RMV-142D

4921240128I

Voltage relays, ANSI codes 27/59

Data sheet

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1. General information

- Under-voltage/over-voltage
- 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 voltage relay type RMV-142D forms part of a complete DEIF series of relays for protection and control of generators.

The RMV-142D is type-approved by major classification societies and is applicable to both marine and land-based installations.

Voltage relays performing a 3-phase measurement are also available:

- RMV-112D for under-voltage/over-voltage

- RMV-122D for over-voltage

- RMV-132D for under-voltage

The RMV-142D is a combined under-voltage and over-voltage relay (U< + U>) and is applied for protection of generators, motors and transformers against adverse system voltage conditions.

1.1.2 Measuring principle

The relay measures the voltage of one phase (single phase measurement) or measures the voltage between two phases, providing an RMS measurement of sinusoidal voltages.

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

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

1.1.3 Timer functions

When the voltage drops below the lower set point or exceeds the upper set point, 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 RMV-142D is provided with two outputs:

- under-voltage (U<) a minimum contact
  (normally energised/normally de-energised)

- over-voltage (U>) a maximum contact
  (normally energised/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 voltage 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.

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

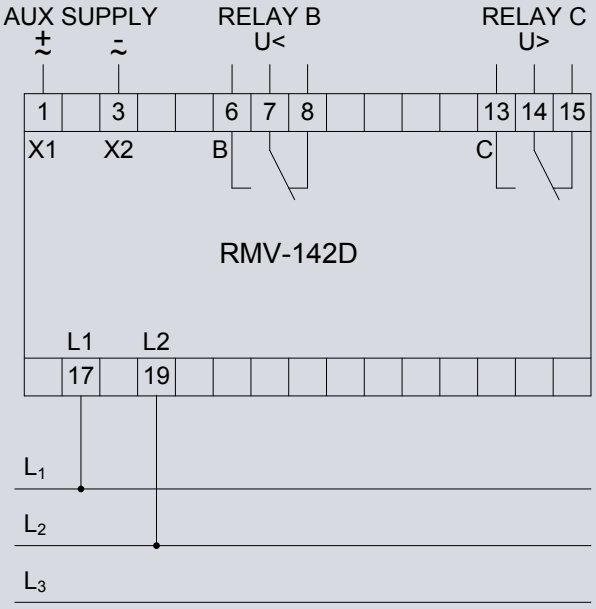
Meas. range (U_n)	57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-480-660-690 V AC UL/cUL Listed: 57.7 to 450 V AC
Frequency range	40 to 45 to 65 to 70 Hz
Max. input voltage	1.2 × U_n, continuously 2 x U_n for 10 s
Load	2 kΩ/V
Outputs	1 minimum + 1 maximum contact
Contact type	Relays B + C: Normally energised ("NE"), or normally de-energised ("ND") with or without latch circuit ("L")
Relay contacts	1 change-over switch per relay
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
Response time	<100 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 and outputs: 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

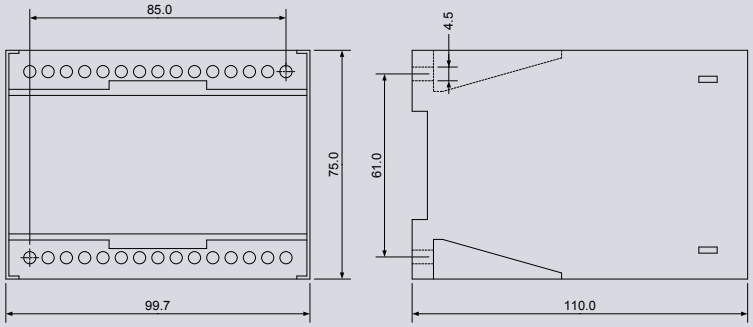
Setting of	LED	Relay
Under-voltage limit: (80 to 100 %) of U_n	"U<"	Yellow LED is lit when the input voltage is lower than the preset limit, but the relay has not yet been activated
Over-voltage limit: (100 to 120 %) of U_n	"U>"	Yellow LED is lit when the input voltage exceeds the preset limit, but the relay has not yet been activated
Time delay: (0 to 10 s) in seconds	"RELAY"	Relay is activated and red LED lit after the timer has expired
Hysteresis: (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)



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
2913210760	01	RMV-142D - DC supply
2913210760	02	RMV-142D - 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.	Measuring voltage (U_n)	Relay B	Relay C	Supply voltage

Example:

Mandatory information						
Item no.	Type	Variant no.	Measuring voltage (U_n)	Relay B	Relay C	Supply voltage
2913210760-01	RMV-142D	01	400 V AC	ND	ND	24 V DC

3.1.3 Disclaimer

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