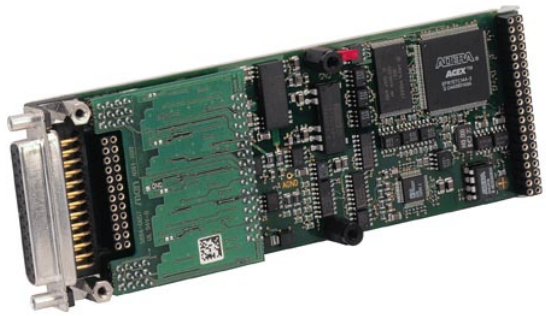
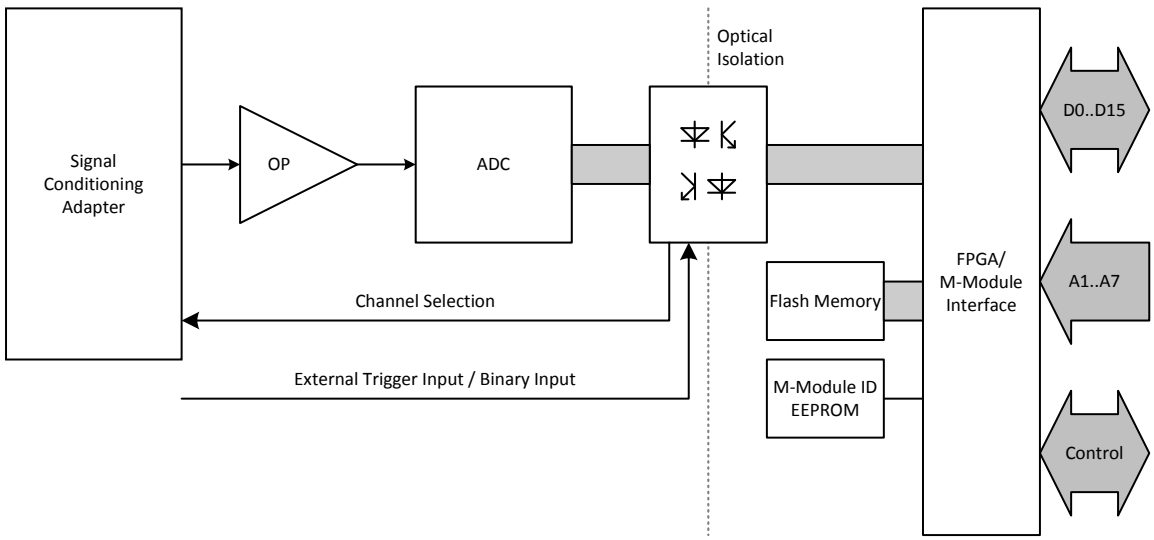
M35N – 8/16 Analog Inputs, 14 Bits

- **8/16 current or voltage inputs**
- **14 bits resolution**
- **7.8 µs acquisition/conversion time**
- **Precision better than 0.1 %**
- **Unipolar/bipolar software-selectable**
- **Autoincrement of channel number**
- **External triggering**
- **Optical isolation (500 V)**
- **-40 to +85°C screened versions**



The mezzanine card M35N is a 14-bit analog M-Module for a wide range of standard input requirements such as 16 channels single-ended voltage or current and 8 channels differential voltage or current. The isolated supply voltages are generated by an onboard DC/DC converter, which is also usable in the extended temperature range of -40 to +85°C. A fast A/D converter and auto-incrementation of the multiplexer channel make the M-Module ideal for fast sampling. The complete acquisition time of an M35N is 7.8µs and the precision is better than 0.1%. The M35N features totally automatic adjustment of each channel and each input range.
The M35N 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.

Diagram



Technical Data

A/D Conversion	■ 14 bits @ 7.8µs ■ Precision: depends on M-Module settings; see user manual ■ Noise: depends on M-Module settings; see user manual ■ Programmable gain factor of 1, 2, 4 or 8 (factor 16 by hardware jumpering) ■ Software-selectable unipolar or bipolar operation ■ Sample and hold ■ Autoincrement of channel number
Input Signal Conditioning: 16 inputs	■ Voltage or Current Inputs □ 16 analog inputs, single-ended □ High input voltage tolerance □ Cross-talk less than 60db □ Low-pass filter 1kHz ■ Voltage Measurement □ Voltage max.: ±15V □ Voltage full scale: ±10V □ Input resistance: 100 kOhm, ±10% ■ Current Measurement □ Current max.: ±25mA □ Current full scale: ±20mA, UA = ±1.25V □ Load resistance: 62.5 Ohm, ±0.1%
Input Signal Conditioning: 8 inputs	■ Voltage or Current Inputs □ 8 analog inputs, differential □ High common mode range ±200V □ Cross-talk less than 60db □ Low-pass filter 3kHz ■ Voltage Measurement □ Voltage max.: ±200V (common mode) □ Voltage full scale: ±10V □ Input resistance: 400 kOhm typ. ■ Current Measurement □ 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), 300mA ■ MTBF: 198,000h @ 40°C (derived from MIL-HDBK-217F)
Mechanical Specifications	■ Dimensions: conforming to M-Module Standard ■ Weight: 84g (incl. adapter)

Technical Data

Environmental Specifications	■ Temperature range (operation): □ 0..+60°C or -45..+85°C □ Airflow: min. 10m³/h ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (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 Downloads.

Configuration & Options

Standard Configurations

Article No.	Channels	Type	Operation Temperature
04M035N00	16 single-ended	voltage	0..+60°C
04M035N01	16 single-ended	current	0..+60°C
04M035N02	8 differential	voltage	0..+60°C
04M035N03	8 differential	current	0..+60°C
04M035N04	16 single-ended	voltage	-40..+85°C
04M035N05	16 single-ended	current	-40..+85°C

Options

Channels	■ 8 differential or 16 single-ended
Type	■ Voltage or current
Operation Temperature	■ 0..+60°C ■ -40..+85°C

Ordering Information

Standard M35N Models	**04M035N00**	16 analog voltage inputs, DC/DC converter, single-ended, 0..+60°C
	04M035N01	16 analog current inputs, DC/DC converter, single-ended, 0..+60°C
	04M035N02	8 analog voltage inputs, DC/DC converter, differential, 0..+60°C
	04M035N03	8 analog current inputs, DC/DC converter, differential, 0..+60°C
	04M035N04	16 analog voltage inputs, DC/DC converter, single-ended, -40..+85°C screened
	04M035N05	16 analog current inputs, DC/DC converter, single-ended, -40..+85°C screened
Miscellaneous Accessories	**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: Linux	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	13M034-06	MDIS5 low-level driver sources (MEN) for M35N
Software: Windows®	This product is designed to work under Windows®. See below for potentially available separate software packages from MEN.	
	13M034-70	MDIS4/2004 / MDIS5 Windows® driver (MEN) for M35N
Software: VxWorks®	This product is designed to work under VxWorks®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13M034-06	MDIS5 low-level driver sources (MEN) for M35N
Software: QNX®	This product is designed to work under QNX®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13M034-06	MDIS5 low-level driver sources (MEN) for M35N
Software: OS-9®	This product is designed to work under OS-9®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13M034-06	MDIS5 low-level driver sources (MEN) for M35N

For operating systems not mentioned here contact MEN sales.

Documentation	Compare Chart analog I/O M-Modules » Download	
	20M000-00	M-Module Draft Specification, Rev. 3.0
	20M035N00	M35N User Manual

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