

# Voltage- and Frequency-Relay UFR1001E

Grid- and Plant Protection according to VDE-AR-N 4105, bdew, ÖVE-standard, G59/3 and G83/2, DIN V VDE 0126-1-1

## UFR1001E



The UFR1001E monitors voltage and frequency in plants for own generation of electricity. It fulfills the requirements of VDE-AR-N 4105

bdew-directive, G59/3, G83/2 and ÖVE/ÖNORM E 8001-4-712:2009 for generators connected to the public grid. The UFR1001E is a dual-channel device and thus one-fault-proof. Input-circuit, A/D-converter, processor and output-relay are doubly present. The processors control each other. The function of the output-relays and of the connected switches can be monitored with feed-back contacts. At an alarm the device switches off and the reason is displayed with LEDs and signaled with transistor-outputs.

The limits are pre-set according to VDE-AR-N 4105. They can be changed if required and be protected with a code and/or a seal. An alarm-counter stores the last 100 alarms with reason and elapsed time.

In addition the time the UFR1001E has interrupted the plant is recorded. All values can be read-out with the integrated display and give the operator valuable information about the availability of the plant.

- Monitoring of under- and overvoltage 15-520 V
- Measuring phase-neutral or phase-phase
- Monitoring of under- and overfrequency 45-65 Hz
- Monitoring of quality of voltage (10-minutes-average)
- Monitoring of vector shift 2...20 °
- **NEW** Monitoring of rate of change of frequency (ROCOF, df/dt) 0,100...5,000 Hz/s
- One-fault-proof with monitoring of connected switches (defeatable), 2 automatic restarts at error
- Passive detection of insular grid acc. to ch. 6.5.3 and app. D2
- Support of synchronisation of generators
- Selftest
- Switching delay adjustable 0,05 ... 130 s
- Switching-back-delay adjustable 0 ... 999 s
- Switching-back-delay at alarms <3 s: 5 s
- Preset values acc. to VDE-AR-N 4105 and bdew-directive
- **NEW** Preset values acc. to G59/3 and G83/2 for Great Britain
- **NEW** Preset values acc. to ÖVE standard for Austria
- Alarm-counter for 100 alarms with value, reason and elapsed time
- Recording of added time of alarms
- Input for standby with counter and recording of time
- Test-button and simulation with measuring of switching-times
- LEDs for alarms. Allocation of values and states of relays
- Sealing. All values can be read-out when sealed
- Easy installation and programming with 12 pre-set programs
- Outputs for reporting of alarms to superior control

## NEW January 2014 and Firmware 0-05

### Certificates:


 **Konformitätsnachweis** NA-Schutz VDE-AR-N 4105  
"Eigenerzeugungsanlagen am Niederspannungsnetz"

**Konformitätsnachweis** NA-Schutz bdew-Richtlinie  
"Eigenerzeugungsanlagen am Mittelspannungsnetz"




 **Certificate of compliance**  
DIN V VDE 0126-1-1

 **Certificate**  
ÖVE/ÖNORM E 8001-4-712:2009-12, Anhang A

 **Certificate of compliance** G59/3:2013  
**Certificate of compliance** G83/2:2012

 **Certificate de conformité**  
DIN V VDE 0126-1-1, VFR2013/VFR 2014

### for Italy:

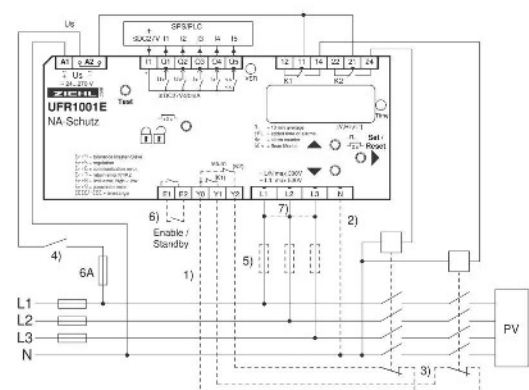
 CEI 0-21 only relais SPI1021

With a test-button the function of the connected switches can be tested and their switching-time can be measured. The simulation displays the complete switching-time of device plus connected switches. The standby input allows a remote shutoff e.g. with a RCR. It can also be used to switch to an energy saving mode by a timer or a twilight switch.

