

NPIHD800R

RETROFITTING - Earth Fault Protection Overcurrent with or without Directional Criteria



NPIHD800R (R2 case) is dedicated to the refurbishment of 7000 series (R2 case) of CEE earth fault overcurrent and directional relay providing the detection of zero-sequence currents of medium and high voltage electrical networks. This numerical and multi-function relay supervises in particular 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 NPIHD800R).

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



NPIHD800 - EDPAR

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

Protection functions

- Earth fault with 2 thresholds [50N] [51N]
- Earth directional [67N]
- Load reclosing function
- Logical selectivity

Additional functions

- Latching of the output contacts [86]
- Trip circuit supervision of the breaker [74TC]
- Breaker failure [50N_BF]
- Load shedding - Load Restoration, remote control

OUR TRADEMARKS



GENERAL CHARACTERISTICS

Auxiliary Supply <ul style="list-style-type: none"> • Auxiliary supply ranges • Typical burden • Memory backup 	19 to 70 – 85 to 255 / Vdc or Vac 50 or 60 Hz 6 W (DC), 6 VA (AC) 72 hours
Analogue inputs <ul style="list-style-type: none"> • Earth current CT 	I_{n_0} 1 or 5 A measurement from 0.005 to 2.4 I_{n_0} burden at $I_{n_0} < 0.5$ VA continuous rating 1 I_{n_0} , short duration withstand 40 I_{n_0} / 1s CT setting: primary value from 1 A to 10 kA display of primary current from 0 to 6.5 kA
<ul style="list-style-type: none"> • Recommended CTs 	5VA 5P20
<ul style="list-style-type: none"> • Earth current from Ring CT 100/1 or Ring CT 1500/1 and BA800 	measurement from 0.1 to 48 A primary
<ul style="list-style-type: none"> • VT nominal value 	Un: 33 to 120 V input impedance > 80 k Ω continuous rating 240 V, short duration withstand 275 V - 1 min measurement from 1 to 240 V VT setting: primary value from 220 V to 250 kV
<ul style="list-style-type: none"> • Frequency (50Hz or 60Hz) 	measurement: 45 to 55 Hz or 55 to 65 Hz
Digital inputs (4) <ul style="list-style-type: none"> • Polarizing voltage • Level 0 • Level 1 • Operating of the input by level 1 or 0 • Burden 	20 to 70 Vdc for 19 to 70 V auxiliary supply range 37 to 140 Vdc for 85 to 255 V auxiliary supply range < 10 Vdc range 19 to 70 V – < 33 Vdc range 85 to 255 V > 20 Vdc range 19 to 70 V – > 37 Vdc range 85 to 255 V programmable < 15 mA
Output Relays (3 + 1 WD) <ul style="list-style-type: none"> • Relays A, B: (signalling, Shunt Opening Release) 	double contact NO, permanent current 8 A 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 $\cos \varphi = 0.4$: 1,250 VA
<ul style="list-style-type: none"> • Relays C & WD: (control, WD: Watchdog) (C: programmable for CB Shunt Opening Release or Under Voltage Release) 	changeover contact, permanent current 10 A closing capacity 15 A / 4 s short circuit current withstand 250 A / 30 ms breaking capacity DC with L/R = 40 ms: 50W breaking capacity AC with $\cos \varphi = 0.4$: 1,250 VA
<ul style="list-style-type: none"> • Relays pulse, except WD 	adjustable from 100 to 500 ms
<ul style="list-style-type: none"> • Assignment of name to the output maximum of 16 characters 	by the setting software, capital letters or digits
Earth fault function [51N] [50N] <ul style="list-style-type: none"> • Operating range $I_{o>}$ - $I_{o>>}$ • Thresholds accuracy • Reset percentage on the operating level • Instantaneous operating time • Definite time delay • Accuracy of the time delays • Curves [51N] $I_{o>}$ • Curves accuracy and type 	0.03 to 2.4 I_{n_0} / CT - 0.6 to 48 A / ring CT 1% typical, 2% max from 0.05 to 0.4 I_{n_0} / CT 3% typ., 5% max from 0.03 to 0.05 I_{n_0} and 0.4 to 2.4 I_{n_0} / CT 5% from 0.6 to 48 A / ring CT 95% 60 ms including trip for $I \geq 2$ Is 40 ms to 300 s: [51N] $I_{o>}$ [50N] $I_{o>>}$ $\pm 2\%$ or 20 ms IEC 60255-3, ANSI IEEE and factory programmable class 5 - Time Multiplier Setting: 0.03 to 3 s, type: see functionalities

