

Video Image Detection System (SVS-1) User Guide – Part A Overview, Hardware, and Interfaces

22 May 2009



SmartTek Systems®

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Limited Warranty

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SVS-1 Overview

The SmarTek Video Detection System (SVS-1) is used to capture and process video signals from up to six (6) NTSC cameras for the purpose of indicating vehicle presence at surface street intersections. The heart of the SVS-1 system is SmarTek System's state of the art Digital Signal Processor (DSP) based processing hardware and highly innovative image processing software. The SVS-1 system is modular, and therefore may be configured or populated with the right amount of "processing horsepower" to meet each customer's requirements. SVS-1's video signal acquisition design and processing algorithms are very robust which facilitates the use of a wide array of Off-The-Shelf NTSC Cameras.

The SVS-1 system hardware is designed to provide years of reliable service in the harsh environment of roadside cabinets. The SVS contains its own DC voltage regulators which facilitates the use of a wide range of unregulated DC power (12 to 24 VDC). For intersections requiring ten (10) or fewer Detector Channels (output vehicle presence relays), the basic SVS-1 processor box is all that is needed. This results in a very small footprint. For intersections requiring more than ten (10) Detector Channels, external Relay Interface Cards are used with up to ten (8) relays per card (per camera channel) providing up to a total of forty-eight (48) relays.

The SVS-1 Setup and Monitor software has been designed and implemented using years of highway sensor setup experience. The Windows based SVS setup software is very intuitive and easy to learn and use, making SVS-1 setup for a specific intersection quick and efficient.



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SVS-1 Overview (continued)

The SVS-1 Feature Set includes, but is not limited to the following major features:

- Rugged processor enclosure with small footprint (7.75 in long x 6.5 in wide x 5 in high)
- One Main System Processor Board and up to three Camera Processor Boards (2 cameras per board)
- Interfaces and processing for up to 6 NTSC cameras
- RS-232 serial communication interface on each processor board (comms via serial I/O)
- Ethernet network interface on the main system processor board (comms via LAN)
- Ten (10) onboard Detector Channels (vehicle presence output relays on the SVS-1 back panel)
- Six (6) onboard Input Relays for local status input (door switches, controller status, etc.)
- Each camera processor channel has a unique ID (SVS0001, SVS0002, ..., SVS0006)
- Each processor channel provides up to 30 user selectable detection line zones (30 zones per camera)
- Each detection line zone provides directional detection
- User selectable video output with active detection line zones overlay for operational visualization
- User selectable combining/routing of detection line zones (30) to output Detector Channels
- User selectable vehicle presence activation delay
- User selectable vehicle presence activation extension
- User selectable vehicle presence detector activation state (active low or active high)
- User selectable routing of vehicle presence Detector Channels to Onboard Output Relays



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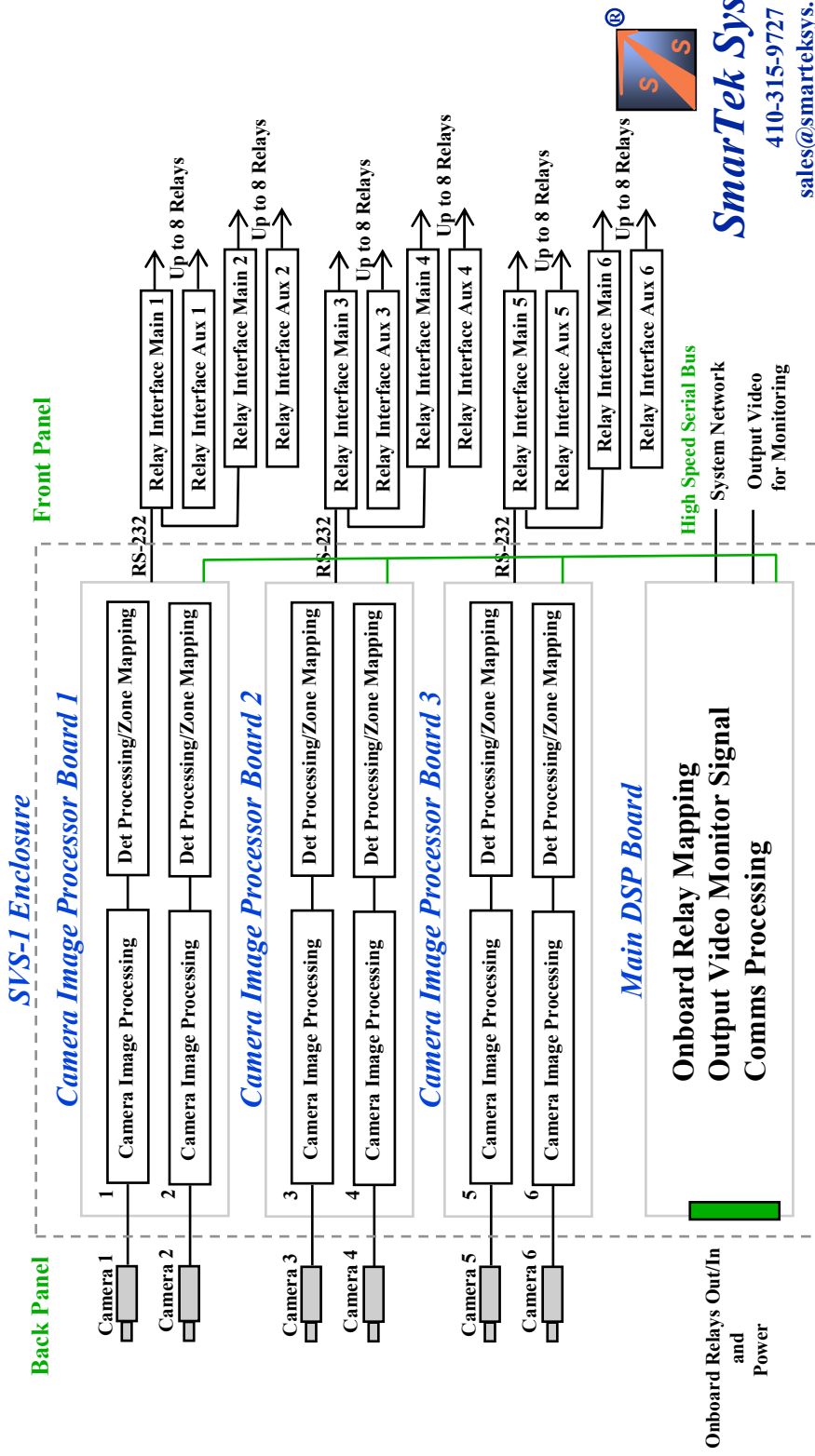
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SVS-1 Architecture and Interfaces

