Shuttle®

BAREBONE
XPC slim
DL30N
Intel N100 Processor

FANLESS 1-LITRE PC SUITABLE FOR 24/7 OPERATION

The Shuttle XPC slim Barebone DL30N series is the successor to Shuttle's DL20N series. These fanless Slim PC barebones with an energy-efficient Intel 12th-Gen "Alder Lake-N" processor are suitable for building particularly slim PC systems with drives and operating system as well as client/server setups for pure network-based applications. Two Intel 2.5G LAN ports provide excellent network connectivity and the optional Shuttle accessory WWN03 allows for an LTE module to be installed for mobile internet access. The integrated graphics is based on Intel's powerful Intel UHD Graphics that supports hardware acceleration for 4K videos. Combined with an SSD drive, these Slim-PCs works virtually noiseless.

Alder Lake-N SOC CPU	HDMI 2.0b	DISPLAY-PORT 1.4a	VGA Port	Dual LAN 2.5 Gbps	DUAL COM	NVMe SSD SUPPORT	2.5" HDD/SSD SUPPORT	VESA MOUNT	FANLESS	Max. 40 °C	24/7 SUPPORT

SLIM DESIGN
■ Slim 1.35-litre metal chassis, black ■ Noiseless, fanless cooling system ■ Dimensions: 190 x 165 x 43 mm (LWH) ■ Including VESA mount (75/100 mm) ■ Supports 24/7 Nonstop Operation ■ Operating temperature: 0~40 °C (non-condensing)

OPERATING SYSTEM
■ An operating system is not included
■ Supports Windows 10/11 and Linux (64-bit)

PROCESSOR
■ Intel N100 processor, 4 cores, 3.4 GHz turbo clock, TDP: 6W
■ Code name "Alder Lake-N", Intel 7 process technology (10 nm)
■ Soldered SoC processor with fanless cooling

GRAPHICS
■ Integrated Intel UHD graphics with 4K support
■ Supports three independent displays (HDMI, DP, VGA)

MEMORY SUPPORT
■ 1x 262-pin SO-DIMM slot ■ Supports up to 16 GB DDR5-4800

STORAGE – SATA / M.2
■ 1x 2.5" bay for SATA hard disk or SSD, max. 9.5 mm
■ 1x M.2-2280M slot (supports PCIe/NVMe or SATA)
■ 1x M.2-2230E slot (supports optional WLAN cards)
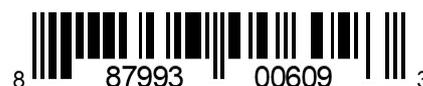
CONNECTORS
■ HDMI 2.0b ■ DisplayPort 1.4 ■ D-Sub/VGA ■ 8x USB 3.2 Gen1 (blue)
■ 2x Intel 2.5 GbE LAN (i226) ■ 2x COM port (1x RS232/422/485)
■ 2x audio (line out, mic) ■ Connector for external power button
■ "Always-on" Jumper ■ DC-input 12 V or 19 V

POWER SUPPLY
■ External 65W/19V power adapter (DC-in supports 12 V and 19 V)

OPTIONAL ACCESSORIES
■ Rackmount kit (PRM01) ■ Cable for external power button (CXP01)
■ DIN-Rail kit (DIR01) ■ 4G/LTE-kit (WWN03) ■ Stand (PS02)
■ WLAN-ax kit with two external antennas (WLN-M1)

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MODELS OF THE DL30N SERIES

Product	Processor	Cores / Threads	Turbo Clock	L3 Cache	TDP	RAM	UPC Code
DL30N	Intel N100	4 / 4	3.4 GHz	6 MB	6 W	max. 16 GB DDR5-4800	887993006093
DL30N2	Intel N200	4 / 4	3.7 GHz	6 MB	6 W	max. 16 GB DDR5-4800	N.A. (project only)
DL30N3	Intel Core i3-N300	8 / 8	3.8 GHz	6 MB	7 W	max. 16 GB DDR5-4800	N.A. (project only)

