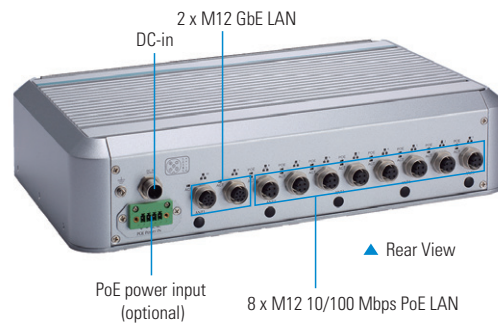
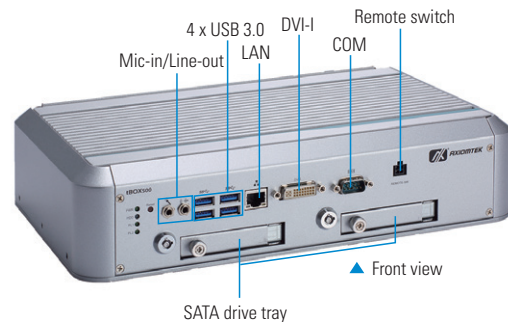


# tBOX400-510-FL NEW

Fanless Embedded System with 7th Gen Intel® Core™ i7/i5/i3 & Celeron® Processors, Built-in Managed PoE Switch for Railway, Vehicle and Marine PC

## Features

- CE (Class A), FCC certified; E-Mark, ISO 7637-2, EN 50155, EN 50121-3-2, EN 45545-2, DNV 2.4, and IEC 60945 compliance
- 7th gen Intel® Core™ i7/i5/i3 & Celeron® processors (Kaby Lake)
- Built-in managed layer 2 PoE switch
- PoE power budget up to 120W by 8 ports
- Optimized network performance with QoS, VLAN and PoE scheduling, etc.
- Fanless and wide operating temperature from -40°C to 60°C
- Power Input:
  - 24 to 110 VDC for Railway version
  - 12/24 VDC for Vehicle version
  - 24 VDC for Marine version



## Specifications

Standard Color	Silver	
Construction	Aluminum extrusion and heavy-duty steel, IP30	
CPU	Intel® Core™ i7-7600U 2C@2.8 GHz Intel® Core™ i5-7300U 2C@2.6 GHz Intel® Core™ i3-7100U 2C@2.4GHz Intel® Celeron® 3965U 2C@2.2GHz	
Chipset	SoC integrated	
System Memory	2 x DDR4-1866/2133 SO-DIMM slot, up to 32G	
BIOS	AMI	
System I/O Outlet	Rear Side	1 x M12 DC-in (for railway version) or terminal block DC-in (for marine & vehicle version) 1 x PoE terminal block power-in 8 x M12 D-coded 10/100 Mbps PoE 2 x M12 A-coded 10/100/1000 Mbps Ethernet
	Front Side	4 x LED indicator 2 x Audio (Mic-in & Line-out) 1 x 10/100/1000 Mbps Ethernet (Intel® i210-IT) 4 x USB 3.0 1 x DVI-I 1 x DB9 serial console or RS-232/422/485 1 x Remote switch 1 x Reset bottom 2 x HDD/SSD tray
Watchdog Timer	255 levels, 1 - 255 sec.	
Storage	2 x Swappable 2.5" SATA drive (9.5 mm height) 1 x mSATA (use 1 PCI Express Mini Card slot)	
RAID Function	Intel® RAID 0/1	
Expansion Interface	3 x Full-size PCI Express Mini Card slot 2 x SIM card slot	

System Indicator	1 x LED indicator for system power 1 x LED indicator for HDD activities 2 x Programmable
Power Supply	Railway version DC-input: 24 to 110 VDC (tolerance: 16.8 to 137.5 VDC) Vehicle version DC-input: 12/24 VDC (tolerance: 9 to 36 VDC, with ACC ignition) Marine version DC-input: 24 VDC (tolerance: 14 to 32 VDC)
Managed Layer 2 PoE Switch	Broadcom processor onboard PoE power output maximum 120W (*) Up to 30W per PoE port (802.3at) * Different system version has different PSU.
Operating Temperature	-40°C to +60°C (-40°F to +158°F) with W.T. SSD -25°C to +55°C (-13°F to +131°F) with W.T. HDD
Humidity	10% - 95%, non-condensing
Vibration Endurance	3 Grms with SSD, 1.5 Grms with HDD (5 - 500Hz, X/Y/Z direction; random) EN 61373 cat. 1 class B IEC 60068-2-64 MIL-STD-810G, Method 514.6C, Procedure I, Category 4
Shock (non-operating test)	Shock optioning, 50 Grms, Half-sine 11ms duration (with SSD, according to IEC 60068-2-27)
Dimensions	321 mm (12.64") (W) x 210.2 mm (8.28") (D) x 73.3 mm (2.89") (H)
Weight(net/gross)	3.5 kg (7.72 lb)/4.5 kg (11.02 lb)
Certifications	CE (Class A), FCC certified; E-Mark, ISO 7637-2, EN 50155, EN 50121-3-2, EN 45545-2, DNV 2.4, and IEC 60945 compliance
EOS support	Windows® 10 64-bit, Linux

