



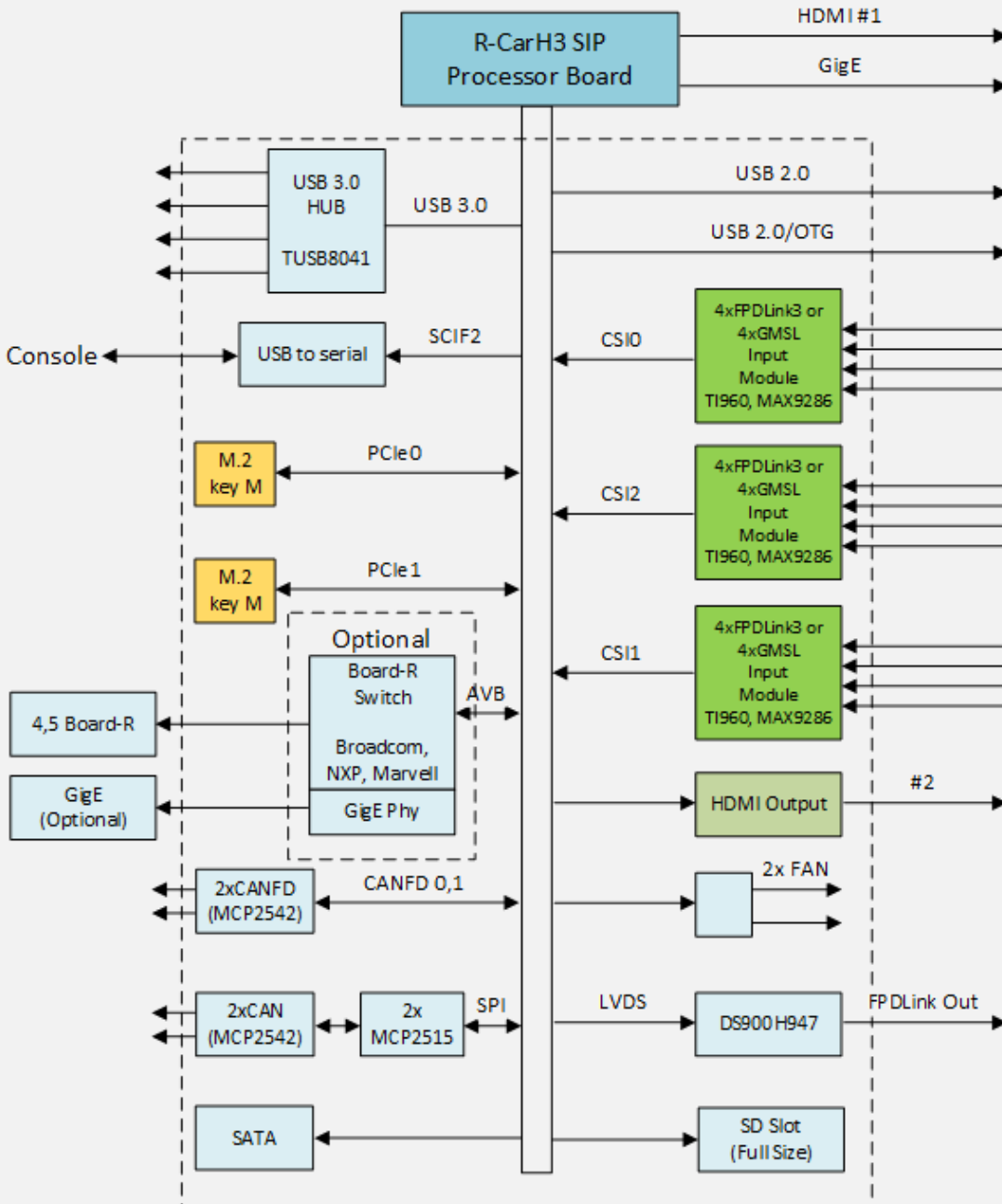
VIDEOBOX V2 DATASHEET

