



# Axiomtek UST210-83K-FL Fanless Embedded System with Intel Atom x5-E3940

## Key Features:

- CE, FCC certified; ISO 7637-2 compliant
- Intel Atom x5-E3940 processor
- Extreme cost-effective with fanless and cableless design
- Wide operating temperature range from -40°C to +70°C
- Supports 9-36 VDC & 12/24 VDC typical in-vehicle power input
- Smart Ignition for power on/off schedule, vehicle battery protection and different power mode
- Support COM, CAN, USB, GbE PoE LAN
- 8-bit programmable DIO for IoT gateway applications
- Supports SocketCAN
- AMS.AXView intelligent remote monitoring

## Description

The UST210-83K-FL, its new compact DIN-rail fanless in-vehicle box PC powered by the Intel Atom x5-E3940 processor. The UST210-83K-FL features a Smart Ignition function for power on/off scheduling to protect vehicle battery from unstable voltage. Furthermore, the in-vehicle box PC is in compliance with ISO 7637-2 and can endure vibration of up to 3 Grms, ensuring stable and reliable operation under challenging environmental conditions.

The ruggedized in-vehicle embedded system adopts front-accessible I/O ports for easy access and maintenance. In addition, the well-developed in-vehicle box PC supports 9V to 36V DC wide voltage input. The flexible IoT gateway is aimed at all kinds of in-vehicle applications, e.g., shuttle buses, police cars, ambulances or heavy-duty trucks. The UST210-83K-FL can operate under a wide temperature range from -40 to +70°C and it passes MIL-STD-810G shock and vibration resistance certifications to ensure proper operations when traveling on poor road conditions. The UST210-83K-FL is specially designed for in-vehicle applications such as vehicle controls, fleet monitoring, management system, and in-vehicle edge computing.

## Website Specification

CPU	<ul style="list-style-type: none"> <li>• Intel Atom x5-E3940 4C @1.6 GHz, TDP: 9.5W</li> </ul>
Chipset	<ul style="list-style-type: none"> <li>• SoC integrated</li> </ul>
System Memory	<ul style="list-style-type: none"> <li>• 1 x DDR3L-1866 SO-DIMM, up to 8GB</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>• AMI</li> </ul>
COM	<ul style="list-style-type: none"> <li>• Up to 2 terminal block serial console or RS-232/422/485</li> </ul>
USB	<ul style="list-style-type: none"> <li>• 2 x USB 3.0</li> </ul>
PoE	<ul style="list-style-type: none"> <li>• 4 x RJ-45 PoE</li> <li>• Max. 30W</li> <li>• Supports PoE (802.3af 15.4W/port) &amp; PoE+ (802.3at 30W/port)</li> </ul>
Ethernet	<ul style="list-style-type: none"> <li>• 4 x RJ-45 isolated 10/100/1000 Mbps Ethernet (Intel i211-AT)</li> <li>• Isolation voltage: 1.5 kV</li> </ul>
Display	<ul style="list-style-type: none"> <li>• 1 x HDMI (up to 1920x1080@60Hz)</li> </ul>
CANbus	<ul style="list-style-type: none"> <li>• 1 x Terminal block CANBus 2.0 A/B</li> </ul>
Digital I/O	<ul style="list-style-type: none"> <li>• 1 x DB9 8-bit programmable DIO</li> </ul>
Audio	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Storage	<ul style="list-style-type: none"> <li>• 1 x Half-size mSATA (occupied 1 x PCI Express Mini Card slot)</li> <li>• 1 x Internal 2.5" SATA drive (9.5 mm height)</li> </ul>
Expansion	<ul style="list-style-type: none"> <li>• 1 x Full-size Rev. 1.2 PCI Express Mini Card slot (USB with SIM slot)</li> <li>• 1 x Half-size Rev. 1.2 PCI Express Mini Card slot (mSATA/USB)</li> </ul>
Others	<ul style="list-style-type: none"> <li>• 4 x Antenna opening</li> <li>• TPM 2.0</li> </ul>
Power Consumption	<ul style="list-style-type: none"> <li>• Non-PoE SKU: 9VDC, 3.878A; 36VDC, 0.85A</li> <li>• PoE SKU: 9VDC 6.298A, 36VDC 1.617A</li> </ul>
Power Supply	<ul style="list-style-type: none"> <li>• 1 x Terminal block, 9 to 36 VDC (Typical 12/24 VDC) with smart ignition</li> </ul>
Watchdog Timer	<ul style="list-style-type: none"> <li>• 255 levels, 1 to 255 sec.</li> </ul>
Construction	<ul style="list-style-type: none"> <li>• Extruded aluminum and heavy-duty steel, IP20</li> </ul>
Operating Temperature	<ul style="list-style-type: none"> <li>• -40°C to +70°C (-40°F to +158°F)</li> </ul>
Relative Humidity	<ul style="list-style-type: none"> <li>• 0% to 95%, non-condensing</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• 3 Gms with mSATA and SSD (5 to 500Hz, X/Y/Z direction; random, operating)</li> <li>• MIL-STD-810G, Method 514.6C-VI Category 4 compliant</li> </ul>
Shock	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Dimensions(W x D x H)	<ul style="list-style-type: none"> <li>• Non-PoE SKU: 48 x 110.4 x 155 mm (1.89" x 4.33" x 6.1")</li> <li>• PoE SKU: 66.7 x 110.4 x 155 mm (2.63" x 4.33" x 6.1")</li> </ul>
Weight (net/gross)	<ul style="list-style-type: none"> <li>• Non-PoE SKU: 0.51 kg (1.12 lb)/0.79 kg (1.74 lb)</li> <li>• PoE SKU: 0.84 kg (1.85 lb)/1.12 kg (2.47 lb)</li> </ul>

