TPC-B610

Modular TPC - Computing Box Module with Intel® 10th Gen. Core™ i CPU Socket (LGA1200)

Features

- High Performance Computing Box powered by Intel® 10th Gen. Core™ i CPU Socket (LGA1200) with fanless design
- 10+ x Panel Modules (IP66) ranging from 15" to 23.8" in selection
- Dual Channel Memory slots (DDR4) support up to 64GB in total
- Comprehensive I/Os, including 6 x USB, 2 x COM, 2 x RJ45...etc
- Supports Expansion via 1 x PCIe x16, ,1 x PCI or PCIe x 4, 1 x mPCIe, 2 x M.2 (NVMe, SATA, 5G)
- Supports Storage via 2 x 2.5" HDD/SSD (RAID 0/1), 2 x M.2 (2242/2280)
- Supports Fieldbus protocols/GPS/GPRS/Wi-Fi capabilities via iDoor technology
- Supports Diverse system I/O, DIO, PoE...etc. via iDoor technology
- Supports TPM 2.0 hardware security

Introduction

Advantech's TPC-B610 is the highest performance Panel PC solution to date for your future-proof Industry 4.0 application. This Modular Computing Box, with its iconic fanless design, is powered by 10th Gen. Intel Core i Socket (LGA1200), a total of 64GB DDR4, comprehensive I/Os including 6 x USBs, greatest expansion via PCIe x16 and bountiful Storage through M.2 SATA/NVME and 2 x 2.5" HDD/SSD slots, living up to your high-end processing and calculation demands. With an easy pairing with Panel Module, a premium Panel PC system with IP66-grade, ranging from 15" to 23.8" up to FHD resolution, is born to meet your corporate expectation.

*For other Modular Series TPC/FPM family members, please find 'TPC-B520', 'TPC-B520L', and 'TPC-B300' 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)** — 269 x 224 x 70 (mm)
- **Enclosure** — Die cast aluminum alloy
- **Mounting** — VESA Mount, Desktop, Wall or Panel Mount
- **OS Support** — Win10 LTSC, Linux
- **Security** — TPM 2.0 (built-in)
- **Power Consumption** — Typ. 74W; Max. 187W (without Panel Module)
- **Power Input** — 24 V_{DC} ± 20%
- **Watchdog Timer** — 15-255 sec (system)
- **Weight (Net)** — 4.5 kg (9.92 lbs)

System Hardware

- **CPU** — Intel® 10th Gen. Core™ i Socket CPU (LGA1200)***
- **Memory** — Dual channel DDR4 SO-DIMM (Each channel supports up to 32G, 2933 MHz)
- **LAN** — 2 x 10/100/1000BASE-T (LAN A: i219, LAN B: i210)
- **Expansion Slot** —
  - 1 x PCIe x16
  - 1 x PCI**
  - 1 x PCIe x4**
  - 1 x Full-size mini PCIe
  - 1 x M.2 B key 3025 (5G) USB3
  - 1 x SIM card slot

- **Storage Slot*** —
  - 1 x M.2 M key 2280 (SATA or NVMe PCIex4)**
  - 1 x M.2 B key 2242 (SATA)
  - 2 x 2.5" SSD/ HDD (SATA, Max. 7mm)**
- **I/O** —
  - 1 x RS-232/422/485 (COM 1)
  - 1 x RS-232 (COM 2)
  - 5 x USB 3.2 (Gen 1)
  - 1 x USB 2.0
  - 1 x Displayport 1.2
  - 1 x Audio line out/Mic in

Environment

- **Humidity** — 95% RH @ 40°C, non-condensing
- **Ingress Protection** — IP66 (for optional panel module with "Panel Mount")
- **Operating Temperature** — 35W CPU: -10~50°C (14~122°F) (w/ 0.7 m/s airflow) 65W CPU: -10~40°C (14~104°F) (w/ 0.7 m/s airflow)
- **Storage Temperature** — -20~70°C (-4~158°F)
- **Vibration Protection** — With SSD: 1 Grms (5 ~ 500 Hz) (Operating, random vibration)

Note 1: Operating Temperature is based on 1 x Industrial SSD without PCI expansion cards. When combined with FPM-D24W-BE, the operating temp. is -10~40°C for both types of CPUs.
Note 2: IP66 is applicable for Panel Mount.

