15.6” All-in-One PC for POS, POI and Kiosk Applications

Shuttle’s range of All-in-One PCs yet comprises models with three different screen sizes: 11.6", 15.6" and 19.5". The Shuttle XPC all-in-one P51U with a capacitive 15.6" multitouch screen offers Full HD resolution. An Intel Ultra-Low-Voltage (ULV) processor makes for high computing power while it keeps energy consumption at a low level. Thanks to its passive cooling, the system is virtually noiseless, maintenance-free and approved for 24/7 nonstop operation. Particularly suitable for vertical applications is the arrangement of connectors at the bottom and the IP54 compliant front panel which is dust-protected and protected from splashing of water.

Feature Highlights

All-in-One Design	• All-in-one PC • Stand can also be used as a handle • 100 mm VESA mount capable • IP54-compliant front panel • Approved for 24/7 nonstop operation
Display & Graphics	• 39.6 cm (15.6”) Full HD IPS display (1920x1080) • Capacitive 10-point multitouch display • Intel HD 610 graphics with HDMI 1.4b and VGA
CPU & Cooling	• Intel Celeron 4205U, Dual Core, 15 W TDP Intel ULV “Whiskey-Lake-U” Generation • Fanless cooling system
Storage (not included)	• Supports max. 2x 32 GB DDR4 SO-DIMM • Supports one 2.5" SATA HDD / SSD ≤9.5 mm • Supports one M.2-2280 SSD (SATA / PCIe) • Supports internal USB stick (USB 2.0, type A)
Operating System	• Operating system is not included • Supports Windows 10 (64-bit) & Linux (64-bit)
Connectivity	• HDMI 1.4b, D-Sub/VGA, 2x USB 3.0, 4x USB 2.0 • Gigabit LAN, 2x Audio (Mic / Headphones) • 2x RS232, internal USB 2.0 type A port
Built-in	• Wireless LAN 802.11ac (1T1R), Bluetooth 4.2 • SD card reader, 1080p Full HD webcam • 2x 2W speakers and microphone
Optional Accessories	• Two additional COM ports • WLAN / Bluetooth with two external antennas • Integrated NFC module (on request only)
Power Supply	• External fanless power adapter, 65 W
Warranty	• 24 months Bring-in Service

XPC all-in-one Barebone

P51U Black





Images for illustration purposes only.



15.6” Multitouch



Nonstop operation



Fanless cooling



Front protected from dust & water



Two COM ports



Supports Windows 10 & Linux (64-bit)