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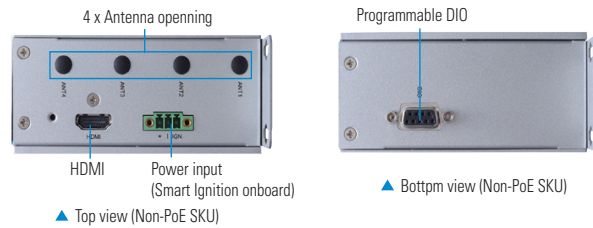
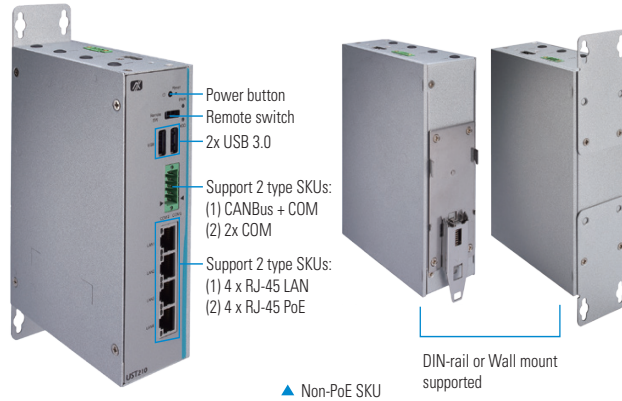
Certifications	<ul style="list-style-type: none"><li>• CE (Class A), FCC (Class A) certified</li><li>• ISO 7637-2 compliant</li></ul>
EOS Support	<ul style="list-style-type: none"><li>• Windows 10 64-bit, Ubuntu 18.04</li></ul>
Software Support	<ul style="list-style-type: none"><li>• AMS.AXView</li></ul>
Mounting	<ul style="list-style-type: none"><li>• Wall mount, DIN-rail</li></ul>

# UST210-83K-FL NEW

Robust and Compact DIN-rail Fanless Embedded System with Intel Atom® x5-E3940 Processor for In-Vehicle Gateway Application