Power Consumption with Panel Module

Item	Power Consumption		Screen Size	Resolution	Aspect Ratio
	Type	Max.			
TPC-B610	73W	187W	N/A	N/A	N/A
w/ FPM-D15T-CE/BE	82W	196W	15"	1024x768	04:03
w/ FPM-D15T-HE	97W	211W	15"	1024x768	
w/ FPM-D17T-CE/BE	89W	203W	17"	1280x1024	05:04
w/ FPM-D19T-CE	87W	201W	19"	1280x1024	
w/ FPM-D15W-FCE/FBE	89W	203W	15.6"	1920x1080	
w/ FPM-D15W-FHE	98W	212W	15.6"	1920x1080	
w/ FPM-D18W-FCE/BE	90W	204W	18.5"	1920x1080	16:09
w/ FPM-D21W-CE/BE	85W	199W	21.5"	1920x1080	
w/ FPM-D21W-HE	115W	229W	21.5"	1920x1080	
w/ FPM-D24W-CE/BE	94W	208W	23.8"	1920x1080	

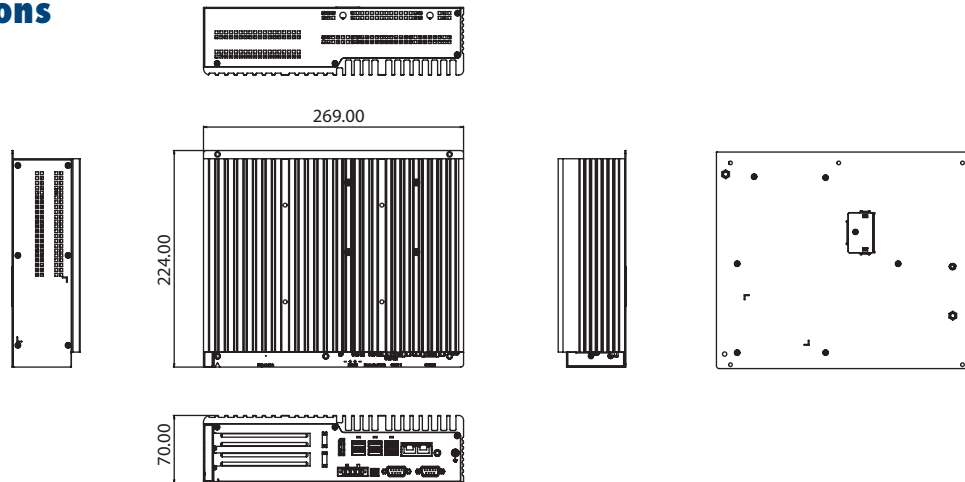*TPC-B610 supports only wide temperature (~85°C or wider) M.2 storage.
**PCI and M.2 2280 (SATA) is only for TPC-B610H-A00A.
**PCIex4, NVMe, RAID 0/1 are only for TPC-B610W-A00A.
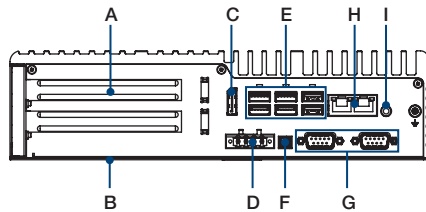***CPU Power was limited to 35W via BIOS default for fanless support.

Dimensions

Unit: mm

269.00

224.00

70.00

Rear View

A. PCI expansion slots
B. 2.5" HDD/SSD slots
C. Displayport 1.2
D. Power Receptor
E. USB (5 x 3.2, 1 x 2.0)
F. Remote Power
G. RS-232/422/485 (COM 1), RS-232 (COM 2)
H. RJ45 (10/100/1000BASE-T)
I. Audio line out/Mic in

Note 1: The max. dimension of PCI expansion cards supported is 191 x 111.15 x 34.80 mm.
Note 2: If the two slots are to be used simultaneously, the max. dimension supported is 191 x 111.15 x 14.47 mm for each PCI expansion card.
Note 3: The max. power consumption of PCI expansion card supported is 75W.

Ordering Information

Part No.	Description	PCIe x 16	PCIe x 4	PCI	NVMe	RAID 0/1
TPC-B610H-A00A	Intel® 10th Gen. Core™ i CPU Socket (LGA1200), H420E	1	NA	1	NA	NA
TPC-B610W-A00A	Intel® 10th Gen. Core™ i CPU Socket (LGA1200), W480E	1	1	NA	Yes	Yes

Processor (TDP 35W)

CPU	i7-10700TE	i5-10500TE	i3-10100TE	G6400TE	G5900TE
Cores	8	6	4	2	2
Base Frequency	2.00 GHz	2.30 GHz	2.30 GHz	3.20 GHz	3.00 GHz
Turbo Frequency	4.40 GHz	3.70 GHz	3.60 GHz	N/A	N/A

Processor (TDP 65W)****

CPU	i7-10700E	i5-10500E	i3-10100E	G6400E (58W)	G5900E (58W)
Cores	8	6	4	2	2
Base Frequency	2.90 GHz	3.10 GHz	3.20 GHz	3.80 GHz	3.20 GHz
Turbo Frequency	4.50GHz	4.20 GHz	3.80 GHz	N/A	N/A

Panel Module

P/N	FPM-D15T-BE	FPM-D17T-BE	FPM-D15W-FBE	FPM-D18W-BE	FPM-D21W-BE	FPM-D24W-BE
Description	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
Dimension w/ TPC-B610 (L x W x H) (mm)	383.2 x 328.3 x 97.5	410.4 x 364.4 x 98.3	419.7 x 290 x 100.3	488 x 330 x 100.3	558.4 x 370.8 x 100.3	595.9 x 395.1 x 100.3

