DS20U Series

SLIM PC

PROCESSOR	Intel® Comet Lake-U Celeron® 5205U 15W CPU i3-10110U/i5-10210U/i7-10510U (optional)
MEMORY	2 x 260 pin DDR4 2400/2666 MHz SODIMM slots*, Supports dual channel up to 64GB (32GB x 2)
VIDEO GRAPHICS	Intel Ultra HD graphics
VIDEO OUTPUT	HDMI 2.0a + DisplayPort 1.2 + VGA, Supports triple independent displays
AUDIO	Realtek ALC897/ALC662, 2 channel HD audio
ETHERNET	Intel i211 and i219LM 10/100/1000 MB/s operation Supports Wake on LAN function
STORAGE INTERFACE	SATA III 6 GB/s
ONBOARD CONNECTORS	(1) External 4 pin header (1) RS232 voltage switch (1) Auto power on jumper (2) 2.5 inch SATA connector (1) USB 2.0 header
FRONT PANEL	(1) Power Button (4) USB 2.0 (1) Power LED (2) USB 3.2 Gen 2 (Celeron 5205U is Gen 1)** (1) HDD LED (1) SD Card Reader (1) MIC in (1) Headphone out
BACK PANEL	(1) HDMI 2.0a (1) External 4 pin header (clear CMOS/power switch/5V) (1) DisplayPort 1.2 (2) Wireless Antenna fixture (1) VGA (1) DC-in (2) RJ45 Gigabit LAN (1) Kensington Lock (2) USB 3.2 Gen 2 (Celeron 5205U is Gen 1) (1) RS232/RS422/RS485
DRIVE BAYS	(1) 2.5" HDD/SSD bay
DIMENSIONS	7.9(L) x 6.5(W) x 1.5(H) inches
POWER	Input: 100 - 240V AC 65W 19V power supply Output: 19V/3.42A or 12V/5.42A DC DC-in supports 12V and 19V
ACCESSORIES	Quick Guide VESA mount Screw pack VESA mount screws 65W power adapter Vertical Stand Power cord Driver DVD
EXPANSION SLOT	(1) M.2 2280 Type BM (1) M.2 2230 Type E key socket
OS SUPPORT	Windows 10, Linux

*Memory supported depends on CPU: Celeron supports 2400 MHz, U3/U5/U7 supports 2666 MHz
**DS20U with Celeron processor supports USB 3.2 Gen 1 (blue connector) only

