16 Parallel I/O Lines

Real Time Clock With Alarm

Battery Back-Up Real Time Clock Static RAM

RS-485 Network

RS-232 Port

387SX Co-Processor (Optional)

RS-232 Port

Power Requirements 9-15 Vdc or 5 Vdc

Two ISBX I/O Expansion Ports

Up to 1-Meg FLASH Memory

RS-485 Network

386EX or 188EB Embedded CPU Counter/Timers

Up to 1-Meg Static RAM

MAXI-Plus ™

The **MAXI-Plus** 188EB and 386EX Single Board Computers have the functions needed for most embedded applications, plus the ability to add additional I/O using direct plug in *iSBX I/O Modules* and stackable *Network I/O Modules*. These new Single Board Computers were designed to provide a cost effective, high performance solution with the added flexibility to add both standard and custom I/O as required. Add on *Network I/O Modules* and *iSBX I/O Modules* are available for a wide variety of applications, including Digital, Serial, Parallel, Analog, LCD Display, Relay, Opto, and more.

Hardware Features

* 32-Bit 386EX or 16-Bit 80C188EB
* Up To 33 MHz CPU
* 80387SX Co-Processor Option
* 16-Bits Of Parallel I/O
* Two Serial/Network Ports (232/485)
* Real Time Clock
* Watch Dog Timer
* Up To 1 Meg FLASH EPROM
* Up To 1 Meg Battery Backed Static RAM
* Lithium Battery For RTC And RAM
* -40 To +85 C Temperature Range
* Ideal For Battery Powered Applications

Software Features

* On-Board FLASH Programming
* C & C++ Fully Supported
* *RLC-RTOS* Provided Free
* I/O Driver Library Provided Free
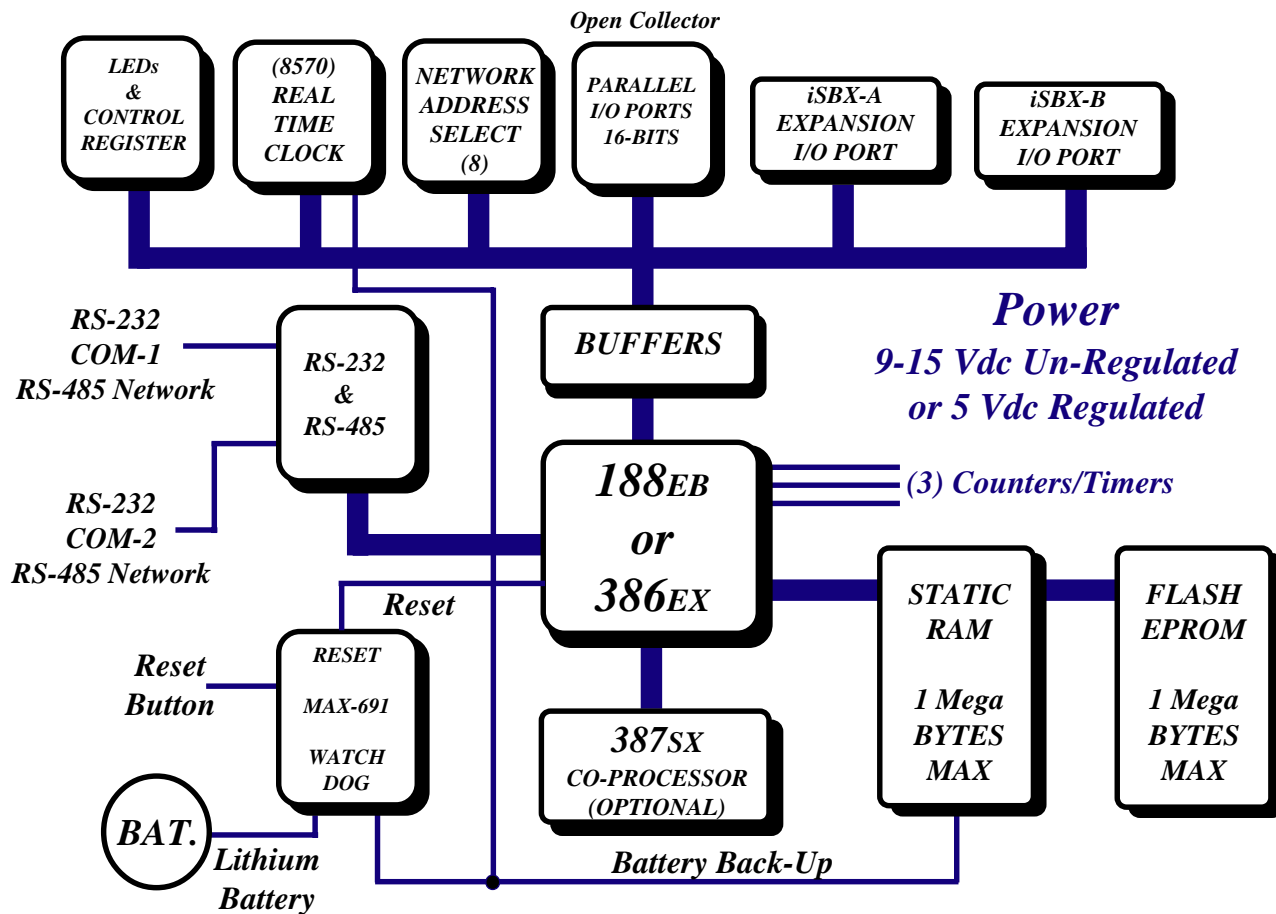* Demo Programs Provided Free
* Embedded Debugger Available

