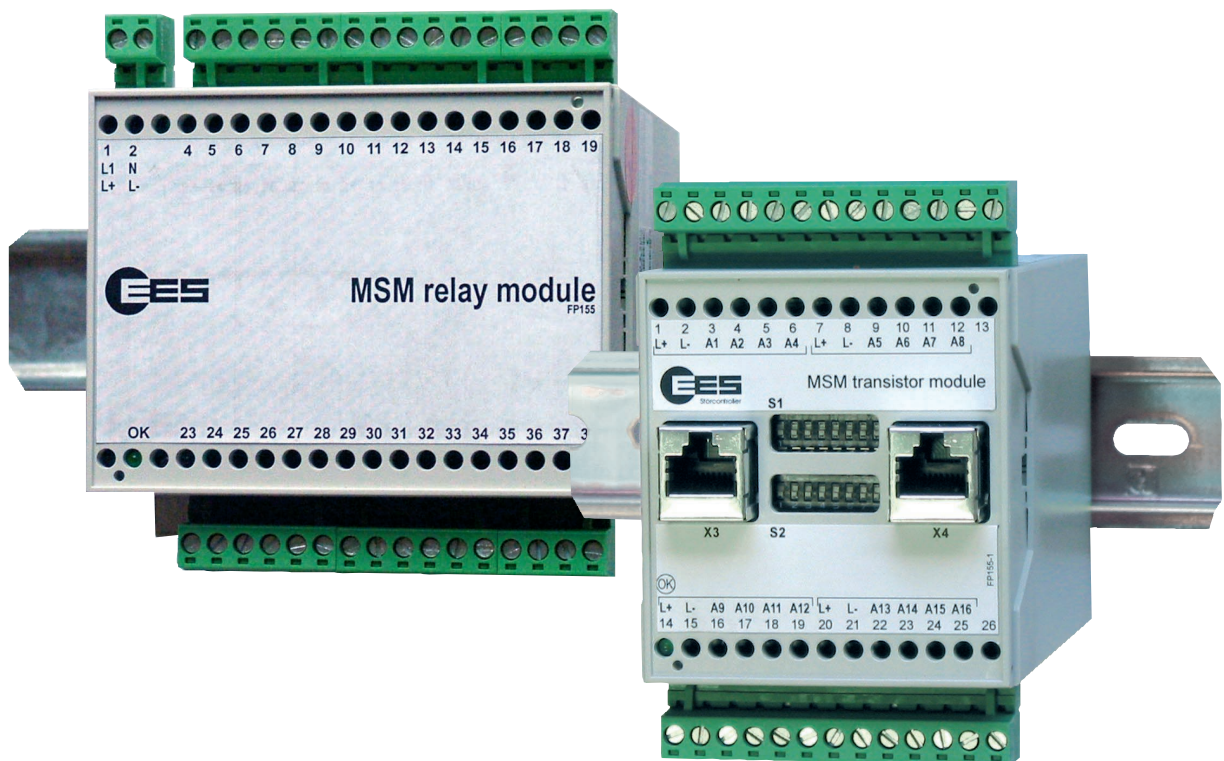




MSM - Expansion modules




➔ Transistor- and relay modules for devices of the MSM-product family


- › Free assignment of the output arrays to the input arrays of the annunciator
- › Triggering of relays or transistor outputs in- or output parallel to the fault annunciator
- › Triggering of the transistor outputs according to the LED-display of the fault annunciator possible
- › On option relay groups available as NC and / or NO - contacts
- › Signal voltage and supply voltage range 12 V ... 250 V AC/DC
- › Connection between annunciator and expansion module with preconfectedion buscable
- › DIN-rail housing
- › Plug-in connection terminals


→ **General system description**

For different application cases, e.g. for providing PCS-contacts or control of a mosaic, it is necessary to enlarge annunciators from the MSM-product family with additional outputs. Therefore relay-modules RM16 and transistor modules TM16 were developed. Mountable on DIN-rail the modules are connected to the annunciator via CAN-bus.

