RED00202

Redundancy Module, 2x 1kW input / 1x 1kW output, floating



Specification:

- Detects low voltage and over voltage
- Reverse polarity protected
- Monitoring relay, floating
- Low voltage drop
- Screw terminals 16mm²
- EN62368-1
- Schottky barrier decoupling diodes
- Efficiency ≥ 97%
- Adjustable drop out voltage detection
- - 20°C...+70°C ambient temperature
  IP20 metal housing

Models	Voltage
RED00202A(R2)	**+0 – +28Vdc**
RED02020B(R2)	**+36 – +60Vdc**
RED00202C(R2)	**+90 – +125Vdc**

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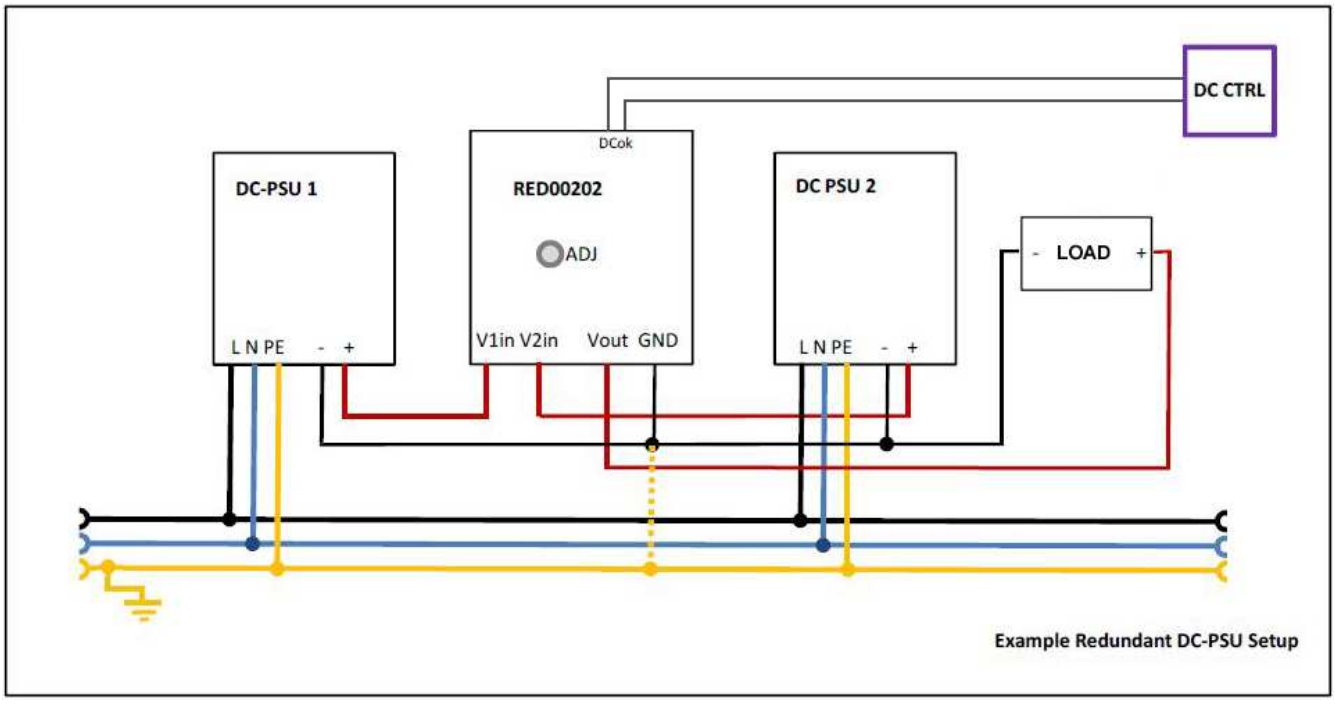
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Technical Data Table

