

# Data Sheet SBC488 Test Controller



# SBC488-OEM

A turnkey IEEE 488 solution for OEM's. The SBC488-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-OEM features:

- " Powerful Z180 based processor module.
- " Efficient multi-output 115 VAC 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.
- " 12 bit D/A with up to 6 channels. D/A ranges of 0-2.5 and 0-5 VDC are available. (Optional)
- " 12 Bit A/D with 11 channels. (Optional)
- 32 Bi-directional digital I/O's and 8 dedicated outputs to connect to keypads, LCD's and discrete control lines.
- " 2500 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 SBC488-OEM connects via ribbon cable.
- " RS-232 Programming port supports C downloading and debugging.
- " A Windows(tm) program is available to control the SBC488 from a PC's IEEE 488 card.

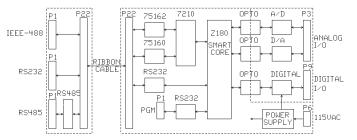
The SBC488 is designed for both OEM's and end user applications. Support for the C environment and the large array of peripherals makes the SBC488 useful in many different applications. Custom OEM and end user applications can be created quickly and easily by modifying sample applications.

### The SBC488 can be applied to the following applications:

- "OEMs can use the SBC488 to add IEEE 488 and RS-232 interface/control capability to their equipment. Power supply manufacturers have made the SBC488 an option across their whole product line.
- "The SBC488 is low cost replacement for a PC or workstation doing repetitive test applications.

  An RF component manufacturer is using the SBC488 to control their attenuator trim station in a production environment. See the MT488 data sheet.
- " Finally, the SBC488 can also be used as an RS-232 or RS-485 to IEEE 488 protocol converter.

### SBC488-OEM BLOCK DIAGRAM



#### SBC488-OEM SPECIFICATIONS

Size	7.75" X 5.00" and 1.25" X 5.00" connector PCB
Processor	Zilog Z180 based processor Core w/ EPROM,SRAM,EEPROM and RTC.
CLK Speed	9.216 MHz or 18.432 MHz
Power	115 VAC, 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
D/A Conv.	12 Bit, up to 6 Channel, 2.5 and 5.0 Vfs
A/D Conv.	12 Bit, 11 Channel, 2.5 and 5.0 Vfs
Digital I/O	32 Bit bi-directional w/optional pull up resistor

### **Power Supply**

The low EMI power supply operating from 115 VAC provides power for all standard and optional features.

#### 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 SBC488-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.

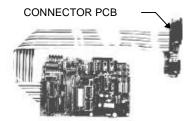
# D/A Converter (Optional)

The SBC488's A/D, D/A and Digital I/O sections are isolated with 2500 VAC Opto-Isolators. The optional A/D is a 12 Bit converter with 11 input channels and ranges of 0-2.5 and 0-5 VDC.



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A/D Converter (Optional) The optional A/D converter is also 12 bit with up to 6 channels and output ranges of 0-2.5 and 0-5 VDC. Space for input filter networks are provided.

# Digital I/O (Optional)

The digital I/O capability is 32 bits and based on Phillips I<sup>2</sup>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 SBC488-OEM includes a 3 volt button cell for SRAM memory retention and RTC functions. The SBC488-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 SBC488. 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 SBC488-OEM firmware with QuickBasic examples.
- " Test and Troubleshooting information.

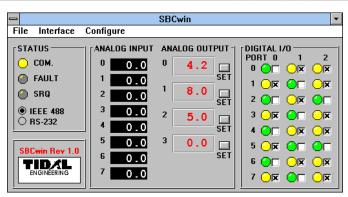
### Software

SBC488-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.

A Windows(tm) program called SBCwin is provided to control the SBC488 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 SBC488 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 July 98)

Model	Description	QTY 1
SBC488- OEM	SBC488-OEM, 9.2 MHz, 32 K Ram, IEEE 488 & RS-232 Interfaces, RTC, includes SBCwin.	\$395
LCDKEY	20X4 LCD and 16 Key Keypad.	\$165
AD4-x	11 Channel, 12 Bit A/D Converter, +/- 3 LSB, x=2.5 or 5 volts	\$32
DA4-y	1 Channel, 12 Bit D/A Converter, +/- 3 LSB, y=2.5 or 5.0 volts- up to 6 D/A channels.	\$17
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
SBC488- source	SBC488 C Source code License for use with SBC488 products	\$475
C Dev.	C Language development environment	\$200

The SBC488 is available exclusively from:

### American Distributors Inc. (ADI)

Is an ISO-9002 certified distributor of Electronic and Electro-Mechanical components and assemblies. Founded in 1983, ADI serves domestic and international customers in both commercial and military markets. ADI has introduced several high technology board level solutions in joint venture with Tidal Engineering. Tidal Engineering founded in 1994 and also of NJ is involved in contract engineering and product development in embedded software, digital, analog and power electronics.



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