## Ethernet Software Features

Management	Interface: CLI, Telnet and Web Browser, SNMP v1/v2c/v3 Firmware and configuration upgrade and backup via TFTP Supports DHCP Server/Client RMON (Remote monitoring): group 1, 2, 3, 9 Port mirroring: TX/RX and both NTP (Network Time Protocol) time synchronization IEEE 802.1ab LLDP (Link Layer Discovery Protocol)
Security	MAC address filtering Enable/disable port Storm control (broadcast and multicast types) IEEE 802.1x LAN access control Remote authentication through RADIUS SSH for CLI and Telnet security SSL for web security System log (remote/local) ACL
Quality of Service (QoS)	Priority Queues: 4 queues per port Traffic classification based on IEEE 802.1p CoS, DSCP, WRR (weighted round robin) and strict mode Rate Limiting (ingress/egress)
Network Redundant	IEEE 802.1D Spanning Tree Protocol (STP) IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) EtherWAN's Alpha-Ring network fault recovery (<15ms)
Software	Auto-negotiation for port speed and duplex mode: Flow Control IEEE 802.3x full duplex mode Back-Pressure half duplex mode VLANs: IEEE 802.1Q Tag VLANs (128 groups, 4096 VID) GVRP (GARP VLAN Registration Protocol) GMRP (GARP Multicast Registration Protocol) Link Aggregation: Static Trunk (4 groups, support MAC base) IEEE 802.3ad Link Aggregation Control Protocol IGMP Snooping: IGMP snooping v1/v2/v3

## Power Protection

SCP (short circuit protection)  
OVP (over voltage protection)  
UVP (under voltage protection)  
RVP (reverse voltage protection)

### Vehicle Version

ISO 7637-2 pulse 1/2/3/4  
Setting for battery protection: Low voltage or very low voltage  
Setting for ignition control: Low voltage counter, ACC-ON delay or shut down delay

## Packing List

- 1 x Quick installation guide
- 1 x Driver CD
- 4 x Foot pad
- 1 x Screw pack
- 1 x Wall mount kit
- 4 x DRAM thermal pad
- 1 x Terminal block DC-in connector for marine version
- 4 x HDD mylar
- 2 x SATA drive key

## Ordering Information

Standard	
tBOX400-510-FL-Celeron/i3/i5/i7-24-110MRDC (P/N: E26N400103) for Celeron® 3965U (P/N: E26N400102) for i3-7100U (P/N: E26N400101) for i5-7300U (P/N: E26N400100) for i7-7600U	Fanless railway embedded system with Intel® Celeron® 3965U/Core™ i3-7100U/i5-7300U/i7-7600U processor, 4 USB 3.0, DVI-I, RJ-45 LAN, serial console, Mic-in & Line-out, 2 2.5" SATA trays, M12 A-code 5P DC-in, and 24 to 110 VDC
tBOX400-510-FL-Celeron/i3/i5/i7-TVDC (By request)	Fanless vehicle embedded system, Intel® Celeron® 3965U/Core™ i3-7100U/i5-7300U/ i7-7600U processor, 4 USB 3.0, DVI-I, RJ-45 LAN, serial console, Mic-in & Line-out, 2 2.5" SATA trays, 9 to 36 VDC, TB 3P DC-in, and ACC ignition
tBOX400-510-FL-Celeron/i3/i5/i7-TMDC (By request)	Fanless marine embedded system, Intel® Celeron® 3965U/Core™ i3-7100U/i5-7300U/ i7-7600U processor, 4 USB 3.0, DVI-I, RJ-45 LAN, serial console, Mic-in & Line-out, 2 2.5" SATA trays, TB 3P DC-in, and 14 to 32 VDC
PSU120-259-Railway-24VDC-400 (P/N: E276120105)	Fanless EN 50155 complied DC-DC adapter, 24V-in/53V-out/120W

\*Specifications and certifications may vary according to various options.  
\*TDC: Terminal Block DC-IN connector, Vehicle&Railway SKU, DC voltage input

Optional	
2.5" SATA HDD/SSD	128GB or above
mSATA	64GB or above
DDR4 SO-DIMM	4GB - 16GB
3G/4G/GPS module	826N3230140E, 82606200410E
Wi-Fi/Bluetooth module	826N3230060E, 826N3230100E, 826N3230110E, 826N3230120E
DC-in cable	594B8120B30E (M12 with ACC),
LAN cable	594N3202730E (M12-A male 8-pin to RJ-45) 594N3202710E (M12-D male 4-pin to RJ-45)
Remote Switch Cable	594K3101020E
AC to DC Adapter	50906D24000E (24V/120W,wire), 50966224010E (24V 90W, M12 A-code 5-pin)
Power cord	59903000000E (EU), 59906000010E (JP), 59902000000E (US), 59904000000E (UK)

## Dimensions

