

TPC-B510

Modular Series - Computing Box Module with 8th Gen. Intel® Core™ i3/i5/i7 Processor



Features

- Modular Computing Box powered by 8th Gen. Intel® Core™ i3- 8145UE dual-core/i5-8365UE quad-core/ i7-8665UE quad-core processor with built-in 8 GB DDR4 SO-DIMM
- Dual channel memory slots support up to 32GB in total
- Compact, fanless embedded system with chassis grounding protection
- Support expansion via Full-size Mini PCIe and two M.2 slots (NVMe, 5G)
- Diverse system I/O and isolated digital I/O via iDoor technology
- Support fieldbus protocols/GPS/GPRS/Wi-Fi capabilities via iDoor technology
- Support TPM2.0 hardware security
- Modular Front Panel modules ranging from 12.1" to 23.8" with P-CAP multi-touch in selection (12.1" features 5-wire resistive touch)



Introduction

Advantech's TPC-B510 computing box module, as a member of the Modular Series TPC family, is powered by 8th Generation Intel Core processors. With its compact and fanless design, TPC-B510 delivers high performance that not simply meets your demands for a daily-operation control panel, but a genuine Industry 4.0-era-tailored Industrial PC that features bountiful I/Os including four USB 3.1 ports, expansions with M.2 NVMe SSD and 5G/Wi-Fi module support for ultra speed data transmission. With an easy pairing with modular series FPM module, the whole system makes an IP66-grade powerful Panel PC that ranges from 12.1" to 23.8" with up to FHD resolution, adapting to your corporate demands both visually and technically.

*For other Modular Series TPC/FPM family members, please find 'TPC-B500', 'TPC-B200' and 'FPM-B700' on Advantech's official website.

Specifications

General

- **BIOS** AMI UEFI
- **Certification** BSMI, CCC, CE, FCC Class A, CB/UL
- **Cooling System** Fanless design
- **Dimensions (W x H x D)** 268.96 x 202.96 x 39.5 (mm)
- **Enclosure** Back housing: Die cast aluminum alloy
- **Mounting** VESA Mount, Desktop, Wall or Panel Mount
- **OS Support** Win 10, Android, Linux
- **Power Consumption** Typ. 29W; Max. 65W
- **Power Input** 24 V_{DC} ± 20%
- **Watchdog Timer** 15-255 sec (system)
- **Weight (Net)** 4.5kg

System Hardware

- **CPU** 8th Gen. Intel® Core™ i3- 8145UE 2.20GHz Dual-core/ i5-8365UE 1.60GHz Quad-core/i7-8665UE 1.70GHz Quad-core processor
- **Memory** Dual channel DDR4 SO-DIMM (Each channel supports up to 16G)
1 x 8G DDR4 SO-DIMM (Built-in)
- **LAN** 2 x 10/100/1000BASE-T
- **Expansion Slot** 1 x Full-size mini PCIe
- **Storage Slot** 1 x M.2 M key 2280 (SATA or NVMe PCIe x4)
1 x M.2 B key 2242 (SATA / PCIe)
1 x 2.5" SSD/ HDD (SATA, Max. 7mm)
- **I/O** 2 x RS-232/422/485
1 x USB 2.0
4 x USB 3.1 (Gen.2)
1 x iDoor slot
1 x Displayport (Video output)
1 x Audio line out/ mic in

Environment

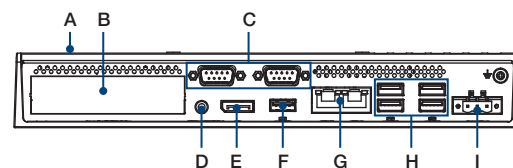
- **Humidity** 10 ~ 95% RH @ 40°C, non-condensing
- **Ingress Protection** IP66-rated front panel
- **Operating Temperature** -10~55°C (14~131°F) (w/o air flow)
- **Storage Temperature** -20~70°C (-4~158°F)
- **Vibration Protection** With SSD: 1 Grms (5 ~ 500 Hz) (Operating, random vibration)

