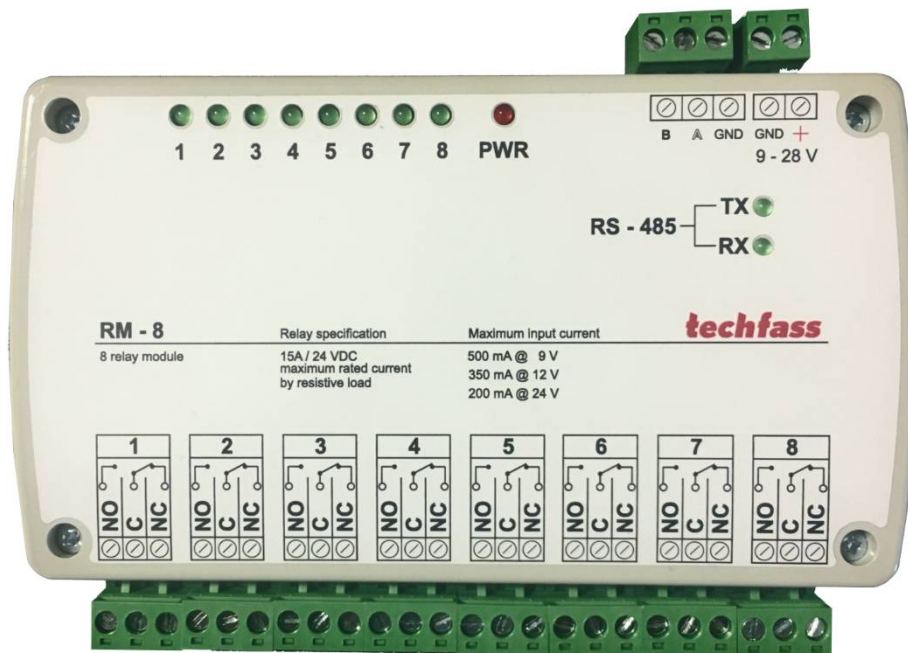


RM-4, RM-8

four and eight channel Relay module

User's guide



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2 RM-8 relay module description

TECH FASS RM-8 Relay module is an eightchannel relay output device connected to MREM 82 MTMBOX-MF interface reader module, which is connected to system bus APS mini Plus. The device is capable to control up to 8 devices like post boxes locks, lights or any other devices which enable to be controlled by relay specified below. All outputs have the same type of control (standard, toggle or pulse). It is possible to connect up to four RM-8 modules on aux RS-485 bus. The MREM 82 MTMBOX-MF is able to control up to 32 devices as maximum (4x RM-8 modules). If there are any other reader modules or controllers connected between the LAN converter and MREM 82 MTMBOX-MF on the system bus APS Mini Plus, then the number of possible controlled devices will be reduced by their number. For higher number of controlled outputs the next APS mini Plus line with MREM 82 MTMBOX-MF has to be added.

Applications

- Post boxes control
- Industrial & Home Automation

Product version	Product designation	System	Channels	Catalogue number
	RM-8 Relay module	<i>APS mini plus</i>	8	53408000
	RM-4 Relay module	<i>APS mini plus</i>	4	53404000

Table 1: Product versions

3 Technical parameters

Technical features	GENERAL PARAMETERS		Value
	Number of channels		8 (4)
	Supply voltage		8 ÷ 28 VDC
	Standby current at 12Vin		22mA
	Maximum input current	9Vin	500 mA
		12Vin	350 mA
		24Vin	200 mA
	Standby power		0, 264 W
	Maximum Peak power		5 W
	Signalization		8x LED channel ON 1x LED power 2x LED Rx, Tx RS-485
	System communication interface		RS-485
	RELAY CONTACT SPECIFICATION		Value
	Rated Load (Resistive)		15A 24VDC
	Rated Carrying Current by 24VDC		15 A
	Maximum allowable voltage		60 VDC
	Maximum allowable current		15 A
	Maximum allowable power force		360 W

