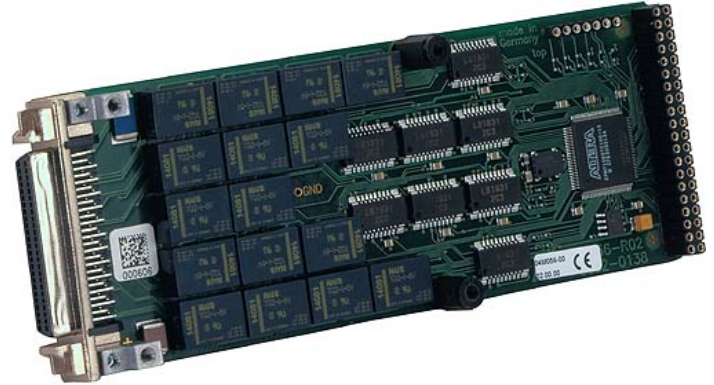


# M56 – 16-Channel Analog Multiplexer

- **16 powerless-switching relays**
- **1  $\mu\text{A}$  to 50 mA (max. 50 V),  $\pm 1.25\text{ V}$ ,  $\pm 2.5\text{ V}$**
- **One throw-over contact each**
- **No separate supply voltage**
- **Low heat development**
- **Optical isolation**
- **-40 to +85°C screened versions**

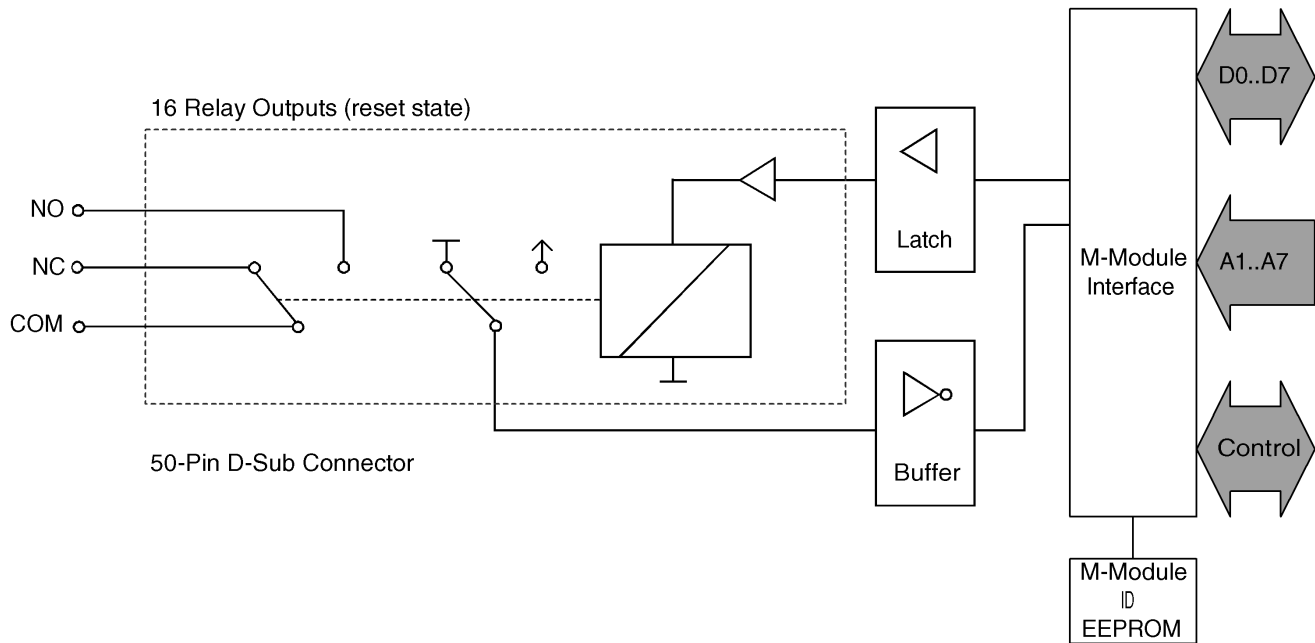


The mezzanine card M56 is an M-Module which has 16 relay channels with throw-over contacts. It is a switching matrix for measuring signals with different voltage levels and different ground references.

The powerless-switching relays offer great advantages: since there are no thermoelectric potentials, the M56 can "process" very small voltage and current.

