BAREBONE
XPC slim
DL20N6

FANLESS 1-LITRE PC SUITABLE FOR 24/7 OPERATION

The Shuttle XPC slim Barebone DL20N Series is the successor to Shuttle's DL10J. These fanless Slim PC barebones with an energy-efficient 10 nm Intel "Jasper Lake" 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. 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 11th gen. Intel UHD Graphics that supports hardware acceleration for 4K videos. Combined with an SSD or M.2 drive, these Slim-PCs works virtually noiseless.

16 GB SUPPORT · HDMI 2.0b · DISPLAY-PORT 1.4a · 4K UHD · NVMe SSD SUPPORT · 2.5" HDD/SSD SUPPORT · DUAL COM · VESA MOUNT · LTE OPTIONAL · 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, Windows 11 and Linux (64-bit)

PROCESSOR

■ Intel Pentium Silver 6005, Quad Core, 2.0-3.3 GHz, 4 MB Cache
■ Soldered 10nm SoC processor "Jasper Lake" with 10 W TDP

GRAPHICS

■ Integrated Intel Gen. 11 UHD graphics with 4K support
■ Supports three independent displays

MEMORY SUPPORT

■ 2x 260-pin SO-DIMM slot ■ Supports up to 16 GB DDR4-2933

STORAGE – SATA / M.2

■ 1x 2.5" bay for SATA hard disk or SSD
■ 1x M.2-2280M slot (supports PCIe x2 NVMe or SATA)

CONNECTORS

■ HDMI 2.0b ■ DisplayPort 1.4 ■ D-Sub/VGA ■ SD card reader ■ 2x USB 3.2 Gen2 (red) ■ 2x USB 3.2 Gen1 (blue) ■ 2x USB 2.0 ■ 1x internal USB 2.0 ■ 1x Intel Gigabit LAN (RJ45, i211) ■ 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 40W/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) ■ LTE-kit (WWN03) ■ Stand (PS02)
■ WLAN kit with two external antennas (WLN-M)

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MODELS OF THE DL20N SERIES

Product	Intel Processor	Cores/Threads	CPU Clock	L3 Cache	GPU clock	EUs	TDP	UPC Code
DL20N	Celeron N4505	2 / 2	2.0 ~ 2.9 GHz	4 MB	450 ~ 750 MHz	16	10 W	887993003641
DL20N6	Pentium Silver N6005	4 / 4	2.0 ~ 3.3 GHz	4 MB	450 ~ 900 MHz	32	10 W	887993003665

PRODUCT FEATURES

1.3 L

Only 4.3 cm tall

Slim, stylish & robust chassis

The Shuttle XPC slim Barebone DL20N6 features a slim 1.3-litre steel chassis, giving it the appropriate stability required for professional applications. The decorative silver stripe lets it also easily find a place in both home and office environments.

Fanless, quiet and 24/7 approved

The Shuttle XPC slim Barebone DL20N6 is officially approved for 24/7 permanent operation. It uses a passive thermal module which makes the system not only quiet, but also dust-free and virtually maintenance-free. Thanks to its low power consumption and completely fanless cooling, this PC runs highly reliably making it perfectly suitable for digital signage and POI/POS applications.

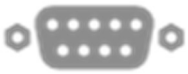
Conditions for permanent use:
- Free circulation of air amongst the PC must be guaranteed
- Ventilation holes must be clear
- If a hard disk is installed, this must also be approved for permanent operation by its manufacturer.

Easy assembly

With pre-installed SATA cable and no daughterboards the interior of the Shuttle XPC slim Barebone DL20N6 is very tidy and it won't take long to set it up.

Dual 4K Display support

The DL20N6 features two digital video outputs: HDMI 2.0b and DisplayPort 1.4 which both can run at 4K (3840 x 2160 / 2160p) high resolution at 60 Hz frames per second. Furthermore, the DL20N6 supports an additional D-Sub/VGA port.



Two serial COM ports

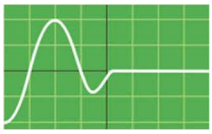
The Shuttle XPC slim Barebone DL20N6 features two serial RS232 COM ports on the back panel. Both ports support 5 V / 12 V auxiliary voltage and the left port is switchable to RS422 or RS485 mode. COM ports are a common interface for applications in industrial automation, scientific analysis and POS.

Intel Gigabit LAN Network

The Shuttle XPC slim Barebone DL20N6 supports Gigabit LAN with Intel network adapters, which are popular for their excellent performance and driver compatibility and are the preferred choice for professional environments.

VESA mount

The supplied 75/100mm VESA mount allows for installation on to walls or monitors which is particularly interesting for the industry segment, company buildings and public institutions. Other than this, the chassis bears numerous threaded holes (M3) enabling it to be fitted almost anywhere.



