

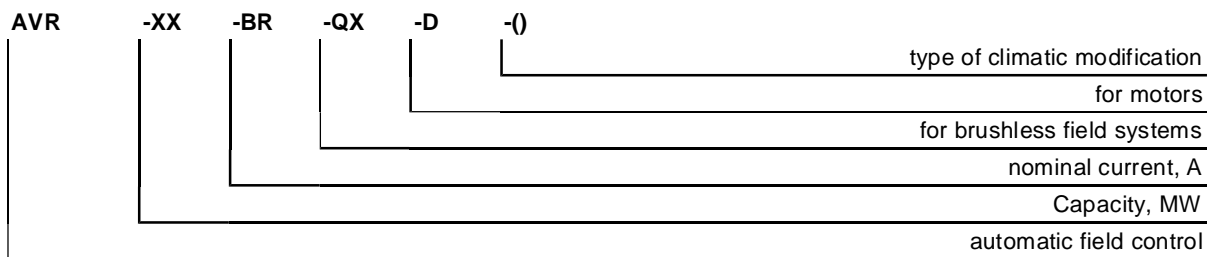


AVR AUTOMATIC FIELD CONTROL FOR CAGE SYNCHRONOUS BRUSHLESS MOTORS

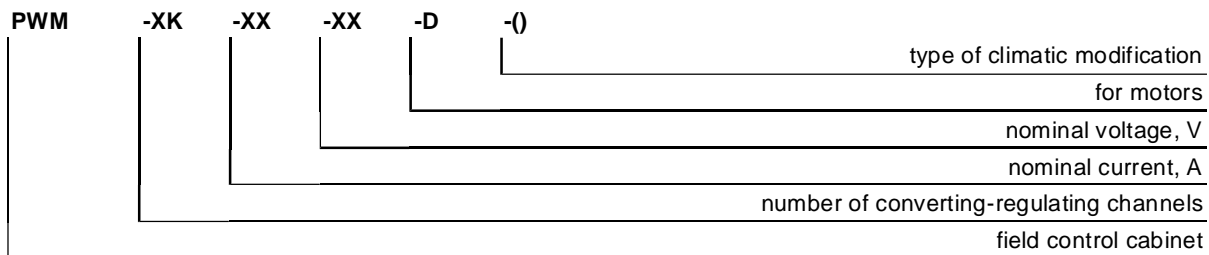
APPLICATION

AVR-XX-BR-QXD microprocessor automatic field control, produced by CC "Energocomplekt", is designed for power supply by automatically adjustable current of field windings of a cage synchronous motor brushless exciter in all its operational modes. The control also carries out functions of control, protection and signaling about the field system condition.

STRUCTURE OF SYMBOLS



AVR controls of a cabinet design, the notation for field control cabinet ("ECC cabinet") is used.



The control is produced in UHL climatic modification, accommodation category 4 in accordance with GOST 15150 and GOST 15543 with the following influencing factors:

- ambient temperature from +1 up to +40 °C;
- height above sea level up to 3000 m;
- relative humidity not more than 80% at temperature +25 °C.
- environment: non-explosive, not containing current-conducting dust in concentration reducing insulation level to impermissible limits.



Fig. 1. AVR-8-BR-Q1D automatic field control for cage synchronous motors.

OPERATING MODES

Field automatic control provides:

- I field automatic supply in sliding function at the cage synchronous motor start-up;
- I local or remote change of voltage setting with the speed of 0.5 % per second in the range from 80 up to 110% with relation to nominal voltage or reactive capacity;
- I maintenance of voltage set by the device on the stator outputs with accuracy not worse than 1% (with relation to the established static characteristic) or reactive capacity with accuracy not worse than 5%;
- I forcing field current up to the preset values on the frequency rate at reduction of voltage on the stator outputs by 10-20% and more;
- I limiting field current on the double value of the rotor current;
- I limiting the duration of field forcing depending on its frequency rate;
- I clearing (unexciting) the motor field by clearing the brushless exciter field;
- I limiting the minimal field current to the value not allowing the motor switch to the mode of reactive capacity deep consumption and falling out of synchronization;

There is also a possibility of outputting through dry isolated contacts the following signals about the condition of the control and the activator:

- I automatic mode of the control operation;
- I manual mode of the control operation;
- I field system failure (breakdown of the rotating rectifier diode, breakdown of the control power transistor, field loss, increased voltage on the stator outputs).

Note: Permissible current through the relay contacts is 0.7 A at the direct current voltage 250 V.

BASIC SPECIFICATIONS

Name of the parameter	Value
Nominal rectified current, A	8
Nominal rectified voltage, V	75
Maximum rectified voltage, V	180
Overload duration by two-times current, sec	60
Nominal voltage of alternating current circuits (from additional winding), V	110...230
Nominal voltage of alternating current circuits, V	220
Power consumption on alternating current circuits, W, not more than, in nominal mode in forcing mode	450 3000
Nominal voltage on circuits of the stator voltage measurement, V	100
Nominal current on circuits of the stator current measurement, A	5
Power consumption from current and voltage measuring transformers, per phase, VA, not more than	1

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