

ITA-510NX

AI Inference System Powered by NVIDIA® Jetson Orin NX™ for Railway Applications



Features

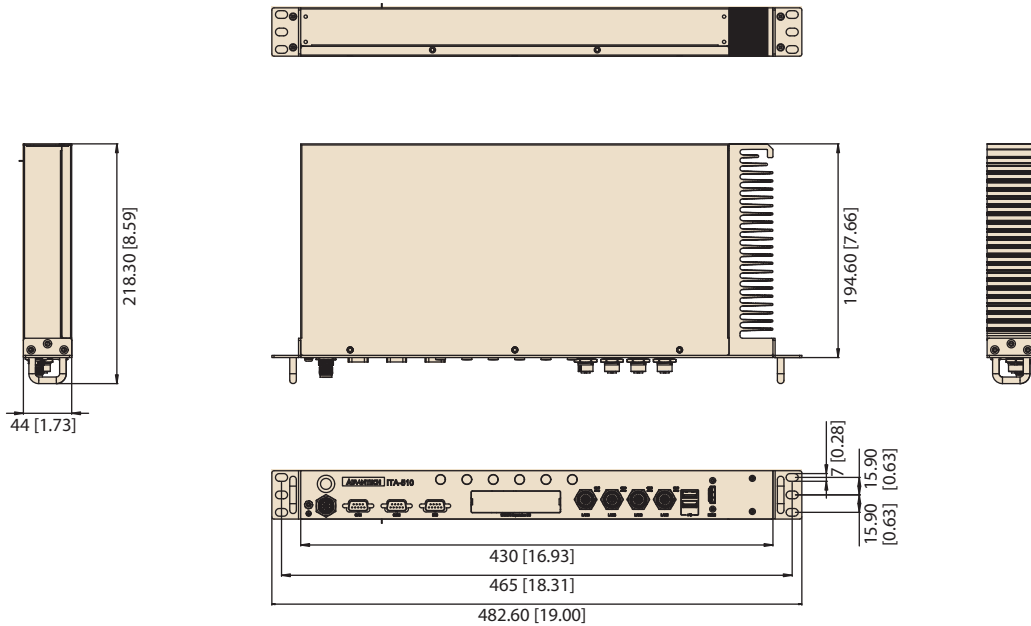
- Fanless system designed for AI inference
- Embedded NVIDIA® Jetson Orin NX™ platform
- Compliant with EN 50155 OT3 and EN 50121-3-2 EMC standards
- Rugged M12 connectors suitable for harsh, industrial environments
- 1 x Mini PCIe, 1 x M.2 (E-key), 1 x M.2 (M-key) and 1 x M.2 (B-key) for easy expansion
- Bundled with Linux Ubuntu 18.04 operating system

Specifications

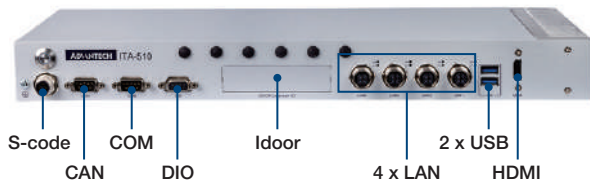
System	GPU	NVIDIA® Ampere GPU 1024 NVIDIA CUDA cores and 32 Tensor cores Up to 100 (Sparse) INT8 TOPs and 50 (Dense) INT8 TOPs
	CPU	NVIDIA® Jetson Orin NX™ 8-core Arm® Cortex®-A78AE v8.2 64-bit CPU
	DLA	20 TOPS each (Sparse INT8)
Memory	Max. Capacity	16 GB 128-bit LPDDR5 102.4 GB/s
I/O - External	Display	1 x HDMI
	CAN	1 x CAN, DB9
	USB	2 x USB 3.0 type A
	Serial Port	1 x RS-232/RS-422/RS-485, DB9
	DI/O	1 x 8bit (4in/4out), DB9 (optional)
I/O - Internal (Pin Header)	CAN	1 x CAN, DB9 (optional)
	OTG USB	1 x Micro USB
	Serial Port	1 x RS-232/RS-422/RS-485, DB9 (optional)
Ethernet	Controller	Intel® I210-IT
	Interface	10/100/1000 Mbps
	Connector	4 x M12 X-coded (4 x PoE, optional)
Expansion	Mini PCIe	1 x Mini PCIe slot
	M.2	1 x M.2 (B-key) 3052 for 5G/LTE
		1 x M.2 (E-key) 2230 for Wi-Fi/Bluetooth/storage
		1 x M.2 (M-key) 2280 for storage
	SIM	1 x Nano SIM card slot
Antenna	6	
Storage	SSD easy-swap module	1 x 2.5" SSD (optional)
Power	Input Range	24/110V _{DC}
	Connector	1 x M12 (S-coded)
Environmental	Operating Temperature	-25 ~ 70 °C/-13 ~ 158 °F
	Storage Temperature	-40 ~ 85 °C/-40 ~ 185 °F
	Humidity	5% ~ 95% @ 40 °C/104 °F (non-condensing)
Mechanical	Dimensions (W x H x D)	482.6 x 44 x 195.8
	Mount Options	1U Rackmount
Certification	EMC	CE, FCC, BSMI, CCC
	Safety	CE, FCC, BSMI, CCC
EN50155 Compliance	Ambient Temperature	-25 ~ 70 °C/-13 ~ 158 °F (EN 50155 OT3)
	Shock and Vibration	IEC 61373 body mount class B
	Voltage Interruptions	Class S2
	Supply Change Over	Class C2
	EMC	EN 50121-3-2

Dimensions

Unit: mm [inch]



I/O Layout



Ordering Information

Part Number	Processor	Voltage (M12-S-Male)	Ethernet GbE (M12-X-F)	USB3.1 (Type A)	miniPCIe	M.2 M-Key	M.2 E-key	M.2 B-key	CAN	COM	DIO	HDMI	2.5" SSD
ITA-510NX-LOA1	Orin NX	24V _{DC}	4	2	1	1	1	1	1	1	1	1	1
ITA-510NX-SOA1	Orin NX	110V _{DC}	4	2	1	1	1	1	1	1	1	1	1

Optional Expansion Modules

Part Number	Description
AIW-355DQ-E01	Qualcomm SDX55 5G M.2 3052 module (EU)
AIW-355DQ-C01	Qualcomm SDX55 5G M.2 3052 module (China)
AIW-355DQ-N01	Qualcomm SDX55 5G M.2 3052 module (US)
AIW-152BQ-001	M.2 2230 802.11AC + BT4.2 i-temp module
SQF-C3AV1-128G-EDE	M.2 2230 OPAL 720 128 GB 3D TLC BiCS3 module (-40 ~ 85 °C/-40 ~ 185 °F)
EWM-W158F01E	802.11 a/b/g/n, Atheros AR9592-AR1B, 2T2R module (wide temperature)
PCM-27D24DI-AE*	Isolated digital I/O module with 16 DI and 8 DO, 1 x mPCIe, and 1 x DB37

* Requires a specific chassis

External Cables and Connectors

Part Number	Description
FRU-ITA5831-0002	External cable - Power to M12
FRU-ARS2600-0001	External cable - RJ45 to M12
Y5D5231005	External connector - LAN X-coded
Y5A5231004	External connector - PWR S-coded