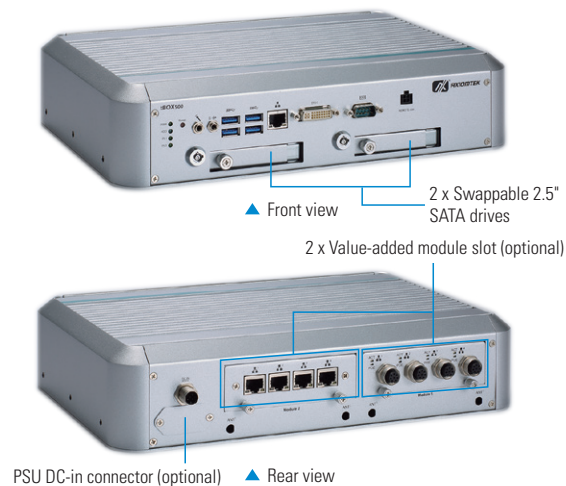


# tBOX500-510-FL

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

## Features

- CE, LVD, FCC, EN 50155, EN 45545-2, and IEC 60945 certified; ISO 7637-2 compliant
- 7th gen Intel® Core™ i7/i5/i3 or Celeron® processor (Kaby Lake)
- Power supply:
  - 24 to 110 VDC for Railway version
  - 12/24 VDC for Vehicle version
  - 24 VDC for Marine version
- External PoE PSU (optional), up to 120W power supply
- Value-added modules available for various I/O requirements (COM/LAN/DIO/PoE/CAN/BNC)
- 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<br>Intel® Core™ i5-7300U 2C@2.6 GHz, TDP: 15W<br>Intel® Core™ i3-7100U 2C@2.4 GHz, TDP: 15W<br>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<br>Display 1 x DVI-I (up to 1920 x1200 @60Hz, 1 x VGA & 1 x DVI included)<br>Audio 1 x Mic-in, 1 x Line-out<br>Ethernet 1 x RJ-45 10/100/1000 Mbps Ethernet (Intel® i210-IT)<br>USB 4 x USB 3.0<br>Others 1 x Reset button<br>1 x Remote switch<br>4 x Antenna opening                |
| Expansion Interface                 | 3 x Full-size Rev.1.2 PCI Express Mini Card slot<br>• 1 x mSATA/PCIe<br>• 2 x USB/PCIe with SIM socket<br>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<br>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<br>Vehicle: 1 x terminal block, 12/24 VDC with ACC ignition<br>Marine: 1 x terminal block, 24 VDC<br>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)<br>PoE Performance Up to 8 x configurable M12/RJ-45 PoE output max. 120W supports PoE & PoE+<br>• PoE (802.3af 15.4W/port)<br>• PoE+ (802.3at 30W/port)<br>To be used with VAM PoE and PSU120-259 series (optional, see ordering info) |

|                       |                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System Indicator      | 1 x LED indicator for power<br>1 x LED indicator for SATA drive activity<br>2 x Programmable                                                                                                                                                                                                                                                        |
| Operating Temperature | -40°C to +70°C (-40°F to +158°F) with W.T. peripheral*<br>-40°C to +60°C (-40°F to +140°F) with external PoE PSU & W.T. 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) (without wall mount)                                                                                                                                                                                                                                                               |
| Mounting              | Wall mount                                                                                                                                                                                                                                                                                                                                          |
| Weight                | 3.5 kg (7.72 lb)/5.1 kg (11.24 lb)                                                                                                                                                                                                                                                                                                                  |
| Certifications        | CE (Class A), LVD, FCC (Class A), 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)<br>EN 50155 EN 50121-3-2, IEC 62236-3-2<br>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   | 3 Grms w/ SSD (5 to 500Hz, X/Y/Z direction; random, operating)<br>1.5 Grms w/ HDD (5 to 500Hz, X/Y/Z direction; random, operating)<br>2 Grms w/ HDD & Anti-Vibration Kit (5 to 500Hz, X/Y/Z direction; random, operating)<br>MIL-STD-810G, Method 514.6C-VI Category 4 compliant<br>EN 50155 EN 61373 category 1 class B<br>IEC 60945 IEC 60068-2-6 |
| Shock                 | EN 50155 EN(IEC) 61373 category 1 class B, half-sine pulse, 5g, 30ms (longitudinal direction), 3g, 30ms (vertical/transverse direction)                                                                                                                                                                                                             |
| EOS Support           | Windows® 10 64-bit, Ubuntu 16.04                                                                                                                                                                                                                                                                                                                    |
| Software Support      | AMS.AXView                                                                                                                                                                                                                                                                                                                                          |

\*Wide Temperature. All W.T. supported products have to be sorted by Axiomtek.