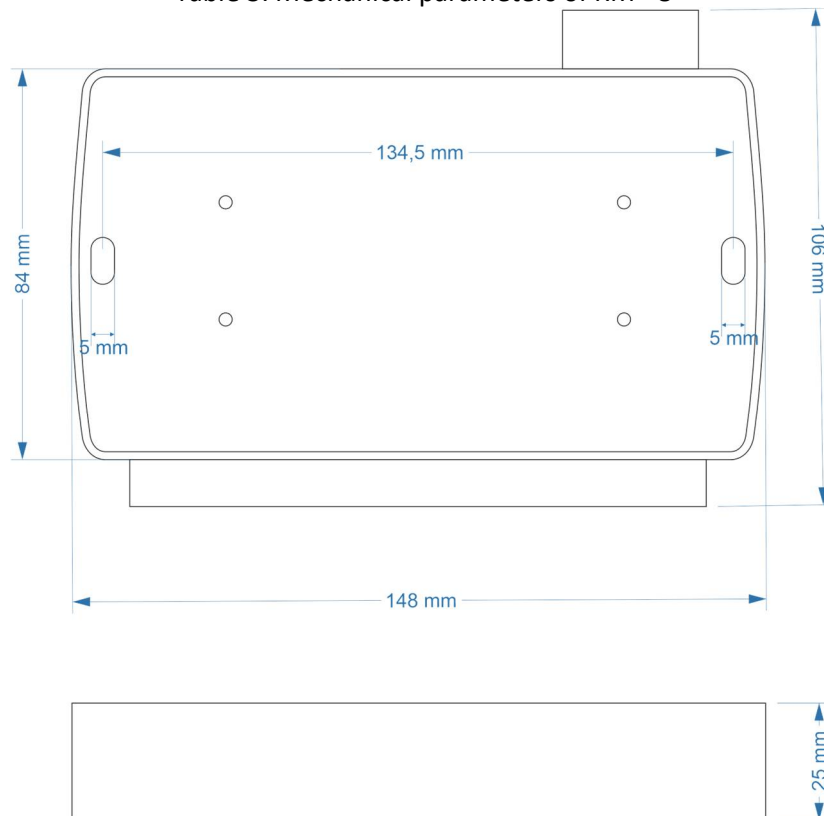
Technical features	Relay contact material		Ag Alloy
	RELAY PERFORMANCE (at initial value)		Value
	Contact resistance		50 mΩ
	Operate time		10 ms
	Release time		5 ms
	Dielectric strength	Between Coil & Contact	1500 VAC (1min)
		Between Contacts	750 VAC (1min)
	Insulation resistance		100 MΩ min. 500VDC
	Life Expectancy	Mechanically	1x10 ⁷ (no load condition)
		Electrically	1x10 ⁵ (rated load condition)

Table 2, 3: Technical and relay parameters of RM - 8

4 Mechanical design

Mechanical design	Weight	250 g
	Operating temperature	-10 ÷ 40 °C
	Humidity	45 ÷ 85% RH
	IP code	IP 52
	IK code	IK 04
	Mounting	DIN rail
		Wall mountable
	Housing material	ABS
	Color	Gray
	Dimensions (Height x Width x Depth)	148 x 106 x 25 mm

