INTIEL

THE ELECTRONICS ON YOUR SIDE

Controller for generator automatic start

User's Manual

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1. Application

The device is designed to provide an automatic start of diesel or gasoline electrical generators. In relation to a main presence or absence the consumers is switched to generator or main power supply.

2. Operation

2.1 Automatic control

This mode can be entered by means of the regime switcher in position automatic (Auto). The controller operation in this regime is the following:

- Cut off the main power supply:

In case of main or any of power supply phases cut off a command for switching off the main contactor is being sent, as the generator is being started. The first start impulse is being provided in 10 sec., and if there is no successful start, then two more attempts are being provided in intervals of 30 sec. The start procedure is being stopped in case of no start after the third attempt, as a fault message appears and it is to be waited for until the main power supply will be restored.

In case of successful generator start it is being checked out the generator power supply concerning the presence of the three phases and their sequence.

- Restoration of the main power supply:

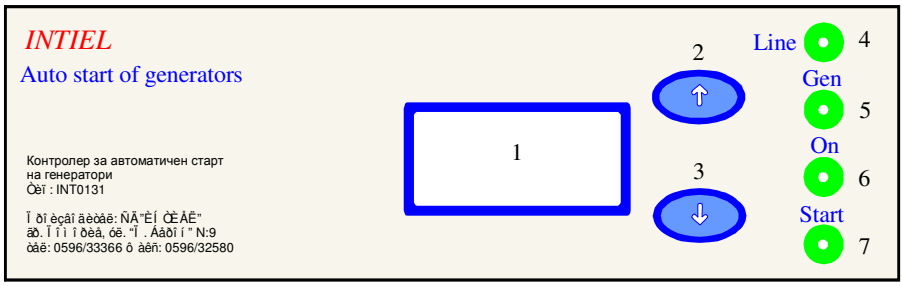
When the main power supply is being restored, then in 30 sec. a command for switching off the generator contactor is being sent. The main power supply is being checked out for presence of the three phases and their sequence "**RST**". In case the test is successful in 2 sec. the contactor for main power supply is being switched on. It is waited for more than 50 sec., as if during that time the main power supply is cut off, it switches off the contactor of the main power supply and in 2 sec. it switches on again the generator power supply contactor. If the main power supply is available in 50 sec. the generator is being switched off.

2.2 Manual control

This mode can be entered by means of the mode switch in "Manual" position. In this mode the generator is being switched on and it is allowed the action of the switches for manual control.

- generator start – it is fulfilled by means of "Start" button.
- switching on the contactors of the main and generator power supply – it can be fulfilled by means of the switch Line/Generator.
- generator stop – it is fulfilled by means of the switch for a mode choice in position Switched off (OFF)

3. Front panel



1 – digital display
2 – “forward” button for review and change
3 – “backward” button for review and change
4 – Indication about switched on state of relay “main power supply”
5 – Indication about switched on state of relay “generator power supply”
6 – Indication about switched on state of relay “switched on generator”
7 – Indication about switched on state of relay “generator starter”

Display indications:

Symbol	*Meaning*
LinE	Main power supply
GEn	Generator power supply
PHC	Phase control
EPHC	Enabled phase control
dPHC	Disabled phase control
rSt	Correct phase sequence
Str	wrong phases sequence
AUto	Automatic mode
HAnd	Manual mode
OFF	Switched off mode
FAiL	Failure generator mode
StoP	Activated emergency stop
nbAt	Normal battery voltage - above 12.4V
LbAt	Low battery voltage - under 11V

