

UNIFREM 690

from 315 to 1400 kW



UNIFREM 690 is the last generation of frequency converters family. These converters are designed for motors rated from 315 kW to 1400 kW and supply voltage of 690 V. All UNIFREM converters allow vector control - speed or torque and high performance scalar (V/f) control with slip compensation and many other features. They are designed to solve any drive problem in the most cutting-edge applications. The family is specific by its user-friendly settings and control, users are guided by the graphic control panel (UNIPANEL). The last generation of power electronics (SEMIKRON SkiiP®) has been used for minimization of losses and the disturbance to the grid voltage. All converters are special products made according to customer's requirements and are mounted in the enclosure.



Features and advantages of UNIFREM 400

High resistance against failures

UNIFREM standardly includes protection against overvoltage, undervoltage, current overloading of converter, short circuit between input phases and overheating. Input and output phase loss is detected as well. Overheating of motor is suppressed by calculating the heat integral of the motor. Dimensioning of power electronics is made with respect to long durability of the device.

Minimal disturbance to the supply power grid

Built-in three phase input commutation chokes are lowering the harmonic distortion (EN 61800-3). Standard using of noise suppressing filters ensures minimal disturbance to the power grid (EN 61000-6-4).

Minimal losses

Using of 3rd generation of SEMIKRON SkiiP® power electronics has lowered and minimized converter losses and power grid disturbance.

Smaller dimensions

By using power optimized heat sink together with improved heat-transfer-targeted placement of power components smaller dimensions have been achieved.

High reliability

Besides the newest power electronics components, last generation power capacitors with extended operating temperature and lifetime by 20% have been used. The cooling fans with high-quality bearings ensure longer lifetime and lower noise level.

Software

- Vector control - using mechanical sensor or sensorless - torque, speed, position control
- Offline and online motor parameter identification
- Intelligent scalar V/f control (automatic V/f curve, slip compensation, resonance damping...)
- Extended system of position sensor feedback for improved speed and position control
- V/f control current limiting (motoring, regenerative)
- Kinetic backup of short supply power failures
- Flying start
- 3 brake modes (brake module, flux braking, dynamic stop)
- Programmable universal optimization (for example: minimization of power, maximization of torque...)
- Process PID controller (various action variables ...)
- Universal and fully configurable system of inputs and outputs
- User macros
- Communication protocols: CANopen, MODBUS, PROFIBUS
- 16 logic customizable blocks, (AND, OR, NAND, NOR, XOR, RS flip-flop)
- 16 numeric customizable blocks (addition, subtraction, multiplication, division ...)
- 4 multifunctional proximity switches (track, direction, ...)
- Relay with adjustable on and off delay time
- Crane functions
- Parameter management, 4 sets of parameters, independent, switchable on the fly
- Events and faults history - Configurable history of faults, warnings and other events. Stores up to 1000 items (black box)

Control

- Interactive communication with converter using UNIPANEL
- Hierarchical structure of parameters allows easier configuration and watching mutual dependencies among different parameters
- Access to the parameters, configuration and control is possible in several different independent ways (UNIPANEL, MODBUS RTU, PROFIBUS DP...)

Communication with the operator

Intelligent user interface designed for easy configuration and reliable diagnostic using Unipanel.

User macros - preset configurations:

- for catalogue types of motors
- for standard schemas of control (manual control, PID, ...)
- for basic kinds of load (crane - lifting, pump, fan, conveyor...)

VONSCH Drive Studio

Application for configuration, diagnostics and archivation of settings to PC. It allows: firmware upgrading, process diagnostic "black box" data. Diagnostics of faults, events, providing help to the operator to solve the problems and avoid the next ones.

Built-in features:

Three phase commutation choke

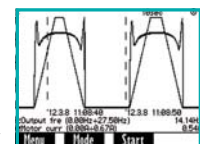
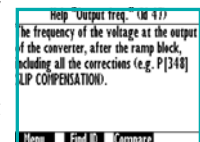
Minimization of high harmonic currents from the power grid. (EN 61800-3)

Noise suppressing filter

Eliminates disturbances to the power grid. (EN 61000-6-4)

Brake module

Electronics for brake resistor control used in regenerative mode of operation.



Options

Motor (output) choke MT1

Required for long distances between the converter and the motor. The effect of cable capacity is eliminated by installation of motor choke or sine filter.



Passive Trap filter TF1

Trap filter ensures cancellation of specific frequencies to lower the total harmonic distortion.

PROFIBUS DP extension module

Connection to Profibus DP network, allowing maximum speed of 12 Mbit/s.

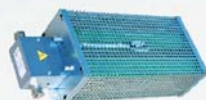
Encoder extension module

Designed for connecting the 24 V push-pull incremental encoder to frequency converter allowing high-performance control.

Sine filter SF1

Brake resistor BO1

Ensures dissipation of kinetic energy in the regenerative mode of motor operation.



Manual control panel – UNIPANEL

UNIPANEL is universal handheld control device for all last generation products made by VONSCH.



Technical data

Type of the converter	Motor rating P_{nom} [kW]	Nominal output current I_N [A]
UNIFREM 690 315	315	350
UNIFREM 690 400	400	440
UNIFREM 690 500	500	550
UNIFREM 690 630	630	660
UNIFREM 690 710	710	750
UNIFREM 690 800	800	860
UNIFREM 690 900	900	980
UNIFREM 690 1000	1000	1080
UNIFREM 690 1200	1200	1230
UNIFREM 690 1400	1400	1470

Dimensions

Type of the converter	height [mm]	width [mm]	depth [mm]
UNIFREM 690 315 ÷ 400	2000	800	600
UNIFREM 690 500 ÷ 630	2000	1000	600
UNIFREM 690 710 ÷ 800	2000	1200	600
UNIFREM 400 900 ÷ 1400	2000	2000	800

General technical data

Input voltage range:	3 x 380 - 415 V \pm 10%
Input frequency:	47 to 63 Hz
Output voltage range:	3 x 0 to 100% of input voltage
Efficiency of the converter:	more than 98,5 %
Analog inputs:	4 programmable analog inputs (Options: 0 ÷ 20 mA, 4 ÷ 20 mA, 0 ÷ 10 V, 2 ÷ 10 V)
Digital inputs:	6 digital programmable inputs 1 digital safety input EN 13849-1 class 3 software adjusted control voltage (+24 V or 0V)
Digital outputs:	3 programmable relay outputs
Analog outputs:	3 analog programmable outputs 0 ÷ 20 mA or 4 ÷ 20 mA
Starting motor torque:	up to 200 % of rated torque (depends on the type of the motor)
Electronic protection against:	overcurrent, overvoltage, undervoltage, short circuit protection, ground fault protection, converter overtemperature, motor overtemperature
Cooling:	forced air cooling by built-in fan
Electromagnetic compatibility (EMC):	built-in RFI filter of category B according to EN 61000-6-4
Elimination of higher harmonic components of voltages and currents	built-in three phase choke lowers harmonic currents, extends lifetime of power capacitors, protects converter against voltage peaks EN 61800-3
Permissible ambient temperature during operation:	+1 °C to +40 °C (EN 50178)
Degree of protection:	IP 20 or up to IP55 (option)