- Supply-voltage AC/DC 24-270 V
- Housing for DIN-rail-mount, 105 mm wide, mounting height 66 mm

### Medium voltage:

- 2 x 2 alarms for voltage and frequency (U>>, U>, U<, U<<, F>>, F>, F<, F<<)



## Technical Data UFR1001E

|                            |  |  |
|----------------------------|--|--|
| Power supply               | Rated supply voltage $U_s$               | AC/DC 24-270 V, 0/45...65 Hz, <5VA<br>DC: 20,4...297 V, AC: 20,4...297 V |
| Relay output               |  | 2 change-over contacts<br>type 2, see "general technical informations"   |
| Voltage                    | Measurement voltage phase-phase          | AC 15...530 V (< 5 V display: 0)   |
|                            | Setting range phase-phase                | AC 15...520 V  |
|                            | Measuring voltage phase-neutral          | AC 10...310 V (< 5 V display: 0)   |
|                            | Setting range phase-neutral              | AC 15...300 V  |
|                            | Measurement method                       | true RMS   |
|                            | Hysteresis                               | adjustable 1,0...99,9 V  |
|                            | Measurement accuracy (with neutral)      | $\pm 0,6\%$ of measured value  |
|                            | Measurement accuracy (without neutral)   | $\pm 0,8\%$ of measured value  |
|                            | Accuracy of display                      | >100V: -1 digit (resolution 1 V)<br><100V: -1 digit (resolution 0,1 V)   |
|                            | Measurement functions                    | 3-phase with / without neutral   |
| Switching-delay (dAL)      | adjustable 0,05 ( $\pm 15$ ms)...130,0 s |  |
| Switching-back-delay (doF) | adjustable 0 (approx. 200 ms)...1000 s   |  |
| Frequency                  | Measurement range                        | 40...70 Hz   |
|                            | Setting range                            | 45,00...65,00 Hz   |
|                            | Hysteresis                               | 0,05...10,00 Hz  |
|                            | Measurement accuracy                     | $\pm 0,04$ Hz $\pm 1$ digit  |
|                            | Switching delay (dAL)                    | adjustable 0,05 ( $\pm 15$ ms)...130,0 s                                 |
|                            | Switching-back-delay (doF)               | adjustable 0 (>200 ms)...999 s   |
| Vector-Shift               | Measurement range                        | 0...45,0°  |
|                            | Setting range                            | 2,0...20,0°  |
|                            | Switching-delay (dAL)                    | < 50 ms  |
|                            | Switching-back-delay (doF)               | adjustable 3...240 s   |
|                            | Delay at $U_s$ on                        | adjustable 2...20 s  |
| ROCOF (df/dt)              | Setting range                            | 0,100...5,000 Hz/s, 4...50 cycles  |
| Digital outputs insulated  | Voltage I1                               | DC 4,5...27 V  |
|                            | Current Q1...Q5                          | max. 20 mA / output  |
| Input Feed-back-contacts   | Voltage Y0...Y1/2                        | DC 15...35 V   |
|                            | Switching time connected switches        | adjustable 0,5...99,0 s  |
| Test Conditions            |  | EN 60255   |
|                            | Rated impulse voltage                    | 4000 V   |
|                            | Overvoltage category                     | III  |
|                            | Rated Insulation voltage                 | 2  |
|                            | Contamination level                      | 300 V  |
|                            | Isolation material group                 | II   |
|                            | ON-period                                | 100 %  |
|                            | Rated ambient temp. range                | -20 °C...+55 °C EN 60 068-2-2 dry heat                                   |
| Interference resistance    | EN 61 000-6-2                            |  |
| Interference transmission  | EN 61 000-6-4                            |  |
| Housing                    | Design                                   | V6   |
|                            | Dimensions (h x w x d)                   | 90 x 105 x 69 mm, mounting height 66 mm                                  |
|                            | Protection housing                       | IP30   |
|                            | Protection terminals                     | IP20   |
|                            | Attachment                               | DIN-rail 35 mm according to EN 60 715 or screws M4                       |
|                            | Weight                                   | ca. 250 g  |