

## BAREBONE XPC slim DH410S

### AFFORDABLE 1.3-LITRE SLIM PC FOR POWERFUL COMET LAKE-S PROCESSORS

The Shuttle XPC slim Barebone DH410S with H410S chipset houses the performance of Intel's 10th generation Core desktop processors (codenamed Comet Lake-S) for socket LGA1200 in a compact 1.3-litre format. The DH410S allows for two digital displays to be operated at the same time via HDMI 1.4b and DisplayPort. Its slim metal chassis provides versatile connectivity and reliable operation in environments with ambient temperatures of up to 50 °C. This platform is targeted at professional applications such as Digital Signage, POS, POI, gambling machines, office, healthcare and industry.



#### SLIM DESIGN

- Slim 1.35-litre metal chassis, black
- Dimensions: 190 x 165 x 43 mm (LWH)
- Including VESA mount (75/100 mm)
- Supports 24/7 Nonstop Operation
- Operating temperature: 0~50 °C (non-condensing)

#### OPERATING SYSTEM

- An operating system is not included
- Supports Windows 10 and Linux (64-bit)

#### PROCESSOR SUPPORT

- Socket LGA1200 supports Intel Core i9/i7/i5/i3, Pentium Gold and Celeron processors Gen. 10, codename "Comet Lake-S", max. 65W TDP
- Includes heatpipe cooling system

#### GRAPHICS

- Integrated Intel HD graphics, 4K support (features depend on processor)
- Supports two independent displays

#### CHIPSET

- Intel H410 Chipset

#### MEMORY SUPPORT

- 2x 260-pin SO-DIMM slot
- Supports DDR4-2933 /2666
- max. 2x 32 GB

#### STORAGE – SATA / M.2

- 1x 2.5" bay for SATA hard disk or SSD
- 1x M.2-2280M slot (supports PCIe x4 NVMe or SATA)
- 1x M.2-2230E for optional WLAN (WLN-M)

#### CONNECTORS

- HDMI 1.4b
- DisplayPort 1.2
- optional VGA
- SD card reader
- 2x audio (line out, mic)
- 4x USB 3.2 Gen1 (1x Type-C)
- 4x USB 2.0
- 1x internal USB 2.0
- Gigabit LAN (RJ45, Realtek)
- Connector for external power button
- "Always on" Jumper

#### POWER SUPPLY

- External 90W/19V power adapter

#### OPTIONAL ACCESSORIES

- WLAN Module (WLN-M)
- Vertical Stand (PS02)
- VGA Port (PVG01)
- Rackmount kit (PRM01)
- Cable for external power button (CXPO1)
- DIN-Rail mounting kit (DIR01)
- LTE-kit (WWN03)
- VESA-Halterung (PV04)



### MODELS OF THE DH4xx SERIES

Product	Chip	Graphics Ports	Displays	LAN	COM	DC-In	VESA Mount	UPC Code
DH410	H410	HDMI 2.0a + DP 1.2 (opt. VGA)	max. 2	2x Intel	2	12V + 19V	included	887993002385
DH410S	H410	HDMI 1.4b + DP 1.2 (opt. VGA)	max. 2	1x Realtek	—	19V	— (optional)	887993002460
DH470	H470	HDMI 2.0a + 2x DP 1.2 (opt. VGA)	max. 3	2x Intel	2	19V	included	887993002422

## PRODUCT FEATURES



### Robust, stylish and particularly small

You should have held it in your own hands to see how small it actually is. At barely a volume of 1.35 litres, its steel chassis gives it the appropriate stability required for professional applications such as digital signage. Despite its dimensions of 19 x 16.5 x 4.3 cm (LWH), the overall system performance is very high thanks to support of Intel Core desktop processors. The interior of the DH410S is very tidy too so that it won't take long to set up. Its sleek and stylish looks let it easily find a place in both home and office environments.



### Low noise thanks to heatpipe cooling system

An active dual-fan heatpipe cooling system ensures whisper-quiet operation and system stability.



