

# Tensor-I22

**Tiger Lake UP3 fanless industrial computer for IoT edge applications**



## Features

- Fanless industrial IoT edge computer
- Intel® 11<sup>th</sup> Gen. Core processor
- Up to 3 NVMe + SATA storage devices
- 2x/4x Gigabit LAN
- Wide multiple wireless connectivity options
- Up to 20 COM ports: RS-232/RS-485
- 12V – 56V DC power input

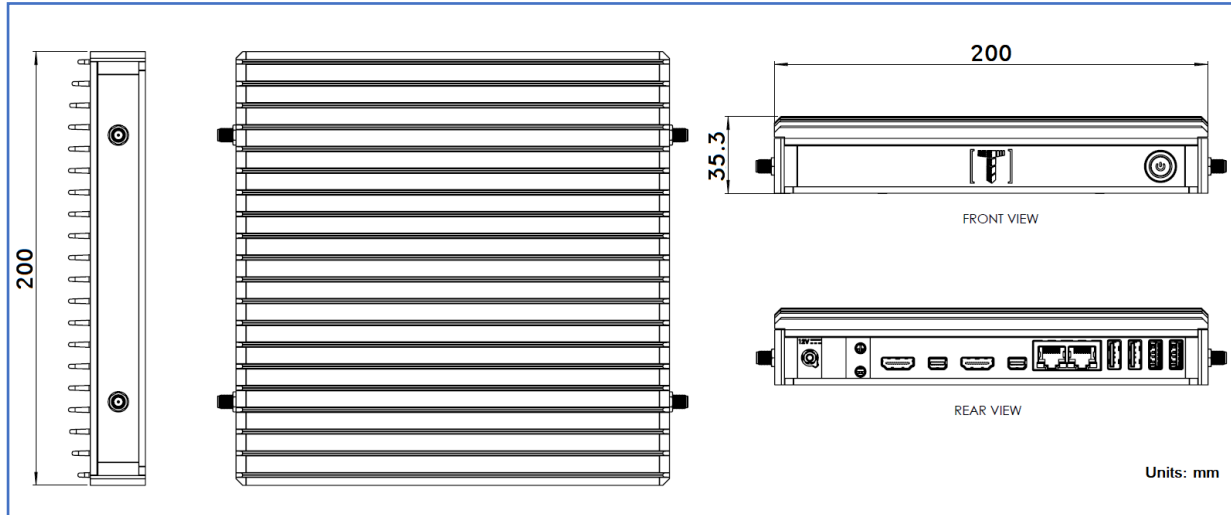
## Specifications

CPU	Intel® Core i7-1185G7E	4 Core   Base: 1.8/2.8 GHz, Boost: 4.4 GHz   TDP: 15/28 W   vPro
	Intel® Core i5-1145G7E	4 Core   Base: 1.5/2.6 GHz, Boost: 4.1 GHz   TDP: 15/28 W   vPro
	Intel® Celeron 6305E	2 Core   Base: 1.8 GHz   TDP: 15 W
Memory	Type	2x SO-DIMM DDR4 up to 3200MT/s
	Max. capacity	64 GB
Storage	Storage devices	Up to 3 NVMe/ SATA storage devices
	Basic configuration	NVMe or SATA on M.2 (PCIe x4 Gen. 4 or SATA 3)
	Optional TEL-NVME on TRIP1	Additional NVMe on M.2 (PCIe x4 Gen. 3)
	Optional TEL-NVME on TRIP2	Additional SATA on M.2
	Optional TEL-SATA1 <sup>1</sup>	Additional SATA on 2.5" for SSD/HDD
Display	Display outputs	Up to 4 independent displays
	HDMI	2x HDMI 1.4b (up to 3840 x 2160 @ 30Hz)
	Mini-Display Port	2x DP 1.2 (up to 4096 x 2160 @ 60Hz) Dual mode
Ethernet	Ethernet ports	Up to 4 ports
	Basic configuration	2x Gigabit Ethernet on RJ45
	Optional TEL-LANX2	Additional 2x Gigabit Ethernet on RJ45
	Optional TEL-OPLNX2	Additional 2x SFP+ ports for optical LAN
	Optional TEL-POEX2 <sup>1</sup>	Additional 2x GbE LAN on RJ45 with PoE source of up to 15W
Wireless Connectivity	M.2 Key-E <sup>2</sup>	For M.2 2230 module with Wi-Fi 6E, BT 5.2
	M.2 Key-B <sup>2</sup>	For M.2 LTE/5G
	Optional TEL-PCIEmini	For mini PCIe module, w/ micro-SIM tray
USB	USB ports	Up to 12 USB 3.1 / 2.0 ports
	Basic configuration	4x USB 3.1 on USB Type-A
	Optional TEL-USB3V4	Up to 2 additional 4x USB 3.1 on USB Type-A
	Optional TEL- USB2V4	Up to 2 additional 4x USB 2.0 on USB Type-A
Serial/GPIO	Serial/GPIO ports <sup>1</sup>	Up to 20 RS-232 / RS-485 or 40+ isolated GPIOs
	RS-232 / RS-485 <sup>1</sup>	Up to 20 RS-232 / RS-485 ports on DB9
	CAN bus	Up to 5 isolated CAN bus ports on DB9
	GPIO	Up to 5 modules with 20 isolated GPIOs each, on terminal blocks
Audio	Codec	Optional analog audio on TEL-AUDIO
	Interfaces	Optional analog output, analog input on 3.5 mm jacks
Power	Input power	Modular power
	Standard power input	12V, 5.5 mm power jack w/ locking, 60W universal PSU
	Wide voltage power input	12-56V, 6-pin ATX power connector w/ locking, 120W universal PSU
TPM	Internal firmware TPM	Intel® PTT (TPM 2.0)
	Discrete TPM	Optional discrete TPM 2.0: RSA-2048, ECC-256, SHA-256, EAL4+
OS support	Windows 10	Windows 10 IoT Enterprise LTSC 2021 / Windows 10 Pro
	Windows 11	Windows 11 Pro
	Linux	Linux Mint / Ubuntu
Operating Environment	Commercial temperature	0°C to 45°C
	Extended temperature	-20°C to 70°C, sample testing
	Industrial temperature	-40°C to 70°C, full testing
	Humidity	5% - 95% non-condensing
Physical Characteristics	Cooling	Fanless, passive cooling
	Dimensions	200 mm X 200 mm X 35.3 mm for standard housing
	Mounting	Side/bottom VESA / DIN Rail mount

