

### Fanless Slim PC with Celeron processor for numerous applications

D 4700BA is an engineering marvel of integration redesigned in an ultra-small form factor. It is a fanless Slim PC packed into a robust 1.3 litre metal chassis with exceptional connectivity and expansion options: HDMI, DVI, Dual Gigabit LAN, USB 3.0/2.0, serial ports, audio, card reader. The D 4700BA also comes with Dual-Core Celeron processor, 60GB SSD, 4 GB memory, WLAN and Windows 8 Pro operation system. The integrated HD graphics is capable of playing 1080p Full HD video flawlessly. Thanks to its redesigned passive cooling architecture, the system is virtually maintenance-free and has been approved for 24/7 nonstop operation. It is big on performance yet extremely energy-efficient, consuming only 11 Watts in idle mode. D 4700BA closes the gap between lower-performance Atom solutions and high-performance Ivy/Sandy Bridge solutions. It is an ideal platform for professional applications such as digital signage, POS, Kiosk, Thin Client, Cloud Computing, Office PC and Multimedia.

### 1.3L Slim PC **D 4700BA** 60 GB SSD, 4 GB DDR3, Windows 8 Pro



#### Feature Highlights

<b>Slim Design</b>	<ul style="list-style-type: none"> <li>• Slim 1.3 litre metal chassis, black</li> <li>• Dimensions: 20 x 16.5 x 3.95 cm (LWH)</li> <li>• Incl. Stand &amp; VESA mount (75/100 mm)</li> </ul>
<b>Operating system</b>	<ul style="list-style-type: none"> <li>• Windows 8 Pro, 64 bit</li> </ul>
<b>Processor</b>	<ul style="list-style-type: none"> <li>• Intel Celeron 847, Dual Core, 1.1 GHz</li> <li>• Integrated Intel HD graphics</li> <li>• Fanless heat-pipe cooling</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>• 4 GB DDR3 SO-DIMM memory</li> </ul>
<b>Storage</b>	<ul style="list-style-type: none"> <li>• 60 GB SSD, 2.5" form factor, SATA</li> <li>• Full-Size Mini-PCIe slot supports mSATA</li> </ul>
<b>Connectors</b>	<ul style="list-style-type: none"> <li>• HDMI 1.3, DVI-I</li> <li>• 2x USB 3.0 rear, 4x USB 2.0 front</li> <li>• SD card reader, 2x Audio (Line out + mic)</li> <li>• Dual Gigabit LAN (RJ45), WLAN 802.11n</li> <li>• 2x COM ports (RS232 + RS232/RS422/RS485)</li> <li>• Connector for external power button</li> </ul>
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• External 65 W fanless power adapter</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• Digital Signage, POS, control device, etc.</li> <li>• Approved for 24/7 permanent operation</li> </ul>

Shuttle Order No: **PIT-D0470BA1**



Windows 8 Pro

Shuttle Slim-PC D 4700BA – Product Features



Robust, Stylish and Extremely Small

You should have held it in your own hands to appreciate how small it actually is. Barely 1.35 litre in volume, its rigid steel chassis design exudes the level of quality and stability that is required for professional digital signage applications. Despite its diminutive size, the processing power inside the D 4700BA is sufficient to meet the needs of the most demanding multimedia and computational workloads. The well-designed interior of the D 4700BA makes installations and upgrades effortless. Its sleek and stylish look blends seamlessly in both home and office environments.



Ease of installation thanks to bay covers

D 4700BA features two practical bay covers at the bottom of the chassis which makes the upgrade of hardware components a breeze.



Intel Core Processor Architecture

The Shuttle Slim PC D 4700BA is equipped with an Intel® Celeron™ 847 processor which is soldered to mainboard and passively cooled by a large heat-sink. Although the Thermal Design Power (TDP) is 17 watts, the average heat dissipation is much lower. The processor belongs to Intel's second-generation Intel Core processor family (Codename: "Sandy Bridge") with which performance and architecture is fundamentally superior to Atom D2700/D2550 processors. The Celeron 847 is originally intended for mobile solutions and features 2 MB Cache, dual channel memory interface and a powerful Intel HD graphics chip. It is capable of decoding Full HD video with driver support for all major operation systems including Windows XP, 7, 8 and Linux.



### No fan noise

A large heat sink is concealed behind a plastic cover and cools down the processor in a passive way without any fan. Using an SSD drive instead of a hard disk makes the system virtually noiseless and hence perfectly suitable for noise-sensitive environments like e.g. bedroom, library, living room, music studio etc.