Front and Back Panel

Front panel

1. Microphone input
2. Headphones output
3. LED indicator for power state
4. LED indicator for storage activity
5. Power button
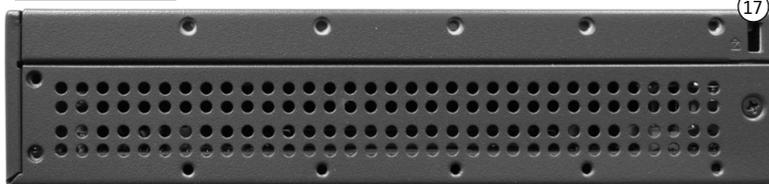6. 4x USB 3.2 Gen 1 port (blue, max. 5 Gbps)

Back panel

7. 2x perforation for optional WLAN antennas
8. COM 1 port supports RS232/RS422/RS485
9. COM 2 port supports RS232
10. 4-pin connector (2.54 mm pitch)
    for external power button, Clear CMOS button
    and 5V DC voltage
11. 4x USB 3.2 Gen 1 port (blue, max. 5 Gbps)
12. DisplayPort 1.4a audio/video output
13. HDMI 2.0b port audio/video output
14. D-Sub / VGA video output
15. 2x RJ45 2.5G LAN port
16. DC-in connector for power adapter
    supports 12V and 19V DC

Left Side

Connector for
an external
power button

Right Side

17. Hole for the Kensington Lock

VESA mounting

18. VESA mount (two parts with screws)

REQUIRED COMPONENTS

The following components need to be added to make it a fully-configured Mini PC

Shuttle XPC slim Barebone DL30N

Memory Module
One module DDR5-4800 or higher rating
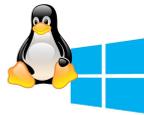SO-DIMM form factor (262 pins)
Capacity: max. 16 GB

2.5" Storage Drive
SATA hard disk or Solid State Disk (SSD)
(max. height: 9.5 mm)

M.2 SSD (optional)
M.2-2280/2260/2242 form factor
SSD storage with PCIe/NVMe or SATA interface

Operating System
Windows 10, Windows 11 or Linux (64-bit only)

OPTIONAL ACCESSORIES FROM SHUTTLE

LTE Adapter Kit WWN03
allows the installation
of an M.2 LTE/4G card and
nano SIM card
(occupies the 2.5" bay)

Cable CXP01
Cable for external push button
switch (without button)

Vertical Stand PS02
for vertical operation

DIN-Rail Kit DIR01
This mounting kit allows the in-
stallation on a standard 35
mm DIN-Rail

**WLAN-Accessory
WLN-M1**
WLAN module in M.2 format
supports Wi-Fi 6 (IEEE
802.11ax) and Bluetooth 5.2 in-
cluding two external antennas
and cables

Rack Mount Kit PRM01
2U front plate to install two
1.3L Shuttle XPCs in a 19" cabi-
net.

