

The School Bus systems required must meet the following minimum requirements: **School:**
HC460 with VSM

CAMERAS

- Cameras shall include the following
- Shatterproof lenses
- Anti-glare Glass
- Scratch resistant Lenses
- High impact, vandal proof, Stainless Steel housing. Internal cameras will be moisture proof. External cameras are waterproof.
- Built-in Noise Gate Omni Directional Microphones
- Cameras will have built-in Infrared Lighting for improved night/low light viewing
- Temperature resistant circuitry
- 520 TV Lines of Resolution.
- Peri-Optic Wide Dynamic Lenses.
- CX3 Sony Chip Set Only
- The vendor must identify the appropriate cameras and lenses to have full view of bus areas (example: front, back, driver, stairwell section, and stop arm)
- The input image to the DVR shall be Clear, Stable and Free of Vibration.
- Cameras shall be mounted without brackets to Ceiling, Surface, Wall, or Side.
- Front windshield view cameras shall have a bracket mount from above the windshield and not interfere with the driver's view.
- Lens sizes shall be specified by the vendor to optimize the view from all locations.
- All cameras must have 6PIN DIN waterproof connections.

FOUR CHANNEL MOBILE DVR (With Hybrid Component Technology)

- The DVR shall have a lockable and removable front door panel for access to Motherboard, Power Control Board, hard drive and Internal VSM Module.
- The DVR and its components must be completely serviceable and repairable without removing the DVR from the bus by utilizing the following:
 - **"Linear Motion Slide Rail"** removable motherboard inside the front door for easy service and technology upgrade. Removing the motherboard by removal two external screws only such that, a new motherboard can be inserted and installed in under 1 minute.
 - **"Linear Motion Slide Rail"** removable Power Control Board inside front door panel for easy service and technology upgrade. Removing the Power Control Board requires the removal of two external screws only such that, a new Power Control Board can be inserted and installed in under 1 minute.
 - **"Linear Motion Slide Rail"** removable VSM GPS Module inside front door panel for easy service and technology upgrade. Removing the VSM GPS Module requires the removal of two external screws only such that a new VSM Module can be inserted and installed in under 1 minute.
- The DVR must be convertible to 8 channel service by swapping the 4channel motherboard for an 8channel motherboard. This conversion yields a DVR capable of 8 channels of audio and video with this quick change.
- The DVR must have a connection from the front door panel for an Optional Live TFT Monitor..
- The dimensions shall not to exceed (Width x Height x Depth) 4" x 3.5" x 8.75" and the Weight shall not to exceed 3.45 lbs.
- The DVR shall have the capability to be installed at any angle, in an easily accessible location.
- The DVR supplied must offer 1 to 4 Channel Video and a minimum of 4 Channel Audio with simultaneous recording.
- The DVR is to include up to 4 camera inputs, with simultaneous recording on individual channels, with independent audio.
- The DVR system must have marking capabilities with a panic button located near the driver's seat.

- The DVR system must have protection from access of unauthorized personnel by having a locking front door panel with no exposed controls and must offer a wireless remote control for easy set up and programming by any authorized personnel.
- The Hard Drive shall have a minimum storage capacity of 160GB High Speed SATA drive and be expandable to 500 GB. The Hard Drive must be “hot swappable”, The term “Hot Swappable” shall mean that the Hard Drive may be removed and or replaced while the DVR is in full powered operation, without any damage. The Hard Drive must be enclosed in a “Tamper proof” & lockable shock resistant housing.
- The system must operate from a 10-36 VDC power source connected with 18 gauge wire or larger, with inline fuse and be internally and continually protected from power surges, spikes and reverse polarity.
- The DVR must offer Lithium ION back-up battery that will save setting for up to 30 years The DVR must be equipped with an RS-232 Serial Port for future expansions. This port must be able to interface with any device that accepts serial communications. The DVR must be wireless capable.
- The DVR camera connectors must be waterproof 6 pin DIN screw on connectors that include Audio, Video, Power, and Ground.
- The DVR unit must have High and Low Temperature Protection
- The System must have crisp Video at 720 x 584 resolutions for DVD quality playback.
- The DVR Recording modes must be user selectable for Continuous, Motion or Alarm. In continuous mode, storage capacity must not be impacted by motion.
- The system must automatically record over data files once the hours of audio/video capacity have been reached. The system must not erase Hard Drive Data when overwrite begins, and overwrite should begin with the oldest data first.
- The DVR on-board real time clock must operate independently of the main power supply and must adjust automatically for daylight savings time.
- The system must have eight sensor inputs for marking events, to include left turn, right turn, brake, Door 1, Door 2, reverse, stop arm and amber lights. .
- The DVR display resolution must have the option for the user to select the full support for NTSC and PAL.
- The DVR must have a start delay, of not more than 10 seconds, for the system to boot up and begin recording upon activation of the bus engine run switch to allow for voltage stabilization.
- The DVR must have a delay stop to allow continued recording after the bus is turned off, in increments of 0, 5, 10, 20, 40 or 60 minutes. This selection will be made by the user during the initial programming.
- The DVR must be capable of accepting a minimum of four independent channels of audio as well as record and playback all channels of user defined mixed audio.
- The DVR must be capable of setting and recording real time images and sound from 1 to 30 frames per second (fps) per channel.
- The System must have an OPTIONAL integrated Passive GPS, with no outside subscription service requirement.
- The OPTIONAL GPS must be compatible with software that can extract .gpx, .kml and .gps data for TeleAtlas/Google Map Overlay.
- The On Screen data of the OPTIONAL GPS coordinates, Direction, and Speed must be imprinted on recorded video, synchronized with the camera(s).
- The DVR must include HOST and SLAVE USB connection for easy firmware upgrade and Laptop connection
- The DVR must have composite Audio/Video connections on the front door panel.
- The DVR must be equipped with a USB memory stick process to quickly review or download events from the on-board system

