

Fanless 3-litre PC with 8 COM ports suitable for 24/7 operation

The Shuttle XPC slim Barebone XC60J is a fanless barebone PC with an energy-efficient Intel Celeron J3355 "Apollo Lake" processor. It supports a combination of M.2 SSD cards and large 3.5" SATA hard disks, however, also 2.5" drives can be fitted instead. This product is particularly aimed at professional users that need a large amount of COM ports. The XC60J is ideally suited as a cost-effective and energy-efficient POS or control unit for nonstop operation.

XPC slim Barebone XC60J



Intel Celeron J3355



Nonstop Operation



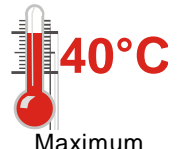
Fanless Cooling



Intel Gigabit



8x COM Port



Maximum Temperature

Feature Highlights

Slim Design	<ul style="list-style-type: none"> • Slim 3.4-litre chassis, black • Dimensions: 23.8 x 20 x 7.2 cm (L/W/H) • Permitted ambient temperature: 0~40 °C
Processor	<ul style="list-style-type: none"> • Intel Celeron J3355 "Apollo Lake" 2.0~2.5 GHz Dual Core 10 W SoC • Noiseless, fanless cooling system
Operating System	<ul style="list-style-type: none"> • Includes no operating system • Supports Windows 10 & Linux (64-bit)
Memory	<ul style="list-style-type: none"> • 2x 204-pin SO-DIMM slot • Supports DDR3L-1333/1600, max. 8 GB
Storage	<ul style="list-style-type: none"> • One 2.5" or 3.5" drive (HDD or SSD) is supported
Graphics	<ul style="list-style-type: none"> • Integrated Intel HD 500 graphics (Gen 9) • Supports Ultra HD @ 30 Hz • Supports two independent displays
Front Panel	<ul style="list-style-type: none"> • Power Button • Power LED and Hard Disk LED • 2x USB 3.0 and 2x USB 2.0 • 3x RS232 COM Port
Back Panel	<ul style="list-style-type: none"> • HDMI 1.4b and D-Sub/VGA video ports • 2x USB, Gigabit LAN, Audio Line-out, Mic-in • 5x RS232 COM (1x switchable to RS422/485) • DC-input for the supplied power adapter
Other	<ul style="list-style-type: none"> • Onboard: Always Power-On Jumper
Mini-Slots	<ul style="list-style-type: none"> • M.2 2280 BM Slot (supports SATA/PCIe SSDs) • M.2 2230 AE Slot (supports WLN-M WLAN kit)
Optional Accessories	<ul style="list-style-type: none"> • Vertical stand (PS01), VESA mount (PV02) • WLAN kit (WLN-M)
Power Supply	<ul style="list-style-type: none"> • 19V / 65W adapter (also supports 12 V)
Applications	<ul style="list-style-type: none"> • Vertical market, Automation, POS, Control-PC

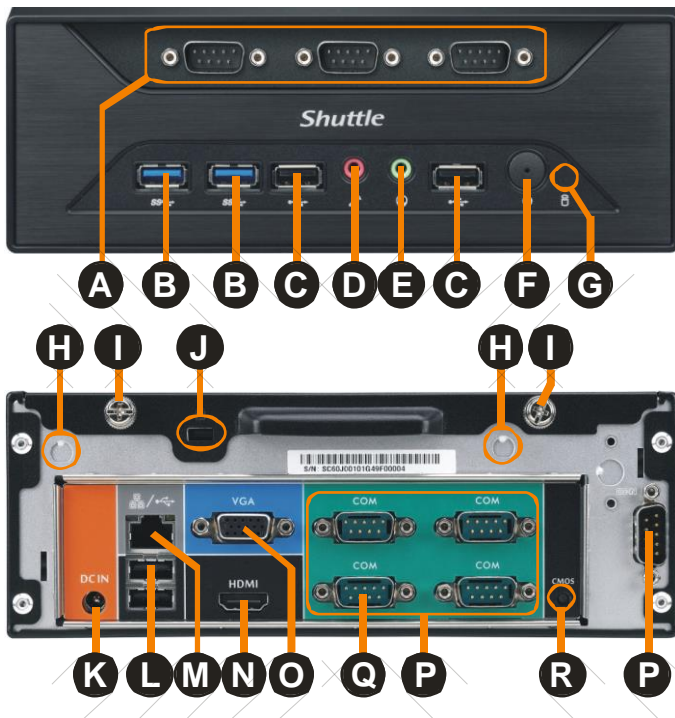


The vertical stand PS01 is optionally available.

