

ANSI codes 50N/51N

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.

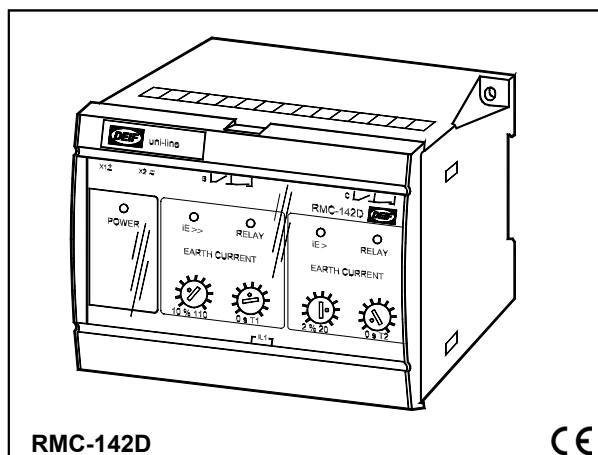
If the fault disappears, the timer is reset.

When the timer expires, the contact is activated and the associated red LED is lit.

Stator earth fault relays

uni-line

4921240148C



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 then 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

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

adjusted range: 75...100% of I_n (e.g. 0.4, 0.45, etc.).
(lowest meas. range: 0.3A)

Frequency range: 40...50/60...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-8A-2000VA (AC)
24V-8A-200W (DC)
(200 x 10³ change-overs at resistive load)

contact voltage: Max. 250V (AC). Max. 150V (DC).

Hysteresis: 2% of full scale (F.S.).

Response time: <50 ms.

Temperature: -25...70°C (operating).

Temperature drift: Set points:
max. 0.2% of full scale per 10°C.

Galvanic separation: Between inputs, outputs and aux. voltage: 3250V - 50Hz - 1 min.

Supply voltage (U_n): 57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-660-690VAC
±20% (max. 3.5VA)
24-48-110-220V DC -25/+30%
(max. 2W).

Climate: HSE, to DIN 40040.

EMC: To EN 50081-1/2, EN 50082-1/2,
SS4361503 (PL4) and IEC 255-3.

Connections: Max. 4 mm² (single-stranded).
Max. 2.5 mm² (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

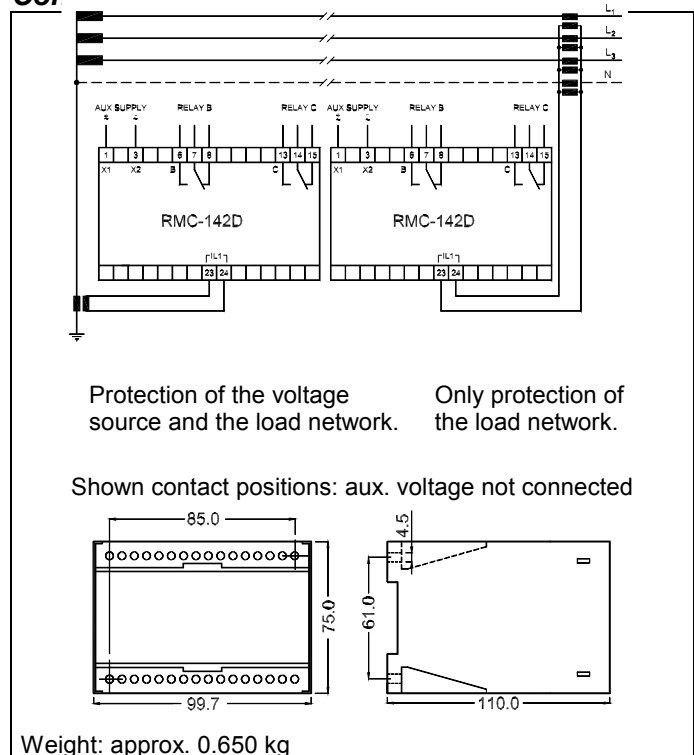
contact DEIF A/S.

Settings and indication

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



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.



DEIF A/S, Frisenborgvej 33
DK-7800 Skive, Denmark

Tel.: +45 9614 9614, Fax: +45 9614 9615
E-mail: deif@deif.com, URL: www.deif.com