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 (3) keep system turned off (4) Power-On by LAN or (5) Power-On by Real-Time-Clock. As a matter of the nature of this function, it may fail after short power failures. This is why the Shuttle XPC slim Barebone DL20N6 also comes with a hardware-based solution. By removing Jumper JP1 the system will start unconditionally once power is applied.

External power button by separate remote line

If, because of space constraints (e.g. in case of fixed installation), the machine cannot be switched on by pressing the front power button, it can be powered on by a separate remote line. You will find an appropriate four-pin connector at the back panel of the DL20N6 (pitch 2.54 mm). Furthermore, this connector provides a Clear CMOS function and +5V DC voltage supply for external devices.

Compact 19V power adapter

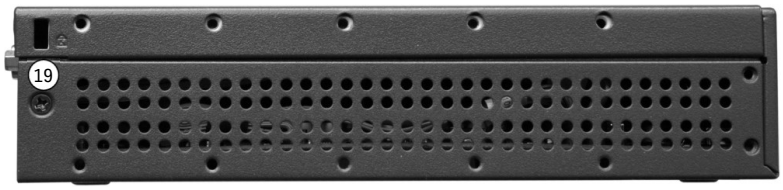
The external fanless 40 W power adapter can easily be hidden behind the desk thanks to its dimunitive size. The power adapter has 19V (max. 2.1A), but the DL20N6 can also be operated with a 12V (max. 3.33A) power source.

Front and Back Panel

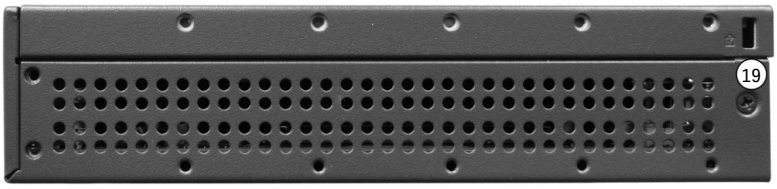
Front panel

Back panel

Left Side



Right Side



VESA mounting

1. Microphone input
2. Headphones output
3. LED indicator for power state
4. LED indicator for storage activity
5. Power button
6. SD card reader
7. 2x USB 3.2 Gen 2 port (red)
8. 2x perforation for optional WLAN antennas
9. COM 1 port supports RS232/RS422/RS485
10. COM 2 port supports RS232
11. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage
12. 2x USB 2.0 port (black)
13. 2x USB 3.2 Gen 1 port (blue)
14. DisplayPort 1.4a audio/video output
15. HDMI 2.0b port audio/video output
16. D-Sub / VGA video output
17. RJ45 Gigabit LAN port
18. DC-in connector for power adapter

19. Hole for the Kensington Lock
20. 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 DL20N6

Memory Modules

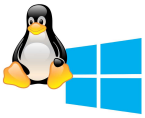
Up to two DDR4-2933
SO-DIMM memory modules (2x 8 GB or 1x 16 GB)
Total capacity: max. 16 GB

2.5" Storage Drive

SATA hard disk or Solid State Disk (SSD)
(max. height: 12.5 mm)

M.2 SSD (optional)

M.2-2280/2260/2242
SSD storage (SATA or PCIe/NVMe)



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 card and nano SIM card
(occupies the 2.5" bay)

Vertical Stand **PS02**

for vertical operation

WLAN-Accessory **WLN-M**

M.2-2230 card supports IEEE 802.11 b/g/n/ac including 2 antennas

Cable **CXP01**

Cable for external push button switch (without button)

DIN-Rail Kit **DIR01**

This mounting kit allows the installation on a standard 35 mm DIN-Rail

Rack Mount Kit **PRM01**

2U front plate to install two 1.3L Shuttle XPCs in a 19" cabinet.