### Energy-saving

Power consumption mainly depends on system load. Equipped with a 2.5" hard disk, the system consumes about 11W in idle mode and max. 30W under full load. Running the device 5 days a week for eight hours a day, the annual consumption would amount to less than 23 kWh which would mean just 6 Euros on the power bill (25 Euro ct/kWh) - way less than a conventional desktop PC draws.



### Great Connectivity

Despite its small size, D 4700BA sports a wide range of I/O connectors. Besides an SD card reader, it sports a couple of USB 3.0, USB 2.0, Gigabit-LAN, digital video, audio and serial ports.



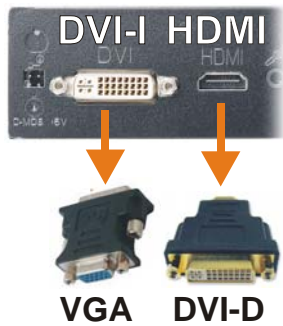
### Dual View Technology with HDMI and DVI

D 4700BA features two digital video outputs: HDMI and DVI-I. Dual View technology offers multiple display support on up to two separate monitors. This helps to improve on productivity by allowing for spreading multiple windows across two monitors while working with them simultaneously.



### Dual Gigabit LAN Network

Today's media-rich communications across the internet and within enterprises create new demands for clients in Local Area Networks. For that reason, Shuttle applies Gigabit LAN performance to their Mini-PCs and D 4700BA even supports two of them. Dual networking allows the computer to connect to a single network using two cables at once with an appropriate switch (teaming mode with load balancing or failover function) or to two different networks depending on the needs of the user.



### Video outputs

With optional adapters DVI-D devices can be connected to the HDMI port or VGA devices to the DVI-I port, respectively.

**DVI-D** means the connector only outputs digital video signals.

**DVI-I** means digital and analog video signals are put out.

**HDMI** supports digital video plus multi-channel digital audio output.

**D-Sub / VGA** means analog video signals are put out.



RS-232  
RS-422  
RS-485

### Two serial ports

Many PCs do not have these legacy ports any longer, since they have been superseded and replaced by USB for most consumer applications, but they are still commonly used for applications such as industrial automation systems, scientific analysis, POS systems and other industrial applications. D 4700BA features two serial RS-232 ports which also support both 5 and 12V auxiliary voltage. The left COM port (COM1) also supports the RS422 and RS485 standard. The COM ports are protected by black plastic caps.



### COM port Pin 9 Configuration

Pin 9 of the COM-Port is a multi-functional signal (see red circle on the photo). Based on Jumper JP2 configuration on the mainboard, it can be configured as Ring Indicator (RI) or external power supply with either 5V or 12V voltage level (each COM port separately).



### Expansion slots for Mini-PCI-Express cards

D 4700BA features two Mini PCI Express expansion slots which can easily be accessed by removing the appropriate bay cover. One slot supports half size cards and is already occupied with a WLAN card. The other slot also supports full size cards and can be used either for a Mini PCIe card or for a mSATA (Mini Serial ATA) card, which is a Solid State Drive (SSD) in a compact Mini PCIe card form factor.



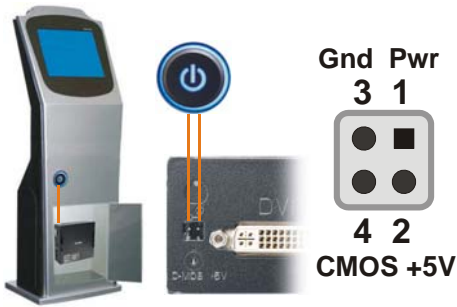
### VESA mount

The supplied 75/100mm VESA mount allows D 4700BA to be installed on to walls or just to be affixed on the rear side of a monitor which is particularly interesting for the industry segment, company buildings and public institutions. Besides this, the chassis of D 4700BA provides numerous threaded holes (M3) enabling it to be fitted almost anywhere.



### SD Card Reader

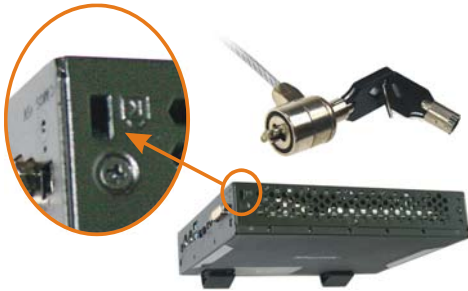
The built-in SD card reader at the front side makes it easy to transfer files from your camera so you can share videos and photos on your D 4700BA with ease. It supports SD, SDHC and SDXC memory flash cards in standard size format also supports boot up from bootable SD cards.