	RM 16	TM 16
Versions:	The modules are delivered in the three following equipment configurations of relays: <ul style="list-style-type: none"> • 16 normally closed contacts (NC) • 16 normally open contacts (NO) • 8 NC- / 8 NO-contacts 	There is only one variant delivered with plus-switching transistors.
Output groups	Each 8 relays are forming an output group. Group 1 (A1 ... A8) Group 2 (A2 ... A16).	Each 8 outputs are forming an output group. Group 1 (A1 ... A8) Group 2 (A9 ... A16).  Each group consists again of 2 subgroups with 4 transistor outputs per each
Assignment of output groups	By DIP switch the output groups are assigned freely to the array of inputs of a fault annunciator.	
Function of outputs	By DIP switch the triggering of every output group can be set up	
Connection to the fault annunciator	The connection between module and annunciator is made by preconfigured cables with RJ45-plugs.	

Function of the outputs

Description	Sequence
Static parallel to input	Output follows the assigned input on the annunciator. The output is triggered as long as the according alarm is lining up.
Dependent on acknowledgement, parallel to input	By an upcoming alarm on the input the output is set. The output is reset by acknowledgement of the alarm <u>or</u> receding of the alarm.
Static parallel to output	The output displays the state of the corresponding LED at the fault annunciator statically. The output is reset when the alarm has receded <u>and</u> is acknowledged (LED flashes or shines steadily).
Dynamic parallel to output	The output displays the state of the corresponding LED at the fault annunciator dynamically. The output follows the LED. If the LED flashes, the output also changes its state in the same rhythm. The output is set when the LED shines steadily.  This function is only available with transistor module.

 By the prerequisite that there is no negation of the outputs a set output means a High-signal at the transistor module or a pulled-in relay at the relay module.
A Low-signal at the transistor module or a released relay correspond to a reset output.
The outputs are not triggered by the lamp test of the fault annunciator.



→ DIP-switch assignment of the relay module

To configure a relay module there are 10 DIP-switches on the bottom-side of the module. With the DIP-switch 1 ... 5 the output group 1 (A1...A8) and with the DIP-switch 6 ... 10 the output group 2 (A9 ... A16) is configured

Assignment to input	Relay triggering of this group	Group inversion	DIP-Switch				
			1/6	2/7	3/8	4/9	5/10
1 ... 8	static parallel to input	no	OFF	OFF	OFF	OFF	OFF
	static parallel to input	yes	OFF	OFF	OFF	ON	OFF
	static parallel to output	no	OFF	OFF	OFF	OFF	ON
	static parallel to output	yes	OFF	OFF	OFF	ON	ON
	Dependent on acknowledgement parallel to input	no	OFF	ON	ON	OFF	OFF
	Dependent on acknowledgement parallel to input	yes	ON	ON	ON	ON	OFF
9 ... 16	static parallel to input	no	ON	OFF	OFF	OFF	OFF
	static parallel to input	yes	ON	OFF	OFF	ON	OFF
	static parallel to output	no	ON	OFF	OFF	OFF	ON
	static parallel to output	yes	ON	OFF	OFF	ON	ON
	Dependent on acknowledgement parallel to input	no	OFF	ON	ON	OFF	ON
	Dependent on acknowledgement parallel to input	yes	ON	ON	ON	ON	ON
17 ... 24	static parallel to input	no	OFF	ON	OFF	OFF	OFF
	static parallel to input	yes	OFF	ON	OFF	ON	OFF
	static parallel to output	no	OFF	ON	OFF	OFF	ON
	static parallel to output	yes	OFF	ON	OFF	ON	ON
	Dependent on acknowledgement parallel to input	no	OFF	ON	ON	ON	OFF
25 ... 32	static parallel to input	no	ON	ON	OFF	OFF	OFF
	static parallel to input	yes	ON	ON	OFF	ON	OFF
	static parallel to output	no	ON	ON	OFF	OFF	ON
	static parallel to output	yes	ON	ON	OFF	ON	ON
	Dependent on acknowledgement parallel to input	no	OFF	ON	ON	ON	ON
33 ... 40	static parallel to input	no	OFF	OFF	ON	OFF	OFF
	static parallel to input	yes	OFF	OFF	ON	ON	OFF
	static parallel to output	no	OFF	OFF	ON	OFF	ON
	static parallel to output	yes	OFF	OFF	ON	ON	ON
	Dependent on acknowledgement parallel to input	no	ON	ON	ON	OFF	OFF
40 ... 48	static parallel to input	no	ON	OFF	ON	OFF	OFF
	static parallel to input	yes	ON	OFF	ON	ON	OFF
	static parallel to output	no	ON	OFF	ON	OFF	ON
	static parallel to output	yes	ON	OFF	ON	ON	ON
	Dependent on acknowledgement parallel to input	no	ON	ON	ON	OFF	ON