Power Consumption with Panel Module

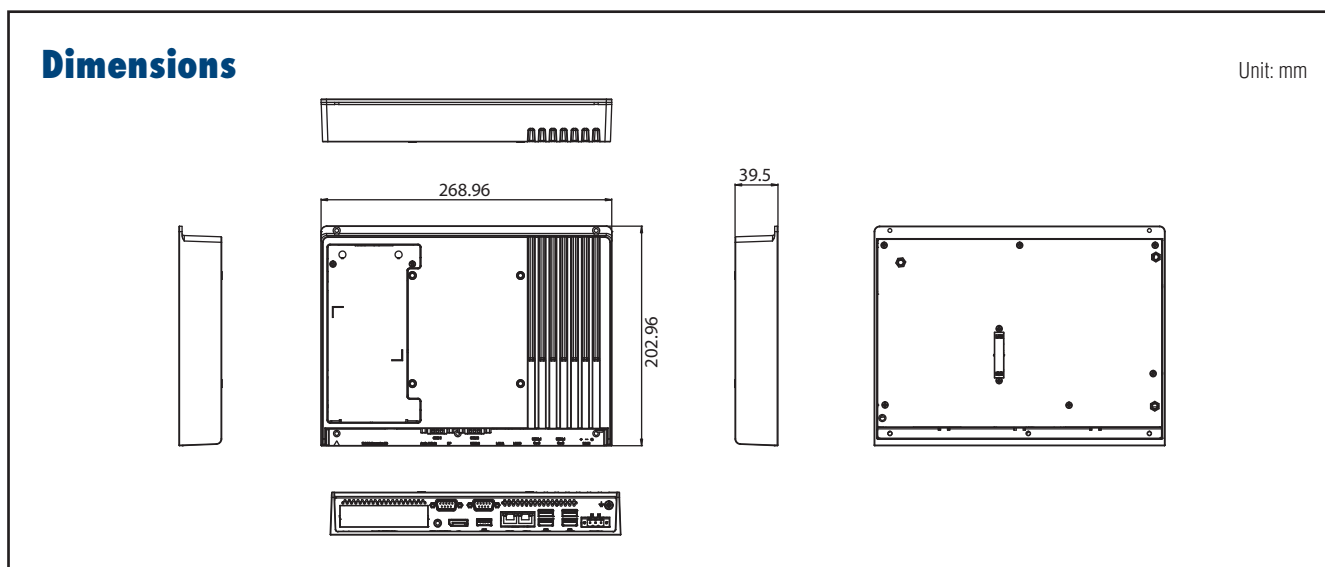
Item	Power Consumption		Screen Size	Resolution	Aspect Ratio
	Typ.	Max.			
TPC-B510	29W	65W	N/A	N/A	N/A
w/ FPM-D12T-BE	41W	77W	12.1"	1024x768	4:3
w/ FPM-D15T-BE	43W	79W	15"	1024x768	
w/ FPM-D17T-BE	53W	89W	17"	1280x1024	16:9
w/ FPM-D15W-FBE	47W	83W	15.6"	1920x1080	
w/ FPM-D18W-BE	40W	76W	18.5"	1366x768	
w/ FPM-D21W-BE	43W	79W	21.5"	1920x1080	
w/ FPM-D24W-BE	55W	91W	23.8"	1920x1080	

*Please find below the Ordering Information for the Panel Module.