**External power button by separate remote line**

If because of space constraints (e.g. in the case of a 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 D 4700BA (pitch 2.54 mm). In addition, this connector also provides the Clear CMOS function and an external 5VDC voltage supply.

Pin 1-3	Connect external power button (use a temporary switch)
Pin 3-4	Close these pins for 3 seconds to perform a Clear CMOS
Pin 2-3	External +5V DC voltage (Pin 3 = Ground).



**Kensington Lock**

This is a small, metal-reinforced hole as part of an anti-theft system. D 4700BA provides an appropriate hole on both side of its chassis. The lock-and-cable is not included.



**24/7 nonstop operation**

Shuttle D 4700BA 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:**

- Free circulation of air amongst the PC must be guaranteed
- Ventilation holes must stay clear



**Operating Position**

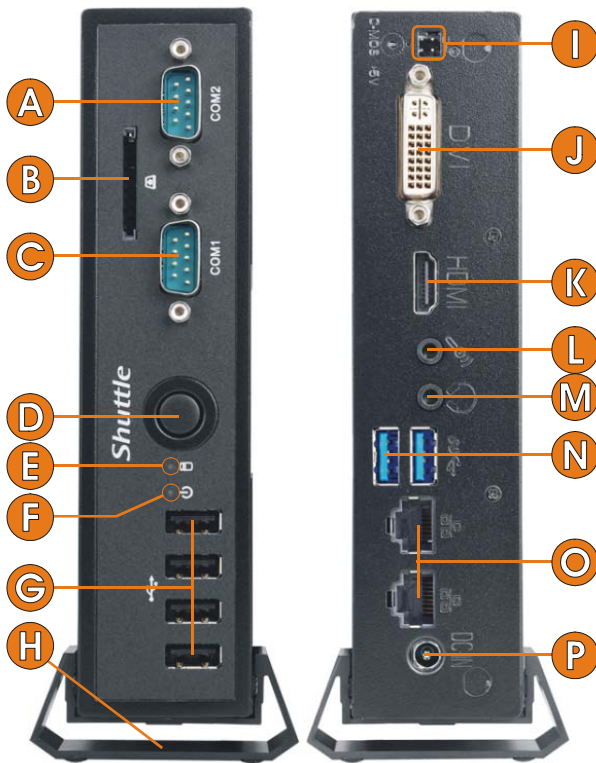
The passive cooling system of D 4700BA uses the convective heat-transfer principle, which requires observing the correct operation position of the device. Please follow these instructions in order to obtain the best possible cooling effect:

- 1) Device must only be used in vertical position with the DVI port facing up
- 2) Please make sure to use either the supplied feet or the VESA mount

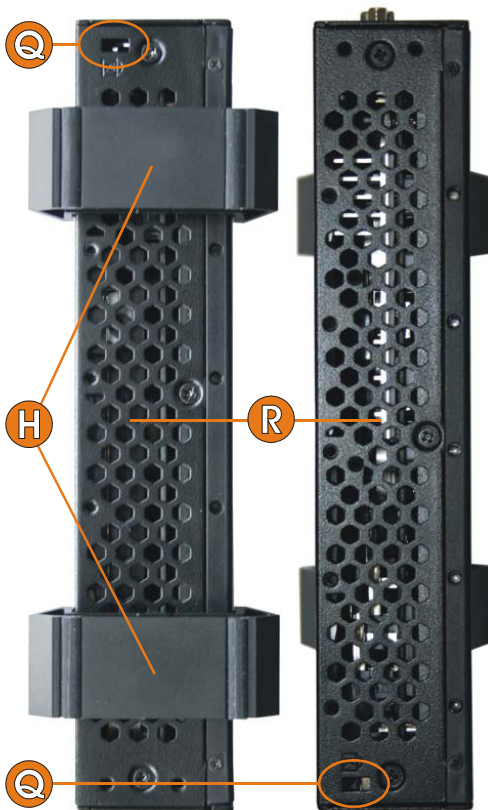
**Comparison: Slim-PC products based on DS47**

Product	Order no.	Bar code	Processor	Storage	Memory	Operating System
DS47	PIB-DS47001	811686006268	Celeron 847	---	---	---
D 4700XA	PIC-DS47011	4046047102716	Celeron 847	60 GB SSD	4 GB	---
D 4700BA	PIT-D0470BA1	4046047102723	Celeron 847	60 GB SSD	4 GB	Windows 8 Pro 64 bit

