

# Firmware Upgrade Notice

17 October 2008

## Description

A beta version of a new firmware release (v2.0) for CATx USB Local & Remote Units is now available. This revision adds several new features.

The firmware may be downloaded from: <http://blackbox.kvmextender.info>

All extender products have a version number label on the base in the following format:

**xxSyy/zz** where **xx** = Hardware Version, **yy** = Firmware Version & **zz** = Daughterboard Version

## Local Units Affected

### For the following products this release version is known as 2.0

- Current Production Firmware Version: 1.2A (Released June 2008)
- New Beta Firmware Version: 2.0

**ACU6001A, ACU6201A, ACU6022A, ACU6222A**

## Remote Units Affected

### For the following products this release version is known as 2.0

- Current Production Firmware Version: 1.1 (Released June 2008)
- New Beta Firmware Version: 2.0

**ACU6001A, ACU6201A, ACU6022A, ACU6222A**

## Enhanced Keyboard & Mouse Support

In previous releases only basic USB keyboards and mice were supported. In v2.0 the HID parser has been extended to handle newer laser mice and combination wireless KB/Mouse devices that often use 'non-standard' report formats.

The firmware has been structured to enable support to be easily added for any 'quirky' devices discovered in the future.

Support has also been added for mouse pan/tilt (horizontal scrolling) for those operating systems that support it within their native HID drivers (e.g. Vista).

## Generic HID Device Support

Previously only KB and mouse type devices (including bar code scanners) were supported. Additional keys on multi-media keyboards could be handled through a Remote Unit command: <Left Control> + <F4>.

In this firmware release a wider range of generic HID devices is supported subject to certain restrictions.

**Firmware v2.0 now supports almost any HID device which only sends data to the CPU, and does not require a vendor driver (i.e. it uses the HID drivers of the operating system).**

Supported generic devices include additional keys on multi-media keyboards, basic joysticks, and some touch screens (basic mode).

Up to four generic devices (in addition to the KB & mouse) may be connected.

To handle these devices you need to register them (once only) as follows:

1. Connect all the generic HID devices (e.g. a joystick, or KB with multimedia keys) you wish to register to the Remote Unit.
2. Enter Command Mode: <Left Control> + <Left Shift> + <F10>.
3. Register the devices by requesting USB Descriptor transfer: <Left Control> + <F4>.

The Remote unit will now read the USB descriptors from the generic devices and copy them to the Local Unit. After a few seconds the Local Unit will then re-enumerate as a composite device with several HID interfaces. The registration process is only required once because the descriptor data is permanently stored within the Local Unit, and the Remote Unit has logged the VID/PID of all registered devices.

Registered devices may be disconnected and re-connected to the Remote Unit without the need to register again.

**Note:** Each time a registration is requested (<Left Control> + <F4>), all previous registration data is overwritten; so you must ensure that all devices to be registered are connected. If you need to restore the extender to its default state with only basic KB/Mouse emulation, simply request a registration without connecting any generic devices (or, issue the system reset command: <Left Control> + <F9>).

**Important:** USB devices connected to the Remote Unit cannot be associated with any particular vendor driver.

You do not normally need to register keyboard or mouse type devices. If however, you are having problems getting a KB/Mouse to work, you could try registering it in case it has 'non-standard' descriptors.

## Private Mode

In previous releases the only Private Mode option was to blank the monitors connected to the Local Unit. Firmware v2.0 enhances Private Mode to provide similar functionality to that on our dual-head PS/2 extenders.

Operation is now as follows:

### Remote Private Mode

- In this mode monitors connected to the Local Unit are blanked.
- It is not possible to disable the Local KB/Mouse because they are connected directly to the CPU.
- To enable Remote Private Mode enter Command Mode (<Left Control> + <Left Shift> + <F10>), and then press <Scroll Lock>.
- All Local monitors are now blanked, and the yellow LED on the Remote Unit will now flash at double speed (as an indication).
- To exit Remote Private Mode, issue the same command sequence again.
- The current Remote Private Mode state is stored in EEPROM, and is restored on power-up.

### Local Private Mode

- In this mode all Remote HID devices are disabled, and (optionally) all monitors connected to the Remote Unit are blanked.
- **To enable Local Private Mode: Press Caps Lock, Num Lock, or Scroll Lock, eight times within two seconds on a keyboard connected directly to the CPU.**
- The Remote Unit is now disabled, all three KB LEDs on the Remote KB are lit, and the yellow LED on the Local Unit will now flash at double speed (as an indication).
- To exit Local Private Mode, issue the same command sequence again.
- The current Local Private Mode state is stored in EEPROM, and is restored on power-up.

A further Remote command has been added to control whether the Remote monitors are blanked in Local Private Mode. The default setting is to blank them.

To toggle the Remote Monitor blank state:

1. Enter Command Mode
2. Press <Left Control> + <Scroll Lock> to toggle the state
3. The setting is saved in EEPROM, and the unit will quit Command Mode.

