

ANSI code 81
Type RMF-112D

- **Combined underfrequency/overfrequency**
- **For single and 3 phase networks**
- **LED indication of fault condition**
- **Timer controlled tripping**
- **LED indication for activated relay**
- **35 mm DIN rail or base mounting**

Application

The digital, combined underfrequency and overfrequency relay type RMF-112D forms part of a complete DEIF series of relays for protection and control of generators.

The relay is type approved by major classification societies and is applicable to both marine and landbased installations.

The RMF-112D is applied for protection against underfrequency and overfrequency by supervising the frequency (of generators) in single phase and 3 phase networks.

Measuring principle

The relay measures the voltage between 2 phases or between one phase and the neutral.

To avoid unwanted underfrequency alarms, the RMF-112D relay is not activated until the measuring voltage exceeds 60% of U_n .

If either the underfrequency or overfrequency exceeds its set point, its associated output is activated.

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 functions

When the set point is exceeded, its associated timer starts and will run as long as the fault conditions prevail. 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.

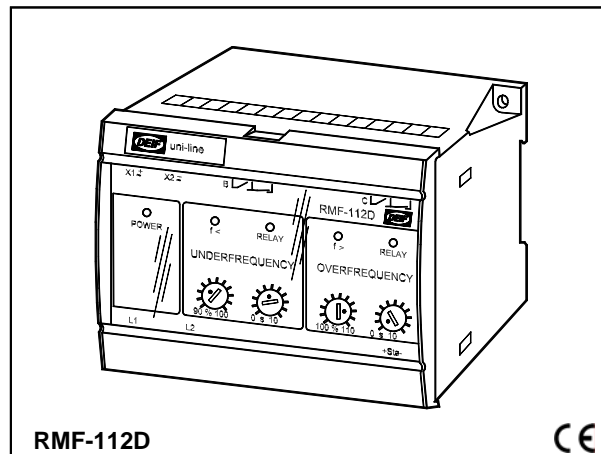
Relay outputs

The RMF-112D is provided with 2 outputs:

- f< a minimum contact
(normally energised or normally de-energised)
- f> a maximum contact
(normally energised or normally de-energised)

Frequency relays

uni-line
4921240223C



The contacts 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 contact can be locked in its warning position, even if the input frequency 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 0.25Hz between energising and de-energising of the relay.

Power-up/power-down circuits

The RMF-112D 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 RMF-112D 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 RMF-112D

Technical specifications

Meas. voltage (U_n):	See supply voltage - AC ranges UL/cUL listed: 57.7...450V AC
Voltage range:	60...120% of U_n
Overload:	1.2 x U_n , continuously, 2 x U_n for 10 s
Load:	2kΩ/V
Frequency range:	40...45...65...70Hz
Nom. frequency (f_n):	50Hz, 55Hz or 60Hz
Output:	1 min. and 1 max. 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:	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
Optocoupler output:	System status off = failure UL/cUL listed: 30V DC, 5mA
Hysteresis:	0.25Hz
Response time:	<90 ms
Temperature:	-25...70°C (-13...158°F) (operating) UL/cUL listed: Max. surrounding air temp. 60°C/140°F
Temperature drift:	±0.1Hz per 10°C/50°F
Galvanic separation:	Between inputs and outputs: 3250V - 50Hz - 1 min.
Supply voltage:	57.7-63.5-100-110-127-200-220-230- 240-380-400-415-440-450-660-690V AC ±20% (max. 4VA) 24-48-110-220V DC -25/+30% (max. 3.5W) 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 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:	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)

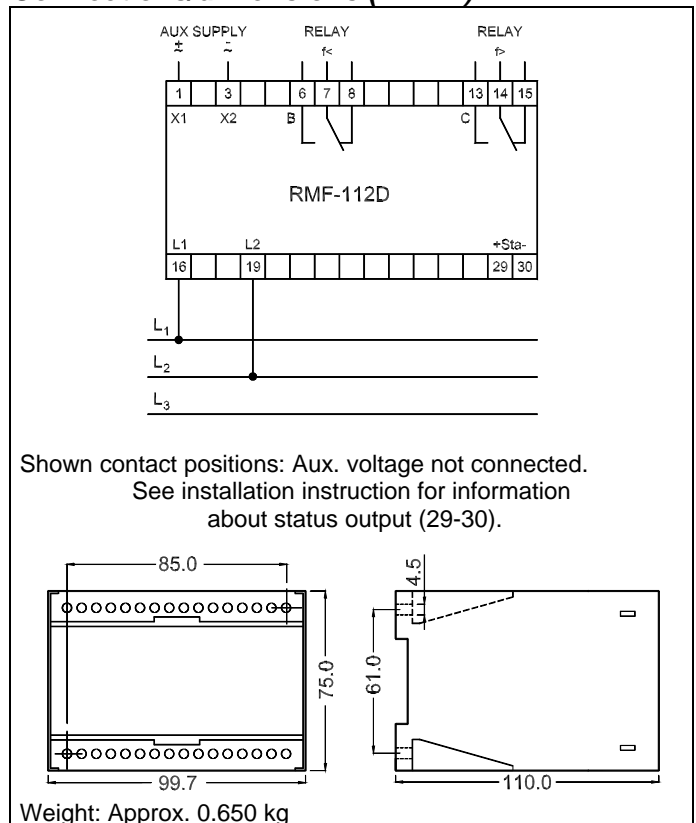
Settings and indication

Setting of	LED/relay
Underfrequency set point: (90...100%) of f_n (80...100%) of f_n at $f_n = 55\text{Hz}$	"f<" yellow LED is lit when the frequency has dropped below the set point, but the relay not yet activated.
Overfrequency set point: (100...110%) of f_n (100...120%) of f_n at $f_n = 55\text{Hz}$	"f>" yellow LED is lit when the set point is exceeded, but the relay not yet activated.
Time delay: (0...10 s) in seconds	Contact is activated and red LED lit after the 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)



Order specifications

Type – Meas. Voltage – Nom. Frequency – Relay B – Relay C – Supply voltage

Example:

RMF-112D – 380V AC – 50Hz – NE – ND – 24V DC

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



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