TPC-B620

Modular TPC - Computing Box Module with Intel® 12th/13th/14th Gen./BTL S Core™ i CPU Socket (LGA1700)



Features

- High Performance Computing Box powered by Intel® 12th/13th/14th Gen. Core™ i / BTL Core™ S-series CPUs Socket (LGA1700) with fanless design
- 10+ x Panel Modules (IP66) ranging from 15" to 23.8" in selection
- Dual Channel Memory slots (DDR5) support up to 64GB in total
- Comprehensive I/Os, including 4 x USB, 2 x COM, 3 x RJ45...etc
- Supports Expansion via 1 x PCIe x16, 1 x PCIe x4 or PCIe x2, 4 x M.2 (NVMe, SATA, WIFI)
- Supports Storage via 2 x M.2 2280 SATA SSD (RAID 0/1), 1 x M.2 NVMe SSD (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-B620 is a high-performance modular Panel PC designed for Industry 4.0 applications. Powered by Intel® 12th/13th/14th Gen. Core™ i / BTL Core™ S-series processors (LGA1700) and supporting up to 64GB DDR5, it features a fanless design with rich I/O (4 x USB, 3 x 2.5GbE LAN, HDMI, DP), PCIe x16 expansion, and versatile storage options including 3 x M.2 and an optional 2.5" HDD/SSD. When paired with IP66-certified touch displays ranging from 15" to 23.8" FHD, it delivers a scalable, rugged solution ideal for demanding industrial environments. Optional internal speaker available.

Specifications

CPU

Bartlett Lake-S Processors	CPU	Core7 251E	Core5 221E	Core5 211E	Core3 201E	Core7 251TE	Core5 221TE	Core5 211TE	Core3 201TE
	P-core Base Frequency	2.1 GHz	2.7 GHz	2.7 GHz	3.6 GHz	1.4 GHz	1.8 GHz	1.7 GHz	2.9 GHz
	L3 Cache	36 MB	24 MB	20 MB	12 MB	36 MB	24 MB	20 MB	12 MB
	Cores	24	14	10	4	24	14	10	4
	Processor Base Power	65 W	65 W	65 W	60 W	45 W	45 W	45 W	45 W

14th Generation Processors	CPU	i9-14900	i7-14700	i5-14500	i5-14400	i5-14400F	i3-14100	300	i9-14900T	i7-14700T	i5-14500T	i5-14400T	i3-14100T	300T
	P-core Base Frequency	2.0 GHz	2.1 GHz	2.6 GHz	2.5 GHz	2.5 GHz	3.5 GHz	3.9 GHz	1.1 GHz	1.3GHz	1.7 GHz	1.5 GHz	2.7 GHz	3.4 GHz
	L3 Cache	36 MB	33 MB	24 MB	20 MB	20 MB	12 MB	6 MB	36 MB	33 MB	24 MB	20 MB	12 MB	6 MB
	Cores	24	20	14	10	10	4	2	24	20	14	10	4	2
	Processor Base Power	65 W	65 W	65 W	65 W	65 W	60 W	46 W	35 W	35 W	35 W	35 W	35 W	35 W

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 76 (mm)
- **Enclosure** Aluminum housing
- **Mounting** VESA Mount, Desktop, Wall or Panel Mount
- **OS Support** Win10 LTSC,Win11 LTSC, Linux
- **Security** TPM 2.0 (built-in)
- **Power Consumption** Typ. 97 W; Max. 179 W (without Panel Module)
- **Power Input** 24 V_{DC} ± 20%
- **Watchdog Timer** 15-255 sec (system)
- **Weight (Net)** 4.2 kg (9.26 lbs)

System Hardware

- **CPU** Intel® 12th/13th/14th Gen. Core™ i / BTL Core™ S-series Socket CPU (LGA1700)
- **Memory** Dual channel DDR5 SO-DIMM
  (Each channel supports up to 32G, 4800 MHz)
- **LAN** 3 x 10/100/1000/2500BASE-T (LAN: i226LM)
- **Expansion Slot*** (R680E Option1) 1 x PCIe* x16 + 1 x PCIe* x4
  (R680E Option2) 2 x PCIe* x4
  *Warning: Please order PCIe card expansion kit or fan kit for adding/installing PCIe card(s)
  1 x M.2 E key 2230 (WIFI, PCIe x1/USB 2.0)
- **Storage Slot** 1 x M.2 M key 2280 (SATA or NVMe PCIe x4 for R680E; PCIe x2 for H610E)
  2 x M.2 M key 2280 (SATA)
  (Optional) 1 x 2.5" SSD/ HDD (SATA, Max. 7mm)
- **I/O** 2 x RS-232/422/485
  4 x USB 3.2 (Gen 1)
  1 x Displayport 1.4
  1 x HDMI 1.4a
  1 x Audio line out/Mic in

All product specifications are subject to change without notice.

