

# UST500-517-FL

Fanless Embedded System with 7th/6th Gen Intel® Core™, Pentium® and Celeron® Processor for Railway and Vehicle PC

## Features

- CE, FCC, E-Mark, EN 50155 and EN45545-2 certified
- LGA1151 7th/6th gen Intel® Core™ & Pentium® processors (up to 65W) with Intel® Q170 (Kaby Lake/Skylake)
- Fanless and Wide operating temperatures from -40°C to +70°C
- Flexible LAN selection, up to 16 RJ-45 GbE PoE LAN ports
- 24 VDC power input
- Intelligent solution of vehicle power management (ACC ignition)
- Convenient and Accessible Storage, two/four 2.5" SATA drive, 1 mSATA



▲ Front view



▲ Rear View

## Specifications

Standard Color	Silver
Construction	Aluminum extrusion and heavy-duty steel, supports up to IP40**
CPU	LGA1151 7th gen Intel® Core™ processor, TDP: 35 - 65W LGA1151 6th gen Intel® Core™ processor, TDP: 35 - 65W
Chipset	Intel® Q170
System Memory	2 x DDR4-1866/2133/2400 S0-DIMM, up to 32GB
BIOS	AMI
TPM	TPM 2.0
System I/O Outlet	Serial 2 x DB9 serial console or RS-232/422/485 Display 1 x VGA (supports up to 1920 x 1200 @60Hz) 1 x DVI-D (supports up to 2K) 1 x HDMI (supports up to 4K/2K) Audio 1 x Mic-in, 1 x Line-out Ethernet Flexible LAN selection: • 8 x RJ-45 GbE LAN with 2 SATA (Intel® i211-AT) • 8 x M12 A-coded GbE LAN with 4 SATA (Intel® i211-AT) • 8 x RJ-45, 8 x M12 A-coded GbE LAN with 4 SATA (Intel® i211-AT) • 16 x RJ-45 GbE LAN with 4 SATA or 2 SATA (Intel® i211-AT) USB 4 x USB 3.0 DIO 1 x Terminal block isolated 6-in/2-out DIO (isolation voltage: 5 kV) Others 1 x Reset button 5 x Antenna opening 2 x External accessible SIM card socket
Expansion Interface	2 x Full-size Rev.1.2 PCI Express Mini Card slot: • 2 x USB/PCIe with external SIM socket 2 x Half-size Rev.1.2 PCI Express Mini Card slot: • 1 x mSATA/USB/PCIe • 1 x USB
Storage	SATA Drive • 2 x 2.5" 15 mm internal SATA drive with 2 SATA, Intel® RAID 0/1 supported • 2 x 2.5" 15 mm swappable SATA drive with 2 SATA, Intel® RAID 0/1 supported • 4 x 2.5" 15 mm swappable SATA drive with 4 SATA, Intel® RAID 0/1/5/10 supported mSATA 1 x Half-sized mSATA (occupied 1 x PCI Express Mini Card slot)
Watchdog Timer	255 levels, 1 to 255 sec.

