NPU800R - NPU800RE

RETROFITTING Voltage and Frequency Relay







NPU800R (R2 case) and NPU800RE (R3 case) are dedicated to the refurbishment of 700 and 7000 series (R2 and R3 cases) of CEE relays providing the supervision of the voltage and the frequency of electrical networks. These numerical and multi-function relays supervise the phase to phase or phase to earth faults, the positive sequence and negative sequence voltages, and the good operation of the circuit breaker and its trip circuit. Their voltage and frequency minimum and maximum thresholds intend them as to the simple operations of network supervision than the load management and load-sheddings.

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 NPU800R).

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





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

Protection functions

- Undervoltage with 4 thresholds [27]
- Positive sequence voltage drops with 3 thresholds [27P]
- Max of negative sequence voltage with 2 thresholds
 [47]
- Overvoltage with 2 thresholds [59]
- Max of zero sequence voltage with 2 thresholds [59N]

NPU800RE / NPU800R - EDPAR

- Overfrequency with 4 thresholds [810]
- Underfrequency with 4 thresholds [81U]

Additional functions

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

OUR TRADEMARKS









GENERAL CHARACTERISTICS

GENERAL CHARA	CTERISTICS
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
Connection modes	
• 1, 2 or 3 phase to neutral voltages	
• 1, 2 or 3 phase to phase voltages	
 Zero sequence voltage measured if connection mode 1 or 2 voltage(s) 	
Analogue inputs	
VT nominal value	Un: 33 to 120 V
	input impedance > 80 kΩ
	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
Frequency (50Hz or 60Hz)	measurement: 45 to 55 Hz or 55 to 65 Hz
Digital inputs (4 for NPU800R; 8 for NPU800RE)	
Polarizing voltage	20 to 70 Vdc for 19 to 70 V auxiliary supply range
J J -	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* for NPU800R + 1 WD ; 7 for NPU800RE + 1 WD)	
• Relays A*, B*, E, F:	double contact NO, permanent current 8 A
(signalling, Shunt Opening Release)	closing capacity 12 A / 4 s
(signaling, shall opening release)	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
• Relays C*, D, G & 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 Release)	breaking capacity DC with L/R = 40 ms: 50W
opening Release of Orider Voltage Release,	breaking capacity AC with $\cos \varphi = 0.4$: 1,250 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
Undervoltage [27]	copiler review or original
Operating mode	function « Or » or « And » programmable
Measurement method	phase to neutral or phase to phase, according to wiring
Setting of thresholds U< - U<< - U<< U<<	5 à 120 % Un
Reset percentage on the operating level	103%
Thresholds accuracy	2%
Definite time delays	40 ms to 300 s
Tripping curves	CEI 60255-4, ANSI IEEE
Accuracy and type of curves	class 5 - Time Multiplier Setting: 0,03 à 3 s, type: see Functionalities
Instantaneous operating time	60 ms including trip relay
Blocking of the thresholds	10% Un, programmable: in or out of service (If the blocking is
order and an extension	activated, the minimum setting of the thresholds is 20% Un)
Display accuracy	5% from 3 to 240 V
Note: the functions [27] and [27P] cannot be used simultaneously	3.5.1.5.1.5.1.5.1.5.1.5.1.5.1.5.1.5.1.5.