Environment

- **Humidity** 95% RH @ 40°C, non-condensing
- **Ingress Protection** IP66 (for optional panel module with "Panel Mount")
- **Operating Temperature** **(Without PCIe cards)**
  35W/45W CPU: -10~55°C (14~131°F) (w/ 0.7 m/s airflow)
  65W CPU: -10~45°C (14~113°F) (w/ 0.7 m/s airflow)
  (With 35W GPU card)
  35W/45W CPU: -10~45°C (14~ 113°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: Operating, IEC 60068-2-6, 1G, 5-500 Hz, random vibration
- **Shock Protection** With SSD: Operating, IEC 60068-2-27, half sine, 10G, 11 ms

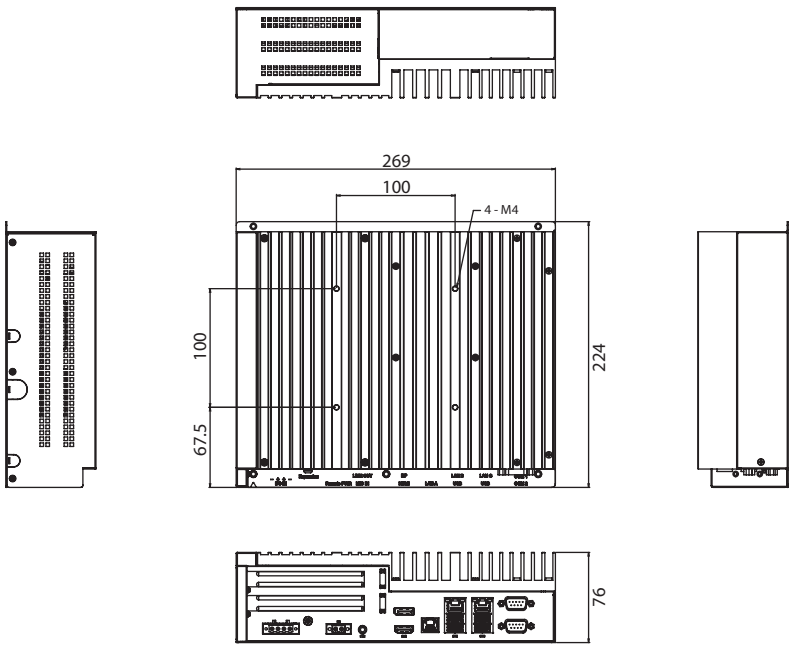
Note 1: IP66 is applicable for Panel Mount.

Power Consumption with Panel Module

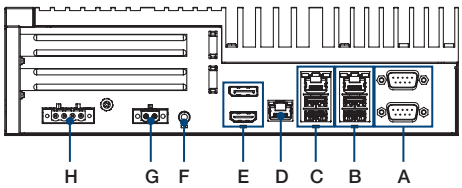
Item	Power Consumption		Screen Size	Resolution	Aspect Ratio
	Type	Max.			
TPC-B620 (w/ 65W CPU)	97W	179W	N/A	N/A	N/A
w/ FPM-D15T-CE/RE	106W	188W	15"	1024x768	04:03
w/ FPM-D15T-HE	121W	203W	15"	1024x768	
w/ FPM-D17T-CE/RE	113W	195W	17"	1280x1024	05:04
w/ FPM-D19T-CE	111W	193W	19"	1280x1024	
w/ FPM-D15W-FCE	113W	195W	15.6"	1920x1080	16:09
w/ FPM-D15W-FHE	122W	204W	15.6"	1920x1080	
w/ FPM-D18W-FCE	111W	193W	18.5"	1920x1080	
w/ FPM-D21W-CE	110W	192W	21.5"	1920x1080	
w/ FPM-D21W-HE	139W	221W	21.5"	1920x1080	
w/ FPM-D24W-CE	121W	203W	21.5"	1920x1080	
w/ FPM-S18W-A	111W	193W	18.5"	1920x1080	16:09
w/ FPM-S21W-A	110W	192W	21.5"	1920x1080	

Dimensions

Unit: mm



Rear View



A. COM1,2 (RS-232/422/485)
B. 2.5 GbE LAN / USB 3.2 x2
C. 2.5 GbE LAN / USB 3.2 x2
D. 2.5 GbE LAN
E. 1 x DP / 1 x HDMI
F. Audio line out/Mic in
G. Remote Power Button Connector
H. DC IN Connector

Note 1: The max. dimension of PCIe 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 PCIe expansion card.
Note 3: The max. power consumption of PCIe expansion card supported is 60W.