Wireless and Wired Network



2x USB 3.0 4x USB 2.0



Internal USB-Port



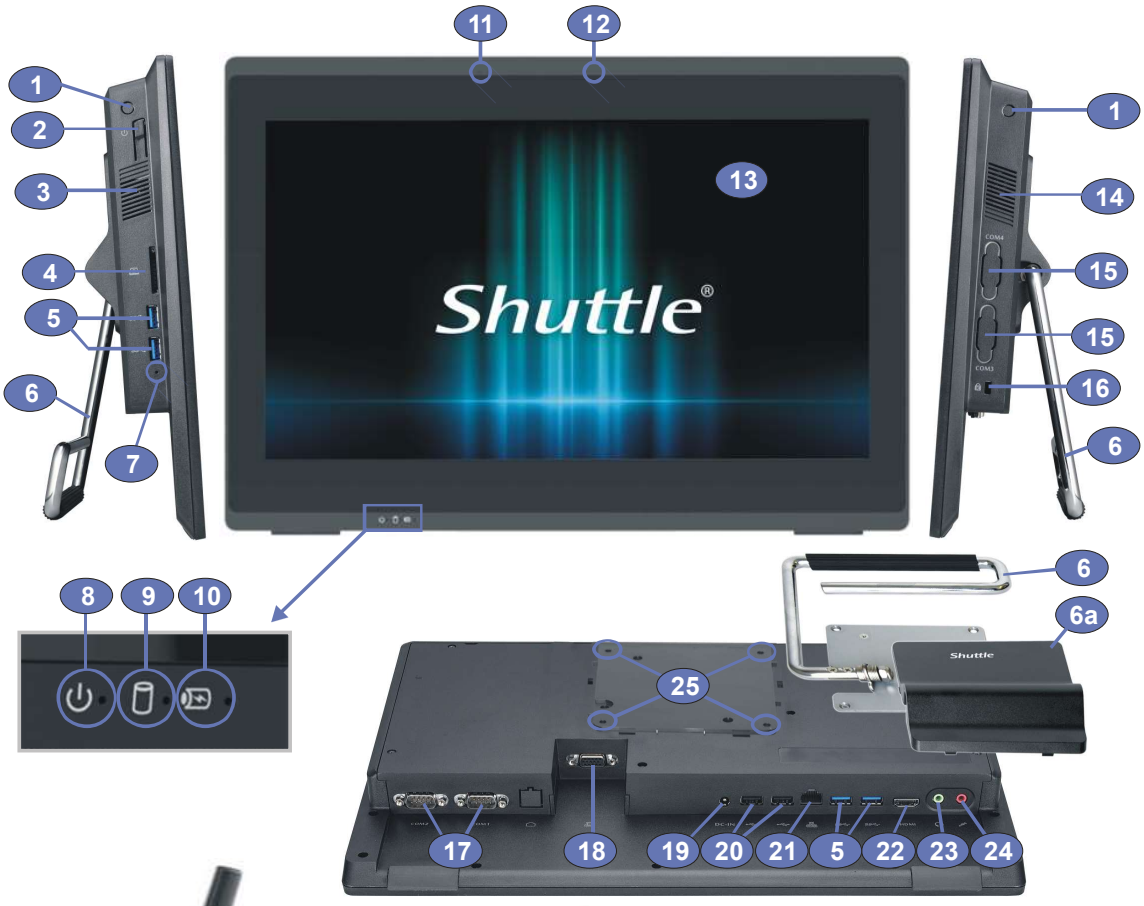
Produkt	Farbe	Prozessor
P51U	Schwarz	Celeron 4205U
P51U3	Schwarz	Core i3-8145U

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Shuttle XPC all-in-one P51U – Overview