Hardware Specification

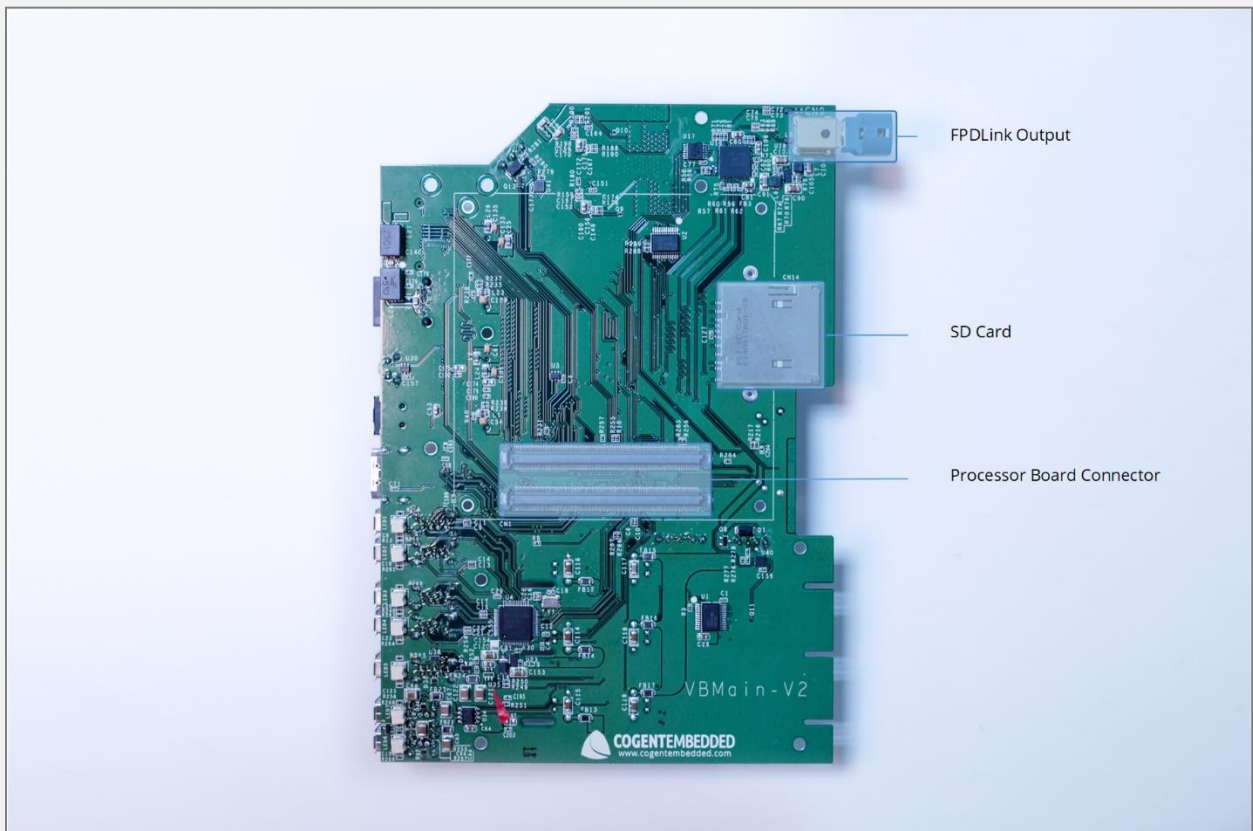