➔ **State of relay contacts**

The state of the relay contacts is represented in the following table in dependence of the alarm inputs, the type of the relay contacts and the position of the DIP switch „inverted“

DIP-switch „inverted“ (4 or 9)	Relay contact designed as	Relay contact if alarm present	Relay contact if alarm not present	Relay contact without supply voltage
OFF	normally open	closed	open	open
OFF	normally closed	open	closed	closed
ON	normally open	open	closed	open
ON	normally closed	closed	open	closed



The state of relay contacts is dependent on:

- the group assignment (Input group of fault annunciator and output group of relay module)
- the control of relays (static parallel to input, dependent on ackn. - parallel to Input or static parallel to output)
- the type of relay contacts (NO-/NC-contacts)
- normal or inverted (yes or no)

➔ **DIP-switch assignment of the transistor module**

On the front of the module there are two sets of DIP-switches S1.1 ... S1.8 and S2.1 ... S2.8. With switch set 1 the output group 1 is configured and with switch set 2 the output group 2. The meaning of each DIP-switch is identical on both groups.

DIP-Switch	Meaning																																							
1 ... 4	Assignment output group of the transistor module to an input group of the fault annunciator <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="4">DIP-Switch</th> <th rowspan="2">Inputs</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>1 ... 8</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>9 ... 16</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>17 ... 24</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>25 ... 32</td> </tr> <tr> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>33 ... 40</td> </tr> <tr> <td>ON</td> <td>OF</td> <td>ON</td> <td>OFF</td> <td>41 ... 48</td> </tr> </tbody> </table>	DIP-Switch				Inputs	1	2	3	4	OFF	OFF	OFF	OFF	1 ... 8	ON	OFF	OFF	OFF	9 ... 16	OFF	ON	OFF	OFF	17 ... 24	ON	ON	OFF	OFF	25 ... 32	OFF	OFF	ON	OFF	33 ... 40	ON	OF	ON	OFF	41 ... 48
DIP-Switch				Inputs																																				
1	2	3	4																																					
OFF	OFF	OFF	OFF	1 ... 8																																				
ON	OFF	OFF	OFF	9 ... 16																																				
OFF	ON	OFF	OFF	17 ... 24																																				
ON	ON	OFF	OFF	25 ... 32																																				
OFF	OFF	ON	OFF	33 ... 40																																				
ON	OF	ON	OFF	41 ... 48																																				
5	Negation of the outputs of a group OFF - Normal (Outputs follow the fault annunciator according to the function set on the outputs) ON - Outputs get inverted																																							
6 ... 8	Function of the outputs <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="3">DIP-Switch</th> <th rowspan="2">Function</th> </tr> <tr> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>static parallel to input</td> </tr> <tr> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>dependent on ackn. parallel to input</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>static parallel to output</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>dynamic parallel to output</td> </tr> </tbody> </table>	DIP-Switch			Function	6	7	8	OFF	OFF	OFF	static parallel to input	OFF	OFF	ON	dependent on ackn. parallel to input	ON	OFF	OFF	static parallel to output	OFF	ON	OFF	dynamic parallel to output																
DIP-Switch			Function																																					
6	7	8																																						
OFF	OFF	OFF	static parallel to input																																					
OFF	OFF	ON	dependent on ackn. parallel to input																																					
ON	OFF	OFF	static parallel to output																																					
OFF	ON	OFF	dynamic parallel to output																																					



