

M35N – 8/16 Analog Inputs, 14 Bits

- 8/16 current or voltage inputs
- 14 bits resolution
- 7.8 μ s 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

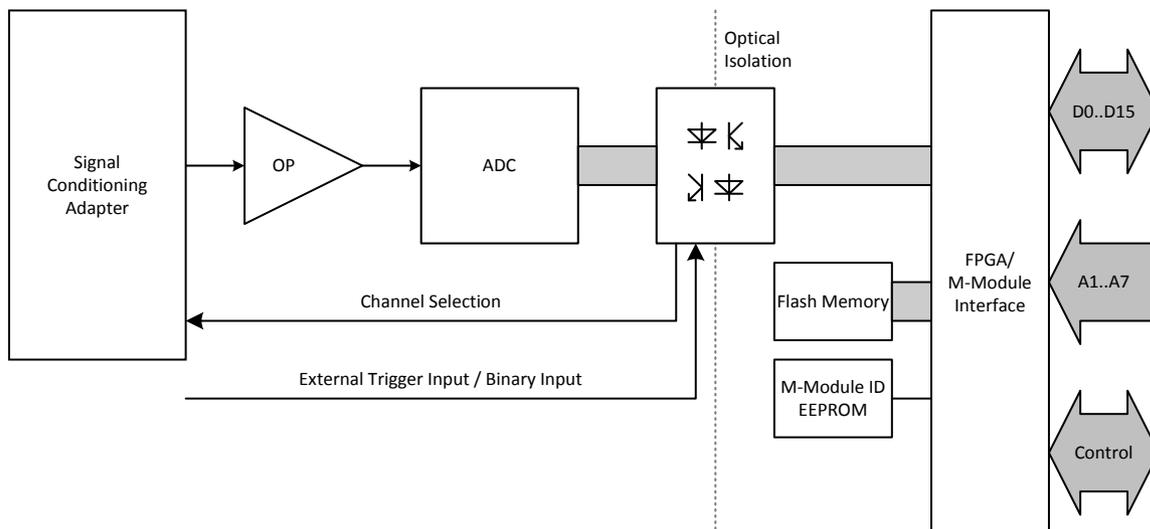


The mezzanine card M35N is a 14-bit analog M-Module for a wide range of standard input requirements such as 16 channels single-ended voltage or current and 8 channels differential voltage or current. The isolated supply voltages are generated by an onboard DC/DC converter, which is also usable in the 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 7.8 μ s 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Voltage or Current Inputs <ul style="list-style-type: none"> □ 16 analog inputs, single-ended □ High input voltage tolerance □ Cross-talk less than 60db □ Low-pass filter 1kHz ■ Voltage Measurement <ul style="list-style-type: none"> □ Voltage max.: ±15V □ Voltage full scale: ±10V □ Input resistance: 100 kOhm, ±10% ■ Current Measurement <ul style="list-style-type: none"> □ Current max.: ±25mA □ Current full scale: ±20mA, UA = ±1.25V □ Load resistance: 62.5 Ohm, ±0.1%
Input Signal Conditioning: 8 inputs	<ul style="list-style-type: none"> ■ Voltage or Current Inputs <ul style="list-style-type: none"> □ 8 analog inputs, differential □ High common mode range ±200V □ Cross-talk less than 60db □ Low-pass filter 3kHz ■ Voltage Measurement <ul style="list-style-type: none"> □ Voltage max.: ±200V (common mode) □ Voltage full scale: ±10V □ Input resistance: 400 kOhm typ. ■ Current Measurement <ul style="list-style-type: none"> □ Current max.: ±25mA □ Voltage max. to IGND: ±200V □ Input resistance: 62.5 Ohm, ±0.1%
Miscellaneous	<ul style="list-style-type: none"> ■ External trigger (isolated, rising-edge sensitive) ■ External binary input
Peripheral Connections	<ul style="list-style-type: none"> ■ Via front panel on a shielded 25-pin D-Sub receptacle connector ■ Via carrier board (rear I/O)
M-Module Characteristics	<ul style="list-style-type: none"> ■ A08, D16, INTA, IDENT
Electrical Specifications	<ul style="list-style-type: none"> ■ Isolation voltage: <ul style="list-style-type: none"> □ 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: <ul style="list-style-type: none"> □ +5V (4.85V..5.25V), 300mA ■ MTBF: 198,000h @ 40°C (derived from MIL-HDBK-217F)
Mechanical Specifications	<ul style="list-style-type: none"> ■ Dimensions: conforming to M-Module Standard ■ Weight: 84g (incl. adapter)

Technical Data

Environmental Specifications	<ul style="list-style-type: none">■ Temperature range (operation):<ul style="list-style-type: none">□ 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	<ul style="list-style-type: none">■ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers
EMC	<ul style="list-style-type: none">■ Tested according to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)
Software Support	<ul style="list-style-type: none">■ 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	<ul style="list-style-type: none"> ■ 8 differential or 16 single-ended
Type	<ul style="list-style-type: none"> ■ Voltage or current
Operation Temperature	<ul style="list-style-type: none"> ■ 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

Contact Information

Germany

MEN Mikro Elektronik GmbH
Neuwieder Straße 3-7
90411 Nuremberg
Phone +49-911-99 33 5-0
Fax +49-911-99 33 5-901

info@men.de
www.men.de

France

MEN Mikro Elektronik SAS
18, rue René Cassin
ZA de la Châtelaine
74240 Gaillard
Phone +33 (0) 450-955-312
Fax +33 (0) 450-955-211

info@men-france.fr
www.men-france.fr

USA

MEN Micro Inc.
860 Penllyn Blue Bell Pike
Blue Bell, PA 19422
Phone (215) 542-9575
Fax (215) 542-9577

sales@menmicro.com
www.menmicro.com

The date of issue stated in this data sheet refers to the Technical Data only. Changes in ordering information given herein do not affect the date of issue. All brand or product names are trademarks or registered trademarks of their respective holders.

MEN is not responsible for the results of any actions taken on the basis of information in the publication, nor for any error in or omission from the publication.

MEN expressly disclaims all and any liability and responsibility to any person, whether a reader of the publication or not, in respect of anything, and of the consequences of anything, done or omitted to be done by any such person in reliance, whether wholly or partially, on the whole or any part of the contents of the publication.

The correct function of MEN products in mission-critical and life-critical applications is limited to the environmental specification given for each product in the technical user manual. The correct function of MEN products under extended environmental conditions is limited to the individual requirement specification and subsequent validation documents for each product for the applicable use case and has to be agreed upon in writing by MEN and the customer. Should the customer purchase or use MEN products for any unintended or unauthorized application, the customer shall indemnify and hold MEN and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim or personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that MEN was negligent regarding the design or manufacture of the part.

In no case is MEN liable for the correct function of the technical installation where MEN products are a part of.

Copyright © 2014 MEN Mikro Elektronik GmbH. All rights reserved.