

# VRIP

## *Low Latency, High Definition Video Router and Image Processor*



Video Routing/Encoding/Decoding

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Image Enhancement

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Operator Aids

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Image Controls

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Sensor Fusion

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### Overview

The Video Router and Image Processor (VRIP) unit provides low- latency, low-cost video routing and processing and streaming capabilities suitable for the most demanding in-vehicle high definition video distribution applications such as Situational Awareness Systems.

The VRIP unit is an open standard 3U VPX chassis containing a GDMS-C VP1-1 Video Processor, a Graphics Processing Module, and power supply.

The VRIP supports the following I/Os:

Video inputs:

- 4x SD def CVBS/RS-170A (NTSC/PAL)
- 4x 3G SDI up to 1920x1080 resolution
- 1x HD SDI up to 1920x1080 resolution
- 2x DVI up to 1920x1080 resolution
- 1x RGB or VESA VGA analog component up to 1280x1024 resolution
- 1 x H.264 SD Decoded video streams
- 1x H.264 HD Decoded video streams

Video outputs:

- 4 x 3G SDI Outputs up to 1080p60 resolution
- 1 x DVI up to 1920x1080 resolution
- 4 x SD H.264 Encoded video
- 1 x SXGA H.264 Encoded video

The control API is accessed via a dedicated Ethernet port.

# Technical Information

## Features:

- Image Enhancement:
  - Mirroring: used for Rear facing cameras;
  - Histogram: used for low contrast scene enhancement in fog, smoke, overcast snow or sand, etc.;
  - Image Sharpening: used to enhance brightness and edges;
  - Local Equalization: used for local contrast enhancement;
  - Horizon Compensation: used to automatic adjustment contrast in bright sky or low sun angle situations.
- Operator Aids:
  - Change Detection: automatic detection of transient flashes such as gun firing and windscreen glint;
  - Automatic Target Detection: provides a video overlay of possible targets based on contrast, size & co-location;
  - Target Tracking: Tracking of designated object.
- Image Controls:
  - Stitching: used to combine video streams with adjacent horizontal boundaries and output a single stitched image; and
  - Stabilization: scene based stabilization to remove vibration artefacts.
- Sensor Fusion: used to combine two video streams by combining corresponding pixels from two video cameras into a single output pixel representative of information from both sources.
- Video Routing: Any to any routing available with customizable firmware. Base routing available today.
- Video Encoding/decoding: STANAG 4609.
- Multi-view outputs: Picture in Picture (PIP) and multi view displays.
- Customizable graphics overlay on all video outputs.
- Real Time Video Processing: scaling, layering, positioning, and routing as well as the blending of any input or output video.
- Dual-core A9 Cortex Processor: used to host applications .

## Interfaces

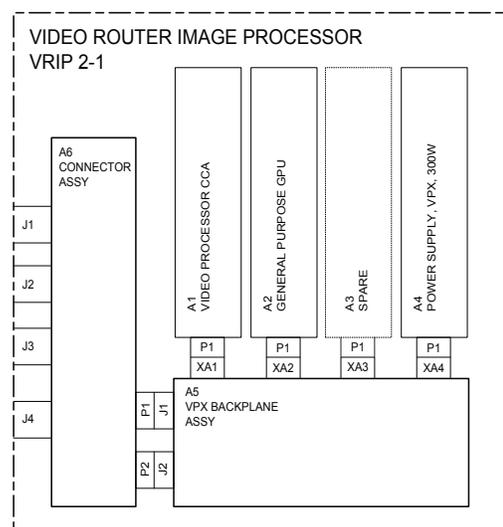
User Application CPU:	Dual-Core ARM Cortex-A9 (1.05 GHz)
Network:	3x 10/100/1000 Ethernet
USB:	2x USB 2.0
Serial:	1x RS422/RS232
Audio:	1x Mono Input 1x Mono Outputs
Video Input Interfaces:	4x CVBS/RS-170A (NTSC/PAL) 4x 3G SDI up to 1920x1080 resolution 1x HD SDI up to 1920x1080 resolution 2x DVI up to 1920x1080 resolution 1x RGB or up to 1280x1024 resolution
Video Output Interfaces:	4 x 3G SDI Outputs up to 1920x1080 resolution 1x DVI up to 1920x1080 resolution
Video Latency:	As low as 1 frame
Power Input:	MIL STD 1275D

Video-Over-Ethernet:	STANAG 4609. H.264 SD and HD Video Decode STANAG 4609. H.264 SD and SXGA Video Encoding *Optional low bandwidth (1Mbps) secondary stream per encode 1x Mono encoding (AAC @ 128/192/256/320Kbps) Support for KLV metadata
On-Screen-Display:	Multiple independent OSDs supported (OSD Overlays)
Operating Systems:	Linux
<b>Physical Characteristics</b>	
Size:	11.35" d x 6.79" w x 5.75" h
Weight:	15 lbs
Connectors:	MIL-C-38999
<b>Environmental Specifications</b>	
Operating Temperature:	-40C to +49C
Storage Temperature:	-51C to +71C
Vibration:	MIL-STD-810G Method 514.5 Procedure I Composite Tracked and Wheeled Vehicle
Shock:	MIL-STD-810G Operational: Method 516.5, Procedure I Bench Handling: Method 516.5, Procedure VI Crash Hazard: Method 516.5, Procedure V
EMI/EMC:	MIL-STD-461F

## Additional Features

- Built-In Test (BIT)
- Two level maintenance support

The processor described here represents a general configuration of this family of products. Specifications are configurable for specific customer requirements. For pricing and availability interfaces, casings, connectors and other information, please contact your General Dynamics representative.



## GENERAL DYNAMICS

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