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CHASSIS	Black slim type metal chassis Bays for memory, 2.5" drive, and M.2 card easily accessed by removing two cover plates Kensington lock slots on the sides as part of anti-theft system Dimensions: 7.9 (L) x 6.5 (W) x 1.6 (H) inches Weight: 3.3 LBS (net) / 4.9 LBS (gross)
MAINBOARD AND CHIPSET	Shuttle mainboard FS20 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 EEPROM Supports Firmware-TPM (fTPM) v2.0 Supports boot up from M.2 SSD cards and USB devices Supports Unified Extensible Firmware Interface (UEFI) Supports resume after power failure [6]* Supports Wake-on-LAN (WOL), Power on by RTC alarm
POWER SUPPLY	External 65W power adapter (fanless), DC-input supports 12V±5% or 19V±5% power source AC input voltage: 100 - 240V, 50/60 Hz, max. 1.6A Output: 19V DC 3.42A, max 65W DC cable length: 67 inches, 5.5/2.5 mm (outer/inner diameter) AC cable length: 67 inches
OPERATING SYSTEM	The system comes without an operating system installed. Compatibility: Windows 10, Linux 64bit
PROCESSOR SUPPORT	Intel® Celeron® 5205U processor (ULV), Core i3/i5/i7 options available (i3-10110U/i5-10210U/i7-10510U) System-on-a-chip architecture (SoC), Integrated memory and graphics controller (no chipset required) Comet Lake-U (10th Generation Intel® Core™) directly soldered onto the mainboard Max supported processor power consumption (TDP): 15W 14nm process technology, up to 2 cores and 2 threads L1/L2/L3 cache: 128KB/512KB/2048 KB, Clock rate 1.9 GHz Supports 64-bit, VT-x (EPT), VT-d, Enhanced SpeedStep, NX bit, AES-NI, SSE 4.1/4.2 Please refer to the support list for more detailed processor information at global.shuttle.com
SYSTEM COOLING	Passive cooling, fanless and dust free Perfect for noise sensitive environments
MEMORY SUPPORT	2 x 260 pin SODIMM slots Supports DDR4 2400 MHz memory (PC4-19200) SDRAM at 1.2V (Memory supported depends on CPU: Celeron supports 2400 MHz, U3/U5/U7 supports 2666 MHz) Supports Dual Channel mode Supports a max. of 32GB per DIMM, up to 64GB total Supports two unbuffered DIMM modules (no ECC or registered)
2.5" DRIVE BAY	1 x 2.5" drive bay supports one SATA hard disk or SSD drive (2.5" format), max height 12.5 mm Supports Serial-ATA III, 6 GB/s (600MB/s) bandwidth Supports Unified Extensible Firmware Interface (UEFI) No serial ATA cable is required, power consumption in idle mode 6W (under Windows 10)
M.2 SLOT FOR SSD	M.2 2280 BM slot provides the following interfaces: -PCI-Express Gen 2.0 X4 -SATA v3.0 (max. 6GB/s) Supports M.2 cards with a width of 22 mm and length of 42/60/80 mm (type 2242, 2260, 2280) Supports M.2 SSDs (with BM key) and M.2 PCI-E NVMe SSDs (with M key)
WIRELESS NETWORK	2 x pre-installed antenna cables (WLAN card and antennas not included) Prepared for installation of M.2 2242 WLAN card and two external antennas
M.2 2230E SLOT FOR WLAN	PCI-Express Gen 2.0 X1 and USB 2.0 Supports WLAN expansion cards (optional accessory WLN-M) Supports M.2 cards with a width of 22 mm and length of 30 mm (type 2230)

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INTEGRATED GRAPHICS	Intel UHD Graphics GPU clock frequency: 300 - 900 MHz, Execution Units (EUs): 12 Supports DirectX 12, OpenGL 4.5, full H264, H265 8/10 bit, VP 8/9, VC-1, AVC hardware decoding Supports Quick Sync Video and Clear Video HD technology Supports up to three independent displays: 1) DisplayPort 1.2 supports Ultra HD (60 Hz) 2) HDMI 2.0a supports Ultra HD (60 Hz) 3) VGA supports analog displays
MULTI-CHANNEL AUDIO	Realtek ALC 897 or 662 High Definition Audio, Digital multi-channel audio output via HDMI and DisplayPort Two analog audio connectors (3.5 mm) on the back panel: 1) 2 channel line out (headphones) 2) Microphone input
GIGABIT LAN CONTROLLER	Dual network with two RJ45 ports, used network chips: Intel i211 Ethernet Controller with MAC, PHY, and PCIe interface Intel i219LM PHY connected to the MAC of the processor Supports 10/100/1000 MB/s operation Supports Wake-on-LAN (WOL), Supports Teaming mode [3]* Supports network boot by Preboot eXecution environment (PXE)
SATA CONNECTORS	The mainboard provides one Serial-ATA III interface, max 6GB/s supported Serial-ATA power connector (onboard)
CARD READER	Integrated card reader supports SD, SDHC, SDXC memory flash cards
FRONT PANEL CONNECTORS	Microphone input Headphone output (line-out) 2 x USB 3.2 Gen 1 4 x USB 2.0 Power button Power indicator (Blue LED) Hard disk drive indicator (Yellow LED) SD Card Reader
BACK PANEL CONNECTORS	HDMI 2.0a DisplayPort 1.2 [7]* VGA port USB 3.2 Gen 1 x 2 (max 5 GB/s) Serial COM port (5V/12V, switchable to RS232/RS422/RS485) [1]* DC-input connector for external power adapter 4-pin connector for power button, Clear CMOS, 5V DC [4]* RS232 x 2 (1 x RS422/RS485)
ALWAYS-ON-JUMPER	By removing Jumper J9 (refer to quick guide), the system will start once power is applied [6]*
INCLUDED ACCESSORIES	XPC installation guide Driver DVD Screw packs VESA mount (75/100mm standard) External 65W power adapter with power cord Stand with screws
OPTIONAL ACCESSORIES	Cable for second COM port (PCP11) Cable for external power button (CXP01) Mounting kit for 35mm DIN-rail (DIR01) 2U rack mount front plate for two slim PCs (PRM01) LTE adapter kit for 2.5" bay w/ two antennas (WWN03) [2]* WLAN module w/ antennas and cables (WLN-M)
ENVIRONMENTAL CRITERIA	Operating temperature: 0 - 40°C [5]* Humidity: 10 - 90% (non-condensing)
OPERATING POSITION	Vertical: Usual operating position with supplied stand (DisplayPort facing up) VESA mounted: Can be mounted behind monitor with supplied kit Horizontal operation can be used but there are no rubber feet on the device (max operating temperature would be 35°C in that case)
CERTIFICATIONS	EMI: FCC, CE, BSMI, RCM, VCCI Safety: CB, BSMI, cTUVus Other: RoHS, Energy Star, ErP 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) 2014/30/EU relating to electromagnetic compatibility (EMC) (2) 2014/35/EU 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)