## Features

- CE, FCC certified; ISO 7637-2 compliant
- Intel Atom® x5-E3940 processor
- Extreme cost-effective with fanless and cableless design
- Wide operating temperature range from -40°C to +70°C
- Supports 9-36 VDC & 12/24 VDC typical in-vehicle power input
- Smart Ignition for power on/off schedule, vehicle battery protection and different power mode
- Support COM, CAN, USB, GbE PoE LAN
- 8-bit programmable DIO for IoT gateway applications
- Supports SocketCAN
- AMS.AXView intelligent remote monitoring



## Specifications

Standard Color	Sliver	
Construction	Extruded aluminum and heavy-duty steel, IP20	
CPU	Intel Atom® x5-E3940 4C @1.6 GHz, TDP: 9.5W	
Chipset	SoC integrated	
System Memory	1 x DDR3L-1866 SO-DIMM, up to 8GB	
BIOS	AMI	
TPM	TPM 2.0	
System I/O Outlet	Serial	Up to 2 x Terminal block Serial console or RS-232/422/485**
	CANBus	1 x Terminal block CANBus 2.0 A/B**, supports SocketCAN*
	Display	1 x HDMI (up to 1920x1080@60Hz)
	Ethernet	4 x RJ-45 isolated 10/100/1000 Mbps Ethernet (Intel® i211-AT) Isolation voltage: 1.5 kV
	USB	2 x USB 3.0
	DIO	1 x DB9 8-bit programmable DIO
	Others	4 x Antenna opening 1 x Power button 1 x Reset button 1 x Remote switch
Extension Interface	1 x Full-size Rev. 1.2 PCI Express Mini Card slot:	
	• USB with SIM slot 1 x Half-size Rev. 1.2 PCI Express Mini Card slot: • mSATA/USB	
Storage	SATA Drive	1 x Internal 2.5" SATA drive (9.5 mm height)
	mSATA	1 x Half-sized mSATA (occupied 1 x PCI Express Mini Card slot)
Watchdog Timer	255 levels, 1 to 255 sec.	





Power	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	Non-PoE SKU: 9 VDC, 3.878A; 36VDC, 0.85A PoE SKU: 9VDC 6.298A, 36VDC 1.617A
PoE (PSE, Power Sourcing Equipment)**	Up to 4 x configurable RJ-45 PoE output max. 30W 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	
Operating Temperature	-40°C to +70°C (-40°F to +158°F) with W.T. peripheral***	
Humidity	0% to 95%, non-condensing	
Dimensions	Non-PoE SKU: 48 mm (1.89") (W) x 110.4 mm (4.33") (D) x 155 mm (6.1") (H)	
	PoE SKU: 67 mm (2.63") (W) x 110.4 mm (4.33") (D) x 155 mm (6.1") (H)	
Mounting	Wall mount, DIN-rail	
Weight (net/gross)	Non-PoE SKU: 0.51 kg (1.12 lb)/0.79 kg (1.74 lb)	
	PoE SKU: 0.84 kg (1.85 lb)/1.12 kg (2.47 lb)	
Certifications	CE (Class A), FCC (Class A) certified; ISO 7637-2 compliant	
	EMC/FCC EN 55032 (Class A), EN 55024, FCC part 15 B (Class A)	
Vibration Endurance	3 Gms with mSATA and SSD (5 to 500Hz, X/Y/Z direction; random, operating) MIL-STD-810G, Method 514.6C-VI Category 4 compliant	
EOS Support	Windows® 10 64-bit, Ubuntu 18.04	
Software Support	AMS.AXView	

\* Please refer the detail in SocketCAN manual.

\*\* See Ordering information.