The M56 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

<b>Relay Outputs</b>	<ul style="list-style-type: none"> <li>■ 16 outputs as throw-over contacts</li> <li>■ Switching voltages and currents <ul style="list-style-type: none"> <li>□ Switching voltage: max. 50V</li> <li>□ Switching current: max. 100mA</li> <li>□ Switching power: max. 5W</li> </ul> </li> <li>■ Cross-talk <ul style="list-style-type: none"> <li>□ Cross-talk damping between individual inputs: &gt; 60dB</li> <li>□ Cross-talk damping between input and output: &gt; 60dB</li> <li>□ Maximum frequency without cross-talk: 100MHz</li> </ul> </li> <li>■ Load current <ul style="list-style-type: none"> <li>□ Min. 1µA</li> <li>□ Max. 50mA</li> </ul> </li> <li>■ Initial contact resistance: max. 50 mOhm</li> </ul>
<b>Miscellaneous</b>	<ul style="list-style-type: none"> <li>■ Relay position can be read back</li> <li>■ Low heat development by use of CMOS components and bistable/monostable relays</li> </ul>
<b>Peripheral Connections</b>	<ul style="list-style-type: none"> <li>■ Via front panel on a shielded 50-pin D-Sub receptacle connector</li> </ul>
<b>M-Module Characteristics</b>	<ul style="list-style-type: none"> <li>■ A08, D08, IDENT</li> </ul>
<b>Electrical Specifications</b>	<ul style="list-style-type: none"> <li>■ Isolation voltage: <ul style="list-style-type: none"> <li>□ 500V DC between isolated side and digital side</li> <li>□ Voltage between the connector shield and digital ground is limited to 180V using a varistor; AC coupling between connector shield and digital ground through 47nF capacitor</li> <li>□ 150V DC between relay switching contacts</li> <li>□ 250V DC between the channels</li> </ul> </li> <li>■ Supply voltage/power consumption: +5V (5V..5.5V), 150mA typ. with load, 125mA typ. w/o load</li> <li>■ MTBF: 47,000h @ 50°C (derived from MIL-HDBK-217F)</li> <li>■ Maximum switching quantity: 100,000,000 for any relay</li> </ul>
<b>Mechanical Specifications</b>	<ul style="list-style-type: none"> <li>■ Dimensions: conforming to M-Module Standard</li> <li>■ Weight: 75g</li> </ul>
<b>Environmental Specifications</b>	<ul style="list-style-type: none"> <li>■ Temperature range (operation): <ul style="list-style-type: none"> <li>□ 0..+60°C</li> <li>□ Industrial temperature range on request</li> <li>□ Airflow: min. 10m³/h</li> </ul> </li> <li>■ Temperature range (storage): -40..+85°C</li> <li>■ Relative humidity (operation): max. 95% non-condensing</li> <li>■ Relative humidity (storage): max. 95% non-condensing</li> <li>■ Altitude: -300m to + 3,000m</li> <li>■ Shock: 15g/11ms</li> <li>■ Bump: 10g/16ms</li> <li>■ Vibration (sinusoidal): 2g/10..150Hz</li> <li>■ Conformal coating on request</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>■ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers</li> </ul>
<b>EMC</b>	<ul style="list-style-type: none"> <li>■ Tested according to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)</li> </ul>
<b>Software Support</b>	<ul style="list-style-type: none"> <li>■ MEN Driver Interface System (MDIS for Windows®, Linux, VxWorks®, QNX®, OS-9®)</li> <li>■ <a href="#">For more information on supported operating system versions and drivers see Downloads.</a></li> </ul>

## Ordering Information

<b>Standard M56 Models</b>	<b>04M056-00</b>	16-channel analog multiplexer, 0..+60°C
<b>Miscellaneous Accessories</b>	<b>05M000-17</b>	25 mounting screw sets to fix M-Modules on carrier boards
<b>Software: Linux</b>	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	<b>13M056-06</b>	MDIS4/2004 low-level driver sources (MEN) for M56
	<b>13M056-70</b>	MDIS4/2004 Windows® driver (MEN) for M56
<b>Software: VxWorks®</b>	This product is designed to work under VxWorks®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	<b>13M056-06</b>	MDIS4/2004 low-level driver sources (MEN) for M56
<b>Software: QNX®</b>	This product is designed to work under QNX®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	<b>13M056-06</b>	MDIS4/2004 low-level driver sources (MEN) for M56
<b>Software: OS-9®</b>	This product is designed to work under OS-9®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	<b>13M056-06</b>	MDIS4/2004 low-level driver sources (MEN) for M56
For operating systems not mentioned here <a href="#">contact MEN sales</a> .		
<b>Documentation</b>	Compare Chart instrumentation M-Modules » <a href="#">Download</a>	
	<b>20M000-00</b>	M-Module Draft Specification, Rev. 3.0
	<b>20M056-00</b>	M56 User Manual

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