VARIMETER NA
Voltage and Frequency Monitor
RP 9800

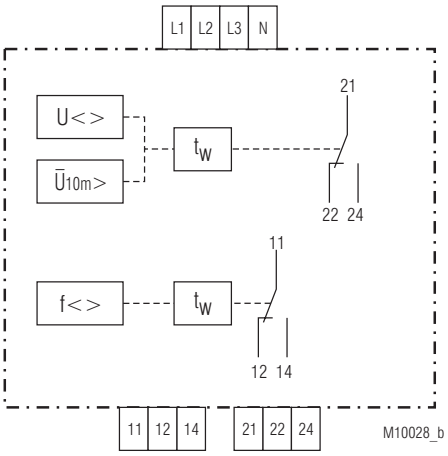
Translation of the original instructions

0262345

Product Description

With the voltage and frequency monitor RP 9800, DOLD offers a possibility to disconnect self-generating systems from the low-voltage grid in case of impermissible voltage and frequency values. The voltage and frequency increase or decrease, the reconnection time and the average value of the voltage increase over 10 minutes can be set individually as required using rotary switches.

Circuit Diagram



RP 9800.12

Your advantages

- Easy adjustment via rotational switch
- Precise adjustment and indication of setting values
- Protection against manipulation by sealable transparent cover over setting switches

Features

- 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
- High measuring accuracy
- Width 70 mm

Approvals and Markings

CE

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 U<> s energized, flashes during time delay t_w - relay 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 switch
104 %, 106 %, 108 %, 110 %, 112 %, 114 % 115 % 116 % of 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 ≤ ± 1 %
Frequency measuring ≤ ± 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 60947-5-1
NC contacts:	1 A / AC 230 V	IEC/EN 60947-5-1
Electrical life		
to AC 15 at 1 A, AC 230 V		
NO contacts:	3 x 10^5 switching cycles	IEC/EN 60947-5-1
Max. fuse rating:	4 A gG / gL	IEC/EN 60947-5-1
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. relay for f<>, 2. relay 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		
Operation:	- 20 ... 60 °C	
Storage:	- 25 ... 70 °C	
Altitude:	≤ 2000 m	
Clearance and creepage distance		
Rated impulse voltage / pollution degree:	6 kV / 2	IEC 60664-1
EMC		
Electrostatic discharge (ESD):	8 kV (air)	IEC/EN 61000-4-2
HF irradiation		
80 MHz ... 6 GHz:	10 V/m	IEC/EN 61000-4-3
Fast transients:	4 kV	IEC/EN 61000-4-4
Surge voltage between		
wires for power supply:	2 kV	IEC/EN 61000-4-5
Between wire and ground:	4 kV	IEC/EN 61000-4-5
Interference suppression:	Limit value class B	EN 55011
Degree of protection		
Housing:	IP 30 (not sealed)	IEC/EN 60529
	IP 40 (sealed with seal wire 50/30)	IEC/EN 60529
	The unit must be disconnected from the power supply before the seal is applied	
Termials:	IP 20	IEC/EN 60529
Housing:	Thermoplastic with VO behaviour according to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz,	IEC/EN 60068-2-6
Climate resistance:	20 / 060 / 04	IEC/EN 60068-1
Terminal designation:	EN 50005	
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)	
Stripping length:	6.5 mm	
Max. fixing torque:	0.5 Nm	
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