000.
3. Connect the keyboard device to the LS8000.
4. Connect the Ethernet cable from Ethernet hub or switch to the LS8000.
5. Connect power to all peripheral devices and turn on power.
6. Connect power adapter to the LS8000 and power cord to the power adapter.
7. Plug the power cord into AC power outlet.
8. If necessary, reset the LS8000 by pressing the reset button.

HARDWARE SETUP

Ethernet

The LS8000 KDS station communicates with POS stations or KDS router through Ethernet connection. The POS or KDS software would most likely work with the KDS station with static IP. To set up static IP for LS8000, follow steps below.

1. Click on Apps icon.
2. Click on "Settings" app.
3. Under "WIRELESS & NETWORKS", click "More..."
4. Click "Ethernet" and then click "Static IP Settings"
5. Click "Use Static IP". The check box should be checked.
6. Click "IP address", "Gateway" and "Netmask" correspondingly to set up the parameters according to requirements of network. Make sure that the IP address matches the setup in the POS or KDS software.

Display

The LS8000 KDS station can be connected to a variety of display monitors with standard VGA connection. To set up the VGA video output format to match the monitor connected, follow steps below.

1. Click on Apps icon.
2. Click on "Settings" app.
3. Click "Display" on the menu items.
4. Click "VGA Resolution".
5. Click on the desired video format.

APP INSTALLATION

To install an application such as KDS app, follow steps below.

1. Copy APK file of the app into a flash drive.
2. Plug the flash drive into one of the USB ports of LS8000.
3. Click on Apps icon.
4. Click on "Explorer" app
5. Click "USB Storage".
6. Browse and click the application APK file to start the installation.

TROUBLE SHOOTING

There are no user serviceable components inside the LS8000. 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. Check that the monitor and LS8000 power supplies are plugged into functioning AC outlets.
2. Adjust the contrast controls.
3. Check that the VGA cable is plugged in properly.
4. Check that the LS8000 is properly connected to its power supply adapter.
5. If the LS8000 is connected to a power supply but the power LED is off, replace the power supply.
6. Press the RESET button on the LS8000 to check whether boot up screen is displayed.
7. Replace the LS8000 if necessary.

One VGA monitor display is not showing kitchen orders

1. Reset the LS8000 and check that the LS8000 IP address is correct and unique.
2. Check the Ethernet cable connections at the LS8000 and at the Ethernet hub or switch.
3. Check POS and/or KDS router application software setup. Restart software if necessary and test again.

Two or more (but not all) station displays are not showing kitchen orders

1. Reset the LS8000s at the stations experiencing problems and check that the LS8000s' IP addresses are correct and unique.
2. Check the Ethernet cable connections at the problem LS8000s and at the Ethernet hub or switch.
3. Check POS and/or KDS router application software setup. Restart software if necessary and test again.

All station displays are not showing kitchen orders

1. Check that the Ethernet hub or switch is connected to the host server properly.
2. Check that POS stations or KDS router IP address matches the LS8000 IP address group.
3. Check POS stations and/or KDS router application software IP address and socket number setup. Restart software if necessary and test again.
4. Reboot POS stations and/or KDS router and test again.
5. Replace Ethernet hub or switch and test again.

LS8000 does not respond to keyboard commands

1. Check the keyboard cable connections at both the keyboard and the LS8000. Unplug the cable and re-insert fully. Check whether it snaps in correctly.
2. Test with known good keyboard and cable. If it fails, replace the LS8000.

Attached RS-232 device is not working

1. Check that the device and LS8000 have power.
2. Check serial cable connections and verify pin out of cable is correct for the device.
3. Check that serial protocol settings are matching between application software and serial device.

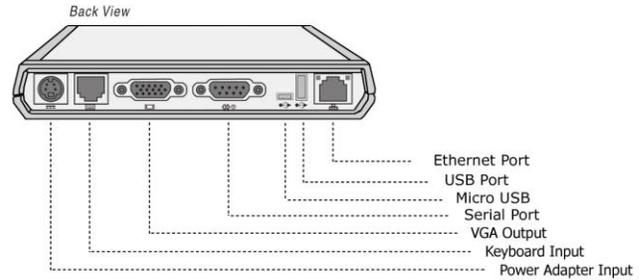
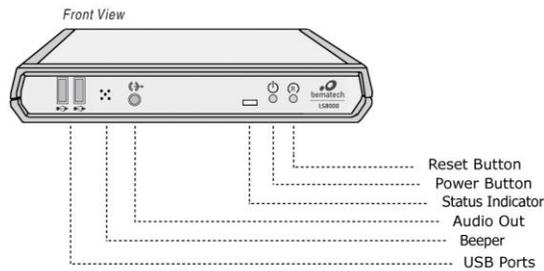
SOFTWARE DEVELOPMENT

The LS8000 is installed with Android operating system. A KDS app will need to be developed and installed in the LS8000 to function as Kitchen Display Controller.

For Android app development details, please refer to the official Android developer web site <http://developer.android.com>.

The LS8000 is equipped with a micro USB connector for connecting to host computer to facilitate app development and debugging.

SPECIFICATIONS



SYSTEM

CPU	PX2 dual core, 1.4GHz
System memory	1GB
Mass storage	eMMC 8GB
Operating System	Android 4.4.2

I/O PORTS

Bumpbar/Keyboard	PS/2 (RJ11 6-pin connector)
Video	DB15 VGA, 1920X1080 max
Serial ports	RS232 (DB9 connector) Optional +5V power at pin 9
Network Interface	10/100 Mbits Ethernet
USB 2.0 Type A	2 at front panel 1 at back panel
Micro USB	Host connection (for Android app development)
Audio	Audio out & mic in (phone jack) Internal buzzer

ELECTRICAL (power adapter)

Input voltage	100 to 240VAC, 47 to 63Hz
Input current	0.6A max @ 120VAC
Output voltage	+5VDC
Output current	2A max
Connector	4 pin mini-DIN latched

MECHANICAL

Weight	2.2lbs (1.02Kg)
Dimension (W x H x D)	6.3" x 1.0" x 5.1" (161mm x 26mm x 130mm)
Housing	Die cast

ENVIRONMENT

Operating temperature	5°C to 40°C
Operating relative humidity	8% to 80%
Storage temperature	0°C to 60°C
Storage relative humidity	5% to 85%

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