Model	RED00202A	RED00202B	RED00202C
2 Channel Inputs	V1in / V2in	V1in / V2in	V1in / V2in
1 Channel Output	Vout	Vout	Vout
DC-Input Voltage	+0Vdc - +28Vdc	+36Vdc - +60Vdc	+90Vdc - +125Vdc
DC-Input Upper Margin Vo	fix +36V ± 5%	fix +75V ± 5%	fix +140V ± 5%
Hysteresis Vo	~1.5V	~1.5V	~1.5V
Drop-Out Voltage Set Range	+8Vdc - +28Vdc	+24Vdc - +60Vdc	+60Vdc - +135Vdc
Low-Rate Hysteresis Vu	~1.5V	~1.5V	~1.5V
Maximum Input Current	2x 50A (2x 1000W)	2x 28A (2x 1000W)	2x 9,1A (2x 1000W)
Maximum Output Current	1x 50A (1x 1000W total)	1x 28A (1x 1000W total)	1x 9,1A (1x 1000W total)
Voltage Drop, Input to Output	500mV typical	600mV typical	700mV typical
DC Input	Floating		
DC Output	Floating		
Power Good Relay	Change over contact		
Relay contact load	48Vdc 500mA max.		
Relay contact separation	Protective electrical insulation ≤60Vdc		
Cooling	Natural convection		
Ambient temperature	-20°C...+70°C		
Storage temperature	-40°C...+85°C		
Environment	Humidity 95% non-condensing @ 25°C, climate class. 3k3, pollution degree 2		
ROHS	2011/65/EU, (EU)2015/863		
REACH	EG No. 1907/2006		
EMI	EN55032 class B, EN61000-6-3		
EMS	EN61000-6-2		
Safety	EN61010-1, EN61010-2-201, EN62368-1, EN60950-1, EN60204-1		
Protection Class I	PE connection required		
Altitude in Operation	3000m (9842 ft) above sea level		
MTBF (IEC61709)	500000h (Meantime Between Failures: statistic time between failures after repairs)		
MTTF (IEC61709)	175236 (Meantime To Failure: statistic time to ever fails)		
Dimensions (HxWxD)	130x62x115mm		
Weight	1kg		
Connectors	Output Screw Terminal 4x AWG22 – AWG6 / 0,5 – 16mm² (+ + + -)		



Example Redundant DC-PSU Setup

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Manual and Technical Function

Technical Description

If breakdowns cost a lot of money and a service call is expensive, it is advisable to operate the power supply redundantly. The redundancy module RED00202 is designed for applications from 0Vdc to 125Vdc. The DC outputs of two identical DC voltage sources are decoupled. The total load is equal to the individual load of each connected DC source.
In normal operation, the total load is distributed evenly among the connected power supplies. If one of the connected DC power sources fails, the other source takes over the entire load without causing a power failure in the system. The internal Power-ok relay (changeover contact) provides continuous control of the status of the connected power supplies. If one power supply fails, the relay indicates that the remaining power supply will take over. The low voltage detection Vu can be adjusted via the ADJ control potentiometer on the front panel. The over voltage detection Vo from the technical data table is set by the factory and cannot be changed.

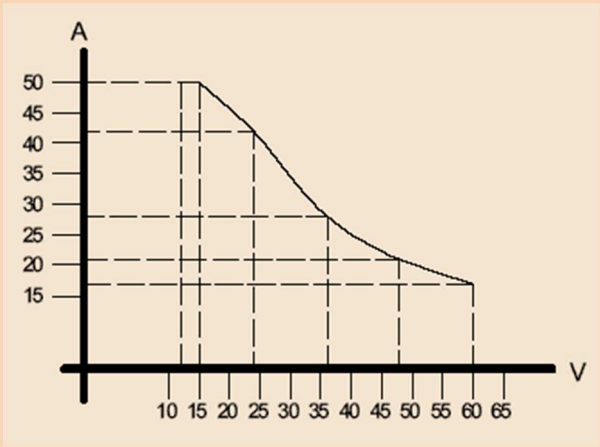
The DC input and the DC output are potential-free. The GND input of the RED00202 is only necessary for self-supply. The voltage drop between DC input and DC output is between 500mV and 700mV (see table Technical Data).

Current voltage graph

Voltage control specification:
The change-over contact of the control relay is at the left position when the input voltage V1in and V2in operate between Vu and Vo. The LED of each input lights green. The relay contact changes to the right position when the input voltages are either smaller Vu or larger Vo.