Images for illustration purposes only.



Front and Back Panel



Front Panel

- A 3x COM port
- B 2x USB 3.0 port
- C 2x USB 2.0 port
- D Microphone input
- E Headphones output
- F Power-on button with LED
- G LED indicator for hard disk activity

Back Panel

- H 2x perforation for optional WLAN antenna
- I 2x thumbscrew
- J Hole for Kensington Lock
- K DC-in Connector for power adapter
- L 2x USB 2.0
- M Gigabit LAN (RJ45)
- N HDMI Video/Audio output
- O D-Sub/VGA Video output
- P 5x RS232 serial interface (COM port)
- Q RS232 – switchable to RS422 / RS485
- R Clear CMOS button

Required Components

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

One SATA storage drive:
Hard disk or SSD
2.5" or 3.5" format



Optional:
M.2 2280/2260/2242 SSD module
SATA or PCIe X4 interface



One or two memory modules:
DDR3L-1600/1866 SO-DIMM
max. 2x 4 GB or 1x 8 GB



**Windows 10 / Linux
Operating System
(64-bit only)**



Optional Accessories

Stand: PS01



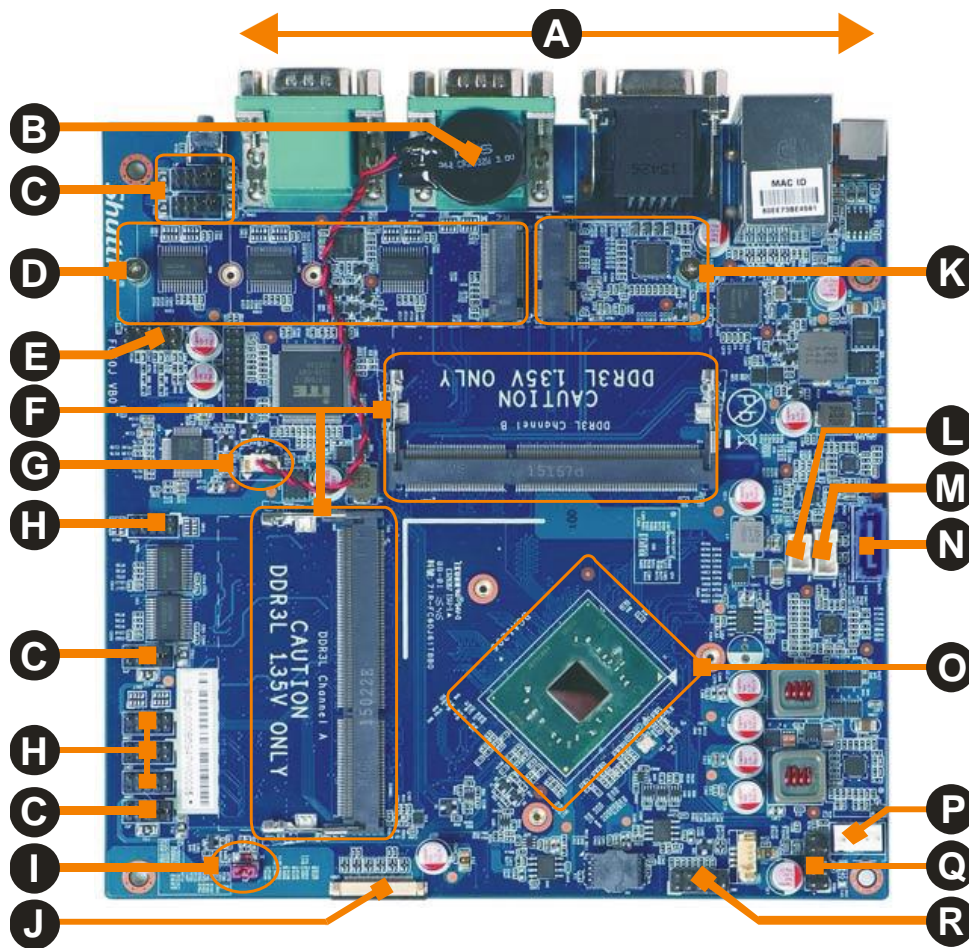
VESA: PV02



WLAN: WLN-M



Mainboard Illustration



A	Back panel connectors
B	CMOS battery
C	Jumper for COM port configuration
D	M.2-2280 slot for SSD cards
E	Audio header
F	2x SO-DIMM socket for DDR3L memory
G	Connector for the CMOS battery
H	3x COM port header
I	Always-on jumper
J	Header for front USB 3.0 ports