Shuttle D 4700BA – Product Views



- A COM2: RS-232
- B SD card reader
- C COM1: RS-232/422/485
- D On/Off power button
- E Hard disk LED indicator
- F Power LED indicator
- G 4x USB 2.0
- H Stand
- I Pin connector for external power or CMOS button or 5V DC voltage supply
- J DVI-I Video Port
- K HDMI Video Port
- L Microphone input
- M Head phone output
- N 2x USB 3.0
- O 2x RJ45 Gigabit LAN
- P DC connector for external power adapter
- Q Hole for the Kensington lock
- R Ventilation holes
- S Bay for 2.5" storage (HDD or SSD) \*
- T Slot for Mini PCIe card or mSATA module (full size or half size) \*
- U Slot for half size WLAN module \*
- V 2x SO-DIMM slot for DDR3 memory modules \*



\*) The scope of delivery includes a 2.5" SSD storage, one or two SO-DIMM memory modules and a WLAN module. The mSATA module is not included. The images are for illustration purposes only.

## Shuttle D 4700BA Specifications

<i>Fanless and silent</i>	<p>Passive cooling, no fan noise at all                  Perfect to be used in noise-sensitive environments                  Fanless, dust-free and thus virtually maintenance-free</p>
<i>Low power consumption</i>	<p>Power consumption: idle: 10-11W, full load: 22-30W (without/with graphics)                  (measured with 2x 2GB SO-DIMM, 500 GB 2.5" hard disk)</p>
<i>24/7 nonstop operation</i>	<p>This device is approved for 24/7 permanent operation.                  Requirements:                  - Free circulation of air amongst the PC must be guaranteed.                  - Ventilation holes must stay clear.</p>
<i>Chassis</i>	<p>Slim-PC (Nettop) with black chassis made of steel                  Without cooling fan, passive cooling only                  The bays for memory, 2.5" drives and Mini-PCIe cards can be easily accessed by removing two cover plates.                  Dimensions: 200 x 165 x 39.5 mm (LWH) = 1.3 litres                  Weight: 1.43 kg net and 2.13 kg gross                  Two holes for Kensington Lock and numerous threaded holes (M3) at both sides of the chassis</p>
<i>Operation position</i>	<p>Operation Position:                  1) Device must only be used in vertical position with the DVI port facing up                  2) Please make sure to use either the supplied feet or the VESA mount</p>
<i>Operation System</i>	<p>Windows 8 Pro, 64 bit</p>
<i>Processor</i>	<p>Model: Intel Celeron 847                  Code name: Sandy Bridge (2nd Gen. Core)                  Cores / Threads: 2 / 2                  Clock rate: 1.1 GHz                  L1/L2/L3 cache: 128 kB / 512 kB / 2048 kB                  Memory controller: DDR3-1066/1333 Dual Channel                  TDP wattage: 17 W maximum, 13.8W typical                  Manufacturing process: 32 nm                  Socket: FCBGA1023                  Enhanced SpeedStep technology                  Maximum Tjunction Temperature: 100°C                  Integrated Intel HD graphics engine                  Supports 64 Bit, VT-x with EPT, SpeedStep</p>
<i>Storage</i>	<p>60 GB SSD (Solid State Drive)                  2.5" form factor, Serial ATA connector</p>

<p><i>Memory</i></p>	<p>4 GB DDR3 SO-DIMM memory module with 204 pins                  Supports max. 8 GB per DIMM, maximum total size of 16 GB                  Supports two unbuffered DIMM modules (no ECC)</p>
<p><i>Integrated graphics</i></p>	<p>Intel HD graphics                  Clock rate: 350~800 MHz                  Maximum resolution: 2560 x 1600 (analog), 1920 x 1200 (digital, via DVI-D / HDMI)                  Execution Units (EU): 6                  Supports two independent screens                  Supports DirectX 10.1, Shader 4.1, OpenGL 3.0                  HDMI supports HD video plus multi-channel digital audio via a single cable</p>
<p><i>Mainboard Chipset BIOS</i></p>	<p>Shuttle Mainboard FS47                  All capacitors are high quality solid capacitors                  Chipset: Intel® NM70 Express                  Supports resume after power failure                  Supports Wake on LAN (WOL)                  Supports Power on by RTC Alarm                  Supports boot from USB devices and SD card reader                  AMI BIOS in 8 Mbit EEPROM with SPI interface                  Supports hardware monitoring and watch dog functionality                  Supports Unified Extensible Firmware Interface (UEFI) [1]</p>
<p><i>Power Adapter</i></p>	<p>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 Connector: 5.5/2.5mm (outer/inner diameter)</p>
<p><i>Mini-PCIe slots</i></p>	<p>Two Mini PCI Express expansion slots: full size and half size                  1) the half size slot is occupied with a WLAN module                  2) the full size slot supports PCIe 2.0, SATA 3G and USB 2.0 and can either be used for a Mini-PCIe card or for a Mini SATA (mSATA) flash memory card [3]                  Please use the "Mini-PCIE / mSATA Select" function in the BIOS setup.</p>
<p><i>Audio</i></p>	<p>Audio Realtek® ALC 662 High-Definition Audio (5.1 channel)                  Two analog audio connectors (3.5mm) at the back panel:                  1) 2 channel line out (head phone)                  2) microphone input                  Digital multi-channel audio output: via HDMI</p>
<p><i>Dual Gigabit LAN Controller</i></p>	<p>Dual Realtek 8111G Ethernet network controller (Gigabit)                  Supports 10 / 100 / 1.000 MBit/s operation                  With two RJ45 ports (dual network) supports Teaming [2]                  Supports WAKE ON LAN (WOL)                  Supports network boot by Preboot eXecution Environment (PXE)</p>
<p><i>Wireless Network (WLAN)</i></p>	<p>Built-in Mini-PCIe WLAN card (half size) and internal antenna                  Supports IEEE 802.11b/g/n, max. 150Mbps up-/downstream                  Security: WPA/WPA2(-PSK), WEP 64/128bit, IEEE 802.11x/i</p>