Shuttle Product Comparison: DL30N Series versus DL20N(V2) Series

MODEL	DL30N Series	DL20N(V2) Series
Processor	Intel "Alder Lake-N", TDP= 6-7W, 10 nm **DL30N:** Intel N100, 4-core, max. 3.4 GHz, 6W **DL30N2:** Intel N200, 4-core, max. 3.7 GHz, 6W **DL30N3:** Intel Core i3-N300, 8-core, 3.8 GHz, 7W	Intel "Jasper Lake", TDP= 10W, 10 nm **DL20N(V2):** Celeron N4505, 2-core, 2.0/2.9 GHz **DL20N6(V2):** Pentium N6005, 4-core, 2.0/3.3 GHz
RAM Suppport	1x SO DIMM (262-pins) max. 16 GB DDR5-4800	2x SO DIMM (260-pins) max. 16 GB DDR4-2933
2.5 bay	Supports 2.5" SATA drive max. height: 9.5 mm	Supports 2.5" SATA drive max. height: 9.5 mm
M.2-2280 slot	M.2-2280 supports PCIe X2 and SATA	M.2-2280 supports PCIe X2 and SATA
Audio	Realtek ALC888S	Realtek ALC897 / ALC662 / ALC888S
LAN	**2x Intel 226LM – 2.5 Gbps**	**DL20N(6):** Intel 211 – 1.0 Gbps **DL20N(6)V2:** Intel 225 – 2.5 Gbps
WLAN	M.2-2230E Slot supports an optional WLAN card (Accessory WLN-M1)	M.2-2230E Slot supports an optional WLAN card (Accessory WLN-M1)
Front Panel	On/Off button Power LED, HDD LED 4x USB 3.2 Gen 1 (blue, max. 5 Gbps) 2x Audio	On/Off button Power LED, HDD LED 2x USB 3.2 Gen 2 (red, max. 10 Gbps) 2x Audio SD card reader
Back Panel	HDMI 2.0b DisplayPort 1.4a D-Sub/VGA (no hot plug) 4x USB 3.2 Gen 1 (blue, max. 5 Gbps) 2x RJ45 2.5G LAN 2x COM (1x RS422/485) 4-pin power-on connector	HDMI 2.0b DisplayPort 1.4a D-Sub/VGA (no hot plug) 2x USB 3.2 Gen 1 (blue, max. 5 Gbps) 2x USB 2.0 RJ45 LAN 2x COM (1x RS422/485) 4-pin power-on connector
DC-in port	Supports 12 V and 19 V	Supports 12 V and 19 V
Power Adapter	65 W (19V, 3.42 A)	40 W (19V, 2.1 A)
VESA Mount	included	included
Optional Accessories	**PS02**: vertical stand **CXP01**: cable for ext. power button **PRM01**: 2U rack-mount kit **DIR01**: DIN-Rail mounting kit **WLN-M1:** WLAN kit with external antennas **WWN03**: LTE/4G kit for 2.5" drive bay	**PS02**: vertical stand **CXP01**: cable for ext. power button **PRM01**: 2U rack-mount kit **DIR01**: DIN-Rail mounting kit **WLN-M1:** WLAN kit with external antennas **WWN03**: LTE/4G kit for 2.5" drive bay
Front View		
Back View		

Shuttle Computer Handels GmbH · Fritz-Strassmann-Str. 5 · 25337 Elmshorn · Germany
Tel. +49 (0) 4121-47 68 60 · Fax +49 (0) 4121-47 69 00 · sales@shuttle.eu   4 | 8

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SHUTTLE XPC SLIM BAREBONE DL30N — SPECIFICATIONS

FANLESS & SILENT	Completely fanless, virtually noiseless Passive cooling through convective heat transfer Perfect to be used in noise-sensitive environments Fanless means less dust and thus virtually no maintenance required
24/7 NONSTOP OPERATION	This device is approved for 24/7 permanent operation. Requirements: - Free air circulation around the PC must be guaranteed. - Ventilation holes must be kept clear. - Any installed disk must also be approved for permanent operation by its manufacturer
CHASSIS	Slim PC with black chassis made of steel Dimensions: 190 x 165 x 43 mm (LWH) = 1.35-litre Weight: 0.8 kg net and 2.1 kg gross Two holes for Kensington Lock and numerous threaded holes (M3) at both sides of the chassis
OPERATION POSITION	1) Horizontal 2) Vertical with mounted feet. These feet can be purchased as optional accessory PS02. 3) Vertical (e.g. VESA-mounted behind an appropriate monitor) In vertical position, the front USB ports should point upward. Ventilation holes must not be blocked to ensure sufficient cooling.
OPERATION SYSTEM	This system comes without operating system. It is compatible with - Windows 10, Windows 11 (64-bit) - Linux (64-bit)
PROCESSOR	Model: Intel® Processor N100 Max. Turbo clock frequency: 3.4 GHz Code name: "Alder Lake-N" 10 nm structure, FCBGA1338 package (soldered) CPU cores / Threads: 4 / 4 L2 Cache: 6 MB Thermal Design Power (TDP): 6 W System-on-Chip processor (SoC) with integrated graphics processor, no chipset required
INTEGRATED GRAPHICS	The Graphics Processing Unit (GPU) is integrated in the processor Intel® UHD Graphics, GPU frequency: max. 750 MHz Supports DirectX 12.1, OpenGL 4.6, OpenCL 3.0, Intel Quick Sync Video Execution Units (EU): 24 Triple Display Support via three video outputs: - HDMI 2.0b: max. 4096 x 2160 @ 60 Hz - DisplayPort 1.4a: max. 4096 x 2160 @ 60 Hz - D-Sub/VGA: max. 1920 x 1200 resolution @ 60 Hz Supports two digital displays and one analog display simultaneously. The D-Sub/VGA connector does not support the Hot Plug feature.
UEFI FIRMWARE	32 MB Flash ROM with AMI's Aptio UEFI BIOS Firmware Based on the Unified Extensible Firmware Interface (UEFI) Supports Power-fail-resume / AC power-on state / always-on **[3]** Supports Wake-on-LAN (WOL) from S3, S4, S5 ACPI states Supports boot up from external flash memory cards With embedded Firmware TPM v2.0 (fTPM) **[5]** CMOS battery (type CR2032)
MEMORY SUPPORT	1x SO-DIMM slots with 262 pins Supports DDR5-4800 (PC5-38400U) SDRAM at 1.1V Supports one RAM module with max. 16 GB capacity Supports two unbuffered DIMM modules (no ECC)
2.5" DRIVE BAY	Supports one drive in 6.35 cm / 2.5" format (hard disk or SSD) Serial ATA III Interface with up to 600 MB/s transfer speed Max. height 9.5 mm Pre-installed SATA cable (data / power) Supports Unified Extensible Firmware Interface (UEFI)

