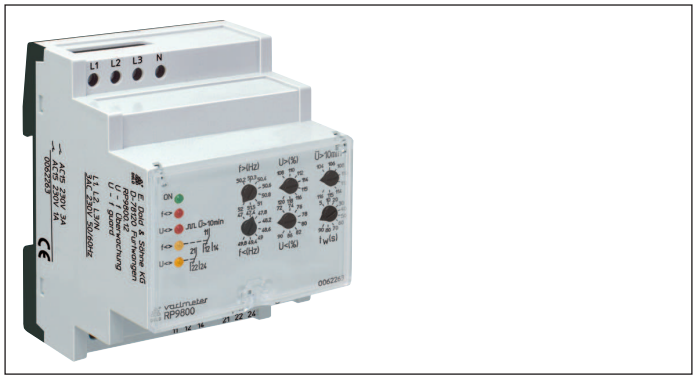
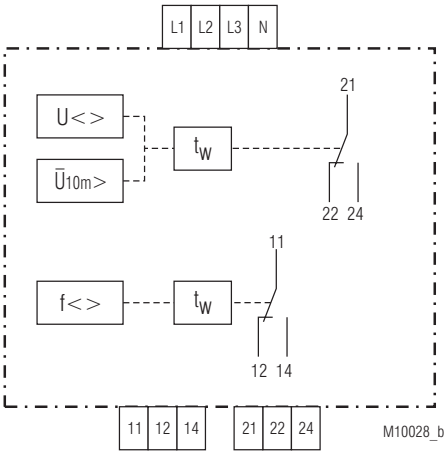
VARIMETER NA
Voltage and Frequency Monitor
RP 9800

0262345



- According to DIN EN 60255-1, DIN EN 60947-1
- Voltage and frequency monitoring for generator sets >30 kVA on public grid, according to VDEW directive
- RP 9800: 3-phase voltage measurement to neutral
- Disconnection on rise and drop of voltage
- Disconnection on rise and drop of frequency
- Disconnection when 10 minute mean value differs to nominal voltage (overvoltage)
- Frequency and voltage are indicated by separate output relays
- Permits connection or re-connection after adjustable time delay t_w
- Protection against manipulation by sealable transparent cover over setting switches
- Precise adjustment and indication of setting values according to the directive
- High measuring accuracy
- Width 70 mm

Circuit Diagram



Approvals and Markings

AE68

Application

Monitoring of voltage and frequency for generator set >30 kVA connected to the public grid according to VDEW directive
As alternative to disconnector switches in plants with <30 kVA , when a manual isolator switch is used.

Function

The RP 9800 monitors the voltage of the 3 phases against neutral indicating over and undervoltage. The phase with the highest voltage (overvoltage) and the phase with the lowest voltage (undervoltage) will cause the relay to switch. The unit is calibrated to the mean RMS value.

The frequency is measured single phase in phase L1. (Reference N).

The voltage and frequency monitoring operate 2 separate output relays. When exceeding the setting values the output relays switch into de-energized state.

If the measured values are within or return to the adjusted ranges the activation or reset takes place after an adjustable time delay t_w.

Note

When using the variant RP 9800.12 N-terminal for 3-pase 4 wire connection, the neutral has to be connected.

Indication

green LED ON	On, when auxiliary supply connected.
red LED f<>	On, when frequency out of range.
red LED U<>	On, when voltage out of range, Flashes, when 10 min mean value is higher then setting.
yellow LED f<>	On, when relay f<> is energized, flashes during time delay t_w-relay f<>.
yellow LED U<>	On, when relay Rel. U<> s energized, flashes during time delay t_w - Rel. U<>.

Adjustment Facilities

Adjustment with 8-or 10 step rotary switches:
Poti f>(Hz): - overfrequency (variant /500: 2 potentiometers)
Poti f<(Hz): - underfrequency
Poti U>(%): - overvoltage
Poti U<(%): - undervoltage (variant /500: not available)
Poti $\overline{U}$ 10 min: - overvoltage, 10 min mean value
Poti t_w(s): - time delay for activation or reset

Standard factory settings according to VDE 0126
(not for time delay for activation):
Response value for: - overfrequency f> = 50,2 Hz
Response value for: - underfrequency f< = 47,5 Hz
Response value for: - overvoltage U> = 115 %
Response value for: - undervoltage U< = 80 %
Response value for: - overvoltage, 10 min mean value $\overline{U}$10m> = 110 %
Time delay for: - activation t_w = 40 s