K	M.2-2230 slot for optional WLAN
L	12 V voltage for SATA
M	5 V voltage for SATA
N	SATA 3.0 (6 Gbps) connector
O	Intel Celeron J3355 processor
P	Fan connector (not occupied)
Q	Header for front USB 2.0 ports
R	Header for power button

Shuttle XPC slim Barebone XC60J – Product Features



Slim, stylish and robust chassis

The Shuttle XPC slim Barebone XC60J features a slim 3.4-litre steel chassis, giving it the appropriate stability required for professional applications.

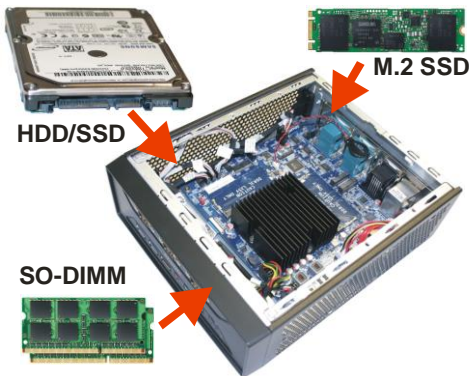


Fanless, quiet and approved for 24/7 operation

The Shuttle XPC slim Barebone XC60J 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 industrial 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.



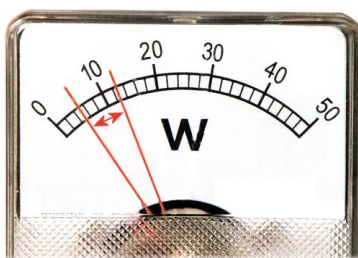
What does Barebone mean?

The Shuttle XPC slim Barebone XC60J consists of a stylish case with pre-installed mainboard, cooling system and external power adapter. Despite its small form factor, it offers outstanding connectivity, functionality and performance. For a complete Mini-PC system, a few components still need to be added. The Mini-PC is customisable and takes DDR3L SO-DIMM memory, SATA storage (2.5"/3.5" hard disk or SSD) and optionally an SSD in M.2 format. Once the Windows 10 or Linux operation system is installed, the XC60J is ready to use. Moreover, the system comes with pre-routed cables to reduce clutter, increase airflow and ease component installation.



Eight serial RS-232 ports (COM)

The Shuttle XPC slim Barebone XC60J features eight serial RS232 COM ports on the front and back panel. All ports support 5 V / 12 V auxiliary voltage and one port is switchable to RS422 or RS485 mode. Today, many consumer PCs do no longer have these legacy ports, since this interface has been superseded by USB. Still, they are commonly used for applications in the industrial automation field, scientific analysis and POS systems.



Highly energy-saving

The Shuttle XPC slim Barebone XC60J barely consumes, depending on system load, about 5.5~12.5 Watt. Running the device in 24/7 continuous operation, the annual consumption would amount to approx. 48~109.5 kWh which would mean just 12~27 Euros on the power bill (25 Euro ct/kWh) - way less than a conventional desktop PC draws.

(Based on a configuration with 2x 4 GB of memory, 64 GB 2.5" SSD and Windows 10 Build 1607 64-bit.)



Celeron® J3355 – energy-efficient Dual Core CPU

The Shuttle XPC slim Barebone XC60J is equipped with an Intel® Celeron® Processor J3355 which is a power-efficient System-on-a-Chip (SoC) from the Apollo Lake family. Thanks to the optimized 14 nanometer architecture, two x86-64 CPU cores and a clock speed of 2.0 to 2.5 GHz (Burst), energy efficiency and performance have been significantly improved compared to the Bay Trail predecessor in 22 nm architecture. In addition, the processor integrates a powerful 9th Gen Intel® HD graphics engine, which is also known from the Skylake and Kaby Lake desktop processors.



