TPC-B520L

Modular TPC - Computing Box Module with Intel® Alder Lake-N CPU

Features

- Modular Computing Box powered by Alder Lake-N Intel® Core™ i3-N305 octo-core processor
- Modular Front Panel modules ranging from 12.1" to 23.8" with P-CAP multi-touch in selection (12.1", 15", 15.6", 21.5" with high brightness panel option)
- Single DDR5 Memory slot supports up to 16GB
- Support expansion via three M.2 slots (PCIe, Wifi, 5G)
- LAN, POE, isolated serial port and isolated digital I/O via iDoor technology
- Support Type C connector with USB 3.2, DP 1.4a, 15W power delivery
- Support fieldbus protocols/GPS/GPRS/Wi-Fi capabilities via iDoor technology
- Performance, fanless embedded system with chassis grounding protection

Introduction

Advantech's TPC-B520L computing box module, as a member of the Modular Series TPC family, is powered by Alder Lake-N Intel processors. With its fanless design, TPC-B520L 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 two USB 3.2 ports, one type C port, expansions with M.2 SATA 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". For enhance adaptability and compatibility with various environment, FHD resolution and high brightness for sunlight readable FPM modules are ready and available.

*For other Modular Series TPC/FPM family members, please find 'TPC-B610', 'TPC-B520', 'TPC-B510' 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 203 x 50 (mm)
- **Enclosure** — Back housing: Die cast aluminum alloy
- **Mounting** — VESA Mount, Desktop, Wall or Panel Mount
- **OS Support** — Win 11, Win10, Linux
- **Security** — TPM 2.0 (built-in)
- **Power Consumption** — Typ. 29W; Max. 65W
- **Power Input** — 19 - 24 V_{DC} ± 15%
- **Watchdog Timer** — 15-255 sec (system)
- **Weight (Net)** — 2.65KG

System Hardware

- **CPU** — Intel® Alder Lake-N Core™ i3-N305
- **Memory** — Single DDR5 4800 SO-DIMM, up to 16GB
- **LAN** — 2 x 2.5 GbE with Intel® i226
- **Storage** — 1 x M.2 M key 2280 for SATA SSD (PCIE x1/SATA) (Optional) 1 x SATA for 2.5" SSD/HDD
- **Expansion Slot** — 1 x M.2 B Key 3042, 3052, 3080 for iDoor (PCIe x1/USB2.0)
  1 x M.2 E key 2230 for WIFI (PCIe/USB2.0)
  1 x M.2 B Key 3052 for 5G LTE (USB3.2/USB2.0)
  1 x SIM card slot
- **I/O** — 1 x Displayport 1.4a (Video output)
  1 x Type C (USB 3.2 Gen.2, DP 1.4a, 5V w/ 3A max)
  2 x USB 3.2 (Gen.1)
  2 x USB 2.0
  2 x RS-232/422/485
  (Optional) 2 x 4Ω Speaker for Audio out

Environment

- **Humidity** — 95% RH @ 40°C, non-condensing
- **Ingress Protection** — IP66-rated front panel
- **Operating Temperature** — -10~60 °C (-4~140 °F)
- **Storage Temperature** — -30~70 °C (-22~158 °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

Power Consumption with Panel Module

Item	Power Consumption		Screen Size	Resolution	Aspect Ratio
	Type	Max.			
TPC-B520L	29W	65W	N/A	N/A	N/A
w/ FPM-D12T-CE	41W	77W	12.1"	1024x768	04:03
w/ FPM-D12T-HE	43W	79W	12.1"	1024x768	
w/ FPM-D15T-CE	38W	74W	15"	1024x768	
w/ FPM-D15T-HE	53W	89W	15"	1024x768	
w/ FPM-D17T-CE	45W	81W	17"	1280x1024	05:04
w/ FPM-D19T-CE	43W	79W	19"	1280x1024	
w/ FPM-D15W-FCE	45W	81W	15.6"	1920x1080	16:09
w/ FPM-D15W-FHE	54W	90W	15.6"	1920x1080	
w/ FPM-D18W-FCE	46W	82W	18.5"	1920x1080	
w/ FPM-D21W-CE	41W	77W	21.5"	1920x1080	
w/ FPM-D21W-HE	71W	107W	21.5"	1920x1080	
w/ FPM-D24W-CE	50W	86W	23.8"	1920x1080	