### Notes:

1. Some expansion TELs require a larger housing
2. Additional options are available with extension TELs
3. For 28W CPU operation, EW30-ECR20 housing is recommended (300 X 200 X 45.3 mm)

## Dimensions



Note: The above are the dimensions of a standard Tensor-I22. Additional housing options are available, with different lengths, heights, and cooling ribs heights.

## Interfaces

Location	Connector	Interface			
Rear Panel	Power input: 5.5mm jack / 6-pin ATX conn.	7V - 12V, up to 60W / 12v – 56V, up to 120W			
	Optional 2x 3.5mm jacks	Optional analog audio (TEL-AUDIO)			
	2x HDMI	HDMI 1.4b (up to 3840 x 2160 @ 30Hz)			
	2x mini-DP	DP 1.2 (up to 4096 x 2160 @ 60Hz) Dual mode			
	2x RJ45	2 x RJ45 10/100/1000 Mbps Ethernet			
	2x USB Type-A	2x USB 2.0			
Front Panel	2x USB Type-A	2x USB 3.1			
	Power button	On/Off push button w/ power LED			
Right Panel	Optional expansion TELs	2x RJ45, DB9, terminal block, etc.			
	2x SMA	2x SMA antennas for Wi-Fi/BT or cellular modem			
Left Panel	Optional expansion TELs	2x RJ45, DB9, terminal block, etc.			
	2x SMA	2x SMA antennas for Wi-Fi/BT or cellular modem			
Internal	Optional expansion TELs	2x RJ45, DB9, terminal block, etc.			
	Location	Connector	Form factor	Interface	Usage
	Internal	2x SO-DIMM	DDR4 SO-DIMM	DDR4, up to 3200 MT/s	2x DDR4 module
		M.2 Key-B	M.2 Up to 3060	PCIe Gen 3 x1 + USB 2.0	LTE/5G modem
		M.2 Key-E	M.2 2230 or	PCIe Gen 3 x1 + USB 2.0	Wi-Fi/BT module
		M.2 Key-M	M.2 up to 2280	PCIe Gen 3 x4 / SATA	NVMe/SATA storage/AI
		TRIP1	Expansion TEL	PCIe Gen 3 x4 / 2x PCIe	TEL expansions for TRIP1
		TRIP2	Expansion TEL	PCIe Gen 3 x1 / SATA	TEL expansions for TRIP2
4-pin internal USB		Expansion TEL	USB 2.0	USB TEL expansions	

## Optional TEL expansion modules

TEL	Description	Max. quantity	Where connected	PN
FT.C-LAN2	Additional 2x Gbit LAN <sup>1</sup>	1	TRIP1	FC
FT.EC-USB2V4	Additional 4x USB 2.0 <sup>1</sup>	2	TRIP1 / TRIP2	FEC
FT.ED-USB3PCIV4	Additional 4x USB 3.0 <sup>1</sup>	2	TRIP 1,2	FED
FT.F-M2NVMe for NVMe	Additional M.2 Key-M for NVMe <sup>1</sup>	1	TRIP1	FFN
FT.F-M2NVMe for SATA	Additional M.2 Key-M for SATA <sup>1</sup>	1	TRIP2	FFS
FT.F-M2NVMe for AI	Additional M.2 Key-M for AI module <sup>3</sup>			
FT.H-SER4	1-4 isolated RS232 or RS485	3	TRIP1 / TRIP2 / int. USB	FH
FT.HB-DB9	DB9 connector for FT.H-SER4	3 per FT.H-SER4	FT.H-SER4	FHB
FT.HA-SER1	1 port RS232	3	TRIP1 / TRIP2 / int. USB	FHA
FT.I-M2B	Additional M.2 Key-B for modem <sup>1</sup>	2	TRIP1 / TRIP2	FI
FT.J-M2E	Additional M.2 Key-E for Wi-Fi/BT <sup>1</sup>	2	TRIP1 / TRIP2	FJ
FT.L-PCIEmini	Mini PCIe compartment	2	TRIP1 / TRIP2	FL
FT.Q-CAN	Isolated CAN bus port	3	TRIP1 / TRIP2 / int. USB	FQ
FT.S-GPIO	4 – 20 isolated GPIOs	3	TRIP1 / TRIP2 / int. USB	FS
FT.V-TERM4	Terminal block 4x for FT.S-GPIO	4 per FT.S-GPIO	FT.S-GPIO	FV
FT.T-SATA	SATA for 2.5" HDD/SSD <sup>2</sup>	1	TRIP2	FT
FT.U-POE2	2x Gbit LAN with PoE	1	TRIP1	FU
FT.W-OPLN2	2x Gbit LAN on SFP+ for optical LAN	1	TRIP1	FW

Notes:

1. This interface is also available in some quantity on the motherboard, without a TEL expansion module.
2. FT.T-SATA1 requires larger housing: EH35C or EW30
3. FT.F-M2NVMe for AI includes enhanced heat dissipation for AI acceleration modules that use PCIe x1/x2/x4