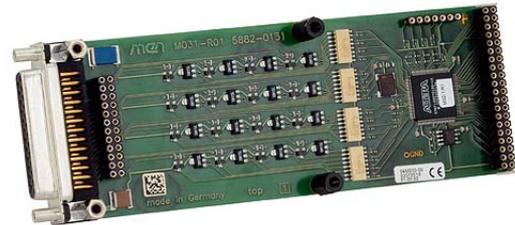


M31 – 16 Binary Inputs

- **16 inputs 5..180 V**
- **Constant current inputs**
- **Debouncing circuit**
- **Interrupt generation**
- **Load on ground**
- **Optical isolation**
- **-40 to +85°C with qualified components**



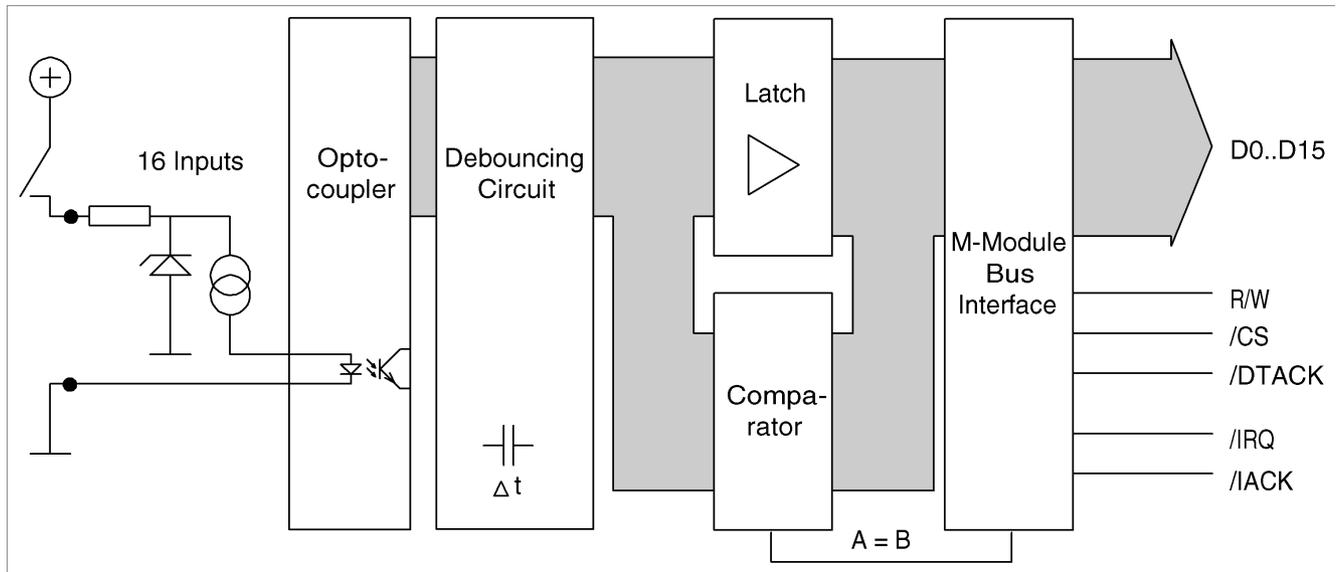
The mezzanine card M31 is a 16-bit binary input M-Module with latching and comparator capabilities for industrial applications. The inputs are optically isolated with a high isolation voltage of 500V DC. A current limit for each input guarantees a wide input voltage range of 5 to 180V. Each input signal edge generates a maskable interrupt for each channel.

The signals of mechanical switches are debounced by a digital circuit. The precision debouncing time of 300ns to 100ms is software programmed in a PLD.

The M31 has its input load on ground which means that switching an input to an external supply activates the respective optocoupler.

The M31 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

Binary Inputs	<ul style="list-style-type: none"> ■ Input load on ground ■ FET constant current source inputs ■ Input voltages and currents: <ul style="list-style-type: none"> □ 5..40V; 2.5..3.5mA (high level) □ 5..180V (M-Module version for extended temperature range) □ 0..1V; 0..0.2mA (low level) ■ Switching time for input change: 3µs typ.
Debouncing Time	<ul style="list-style-type: none"> ■ 14ms (defined by PLD programming)
Miscellaneous	<ul style="list-style-type: none"> ■ Debouncing circuit ■ Interrupt generation with maskable interrupt
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, INTB, 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 □ 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 voltage/power consumption: +5V (4.85V..5.25V), 50mA typ. ■ MTBF: 300,000h @ 50°C (derived from MIL-HDBK-217F)
Mechanical Specifications	<ul style="list-style-type: none"> ■ Dimensions: conforming to M-Module Standard ■ Weight: 67.5g
Environmental Specifications	<ul style="list-style-type: none"> ■ Temperature range (operation): <ul style="list-style-type: none"> □ 0..+60°C or -40..+85°C □ 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	<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.

Ordering Information

Standard M31 Models	04M031-00	16 binary sink inputs, 0..+60°C
	04M031-08	16 binary sink inputs, -40..+85°C with qualified components
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 all available separate software packages.	
	13MD05-90	MDISS System (and Device Driver) Package (MEN) for Linux. This software package includes most standard device drivers available from MEN.
Software: Windows®	This product is designed to work under Windows®. See below for all available separate software packages.	
	13M031-70	MDIS4/2004 / MDISS Windows® driver (MEN) for M31, M32 and M82
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.	
	13M031-06	MDISS low-level driver sources (MEN) for M31, M32 and M82
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.	
	13M031-06	MDISS low-level driver sources (MEN) for M31, M32 and M82
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.	
	13M031-06	MDISS low-level driver sources (MEN) for M31, M32 and M82
For operating systems not mentioned here contact MEN sales .		
Documentation	Compare Chart binary I/O M-Modules » Download	
	20M000-00	M-Module Draft Specification, Rev. 3.0
	20M031-00	M31 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 © 2015 MEN Mikro Elektronik GmbH. All rights reserved.