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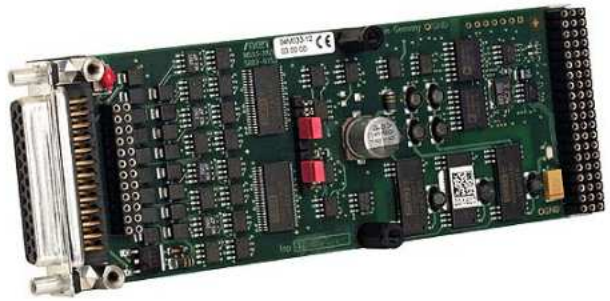
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Find the *MEN Micro / Mikro Elektronik M33* at our website: ***Click HERE***

Embedded Solutions

M33 - 8 Analog Outputs



- **8 current or voltage outputs**
- **12 bits resolution**
- **10 µs acquisition/conversion time**
- **Simultaneous channel update**
- **Optical isolation**
- **-40 to +85°C screened versions**

The M33 is a highly flexible M-Module™ for analog output signals. The isolated supply voltages can be generated by an on-board DC/DC converter. The output voltage range can be set to 0..10V, -5..+5V or -10..+10V for each channel by software. In addition, the current outputs can be used with 0..20mA or 4..20mA. The output load is driven to ground. Attention: An external supply is needed with 8 current outputs!

The M33 is based on the M-Module™ ANSI mezzanine standard. It can be used as an I/O extension in any type of bus system, i.e. CPCI, VME or on any type of stand-alone SBC. Appropriate M-Module™ carrier cards in 3U, 6U and other formats are available from MEN or other manufacturers.

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Technical Data

D/A Conversion
- 8 channels
- 12 bits
- DAC conversion time 10µs
- ±5 LSB gain
- Simultaneous update of all channels possible

Voltage Output
- Output current: 5mA max.
- Output linearity: ±1 LSB
- Accuracy: ±0.2%, ±1 LSB differential
- Voltage ranges: 0..10V; -5V..+5V; -10V..+10V
- Voltage output stable up to 1µF capacitive load

Current Output
- Accuracy: ± 0.5%
- Current range: 0..20mA; 4..20mA
- Max. output voltage 10V
- Load resistance range: 0..500 Ohm

Slew Rates for Voltage Output
- 0V..+10V mode: switch from 0V to +10V; slew rate (SR) = 4V/µs
- -5V..+5V mode: switch from -5V to +5V; slew rate (SR) = 4V/µs
- -10V..+10V mode: switch from -10V to +10V; slew rate (SR) = 4V/µs

Peripheral Connections
- Via front panel on a shielded 25-pin D-Sub receptacle connector
- Via carrier board (rear I/O)

M-Module™ Characteristics
- A08, D16, IDENT

Electrical Specifications
- Isolation voltage: 500V DC
- Supply voltage/power consumption:
  - +5V (4.85V..5.25V), 480mA quiescent current, 600mA with 8 channels voltage output, 650mA with 4 channels current output
  - External supply voltage +24V: 15.6V..30V
- MTBF: 200,000h @ 50°C (derived from MIL-HDBK-217F)

Mechanical Specifications
- Dimensions: conforming to M-Module™ Standard
- Weight: 80g

Environmental Specifications
- Temperature range (operation):
  - 0..+60°C
  - Industrial temperature range on request
  - Airflow: min. 10m³/h
- Temperature range (storage): -40..+85°C
- Relative humidity range (operation): max. 95% non-condensing
- Relative humidity range (storage): max. 95% non-condensing
- Altitude: -300m to + 3,000m
- Shock: 15g/11ms
- Bump: 10g/16ms
- Vibration (sinusoidal): 2g/10..150Hz
- Conformal coating on request

