RETROFITTING
Zero Sequence Voltage Protection Relay

NPUH800R

NPUH800R (R2 case) is dedicated to the refurbishment of 700 and 7000 of CEE relays (R2 case) providing the supervision of zero-sequence voltage of electrical networks with isolated or high impedance earthed neutral. This numerical and multi-function relay supervises the phase to earth faults and the good operation of the circuit breaker and its trip circuit.

NP800R relays provide monitoring, measurement and recording of the electrical quantities of the network.
The relays can be set locally, using either the keypad and display or the RS232 port, or remotely using the RS485 port.

Two mountings are available, Flush Rear Connection (**EDPAR**) or Projecting Rear Connection (**SDPAR**). A blank cover R1, provide in option, can improve mechanical installation (replacement of CEE case R3 by a NPUH800R).

Setting, reading, measurement and recording are all available locally or remotely.

NPUH800R - EDPAR

- Minimises retrofitting man-hours
- Maximises preservation of existing installation
- Simplifies and reduces re-commissioning time
- Minimises retrofitting costs

Protection function
- Maximum of zero sequence voltage with 2 thresholds **[59N]**

Additional functions
- Latching of the output contacts **[86]**
- Trip circuit supervision of the breaker **[74TC]**

Protection & Control

ice

CHARACTERISTICS NPUH800R

Auxiliary Supply
- Auxiliary supply ranges   19 to 70 – 85 to 255 / Vdc or Vac 50 or 60 Hz
- Typical burden   6 W (DC), 6 VA (AC)
- Memory backup   72 hours

Analogue inputs
- VT nominal value   Un: 33 to 120 V
  input impedance > 80 kΩ
  Continuous rating 240 V, short duration withstand 275V - 1 min
  measurement from 1 to 240 V
  VT setting: primary value from 220 V to 250 kV
- Frequency (50Hz or 60Hz)   measurement: 45 to 55 Hz or 55 to 65 Hz

Digital inputs (4)
- Polarizing voltage   20 to 70 Vdc for 19 to 70 V auxiliary supply range
  37 to 140 Vdc for 85 to 255 V auxiliary supply range
- Level 0   < 10Vdc range 19 to 70 V – < 33Vdc range 85 to 255 V
- Level 1   > 20Vdc range 19 to 70 V – > 37Vdc range 85 to 255 V
- Operating of the input by level 1 or 0   programmable
- Burden   < 15 mA

Output Relays (3 + 1 WD)
- Relays A, B   double contact NO, permanent current 8 A
- (signalling, Shunt Opening Release)   closing capacity 12 A / 4 s
  short circuit current withstand 100 A / 30 ms
  breaking capacity DC with L/R = 40 ms: 50W
  breaking capacity AC with cos φ = 0.4: 1250 VA
- Relays C & WD: changeover contact, permanent current 10 A
  (control, WD: Watchdog)   closing capacity 15 A / 4 s
  (C, D, G: programmable for CB Shunt   short circuit current withstand 250 A / 30 ms
  Opening Release or Under Voltage   breaking capacity DC with L/R = 40 ms: 50W
  Release)   breaking capacity AC with cos φ = 0.4: 1250 VA
- Relays pulse, except WD   adjustable from 100 to 500 ms
- Assignment of name to the output   by the setting software
  maximum of 16 characters   capital letters or digits

Max of zero sequence voltage [59N]
- Measurement method (according wiring)   calculated: 3 phase and neutral connection
  measured: with 1 neutral point VT or 3 VT with broken delta
- Setting of thresholds Vo> - Vo>>   2 to 80 % Un
- Thresholds accuracy   2% of Un
- Reset percentage on the operating level   97%
- Instantaneous operating time   60 ms including trip relay Vo ≥ 2 Vs
- Definite time delays   40 ms to 300 s
- Accuracy of the time delays   ± 2% or 20 ms
- Accuracy of displayed measures   3% from 3 to 240 V

Trip circuit supervision of the breaker [74TC]
- Trip circuit supervision   requires one or two digital inputs (see application guide)
- Operating time (in faulty condition)   500 ms fixed

Latching of the output contacts [86]
- Latching of output relays   A, B, C (programmable assignment)
- Reset   digital input, digital communication or local MMI

Digital inputs assignment
- By setting software
- Setting table selection   set 1 – set 2
- Disturbance recording order
- Interlock o/o
- Interlock c/o
- Control mode   dedicated to remote control, local / remote
- Reset [86] function   acknowledgment of the selected output(s)
- Trip circuit supervision   [74TC] function
- CB trip external order   function [74TC] blocked if external trip order
- Input – output programmable functions

