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/ONORM 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.

NEW January 2014 and Firmware 0.05

Certificates:
- Konformitätsschein NA-Schutz VDE-AR-N 4105 "Eigenerzeugungsanlagen am Niederspannungsnetz" (Certificate of compliance DIN V VDE 0126-1-1)
- Certificate
  - ÖVE/ONORM E 8001-4-712:2009-12, Anhang A
- Certificate of compliance G83/2:2012
- Certificate de conformité DIN V VDE 0126-1-1, VFR2013/VFR 2014

for Italy:
- CEI0-21 only relais SP11021

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°
- 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
- Preset values acc. to G59/3 and G83/2 for Great Britain
- 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

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 Us: AC/DC 24-270 V, 0/45...65 Hz, 5 VA
  - DC: 20,4...297 V, AC: 20,4...297 V

**Relay output**
- 2 change-over contacts
- 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): ±0,6% of measured value
- Measurement accuracy (without neutral): ±0,8% of measured value
- Accuracy of display: >100V: -1 digit (resolution 1 V)
  - <100V: -1 digit (resolution 0.1 V)
- Measurement functions: 3-phase with / without neutral
- Switching-delay (dAL): adjustable 0,05 (± 15ms)...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: ±0,04 Hz ± 1 digit
- Switching delay (dAL): adjustable 0,05 (± 15ms)...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 Us 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 output: DC 15...35 V
- Switching time connected switches: adjustable 0,5...99,0 s

**Test Conditions**
- 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