Table 3: Mechanical parameters of RM - 8

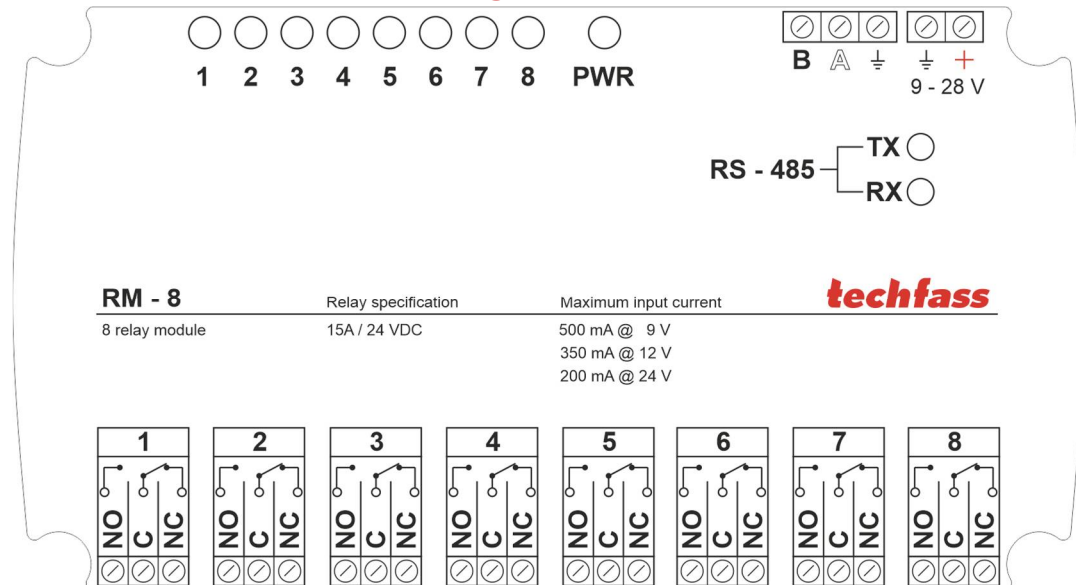


Picture 1: Dimensions of RM - 8

4.1 Mounting

The RM – 8 relay module can be mounted on the DIN rail or on the wall. In case of wall mounting please use the two oval holes on the bottom part of the housing. It is necessary to open the top part of the housing by removing the four screws placed in each corner. The two DIN holders can be removed as well (in case you have ordered the DIN version). It is necessary to remove the printed circuit board first to get to the screws of DIN holders. It is better to order either the DIN rail or the wall mounted version directly to avoid the manipulation with the printed circuit board.

