



StackableUSB™ Celeron®/Pentium® III Computer with Gigabit Ethernet SBC1685



Features

- ✓ Industry's first StackableUSB™ host
- ✓ Celeron®/Pentium® III computer
- ✓ Gigabit Ethernet
- ✓ 4 USB 2.0 High speed ports, 4 USB 1.1 ports
- ✓ Two serial ports
- ✓ Compact Flash
- ✓ PCI-104 expansion

The SBC1685 packs a fast Pentium® III or Celeron® processor with advanced user interface capabilities into a 3.775" x 4.55" x 1.2" size board supporting industry standard mounting holes (PC/104 footprint). This powerful SBC is coupled with StackableUSB™ I/O expansion connectors, enabling it to control more than ten StackableUSB™ peripheral boards in a stack.

With 256Mbytes of SDRAM, most off-the-shelf PC programs can be run. However, if additional storage capacity is required, the CompactFlash connector allows for multiple gigabits of removable

program and data storage.

The VGA interface on the SBC1685 supports CRT and DVO at resolutions of 1600 x 1200. The SBC1685 has multiple data communication channels for fast reliable data transfer, including Gigabit Ethernet, dual serial ports, and eight host USB ports.

A wide variety of system specific I/O can be plugged into the SBC1685 through the easy to use StackableUSB™ connector or the more sophisticated PCI-104 interface connector.

Software Support

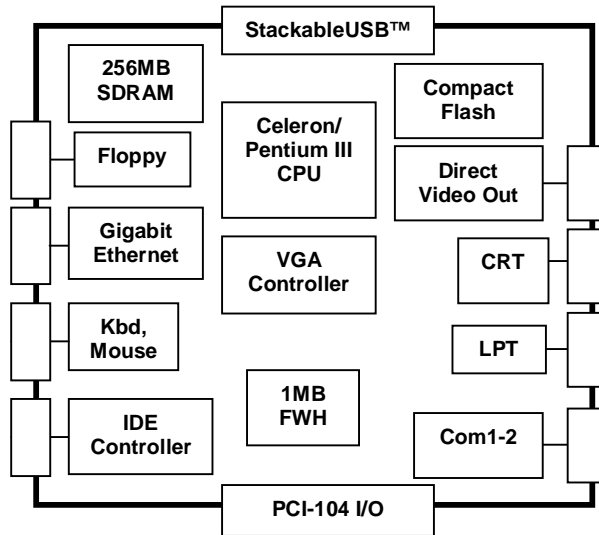
*DOS emulation, MSDOS 6.22,
Linux, VxWorks®,
Windows CE, Windows XP,
RTOS
Comm Library, CommBLOK™
Phar Lap ETS, PID loop library,
PidBLOK™ C, compilers
[Items above in Section 6]*

Compatible Hardware

*StackableUSB™ expansion
cards
PCI-104 expansion cards
RS232/RS485 devices
Custom*

Mounting/Packaging

*Standoffs, STDOFF01
[Item above in Section 5]
Custom*



Technical Details:

The SBC1685 CPU core is built around the Intel Low Power Pentium III running at 933MHz, or the Ultra-Low Voltage Celeron processor running at 650 or 400 MHz. Each of these CPUs include hardware floating point math and multimedia acceleration extensions.

The Pentium III and Celeron provide compatibility with both real mode and 32-bit protected mode programs. The SBC1685 incorporates the Intel 815E chipset, which integrates many PC-compatible peripherals. USB1.1 ports, a battery-backed real time clock, an EIDE controller, two cascaded 82C59A interrupt controllers, three timer/counters (82C54 compatible), and a dual DMA controller are all included on the board from the 815E chipset.

The large memory subsystem on the SBC1685 enables many programs to be run without any external storage. 256Mbytes of synchronous DRAM (SDRAM) is more than sufficient for many complex, protected-mode programs and operating systems.

In those cases where that is not sufficient or for

system designs that need removable media, there is a CompactFlash adaptor that supports gigabytes of storage. The CompactFlash is used in the True IDE mode, where it is register-compatible with an EIDE hard drive, eliminating the need for special drivers in the operating system.

Display capabilities on the SBC1685 include RGB CRT and DVO (direct video out). It includes hardware acceleration for fast graphic updates. The video capability comes from the 815E chipset and supports resolutions up to 1600 x 1200.

For communication, there are two serial ports, COM1 and COM2, that are 16C550 compatible UARTS with transmit and receive FIFOs. They run at speeds up to 11500 baud, have RS232 transceivers, RTS and CTS modem control lines. Additionally, COM1 is configurable for half or full duplex RS485 communication with jumperable termination resistors.

Networking capabilities are provided with a 10/100/1000BASE-T Ethernet port that connects to any Ethernet network as a node or as a gateway.

The SBC1685 becomes a powerful front end processor for control applications with two stackable I/O expansion formats on the board. The StackableUSB™ connector accommodates up to five I/O boards on the top side and/or on the bottom side of the board without use of a hub. The other I/O expansion connector is PCI-104 which is a 32-bit bus that supports expansion cards with standard PC/104-Plus (PCI) bus protocol and timing.

The firmware preinstalled in flash on the SBC1685 includes a fully PC compatible BIOS that supports many operating systems and application programs. The BIOS setup allows users to configure the SBC1685 for different operating modes which can include setting disk parameters, console redirection and interrupts. The BIOS can be customized for specific applications that require faster boot up times. Contact the factory for additional information on this feature.