The upper voltage margin Vo is fixed by the factory. The low voltage detection Vu can be set with the front sided potentiometer (ADJ). The input to DC output power ratio is 2x 1kWinput = 1x 1kWoutput, 1x 1kWinput = 1x 1kWoutput

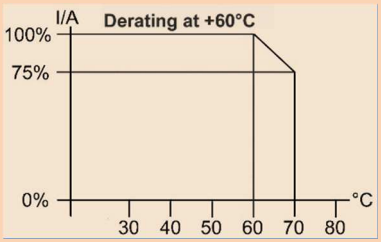
The model RED00202A can be used below 12Vdc. Note that the DC-ok relay and the ADJ potentiometer will not function below when a voltage below 12Vdc is applied to the inputs V1in & V2in.



Temperature Derating

The maximum ambient temperature during operation is + 70°C.

The measuring point is 50mm outside the device.



Coating Option

We offer the RED-series with optional coating. It is to be used in e.g., dusty, dirty, high humidity, or in awaiting quick temperature changes. Short circuit and corrosion at print board lines and at solder points can be prevented. The coat itself is a transparent acrylic resin. Peters SL 1306 N-FLZ (transparent) IEC60216-1 2001, IPC-CC-830B, UL listed as permanent coating File No.: E80315 , UL94V-0

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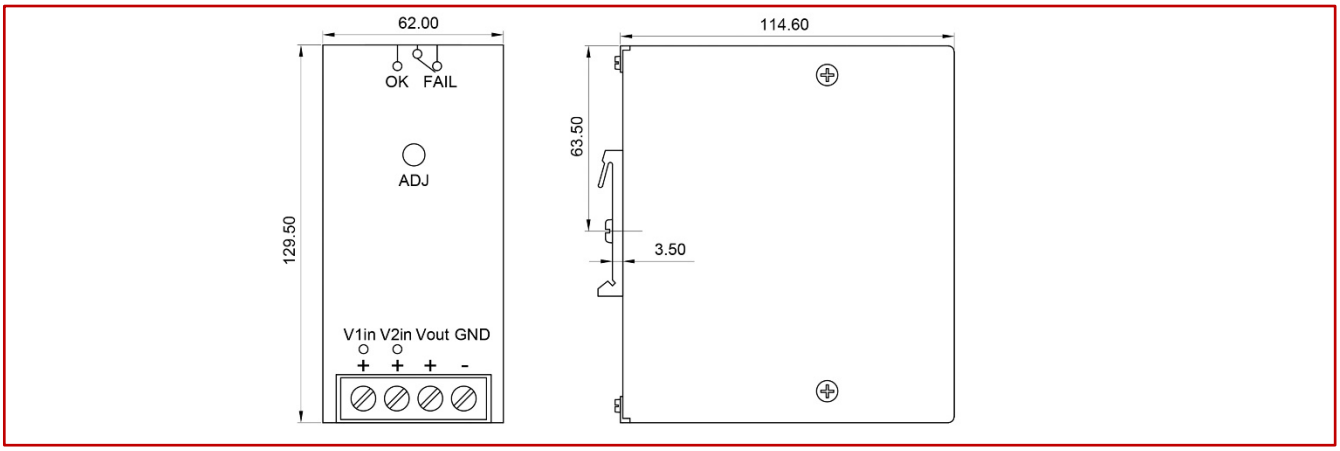
Connections and Signal Table

