RETROFITTING
Network Check Synchronizing Relay

NPSC800R
NPSC800RE

NPSC800R (R2 case) is dedicated to the refurbishment of CEE STS 7041 relay (R3 case) providing the check of synchronism between two sources. This numerical and multi-function relay is generally used to authorize the transmission of a closing order to a paralleling circuit-breaker.
NPSC800RE (R case) provides the replacement of CEE STS 7041 relay (R3 case) and allows the operating of live (or dead) line and live (or dead) bus. This multi-function and numerical relay can also allows, with a dedicated output relay, the reconnection of two bus sections fed by the same supply.

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 NPSC800R).

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

NPSC800RE / NPSC800R - EDPAR

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

Common functions for NPSC800R and NPSC800RE

- Synchro- check **[25]**

Specific functions for NPSC800RE

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

CHARACTERISTICS NPSC800R – NPSC800RE

Auxiliary Supply

• Auxiliary supply ranges	19 to 70 – 85 to 255 / Vdc or Vac 50 or 60 Hz
• Typical burden	6 W (CC), 6 VA (CA)
• Memory backup	72 hours

Analogue Inputs

• Phase voltage inputs	Un: 55 to 120 V input impedance > 80 KΩ continuous rating 240 V, short duration withstand 275V - 1 min measurement from 3 to 240 V VT setting: primary value from 220 V to 250 kV
• Frequency (50Hz or 60Hz)	measurement: 45-55 Hz or 55-65 Hz measurement: 30 to 70 Hz *(from V1.50)*

Digital Inputs (4 for NPSC800R, 8 for NPSC800RE)

• Polarizing voltage	20 to 70 Vdc, range 19 to 70 V 37 to 140 Vdc, range 85 to 255 V
• Level 0	< 10Vdc range 19 to 70 V – < 33Vdc range 85 to 255 V
• Level 1	> 20Vdc range 19 to 70 V – > 37Vdc range 85 to 255 V
• Burden	< 15 mA

Relay Outputs (3* for NPSC800R + 1 WD, 7 for NPSC800RE + 1 WD)

• Relays A*, B*, E, F	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: 50 W breaking capacity AC with cos φ = 0.4: 1250 VA
• Relays C*, WD, D, G	changeover contact, permanent current 10 A closing capacity 15 A / 4 s short circuit current withstand 250 A / 30 ms breaking capacity DC with L/R = 40 ms: 50 W breaking capacity AC with cos φ = 0.4: 1250 VA

Characteristics of the function [25]

• Blocking of the output relay C	possible by digital input (output relay use for paralleling authorisation)
• Threshold U line mini for authorisation [25]	50 to 100 % Un
• Threshold accuracy	2% of Un
• Setting of voltage difference: ΔU	thresholds +/- : 1% to 15% Un, with step of 1% Un
• Voltage difference accuracy	± 5% of the set value
• Setting of angular difference: Δφ	thresholds +/- : 1° to 20°, with step of 1°
• Angular difference accuracy	± 2%
• Setting of frequency difference: ΔF	thresholds +/- : 0.01 to 1.5 Hz, with step of 0.01 Hz
• Frequency difference accuracy	± 5% of the set value
• Setting of rate of frequency change: ΔF/dt	thresholds +/- : 0.01 to 0.2 Hz/s, with step of 0.01 Hz/s
• Rate of frequency change accuracy	± 2%
• Time lag before authorisation	0 ms to 300 s
• Accuracy of the time delays	± 2% or 20 ms
• Accuracy of displayed measures	3% from 3 to 240 V

Characteristics of line and bus functions**: DLDB - DLLB – LLDB

• Activation of functions	by setting software and dedicated DI (non exclusive mode)
• Information function activated	HMI, dedicated DO, communication and setting software with PC
• Operating mode	paralleling authorisation by the output relay C
• Threshold U> Live Line	5 to 120 % Un
• Threshold U< Dead Line	5 to 120 % Un
• Threshold U> Live Bus	5 to 120 % Un
• Threshold U< Dead Bus	5 to 120 % Un
• Thresholds accuracy	2% of Un
• Time lag before authorisation	0 ms to 300 s (3 settings: DLDB, DLLB and LLDB)
• Accuracy of the time delays	± 2% or 20 ms

