

Advanced Video and Data Vehicular Recorder

Features and Capabilities

VAADR SFF-CAN

- Record 2 color cameras/ sensors
- Record raw Bayer data
- Record vehicular CAN data, synchronized to the video
- Instant access to video
- Show vehicle GPS track over maps synchronized to video
- Connect to additional VAADR for more channels of synchronized video recording.
- Various drive sizes

Other Features

- Small, lightweight
- Easy to install and operate
- Customizable for various sensors and data
- Expansion capabilities to other cameras/sensors and inetrfaces

Applications

- Vehicular sensor testing
- Data gathering for image processing experimentation
- R/D for surround-view, top-view, analytics, etc.
- Build a library of corner-case automotive video anomalies
- Road-test documentation

General Information

VAADR-SFF-CAN provides real-time recording of 2 channels (cascadable to 4 with a cable to another VAADR SFF-CAN) full frame-rate 16-bit hi-resolution raw Bayer imagery from 2 sensors/cameras, in vehicular applications, or in the lab or other industrial setting. It can record RAW Bayer imagery, and associated vehicular meta-data (GPS, timestamp, CAN, etc.). The RAW imagery recording and associated playback allows unprecedented advanced image analysis and processing during debriefing or post mission analysis. It provides multiple channels, a variety of conventional VCR type controls, bookmarks, and a mix of very advanced image analysis and processing during playback. Additionally, it handles metadata acquisition, synchronization, management, and display







Specs

Interfaces / Specs

Image

- 2 channels of Omnivision OV10635 or equivalent. Adaptable to others.
- LVDS. 16 bits/pixel, RGGB Bayer, RCCC, other
- 492Mbits/sec
- FAKRA Type Z connector
- Power over Coax

Vehicle Data

- 1 high speed CAN2.0, 1 low speed CAN2.0
- DB-9 physical interface, both channels
- Data skew to video: < 100 ms
- Data stored in video header (speed, yaw, yaw rate, GPS, time, gear position, steering angle, etc.)
- Adaptable to other codebooks

Video Storage / Extraction

- 2 750GB spinning drives, or 2 500GB SSD drives (other drives available)
- 2 channels of approximately 3.4 hrs for 750GB.
- Stored as Bayer mosaic
- Video monitoring during storage out DVI/ HDMI at 30 fps from selected camera source
- Console button for VCR controls start/stop, and bookmark insertion
- Video extraction over USB2.0, or directly view data on drive with VAADRView or other
- Extra serial port for synchronizing this recorder to other VAADR recorders, for 4 or 6 simultaneous video records.

Environmental / Physical

Storage: -40 °C to +85 °C Spinning drives: -25 °C to 70 °C Solid state drives: 0°C to 60 °C Dimensions: 7"x4"x2.5" Power: 12VDC (8V-16V DC), < 25W Weight: 3.5 lbs

Front Panel



Back Panel



Expansion

Extra hardware and ports exist. With effort, the following functionality could be added:

- Network access
- 3rd CAN port
- Cameralink camera input
- Sensor Tx outputs. This can be used to play the recorded video later out 2 output jacks, to look like the live camera feeds that came in upon record
- Console button for VCR controls start/stop, and bookmark insertion
- Video extraction over USB2.0, or directly view data on drive with VAADRView or other







Control

VAADK SFF-CAN

VAADR Simple Control GUI

An application that is used to control VAADR to record, stop, drop bookmarks, and gather VAADR status. It is meant to run on a laptop inside the vehicle to initiate the desired operations.

It implements the VAADRLink protocol, which can be provided in some circumstances, if you wish to write your own control application.

A VAADR Simple C	ontrol Interface	- 🗆 X				
File Help						
VAADR state	Bookmark Recor	rd Stop				
rec live	• •					
	SPACE Q	S				
Drive usage	Display From Camera 1 Camera 2	Reset Recording				
Time						
Get Time Get VAADR						
Set Time 2016-03-09 13:14:19						
[Stopped] [Camera 1 recorded, Camera 1 displayed] [usage=empty]						
13:11:42 No COM port open!						