### Supports extended temperature range and 24/7 operation

The Shuttle XPC slim Barebone DH410S is officially approved for 24/7 permanent operation. Thanks to its efficient cooling, this PC runs highly reliably making it perfectly suitable for digital signage and POI/POS applications - even at ambient temperatures of up to 50 °C (non-condensing). **Caution:** For high ambient temperatures over 40 °C we strongly recommend to use SSDs.



### Supports 10<sup>th</sup> Generation Intel® Core™ processors

"Comet Lake-S" is the codename for Intel's 10<sup>th</sup> Generation of Intel® Core™ Desktop Processors for socket LGA1200 introduced in 2020 along with the 400-Series chipsets. The 10000 series processors feature up to 10 cores and 20 threads and 20 MB of cache memory. With an optimal balance of frequency, cores and threads, these processors help supercharge Shuttle XPCs and enable incredible experiences and productivity for professional and mainstream applications.



### Dual Display support

Up to two monitors can be connected simultaneously via HDMI 1.4b and DisplayPort (DP). The DisplayPort supports displays running at 4K (3840 x 2160 / 2160p) high resolution at 60 Hz frames per second. Furthermore, it supports an optional D-Sub/VGA port.



### One M.2-Slot for SSD cards

The M.2-2280 slot supports one M.2 SSD storage card with NVMe PCIe or SATA interface. Type 2280 means, it supports the usual M.2 cards with a width of 22 mm and a length of 80 mm, but also 2242 and 2260 standard cards are supported.



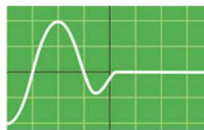
### Kensington Lock

This is a small, metal-reinforced hole as part of an anti-theft system. The DH410S provides an appropriate hole on both sides of its chassis. The lock and cable are not included.



### VESA mount (optional)

The optional 75/100mm VESA mount (Shuttle Accessory PVO4) 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 DH410S also comes with a hardware-based solution. By removing Jumper JP2 (see image) 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 DH410S (pitch 2.54 mm). Furthermore, this connector provides a Clear CMOS function and +5V DC voltage supply for external devices.

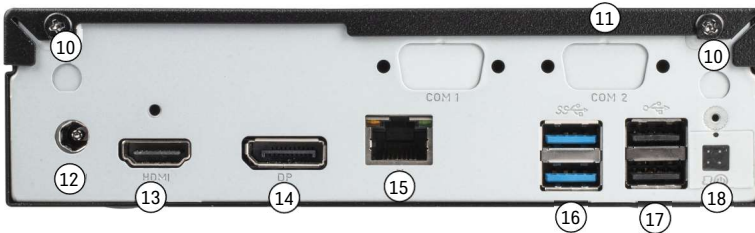
+5V voltage (2) (4) Power Button  
Clear CMOS (1) (3) Ground

