# **NPW800**

# Power and Voltage Relay



NPW800 performs the measurement of the apparent (S), active (P) and reactive (Q) power of 3 or 4 wire electrical networks. The monitoring of the energy flow direction is completed by the management of power factor, tangent  $\varphi$  and by the supervision of network voltage and frequency.

As well as the usual protection functions, NP800 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.

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



# Multifonction

- Measurement
- Recording / event log
- Disturbance recording
- Local MMI

#### **Protection functions**

- Maximum of active power with 2 thresholds\* [32P]
- Minimum of active power with 2 thresholds\* [37P]
- Max of reactive power with 2 thresholds\* [320]
- Min of reactive power with 2 thresholds\* [370]
- Overvoltage with 3 thresholds [59]
- Undervoltage with 3 thresholds [27]
- Overfrequency with 4 thresholds [810]
- Underfrequency with 4 thresholds [81U]
- · Max of zero sequence voltage with 2 thresholds [59N]

#### **Additional functions**

- · Management of the network power factor with 2 thresholds\* [55]
- Management of the network tangent  $\varphi$  with 2 thresholds\* [Q/P]
- Max of Active  $\Sigma P$  and reactive  $\Sigma Q$  integrated power with 2 thresholds\*
- Latching of the output contacts [86]
- Trip circuit supervision of the breaker [74TC]
- Breaker failure [BF]
- · Load shedding Load Restoration, remote control (communication option)
  - \*operating mode: user configurable see characteristics









CIERISTICS
19 to 70 - 85 to 255 / Vdc or Vac 50 or 60 Hz
6 W (DC), 6 VA (AC)
72 hours
In: 1 or 5A
burden at In < 0.2 VA
continuous rating 3 In, short duration withstand 100 In / 1 s
CT setting: primary value from 1 A to 10 kA
measurement from 0.01 to 18 In
display of primary current from 0 to 65 kA
5VA 5P10
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
measurement: 45-55 Hz or 55-65 Hz
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
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
changeover contact, permanent current 16 A
closing capacity 25 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
adjustable from 100 to 500 ms
by the setting software capital letters or digits
2 wattmeter or 3 wattmeter as an alternative
3 programmable modes for the power flow:
export / import / export and import
1 to 120 % of Sn
1 to 120 % of Sn
0.5% of Sn, Blocking of the [37] thresholds 0.5% of Sn
95% for P> and Q>, 105% for P< and Q<
3 programmable modes: lead / lag / lead-lag
0.1 to 0.99
PF< - PF<<: adjustable from 0.1 to 0.99
PF< - PF<<: adjustable from 0.1 to 0.99 6° < φ < 84.28°
PF< - PF<<: adjustable from 0.1 to 0.99