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

Dimensions

Unit: mm

269

100

100

202.9

50
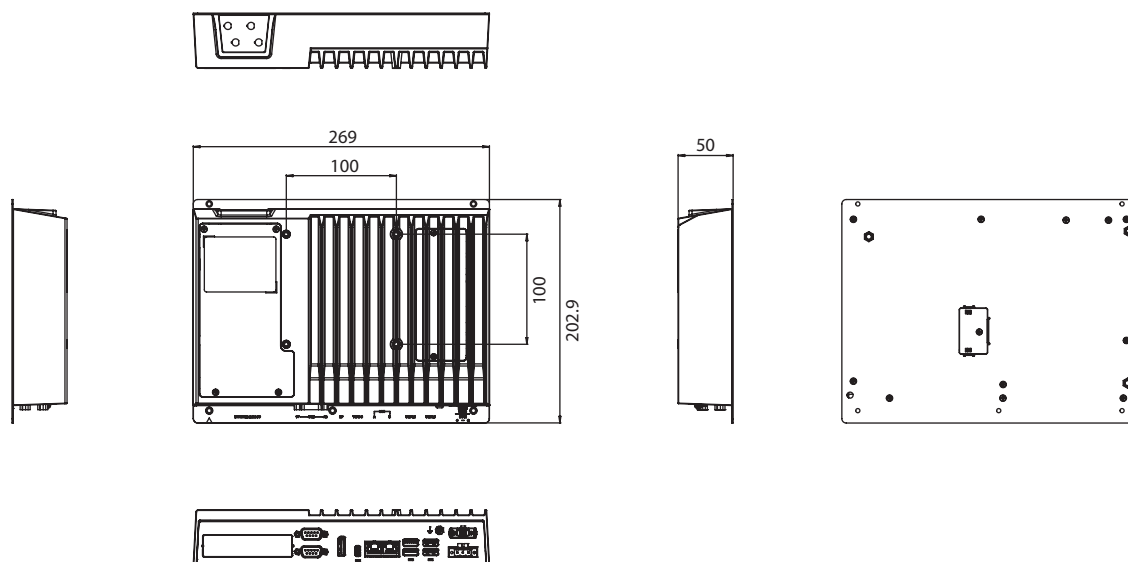
VESA 100 x 100

Rear View

A B

I

C D E F G H J
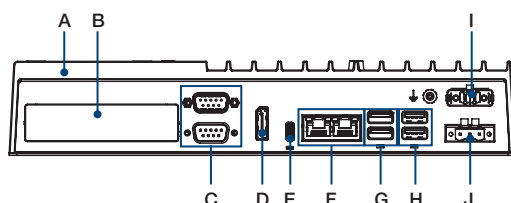
A. Default sku for iDoor installation
   (optional 2.5" SSD / 2 x speakers)
B. iDoor slot
C. RS-232/422/485
D. Display Port
E. TYPE-C

F. 2.5GbE LAN port
G. USB 3.2
H. USB 2.0
I. Remote Button
J. DC In

Ordering Information

- **TPC-B520L-C30A**   Intel® Alder Lake-N Core™ i3-N305 1.8 GHz Octo-core Processor

Panel Module P/N	FPM-D12T-CE	FPM-D12T-HE	FPM-D15T-CE	FPM-D15T-HE	FPM-D17T-CE	FPM-D19T-CE
Description	12.1" XGA TFT LED LCD	12.1" XGA TFT LED LCD High Brightness 1000 nits	15" XGA TFT LED LCD	15" XGA TFT LED LCD High Brightness 1800 nits	17" SXGA TFT LED LCD	19" SXGA TFT LED LCD

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

Note: Display modules cannot work independently. A computing box (TPC-B200/300/520/600) is compulsory to operate the display module.