## Front and Back Panel

Front panel



Back panel



Right side



Left side



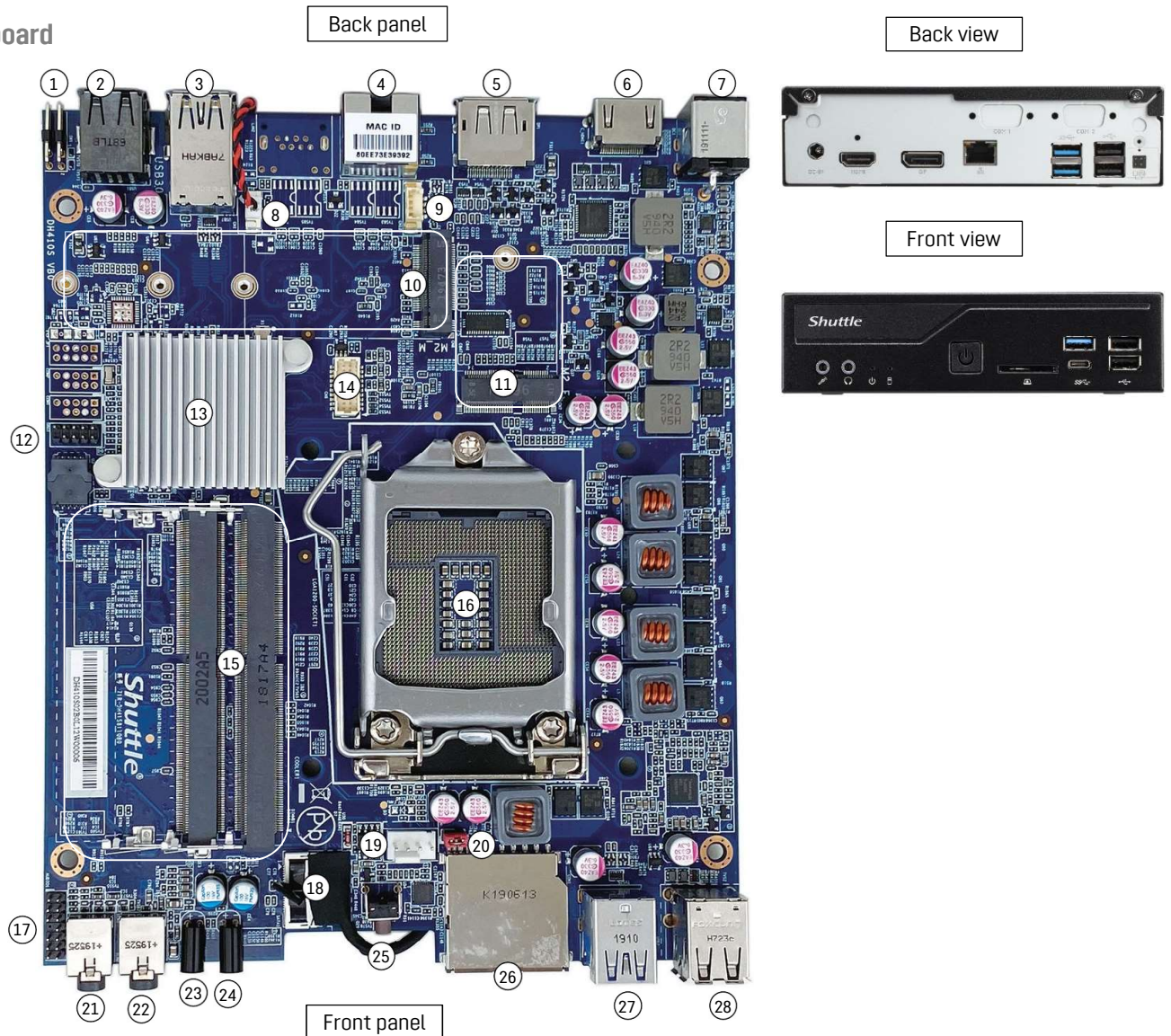
1. Microphone input
2. Headphones output
3. LED indicator for power state
4. LED indicator for storage activity
5. Power button
6. SD card reader
7. USB 3.2 Gen 1 port
8. USB 3.2 Gen 1 port, Type-C
9. 2x USB 2.0 port
10. 2x WLAN perforation
11. Optional D-Sub/VGA port (PVG01)
12. DC-in connector for power adapter
13. HDMI 1.4b port
14. DisplayPort 1.2
15. RJ45 Gigabit LAN port
16. 2x USB 3.2 Gen 1 port
17. 2x USB 2.0 port
18. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage

