

# Fanless Box-PC 3900E2/P2/P2E

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 PKBX5138/-1/-2/-3/-4/-5/-6



Integrated with 9th & 8th Generation Intel® Core™ i7/i5/i3 processors, the Fanless Box-PC 3900E2/P2/P2E series is the fanless PC designed for industrial applications which demand high CPU and graphics performance. It supports up to 32GB DDR4 memory and have several options on storage devices like M.2, HDD or SSD.

The Fanless Box-PC 3900E2/P2/P2E series supports wide range of DC input from +9V to 30VDC input, and can be operated in an extended operating temperature range between -5 to 55 Celsius degree. For extended module availability, it also designed one internal mini-PCIe sockets to support IoT wireless connectivity applications (support optional Wi-Fi, 3.5G, 4G LTE modules).



## Main Features

- Support 9th & 8th generation Intel® Core™ i7 / i5 / i3 LGA socket type embedded processor
- Intel® Q370 PCH
- 2x DDR4 SO-DIMM socket, support up to 32GB
- Support 1x 2.5" SATA HDD
- 1x DVI-D, 1x DisplayPort & 1x HDMI with independent display support
- 3x Intel® GbE LAN; support WoL, teaming & PXE
- 6x USB 3.1 & 4x USB 2.0
- 2x RS232/422/485 w/ auto flow control & 2x RS232
- 1x external M.2 socket & 1x SIM card socket
- Expansion slots: 2x PCIe x4 or 2x PCI or 1x PCIe x4 + 1x PCI
- 1x internal mini-PCIe socket support optional WiFi / 3.5G / 4G LTE
- Designed for industrial applications
- Support +9V to 30VDC input; ATX power mode
- OS Support: WINDOWS 10 / LINUX Kernel 4.9
- Certifications: CE / FCC
- Dimensions: 215 x 272 x 115 mm (W x D x H)
- Operating temperature: -5°C to 55°C

## Technical Specifications

### CPU Support

- Support 9th & 8th generation Intel® Core™ i7 / i5 / i3 LGA socket type embedded processor
  - Core™ i7-9700TE, 8 Core, 1.8GHz, 12M Cache
  - Core™ i5-9500TE, 6 Core, 2.2GHz, 9M Cache
  - Core™ i3-9100TE, 4 Core, 2.2GHz, 6M Cache
  - Core™ i7-8700T, Hexa Core, 2.4GHz, 12M Cache
  - Core™ i5-8500T, Hexa Core, 2.1GHz, 9M Cache
  - Core™ i3-8100T, Quad Core, 3.1GHz, 6M Cache
- Turbo-boost disabled by default

### Main Memory

- 2x DDR4 2.400/2.666 SO-DIMM socket, support up to 32GB with un-buffered and non-ECC

### Display Option

- Three independent display
  - HDMI + DisplayPort + DVI-D
- Dual independent display
  - HDMI + DisplayPort
  - HDMI + DVI-D
  - DisplayPort + DVI-D

### Storage Device

- 1x external M.2 socket (M-key SATA 3.0, PCIe x4)
- 1x 2.5" HDD or SSD (SATA 3.0) driver bay

### Front I/O Interface Status LEDs

- 3x LAN active LEDs
- 2x GPO status / COM1/2 TX/RX LEDs
- 1x HDD access LEDs
- 1x Battery low
- 1x M.2

### Front I/O Interface

- 1x ATX power on/off switch
- 1x DisplayPort
- 1x Line-out and 1x Mic-in
- 2x Antenna holes
- 1x external M.2 socket (M-key)
- 1x SIM card holder
- 4x USB 2.0 ports (500mA per each)

Technical changes and errors reserved.

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## Rear I/O Interface

- 4x D-Sub HD9 for COM1 to COM4
  - COM1 / COM2: RS232/422/485 auto flow control
  - COM3 / COM4: RS232
- 6x USB 3.1 ports (900mA per each)
- 1x DVI-D port
- 1x HDMI port
- 2x Intel® I210-IT GbE LAN ports; support WoL, teaming & PXE
- 1x Intel® I219-LM GbE LAN port
- 1x 3-pin remote power on/off switch
- +9V to 30VDC input

## Internal I/O

- 8-CH GPIO: internal pin header, support 4x GPO and 4x GPI, TTL 5V level
- On-board TPM2.0 (SLB9665) for data encryption purpose
- 1x internal M.2 (B-key) support optional LTE

