tBOX400-510-FL

Fanless Embedded System with 7th Gen Intel® Core™ i7/i5/i3 & Celeron® Processors, Built-in Managed Layer 2 PoE Switch for Railway PC

Features

- CE, LVD and FCC certified; EN 50155 and EN 45545-2 compliant
- 7th gen Intel® Core™ i7/i5/i3 & Celeron® processors (Kaby Lake)
- Power supply: 24 to 110 VDC for Railway version
- 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 70°C

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Color</td>
<td>Silver</td>
</tr>
<tr>
<td>Construction</td>
<td>Aluminum extrusion and heavy-duty steel, IP30</td>
</tr>
<tr>
<td>CPU</td>
<td>Intel® Core™ i7-7600U 2C @2.8 GHz TDP: 15W</td>
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<tr>
<td></td>
<td>Intel® Core™ i5-7100U 2C @2.6 GHz TDP: 15W</td>
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<tr>
<td></td>
<td>Intel® Celeron® 3965U 2C @2.2 GHz TDP: 15W</td>
</tr>
<tr>
<td>Chipset</td>
<td>SoC integrated</td>
</tr>
<tr>
<td>System Memory</td>
<td>2 x DDR4-1866/2133 SO-DIMM slot, up to 32G</td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI</td>
</tr>
<tr>
<td>TPM</td>
<td>TPM 2.0 (optional)</td>
</tr>
<tr>
<td>System I/O Outlet</td>
<td>1 x DB9 serial console or RS-232/422/485</td>
</tr>
<tr>
<td>Display</td>
<td>1 x DVI-I (up to 1920 x1200 @60Hz, 1 x VGA and 1 x DVI included)</td>
</tr>
<tr>
<td>Audio</td>
<td>1 x Mic-in, 1 x Line-out</td>
</tr>
<tr>
<td>Ethernet</td>
<td>8 x M12 D-coded 10/100 Mbps Ethernet</td>
</tr>
<tr>
<td></td>
<td>2 x M12 A-coded 10/100/1000 Mbps Ethernet</td>
</tr>
<tr>
<td></td>
<td>1 x RJ-45 10/100/1000 Mbps Ethernet</td>
</tr>
<tr>
<td></td>
<td>(Intel® i210-IT)</td>
</tr>
<tr>
<td>USB</td>
<td>4 x USB 3.0</td>
</tr>
<tr>
<td>Others</td>
<td>1 x Reset button</td>
</tr>
<tr>
<td></td>
<td>1 x Remote switch</td>
</tr>
<tr>
<td></td>
<td>5 x Antenna opening</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>3 x Full-size Rev.1.2 PCI Express Mini Card slot:</td>
</tr>
<tr>
<td></td>
<td>- 1 x mSATA/PCIe</td>
</tr>
<tr>
<td></td>
<td>- 2 x USB/PCIe with SIM socket</td>
</tr>
<tr>
<td>Storage</td>
<td>SATA Drive 2 x Swappable 2.5” SATA drive (9.5 mm height), Intel® RAID 0/1 supported</td>
</tr>
<tr>
<td></td>
<td>mSATA 1 x mSATA (occupied 1 x PCI Express Mini Card slot)</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 levels, 1 to 255 sec.</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Railway: 1 x M12, 24 to 110 VDC</td>
</tr>
<tr>
<td></td>
<td>Power Consumption</td>
</tr>
<tr>
<td></td>
<td>24V~110V, 3.5A - 0.7A</td>
</tr>
</tbody>
</table>

PoE

- PoE (PSE, Power Sourcing Equipment)
- PoE Power Source 1 x M12 PoE power-in with PSU120-259
- PoE Performance 8 x configurable M12 D-coded PoE output (optional, see ordering info)
- PoE (802.3af 15.4W/port)
- PoE+ (802.3at 30W/port)
- To be used with PSU120-259 series (optional, see ordering info)

System Indicator

- 1 x LED indicator for SATA drive activity
- 1 x LED indicator for power
- 2 x Programmable

Operating Temperature

- -40°C to +70°C (-40°F to +158°F) with W.T. peripheral*
- -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 (net/gross)

- 3.5 kg (7.72 lb)/5.17 kg (11.40 lb)

Certifications

- CE (Class A), LVD and FCC (Class A) certified; EN 50155 and EN 45545-2 compliant
- EM/EN (IEC) 61373 category 1 class B compliant
- Shock EN 50155 EN (IEC) 61373 category 1 class B compliant
- Vibration Endurance 3 Grms w/ SSD (5 to 500Hz, X/Y/Z direction; random, operating) MIL-STD-810G, Method 514.6C-VL Category 4 compliant
- EN 50155 EN (IEC) 61373 category 1 class B compliant

CSP support

- Windows® 10 64-bit, Linux

Software Support

- AMS AXView2.0

*Wide operating temperature peripheral
**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 802.1 Tab 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)
  - SMRP (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

**Ordering Information**

**System**
- tBOX400-510-FL-Celeron/i3/i5/i7-24-110MRDC
- (P/N: E26N400100) for i7-7600U
- (P/N: E26N400101) for i5-7300U
- (P/N: E26N400102) for i3-7100U
- (P/N: E26N400103) for 3965U

*MRDC: M12 DC-IN connector, Railway SKU, DC voltage input*

**PSU120-259**
- Railway-24VDC
  - (P/N: E276120105) compliant DC-DC adapter
  - Supports 24/48/60/110V-in
- Railway-48VDC
  - (P/N: E276120106) Power output max. 120W
- Railway-96/110VDC
  - (P/N: E276120107) -40°C to +60°C (-40°F to +140°F)
  - For tBOX400

**Optional**
- Communication modules
  - 8818N32239A0E 3G UC20Kit for tBOX/UST (3G ANT) (E)
  - 8818N32235A0E 3G GPS UC20Kit for tBOX/UST (3G GPS ANT) (E)
  - 8818N50030A0E AP12356 WT Wi-Fi kit for tBOX/UST SFP (E)
  - 8818N50022A0E LTE MCI455US (US) kit for tBOX/UST SFP (E)
  - 8818N50009A0E LTE SIM170UC kit for tBOX, JPN SFP (E)
  - 8818N50008A0E LTE SIM170UCP kit for tBOX/UST SFP (E)
  - 881868262BA0E LTE SIMCOM SIM170D (E) kit for tBOX/UST SFP (E)
  - 881745000A0E LTE + GPS SIM170MEU kit for tBOX/UST SFP (E)
  - 881865004A0E LTE + GPS SIM170CCE kit for tBOX (30) SFP (E)
- AC to DC adapter
  - 50986224010E Adapter 24V 90W, M12 A-code SP

*Specifications and certifications may vary based on different requirements.*

**Power Protection**
- SCP (short circuit protection)
- OVP (over voltage protection)
- UVP (under voltage protection)
- RVP (reverse voltage protection)

**Dimensions**

![Diagram of the dimensions of the system](image-url)

*All specifications and photos are subject to change without notice.*

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**Updated Aug. 12, 2019.**

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