



ICE
PROTECTIONS
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COMMANDE

FIRST HANDLING GUIDE

NUMERICAL CHECK SYNCHRONIZING RELAY

**NPSC 800
NPSC800R - NPSC800RE**

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FOREWORD

This aim of this handbook is to provide to the User useful information for the commissioning and the tests of NPSC 800, NP800R and NP800RE, check synchronizing relay.

We advise you to read it attentively, in order to take note of the available functionalities and to proceed to connection and power of the product in accordance with the provided recommendations.

Before any use, we recommend you to read the safety instructions of this guide.

These functions described in the following chapters are partially programmable locally or fully by the dedicated SMARTSoft setting software used on a computer.

- ◆ Check synchronizing relay “NPSC800-1” - “NPSC800R” - ANSI 25.
- ◆ Check synchronizing relay “NPSC800-2” - “NPSC800RE” - ANSI 25 and network management.

The operation functions of the Check synchronizing relay are configurable from the menu “**OPERATION**”, or from the sub-menu “Parameters” available with the setting software.

Locally, setting, commissioning and real time or event readings are accessible from keyboard located on the front plate and displayed on the display screen.

To be fully exploited, the available functions must be programmed and consulted with the setting software PC.

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1. Safety instructions

For your safety, we recommend you to read the following information carefully. They have the aim of specifying the precautions essential to the good installation and the correct operation of the relays.

1.1 Documentation

Following documentations are available for the products of the range NP800:

- ◆ Application guide of the NP800 and NP800R series
- ◆ User's Guide of SMARTSoft Setting Software
- ◆ User's Guide (for each kind of relay)
- ◆ First Handling Guide (for each kind of relay)
- ◆ Diagram of each relay.

We advise you to read them before any handling.

1.2 Connection of NP800, NP800R, NP800RE, relays

The terminal blocks of the relays are studied to ensure the safety of the people during the operation of the relays.

During installation, commissioning or maintenance, they can however present high voltages and possibly a thermal heating. Consequently, the following precautions must be respected:

- ◆ Connection of the terminal blocks at installation must be carried out after having ensured of the absence of any voltage
- ◆ Their access during operation must be carried out through adequate means ensuring as well electric as thermal insulation
- ◆ The connection of the earth at the back of the relays must imperatively be done with mean of a 2.5 mm² wire.

Before powering the relays, it will be necessary to check in particular:

- ◆ The value of the voltage rating of the auxiliary supply and its polarization
- ◆ The reliability of the connection to the earth.

1.3 On load withdrawal

It is formally misadvised to withdraw the connectors under voltage or on load.

1.4 Removal and destruction

The relays should in no case be opened by the User. During their removal, they must be completely isolated from any external polarity and condensers must be discharged by connecting their external terminals to the earth.

Destruction of the relays will have to be carried out in accordance with legislation in force, in particular in compliance with the environment and safety requirements.

2. Preliminary information

In the NP800 and NP800R, NP800RE range of relays, technology used is digital.

Due to their design, they comprise a significant number of self-controls, as well as under powering as under operation. Any material or software failure is automatically detected and announced by an alarm.

During the first use, it is thus not necessary to test all the functions. It is on the other hand recommended to look after and check the good wiring of the relay, and the specifications of this handbook have the aim of allowing a fast setting in order of the relay.

The User will be able then to define the setting values necessary to his installation, and to adjust the relay using the Setting software, common to the whole of the range. The saving of the configuration and its loading will be carried out with a laptop.

The functions of recording of events and disturbance recording, available through the setting software, will also largely contribute to the commissioning of the installation.

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3. Relay checking and commissioning

3.1 Recommendations

All the relays are delivered after a final inspection in factory.

It is important before any test to make sure that the relay did not suffer any mechanical damage.

3.2 Checking's prior to the commissioning

They are intended to check that the hardware did not suffer damage during its transport or its storage and constitute a proof of right operation at the set values.

These simple tests require minimum equipment, as indicated:

- ◆ Voltage generator with variable frequency, automatic injection cut-off system, timer and auxiliary supply.
- ◆ A second voltage generator able to provide a voltage equal to the rated value of the measurements inputs.

In order to be free from the interaction of the multiple functions of the Check synchronizing relay, the tests must be carried out by following the different chapters as below.