Power in	Power Supply	General use: 1 x Terminal block, 9 to 36 VDC Vehicle: 1 x terminal block, 12/24 VDC with ACC ignition
	Power Consumption	16LAN SKU <sup>(1)</sup> : 24V/13.15A 8LAN SKU <sup>(2)</sup> : 24V/9.6A (1) 16 x RJ-45/8 x RJ-45 + 8 x M12 (2) 8 x RJ-45/8 x M12
PoE (PSE, Power Sourcing Equipment)	PoE Performance	Up to 16 x RJ-45/8 x RJ-45 & 8 x M12 PoE output max. 200W supports PoE & PoE+ • PoE (802.3af 15.4W/port) • PoE+ (802.3at 30W/port)
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*
Humidity		0% to 95%, non-condensing
Dimensions		2 internal SATA SKU: 280 mm (11.02") (W) x 210.5 mm (8.27") (D) x 70 mm (2.76") (H)* 2 swappable SATA SKU: 280 mm (11.02") (W) x 210.5 mm (8.27") (D) x 83.7 mm (3.30") (H)* 4 swappable SATA SKU: 280 mm (11.02") (W) x 210.5 mm (8.27") (D) x 99.2 mm (3.91") (H)* *Without wall mount
Mounting		Wall mount
Weight (net/gross)		2 internal SATA SKU: 3.95 kg (8.71 lb)/4.97 kg (10.96 lb) 2 swappable SATA SKU: 4.92 kg (10.85 lb)/5.74 kg (12.65 lb) 4 swappable SATA SKU: 4.92 kg (10.85 lb)/5.74 kg (12.65 lb)
Certifications		CE (Class A), FCC (Class A), E-Mark (E13) and EN 50155 <sup>(1)</sup> and EN45545-2 certified (1) 8 x RJ-45 + 8 x M12 certified
EMC	CE/FCC	EN 55032 (Class A), EN 55024, FCC part 15 B (Class A)
	EN 50155	EN 50121-3-2, IEC 62236-3-2
	E-Mark	ECE-R10
Vibration Endurance		3 Grms w/ SSD (5 to 500Hz, X/Y/Z direction; random, operating) 1 Grms w/ HDD (5 to 150Hz, X/Y/Z direction; random, operating) 2 Grms w/ HDD & Anti-Vibration Kit (5 to 500Hz, X/Y/Z direction; random, operating) MIL-STD-810G, Method 514.6C-VI Category 4 compliant EN 50155 EN (IEC) 61373 category 1 class B
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, Windows® 7 64/32-bit (for 6th gen Intel CPU), Ubuntu 16.04
Software Support		AMS.AXView

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

\*\*Please refer the IP rating in ordering information

## Ordering Information

### 4 Swappable SATA Drive SKUs

UST500-517-FL-16RJ-4SATA-TDC (P/N: E274500100)	Fanless embedded IP40-rated system with 6/7th gen Intel® desktop processor (LGA1151), Q170, VGA, DVI-D, HDMI, 6-in/2-out DIO, 2 COM, 4 USB 3.0, <b>16 RJ-45</b> PoE GbE LAN, 4 SATA drive and ACC ignition
UST500-517-FL-8RJ8M12-4SATATDC (P/N: E274500101)	Fanless embedded IP40-rated system with 6/7th gen Intel® desktop processor (LGA1151), Q170, VGA, DVI-D, HDMI, 6-in/2-out DIO, 2 COM, 4 USB 3.0, <b>8 RJ-45, 8 M12</b> PoE GbE LAN, 4 SATA drive and ACC ignition
UST500-517-FL-8M12-4SATATDC (P/N: E274500102)	Fanless embedded IP40-rated system with 6/7th gen Intel® desktop processor (LGA1151), Q170, VGA, DVI-D, HDMI, 6-in/2-out DIO, 2 COM, 4 USB 3.0, <b>8 M12</b> PoE GbE LAN, 4 SATA drive and ACC ignition

