



# **Operating Guide**

## **EPIA NX-Series Nano-ITX Mainboard**

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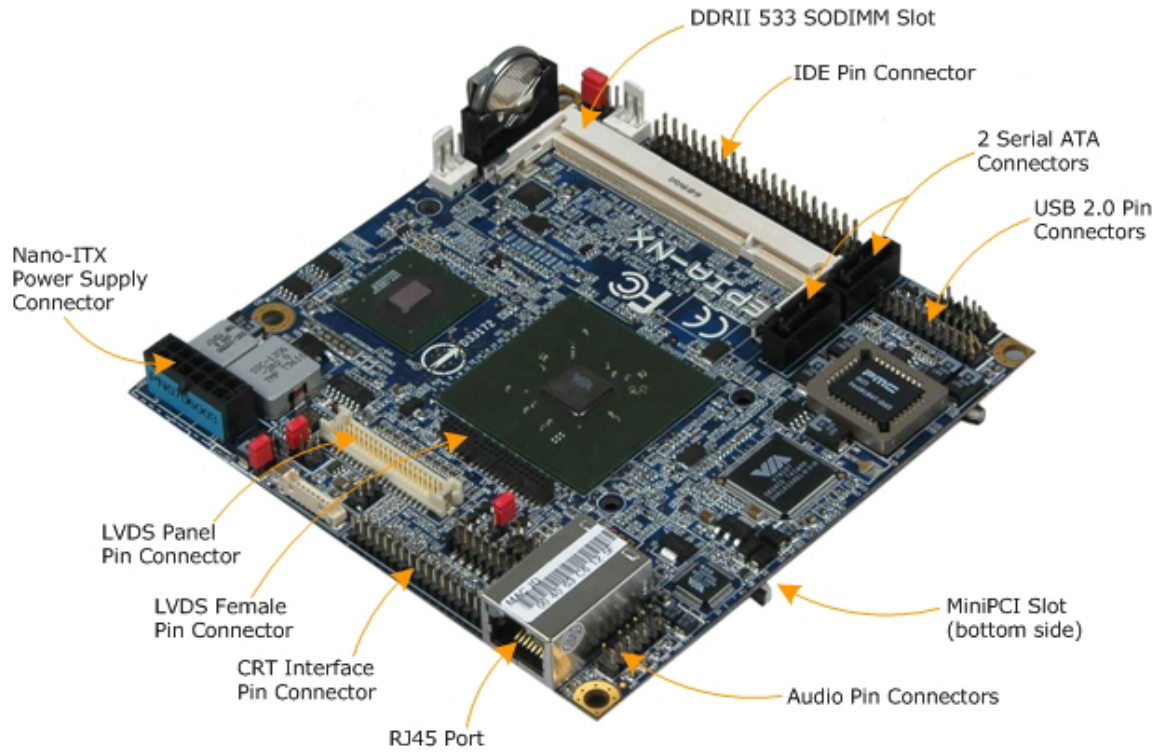
## VIA EPIA NX-Series Overview

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The VIA EPIA NX-Series Nano-ITX Mainboard is an ultra compact native x86 platform optimized for today's demanding embedded and productivity applications. The mainboard is based on the VIA CX700M2 advanced all-in-one system processor featuring an embedded hardware MPEG-2, MPEG-4 and WMV9 video decoding accelerator. Its integrated VIA UniChrome™ Pro II 2D/3D graphics provide rich digital media performance. With the sizable memory bandwidth of DDR2 533MHz SDRAM DIMM and the high data transfer speeds of ATA-133 and further enhanced by support of 8-Channel High Definition Audio Codec for Smart 7.1 surround sound and SPDIF, the VIA EPIA NX-Series delivers the increased performance levels required by today's embedded digital media applications.

