



**Product Description and Minimum Specifications**  
**8 Channel, Hard Drive Based, Mobile Digital Video Recorder**  
**R1 Feb 2015**

The below specifications are not intended to limit competitiveness in similar products, rather they are intended to establish a standard of quality and desired features in order to ensure that the needs and requirements of the school district are met.

Each system shall consist of eight (8) dome style flush mount CCD day/night cameras with the capability of mounting to the ceiling or bulkhead, 12VDC digital video recorder, lockable enclosure/security caps, in addition to all wiring harnesses and mounting hardware required for installation. GPS antenna receiver and/or required components to enable GPS mapping and data collection are to be included. Unit bid must meet/exceed the specifications for Gatekeeper 508HD™ to ensure uniformity within the fleet.

In addition to a hard drive the DVR must include a SD card slot. The SD card slot must support both SDXC (Secure Digital Extended Capacity) and SDHC (Secure Digital High Capacity) memory cards. SDHC cards and SDXC cards shall be available from the vendor. The SDXC shall be available up to 128 GB in size.

Any equivalent product that is proposed must be pin for pin electronically compatible with the Gatekeeper 508HD Mobile Digital Video Recorder in order to ensure uniformity within the bus fleet.

**Detailed specifications are as follows:**

Interior Camera:

- The camera must have the capability of mounting flush to header, front bulkhead or ceiling of the bus.
- When mounted to the front bulkhead it must be possible to correctly aim the camera so to capture the rear seat of a full size transit bus.
- Each camera must have a lens windshield that is manufactured from optically clear material
- Each camera must be housed in an enclosure that is fabricated of metal
- Each camera must have the capability allow lenses to be interchange in the field
- Each camera must have 24 IR LED's that turn on/off with varying light conditions
- Each camera sensitivity shall be 0.1LUX/F1.2 (no IR), 0.0 LUX (IR On)
- Each camera shall have a minimum resolution of 700 TV lines.
- Each dimensions of the camera shall be no larger than 2.8" (7cm) high x 3.3" (8.5 cm) base diameter
- Each camera shall include a microphone to capture audio
- Each camera must utilize Sony Super HAD

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- Each Camera shall use a Sony Effio Super HAD II 1/3" CCD (Charge Coupled Device) imaging sensor and Sony DSP (digital signal processor)
- Each camera shall support 3D gimbal functionality to be able to square up an image
- Each camera shall have the option to be ordered with one of the following lens sizes 2.9 mm, 3.6 mm, 4.3 mm, 6.0 mm, 8.0 mm, and 12.0 mm
- Once the camera is installed the camera shall be tamper proof to reduce the probability of the aiming of the camera to be changed by a passenger.
- Each camera shall have a 5 year warranty

### **Digital Video Recorder**

- The digital video recorder must record a minimum of eight video channels
- The digital video recorder must have GPS recording capability in addition to the 8 separate video channels. The recorder must not cannibalize one of the video channels to record the GPS data.
- The digital video recorder must record a minimum of four audio channels (one associated with each video channel)
- The digital video recorder must use H.264 video compression technology
- The digital video recorder must be able to support the following video resolutions D1 (720 x 480), HD1 (704 x 240) and CIF (352 x 240)
- The digital video recorder shall support a removable spinning hard drive (via drive caddy).
- The vendor shall offer hard drives of the following capacities: 512GB, 1TB and 2TB
- The digital video recorder must support both SDHC and SDXC memory cards.
- The digital video recorder must be capable of recording up to 1729 hours on a 500GB spinning hard drive.
- The digital video recorder must allow for recording of up to 8 cameras simultaneously and up to at 120 Frames per Second at D1 resolution best quality.
- The digital video recorder must support the following recording frame rates from 1 to 30 fps in 1 frame per second increments. It shall be possible to independently set the frame rate on each video channel independently.
- The digital video recorder must provide adjustable frame rate, resolution and video quality setting for each camera independently.
- The digital video recorder must support at least 9 video quality settings
- The digital video recorder must support daylight savings time and automatically change its time on the appropriate day.
- The digital video recorder must be capable of operating up to ambient temp of -40°C (-40°F) to +60°C (+140°F)
- The digital video recorder must record to an integrated spinning hard drive.

