K5EXT300

**300m Extender for USB and PS/2 Keyboard,
USB and PS/2 Mouse, VGA, Serial RS232,
Audio and Microphone over Cat 5 UTP cable**

User Manual

Date: 7/20/2007
Version : 130

About this manual

This User Guide is the complete reference to the KLE, its functional features and usage. The Complete User Guide could be found only on the KLE Support CD-ROM disc.

FCC Statement

> This equipment has been tested and found to comply with the regulations for a Class B 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 installed and used in accordance with this User Guide, 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/her own expense.

CE Statement

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

FC CE

Technical Support

Telephone: 331 4590 6270
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Introduction

Advantages and Features

K5EXT300 is a new KVM extender technology that utilizes CAT5 media technology to extend your console up to 300m/1000ft away. It allows you to locate your server physically far back from the user due to security or spatial concerns. It is especially useful for setting up a highly flexible computer/user topology over a long distance, either over an exhibition room, work floor, security room, locked server room, or other mission-critical scenarios. This advanced KVM extender not only extends your keyboard, monitor and mouse, but also serial port, audio speakers and microphone on a single CAT 5 UTP cable, with satisfying video quality and audio output.

K5EXT300 comprises two disparate units - **K5LC** and **K5CMLC**. K5LC is the local console unit, i.e., the receiver on one end of the UTP cable. K5CMLC is the computer module with local console, i.e. the transmitter on the other end of the UTP cable. However, K5CMLC also provides a local console, so that users can also access the computer at the local end, in addition to the remote end on K5LC.

The firmware can be upgraded whenever is needed to enhance compatibility or functionality. For the flash upgrade procedure, please refer to the *Flash Upgrade Operation Guide* provided with the new version of firmware upgrade file.

K5CMLC – Computer Module w/ Local Console

K5LC – Local Console

Package Contents

Please check whether you have all the following items within the packaging box:

☑ K5CMLC (Computer Module w/ Local Console – Console 1) x 1
☑ K5LC (Remote Console – Console 2) x 1
☑ Slim 3-in-1 PS/2 KVM Cable x 1
☑ USB Cable (TypeA - TypeB) x 1
☑ Audio & Mic Combo Cable x 1
☑ Power Adapters (DC9V 1.7A) x 2
☑ This Quick Installation Guide x 1
☑ The User Guide (electronic version, found only within the Support CDROM)
☑ Support CDROM x 1

Front-panel and Rear Panel Views

The back panels are where the various connectors are located on the two pieces of K5EXT300. Before you connect these two units to any computer, cabling or peripherals, you should get a glimpse of the main connectors you are going to encounter when setting up the system

K5LC – Remote Console Unit (300m away from computer)

K5LC - Backpanel

1. Power receptacle (DC9V 1A)
2. USB port [only for firmware upgrade use]
3. RS-232 port for serial extension
4. Monitor port [HDB15]
5. PS/2 keyboard port
6. PS/2 mouse port
7. USB mouse port
8. USB keyboard port
9. Audio receptacle
10. Mic receptacle
11. CAT5 Extension Port [RJ-45, connect to a CAT5 UTP cable, 300m max.]

K5CMLC – Computer Module with Local Console (Connected to the computer)

K5CMCL - Backpanel

[Computer Connections]
a. Power receptacle (DC9V 1A)
b. RS-232 port for serial extension
c. PC/KVM port for computer connection (integrated with keyboard, mouse and video interface)
d. Audio output port
e. Mic input port
f. USB interface for computer connection [for USB keyboard and mouse connection]

[Console Connections]
g. Monitor port [HDB15]
h. PS/2 mouse port
i. PS/2 keyboard port
j. USB mouse port
k. USB keyboard port
l. Audio receptacle
m. Mic receptacle
n. CAT5 Extension Port [RJ-45, connect to a CAT5 UTP cable, 300m max.]

