

DH610

SLIM PC



PROCESSOR	Supports Intel® Alder Lake-S® i3/i5/i7/i9 series, Pentium, and Celeron® LGA 1700 65W processors	
MEMORY	2 x DDR4 3200 MHz Supports dual channel up to 64GB (32GB x 2)	
VIDEO GRAPHICS	Intel UHD Graphics	
VIDEO OUTPUT	HDMI 2.0b + DisplayPort 1.4 x 2, Supports three independent displays, Supports 4K Ultra HD	
AUDIO	Realtek ALC662/897/888S HD audio	
ETHERNET	RJ45 (Intel 225) x 1, RJ45 (Intel 219V) x 1 100/1000/2500 MB/s transfer rate (225) 10/100/1000 MB/s transfer rate (219V)	RJ45 ports have LEDs Supports Wake-on-LAN function Supports Teaming Mode
STORAGE INTERFACE	SATA 6 GB/s	
ONBOARD CONNECTORS	(1) 4 pin fan connector (1) analog VGA graphics output (1) 1x4 pin USB header (for WWN03) (1) RS232 voltage switch	(1) SATA connector w/ power (1) Front audio header (2) serial interface (COM) (back panel connectors) (1) USB 2.0 (4-pin) for optional WWN03 kit
FRONT PANEL	(1) Power Button (1) Power LED (1) HDD LED (1) USB 3.2 Gen 1 (Type-C)	(1) USB 3.2 Gen 1 (Type-A, blue) (2) USB 2.0 (Type-A, black) (1) External microphone jack 1/8" (1) External headphone jack 1/8"
BACK PANEL	(1) HDMI 2.0b (2) DisplayPort 1.4 (1) Optional VGA connector (2) USB 3.2 Gen 1 (Type-A, blue) (2) USB 2.0 (Type-A, black) (2) RJ45 LAN ports w/ LED**	(1) RS232/RS422/RS485* (1) RS232* (1) External 4 pin header (2) Wireless Antenna holes (2) Kensington Lock (1) DC-in
DRIVE BAYS	(1) 2.5" HDD/SSD bay	
DIMENSIONS	7.5(L) x 6.5(W) x 1.7(H) inches	
POWER	Input: 100 - 240V AC Output: 19V/6.32A DC	120W power supply
ACCESSORIES	Quick Guide Screw package Power cord Driver DVD SATA cable	VESA mount VESA mount quick guide Thermal grease HDD screw pack Protection cap for CPU socket (don't use if heatpipe/fan is mounted)
EXPANSION SLOT	(1) M.2 2280 Type M	(1) M.2 2230 Type E key socket
OS SUPPORT	Windows 10/11 64 bit, Linux	

*RS232 ports support 0/5/12V outputs, refer to the quick guide for voltage settings

**2.5 GbE x 1 and 1 GbE x 1 LAN ports

For more information on all products, please contact us at sales@us.shuttle.com or 626.820.9000

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DH610

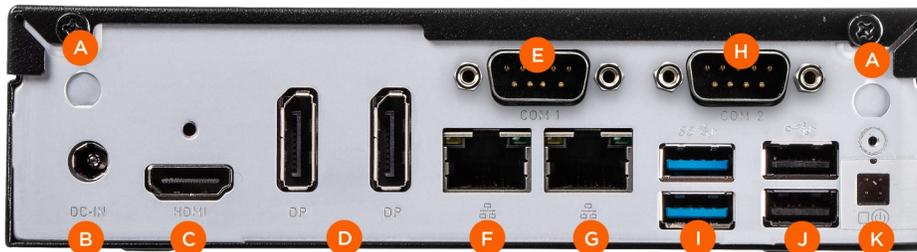
SLIM PC

Front View



- | | |
|---------------------|----------------------------------|
| 1 Microphone input | 5 Power Button |
| 2 Headphones output | 6 USB 3.2 Gen 1 x 2 (Type C x 1) |
| 3 Power LED | 7 USB 2.0 x 2 |
| 4 Hard Disk LED | |