Rear View



- A. Default HDD/SSD Bay
- B. iDoor slot
- C. RS-232/422/485
- D. Audio line out/ mic in
- E. Display Port
- F. USB 2.0
- G. LAN (10/100/1000)
- H. USB 3.1
- I. Power Receptor



Dimensions

Unit: mm

Ordering Information

- **TPC-B510-833AE** Intel® Core™ i3-8145UE 2.20GHz Dual-core Processor, 8G DDR4 RAM
- **TPC-B510-853AE** Intel® Core™ i5-8365UE 1.60 GHz Quad-core Processor, 8G DDR4 RAM
- **TPC-B510-873AE** Intel® Core™ i7-8665UE 1.70GHz Quad-core Processor, 8G DDR4 RAM
- **TPC-B510-833AO** Intel® Core™ i3-8145UE 2.20GHz Dual-core Processor, 8G DDR4 RAM without Audio Line out
- **TPC-B510-853ACO** Intel® Core™ i5-8365UE 1.60 GHz Quad-core Processor, 8G DDR4 RAM without Audio Line out (Mfg: China)
- **TPC-B510-873AO** Intel® Core™ i7-8665UE 1.70GHz Quad-core Processor, 8G DDR4 RAM without Audio Line out

Panel Module P/N	FPM-D12T-BE	FPM-D15T-BE	FPM-D17T-BE	FPM-D15W-FBE	FPM-D18W-BE	FPM-D21W-BE	FPM-D24W-BE
Description	12.1" XGA TFT LED LCD	15" XGA TFT LED LCD	17" SXGA TFT LED LCD	15.6" FHD TFT LED LCD	18.5" HD TFT LED LCD	21.5" FHD LED LCD	23.8" FHD TFT LED LCD

*For more information about the panel module, please refer to "FPM-Display Module" Data Sheet.

Optional Accessories

- **96PSA-A120W24T2-3** 120W 24V_{DC} power supply
- **1702002600** Power cable (US) 1.8 M
- **1702002605** Power cable (EU) 1.8 M
- **1702031801** Power cable (UK) 1.8 M
- **1700000596-11** Power cable (China/Australia) 1.8 M

Embedded OS

- **20703WX9HS0020** Win10 LTSC for TPC-B510-873AE
- **20703WX9VS0023** Win10 LTSC for TPC-B510-833AE/853AE
- **Android**
- **Advantech Linux**

iDoor Modules

- **PCM-24D2R4-BE** Isolated RS-422/485, DB9 x 2, (USB type)
- **PCM-24D2R2-BE** Isolated RS-232, DB9 x 2, (USB type)
- **PCM-24R1TP-AE** 1-Port Gigabit Ethernet, Intel® 82574L, mPCIe, RJ45
- **PCM-27D24DI-AE** Digital I/O, 16 DI / 8 DO, Isolation, DB37 x 1
- **PCM-24S2WF-BE** 802.11 a/b/g/n/ac 2T2R w/BT4.1, Atheros QCA6174A
- **PCM-26D2CA-AE** 2-Port Isolated CANBus mPCIe, CANOpen, DB9
- **PCM-23U1DG-CE** Internal locked USB Slot for USB Dongle, mPCIe

Application Software

WebAccess/SCADA	Advantech WebAccess/SCADA is a 100% browser-based IIoT software platform aimed at supervisory control and data acquisition (SCADA) operations. WebAccess/SCADA provides open interfaces that allow our customers and partners to develop unique IoT applications for different vertical markets. In addition to supporting traditional SCADA functions, the platform features an HTML5-based user interface and intelligent dashboard to facilitate cross-platform, cross-browser data analysis. Moreover, WebAccess/SCADA not only offers built-in widgets, but is also equipped with an innovative Widget Builder that enables customers to build their own widgets.
WebAccess/HMI	Advantech WebAccess/HMI is human-machine interface (HMI) software based on Microsoft's Windows operating system. This software features excellent communication and monitoring capabilities, supports more than 350 PLC communication protocols, and offers a wide choice of screen design objects to satisfy diverse integrations of factory automation and HMI operation and monitoring requirements.

Please note: If some optional modules are offered with the system, additional system certificates may be required in certain regions/countries. Please contact Advantech for certificate compliance.