## VIA EPIA NX-Series Layout

### VIA EPIA NX Nano-ITX Mainboard (Dimension 12cm x 12cm)



## VIA EPIA NX-Series Specifications

<b>Model Name</b>	- EPIA NX15000	- EPIA NX12000E
<b>Processor</b>	- VIA C7 1.5GHz NanoBGA2 processor	- VIA Eden 1.2GHz NanoBGA2 processor
<b>Chipset</b>	- VIA CX700M2 advanced all-in-one system processor	
<b>System Memory</b>	- 1 DDRII 533 SODIMM socket - Up to 1GB memory size	
<b>VGA</b>	- Integrated VIA UniChrome™ Pro II 3D/2D AGP graphics with MPEG-2/4 and WMV9 video decoding Accelerator	
<b>Expansion Slots</b>	- 1 miniPCI slot	
<b>Onboard IDE</b>	- 1 UltraDMA 133/100 connector (2.0mm 44-pin pin header)	
<b>Onboard Serial ATA</b>	- 2 SATA connectors	
<b>Onboard LAN</b>	- 1 VIA VT6107 10/100 Mbps Fast Ethernet Controller Or 1 VIA VT6122 Gigabit Ethernet Controller (Optional)	
<b>Onboard Audio</b>	- VIA VT1708A High Definition Audio Codec	
<b>Onboard TV Out</b>	- Integrated HDTV TV Encoder	
<b>Onboard I/O Connectors</b>	- 1 USB pin connector for 6 additional USB 2.0 ports - 1 LPC pin connector - 1 PS2 mouse/keyboard pin connector - 2 Fan pin connectors for CPU and System fans - 1 LVDS panel pin connector - 1 DVO pin connector to support 2 <sup>nd</sup> LVDS panel (VT1636 add-on card required) - 1 Audio pin connector: Line-out, Line-in, MIC-in, and S/PDIF out - 1 TV out pin connector for Composite, S-Video, or Component (YPbPr) - 1 Video pin connector for VGA output, CCIR656/601 video input and SMBUS - 1 Nano-ITX power connector	
<b>Back Panel I/O</b>	- 1 RJ45 LAN Port	
<b>BIOS</b>	- Award BIOS - 4/8Mbit flash memory	
<b>System Monitoring &amp; Management</b>	- Wake-on-LAN, Keyboard-Power-on, Timer-Power-on - System power management, AC power failure recovery	
<b>Operating Temperature</b>	0 ~ 50 °C	
<b>Operating Humidity</b>	0% ~ 95% (relative humidity; non-condensing)	
<b>Form Factor</b>	- Nano-ITX (8-layer) - 12 cm x 12 cm	

\* The specification is subject to change without prior notice.