19. Threaded holes (M3)
20. 2x hole for Kensington Lock



21. **Optional:** VESA mount (two parts) Shuttle Accessory PV04

## Mainboard

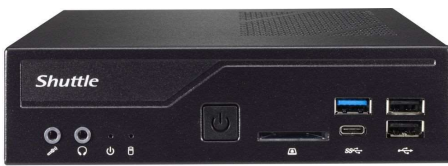


- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage</li> <li>2. 2x USB 2.0 port</li> <li>3. 2x USB 3.2 Gen 1 port</li> <li>4. RJ45 Gigabit LAN port</li> <li>5. DisplayPort 1.2</li> <li>6. HDMI 1.4b port</li> <li>7. DC-in connector for power adapter</li> <li>8. Connector for CMOS battery</li> <li>9. Onboard USB 2.0 connector (4-pin)</li> <li>10. M.2-2280M slot for SSD card</li> <li>11. M2-2230E slot for WLAN card</li> <li>12. Debug header (reserved)</li> <li>13. Intel H410 chipset with heat sink</li> <li>14. Onboard VGA connector</li> </ol> | <ol style="list-style-type: none"> <li>15. 2x SO-DIMM memory slot</li> <li>16. LGA1200 processor socket</li> <li>17. Audio connector (optional)</li> <li>18. SATA v3.0 connector</li> <li>19. 4-pin connector for cooling fan</li> <li>20. Always-Power-On jumper</li> <li>21. Microphone input</li> <li>22. Headphones output</li> <li>23. LED indicator for power state</li> <li>24. LED indicator for storage activity</li> <li>25. Power button</li> <li>26. SD card reader</li> <li>27. 2x USB 3.2 Gen 1 port</li> <li>28. 2x USB 2.0 port</li> </ol> |
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## REQUIRED COMPONENTS

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

### Shuttle XPC slim Barebone DH410S



#### LGA1200 Processor

Intel Core Gen 10 "Comet Lake-S"  
Core i9 / i7 / i5 / i3, Pentium Gold or Celeron  
TDP max. 65 W



#### Memory Modules

Up to two DDR4-2666/2933  
SO-DIMM memory modules  
max. 32 GB each



#### 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 or Linux (64-bit only)

## OPTIONAL ACCESSORIES FROM SHUTTLE



#### VGA port adapter PVG01

Installing PVG01 means one serial port (COM) less can be used on the backpanel.



#### 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



#### DIN-Rail Kit DIR01

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



#### LTE Adapter Kit WWN03

allows the installation of an M.2 LTE card and nano SIM card (occupies the 2.5" bay)



#### Rack Mount Kit PRM01

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



#### Cable CXP01

Cable for external push button switch (without button)



#### VESA Mount PV04

supports the 75/100 mm VESA standard

## Shuttle Product Comparison: DH3xx versus DH4xx

MODEL	DH310S	DH310V2	DH370	DH410S	DH410	DS470
PROCESSOR SUPPORT	Socket LGA1151v2, TDP max. 65 W Code name "Coffee Lake-S (Refresh)" – Gen 8 and 9			Socket LGA1200, TDP max. 65 W Code name "Comet Lake-S" – Gen 10		
CHIPSET	Intel H310	Intel H310	Intel H370	Intel H410	Intel H410	Intel H470
OS SUPPORT	Windows 10 and Linux (64-bit)			Windows 10 and Linux (64-bit)		
MULTI-DISPLAY	max. 2	max. 2	max. 3	max. 2	max. 2	max. 3
RAM MEMORY	max. 2x 32 GB <b>DDR4-2400/2666</b> SO-DIMM			max. 2x 32 GB <b>DDR4-2666/2933</b> SO-DIMM		
2.5" BAY	1x 2.5" drive bay, SATA connector max. height 12.5 mm			1x 2.5" drive bay, SATA connector max. height 12.5 mm		
M.2 SSD SLOT	M.22280M			M.22280M		
WLAN SLOT	M.2-2230E			M.2-2230E		
BUTTONS / LEDS	Power-Button, Power LED, HDD LED			Power-Button, Power LED, HDD LED		
SD CARD READER	Yes			Yes		
GRAPHICS PORTS	HDMI 1.4b DP 1.2	HDMI 2.0a DP 1.2	HDMI 2.0a <b>2x DP 1.2</b>	HDMI 1.4b DP 1.2	HDMI 2.0a DP 1.2	HDMI 2.0a <b>2x DP 1.2</b>
USB 3.1 GEN. 2	–	–	<b>4</b>	–	–	<b>4</b>
USB 3.1 GEN. 1	4 (1x Type-C)	4	4	4 (1x Type-C)	4	4 (1x Type-C)
USB 2.0	4	4	–	4	4	–
COM PORTS	–	2	2	–	2	2
GIGABIT NETWORK	Single LAN Realtek 8111H	Dual LAN 2x Intel 211	Dual LAN 2x Intel 211	Single LAN Realtek 8111H	Dual LAN 2x <b>Intel 210</b>	Dual LAN 2x <b>Intel 210</b>
AUDIO	Mic-Input, Line-Out (Realtek ALC662)			Mic-Input, Line-Out (Realtek ALC662)		
OPTIONAL ACCESSORIES	WLAN Kit: <b>WLN-M</b> Vertical Stand: <b>PS02</b> Rackmount Kit: <b>PRM01</b> VGA Port: <b>PVG01</b> Power Button Cable: <b>CXP01</b> DIN-Rail Mount: <b>DIR01</b>			WLAN Kit: <b>WLN-M</b> Vertical Stand: <b>PS02</b> Rackmount Kit: <b>PRM01</b> VGA Port: <b>PVG01</b> Power Button Cable: <b>CXP01</b> DIN-Rail Mount: <b>DIR01</b> <b>LTE-Kit: WWN03</b>		
VESA MOUNT	optional <b>PV04</b>	supplied	supplied	optional <b>PV04</b>	supplied	supplied
POWER ADAPTER	90 W / 19 V			90 W / 19 V		
DC-IN 12V SUPP.	–	<b>Yes</b>	–	–	<b>Yes</b>	–