GENERAL CHARACTERISTICS

GENERAL CHAR	ACTERISTICS
Positive sequence voltage drops [27P]	
Measurement method	positive voltage calculated with 3 phase connection mode
 Setting of thresholds 	5 to 120 % Un
Ud<- Ud<< - Ud<<<	
 Reset percentage on the operating level 	103%
Definite time delay	40 ms to 300 s
 Time delays accuracy 	± 2% or 20 ms
 Instantaneous operating time 	60 ms including trip relay
 Blocking of the thresholds 	10% Un, programmable: in or out of service (If the blocking is
	activated, the minimum setting of the thresholds is 20% Un)
Display accuracy	5% from 3 to 240 V
Note: the functions [27] and [27P] cannot be used simultaneously	
Max of negative sequence voltage [47]	
Measurement method	negative voltage calculated with 3 phase connection mode
• Setting of thresholds U _{neg} > - U _{neg} >>	3 to 30 % Un
Thresholds accuracy	5% Un
Reset percentage on the operating level	94%
Definite time delays	40 ms to 300 s
Time delays accuracy	± 2% or 20 ms
Instantaneous operating time	60 ms including trip for U ≥ 2 Us
Accuracy of displayed measures	3% from 3 to 240 V
Overvoltage function [59]	(and a second of the second of the
Operating modeMeasurement method	function « Or » or « And » programmable
Measurement method	phase-neutral voltages or phase-phase voltages, according to
• Setting of thresholds U> - U>>	wiring 40 to 200 % Un
Reset percentage on the operating level	97%
Thresholds accuracy	2% from 40% to 150% Un – 3% above 150% Un
Definite time delays	40 ms to 300 s
Accuracy of the time delays	± 2% or 20 ms
Operating curves	IEC 60255-3, ANSI IEEE and factory programmable (consult us)
Curves accuracy	class 5 - Time Multiplier Setting: 0.03 to 3 s
 Instantaneous operating time 	60 ms including trip relay
Accuracy of displayed measures	3% from 3 to 240 V
Max of zero sequence voltage [59N]	
 Measurement method (according wiring) 	calculated: 3 phase and neutral connection
, 3 3,	measured: with 1 neutral point VT or 3 VT with broken delta
	(with V1 or U12 connected)
 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]	
 Manual reset for output relays 	A, B, C and and according to version D, E, F, G (programmable
	assignment)
• Reset	digital input, digital communication or local MMI