Safety
- PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

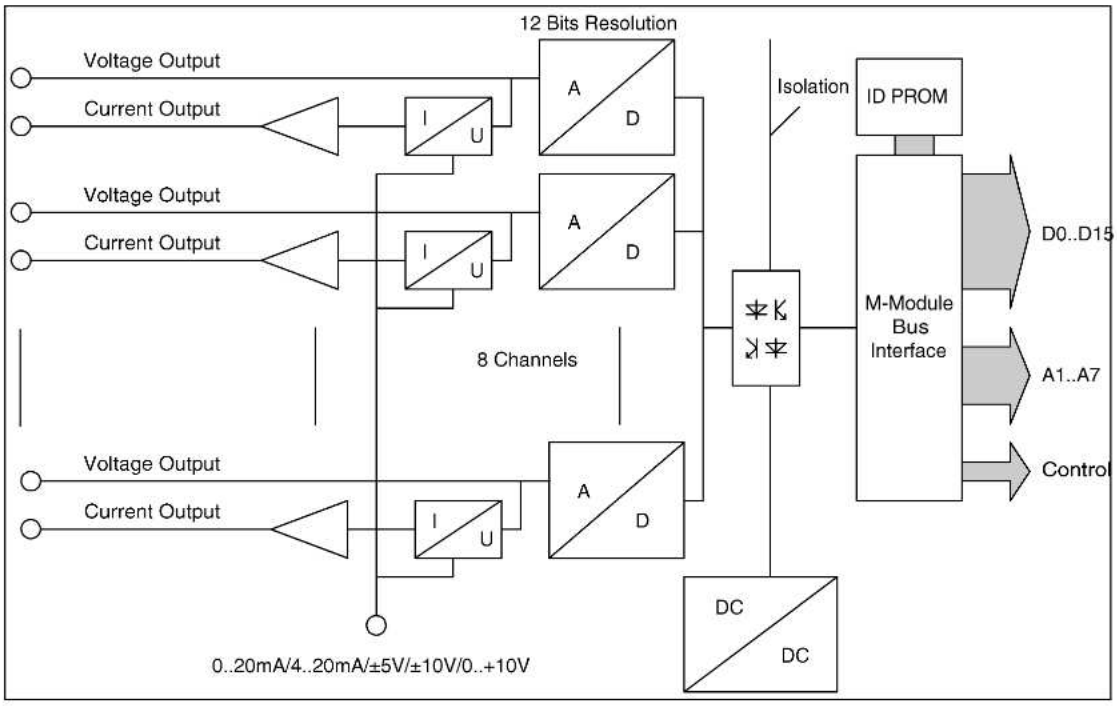
EMC
- Tested according to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)

Software Support
- MEN Driver Interface System (MDIS™ for Windows®, Linux, VxWorks®, QNX®, OS-9®)
- For more information on supported operating system versions and drivers see Software.

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Diagram



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Configuration & Options

Standard Configurations

Article No.	Channels	Operation Temperature
04M033-10	4	0..+60°C
04M033-11	4	-40..+85°C
04M033-12	8	0..+60°C
04M033-13	8	-40..+85°C

Options

Channels

- 4 or 8

Operation Temperature

- 0..+60°C
- -40..+85°C

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Ordering Information

Standard Hardware

04M033-10	4 analog outputs, 0..+60°C
04M033-11	4 analog outputs, -40..+85°C screened
04M033-12	8 analog outputs, 0..+60°C
04M033-13	8 analog outputs, -40..+85°C screened

Miscellaneous

05M000-00	M-Module cable, 2m, with 25-pin D-Sub plug/housing to pig tail
05M000-17	25 mounting screw sets to fix M-Modules on carrier boards

Software: OS independent

13M033-06	MDIS4/2004 low-level driver sources (MEN) for M33

Software: Windows

13M033-70	MDIS4/2004 Windows driver (MEN) for M33

Documentation

20M000-00	M-Module Draft Specification, Rev. 3.0
20M033-00	M33 User Manual

For the most up-to-date ordering information and direct links to other data sheets and downloads, see the M33 online data sheet under » www.men.de.

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