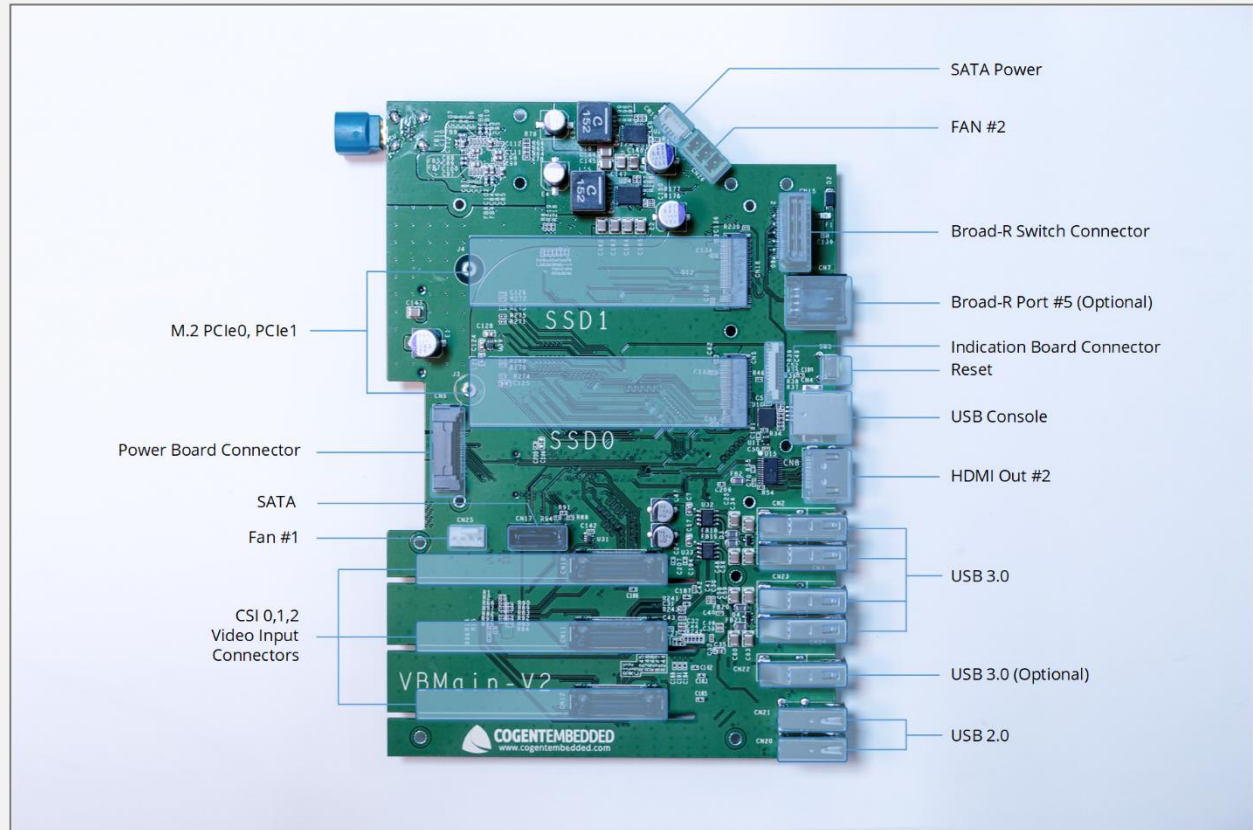
VideoboxV2 Hardware Features