The SVS-1 system is modular, and may be configured or populated with the right number of processor boards to meet each customer's requirements. A fully populated SVS-1 is made up of three Camera Image Processor DSP Boards and one Main DSP Board. Each Camera Image Processor DSP Board in the SVS-1 implements two camera processing channels with each having a unique ID number (SVS0001, SVS0002, SVS0003, ..., SVS0006).

For robust vehicle detection performance, the end user may combine any number of the thirty (30) detection line zones per camera channel to form a resultant Lane Group (up to 10 LGs per camera channel). Each LG may be output via the onboard back panel connector (up to 10 relays) or via External Relay Interface Cards (1 or 2 RI cards per camera channel, 1 Main and 1 Aux).



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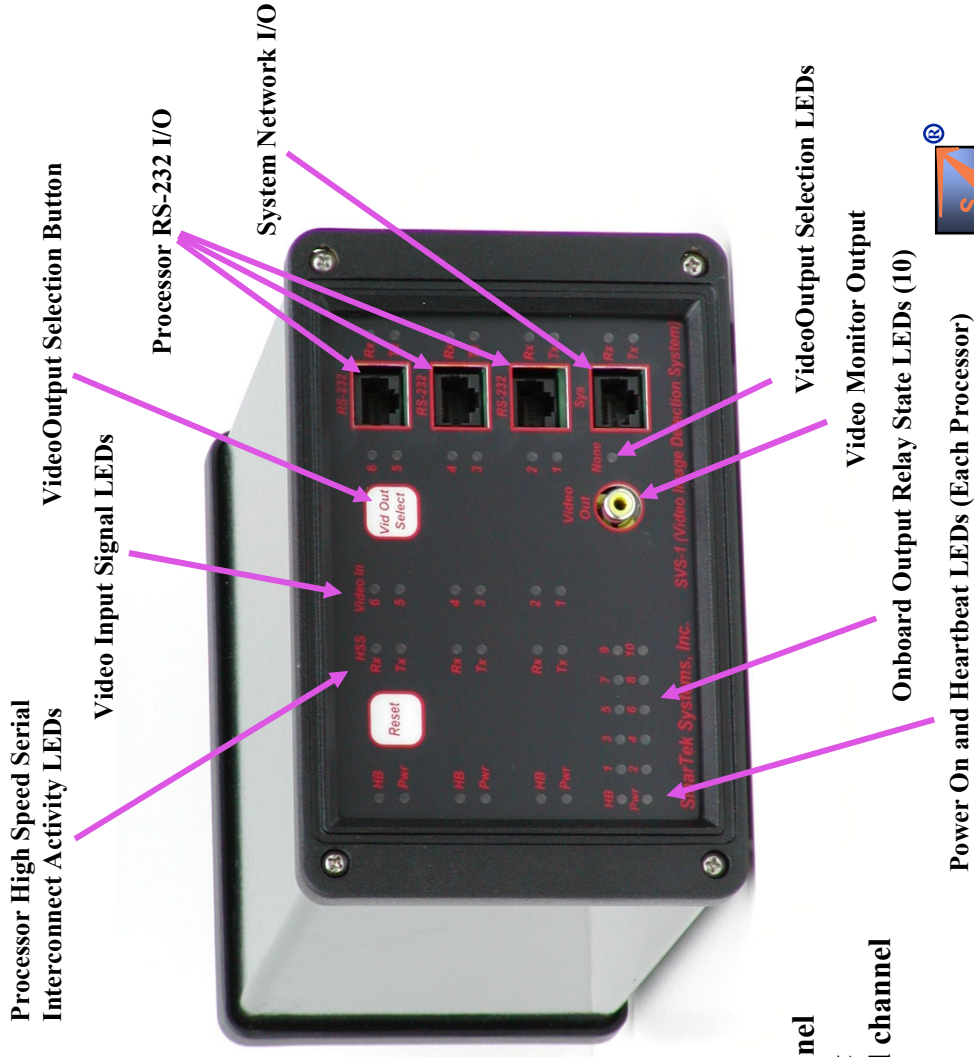
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SVS-1 Hardware-Front