Power functions [32P] [320] [37P] [370] [55] - tg @ (Q/P) - TP and YQ  Maximum of integrated power YP- and YQ-  Integrated period  Integrated period  Integrated period  Instantaneous operating time  Definite time delay  Definite time delay  Accuracy of the time delays  Accuracy of the time delays  Accuracy of displayed measures  Deparating running delays  Measurement method  Overvoltage operating range [59]  Thresholds accuracy  Reset percentage on the operating level  Undervoltage operating range [27]  Thresholds accuracy  Reset percentage on the operating level  Blocking of the [27] thresholds  Definite time delays  Accuracy of displayed measures  Definite time delays  Accuracy of displayed measures  Definite time delay  Definite time delay  Accuracy of displayed measures  Definite time delays  Accuracy of displayed measures  Definite time delays  Accuracy of displayed measu	GENERAL CHARACTERISTICS		
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<ul> <li>Undervoltage operating range [27]</li> <li>5 to 120 % Un</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocking of the [27] thresholds</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Operating curves</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Wassurement method</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Instantaneous operating time</li> <li>Operating range</li> <li>Instantaneous operating time</li> <li>Operating time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Prequency functions [810] [810]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>± 0.1 Hz</li> <li>Olyerating range</li> <li>Thresholds accuracy<!--</td--><td>Thresholds accuracy</td><td>2% from 40% to 150% Un – 3% over 150% Un</td></li></ul>	Thresholds accuracy	2% from 40% to 150% Un – 3% over 150% Un	
<ul> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocking of the [27] thresholds</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Operating curves</li> <li>Curves accuracy and type</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Operating range</li> <li>Instantaneous operating time</li> <li>Operating range</li> <li>Instantaneous operating time</li> <li>Operating range</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Operating range</li> <li>Instantaneous operating time</li> <li>Operating trip relay</li> <li>Operating range</li> <li>Accuracy of the time delays</li> <li>Accuracy of the time delays</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Trequency functions [810] [810]</li> <li>Operating range</li> <li>46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>Thresholds accuracy</li> <li>Thresholds accuracy</li> <li>Unl Hz</li> <li>Reset percentage on the operating level</li> <li>Operating range</li> <li>46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>Dil Hz</li> <li>Reset percentage on the operating level</li> <li>Operating range</li> <li>46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>Dil Hz</li> <li>Operating range</li> <li>Accuracy of the time delays</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> </ul>	Reset percentage on the operating level	97%	
<ul> <li>Reset percentage on the operating level</li> <li>Blocking of the [27] thresholds</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Operating curves</li> <li>Curves accuracy and type</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Measurement method</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Pefinite time delays</li> <li>2 to 80 % Un (3wW) or Un/√3 (2W)</li> <li>Thresholds accuracy</li> <li>Pefinite time delay</li> <li>Accuracy of displayed measures</li> </ul> 2 to 80 % Un (3wW) or Un/√3 (2W) <ul> <li>Thresholds accuracy</li> <li>Pefinite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of the time delays</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> </ul> Frequency functions [810] [81U] <ul> <li>Operating range</li> <li>A6 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>Thresholds accuracy</li> <li>Phresholds accuracy</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> </ul> Frequency functions [810] [81U] <ul> <li>Operating range</li> <li>A6 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>Thresholds accuracy</li> <li>Blocked for voltage</li> <li>All Hz</li> </ul> Reset percentage on the operating level <ul> <li>OL Hz</li> <li>OL Hz</li> <li>OL Hz</li> <li>OL Hz</li> </ul> - 10% of Un	<ul> <li>Undervoltage operating range [27]</li> </ul>	5 to 120 % Un	
<ul> <li>Blocking of the [27] thresholds</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>∴ Accuracy of the time delays</li> <li>∴ Operating curves</li> <li>∴ Operating curves</li> <li>∴ Curves accuracy and type</li> <li>∴ Curves accuracy of tisplayed measures</li> <li>∴ Reset percentage on the operating level</li> <li>∴ Instantaneous operating time</li> <li>∴ Accuracy of displayed measures</li> <li>∴ Measurement method</li> <li>∴ Definite time delay</li> <li>∴ Reset percentage on the operating level</li> <li>∴ Defraiting range</li> <li>∴ Defraiting range</li> <li>∴ Instantaneous operating time</li> <li>∴ Instantaneous operating time</li> <li>∴ Thresholds accuracy</li> <li>∴ Reset percentage on the delay</li> <li>∴ Instantaneous operating time</li> <li>∴ Operating time delay</li> <li>∴ Accuracy of the time delays</li> <li>∴ Accuracy of displayed measures</li> <li>Frequency functions [810] [810]</li> <li>∴ Operating range</li> <li>∴ Operating rang</li></ul>	Thresholds accuracy	2%	
<ul> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Deprating curves</li> <li>Operating curves</li> <li>Curves accuracy and type</li> <li>Class 5 - Time Multiplier Setting: 0.03 to 3 s, type : see Functionalities</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Measurement method</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Definite time delay</li> <li>Accuracy of the time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Frequency functions [810] [81U]</li> <li>Operating range</li> <li>Operating range</li> <li>Accuracy of the operating level</li> <li>Operating range</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Frequency functions [810] [81U]</li> <li>Operating range</li> <li>Accuracy of the operating level</li> <li>O1 Hz</li> <li>O2 Hz</li> <li>Blocked for voltage</li> <li>Albo ms to 300 s</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Blocked for voltage</li> </ul>	Reset percentage on the operating level	103%	
<ul> <li>Accuracy of the time delays</li> <li>Operating curves</li> <li>Curves accuracy and type</li> <li>class 5 – Time Multiplier Setting: 0.03 to 3 s, type: see Functionalities</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Measurement method</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Definite time delay</li> <li>Accuracy of displayed measures</li> <li>The delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Pefinite time delay</li> <li>Accuracy of displayed measures</li> <li>The delays</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Accuracy functions [810] [810]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Eset percentage on the operating level</li> <li>Operating range</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Thresholds accuracy</li> <li>Blocked for voltage</li> <li>Alz</li> <li>O2 Hz</li> <li>Blocked for voltage</li> </ul>	Blocking of the [27] thresholds	10% of Un, programmable: in or out of service	
<ul> <li>Operating curves</li> <li>Curves accuracy and type</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Measurement method</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Pefinite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> </ul> <ul> <li>Trequency functions [810] [81U]</li> <li>Operating range</li> <li>Accuracy of the toperating level</li> <li>Thresholds accuracy</li> <li>Operating range</li> <li>Operating time</li> <li>OEFINITE TO SOLUTIONS (SOLUTION)</li> <li>Accuracy of the time delays</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>OPERATING (SOLUTIONS (SOLU</li></ul>	Definite time delay	40 ms to 300 s	
