

VAADR N-EX

**DIGITAL DESIGN
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The DDC VAADR N-EX is a small form factor real time video image enhancement board that is also a recorder.

Processing Platform

As a processing platform, the VAADR N-EX can interface to most FLIR/CCD cameras and provides both conventional and advanced image processing. It can then output processed analog or digital video.

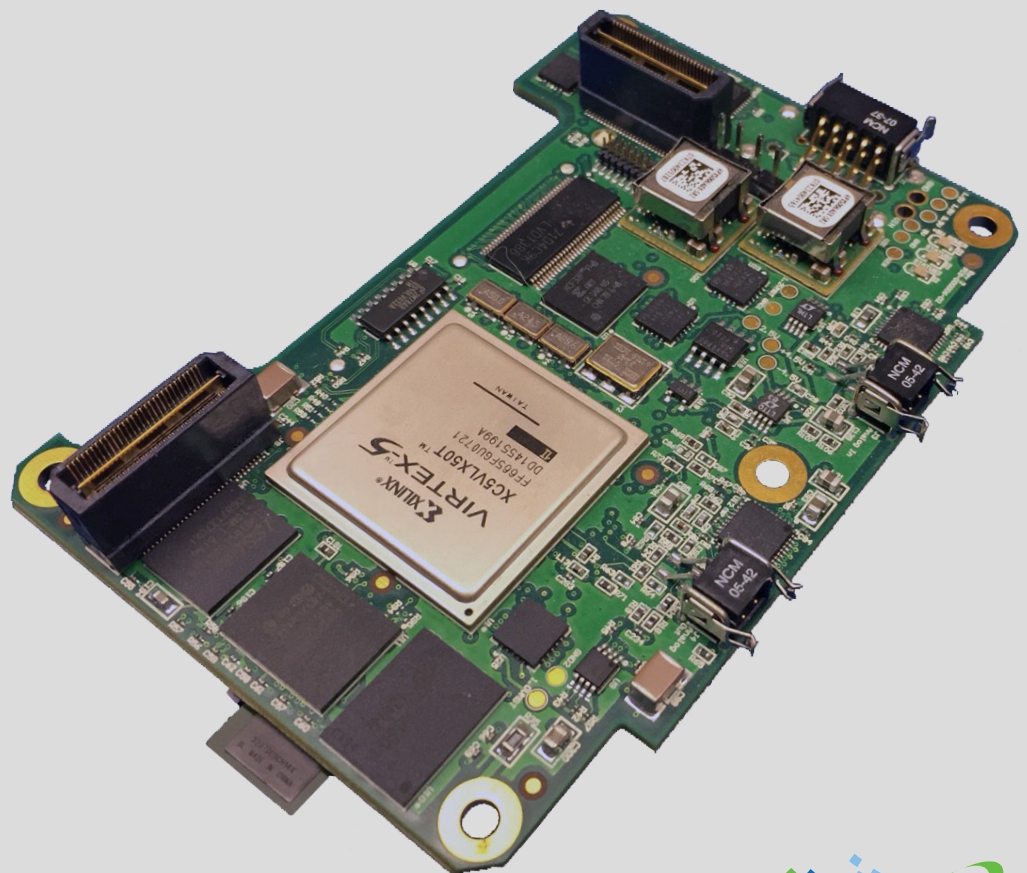
Example processing options are shown below.

- Sharpening
- LAP
- Compression
- Detail enhancement

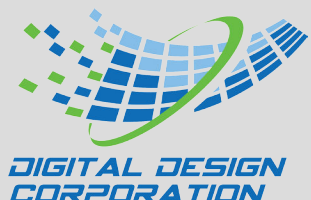
Many other processing options are possible.

General Information

The DDC small form factor advanced video and data recorder and processing platform provides real-time recording and/or image processing of high frame-rate 16-bit hi-resolution imagery, in ruggedized applications. The VAADR-N-EX allows unprecedented advanced image analysis and processing during debriefing and image processing capabilities on live video. It provides multiple video inputs, a variety of conventional VCR type controls, and a mix of very advanced image analysis and processing. The device also supports multiple video formats.