The SBC1685 supports several different approaches for software development. If 16-bit DOS or DOS-extended software is required, Micro/sys installs a free DOS-compatible operating system on the SBC1685. Each board is shipped in this configuration if a SDK (software development kit) is not specified on the initial order. There is a small royalty fee for upgrading to MSDOS 6.22 and development tool chains can be recommended

For true 32-bit application development, the SBC1685 supports several operating systems. 32-bit real time operations systems (RTOS) such as Linux, PharLap ETS, and VxWorks can be booted on the SBC1685. All these operating systems support 32-bit linear protected mode operation and have full tool suites available, including compilers and debuggers. For Microsoft developers, the SBC1685 will run Windows CE and Windows XP in various configurations from the factory.

For pre-configured sets of options, Micro/sys can provide OEMs with a single part number for ordering. In addition, custom versions of the SBC1685 are available. Please call Micro/sys Technical Sales for details.

Specifications:

Mechanical:

- Industry standard mounting holes (PC/104)
- 3.775" x 4.55" x 1.2"
- Installed CompactFlash card extends past edge of board

Power Requirements:

- All versions require +5v ±5%
- SBC1685 (400Mhz) at 3.3A max
- SBC1685 (650Mhz) at 4.1A max
- SBC1685 (933Mhz) at 4.5A max
- +12v required only if used by expansion modules or flat-panel displays

Environmental:

<i>Part number</i>	<i>Board Airflow *</i>	<i>Operating Temp.</i>
SBC1685	0 lfps	0° to +70°C
SBC1685-650	200 lfps	0° to +70°C
SBC1685-933	200 lfps	0° to +65°C

- SBC1685, SBC1685-650 includes a factory- installed CPU heatsink
- SBC1685-933 includes a factory-installed heatsink/fan
- 40° to +85°C storage
- 5%-95% relative humidity, non-condensing

Processor Core Section:

- Intel Celeron® or Pentium® III CPU
- 400, 650, 933 MHz clock rate
- Hardware floating point math
- AT-compatible timers, interrupts, DMA

On-board Memory:

- 256M Synchronous DRAM based at 0

Watchdog Timer:

- When enabled program must refresh watchdog timer periodically, or system will be reset
- Enabled through software

COM1-COM2 Serial Ports:

- Two async serial ports, PC compatible
- 16550-compatible
- RTS and CTS modem controls
- RS232 signal levels

SVGA Video Output:

- CRT and DVO outputs
- Resolutions to 1600 x 1200

Keyboard, Mouse, and Speaker:

- PS/2-compatible keyboard port
- PS/2-type mouse port
- AT-compatible TTL speaker output

Real Time Clock:

- RTC with onboard battery
- Driver software in BIOS

PCI-104 Interface:

- Non-stackthrough PCI-104 connector
- Full 32-bit PCI-type transfers supported
- Stackthrough option available (SBCOPT120ST)

USB:

- Quad USB 2.0 ports
- Transfers at high-speed 480 Mbit/sec, full-speed 12 Mbit/sec, or 1.5 Mbit/sec
- Quad USB 1.1 ports
- Transfers at 12 Mbit/sec or 1.5 Mbit/sec

Floppy Disk Interface:

- Two drives on a single cable
- Standard connector pinout

IDE:

- One connector with two drives on each cable (CompactFlash counts as one drive) for a total of four drives

- Hard drive, CD-ROM support
- Flexible BIOS drive setup

Parallel Printer Port:

- Bi-directional LPT standard

CompactFlash Interface:

- Supports Type I CompactFlash
- Operates in True IDE mode
- CF+ cards not supported
- Not hot-swappable

DK1685 Development Kit:

- Free with first SBC1685 purchase
- Breakout cable to COM1-COM2
- Breakout cable to CRT, keyboard, mouse, speaker
- Download cable and utilities
- Documentation, schematics, sample software

External Connections:

- 40-pin high-density header for IDE
- 20-pin high-density header for USB
- 20-pin high-density header for COM1-COM2 RS232/ COM1 RS485
- 20-pin high-density header for CRT, keyboard, mouse, and speaker
- 40-pin high-density header for DVO
- 20-pin high-density header for parallel port
- 20-pin high-density header for floppy
- 5-pin removable terminal strip for power input

Ordering Information:**Single Board Computer:**

SBC1685	Celeron CPU, 400MHz, 128MB RAM, VGA
SBC1685-1	Celeron CPU, 400MHz, 128MB RAM, VGA, 10/100/1000 BASE-T Ethernet
SBC1685-650	Celeron CPU, 650MHz, 128MB RAM, VGA, Single

SBC1685-650-1	Celeron CPU, 650MHz, 128MB RAM, VGA, 10/ 100/1000 BASE-T Ethernet
SBC1685-933	Pentium III CPU, 933MHz, 128MB RAM, VGA
SBC1685-933-1	Pentium III CPU, 933MHz, 128MB RAM, VGA, 10/ 100/1000 BASE-T Ethernet
DK1685	No charge development kit, available with first order only
SDK-Linux-1685	Linux kit
SDK-WinCE-1685	Windows CE Develop ment Kit (Ethernet option recommended)
1685OPT1	256MB of RAM
1685OPT25	MS-DOS in Compact Flash

Related Products:

BA2018	Breakout cable to two DB9 COM port connectors
BA1616	CRT/Mouse/Keyboard Breakout Cable
BA4040	IDE Breakout Cable
BA2034	Floppy Breakout Cable
BA2025	LPT Breakout Cable
SBCOPT120ST	PCI-104 Stackthrough Option, 120-pin
CF-FL128	128MB CompactFlash Card
CF-FL256	256MB CompactFlash Card
CF-FL512	512MB CompactFlash Card

Cables nominally 15", other lengths available.

CommBLOK, PidBLOK trademark Drumlin
IBM, PC trademark IBM Corp.
MSDOS, Microsoft trademark Microsoft Corp.
VxWorks trademark Wind River
Pentium, Celeron trademark Intel Corp.
StackableUSB trademark Micro/sys, Inc.