GENERAL CHARACTERISTICS

Setting of the 4 thresholds Fe Fesce Setting of the 4 thresholds Fe Fesce Setting of the 4 thresholds Fe Fesce Thresholds accuracy ± 0.1 Hz Violage inhibition threshold 10% of Un Instantaneous operating level 2.2 Hz Adjustment of time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Accuracy of the time delays ± 70 ms y to 20 ms Setting software 50 ms y to 20 ms Control mode	GENERAL CHARA	CTERISTICS
Setting of the 4 thresholds FK	Frequency functions [810] [81U]	
Interlock cyfo Control mode Reset Value on the operating level Institution of the control of the selected output(s) Interlock cyfo Control mode Reset (Baf) function Interlock cyfo Interlock cyfo Control mode Reset (Baf) function Interlock cyfo Interlock cyfo Control mode Reset (Baf) function Interlock cyfo Interloc	Setting of the 4 thresholds F< F<<<<	50.05 - 54.00 Hz / 60.05 - 64.00 Hz
Reset value on the operating level Voltage inhibition threshold Instantaneous operating time Adjustment of time delays Accuracy of the time delays Accuracy of displayed measures Digital inputs assignment By setting software Setting table selection Obsturbance recording order Interlock c/o Inter	Setting of the 4 thresholds F< F<<<<	46.00 - 49.95 Hz / 56.00 - 59.95 Hz
• Voltage inhibition threshold • Instantaneous operating time • Adjustment of time delays • Accuracy of the time delays • Accuracy of the time delays • Accuracy of the time delays • Accuracy of biaplayed measures Digital inputs assignment • By setting software • Setting table selection • Disturbance recording order • Interlock c/o • Control mode • Reset [86] function • Tip circuit supervision • CB trip external order • Input - output programmable functions User programmable functions User programmable function (aligital inputs – digital outputs) • Status of the function • Tripping mode or report • Operating and release time delays • Assignment of name to the function, maximum of 1d characters • Assignment of name to the function, remote control • Load shedding Load Restoration, semote control • Load shedding L	Thresholds accuracy	± 0.1 Hz
- Instantaneous operating time - Adjustment of time delays - Accuracy of the time delays - Accuracy of the time delays - Accuracy of displayed measures Digital inputs assignment - By setting software - Setting table selection - Disturbance recording order - Interlock c/o - Interlock c	• Reset value on the operating level	0.2 Hz
- Adjustment of time delays - Accuracy of the time delays - On the Control mode - Bestling software - Interlock c/o - Control mode - Reset [86] function - If thip external order - Input - output programmable functions User programmable functions - Assignment of name to the function, maximum of 14 characters - Assignment of name to the function, maximum of 14 characters - Assignment of name to the function, maximum of 14 characters - Assignment of name to the function, maximum of 14 characters - Assignment of name to the function, maximum of 15 characters - Assignment of name to the function, maximum of 16 characters - Assignment of name to the function of the control of the setting software - User and Restoration, remote control - Load shedding - Load Restoration, remote control - Load shedding bevel - Time delay before reclosing - Reclosing pulse - Output relays assigned - Output relays assignment - By ocal MMI or by setting software - By local MMI or by setting software - By local MMI or by setting software - By can darcording to 0, E, E, G Digital outputs assignment - By setting software - By local MMI or by setti	Voltage inhibition threshold	10% of Un
- Accuracy of the time delays - Accuracy of displayed measures - Digital inputs assignment - By setting software - Setting table selection - Disturbance recording order - Interlock c/o - Int	Instantaneous operating time	80 ms typical including trip relay, 150 ms maximum
- Accuracy of displayed measures Digital inputs assignment - Sy setting software - Setting table selection - Disturbance recording order - Interlock c/o - Interlock c/o - Control mode - Reset [86] function - Trip circuit supervision - CB trip external order - Input - output programmable functions User programmable functions User programmable functions User programmable functions User programmable function (digital inputs – digital outputs) - 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) Load shedding – Load Restoration, remote control - Load shedding level - Time delay before reclosing - Reciosing pulse - Output relays assignment - By Jocal MMI or by setting software - A, B, C and according to D, E, F, G Digital outputs assignment - By yesting software - Relay display - Language - Reday display - Language - Reday display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Relay display - Language - Configuration and operating software - Language - Lang	Adjustment of time delays	80 ms to 10 s
Digital inputs assignment - 8y setting software - 5etting table selection - Disturbance recording order - Interlock c/o - Control mode - Reset [86] function - Tipi circuit supervision - GB trip external order - Input - output programmable functions User programmable functions User programmable functions (digital inputs - digital outputs) - Status of the function - Tipiping 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) - Load shedding - Load Restoration, remote control - Load shedding level - Load shedding level - Time delay before reclosing - Neclosing pulse - Output relays assignment - By local MMI or by setting software - Re, C, and according to D, E, F, G Digital outputs assignment - By local MMI or by setting software - Re, C, and according to D, E, F, G Digital outputs assignment - By local MMI or by setting software - Relay display - Language - Relay display - Relay display - Language - Relay display - Relay	Accuracy of the time delays	± 2% or 20 ms
- By setting software - setting table selection - bitsturbance recording order - interlock c/o - interlo	 Accuracy of displayed measures 	0.1 Hz
Setting table selection Oisturbance recording order Interlock cy0 Interlock cy0 Interlock cy0 Control mode Reset [86] function Trip circuit supervision (B trip external order Input - output programmable functions User programmable functions (digital inputs - digital outputs) 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) Load shedding - Load Restoration, remote control Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software Relay display Language French, English, Spanish, Italian MODBUS* Communication (option) Interface Transmission asynchronous series, 2 wires Transmission speed Number of recordings Number of recordings	Digital inputs assignment	