GENERAL CHARACTERISTICS

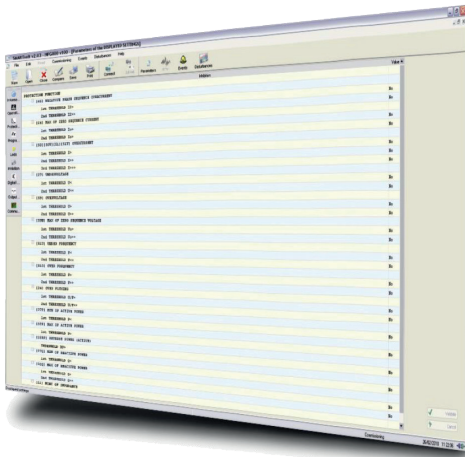
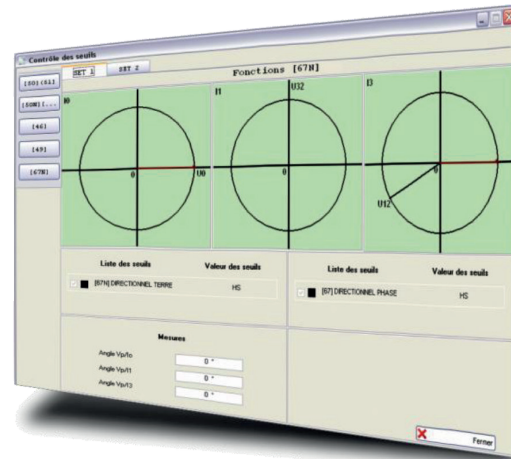
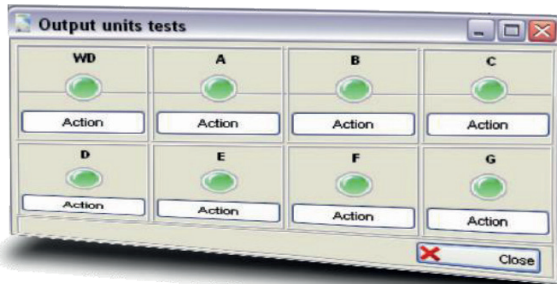
<p>Earth directional function [67N]</p> <ul style="list-style-type: none"> • Operating principle • Measurement of residual voltage V_r • Polarization threshold • Operating mode according to the polarization voltage • Angle measurement V_p/I_0 • Setting of characteristic angle α • Inhibition of the function 	<p>assignment of a directional criteria to the functions [50N] [51N] measured or calculated, to be defined at the order 3% to 20% U_n, step of 1 %, accuracy ± 5 % or 1 V programmable: blocking or permission (tripping by functions [50N] [51N]) -180° to $+180^\circ$, accuracy $\pm 5^\circ$ -180° to $+180^\circ$, step of 1°, accuracy $\pm 5^\circ$ programmable: yes or no ; by digital input or by the communication</p>
<p>Load reclosing function</p> <ul style="list-style-type: none"> • Application • Operating principle • Ratio « K » of reclosing time • Accuracy • Reclosing time 	<p>threshold adjustment [50N] [51N] function activation by digital input 50 à 200% ± 5 % 40 ms to 300s, ± 2% or 20 ms</p>
<p>Latching of the output contacts [86]</p> <ul style="list-style-type: none"> • Manual reset for output relays • Reset 	<p>A, B, C digital input, digital communication or local MMI</p>
<p>Trip circuit supervision and breaker failure [74TC] [50N_BF]</p> <ul style="list-style-type: none"> • Trip circuit supervision [74TC] • Operating time (in faulty condition) • Failure threshold [50N_BF] • Breaker failure time delay 	<p>requires one or two digital inputs (see application guide) 500 ms fixed for [74TC] function 0.5% to 3% I_{n0}, step of $0.1 I_{n0}$ 60 to 1,000 ms, step of 10 ms</p>
<p>Logical selectivity</p> <ul style="list-style-type: none"> • Application on radial network • Operating principle • Additional time delay [51N] • Additional time delay [50N] • Operating mode of digital input 	<p>number of relays too important to allow the use of time co-ordination additional time added to the functions [50N] [51N] 60 ms to 120s, ± 2% or 20 ms 60 ms to 3s, ± 2% or 20 ms negative or positive true-data mode</p>
<p>Digital inputs assignment</p> <ul style="list-style-type: none"> • By setting software • Setting table selection • Disturbance recording order • Logical selectivity • Interlock o/o • Interlock c/o • Control mode • Closing mode • Reset [86] function • Trip circuit supervision • CB trip external order • Input - output programmable functions 	<p>set 1 - set 2</p> <p>dedicated to remote control, local / remote</p> <p>acknowledgment of the selected output(s) [74TC] function function [74TC] blocked if external trip order</p>
<p>User programmable functions (digital inputs - digital outputs)</p> <ul style="list-style-type: none"> • Status of the function • Tripping mode or report • Operating and release time delays • Assignment of name to the function, maximum of 14 characters • Assignment of one or more output relays (alarm or trip) 	<p>in or out of service, by local MMI or by the setting software report: for time stamping and event recorder tripping mode: 40 ms to 300 s by the setting software by local MMI or by the setting software A, B, C</p>
<p>Counters</p> <ul style="list-style-type: none"> • Operation number of circuit breaker 	<p>0 to 10,000</p>