Back View



- | | |
|----------------------------|--------------------------------|
| A WLAN antenna hole x 2 | G RJ45 Gigabit LAN w/ LED |
| B DC power input | H RS232 (COM2) or optional VGA |
| C HDMI 2.0b x 1 | I USB 3.2 Gen 1 x 2 |
| D DisplayPort 1.4 x 2 | J USB 2.0 x 2 |
| E RS232/RS422/RS485 (COM1) | K External 4-pin header |
| F RJ45 2.5GbE LAN w/ LED | |



Kensington lock hole on left and right side

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INTEL® 12TH GENERATION PROCESSORS

Equipped with a LGA 1700 socket, the DH610 supports Intel® 12th Generation Celeron®, Pentium®, and Core® i3/i5/i7/i9 65W processors. Support for up to 64GB DDR4 3200 MHz memory and Intel® UHD graphics, the DH610 is capable of driving content in 4K UHD.



VESA MOUNTABLE

The supplied 75/100mm VESA mount allows for installation of the DH610 on walls or monitors, for use in company buildings, public institutions, or other industry buildings. With a thickness of 43mm, it allows for versatile integration into hardware systems and well suited for areas with limited space.



TRIPLE DISPLAY SUPPORT

The DH610 features one HDMI 2.0b and two DisplayPort outputs built-in to support 4K Ultra HD resolution, providing dynamic visualization for multi-tasking and digital signage applications.



HIGH-SPEED INTEL® 2.5 GBE LAN

Intel® 2.5 GbE and Intel® 1 GbE LAN are equipped to support Wake-on-LAN and Teaming Mode functions for high-speed data transfer capability and better business networking integration.



SMART FAN DESIGN

A heat-pipe cooling system with smart fan design can be set in the BIOS for faster fan speed automatically when CPU temperature increases for high stability and low noise during long term operation.

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SLIM PC



ACCESSORY	PS02
DESCRIPTION	The PS02 stand is required for placing 1.3L slim PC models into a vertical orientation.
SPECIFICATIONS	Two metal stands, four screws



ACCESSORY	PVG01
DESCRIPTION	The PVG01 equips compatible slim PCs with an analog VGA output. For slim 1L PCs, this means only one serial interface (COM 1) can be used after installation.
SPECIFICATIONS	Length: 6.3 inches, Back panel connector: 15 pin Mini D-sub female socket, Internal connector: Subminiature 2x10 pin female
REMARKS	Slim PCs with H81/H110 chipsets can support up to two displays at the same time, so only two out of the available video outputs can be used.



ACCESSORY	WLN-M
DESCRIPTION	The WLN-M wireless LAN kit can be used to equip XPC cube and slim series models with the wireless LAN standard 802.11 b/g/n/ac at 2.4/5 GHz. The combo device supports Bluetooth 4.0.
REMARKS	M.2 2230 (NGFF) WLAN card, Antenna cable (XPC slim) x 2, Antenna cable (XPC cube) x 2, Dipole antenna x 2, Quick Guide, Driver DVD
OS SUPPORT	Windows 7, Windows 8.1, Windows 10, Windows 11, Linux (32/64 bit)



ACCESSORY	WLN-M1
DESCRIPTION	The WLN-M1 wireless LAN kit can be used to equip XPC cube and slim series models with the wireless LAN standard 802.11 b/g/n/ac at 2.4/5 GHz. The combo device supports Bluetooth 4.2.
REMARKS	M.2 2230 (NGFF) WLAN card, Antenna cable (XPC slim) x 2, Antenna cable (XPC cube) x 2, Dipole antenna x 2, Quick Guide, Driver DVD
OS SUPPORT	Windows 7, Windows 8.1, Windows 10, Windows 11, Linux (32/64 bit)