<ul> <li>Curves accuracy and type</li> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Measurement method</li> <li>Operating range</li> <li>Instantaneous operating time</li> <li>Messet percentage on the operating level</li> <li>Definite time delay</li> <li>Accuracy of displayed measures</li> <li>Trequency functions [810] [81U]</li> <li>Operating range</li> <li>Curves accuracy</li> <li>Accuracy of displayed measures</li> <li>Class 5-Time Multiplier Setting: 0.03 to 3 s, type: see Functionalities</li> <li>60 ms including trip relay</li> <li>2 to 80 % Un (3W) or Un/√3 (2W)</li> <li>2% of Un</li> <li>97%</li> <li>60 ms including trip relay</li> <li>40 ms to 300 s</li> <li>± 2% or 20 ms</li> <li>Accuracy of the time delays</li> <li>± 2% or 20 ms</li> <li>3% from 3 to 240 V</li> <li>Frequency functions [810] [81U]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>End 46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>± 0.1 Hz</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> </ul>	Accuracy of the time delays	± 2% or 20 ms	
<ul> <li>Instantaneous operating time</li> <li>Accuracy of displayed measures</li> <li>Zero sequence voltage functions [59N]</li> <li>Measurement method</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Instantaneous operating time</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Defenting range</li> <li>Thresholds accuracy</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Thresholds accuracy</li> <li>Thresholds accuracy</li> <li>Thresholds accuracy</li> <li>Thresholds accuracy</li> <li>Blocked for voltage</li> </ul>	Operating curves	according to IEC 60255-3, ANSI IEEE	
<ul> <li>Accuracy of displayed measures</li> <li>Zero sequence voltage functions [59N]</li> <li>Measurement method</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Instantaneous operating time</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Accuracy of displayed measures</li> <li>Frequency functions [810] [81U]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>OP and the percentage on the operating level</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> </ul>	Curves accuracy and type	class 5 – Time Multiplier Setting: 0.03 to 3 s, type: see Functionalities	
Zero sequence voltage functions [59N]  • Measurement method • Operating range • Operating range • Thresholds accuracy • Reset percentage on the operating level • Instantaneous operating time • Definite time delay • Accuracy of the time delays • Accuracy of displayed measures  Frequency functions [810] [81U] • Operating range • Thresholds accuracy • Reset percentage on the operating level • Operating range • A6 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz • Operating range • Blocked for voltage • 710% of Un	Instantaneous operating time		
<ul> <li>Measurement method</li> <li>Operating range</li> <li>2 to 80 % Un (3W) or Un/√3 (2W)</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Instantaneous operating time</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Frequency functions [810] [81U]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> </ul>	<ul> <li>Accuracy of displayed measures</li> </ul>	3% from 3 to 240 V	
<ul> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Instantaneous operating time</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Frequency functions [810] [81U]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>2 to 80 % Un (3W) or Un/√3 (2W)</li> <li>2% of Un</li> <li>97%</li> <li>60 ms including trip relay</li> <li>40 ms to 300 s</li> <li>± 2% or 20 ms</li> <li>3% from 3 to 240 V</li> </ul>	Zero sequence voltage functions [59N]		
<ul> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Instantaneous operating time</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Trequency functions [810] [81U]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> </ul>	Measurement method	zero sequence voltage calculated	
<ul> <li>Reset percentage on the operating level</li> <li>Instantaneous operating time</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Accuracy of displayed measures</li> <li>Trequency functions [810] [810]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>Poms to 300 s</li> <li>40 ms to 300 s</li> <li>± 2% or 20 ms</li> <li>3% from 3 to 240 V</li> <li>46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>± 0.1 Hz</li> <li>Reset percentage on the operating level</li> <li>Slocked for voltage</li> </ul>	Operating range	2 to 80 % Un (3W) or Un/√3 (2W)	
<ul> <li>Instantaneous operating time</li> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Erequency functions [810] [810]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>60 ms including trip relay</li> <li>40 ms to 300 s</li> <li>± 2% or 20 ms</li> <li>3% from 3 to 240 V</li> </ul>	Thresholds accuracy	2% of Un	
<ul> <li>Definite time delay</li> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>Frequency functions [810] [810]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>40 ms to 300 s</li> <li>± 2% or 20 ms</li> <li>3% from 3 to 240 V</li> </ul>	Reset percentage on the operating level	97%	
<ul> <li>Accuracy of the time delays</li> <li>Accuracy of displayed measures</li> <li>3% from 3 to 240 V</li> </ul> Frequency functions [810] [81U] <ul> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> </ul> 46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz <ul> <li>± 0.1 Hz</li> <li>0.2 Hz</li> <li>10% of Un</li> </ul>	Instantaneous operating time	60 ms including trip relay	
<ul> <li>Accuracy of displayed measures</li> <li>3% from 3 to 240 V</li> <li>Frequency functions [810] [810]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>3% from 3 to 240 V</li> <li>46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>± 0.1 Hz</li> <li>0.2 Hz</li> <li>610% of Un</li> </ul>	Definite time delay	40 ms to 300 s	
<ul> <li>Accuracy of displayed measures</li> <li>3% from 3 to 240 V</li> <li>Frequency functions [810] [810]</li> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>3% from 3 to 240 V</li> <li>46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>± 0.1 Hz</li> <li>0.2 Hz</li> <li>610% of Un</li> </ul>	Accuracy of the time delays	± 2% or 20 ms	
<ul> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>± 0.1 Hz</li> <li>0.2 Hz</li> <li>10% of Un</li> </ul>	·	3% from 3 to 240 V	
<ul> <li>Operating range</li> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz</li> <li>± 0.1 Hz</li> <li>0.2 Hz</li> <li>10% of Un</li> </ul>	Frequency functions [810] [81U]		
<ul> <li>Thresholds accuracy</li> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>± 0.1 Hz</li> <li>0.2 Hz</li> <li>&lt;10% of Un</li> </ul>		46 - 49.95 Hz / 50.05 - 54 Hz or 56 - 59.95 Hz / 60.05 - 64 Hz	
<ul> <li>Reset percentage on the operating level</li> <li>Blocked for voltage</li> <li>0.2 Hz</li> <li>10% of Un</li> </ul>		· ·	
• Blocked for voltage <10% of Un	•	0.2 Hz	
* Installations operating time   our installation including tilp relay, 150 instillation	Instantaneous operating time	80 ms typical including trip relay, 150 ms maximum	
• Definite time delay 80 ms to 10 s	•		
Accuracy of the time delays     ± 2% or 20 ms	•		
Accuracy of displayed measures     O.1 Hz	·		
Latching of the output contacts [86]			
Manual reset for output relays     A, B, C, D, E, F, G (programmable assignment)		A. B. C. D. E. F. G (programmable assignment)	
• Reset digital input, digital communication or local MMI			



