NPIH800R

RETROFITTING
Earth Fault Overcurrent Relay

NPIH800R (R2 case) is dedicated to the refurbishment of 700 and 7000 series (R2 case) of CEE earth fault overcurrent 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 NPIH800R).

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

NPIH800R - 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 **[51N] [50N]**
- 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

GENERAL CHARACTERISTICS

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	
• Earth current CT - low range	In_0 1 or 5 A CT setting: primary value from 1 A to 10 kA burden at In_0 < 0.5 VA Continuous rating 1 In_0, short duration withstand 40 In_0 / 1s measurement from 0.005 to 2.4 In_0 display of primary current from 0 to 6.5 kA
• Earth current CT - high range (consult us)	In_0 1 or 5 A burden at In_0 < 0.2 VA Continuous rating 3 In_0, short duration withstand 80 In_0 / 1s CT setting: primary value from 1 A to 10 kA measurement from 0.05 to 24 In_0 display of primary current from 0 to 65 kA
• Recommended CTs	5VA 5P20
• Earth current from Ring CT 100/1 or Ring CT 1500/1 and BA800	measurement from 0.1 to 48 A primary
• 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	< 10 Vdc range 19 to 70 V – < 33 Vdc range 85 to 255 V
• Level 1	> 20 Vdc range 19 to 70 V – > 37 Vdc 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: (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 φ = 0.4: 1,250 VA
• Relays C & WD: (control, WD: Watchdog) (C, D): 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 φ = 0.4: 1,250 VA
• Relays pulse, except WD	adjustable from 100 to 500 ms
• Assignment of name to the output maximum of 16 characters	by the setting software / capital letters or digits
Earth fault function [50N] [51N]	
• Operating range Io> - Io>>	0.03 to 2.4 In_0 /CT (low range) or 0.3 to 24 In_0 /CT (high range) 0.6 to 48 A / ring CT
• Thresholds accuracy	1% typical, 2% max from 0.05 to 0.4 In_0 / CT 3% typ., 5% max from 0.03 to 0.05 In_0 and 0.4 to 2.4 In_0 / CT 5% from 0.6 to 48 A / ring CT
• Reset percentage on the operating level	95%
• Instantaneous operating time	60 ms including trip for I ≥ 2 Is
• Definite time delay	40 ms to 300 s: [51N] Io> [50N] Io>>
• Accuracy of the time delays	± 2% or 20 ms
• Curves [51N] Io>	IEC 60255-3, ANSI IEEE
• Curves accuracy and type	class 5 - Time Multiplier Setting: 0.03 to 3 s, type: see functionalities

GENERAL CHARACTERISTICS

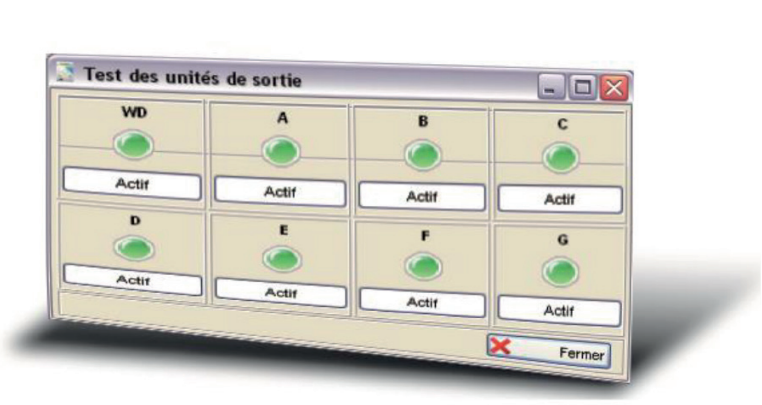
Load reclosing function	
• Application	threshold adjustment [50N] [51N]
• Operating principle	function activation by digital input
• Ratio « K » of reclosing time	50 à 200%
• Accuracy	± 5 %
• Reclosing time	40 ms to 300s, ± 2% or 20 ms
Latching of the output contacts [86]	
• Latching of output relays	A, B, C (programmable assignment)
• Reset	digital input, digital communication or local MMI
Trip circuit supervision and breaker failure [74TC] [50N_BF]	
• Trip circuit supervision [74TC]	requires one or two digital inputs (see application guide)
• Operating time (in faulty condition)	500 ms fixed for [74TC] function
• Failure threshold [50N_BF]	0.5% to 3% In_0, step of 0.1 In_0
• Breaker failure time delay	60 to 1,000 ms, step of 10 ms
Logical selectivity	
• Application on radial network	number of relays too important to allow the use of time co-ordination
• Operating principle	additional time added to the functions [50N] [51N]
• Additional time delay [51N]	60 ms to 120s, ± 2% or 20 ms
• Additional time delay [50N]	60 ms to 3s, ± 2% or 20 ms
• Operating mode of digital inputs	negative or positive true-data mode
Digital inputs assignment	
• By setting software	set 1 – set 2
• Setting table selection	
• Disturbance recording order	
• Logical selectivity	
• Interlock o/o	
• Interlock c/o	
• Control mode	dedicated to remote control, local / remote
• Closing mode	
• 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	
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, maximum of 14 characters	by the setting software
• Assignment of one or more output relays (alarm or trip)	by local MMI or by the setting software A, B, C
Counters	
• Operation number of circuit breaker	0 to 10,000
Load shedding – Load Restoration, remote control (communication option)	
• 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