## **VIA EPIA NX Processor SKUs**

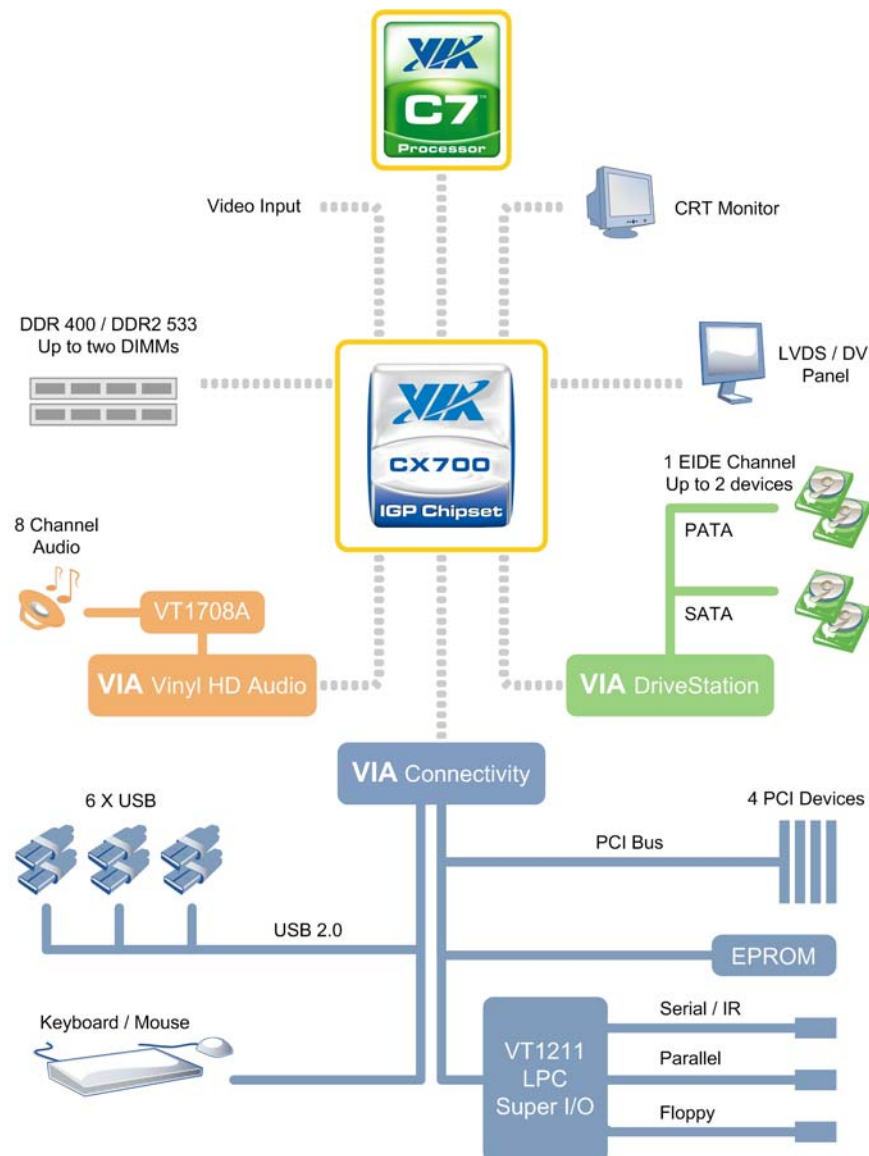
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The VIA EPIA NX-Series is available in two speed grades as follows:

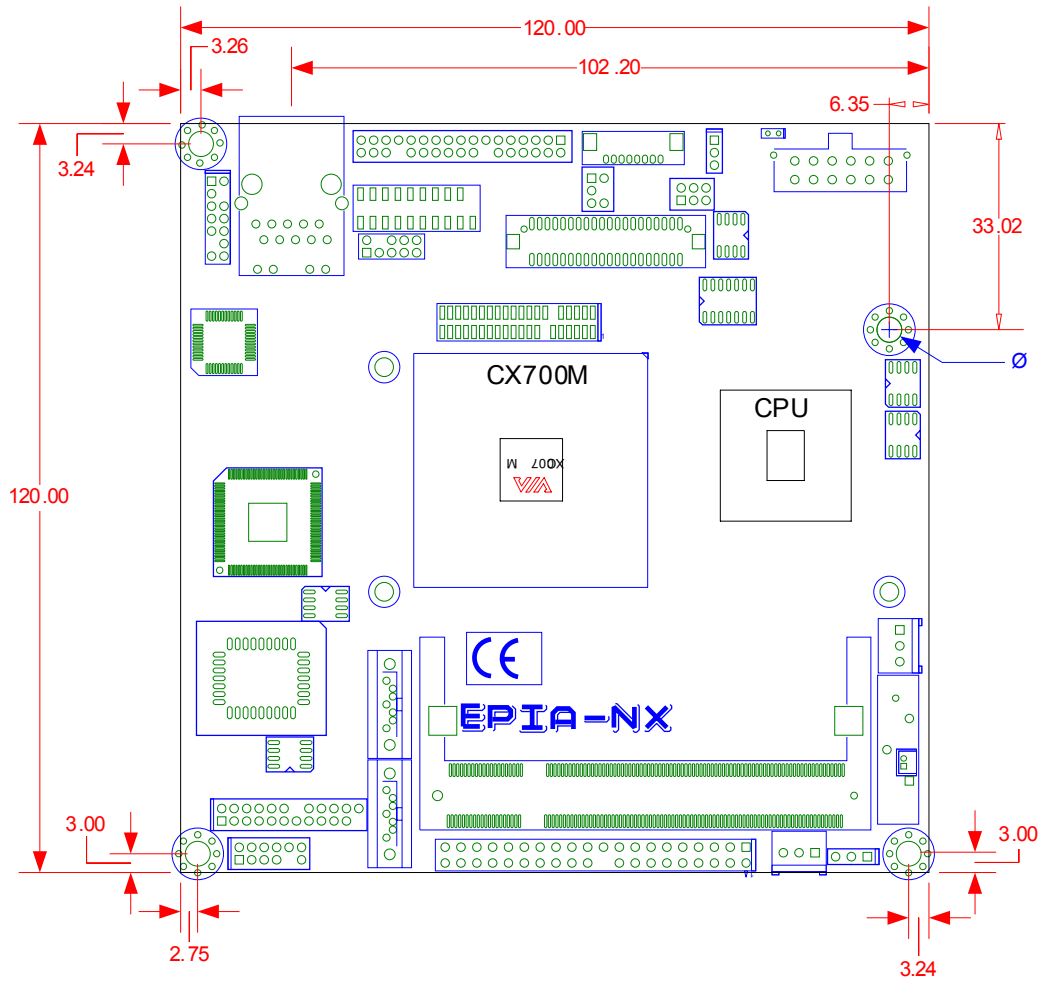
- 1.2 GHz VIA Eden NanoBGA2 Processor
- 1.5 GHz VIA C7 NanoBGA2 Processor

