

UST500-517-FL

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



▲ Front view



▲ Rear View



Features

- CE, FCC, E-Mark, EN 50155 and EN 45545-2 certified
- LGA1151 7th/6th gen Intel® Core™ & Pentium® processors (up to 65W) with Intel® Q170
- Fanless and wide operating temperatures from -40°C to +70°C
- Flexible LAN selection, up to 16 RJ-45 GbE PoE LAN ports
- Intelligent solution of vehicle power management (Smart Ignition)
- Two/four swappable 2.5" SATA drives and one mSATA



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 SO-DIMM, up to 32GB														
BIOS	AMI														
TPM	TPM 2.0														
System I/O Outlet	<table border="0"> <tr> <td>Serial</td> <td>2 x DB9 serial console or RS-232/422/485</td> </tr> <tr> <td>Display</td> <td>1 x VGA (supports up to 1920 x 1200 @60Hz) 1 x DVI-D (supports up to 2K @60Hz) 1 x HDMI (supports up to 4K/2K @30Hz)</td> </tr> <tr> <td>Audio</td> <td>1 x Mic-in, 1 x Line-out</td> </tr> <tr> <td>Ethernet</td> <td>Flexible LAN selection: • 8 x RJ-45 GbE LAN with 2 SATA (Intel® I210-AT) • 8 x M12 A-coded GbE LAN with 4 SATA (Intel® I210-AT) • 8 x RJ-45, 8 x M12 A-coded GbE LAN with 4 SATA (Intel® I210-AT) • 16 x RJ-45 GbE LAN with 4 SATA or 2 SATA (Intel® I210-AT)</td> </tr> <tr> <td>USB</td> <td>4 x USB 3.0</td> </tr> <tr> <td>DIO</td> <td>1 x Terminal block isolated 6-in/2-out DIO (isolation voltage: 2 kV)</td> </tr> <tr> <td>Others</td> <td>1 x Reset button 5 x Antenna opening 2 x External accessible SIM card socket</td> </tr> </table>	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 @60Hz) 1 x HDMI (supports up to 4K/2K @30Hz)	Audio	1 x Mic-in, 1 x Line-out	Ethernet	Flexible LAN selection: • 8 x RJ-45 GbE LAN with 2 SATA (Intel® I210-AT) • 8 x M12 A-coded GbE LAN with 4 SATA (Intel® I210-AT) • 8 x RJ-45, 8 x M12 A-coded GbE LAN with 4 SATA (Intel® I210-AT) • 16 x RJ-45 GbE LAN with 4 SATA or 2 SATA (Intel® I210-AT)	USB	4 x USB 3.0	DIO	1 x Terminal block isolated 6-in/2-out DIO (isolation voltage: 2 kV)	Others	1 x Reset button 5 x Antenna opening 2 x External accessible SIM card socket
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Expansion Interface	<table border="0"> <tr> <td>2 x Full-size Rev.1.2 PCI Express Mini Card slot: • 2 x USB/PCIe with external SIM socket</td> </tr> <tr> <td>2 x Half-size Rev.1.2 PCI Express Mini Card slot: • 1 x mSATA/USB/PCIe • 1 x USB</td> </tr> </table>	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												
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Storage	<table border="0"> <tr> <td>SATA Drive</td> <td>• 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</td> </tr> <tr> <td>mSATA</td> <td>1 x Half-sized mSATA (occupied 1 x PCI Express Mini Card slot)</td> </tr> </table>	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)										
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mSATA	1 x Half-sized mSATA (occupied 1 x PCI Express Mini Card slot)														
Watchdog Timer	255 levels, 1 to 255 sec.														
Power in	<table border="0"> <tr> <td>Power Supply</td> <td>General use: 1 x Terminal block, 9 to 36 VDC Vehicle: 1 x terminal block, 12/24 VDC with Smart ignition</td> </tr> <tr> <td>Power Consumption</td> <td>16LAN SKU⁽¹⁾: 24V/13.15A 8LAN SKU⁽²⁾: 24V/9.6A (1) 16 x RJ-45/8 x RJ-45 + 8 x M12 (2) 8 x RJ-45/8 x M12</td> </tr> </table>	Power Supply	General use: 1 x Terminal block, 9 to 36 VDC Vehicle: 1 x terminal block, 12/24 VDC with Smart ignition	Power Consumption	16LAN SKU ⁽¹⁾ : 24V/13.15A 8LAN SKU ⁽²⁾ : 24V/9.6A (1) 16 x RJ-45/8 x RJ-45 + 8 x M12 (2) 8 x RJ-45/8 x M12										
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Specifications

