

**Data Sheet**  
**SBC488A Test Controller**



Now available  
with SCPI Parser.

## SBC488A

**A turnkey IEEE 488 solution for OEM's. The SBC488A-OEM is a low cost single board computer that provides OEM's with turnkey IEEE 488 and RS-232/RS-485 control solutions. The SBC488-OEM includes a fully integrated C development environment using just a PC.**

### THE SBC488 - FEATURES:

- ◆ Powerful Z180 based processor module.
- ◆ Efficient switching power supply.
- ◆ IEEE 488 (GPIB) using NEC/National Inst. 7210 Talker/Listener/Controller
- ◆ RS-232 up to 9600 baud with DB-9 connector.
- ◆ RS-485 half duplex connection with DB-9 connector.
- ◆ ADAIO (Analog/Digital Digital/Analog) Plug-in modules (Optional) operate over the onboard I<sup>2</sup>C Interface.
- ◆ 32 Bi-directional digital I/O's to connect to keypads, LCD's and discrete control lines.
- ◆ 1500 VAC Optical Isolation for D/A, A/D and Digital I/O.
- ◆ 32K to 128K SRAM (battery backed).
- ◆ EEPROM: 512 bytes for calibration and other constants.
- ◆ Real Time Clock.
- ◆ Breakaway IEEE 488/RS-232/RS-485 connector board for easy packaging. The SBC488A-OEM connects via ribbon cable.
- ◆ RS-232 Programming port supports C downloading and debugging.
- ◆ A Windows(tm) program is available to control the SBC488A from a PC's IEEE 488 card.

### THE SBC488A - APPLICATIONS:

The SBC488A is designed for both OEM's and end user applications. Support for the C environment and the large array of peripherals makes the SBC488A useful in many different applications. Custom OEM and end user applications can be created quickly and easily by modifying sample applications.

- ◆ OEMs can use the SBC488A to add IEEE 488 and RS-232 interface/control capability to their equipment. Power supply manufacturers have made the SBC488A an option across their whole product line.
- ◆ The SBC488A is low cost replacement for a PC or workstation doing repetitive test applications. An RF component manufacturer is using the SBC488A to control their attenuator trim station in a production environment. See the MT488 data sheet.
- ◆ Finally, the SBC488A can also be used as an RS-232 or RS-485 to IEEE 488 protocol converter.

### ADAIO - Analog Input/Output with Opto Isolated I<sup>2</sup>C



- ◆ 12 and 16 bit D/A and A/D converters with optical isolation and isolated power supply.
- ◆ Custom ADAIO I<sup>2</sup>C peripherals available.

### SBC488A - SPECIFICATIONS

Size	6.5" X 4.00" and .75" X 4.00" connector PCB
Processor	Zilog Z180 based processor Core w/ EPROM, SRAM, EEPROM and RTC.
CLK Speed	9.216 MHz or 18.432 MHz
Power	7-24VDC , 5 Watts max.
RS-232/485	Up to 9600 Baud
IEEE 488	NEC/National Instruments 7210 ASIC SH1,AH1,T5,TE5,L3,SR1,DC1, C1-C5,E2
ADAIO	I <sup>2</sup> C Interface for up to three modules.
Digital I/O	32 Bit bi-directional w/optional pull up resistor

### IEEE 488 INTERFACE

The IEEE 488 Interface provides talker, listener and controller functions. The industry standard NEC 7210 GPIB controller ASIC provides full functionality.

### SERIAL COMMUNICATIONS

The SBC488A-OEM includes RS-232 capability and allows communication with any terminal or PC. In addition, a separate connector provides RS-485 half duplex network functionality and provides multi-drop capability. One serial port can be used to interface to the LCD and Keypad option.

### LCD AND KEY PAD INTERFACE (OPTIONAL)

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An optional LCD and Keypad interface provides a user interface for data entry and display.

### POWER SUPPLY

The low EMI power supply operating from DC provides power for all standard and optional features.

