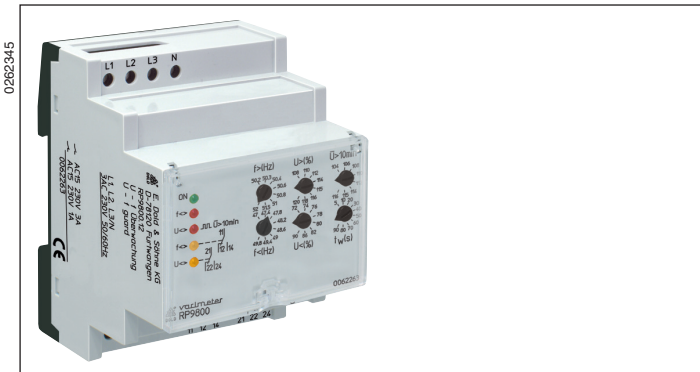
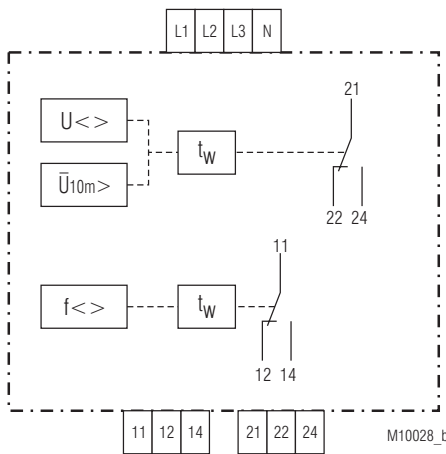


## VARIMETER NA Voltage and Frequency Monitor RP 9800



- 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



### 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-phase 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 than 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  $\bar{U}$  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  $\bar{U}_{10m} > = 110$  %  
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 switch  
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  $\leq 2.5$  %  
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:  $3 \times 10^5$  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  $U <$   
3 x AC 85 V ... 280 V  
( $U_H$  of all 3-phases to neutral)  
box terminal with cross recess screw  
solid / stranded 0,5 - 4 mm<sup>2</sup>

### Voltage range:

### Terminals:

### Cross section:

### Flexible with

### multicore cable ends:

### Multiple wire connection:

### Temperature range:

### 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

Terminals:

IP 20

IEC/EN 60 529

Housing:

Thermoplastic with VO behaviour

according to UL subject 94

### Vibration resistance:

Amplitude 0.35 mm

### Climate resistance:

frequency 10...55 Hz, IEC/EN 60 068-2-6

20 / 060 / 04

IEC/EN 60 068-1

### Terminal designation:

EN 50 005

### Wire connection

Cross section:

solid/stranded 0.5 ... 4 mm<sup>2</sup>

Stranded ferruled:

0,5 ... 2,5 mm<sup>2</sup>

Multiple wire connection:

0,5 ... 1,5 mm<sup>2</sup> (2 wires with same  
cross section)

### Wire fixing:

### Mounting:

box terminal with cross recess screw

DIN rail

### Weight:

175 g

## Dimensions

**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