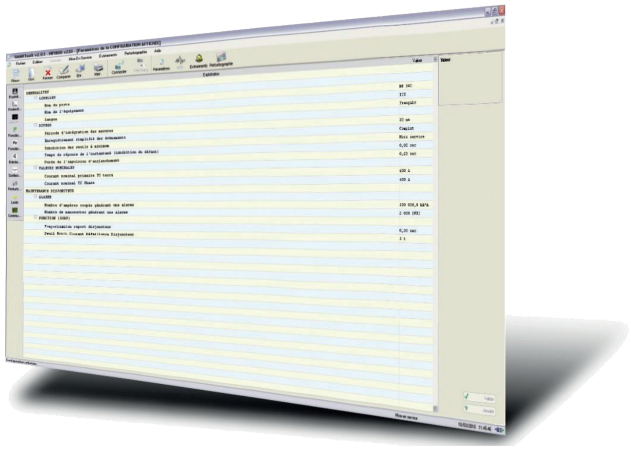
GENERAL CHARACTERISTICS

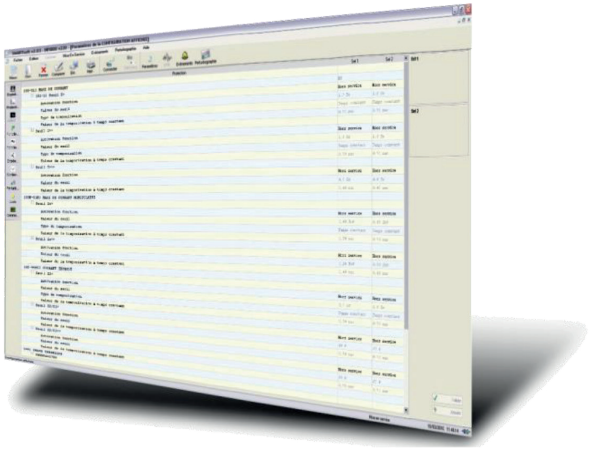
Digital outputs assignment	
• By local MMI or by setting software	
Signalling LEDs assignment	
• By setting software	
Man Machine Interface	
• Relay display	2 lines of 16 characters
Language	French, English, Spanish, Italian
• Configuration and operating software	Windows® 2000, XP, Vista and 7 compatible
Language	French, English, Spanish, Italian
MODBUS® Communication (option)	
• Transmission	asynchronous series, 2 wires
• Interface	RS485
• 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	
• NPIH800R	See diagram S39964
• Ring CT	See diagram 142941
• BA800	See diagram 38766