Characteristics of the reconnection function**

• Active only in synchronous mode	concomitance of Line and Bus frequencies
• Activation of the function	by setting software and dedicated DI
• Setting of ΔU and Δφ	common settings with function [25]
• Information function activated	HMI, dedicated DO, communication and setting software with PC
• Setting of voltage difference: ±ΔU	1% to 15% Un, step of 1% Un
• Time delay for controlling the reconnection conditions	40 ms to 300 s
• Hold time of the output relay G	100 ms to 500 ms (output relay dedicated to the recon. function)
• Accuracy of the time delays	± 2% or 20 ms

**** only NPSC800RE***

CHARACTERISTICS NPSC800R – NPSC800RE

Phase shift

• Line voltage / bus voltage	0 to 360°, step of 1°

Digital inputs assignment

(see application guide)

• Input 1	activation set 2
• Input 2	inhibition of the function [25]
• Input 3	paralleling order (management of disturbance recording and events)
• Input 4	contact o/o of the Circuit Breaker (management of events)
• Input 5 (NPSC800RE only)	enable mode DL-DB
• Input 6 (NPSC800RE only)	enable mode DL-LB
• Input 7 (NPSC800RE only)	enable mode LL-DB
• Input 8 (NPSC800RE only)	enable mode reconnection

Digital output assignment

(see application guide)

• Relay A	set 2 activated
• Relay B	function [25] inhibited
• Relay C	paralleling authorisation (permanent order if conditions are valid)
• Relay D (NPSC800RE only)	mode DL-DB selected
• Relay E (NPSC800RE only)	mode DL-LB selected
• Relay F (NPSC800RE only)	mode LL-DB selected
• Relay G (NPSC800RE only)	reconnection order

Signalling LEDs assignment

• LED 1	info ΔU OK
• LED 2	info Δφ OK
• LED 3	info ΔF OK
• LED 4	paralleling authorised

Man Machine Interface

• Relay display	2 lines of 16 characters
Language	French, English, Spanish, Italian
• Configuration and operating software	Windows® 2000, XP, Vista and 7 compatible
Language	French, English, Spanish, Italian

MODBUS® Communication (option)

• Transmission	asynchronous series, 2 wires
• Interface	RS 485
• Transmission speed	300 to 115 200 bauds

Disturbance recording

• Number of recordings	4
• Total duration	170 cycles per recording (12 samples / cycle)
• Pre fault time	adjustable from 0 to 170 cycles

Presentation

• Height	4U
• Width	R2 and according to version R3
• Brackets 19” rack mounting	see diagram 9954 (7000 series rack definition table)

Case (see drawing D40037)

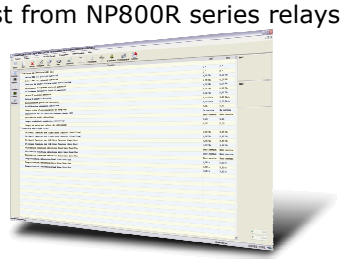
• **EDPAR**	
H, W, D (case & base)	NPSC800R : 172 x 83 x 222 mm
	NPSC800RE : 172 x 125 x 222 mm
H, W (front face dimensions)	NPSC800R : 217 x 98 mm
	NPSC800RE : 217 x 140 mm
• **SDPAR**	
H, W, D (case & base)	NPSC800R : 172 x 83 x 227 mm
	NPSC800RE : 172 x 125 x 227 mm
H, W (front face dimensions)	NPSC800R : 172 x 83 mm
	NPSC800RE : 172 x 125 mm
Weight	NPSC800R : 3.5 kg
	NPSC800RE : 4.5 kg

