

M-508/M-508T Linux-ready ATMEL AT91RM9200 Single Board Computer



- ✓ 100% Linux 2.6.x compatible computing platform
- ✓ 64MB SDRAM and 32MB Flash
- ✓ 512KB non-volatile SRAM (M-508T only)
- ✓ -20 to 80C wide-temperature operation (M-508T only)
- ✓ Ultra-low power consumption, less than 3 Watts
- ✓ One 10/100Mbps Ethernet port
- ✓ Four 921.6Kbps RS-232/485 TTY ports
- ✓ Two USB 2.0 host ports for functionality expansion
- ✓ One SD memory card slot inside for storage expansion
- ✓ 32x CMOS-level digital I/Os (GPIO)
- ✓ Single 5V power input
- ✓ GNU C/C++ tool chain for Linux/Windows environment

Introduction

The M-508/M-508T is a mini-mighty Linux-ready ARM9-based single board computer. Users can operate the M-508/M-508T the same way as they do on a normal Linux desktop. The M-508/M-508T comes equipped with one Ethernet, four RS-232/485 ports, two USB 2.0 host ports, plus one SD memory card slot and 32x GPIOs in an incredible small package measuring only 105x 75mm.

✘ Operates in -20 to 80C Environment (M-508T)

The M-508T is especially designed to withstand environmental extremes. All the major components used by the M-508 are of industrial grade, to ensure continuous operation in -20 to 80C temperature range.

✘ 512KB Non-volatile SRAM (M-508T)

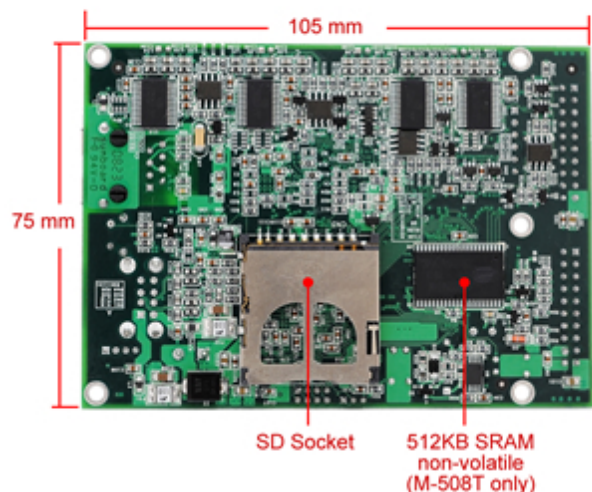
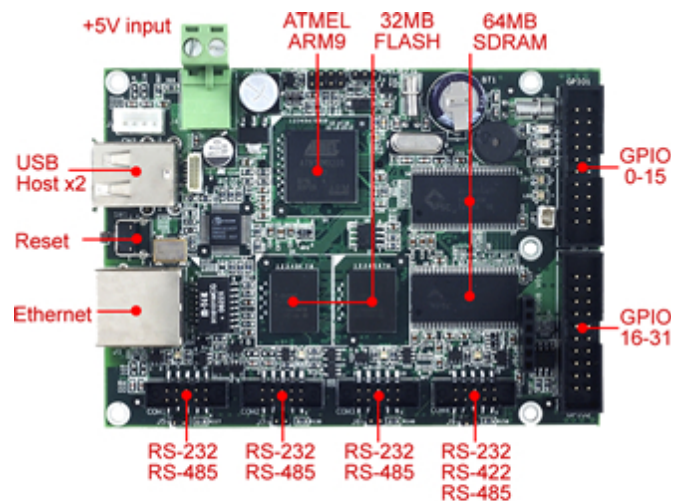
For critical applications, working data needs to be safely kept while system power goes down incidentally. The M-508T provides 512KB non-volatile SRAM for fast and safe data retention, eliminating the need of a trouble-making external battery.

✘ Four 921.6Kbps RS-232/485 TTY Ports

The M-508 provides four 921.6Kbps RS-232/485 TTY ports. Port 1, 2, 3 support standard RS-232/485. Port 4 supports RS-232/422/485. Port 2 also features full RS-232 supporting for modem connection.

✘ Thirty-two CMOS-level GPIOs

The M-508 comes with 32x CMOS-level digital I/Os. Each I/O pin can be individually programmed as input or output.



