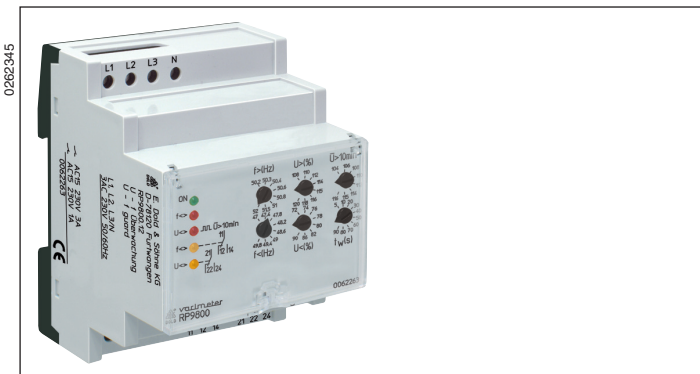
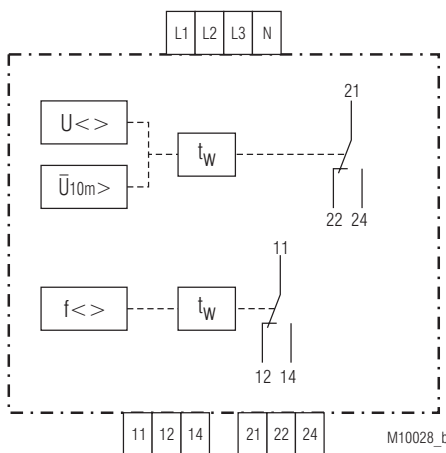


VARIMETER NA Voltage and Frequency Monitor RP 9800



- 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 Marking



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 ≤ 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: 3×10^5 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 mm²

Terminals:

Cross section:
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 impuls 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
frequency 10...55 Hz, IEC/EN 60 068-2-6
20 / 060 / 04 IEC/EN 60 068-1

Climate resistance:

Terminal designation:

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

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