→ Technical Data

Mechanical data

Assembly	DIN-rail TS35 (EN 50 022)
Protection class	Plastic / IP 20
Connection	pluggable connection terminals
Conductor cross section rigid or flexible	
without wiresleeves	0,2 ... 2,5 mm ²
with wiresleeves	0,25 ... 2,5 mm ²

CAN-Bus-connenction

Plug	RJ45
Buscable	Ethernet patchcabel Cat5 IEC11801

Environmental condition

Operating temperature	-20°C +60°C
Storage temperature	-20°C +70°C
Permissible relative humidity=	75% on average over the year; on 56 days up to 93% relative humidity On duty condensation is not permitted [Check: 40°C,93%rF > 4days]

Electromagnetic compatibility

Noise immunity acc. to	EN 61000-4-2,3,4,5,6,12
Noise irradiation acc. to	EN 61000-3-3, EN 55011

Relay module

Dimensions incl. terminals (WxHxD)	100 mm x 100 mm x 110 mm
Weight	approx. 0,37 kg
Supply voltage	see table

Key	Nominal voltage	Voltage range	Power consumption
0	12 V AC/DC	10...19 V DC 8...13 V AC	< 4 W
1	24 V AC/DC	19...37 V DC 14...26 V AC	< 4 W
2	48 V AC/DC 60 V DC	37...73 V DC 26...51 V AC	< 4 W
5	110 V AC/DC 220 V AC/DC	100...370 V DC 85...264 V AC	< 7 W

Load on relay contacts	24 ... 250 V AC 2 A 110 V DC 0,5 A 220 V DC 0,3 A
------------------------	---

Dielectric strength of alternating voltage

All circuits except:

Relay contacts against each other
and CAN-Bus-interface

4 kV_{RMS} / 50 Hz 1 min

Dielectric strength of alternating voltage

Relay contacts against each other
and CAN-Bus-interface

500 V_{RMS} / 50 Hz 1 min

Resistance to surge voltage

all circuits except for:

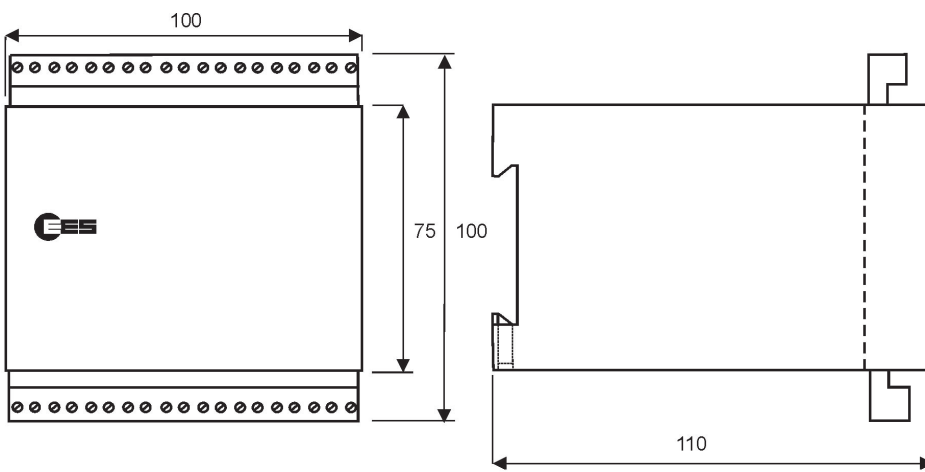
Relay contacts against each other
and CAN-Bus-interface