Packing List

Item	Part No.	Depiction	Qty
Memory Thermal Pad	1990019810N000	THERMAL PAD 60x23x2t XR-HL	1
NVMe Thermal Pad	1990034862N040	Thermal pad POC-615 PG45A 59x24.3x1 K=6	1
Grounding cable	1703011001-11	A Cable G-TEM 4.3 100CM C=GR/Y	1
Power Connector	1652007930-01	Plug-In Block 1x3P/5.08mm/PA66/F/VA/Sn/G	1
Remote Connector	1652002202	PLUG-IN BLOCK 2P 90D(F) SMD 5ESDVM-1492-	1
Cable Lock Rail	1990022422S000	Fixed rail 71.3Lx6.2W mm YJC-64C for UBC-DS31	3
Cable Lock Ring	1990022423S000	Fixed ring DIA:7.5-8.5 FWM-8K for UBC-DS31	3
BOX Fix Screw	19310305C0	Screw M3x5L S/S D=5 H=1.2 (2+) ST BZn NK	5
VESA Screw	1930006175-01	Screw M4x10L R/S DH=6.8x2.50 + ST ZBK PL	4
M.2 Screw	1930008738	Screw M3x3L F/S D=5 H=1 2+ ST Ni NK	1
M.2 Post for B key 3042/3052	1910003081-01	POST F=M3x5.5L M=M3x5L B=5 H=6.5 CU NK	1
China rohs	202KAKMC00	China rohs for AKMC model name 1st ed	1
Warranty	2190000902	CARDBOARD-WARRANTY REV. A2	1
Manual	2003TPC01A	Simplified Chinese manual for TPC Serie	1

Optional Accessories

- **TPC-WLAN-A1** — M.2 AE, Intel AX210, Wifi6 + BT5.3, 2T2R,w/Antenna, -40~85°C
- **96PSA-A120W24T2-4** — 120W 24V$_{DC}$ power supply
- **96PSA-A150W24T2-4** — 150W 24V$_{DC}$ power supply for FPM-Dxxx-HE and Type-C with Power Delivery
- **98R1B520L10** — TPC-B520L 2.5" SSD Expansion Kit
- **98R1B520001** — TPC-B520 Speaker (2W 4Ω 82dB) Expansion Kit
- **98R1B520002** — TPC-B520 Power Button Extension Kit
- **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

- **20701WX1VS0015** — WIN10 LTSC for TPC-B520L-C30A
- **20701WLV1S0011** — WIN11 LTSC for TPC-B520L-C30A
- **20701U22DS0019** — Img AdvLinuxTu-IOTG_x64 V4.3.5 for TPC-B520L
- **Advantech Android**

iDoor Modules

- **PCM-34D2R2-AE** — 2-Port Isolated RS-232, M.2 B key (2242, USB), DB9
- **PCM-34D2R4-AE** — 2-Port Isolated RS-422/485, M.2 B key (2242, USB), DB9
- **PCM-34D4R2-AE** — 4-Port Non-Isolated RS-232, M.2 B key (2242, USB), DB37 cable
- **PCM-34D4R4-AE** — 4-Port Non-Isolated RS-422/485, M.2 B key (2242, USB), DB37 cable
- **PCM-34R1TP-AE** — 1-Port 2.5Gigabit Ethernet, Intel® I225 B+M key (3042, PCIex1)
- **PCM-34R2GL-AE** — 2-Port Gigabit Ethernet, Intel® I350, B+M Key (2242, PCIex1)
- **PCM-37D24DI-AE** — 24-Channel Isolated Digital I/O, M.2 B+M key (3042, PCIe*1), DB37

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.

TPC-B520L Photo

*Note: Request to order FPM-D CE/HE front touch display kit

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.