## Expansion Slot

- Fanless Box-PC 3900E2: two PCIe x4 expansion slots
  - Add-on card length: one 169 mm max and one 240 mm max
  - Power consumption: 10W / slot max
- Fanless Box-PC 3900P2: two PCI expansion slots
  - Add-on card length: one 169 mm max and one 240 mm max
  - Power consumption: 10W / slot max
- Fanless Box-PC 3900P2E: one PCIe x4 + one PCI expansion slots
  - Add-on card length: one 169 mm max for PCIe x4 and one 240 mm max. for PCI
  - Power consumption: 10W / slot max
- 1x internal mini-PCIe socket support optional Wi-Fi / 3.5G / 4G LTE

## Power requirements

- AT/ATX power mode (default: ATX power mode)
- Power input: +9 to 30VDC
- Power adapter: optional AC to DC power adapter (24VDC, 120W)

## Dimensions and Weight

- 215 x 272 x 115 mm (W x D x H) without wall mount bracket
- Net weight: 5,3 kg

## Construction

- Aluminum and metal chassis with fanless design

## Environment

- Operating temperature: -5°C to 55°C ambient with air flow (according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -20°C to 80°C
- Relative humidity: 10% to 95% (non-condensing)
- Shock protection:
  - HDD: 20G, half sine, 11ms, IEC60068-27
  - M.2: 50G, half sine, 11ms, IEC60068-27
- Vibration protection with HDD condition:
  - Random: 0,5Grms @ 5~500 Hz, IEC60068-2-64
  - Sinusoidal: 0,5Grms @ 5~500 Hz, IEC60068-2-6
- Vibration protection with SSD & M.2 condition:
  - Random: 2Grms @ 5~500 Hz, IEC60068-2-64
  - Sinusoidal: 2Grms @ 5~500 Hz, IEC60068-2-6

## Certifications

- CE approval - EN61000-6-2 / EN61000-6-4
- FCC class A

## OS Support Lists

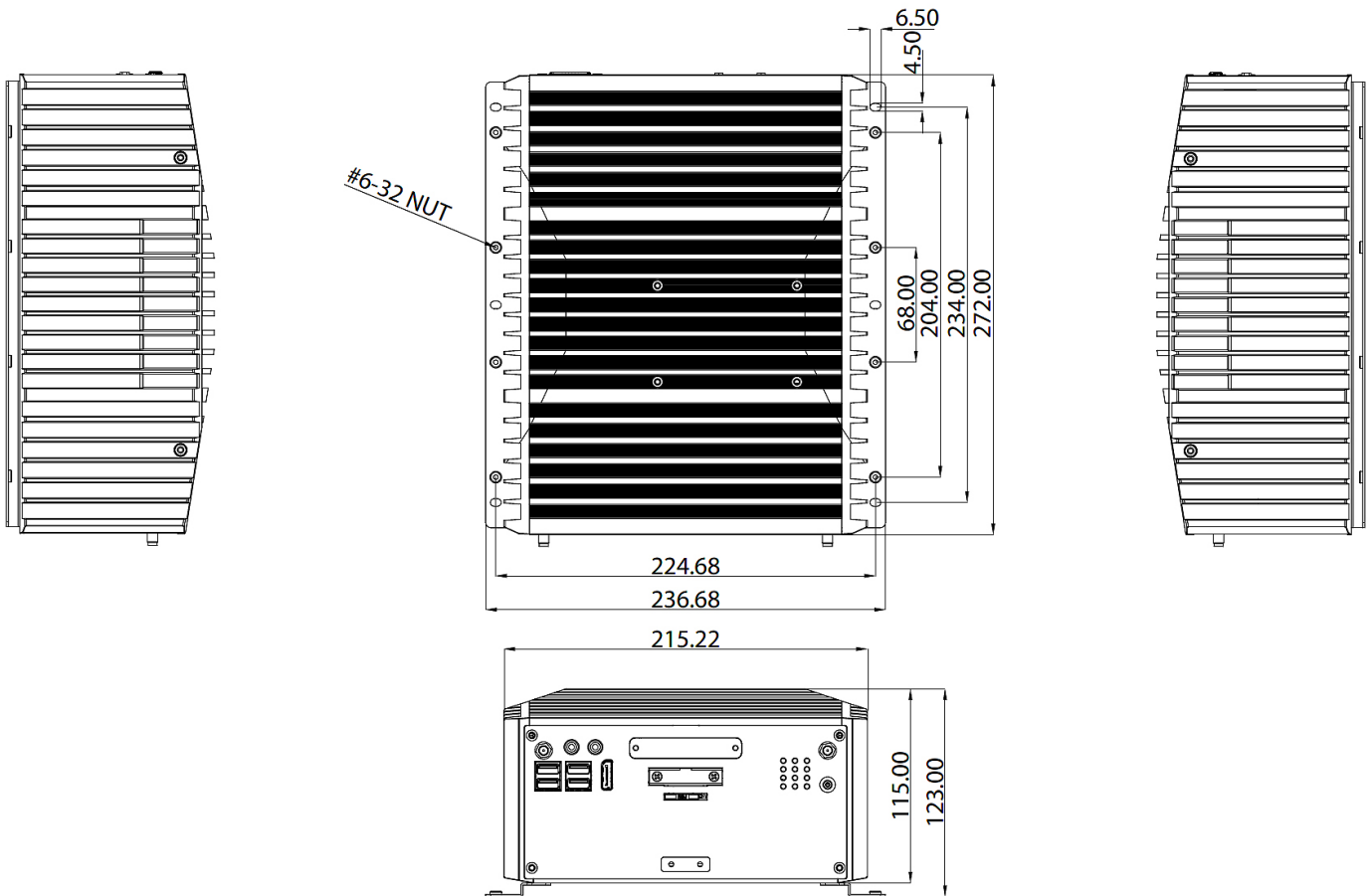
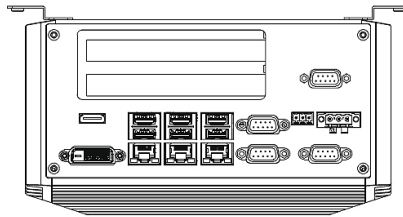
- WINDOWS 10 (64 bits)
- LINUX Kernel 4.9