An application that is a playback/debrief PC GUI to view/process large amounts of VAADR recorded video. It also shows the vehicle track/position over map/satellite data for any frame of video.

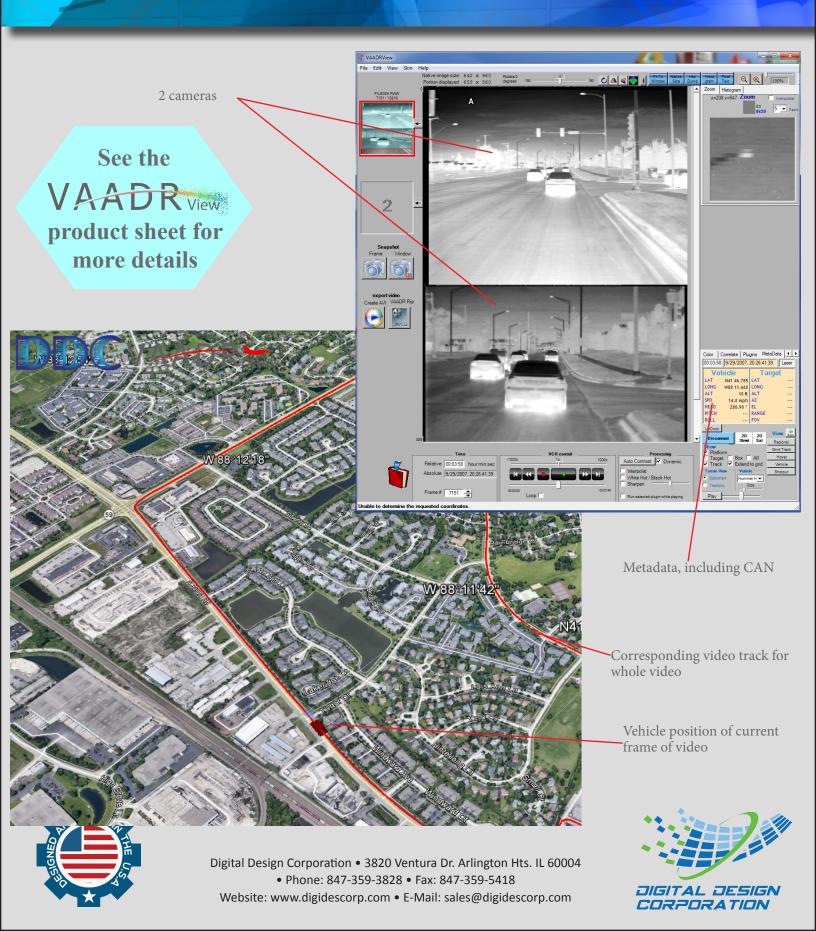
- Video: Instant access to any amount of video from your VAADR, from your PC, or from your network storage. Load multiple videos simultaneously. Export to other formats. Extract interesting sections.
- Video Formats: Reads RAW Bayer, RAW grayscale, MPEG-2, AVI, jpg, BMP, GIF, png, tiff. Writes JPG, BMP, GIF, and AVI with available codecs on your PC.
- **Bookmarks**: Add bookmarks for quick indexing. Multiple people can have their own sets for the same video. Extract video of bookmarks.
- Data: Study images, video, histograms, hex data, CAN data, or PixelText (see next page).
- **Mapping**: Show vehicle GPS track and position data over satellite or map imagery (see next page), in real time during playback of stored video.
- **Processing**: Zoom, AGC, sharpen, color adjustments, rotation, flipping, etc.







VAADRView Mapping



SFE-CAN

VAADRView Analysis

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		0352 03ff 03fa			003d 004d 0032 0037	CAN data VID=61166 CID=56797
	00d1 00d8 00 00 02f	f 039d <mark>03ff 03c9</mark> (03ff 03bb 03f3	00b6 0055	0030 0043 0032 002E	LAT LONG g = 0 m/s^2
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SFF-CAN

Reference image Reference image

See the VAADR view product sheet for more details CAN data. Can be tuned to desired data: GPS, time, steering angle, brake pedal, gas pedal, etc.