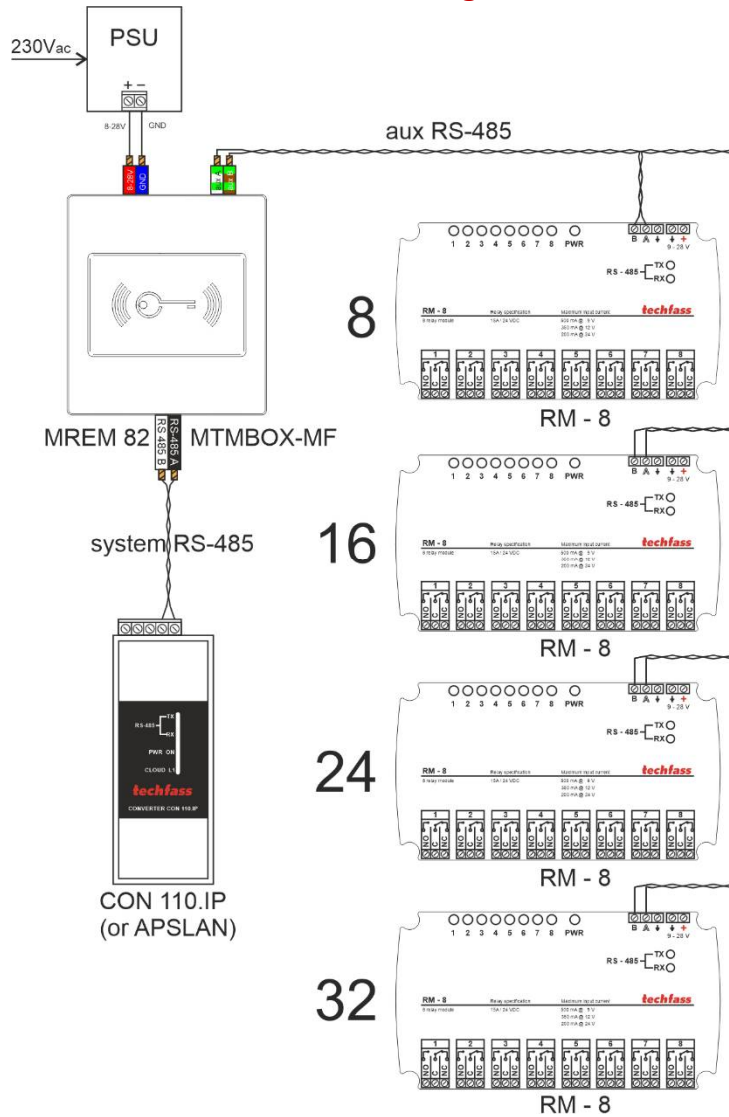
5 Terminal block wiring



Picture 2: the RM – 8 module

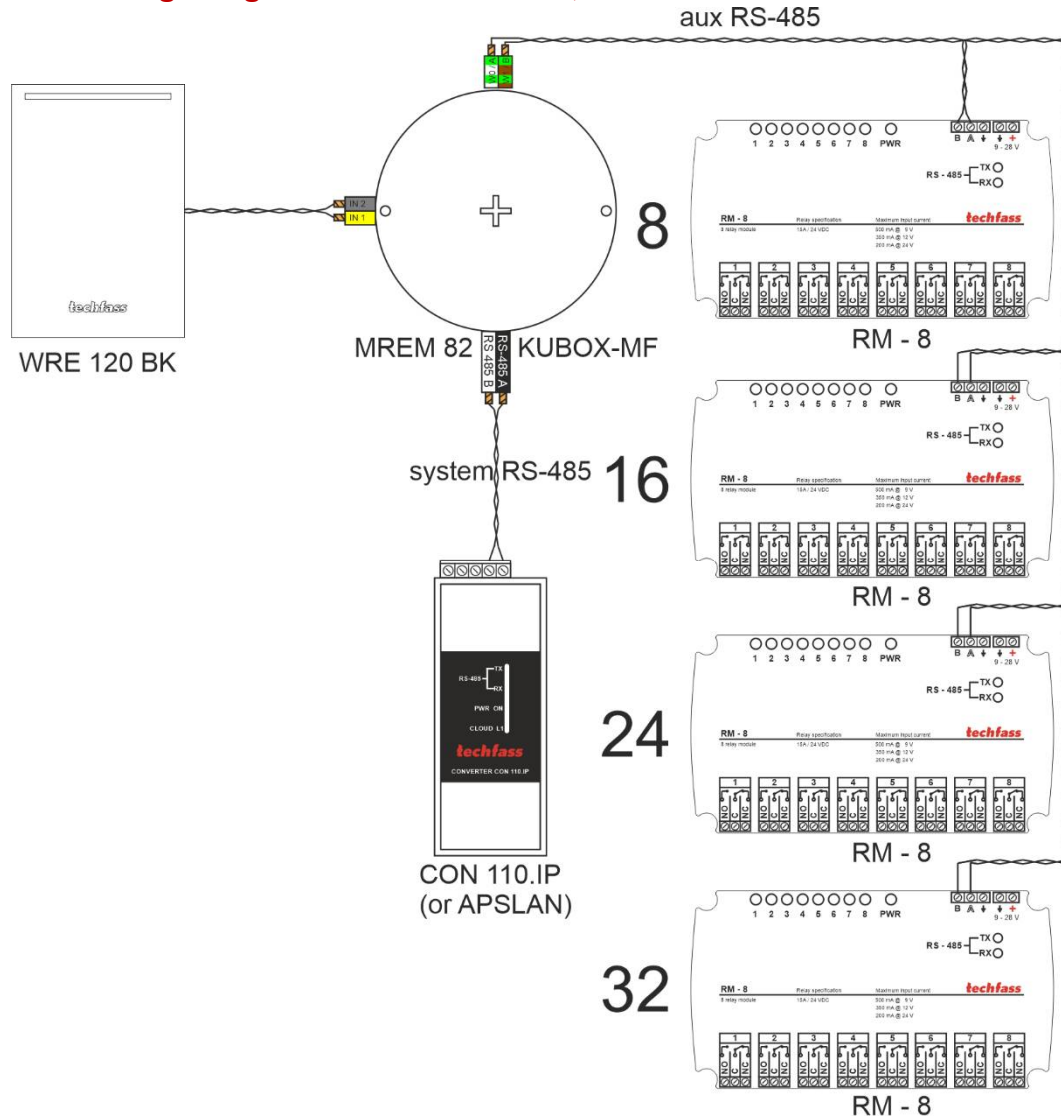
6 Block diagram

6.1 Direct connection – using MREM 82 MTMBOX-MF as a reader



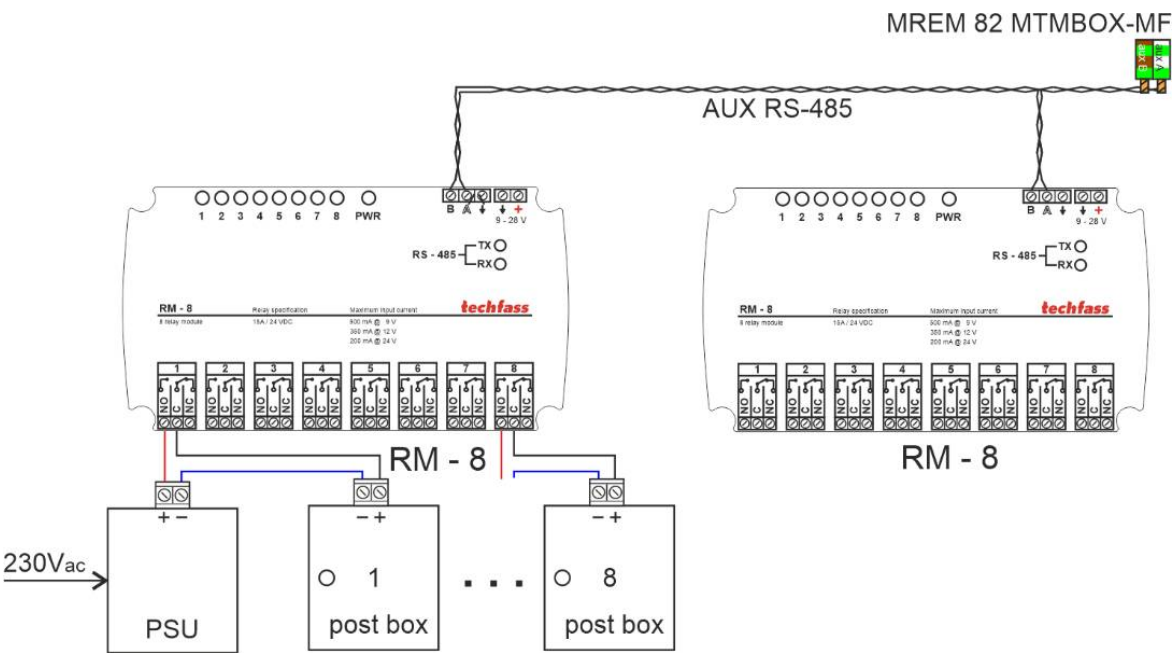
Picture 3: System connection of up to 4 modules RM – 8 to the aux RS-485 of MREM 82 MTMBOX-MF. The MREM 82 MTMBOX-MF is then standard connected to the APS mini Plus bus.

6.2 Using Wiegand reader WRE 120, WRE 121K



Picture 4: If wiegand reader WRE 120 or WRE 121K is preferred as a reader, it is possible to use the version of MREM 82 KUBOX-MF in the installation box and connect the external reader by Wiegand as shown above.