R L C

**TOLL FREE
1-888-RLC-TECH
http://www.RLC.com**

R.L.C. Enterprises, Inc.

2985 Theatre Drive, Paso Robles, CA 93446 Phone (805) 239-9737 FAX (805) 239-9736

MAXI-Plus ™

Open Collector

| LEDs & CONTROL REGISTER | (8570) REAL TIME CLOCK | NETWORK ADDRESS SELECT (8) | PARALLEL I/O PORTS 16-BITS | iSBX-A EXPANSION I/O PORT | iSBX-B EXPANSION I/O PORT |

Power
9-15 Vdc Un-Regulated
or 5 Vdc Regulated

RS-232 COM-1
RS-485 Network

RS-232 & RS-485

BUFFERS

188EB or 386EX

(3) Counters/Timers

RS-232 COM-2
RS-485 Network

Reset

RESET MAX-691 WATCH DOG

387SX CO-PROCESSOR (OPTIONAL)

STATIC RAM 1 Mega BYTES MAX

FLASH EPROM 1 Mega BYTES MAX

Reset Button

BAT.

Lithium Battery

Battery Back-Up

POWERFUL - EXPANDABLE - INEXPENSIVE - EASY

The MAXI-Plus Single Board Computers are Powerful because they use the new Intel 32-bit 386EX or 16-bit 80C188EB embedded microprocessor at speeds up to 33 MHz and are object code compatible to the PC/XT/AT.

The MAXI-Plus Single Board Computers are Expandable because they provide for on-board *iSBX I/O Module* expansion and network expansion using our *Network I/O Modules*. You may also use the additional RS-485/232 port to interface to other computers or I/O modules.

The MAXI-Plus Single Board Computers are Inexpensive because they do not need a card cage or rack full of other cards. Additional on-board expansion is provided by using low cost, off the shelf *iSBX I/O Modules* and *Network I/O Modules*.