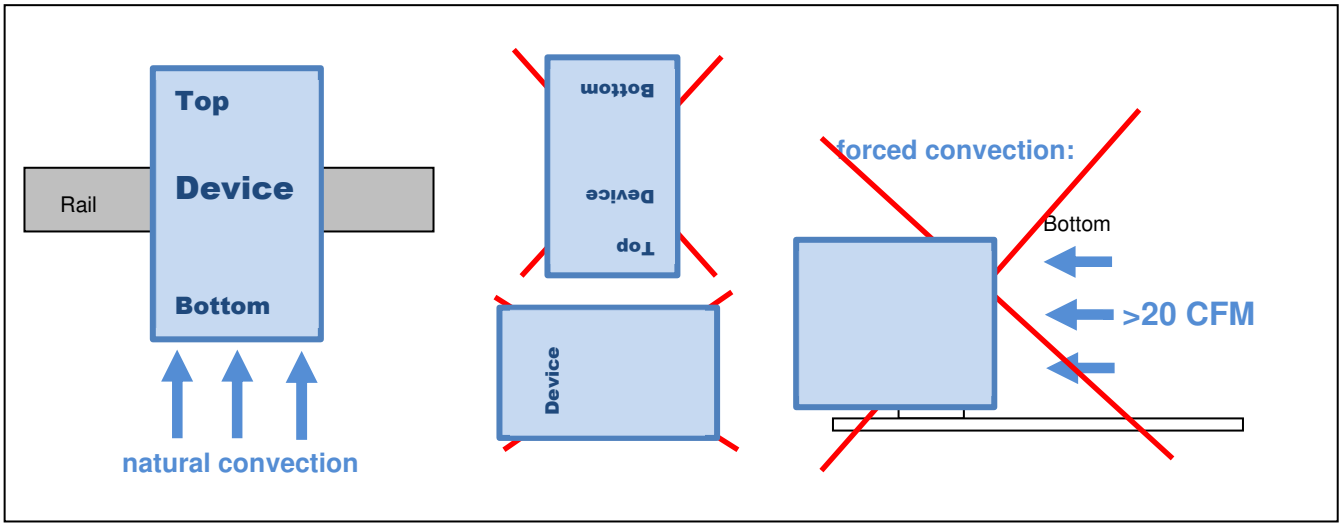
Position	Function	Remarks
V1in	DC(+) voltage input 1	Connect to (+) of the DC-source 1
V2in	DC(+) voltage input 2	Connect to (+) of the DC-source 2
Vout	DC(+) voltage output	Connect to (+) of the load
GND	Common GND	Connect to (-) of the DC sources 1&2 and to the (-) of the connected load
Relay	Change over contact	Left position indicates all DC-inputs are ok and operate between Vu and Vo Right position indicates that a DC-source fails or that it operates below Vu or above Vo
V1in LED	LED signal	OFF = no voltage, YELLO = low voltage
V1in LED	LED signal	OFF = no voltage, YELLO = low voltage
ADJ	Potentiometer	Set the drop out voltage together for V1 and V1

Mechanics & Installation Instruction of the RED00202

Stable metal/aluminium housing IP20. To allow adequate convection, a free air space of 50mm (top/bottom) and 10mm (sidewalls) is required; and for active devices 15mm space from the sidewalls. For proper air convection it is necessary to install the RED. One can use the DIN-Rail installation (equipped standard) with our patented 35mm DIN-Rail bracket according to EN60715. It is easy to mount/dismount while snaping it onto the 35mm DIN-Rail - no tools necessary. The housing screws are recommended for the GND-connection – do not remove them. For operation >60Vdc a GND-connection to PE is necessary to prevent from any kind of interferences to the supply system.

It is not allowed to install the RED00202 in other mounting direction then below drawings.





Mounting Instruction

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Connections

Clamping Yoke Connector Specifications

	Input / Output connections	Signal connection plug
Tightening torque min. – max.	1,2 – 2,2Nm (blade 1,0x5,5 DIN5264)	0,4 – 0,5Nm (blade 0,6x3,5 PH1 PZ1)
Touch-safe protection acc. to DIN VDE 0470	IP20 plugged/ IP10 unplugged	Not applicable
Clamping range, min. – max.	0,5 – 16mm² / AWG26 – AWG6	0,2 – 4,0mm² / AWG26 – AWG12
Solid, H05(07) V-U min. – max.	0,5 – 16mm²	0,2 – 4,0mm²
Stranded, H05(07) V-U min. – max.	6 – 16mm²	Not applicable
Flexible, H05(07) V-U min. – max.	0,5 – 16mm²	0,2 – 4,0mm²
w. plastic collar ferrule, DIN 46228 pt 4 min. – max.	2,5 – 10mm²	0,2 – 2,5mm²
w. wire end ferrule, DIN 46228 pt 1, min. – max.	2,5 – 10mm²	0,2 – 4,0mm²
Plug gauge in accordance with EN 60999 a x b; ø	5,4 x 5,1mm; 5,3mm	2,8 x 2,4mm; 2,5mm
Pitch (P)	10,16mm	7,50mm

