



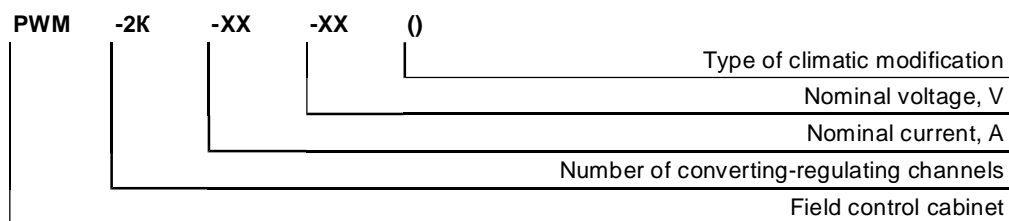
## **SUV-2K AUTOMATIC FIELD CONTROL FOR STANDBY DIESEL POWER STATIONS OF ATOMIC POWER STATIONS**

### **APPLICATION**

SUV-2K series automatic field control produced by CC "Energocomplekt" is designed for power supply by automatically adjustable current of field winding of electric machine and brushless exciters of diesel engines operating in standby diesel power stations (RDPS) of atomic power stations (APS) in all operational modes. The cabinet carries out all the functions of control, protection and signaling about the field system condition. SUV-2K cabinet includes two identical AVR series automatic field controls providing 100% "hot" standby for power part and control.

SUV automatic control has passed tests on the electrodynamic model of PC "NIPT" (St. Petersburg) and has an expert testimony of its applicability on generators of any capacity.

### **STRUCTURE OF SYMBOLS**



The control is produced in UHL climatic modification, accommodation category with the following influencing factors:

- ambient temperature from +1 up to +40 °C;
- height above sea level up to 1000 m;
- relative humidity not more than 80% at temperature +25 °C.

On operational conditions regarding mechanical factors, the control has mechanical performance class M39 in accordance with GOST 17516.1-90; thereby acceleration of the premise floor vibration can not be more than 2.5 m/sec<sup>2</sup> at frequencies in the range from 0.5 to 100 Hz, hardness class 8. Protection class of SUV cabinet is IP41 or 54 in accordance with GOST 14254-96. SUV cabinet has seismic stability up to 6 points on MSK-64 scale in accordance with GOST 17516.1-90.

SUV cabinet can be produced on request in other groups of climatic and mechanical modification.

### **THE CONTROL PROVIDES**



**Fig. 1.** Appearance of SUV-2K cabinet with 100% standby

## SUV-2K CABINET PROVIDES

- I generators operation in the modes:
  - initial field,
  - idling,
  - including in a network by methods of exact synchronization and self-synchronization,
  - work for the network or independent loading;
- I initial field of the generator to voltage not less than 95% of nominal value in time not more than 10 seconds, under the condition that to this moment the generator gathers a speed not less than 90%;
- I 100% "hot" standby for power part and control;
- I steady voltage maintenance on idling and under load in accordance with GOST 14965-80 and GOSTR 50783-95;
- I possibility of switching on for parallel operation with the network by exact synchronization method;
- I long-term parallel operation of generator with network;
- I generator operation in all operational modes within the nominal load limits and with permissible overloads in accordance with GOST 14965-80 and the generator loading diagram;
- I forcing field at voltage reduction on the generator clips by 5% and over in relation to the given static characteristic (static characteristic inclination 3.6%), and at short circuit in accordance with GOST 14965-80;
- I clearing the generator field by clearing the exciter field at normal and emergency stop (under the action of field system protection and on ACS signal);
- I remote control of the generator voltage;
- I fault protection in the field system;
- I blocking part of the protection systems on the signal "Regular start-up";
- I independence of voltage on the generator outputs in the idling mode by frequency change from 47 to 52 Hz;
- I automatic limiting of field current on the double value of the generator rotor current;
- I limiting field current of the excitant on time-dependent characteristic according to the data on the generator overload;
- I limiting the minimal field current to the value not allowing the generator switch to the mode of reactive capacity deep consumption;
- I steady distribution of reactive capacity without use of group regulation or cross leveling connections between several uniform generators of comparable capacity, switched on in parallel on the generating voltage level;
- I unloading the generator on its reactive capacity and its switching off the network.

## STRUCTURE

SUV-2K cabinet is a structurally complete block including two circuit-wise and structurally identical microprocessor automatic field controls of AVR series, and the necessary switching, protective, control and measuring equipment. The cabinet appearance is shown in Fig. 1.

## BASIC SPECIFICATIONS

Name of the parameter	Value
Nominal rectified current, A	4 - 100
Nominal rectified voltage, V	36 - 250
Forcing ratio on field current and voltage, r.u., not less than	3
Overload duration by two-times current, sec	60
Nominal power supply voltage of the power module, not more than, V	440
Power supply voltage frequency of the power module, Hz	25 - 100
Power supply voltage of the control equipment, V	120 - 375
Power consumption by the control equipment on power supply, W, not more than	400
Nominal voltage on circuits of the stator voltage measurement, V	105
Power consumption from current and voltage measuring transformers, per phase, VA, not more than	2

The company carries out installation supervision, adjustment and testing of field systems, warranty and post-warranty service, modernization and repair of engine field systems in operation, maintenance personnel training and technical advisory services on the equipment selection. Field systems equipment is delivered within 3 months from the date of contract execution and prepayment.

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