Panel Module P/N	FPM-D15T-CE	FPM-D15T-HE	FPM-D17T-CE	FPM-D19T-CE	FPM-D15W-FCE
Description	15" XGA TFT LED LCD	15" XGA TFT LED LCD High Brightness 1800 nits	17" SXGA TFT LED LCD	19" SXGA TFT LED LCD	15.6" FHD TFT LED LCD

Panel Module P/N	FPM-D15W-FHE	FPM-D18W-FCE	FPM-D21W-CE	FPM-D21W-HE	FPM-D24W-CE
Description	15.6" FHD TFT LED LCD High Brightness 1200 nits	18.5" HD TFT LED LCD	21.5" FHD TFT LED LCD	21.5" FHD TFT LED LCD High brightness 1400 nits	23.8" FHD TFT LED LCD

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

Packing List

Item	Part No.	Depiction	Qty
Grounding cable	1703011001-11	A Cable G-TEM 4.3 100CM C=GR/Y	1
Plug-In Block	1652006277-01	PLUG-IN BLOCK 4P 5.08mm 90D(F) DIP	1
Plug-In Block	1652006941-01	Plug 2P 3.5mm 180D(F) MC420-35002ZY	1
Grease	2170000093-01	GREASE X23-7762 0.5+/- 0.15g	1
DDR Thermal-Pad	1990021847N000	Thermal-Pad PAD 64x24.5x2.0 K=6 GR-Hm SPC-1	1
NVMI Thermal-Pad	1990037589N000	Thermal-Pad 60x15x3 K=6 Apus-GR-Hm	1
DDR Thermal-Pad	1990031076N000	Thermal-Pad 65x18x1.0 K=6 Apus-GR-Hm	2
M.2 & mini iPCIE Thermal-Pad	1990027303N000	Thermal-Pad 39X29.5X1.5 K=6 TP GR-Hm Snap on_A8	2
Warranty	2190000902	CARDBOARD-WARRANTY REV. A2	1
HDD Mylar	1990037172T000	Mylar HDD 104x70x0.15 for TPC-B610	2
BOX Fix Screw	1930030800	Screw M3x8L S/S D=4.9 H=1 (2+) ST Ni	5
VESA Screw	1930005204	Screw M4x10L R/S DH=6.8x2.50 + ST ZBK PL	4
China rohs	202KAKMC00	China rohs for AKMC model name 1st ed	1

Optional Accessories

- **96PSA-A230W24P4-3** 230W 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

- **20701WX1ES0006** Win10 IoT Enterprise LTSC 2021 for Entry (G5900TE/E)
- **20701WX1VS0003** Win10 IoT Enterprise LTSC 2021 for Value (Core i3/i5, G6400TE/E)
- **20701WX1HS0003** Win10 IoT Enterprise LTSC 2021 for High (Core i7)
- **20701WLE1S0003** Win 11 IoT Ent LTSC 2024 for Entry (G5900TE/E)
- **20701WLV1S0002** Win 11 IoT Ent LTSC 2024 for Value (Core i3/i5, G6400TE/E)
- **20701WLH1S0002** Win 11 IoT Ent LTSC 2024 for High (Core i7)
- **20701U20DS0004** Advantech Linux, V3.4.3 for TPC-B610 Series

iDoor Modules

- **PCM-24S2WF-BE** 802.11 a/b/g/n/ac 2T2R w/BT4.1, Atheros QCA6174A
- **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-BE** 1-Port Gigabit Ethernet, Intel® 82574L, mPCIe, RJ45
- **PCM-27D24DI-AE** Digital I/O, 16 DI / 8 DO, Isolation, DB37 x 1
- **PCM-26D2CA-AE** 2-Port Isolated CANBus mPCIe, CANOpen, DB9
- **PCM-24R2PE-AE** Intel i350, GbE, PoE IEEE 802.3af, PD, RJ45 x 2

*For TPC-B610, "PCM-28P1AD" is needed for iDoor module installation.
**iDoor module ocuppies one PCI expansion slot.
***For more information about iDoor Module, please find "Advantech iDoor Module" on Advantech's official website.
**** CPU Power was limited to 35W via BIOS default for fanless support.

Application Software

HMINavi

HMINavi Designer is a powerful and intuitive software program for creating comprehensive human machine interface solutions. HMINavi Designer is an easily integrated development tool with proven value in many application fields. The features include solution-oriented screen objects, high-end vector graphics, Windows fonts for multi-language applications, receipts, alarm functions, as well as data and operation logging capabilities. HMINavi Designer also supports utility programs such as Data Transfer Helper (DTH), recipe editor, and text editor. The HMINavi Designer software is free download for usage, user can directly download before purchase. With online/offline simulation user can directly connect to PLC controller to ensure solid connection and screen design without any issue. HMINavi Runtime, a component of HMINavi, guarantees the reliability and performance of Open Platform because of the minimum system overhead, high data communication rates, sub-second screen switching, and 24/7 operation. Additionally, Advantech's fast response software team is continually adding new functions, communication drivers, and solutions to the software to meet dynamic needs.

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.