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CHASSIS	Black slim type metal chassis Kensington lock slots on the sides as part of anti-theft system Dimensions: 7.5 (L) x 6.5 (W) x 1.7 (H) inches Weight: 2.8 LBS (net) / 4.6 LBS (gross)
MAINBOARD AND CHIPSET	Shuttle form factor proprietary design for XPC DH610 Chipset: Intel® H610, passive chipset cooling with heat sink Supports hardware monitoring and watch dog functionality Solid capacitors for sensitive areas provide excellent heat resistance for enhanced system durability
BIOS	AMI BIOS, SPI Interface, 16 MB Flash-EPROM Supports Firmware-TPM (fTPM) v2.0 [9]* Supports boot up from external USB flash memory Supports Unified Extensible Firmware Interface (UEFI) Supports power on after power failure [7]*
POWER SUPPLY	External 120W power adapter (fanless) AC input voltage: 100 - 240V, 50/60 Hz Output: 19V DC 6.32A, max 120W DC connector: 5.5/2.5mm (outer/inner diameter)
OPERATING SYSTEM	The system comes without an operating system installed. Compatibility: Windows 10/11, Linux 64bit
PROCESSOR SUPPORT	LGA 1700 Socket supports Intel® Core® i3/i5/i7/i9, Pentium, and Celeron processors Supports the 12th generation Intel Core processors, codename "Alder Lake-S" Supports processors with integrated graphics only [5]* Max supported processor power consumption (TDP): 65W, 10 nm process technology, up to 16 cores The unlock function for Intel® K-Series processors is not supported with this model The processor integrates PCI-Express, the memory controller, and graphics engine on the same die (performance features depend on the processor type) Please refer to the support list for more detailed processor information at global.shuttle.com
SYSTEM COOLING	Heatpipe cooling with two 60 mm fans on the upper side of the chassis
MEMORY SUPPORT	2 x 260 pin SODIMM slots Supports DDR4 3200/2933/2400/2133 MHz memory (PC4-25600/23466/21300/19200/17000) at 1.2V Supports Dual Channel mode Supports a max. of 32GB per DIMM, up to 64GB total Supports two unbuffered DIMM modules (no ECC or registered)
DRIVE BAYS	1 x 2.5" drive bay supports one hard disk or SSD drive with SATA connector, max height 12.5 mm
M.2 SLOTS	M.2 2280 M slot provides the following interfaces: PCI-Express Gen 3.0 X4 (supports NVMe), SATA v3.0 (6 GB/s) interface 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. M.2 2230 E slot provides the following interfaces: PCI-Express v2.0 X1, USB 2.0 interface Supports M.2 cards with a width of 22 mm and a length of 30 mm (type 2230) Supports WLAN extension cards (optional WLN-M/M1 accessory)
AUDIO	Realtek® ALC 897/662/888S HD audio Two analog audio connectors (3.5 mm) on the front panel: 2 channel line-out (headphones), Microphone input Digital multi-channel audio output (HDMI and DisplayPort)
DUAL LAN CONTROLLER	Dual network with two RJ45 ports with LEDs: 1) Intel 225 supports 100/1000/2500 MB/s data transfer rate 2) Intel 219V/LM supports 10/100/1000 MB/s data transfer rate Supports Wake-on-LAN and Teaming Mode Supports network boot by Preboot eXecution environment (PXE)