Disturbance recording order Interlock c/o Control mode Reset [86] function Trip circuit supervision CB trip external order Input - output programmable functions User programmable functions User programmable functions (digital inputs - digital outputs) Tripping mode or report Tripping mode or report Poparting and release time delays Assignment of name to the function, maximum of 14 characters Assignment of one or more output relays (alarm or trip) Load shedding - Load Restoration, remote control Time delay before reclosing Reclosing pubse Output relays assigned Output relays assigned Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software Bandhine Interface Relay display Setting software Man Machine Interface Relay display Setting software Man Machine Interface Relay display Setting software MobBUS* Communication (option) Transmission Setting Software Transmission Setting Software Relay Sobolated Transmission Setting Software	By setting software	
Interlack o/o Interlack c/o Control mode Reset [86] function Reset	Setting table selection	set 1 - set 2
. Interlock c/o Control mode Reset [86] function Reset [86] funct	Disturbance recording order	
- Control mode - Resel [86] function - Resel [86] function - CB trip external order - Input – output programmable functions User programmable functions (digital inputs – digital outputs) - Status of the function - Triping 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) - Load shedding – Load Restoration, remote control - Load shedding – Load Restoration, remote control - Time delay before reclosing - Reclosing pulse - Output relays assigned - By local MMI or by setting software - Belay display - Language - Configuration and operating software - Configuration and operating software - Configuration and operating software - Language - Configuration and operating software - Language - MODBUS* Communication (option) - Transmission - Interface - Transmission asynchronous series, 2 wires - Transmission speed - Disturbance recording - Number of recordings	• Interlock o/o	
Reset [86] function 7 Tip circuit supervision 7 Et trip external order 8 Input – output programmable functions 1 Suser programmable functions (digital inputs – digital outputs) 9 Status of the function 1 Tripping mode or report 9 Operating and release time delays 1 Assignment of one or more output relays (alarm or trip) 1 Load shedding – Load Restoration, remote control 1 Load shedding level 1 Trime delay before reclosing 1 Load shedding level 1 Trime delay before reclosing 1 Load shedding level 1 Trime delay before reclosing 1 Load shedding sassignment 1 Sy local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment 1 By local MMI or by setting software 8 By local MMI or by setting software 1 Sy setting software 1 Sy setting software 1 Sy setting software 2 Lines of 16 characters French, English, Spanish, Italian MODBUS* Communication (option) 1 Transmission 1 Interface 1 Transmission 2 Interface 1 Transmission speed 3 Sustumbance recording Number of recordings 4	• Interlock c/o	
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. (B trip external order · . Input – output programmable functions User programmable functions (digital inputs – digital outputs) . 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 name to the function, maximum of 14 characters . Assignment of one or more output relays (alarm or trip) Load shedding – Load Restoration, remote control . Load shedding level . Time delay before reclosing . Reclosing pulse . Output relays assigned Digital outputs assignment . By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment . By local MMI or by setting software Signalling LEDs assignment . By setting software Man Machine Interface . Relay display . Configuration and operating software MODBUS* Communication (option) . Transmission . Interface . Transmission speed Disturbance recording . Number of recordings 4 Unication [74TC] blocked if external trip order 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 1 to 300 s by the setting software 1 to 6 1 to 120 s, ± 2% 100 to 500 ms (remote control) programmable by local MMI or by setting software A, B, C and according to D, E, F, G Disturbance recording . Number of recordings	• Reset [86] function	acknowledgment of the selected output(s)
User programmable functions User programmable functions (digital inputs – digital outputs) 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) User by local MMI or by the setting software Load shedding – Load Restoration, remote control Utoad shedding level Utoad shedding level Utoad shedding level Utoad shedding pulse Output relays assigned Reclosing pulse Output relays assigned Regional MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Transmission speed Disturbance recording Number of recordings	Trip circuit supervision	[74TC] function
User programmable functions (digital inputs – digital outputs) 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) Load shedding – Load Restoration, remote control Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software Signalling LEDs assignment By setting software And Machine Interface Relay display Language French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Interface Restass Signals, Spanish, Italian MODBUS® Communication (option) Transmission speed Disturbance recording Number of recordings	• CB trip external order •	function [74TC] blocked if external trip order
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- Assignment of name to the function, maximum of 14 characters - Assignment of one or more output relays (alarm or trip) - Assignment of one or more output relays (alarm or trip) - A, B, C and according to D, E, F, G Load shedding - Load Restoration, remote control - Load shedding level - Time delay before reclosing - Reclosing pulse - Output relays assigned - Output relays assignment - By local MMI or by setting software - By local MMI or by setting software - By setting software Man Machine Interface - Relay display - Configuration and operating software - Language - Configuration and operating software - Interface - Transmission - Interface - Transmission speed - Number of recordings - Number of recordings - Number of recordings	Tripping mode or report	report: for time stamping and event recorder
Assignment of one or more output relays (alarm or trip) by local MMI or by the setting software A, B, C and according to D, E, F, G Load shedding – Load Restoration, remote control Load shedding level 1 to 6 1 time delay before reclosing 1 to 120 s, ± 2% 100 to 500 ms (remote control) programmable by local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian MODBUS® Communication (option) Transmission Stransmission Synchronous series, 2 wires A, B, C and according to D, E, F, G Interface Stransmission asynchronous series, 2 wires Stransmission speed Disturbance recording Number of recordings	 Operating and release time delays 	tripping mode: 40 ms to 300 s