<p><i>Card reader</i></p>	<p>Integrated USB card reader Supports SD, SDHC and SDXC memory flash cards Supports boot up from SD card</p>
<p><i>Front Panel Connectors</i></p>	<p>4x USB 2.0 2x RS232 serial ports (5V/12V, 1x switchable to RS422 / RS485) with black plastic caps SD card reader (supports SD, SDHC, SDXC) Power button Power LED (blue) HDD LED (yellow)</p>
<p><i>Back Panel Connectors</i></p>	<p>HDMI 1.3 connector (supports DVI-D with optional adapter) DVI-I connector (supports VGA with optional adapter) 2x USB 3.0 2x Gigabit LAN (RJ45) Microphone input Audio Line-out (headphone) DC-input connector for external power adapter 4 pin connector (2.54 mm pitch) for power button, Clear CMOS and 5V DC [4] Perforation for optional Wireless LAN antennas (2 holes)</p>
<p><i>Other Onboard Connectors</i></p>	<p>Connector for CMOS battery (with battery) Fan connector (4 pins) not occupied LVDS connector (50 pins) Jumpers for panel voltage and converter voltage select</p>
<p><i>Scope of delivery</i></p>	<p>Multi-language user guide Two metal feet VESA mount for 75/100mm standard (two metal brackets) Four thumbscrews M3 x 5 mm (screws together VESA mount and PC) Four screws M4 x 10 mm (to fix the VESA mount to the external device) Three screws M3 x 4 mm and a rack (to mount a 2.5" storage into the bay) Driver DVD (Windows 8 / 7 / XP) External power adapter with power cord</p>
<p><i>Environmental Specifications</i></p>	<p>Operating temperature range: 0~40 °C [5] Relative humidity, non-condensing: 10~90%</p>
<p><i>Conformity Certifications</i></p>	<p>EMI: FCC, CE, BSMI, C-Tick Safety: CB, BSMI, ETL, CCC 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-guidelines: - EMV-guideline 89/336/EWG electromagnetic tolerance - LVD-guideline 73/23/EWG use of electric devices within certain voltage-limits</p>

### **Footnote:**

[1] **Unified Extensible Firmware Interface (UEFI)** - required when booting from hard disks larger than 2.2 TB

### **[2] Teaming Mode**

The teaming function allows you to group both available network adapters together to function as a single adapter - a method of creating a virtual LAN. The benefit of this approach is that it enables load balancing and failover.

### **[3] mini-SATA (mSATA)**

not to be confused with the "micro SATA" connector, is a newer industry standard which converts the electrical SATA interface (1.5 or 3.0 Gbit/s) to the physical "Mini PCI Express" mini card form factor.

### **[4] Four pin header at the back panel**

This header allows for connecting an external power button.

It also provides 5V DC voltage for external devices and the Clear CMOS function.

**[5] Caution:** for high ambient temperature of 35°~40°C we strongly recommend to use rugged SODIMM memory with wide temperature range (up to 95°C).

Suggested vendors for rugged memory modules:

Samsung: <http://www.samsung.com/global/business/semiconductor/product/computing-dram/catalogue?iald=690>

Elpida: <http://www.elpida.com/en/products/ddr3module.html>

Micron: <http://www.micron.com/products/dram/ddr3-sdram#fullPart&186=1&219=3,4,5,6&220=3>

### **Supplied accessory: VESA mount with screws**

