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M36 - 8/16 Analog Inputs

- **8/16 current or voltage inputs**
- **16 bits resolution**
- **10 µs acquisition/conversion time**
- **Unipolar/bipolar software-selectable**
- **Auto-sampling system**
- **Communication via dual-ported RAM**
- **External triggering**
- **Optical isolation**
- **On-board signal conditioning with SA-Adapter™**

The M36 is a 16-bit analog input M-Module™. The isolated supply voltages can be generated by an on-board DC/DC converter. Sampling on the M-Module™ is completely automatic. The measured values are available in a dual-ported RAM. The sequence and mode of channels to be measured can also be defined in the dual-ported RAM. Acquisition time is less than 10µs. Input signal conditioning is done using a small adapter.

The M36 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, PXI™, 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

A/D Conversion
- 16 bits @ 10µs
- Precision: ±2 LSB, ±0.1% typ.
- Noise: ±3 LSB of mean value, delta = 0.8
- Optically isolated (500V isolation)
- Programmable gain factor of 1, 2, 4 or 8 (factor 16 by hardware jumpering)
- Offset max. 4 LSB (25°C)
- Full-scale error max. 4 LSB (25°C)
- Software-selectable unipolar or bipolar operation
- Sample and hold
- Autoincrement of channel number

Input Signal Conditioning with AD01
- Voltage or Current Inputs
  - 16 analog inputs, single-ended
  - High input voltage tolerance
  - Cross-talk less than 56db
  - Low-pass filter 1kHz
- Voltage Measurement
  - Precision: ±0.5%
  - Voltage max.: ±15V
  - Voltage full scale: ±10V
  - Input resistance: 100 kOhm, ±10%
- Current Measurement
  - Precision: ±1%
  - Current max.: ±25mA
  - Current full scale: ±20mA, UA = ±1.25V
  - Load resistance: 62.5 Ohm, ±0.1%

Input Signal Conditioning with AD02
- Voltage or Current Inputs
  - 8 analog inputs, differential
  - High common mode range ±200V
  - Cross-talk less than 60db
  - Low-pass filter 3kHz
- Voltage Measurement
  - Precision: ±0.5%
  - Voltage max.: ±200V (common mode)
  - Voltage full scale: ±10V
  - Input resistance: 400 kOhm typ.
- Current Measurement
  - Precision: ±1%
  - Current max.: ±25mA
  - Voltage max. to IGND: ±200V
  - Input resistance: 62.5 Ohm, ±0.1%

Miscellaneous
- External trigger (isolated, rising-edge sensitive)
- External binary input

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, INTA, IDENT

Electrical Specifications
- Isolation voltage:
  - 500V DC between isolated side and digital side
  - 180V DC between the channels
  - Voltage between the connector shield and isolated ground is limited to 180V using a varistor; AC coupling between connector shield and isolated ground through 47nF capacitor
- Supply voltages/power consumption:
  - +5V (4.85V..5.25V), 110mA typ. (without DC/DC converter), 580mA (with DC/DC), 990mA (with DC/DC and AD01)
  - External supply voltages (without on-board DC/DC converter and adapter): +15V: 14.5V..15.5V, +60mA; -15V: 14.5V..15.5V, -32mA
- MTBF: 312,000h @ 50°C (derived from MIL-HDBK-217F)

Mechanical Specifications
- Dimensions: conforming to M-Module™ Standard
- Weight (incl. adapter): 102g

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) with regard to CE conformity

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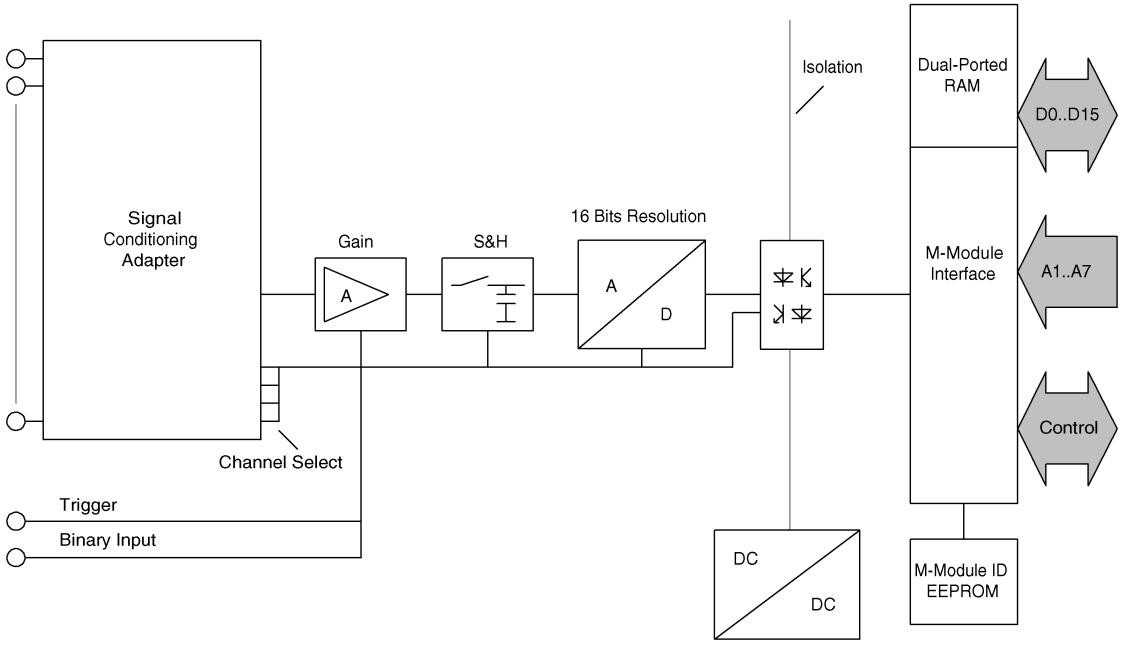
Technical Data

Software Support

- MEN Driver Interface System (MDIS™ for Windows®, Linux, VxWorks®, QNX®, RTX, OS-9®)

Diagram


Signal
Conditioning
Adapter
Gain
A
S&H
16 Bits Resolution
A
D
Isolation
Dual-Ported
RAM
D0..D15
M-Module
Interface
A1..A7
Control
Channel Select
Trigger
Binary Input
DC
DC
M-Module ID
EEPROM

Ordering Information

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
08AD01-01	Adapter for M34/M35/M36: 16 voltage inputs, single-ended, discontinued as of December 19, 2005
08AD01-02	Adapter for M34/M35/M36: 16 current inputs, single-ended, discontinued as of December 19, 2005
08AD01-04	Adapter for M34/M35/M36: 16 current inputs, single-ended, temperature range: -40..+85°C, discontinued as of December 19, 2005
08AD02-01	Adapter for M34/M35/M36: 8 voltage inputs, differential, discontinued as of December 19, 2005
08AD02-02	Adapter for M34/M35/M36: 8 current inputs, differential, discontinued as of December 19, 2005
08AD32-00	Adapter for M34/35/36 and M67: evaluation card

Software: OS independent

13M036-06	MDIS4™/2004 low-level driver sources for M36

Software: Windows

13M036-70	MDIS4™/2004 Windows® NT4/W2K/XP and XP Embedded driver for M36

Documentation

20M000-00	M-Module™ draft specification, Rev. 3.0
20M036-00	M36 user manual

For the most up-to-date ordering information and direct links to other data sheets and downloads, see the M36 online data sheet under » www.men.de.

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