Dual Display with HDMI and VGA

The Shuttle XPC slim Barebone XC60J features two video outputs: HDMI and D-Sub/VGA. Dual View technology offers multiple display support on up to two separate monitors. This helps improve on productivity by allowing for multiple windows to be spread across two monitors while working with them simultaneously.



M.2-2280-Slot for SSD cards

The M.2-2280 slot supports M.2 SSD storage cards with SATA or with the more advanced PCIe 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.



M.2-2230-Slot for optional WLAN

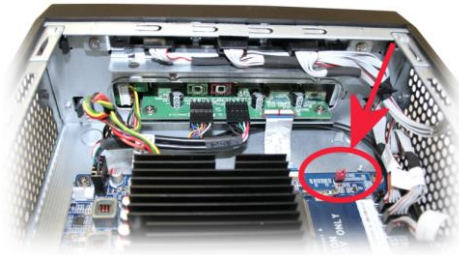
The M.2-2230 AE slot is intended for Wireless LAN (Wifi), Bluetooth, GSM/UMTS cards and others.

Shuttle offers the optional accessory „WLN-M“ (see picture on the left), which adds WLAN 802.11ac and Bluetooth 4.0 to your Shuttle XPC slim Barebone XC60J.



Kensington Lock

This is a small, metal-reinforced hole as part of an anti-theft system. (Lock and cable not included)



Power-On after Power fall

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 XC60J also comes with a hardware-based solution. By removing the appropriate Jumper (see image) the system will start unconditionally once power is applied.



Input voltage: 12 V or 19 V

A 65 Watt power adapter with 19 Volt output voltage is included in the scope of delivery. Alternatively, the XC60J can also be supplied with a power source of 12 Volt $\pm 5\%$.

Shuttle XPC slim Barebone XC60J - Specifications

<i>Fanless and silent</i>	<p>Completely fanless, virtually 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</p>
<i>Chassis</i>	<p>Slim 3-litre chassis, colour: black Dimensions: 238 x 200 x 72 mm (LWH) = 3.4-litre Open front - without covers for easy access to the front panel connectors</p>
<i>Operation Position</i>	<p>1) Horizontal 2) Vertically with optional stand PS01 3) Vertically with optional VESA mount PV02 (e.g. VESA-mounted behind an appropriate monitor) In vertical position, the front USB ports should point upwards. Ventilation holes must not be blocked to ensure sufficient cooling.</p>
<i>Operation System</i>	<p>This system comes without operating system. It is compatible with - Windows 10 (64-bit) - Linux (64-bit) Kernel 4.8 or higher Note: Windows 7, 8 and 8.1 are not supported</p>
<i>Processor</i>	<p>Intel® Celeron® Processor J3355, Dual Core CPU clock frequency: 2.0 GHz, max. Turbo frequency: 2.5 GHz Apollo Lake platform, Goldmont architecture, 14 nm structure CPU cores / Threads: 2 / 2, L2 Cache: 2 MB Thermal Design Power (TDP): 10 W Supports AES-NI, VT-x (EPT), VT-d, Secure Boot SOC design with integrated graphics processor, no chipset required</p>
<i>Integrated Graphics</i>	<p>The Graphics Processing Unit (GPU) is integrated in the processor Intel® HD Graphics 500 (9th Gen), graphics frequency: 250~700 MHz Supports DirectX 12, OpenGL 4.3, OpenCL 1.2, OpenGL ES 3.0, Intel Quick Sync Video, Intel Clear Video (HD) Execution Units (EU): 12 Video outputs (Resolution): - HDMI 1.4b: max. 1920 x 1200 @ 60 Hz oder 3840 x 2160 @ 30 Hz - D-Sub (VGA): max. 1920 x 1200 resolution @ 60 Hz Supports two displays simultaneously via HDMI and VGA port.</p>
<i>UEFI Firmware</i>	<p>16 MB Flash ROM with AMI's Aptio UEFI BIOS Firmware Based on the Unified Extensible Firmware Interface (UEFI) [1] Supports Power fail resume / AC power on state / always on / always off Supports Wake-on-LAN (WOL) from S3, S4, S5 ACPI states Supports boot up from external flash memory cards Supports embedded Firmware TPM v2.0 (fTPM)</p>