\*) The DH370 has no USB Type-C connector on the front panel, all its USBs are Type-A.

## SHUTTLE XPC SLIM BAREBONE DH410S – SPECIFICATIONS

<b>CHASSIS</b>	<p>Slim PC with black chassis made of metal</p> <p>Dimensions: 190 x 165 x 43 mm (LWH) = 1.35-litre</p> <p>Weight: 1.3 kg net and 2.1 kg gross</p> <p>Two holes for Kensington Locks and numerous threaded holes (M3) on both sides of the chassis</p>
<b>POWER ADAPTER</b>	<p>External 90 W power adapter (fanless)</p> <p>Input: 100~240 V AC, 50/60 Hz</p> <p>Output: 19 V DC, 4.74 A, max. 90 W</p> <p>DC Connector: 5.5/2.5 mm (outer/inner diameter)</p> <p>Remark: The DC-input of the computer supports an external power source with 19V±5%.</p> <p>AC mains cable: 3 pins, ca. 1.7 m length, with C5/C6 coupler (called "Mickey Mouse" or "Clover-leaf") for the power adapter and CEE-7/7 plug with earth-contact (type E+F) for the power outlet</p>
<b>OPERATING SYSTEM</b>	<p>This system comes without an operating system.</p> <p>It is compatible with Windows 10 and Linux (64-bit).</p>
<b>PROCESSOR SUPPORT</b>	<p>Processor Socket LGA1200</p> <p>Supports Intel Core i9 / i7 / i5 / i3, Pentium Gold and Celeron processors</p> <p>Supports 10<sup>th</sup> generation Intel Core processors, codename "Comet Lake-S" in 14 nm process technology</p> <p>Supports processors with integrated graphics only [4]</p> <p>Maximum supported processor power consumption (TDP) = 65 W</p> <p>Up to 10 CPU cores, 20 threads and 20 MB of L3 cache</p> <p>Does not support the unlock-function of Intel K-Series processors.</p> <p>The processor integrates PCI-Express, memory controller and the graphics engine on the same die. (Performance features depend on processor type.)</p> <p>Please refer to the support list for detailed processor support information at <a href="http://global.shuttle.com">global.shuttle.com</a>.</p> <p>Not compatible with older Socket LGA1151(v2) processors.</p>
<b>PROCESSOR COOLING</b>	<p>Heatpipe processor cooling with two 60 mm fans on the upper side of the chassis</p>
<b>MAINBOARD / CHIPSET</b>	<p>Mainboard in a Shuttle form factor proprietary design for the XPC DH410S</p> <p>Chipset/Southbridge: Intel® H410</p> <p>Passive chipset cooling with heat sink</p> <p>The Northbridge is integrated in the processor.</p> <p>Solid Capacitors for sensitive areas provide excellent heat resistance for enhanced system durability.</p>
<b>BIOS</b>	<p>AMI BIOS, SPI Interface, 16 MB Flash-EPROOM</p> <p>Supports Hardware Monitoring and watch dog functionality</p> <p>Supports Firmware-TPM (fTPM) v2.0 [9]</p> <p>Supports boot up from external USB flash memory</p> <p>Supports Unified Extensible Firmware Interface (UEFI)</p> <p>Supports power on after power failure [7]</p>
<b>MEMORY SUPPORT</b>	<p>2x SO-DIMM slot with 260 pins</p> <p>Supports DDR4-2666/2933 (PC4-21300/23466) SDRAM at 1.2 V</p> <p>Supports Dual Channel mode</p> <p>Supports a maximum of 32 GB per DIMM, maximum total size: 64 GB</p> <p>Supports two unbuffered DIMM modules (no ECC or registered)</p> <p>Note: The memory clock speed depends on the processor model. Intel Core i9 and i7 series processors support DDR4-2933 memory speed, while the other models support DDR4-2666.</p>
<b>INTEGRATED GRAPHICS</b>	<p>The features of the integrated Intel UHD graphics function depend on the processor type used.</p> <p>Supports DirectX 12, OpenGL 4.5</p> <p>The PC features two digital video outputs:</p> <ul style="list-style-type: none"> <li>- 1x HDMI v1.4b supports 1080p/60 and 2160p/30</li> <li>- 1x DisplayPort v1.2 supports 1080p/60 and 2160p/60</li> </ul> <p>Supports displays with 4K Ultra HD resolution at 3840 x 2160</p> <p>Supports two independent displays with the integrated graphics function</p> <p>Supports Blu-ray (BD) playback with HDCP content protection [5]</p> <p>Hardware video decoding/encoding: H.264, H. 265 (8- and 10-bit, encoding via QuickSync), VP9 (10-bit VP9 can only be decoded)</p> <p>DisplayPort and HDMI support multi-channel digital audio over the same cable.</p> <p>Optional analog D-Sub/VGA video output [3]</p>