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INTEGRATED GRAPHICS	<p>Integrated Intel UHD graphics function features depend on the processor type used [5]*</p> <p>This model has three video outputs which support 1080p/60 and 2160p/60 HDMI 2.0b x 1 DisplayPort 1.4 x 2</p> <p>Supports displays with 4K Ultra HD resolution at 3840 x 2160 Supports three independent displays with integrate graphics function DisplayPort and HDMI support multi-channel digital audio over the same cable Optional analog VGA video output [4]*</p>	
SATA CONNECTORS	<p>The mainboard provides one Serial-ATA III interface, max 6GB/s supported Serial-ATA power connector (onboard)</p>	
FRONT PANEL CONNECTORS	<p>Microphone input Headphone output (line-out) 1 x USB 3.2 Gen 1 (Type-A) 1 x USB 3.2 Gen 1 (Type-C) 2 x USB 2.0 (Type-A)</p>	<p>Power button Power indicator (Blue LED) Hard disk drive indicator (Yellow LED)</p>
BACK PANEL CONNECTORS	<p>HDMI 2.0b [1]* DisplayPort 1.4 x 2 [2]* VGA connector (optional PVG01) [4]* USB 3.2 Gen 1 x 2 (Type-A) USB 2.0 x 2 Kensington Lock x 2</p>	<p>Clear CMOS button RJ45 LAN port x 2 (1G + 2.5G) WLAN antenna holes x 2 RS232 x 2 (1 x RS422/RS485) [3]* DC-input connector for external power adapter (19V±5%)</p>
OTHER CONNECTORS (ONBOARD)	<p>Analog VGA graphics (2x10 pin) [4]* RS232 COM port x 2 Connector for CMOS battery</p>	<p>Fan connectors x 1 (4 pin), one occupied by cooling system Power on after power failure (hardware solution by jumper) [7]* USB 2.0 x 1 (4-pin) for optional WWN03 (LTE kit)</p>
INCLUDED ACCESSORIES	<p>XPC installation guide Driver DVD (Windows 64-bit) SATA and power cables Heatsink compound</p>	<p>External 120W power adapter with cord VESA mount (75/100mm standard) Screw packs Protector cap for CPU socket (don't use if heatpipe/fan is mounted)</p>
OPTIONAL ACCESSORIES	<p>VGA port adapter (PVG01) [4]* WLN-M/M1 (WLAN module) Vertical stand (PS02)</p>	<p>2U rack mount front plate for two slim PCs (PRM01) Adapter cable for external power button (CXP01) DIN-Rail mounting kit (DIR01)</p>
ENVIRONMENTAL CRITERIA	<p>Operating temperature: 0 - 50°C [6]*</p>	<p>Humidity: 10 - 90% (non-condensing)</p>
CERTIFICATIONS	<p>EMI: FCC, CE, BSMI, RCM, VCCI Safety: ETL, CB, BSMI</p>	<p>Other: RoHS, Energy Star, ErP</p>
	<p>This model is classed as a technical information equipment (ITE) in class B and is intended for use in living rooms and offices. The CE mark approves 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 eco-design requirements for energy related products (ErP)</p>	

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[1] HDMI OUTPUT

HDMI output supports DVI-D with optional adapter

[2] HOW TO CONVERT DISPLAYPORT TO HDMI/DVI

The DisplayPort output can be converted into a HDMI or DVI output using an additional passive adapter cable.

The integrated graphics automatically detects the connected display and outputs the appropriate electric signal - either 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] SERIAL PORTS

This PC features two serial RS232 ports with 9 pin D-sub connectors on the back panel (pin 9 is a multi-functional signal). The left COM1 port can also be configured as RS422 and RS485 in the BIOS setup. Based on the Jumper JP1 configuration on the mainboard, it can be configured as Ring Indicator (RI) or external power supply with a voltage level of either 5V or 12V (each COM port can be configured separately; the maximum current is 500 mA per connector).

[4] OPTIONAL VGA CONNECTOR

The mainboard features one analog graphics port (CN6). This 15 pin D-sub connector can be lead to the outside of the back panel by using an optional adapter PVG01. Doing so will occupy one serial port (COM) on the back panel, the integrated graphics supports a maximum of four displays simultaneously.

[5] INTEL PROCESSORS WITHOUT INTEGRATED GRAPHICS

Processors ending in F (ie Core i7-12700F) are not compatible

[6] HIGH AMBIENT TEMPERATURE

For high ambient temperature over 40°C, SSDs are strongly recommended instead of hard disk drives (supporting at least 70°C) and rugged SODIMM memory modules for temperature ranges 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 behavior after a power failure: (1) unconditional power on, (2) restore former status, or (3) keep system turned off. This function may fail after short power failures, but the DH610 comes with a hardware based solution in these cases. By removing the 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 M.2 SSD will have to be used as mass storage device. The LTE/4G card in M.2 3042 format and an activated Nano SIM card is not included in scope of delivery.

[9] TPM FUNCTION

This product has Firmware-TPM (fTPM) v2.0. It is prepared for a hardware TPM chip, which can be fitted on request if required.