A, B, C and according to D, E, F, G Load shedding – Load Restoration, remote control Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned Name of the string software Figure 1	Assignment of name to the function, maximum of 14 characters	by the setting software
Load shedding - Load Restoration, remote control Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned Poigital outputs assignment By local MMI or by setting software By setting software Man Machine Interface Relay display Language Configuration and operating software Mobbus Communication (option) Transmission Interface Interface Resals Transmission speed Disturbance recording Number of recordings 1 to 6 1 to 120 s, ± 2% 1 to 6 1 to 120 s, ± 2% 1 to 6 1 to 120 s, ± 2% 1 to 120 s, ± 2% 1 to 120 s, ± 2% 1 to 6 1 to 120 s, ± 2% 1 to 6 1 to 120 s, ± 2% 1 to 120 s, ± 2% 1 to 6 1 to 120 s, ± 2% 1 to 6 1 to 120 s, ± 2%	 Assignment of one or more output relays (alarm or trip) 	by local MMI or by the setting software
 Load shedding level Time delay before reclosing Reclosing pulse Out to 500 ms (remote control) programmable by local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible Language French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Transmission speed Both to 100 to 115,200 bauds		A, B, C and according to D, E, F, G
 Time delay before reclosing Reclosing pulse Output relays assigned Digital outputs assignment By local MMI or by setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display Language Configuration and operating software Windows® 2000, XP, Vista and 7 compatible tanguage French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface RS485 Transmission speed Number of recordings Number of recordings 	Load shedding – Load Restoration, remote control	
 Reclosing pulse Output relays assigned Programmable by local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display Language Configuration and operating software Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Transmission speed 300 to 115,200 bauds Disturbance recording Number of recordings 4	• Load shedding level	1 to 6
Output relays assigned programmable by local MMI or by setting software A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display 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 Synchronous series, 2 wires RS485 Transmission speed Disturbance recording Number of recordings	Time delay before reclosing	1 to 120 s, ± 2%
A, B, C and according to D, E, F, G Digital outputs assignment By local MMI or by setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display Language French, English, Spanish, Italian Configuration and operating software Windows® 2000, XP, Vista and 7 compatible Enguage French, English, Spanish, Italian MODBUS® Communication (option) Transmission Synchronous series, 2 wires RS485 Transmission speed Disturbance recording Number of recordings	Reclosing pulse	100 to 500 ms (remote control)
Digital outputs assignment By local MMI or by setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display Language French, English, Spanish, Italian Configuration and operating software Windows® 2000, XP, Vista and 7 compatible Enguage French, English, Spanish, Italian MODBUS® Communication (option) Transmission Stransmission Asynchronous series, 2 wires RS485 Transmission speed Disturbance recording Number of recordings	Output relays assigned	
By local MMI or by setting software Signalling LEDs assignment By setting software Man Machine Interface Relay display Language Configuration and operating software Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Interface Transmission speed Solution and speed Solution and speed Solution and operating software Solution and operating software Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian MODBUS® Communication (option) Transmission Solution asynchronous series, 2 wires Interface Transmission speed		A, B, C and according to D, E, F, G
Signalling LEDs assignment By setting software Man Machine Interface Relay display Language Configuration and operating software Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Interface Transmission speed Signalling LEDs assignment 2 lines of 16 characters French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian 8 Synchronous series, 2 wires RS485 Transmission speed 300 to 115,200 bauds	Digital outputs assignment	
By setting software Man Machine Interface Relay display Language Configuration and operating software Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Interface Transmission speed Disturbance recording Number of recordings	By local MMI or by setting software	
Man Machine Interface Relay display Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible Language French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian MODBUS® Communication (option) Transmission Stransmission French, English, Spanish, Italian MODBUS® Communication (option) Transmission Stransmission speed Number of recording Number of recordings	Signalling LEDs assignment	
 Relay display Language Configuration and operating software	By setting software	
Language Configuration and operating software Unidows® 2000, XP, Vista and 7 compatible Eanguage French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Interface Transmission speed Disturbance recording Number of recordings French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian Asynchronous series, 2 wires RS485 4	Man Machine Interface	
 Configuration and operating software Language French, English, Spanish, Italian MODBUS® Communication (option) Transmission Interface Transmission speed Disturbance recording Number of recordings 4 	• Relay display	2 lines of 16 characters
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	Language	French, English, Spanish, Italian
MODBUS® Communication (option) Transmission asynchronous series, 2 wires RS485 Transmission speed 300 to 115,200 bauds Disturbance recording Number of recordings 4	 Configuration and operating software 	Windows® 2000, XP, Vista and 7 compatible
 Transmission asynchronous series, 2 wires Interface RS485 Transmission speed 300 to 115,200 bauds Disturbance recording Number of recordings 4 	Language	French, English, Spanish, Italian
 Interface Transmission speed RS485 300 to 115,200 bauds Disturbance recording Number of recordings 4 	MODBUS® Communication (option)	
 Transmission speed Disturbance recording Number of recordings 4 	Transmission	asynchronous series, 2 wires
Disturbance recording • Number of recordings 4	• Interface	RS485
• Number of recordings 4	Transmission speed	300 to 115,200 bauds
	Disturbance recording	
• Total duration 52 periods per recording	Number of recordings	4
	Total duration	52 periods per recording
• Pre fault time adjustable from 0 to 52 cycles	Pre fault time	adjustable from 0 to 52 cycles