3.3 Connection diagrams

Connection diagrams for each version are available as follow:

Check synchronizing relay version	Drawing reference
NPSC800-1	S 38893
NPSC800-2	S 39609
NPSC800R	S 39967
NPSC800RE	S 39972

4. Phase angle initiation

The NPSC 800 Check synchronizing relay allows correction of the shifting of the line phase angle from the voltage measurements provided by the VT's.

This shifting is carried out by programming.

NB: For further information, please see NP800's application guide.

5. Voltage measurements calibration

The calibration of the voltage measurements is carried out directly by the configuration of "Analogue Voltage Inputs" parameters of the SMARTSoft setting software.

NB: For more explanations, refer to the user guide of the PC setting software of NP800 range.

6. Parameters

The settings parameters can only be changed by using the SMARTSoft setting software. The reading are available locally thanks to keypad / display.

7. Test of the check synchronizing function [25]

Before any test, please read paragraphs “Checking’s prior to the commissioning” and “Parameters”

Check that digital input n°2 “Inhibition of function [25]” is not activated.

Carried out the steps sequence as follows		Results after each step
Apply the auxiliary supply.		<p><u>Indication on the display:</u></p>
Connect the voltage generator to the terminals :		
<p>NPSC800-1,-2: (A-1 et A-2) (A-3 et A-4)</p>	<p>NPSC800R, RE: (T1-2 et T1-3) (T1-6 et T1-7)</p>	
Inject the voltage to the rated value (secondary V.T. side) with rated frequency.		<p><u>Indication on the display:</u></p> <p>Operation of the output unit C at the end of the Time delay of the paralleling authorization.</p>

Acknowledge the event by pressing key then use key.

8. Test of the inhibition of the function [25]

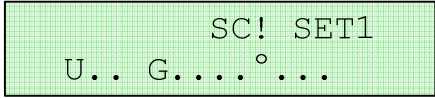

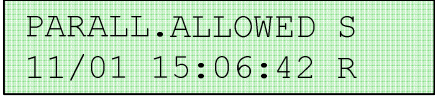
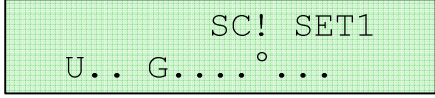
Energize the Digital Inputs n°2 “Inhibition of function [25]” and carried out the same test as above and check that the status of the output unit **C** doesn’t change when the paralleling conditions are sensed.



9. Dead Line / Dead Bus function – NPSC800-2 and NPSC800RE

Before any test, please read paragraphs “Checking’s prior to the commissioning” and “Parameters”

Enable the software inputs “DL-DB Function Enable” and “Inhibition of function [25]” with SMARTSoft setting software.

Energize Digital Inputs n°2 “Inhibition of function [25]” and n°5 “Enable mode DL-DB”.

Carried out the steps sequence as follows		Results after each step
Apply the auxiliary supply.		<p><u>Indication on the display:</u></p> 
Connect the voltage generator to the terminals :		
NPSC800-2: A-1 et A-2	NPSC800RE: T1-2 et T1-3	
Inject the voltage to the rated value (secondary V.T. side)		<p>Output unit C must not be activated.</p> <p><u>Indication on the display:</u></p> 
Stop the injection.		<p><u>Indication on the display:</u></p>  <p style="text-align: center;">CLEAR and ENTER</p>  <p>Operation of the output unit C at the end of the Time delay of the DL/DB authorization.</p>

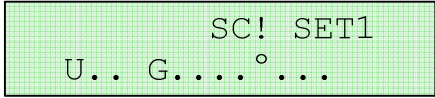


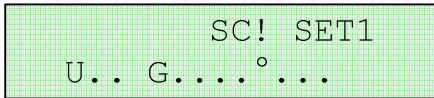
Acknowledge the event by pressing  key then use  key.



10. Dead Line / Live Bus function – NPSC800-2 and NPSC800RE

Before any test, please read paragraphs “Checking’s prior to the commissioning” and “Parameters”

Enable software inputs “DL-LB Function Enable” and “Inhibition of function [25]” with SMARTSoft setting software.

Energize Digital Inputs n°2 “Inhibition of function [25]” and n°6 “Enable mode DL-LB”.