2,5 kV; 1,2 / 50 µs; 0,5 J; acc. to IEC60255-5:2000

Transistor module

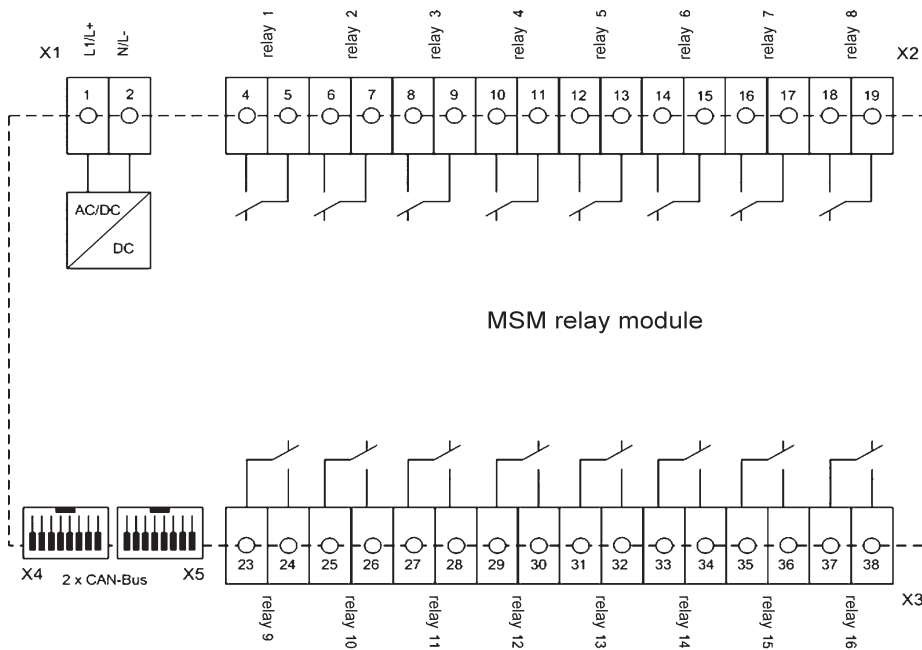
Dimensions incl. terminals (WxHxD)	70 mm x 107 mm x 117 mm
	Note: Depth plus bus cable
Weight	approx. 0,24 kg
Nominal supply voltage	24 V DC
Supply voltage range	10 ... 32 V DC
Power consumption	1 W + load current
Load on transistor outputs	maximum 500 mA per output

→ Dimensional drawing RM 16



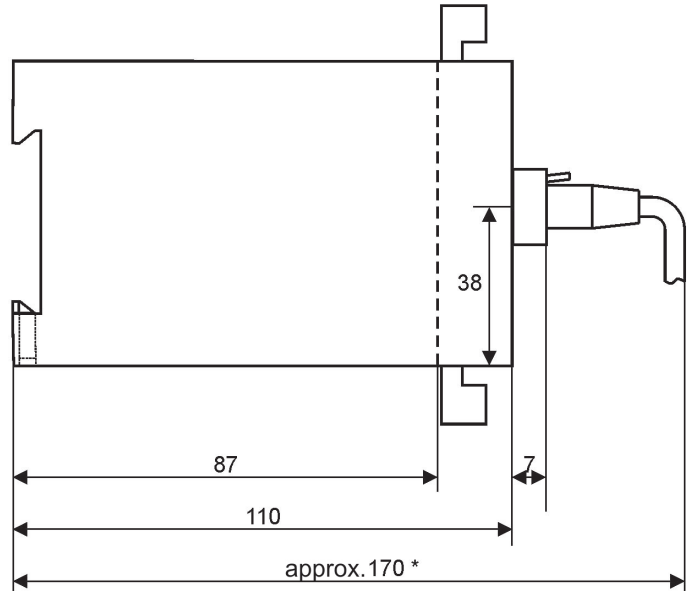
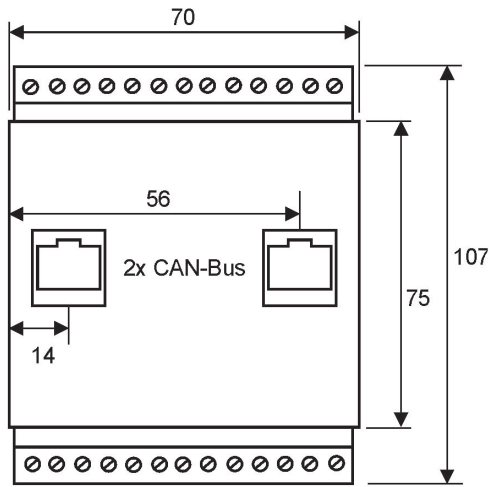
Dimensions in mm