Trip circuit supervision and breaker failure [74TC] [8F]  • Operating time (in faulty condition)  • Fixed operating range [8F]  • Steaker failure time delay  Digital inputs assignment  • By the setting software  • Settling stable selection  • Obstrubance record  Interlock c/o  • Interlock c/o  • Control mode  • Reseat [86] function  • Trip circuit supervision  • Be Settmal trip order  • Bocking of the protection functions  • Programmable function  • Stating and release time delays    Digital output assignment of one or more output relays (alarm or trip)  Load shedding – Load Restoration, remote control (communication option)  • Counters  • Recoining µlbe  • Output relays assignment  • By local MMI or by settling software  • Responsibility EDS assignment  • By setting software  • Responsibility EDS assignment  • By setting software  • Ready stibplay  • Language  • Countiguation and operating software  Language  • Contiguation and operating software  Language  Language  Language  Language  Language  Lan	GENERAL CHARA	CILKIJICJ
- Operating time (in faulty condition) - Fixed operating range [BF] - Steaker failure time delay - Stettings stolle selection - Interlock c/o - Interlock c/o - Control mode - Reset [86] function - Trip circuit supervision - Trip circuit supervision - Steeker [86] function - Steeker [86] function - Steeker [86] function - Steeker It is porder - Steeker It is porder - Stettings stolle selection - Trip primarial selection - Trip primary selection functions - Programmable functions - Programmable functions - Programmable functions - Status of the function - Tripping mode or report - Operating and release time delays - Assignment of one or more output relays (alarm or trip) - Assignment of name, maximum of 14 characters to the function - Assignment of one or more output relays (alarm or trip) - Load shedding level - Time delay before reclosing - Receiosing pulse - Output relays assigned - Output relays assigned - Output relays assigned - Output relays assigned - Steep selection selec	Trip circuit supervision and breaker failure [74TC] [BF]	
- Fixed operating range [BF] - Bracker failure time delay  - By the setting software - Settings table selection - Soltsurbance record - Interlock c/o - Inter	Trip circuit supervision [74TC]	requires one or two digital inputs (see application guide)
Breaker failure time delay  Digital inputs assignment  - 8y the setting software  - Settings table selection  - 10 istrubance record  - 10 interlock c/o  - 10 interlock certain trip order  - 10 interlock ce	Operating time (in faulty condition)	500 ms fixed for [74TC] function
Digital inputs assignment  Py the setting software  Settings table selection  Disturbance record  Interlock Cyo  Control mode  Reset [86] function  CB external trip order Blocking of the protection functions  Programmable function  Trip picture its uspervision  CB external trip order Blocking of the protection functions  Programmable function  Tripping mode or report  Operating and release time delays  Assignment of name, maximum of 14 characters to the function  Assignment of one or more output relays (alarm or trip)  Load shedding - Load Restoration, remote control (communication potton)  Load shedding level  Time delay before reclosing  Reclosing puble  Output relays assigned  Digital output assignment  Py local MMI or by setting software  A, B, C, D, E, F, G  Digital output assignment  Py local MMI or by setting software  Energy  Cumulative breaking current  Operation number circuit breaker  Energy  Language  Confliguration and operating software  Windows® 2000, XP, Vista and 7 compatible	Fixed operating range [BF]	>0.5 % of In / >0.5% of In or >1% of Un
By the setting software  Settings table selection  Set 1 – set 2  Interlock c/o  Interlock c/o  Interlock c/o  Interlock c/o  Seest [86] function  Reset [86] function  CB external trip order  Blocking of the protection functions  Programmable function  Tripping mode or report  Operating and release time delays  Assignment of name, maximum of 14 characters to the function  Assignment of one or more output relays (alarm or trip)  Load shedding – Load Restoration, remote control (communication or time delay before reclosing use)  Output relays assigned  Digital output assignment  By local MMI or by setting software  Signalling LEDs assignment  By local MMI or by setting software  Signalling LEDs assignment  By comment  Counters  Counters  Counters  Counters  Caunitative breaking current  Operation number circuit breaker  Pelay display  Language  Configuration and operating software  Set 1 – set 2  dedicated to remote control, switching device position dedicated to remote control (acide to remote control (FarC function  Interlock C/o  dedicated to remote control, local / remote caknowledgment of the selected output(s)  [74TC] function  [74TC] blocked if external trip order  Interlock C/o  [74TC] blocked if external trip order  Interlock C/o  [74TC] blocked if external trip order  Interlock C/o  [74TC] blocked if external trip order  Interlock of service, by local MMI or by the setting software  Interlock C/output sets at part trip order  Interlock C/output sets assignment  In or out of service, by local MMI or by the setting software  In or out of service, by local MMI or by the setting softw	Breaker failure time delay	60 to 1,000 ms
Settings table selection  Disturbance record  Interlock c/o  Interlock c/o  Control mode  Reset [86] function  Trip circuit supervision  CB external trip order  Blocking of the protection functions  Programmable function  Tripping mode or report  Operating and release time delays  Assignment of none or more output relays (alarm or trip)  Load shedding – Load Restoration, remote control (communication option)  Reclosing pulse  Output relays assignment  By local MMI or by setting software  Digital output assignment  By local MMI or by setting software  Counters  Energy  Countlative breaking current  Operation number circuit breaker  Relay display  Language  Configuration and operatting software  Vindows* 2000, XP, Vista and 7 compatible  Vindows* 2000, XP, Vista and 7 compatible	Digital inputs assignment	
Disturbance record  Interlock c/o Control mode Reset [86] function Tip circuit supervision Gederated to remote control, switching device position dedicated to remote control, local / remote acknowledgment of the selected output(s) Tip circuit supervision Gederated to remote control, local / remote acknowledgment of the selected output(s) Tip circuit supervision Gederated to remote control, switching device position dedicated to remote control, protection dedicated to remote control, protection in protection in protection [74TC] blocked if external trip order in unction [74TC] blocked if external trip order in unction [74TC] blocked if external trip order in unction [74TC] blocked if external trip order in or out of service, by local MMI or by the setting software are prot to rime stamping and event recorder tripping mode or report for time stamping and event recorder tripping mode or report for time stamping and event recorder tripping mode or report for time stamping and event recorder tripping mode or separate prot to	By the setting software	
Interlock o/o   Interlock c/o   Interlock c/o   Interlock c/o   Control mode   Reset [86] function   dedicated to remote control, local / remote acknowledgment of the selected output(s)   Trip circuit supervision   [74TC] blocked if external trip order   Blocking of the protection functions   Forgrammable function     User programmable function   Gligital inputs - digital outputs)     Status of the function   Status of the function   Tripping mode or report   Programmable function     Operating and release time delays   Sasignment of name, maximum of 14 characters to the function   Assignment of one or more output relays (alarm or trip)   by cload MMI or by the setting software     Time delay before reclosing   1 to 6   1 to 120 s, ± 2%     Output relays assigned   100 to 500 ms (remote control)   programmable by local MMI or by setting software     By setting software   Signalling LEDs assignment   By local MMI or by setting software     By setting software   E. Active +, E. Reactive +, E. Reactive -     Manual Machine Interface   Program and perating software     Programinal operating software   Program and perating software     Programmable interface   Program and perating software   Programmable     Programmable interface   Programmable   P	Settings table selection	set 1 – set 2
