

tBOX500-510-FL

Fanless Embedded System with 7th Gen Intel® Core™ i7/i5/i3 & Celeron® Processor for Railway, Vehicle and Marine PC

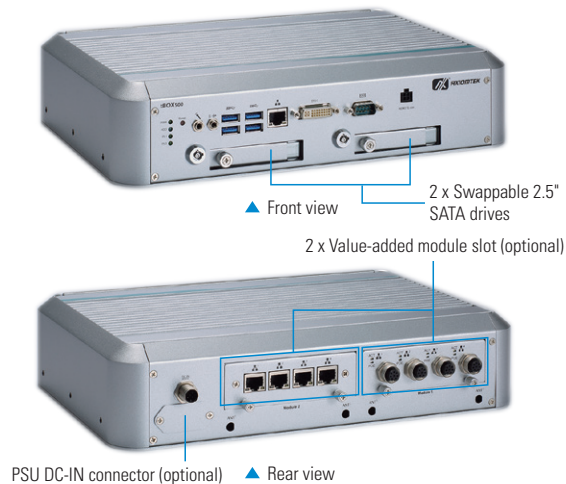
Features

- CE (Class A), FCC, EN 50155, EN 50121, EN 45545-2, and IEC 60945 certified; ISO 7637-2 compliant
- 7th gen Intel® Core™ i7/i5/i3 or Celeron® processor (Kaby Lake)
- 2 value-added modules available for various I/O requirements (COM/LAN/DIO/PoE/CAN/BNC)
- External PoE PSU (optional), up to 120W power supply
- Power supply:
 - 24 to 110 VDC for Railway version
 - 12/24 VDC for Vehicle version
 - 24 VDC for Marine version
- Intelligent solution of vehicle power management (ACC ignition)
- 2 swappable 2.5" SATA drives






Specifications

Standard Color	Silver
Construction	Aluminum extrusion and heavy-duty steel, IP30
CPU	Intel® Core™ i7-7600U 2C@2.8 GHz, TDP: 15W Intel® Core™ i5-7300U 2C@2.6 GHz, TDP: 15W Intel® Core™ i3-7100U 2C@2.4 GHz, TDP: 15W Intel® Celeron® 3965U 2C@2.2 GHz, TDP: 15W
Chipset	SoC integrated
System Memory	2 x DDR4-1866/2133 SO-DIMM, up to 32GB
BIOS	AMI
TPM	TPM 2.0 (optional)
System I/O Outlets	Serial 1 x DB9 serial console or RS-232/422/485 Display 1 x DVI-I (up to 1920 x 1080 @60Hz) Audio 1 x Mic-in 1 x Line-out Ethernet 1 x RJ-45 GbE (Intel® i210-IT) USB 4 x USB 3.0 Others 1 x Reset button 1 x Remote switch
Expansion Interface	3 x Full-size Rev.1.2 PCI Express Mini Card slot • 1 x mSATA/PCIe • 2 x USB/PCIe with SIM socket 2 x Value-added module slot
Storage	SATA Drive 2 x Swappable 2.5" SATA drive (9.5 mm height), Intel® RAID 0/1 supported mSATA 1 x mSATA (occupied 1 x PCI Express Mini Card slot)
Watchdog Timer	255 levels, 1 to 255 sec.
Power	Power Supply Railway: 1 x M12, 24 to 110 VDC (tolerance: 16.8 to 137.5 VDC) Vehicle: 1 x terminal block, 12/24 VDC (tolerance: 9 to 36 VDC, with ACC ignition) Marine: 1 x terminal block, 24 VDC (tolerance: 14 to 32 VDC) Power Consumption 24V - 110V, 3A - 0.6A
PoE (PSE, Power Sourcing Equipment)	PoE Power Source 1 x Terminal block PoE power-in with PSU120-259 (optional, see ordering info) PoE Performance Up to 8 x configurable M12/RJ-45 PoE output max. 120W supports PoE & PoE+: • PoE (802.3af 15.4W/port) • PoE+ (802.3at 30W/port) To be used with VAM PoE and PSU120-259 series (optional, see ordering info)













System Indicator	1 x LED indicator for system power 1 x LED indicator for HDD activities 2 x Programmable
Operating Temperature	-40°C to +70°C (-104°F to +158°F) with wide operating temperature peripheral -40°C to +60°C (-104°F to +140°F) with external PoE PSU & wide operating temperature peripheral
Humidity	0% to 95%, non-condensing
Dimensions	321 mm (12.64") (W) x 210.2 mm (8.28") (D) x 73.3 mm (2.89") (H)
Mounting	Wall mount
Weight	3.5 kg (7.72 lb)/5.1 kg (11.24 lb)
Certifications	CE, LVD, FCC, EN 50155, EN 45545-2, and IEC 60945 certified; ISO 7637-2 compliant
EMC	CE/FCC EN 61000-6-4 (Class A), EN 61000-6-2, FCC part 15 B (Class A) EN 50155 EN 50121-3-2, IEC 62236-3-2 IEC 60945 IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-4
LVD	EN 60950-1
Vibration Endurance	5 Grms w/ SSD, 1.5 Grms w/ HDD (5 to 500Hz, X/Y/Z direction; random) EN 50155 EN 61373 category 1 class B IEC 60945 IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-30 MIL-STD-810G, Method 514.6C, Procedure I, Category 4 compliance
Shock	IEC 60945 IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-30 EN 50155 EN(IEC) 61373 category 1 class B, half-sine pulse, 5g, 30ms (longitudinal direction), 3g, 30ms (vertical/transverse direction) MIL-STD-810G, Method 514.6C, Procedure I, Category 4 compliance
EOS Support	Windows® 10 64-bit, Linux
Remote Management Software	AMS.AXView2.0