Our new MAXI-Plus Single Board Computers are Easy because they are based on an industry standard Intel processor family and are fully supported by Microsoft & Borland C/C++. The **RLC-RTOS,** Embedded Real Time Operating System demos and drivers are provided free.
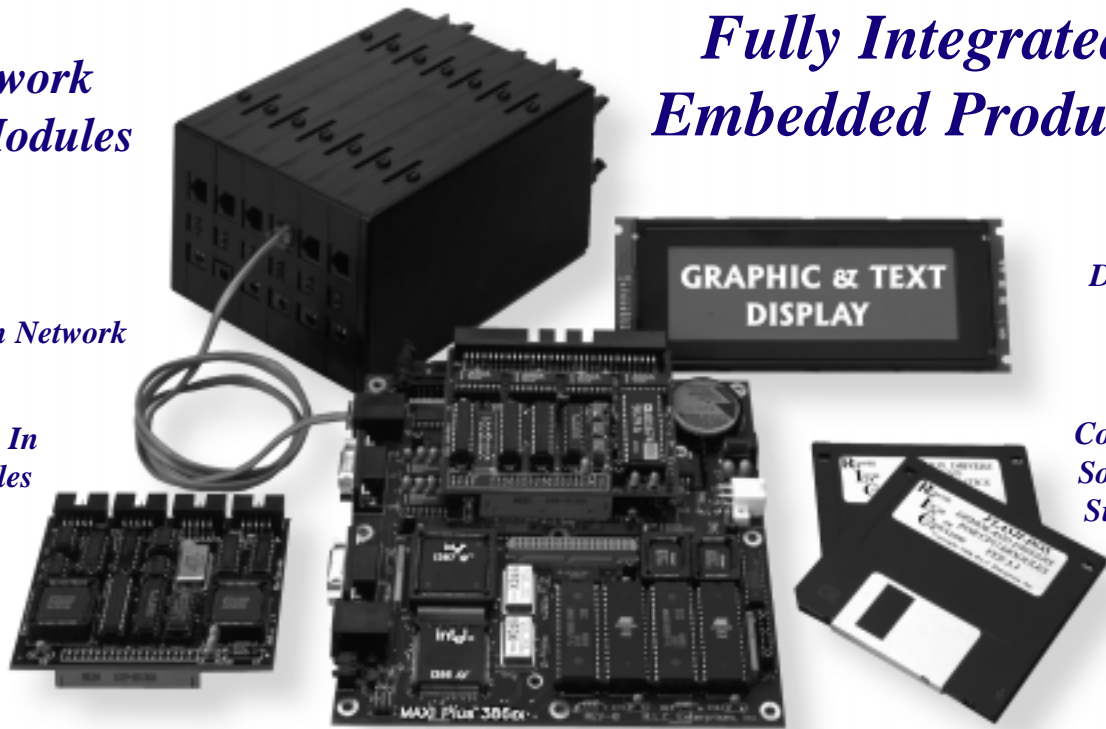
GRAPHIC & TEXT DISPLAY

MINI , MAXI, MAGNUM-Plus 386EX 0r 188EB

FUNCTIONAL DESCRIPTION

386EX or 80C188EB CPU

The *MAXI-Plus* Single Board Computers features a high performance, low power 16-bit or 32-bit embedded microprocessor which is object code compatible to the PC/XT/AT family. The 386EX and 80C188EB CPU chips also provides two independent UARTs, three counter/timers, programmable interrupt controller, programmable chip select unit, wait state generator, and much more. These on-chip functions have been integrated into the board design in a flexible manner. An 80387SX Co-Processor may be added to the 80386EX version for higher performance applications.

FLASH Memory

Up to 1 Mega-bytes of FLASH EPROM are provided which include a resident BIOS. This BIOS allows new programs to be down loaded and programmed directly into the FLASH EPROMS without the use of external EPROM programmers or ultra-violet erasers. You may down load through either network or RS-232 port using the provided program down loader. The area in the FLASH EPROM which holds the BIOS is protected against accidental programming. FLASH EPROMs are 100% dependable and are unaffected by glitches, program crashes, etc. FLASH EPROMs allow for fast program development and easy field updates.

Static RAM

Up to 1 Mega-bytes of low power battery backed Static RAM are provided. An on-board lithium battery is used to back up the RAM for up to 10 years. Flawless glitch prevention and battery switch-over is provided by a Maxim supervisory circuit.

