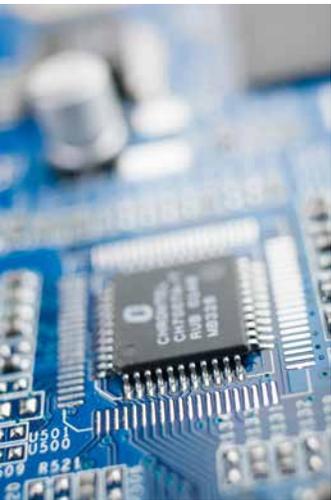


HOW TO CHOOSE  
**THE BEST SINGLE-  
BOARD COMPUTER**



## How to Choose the Best Single-Board Computer

The inside of your local ATM, the register at your favorite restaurant, and an EKG machine all have one important thing in common: they're typically driven by a small but powerful single-board computer (SBC).

SBCs are a complete computer built into a single circuit board. All of the memory, microprocessors, and input/output (I/O), plus other features that your typical computer requires, are integrated into one board. Designed to fit in small spaces and mobile units, these computers are barebones and only include the ports and slots that they need.

Most of us interact with these computers every day without realizing it. They successfully power the complex interactions we need in various devices and situations. SBCs are commonly found in:

- ATMs
- Automation equipment
- Cash registers
- Gaming applications such as video poker
- Industrial and machine-control applications
- Medical equipment
- Point-of-sale systems
- Touchscreen kiosks

SBCs can also be used in control and centralization deployments, for which they're designed specifically to be plugged into a backplane as support for I/O cards. The sheer range of SBC applications and industries they're used in means that there are many different form factor and manufacturer variables, among others, to choose from.

### Select By

Processor Speed
133 MHz
1.66 GHz
1.67 GHz

ICP America provides a variety of form factors.

## Learning the Important Parts

SBCs are the future of many modern computing solutions. OEMs are creating a variety of models for specific industries, as well as support for software and operating systems that you and your employees are already familiar with.

Like common, everyday PC, SBCs have several key parts that you should be aware of in order to choose the perfect SBC for your application.

## Processor

There's no need to sacrifice processor speed for tight form factors. Most SBCs will include Intel, ARM, or comparable architecture. Choose the power you need that can operate within the temperature profile of your application.

## Memory

Processors are clearing old hurdles and offering up to 32GB of memory in most SBC options. The choice in this segment will be based on your application and the ability for many low-memory options to run at cooler temperatures and with lower power needs.

## Power Options

Power requirements are a key differentiator in many models. You can find a variety of options to fit your power specifications, but be sure to also consider your cooling capabilities when making your choice.

### Backwards Compatibility

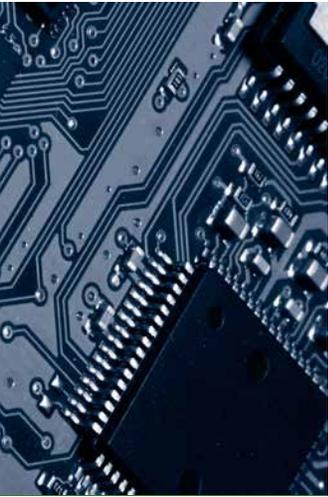
Every industry works with legacy systems. Even if your SBC is the newest model available, it may need to support a rack that isn't. Verify that you can get the backwards support your existing backplane and network demand so you don't have to go through a major rehaul or respec due to new equipment.

## I/O Complement

Like pin compatibility, your SBC's I/O structure must support your network's needs. Today's systems offer traditional serial ports, the latest in USB 3.0 and SATA, and Ethernet, as well as other standard interconnects.

These are just a few of the sections to consider. Working with a partner such as ICP America can ensure that you get the right SBC for your needs and network.





## Form Factors Available

Industry-specific and use-specific developments in the SBC space have led to many different models, all developed with precise deployments in mind. Six different setups dominate today's market, and each offers a unique profile.

While this explanation is just an overview, you'll quickly see how different SBC families can provide the processing power and operational support for both simple and complex interfaces and networks.

## EBX

Advantech's EBX 5.25" systems offer a super-low profile design with flexible I/O functions to support stacking in a variety of temperatures. Expand your operating power to handle almost any industry application with an Intel Core 2 Duo processor.

### AVAILABLE UNITS FOR CONSIDERATION INCLUDE:



•NOVA-PV-D5251



•NOVA-PV-D4251



•NOVA-945GSE

## EPIC

Industrial applications will find a specifically designed SBC in the EPIC lineup. With options for dual-core processors, USB 3.0 support, SATA 6 GB/s, and even 1080i HD-TV out options, these systems can give your team or customers the information they need with clarity.