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

**Ordering Information**

Standard	
UST210-83K-FL-E3940-CANCOM-TVDC (P/N: E274210100)	Fanless embedded system with Intel Atom® x5-E3940 processor, 1 CAN, 1 COM, 4 LAN, 2 USB, 1 DIO and 1 HDMI, TPM 2.0 supported, with Smart Ignition  <i>Non-PoE SKU</i>
UST210-83K-FL-E3940-2COM-TVDC (P/N: E274210101)	Fanless embedded system with Intel Atom® x5-E3940 processor, 2 COM, 4 LAN, 2 USB, 1 DIO and 1 HDMI, TPM 2.0 supported, with Smart Ignition  <i>Non-PoE SKU</i>
UST210-83K-FL-E3940-4POE-CANCOM-TVDC (P/N: E274210102)	Fanless embedded system with Intel Atom® x5-E3940 processor, 1 CAN, 1 COM, 4 PoE LAN, 2 USB, 1 DIO and 1 HDMI, TPM 2.0 supported, with Smart Ignition  <i>PoE SKU</i>
UST210-83K-FL-E3940-4POE-2COM-TVDC (P/N: E274210103)	Fanless embedded system with Intel Atom® x5-E3940 processor, 2 COM, 4 PoE LAN, 2 USB, 1 DIO and 1 HDMI, TPM 2.0 supported, with Smart Ignition  <i>PoE SKU</i>

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

**Optional**

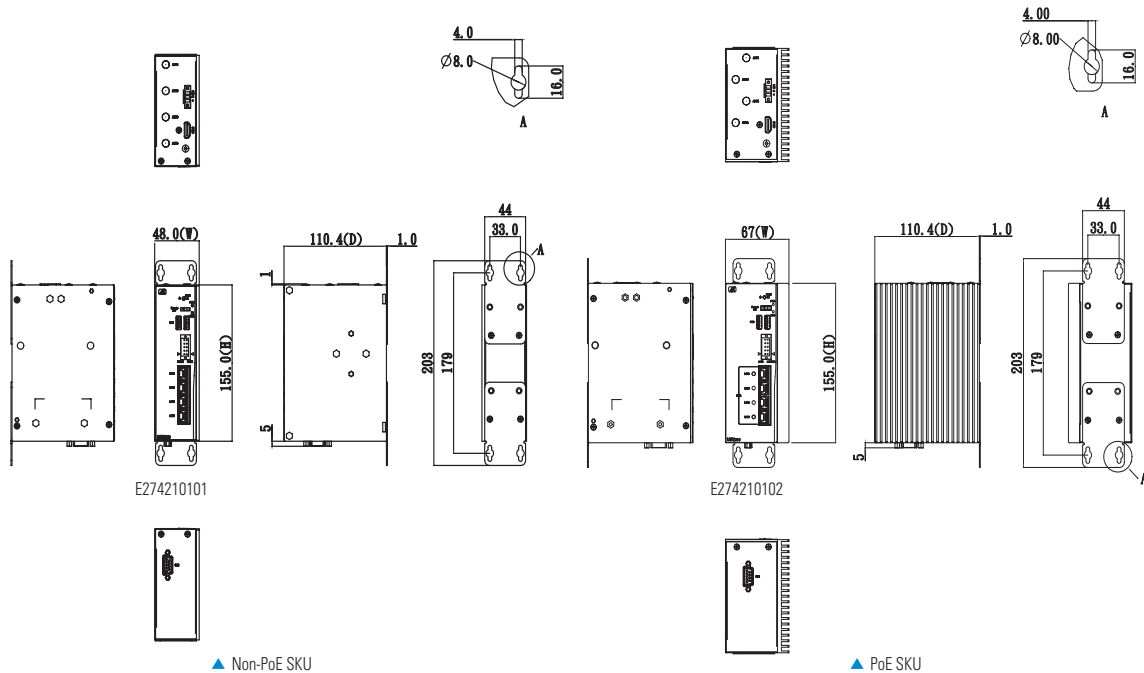
Communication Modules	8812C300GA0E	3G UC20GKit tBOX/ICQ(20) (E)
	8812C300HA0E	3G/GPS UC20GKit tBOX/ICQ(20) (E)
	8812C300IA0E	LTE SIM7100JC Kit for ICQ(20) JPN SFP(E)
	8812C300EA0E	LTE SIMCOM SIM7100C(TW) for ICQ300 SFP(E)
	8812C300DA0E	LTE SIMCOM SIM7100E(EU) for ICQ300 SFP(E)
AC to DC Adapter	50906D24000E	Adaptor 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

**Dimensions**



## Images



## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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