RMP-121D

4921240106L

Reverse power relays, ANSI code 32

Data sheet

Improve Tomorrow

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1. General information

- Protection against "motoring"
- Single phase measurement
- LED indication of fault condition
- Timer-controlled tripping
- LED indication for activated relay

1.1 Application and features

1.1.1 Application

The protective reverse power relay type RMP-121D forms part of a complete DEIF series of relays for protection and control of generators, and is applicable to both marine and land-based installations. Also available are overload relays (RMP-111D) and combined overload and reverse power relays (RMP-112D).

The RMP-121D is type-approved by major classification societies.

The protective reverse power relay will prevent a generator running in parallel with other generators from running as a motor ("motoring") in case of lost prime mover torque, and will thus protect the prime mover, at the same time ensuring that the remaining generators connected to the system are not overloaded.

Likewise, the RMP-121D protects against reverse power due to an increase of the power of other generators connected to the system.

1.1.2 Measuring principle

The applied TDM (Time-Division-Multiplication) principle ensures an accurate measurement of the RMS value of the power (U × I × cos-φ), irrespective of wave form.

The RMP-121D is available with the following connections:

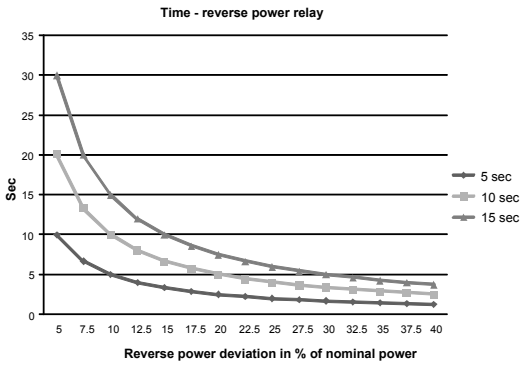
1W	Single phase
1W3	1-element 3-phase 3-wire, balanced load
1W4	1-element 3-phase 4-wire, balanced load

The set point value is set on the front of the relay by means of a potentiometer. If exceeded, a fault signal is generated, and the associated yellow LED is lit.

1.1.3 Timer functions

The RMP-121D can be delivered with two different timer characteristics:

- Normal timer characteristic means that the delay does not depend on the exceeding of the set point.
- Inverse timer characteristic means that if the -P set point is exceeded by 10 % of nominal power, the inverse timer functionality gives the same delay as the time potentiometer. If the -P set point is exceeded by 20 % of nominal power, the delay will be half the value set on the time potentiometer.



1.1.4 Relay outputs

The RMP-121D is provided with an output with a minimum contact, either normally energised or normally de-energised.

The contact may be set to open or to close on activation.

Normally energised contact

Recommended for land-based installations for warning and alarm purposes.

In case of an auxiliary supply drop-out, the contact is immediately activated.

Normally de-energised contact

Recommended for marine installations for regulating and control purposes.

An auxiliary supply failure will not result in an unwanted activation of the contact.

Latch circuit

The contact can be locked in its warning position, even if the input returns to normal (add "L" to contact type in order specifications if this is required).

The latch circuit is reset by disconnecting the auxiliary supply.

Hysteresis

In order to avoid "chatter" on the relay contacts the contact functions are provided with a hysteresis, that is a difference of 2 % of full scale between energising and de-energising of the relay.

Power-up/power-down circuits

The RMP-121D is provided with a 200 ms power-up circuit, ensuring the correct function of the relay on connection of the auxiliary voltage.

INFO
Normally energised contacts are not activated until 200 ms after connection of the auxiliary voltage.

Likewise, the RMP-121D has a ride-through circuit that allows continued operation, supervision and maintenance in the event of a momentary loss of power for up to 200 ms.

2. Technical information

2.1 Technical specifications and dimensions

2.1.1 Technical specifications

Meas. current (I_n)	0.3-0.4-0.5-0.6-0.8-1.0-1.3-1.5-2.0-2.5-3.0-4.0-5.0 A AC UL/cUL Listed: 0.4 to 5.0 A AC
Adjusted range	75 to 100 % of I_n (for example 0.4, 0.45, etc.) (lowest meas. range: 0.3 A)
Overload	4 × I_n, continuously, 20 × I_n for 10 s (max. 75 A) 80 × I_n for 1 s (max. 300 A)
Load	Max. 0.5 VA per phase
Meas. voltage (U_n)	57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-480-660-690 V AC UL/cUL Listed: 57.7 to 450 V AC
Overload	1.2 × U_n, continuously, 2 × U_n for 10 s
Load	2 kΩ/V
Frequency range	40 to 45 to 65 to 70 Hz
Outputs	1 minimum contact
Contact type	Relay B: Normally energised ("NE"), or normally de-energised ("ND") with or without latch circuit ("L")
Relay contact	1 change-over switch
Contact ratings	250 V AC/24 V DC, 8 A (200 x 10^3 change-overs at resistive load) UL/cUL Listed: Resistive load only
Contact voltage	Max. 250 V AC/150 V DC
Hysteresis	2 % of full scale (F.S.)
Response time	<400 ms
Temperature	-25 to 70 °C (-13 to 158 °F) (operating) UL/cUL Listed: Max. surrounding air temp. 60 °C/140 °F
Temperature drift	Set points: Max. 0.2 % of full scale per 10 °C/50 °F
Galv. separation	Between inputs, outputs and aux. voltage: 3250 V - 50 Hz - 1 min.
Supply voltage (U_n)	57.7-63.5-100-110-127-220-230-240-380-400-415-440-450-480-660-690 V AC ±20 % (max. 3.5 VA) 24-48-110-220 V DC -25/+30 % (max. 2 W) UL/cUL Listed: Only 24 V DC and 110 V AC DC supply must be from a class 2 power source
Climate	HSE, to DIN 40040
EMC	To IEC/EN 61000-6-1/2/3/4
Connections	Max. 4.0 mm^2 (single-stranded) Max. 2.5 mm^2 (multi-stranded)
Materials	All plastic parts are self-extinguishing to UL94 (V1)
Protection	Case: IP40. Terminals: IP20, to IEC 529 and EN 60529