Main SoC (Processing Unit)	• Renesas R-Car H3: ○ 4x Cortex A57, 4x Cortex A53 ○ ImgTech GPU GX6650 ○ Vision: IMP X5, IMR • (optional) R-Car M3W • (optional) R-Car V3H: ○ 4x Cortex A53 ○ IMP X5+, IMR ○ ISP
RAM	• LPDDR4 4GB
Video Input Interfaces	• Up to 8 FPDLinkIII (TI960 Deserializer Hub) • Up to 8 GMSL (MAX9286) • (optional) custom video input adapters (e.g. HDMI to CSI)
PCIe Interfaces	• Two M.2 Key M PCIe Slots
Ethernet	• 1x GigE • (optional) Broad-R Switch add-on cards (Broadcom, NXP, Marvell): 4-5x Broad-R ports, 1x GigE
CANFD/CAN	• 2x CANFD/CAN • 2x CAN
Storage	• 1x SATA • 1x uSD slot • 1x Full-size SD card slot • 2x PCIe(NVME or SATA) M.2 SSDs • On-board eMMC (32GB)
Video Output	• 2x HDMI Output • 1x FPDlink3 Output
USB	• 4x USB3.0 • 2x USB2.0 (1x OTG)

VideoboxV2 Block Diagram



VideoboxV2 Motherboard



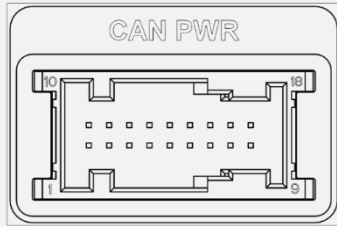
Cogent Embedded, Inc.

www.cogentembedded.com

VideoboxV2 Connectors Pinout

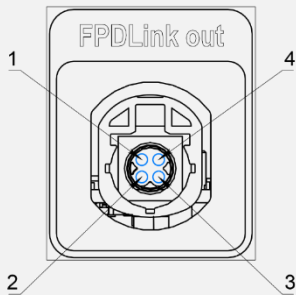
CAN PWR Connector (CN1)

Power, CAN, wakeup. TE Connectivity: 1-1355154-1



Pin	Connection	Connection	Pin
1	12VDC in	12VDC in	10
2	GND	GND	11
3	CAN2_H	nc	12
4	CAN2_L	CAN3_H	13
5	CAN0_H	CAN3_L	14
6	CAN0_L	CAN1_H	15
7	WKUP1	CAN1_L	16
8	WKUP0	+5VDC out	17
9	nc	nc	18

FPDLink-III Display Output Connector

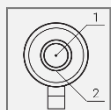


Pin	Connection
1	A-
2	B-
3	A+
4	B+

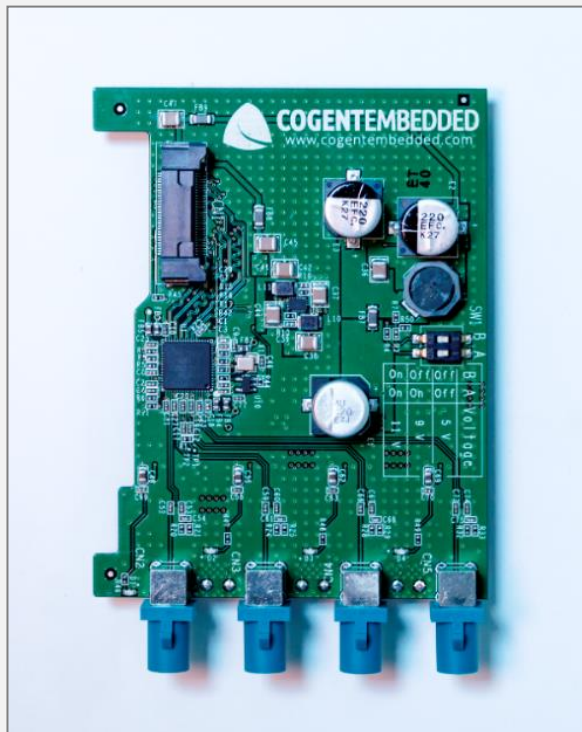
VideoboxV2 Add-on Modules

Video Input Modules:

- TI960 and MAX9286 variants
- PoC and HSD connectors



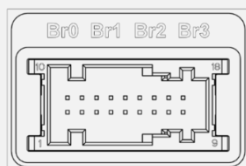
Pin	Connection
1	PoC GMSL (selectable 5, 9 or 11 V) or PoC FPD-Link III (selectable 5, 9 or 11V)
2	Ground/Shield