Wire Stripping Length (fine wired)

Nominal Cross Section	Wire End Ferrule	Stripping Length	Wire End Ferrule	Stripping Length
0,25mm²	H0,25/5	5mm	H0,25/10 HBL	8mm
0,5mm²	H0,5/6	6mm	H0,5/12 OR	8mm
1,0mm²	H1,0/6	6mm	H1,0/12 GE	8mm
2,5mm²	H2,5/12	12mm	H2,5/19D BL	14mm
4,0mm²	H4,0/12	12mm	H4,0/20 GDR	14mm
6,0mm²	H6,0/20	12mm	H6,0/20 SW	14mm
10,0mm²	H10,0/12	12mm	H10,0/22 EB	15mm

The length of ferrules is to be chosen depending on the rated voltage. The outside diameter of the plastic collar should not be larger than the pitch (P)

Ordering Information

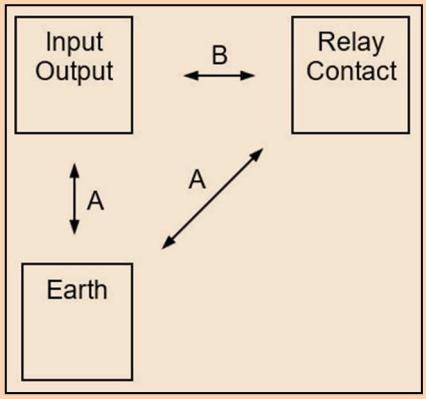
Ordering Codes

Product Code	Volt	Power	Information	Article Number
RED00202A(R2)	**0 – 28Vdc**	**1000W**	**below 12Vdc is the DC-OK relay without function**	**3041049001CA**
RED00202B(R2)	**36 – 60Vdc**	**1000W**		**3041049002CA**
RED00202C(R2)	**90 – 125Vdc**	**1000W**		**3041049003CA**

Electrical Safety (Factory-Test / Field-Test Owner)

	T	A[1)]	B
Type Test	60s	500Vac	500Vdc
Factory Test	5s	500Vac	500Vdc
Field Test	2s	500Vac	500Vdc
Cut-off current setting		>1mA	>1mA

[1)] **≥60Vdc = 1500Vdc**



Type and factory test are the manufacturer. While repeating damage can happen to the power supply unit. For the field test (owner) follow the below instruction:

a) Use suitable test equipment, raising the voltage slowly.
b) Use only test voltages of 50/60Hz. The outputs are unearthed and therefore they have no resistance to GND/PE.
c) If the residual voltage is ≥60Vdc, observe the safety standards. Use only specially insulated screwdriver to trim the Ua/Ia.

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Safety regulations: Please read these instructions completely before using the equipment. Keep these instructions on to hand. The device may only be operated by trained specialist staff.

Installation:

1) The device is designed for devices and systems that meet the standard requirements for hazardous voltages, power, and fire prevention.
2.) Installation and service only by trained persons. The AC power must be switched off. The work is to be labelled; accidental reconnection of the system must be prevented.
3.) Opening the device, its modification, loosening bolts, or operation outside the specified herein specification or in an unsuitable environment, has the immediate loss of warranty to follow. We disclaim any responsibility for any resulting damage to persons or things.

Warning:

Non-compliance these warnings can result in fire and serious injury or death.

1. Allow neat and professional cabling.
2. Never open nor try to repair the unit. Inside are dangerous voltages that can cause electrical shock hazard.
3. Avoid metal pieces or other conductive material to fall into the item
4. Do not operate the device in damp or wet conditions
5. Do not operate the unit under EX-conditions



All parameters base on 15 minutes run-in @ full load / 25°C / 230Vac 50/60Hz, as otherwise stated.

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