ANSI codes 50N/51N, 50G/51G Type RMC-142D

- Earth fault protection at 2 levels
- Built-in filter for 3rd harmonic
- LED indication of fault condition
- Timer controlled tripping
- LED indication for activated relay
- 35 mm DIN rail or base mounting

Application

The protective stator earth fault relay type RMC-142D forms part of a complete DEIF series of relays for protection and control of generators. The RMC-142D is primarily designed for land based installations. Also available are short circuit relays (RMC-111D), combined short circuit and overcurrent relays (RMC-122D) and double overcurrent relays (RMC-132D).

The RMC-142D is CE marked and is applied for protection of voltage sources and load networks against earth fault in a solid earthing or a low-resistance earthing system.

Measuring principle

The relay measures the leakage or a short circuit from one or more of the phases to earth.

In order to obtain a short response time on a fault condition, the measurement is based on peak values.

The earth fault current protection is i.e. obtained by connecting an external current transformer in the star point of the protected voltage source.

In order to prevent malfunction due to 3rd harmonic the RMC-142D is equipped with a special filter cutting off frequencies higher than 50/60Hz.

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

Timer function

When the set point is exceeded, its timer starts and will run as long as the fault condition prevails.

The delay (3 ranges) 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.

Stator earth fault relays

4921240148E



Relay outputs

The RMC-142 is provided with 2 outputs with maximum contacts either normally energised or normally deenergised. The contact may be set to open or close on activation.

Normally energised contact

Recommended for warning and alarm purposes.

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

Normally de-energised contact

Recommended for 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 earth faulty current (leakage current) 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.

<u>Hysteresis</u>

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

Power-up/power-down circuits

The RMC-142D is provided with a 200 ms power-up circuit, ensuring the correct function of the relay on connection of the auxiliary voltage.

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

Likewise, the RMC-142D 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.