### 2 Internal SATA Drive SKUs

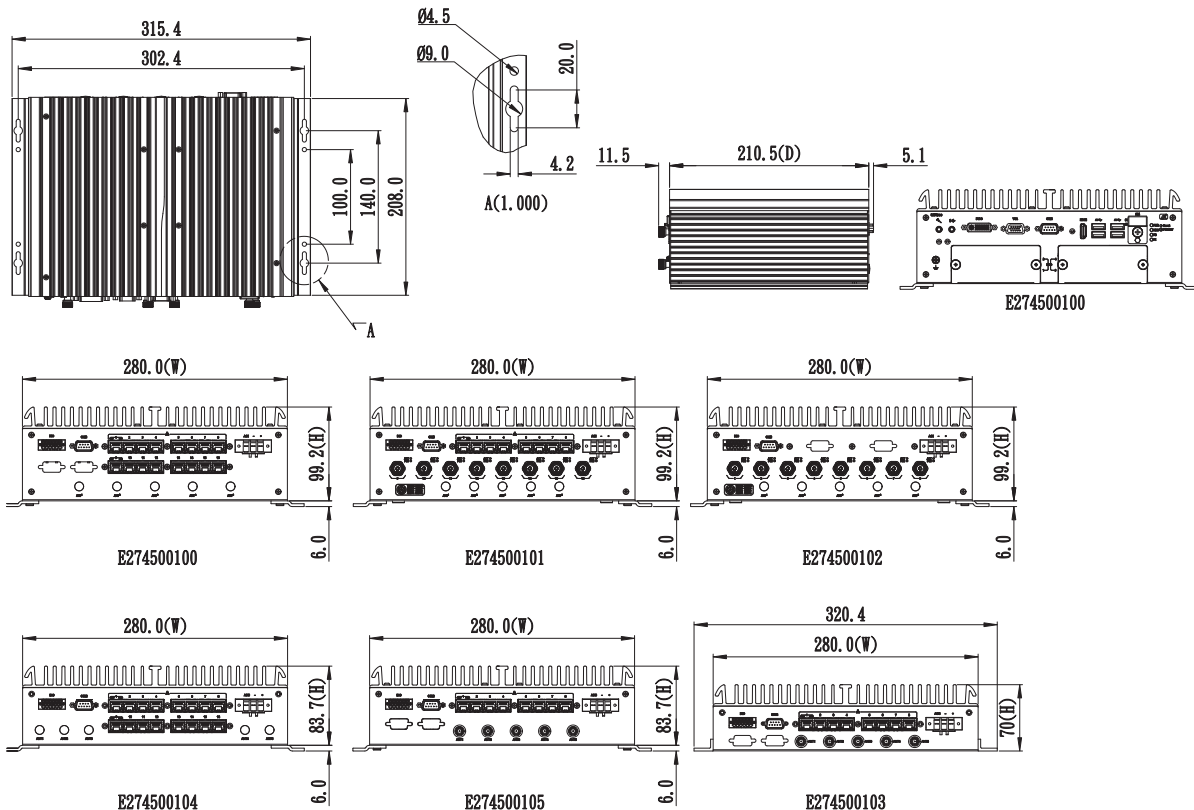
UST500-517-FL-8RJ-2SATA-TDC (P/N: E274500103)	Fanless embedded IP40-rated system with 6/7th gen Intel® desktop processor (LGA1151), Q170, VGA, DVI-D, HDMI, 6-in/2-out DIO, 2 COM, 4 USB 3.0, <b>8 RJ-45</b> PoE GbE LAN, 2 internal SATA drive and ACC ignition
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### 2 Swappable SATA Drive SKUs


UST500-517-FL-16RJ-2SATATRAY-TDC (P/N: E274500104)	Fanless embedded IP30-rated system with 6/7th gen Intel® desktop processor (LGA1151), Q170, VGA, DVI-D, HDMI, 6-in/2-out DIO, 2 COM, 4 USB 3.0, <b>16 RJ-45</b> PoE GbE LAN, 2 swappable SATA drive and ACC ignition
UST500-517-FL-8RJ-2SATATRAY-TDC (P/N: E274500105)	Fanless embedded IP30-rated system with 6/7th gen Intel® desktop processor (LGA1151), Q170, VGA, DVI-D, HDMI, 6-in/2-out DIO, 2 COM, 4 USB 3.0, <b>8 RJ-45</b> PoE GbE LAN, 2 swappable SATA drive and ACC ignition

\*TDC: terminal block DC-in connector, DC voltage input

## Dimensions



### Optional

Anti-vibration Kit (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) 8816N3235A0E 3G/GPS UC20GKit for tBOX (3G/GPS ANT) 8816K6603A0E AMPAK AP12356 Wi-Fi kit (E) 8816N5003A0E AP12356 w/WT Wi-Fi kit for tBOX/UST SFP (E) 881745001A0E GPS Kit M8N w/o adpater for tBOX/UST SFP (E) 88160620BA0E LTE SIMCOM SIM7100 (EU) for tBOX/UST SFP (E) 881745000A0E LTE+GPS SIM7100EU kit for tBOX/UST SFP (E) 8816N5000A0E LTE SIM7100JC kit for tBOX500, JPN SFP (E) 8816N5006A0E LTE+GPS SIM7100 (JPE) kit tBOX (30) SFP (E) 8816N5004A0E LTE+GPS SIM7100C (TW) kit tBOX (30) SFP (E)	
AC to DC Adapter	50906D24000E Adapter 24V/120W, wire only, FSP120-AAAN3	

\*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

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