<ul> <li>Interlock c/o</li> <li>Control mode</li> <li>Reset [86] function</li> <li>Trip circuit supervision</li> <li>CB external trip order</li> <li>Blocking of the protection functions</li> <li>Programmable function</li> <li>Status of the function</li> <li>Tripping mode or report</li> <li>Operating and release time delays</li> <li>Assignment of name, maximum of 14 characters to the function</li> <li>Assignment of one or more output relays (alarm or trip)</li> <li>Load shedding − Load Restoration, remote control (communication option)</li> <li>Load shedding level</li> <li>Time delay before reclosing</li> <li>Reclosing pulse</li> <li>Output relays assignment</li> <li>By local MMI or by setting software</li> <li>A, B, C, D, E, F, G</li> </ul> Digital output assignment <ul> <li>By cetting software</li> <li>By cetting software</li> <li>Counters</li> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> <li>Relay display</li> <li>Configuration and operating software</li> <li>French, English, Spanish, Italian</li> <li>Windows* 2000, XP, Vista and 7 compatible</li> </ul>	Disturbance record	
- Control mode - Reset [86] function - CB external trip order - Blocking of the protection functions - Programmable function - Status of the function - Tripping mode or report - Operating and release time delays - Assignment of one or more output relays (alarm or trip) - Load shedding - Load Restoration, remote control (communication option) - Load shedding level - Time delay before reclosing - Reclosing pulse - Output relays assigned - Output relays assigned - Signalling LEDS assignment - By setting software - By setting software - By setting software - Counters - Energy - Cumulative breaking current - Operating and perating software - Relay display - Configuration and operating software - Relay display - Load shed more control to tripping mode: 40 ms to 300 s - When the setting software - Load shedding - Load Restoration, remote control (communication option) - Load shedding bevel - Time delay before reclosing - Reclosing pulse - Output relays assigned - Output relays assigned - Configuration and operating software - By setting software - By setting software - Counters - Energy - Cumulative breaking current - Operation number circuit breaker - Relay display - Land shed on perating software - Relay display - Land shed on perating software - Relay display - Land shed on perating software - Relay display - Land shed on perating software - Relay display - Land shed on perating software - Configuration and operating software - Windows* 2000, XP, Vista and 7 compatible	• Interlock o/o	dedicated to remote control, switching device position
<ul> <li>Reset [86] function</li> <li>1 Trip circuit supervision</li> <li>CB external trip order</li> <li>Blocking of the protection functions</li> <li>Programmable function</li> <li>User programmable function</li> <li>User programmable function</li> <li>in or out of service, by local MMI or by the setting software</li> <li>Tripping mode or report</li> <li>Operating and release time delays</li> <li>Assignment of name, maximum of 14 characters to the function</li> <li>Assignment of one or more output relays (alarm or trip)</li> <li>Load shedding - Load Restoration, remote control (communication option)</li> <li>Load shedding level</li> <li>Time delay before reclosing</li> <li>Reclosing pulse</li> <li>Output relays assigned</li> <li>Output relays assigned</li> <li>By local MMI or by setting software</li> <li>A, B, C, D, E, F, G</li> </ul> Digital output assignment <ul> <li>By local MMI or by setting software</li> </ul> Signalling LEDs assignment <ul> <li>By setting software</li> </ul> E. Active -, E. Reactive -, E. Reactive -, E. Reactive - <ul> <li>maximum 64.10* kA² (phase 1,2 and 3)</li> <li>Oto 10,000</li> </ul> Man Machine Interface <ul> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> Windows* 2000, XP, Vista and 7 compatible	Interlock c/o	dedicated to remote control, switching device position
Trip circuit supervision CR external trip order Blocking of the protection functions Programmable function  User programmable functions (digital inputs - digital outputs) Status of the function Tripping mode or report Operating and release time delays Assignment of name, maximum of 14 characters to the function Assignment of one or more output relays (alarm or trip)  Load shedding - Load Restoration, remote control (communication) Time delay before reclosing Reclosing pulse Output relays assigned  Digital output assignment By local MMI or by setting software  A, B, C, D, E, F, G  Digital output assignment By local MMI or by setting software  By local MMI or by setting software  A, B, C, D, E, F, G  Counters By local MMI or by setting software  By local MMI or by setting software  A, B, C, D, E, F, G  Counters Counters Relay display Cumulative breaking current Operation number circuit breaker  Relay display Language Configuration and operating software  Windows® 2000, XP, Vista and 7 compatible	· Control mode	dedicated to remote control, local / remote
CB external trip order Blocking of the protection functions Programmable functions Programmable functions (digital inputs – digital outputs) Status of the functions Tripping mode or report Operating and release time delays Assignment of name, maximum of 14 characters to the function Assignment of one or more output relays (alarm or trip)  Load shedding – Load Restoration, remote control (communication option)  Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned  Digital output assignment By local MMI or by setting software A, B, C, D, E, F, G  Digital output assignment By local MMI or by setting software By local MMI or by setting software A, B, C, D, E, F, G  E. Active +, E. Active -, E. Reactive +, E. Reactive - maximum 64.10¢ kA² (phase 1,2 and 3) O to 10,000  Man Machine Interface Relay display Language Configuration and operating software Windows® 2000, XP, Vista and 7 compatible	• Reset [86] function	acknowledgment of the selected output(s)
Blocking of the protection functions Programmable function  User programmable functions (digital inputs – digital outputs) Status of the function Tripping mode or report Operating and release time delays Assignment of name, maximum of 14 characters to the function Assignment of one or more output relays (alarm or trip) User production Assignment of one or more output relays (alarm or trip) User production  Load shedding – Load Restoration, remote control (communication option)  Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned  Digital output assignment By local MMI or by setting software A, B, C, D, E, F, G  Digital output assignment By local MMI or by setting software  A, B, C, D, E, F, G  Counters Energy Cumulative breaking current Operation number circuit breaker  Man Machine Interface Relay display Language Configuration and operating software  Windows® 2000, XP, Vista and 7 compatible	Trip circuit supervision	[74TC] function
Programmable function  User programmable functions (digital inputs – digital outputs)  Status of the function Tripping mode or report Operating and release time delays Assignment of name, maximum of 14 characters to the function Assignment of one or more output relays (alarm or trip)  Used shedding – Load Restoration, remote control (communication option)  Load shedding – Load Restoration, remote control (communication option)  Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned  Digital output assignment By local MMI or by setting software A, B, C, D, E, F, G  Digital output assignment By local MMI or by setting software  A, B, C, D, E, F, G  Digital output assignment By setting software  Energy Counters Finergy Cumulative breaking current Operation number circuit breaker  Relay display Language Configuration and operating software  Windows® 2000, XP, Vista and 7 compatible	• CB external trip order	function [74TC] blocked if external trip order