→ Terminal assignments RM 16





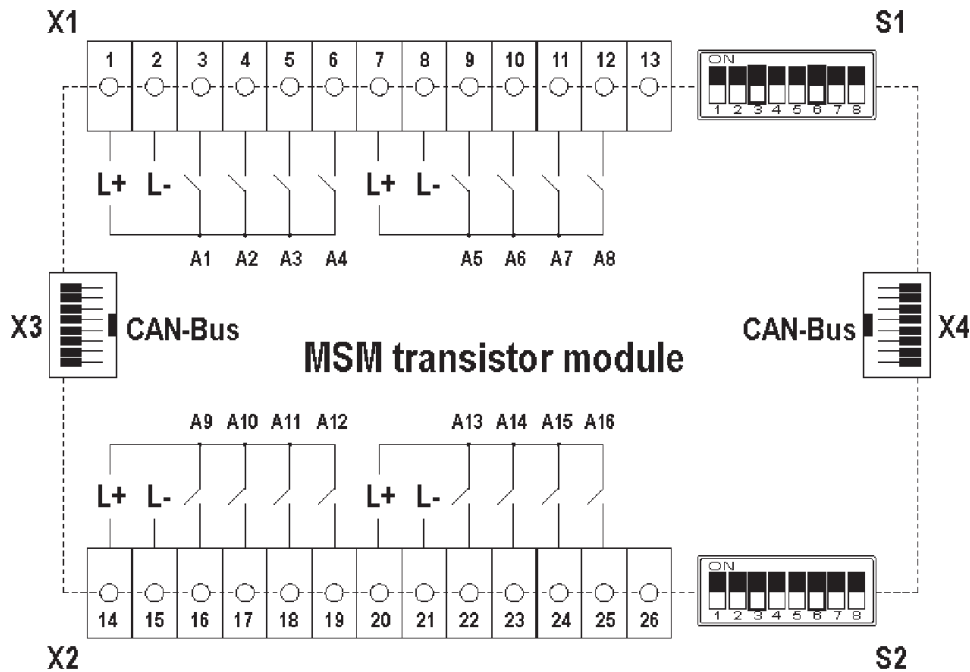
→ Dimensional drawing TM 16



*) dependent on the bending radius of the patch cable !

Dimensions in mm

→ Terminal assignments TM 16



Subject to changes without prior notice

→ Order description

Relay module designed with 16 NO contacts

Article-No	Type	Supply voltage
58MSMRM16000	MSM-RM-16-0-00	12 V AC/DC
58MSMRM16100	MSM-RM-16-1-00	24 V AC/DC
58MSMRM16200	MSM-RM-16-2-00	48 V AC/DC / 60 V DC
58MSMRM16500	MSM-RM-16-5-00	110 - 220 V AC/DC
58MSMRM16X00	MSM-RM-16-X-00	Supply voltage over CAN-Bus

Transistor module with 16 contacts

Article-No	Type	Supply and output voltage
58MSMTM16100	MSM-TM-16-1-00	24 V DC

To connect the first expansion module to the fault annunciator a bus cable with 3m length is enclosed in delivery. When connecting additional modules please be advised to order cables listed in the following table depending to your installation conditions.

Article no	Length
K118-0.25	0,25 m
K118-0.50	0,50 m
K118-2.00	2,00 m
K118-3.00	3,00 m



The full functionality of the transistor modules is only guaranteed in combination with the following versions of the BSM or respective relay modules:

- BSM with CAN-Bus connection from version 04912001.002
- BSM with CAN-Bus connection and parameterization interface from version 05217001.001
- MSMRM from version 04b23001.001

If you like to combine transistor modules with older devices, EES is providing an update service for charge to the versions listed above. On request please contact our service-team.

→ Contact