Installing the Extender

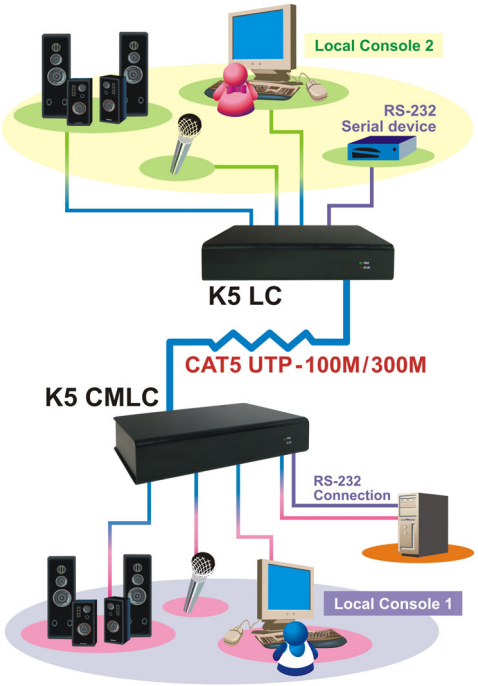
Before you install the two pieces of K5EXT300, you should have these items on the checklist ready:

1. The computer for extension should be one with either PS/2 or USB interfaces.
2. You should check the display mode of the computer to be within 1600 x 1200 pixel dimension. And refresh rate to be one that is more commonly used such as 60Hz, etc.
3. Since the CAT5 KVM extender supports only standard 5-key mouse and keyboard, any more advanced mouse/keyboard function will not be supported by CAT5 extension.
4. Use good quality UTP cable (max. 300m/1000ft). Note that good quality cable will give better video outcome with longer distance span.
5. Any cabling distance longer than 300m/1000ft will experience more signal degradation with longer span. However, good quality cable can reach out farer away.
6. The choice of path of the CAT5 UTP cable should not only take into account the shortest possible path, but also one that is relatively farer away from any significant electromagnetic interference source.
7. Prepare one or two sets of keyboard, mouse, monitor, mic and speakers - one set for console 1 and the other set for console 2.
8. There should be power outlets near where you locate the extenders.

Plan the layout path and deploy the UTP cable for extension

Step 1. Plan the path through which the UTP cable will be deployed across the distance between the K5LC and K5CMLC. You should choose the layout path not only base on shortest possible length consideration, but also on least electromagnetic interference.

Step 2. Lay out the UTP cable according to your planned path.



Configure the K5CMLC (Local)

Step 3. Connect one end of the UTP cable to the CAT5 Extension port of the K5CMLC. (Connector n)

Step 4. Connect the power adapter to the K5CMLC to power it up before connecting any computer or cables to it. (connector a)

Step 5. Connect the K5CMLC to the computer, using the Slim 3-in-1 PS/2 KVM cable (connector c) and/or the USB cable (connector f). (Note that if you need to connect with the USB interface, you should connect the USB cable to the computer since the Slim 3-in-1 PS/2 KVM cable supports only the PS/2 interface.)

Step 6. Set up Console 1: Connect a set of keyboard, mouse, monitor as well as a set of speakers and microphone to the K5CMLC Console ports (connectors g, h, I, I, k, l, m).

Step 7. Power on the computer, and check the keyboard, mouse, video and audio output and mic input on Local Console 1 to see if it works fine. If should work fine before you proceed to next steps.

Configure the K5LC (Console2)

Step 8. Connect the other end of the UTP cable to the CAT5 Extension port of the K5LC (connector 11).

Step 9. Connect the power adapter to the K5LC (connector 1) to power it up before connecting any devices to it.

Step 10. Set up Console 2: Connect a set of keyboard, mouse, monitor (connector 4, 5, 6, 7, 8) as well as a set of speakers and microphone (connector 9, 10) to the K5LC Console ports. If serial extension is used, you may also connect a serial device to the serial port (connector 3).

Step 11. Check the keyboard, mouse, video, audio output and mic input on the Local Console 2 to see if it works fine. At this time, the video might be blurred since it is not yet adjusted and optimized.

Step 12. Adjust the video parameters to optimize the display output (Refer to OSD Menu/Video page for details).