## Issues Addressed

1. If three external hubs were connected in series to the Remote Unit (exceeding the two hub layer limit) then extender operation would cease or become erratic. This has now been addressed and the additional hub is ignored.
2. Fixed a buffer overflow issue in the Remote Unit which could theoretically occur under rare circumstances requiring the Remote to be re-powered.
3. Firmware v2.0 includes all previous bug fixes

## Future Versions

It is hoped that touch screens (with a vendor driver) will be fully supported in the next release through the inclusion of an optional 'transparent mode' for a single device (no KB/Mouse support through the extender). Release date (if it works) will be Q1 '09.

## Upgrading Older Units

Around 10% of units with older firmware (v1.0) may not be able to enter Upgrade Mode (due to a processor hardware issue which was addressed in later revision firmware). If you cannot enter Upgrade Mode (after several attempts) your extender will need to be returned for a factory firmware upgrade.

## Firmware Upgrade Procedure

The extender's firmware may be upgraded via USB. In addition, the current extender configuration may be saved and restored.

On entering Upgrade Mode the extender detaches itself from the USB and re-enumerates as a removable disk drive allowing upgrades to be made.

### Preparation

The Local and Remote Units must both be connected and powered even if you only wish to upgrade one of them.

Connect a mouse & monitor directly to the CPU as the Remote KB & Mouse will not function in Upgrade Mode. Alternatively, connect the Local Unit to a laptop.

### Entering Upgrade Mode

1. From the REMOTE KB first enter Command Mode
2. Now enter <Left Control> + <Left Shift> + <Right Shift> + <F9>

The yellow LED on both the Local & Remote units will light to indicate Upgrade Mode has been entered.

Your PC should indicate a flash drive called EXTENDER is attached. Under many operating systems a window showing the contents will pop up. If the drive contents window does not appear, then you will need to manually open the drive folder.

### Operating Upgrade Mode

When in Upgrade Mode you must use a KB/mouse directly attached to the PC.

You will see four *virtual* files listed:

<b>BOOT</b>	Delete this file to return to normal extender operation.
<b>LOC_xx</b>	This shows the firmware version in the Local Unit. If the version is reported as 'LOC_BAD' the upgrade was not successful – try again
<b>REM_xx</b>	This shows the firmware version in the Remote Unit. If the version is reported as 'REM_BAD' the upgrade was not successful – try again.
<b>CONFIG</b>	This file contains the current extender configuration. You may save this file and use it setup another extender by dragging it onto the file window and overwriting it.

## Upgrading a Local Unit

Drag the Local firmware file provided onto the window. After a few seconds the window display should refresh and the new firmware version displayed by file 'LOC\_xx'

If the window does not refresh (will not on some OS,) and the dragged upgrade file is still shown, then you may need to re-power the Local Unit (by disconnecting the USB cable) and view the drive folder again.

If the 'LOC\_xx' file displays as 'LOC\_BAD' the upgrade was not successful. Try again or call technical support.

If the upgrade was successful and you only want to upgrade the Local Unit, delete the file BOOT. The extender drive will disconnect itself and normal extender operation will resume.

Note: If the upgrade was not successful, you will not be able return to normal operation and the extender will remain in Upgrade Mode.

## Upgrading a Remote Unit

You need to drag each of the EIGHT the firmware files provided onto the window. Simply highlight them all and drag in one operation. After approx 50 seconds the window display should refresh and the new firmware version displayed by file 'REM\_xx'

If the window does not refresh (will not on some OS), and the dragged upgrade files are still shown, then you may need to re-power the Local Unit (by disconnecting the USB cable)) and view the drive folder again.

If the 'REM\_xx' file displays as 'REM\_BAD' the upgrade was not successful. Try again or call technical support.

If you have finished upgrading both units delete the file BOOT. The extender drive will disconnect itself and normal extender operation will resume.

Note: If the upgrade was not successful you will not be able return to normal operation and the extender will remain in Upgrade Mode.

## Important Notes

- This upgrade feature is not guaranteed to work correctly with all operating systems. It was designed for Window but has successfully been tested on Mac OS X and some Linux distributions.
- The feature functions best if write caching is switched off for flash drives. This done by default on XP SP2, Vista and OS X. If write caching is not disabled then file writes or deletes may take up to 45 seconds to complete. For example, under Windows 2000 or Linux if you delete the BOOT file to return to normal operation, it may take 30 seconds before the file is actually deleted and the EXTENDER drive reported as removed.
- Do not attempt to drag any other kinds of file onto the Extender drive. It is a virtual storage device.

Consult Technical Support if you have any issues regarding upgrading.

## Upgrading Tips

If you have a number of installed units to upgrade you may not need to move them in order to upgrade.

**Example: To upgrade a number of Local Units installed in a rack** you may find it much faster to bring a Remote Unit & USB KB into the same room as the Local Units. To upgrade each Local Unit in turn simply connect a patch cable from the Remote to the Local Unit and then enter the Upgrade Mode entry sequence on the Remote KB. Now, with the aid of a flash drive (or upgrade file located on a shared drive), you may simply upgrade the Local Unit (by dragging the file on to the extender drive) and then delete the BOOT file before moving on to the next unit.

**Example: To upgrade a number of Remote Units** you may find it much faster to use a patch cable to connect (in turn) each Remote Unit to a nearby notebook which has a Local Unit connected.