<b>DRIVE BAY</b>	1x 6.35 cm / 2.5" storage bay supports one hard disk or SSD drive with SATA connector Device height: 12.5 mm (max.)
<b>SATA CONNECTORS</b>	1x Serial-ATA III, 6 Gb/s (600 MB/s) bandwidth With Serial-ATA power connector (onboard)
<b>M.2-2280M SSD SLOT</b>	The M.2-2280M slot provides the following interfaces: - PCI-Express Gen. 2.0 X4, supports NVMe - SATA v3.0 (max. 6 Gbps) It supports M.2 cards with a width of 22 mm and a length of 42, 60 or 80 mm (type 2242, 2260, 2280). Supports M.2 SSDs with SATA or PCI-Express interface
<b>M.2-2230E SLOT FOR WLAN CARDS</b>	Interfaces: PCI-Express Gen. 2.0 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-M)
<b>AUDIO</b>	Audio Realtek® ALC 662 5.1 channel High-Definition Audio Two analog audio connectors (3.5 mm) on the front panel: 1) 2-channel line-out (headphones) 2) microphone input Digital multi-channel audio output: by HDMI and DisplayPort
<b>GIGABIT LAN CONTROLLER</b>	Realtek 8111H Ethernet network controller (Gigabit) RJ45 port with two status LEDs Supports 10 / 100 / 1.000 MBit/s operation Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE)
<b>CARD READER</b>	Integrated card reader Supports SD, SDHC and SDXC up to v3.01 memory flash cards UHS-I interface supports up to 104 MB/s (SDR104) transfer speed Realtek RTS5227S chip with PCIe chipset interface Supports boot up from SD card.
<b>FRONT PANEL CONNECTORS</b>	Microphone input Audio Line-out (headphones) 2x USB 3.2 Gen 1 (1x Type C) 2x USB 2.0 SD card reader Power button Power LED (blue) HDD LED (yellow)
<b>BACK PANEL CONNECTORS</b>	1x HDMI 1.4b connector [1] 1x DisplayPort 1.2 connector (DP) [2] Optional: 1x D-Sub VGA connector (Accessory PVG01 [3]) 2x USB 3.2 Gen 1 2x USB 2.0 1x Gigabit LAN (RJ45) 1x DC-input connector for external power adapter 1x 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 2x hole for Kensington Lock
<b>OTHER ONBOARD CONNECTORS</b>	1x jumper for power-on-after-power-fail (hardware solution) [7] 1x analog VGA graphics output CN6 (2x 10-pin, 1 mm pitch) [3] 1x USB 2.0 (4-pin) for optional accessory WWN03 (LTE kit) 1x fan connector (4-pin) occupied by the cooling system 1x connector for CMOS battery (occupied)