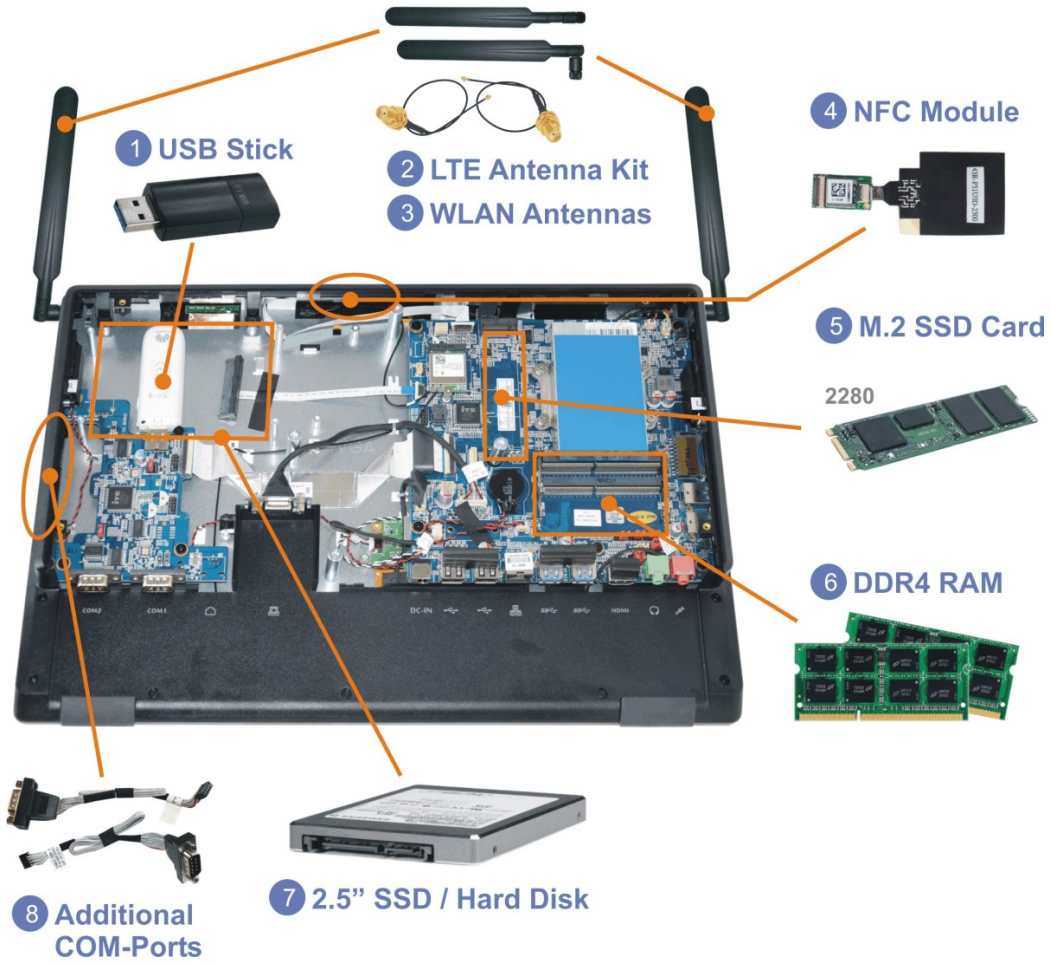


1	2x Perforation for optional LTE antennas
2	Power button
3	Speaker (left)
4	Card reader
5	4x USB 3.0 port (= USB 3.1 Gen 1)
6	Stand
6a	Cover for stand
7	Hole for Clear CMOS button
8	Power LED (blue)
9	Storage LED (orange)
10	Battery LED (red)
11	Microphone
12	Webcam
13	LCD Touchscreen
14	Speaker (right)
15	2x Serial COM port (optional)
16	Hole for Kensington Lock
17	2x Serial COM port
18	D-Sub/VGA output
19	DC-input (for power adapter)
20	2x USB 2.0 port
21	Gigabit LAN port
22	HDMI 1.4b output
23	Audio Line-out (headphones)
24	Microphone input
25	Screw holes for VESA mount
26	Optional LTE antennas
27	Optional NFC module area