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DS20U Series

[1] JUMPER FOR COM PORT CONFIGURATION

Pin 9 of the COM port is a multi-functional signal. Based on the Jumper JP1 configuration on the mainboard, it can be configured as a Ring Indicator (RI) or external power supply with a voltage of either 5V or 12V. Each COM port can be configured separately (the operating mode of COM1 can be set to RS232, RS422, or RS485 in the BIOS). The second COM port (COM2) supports RS232 mode only and is only available as an onboard connector on the mainboard. An appropriate adapter (ie the optional accessory PCP11) is required in order to use this port as a D-sub connector on the back panel (the VGA port cannot be used in this case).

[2] LTE ADAPTER KIT WWN03

If the LTE adapter kit WWN03 is used, the 2.5" bay cannot be used for SATA drives (2.5" HDD/SSD). An SSD card using the M.2 2280 format must be used instead.

[3] TEAMING MODE

The teaming function allows for grouping both available network adapters to work as a single adapter. The benefit is that it enables load balancing and failover.

[4] FOUR-PIN HEADER ON BACK PANEL

This header allows for connecting an external power button and also provides 5V DC voltage for external devices and the Clear CMOS function (optional accessory cable CXP01 is needed for external power button).

[5] HIGH AMBIENT TEMPERATURE

For high ambient temperatures over 35°C, SSDs are strongly recommended instead of hard disk drives

[6] 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 DS20U comes with a hardware based solution in these cases. By removing the Jumper J9 on the mainboard (behind the power button), the system will start unconditionally once power is supplied.

[7] 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.

BIOS DOWNLOADS: https://global.shuttle.com/products/productsDownload?productId=2537
SUPPORT LIST: https://global.shuttle.com/products/productsSupportList?productId=2537
FAQ LIST: http://global.shuttle.com/support/faq
PRODUCT WARRANTY: https://us.shuttle.com/barebone-support/policy-xpc-barebone/

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DS20U Series

SLIM PC

Front View

1	USB 3.2 Gen 1 x 2	**5**	Power Button
2	USB 2.0 x 4	**6**	SD Card Reader
3	Power LED	**7**	Microphone in
4	Hard Disk LED	**8**	Headphone out