Carried out the steps sequence as follows		Results after each step
Apply the auxiliary supply.		<p><u>Indication on the display:</u></p> 
Connect the voltage generator to the terminals :		
<p>NPSC800-2: (A-1 et A-2) (A-3 et A-4)</p>	<p>NPSC800 RE: (T1-2 et T1-3) (T1-6 et T1-7)</p>	
Inject both voltages (V_{line} & V_{bus}) to the rated value (secondary V.T. side).		<p>Output unit C must not be activated.</p> <p><u>Indication on the display:</u></p> 
Stop injection on A-1/A-2 or T1-2/T1-3 terminals.		<p><u>Indication on the display:</u></p>  <p>CLEAR and ENTER</p>  <p>Operation of the output unit C at the end of the Time delay of the DL/LB authorization.</p>

Acknowledge the event by pressing  key then use  key.

11. Live Line / Dead Bus function – NPSC800-2 and NPSC800RE

Before any test, please read paragraphs “Checking’s prior to the commissioning” and “Parameters”

Enable software inputs “LL-DB Function Enable” and “Inhibition of function [25]” with SMARTSoft setting software.

Energize Digital Inputs n°2 “Inhibition of function [25]” and n°7 “Enable mode LL-DB”.

Carried out the steps sequence as follows		Results after each step
Apply the auxiliary supply.		<p><u>Indication on the display:</u></p>
Connect the voltage generator to the terminals :		
<p>NPSC800-2: (A-1 et A-2) (A-3 et A-4)</p>	<p>NPSC800 RE: (T1-2 et T1-3) (T1-6 et T1-7)</p>	
Inject both voltages (V_{line} & V_{bus}) to the rated value (secondary V.T. side).		<p>Output unit C must not be activated.</p> <p><u>Indication on the display:</u></p>
Stop injection on A-3/A-4 or T1-6/T1-7 terminals.		<p><u>Indication on the display:</u></p> <p>CLEAR and ENTER</p> <p>Operation of the output unit C at the end of the Time delay of the LL/DB authorization.</p>

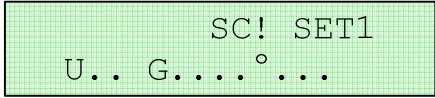
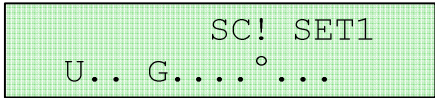
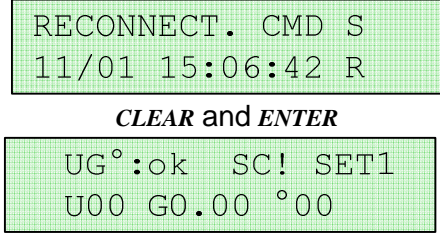
Acknowledge the event by pressing key then use key.



12. Reconnection mode – NPSC800-2 and NPSC800RE

Before any test, please read paragraphs “Checking’s prior to the commissioning” and “Parameters”

Enable software inputs “Reconnection Mode Enable” and “Inhibition of function [25]” with SMARTSoft setting software.

Energize Digital Inputs n°2 “Inhibition of function [25]” and n°8 “Enable Reconnection mode”.

Carried out the steps sequence as follows		Results after each step
Apply the auxiliary supply.		<p><u>Indication on the display:</u></p> 
Connect the voltage generator to the terminals :		
<p>NPSC800-2: (A-1 et A-2) (A-3 et A-4)</p>	<p>NPSC800 RE: (T1-2 et T1-3) (T1-6 et T1-7)</p>	<p>Output unit G must not be activated.</p> <p><u>Indication on the display:</u></p> 
Inject the voltage to the rated value (secondary V.T. side) with rated frequency.		<p><u>Indication on the display:</u></p>  <p>Output unit G operates after a time-delay “Delay of stability on reconnection condition” during a time-delay “Delay of holding relay for reconnection”.</p>

Acknowledge the event by pressing  key then use  key.

13. Commissioning

Before the commissioning of the relay, it is necessary to check that the:

- ◆ Secondary voltage of the VT's matches the rated value of the relay.
- ◆ Frequency of the relay label is the same as the frequency of the network
- ◆ Wiring is in conformity with the connection diagram
- ◆ Auxiliary supply match the auxiliary supply range of the relay label
- ◆ Tripping circuit is OK.

Warning for the phase sequence and the polarity of the VT's

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