### DIGITAL I/O (OPTIONAL)

The digital I/O capability is 32 bits and based on Phillips  $\mu$ C bi-directional data ports. The ports allow easy interface to standard parallel LCD's and keypads. Sockets for SIP resistor pullups are provided to increase source current if necessary.

### BATTERY BACKUP AND REAL-TIME CLOCK (RTC)

The SBC488A-OEM includes a 3 volt button cell for SRAM memory retention and RTC functions. The SBC488A-OEM RTC provides accurate time keeping even without power. The RTC includes leap year calculations.

### PROGRAMMING INTERFACE

The C programming interface is built in to the SBC488A. Software development can be made without the use of any hardware emulators or logic analyzers. Downloading, setting breakpoints, variable watch and single stepping are all supported. EPROM generation is automatic. The C environment is available as an option.

### TECHNICAL MANUAL

A complete technical manual includes:

- ◆ Complete specifications.
- ◆ Functional descriptions.
- ◆ Operating Instructions.
- ◆ Programming Instructions for SBC488A-OEM firmware with QuickBasic examples.
- ◆ Test and Troubleshooting information.

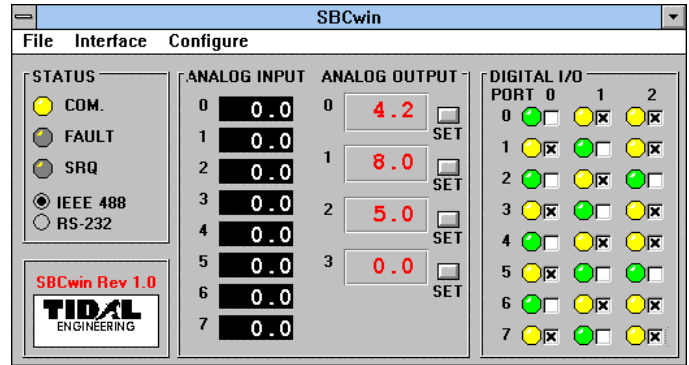
### SOFTWARE

SBC488A-OEM includes application firmware in EPROM for:

- ◆ IEEE 488 Talker and Listener functions.  
\*ESR?, \*STB?, \*IDN?, \*SRE?, SRE, \*ESE?, ESE
- ◆ RS-232 Functions and I/O  
D/A, A/D and Digital I/O commands.
- ◆ IEEE 488 to RS-232 Converter functions.3

A Windows(tm) program called SBCwin is provided to control the SBC488A from a PC using either the RS-232/RS-485 or the IEEE 488 interface. IEEE 488 capability requires IOTech's (tm) GPIB card and software.

The SBC488A and the Visual Basic source code for SBCwin are also available to OEM's as a starting point for your dedicated control program development.



### PRICE LIST (PRICES EFFECTIVE UNTIL SEPT 00)

Model	Description	QTY 1
SBC488A-OEM	SBC488A-OEM, 9.2 MHz, 32 K Ram, IEEE 488 & RS-232 Interfaces, RTC, includes SBCwin.	\$415
LCDKEY	20X4 LCD and 16 Key Keypad.	\$165
ADAIO-U	Unipolar ADC, and DAC 1,2,5,5 and 10 VDC	\$184
ADAIO-B	Bipolar ADC and DAC 1,2,5,5 and 10 VDC	\$184
ADIO-U	Unipolar ADC, 1,2,5,5 and 10 VDC	\$131
ADIO-B	Bipolar ADC 1,2,5,5 and 10 VDC	\$131
DIG	32 Bit Bi-directional Digital I/O.	\$21
SBCwin-source	Visual Basic ® Source code (Includes RS-232 and IEEE 488 interfaces. (IEEE 488 requires IOTech GPIB card and DRVR488W)	\$200
SBC488A-source	SBC488A C Source code License for use with SBC488A products	\$475
C Dev.	C Language development environment	\$225

The SBC488A is available exclusively from:

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