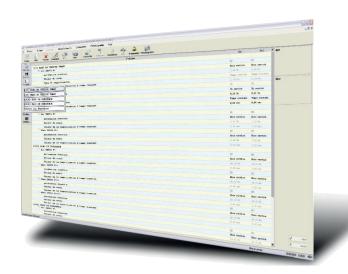
NPU800R - NPU800RE

GENERAL CHARACTERISTICS

Presentation	
• Height	4U
• Width	case R2 or R3 according to version
Brackets 19" rack mounting	see diagram 9954 (7000 series rack definition table)
Case (see drawing D40037)	
• EDPAR	
H, W, D (case & base)	NPU800R : 172 x 83 x 222 mm
	NPU800RE : 172 x 125 x 222 mm
H, W (front face dimensions)	NPU800R : 217 x 98 mm
	NPU800RE : 217 x 140 mm
• SDPAR	
H, W, D (case & base)	NPU800R : 172 x 83 x 227 mm
	NPU800RE : 172 x 125 x 227 mm
H, W (front face dimensions)	NPU800R : 172 x 83 mm
	NPU800RE : 172 x 125 mm
Weight	NPU800R : 3.5 kg
	NPU800RE : 4.5 kg
Connection - codification	
• NPU800R	see diagram S39968
• NPU800RE	see diagram S39973

SMARTsoft

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





- User friendly
- Diagnosis
- Fault analysis
- Maintenance tools

FUNCTIONALITIES

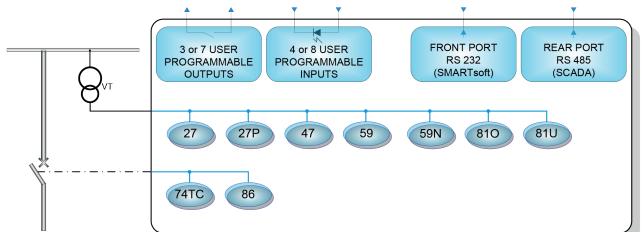
- 2 ranges of auxiliary supply
- Storage of the lack and the restoration of the auxiliary voltage (time stamped events)
- · Configuration and parameter setting by local MMI or off-line / on-line PC
- · Measurement of electrical quantities:
 - Display expressed in primary values Instantaneous, integrated and maximum values of phase to neutral voltages V or phase to phase
 - Positive and negative sequence voltage (according
 - Frequency

voltages U

- Residual voltage and maximum value
- Instantaneous voltage alarm threshold
- Instantaneous frequency alarm threshold
- Definite time tripping for undervoltage and overvoltage thresholds
- Definite time tripping for undervoltage and thresholds inverse/very overvoltage inverse/ extremely inverse time according to IEC inverse/very inverse/extremely inverse time according to ANSI / **IEEE**
- Definite time tripping for positive sequence voltage drop thresholds
- Tripping on frequency thresholds: programmable definite time
- 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 faulty phase (phase to neutral voltages only), 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, converters, auxiliary supply, cycles of execution of software, hardware failure
- Test of wiring, phase order

FUNCTIONAL DIAGRAM















TRANSMISSION



INDUSTRY





the specifications and drawings given are subject to change and are not binding unless confirmed by our specialist