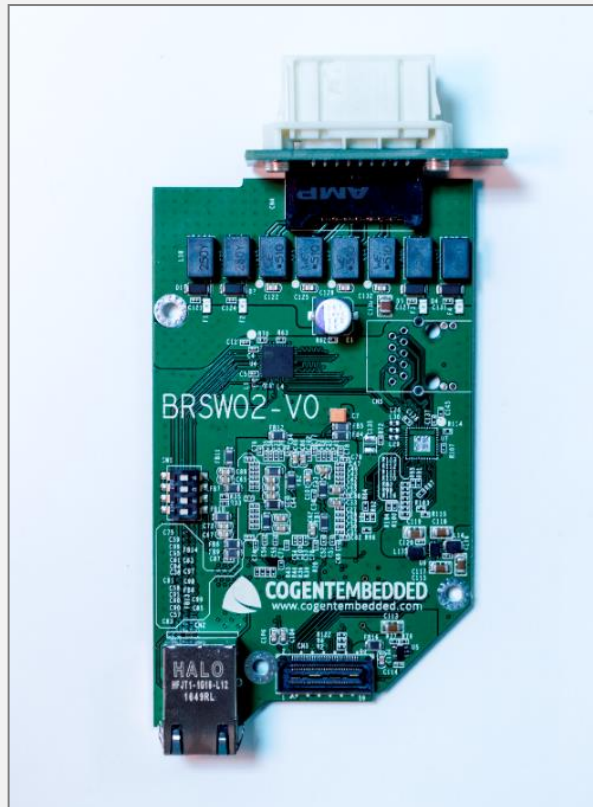
Ethernet Broad-R Switch Modules:

- Broadcom, NXP and Marvell variants
- 4-5 Broad-R Ports, 1x GigE

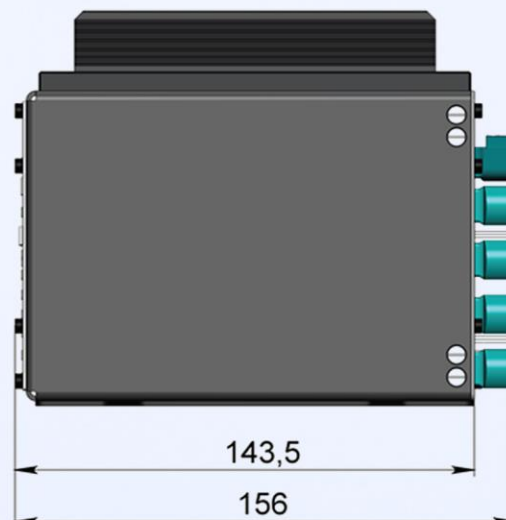
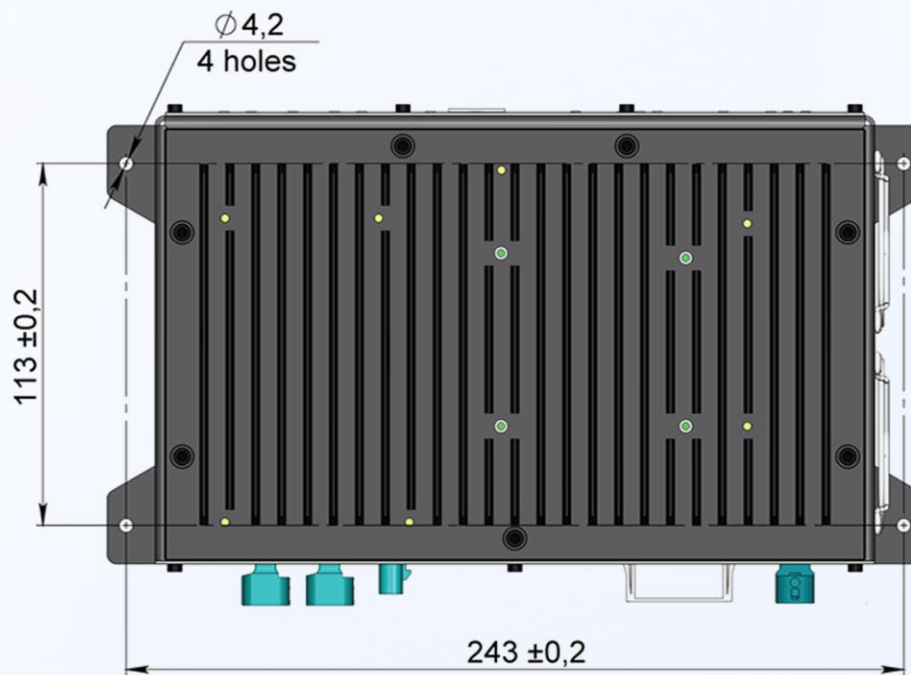
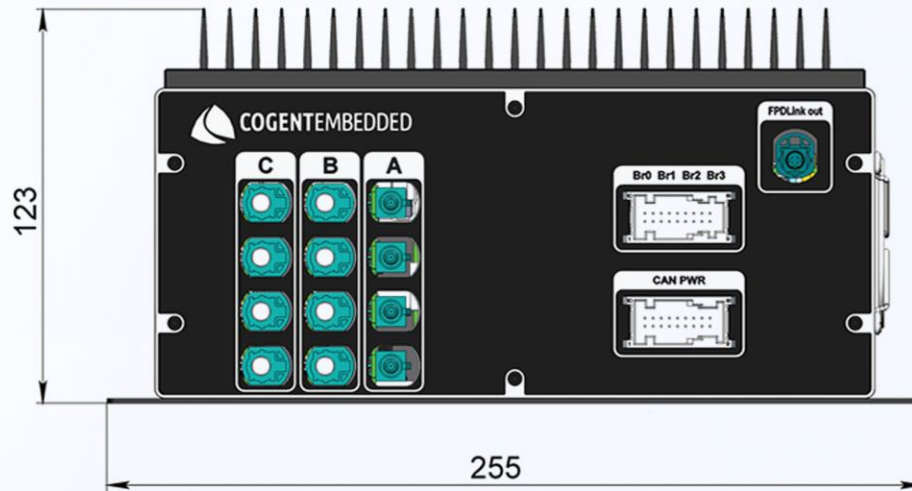
Broad-R Connector (CN3)