4. Programming

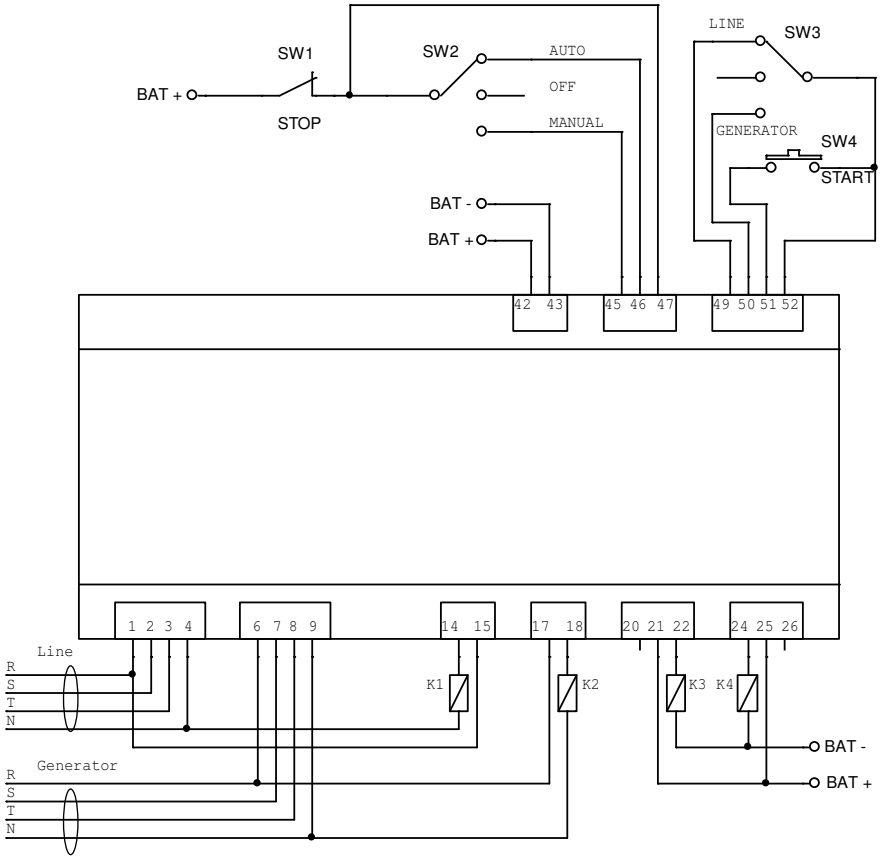
The only programming which is available concerns the function about the phase control. By means of „↑” and „↓”buttons it can be reviewed the indications on the display until one of the following messages appears: **PHC**”, „**rSt**” or „**Str**”. Afterwards both buttons are to be pressed at the same time, as the indication will start blinking, as again with „↑” and „↓”buttons can be selected among „**dPHC**” and „**EPHC**” – disable or enable phase control. After one of the previous functions is selected, the indication is to blink 10 times in order to save the changes. The default setting is “EPHC”, which means enabled phase control.

The phase control function is to be disabled with single phase generators.

5. Emergency announcements

symbol	meaning	corrections
Str	Wrong phase sequence	1. In relation of main or generator power supply presence replace two phases of the main or generator. 2. Disable the phase control (see point 4 Programming)
FAiL	1. Unsuccessful generator start. 2. Drop down phase or wrong phase sequence.	1. Go into manual mode and start the generator, as after that the automatic mode can be restored. (see point.2.2 Manual mode) 2. Refer to the previous situation "wrong phase sequence"
StoP	Activated emergency stop	Check out the reason and repair. Restore the normal state of the switch "emergency stop"
LbAt	Low battery voltage - bellow 11V	1. Charge the battery 2. Replace the battery

6. Electrical connections and technical data
6.1 Connection scheme of three phase generators



Line – inputs for observing the main power supply;

Generator – inputs for observing the generator power supply;

„BAT +" battery terminal plus(+);

„BAT –„ battery terminal minus (-);

SW1 – switch „Emergency stop";

SW2 – mode selection switch;

SW3 – switch for connection of the consumers to main or generator power supply in "manual mode";

SW4 – button for switching on the starter in "Manual mode";