The SVS-1 Front Panel provides serial comm ports and an ethernet port for communications during system setup and operation.

The SVS-1 Front Panel also provides LED indicators for rapid and easy visualization of system status such as power on LEDs and heartbeat LEDs showing system software execution.

The SVS-1 Front Panel video output jack provides an interface for monitoring camera video during camera mounting and positioning. This video output provides a means for real time visualization of detection zone activation during operation. Channel selection for video output is via the Video Out Select Button. Pressing this button increments the selected channel and is indicated by the Video Out Selection LEDs.



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SVS-1 Hardware-Back Panel

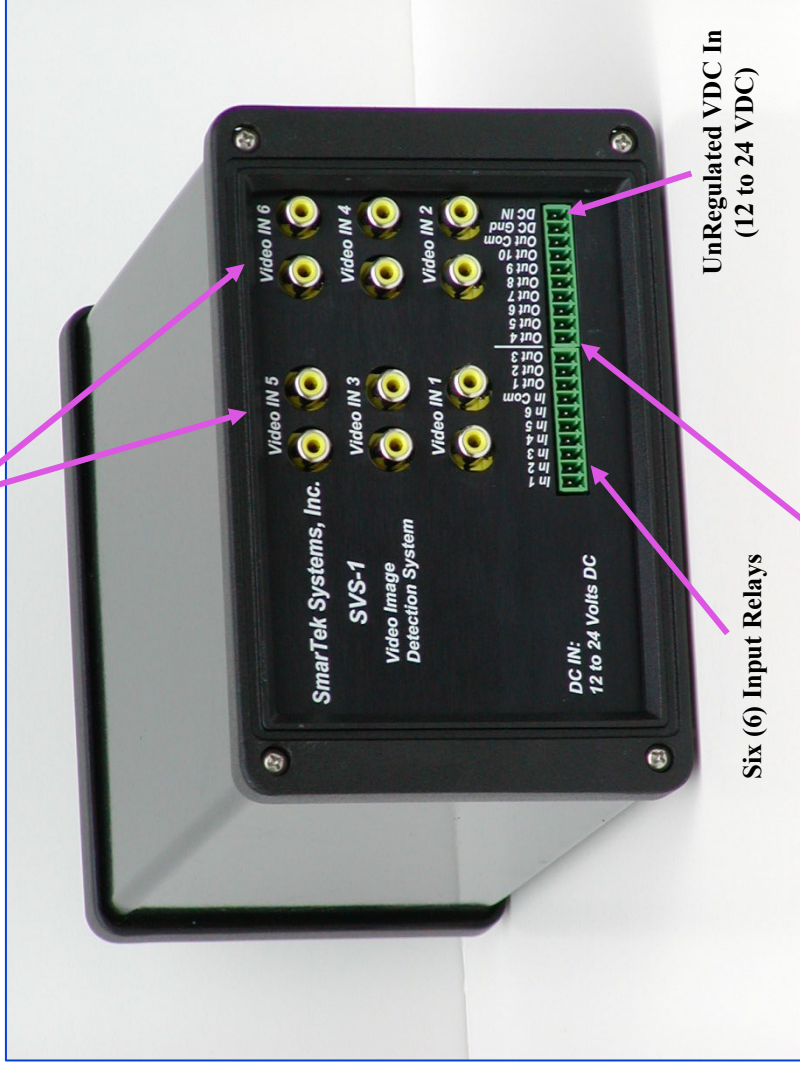
The SVS-1 Back Panel provides "loop-thru" video input for up to six (6) NTSC cameras.

The SVS-1 Back Panel provides a reliable connection point for an unregulated DC power supply of 12 to 24 VDC.

The SVS-1 Back Panel provides the connection point for ten (10) onboard detector channels (vehicle presence relays that are opto-isolated). The SVS-1 processor is capable of providing up to forty eight (48) detector channels (vehicle presence output relays) (8 per camera channel) using external Relay Interface Cards connected via the Front Panel RS-232 ports.

The SVS-1 Back Panel provides the connection point for monitoring the state of up to six (6) input relay signals.

Video Input Signal Jacks (1 to 6)
NTSC Signal (Jack has Loop Thru)



Ten (10) Onboard Output Detector Channels
(vehicle presence relays -Opto-Isolated)

UnRegulated VDC In
(12 to 24 VDC)

Six (6) Input Relays



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