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Interfaces

I/O

- Analog in/out
- USB2.0
- Micro-SD card slot
- RS-422
- eSATA

Expansion Headers*

- 92 signals (single and differential)
- Up to 20 16-bit high speed LVDS pairs (3M 50x100mil)

*Optional. Needed if used with VAADR-N-EX-CC or other mezz cards

Environmental

Power

- 4W maximum dissipation
- 6.5V-14.5V

Temperature

- 40 to +85C ambient operation
- Storage -55 to +125C
- Built-in temperature monitor

Mechanical

Dimensions

- VAADR-N-EX:
3.75"x2.75"x0.5" (5.16 inches³)
- VAADR-N-EX-CC:
3.75"x2.75"x0.75" (7.73 inches³)
- Interlocked:
3.75"x2.75"x1.5" (15.46 inches³)

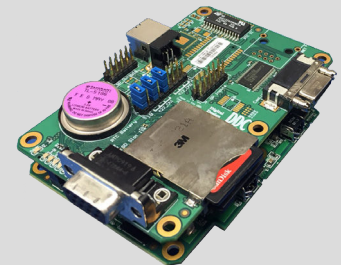
Applications

- Fits into a standard 2.5" PC drive enclosure
- Can be custom mounted into your chassis
- Custom form factors can be created (including smaller)

VAADR-N-EX-CC (Optional)

The VAADR-N-EX-CC is a two-board product with a mezz card mounted onto the VAADR-N-EX for additional functionality through its various I/O interfaces including:

- 2 SD card slots
- Camera Link
- GigE (10/100/1000) (optional)
- Expansion headers
- Additional R-422 and USB2.0



Memory Options

Operate with on-board SD memory, or plug in an off-the-shelf SATA disk (platter or solid-state), or use DDC's high bandwidth ruggedized solid-state nStore drive. VAADR-N-EX can operate with or without storage. Storage options are below:

1. No storage: operate as a multi-purpose processing engine
2. On-board micro-SD slot: up to 512GB, up to 30MB/s
3. (VAADR-N-EX-CC only) 2 on-board SD slots: up to 512GB each, up to 30 MB/s
4. Combined memory of VAADR-N-EX with VAADR-N-EX-CC: up to 1TB and beyond, up to 30 MB/s
5. SATA PC/laptop hard drive or SSD: up to 1TB and beyond, up to 160 MB/s**

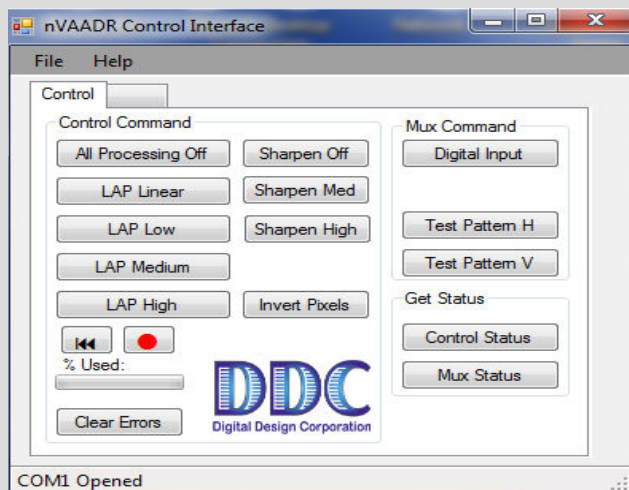
** This option could be supported, but requires advanced integration for use with VAADR-N-EX.

VAADR N-EX Record Times

		Video Source			
		RS-170	640x480 (16-bit, 30 fps)	640x480 (16-bit, 60 fps)	1280x800 (16-bit, 60 fps)
SD Memory	8 GB	15m	7m	3m	1m
	16 GB	31m	15m	7m	2m
	32 GB	1h	31m	15m	4m
	64 GB	2h	1h	31m	9m
	128 GB	4.1h	2h	1h	18m
	256 GB	8.2h	4.1h	2h	37m
	512 GB	16.5h	8.2h	4.1h	1.2h

Compression is possible to increase recording time, but will effect video quality.





VAADR Control Console

The DDC's application for VAADR-N-EX allows the user to enable LAP and other imaging processes on the footage.