<b>SUPPLIED ACCESSORIES</b>	<p>Multi-language user guide (EN, DE, FR, ES, JP, KR, SC, TC)            Four screws M3 x 4 mm (to mount a 2.5" storage device into the bay)            Two screws M3 x 5 mm (silver colour, to mount two M.2 cards)            Driver DVD (Windows 64-bit)            Serial ATA cable for 2.5" drive including power cable            External 90 W power adapter with power cord            Protection cap for CPU socket (do not use if heatpipe or fan is mounted)            Heatsink compound</p>
<b>OPTIONAL ACCESSORIES</b>	<p><b>PVG01:</b> optional D-Sub VGA video output [3]  <b>WLN-M:</b> WLAN module in M.2-2230 format supports IEEE 802.11ac and Bluetooth 4.0 with two external antennas.  <b>WWN03:</b> LTE adapter kit with antennas, but without LTE card  <b>PS02:</b> Stand for vertical operation  <b>CXP01:</b> adapter cable for external power button  <b>PRM01:</b> 2U rack mount front plate for two Shuttle XPC slim PCs  <b>DIR01:</b> DIN-Rail mounting kit  <b>PV04:</b> VESA mounting kit</p>
<b>ENVIRONMENTAL SPECIFICATIONS</b>	<p>Operating temperature range: 0~50 °C [6]            Relative humidity, non-condensing: 10~90 %</p>
<b>CERTIFICATIONS / COMPLIANCE</b>	<p>EMI: FCC, CE, BSMI, RCM, VCCI            Safety: ETL, CB, BSMI            Other: RoHS, Energy Star, ErP</p>
<b>CONFORMITY</b>	<p>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)</p>

**[1] HDMI output** supports DVI-D with optional adapter

**[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] Optional D-Sub/VGA connector**

The mainboard features one analog graphics port CN6 on the mainboard. This signal can be lead to the outside as a 15-pin D-Sub VGA connector on the backpanel by using the optional adapter PVG01. However doing so means one serial port (COM) less can be used on the backpanel.

**[4] Intel processors without integrated graphics** (ID ends with "F", e.g. Core i7-10700F) are not compatible.

**[5] For Blu-ray playback** appropriate software and an external Blu-ray drive is required (not included).

**[6] Operating temperature**

For high ambient temperatures over 40 °C we strongly recommend to use SSDs (supporting at least 70 °C) and rugged SO-DIMM memory modules with a temperature range of up to 95 °C.

**[7] 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 DH410S also comes with a hardware-based solution. By removing Jumper JP2 (on the mainboard behind the power button) the system will start unconditionally once power is supplied.

**[8] Optional Accessory WWN03 (LTE kit)**

The Shuttle XPC accessory WWN03 allows this PC to be upgraded with an LTE/4G function for mobile network. The LTE card will occupy the 2.5" bay, so you will have to use an M.2 SSD as a mass storage device. The required LTE/4G card in M.2-3042 format and an activated Nano SIM card is not included in the scope of delivery.

**[9] 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.

## 10<sup>TH</sup> GENERATION INTEL CORE DESKTOP PROCESSOR FAMILY

Socket LGA1200 14 nm "Comet Lake S" processor overview (Date: May 2020)

Processors with a TDP of more than 65W and processors without graphics function (ID ends with "F") are not supported (marked in red).

