

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.

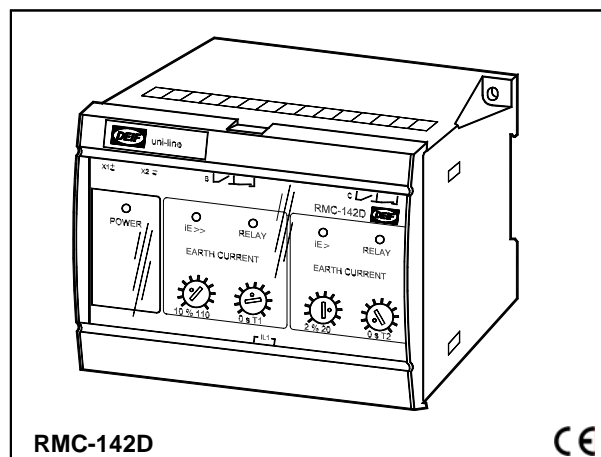
The delay (3 ranges) does not depend on the exceeding of the set point.

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

**uni-line**  
4921240148E



### Relay outputs

The RMC-142 is provided with 2 outputs with maximum contacts either normally energised or normally de-energised. 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.

#### Hysteresis

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

<b>Meas. range (<math>I_n</math>):</b>	0.3-0.4-0.5-0.6-0.8-1.0-1.3-1.5-2.0-2.5-3.0-4.0-5.0A AC UL/cUL listed: 0.4...5.0A AC
<b>Adjusted range:</b>	75...100% of $I_n$ (e.g. 0.4, 0.45, etc.) (lowest meas. range: 0.3A)
<b>Frequency range:</b>	40...50/60...70Hz
<b>Nominal frequency:</b>	50Hz or 60Hz
<b>3rd harmonic reject.:</b>	Better than 18db
<b>Max. input current:</b>	4 x $I_n$ , continuously, 20 x $I_n$ for 10 s (max. 75A) 80 x $I_n$ for 1 s (max. 300A)
<b>Load:</b>	Max. 0.3VA per phase
<b>Outputs:</b>	2 maximum contacts
<b>Contact type:</b>	Relays B + C: normally energised ("NE"), or normally de-energised ("ND") with or without latch circuit ("L")
<b>Relay contact:</b>	1 change-over switch per relay
<b>Contact ratings:</b>	250V AC/24V DC, 8A (200 x 10 <sup>3</sup> change-overs at resistive load) UL/cUL listed: Resistive load only
<b>Contact voltage:</b>	Max. 250V AC/150V DC
<b>Hysteresis:</b>	2% of full scale (F.S.)
<b>Response time:</b>	<50 ms
<b>Temperature:</b>	-25...70°C (-13...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>Galvanic separation:</b>	Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min
<b>Supply voltage (<math>U_n</math>):</b>	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
<b>Climate:</b>	HSE, to DIN 40040
<b>EMC:</b>	To EN 61000-6-1/2/3/4, SS4361503 (PL4) and IEC 255-3
<b>Connections:</b>	Max. 4 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>	Wiring: Use 60/75°C (140/167°F) copper conductors only

**UL markings, cont.:** Wire size:  
AWG 12-16 or equivalent

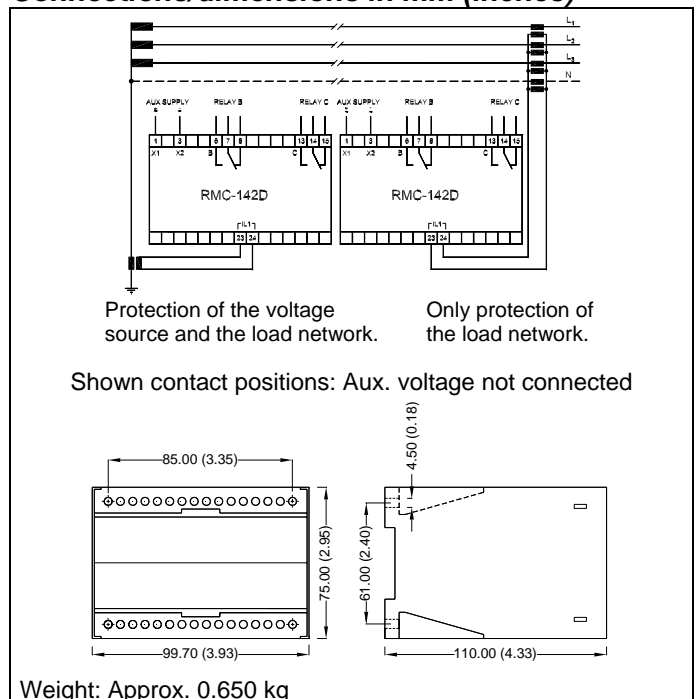
Installation:  
To be installed in accordance with the  
NEC (US) or the CEC (Canada)

### Settings and indication

Setting of	LED	Relay
<b>Earth current set point:</b> (10...110%) of $I_n$	iE>>	Yellow LED is lit when the set point has been exceeded, but the output contact not yet activated.
<b>Time delay:</b> (0-T1) in seconds 0...1/0...5/0...10s		Contact is activated and red LED lit after the timer has expired.
<b>Earth current set point:</b> (2...20%) of $I_n$	iE>	Yellow LED is lit when the set point has been exceeded, but the output contact not yet activated.
<b>Time delay:</b> (0-T2) in seconds 0...20/0...60/0...120s		Contact is activated and red LED 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)



### Order specifications

**Type – Measuring current ( $I_n$ ) – Nom. frequency – relay B – Relay C – Time delay (T1-T2) – Supply voltage**  
**Example:** 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.



**誥鑫企業有限公司**  
**ARITH COMPANY LTD.**  
 地址：台北市復興北路427巷30號  
 電話：(02)2717-5038  
 傳真：(02)2717-5039  
 e-mail: [taipei@arith.com.tw](mailto:taipei@arith.com.tw)  
 網址: <http://www.arith.com.tw>