Back View
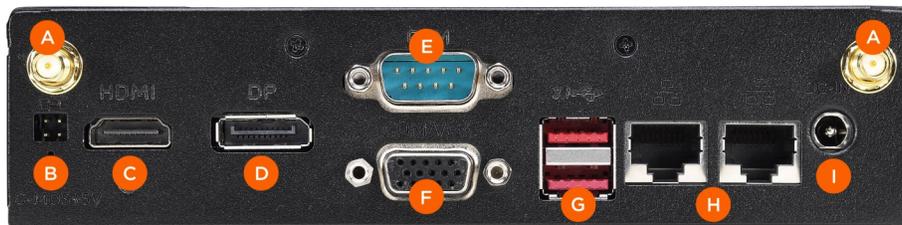
A	WLAN antenna fixture	**F**	VGA output
B	Clear CMOS	**G**	USB 3.2 Gen 1 x 2
C	HDMI 2.0a video output	**H**	RJ45 Gigabit LAN x 2
D	DisplayPort 1.2 output	**I**	DC-in
E	RS232/RS422/RS485		

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DS20U Series
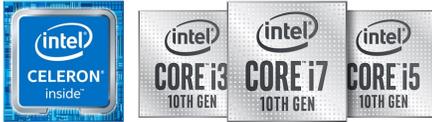
INTEL® 10TH GENERATION PROCESSOR

The DS20U is equipped with an Intel® Celeron® 5205U dual core processor (Core® i3/i5/i7/i9 options available*). Support for up to 64GB DDR4 2400/2666 MHz memory** and integrated UHD graphics provide better efficiency and graphics performance.

*Core i3-10110U/i5-10210U/i7-10510U processor options available
**Memory supported depends on CPU: Celeron supports 2400 MHz, U3/U5/U7 supports 2666 MHz

VESA MOUNTABLE

The DS20U series is VESA mount compliant and allows for versatile integration into hardware systems. This space saving capability is well suited for digital signage and kiosk applications with limited space.

WIFI

GIGABIT LAN AND WIRELESS OPTIONS

The DS20U series features built-in dual Intel Gigabit LAN and can support 802.11 AC Wi-Fi + Bluetooth and an optional 4G LTE adapter kit (WWN03)* at the same time.

*If the WWN03 accessory kit is used, it will occupy the 2.5" HDD rack

4K ULTRA HD EXPERIENCE WITH HDMI 2.0

The DS20U features one HDMI 2.0a, DisplayPort 1.2, and VGA output to support 4K resolution at a maximum of 60 FPS for triple independent displays, supporting resolutions up to 4096 x 2160/3840 x 2160 (the VGA port can be used simultaneously).

FANLESS DESIGN

With a passive thermal cooling system, the fanless design reduces power consumption required by a fan. Use with solid state disks for an operational platform completely free of noise.

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DS20U Series

ACCESSORY	CXP01
DESCRIPTION	Connector for an external power button, includes fitting connection
PORTS	Dual header connector, 2.54mm pitch Two female crimp contact pins, tin-plated Outer Diameter: 6.5 mm Two-pole cable: 2 x 0.34 mm
REMARKS	Cable provides tin-plated leads for a push button switch Connection to the external power button can be screw-type
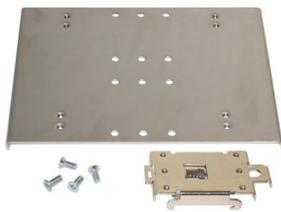
ACCESSORY	DIR01
DESCRIPTION	The DIR01 accessory allows the installation of a 1 liter slim PC on a standard 35 mm DIN rail (100 x 100 mm VESA mount is
COMPATIBILITY	DX30, DL10J, DS61, DS81, DH110, DH110SE, DH170, DQ170, DH270, DH310, DH310s, DH370, DH410, DH470, DH02U, DS10U, DS20U, etc

ACCESSORY	PS02
DESCRIPTION	The PS02 stand is required for placing 1.3L slim PC models into a vertical orientation.
COMPATIBILITY	DX30, DL10J, DS61, DS81, DH110, DH110SE, DH170, DQ170, DH270, DH310, DH370, DH410, DH470, DH02U, DS10U, DS20U, DL20N, etc