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<p><i>Memory Support</i></p>	<p>2x 204-pin SO-DIMM slot Supports DDR3L-1600/1866 (PC3-12800/14900) SDRAM at 1.35 V Supports Dual Channel mode Supports max. 8 GB per DIMM Maximum total size: 8 GB (either 1x 8 GB or 2x 4 GB) Supports two unbuffered DIMM modules (no ECC) Note: This mainboard does only support 1.35 V DDR3L memory modules. DDR3L has a lower operation voltage as compared to DDR3</p>
<p><i>Storage Bays</i></p>	<p>Bays for Hard disk drive/SSD: Combined 2.5"/3.5" bay supports one SATA storage drive - 3.5" SATA hard disk drive or - 2.5" SATA hard disk drive or - 2.5" SATA SSD drive Serial ATA III Interface with up to 600 MB/s transfer speed One pre-installed SATA cable (data / power) Supports Unified Extensible Firmware Interface (UEFI)</p>
<p><i>M.2 Slots</i></p>	<p>M.2 2280 expansion slot for one SSD card Interfaces: PCI-Express Gen. 2.0 X4 (max. 16 Gbit/s) 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 PCIe SSDs (M-Key)</p>
<p><i>Integrated Audio</i></p>	<p>Realtek ALC662 Audio Codec Two analog audio connectors (3.5 mm): 1) Line out (headphones) 2) Microphone input</p>
<p><i>Wired Network</i></p>	<p>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</p>
<p><i>Optional WLAN</i></p>	<p>M.2-2230 slot for optional WLAN kit "WLN-M"</p>
<p><i>LEDs and Buttons</i></p>	<p>Power button Power LED (blue) HDD LED (yellow)</p>
<p><i>Front Panel Connectors</i></p>	<p>Microphone input Audio Line-out (headphones) 2x USB 3.0 2x USB 2.0 3x RS232 COM port</p>

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<p><i>Back Panel Connectors</i></p>	<p>HDMI 1.4b digital video and audio output D-Sub/ VGA analog video output (15-pin) 2x USB 2.0 Gigabit network (LAN, RJ45) 5x RS232 serial port, 9-pin D-Sub (support of an auxiliary voltage of 5 / 12 V, one port is switchable to RS422 / RS485) DC input for external power adapter 2x perforation for external WLAN antennas</p>
<p><i>Power-on Jumper</i></p>	<p>Jumper JP5 for power-on after power fail (hardware solution) [2]</p>
<p><i>Power Supply</i></p>	<p>External 65 W AC/DC power adapter (fanless) AC Input: 100 ~ 240 V AC, 50 ~ 60 Hz Automatic voltage adjust DC Output: 19 V / 3.42 A DC Connector: 5.5 / 2.5 mm (outer/inner diameter) Remark: the DC-input of the computer supports an external power source with either 12 V ±5 % (65 W) or 19 V ±5 % (65 W).</p>
<p><i>Supplied Accessories</i></p>	<p>Quick Installation Guide Driver DVD (Windows 64-bit) External 19 V / 65 W power adapter with power cord Pre-installed cables for a SATA drive, screws for installation</p>
<p><i>Optional Accessories</i></p>	<ul style="list-style-type: none"> - Vertical stand (PS01) - VESA mount (PV02) - WLAN kit with two external antennas (WLN-M)
<p><i>24/7 Nonstop Operation</i></p>	<p>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</p>
<p><i>Environmental Specifications</i></p>	<p>Operating temperature range: 0 ~ 40 °C Relative humidity range: 10 ~ 90 % (non-condensing)</p>
<p><i>Conformity and Certifications</i></p>	<p>EMI: FCC, CE, BSMI, RCM, VCCI, R&TTE Safety: CB, BSMI, ETL, CCC 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) and (3) 2009/125/EC relating to ecodesign requirements for energy-related products (ErP)</p>

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[1] UEFI-Firmware (versus BIOS)

Just as with many modern PCs, the Shuttle XPC slim Barebone XC60J does away completely with a BIOS, but uses a pure UEFI firmware instead. The terms UEFI firmware and BIOS are widely used synonymously, but hardware initialising is now performed by the UEFI. Users might not even notice, but the operating system must be installed and executed in UEFI mode. UEFI creates a GUID Partition Table (GPT) on the system partition instead of a Master Boot Record (MBR). A PC running pure UEFI firmware alone must have a 64-bit operating system installed.

[2] 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 XC60J also comes with a hardware-based solution. By removing Jumper JP5, the system will start unconditionally once power is supplied.

