

# Matrix-516

## Linux-ready ARM9 Industrial Box Computer



### Features

- ATMEL 400MHz ARM9 AT91SAM9G20 CPU
- Linux kernel 2.6.29 with file system
- 64MB SDRAM and 256MB NAND Flash
- 1 x microSD socket inside, up to 32GB capacity
- 2 x 10/100Mbps Ethernet ports
- 8 x isolated RS-485 serial ports
- 2 x USB hosts, 21 x GPIOs
- Ultra-low power consumption, less than 3 Watts

### H/W Specifications

#### CPU / Memory

- CPU: ATMEL 400MHz AT91SAM9G20 w/ MMU
- Memory: 64MB SDRAM, 256MB NAND Flash
- DataFlash@: 2MB, for system backup

#### Network Interface

- Type: 2 x 10/100BaseT, RJ45 connector
- Protection: 1.5KV magnetic isolation

#### TTY (Serial) Ports

- 8 x Isolated RS-485 (2500Vrms isolation)
- Direction Control: Auto, by hardware
- Connector: Terminal block
- Baud Rate: Up to 921.6Kbps
- Parity: None, Even, Odd, Mark, Space
- Data Bits: 5, 6, 7, 8
- Stop Bits: 1, 1.5, 2

#### USB Ports

- Host Ports: 2
- Client Port: 1, reserved
- Speed: USB 2.0 compliant, supports low-speed (1.5Mbps) and full-speed (12Mbps) data rate

#### SD Socket (Secure Digital Card)

- Type: microSD
- No. of Sockets: 1
- Storage Capacity: Up to 32GB
- Compatibility: SD memory specification 1.0

#### Digital I/Os (GPIO)

- No. of Pins: 21
- Signal Level: CMOS / TTL compatible
- Each pin can be programmed as input or output

#### General

- Watchdog Timer: Yes
- Real Time Clock: Yes
- Buzzer: Yes
- Power Input: 9-48VDC
- Power Consumption: 190mA@12VDC
- Dimensions (W x H x D): 160 x 104 x 32mm
- Operating Temperature: 0-70°C (32-158°F)
- Regulation: CE Class A, FCC Class A

### Serial Port Switch Definition

| SW1 | SW2 | SW3 | SW4 | SW5 | SW6 | Description                            |
|-----|-----|-----|-----|-----|-----|--|
| ON  | x   | x   | x   | x   | x   | Terminator (120 ohm) on D+ and D-      |
| x   | ON  | ON  | ON  | ON  | x   | Bias resistors (1k ohm) on D+ and D-   |
| x   | OFF | ON  | OFF | ON  | x   | Bias resistors (150k ohm) on D+ and D- |
| x   | x   | OFF | x   | OFF | x   | Not bias resistors on D+ and D-        |

### S/W Specifications

#### General

- OS: Linux, kernel 2.6.29
- Boot Loader: U-Boot 1.1.2
- File Systems: UBI, JFFS2, ETX2 / ETX3, VFAT / FAT, NFS

#### Pre-installed Utilities

- bash, busybox, sysvinit, wget, ipkg, procs (for webmin), psmics, lighttpd, vsftpd, iptables, ppp, ssh, wireless\_tools, util-linux-mount / umount, usbtutils, Artila utility, and more

#### Daemons Started by Default

- ssh (secured shell) with sftp
- syslog / klogd (system and kernel log)
- telnet server (disable root permission in /etc/securetty)
- ftp server (vsftpd)
- web server (lighttpd)
- amgrd (Artila broadcast search daemon)

#### 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

#### Toolchain for Linux

- GCC: C / C++ PC cross compiler
- GLIBC: POSIX Library

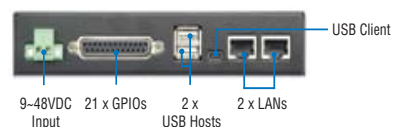
#### USB Host Drivers

- Generic Flash drive
- RS-232 adapters (for Prolific PL-2303 compatibles)
- WiFi dongles (for Ralink RT73 compatibles)

### Ordering Information

- **Matrix-516B**  
Linux-ready ARM9 Industrial Box Computer
- **CBL-F10M9-20 (91-0P9M9-001)**  
Console Cable (10Pin Header to DB9 Male, 20cm)
- **DK-35A (36-DK35A-000)**  
DIN RAIL Mounting Kit

#### Rear View



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