



-power in control



## DATA SHEET



### **Overload/reverse power relays, RMP-112D ANSI code 32**

- Combined overload/reverse power
- 3-phase measurement
- LED indication of fault condition
- Timer-controlled tripping
- LED indication for activated relay



DEIF A/S · Frisenborgvej 33 · DK-7800 Skive  
Tel.: +45 9614 9614 · Fax: +45 9614 9615  
info@deif.com · www.deif.com

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# 1. General information

## 1.1 Application and features

### 1.1.1 Application

The protective overload and reverse power relay type RMP-112D 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 reverse power relays (RMP-121D).

The RMP-112D is type-approved by major classification societies and is applied for protection of the prime mover against overload and for protection against reverse power.

Protection of the prime mover against overload is especially required if this is undersized in proportion to the AC generator. Supervision of the reverse power will prevent a generator running in parallel with other generators from running as a motor - thus protecting the prime mover - and will at the same time ensure that the remaining generators connected to the system are not disconnected due to overload of these.

### 1.1.2 Measuring principle

The relay measures all 3-phase currents and phase voltages.

The TDM (Time-Division-Multiplication) principle ensures an accurate measurement of the RMS value of both the active power and the reverse power ( $3 \times U \times I \times \cos\phi$ ), irrespective of wave form and asymmetry.

The RMP-112D is available with the following couplings:

2W3	2-element 3-phase 3-wire, unbalanced load
3W3(4)	3-element 3-phase 3-wire (4-wire), unbalanced load

If either the power ( $P>$ ) or the reverse power ( $-P>$ ) exceeds its set point, the associated output is activated.

The set point values are 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

When the set point is exceeded, the associated timer starts and will run as long as the fault condition prevails. The delay does not depend on the exceeding of the set point.

If the fault disappears, the timer is reset. When the timer expires, the contact is activated and the associated red LED is lit.

### 1.1.4 Relay outputs

The RMP-112D is provided with two outputs:

- Overload, a maximum contact  
(normally energised or normally de-energised)
- Reverse power, a minimum contact  
(normally energised or normally de-energised)

The contacts 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 contacts can be locked in their warning position, even if the input power 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-112D is provided with a 200 ms power-up circuit, ensuring the correct function of the relay on connection of the auxiliary voltage.



**Normally energised contacts are not activated (contact does not open/close) until 200 ms after connection of the auxiliary voltage.**

Likewise, the RMP-112D is provided with a 200 ms power-down circuit, ensuring supervision and maintenance of any set point exceedings for 200 ms after disconnection of the auxiliary voltage.

## 2. Technical information

### 2.1 Technical specifications and dimensions

#### 2.1.1 Technical specifications

<b>Meas. current (<math>I_n</math>)</b>	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	$4 \times I_n$ , continuously, $20 \times I_n$ for 10 s (max. 75 A) $80 \times I_n$ for 1 s (max. 300 A)
Load	Max. 0.5 VA per phase
<b>Meas. voltage (<math>U_n</math>)</b>	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	$1.2 \times U_n$ , continuously, $2 \times U_n$ for 10 s
Load	2 k $\Omega$ /V
<b>Frequency range</b>	40 to 45 to 65 to 70 Hz
<b>Outputs</b>	1 max. and 1 min. contact
Contact type	Relays B + C: Normally energised ("NE"), or normally de-energised ("ND") with or without latch circuit ("L")
Relay contact	1 change-over switch per contact
Contact ratings	250 V AC/24 V DC, 8 A (200 x 10 <sup>3</sup> change-overs at resistive load) UL/cUL Listed: Resistive load only
Contact voltage	Max. 250 V AC/150 V DC
<b>Hysteresis</b>	2 % of full scale (F.S.)
<b>Response time</b>	<400 ms
<b>Temperature</b>	-25 to 70 °C (-13 to 158 °F) (operating) UL/cUL Listed: Max. surrounding air temp. 60 °C/140 °F
<b>Temperature drift</b>	Set points: Max. 0.2 % of full scale per 10 °C/50 °F
<b>Galv. separation</b>	Between inputs, outputs and aux. voltage: 3250 V - 50 Hz - 1 min.
<b>Supply voltage (<math>U_n</math>)</b>	57.7-63.5-100-110-127-220-230-240-380-400-415-440-450-480-660-690 V AC $\pm 20$ % (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
<b>Climate</b>	HSE, to DIN 40040
<b>EMC</b>	To IEC/EN 61000-6-1/2/3/4

