DEIF A/S

ANSI code 40

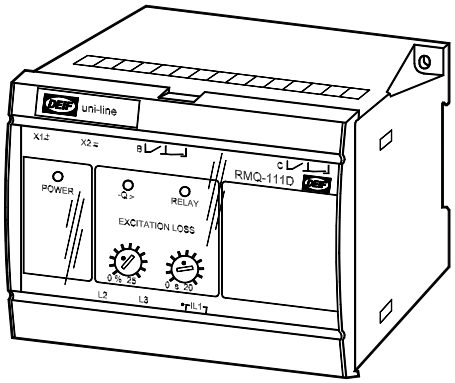
Type RMQ-111D, RMQ-121D

Excitation relays

uni-line

4921240112F

- ***Loss of excitation/overexcitation***
- ***Protection of generators***
- ***Single phase measurement***
- ***Timer controlled tripping***
- ***LED indication of fault/activated relay***
- ***35 mm DIN rail or base mounting***



RMQ-111D CE

Application

The protective loss of excitation relay type RMQ-111D and the overexcitation relay type RMQ-121D form part of a complete DEIF series of relays for protection and control of generators.

The relays are type approved by major classification societies and are applicable to both marine and land-based installations.

Loss of excitation relay type RMQ-111D (ANSI code 40)
This relay is applied to protect a generator running in parallel with other generators from running as an induction generator due to underexcitation.

The RMQ-111D will thus protect the generator against damages caused by excessive heating due to slip frequency current flow, at the same time preventing transfer of reactive load from a faulty generator.

The RMQ-111D is especially applied in cases where applying an undervoltage relay for protection does not suffice, because the remaining generators of the system can supply sufficient reactive power to magnetize the faulty generator, thus maintaining the terminal voltage of the generators.

Overexcitation relay type RMQ-121D (ANSI code 40/O)
This relay is applied to protect a generator against over-excitation and will prevent it from generating too high currents in case of heavy inductive loads.

The RMQ-121D will thus protect the generator against damages caused by excessive heating of its windings, at the same time preventing transfer of reactive load to a faulty generator.

Measuring principle

The applied TDM (Time-Division-Multiplication) principle ensures an accurate measurement of the RMS value of the reactive power (U x I x sin-φ), irrespective of wave form. The relays are available with connection 1var3(4), i.e. 1 element 3 phase 3 wire (4 wire), balanced load.

If the reactive power exceeds the set point, the output is activated. The set point value is set on the front of the relay by means of a potentiometer. If the reactive power exceeds this, a fault signal is generated, and the associated yellow LED is lit.

Timer function

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 is activated and the associated red LED is lit.

Relay output
The relays are provided with outputs as follows:

RMQ-111D	-Q>	1 minimum contact
RMQ-121D	Q>	1 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 drop-out, 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 contacts can be locked in their warning position, even if the input 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.

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 relay.

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.

Note: 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.

Type RMQ-111D, RMQ-121D

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: 0.4…5.0A AC

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

Overload: 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. 0.5VA per phase

Meas. voltage (U_n): (see supply voltage - AC ranges)

Overload: 1.2 x U_n, continuously, 2 x U_n for 10 s

Load: 2kΩ/V

Frequency range: 40...45...65...70Hz

Output: 1 minimum contact

Contact type: Relay B: normally energised (“NE”), or normally de-energised (“ND”) with or without latch circuit (“L”)

Relay contact: 1 change-over 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: <400 ms

Temperature: -25...70°C (-13…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

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)

UL/cUL listed: Only 24V DC and 110V AC

DC supply must be from a class 2 power source

Climate: HSE, to DIN 40040

EMC: To EN 61000-6-1/2/3/4, 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.

UL markings: Wiring: Use 60/75°C (140/167°F) stranded 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)

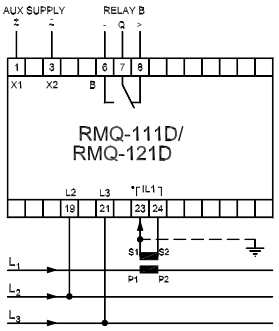
Settings and indication

Setting of	LED	Relay
Reactive power set point: RMQ-111D: (0...25%) of Q_n	“-Q>”	Yellow LED is lit when the reactive power has dropped below the set point, but the relay has not yet been activated.
Reactive power set point: RMQ-121D: (25...125%) of Q_n	“Q>”	Yellow LED is lit when the reactive power exceeds the set point, but the relay has not yet been activated.
Time delay: (0...20 s) in sec.	“RELAY”	Contact is activated and red LED lit after timer has expired.

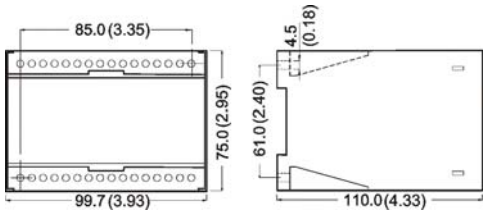
The relay is furthermore equipped with a green LED marked “POWER” for indication of power ON. Once the relay has been mounted and adjusted, the transparent front cover may be sealed, preventing unwanted change of the setting.

Connections/dimensions in mm (inches)

1var3(4)



Shown contact positions: Aux. voltage not connected



Weight: Approx. 0.650 kg

Order specifications

Type - Measuring power (Q_n) - Measuring voltage - Relay B - Supply voltage

Examples:

RMQ-111D - 0...100var - 110V AC - NDL - 220V DC

RMQ-121D - 0...1000var - 660V AC - NE - 24V DC

$$\textit{Meas. power } (Q_n) = \frac{\textit{Primary power}}{\textit{CT ratio x VT ratio}}$$

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

DEIF -power in control

ARITH

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
網 址： http://www.arith.com.tw