BIOS DOWNLOADS: <http://global.shuttle.com/products/productsDownload?productId=2677>

SUPPORT LIST: <http://global.shuttle.com/products/productsSupportList?productId=2677>

FAQ LIST: <http://global.shuttle.com/support/faq>

PRODUCT WARRANTY: <https://us.shuttle.com/barebone-support/policy-xpc-barebone/>

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DH410 vs DH610

SLIM PC



MODEL	DH410	DH610
CHIPSET	Intel H410	Intel H610
PROCESSOR SUPPORT	LGA 1200, max TDP 65W 14nm Comet Lake-S (10th Gen Core CPU) Intel® Core™ i3/i5/i7/i9, Pentium, Celeron	LGA 1700, max TDP 65W Alder Lake-S (12th Gen Core CPU) Intel® Core™ i3/i5/i7/i9, Pentium, Celeron
MEMORY	2 x 32GB DDR4 2666/2933 MHz max	2 x 32GB DDR4 3200/2666 MHz max
VIDEO OUTPUT	HDMI 2.0a + DisplayPort 1.2, Supports dual displays, Supports 4K Ultra HD	HDMI 2.0b + DisplayPort 1.4 x 2, Supports triple displays, Supports 4K Ultra HD
AUDIO	Realtek AL662, 5.1 channel HD audio	Realtek AL662/897/888S, HD audio
ETHERNET	Intel i210-AT x 2 10/100/1000 MB/s operation Supports Wake-on-LAN function Supports Teaming mode	Intel 225 (2.5G) + Intel 219V/LM (1G) 10/1000/2500 MB/s operation (225) 10/100/1000 MB/s operation (219V/LM) Supports Wake-on-LAN function Supports Teaming Mode
SATA ONBOARD	SATA 6G x 1	SATA 6G x 1
FRONT PANEL	Power button with LED, HDD LED, MIC-in, Headphone out, SD Card Reader, USB 3.2 Gen 1 x 2, USB 2.0 x 2	Power button with LED, HDD LED, MIC-in, Headphone out, USB 3.2 Gen 1 x 2 (Type-C x 1, Type-A x 1), USB 2.0 x 2 (Type-A)
BACK PANEL	HDMI 2.0a x 1, DisplayPort 1.2 x 1, optional VGA x 1 USB 3.2 Gen 1 x 2, USB 2.0 x 2 Gigabit LAN (Intel i211) x 2 RS232 + RS232/RS422/RS485 WLAN antenna x 2 (optional) Clear CMOS button Kensington Lock x 2	HDMI 2.0b, DisplayPort 1.4 x 2, optional VGA x 1 USB 3.2 Gen 1 x 2 (Type-A), USB 2.0 x 2 (Type-A) RJ45 LAN x 2 (1G + 2.5G) RS232 + RS232/RS422/RS485 WLAN antenna x 2 (optional) Clear CMOS button Kensington Lock x 2
DRIVE BAYS	(1) 2.5" HDD/SSD bay	(1) 2.5" HDD/SSD bay
OPTIONAL ACCESSORIES	Vertical Stand (PS02) Optional VGA adapter (PVG01) WLAN kit (WLN-M) Cable for external power button (CXP01) 2U rack mount front plate for two slim PCs (PRM01) DIN-Rail mounting kit (DIR01)	Vertical Stand (PS02) Optional VGA adapter (PVG01) WLAN kit (WLN-M/M1) Cable for external power button (CXP01) 2U rack mount front plate for two slim PCs (PRM01) DIN-Rail mounting kit (DIR01)
EXPANSION SLOT	M.2 2280 M slot M.2 2230 E slot, Supports optional WLAN	M.2 2280 M slot M.2 2230 E slot, Supports optional WLAN
OS SUPPORT	Windows 10, Linux 64 bit	Windows 10/11, Linux 64 bit

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12th Generation Intel Core Desktop Processors (LGA 1700 10 nm Alder Lake-S)

Processors with a TDP > 65W and without graphics function are not supported (marked in red)