M.2-2280M SSD SLOT	M.2-2280 M-key slot Interfaces: PCI-Express Gen. 3.0 X2 and SATA v3.0 (max. 6 Gbit/s) Supports M.2 cards with a width of 22 mm and a length of 42, 60 or 80 mm (type 2242, 2260, 2280) Supports SATA SSDs (BM-Key) or NVMe PCIe SSDs (M-Key)
M.2-2230E SLOT FOR OPTIONAL WLAN CARD	Interfaces: PCI-Express Gen. 3.0 X1 und USB 2.0 Supports M.2 cards with a width of 22 mm and a length of 30 mm (type 2230) Supports WLAN expansion cards (optional Shuttle accessory: WLN-M1)
AUDIO	Realtek ALC888S Audio Codec Two analog audio connectors (3.5 mm): 1) Line out (head-phones) 2) Microphone input Digital multi-channel audio output: via HDMI and DisplayPort
DUAL 2.5G NETWORK	Two RJ45 connectors support LAN at 100/1000/2500 Mbit/s. 2x Intel i226-LM Ethernet Controller Supports Wake-on-LAN
LEDs & BUTTONS	Power button Power LED (blue) HDD LED (yellow)
FRONT PANEL CONNECTORS	4x USB 3.2 Gen 1 Type A (blau, max. 5 Gbps) Audio 3.5 mm line-out (headphones) Microphone 3.5 mm input
BACK PANEL CONNECTORS	HDMI 2.0b digital video and audio output DisplayPort 1.4a digital video and audio output **[2]** D-Sub/ VGA analog video output (15-pin) - no hot plug 4x USB 3.2 Gen 1 Type A (blue, max. 5 Gbps) 2x LAN port 2.5 Gbps (Intel i226-LM, RJ45) 2x RS232 serial port, 9-pin D-Sub (support of an auxiliary voltage of 5/12 V, the left port is switchable to RS422 / RS485) [4] DC input for the external power adapter (supports 12V and 19V) 4-pin connector (2.54 mm pitch) supports - external power-on button - Clear CMOS function - +5V DC voltage for external components 2x perforation for optional Wireless LAN antennas
OTHER ONBOARD CONNECTORS	Connectors COM1/COM2 for serial ports (occupied) Jumper JP1 for power-on-after-power-fail (hardware solution) **[3]** USB 2.0 header CN1 (4-pin) required for WWN03 accessory
POWER SUPPLY	External 65 W AC/DC power adapter (fanless) AC Input: 100 ~ 240 V AC, 50 ~ 60 Hz, max. 1.6 A DC Output: 19 V, max. 3.42 A, max. 65 W Automatic AC voltage adjust DC cable length: ca. 180 cm AC cable length: ca. 180 cm (3-pin Micky MM C6 and Schuko earthed safety plug)
DC INPUT CONNECTOR	DC Connector: 5.5 / 2.5 mm (outer/inner diameter) The DC-input of the computer supports an external power source with either 12 V ±5% (max. 5.33 A) or 19 V ±5% (max. 3.42 A).
SUPPLIED ACCESSORIES	Multi-language user guide (EN, DE, FR, ES, JP, KR, SC, TC) VESA mount for 75 / 100 mm standard (two metal brackets) Four screws M3 x 5 mm (screws together VESA mount and PC) Four screws M4 x 10 mm (to affix VESA mount on the PC) Four screws M3 x 4 mm (to mount a 2.5" storage into the bay) Two screws M2 (to mount some M.2 cards) Driver DVD (Windows 64-bit) External 65 W power adapter with power cord (with protective-earth contacts)