6.3 Driving the post boxes with RM – 8 module

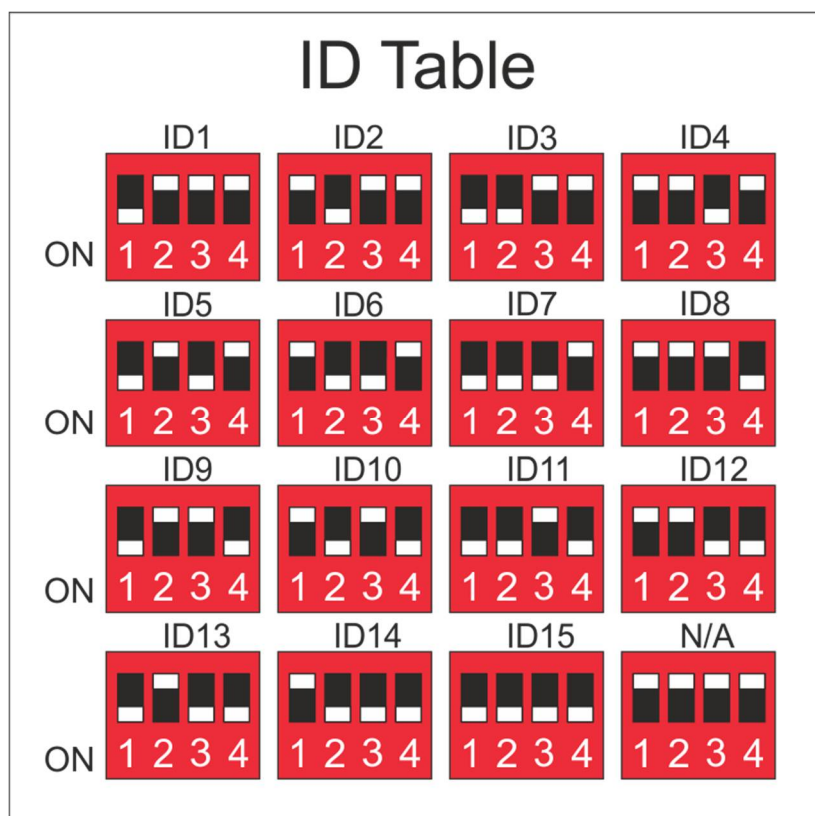


Picture 5: Each relay output can drive the post box.

7 DIP Switch addresses setting

Each module needs to have a correct group of addresses set. The setting is carried out by a DIP switch setting. The fact is, that the address 1 at the RM-X modules BUS corresponds with the lowest address of the control module (e.g. MREM 82 MTMBOX-MF) at the system BUS. Therefore RM-X modules are always addressed from address 1, regardless to the actual own setting of the HW address of the control module at the system BUS.

The setting is performed on the DIP switch located closer to the terminals.



Picture 6: Setting addresses of RM-4 and RM-8 modules

7.1 RM-8 module addresses

RM-8 module addresses	DIP switch setting	Address range
	ID1	1-8
	ID2	9-16
	ID3	17-24
	ID4	25-32
	ID5	33-40
	ID6	41-48
	ID7	49-56
	ID8	57-64

Table 5: RM-8 module addresses

7.2 RM-4 module addresses

RM-4 module addresses	DIP switch setting	Address range
	ID1	1-4
	ID2	9-13
	ID3	17-20
	ID4	25-28
	ID5	33-36
	ID6	41-44
	ID7	49-52
	ID8	57-60

Table 6: RM-4 module addresses

8 Driving inductive loads

General-purpose relays are typically designed to drive resistive loads, not inductive loads. This is why electromechanical life ratings are published for resistive loads and not inductive loads. Inductive loads can best be defined as anything with a magnetic coil, such as a motor, solenoid, or a transformer. The purpose of this capacitor is to absorb the high voltages generated by inductive loads. Unlike resistive loads, inductive loads love power, and they will do everything they can to hold on to it. The unpleasant result of this power hunger is inductive kickback, and it has a devastating effect on the contact life of most general-purpose relays. This is true of both ac and dc inductive loads, although the inductive kickback is far worse with dc loads due to the constant current characteristic of dc power. How bad is the kickback? A 24-Vdc solenoid with a current consumption as low as a quarter of an amp will create a negative inductive kickback of more than 300 V. Adding a suspension capacitor could easily reduce the problems. It has to be installed as close as possible to the Relay Board. DME Polyester Film Capacitors are suitable for this job with capacitance around 0.47uF – 0.68uF will be satisfied.

9 Declaration of conformity



The manufacturer TECH FASS s.r.o. declares, that the product follows legal requirements and fulfils necessary European directives. The declaration of conformity document can be downloaded from our web site:

<https://www.techfass.com/en/download/11/conformity-declaration>

10 Electrical waste



According to WEEE directive (2012/19/EU), this product cannot be disposed of as unsorted municipal domestic waste and has to be returned to recycling center after its lifetime is over.

11 Legislation

The product complies following harmonization legislation of EU

Legislative	Product	European harmonization legislation
	RM-8, RM-4	2014/30/EU; "EMCD"
		2014/35/EU; "LVD"
		2011/65/EU "RoHS"
		REACH

Table 7: Legislation