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Installable Components

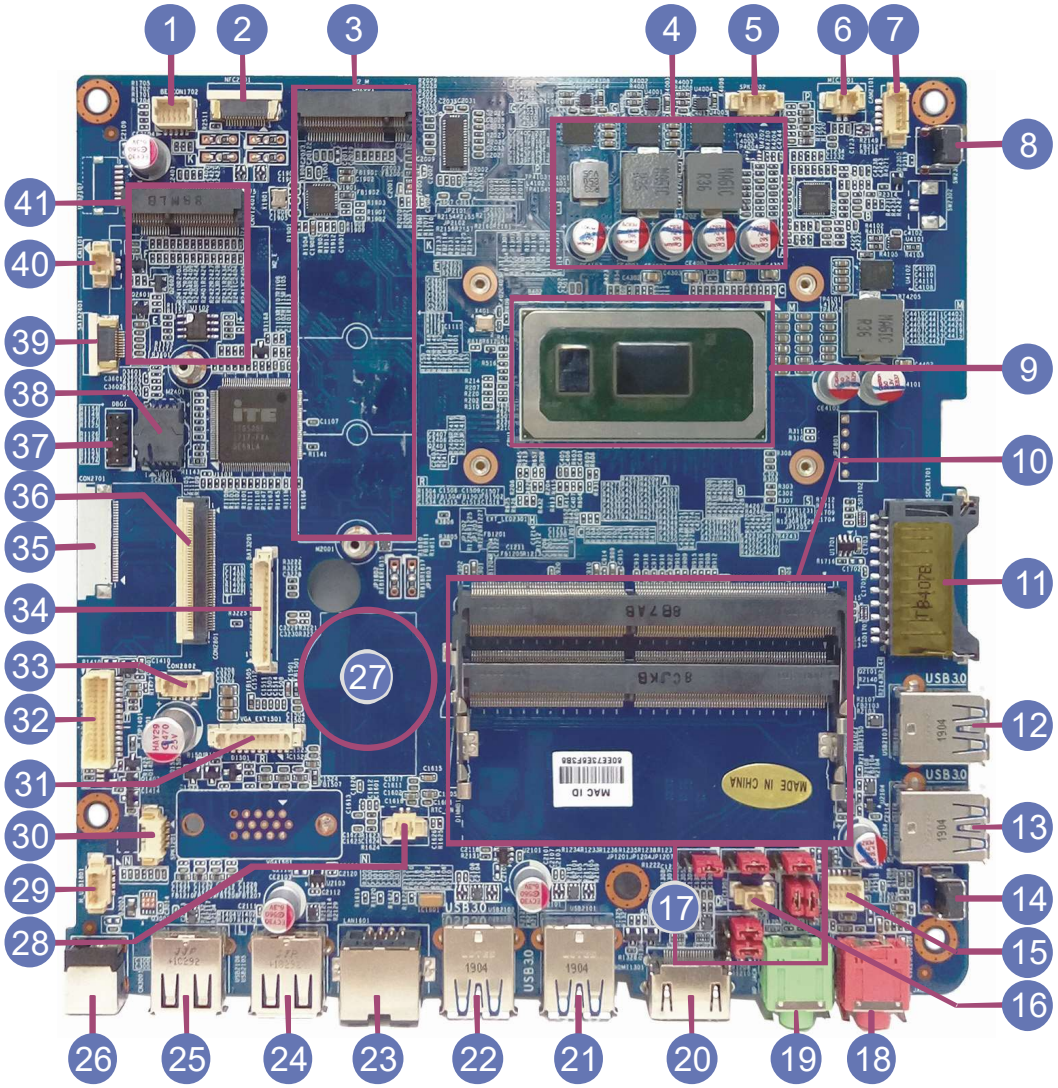


1	USB Stick	The P51U3 features an internal USB 2.0 Type A connector for expansion sticks (such as flash memory or LTE modules).
2	LTE Antenna Kit	The chassis features two perforated 7 mm holes for optional external antennas with SMA connector. You may add mobile network functionality by, for example, using the USB LTE stick Huawei MS2372h-153 (for EMEA region) which provides two antenna connectors.
3	WLAN Kit with ext. Antennas	The optional Shuttle Accessory WLN-M is a WLAN kit with two external antennas. It supports IEEE 802.11ac in the 2.4 / 5 GHz band and Bluetooth 4.0.
4	NFC Module	The PNFC03 is a 13.56 MHz NFC module for internal installation. It supports Windows 10 and is not certified for payment applications. This Shuttle accessory is available on request only.
5	M.2 SSD card	The P51U3 supports M.2 SSD cards with a length 80 mm and with both SATA and PCIe interface.
6	DDR4 RAM	The P51U3 supports up to two 32 GB DDR4-2400(+) SO-DIMM memory modules.
7	2.5" SSD/HDD	Supports one SATA SSD or Hard Disk in 2.5" format (max. height: 9.5 mm).
8	Additional COM-Ports	The optional Shuttle Accessory PCP21 (or 2x PCP11) provides two more serial COM ports.

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Mainboard Overview



1	Conn. for Beacon Module	15	LED Connector	29	USB-Conn. f. Touch Screen
2	Connector for NFC-Module	16	Microphone Port (reserved)	30	Speakers Connector
3	M.2-2280 Slot	17	Jumper Block	31	VGA Connector
4	CPU Voltage Regulator	18	Microphone Port	32	Embedded DisplayPort (eDP)
5	Speakers Connector (res.)	19	Audio Line-Out	33	Cash Drawer Connector
6	Microphone Connector	20	HDMI 1.4b Connector	34	Battery Pack Connector
7	Webcam Connector	21	USB 3.1 Connector	35	Connector for POS01/PCL71
8	Onboard Power Button	22	USB 3.1 Connector	36	Conn. for POS03 I/O board
9	Soldered Processor	23	RJ45 Network Connector	37	Debug Port (Reserved)
10	SO-DIMM Memory Slots	24	USB 2.0 Connector	38	BIOS EEPROM
11	SD Card Reader	25	USB 2.0 Connector	39	Serial ATA Connector
12	USB 3.1 Connector	26	DC-in for Power Adapter	40	Debug Port (Reserved)
13	USB 3.1 Connector	27	Location of CMOS Battery	41	M.2-2230 Slot
14	Clear CMOS Button	28	Connector for CMOS Battery		

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Shuttle XPC all-in-one P51U – Special Features



All applications at your fingertips - 10-point multitouch

The innovative touchscreen technology delivers the simplest operation possible and makes the screen the centre of action. Its high-quality design gives you access to all capabilities of the PC - by just touching the screen.