## VIA CX700M2 All-in-One System Processor Overview

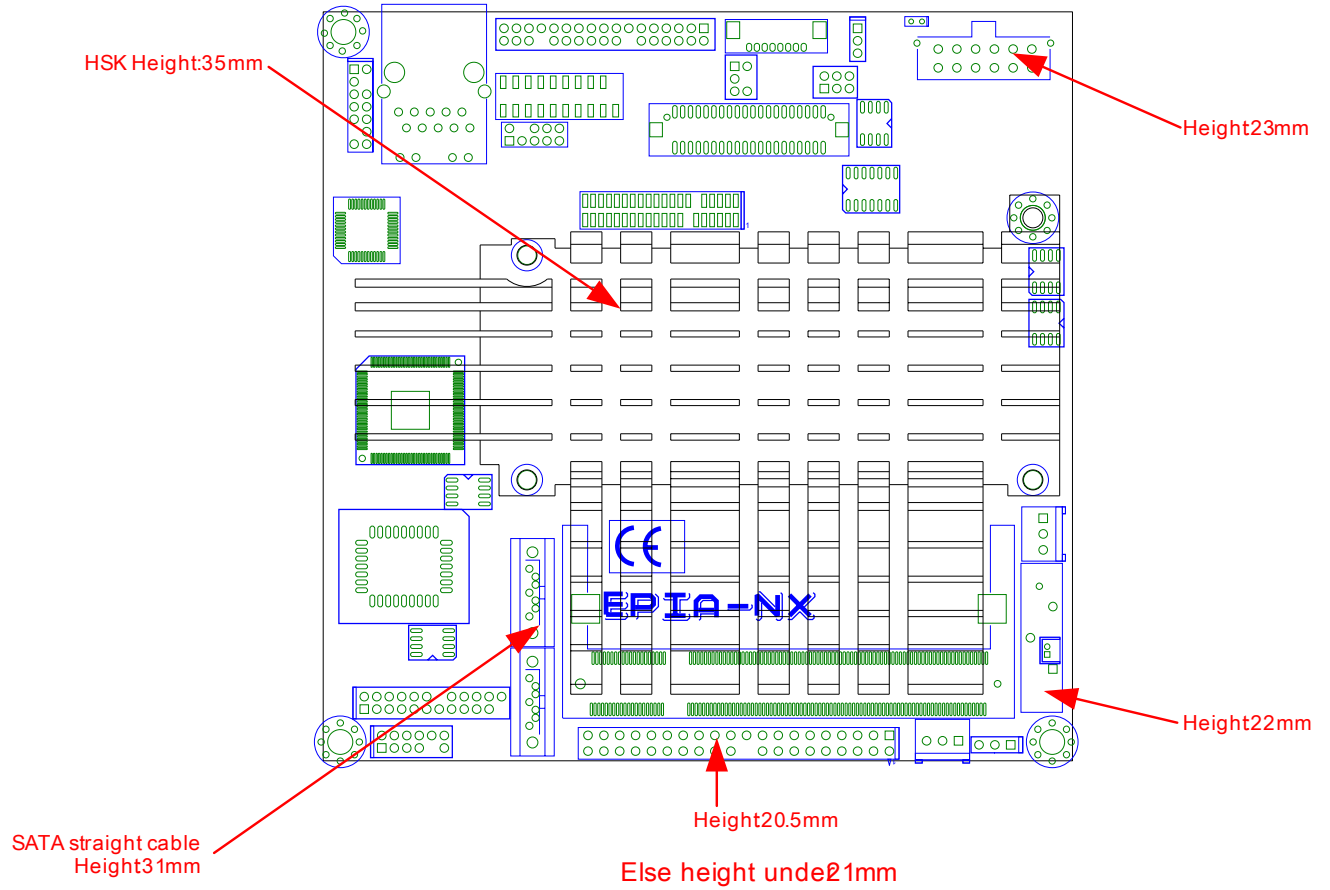
The VIA CX700M2 All-in-One System Processor is designed to enable high quality digital video streaming and DVD playback in a new generation of fanless, small form factor PCs and IA devices. The [CX700M2](#) features the embedded VIA UniChrome™ Pro II 2D/3D MPEG-2, MPEG-4 and WMV9 video decoding acceleration, DDR2 533MHz support, motion compensation and dual-display support to ensure a rich overall entertainment experience. Outstanding connectivity features include USB 2.0, 10/100 LAN and ATA/133.