К1 – Contactor coil for a connection of the consumers to a main power supply;

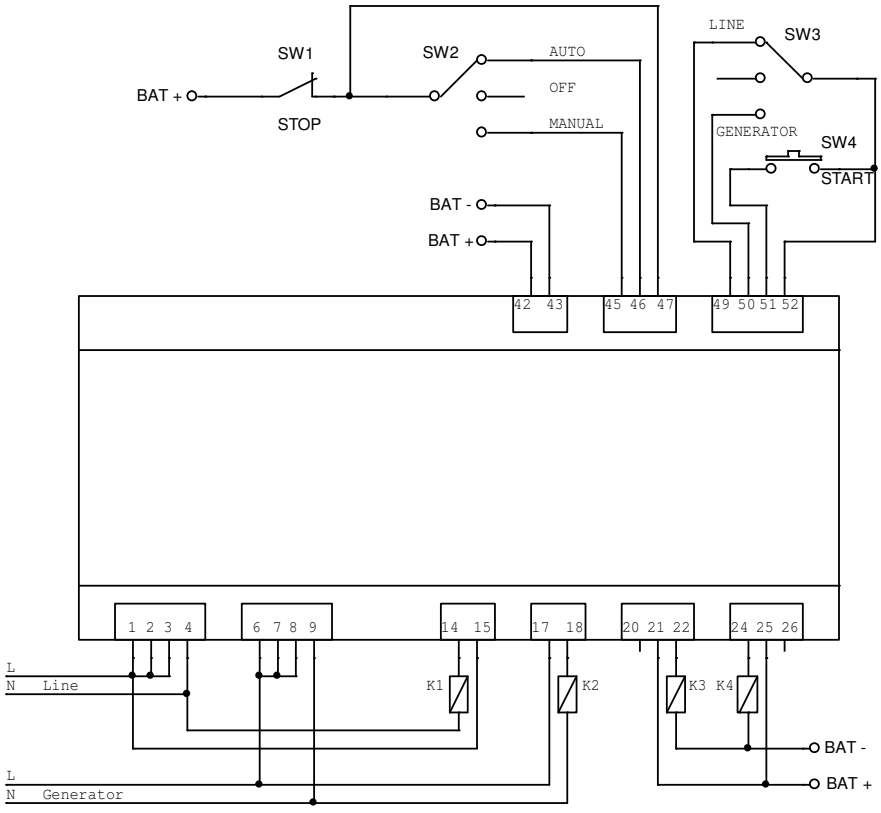
К2 – Contactor coil for a connection of the consumers to a generator power supply;

К3 – Relay coil for a generator switching;

К4 – Relay coil for the generator starter;

6.2 Connection scheme of single phase generators

The function about the phase control is to be disabled with single phase generators. (see point 4 Programming)



Technical data:

Power supply	12V DC
Input for observing of main power supply presence	three X ~220V/7mA
Input for generator observing	three X ~220V/7mA
Main power supply output	independent contact ~220V/3A
Generator power supply output	independent contact ~220V/3A
Output for generator start	independent contact =12V/16A
Output for generator starter	independent switching contact =12V/16A
Humidity	up to 80%
Protection	IP20

7. Warranty

The warranty period is 24 months following the purchase date of the unit or its installation by a qualified staff, but not exceeding 28 months after the production date. The warranty is extended to the malfunctions that occur during the warranty period and are result of the production reasons or defective used parts.

The warranty does not relate to malfunctions corresponding to not-qualified installation, activities directed to the product body interference, not regular storage or transport.

The repairs during the warranty period can be done after correct filling of the manufacturer warranty card

Warranty Card

Manufacturer: *INTIEL*	
Product type	
Production number	
Production date	
Dealer's confirmation	
Purchase date	
Invoice number	
Dealer's name, address and stamp	
Seller's name and signature	
Installation date	
Date	
Company (address, stamp)	
Installer's name and signature	