24/7 nonstop operation

The Shuttle XPC all-in-one P51U is officially approved for 24/7 permanent operation. Thanks to its low power consumption and completely passive cooling, this PC runs highly reliable making it perfectly suitable for digital signage and POI/POS applications.

Conditions for permanent use:

- Ambient temperature while under load: 5 - 40 °C
- Air humidity while under load: 10 - 80 % (not condensing)
- Free circulation of air amongst the PC must be guaranteed
- Ventilation holes must be kept clear
- If a hard disk or SSD is installed, this must also be approved for permanent operation by its manufacturer.



Fanless and quiet

The Shuttle XPC all-in-one P51U uses a passive thermal module to lead heat out of the case quickly and evenly. The unique fanless design makes the P51U perfect to be used in noise-sensitive environments. As an additional benefit, fanless cases rarely gather dust on the inside and stay cleaner than others. So it is not only quiet and low in energy use, but also virtually maintenance-free.



Protection Class IP54

The front panel of the Shuttle XPC all-in-one P51U is dust-protected and protected from splashing of water according to IP protection class 54. Consequently, this All-in-One PC can be used for those indoor applications, where the touchscreen may be exposed to humidity and occasional splashing of water. This is particularly welcome in restaurants, laboratories, production or other places.



Optimised Cable Management

Most of the connectors are now located at the back panel facing down. This leads to an effective cable management making for a clean, tidy appearance on the desk.
On the left side sit those connectors which need to be accessed from the front: the card reader and two USB ports.

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Connects to two external Full HD displays

The Shuttle XPC all-in-one P51U features two video outputs: One analog D-Sub/VGA connector and one HDMI 1.4b connector. Two separate Full HD displays can be connected in extended mode. Now add the built-in display of the P51U and there are three displays showing different content.



VESA mount *)

The stand on the rear can easily be removed to unveil four VESA mounting screw holes that can be used for mounting arms and other mounting devices from a variety of manufacturers.

*) VESA mount is not included

Shuttle XPC all-in-one Systems based on P51U Black

Name	Type	OS	SSD / Hard Disk	RAM	Battery	UPC/EAN Code
P51U	Barebone	–	–	–	–	887993001791
P51U3	Barebone	–	–	–	–	887993002187
POS P510	System, fixed	–	120 GB M.2 SSD	4 GB	–	4046047103454
POS P511	System, fixed	–	120 GB M.2 SSD	4 GB	PBAT01	4046047103461
IoT P5100PA	System, fixed	Windows 10 IoT	120 GB M.2 SSD	4 GB	–	4046047103478
P51UXA	System, BTO	–	BTO	BTO	BTO	–
P5100T	System, BTO	Windows 10	BTO	BTO	BTO	–

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Shuttle XPC all-in-one P51U – Specifications