Ordering Information

System	
tBOX500-510-FL-Celeron/i3/i5/i7-24-110MRDC (P/N: E26N500100) for i7-7600U (P/N: E26N500101) for i5-7300U (P/N: E26N500102) for i3-7100U (P/N: E26N500103) for 3965U	Fanless railway embedded system, Intel® Celeron® 3965U/Core™ i3-7100U/i5-7300U/ i7-7600U processor, 4 USB 3.0, DVI-I, LAN, serial console, Mic-in & Line-out, two 2.5" SATA trays, M12 A-code 5P DC-in, and 24 to 110 VDC 
tBOX500-510-FL-Celeron/i3/i5/i7-TVDC (P/N: E26N500104) for i7-7600U (P/N: E26N500105) for i5-7300U (P/N: E26N500106) for i3-7100U (P/N: E26N500107) for 3965U	Fanless vehicle embedded system, Intel® Celeron® 3965U/Core™ i3-7100U/i5-7300U/ i7-7600U processor, 4 USB 3.0, DVI-I, LAN, serial console, Mic-in & Line-out, two 2.5" SATA trays, 9 to 36 VDC, TB 3P DC-in, and ACC ignition *Not supporting PoE function 
tBOX500-510-FL-Celeron/i3/i5/i7-TMDC (P/N: E26N500108) for i7-7600U (P/N: E26N500109) for i5-7300U (P/N: E26N500110) for i3-7100U (P/N: E26N500111) for 3965U	Fanless marine embedded system, Intel® Celeron® 3965U/Core™ i3-7100U/i5-7300U/ i7-7600U processor, 4 USB 3.0, DVI-I, LAN, serial console, Mic-in & Line-out, two 2.5" SATA trays, TB 3P DC-in, and 14 to 32 VDC 

Value-Added Modules (VAMs) & PSU120-259

VAM100 (P/N: E277100100)	4 x 4-wire isolated terminal block RS-232/422/485 COM Isolation voltage: 2 kV 
VAM101 (P/N: E277101100)	4 x Isolated terminal block CANbus 2.0 A/B Isolation voltage: 2.5 kV 
VAM200 (P/N: E277200100)	8-in/8-out isolated Terminal block DIO Isolation voltage: 2 kV 
VAM400 (P/N: E277400100)	4 x BNC video & 1 x BNC audio-in 2 x Full size Rev. 1.2 PCI Express Mini Card slot • 1 x USB/PCIe with SIM socket • 1 x USB with SIM socket 1 x Capture card (occupied 1 x PCIe slot), up to 120 fps@960/720 x 480 H.264 video recording 
VAM600 (P/N: E277600100)	2 x Full size Rev. 1.2 PCI Express Mini Card slot • 1 x USB/PCIe with SIM socket • 1 x USB with SIM socket 4 x Antenna opening 
VAM700/VAM701 (P/N: E277700100/E277701100)	VAM700/701(PoE): 4 x M12 A-code GbE (PoE optional*) 
VAM702/VAM703 (P/N: E277702100/E277703100)	VAM702/703(PoE): 4 x RJ-45 GbE (PoE optional*) 
VAM704/VAM705 (P/N: E277704100/E277705100)	VAM704/705(PoE): 4 x M12 D-code GbE (PoE optional*) 
VAM706/VAM707 (P/N: E277706100/E277707100)	VAM706/707(PoE): 4 x M12 X-code GbE (PoE optional*) *PSU120-259 is required if select VAM701/703/705/707
VAM900 (P/N: E277900100)	2 x Full-size Rev.1.2 PCI Express Mini Card slot (2 x USB with SIM socket) 1 x Half-size Rev.1.2 PCI Express Mini Card slot (1 x PCIe) 1 x 4-wire isolated Terminal block RS232/422/485 COM (isolation voltage 2 kV) 1 x Terminal block configurable CANbus 2.0A/B (isolation voltage 2 kV) 1 x 8-in/8-out isolated DIO (isolation voltage: 2 kV) 
PSU120-259 series Railway-24VDC (P/N: E276120101) Railway-48VDC (P/N: E276120102) Railway-96/110VDC (P/N: E276120103) Marine-24VDC (P/N: E276120104)	Fanless EN 50155/IEC 60945 complied DC-DC adapter • Supports 24/48/96/110V-in • Power output max. 120W • -40°C to +60°C (-104°F to +140°F) 

Optional

Communication Modules	8816N3235A0E 3G/GPS UC20GKit for tBOX (3G/GPS ANT) 8816N5003A0E AP12356 with WT WiFi Kit for tBOX500 SFP (E) 8816N5002A0E LTE MC7455 (US) Kit for tBOX500 SFP (E) 8816N5000A0E LTE SIM7100JC Kit for tBOX500, JPN SFP (E) 88160620BA0E LTE SIMCOM SIM7100 (EU) for eBOX SFP (E)
AC to DC Adapter	50906D24000E Adaptor 24V/120W, wire only, FSP120-AAAN3 50966224010E Adaptor 24V 90W, M12 A-code 5P FSP090AAAN3

*Specifications and certifications may vary based on different requirements.

Power Protection

OCP (over current protection)
OVP (over voltage protection)
UVP (under voltage protection)
RPP (reverse polarity protection)
ISO 7637-2 pulse 1/2/3/4a (vehicle version)
Setting for in-vehicle battery protection: system will be automatically turned down at low voltage level
Setting for ignition control: system will activate a counter while in-vehicle battery at low voltage, ACC-ON delay and shut down delay

Dimensions

