

MRF102 Electronic Circuit Breaker



The MRF102, 2-channel electronic circuit breaker with Din Rail and Wall mounting is designed for current distribution and protection of 12V or 24V load circuits. ADELBus communication for Driving and Monitoring.

Input Data

Supply voltage / at DC / Rated value	12 – 24 V
DC Input Voltage range (Vdc)	8 – 32 V
Overvoltage overload capability	35 V
Input current / at rated input voltage 12 – 24 V / Rated Value	20 A max (30A peak max 10 sec)
Maximum current consumption	10mA A (12 VDC) – 10mA (24 VDC)
Required Back Up Fuse	Not required. Integrated fail-safe element (internal fuse)

Output Data

Voltage curve / at output	Controlled DC voltage
Drop Out	0.2 V
Number of outputs	2
Output current / up to 60 °C / per output / rated value	10 A
Adjustable switch Off out current	0.5A...5A or 1A ...10A
Tolerance:	0.5A...5A +/-100mA 5A ...10 A +/-250mA
Type of response value setting	via code blinks Led and Push button
Parallel switching of outputs	Yes
Bridging of equipment	No
Start Up	< 0.5 sec.
Surge voltage shutdown load circuit	>32 Vdc
Max Capacitive Load	50.000 uF
Rated Surge Voltage	0.5 KV

Efficiency

Efficiency	97%
Power loss [W] (typ)	1.5 W (Nominal Operation)
Power dissipation	0.9 W (No Load operation)

Switching - off per output

I _{out} = 1.2 ...1.5 x set value	switch-off after approx. 5 s
I _{out} = 1.5 ...1.8 x set value	switch-off after approx. 1 s
I _{out} = 1.8 ...2 x set value	switch-off after approx. 0,1 s
I _{out} > 2 x set value	switch-off after approx. 0,03 s
I _{out} > set value and V _{in} < 15% (24V); (12V)	switch-off after approx. 0,03 s
Turn On Output after Switch Off	- Manual Reset - By Press Button
Waiting time after switch off Out	- 5 sec (Over load / Short Circuit)

Protection and Monitoring

Internal Fuse protection type	16A per output (not replaceable)
Dielectric strength	Max 32 Vdc (on Load Circuit)
Display indication	- GREEN Led for "Output switched ON" - RED Led for "Output switched off manually" - RED Led Blink for "Output switched off due to protection" - ORANGE Led: Verify and Configure
Connection for monitoring device:	AUX1: connection 2 pin AMP
Configuration Aux1	1: as ADELBus for Driving, Monitoring, Configuring; CAN Open Protocol 2: Out Channels Alarm for switch Off Output Sink mode. Pull Up with Resistance: 1 – 5K6 Ohm

Visual warning when the current exceeds 80%

2 Channels with adjustable current range

2 Range tripping current: 0.5...5A or 1A...10A

Sequential output switch startup. Reduced Inrush Current

Power Boost 150%

Two outputs switchable in Parallel (max 15A)

Power limitation of the output to 100 VA,

Alarm open collector output for monitoring output shutdown by maximum current or minimum voltage

ADELBus I/O for driver, monitoring and configuration

DIN Rail and Wall Mount

Diagnosis	- Common Signaling for disconnection Last Output - For Single Channel: Current, set current threshold, Status On/Off - Reason for Output disconnection
Communication	- read current, voltage, trip state; - turn channels on and off, reset after trip - configure device (tripping current, fast action, hiccup, join channels) - identify devices installed in the electric cabinet by flickering their LEDs. - Output Voltage

Connection

Input 12 or 24V	Screw Type:	0.2 - 2.5 mm ²
Input 0V	Screw Type	(24 – 12 AWG);
Outputs	Screw Type	0.6 - 0.8 Nm
Signal Output:	AUX1: connection 2 pin AMP for RTConn Cable	

Data and Communications

Remote monitoring data:	AUX1
Protocol:	ADELBus (CAN)

Ambient Conditions

Nominal Temperature operation	-25 up to +60°C (>60°derating 2.5%°C)
Ambient Temperature operation	-25 up to +70 °C
Ambient Temperature storage	-40 up to +85 °C
Humidity at 25 °C, no condensation	95 % to 25 °C (acc. to IEC 60721)
Vibration (operation) IEC 60068-2-6	<15 Hz, amplitude ± 2.5mm <15Hz-150Hz, 2.3G 90 min.
Altitude: 0 to 6 000m - 0 to 19685ft	No restrictions

General Data

Protection Class (EN/IEC 60529)	IP20
Reliability: MTBF IEC 61709	> 700.000 h (Automatically Switch Off Back Light after 30 sec)
Protection class	III
Housing material	Polycarbonate
Screw type connection	0.6 - 0.8 Nm
Connections: Input / Output	0.2 - 2.5 mm ² (30–14 AWG)
Stripping Length	5.5 – 6.5 mm
Protection class	II
Dimension (WxHxD) DIN 43880	18 x 90 x 62mm
Weight	0.1 kg approx.

Immunity and Emission

CE mark in conformity to EMC 2014/30/EU: Electromagnetic Compatibility Directive; 2014/35/EU: Low Voltage Directive; ROHS 2011/65/EU: Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS), as amended by 2015/863/EU

- EMC Immunity: EN61000-6-2
- EMC Emission: EN61000-6-3, EN 55022 Class B

Electrical Safety for mounting

According to:

- Electrical Equipment for Machinery EN 60204
- Electrical safety (of information technology equipment) IEC/EN EN62368-1.
- Safety requirements for electrical equipment for measurement, control and Laboratory use IEC/EN 61010

Accessory

- RTConn: connector cable for the connection to the ADELBus