

Dutchi Motors®



ENERGY SAVING TECHNOLOGIES

*Energy-efficient control
systems for high-voltage
electric motors*

www.dutchi.com

Power is our commodity,
the world is our market!

EK-AV6D

ENERGY SAVING TECHNOLOGIES

Frequency converter for high voltage asynchronous and synchronous electric motors

APPLICATION

EK-AV6D-XX-XF-IX frequency converter (FC) is designed for providing effective speed control of high voltage alternating current motors with stator voltage 3; 3,3; 6; 6,6; 10 and 11 kV and power range 160-12500 kW. The FC is based on power IGBT transistors with multilevel PWM. The EK-AV6D-XX-XF-IX does not require installation of auxiliary equipment for reducing the negative consequences of energy transduction.

SYMBOLIC NOTATION STRUCTURE

EK-
AV6D

-XX

-X

-F

-I

-X

Output voltage, kV

Power element on IGBT

Frequency drive

"A" for asynchronous motor, "S" for cage synchronous motor

Power, MW

Nature of product

EK-AV6D-XX-XF-IX is produced with all-digital control, can be applied in computer-aided manufacturing, operated and controlled with a top-level control system



EK-AV6D

ENERGY SAVING TECHNOLOGIES

Frequency converter for high voltage asynchronous and synchronous electric motors

IF of the EK-AV6D-XX-XF-IX has a powerful microprocessor-based control system, combined with quick-operating power modules, and thereby demonstrates the following advantages:

soft speed control in a broad range;

soft start and soft stop of the motor;

high accuracy of keeping up the process variable;

easy readjustment of the parameters for specific operational conditions;

significant reduce of the motor noise and vibration;

possibility of operation under top-level ACS control when using ModBus RTU, Profibus DP protocols.

When using EK-AV6D-XX-XF-IX frequency drives:

there is no significant harmonic interference in supply mains;

power filters in IF chain are not needed;

cage induction motor;

length of cables from the IF to the motor can amount to 2 km;

coefficient of efficiency is not less than 0.97 by a frequency close to nominal;

dynamic braking of the motor (direct current supply to the stator) and running-out are possible;

selecting special motors with increased insulation class is not needed, the motor heating stays within normal limits;

it is possible to recover the IF operability in a short time without special instruments (a cell can be replaced in less than 30 minutes).

OPERATING PRINCIPLE

For improving the quality of IF output voltage, the EK-AV6D contains a number of low-yield power width converters (cells). Each power cell has its own three-phase rectifier, connected to the input transformer secondary coil at the voltage 690 V. In the 6 kV IF, there are 15 cells of 690 V, connected in phase in series of 5, the phases are connected in a star. Each cell is designed for full output current, but operates for just 1/5 of the output voltage. Frequency drives for 3 and 10 kV contain respectively 3 and 8 cells in each phase.

STRUCTURE

Structurally the EK-AV6D-XX-XF-IX consists of separate cabinets, each containing five power cells with forced air or water cooling. IF control system is installed in a separate control cabinet and is connected to the cells by a fiber-optic channel.

The EK-AV6D-XX-XF-IX has fully modular structure. A defective module can be easily and quickly replaced. A broken-down cell is automatically switched off without the operator interference, thereby the output power of the transmission falls by 10% (for IF, by 6 kV).

EK-AV6D

ENERGY SAVING TECHNOLOGIES

Soft starter for high voltage asynchronous and synchronous electric motors

APPLICATION

EK-AV6D-XX-AS-VX high voltage soft starter (SS) is designed for smooth stepless acceleration and braking of high voltage (3; 3,3; 6; 6,6; 10 and 11 kV) cage synchronous and cage induction drives of various mechanisms with power range 160-12500 kW. The power part of SS is performed using thyristors, the control system is completely digital and microprocessor-based, due to which the device can be applied in the automated manufacture, be controlled and supervised by a top level control system.

STRUCTURE OF SYMBOLS

EK-AV6D	-XX	-A	-S	-V	-X	
						Output voltage, kV
						Power part on thyristors
						Smooth start-up
						For cage induction motor with square-cage rotor
						Capacity, MW
						Type of product

ADVANTAGES

The power part of EK-AV6D-XX-AS-VX is based on antiparallel switched-on thyristors. The thyristors are controlled through optical fiber channels, is consequence of which there is no electric connection between the control section and the high voltage power part. Also with the use of optical fiber, synchronization of impulse delivery to thyristors is realized. Use of this technology allows obtaining a compact complete solution with high level of the control part interference resistance. EK-AV6D SS allows achieving the following advantages:

- providing stepless start-up and smooth acceleration with a preset restriction of starting current;
- reducing impact moments by the motor start-up;
- realizing several start-ups on end;
- switching the started-up motor to network;
- possibility to start-up an unlimited number of motors from one device;
- capacity of the started-up motor from one SS can be different, the device parameters can be changed for a specific started-up motor;
- realizing the started-up motor protection;
- possibility of equipment testing from low voltage with the use of low-voltage motor;
- easiness of parameters adjustment by means of a control panel with LCD;
- realizing connection with process control system on ModBus RTU (Profibus DP) protocol.



FIELD SYSTEMS

ENERGY SAVING TECHNOLOGIES



SUVD series automatic excitation regulator for brushless turbo- and hydrogenerators



SVBGD series brushless field systems for hydrogenerators



EX-SRD static exciter for synchronous engines



STSD static thyristor excitation systems for turbo- and hydrogenerators

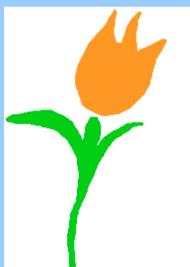


AVRD automatic excitation regulator for synchronous brushless diesel-generators and engines

SUDGD diesel-generator control system

Dutchi Motors[®]

ENERGY SAVING TECHNOLOGIES



Dutchi Motors BV
Van Oldenbarneveldstraat 85
NL-6828 ZN Arnhem

SALES AND SERVICE

Tel. : +31-(0)26-3541 600
Fax : +31-(0)26-3541 650
E-mail : dutchi.motors@dutchi.nl

Chamber of Commerce at Arnhem the Netherlands, no. 09.02.37.67, VAT no. NL001822238B01

www.dutchi.com

**Power is our commodity,
the world is our market!**