Using the OSD Menu

The CAT5 KVM Extender provides intuitive OSD Menus facilitate control and setup operations. Users can set up the video, audio, serial extensions as well as password protection, auto logout, etc.

To open the OSD Menu, hit the following keyboard hotkeys:

Hotkey sequence = [ScrLk]* + [ScrLk]* + *Space*

* User-configurable from among SCROLL LOCK, CAPS, ESC, F12 or NUM LOCK

Changing the Hotkeys

The hotkey is default to ScrLk + ScrLk. To change the hotkeys go to the OSD System page and select any one of the five alternatives - SCROLL LOCK, CAPS, ESC, F12 or NUM LOCK.

Each keystroke within a hotkey sequence should be pressed within 2 seconds. Otherwise, the hotkey sequence will not be validated.

Navigating into the OSD Menu

Esc: Exit,

← → Left/Right cursor: change value in the menu option

↑ ↓ Up/Down Cursor: Select the option item.

F1: go to Main Menu

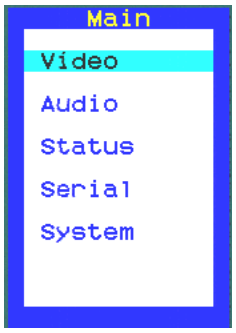
F9: Logout the OSD Menu (However, if the password protection is not enabled, the Logout feature will not be available

TAB: Go to the next setting page.

These keys are listed explicitly on every OSD setting page for your ready reference.

OSD Menu/Main page

This is the Main Menu of the OSD Menu Control and it is also the first page you will see when you hit the keyboard hotkeys - **Scrlk + Scrlk + Space** - to open the OSD Menu. From the Main Menu, you can go to the Video Page, Status Page, Serial page and System page. Highlight the page name and hit <Enter>.

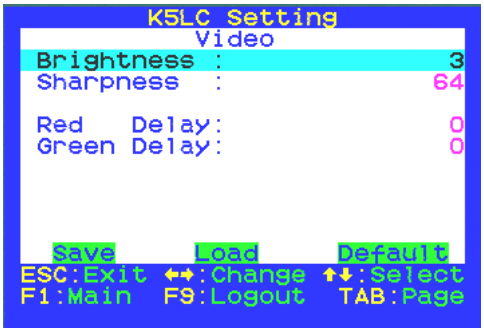


OSD Menu/Video Page

The Video page allows you to adjust the video parameters such as brightness, sharpness, Red Delay and Green Delay. The ranges of adjustment of these parameters are

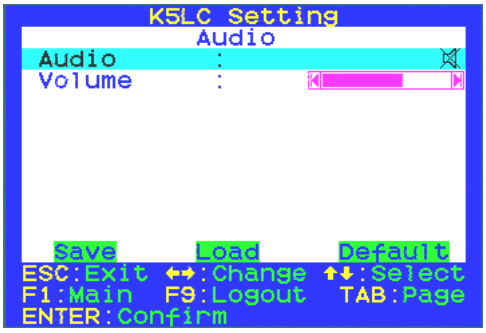
Brightness: **0 ~ 64**
Sharpness: **0 ~ 64**
Red Delay/Blue: **-31 ~ +31**
Green Delay/Blue: **-31 ~ +31**

In order to achieve optimized video output on the remote console (K5LC), you must adjust these four parameters. For details, please refer to next section, *Optimize the Video Display on the Remote Console*.



OSD Menu/Audio Page

The *Audio* page allows you to toggle the audio ON/OFF, and to adjust the volume of the sound output on the K5LC unit.



