Solutions for Professional Applications

DOS-Drive Mini

- **PC Card Reader-Writer for embedded systems and microcontrollers**
- **Communication via asynchronous serial interface (RS232)**
- **Robust ATA Flash Card as removable storage medium**
- **Easy data exchange with notebooks through DOS FAT file system (MS-DOS 6.x)**
- **Functions to create, read, write and format files and directories**

Fields of Applications

Memory Cards are used as universal, flexible and reliable media to exchange data between devices and PCs.

Often there is the need to integrate a Memory Card interface into an existing device.

For this purpose CSM offers the **DOS-Drive Mini**, a universal and mature solution for *embedded systems*.

This product is based on our **long standing experience** in secure Memory Card applications.

CSM DOS-Drive Mini is used in these fields:

- ▷ **Machine and Plant Construction**
  Machine setup data,
  process instructions and control
- ▷ **Traffic Engineering**
  Trip recorders, passenger counting,
  traffic light control
- ▷ **Medical Technology**
  Biosignal recorders, reading of
  therapy data for dialysis devices
- ▷ **Measurement Technology**
  Recording of measurement data,
  e.g. in weighing systems

Universal Data Format for PC Cards

The Microsoft DOS FAT File System is widely-used and supported by all computers running Windows.

If an *embedded system* needs to exchange data with a PC, it must be able to manage the data on the Memory Card in DOS format. The design of the required hard- and software is normally associated with high engineering costs.

With **CSM DOS-Drive Mini** a **professional and perfect standard product** can be used directly. Your final system meets the expected functionality without the expense and risk of an individual system development.

Robust Storage Medium

As storage media **ATA Flash Cards** are supported which are perfect for industrial use due to their reliability and robustness.

For use with **DOS-Drive Mini** we recommend **CSM SuperStore ATA Flash Cards** which are available in capacities from 32 MB to 2 GB.

DOS-Drive Mini Features

CSM DOS-Drive Mini is outstanding in conception, functionality and performance:

- ▷ **File System full compatible with MS-DOS 6.x**
  support of 12-bit and 16-bit FAT
- ▷ **Extensive File Functions:**
  create, open, close,
  read, write, position,
  rename, delete,
  read/define date and attribute
- ▷ **Support of Subdirectories:**
  change, create, delete, show
- ▷ **Formatting of PC Cards**
  in MS-DOS compatible format
- ▷ **Sector Access for Special Applications**
  format-independent access to
  all sectors of the PC Card (read and write)
- ▷ **Request of Status Information**
  PC Card inserted/changed,
  information about PC Card (type, size, format)
- ▷ **Full Functionality**
  user defined file names, up to 16 files opened at the same time, max. number of files in the root directory only limited by format
- ▷ **High effective Data Transfer Rate**
  optimized access by an internal cache for data and FAT

Universal Serial Interface

The requirements for the host system are minimal. Only an **asynchronous serial interface** without handshake lines is needed.

By default **CSM DOS-Drive Mini** is equipped with one **RS232-Interface.** Optional a second serial interface and/or a CAN interface is available.

CSM DOS-Drive Mini detects **automatically** the **baud rate** used by the host system. The maximum baud rate is adapted to the type of line transceiver (max. 115,200 Baud at RS232).

Professional communication protocol

For communication between host-system and **CSM DOS-Drive Mini** commands and data are transferred via an asynchronous serial line.

For this a **simple and safe protocol** is available to handle the complete functionality in an easy way:

- ▷ **Efficient and optimized communication:**
  command/answer-protocol,
  checksum secured telegrams,
  high data transfer rate,
  automatic baud rate detection

Hence, **CSM DOS-Drive Mini** is widely independent of the individual architecture of the host-system and requires only **minimal resources**.

Support for Design-In

Usually **CSM DOS-Drive Mini** will be integrated into an own system as an OEM component. The integration into a target system is a one-time process. Therefore, the **documentation and application samples** are offered as a separate product which has to be purchased only once:

- ▷ **DOS-Drive SDK (Software Development Kit):**
  complete device description,
  detailed documentation of the serial communication protocol,
  test and demo application

For testing and as an example, a **32 Bit Windows application**[1)] is delivered which supports the standard COM interfaces of PCs. The available functions correspond to those of a DOS command interpreter (COMMAND.COM):

FORMAT, DIR, COPY, TYPE, DEL, REN, CD, MD, RD and others.

Additional support on request: Consulting and training after an arrangement, please ask for custom specific versions.

---

1) **System requirements:** Win 9x/Me, NT 4.0, 2000 or XP

Specification DOS-Drive Mini

Item	DOS-Drive Mini RS232 PCB
PC Card Slots	1 x type II Front-Slot
Dimensions (W x D)	86 mm x 130 mm (without projected connectors) height of PCB max. 15 mm, on solder side max. 5 mm
Weight	approx. 100 g
Power Supply	5V DC (optional 8-32V DC) via connector JST2 (B2B-XASK-1)
Power Consumption	approx. 400 mW without PC Card approx. 450 mW with SanDisk ATA Flash Card read access approx. 600 mW with SanDisk ATA Flash Card write access
System Kernel	Microcontroller: C163 (Infineon) program memory: Flash 128 KByte 64 KByte as program memory (code) usable 8 KByte as permanent memory (data) usable data memory: SRAM 128 KByte
Serial Interface[1)]	RS232 (TxD, RxD, RTS and CTS) via connector 10-pin box header max. 115200 Baud (115.2k, 57.6k, 38.4k, 19.2k, 9.6k ... Baud)
Option: CAN-Interface	Philips SJA1000 High-Speed CAN (ISO11898), max. 1MBit/s (1MBit, 500k, 250k, 125k, 83.3k, 62.5k, ...)
Option: Real Time Clock	Philips PCF8583 with clip-mounted lithium battery
PC Card Types	ATA Flash Card type II, CompactFlash Card with adapter [2)]
Operating Temperature	+0°C to +65°C
Storage Temperature	-20°C to +85°C
Humidity	10% to 95% (non condensing)
Conformity	The module is designed as a supplier-part for process and therefore doesn't have a CE identification.

[1)] **Optional:** Second serial interface
[2)] We recommend the use of CSM SuperStore Cards Type AI

Shipping Contents:

- ***DOS-Drive Mini***
  tested PCB, single packed (no cable, no assembly material, no manual)

Additional Products:

- **Omni*Drive***
  Universal PC Card Drive for USB or PC printer interface (SPP and EPP), for data exchange with PCs.
- ***SuperStore Industrial Memory Cards***

CSM GmbH, Raiffeisenstrasse 34, D-70794 Filderstadt
Phone: +49 711 77964 20 Fax: +49 711 77964 40
E-Mail: info@csm.de www.csmproducts.com