User programmable functions (digital inputs – digital outputs)  Status of the function  Tripping mode or report  Operating and release time delays  Assignment of name, maximum of 14 characters to the function  Assignment of one or more output relays (alarm or trip)  Uoad shedding – Load Restoration, remote control (communication option)  Load shedding bevel  Time delay before reclosing  Reclosing pulse  Output relays assigned  Digital output assignment  By local MMI or by setting software  A, B, C, D, E, F, G  Digital output assignment  By local MMI or by setting software  A, B, C, D, E, F, G  Digital output assignment  By local MMI or by setting software  A, B, C, D, E, F, G  Digital output assignment  By setting software  Counters  Energy  Cumulative breaking current  Operation number circuit breaker  And Machine Interface  Relay display  Language  Configuration and operating software  Windows® 2000, XP, Vista and 7 compatible	Blocking of the protection functions	
<ul> <li>Status of the function</li> <li>Tripping mode or report</li> <li>Operating and release time delays</li> <li>Assignment of name, maximum of 14 characters to the function</li> <li>Assignment of one or more output relays (alarm or trip)</li> <li>Load shedding – Load Restoration, remote control (communication option)</li> <li>Load shedding level</li> <li>Time delay before reclosing</li> <li>Reclosing pulse</li> <li>Output relays assigned</li> <li>Output relays assigned</li> <li>By local MMI or by the setting software</li> <li>A, B, C, D, E, F, G</li> <li>100 to 500 ms (remote control)</li> <li>programmable by local MMI or by setting software</li> <li>A, B, C, D, E, F, G</li> </ul> Digital output assignment <ul> <li>By local MMI or by setting software</li> </ul> Signalling LEDs assignment <ul> <li>By setting software</li> </ul> <li>Counters</li> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> In or out of service, by local MMI or by the setting software reports: for time stamping and event recorder <ul> <li>tripping mode: 40 ms to 300 s</li> <li>by the setting software</li> </ul> It of 6 <ul> <li>1 to 6</li> <li>1 to 6</li> <li>1 to 120 s, ± 2%</li> <li>100 to 500 ms (remote control)</li> <li>programmable by local MMI or by setting software</li> </ul> E. Active +, E. Rective -, E. Reactive - maximum 64.106 kA² (phase 1,2 and 3) <ul> <li>0 to 10,000</li> </ul> Man Machine Interface <ul> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> Windows® 2000, XP, Vista and 7 compatible	Programmable function	
<ul> <li>Status of the function</li> <li>Tripping mode or report</li> <li>Operating and release time delays</li> <li>Assignment of name, maximum of 14 characters to the function</li> <li>Assignment of one or more output relays (alarm or trip)</li> <li>Load shedding – Load Restoration, remote control (communication option)</li> <li>Load shedding level</li> <li>Time delay before reclosing</li> <li>Reclosing pulse</li> <li>Output relays assigned</li> <li>Output relays assigned</li> <li>By local MMI or by the setting software</li> <li>A, B, C, D, E, F, G</li> <li>100 to 500 ms (remote control)</li> <li>programmable by local MMI or by setting software</li> <li>A, B, C, D, E, F, G</li> </ul> Digital output assignment <ul> <li>By local MMI or by setting software</li> </ul> Signalling LEDs assignment <ul> <li>By setting software</li> </ul> <li>Counters</li> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> In or out of service, by local MMI or by the setting software reports: for time stamping and event recorder <ul> <li>tripping mode: 40 ms to 300 s</li> <li>by the setting software</li> </ul> It of 6 <ul> <li>1 to 6</li> <li>1 to 6</li> <li>1 to 120 s, ± 2%</li> <li>100 to 500 ms (remote control)</li> <li>programmable by local MMI or by setting software</li> </ul> E. Active +, E. Rective -, E. Reactive - maximum 64.106 kA² (phase 1,2 and 3) <ul> <li>0 to 10,000</li> </ul> Man Machine Interface <ul> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> Windows® 2000, XP, Vista and 7 compatible		
<ul> <li>Tripping mode or report</li> <li>Operating and release time delays</li> <li>Assignment of name, maximum of 14 characters to the function</li> <li>Assignment of one or more output relays (alarm or trip)</li> <li>Load shedding – Load Restoration, remote control (communication option)</li> <li>Load shedding belee</li> <li>Time delay before reclosing</li> <li>Reclosing pulse</li> <li>Output relays assigned</li> <li>By local MMI or by setting software</li> <li>A, B, C, D, E, F, G</li> <li>1 to 6</li> <li>1 to 6</li> <li>1 to 20 s, ± 2%</li> <li>100 to 500 ms (remote control) programmable by local MMI or by setting software</li> <li>A, B, C, D, E, F, G</li> </ul> Digital output assignment <ul> <li>By local MMI or by setting software</li> </ul> Signalling LEDs assignment <ul> <li>By setting software</li> </ul> E. Active +, E. Active -, E. Reactive +, E. Reactive - maximum 64.10s kA² (phase 1,2 and 3) <ul> <li>Oto 10,000</li> </ul> Man Machine Interface <ul> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> Windows® 2000, XP, Vista and 7 compatible Windows® 2000, XP, Vista and 7 compatible		in or out of service, by local MMI or by the setting software
<ul> <li>Operating and release time delays</li> <li>Assignment of name, maximum of 14 characters to the function</li> <li>Assignment of one or more output relays (alarm or trip)</li> <li>by the setting software</li> <li>A, B, C, D, E, F, G</li> </ul> Load shedding - Load Restoration, remote control (communication option) <ul> <li>Load shedding level</li> <li>Time delay before reclosing</li> <li>Reclosing pulse</li> <li>Output relays assigned</li> <li>Output relays assignment</li> <li>By local MMI or by setting software</li> </ul> A, B, C, D, E, F, G <ul> <li>Digital output assignment</li> <li>By setting software</li> </ul> Signalling LEDs assignment <ul> <li>By setting software</li> </ul> E. Active +, E. Active -, E. Reactive +, E. Reactive - maximum 64.106 kA² (phase 1,2 and 3) <ul> <li>Ot o 10,000</li> </ul> Man Machine Interface <ul> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> Windows® 2000, XP, Vista and 7 compatible Windows® 2000, XP, Vista and 7 compatible	Tripping mode or report	, , , , , , , , , , , , , , , , , , , ,
Assignment of name, maximum of 14 characters to the function Assignment of one or more output relays (alarm or trip)  by the setting software by local MMI or by the setting software A, B, C, D, E, F, G  Load shedding – Load Restoration, remote control (communication option)  Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned  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, D, E, F, G  Digital output assignment By local MMI or by setting software  Signalling LEDs assignment By setting software  Counters Energy E. Active +, E. Active -, E. Reactive -, E. Reactive - maximum 64.106 kA² (phase 1,2 and 3) Oto 10,000  Man Machine Interface Relay display Language Configuration and operating software  Windows® 2000, XP, Vista and 7 compatible		
Assignment of one or more output relays (alarm or trip)  by local MMI or by the setting software A, B, C, D, E, F, G  Load shedding – Load Restoration, remote control (communication option)  Load shedding level Tito 6 Time delay before reclosing Reclosing pulse Output relays assigned  Toto 120 s, ± 2% Toto 1500 ms (remote control) Programmable by local MMI or by setting software  A, B, C, D, E, F, G  Digital output assignment By local MMI or by setting software  Signalling LEDs assignment By setting software  Counters Energy Cumulative breaking current Operation number circuit breaker  Man Machine Interface Relay display Language Configuration and operating software  Windows® 2000, XP, Vista and 7 compatible		
Load shedding – Load Restoration, remote control (communication option)  Load shedding level  Time delay before reclosing Reclosing pulse Output relays assigned  Digital output assignment By local MMI or by setting software  Signalling LEDs assignment By setting software  Counters Energy Cumulative breaking current Operation number circuit breaker  Relay display Language Configuration and operating software  A, B, C, D, E, F, G  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, D, E, F, G  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, D, E, F, G  1 to 46 1 to 120 s, ± 2% 100 to 500 ms (remote control) programmable by local MMI or by setting software  A, B, C, D, E, F, G  1 to 120 s, ± 2% 100 to 500 ms (remote control) programmable by local MMI or by setting software  A, B, C, D, E, F, G  1 to 120 s, ± 2% 100 to 500 ms (remote control) programmable by local MMI or by setting software  A, B, C, D, E, F, G  1 to 120 s, ± 2% 100 to 500 ms (remote control) programmable by local MMI or by setting software  A, B, C, D, E, F, G  1 to 120 s, ± 2% 100 to 500 ms (remote control) programmable by local MMI or by setting software  A, B, C, D, E, F, G  100 to 500 ms (remote control) programmable by local MMI or by setting software  A, B, C, D, E, F, G		1
