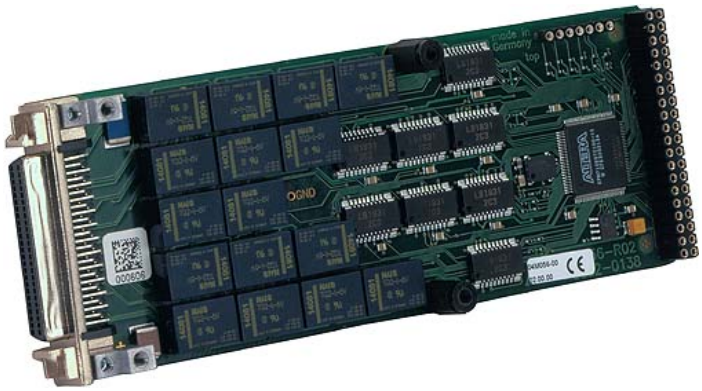
M56 – 16-Channel Analog Multiplexer

- **16 powerless-switching relays**
- **1 µA to 50 mA (max. 50 V), ±1.25 V, ±2.5 V**
- **One throw-over contact each**
- **No separate supply voltage**
- **Low heat development**
- **Optical isolation**
- **-40 to +85°C screened versions**

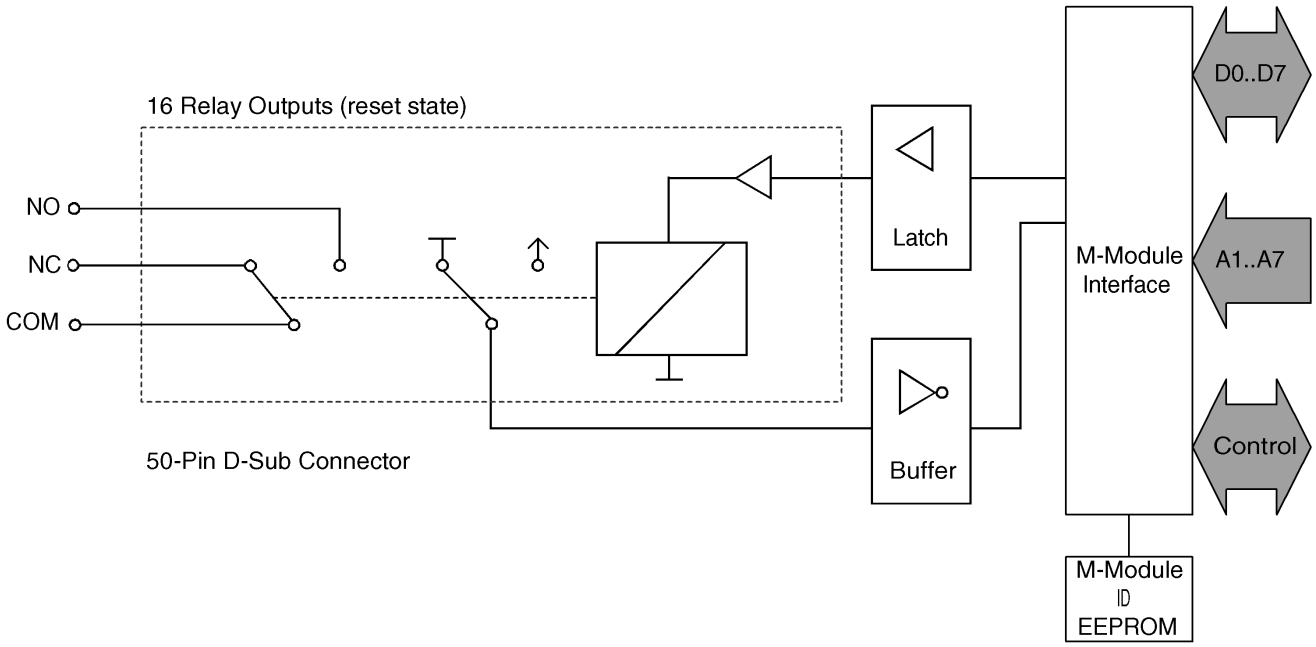


The mezzanine card M56 is an M-Module which has 16 relay channels with throw-over contacts. It is a switching matrix for measuring signals with different voltage levels and different ground references.

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


16 Relay Outputs (reset state)
NO
NC
COM
50-Pin D-Sub Connector
Latch
Buffer
M-Module
Interface
D0..D7
A1..A7
Control
M-Module
ID
EEPROM

Technical Data

Relay Outputs	■ 16 outputs as throw-over contacts ■ Switching voltages and currents □ Switching voltage: max. 50V □ Switching current: max. 100mA □ Switching power: max. 5W ■ Cross-talk □ Cross-talk damping between individual inputs: > 60dB □ Cross-talk damping between input and output: > 60dB □ Maximum frequency without cross-talk: 100MHz ■ Load current □ Min. 1µA □ Max. 50mA ■ Initial contact resistance: max. 50 mOhm
Miscellaneous	■ Relay position can be read back ■ Low heat development by use of CMOS components and bistable/monostable relays
Peripheral Connections	■ Via front panel on a shielded 50-pin D-Sub receptacle connector
M-Module Characteristics	■ A08, D08, IDENT
Electrical Specifications	■ Isolation voltage: □ 500V DC between isolated side and digital side □ 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 □ 150V DC between relay switching contacts □ 250V DC between the channels ■ Supply voltage/power consumption: +5V (5V..5.5V), 150mA typ. with load, 125mA typ. w/o load ■ MTBF: 47,000h @ 50°C (derived from MIL-HDBK-217F) ■ Maximum switching quantity: 100,000,000 for any relay
Mechanical Specifications	■ Dimensions: conforming to M-Module Standard ■ Weight: 75g
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 (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.

Ordering Information

Standard M56 Models	**04M056-00**	16-channel analog multiplexer, 0..+60°C
Miscellaneous Accessories	**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.	
	13M056-06	MDIS4/2004 low-level driver sources (MEN) for M56
	13M056-70	MDIS4/2004 Windows® driver (MEN) for M56
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.	
	13M056-06	MDIS4/2004 low-level driver sources (MEN) for M56
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.	
	13M056-06	MDIS4/2004 low-level driver sources (MEN) for M56
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.	
	13M056-06	MDIS4/2004 low-level driver sources (MEN) for M56

For operating systems not mentioned here contact MEN sales.

Documentation	Compare Chart instrumentation M-Modules » Download	
	20M000-00	M-Module Draft Specification, Rev. 3.0
	20M056-00	M56 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