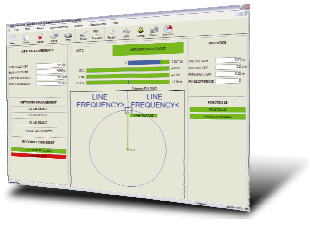
Raccordement - codification

• NPSC800R	see diagram S39967
• NPSC800RE	see diagram S39972

SMARTsoft

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





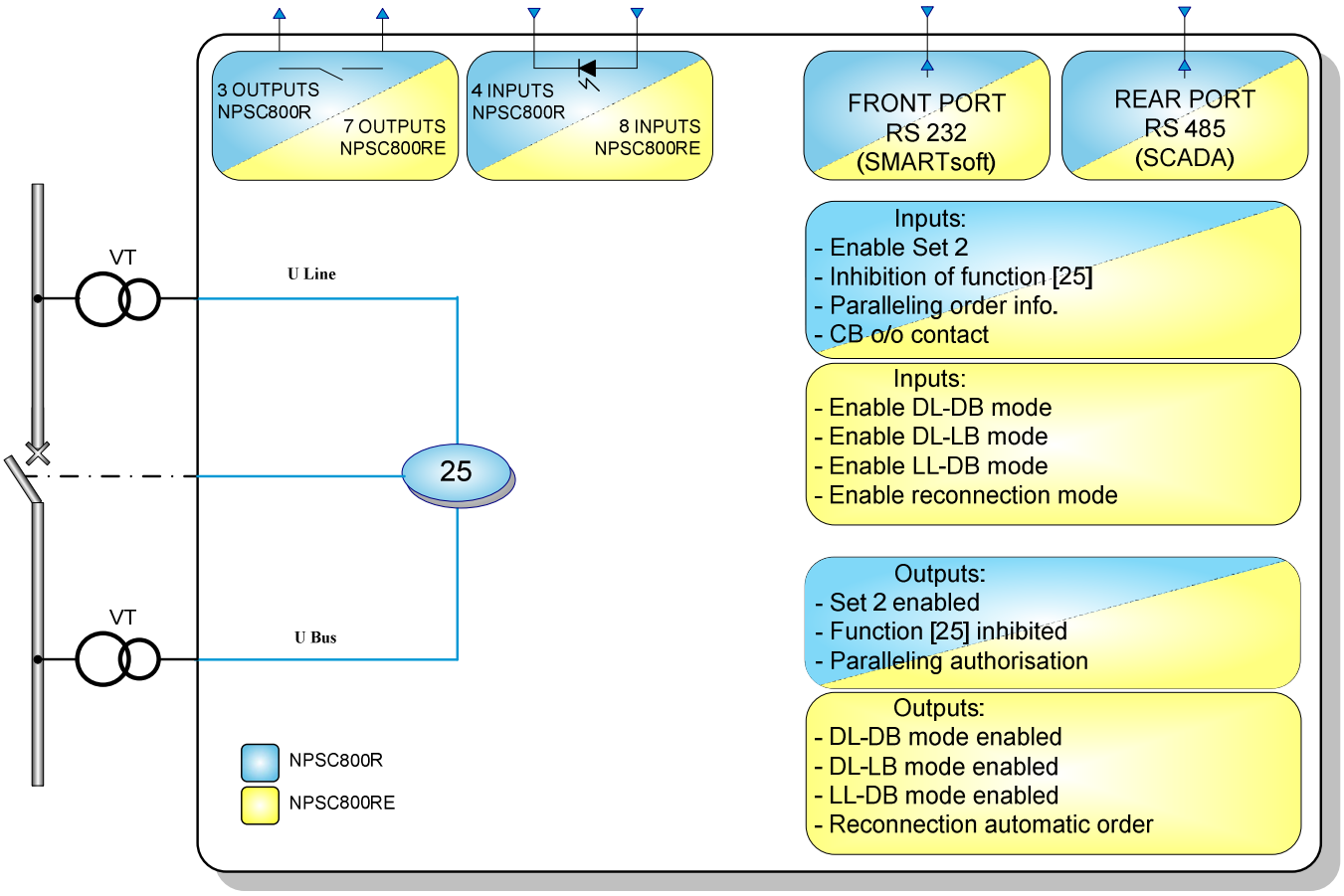
SMARTsoft

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 ΔU ($U_L - U_B$)
  - Angular difference $\Delta\phi$
  - Frequency difference ΔF ($F_L - F_B$)
  - 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 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 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

Functional diagram



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