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- The spinning hard drive must be housed in a drive caddy that has an internal temperature control system in order to heat up the drive in cold environments.
- The digital video recorder must record to spinning hard drive with capacities up to 2 TB.
- The digital video recorder must record to solid state Secure Digital High Capacity (SDXC) card capacities up to 128 GB
- The digital video recorder must record to solid state Secure Digital High Capacity (SDHC) card capacities up to 32 GB
- The SD cards provided must be industrial rated with an operating temperature range of -40°C (-40°F) to +60°C (+140°F) and not consumer grade SD cards.
- The removable hard drives and solid state cards must be swappable between digital video recorders without the digital video recorder losing its configuration
- The digital video recorder must allow for the solid state cards to interface with a PC without need for a docking station and the solid state card shall connect to a PC directly (when the PC has an integral SD card reader) or via a SD card reader with a USB 2.0 interface to a PC
- The recorder shall be small and light for easy mounting in various locations in a bus and shall not exceed the following dimensions: 11.5" x 7" x 2.5"
- The digital video recorder must operate on standard 12 Volts with operating range of 8 to 32 Volts
- The digital video recorder must be a maximum weight of 5.6 lbs. (2.5 kg) and be capable of horizontal or vertical installation.
- The digital video recorder must begin recording upon activation of 12V trigger (i.e. ignition activation)
- The digital video recorder must be designed for a rugged mobile environment and shock and vibration tested and tested to a provision of MIL-STD 810F (Trucks on Highways)
- The digital recorder must be configurable to overwrite data or power off when disk is full.
- The digital video recorder must be capable of formatting the spinning hard drive or SDHC or SDXC solid state cards for erasing data if required
- The digital video recorder must be capable of recording and playing back video when connected to a NTSC monitor
- The digital video recorder must have Auto-Record Schedule capability and be able to be programmed on/off up to three times over a 24 hour period
- The digital video recorder must be capable of adjusting the video quality on each camera independently at time of installation
- The digital video recorder must have the capability to record for up to 23 hours, 59 minutes and 59 seconds after the bus has been turned off.
- The digital video recorder must include the capability to record up to eight event triggers that can be analyzed upon playback
- The digital video recorder must include 2 output triggers.

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- The digital video recorder must have the capability to connect to a driver alarm push button switch.
- The digital video recorder must have included an internal GPS module. No external cards or boxes will be accepted except for the external GPS antenna.
- The GPS location and speed information must be recorded and synchronized with the video for subsequent analysis and playback using a compatible viewer provided by the successful vendor.
- The digital video recorder must have motion detection capability
- The digital video recorder must have a boot time of no more than 90 seconds
- The DVR must have a minimum 3 year warranty
- The spinning hard drive must have a minimum 1 year warranty
- The SD card must have a minimum 3 year warranty
- The digital video recorder must be based on an embedded operating system with the ability to upgrade software in the field without return to the manufacturer
- The digital video recorder must have a built-in real time clock with automatic Daylight Savings time adjustment
- The digital video recorder when equipped with GPS shall automatically update the digital video recorders real time clock automatically.
- The digital record must have passed ISO 7637-2, Road vehicles — Electrical disturbances from conduction and coupling — Part 2: Electrical transient conduction along supply lines only.
- The video recorder must include options for cellular and WiFi data transmission.
- A driver alert button with at minimum a power LED and record LED must be available for use with the recorder.
- The design of the digital video recorder must be such so that it is secured from Hard Drive and SD card removal and changing of configuration without the use of a lock box.
- The digital video recorder must include a key lock mechanism that will allow access to the Hard Drive and SD card when unlocked and simultaneously stop recording to the Hard Drive and SD card so that it is safe to remove the Hard Drive and SD card. When the key lock mechanism it shall be possible to continue recording to the Hard Drive and SD card.
- The recorder must come with 4 pin molex connectors that that consistent with Gatekeeper Systems camera wiring cables.
- The digital DVR shall include, at no additional cost, 15' power cable and multi conductor sensor cable.

### **Viewing Software**

- The viewing software shall incorporate the following capabilities as found in The G4 Viewer or equivalent.
- The viewing software shall be included in the system price at no extra charge.

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- The viewing software must be able to playback up to 8 channels of video simultaneously
- The viewing software must display Bus ID, time, date, event triggers, GPS information and speed
- The viewing software must display the video file time, date, bus ID, and number of alarms
- The Viewing software must have the capability to save portions of a video file into a clip to be specified by the user
- The viewing software must provide the user with a means to fast forward and rewind, pause and play all video files
- The viewing software must have the ability to capture still images at any point in the video as specified by user and saved as a JPEG or BMP.
- The viewing software must display the date, time, bus ID of each event trigger
- The viewing software must operate on the following operating systems: Microsoft Vista  
Microsoft Windows 7 and Microsoft Windows 8.
- The viewing software must provide a map view that displays the location of the vehicle using Google maps when video (with GPS information) is being played.
- The Viewer must support blurring of selective areas of the image.

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