BoltGPU 10-31

AI and Machine Vision Subsystem for Rolling Stock and Automotive



- **GPU Accelerated**
- **Multiple Camera Input**
- **High Speed Interfaces**
- **Rolling Stock & Automotive**
- **Rugged**
- **Customizable**

Features

GPU Accelerated - Powered by NVIDIA Jetson Xavier NX with up to 21 TOPS of GPU accelerated computing
Multiple Camera Input - Supports high speed, high frame rate cameras on GMSL, GbE and USB3
High Speed Interfaces - Provides best in class interfaces, like 3x GbE, 4x GMSL, USB3.1 G2 and Wi-Fi 6
Rolling Stock & Automotive - Certified for EN50155, EN45545 and E-Mark, supporting GNSS with Untethered Dead Reckoning
Rugged - Comes with rugged connectors, EN50155 OT3 operating temperature and with a 24-110VDC EN50155 power supply
Customizable - Personalization and full customization options are available, ranging from branding ("skins" and color) to deep HW/SW configurations

Description

The BoltGPU 10-31 is a rugged subsystem that has been designed to deliver GPU acceleration to Rolling Stock and Automotive applications.

Based on NVIDIA Jetson Xavier NX, it combines a 6-core, high-performance ARM CPU with a 384-core GPU and 48 Tensor Cores, offering exceptional power efficiency and up to 21 TOPS of accelerated computing.

The BoltGPU 10-31 is a power efficient, stand-alone unit that enables traditional and GPU-accelerated workloads in harsh environments, and comes with Automotive and Rolling Stock certifications, such as EN50155, EN45545 and E-Mark.

With a very complete set of high-speed interfaces, the BoltGPU 10-31 can be used to process multiple video streams from high speed, high frame rate cameras: it provides 3x GbE, 4x GMSL and 3x USB3.1 Gen 2 ports (noise and surge protected) that can be used to connect sensors and to create sophisticated networking architectures. Wireless connectivity is also cutting edge, thanks to Wi-Fi 6, BT5.1 and support for optional LTE modems.

The BoltGPU 10-31 offers plenty of storage capacity for video and other data via an internal NVME unit; removable storage is also supported via a microSD interface.

On-vehicle features include isolated CAN-FD and opto-isolated DIO, a GNSS with Untethered Dead Reckoning (optionally RTK), and rugged M12 connectors.

Other transportation and heavy-duty enablers are a wide range power input (24-110VDC, EN50155) with ignition sense and EN50155 OT3 operating temperature range (-25 to +70°C).

The BoltGPU 10-31 shares the same form factor of the BoltGATE 20-31 and of its expansion modules, making it possible to create hybrid architectures with extra features.

For customers seeking a tailored product, Eurotech offers a range of personalization and full customization options, ranging from branding ("skins" and color) to deep HW/SW configurations.

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EUROTECH

Ordering Code: BTGPU-10-31-XX

XX		-21	-24
NVIDIA MODULE	Core	NVIDIA® Jetson Xavier NX™	
	CPU	6-core NVIDIA Carmel ARM® v8.2 64-bit CPU 6MB L2 + 4MB L3	
	GPU	384-core NVIDIA Volta™ GPU with 48 Tensor Cores	
MEMORY	RAM	8 GB 128-bit LPDDR4x @1600MHz, 51.2GB/s	
STORAGE	Embedded	16 GB eMMC 5.1	
	NVME	-	512GB on M.2 Key M
	Additional Storage	Micro SD Slot (User Accessible)	
I/O INTERFACES	Ethernet	3x 10/100/1000 Mbps - M12	
	USB 3.0	2x Host USB3.1 Gen.2 (Noise and Surge Protected) - Type A	
	Serial	1x TTL Serial Console	
	CAN	1x CAN-FD (Isolated) - DB9	
	Digital I/O	2x Digital Inputs Optoisolated 2x Digital Outputs Optoisolated	
	Video OUT	1x Video Output (Display Port)	
CAMERA INPUT	Camera IN	4x GMSL (1.5Gbps to CSI-2)	
RADIO INTERFACES	Wi-Fi/BT Radio	-	Wi-Fi 6 (802.11ax/ac/abgn) + BT5.1/BLE
	Cellular Radio	Factory Option	
	GNSS	-	Internal (72 channels BeiDou, Galileo, GLONASS, GPS, QZSS) - Untethered Dead Reckoning (RTK GNSS - Factory Option)
EXPANSIONS	M.2 Key B	1x M.2 Key B (3042, 3052) - (USB3.1, USB2, PCIe x1)	
	M.2 Key E	1x M.2 Key E (1630, 2230, 3030) - (PCIe x1, USB2.0, SDIO, I2C, I2S) - Used for Wi-Fi/BT	
	M.2 Key M	1x M.2 Key M (2242, 3042, 2280) - (PCIe x4) - Used for NVME	
	Side Connector	PCIe x4 Endpoint Mode + 12V Power Input - PCIe x4 Shared with M.2 Key M	
OTHER	RTC	Yes (SuperCAP Backed) with Anti-tampering Timestamp	
	Discrete Watchdog	Yes	
	Serial EEPROM on I2C	256 Kbit	
	TPM	Internal TPM 2.0	
	Sensors	Internal Temperature	
	LED	1x Power (Blue) 1x Cellular Activity (Green) 4x User Configurable (2x Green, 2x Amber)	
MISC	Buttons	1x Reset	
	Anti-Tamper Detection	Yes	
	SIM Slot	Yes (User Accessible)	
POWER	Power Input	Wide Range 24-110VDC nom.(EN50155 Compliant); 24VDC Automotive (Regulation 10 Compliant) with Ignition sense	
	Power Consumption	TBD	
ENVIRONMENT	Operating Temperature	EN50155 OT3	
	Storage Temperature	-40°C to +85 °C	
	Humidity	RH 5..95% Operating Non-condensing (40°C)	
CERTIFICATIONS	Regulatory	CE, FCC, ISED	
	Safety	EN62368, UL60950 (§)	
	Vertical	EN50155, EN45545, E-Mark	
	Environmental	ROHS3, REACH	
	Wi-Fi/BLE Radio	-	RED, FCC, ISED
	Cellular Radio	-	

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	Ingress Protection	IP 40
MECHANICAL	Dimensions	65x132x149mm (WxHxD) - With Connectors

§ UL, NRTL listing Factory Option

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