

NPSC800

Network Check Synchronizing Relay



NPSC800-1 performs check of synchronism between two power supplies. It is usually used to authorize the closing order of a paralleling circuit breaker.

NPSC800-2 allows in addition the operating of live (or dead) line and live (or dead) bus. It also allows, with a dedicated output relay, the reconnection of two bus sections fed by the same supply.

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 by the RS232 port, or remotely using the RS485 port.

Reading, measurement and recording are all available locally or remotely.



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

Common functions for NPSC800-1 and NPSC800-2

- Synchro- check [25]

Specific functions for NPSC800-2

- Dead Line – Dead Bus (DLDB)
- Dead Line – Live Bus (DLLB)
- Live Line – Dead Bus (LLDB)
- **Reconnection** of two bus section from the same source

OUR TRADEMARKS



GENERAL CHARACTERISTICS

<p>Auxiliary Supply</p> <ul style="list-style-type: none"> • Auxiliary supply ranges • Typical burden • Memory backup 	<p>19 to 70 – 85 to 255 / Vdc or Vac 50 or 60 Hz 6 W (DC), 6 VA (AC) 72 hours</p>
<p>Analogue inputs</p> <ul style="list-style-type: none"> • Phase voltage inputs 	<p>Un: 55 to 120 V input impedance > 80 KΩ continuous rating 240 V, short duration withstand 275 V - 1 min measurement from 3 to 240 V VT setting: primary value from 100 V to 500 kV</p>
<ul style="list-style-type: none"> • Frequency (50Hz or 60Hz) 	<p>measurement: 45-55 Hz or 55-65 Hz measurement: 30 to 70 Hz (<i>from V1.50</i>)</p>
<p>Digital Inputs (4 for NPSC800-1, 8 for NPSC800-2)</p> <ul style="list-style-type: none"> • Polarizing voltage • Level 0 • Level 1 • Burden 	<p>20 to 70 Vdc for 19 to 70 V 37 to 140 Vdc for 85 to 255 V < 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 < 15 mA</p>
<p>Relay Outputs (3* for NPSC800-1 + 1 WD, 7 for NPSC800-2 + 1 WD)</p> <ul style="list-style-type: none"> • Relays A*, B*, E, F : 	<p>double contact NO, permanent current 8 A closing capacity 12 A / 4 s short circuit current withstand 100 A / 30 ms breaking capacity DC with L/R = 40 ms: 50W breaking capacity AC with cos φ = 0.4: 1,250 VA</p>
<ul style="list-style-type: none"> • Relays C*, WD D, G 	<p>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 φ = 0.4: 1,250 VA</p>
<p>Characteristics of the function [25]</p> <ul style="list-style-type: none"> • Blocking of the output relay C • Threshold U line mini for authorisation [25] • Threshold accuracy • Setting of voltage difference: ΔU • Voltage difference accuracy • Setting of angular difference: Δφ • Angular difference accuracy • Setting of frequency difference: ΔF • Frequency difference accuracy • Setting of rate of frequency change: ΔF/dt • Rate of frequency change accuracy • Time lag before authorisation • Accuracy of the time delays • Accuracy of displayed measures 	<p>possible by digital input (output relay use for paralleling authorisation) 50 to 100 % Un 2% of Un thresholds +/- : 1% to 15% Un, with step of 1% Un ± 5% of the set value thresholds +/- : 1° to 20°, with step of 1° ± 2% thresholds +/- : 0.01 to 1.5 Hz, with step of 0.01 Hz ± 5% of the set value thresholds +/- : 0.01 to 0.2 Hz/s, with step of 0.01 Hz/s ± 2% 0 ms to 300 s ± 2% or 20 ms 3% from 3 to 240 V</p>

