

Application Note

1394 cameras: Corrupted images and power saving issues

Error messages

SmartView error messages:

Logfile entries FIFO OVERFLOW und ERROR 100

FireGrab error codes:

0x00400000 (HALERF_GRFOVERFLOW), 0x00000100 (HALERF_ISORXACK)

UniversalPackage error notification:

E_UNI_NOTIFICATION_ERROR_BUS

Problem description

Corrupted data on the IEEE 1394 port are commonly caused by too much latency in the C3 power state in the case of a low CPU load, which causes buffer underruns. Frames are dropped on the driver level due to lost packets at the PCI FIFO and the image gets corrupted (General receive FIFO overflowed).

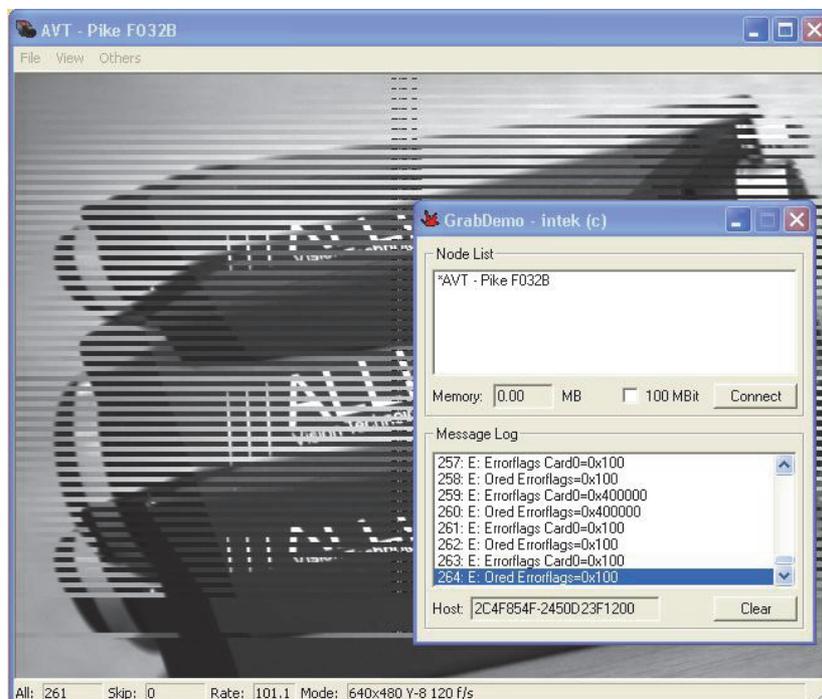
Displaying faulty frames with SmartView

FireDrv.sys notifies global error flags, but SmartView drops faulty frames on default.

To display faulty frames with SmartView: uncheck "Extras" -> "Drop faulty frames"

To activate SmartView's error logging: run SmartView with option e: AVT_SmartView.exe -e.

Displaying faulty frames with GrabDemo



Workaround

Depending on your hardware and BIOS, various solutions are possible. Ask your mainboard supplier if a newer BIOS is available, which can solve SpeedStep issues.

- Forcing a high CPU load can prevent the energy saving states from cutting resources. A **50% CPU load or less** indicates that SpeedStep is part of the problem. To increase the CPU load temporarily and verify whether these errors persist, run cpuload.exe: <https://alliedvisiontec.box.com/s/7548n60wno5cgrro11a0fvzqdxw855xs>
- Reducing the frame rates can also prevent corrupted images.

Solutions

- **Intel Core i5 and i7 CPU** (Dell OptiPlex 980 BIOS Vers. A07): Select: C-States <Disabled>
- To prevent energy saving modes, **check the advanced BIOS features** and select these or similar settings:
 - Limit CPUID: disabled
 - No-Execute: disabled
 - C1E:
 - disabled
 - C2/C2E: disabled
 - CPU Thermal Monitor: disabled
 - CPU
 - EIST: disabled
 - Virtualization:
 - Enabled (this can be disabled safely)
- If the energy saving modes cannot be prevented by the BIOS settings, the *ThrottleStop application* is an alternative to disable the C3 state: <http://www.softpedia.com/get/System/Benchmarks/ThrottleStop.shtml>
- Successful BIOS settings for **HP Z200 workstations**:
 - Runtime Power Management Enable -> Disable
 - Idle
 - Power Saving Extended -> Normal
 - SATA Power Management Enable -> Disable
- How to **disable the idle states for Windows 7 programmatically**: <http://stackoverflow.com/questions/9721218/trying-to-disable-processor-idle-states-c-states-on-windows-pc>
- **Intel Core2 Duo CPU**: Use *RightMark Clock Utility* to modify the C3 state settings (see below)

RightMark Clock Utility (only for Intel Core2 Duo CPUs)

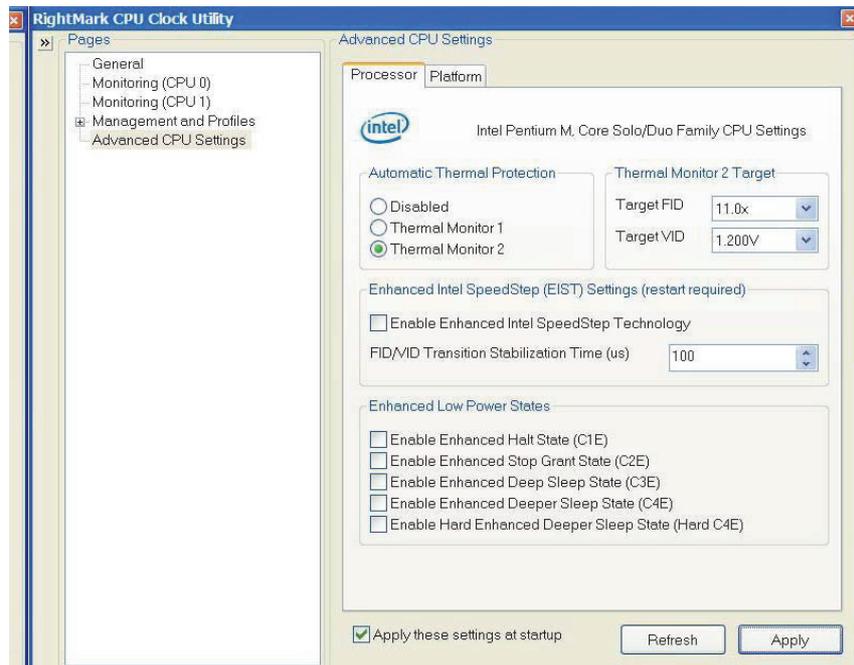
1. Download *RightMark Clock Utility*: <http://cpu.rightmark.org/download.shtml>
2. Advanced Settings -> select the Platform tab.
3. Enter C4 on C3 command.
4. Enable Popdown mode.
5. Enable
6. Popup mode.

These settings must be exactly as described, as stated in the Readme file:

Enter C4 on C3 command (only available for mobile chipsets ICH4-M, ICH6-

M and ICH7-M) causes the chipset to transition the CPU into a deeper power-saving C4 Deep Sleep state when a C3/Sleep state is requested.

Enable Popdown mode (auto C2 to C3/C4, only for ICH6-M and ICH7-M) should be used in conjunction with Popup mode. When this option is off, the chipset does not attempt to automatically return into a previous C3 or C4 state. If this option is on and the chipset observes no bus master requests, it can return into the previous C3/C4 state.



For technical support, please contact support@alliedvision.com.

For comments or suggestions regarding this document, please contact info@alliedvision.com.

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