PROCESSOR	MODEL	CORES/ THREADS	CPU CLOCK	TURBO CLOCK	SMART CACHE	TDP	MEMORY SUPPORT	GRAPHICS ENGINE
Core™ i9	10900K	10/20	3.7 GHz	5.1 GHz	20 MB	125 W	DDR4-2933	UHD 630
	10900KF	10/20	3.7 GHz	5.1 GHz	20 MB	125 W	DDR4-2933	None
	10900	10/20	2.8 GHz	5.0 GHz	20 MB	65 W	DDR4-2933	UHD 630
	10900F	10/20	2.8 GHz	5.0 GHz	20 MB	65 W	DDR4-2933	None
	10900T	10/20	1.9 GHz	4.5 GHz	20 MB	35 W	DDR4-2933	UHD 630
Core™ i7	10700K	8/16	3.8 GHz	5.0 GHz	16 MB	125 W	DDR4-2933	UHD 630
	10700KF	8/16	3.8 GHz	5.0 GHz	16 MB	125 W	DDR4-2933	None
	10700	8/16	2.9 GHz	4.7 GHz	16 MB	65 W	DDR4-2933	UHD 630
	10700F	8/16	2.9 GHz	4.7 GHz	16 MB	65 W	DDR4-2933	None
	10700T	8/16	2.0 GHz	4.4 GHz	16 MB	35 W	DDR4-2933	UHD 630
Core™ i5	10600K	6/12	4.1 GHz	4.8 GHz	12 MB	125 W	DDR4-2666	UHD 630
	10600KF	6/12	4.1 GHz	4.8 GHz	12 MB	125 W	DDR4-2666	None
	10600	6/12	3.3 GHz	4.8 GHz	12 MB	65 W	DDR4-2666	UHD 630
	10600T	6/12	2.4 GHz	4.0 GHz	12 MB	35 W	DDR4-2666	UHD 630
	10500	6/12	3.1 GHz	4.5 GHz	12 MB	65 W	DDR4-2666	UHD 630
	10500T	6/12	2.3 GHz	3.8 GHz	12 MB	35 W	DDR4-2666	UHD 630
	10400	6/12	2.9 GHz	4.3 GHz	12 MB	65 W	DDR4-2666	UHD 630
	10400F	6/12	2.9 GHz	4.3 GHz	12 MB	65 W	DDR4-2666	None
Core™ i3	10320	4/8	3.8 GHz	4.6 GHz	8 MB	65 W	DDR4-2666	UHD 630
	10300	4/8	3.7 GHz	4.4 GHz	8 MB	65 W	DDR4-2666	UHD 630
	10300T	4/8	3.0 GHz	3.9 GHz	8 MB	35 W	DDR4-2666	UHD 630
	10100	4/8	3.6 GHz	4.3 GHz	8 MB	65 W	DDR4-2666	UHD 630
	10100T	4/8	3.0 GHz	3.8 GHz	8 MB	35 W	DDR4-2666	UHD 630
Pentium® Gold	G6600	2/4	4.2 GHz	-	4 MB	58 W	DDR4-2666	UHD 630
	G6500	2/4	4.1 GHz	-	4 MB	58 W	DDR4-2666	UHD 630
	G6500T	2/4	3.5 GHz	-	4 MB	35 W	DDR4-2666	UHD 630
	G6400	2/4	4.0 GHz	-	4 MB	58 W	DDR4-2666	UHD 610
	G6400T	2/4	3.4 GHz	-	4 MB	35 W	DDR4-2666	UHD 610
Celeron®	G5920	2/2	3.5 GHz	-	2 MB	58 W	DDR4-2666	UHD 610
	G5900	2/2	3.4 GHz	-	2 MB	58 W	DDR4-2666	UHD 610
	G5900T	2/2	3.2 GHz	-	2 MB	35 W	DDR4-2666	UHD 610

**K** = unlocked, **T** = Power optimized lifestyle, **F** = without integrated graphics, **TDP** = Thermal Design Power (max. Power Consumption).

Note: The Shuttle XPC slim Barebone DH410S does not support the Unlock-function of Intel K-Series processors. Please refer to the support list for detailed processor support information at [global.shuttle.com](http://global.shuttle.com).