Ordering Information

Part No.	Desription	PCIe Expansion	SATA RAID 0/1
TPC-B620H-F00A*	Intel® 12th/13th/14th Gen. Core™ i / BTL Core™ S CPU Socket (LGA1700), H610E	Not Support	NA
TPC-B620R-F00A*	Intel® 12th/13th/14th Gen. Core™ i / BTL Core™ S CPU Socket (LGA1700), R680E	Need to order optional Module	Yes

* TPC-B620R-F00A do not include PCIe expansion card by default, customer will need to order GPU or IO card expansion kit.
** TPC-B620R-DIOA1 does not including system fan. With high power consumption PCIe cards (EX: POE), please also order 98R1B620F00.

Panel Module

Panel Module P/N	FPM-D15T-CE/RE	FPM-D15T-HE	FPM-D17T-CE/RE	FPM-D19T-CE	FPM-D15W-FCE	FPM-D15W-FHE
Description	15" XGA TFT LED LCD 300 nits	15" XGA TFT LED LCD High Brightness 1800 nits	17" SXGA TFT LED LCD 350 nits	19" SXGA TFT LED LCD 350 nits	15.6" FHD TFT LED LCD 450 nits	15.6" FHD TFT LED LCD High Brightness 1200 nits

Panel Module P/N	FPM-D18W-FCE	FPM-D21W-CE	FPM-D21W-HE	FPM-D24W-CE	FPM-S18W-A	FPM-S21W-A
Description	18.5" HD TFT LED LCD 350 nits	21.5" FHD TFT LED LCD 250 nits	21.5" FHD TFT LED LCD High brightness 1400 nits	23.8" FHD TFT LED LCD 350 nits	18.5" HD TFT LED LCD, SLIM 350 nits	21.5" HD TFT LED LCD, SLIM 250 nits

*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 (2 Pin)	1652002202	Remote Button, PLUG-IN BLOCK 2P 90D(F)	1
Plug-In Block (4 Pin)	1652003234	DC-IN Connector, PLUG-IN BLOCK 4P	1
CPU Grease	1990041069N000	Thermal pad PTM7958 40.3x30.7x0.21 K=8.5	1
PCH Thermal-Pad	1990022548N000	Thermal-Pad 11.8x11.8x0.8 K=6 TP Apus-GR-Hm	1
VR Thermal-Pad	1990040197N000	Thermal pad GR-Hm 59x8.0x0.5mm K=6(R-Cut)	2
NVMI Thermal-Pad	1990026184N010	Thermal Pad 59X19.5X0.8 K=6 Apus-GR-Hm Snap w/pa	1
TOP DDR Thermal-Pad	1990026184N010	Thermal Pad 59X19.5X0.8 K=6 Apus-GR-Hm Snap w/pa	1
BOT DDR Thermal-Pad	1990039208N010	Thermal pad 59x22x2 GR-Hm K=6 R-Cut DDR-SODIMM	1
M.2 for Wifi Thermal-Pad	1990011911N010	Thermal pad UTC-515 GR-Hm 20x20x2.5mm K=6	1
M.2 SATA Thermal Pad	1990024800N000	Thermal-Pad 60x20x1.3 K=6 TP GR-HM HIT-R181	2
Warranty	2190000902	CARDBOARD-WARRANTY REV. A2	1
BOX Fix Screw	19310305C0	Screw M3x5L S/S D=5 H=1.2 (2+) ST BZn NK	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

- **TPC-B620R-DIOA1** TPC-B620R PCIe card expansion module for 2x PCIe x4, system fan excluded
- **TPC-B620-DGUA1** TPC-B620R PCIe card expansion module for 1x PCIe x16 + 1x PCIe x4, system fan included
- **98R1B620F00*** TPC-B620 System Fan kit
- **98R1B620S00**** TPC-B620 2.5" SSD Expansion bracket wo SSD
- **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

*System Fan kit will be request for high power consumption PCIe card. EX: POE cards
**2.5" SSD Expansion kit will occupy upper PCIe card space and need to use PCIe expansion module.

Embedded OS

- **20701WX1HS0025** Win10 IoT Enterprise LTSC 2021 for High
- **20701WLE1S0026** Win11 IoT Ent LTSC 2024 v7.02 B003 for Entry
- **20701WLV1S0025** Win11 IoT Ent LTSC 2024 v7.02 B003 for Value
- **20701WLH1S0022** Win11 IoT Ent LTSC 2024 v7.02 B003 for High
- **20701U22DS0035** Advantech Linux, TPC-B620 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-B620, "PCM-28P1AD" is needed for iDoor module installation.
**iDoor module occuppies one PCIe expansion slot.
***For more information about iDoor Module, please find "Advantech iDoor Module" on Advantech's official website.

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.