Technical Data

Overfrequency:
RP 9800: 50.2 ... 52 Hz
setting via 8 step rotary switch
50.2; 50.3; 50.4; 50.6; 50.8; 51.0; 51.5; 52 Hz
RP 9800/500: 50.2 … 51.5 Hz
Adjustment on 2 Pots each with 8 steps in steps of 0.1 Hz
Pot. 2 min. + Pot. 1 50.2 … 50.8 Hz and
Pot. 1 max. + Pot. 2 50.9 … 51.5 Hz
Underfrequency: 47 ... 49.8 Hz
setting via 8 step rotary switch
47; 47.5; 47.8; 48.2; 48.6; 49.0; 49.4; 49.8 Hz
Overvoltage: 197 ... 218 V (L - N) (182 V)
248 ... 276 V (L - N) (230 V)
setting via 8 step rotary switch
108%, 110%, 112%, 114%, 115%, 116%, 118%, 120% of U_N
Undervoltage
RP 9800: 131 ... 164 V (L - N) (182 V)
166 ... 207 V (L - N) (230 V)
setting via 8 step rotary switch
72%, 74%, 76%, 78%, 80%, 82%, 86%, 90% of U_N
RP 9800/500: 80% of U_N fixed
Overvoltage, 10 minute mean value: 189 ... 211 V (L - N) (182 V)
239 ... 267 V (L - N) (230 V)
setting via 8 step rotary switchr
104%, 106%, 108%, 110%, 112%, 114% 115% 116% von U_N
Time delay for activation or reset: setting via 10 step rotary switch
5, 10, 20, 30, 40, 50, 60, 70, 80, 90 s
Repeat accuracy: Voltage measuring $\leq \pm 1$ %
Frequency measuring $\leq \pm 0.02$ %
Hysteresis: Voltage measuring ≤ 2.5 %
Frequency measuring 0.05 Hz
Response time (disconnection): < 100 ms (typ. 75 ms)

Output

Thermal current I_{th}: 5 A
Switching capacity
according to AC 15
NO contacts: 3 A / AC 230 V IEC/EN 60 947-5-1
NC contacts: 1 A / AC 230 V IEC/EN 60 947-5-1
Electrical life
to AC 15 at 1 A, AC 230 V
NO contacts: 3 x 10^5 switching cycles IEC/EN 60 947-5-1
Max. fuse rating: 4 A gL IEC/EN 60 947-5-1
Mechanical life: > 50 x 10^6 switching cycles

Technical Data

General Data

De-energized on trip: are switched off when failure indicated or voltage is switched off
2 relays with C/O contact each
1. Rel. for f<>, 2. Rel. for U<>
Voltage range: 3 x AC 85 V ... 280 V
(U_H of all 3-phases to neutral)
Terminals: box terminal with cross recess screw
Cross section: solid / stranded 0,5 - 4 mm²
Flexible with multicore cable ends: 0.5 - 2.5 mm²
Multiple wire connection: 0.5 - 1.5 mm² (2 wires of same diameter)
Temperature range: -20 ...60 °C
Clearance and creepage distance
rated impulse voltage / pollution degree: 6 kV / 2 IEC 60 664-1
EMC
Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2
HF irradiation: 10 V/m IEC/EN 61 000-4-3
Fast transients: 4 kV IEC/EN 61 000-4-4
Surge voltage between
wires for power supply: 2 kV IEC/EN 61 000-4-5
between wire and ground: 4 kV IEC/EN 61 000-4-5
Interference suppression: Limit value class B EN 55 011
Degree of protection
Housing: IP 40 IEC/EN 60 529
Termials: IP 20 IEC/EN 60 529
Housing: Thermoplastic with VO behaviour according to UL subject 94
Vibration resistance: Amplitude 0.35 mm
frequency 10...55 Hz, IEC/EN 60 068-2-6
Climate resistance: 20 / 060 / 04 IEC/EN 60 068-1
Terminal designation: EN 50 005
Wire connection
Cross section: solid/stranded 0.5 ... 4 mm²
Stranded ferruled: 0,5 ... 2,5 mm²
Multiple wire connection: 0,5 ... 1,5 mm² (2 wires with same cross section)
Wire fixing: box terminal with cross recess screw
Mounting: DIN rail
Weight: 175 g

Dimensiones

Width x height x depth: 70 x 90 x 71 mm

Standard Types

RP 9800.12 3/N AC 400/230V
Article number: 0062263

RP 9800.12 3/N AC 315/182 V
Article number: 0063103

RP 9800.12/200 3/N AC 690/400 V
Auxiliary voltage U_H: AC/DC 24 ... 80 V
Article number: 0063268

RP 9800.12/500 3/N AC 400/230V
Article number: 0064515

Application Example