Type approval	The Uni-line components are approved by the major classification societies. For current approvals see www.deif.com or contact DEIF A/S.
UL markings	UL Listed only on request UL Listing will be lost if the product is re-customised outside DEIF DK's production plant Wiring: Use 60/75 °C (140/167 °F) copper conductors only Wire size: AWG 12-16 or equivalent Installation: To be installed in accordance with the NEC (US) or the CEC (Canada)

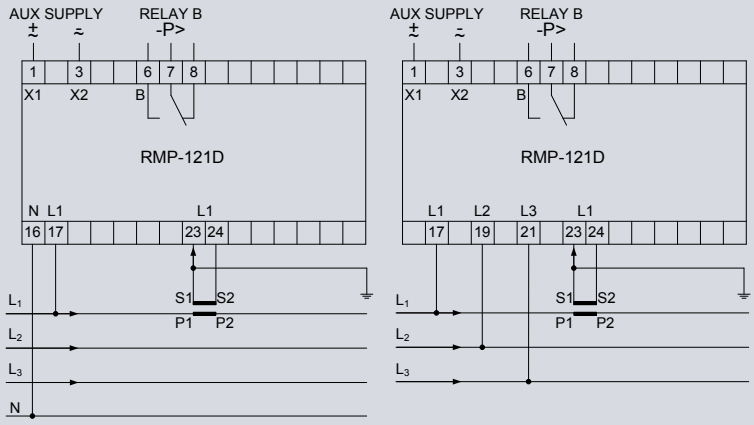
2.1.2 Settings and indication

Setting of	LED/relay
Reverse power set point: (0 to 25 %) of $-P_n$	"-P>" yellow LED is lit when the set point has been exceeded, but the relay not yet activated
Time delay: (0 to 20 s) in seconds	Contact is activated and red LED lit after the timer has expired.

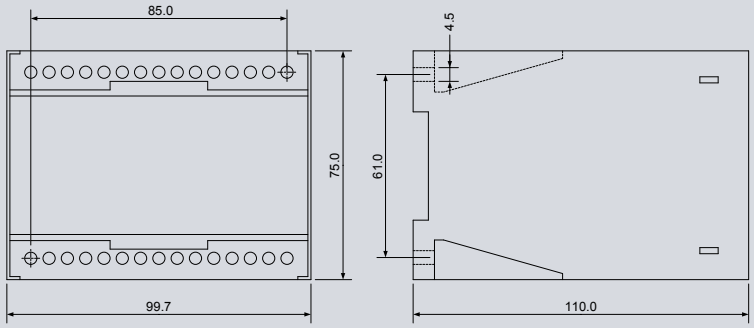
The relay is furthermore equipped with a green LED marked "POWER" for indication of power ON. Once the relay has been mounted and adjusted, the transparent front cover may be sealed to prevent unwanted change of the setting.

2.1.3 Connections/dimensions (in mm)

1W(4) **1W3**



Shown contact positions: Aux. voltage not connected



Weight: Approx. 0.650 kg

3. Ordering information

3.1 Order specifications and disclaimer

3.1.1 Available variants

Item no.	Variant no.	Variant description
2913310520	01	RMP-121D - DC supply
2913310520	02	RMP-121D - AC supply

3.1.2 Order specifications

INFO
There are no additional options to the standard variant.

Variants

Mandatory information								
Item no.	Type	Variant no.	Coupling	Measuring power (P_n)	Measuring voltage	Relay B	Supply voltage	Timer characteristic

Example:

Mandatory information								
Item no.	Type	Variant no.	Coupling	Measuring power (P_n)	Measuring voltage	Relay B	Supply voltage	Timer characteristic
2913310520-02	RMP-121D	02	1W3	0 to 100 W	110 V AC	ND	220 V AC	Normal timer characteristic

INFO
Measuring power (P_n) = Primary power / (CT ratio × VT ratio)

INFO
Specify phase to phase voltage for couplings 1W3 and 1W4.

3.1.3 Disclaimer

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