**M-506 Industrial ARM9 Linux-based Single Board Computer**

- Low power consumption of 200mA
- GNU C/C++ tool chain includes GTK, X11 and Qt library

**Overview**

M-506 is a standard 3.5" form factor ARM9 Linux-based Single Board Computer. M-506 is powered by 400MHz AT91SAM9G45 ARM9 Processor with memory management unit, and equipped with 128MB SDRAM, 128MB NAND Flash, and 2MB DATAFlash. M-506 supports up to 1280 x 860 LCD interface, and LVDS, which makes M-506 an ideal choice for mission-critical industrial applications where HMI (Human Machine Interface) is necessary. M-506 is also pre-installed with Linux 2.6.38 OS, busybox utility collection, lighttpd Web server, and various hardware device drivers. M-506 comes with one 10/100Mbps Ethernet, four USB 2.0 hosts, four serial ports, and 4 GPIOs. M-506 is a reliable single board computer to be used in various embedded systems. It is ideal for all kinds of industrial applications, including intelligent transportation system (ITS), building automation, energy-saving system, and scenario control systems.

**Front View of M-506**

- COM3/4 (RS-232)
- COM1 (RS-232)
- COM2 (RS-485/422)
- 128MB SDRAM
- 128MB FLASH
- 12-40VDC Power Input
- Audio Out
- LCD Controls
- Console
- LAN
- Micro SD
- Touch Screen
- LCD (TTL)
- LCD (LVDS)
- Reset Button
- RTC
- Backup Battery
- Buzzer
- SPI
- USB Host
- USB Client
- DI x 2/DO x 2
- 146mm x 102mm

**Features**

- ATMEL 400MHz AT91SAM9G45 CPU w/ MMU
- Linux kernel 2.6.38 with file system
- 128MB SDRAM/128MB NAND Flash
- 2MB DataFlash for system recovery
- On-board real-time clock w/ backup battery
- Supports up to 1280 x 860 LCD and touch screen
- Supports LVDS
- 1 x 10/100Mbps Ethernet
- 3 x RS-232 ports, 1 x RS-422/485 port
- 4 x USB Hosts supporting high speed of 480Mbps
- 1 x micro SD socket
- 4 x GPIOs
- Standard 3.5” form factor (LxW): 146 x 102mm
### Hardware Specifications

#### CPU/Memory
- CPU: ATMEL 400MHz AT91SAM9G45 w/MMU
- SDRAM: 128MB
- NAND Flash: 128MB
- DataFlash®: 2MB, for system backup

#### Network Interface
- Type: 10/100Mbps Ethernet, RJ-45 connector
- Protection: 1.5KV magnetic isolation

#### TTY(Serial) Ports
- 3 x RS-232 (Port 1, 3, 4)
- 1 x RS-422/485 (Port 2)
- Connector: One DB9 and two 10 pins header (male) for RS-232, Terminal Block for RS-422/485

#### TTY(Serial) Port Parameters
- Baud Rate: up to 921.6Kbps
- Parity: None, Even, Odd, Mark, Space
- Data Bits: 5, 6, 7, 8
- Stop Bit: 1, 1.5, 2
- Flow Control: RTS/CTS, XON/XOFF, None
- RS-485 Direction Control: auto, by hardware

#### USB Ports
- Hosts: Four, USB 2.0 compliant
- Speed: low speed (1.5Mbps), full speed (12Mbps) and high speed (480Mbps)
- Client Port: One USB 2.0
- Speed: high speed (480Mbps)

#### Display Interface
- LCD Resolution: Up to 1280x860 TFT
- Interface Signal: 24-bit TTL/CMOS and LVDS
- Touch Screen: 4-wire touch screen

#### General-Purpose IOs (GPIO)
- No. of Pins: 4
- Signal Level: CMOS/TTL compatible
- Each pin can be programmed as input or output

#### General
- Watch Dog Timer: Yes
- Real Time Clock: Yes, with backup battery
- Buzzer: Yes
- Power Input: 12-40VDC
- Power Consumption: 200mA@12VDC
- Dimensions: 146 x 102mm
- Operating Temperature: 0 to 70ºC (32 to 158ºF)

### Software Specifications

#### General
- OS: Linux, Kernel 2.6.38
- Boot Loader: U-Boot 1.1.2
- File Systems: UBI, JFFS2, ETX2/ETX3, VFAT/FAT, NFS

#### Pre-installed Utilities
- bash, busybox, gtk+, x11, gpe, alsa, madplayer, psplash, sysvinit, wget, ipkg, procps (for webmin), psmics, lighttpd, vsftpd, iptable, ppp, openssh, wireless_tools, util-linux-mount/umount, usbutils, phyton, jamvm, php, qt4-embedded, mysql, perl, sqlite3, snmp, Artila utility and more

#### Package Management & System Administration
- Supports ipkg to manage the package installation, upgrade and removal.
- Supports webmin (use ipkg install webmin to install) for web-based system administration.

#### Tool Chain for Linux
- GCC: C/C++ PC cross compiler
- GLIBC: POSIX Library
- GUI: GTK+, X window (X11), GPE and QT4-Embedded

#### USB Host Drivers
- Generic Flash drive
- RS-232 adaptors (for Prolific PL-2303 compatibles)
- WiFi dongles (rt2500/rtl8187/rtl73/zd1211 chips)

### Ordering Information

| M-506 | Industrial Linux-based ARM9 Single Board Computer |

### Pin Assignments

#### DB9 Male RS-232

<table>
<thead>
<tr>
<th>PIN</th>
<th>RS-232</th>
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<tbody>
<tr>
<td>1</td>
<td>DCD</td>
</tr>
<tr>
<td>2</td>
<td>Rx</td>
</tr>
<tr>
<td>3</td>
<td>Tx</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>DSR</td>
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<td>RTS</td>
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<td>8</td>
<td>CTS</td>
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<td>9</td>
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