## VIA EPIA NX-Series Board Dimensions



## VIA EPIA NX-Series Height Distribution



## Power Consumption

Power consumption tests were carried out comparing the VIA EPIA NX running with VIA Eden 1.2 GHz NanoBGA2 and VIA C7 1.5 GHz NanoBGA2 processors. The following tables are a comprehensive breakdown of the EPIA platform's voltage, amp and wattage values while running common system applications.

### VIA EPIA NX 1.2 GHz

#### A. Playing DVD – Power DVD 5.0

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.266	1.551	5.066
Main Board +5V	5.029	1.151	5.788
Main Board 5VSB	4.914	0.046	0.226
Main Board +12V	11.729	0.187	2.193
<b>Main Board Power Consumption</b>			<b>13.273</b>

#### B. Playing MP3 – Media Player

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.274	1.489	4.875
Main Board +5V	5.030	1.340	6.740
Main Board 5VSB	4.921	0.048	0.236
Main Board +12V	11.789	0.188	2.216
<b>Main Board Power Consumption</b>			<b>14.068</b>

#### C. Running Network Application – Files Copy

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.281	1.503	4.931
Main Board +5V	5.055	0.752	3.801
Main Board 5VSB	4.929	0.040	0.197
Main Board +12V	11.728	0.189	2.217
<b>Main Board Power Consumption</b>			<b>11.146</b>

#### D. Idle

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.284	1.466	4.814
Main Board +5V	5.060	0.678	3.431
Main Board 5VSB	4.931	0.039	0.192
Main Board +12V	11.771	0.190	2.236
<b>Main Board Power Consumption</b>			<b>10.674</b>

**E. Run C.C. Winstone 2004**

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.273	1.467	4.801
Main Board +5V	5.030	1.275	6.413
Main Board 5VSB	4.920	0.047	0.231
Main Board +12V	11.725	0.188	2.204
<b>Main Board Power Consumption</b>			<b>13.650</b>

**F. S3 Mode**

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	0.000	0.000	0.000
Main Board +5V	0.000	0.000	0.000
Main Board 5VSB	4.938	0.117	0.578
Main Board +12V	0.000	0.000	0.000
<b>Main Board Power Consumption</b>			<b>0.578</b>