GENERAL CHARACTERISTICS

<p>Characteristics of line and bus functions**: DLDB - DLLB - LLDB</p> <ul style="list-style-type: none"> • Activation of functions • Information function activated • Operating mode • Threshold U> Live Line • Threshold U< Dead Line • Threshold U> Live Bus • Threshold U< Dead Bus • Thresholds accuracy • Time lag before authorisation • Accuracy of the time delays 	<p>by setting software and dedicated DI (non exclusive mode) HMI, dedicated DO, communication and setting software with PC paralleling authorisation by the output relay C 5 to 120 % Un 5 to 120 % Un 5 to 120 % Un 5 to 120 % Un 2% of Un 0 ms to 300 s (3 settings: DLDB, DLLB and LLDB) ± 2% or 20 ms</p>
<p>Characteristics of the reconnection function**</p> <ul style="list-style-type: none"> • Active only in synchronous mode • Activation of the function • Setting of ΔU and $\Delta\phi$ • Information function activated • Setting of voltage difference: $\pm\Delta U$ • Time delay for controlling the reconnection conditions • Hold time of the output relay G • Accuracy of the time delays ** <i>only NPSC800-2</i> 	<p>concomitance of Line and Bus frequencies by setting software and dedicated DI common settings with function [25] HMI, dedicated DO, communication and setting software with PC 1% to 15% Un, step of 1% Un 40 ms to 300 s 100 ms to 500 ms (output relay dedicated to the reconnection function) ± 2% or 20 ms</p>
<p>Phase shift</p> <ul style="list-style-type: none"> • Line voltage / bus voltage 	<p>0 to 360°, step of 1°</p>
<p>Digital inputs assignment (see application guide)</p> <ul style="list-style-type: none"> • Input 1 • Input 2 • Input 3 • Input 4 • Input 5 (NPSC800-2 only) • Input 6 (NPSC800-2 only) • Input 7 (NPSC800-2 only) • Input 8 (NPSC800-2 only) 	<p>activation set 2 inhibition of the function [25] paralleling order (management of disturbance recording and events) contact o/o of the Circuit Breaker (management of events) enable mode DL-DB enable mode DL-LB enable mode LL-DB enable mode reconnection</p>
<p>Digital output assignment (see application guide)</p> <ul style="list-style-type: none"> • Relay A • Relay B • Relay C • Relay D (NPSC800-2 only) • Relay E (NPSC800-2 only) • Relay F (NPSC800-2 only) • Relay G (NPSC800-2 only) 	<p>set 2 activated function [25] inhibited paralleling authorisation (permanent order if conditions are valid) mode DL-DB selected mode DL-LB selected mode LL-DB selected reconnection order</p>
<p>Signalling LEDs assignment</p> <ul style="list-style-type: none"> • LED 1 • LED 2 • LED 3 • LED 4 	<p>info ΔU OK info $\Delta\phi$ OK info ΔF OK paralleling authorised</p>

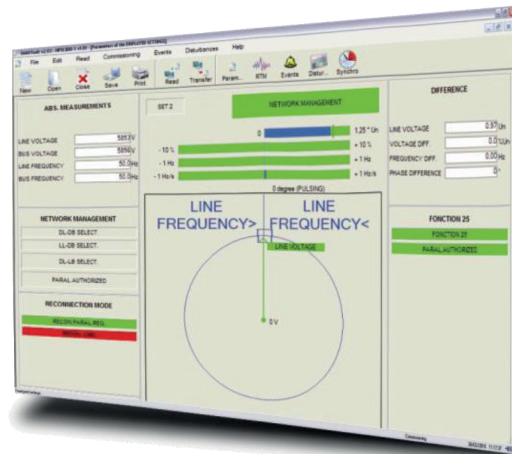
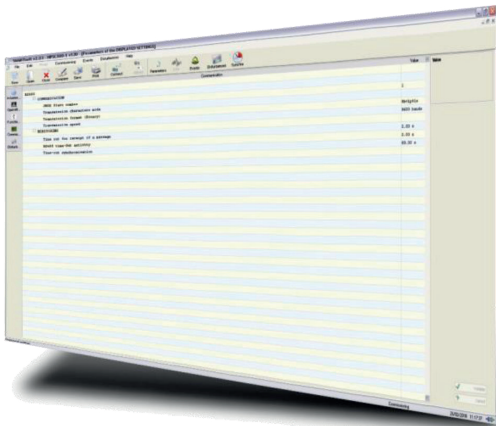
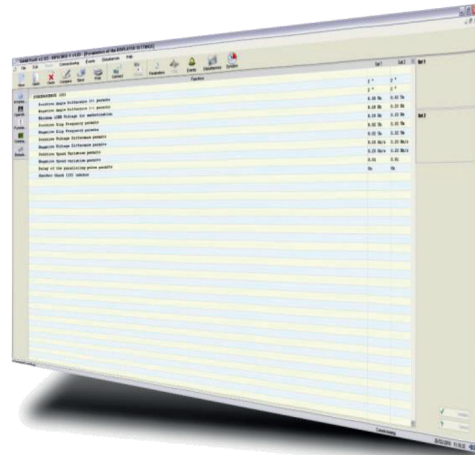
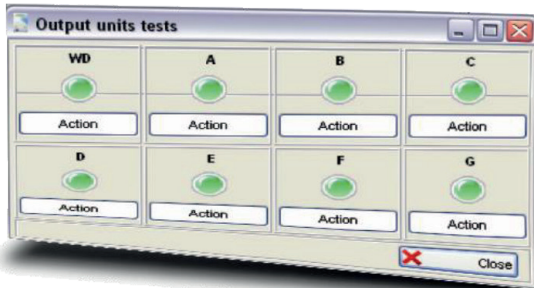
GENERAL CHARACTERISTICS