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## Dimension Drawing (mm)



Technical changes and errors reserved.

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## Ordering Information

### 2x PCIe x4 Expansion Slots

PKBX5136 Fanless Box-PC 3900E2 Barebone w/o CPU  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCIe x4

#### 8th Gen Coffee Lake Intel Core

PKBX5136-1 Fanless Box-PC 3900E2, Intel Core i7-8700T 2.4GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCIe x4

PKBX5136-2 Fanless Box-PC 3900E2, Intel Core i5-8500T 2.1GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCIe x4

PKBX5136-3 Fanless Box-PC 3900E2, Intel Core i3-8100T 3.1GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCIe x4

#### 9th Gen Coffee Lake Intel Core

PKBX5136-4 Fanless Box-PC 3900E2, Intel Core i7-9700TE 1.8GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCIe x4

PKBX5136-5 Fanless Box-PC 3900E2, Intel Core i5-9500TE 2.2GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCIe x4

PKBX5136-6 Fanless Box-PC 3900E2, Intel Core i3-9100TE 2.2GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCIe x4

### 2x PCI Expansion Slots

PKBX5137 Fanless Box-PC 3900P2 Barebone w/o CPU  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCI

#### 8th Gen Coffee Lake Intel Core

PKBX5137-1 Fanless Box-PC 3900P2, Intel Core i7-8700T 2.4GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCI

PKBX5137-2 Fanless Box-PC 3900P2, Intel Core i5-8500T 2.1GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCI

PKBX5137-3 Fanless Box-PC 3900P2, Intel Core i3-8100T 3.1GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCI

#### 9th Gen Coffee Lake Intel Core

PKBX5137-4 Fanless Box-PC 3900P2, Intel Core i7-9700TE 1.8GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCI

PKBX5137-5 Fanless Box-PC 3900P2, Intel Core i5-9500TE 2.2GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCI

PKBX5137-6 Fanless Box-PC 3900P2, Intel Core i3-9100TE 2.2GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 2x PCI

### 1x PCIe x4 + 1x PCI Expansion Slots

PKBX5138 Fanless Box-PC 3900P2E Barebone w/o CPU  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 1xPCIe x4, 1xPCI

#### 8th Gen Coffee Lake Intel Core

PKBX5138-1 Fanless Box-PC 3900P2E, Intel Core i7-8700T 2.4GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 1xPCIe x4, 1xPCI

PKBX5138-2 Fanless Box-PC 3900P2E, Intel Core i5-8500T 2.1GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 1xPCIe x4, 1xPCI

PKBX5138-3 Fanless Box-PC 3900P2E, Intel Core i3-8100T 3.1GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 1xPCIe x4, 1xPCI

#### 9th Gen Coffee Lake Intel Core

PKBX5138-4 Fanless Box-PC 3900P2E, Intel Core i7-9700TE 1.8GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 1xPCIe x4, 1xPCI

PKBX5138-5 Fanless Box-PC 3900P2E, Intel Core i5-9500TE 2.2GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 1xPCIe x4, 1xPCI

PKBX5138-6 Fanless Box-PC 3900P2E, Intel Core i3-9100TE 2.2GHz  
 DVI-D, DP, HDMI, 10x USB, 3x GbE, 1xPCIe x4, 1xPCI

## Optional Accessories

NASX5237 Power Adapter for Industrial Panel-PC + Fanless Box-PC  
 24V, 120W AC to DC power adapter w/o power cord