### AVAILABLE UNITS FOR CONSIDERATION INCLUDE:



• NANO-9452



• NANO-SE-i1



• NANO-KBN-i1



• NANO-BT-i1



• NANO-QM871-i1



• NANO-HM651



• NANO-HM650



• NANO-CV-N26002



• NANO-CV-D25502



• NANO-CV-D25501



• NANO-CV-N26001



• NANO-QM770



• NANO-PV-N4551



• NANO-PV-D5252



• NANO-945GSE2



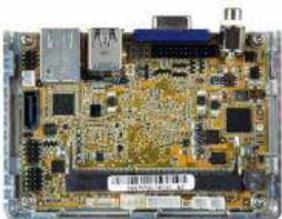
• NANO-LX-800



## Pico-ITX

The Pico-ITX form factor is built for hefty applications that require miniature x86 chipsets and power applications under 8 Watts. With these models, you'll get a great fit and competitive cost for price- and size-sensitive devices. Intel Atom and Celeron on-board systems on a chip (SoCs) and dual display support create a compelling product ideal for repeat interactions.

### AVAILABLE UNITS FOR CONSIDERATION INCLUDE:



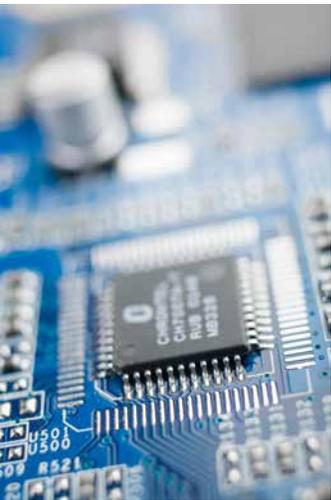
• HYPER-BT



• HYPER-KBN



• PC/104



The PC/104 SBCs are designed to meet a variety of different deployment and expansion needs. PC/104-Plus models give you broader support and some models can operate in ultra-low 5 Watt SoC setups. The PC/104 line is designed to be the leader of stackable options, delivering performance in tight spaces or when temperatures may stay high for longer periods of time.

#### AVAILABLE UNITS FOR CONSIDERATION INCLUDE:



• PM-PV-N4551



• PM-PV-D5251



• PM-LX2



• PM-LX

## PCI/ISA

Industrial, full-sized PIC 1.0 SBCs offer a variety of power and support options for multiple applications, with easy deployment in half-size slots. These SBCs are designed to provide the power you need in industrial control, factory automation, network appliances, and ATM kiosks. They're limited space computers that offer you full power with dual and quad-core processors.

#### AVAILABLE UNITS FOR CONSIDERATION INCLUDE:



• Intel Atom PICMG 1.0 SBC



• Intel Core PICMG 1.0 SBC



• Core 2 DUO PICMG 1.0 SBC



• Pentium M PICMG 1.0 SBC

## PCIe/SMB

The PICMG 1.3 (PCIe/SMB) SBC provides a specification upgrade to the PCI-ISA line by adding support for PCI Express slots for commercial peripheral boards. The full-sized CPU cards allow you to implement flexible I/O configurations, scale your performance, and maintain compatibility with many existing standards.

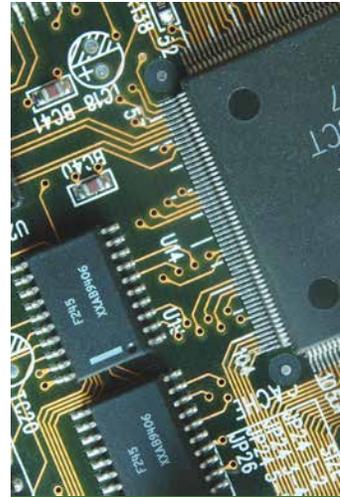
### AVAILABLE UNITS FOR CONSIDERATION INCLUDE:



• Server Grade PICMG 1.3 SBC



• Core 2 Duo/Quad



## Comparing Your Options

ICP America has been providing industry support for more than 25 years, and we continue to bring expertise to the SBC space. Our catalog offers a wide range of single-board computers with a specialization in the automation and industrial control industries.

We hope this guide has helped you to narrow your search for the best single-board computer for your application. Whether you need slot support or a no-slot design, specific integration and connector support, or on-board intelligence, you'll find it with ICP America.

Ready to make your selection, or have a few more questions? Contact our team to discuss how we can ensure that you've got the perfect setup for your next project.