Fanless and silent	Passive heatpipe cooling, absolutely no fan noise Perfect for noise-sensitive environments Fanless, dust-free and thus virtually maintenance-free
24/7 nonstop operation	This device is approved for 24/7 permanent operation. Requirements: - Free circulation of air amongst the PC must be guaranteed. - Ventilation holes must be kept clear. - If a hard disk is installed, this must also be approved for permanent operation by its manufacturer.
IP54 protected	The front panel is dust-protected and protected from splashing of water according to protection class IP54.
Chassis	Colour: black Dimensions: 393.6 x 272.5 x 39.8 mm (W x H x D) 100 mm VESA mountable Hole for Kensington lock Weight: 3.25 kg net, 4.5 kg gross
Operation System	This system comes without operating system. It is compatible with: - Windows 10 (64-bit) - Linux –(64-bit)
Touchscreen	Touchscreen function supports fingertip input Capacitive Touch Panel with 10-point multitouch Supports input with gloves (PVC, cotton, cotton/linen) Stylus pen not supported
15.6" Display	39.6 cm / 15.6" LC display, IPS technology Ratio: 16:9 wide-screen panel Native resolution: 1920 x 1080 = 2 Megapixel (Full HD / 1080p) Brightness: 250 cd/sqm
Processor	Model: Intel Celeron 4205U (ULV) System-on-a-chip architecture (SoC) with integrated memory and graphics controller: no chipset required FCBGA1528 package - directly soldered onto the mainboard Code name: Whiskey Lake U (8th Generation Intel Core) Cores / Threads: 2 / 2, Clock rate: 1.8 GHz L1/L2/L3 Cache: 128 kB / 512 kB / 2048 kB TDP wattage: 15 W maximum Manufacturing process: 3rd-generation enhanced 14nm++ Maximum Tjunction Temperature: 100 °C Supports 64-bit, VT-x (EPT), VT-d, Enhanced SpeedStep, NX bit, AES-NI, SSE 4.1/4.2

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Integrated Graphics	Intel HD Graphics 610 GPU clock frequency: 300~900 MHz Execution Units (EUs): 12 Supports DirectX 12 Supports full H264, H265 8/10 bit, VP8/9, VC-1, AVC hardware decoding Supports Quick Sync Video and Clear Video HD technology
Up to three displays	Two video ports support two additional independent screens: 1) HDMI 1.4b supports 1920 x 1080 @ 60 Hz or 3840 x 2160 @ 30 Hz 2) VGA / D-Sub analog video supports 1920 x 1080 @ 60 Hz Multi-Monitoring modes as follow: Clone mode: All displays show the same content at 1920 x 1080. Extended mode: All displays show different content.
BIOS	AMI BIOS in 8 MByte EEPROM with SPI interface Supports Power-on-after-power-fail / always on Supports Wake-on-LAN (WOL) from S3, S4, S5 ACPI states Supports hardware monitoring and Watchdog function Supports Firmware TPM v2.0 function
Memory	2x SO-DIMM slot with 260 pins Supports DDR4-2133 (PC4-17000) SDRAM at 1.2 V Also compatible with DDR4-2400/2666 memory modules Supports Dual Channel mode Supports a maximum of 32 GB per DIMM, maximum capacity: 32 GB Supports two unbuffered DIMM modules (no ECC or registered)
Storage	Supports one SATA hard disk or one SATA SSD drive in 6.35 cm / 2.5" format The SATA 3.0 interface supports up to 600 MB/s of data transfer speed (6 Gbit/s) Supports one drive with up to 9.5 mm in height SATA cable pre-installed
M.2-2280 Slot	The M.2 2280 BM slot provides the following interfaces: - PCI-Express Gen. 2.0 X4 - SATA v3.0 (max. 6 Gbps) It supports M.2 cards with a width of 22 mm and a length of 80 mm. Supports M.2 SATA SSDs (with B+M key) and M.2 PCIe NVMe-SSDs (with M key)
Card Reader	Integrated card reader supports SD, SDHC and SDXC memory flash cards
Webcam	Integrated Full HD 2 megapixel camera (1920 x 1080)
Microphone Speakers	Front panel with integrated Electret Condenser Microphone and 2x 2 W speakers

