



## DATA SHEET



# RMV-112D, RMV-122D, RMV-132D

Voltage relays

ANSI codes 27/59, 59, 27



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# 1. General information

- Under-voltage/over-voltage
- 3-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 voltage relays types RMV-112D, RMV-122D and RMV-132D form part of a complete DEIF series of relays for protection and control of generators and are applicable to both marine and land-based installations. Also available are voltage relays for single phase measurement (RMV-142D).

The relays are type-approved by major classification societies.

The voltage relays are applied for protection of generators, motors and transformers against adverse system voltage conditions. The relay supervises all 3-phase voltages. The following types are available:

- Type RMV-112D (ANSI codes 27/59)  
under-voltage and over-voltage relay ( $U<$  +  $U>$ )
- Type RMV-122D (ANSI code 59)  
over-voltage relay (2 levels:  $U>$  +  $U>$ )
- Type RMV-132D (ANSI code 27)  
under-voltage relay (2 levels:  $U<$  +  $U<$ )

### 1.1.2 Measuring principle

The relays measure all 3-phase voltages, providing an RMS measurement of sinusoidal voltages.

#### Under-voltage/over-voltage ( $U<$ + $U>$ )

If the voltage either drops below the lower set point or exceeds the upper set point, the associated output is activated.

#### Over-voltages ( $U>$ and $U>$ )

The highest input voltage is detected, and if this exceeds its set point, the output is activated.

#### Under-voltages ( $U<$ and $U<$ )

The lowest input voltage is detected, and if this is lower than the set value, the output is activated.

The set point values are set on the front of the relays by means of potentiometers.

### 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 and its built-in hysteresis circuit are activated and the associated red LED is lit.

## Hysteresis

The relays are provided with an adjustable hysteresis (common to both contacts), that is a difference of 1 to 10 % of  $U_n$  between energising and de-energising of the relay. The relay is deactivated when the fault voltage equals or is less than the preset hysteresis.

### 1.1.4 Relay outputs

The relays are provided with two outputs:

$U<$  outputs with a minimum contact,  $U>$  outputs with a maximum 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 dropout, 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 voltages return to normal (add "L" to contact type in order specifications if this is required).

The latch circuit is reset by disconnecting the auxiliary supply.

#### Power-up/power-down circuits

The relays are 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 (contact does not open/close) until 200 ms after connection of the auxiliary voltage.

Likewise, the relays are 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

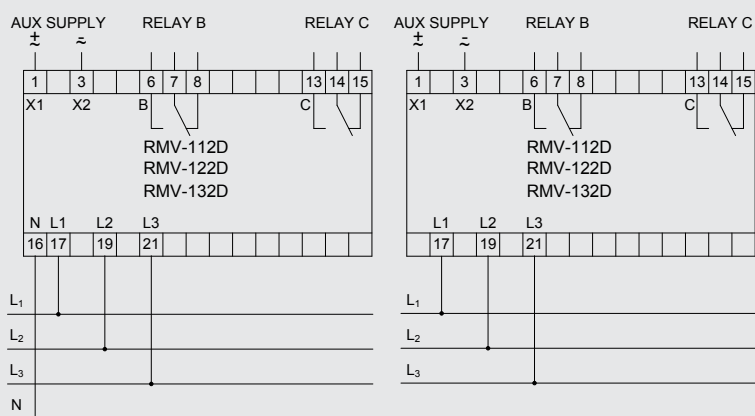
<b>Meas. range (<math>U_n</math>)</b>	57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-480-660-690 V AC UL/cUL Listed: 57.7 to 450 V AC
<b>Frequency range</b>	40 to <del>45</del> to 65 to 70 Hz
<b>Max. input voltage</b>	$1.2 \times U_n$ , continuously $2 \times U_n$ for 10 s
<b>Load</b>	2 k $\Omega$ /V
<b>Outputs</b>	RMV-112D 1 minimum + 1 maximum contact RMV-122D 2 maximum contacts RMV-132D 2 minimum contacts
<b>Contact type</b>	Relays B + C: Normally energised ("NE"), or normally de-energised ("ND") with or without latch circuit ("L")
<b>Relay contacts</b>	1 change-over switch per relay
<b>Contact ratings</b>	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
<b>Contact voltage</b>	Max. 250 V AC/150 V DC
<b>Response time</b>	<100 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 and outputs: 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>Under-voltage limit:</b> (80 to 100 %) of $U_n$	"U<"	Yellow LED is lit when the input voltage is lower than the preset limit, but the relay has not yet been activated
<b>Over-voltage limit:</b> (100 to 120 %) of $U_n$	"U>"	Yellow LED is lit when the input voltage exceeds the preset limit, but the relay has not yet been activated
<b>Time delay:</b> (0 to 10 s) in seconds	"RELAY"	Relay is activated and red LED lit after the timer has expired
<b>Hysteresis:</b> (1 to 10 %) of $U_n$		Relay contact is reset when fault voltage equals or is less than the preset hysteresis

The relays are 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.

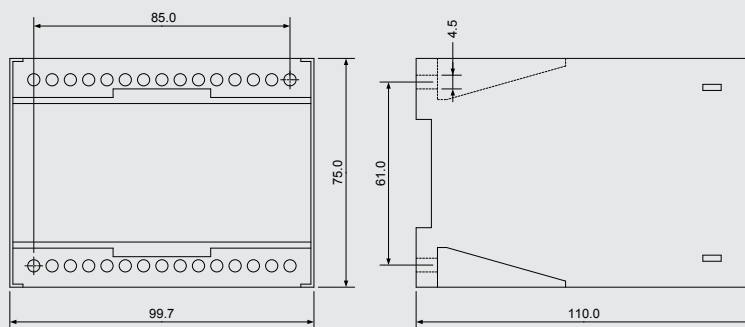
## 2.1.3 Connections/dimensions (in mm)



Star coupling

Delta coupling

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
2913210120	01	RMV-112D - DC supply
2913210120	02	RMV-112D - AC supply
2913210530	01	RMV-122D - DC supply
2913210530	02	RMV-122D - AC supply
2913210660	01	RMV-132D - DC supply
2913210660	02	RMV-132D - 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 voltage ( $U_n$ )	Relay B	Relay C	Supply voltage

Example:

Mandatory information							
Item no.	Type	Variant no.	Coupling	Measuring voltage ( $U_n$ )	Relay B	Relay C	Supply voltage
2913210120-01	RMV-112D	01	Delta	400 V AC	ND	ND	24 V DC
2913210530-02	RMV-122D	02	Star	230 V AC	ND	ND	230 V AC
2913210660-01	RMV-132D	01	Delta	400 V AC	ND	ND	110 V AC



##### INFO

Measuring voltage, delta configuration: Specify phase-phase voltage



##### INFO

Measuring voltage, star configuration: Specify phase-neutral voltage

#### 3.1.3 Disclaimer

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