Load shedding - Load Restoration, remote control (communication option)  Load shedding level Time delay before reclosing Reclosing pulse Output relays assigned Output relays assigned  Digital output assignment By local MMI or by setting software  Signalling LEDs assignment By setting software  Counters Energy Energy Cumulative breaking current Operation number circuit breaker  Relay display Language Configuration and operating software  I to 6 I to 120 S, ± 2% I to 20 N, E, E, G I to 10 to 500 ms (remote control) Programmable by local MMI or by setting software  A, B, C, D, E, F, G  I to 120 S, ± 2% I to 120 S,		
<ul> <li>Load shedding level</li> <li>Time delay before reclosing</li> <li>Reclosing pulse</li> <li>Output relays assigned</li> <li>Digital output assignment</li> <li>By local MMI or by setting software</li> <li>By setting software</li> <li>By setting software</li> <li>By setting software</li> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> <li>1 to 6</li> <li>1 to 120 s, ± 2%</li> <li>100 to 500 ms (remote control)</li> <li>programmable by local MMI or by setting software</li> <li>E. A, B, C, D, E, F, G</li> </ul>		
<ul> <li>Time delay before reclosing         <ul> <li>Reclosing pulse</li> <li>Output relays assigned</li> <li>Programmable by local MMI or by setting software</li> <li>A, B, C, D, E, F, G</li> </ul> </li> <li>Digital output assignment         <ul> <li>By local MMI or by setting software</li> </ul> </li> <li>Signalling LEDs assignment         <ul> <li>By setting software</li> </ul> </li> <li>Counters         <ul> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> <li>O to 10,000</li> </ul> </li> <li>Man Machine Interface         <ul> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> </li> <li>Tito 120 s, ± 2%         <ul> <li>100 to 500 ms (remote control)</li> <li>programmable by local MMI or by setting software</li> </ul> </li> <li>A, B, C, D, E, F, G</li> <li>B</li> <li>E. Active E. Rective E. Reactive E. R</li></ul>		1 to (
Reclosing pulse Output relays assigned  100 to 500 ms (remote control) programmable by local MMI or by setting software A, B, C, D, E, F, G  Digital output assignment By local MMI or by setting software  Signalling LEDs assignment By setting software  Counters Energy Cumulative breaking current Operation number circuit breaker  Man Machine Interface Relay display Language Configuration and operating software  100 to 500 ms (remote control) programmable by local MMI or by setting software  E. Active +, E. Active -, E. Reactive +, E. Reactive - maximum 64.10° kA² (phase 1,2 and 3) O to 10,000  2 lines of 16 characters French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible		
<ul> <li>Output relays assigned</li> <li>programmable by local MMI or by setting software</li> <li>A, B, C, D, E, F, G</li> </ul> Digital output assignment <ul> <li>By local MMI or by setting software</li> </ul> Signalling LEDs assignment <ul> <li>By setting software</li> </ul> Counters <ul> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> </ul> Man Machine Interface <ul> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> French, English, Spanish, Italian <ul> <li>Windows® 2000, XP, Vista and 7 compatible</li> </ul>	,	
Digital output assignment  By local MMI or by setting software  Signalling LEDs assignment  By setting software  Counters  Energy  Cumulative breaking current  Operation number circuit breaker  Relay display  Language  Configuration and operating software  A, B, C, D, E, F, G  A, B, C, D, E, F, G  A, B, C, D, E, F, G  E. Active +, E. Active -, E. Reactive -  maximum 64.106 kA² (phase 1,2 and 3)  O to 10,000  Man Machine Interface  Relay display  Language  Configuration and operating software  Windows® 2000, XP, Vista and 7 compatible		· · · · · · · · · · · · · · · · · · ·
Digital output assignment  By local MMI or by setting software  Signalling LEDs assignment  By setting software  Counters  Energy  E. Active +, E. Active -, E. Reactive -, E. Reactive - maximum 64.10° kA² (phase 1,2 and 3)  Operation number circuit breaker  Man Machine Interface  Relay display Language  Relay display Longuage  Configuration and operating software  Windows® 2000, XP, Vista and 7 compatible	output relays assigned	1
<ul> <li>By local MMI or by setting software</li> <li>Signalling LEDs assignment         <ul> <li>By setting software</li> </ul> </li> <li>Counters         <ul> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> <li>Relay display</li> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> </li> <li>By local MMI or by setting software</li> <li>E. Active +, E. Active -, E. Reactive +, E. Reactive -</li></ul>		A, B, C, D, E, F, G
Signalling LEDs assignment  By setting software  Counters  Energy  Cumulative breaking current  Operation number circuit breaker  Man Machine Interface  Relay display  Language  Configuration and operating software  E. Active +, E. Active -, E. Reactive +, E. Reactive -  maximum 64.106 kA² (phase 1,2 and 3)  0 to 10,000  Z lines of 16 characters  French, English, Spanish, Italian  Windows® 2000, XP, Vista and 7 compatible		
<ul> <li>By setting software</li> <li>Counters         <ul> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> </ul> </li> <li>Man Machine Interface         <ul> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> </ul> </li> <li>Be. Active +, E. Active -, E. Reactive -</li></ul>		
Counters  • Energy  • Cumulative breaking current  • Operation number circuit breaker  • Relay display  Language  • Configuration and operating software  E. Active +, E. Active -, E. Reactive +  maximum 64.106 kA² (phase 1,2 and 3)  0 to 10,000  2 lines of 16 characters  French, English, Spanish, Italian  Windows® 2000, XP, Vista and 7 compatible		
<ul> <li>Energy</li> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> <li>Relay display         <ul> <li>Language</li> <li>Configuration and operating software</li> </ul> </li> <li>E. Active +, E. Active -, E. Reactive +         <ul> <li>maximum 64.106 kA² (phase 1,2 and 3)</li> <li>to 10,000</li> </ul> </li> <li>Wan Machine Interface         <ul> <li>2 lines of 16 characters</li> <li>French, English, Spanish, Italian</li> <li>Windows® 2000, XP, Vista and 7 compatible</li> </ul> </li> </ul>		
<ul> <li>Cumulative breaking current</li> <li>Operation number circuit breaker</li> <li>Oto 10,000</li> <li>Man Machine Interface</li> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> <li>maximum 64.106 kA² (phase 1,2 and 3)</li> <li>Oto 10,000</li> <li>2 lines of 16 characters</li> <li>French, English, Spanish, Italian</li> <li>Windows® 2000, XP, Vista and 7 compatible</li> </ul>	Counters	
<ul> <li>Operation number circuit breaker</li> <li>Man Machine Interface</li> <li>Relay display</li> <li>Language</li> <li>Configuration and operating software</li> <li>0 to 10,000</li> <li>2 lines of 16 characters</li> <li>French, English, Spanish, Italian</li> <li>Windows® 2000, XP, Vista and 7 compatible</li> </ul>	J	
Man Machine Interface2 lines of 16 characters• Relay display2 lines of 16 charactersLanguageFrench, English, Spanish, Italian• Configuration and operating softwareWindows® 2000, XP, Vista and 7 compatible		
<ul> <li>Relay display         <ul> <li>Language</li> <li>Configuration and operating software</li> </ul> </li> <li>2 lines of 16 characters         <ul> <li>French, English, Spanish, Italian</li> </ul> </li> <li>Windows® 2000, XP, Vista and 7 compatible</li> </ul>	•	0 to 10,000
Language  • Configuration and operating software  French, English, Spanish, Italian  Windows® 2000, XP, Vista and 7 compatible	Man Machine Interface	
Configuration and operating software     Windows® 2000, XP, Vista and 7 compatible	Relay display	2 lines of 16 characters
	Language	
Language French, English, Spanish, Italian	Configuration and operating software	·
	Language	French, English, Spanish, Italian
MODBUS® Communication (option)	MODBUS® Communication (option)	
• Transmission asynchronous series, 2 wires	Transmission	asynchronous series, 2 wires
• Interface RS485	Interface	RS485
• Transmission speed 300 to 115,200 bauds	Transmission speed	300 to 115,200 bauds