H/W Specifications

CPU/Memory

- ▷ CPU: ATMEL 180MHz AT91RM9200 (ARM9, w/MMU)
- ▷ Memory: 64MB SDRAM, 32MB Flash
- ▷ SRAM: 512KB, non-volatile (M-508T only)

Network Interface

- ▷ One port, 10/100BaseT, RJ-45 connector
- ▷ Protection: 1.5KV magnetic isolation

TTY (Serial) Ports

- ▷ Four RS-232/485 ports, software select
- ▷ Port 2: supports full modem signals
- ▷ Port 4: also supports RS-422 mode
- ▷ Connector: 10-pin header, male

TTY (Serial) Port Parameters

- ▷ Baud Rate: up to 921.6 Kbps
- ▷ Parity: None, Even, Odd, Mark, Space
- ▷ Data Bits: 5,6,7,8
- ▷ Stop Bit: 1, 1.5, 2 bits
- ▷ Flow Control: RTS/CTS, XON/XOFF, None

USB 2.0 compliant Host Ports

- ▷ Two ports, supports low-speed (1.5Mbps) and full-speed (12Mbps) data rate

CMOS-level Digital I/Os (GPIO)

- ▷ No. of pins: thirty-two pins
- ▷ Each pin can be programmed as input or output

Mass Storage

- ▷ One SD 1.0 compliant socket

General

- ▷ WatchDog Timer: yes, for kernel use
- ▷ Real Time Clock: yes
- ▷ Buzzer: yes
- ▷ Power input: +5VDC, 600mA typical
- ▷ Dimension: 105 x 75mm
- ▷ Operation Temperature:
M-508: 0 to 70C(32 to 158F)
M-508T: -20 to 80C(-4 to 176F)
- ▷ Regulation: CE Class A, FCC Class A

S/W Specifications

General

- ▷ OS: Linux, kernel 2.6.x
- ▷ Boot Loader: U-Boot 1.1.2
- ▷ File Systems: JFFS2, ETX2/ETX3, VFAT/FAT, NFS

Protocol stacks

- ▷ IPv4, ICMP, ARP, DHCP, NTP, TCP, UDP, FTP, Telnet, HTTP, PPP, PPPoE, CHAP, PAP, SMTP, SNMP V1/V2, SSL, SSH 1.0/2.0

Utilities

- ▷ bash: shell command
- ▷ tinylogin: login and user manager utility
- ▷ telnet: Telnet client program
- ▷ busybox: Linux utility collection
- ▷ ftp: FTP client program

Daemon

- ▷ pppd: Dial In/out over serial port and PPPoE
- ▷ snmpd: SNMP agent program
- ▷ telnetd: Telnet server program
- ▷ inetd: TCP server program
- ▷ ftpd: FTP server program
- ▷ boa: Web server program
- ▷ sshd: secured shell server
- ▷ iptables: Firewall service manager
- ▷ armd: Artila manager daemon

Tool Chain for Linux

- ▷ GCC: C/C++ PC cross compiler for Linux, CygWin
- ▷ GLIBC: POSIX Library

Device Drivers

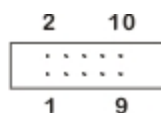
- ▷ SD/MMC, UART, Real Time Clock, Buzzer, Digital I/O, Ethernet, Watchdog Timer

USB Host Drivers (could be customized)

- ▷ Flash disk
- ▷ WiFi (IEEE-802.11b/g)
- ▷ RS-232 adaptors

TTY Pin Assignment

PIN	RS-232	RS-485	RS-422 **
1	DCD *	---	Tx-
2	DSR *	---	---
3	Rx	---	Tx+
4	RTS	---	---
5	Tx	Data+	Rx+
6	CTS	---	---
7	DTR *	Data-	Rx-
8	---	---	---
9	GND	GND	GND
10	---	---	---



* Port 2 only ** Port 4 only

Ordering Information

☒ M-508

Linux-ready ARM9 Single Board Computer with 32MB Flash, 64MB SDRAM, including one CD-ROM which contains GNU tool chain and user guide

☒ M-508T

Wide-temperature Linux-ready ARM9 Single Board Computer with 32MB Flash, 64MB SDRAM, 512KB non-volatile SRAM, including one CD-ROM which contains GNU tool chain and user guide