MDM-8

Technical Documentation
Parallel Output Module

Please keep for further use !

Imprint

TRSystemtechnik GmbH
D-78647 Trossingen
Eglishalde 6
Tel.: (++49) 07425/228-0
Fax: (++49) 07425/228-33

© Copyright 1996 TRSystemtechnik

Guarantee

In our ongoing efforts to improve our products, TRSystemtechnik reserve the right to alter the information contained in this document without prior notice.

Printing

This manual was edited using text formatting software on a DOS personal computer. The text was printed in *Arial*.

Fonts

Italics and **bold** type are used for the title of a document or to emphasize text passages.

Passages written in `Courier` show text which is visible on the display as well as software menu selections.

"<   >" refers to keys on your computer keyboard (e.g. <RETURN>).

Note

Text following the "NOTE" symbol describes important features of the respective product.

Copyright Information ©

MS-DOS is a registered trademark of Microsoft Corporation.

Index of Modifications

i   *Note*
The cover of this document shows the current revision status and the date of the last changes. Since each individual page has its own revision status and date in the footer, this means that there may be several different revision statuses in the same document.

Document created on: 10.10.1995

| Modification	Date

Table of Contents

**MDM-8, Digital Power Output Submodule
8-Bit 24V/2.2A with DMOS Outputs and Fault Feedback**

1 General

The MDM-8 component is a galvanically decoupled submodule for the FOX-10 basic module. It provides eight digital outputs for 24 V/2.2 A. For operation in the II/O System, you can plug up to four MDM-8s in the FOX-10 basic module's four slots. This makes possible a maximum of 32 outputs per FOX-10. You can mix MDM-8s with other submodules, e.g. digital input modules. Every MDM-8 occupies eight of the 32 bits of useful information in a message frame. Depending on the slot (1 to 4), the module occupies one of the four data bytes D0, D1, D2 or D3.

The outputs are short-circuit-proof and protected from thermal overloads. An avalanche diode rated at 72V/5A/100mJ protects the outputs from inductive loads. Due to the high avalanche voltage, the break time of an inductive load is very short (typically below 30 ms).

The module has one fault output for each of channels 0-3 and 4-8. The master can read back these fault outputs via an MDI 8, for example. They are activated in the case of an output short-circuit, or an output driver defect. To spare input channels, you can connect the two fault outputs to one common MDI 8 channel.
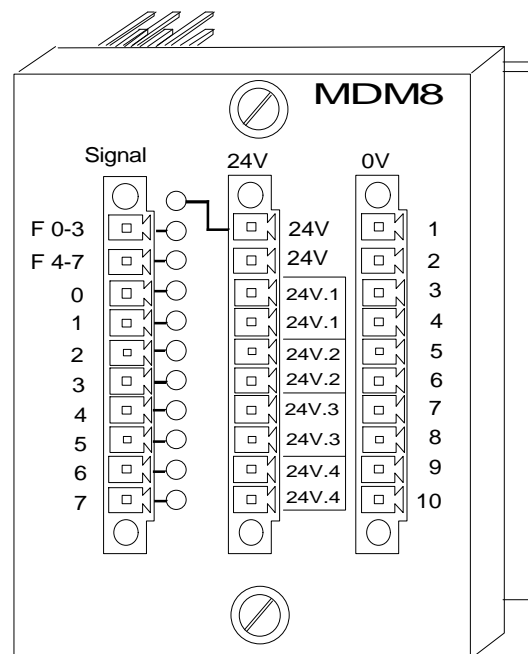
2 Technical data of MDM-8

Outputs	8 switching outputs, galvanically decoupled 2 fault outputs 8 LED status indicators of the outputs 2 LED fault indicators 1 LED voltage indicator
Output Specifications	24V/2.2A (*1), short-circuit-proof, thermally protected suitable for inductive loads (*2), RDSon = 100 mΩ
Output Monitoring	Watchdog circuit 2 fault outputs, 24V/10mA, short-circuit-proof
Supply Voltage	24 VDC (±20%)
Current Consumption System voltage Switching voltage	20 mA 80 mA (without absorption currents)
Housing form	Module mounted with front panel by means of two screws in FOX-10.
Dimensions (B×H×T), **Weight**	58 × 72 × 50 mm, approx. 200 g
Temperature	Operation: ±0..+55° C , storage: -20..+70° C

(*1)   Since the power loss increases steeply at high currents, the maximum permissible switching current was limited to 2.2A. If you observe the total power loss, individual channels can be loaded at up to 3A.

The static power loss per activated channel is calculated according to the following formula:

$P = I^2 * 0.1\ \Omega$ resulting in   100 mW at 1A
400 mW at 2A
900 mW at 3A

When inductive loads switch, the losses of the free-wheeling diode are added. The maximum permissible power loss per submodule is 3.8 W.

(*2)   With inductive loads, the maximum operating frequency reduces in dependence on the inductivity and the current. (2-A solenoid valve, maximum of 2.5 Hz)

3 Signal description

3.1 Terminal strip (on left)

Pin	Signal	I/O	Description
L1	F 0-3	Out	Fault output for channels 0-3
L2	F 4-7	Out	Fault output for channels 4-7
L3	DO 0	Out	Bit 0 of data byte 0, 1, 2 or 3
L4	DO 1	Out	Bit 1 of data byte 0, 1, 2 or 3
L5	DO 2	Out	Bit 2 of data byte 0, 1, 2 or 3
L6	DO 3	Out	Bit 3 of data byte 0, 1, 2 or 3
L7	DO 4	Out	Bit 4 of data byte 0, 1, 2 or 3
L8	DO 5	Out	Bit 5 of data byte 0, 1, 2 or 3
L9	DO 6	Out	Bit 6 of data byte 0, 1, 2 or 3
L10	DO 7	Out	Bit 7 of data byte 0, 1, 2 or 3

3.2 Terminal strip (in middle)

Pin	Signal	I/O	Description
M1,2	24V	VCC	+24-V DC logic supply of output stage
M3,4	24V.1	VCC	+24-V DC supply of outputs bit 0 and bit 1
M5,6	24V.2	VCC	+24-V DC supply of outputs bit 2 and bit 3
M7,8	24V.3	VCC	+24-V DC supply of outputs bit 4 and bit 5
M9,10	24V.4	VCC	+24-V DC supply of outputs bit 6 and bit 7

3.3 Terminal strip (on right)

Pin	Signal	I/O	Description
R1-10	0V	GND	Ground, feedback of outputs

i *Note*

The maximum power loading of any one pin is 8A. If loading is higher, this means that you may not loop the power supply on the middle terminal strip and GND on the terminal strip on the right.