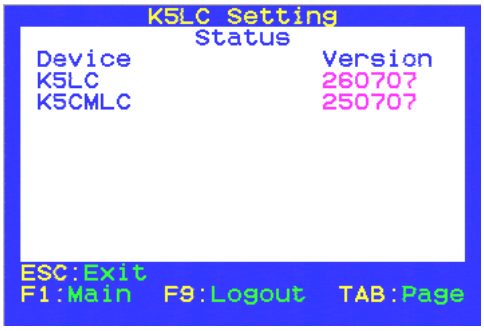
Audio: toggle On/Off the sound output on the remote console.
Volume: adjust sound volume output on the remote console

To achieve an optimized audio output on the remote console, you might need to adhere to the following guideline:

1. **Adjust the computer volume the highest level that does not saturate K5CMLC input**
   To do that, play some good music on the computer and hear it from K5LC. Starting from zero, increase the computer volume. As soon as saturation appears (this distortion phenomenon is very easy to notice), diminish slightly the computer level. This will give the audio signal the best amplitude for digitalization. If the volume output is too small, adjusting the volume on K5LC will not help to give good sound amplitude.
2. **Adjust the sound volume output on K5LC at you convenience**
   Use the slide bar on the OSD menu (Audio page/ Volume) or hot keys: Scrlk + Scrlk + ↑ and Scrlk + Scrlk + ↓

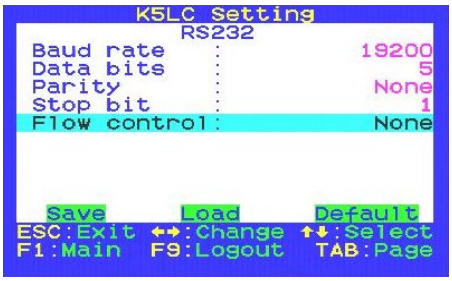
OSD Menu/Status Page

The *Status* page displays the firmware versioning information of the K5LC and the K5CMLC. The versioning number is actually a date code, which has the form of DDMMYY.



OSD Menu/Serial Page

The *Serial* page allows you to set up the serial connection extension. It must correspond to the computer settings. You must configure the baud rate, the number of data bits, the parity type, the stop bit width and the flow control method.

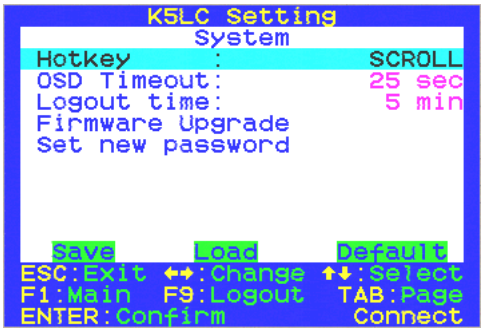


The ranges of adjustment of these parameters are

Baud Rate: **300, 1200, 2400, 4800, 9600, 19200**
Data bits: **5, 6, 7, 8**
Parity: **None, Odd, Even**
Stop bits: **1, 2**
Flow Control: **None, Hardware, Xon/Xoff**

OSD Menu/System Page

The *System* page allows you to set the hotkey, the OSD timeout, the Logout time, the password and to toggle the extender into the Firmware Upgrade mode.



Hotkey: select the hotkey from among: Scroll; Cap; Num; F12; Esc

OSD Timeout: Disable / Enable the OSD timeout (5~30 sec)

Logout Time: Disable / Enable the Logout timeout (1~30min)

Firmware Upgrade: Enter into firmware upgrade mode

Set the new password: Set up new password

To set up a new password, first type in the old password and then type and retype to confirm your new password.

Save, Load and Load Default

Users can save the current configuration of the CAT5 KVM extender into the unit itself, only for later upload in case they need to restore the previously saved configuration.

Save: To save the current configuration, highlight *Save* into the System page and press <Enter>.

Load: To load the previously saved configuration, highlight Load into the System page and press <Enter>. A prompt appears to caution you for an overwrite on the current settings. Highlight Yes and press <Enter>.

Default: To restore the settings to factory default, highlight Default into the System page and press <Enter>. A prompt to caution you for an overwrite on the current settings. Highlight Yes and press <Enter>.