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 n/ac at 2.4/5
REMARKS	M.2 2230 (NGFF) WLAN card, Antenna cable (XPC slim) x 2, Antenna
OS SUPPORT	Windows 7, Windows 8.1, Windows 10, Linux (32/64 bit)

ACCESSORY	WWN03
DESCRIPTION	The WWN03 accessory kit allows the DS10U series to be upgraded with a 4G/LTE function for mobile network.
REMARKS	If this accessory kit is installed, it will occupy the 2.5" HDD rack; a M.2 SSD will have to be used for storage instead. Only Nano SIM (12.3 mm x 8.8 mm) cards are compatible with this kit.

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DS20U vs DS10U

SLIM PC

MODEL	DS20U	DS10U
PROCESSOR	Intel® Celeron® 5205U	Intel® Celeron® 4205U
PROCESSOR SUPPORT	max TDP 15W 14nm Comet Lake-U (10th Gen Core CPU) Intel® Core™ i3/i5/i7 (i3-10110U/i5-10210U/i7-10510U options)	LGA 1151v2, max TDP 65W 14nm++ Whiskey Lake-U (8th Gen Core CPU) Intel® Core™ i3/i5/i7 (i3-8145U/i5-8265U/i7-8565U options)
MEMORY	2 x 32GB DDR4 2400/2666 MHz max*	2 x 16GB DDR4 2133/2400 MHz max
VIDEO OUTPUT	HDMI 2.0a x 2 + DisplayPort 1.2 + VGA, Supports triple displays, Supports 4K Ultra HD, Intel HD graphics	HDMI 2.0a + DisplayPort 1.2 + VGA, Supports triple displays, Supports 4K Ultra HD, Intel 610/620 graphics
AUDIO	Realtek ALC897/ALC662, HD audio	Realtek ALC662, HD audio
ETHERNET	Intel i211 + i219LM 10/100/1000 MB/s operation Supports Wake on LAN function Supports Teaming mode Optional WLAN (pre-mounted antenna cables)	Intel i211 + i219LM 10/100/1000 MB/s operation Supports Wake on LAN function Supports Teaming mode Supports 802.11 ac
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 2 x 2**, USB 2.0 x 4	Power button with LED, HDD LED, MIC-in, Headphone out, SD Card Reader, USB 3.2 Gen 2 x 2**, USB 2.0 x 4
BACK PANEL	HDMI 2.0a x 2, DisplayPort 1.2 USB 3.2 Gen 2 x 2** Gigabit LAN x 2 COM x 1 (RS232/RS422/RS485) WLAN antenna x 2 (optional) Clear CMOS button Kensington Lock x 2	HDMI 2.0a, DisplayPort 1.2, VGA USB 3.1 Gen 2 x 2**, USB 2.0 x 4 Gigabit LAN (Intel i211) x 2 COM x 1 (RS232/RS422/RS485) WLAN antenna x 2 Clear CMOS button Kensington Lock x 2
DRIVE BAYS	(1) 2.5" HDD/SSD bay (12.5 mm max height)	(1) 2.5" HDD/SSD bay (12.5 mm max height)
OPTIONAL ACCESSORIES	Cable for external power button (CXP01) DIN Rail mounting kit (DIR01) 2U rack mount front plate for two slim PCs (PRM01) COM port adapter (PCP11) LTE Adapter Kit (WWN03) WLAN kit with external antennas (WLN-M)	Cable for external power button (CXP01) DIN Rail mounting kit (DIR01) 2U rack mount front plate for two slim PCs (PRM01) COM port adapter (PCP11) LTE Adapter Kit (WWN03)
EXPANSION SLOT	M.2 2280 BM slot M.2 2230 AE 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, Linux 64 bit

*Memory supported depends on CPU: Celeron supports 2400 MHz, U3/U5/U7 supports 2666 MHz
**DS10U and DS20U with Celeron processor supports USB 3.2 Gen 1 (blue connector) only

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