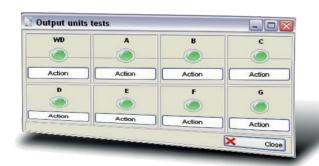


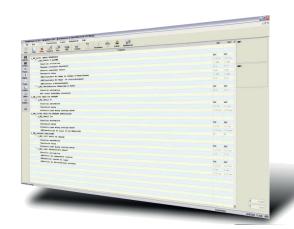
GENERAL CIT	ANACILNIJIICJ
Disturbance recording	
<ul> <li>Number of recordings</li> </ul>	4
<ul> <li>Total duration</li> </ul>	52 periods per recording
Pre fault time	adjustable from 0 to 52 cycles
Climatic withstand in operation	
• Cold exposure	IEC / EN 60068-2-1: class Ad, -10 °C
Dry heat exposure	IEC / EN 60068-2-2: class Bd, +55 °C
Damp heat exposure	IEC / EN 60068-2-3: class Ca, 93 % HR, 40 °C, 56 days
<ul> <li>Temperature variation with specified variation rate</li> </ul>	IEC / EN 60068-2-14: class Nb, -10 °C à +55 °C, 3 °C/min
Storage	
· Cold exposure	IEC / EN 60068-2-1: class Ad, -25 °C
• Dry heat exposure	IEC / EN 60068-2-2: class Bd, +70 °C
Electrical safety	
Ground bond test current	IEC / EN 61010-1: 30 A
<ul> <li>Impulse voltage withstand</li> </ul>	IEC / EN 60255-5: 5 kV MC, 5 kV MD (waveform: 1.2/50μs)
	except Digital Output, 1 kV differential mode
	except RS485, 3 kV common mode
<ul> <li>Dielectric withstand (50Hz or 60Hz)</li> </ul>	IEC / EN 60255-5: common mode 2 kV <sub>rms</sub> - 1 min
	differential mode for Digital Output 1 kV <sub>rms</sub> – 1 min (contact open)
	IEC / EN 60255-5: 500 Vdc - 1 s: > 100 MΩ
Insulation resistance	IEC / EN 60255-5: rated insulation voltage: 250 V
<ul> <li>Clearance and creepage distances</li> </ul>	pollution degree: 2
	overvoltage category: III
Enclosure safety	
<ul> <li>Degree of protection provided by enclosures (IP code)</li> </ul>	IEC / EN 60529: IP51, with front face
Immunity – Conducted disturbances	
<ul> <li>Immunity to RF conducted disturbances</li> </ul>	IEC / EN 61000-4-6: class III, 10 V
Fast transients	IEC / EN 60255-22-4 / IEC / EN 61000-4-4: class IV
<ul> <li>Oscillatory waves disturbance</li> </ul>	IEC / EN 60255-22-1: class III, 2.5 kV CM, 1 kV DM
	except RS485, class II, 1 kV CM
Surge immunity	IEC / EN 61000-4-5: class III
Supply interruptions	IEC / EN 60255-11: 100% 20 ms
Immunity – Radiated disturbances	
<ul> <li>Immunity to RF radiated fields</li> </ul>	IEC / EN 60255-22-3 /
	IEC / EN 61000-4-3: class III, 10 V/m
Electrostatic discharges	IEC / EN 60255-22-2 /
	IEC / EN 61000-4-2: class III, 8 kV air / 6 kV contact
Power frequency magnetic field immunity test	IEC / EN 61000-4-8: class IV, 30 A/m continuous, 300 A/m 1 to 3 s
Mechanical robustness - energised	
<ul> <li>Vibrations</li> </ul>	IEC / EN 60255-21-1: class 1 - 0.5g
• Shocks	IEC / EN 60255-21-2: class 1 - 5g / 11 ms
Mechanical robustness - not energised	
<ul> <li>Vibrations</li> </ul>	IEC / EN 60255-21-1: class 1 - 1g
• Shocks	IEC / EN 60255-21-2: class 1 - 15g / 11 ms
• Bumps	IEC / EN 60255-21-2: class 1 - 10g / 16 ms
• Free falls	IEC / EN 60068-2-32: class 1 - 250 mm
Electromagnetic compatibility (EMC)	
<ul> <li>Radiated field emissivity</li> </ul>	EN 55022: class A
<ul> <li>Conducted disturbance emissivity</li> </ul>	EN 55022: class A
	I .

Presentation		
• Height	4U	
• Width	1/4 19"	
Brackets 19" rack mounting	option (see drawing D37739)	
Case		
H, W, D without short-circuiting devices	173 x 106.3 x 250 mm (see drawing D37739)	
H, W, D with short-circuiting devices	173 x 106.3 x 305 mm (see drawing D37739)	
• Weight	3.6 kg	
Connection - codification		
• See diagram S39292		

#### **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 (events recorded)
- Configuration and parameter setting by local MMI or off-line / on-line PC
- Measurement of electrical quantities: Display expressed in primary values Instantaneous and integrated values of phase currents and S, P, Q power Values, according to the wiring, phase to phase or phase to neutral and the residual voltage Power factor, Cos  $\phi$  Instantaneous value of tangent  $\phi$
- Instantaneous alarm threshold
- Definite time tripping
- Dependent time tripping according to inverse/ very inverse/extremely inverse IEC 60255-3 curves
- Tripping according to RI inverse curve (electromechanical)
- Tripping according to moderately inverse/very inverse/extremely inverse ANSI /IEEE curves
- 2 setting groups, locally or remotely selectable by a digital input or by the communication channel
- Energy metering : storage values / hour

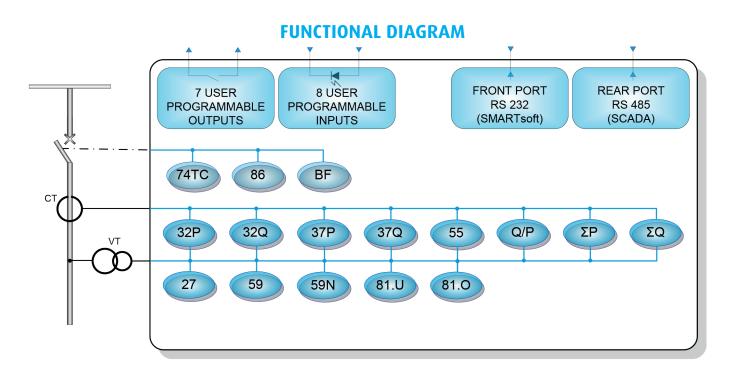
# **NPW800**

- CB Monitoring : interlocks discrepancy, local or remote control of closing / tripping
- Remote control by the 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 internals 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

- Local / remote events acknowledgment
- Disturbance recording according to Comtrade® format: storage of four 52 periods recordings
- · Disturbance recording initiated by digital input, setting software or communication network
- 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 and failure
- Test of wiring, phase rotation and direction of the current

### **Options**

- Communication by Modbus® RS485
- Communication by Modbus® RS485 with redundancy
- 2 dependent time, configurable and downloadable curves (consult us)









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