Optimizing the Video Display on the Remote Console

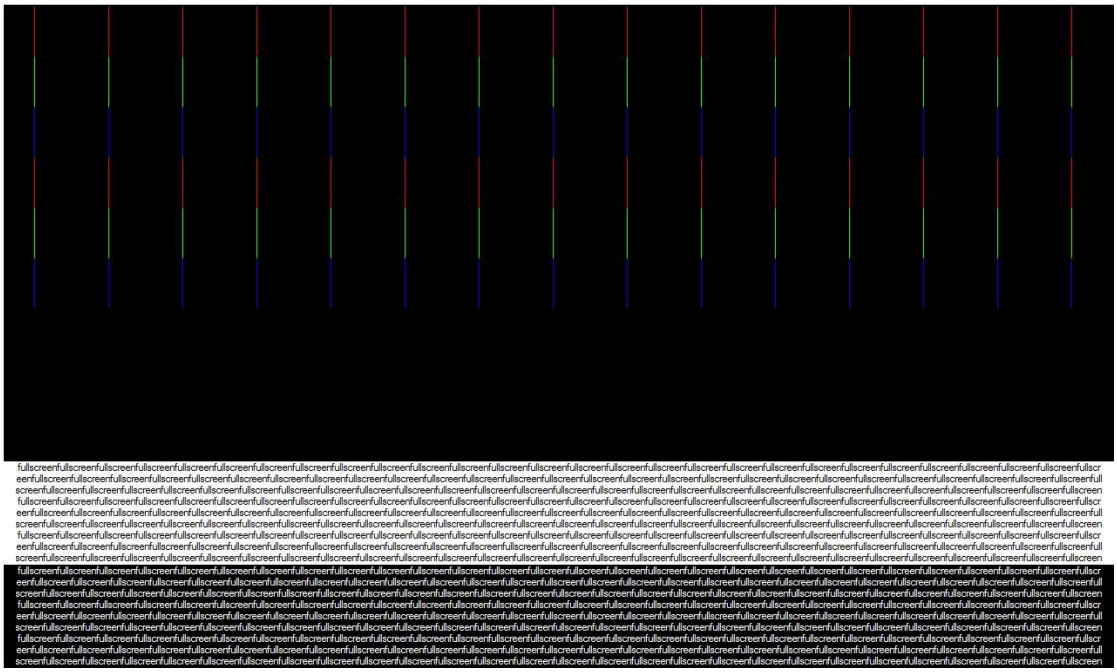
To achieve an optimized display output on the remote console (i.e. the K5LC) will require you to conscientiously adjust the various video parameters such as Brightness, Sharpness, Red Delay and Green Delay in an optimized combination that could most satisfy your visual requirements.

Please follow the procedure below to achieve an optimized display output on your remote console screen (on K5LC):

I. Run the Screen Test program

To facilitate the video adjustment, we provide ScreenTest.exe, a program to serve as a visual reference for easier adjustment. ScreenTest.exe runs on Windows OS. On other OS, use a simple text page.

Find ScreenTest.exe in your Support CDROM. Either you can copy it to your desktop or you can run it directly from the CDROM. ScreenTest.exe displays a full screen image as below:



II. Adjust Brightness and Sharpness

Open the OSD Video page. Brightness and Sharpness adjustments depend on the cable length. With cables below 20 meters, there is almost no need for any adjustment. The longer is the cable, the more you will have to increase Brightness to compensate for the attenuation and Sharpness to compensate for the bandwidth decreasing.

After you have adjusted Brightness and Sharpness to achieve a passable situation, you can temporarily leave them there and try to work on Red Delay and Green Delay so that you can see a cleaner picture for further fine-tuning. Maybe be you will have to come back to Brightness and Sharpness after that.

III. Adjust the Red Delay and Green Delay

Red, Green and Blue are the primary colors that constitute the VGA signal. Depending on the cable quality, these three colors may need slightly different times to travel from K5CMLC to K5LC. This phenomenon does not appear with short cables or very good cables. K5LC allows you to adjust the R, G and B transmission times to compensate for these transmission delay differences.

On K5LC, the Blue signal is taken for reference. The Red and Green signals can be advanced or delayed by entering negative or positive values in the range of -31 to +31. Observe the RED-GREEN-BLUE vertical lines and adjust Red Delay and Green Delay so that the three colors are perfectly aligned. On other OS, observe a simple vertical black line. It must be perfectly black with no color appearing on the edges.