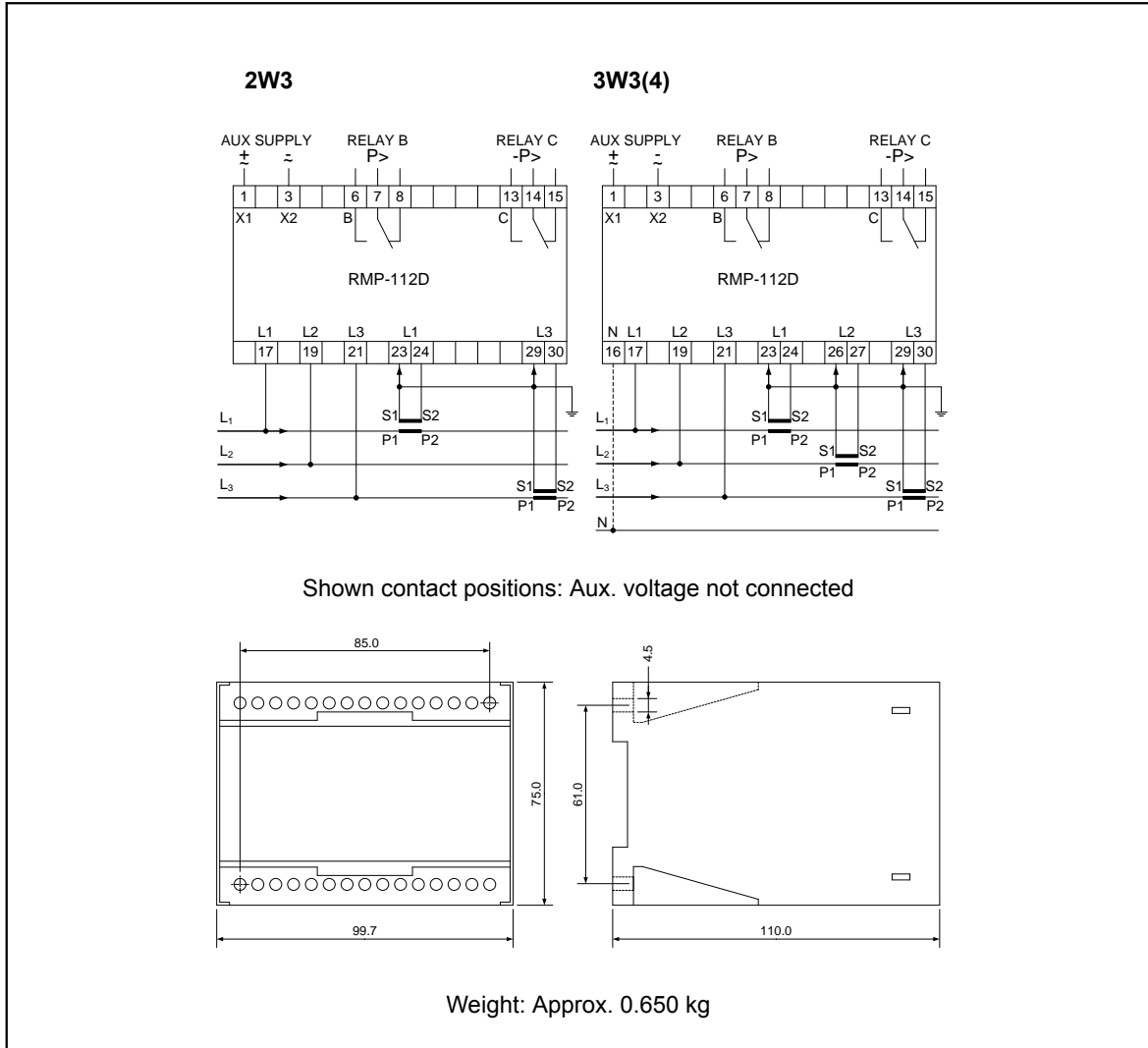
<b>Connections</b>	Max. 4.0 mm <sup>2</sup> (single-stranded) Max. 2.5 mm <sup>2</sup> (multi-stranded)
<b>Materials</b>	All plastic parts are self-extinguishing to UL94 (V1)
<b>Protection</b>	Case: IP40. Terminals: IP20, to IEC 529 and EN 60529
<b>Type approval</b>	The Uni-line components are approved by the major classification societies. For current approvals see <a href="http://www.deif.com">www.deif.com</a> or contact DEIF A/S.
<b>UL markings</b>	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
<b>Overload set point:</b> (25 to 125 %) of P <sub>n</sub>	"P>" yellow LED is lit when the set point has been exceeded, but the output contact not yet activated.
<b>Reverse power set point:</b> (0 to 25 %) of P <sub>n</sub>	"-P>" yellow LED is lit when the set point has been exceeded, but the output contact not yet activated.
For both: <b>Time delay:</b> (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)**



## 3. Ordering information

### 3.1 Order specifications and disclaimer

#### 3.1.1 Available variants

Item no.	Variant no.	Variant description
2913310120	01	RMP-112D - DC supply
2913310120	02	RMP-112D - AC supply

#### 3.1.2 Order specifications



There are no additional options to the standard variant.

##### Variants

Mandatory information								
Item no.	Type	Variant no.	Coupling	Measuring power (P <sub>n</sub> )	Measuring voltage	Relay B	Relay C	Supply voltage

Example:

Mandatory information								
Item no.	Type	Variant no.	Coupling	Measuring power (P <sub>n</sub> )	Measuring voltage	Relay B	Relay C	Supply voltage
2913310120-02	RMP-112D	02	3W3	0 to 100 W	3 × 110 V AC	NDL	NE	230 V AC



Measuring power (P<sub>n</sub>) = Primary power / (CT ratio × VT ratio)

#### 3.1.3 Disclaimer

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