Shuttle Computer Handels GmbH · Fritz-Strassmann-Str. 5 · 25337 Elmshorn · Germany
Tel. +49 (0) 4121-47 68 60 · Fax +49 (0) 4121-47 69 00 · sales@shuttle.eu   6 | 8

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OPTIONAL ACCESSORIES	**PS02:** optional stand for vertical operation **CXP01:** adapter cable for external power button **PRM01:** 2U rack-mount front plate for two Shuttle XPC slim PCs **DIR01:** DIN-Rail mounting kit **WLN-M1:** WLAN module in M.2 format supports Wi-Fi 6 (IEEE 802.11ax) and BT 5.2 including two external antennas and cables **WWN03:** LTE kit with adapter card, 2 antennas and antenna cables. Supports one M.2 LTE module and one nano SIM card **[1]**
ENVIRONMENTAL SPECIFICATIONS	Operating temperature range: 0 ~ 40 °C Relative humidity range: 10 ~ 90 % (non-condensing)
CERTIFICATIONS / COMPLIANCE	EMI: CE, UKCA, FCC, RCM, VCCI, BSMI Safety: CB IEC 60950-1/62368-1, cTUVus (UL 62368-1), BSMI Other: RoHS, Energy Star, ErP This device is classed as a technical information equipment (ITE) in class B and is intended for use in living room and office. The CE-mark approves the conformity by the EU directives: (1) 2004/108/EC relating to electromagnetic compatibility (EMC), (2) 2006/95/EC relating to Electrical Equipment designed for use within certain voltage limits (LVD), (3) 2009/125/EC relating to ecodesign requirements for energy-related products (ErP)

[1] Optional LTE support
Shuttle provides the optional "Shuttle Accessory WWN03" which consists of an adapter card, two antennas plus 20 cm antenna cables. The WWN03 adapter card occupies the 2.5" drive bay, so that no more 2.5" SATA device can be installed. The 3G/LTE card must have M.2-3042 Key B format with MHF IV (I-PEX4) connectors for the antenna. In addition, it supports one Nano-SIM card (Mini and Micro format is not supported). The required 3G/LTE card and SIM card are not included in WWN03.

[2] How to convert DisplayPort into HDMI/DVI
The DisplayPort output can be converted to HDMI or DVI by an additional, passive adapter cable. For example:
DELOCK 82590: 1 m, DisplayPort (male, 20p) to HDMI-A (male, 19p)
DELOCK 82435: 5 m, DisplayPort (male, 20p) to DVI-D (male, 24p)
The integrated graphics automatically detects the connected display and puts out the appropriate electric signal - either through DisplayPort (without an adapter) or HDMI/DVI (with an adapter).
However, a monitor with a DisplayPort connector cannot be connected to the HDMI port with a simple, passive adapter.