GENERAL CHARACTERISTICS

<p>Load shedding – Load Restoration, remote control</p> <ul style="list-style-type: none"> • Load shedding level • Time delay before reclosing • Reclosing pulse • Output relays assigned 	<p>1 to 6 1 to 120 s, $\pm 2\%$ 100 to 500 ms (remote control) programmable by local MMI or by setting software A, B, C</p>
<p>Digital outputs assignment</p> <ul style="list-style-type: none"> • By local MMI or by setting software 	
<p>Signalling LEDs assignment</p> <ul style="list-style-type: none"> • By setting software 	
<p>Man Machine Interface</p> <ul style="list-style-type: none"> • Relay display Language • Configuration and operating software Language 	<p>2 lines of 16 characters French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian</p>
<p>MODBUS® Communication</p> <ul style="list-style-type: none"> • Transmission • Interface • Transmission speed 	<p>asynchronous series, 2 wires RS485 300 to 115,200 bauds</p>
<p>Disturbance recording</p> <ul style="list-style-type: none"> • Number of recordings • Total duration • Pre fault time 	<p>4 52 periods per recording adjustable from 0 to 52 cycles</p>
<p>Presentation</p> <ul style="list-style-type: none"> • Height • Width • Brackets 19" rack mounting 	<p>4U Case R2 see diagram 9954 (7000 series rack definition table)</p>
<p>Case (see drawing D40037)</p> <ul style="list-style-type: none"> • EDPAR H, W, D (case & base) H, W (front face dimensions) • SDPAR H, W, D (case & base) H, W (front face dimensions) • Weight 	<p>172 x 83 x 222 mm 217 x 98 mm 172 x 83 x 227 mm 172 x 83 mm 3.5 kg</p>
<p>Connection - codification</p> <ul style="list-style-type: none"> • NPIHD800R • Ring CT • BA800 	<p>See diagram S39965 See diagram 142941 See diagram 38766</p>

SMARTsoft

SMARTsoft, integrated software for the Industry, Railway and Transmission ranges, helps the User get the best from NP800 series relays.