Type RMC-142D

Technical specifications

Meas. range (I _{n)} :	0.3-0.4-0.5-0.6-0.8-1.0-1.3-1.5-2.0-2.5- 3.0-4.0-5.0A AC UL/cUL listed: 0.45.0A AC		
Adjusted range:	75100% of I _n (e.g. 0.4, 0.45, etc.) (lowest meas. range: 0.3A)		
Frequency range:	40 <u>50/60</u> 70Hz		
Nominal frequency:	50Hz or 60Hz		
3rd harmonic reject.:	: Better than 18db		
Max. input current:	4 x I _n , continuously, 20 x I _n for 10 s (max. 75A) 80 x I _n for 1 s (max. 300A)		
Load:	Max. 0.3VA per phase		
Outputs:	2 maximum contacts		
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 relay		
Contact ratings:	250V AC/24V DC, 8A (200 x 10 ³ change-overs at resistive load) UL/cUL listed: Resistive load only		
Contact voltage:	Max. 250V AC/150V DC		
Hysteresis:	2% of full scale (F.S.)		
Response time:	<50 ms		
Temperature:	-2570°C (-13158°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		
Temperature drift: Galvanic separation:	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min		
Temperature drift: Galvanic separation: Supply voltage (U _n):	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min 57.7-63.5-100-110-127-200-220-230- 240-380-400-415-440-450-660-690V AC ±20% (max. 3.5VA)		
Temperature drift: Galvanic separation: Supply voltage (U _n):	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min 57.7-63.5-100-110-127-200-220-230- 240-380-400-415-440-450-660-690V AC ±20% (max. 3.5VA) 24-48-110-220V DC -25/+30% (max. 2W)		
Temperature drift: Galvanic separation: Supply voltage (U _n):	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min 57.7-63.5-100-110-127-200-220-230- 240-380-400-415-440-450-660-690V AC ±20% (max. 3.5VA) 24-48-110-220V DC -25/+30% (max. 2W) UL/cUL listed: Only 24V DC and 110V AC		
Temperature drift: Galvanic separation: Supply voltage (U _n):	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min 57.7-63.5-100-110-127-200-220-230- 240-380-400-415-440-450-660-690V AC ±20% (max. 3.5VA) 24-48-110-220V DC -25/+30% (max. 2W) UL/cUL listed: Only 24V DC and 110V AC DC supply must be from a class 2 power source		
Temperature drift: Galvanic separation: Supply voltage (U _n): Climate:	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min 57.7-63.5-100-110-127-200-220-230- 240-380-400-415-440-450-660-690V AC ±20% (max. 3.5VA) 24-48-110-220V DC -25/+30% (max. 2W) UL/cUL listed: Only 24V DC and 110V AC DC supply must be from a class 2 power source HSE, to DIN 40040		
Temperature drift: Galvanic separation: Supply voltage (U _n): Climate: EMC:	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min 57.7-63.5-100-110-127-200-220-230- 240-380-400-415-440-450-660-690V AC ±20% (max. 3.5VA) 24-48-110-220V DC -25/+30% (max. 2W) UL/cUL listed: Only 24V DC and 110V AC DC supply must be from a class 2 power source HSE, to DIN 40040 To EN 61000-6-1/2/3/4, SS4361503 (PL4) and IEC 255-3		
Temperature drift: Galvanic separation: Supply voltage (U _n): Climate: EMC: Connections:	Set points: Max. 0.2% of full scale per $10^{\circ}C/50^{\circ}F$ Between inputs, outputs and aux. voltage: $3250V - 50Hz - 1 min$ $57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-660-690V AC\pm 20\% (max. 3.5VA)24-48-110-220V DC -25/+30%(max. 2W)UL/cUL listed:Only 24V DC and 110V ACDC supply must be from a class 2power sourceHSE, to DIN 40040To EN 61000-6-1/2/3/4,SS4361503 (PL4) and IEC 255-3Max. 4 mm2 (single-stranded)Max. 2.5 mm2 (multi-stranded)$		
Temperature drift: Galvanic separation: Supply voltage (Un): Climate: EMC: Connections: Materials:	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: $3250V - 50Hz - 1 min$ $57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-660-690V AC\pm 20\% (max. 3.5VA)24-48-110-220V DC -25/+30%(max. 2W)UL/cUL listed:Only 24V DC and 110V ACDC supply must be from a class 2power sourceHSE, to DIN 40040To EN 61000-6-1/2/3/4,SS4361503 (PL4) and IEC 255-3Max. 4 mm2 (single-stranded)Max. 2.5 mm2 (multi-stranded)All plastic parts are self-extinguishing toUL94 (V1)$		
Temperature drift: Galvanic separation: Supply voltage (Un): Climate: EMC: Connections: Materials: Protection:	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: $3250V - 50Hz - 1 min$ $57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-660-690V AC\pm 20\% (max. 3.5VA)24-48-110-220V DC -25/\pm 30\%(max. 2W)UL/CUL listed:Only 24V DC and 110V ACDC supply must be from a class 2power sourceHSE, to DIN 40040To EN 61000-6-1/2/3/4,SS4361503 (PL4) and IEC 255-3Max. 4 mm2 (single-stranded)Max. 2.5 mm2 (multi-stranded)All plastic parts are self-extinguishing toUL94 (V1)Case: IP40. Terminals: IP20,to IEC 529 and EN 60529$		
Temperature drift: Galvanic separation: Supply voltage (Un): Climate: EMC: Connections: Materials: Protection: Type approval:	Set points: Max. 0.2% of full scale per 10°C/50°F Between inputs, outputs and aux. voltage: $3250V - 50Hz - 1 min$ $57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-660-690V AC\pm 20\% (max. 3.5VA)24-48-110-220V DC -25/+30%(max. 2W)UL/CUL listed:Only 24V DC and 110V ACDC supply must be from a class 2power sourceHSE, to DIN 40040To EN 61000-6-1/2/3/4,SS4361503 (PL4) and IEC 255-3Max. 4 mm2 (single-stranded)Max. 2.5 mm2 (multi-stranded)All plastic parts are self-extinguishing toUL94 (V1)Case: IP40. Terminals: IP20,to IEC 529 and EN 60529The uni-line components are approvedby the major classification societies. Forcurrent approvals see www.deif.com orcontact DEIF A/S.$		

UL markings, cont.:	Wire size: AWG 12-16 or equivalent
	Installation: To be installed in accordance with the NEC (US) or the CEC (Canada)

Settings and indication

Setting of	LED	Relay
Earth current set	iE>>	Yellow LED is lit when the set
point:		point has been exceeded, but
(10110%) of I _n		the output contact not yet
Time delay:		activated.
(0-T1) in seconds		Contact is activated and red LED
01/05/010s		lit after the timer has expired.
Earth current set	iE>	Yellow LED is lit when the set
point:		point has been exceeded, but
(220%) of I _n		the output contact not yet
Time delay:		activated.
(0-T2) in seconds		Contact is activated and red LED
020/060/0120s		lit after the timer has expired.

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, preventing unwanted change of the setting.

Connections/dimensions in mm (inches)



Type – Measuring current (In) – Nom. frequency – relay B		
– Relay C – Time delay (T1-T2) – Supply voltage		
<i>Example:</i> RMC-142D – 5A AC – 50Hz – NDL – 1 s – 20 s –		
440VAC		

Due to our continuous development we reserve the right to supply equipment which may vary from the described.



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