[3] Power-on-after-power-fail
The BIOS setup provides a "Power-on-after-power-fail" function that can be found under "Power Management Configuration". As the name indicates, this function determines the PC's behaviour after power failure: (1) unconditional power-on, (2) restore former status or (3) keep system turned off. As a matter of the nature of this function, it may fail after short power failures. This is why this PC also comes with a hardware-based solution. By removing Jumper JP1 (on the mainboard behind the D-Sub/VGA port) the system will start unconditionally once power is supplied.
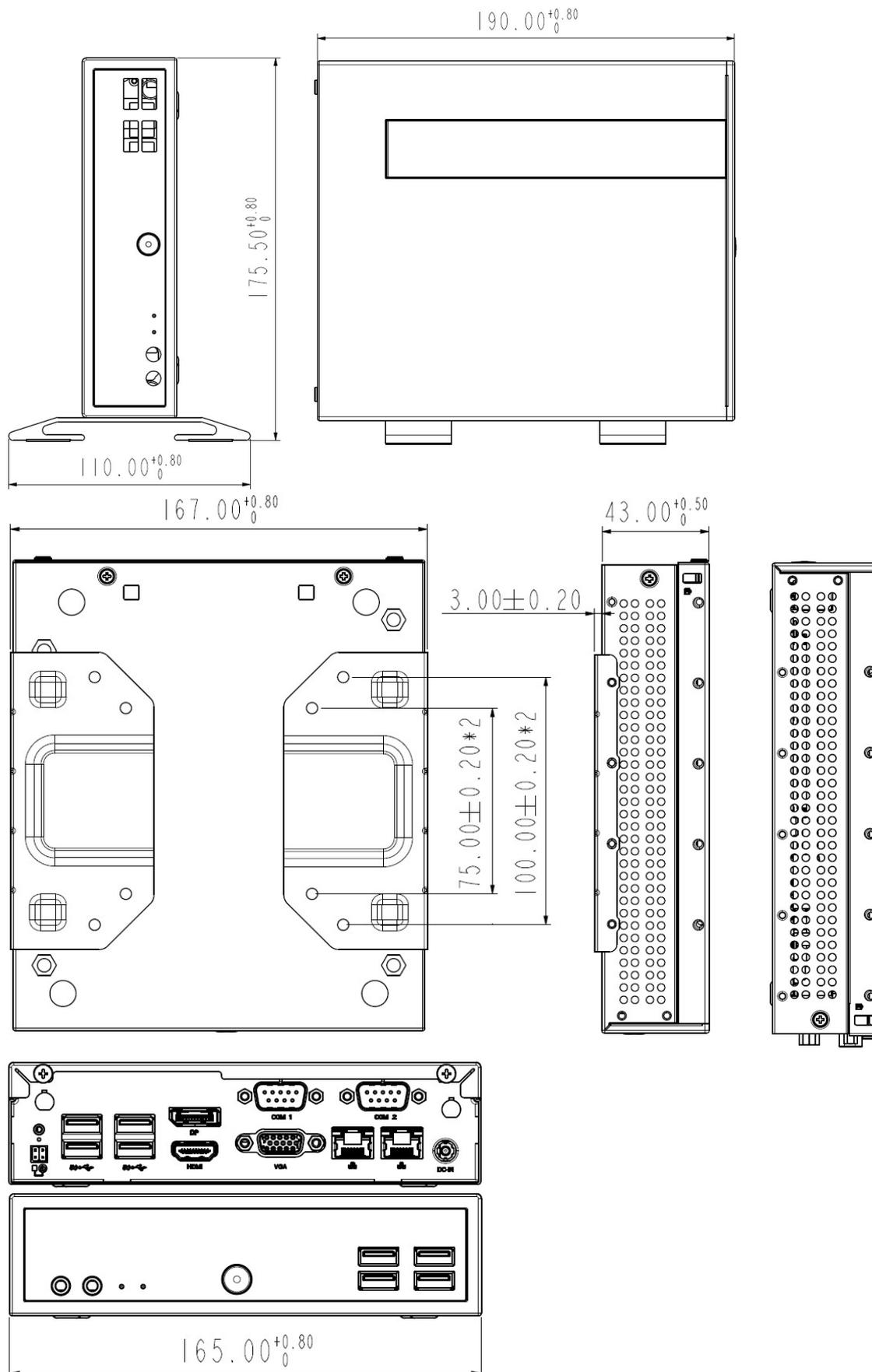
[4] Serial Ports
This PC features two serial RS232 ports with 9-pin D-Sub connectors on the back panel. The left COM port (COM1) can also be configured as RS422 and RS485 in the BIOS setup.
Pin 9 of the D-Sub COM-Port is a multi-functional signal. Based on the Jumper JP2 configuration on the mainboard, it can be configured as Ring Indicator (RI) or external power supply with a voltage level of either 5 V or 12 V. Each COM port can be configured separately. The maximum current is 500 mA per connector.

[5] TPM Function
This product features Firmware-TPM function (fTPM) v2.0. Besides this, it is prepared for a hardware TPM chip which can be fitted by factory on request if required.

SHUTTLE XPC SLIM BAREBONE DL30N — Technical Drawing

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Shuttle Computer Handels GmbH · Fritz-Strassmann-Str. 5 · 25337 Elmshorn · Germany
Tel. +49 (0) 4121-47 68 60 · Fax +49 (0) 4121-47 69 00 · sales@shuttle.eu   8 | 8

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