VAADRLink API

VAADRLink is a control protocol that all VAADR models support. The API allows control by either custom implementation, if desired, or a application that DDC can provide. Contact DDC.

Embedded Image Platforming

The VAADR-N-EX is equipped with an embedded image platform that performs image enhancement and detail extraction from footage collected through DDC's LAP (Local Area Processing) technology. Below are examples of the VAADR-N-EX's image transformation capabilities.

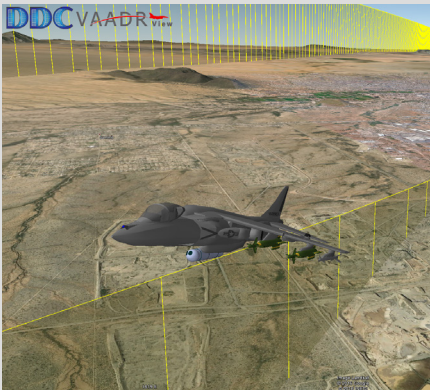
Before



After



VAADRView Console and Debriefing Software



- Instant access from VAADR, PC/ laptop, or network storage.
- Bookmarking for quick references
- Raw image extraction for own processing
- See the VAADRView product sheet for more information.

Running on almost any PC or laptop, and directly connecting to VAADR hardware via USB, the VAADRView application can *instantly* open up (or drag and drop) *all* of the VAADR video and data, and pan through it, play it, single step through it, fast forward, rewind, all while zoomed, or with other contrast, analysis, or processing operations. Works on VAADR or other imagery, and raw or compressed.

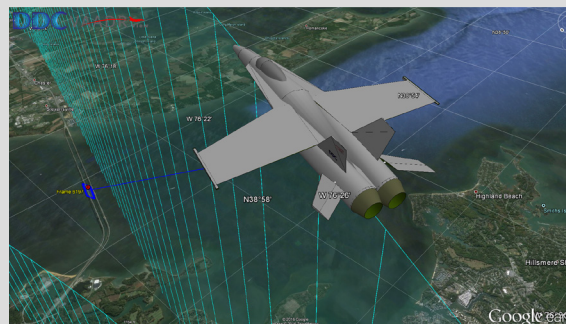
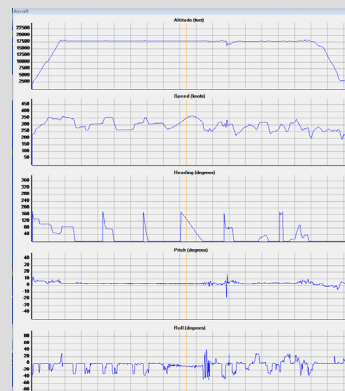
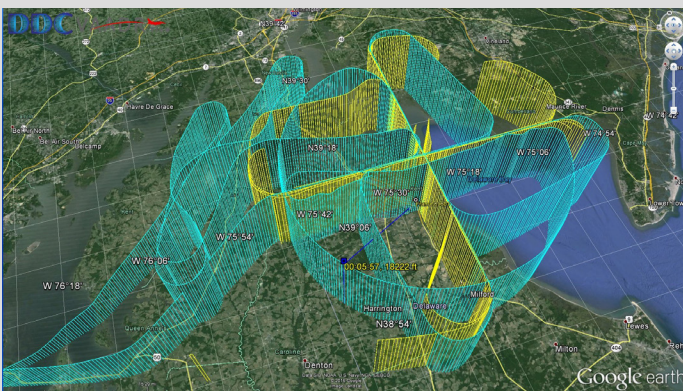


Multiple Videos

- Supports multiple videos loaded simultaneously, for side-by-side comparison.
- Any frame from one video can be differenced with any frame from another video.

Processing

- Dynamic controls for zoom, contrast, rotation, flip, brightness, LAP, sharpen, histogram stretch, AGC, invert, color corrections, interpolate, white hot / black hot, various filters, thresholding, etc.
- RAW video untouched, despite the processing done to enhance the playback.
- Supports plugins.
- Statistical and histogram analysis to analyze and detect defects or oddities in your sensor.
- Declassify mode for black boxing selected areas.



Metadata

- A 3D projection is animated onto Google Earth and NASA World Wind in real time using metadata collected.
- Metadata is displayed simultaneously alongside footage.



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