<p>Man Machine Interface</p> <ul style="list-style-type: none"> Relay display Language Configuration and operating software Language 	<p>2 lines of 16 characters French, English, Spanish, Italian Windows® 2000, XP, Vista and 7 compatible French, English, Spanish, Italian</p>
<p>MODBUS® Communication (option)</p> <ul style="list-style-type: none"> Transmission Interface Transmission speed 	<p>asynchronous series, 2 wires RS485 300 to 115,200 bauds</p>
<p>Disturbance recording</p> <ul style="list-style-type: none"> Number of recordings Total duration Pre fault time 	<p>4 170 cycles per recording (12 samples / cycle) adjustable from 0 to 170 cycles</p>
<p>Climatic withstand in operation</p> <ul style="list-style-type: none"> Cold exposure Dry heat exposure Damp heat exposure Temperature variation with specified variation rate 	<p>IEC / EN 60068-2-1: class Ad, -10 °C IEC / EN 60068-2-2: class Bd, +55 °C IEC / EN 60068-2-3: class Ca, 93 % HR, 40 °C, 56 days IEC / EN 60068-2-14: class Nb, -10 °C à +55 °C, 3 °C/min</p>
<p>Storage</p> <ul style="list-style-type: none"> Cold exposure Dry heat exposure 	<p>IEC / EN 60068-2-1: class Ad, -25 °C IEC / EN 60068-2-1: class Bd, +70°C</p>
<p>Electrical safety</p> <ul style="list-style-type: none"> Ground bond test current Impulse voltage withstand Dielectric withstand (50Hz or 60Hz) Insulation resistance Clearance and creepage distances 	<p>IEC / EN 61010-1: 30 A IEC / EN 60255-5: 5 kV MC, 5 kV MD except outputs TOR, 1 kV MD except RS485, 3 kV MC IEC / EN 60255-5: common mode 2 kV_{rms} - 1 min Differential outputs mode TOR 1 kV_{rms} - 1 min (open contact type) IEC / EN 60255-5: 500 Vdc - 1 s: > 100 MΩ IEC / EN 60255-5: rated insulation voltage: 250 V pollution degree: 2 overvoltage category: III</p>
<p>Enclosure safety</p> <ul style="list-style-type: none"> Degree of protection provided by enclosures (IP code) 	<p>IEC / EN 60529: IP51, with front face</p>
<p>Immunity – Conducted disturbances</p> <ul style="list-style-type: none"> Immunity to RF conducted disturbances Fast transients Oscillatory waves disturbance 1 MHz Surge immunity Supply interruptions 	<p>IEC / EN 61000-4-6: class III, 10 V IEC / EN 60255-22-4 / IEC / EN 61000-4-4: class IV IEC / EN 60255-22-1: class III, 2.5 kV MC, 1 kV MD except RS485, class II, 1 kV MC IEC / EN 61000-4-5: class III IEC / EN 60255-11: 100% 20 ms</p>
<p>Immunity – Radiated disturbances</p> <ul style="list-style-type: none"> Immunity to RF radiated fields Electrostatic discharges Power frequency magnetic field immunity test 	<p>IEC / EN 60255-22-3 / IEC / EN 61000-4-3: class III, 10 V/m IEC / EN 60255-22-2 / IEC / EN 61000-4-2: class III, 8 kV air / 6 kV contact IEC / EN 61000-4-8: class IV, 30 A/m continuous, 300 A/m 1 to 3 s</p>

GENERAL CHARACTERISTICS

<p>Mechanical robustness - energised</p> <ul style="list-style-type: none"> • Vibrations • Shocks 	<p>IEC / EN 60255-21-1 : class 1 - 0.5g IEC / EN 60255-21-2 : class 1 - 5g / 11 ms</p>
<p>Mechanical robustness - not energised</p> <ul style="list-style-type: none"> • Vibrations • Shocks • Bumps • Free falls 	<p>IEC / EN 60255-21-1 : class 1 - 1g IEC / EN 60255-21-2 : class 1 - 15g / 11 ms IEC / EN 60255-21-2 : class 1 - 10g / 16 ms IEC / EN 60068-2-32 : class 1 - 250 mm</p>
<p>Electromagnetic compatibility (EMC)</p> <ul style="list-style-type: none"> • Radiated field emissivity • Conducted disturbance emissivity 	<p>EN 55022: class A EN 55022: class A</p>
<p>Presentation</p> <ul style="list-style-type: none"> • Height • Width • Brackets 19" rack mounting 	<p>4U ¼ 19" option (see drawing D37739)</p>
<p>Case</p> <ul style="list-style-type: none"> • H, W, D without connectors • Net weight 	<p>173 x 106.3 x 250 mm (see drawing D37739) 3.6 kg</p>
<p>Connection - codification</p> <ul style="list-style-type: none"> • NPSC800-1 • NPSC800-2 	<p>see diagram S38893 see diagram S39609</p>