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+ <ul style="list-style-type: none"> • 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 ⁽¹⁾ and EN 45545-2 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	
Shock	EN 50155	EN (IEC) 61373 category 1 class B
	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), Linux	
Software Support	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)	IP40-rated Fanless embedded 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, 16 RJ-45 PoE GbE LAN, 4 SATA drive and Smart ignition
UST500-517-FL-8RJ8M12-4SATATDC (P/N: E274500101)	IP40-rated Fanless embedded 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, 8 RJ-45, 8 M12 PoE GbE LAN, 4 SATA drive and Smart 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, 8 M12 PoE GbE LAN, 4 SATA drive and Smart ignition

2 Internal SATA Drive SKUs

UST500-517-FL-8RJ-2SATA-TDC (P/N: E274500103)	IP40-rated Fanless embedded 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, 8 RJ-45 PoE GbE LAN, 2 internal SATA drive and Smart ignition
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2 Swappable SATA Drive SKUs

UST500-517-FL-16RJ-2SATATRAY-TDC (P/N: E274500104)	IP30-rated Fanless embedded 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, 16 RJ-45 PoE GbE LAN, 2 swappable SATA drive and Smart ignition
UST500-517-FL-8RJ-2SATATRAY-TDC (P/N: E274500105)	IP30-rated Fanless embedded 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, 8 RJ-45 PoE GbE LAN, 2 swappable SATA drive and Smart ignition

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

Ordering Information

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)
	881745001A0E	GPS Kit M8N w/o adapter for tBOX/UST SFP (E)
	887450010A0E	GPS RYP8838 KIT for UST500(E)
	886N50010A0E	LTE LE910C4-AP KIT(30)for tBOX(E)
	886N50011A0E	LTE LE910C4-EU KIT(30)for tBOX(E)
	886N50012A0E	LTE LE910C4-NF KIT(30)for tBOX(E)
AC to DC Adapter	886N50014A0E	MCR8822CE-P WiFi KIT(30)for tBOX(E)
	509000001500	PWS FSP120-AAAN3(9NA1206647) FSP 120W



*Specifications and certifications may vary based on different requirements.

Packing List

4 SATA Tray	<ul style="list-style-type: none"> CPU thermal pad x 1 Audio cable bracket x 1 HDMI cable bracket x 1 Cable fixture screws x 3 Cable tie x 3 HDD screws x 16 HDD Mylar x 4 Power input 3-pin terminal block connector x 1 DIO 12-pin terminal block connector x 1 Wall mount kit x 1 Wall mount kit screws x 4 Mini Card Slot screws x 8 RF isolated plastic spacer x 10
No Tray	<ul style="list-style-type: none"> CPU thermal pad x 1 Audio cable bracket x 1 HDMI cable bracket x 1 Cable fixture screws x 3 Cable tie x 3 HDD screws x 8 HDD holder x 2 HDD holder screws x 8 Power input 3-pin terminal block connector x 1 DIO 12-pin terminal block connector x 1 Wall mount kit x 1 Wall mount kit screws x 4 Mini Card Slot screws x 8 RF isolated plastic spacer x 10
2 SATA Tray	<ul style="list-style-type: none"> CPU thermal pad x 1 Audio cable bracket x 1 HDMI cable bracket x 1 Cable fixture screws x 3 Cable tie x 3 HDD screws x 8 Power input 3-pin terminal block connector x 1 DIO 12-pin terminal block connector x 1 Wall mount kit x 1 Wall mount kit screws x 4 Mini Card Slot screws x 8 RF isolated plastic spacer x 10

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