\*\*For EN45545-2, test report is available exclusively

## Ordering Information

| System                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| tBOX500-510-FL-Celeron/i3/i5/i7-24-110MRDC<br>(P/N: E26N500100) for i7-7600U<br>(P/N: E26N500101) for i5-7300U<br>(P/N: E26N500102) for i3-7100U<br>(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 or RS-232/422/485, Mic-in & Line-out, two 2.5" SATA trays, M12 A-code DC-in, and 24 to 110 VDC                                     |
| tBOX500-510-FL-Celeron/i3/i5/i7-TVDC<br>(P/N: E26N500104) for i7-7600U<br>(P/N: E26N500105) for i5-7300U<br>(P/N: E26N500106) for i3-7100U<br>(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 or RS-232/422/485, Mic-in & Line-out, two 2.5" SATA trays, terminal block DC-in, and ACC ignition <br>*Not supporting PoE function |
| tBOX500-510-FL-Celeron/i3/i5/i7-TMDC<br>(P/N: E26N500108) for i7-7600U<br>(P/N: E26N500109) for i5-7300U<br>(P/N: E26N500110) for i3-7100U<br>(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 or RS-232/422/485, Mic-in & Line-out, two 2.5" SATA trays, and terminal block DC-in                                                 |

\*MRDC: M12 DC-in connector, railway SKU, DC voltage input

\*TVDC: Terminal block DC-in connector, vehicle SKU, DC voltage input

\*TMDC: Terminal block DC-in connector, marine SKU, DC voltage input

### Value-Added Modules (VAMs) & PSU120-259

|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VAM100<br>(P/N: E277100100)                   | 4 x Terminal block 4-wire isolated RS-232/422/485 COM<br>Isolation voltage: 2 kV                                                                                                                                                                                                                                                                                                       |
| VAM101<br>(P/N: E277101100)                   | 4 x Terminal block isolated CANbus 2.0A/B<br>Isolation voltage: 2 kV                                                                                                                                                                                                                                                                                                                  |
| VAM200<br>(P/N: E277200100)                   | 1 x Terminal block isolated DIO 8-in/8-out<br>Isolation voltage: 2 kV                                                                                                                                                                                                                                                                                                                |
| VAM400<br>(P/N: E277400100)                   | 4 x BNC video-in & 1 x BNC audio-in<br>• Supports FPS: NTSC/PAL (up to 120fps @960/720 x 480 / 100fps @960/720 x 576), H.264 video recording<br>2 x Full size Rev. 1.2 PCI Express Mini Card slot<br>• 1 x USB with SIM socket<br>• 1 x USB/PCIe with SIM socket (occupied by 1 x Capture Card)                                                                                      |
| VAM600<br>(P/N: E277600100)                   | 2 x Full size Rev. 1.2 PCI Express Mini Card slot<br>• 1 x USB/PCIe with SIM socket<br>• 1 x USB with SIM socket<br>4 x Antenna opening                                                                                                                                                                                                                                              |
| VAM700/VAM701<br>(P/N: E277700100/E277701100) | VAM700/701(PoE): 4 x M12 A-code GbE (PoE optional*)                                                                                                                                                                                                                                                                                                                                  |
| VAM702/VAM703<br>(P/N: E277702100/E277703100) | VAM702/703(PoE): 4 x RJ-45 GbE (PoE optional*)                                                                                                                                                                                                                                                                                                                                       |
| VAM704/VAM705<br>(P/N: E277704100/E277705100) | VAM704/705(PoE): 4 x M12 D-code 10/100 Mbps Ethernet (PoE optional*)                                                                                                                                                                                                                                                                                                                 |
| VAM706/VAM707<br>(P/N: E277706100/E277707100) | VAM706/707(PoE): 4 x M12 X-code GbE (PoE optional*)<br>*PSU120-259 is required if select VAM701/703/705/707                                                                                                                                                                                                                                                                                                                                                             |
| VAM900<br>(P/N: E277900100)                   | 2 x Full-size Rev.1.2 PCI Express Mini Card slot<br>• 2 x USB with SIM socket<br>1 x Half-size Rev.1.2 PCI Express Mini Card slot<br>• 1 x PCIe<br>1 x Terminal block 4-wire isolated RS-232/422/485 COM (isolation Voltage: 2 kV)<br>1 x Terminal block isolated CANbus 2.0A/B (isolation Voltage: 2 kV)<br>1 x Terminal block isolated DIO 8-in/8-out (isolation Voltage: 1.5 kV)  |

|                                                                                                                                                                              |                                                                                                                                                                                                                                                   |
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| PSU120-259 series<br>Railway-24VDC<br>(P/N: E276120101)<br>Railway-48VDC<br>(P/N: E276120102)<br>Railway-96/110VDC<br>(P/N: E276120103)<br>Marine-24VDC<br>(P/N: E276120104) | Fanless IEC 60945 certified/EN 50155 compliant DC-DC adapter<br>• Supports 24/48/96/110V-in<br>• Power output max. 120W<br>• -40°C to +60°C (-40°F to +140°F)  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Optional

|                                           |                                                                                                                                                                                                                                                                                             |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Anti-vibration Kit<br>(P/N: 8816N5008A0E) | For in-vehicle/rolling stock which improves HDD stability in NVR applications                                                                                                                            |
| Communication Modules                     | 8816N3239A0E 3G UC20GKit for tBOX/UST (3G ANT) (E)<br>8816N3235A0E 3G/GPS UC20GKit tBOX/UST (3G/GPS ANT) (E)<br>8816N5003A0E AP12356 WT Wi-Fi kit for tBOX/UST SFP (E)<br>8816N5000A0E LTE SIM7100JC kit for tBOX, JPN SFP (E)<br>88160620BA0E LTE SIMCOM SIM7100 (EU) for tBOX/UST SFP (E) |
| AC to DC Adapter                          | 8816N5004A0E LTE+GPS SIM7100C (TW) kit tBOX (30) SFP (E)<br>50906D24000E Adapter 24V/120W, wire only, FSP120-AAAN3<br>50966224010E Adapter 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, 2a, 2b, 3a, 3b, 4 (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