Name	Model	P-Cores/ Threads	P-Cores Clock/Turbo	E-Cores	E-Cores Clock/Turbo	Smart Cache	Base TDP	Memory Support	Graphics (Max Clock)
Core i9	12900K	8 / 16	3.2 - 5.1 GHz	8	2.4 - 3.9 GHz	30 MB	125W	DDR4-3200	UHD 770 (1.55 GHz)
	12900KF	8 / 16	3.2 - 5.1 GHz	8	2.4 - 3.9 GHz	30 MB	125W	DDR4-3200	None
	12900	8 / 16	2.4 - 5.0 GHz	8	1.8 - 3.8 GHz	30 MB	65W	DDR4-3200	UHD 770 (1.55 GHz)
	12900F	8 / 16	2.4 - 5.0 GHz	8	1.8 - 3.8 GHz	30 MB	65W	DDR4-3200	None
	12900T	8 / 16	1.4 - 4.8 GHz	8	1.0 - 3.6 GHz	30 MB	35W	DDR4-3200	UHD 770 (1.55 GHz)
Core i7	12700K	8 / 16	3.6 - 4.9 GHz	4	2.7 - 3.8 GHz	25 MB	125W	DDR4-3200	UHD 770 (1.5 GHz)
	12700KF	8 / 16	3.6 - 4.9 GHz	4	2.7 - 3.8 GHz	25 MB	125W	DDR4-3200	None
	12700	8 / 16	2.1 - 4.9 GHz	4	1.6 - 3.6 GHz	25 MB	65W	DDR4-3200	UHD 770 (1.5 GHz)
	12700F	8 / 16	2.1 - 4.9 GHz	4	1.6 - 3.6 GHz	25 MB	65W	DDR4-3200	None
	12700T	8 / 16	1.4 - 4.6 GHz	4	1.0 - 3.4 GHz	25 MB	35W	DDR4-3200	UHD 770 (1.5 GHz)
Core i5	12600K	6 / 12	3.7 - 4.9 GHz	4	2.8 - 3.6 GHz	20 MB	125W	DDR4-3200	UHD 770 (1.45 GHz)
	12600KF	6 / 12	3.7 - 4.9 GHz	4	2.8 - 3.6 GHz	20 MB	125W	DDR4-3200	None
	12600	6 / 12	3.3 - 4.8 GHz	-	-	18 MB	65W	DDR4-3200	UHD 770 (1.45 GHz)
	12600T	6 / 12	2.1 - 4.6 GHz	-	-	18 MB	35W	DDR4-3200	UHD 770 (1.45 GHz)
	12500	6 / 12	3.0 - 4.6 GHz	-	-	18 MB	65W	DDR4-3200	UHD 770 (1.45 GHz)
	12500T	6 / 12	2.0 - 4.4 GHz	-	-	18 MB	35W	DDR4-3200	UHD 770 (1.45 GHz)
	12400	6 / 12	2.5 - 4.4 GHz	-	-	18 MB	65W	DDR4-3200	UHD 730 (1.45 GHz)
	12400F	6 / 12	2.5 - 4.4 GHz	-	-	18 MB	65W	DDR4-3200	None
	12400T	6 / 12	1.8 - 4.2 GHz	-	-	18 MB	35W	DDR4-3200	UHD 730 (1.45 GHz)
Core i3	12300	4 / 8	3.5 - 4.4 GHz	-	-	12 MB	60W	DDR4-3200	UHD 730 (1.45 GHz)
	12300T	4 / 8	2.3 - 4.2 GHz	-	-	12 MB	35W	DDR4-3200	UHD 730 (1.45 GHz)
	12100	4 / 8	3.3 - 4.3 GHz	-	-	12 MB	60W	DDR4-3200	UHD 730 (1.45 GHz)
	12100F	4 / 8	3.3 - 4.3 GHz	-	-	12 MB	58W	DDR4-3200	None
	12100T	4 / 8	2.2 - 4.1 GHz	-	-	12 MB	35W	DDR4-3200	UHD 730 (1.40 GHz)
Pentium Gold	G7400	2 / 4	3.7 GHz	-	-	6 MB	46W	DDR4-3200	UHD 710 (1.35 GHz)
	G7400T	2 / 4	3.1 GHz	-	-	6 MB	35W	DDR4-3200	UHD 710 (1.35 GHz)
Celeron	G6900	2 / 2	3.4 GHz	-	-	4 MB	46W	DDR4-3200	UHD 710 (1.3 GHz)
	G6900T	2 / 2	2.8 GHz	-	-	4 MB	35W	DDR4-3200	UHD 710 (1.3 GHz)

K = unlocked, T = power optimized, F = without integrated graphics (requires discrete graphics card), TDP = thermal design power.

P-Cores = Performance Cores, E-Cores = Efficient Cores, Core Clock = base frequency to turbo frequency

The DH610 does not support the unlock function of Intel K-series processors.

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