Shuttle Product Comparison: DL20N Series versus DL10J

MODEL	DL20N Series	DL10J
Processor	Intel "Jasper Lake", TDP= 10W, 10 nm DL20N: Celeron N4505, 2-core, 2.0/2.9 GHz DL20N6: Pentium N6005, 4-core, 2.0/3.3 GHz	Intel "Gemini Lake", TDP=10W, 14 nm Intel Celeron J4005, 2-core, 2.0/2.7 GHz
RAM Suppport	2x SO DIMM (260-pins) max. 16 GB DDR4-2933	2x SO DIMM (260-pins) max. 8 GB DDR4-2400
2.5 bay	Supports 2.5" SATA drive max. height: 12.5 mm	Supports 2.5" SATA drive max. height: 12.5 mm
M.2-2280 slot	M.2-2280 supports PCIe X2 and SATA	M.2-2280 supports PCIe X2 and SATA
Audio	Realtek ALC897 / ALC662 / ALC888S	Realtek ALC269
GIGABIT LAN	Intel i211	Intel i211
WLAN	–	Realtek RTL8188EE 1x External Antenna Supports 802.11-n (1T1R)
Front Panel	On/Off button Power LED, HDD LED 2x USB 3.2 Gen 2 (red) SD card reader 2x Audio	On/Off button Power LED, HDD LED 2x USB 3.2 Gen 1 (blue) SD card reader 2x Audio
Back Panel	HDMI 2.0b DisplayPort 1.4a D-Sub/VGA (no hot plug) 2x USB 3.2 Gen 1 (blue) 2x USB 2.0 RJ45 Gigabit LAN 2x COM (1x RS422/485) 4-pin power on connector	HDMI 1.4b DisplayPort 1.2 D-Sub/VGA (no hot plug) 4x USB 2.0 RJ45 Gigabit LAN 2x COM (1x RS422/485) 4-pin power on connector 1x external WLAN antenna
DC-in port	Supports 12 V and 19 V	Supports 12 V and 19 V
Power Adapter	40 W (19V, 2.1 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-M.** WLAN kit with external antennas **WWN03**: LTE 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 **WWN01**: LTE kit for M.2-2230 slot
Front View		
Back View		

SHUTTLE XPC SLIM BAREBONE DL20N6 — SPECIFICATIONS

FANLESS & SILENT	Completely fanless, virtualy 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 1.95 kg gross Two holes for Kensington Lock and numerous threaded holes (M3) at both sides of the chassis
OPERATION POSITION	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 points 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 (64-bit) - Windows 11 (64-bit) - Linux (64-bit)
PROCESSOR	Intel® Pentium® Silver Processor N6005, Quad Core CPU clock frequency: 2.0 GHz, max. Turbo frequency: 3.3 GHz Code name: "Jasper Lake" 10 nm structure, FCBGA1338 package (soldered) CPU cores / Threads: 4 / 4 L2 Cache: 4 MB Thermal Design Power (TDP): 10 W Supports x86-64, AES-NI, VT-x (EPT), VT-d, SSE4.2, AES 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 (11th Gen), GPU frequency: 450~900 MHz Supports DirectX 12, OpenGL 4.5, OpenCL 1.2, Intel Quick Sync Video, Intel Clear Video (HD) Execution Units (EU): 32 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	16 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 / always off [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	2x SO-DIMM slots with 260 pins Supports DDR4-2933 (PC4-23466U) SDRAM at 1.2V Supports Dual Channel mode Supports max. 16 GB per DIMM Maximum total size: 16 GB (either 1x 16 GB or 2x 8 GB) 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 12.5 mm Pre-installed SATA cable (data / power) Supports Unified Extensible Firmware Interface (UEFI)
M.2-2280M SSD SLOT	M.2-2280M expansion 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)
AUDIO	Realtek ALC897 / ALC662 / 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
CARD READER	Integrated card reader supports standard SD, SDHC and SDXC memory flash cards Supports boot from SD card Controller: Realtek RTS5227S Media Processor
WIRED NETWORK	RJ45 connector supports Gigabit LAN at 10/100/1000 Mbit/s. Intel i211 Ethernet Controller with MAC, PHY and PCIe interface Supports Wake-on-LAN
LEDs & BUTTONS	Power button Power LED (blue) HDD LED (yellow)
FRONT PANEL CONNECTORS	2x USB 3.2 Gen 2 Type A (red) SD card reader Audio line-out (headphones) Microphone input
BACK PANEL CONNECTORS	HDMI 2.0b digital video and audio output DisplayPort 1.2 digital video and audio output D-Sub/ VGA analog video output (15-pin) - no hot plug 2x USB 3.2 Gen 1 Type A (blue) 2x USB 2.0 Type A Gigabit network (LAN, 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 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 JP2 for power-on-after-power-fail (hardware solution) [3] USB 2.0 header (4-pin) required for WWN03 accessory
POWER SUPPLY	External 40 W AC/DC power adapter (fanless) AC Input: 100 ~ 240 V AC, 50 ~ 60 Hz DC Output: 19 V / 2.1 A Automatic AC voltage adjust Dimensions: ca. 95 x 42 x 29 mm (LWH) DC cable length: ca. 170 cm AC cable length: ca. 170 cm (with 2-pin Europlug)
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. 2.1 A) or 19 V ±5% (max. 3.33 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 M3 x 5 mm (to mount some M.2 cards) Driver DVD (Windows 64-bit) External 40 W power adapter with power cord (Europlug)
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-M.** WLAN module in M.2-2230 format supports IEEE 802.11ac and Bluetooth 4.0 with two external antennas. **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: FCC, CE, BSMI, RCM, VCCI Safety: CB, BSMI, ETL 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 the Shuttle XPC slim Barebone DL10J 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 (fTPM) v2.0. Besides this, it is prepared for a hardware TPM chip which can be fitted by factory on request if required.