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 lack and the restoration of the auxiliary voltage (events recorded)
- Configuration and parameter setting by off-line / on-line PC
- Reading and recording of configuration by PC
- Measurement of electrical quantities:
 - Phase voltages U_L, U_B
 - Frequency F_L, F_B

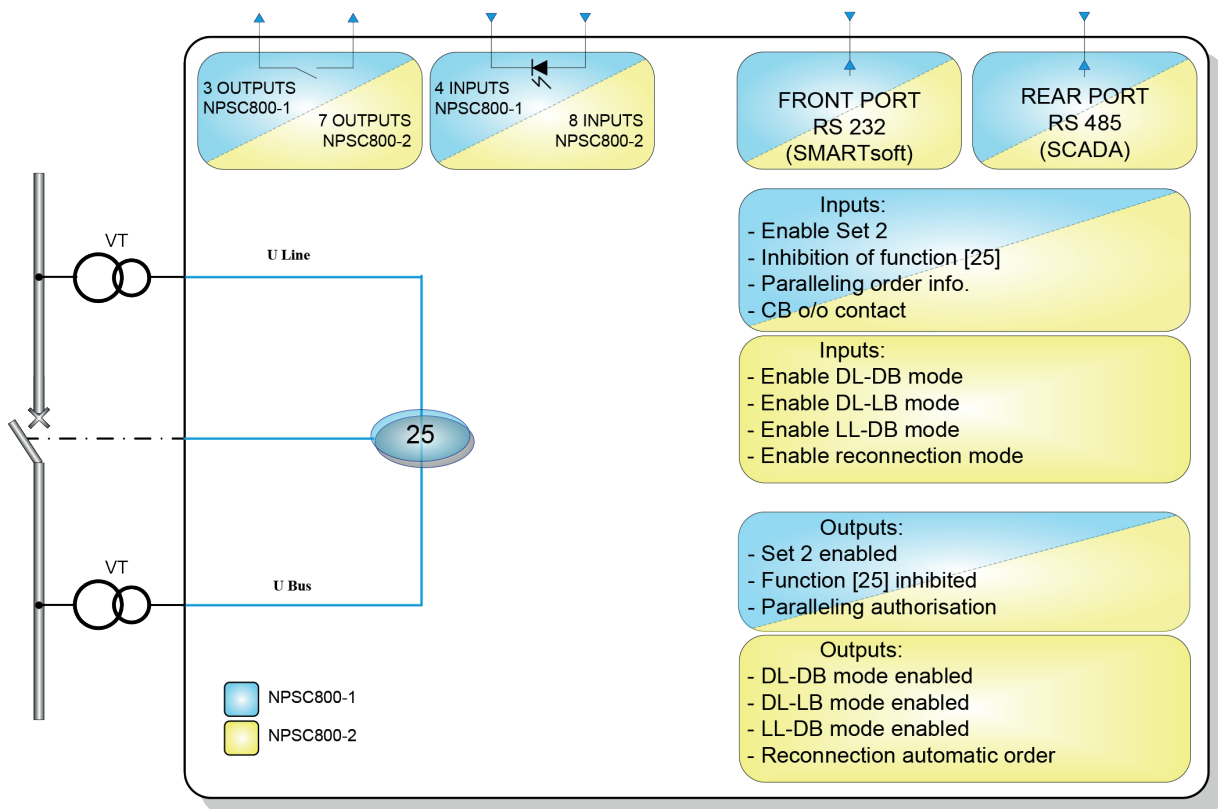
- Voltage difference $\Delta U (U_L - U_B)$
- Angular difference $\Delta \phi$
- Frequency difference $\Delta F (F_L - F_B)$
- Acceleration (Hz / s)
- Display expressed in primary values
- 2 setting groups, remotely selectable by a digital input
- Setting software compatible with Windows® 2000, XP, Vista and 7

- User interface with access to all functions
- Commissioning facilitated, the inhibition of the output relay of the [25] function allow the validation of the wiring.
- 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 the auxiliary supply
- Local / remote events acknowledgment
- Disturbance recording according to Comtrade® format: storage of 4 recordings of 170 periods. Wiring of the paralleling order requested, except for reconnection function
- Remote setting, remote reading of measurements, alarms and parameters settings
- Remote reading of disturbance recording and events log
- Self-diagnosis: Memories, output relays, A/D converters, auxiliary supply, cycles of execution of the software, hardware anomaly

Options

- Communication by Modbus® RS485
- Communication by Modbus® RS485 with redundancy (NPSC800-2 only)

FUNCTIONAL DIAGRAM



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