## VIA EPIA NX 1.5 GHz

### A. Playing DVD – Power DVD 5.0

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.259	1.545	5.035
Main Board +5V	4.996	1.679	8.388
Main Board 5VSB	4.898	0.058	0.284
Main Board +12V	11.896	0.234	2.784
<b>Main Board Power Consumption</b>			<b>16.491</b>

### B. Playing MP3 – Media Player

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.262	1.512	4.932
Main Board +5V	4.978	2.072	10.314
Main Board 5VSB	4.897	0.071	0.348
Main Board +12V	11.906	0.234	2.786
<b>Main Board Power Consumption</b>			<b>18.380</b>

### C. Running Network Application – Files Copy

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.276	1.492	4.888
Main Board +5V	5.036	1.043	5.253
Main Board 5VSB	4.917	0.046	0.226
Main Board +12V	11.894	0.233	2.771
<b>Main Board Power Consumption</b>			<b>13.138</b>

### D. Idle

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.279	1.492	4.892
Main Board +5V	5.040	0.861	4.339
Main Board 5VSB	4.919	0.042	0.207
Main Board +12V	11.896	0.237	2.819
<b>Main Board Power Consumption</b>			<b>12.258</b>

### E. Run C.C. Winstone 2004

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.263	1.443	4.709
Main Board +5V	4.989	1.914	9.549
Main Board 5VSB	4.897	0.072	0.353
Main Board +12V	11.904	0.230	2.738
<b>Main Board Power Consumption</b>			<b>17.348</b>

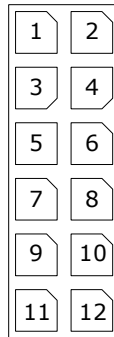
**F. S3 Mode**

	<b>Measured Voltage</b>	<b>Measured Amp.</b>	<b>Watts</b>
Main Board +3.3V	0.000	0.000	0.000
Main Board +5V	0.000	0.000	0.000
Main Board 5VSB	4.940	0.123	0.608
Main Board +12V	0.000	0.000	0.000
<b>Main Board Power Consumption</b>			<b>0.608</b>

## Power Specifications

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The EPIA NX utilizes a special 12-pin Nano-ITX power supply connecto. Due to the EPIA NX platform's ultra low power requirements a 90 – 120 Watt power supply is ample for even the heaviest of multimedia system applications.



<b>1</b>	+3.3V	<b>2</b>	+3.3V
<b>3</b>	+3.3V	<b>4</b>	+5VSUS
<b>5</b>	GND	<b>6</b>	+12V
<b>7</b>	-PSON	<b>8</b>	+5V
<b>9</b>	GND	<b>10</b>	+5V
<b>11</b>	GND	<b>12</b>	PWRGD

## **VIA EPIA NX-Series Microsoft and Linux Driver Support**

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### **Microsoft Driver Support**

VIA EPIA NX series offers full support for the complete range of Microsoft operating systems.

For standard operating systems, Windows 2000/XP latest drivers downloads can be found in the VEPD website at [www.viaembedded.com](http://www.viaembedded.com).

For embedded operating systems, Windows CE.NET and XP Embedded related driver supports can be found in the VIA Arena website at [www.viaarena.com](http://www.viaarena.com).

### **Linux Driver Support**

VIA EPIA NX mainboards have a very high degree of support under Linux.

Support and drivers are provided through various methods including:

- Drivers provided by VIA
  - Using a driver built into a distribution package
  - Visiting VIA Arena website at [www.viaarena.com](http://www.viaarena.com) for latest updates on a monthly basis
- Installing a third party driver (such as the ALSA driver from the Advanced Linux Sound Architecture project for integrated audio)

For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. You can submit a request either through the [Developers portal](#) on VIA Arena, or through your VEPD support contact. Alternatively, VIA can work further towards providing additional drivers to suite your specific needs.

## Contact

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For more information on the VIA EPIA NX-Series Nano-ITX Mainboard contact your sales representative or visit our website at [www.viaembedded.com](http://www.viaembedded.com)

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