- 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
 - Instantaneous, integrated and maximum values of earth currents
 - Residual voltage value
- Instantaneous alarm threshold
- Definite time tripping
- Dependent time tripping according to inverse/very inverse/extremely inverse IEC 60255-3 curves
- Tripping according to RI curve (electromechanical)
- Tripping according to moderately inverse/very inverse/extremely inverse ANSI /IEEE curves
- 2 setting groups, locally or remotely selectable
- CB Monitoring: interlocks discrepancy, local or remote control of closing / tripping
- Circuit breaker maintenance: counter of operation number, over operation alarm
- Monitoring of breaker failure by checking the disappearance of earth current after opening
- 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 measurements and current setting group
- Local / remote events acknowledgment
- Disturbance recording according to Comtrade® format: storage of 4 recordings of 52 periods

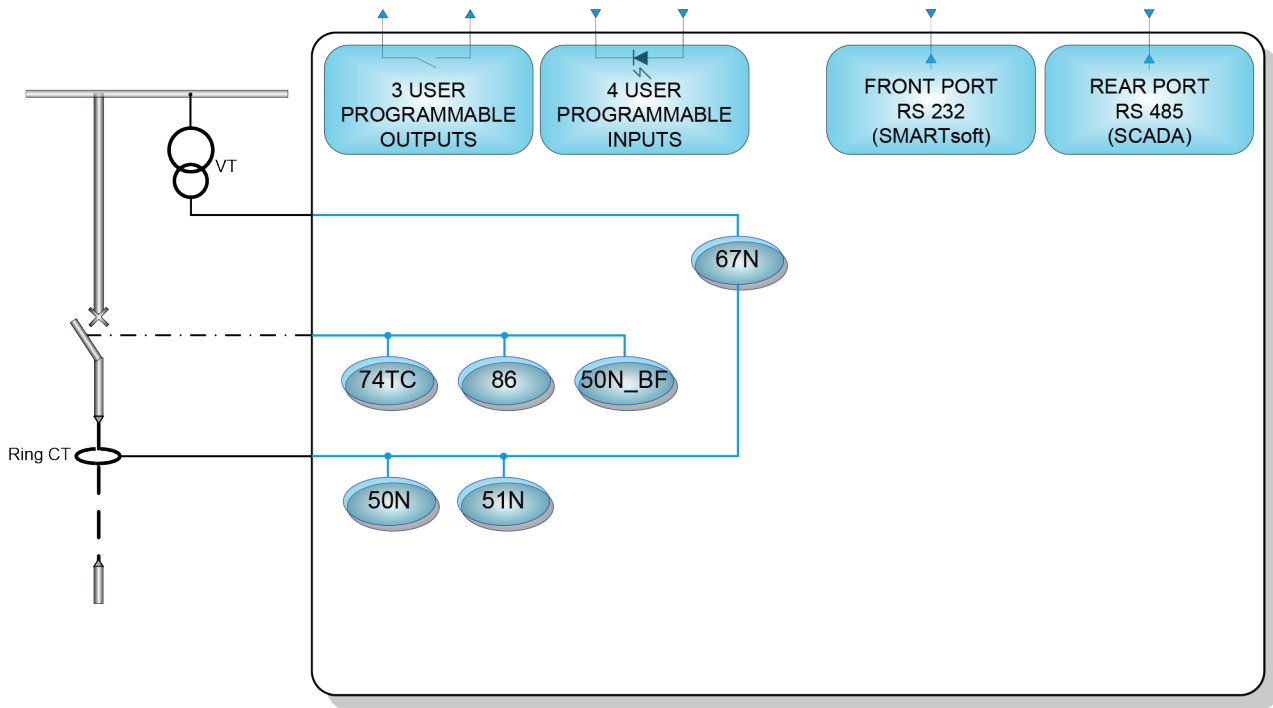
NPIHD800R

- Disturbance recording forced by digital input, setting software or communication channel
- Closing function: adjustment of phase, earth, negative sequence current thresholds by external input
- Remote setting and reading of measurements, counters, alarms and parameter 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
- Test of wiring

Related equipment

- BA800 for ring CT 1500/1

FUNCTIONAL DIAGRAM



The specifications and drawings given are subject to change and are not binding unless confirmed by our specialists.



GENERATION



TRANSMISSION



DISTRIBUTION



RAILWAY



INDUSTRY



INDUSTRIELLE DE CONTRÔLE ET D'ÉQUIPEMENT - 11 rue Marcel Sembat F-94146 Alfortville cedex

+33 (0)1 41 79 76 00 www.icelec.com contact@icelec.com - [in](#) - [yt](#)

• ISO 19443 : 2018 • ISO 9001 : 2015 • ISO 14001 : 2015 certified •