Pin	Connection	Connection	Pin
1	Pwr3+	Br3+	10
2	Pwr3-	Br3-	11
3	Br2-	Pwr2-	12
4	Br2+	Pwr2+	13
5			14
6	Br1+	Pwr1+	15
7	Br1-	Pwr1-	16
8	Pwr0+	Br0-	17
9	Pwr0-	Br0+	18



VideoboxV2 Dimensions



VideoboxV2 Software

Base OS	• Linux/Yocto: ○ 4.9, 4.14 Linux LTS ○ GLES3.1, OpenCL1.2 ○ Wayland/Weston, Qt ○ GStreamer ○ OpenCV ○ Caffe
Recording Software Suite	• Camera and Sensors recording: ○ Up to 4x 2MP 30fps Camera streams (raw), vehicle data (CANFD/CAN, Ethernet), sensors (Ethernet, CANFD/CAN) ○ H.264 and raw formats ○ Time synchronization ○ Recording and Playback modes ○ Cloud synchronization/upload
Camera Calibration Software	• Cogent Intrinsic Calibration Suite • Cogent Extrinsic Calibration Suite
Surround View Software	• Cogent 3D Surround View SDK: ○ 2D/3D projections, fixed and free viewpoints ○ UI overlays (vehicle 3D model, projected path/guidelines, obstacles, objects) ○ Color correction ○ Historical view ○ Dynamic/adaptive mesh and blend zones ○ Factory calibration ○ Online calibration (autocalibration)
Vision Functions	• Cross Traffic Alert • Moving Objects Detection • Pedestrian Detection • Lane Detection • Trailer Angle Detection • Dirt & Blockage Detection • Parking Slot Detection
Ethernet AVB	• Cogent Ethernet AVB Stack ○ AVDECC (IEEE1722.1) ○ MSRP/MVRP (IEEE802.1Q) ○ gPTP (AS master capable) ○ AV payload (IEEE1722, IEEE1733) ○ Traffic shaping



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