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Audio	Realtek ALC269 Audio Codec Two analog audio connectors (3.5 mm) on the bottom side: 1) Line-out (headphones) 2) Microphone input Digital Audio is supported via HDMI.
Wired Network	Intel i211 Ethernet Controller with MAC, PHY and PCIe interface Supports 10 / 100 / 1.000 MBit/s operation Supports WAKE ON LAN (WOL) from S3, S4 modes Supports network boot by Preboot eXecution Environment (PXE)
Wireless Network	Model: AzureWave AW-CB209NF Chipset: Realtek RTL8821CE M.2-2230 (NGFF) expansion card Connected with two internal antennas (via IPEX4) Supports WiFi IEEE 802.11b/g/n/ac in the 2.4/5 GHz band, 1T1R Max. 72.2 / 150 Mbps using 20 / 40 MHz bandwidth in n-mode Max. 433.3 Mbps using 80 MHz bandwidth in ac-mode Supports Bluetooth 4.2 in the 2.4 GHz band (BT 4.0 under Linux)
Front LEDs	Power LED (blue) Hard disk LED (orange) Battery LED (red)
Connectors left side	Power button 2x USB 3.1 Gen. 1 (= USB 3.0, max. 5 Gb/s) SD card reader Hole with power button
Connectors bottom side	HDMI 1.4b (supports digital video and digital audio) VGA connector (D-Sub 15 pol., analog video) 2x USB 3.1 Gen. 1 (= USB 3.0, max. 5 Gb/s) 2x USB 2.0 2x COM/serial (D-Sub) Gigabit Network (LAN, RJ45) Audio Line-out / headphones (3.5 mm jack) Microphone input (3.5 mm jack) DC input for external power adapter (5.5 / 2.5 mm) 2x Perforation for optional WLAN/LTE antennas (diameter: 7 mm)
Connectors onboard	Internal USB 2.0 type A connector for a USB stick Serial ATA (6 Gbps) data/power combo connector 3x USB 2.0 header (all occupied) Microphone connector (2-pin, occupied) Speakers connector (4-pin, occupied) eDP connector (Embedded DisplayPort) - occupied by the display LPC connector (occupied) I2C connector for optional NFC accessory CMOS battery connector (2-pin occupied) System battery connector (14-pin, battery is optional)

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Holes for optional Antennas	The chassis features two perforated 7 mm holes for optional antennas mounted with an (RP-)SMA connector for wireless network such as WLAN or WWAN (e.g. LTE)
Power Adapter	External 65 W power adapter (fanless) Input: 100~240 V AC, 50/60 Hz, max. 1.6 A Output: 19 V DC, max. 3.42 A, max. 65 W
DC Input	DC Input Connector: 5.5 / 2.5 mm (outer/inner diameter) The DC-input of the computer supports an external power source with either 12V ±5 % or 19V ± 5%.
Included Accessories	Quick Guide Driver DVD 2x bracket to install a 2.5" drive External Power Adapter (65W / 19V) Power cord Screws
Optional Accessories	1) **COM port adapter PCP21 or 2x PCP11** provides two more serial COM ports on the right side 2) **WLAN with two external Antennas WLN-M:** supports IEEE 802.11ac and BT 4.0 To use this accessory, the existing WLAN module must be removed. 3) **NFC module** (on request only)
Environ-mental criteria	Operating temperature: 0~40 °C Humidity: 10~90 %
Certification and Compliance	EMI: CE, RED, FCC, RCM, VCCI Safety: CB, ETL Other compliances: RoHS, ErP Lot3, Energy Star
Conformity	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) 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/EU relating to ecodesign requirements for energy-related products (ErP), (4) 2014/53/EU related to Radio and Telecommunications Terminal Equipment (RED)

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Shuttle XPC all-in-one – Comparison

Touch Display	Model	Processor	Colour	UPC Code
11.6" 1366 x 768 pixels Capacitive	**P20U**	Intel Celeron 3865U	Black	887993001487
15.6" 1366 x 768 pixels Resistive	**X50V7**	Intel Celeron 4205U	Black	887993002149
			White	887993002156
	X50V7U3	Intel Core i3-8145U	Black	887993002163
			White	887993002170
15.6" 1920 x 1080 pixels Capacitive	**P51U**	Intel Celeron 4205U	Black	887993001791
	P51U3	Intel Core i3-8145U	Black	887993002187
19.5" 1600 x 900 pixels Capacitive	**P90U**	Intel Celeron 3865U	Black	887993001661
			White	887993001890
	P90U3	Intel Core i3-7100U	Black	887993001685
			White	887993001906
	P90U5	Intel Core i5-7200U	Black	887993001678

P20U (11.6")



X50V7 (15.6")



P51U (15.6")



P90U (19.5")



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