CHARACTERISTICS NPUH800R

User programmable functions (digital inputs – digital outputs)

- Status of the function   in or out of service, by local MMI or by the setting software
- Tripping mode or report   report: for time stamping and event recorder
- Operating and release time delays   tripping mode: 40 ms to 300 s
- Assignment of name to the function,   by the setting software
  maximum of 14 characters
- Assignment of one or more output relays   by local MMI or by the setting software
  (alarm or trip)   A, B, C

Load shedding – Load Restoration, remote control

- Load shedding level   1 to 6
- Time delay before reclosing   1 to 120 s, ± 2%
- Reclosing pulse   100 to 500 ms (remote control)
- Output relays assigned   programmable by local MMI or by setting software
                                   A, B, C

Digital outputs assignment

- By local MMI or by setting software

Signalling LEDs assignment

- By setting software

Man Machine Interface

- Relay display   2 lines of 16 characters
  Language   French, English, Spanish, Italian
- Configuration and operating software Windows® 2000, XP, Vista and 7 compatible
  Language   French, English, Spanish, Italian

MODBUS® Communication (option)

- Transmission   asynchronous series, 2 wires
- Interface   RS 485
- Transmission speed   300 to 115 200 bauds

Disturbance recording

- Number of recordings   4
- Total duration   52 periods per recording
- Pre fault time   adjustable from 0 to 52 cycles

Presentation

- Height   4U
- Width   case R2
- Brackets 19" rack mounting   see diagram 9954 (7000 series rack definition table)

Case (see drawing D40037)
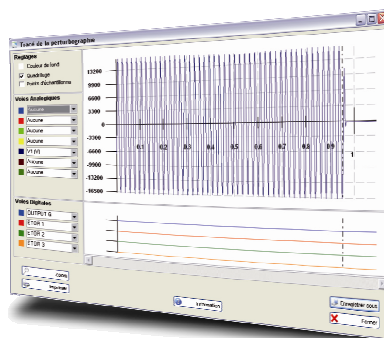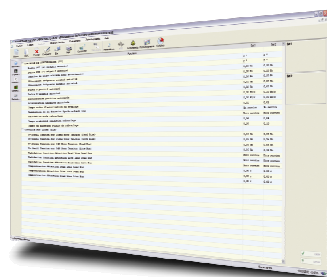
- **EDPAR**
  H, W, D (case & base)   172 x 83 x 222 mm
  H, W (front face dimensions)   217 x 98 mm
- **SDPAR**
  H, W, D (case & base)   172 x 83 x 227 mm
  H, W (front face dimensions)   172 x 83 mm
- Weight   3.5 kg

Connection - codification

- NPUH800R   See diagram S39969

SMARTsoft

SMARTsoft, integrated software for the Industry, Railway and Transmission ranges, helps the User get the best from NP800R series relays.

SMARTsoft

User friendly
Diagnosis
Fault analysis
Maintenance tools

Functionalities

- 2 ranges of auxiliary supply
- Storage of the lack and the restoration of the auxiliary voltage (time stamped events)
- Configuration and parameter setting by local MMI or off-line / on-line PC
- Measurement of electrical quantities:
  Display expressed in primary values
  Residual voltage and maximum values
- Instantaneous alarm threshold
- Definite time tripping for thresholds
- 2 setting groups, locally or remotely selectable
- CB Monitoring: interlocks discrepancy, local or remote control of reclosing / tripping
- Remote control by communication channel: tripping or closing, load shedding with priority levels and load restoration
- Setting software compatible with Windows® 2000, XP, Vista and 7
- User interface with access to all protection functions
- Time stamping of internal events with 10ms resolution
- Time stamping of digital inputs with 10ms resolution
- Event recording: 250 locally recorded events, 200 saved in case of loss of auxiliary supply
- Recording of logical states of digital I/O, of measures, of current setting group
- Local / remote events acknowledgment
- Disturbance recording according to Comtrade® format: storage of 4 recordings of 52 periods
- Disturbance recording forced by digital input, setting software or communication channel
- Remote setting, remote reading of measurements, counters, alarms and parameters settings
- Remote reading of disturbance recording and event log
- Self-diagnosis: Memories, output relays, A/D converters, auxiliary supply, cycles of execution of software, hardware failure

Functional diagram