Addendum: COM ports – what can I use them for today?

Today, COM ports (RS232) are rarely found on consumer PCs, since this interface has been superseded by USB. However, it used to be a standard interface for decades and numerous devices still use it for basic functions such as turning on and off, control or reading and retrieving data. **The following pages show some typical applications with peripheral components with COM port in the areas of POS, kiosk, vending and automation/control.**

Advantages of the COM port

In the past, hardware manufactures particularly succeeded when RS232/422/485 ports were used on their machines.

Possible reasons may be:

- Equally supported by vendors and customers
- Wide range of accessories available. Larger distances can be managed with line drivers. Converters allow the connection with LAN and WLAN networks.
- Simple and cost-effective implementation. Many CPUs and micro controllers already include an UART as the basis of a serial interface. It is simple, transparent in use and memory and energy saving.
- Setup and operation are straightforward and fuss-free.
- No drivers are required regardless of the operating system. USB generally is given low priority by the operating system and thus is not applicable for real-time tasks. The maximum cable length (without hub/repeater) is 5 m. This is why a "genuine" COM port cannot be replaced by a USB-RS232-converter, because this often results in compatibility issues and delay of signal transmission.
- Speed: The traditional UART standard has a transmission rate of 19.200 bps, the newer version (with Fifo function) offers 115.200 bps. This seems very low as compared to USB and LAN, but keep in mind that RS232 is not intended for data-intensive applications, but for applications, where only a little number of control commands have to be transmitted.
- Cable length: At a speed of 19.200 bps a length of 15 m (or 45 m with UTP CAT-5 cable) can be used. If a reduced speed of 2.400 bps is tolerable, even a length of up to 900 m is possible.
- RS422/RS485 mode: Switching the mode of the serial port to RS422 or RS485 achieves a better interference immunity and distances up to 1,200 m can be covered, as the mentioned modes use a differential balanced line over a twisted pair cable.

COM ports at Shuttle

Shuttle pays special attention to the requirements of professional users. Thus, COM ports still have a high priority when a new product is designed. Most Shuttle products offer one or two COM ports minimum, or they can be added with an optional accessory.

In June 2017, Shuttle launched a Mini-PC with even eight COM ports built in as standard:

Shuttle XPC slim Barebone XC60J

- 8x RS232 COM port (1x RS422/485 switchable)
- 3-litre steel chassis
- Fanless – virtually noiseless
- Suitable for continuous operation (24/7)
- Celeron J3355 "Apollo Lake" processor
- Optional VESA mount or vertical stand



POS System



Dallas Key / i-Button



Customer Display



Barcode Scanner



Cash Drawer



Thermoprinter



POS Keyboard



RFID Reader Module



Electronic Scales

Kiosk, Moneychanger, Ticketing Terminal



Thermoprinter



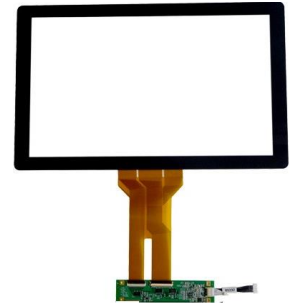
Plastic card dispenser



Relay Card



Card Reader
(Magnetic/IC/RFID)



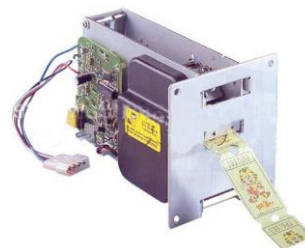
Touch Sensor



Keyboard



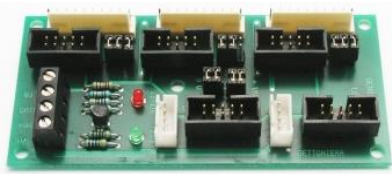
Money Note Acceptor
with RS232/CCTalk
converter



Ticket Dispenser

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Vending Machine



CC talk Hub
to connect money
acceptors to RS232



**Coin Acceptor
Coin Dispenser**



Money Note Acceptor



LCD Matrix Display



**Keyboard with
RFID/MSR card reader**



Stepper Motor Control

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Automation / Control / Conveyor Technology



Robot Feeding System



PLC Control System



Special Displays



Flow Quantity Measurement Device



Dosage System



Pressure Transmitter



Moisture Analyzer



Continuous Scale System



Interface Control PCB