Virtual Synchronized Mapping – VSM

The System must include Built-In VSM GPS – Virtual Synchronized Mapping, providing on-screen route tracking to identify movements of the vehicle on a digital street map, synchronized with the cameras views and recorded to the DVR. Please note that providing and/or recording only the GPS coordinates does not meet this specification. The street map must be recorded onto a camera channel of the DVR to ensure synchronization with the cameras. When viewing the video, the map view must not require an internet connection. Must include Licensed TeleAtlas

embedded maps on the hardware to ensure accuracy.

Video Retrieval PC Playback Software and Archiving

- The software must offer retrieval of the latest MPEG4 and MJPEG compression technology (user selectable) providing motion picture quality, while offering greater storage capacity.
- The hard drive must offer a built-in reader and be able to be connected to the computer through a USB connection. The Video review shall be accomplished through this USB connection with the DVR Hard Drive and utilizing the supplied software. The USB connection from the PC must power the DVR Hard Drive.
- The software must be able to retrieve events downloaded directly on an USB drive via USB 2.0 connections/port or direct connection to a laptop or desktop PC.
- The system must be capable of wireless connectivity to the owners' network.
- Video review will require no other office hardware.
- The video transfer rates must be less than 1:1. The Bidder shall supply the transfer rate proposed with their system.
- The Video retrieval or review must be secured through the use of proprietary software. The software must require user name and password entry and must offer court ready video files.
- The Video Review software must be user-friendly. It must allow for one screen viewing of all cameras, with options to select any single camera view. It must be able to copy video to a PC (user selectable by time frame). It must be able to create a JPEG, WMV or AVI files. The software must offer the capability to easily forward and view video and audio clips/frames as an attachment to an email. It must include options to play, stop, forward, reverse, pause, frame by frame forward, frame by frame reverse, beginning of video file, end of video file and volume control for audio. It must include camera selection buttons and a time slider.
- The video retrieval capability must be Plug N Play reading for fast file transfer, utilizing PC based file formats (with no additional hardware).
- The software must easily retrieve the "tag/mark" on the hard drive, search, pause/freeze and download captured events to a PC, USB flash drive or direct to a DVD burner, or print frame by frame.
- All Video and Data must be able to be saved on the PC's hard drive, and/or transferred or copied to DVD, CD, VHS, and other forms of archiving.
- The supplied software must have the capability of tracking, with playback selections of inquiry by alarm, date, time and camera number.
- The software must have the following Video Quality settings: 16 Settings: four adjustment levels with four quality settings for each adjustment level
- The software must offer Display Modes of Single camera, QUAD, and 4x zoom
- The playback software must be User Password protected, and have defined security levels.

Maintenance and Software Upgrades

- The manufacturer will provide automatic software upgrades at no additional cost for two (2) Years.
- The bidder will provide contact(s) information for technical support.
- The DVR system must not require any additional Maintenance Support other than periodic testing for proper operation.

Installation

- The Bidder will supply the installation of all hardware (including accessories, cables, harnesses, etc.) and software to guarantee systems are fully functional and operational prior to acceptance of payment.
- The Bidder will provide a timeline for installation, testing and start-up.
- The Bidder will provide the number of dedicated technical support and/or installers for this project.

- The Bidder will include the training of Staff employees on the use of the system and certification on the installation.
- The System must be designed and supported by the manufacturer. The bidder must have experience installing and servicing Mobile Video Surveillance Systems on School Buses.

Warranty

- The bidder must offer a Five (5) Year Limited Parts and Labor warranty on the DVR.
- The bidder must offer a Three (3) Year Limited Parts and Labor warranty on the Cameras.
- The bidder must offer a Three (3) Year Limited Parts and Labor warranty on the Hard Drives.
- The bidder must supply extended warranty options.
- The bidder must supply all warranty information on the system in their bid response.
- The bidder must be authorized by the manufacturer to repair the equipment during the warranty period, if the warranty repairs are to be performed by the bidder.

Training and Technical Support

- The bidder shall supply complete user training on the system and its installation, including online and current manufacturer user manuals.
- The bidder will provide a toll free engineering support line and offer technical support at no charge, during the warranty period.