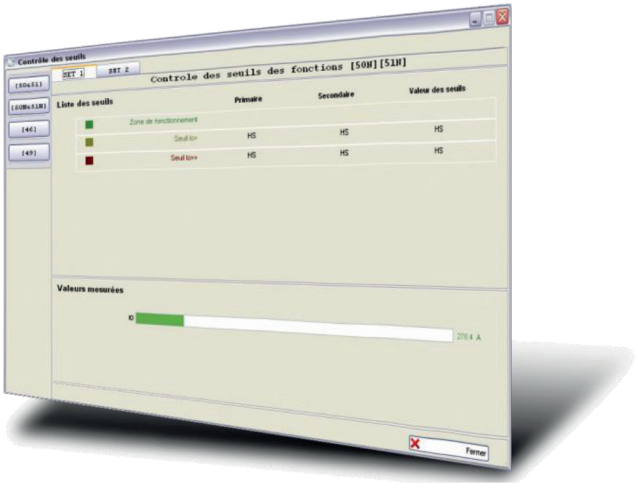
SMARTsoft

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

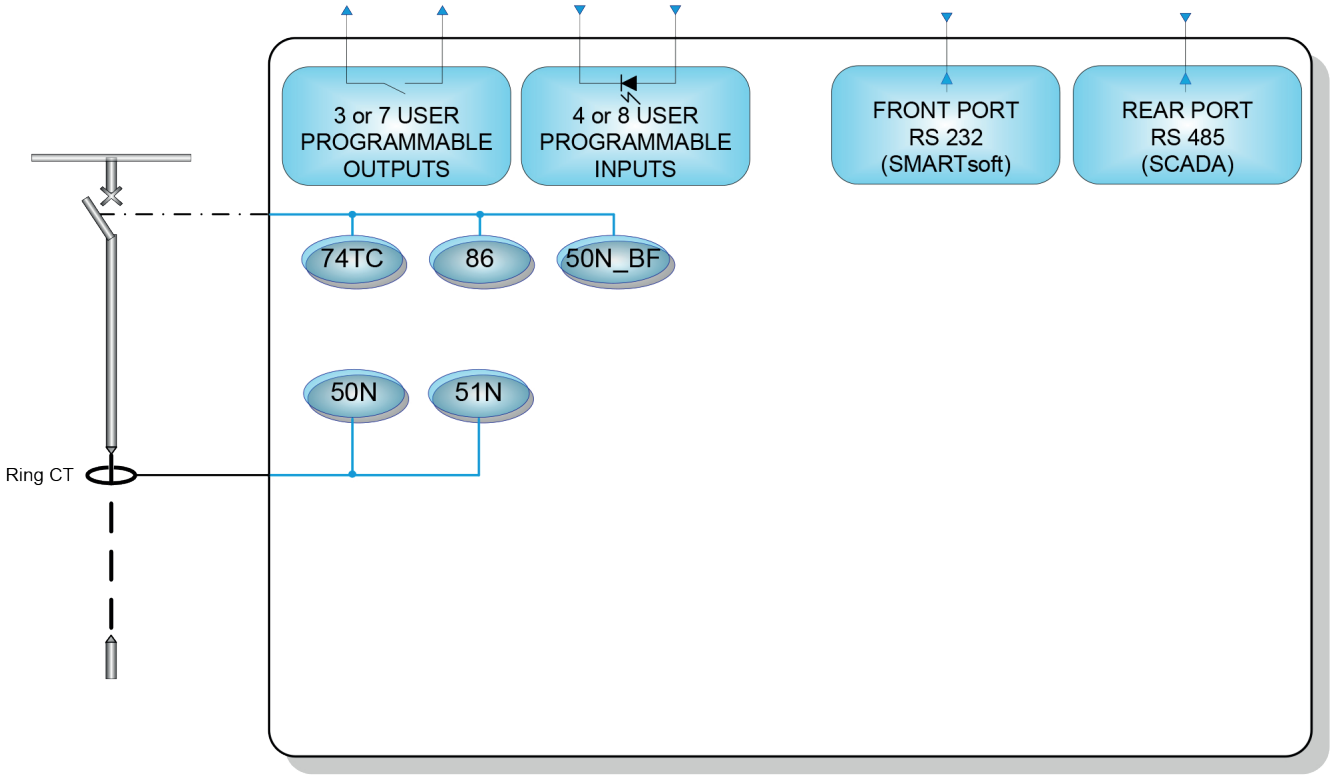
- 2 ranges of auxiliary supply
- Storage of the lack and the restoration of the auxiliary voltage (time stamped events)
- Configuration and parameter setting by local MMI or off-line / on-line PC
- Measurement of electrical quantities:
  Display expressed in primary values
  Instantaneous, integrated and maximum values of earth current
- 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
- Logical selectivity on the two earth thresholds
- 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 10 ms resolution
- Time stamping of digital inputs with 10 ms 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
- 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

Related equipment

- BA800 for ring CT 1500/1

FUNCTIONAL DIAGRAM



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