Parallel & Serial Ports

Two serial ports are provided on the *MAXI-Plus.* Both ports can be configured as either RS-232 or RS-485. RS-485 may be used to implement an effective dependable high speed network using the provided software for interfacing automatically to other *Network I/O Modules*. The *MAXI-Plus* also provides 16-Bits of open collector parallel I/O. Each pin may be independently used as either input or output. All on-board I/O is fully supported by interrupt driven software drivers.

Real Time Clock

A Real Time Clock provides standard time and date functions independent of the CPU. Software is provided. The Real Time Clock is battery backed by the on-board lithium battery.

iSBX Expansion Ports

On-board I/O may be expanded using industry standard iSBX I/O modules. iSBX modules snap directly to the *MAXI-Plus* and are accessed directly by the on-board CPU.

Watch-Dog Reset LEDs

The on-board MAX-691 circuit provides a watch-dog timer used to monitor proper operation of the CPU. If the watch-dog is not periodically updated the system will be reset. The Reset circuit is flawless and ensures that the CPU is held in reset until the power is adequate and stable. Two LEDs are provided which can be turned on/off under program control at any time.

Power Supply

The *MAXI-Plus* accepts a wide range of regulated or unregulated DC power, making it ideal for battery operation. Simple wall transformer DC power supplies plug in directly.

Software Development

(Please see software data sheets for details)

Software development using C/C++ and/or assembly is fully supported. Using our Real Time Operating System *(RLC-RTOS)* you can develop your application program on any standard PC/XT/AT, and down load it into the *SBC* (Single Board Computer) RAM where it is debugged using our full featured remote debugger. The RS-232 link between your PC/XT/AT and the SBC operates at speeds up to 115K baud for an almost instant response. After the application pro-gram is debugged, it may be down loaded and pro-grammed into the *SBC* on-board FLASH EPROMs ready for execution. *RLC-RTOS* Real Time Operat-ing System, device drivers, start-up code, network drivers, and demo programs for all on-board functions are provided free of charge. The FLASH EPROM down loader utility is also provided free. The FLASH down loader utility fully supports Windows operation.

Specifications

Network: Two RJ-11 style phone cables with twisted pair. RS-485 signal levels.

Dimensions: 6.4in. x 6.4in. x .5in.

Power: Standard wall transformer dc power recep-tacle. 9-15Vdc @ 195 ma. (188EB), 390 ma. (386EX) or regulated 5Vdc power with 4-pin Molex.

Environmental: -40C to +85C with unrestricted air flow and no condensation.

Memory: The *MAXI-Plus-386EX* will hold a maxi-mum of 1 Mega-bytes of Static RAM and 1 Mega-bytes of FLASH EPROM. The *MAXI-Plus-188EB* will hold a maximum of 512K bytes of Static RAM and 512K bytes of FLASH EPROM.

User Interface: RJ-11 style connectors provide connection to the Primary and Secondary Networks. Two DB-9 Female connector provides direct RS-232 connection to a desk or lap-top computer's COM port. One 34-pin ribbon connector is provided for interfac-ing to the Parallel I/O. Two locking iSBX I/O expan-sion port connectors are also provided.

Software Interface: Application programs are down loaded from a PC/XT/AT to either network port or the RS-232 ports on the *MAXI-Plus* and burned automatically into the on-board FLASH memory. A full featured PC/XT/AT networking down load utility is provided.

MAXI-Plus ™ Configurations

Standard Boards: are fully assembled and tested. The *MAXI-Plus-386EX* is shipped with 512K bytes of FLASH memory, 256K bytes of SRAM. The *MAXI-Plus-188EB* is shipped with 256K bytes of FLASH memory, 128K bytes of SRAM. Both versions include Real Time Clock, and Lithium Battery. Manuals, Software Drivers, Network Drivers, and Examples supplied free on first order.

Hardware Options: on the *MAXI-Plus-386EX* include 1 Mega-bytes Static RAM memory expansion and 1 Mega-bytes FLASH EPROM expansion. Options on the *MAXI-Plus-188EX* include 512K bytes Static RAM memory expansion and 512K bytes FLASH EPROM expansion. All options are factory installed and tested.