



Frequency Converter FC71 and FC72

SIEB & MEYER





Top Technology made in Germany

SIEB & MEYER was founded in 1962 and has been an internationally successful company in the field of industrial electronics since then. With 300 employees we develop and manufacture control and drive technology. Our product range includes controllers for the machine construction and automation technology, servo amplifiers for various drives, frequency converters for high-speed applications and feed-in technology for renewable energy. Concentration on our core competence results in a worldwide leading position for controllers in the field of PCB tooling and routing machines. Close cooperation with our customers from the development up to the troublefree operation of our products is the basis of our quality philosophy. Highly qualified engineering teams and a modern manufacturing process lead to a maximum amount of innovations and flexibility in serving our customers. Worldwide service and customer-oriented training are guaranteed with our headquarters in Lueneburg and our subsidiaries.



Frequency Converter FC71 and FC72 – The Main Spindle Drive for Machine Tools

The SIEB & MEYER frequency converters FC71 and FC72 are used for the vector-controlled drive of asynchronous and synchronous motors. Speeds up to 150,000 rpm are reached. The vector control provides full torque at low speeds and allows back-magnetization of synchronous motors. Thus, also field-weakened motors can be accelerated up to their maximum speed.

In the machine tool the frequency converters reach positioning accuracies of 0.007°. Beside precise orientation during tool change this also allows interpolated working with feed axes, for example in threading applications.



* FC72C with 13 kVA (left) and FC71 with 40 kVA (right)

** Power Supply PS10 for supply of the frequency converters from 30 kVA

Frequency Converter FC72 – The Vector-Controlled Drive for High Demands

FC72 with the performance ranges from 8 to 20 kVA is available as a compact device with integrated power supply. Frequency converters with power ranges of 30 kVA and higher are supplied by the separate power supply PS10. Alternatively, the devices with power ranges from 30 kVA and higher can be supplied by the intermediate circuit of an existing voltage supply. The FC72 devices are available up

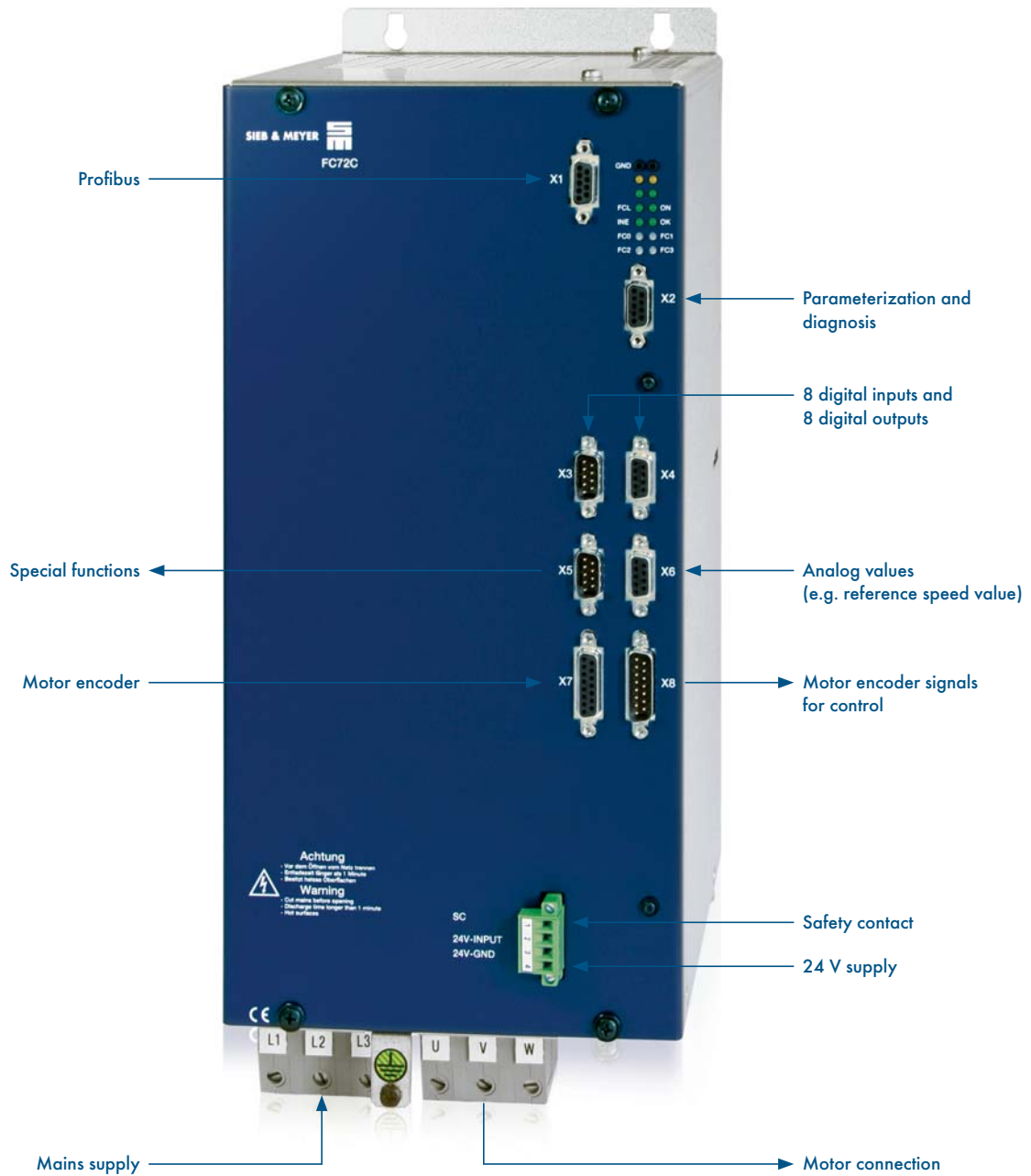
to performance ranges of 173 kVA, whereas water cooling is applied for devices with performance ranges of 100 kVA and higher. The frequency converter is connected to the machine controller via Profibus or analog and digital control signals. FC72 allows a definition of up to 4 motor data sets. This way, different spindles can be operated in one machine or a star-wye switch-over can be realized.

Frequency Converter FC71 – The High-End Drive for Maximum Machine Performances

In FC71 the function of FC72 is expanded by an **active filter module** at the motor output. This produces a sinusoidal output current as well as a sinusoidal output voltage, allowing reduction of the losses caused by the converter to zero and thus an important increase of the active power at the shaft. Another function of the active filter is the excessive output

voltage increase, which is reached via switched capacities. The combination of these two features results in an increase of the machine performance during high-speed cutting (HSC) by up to 100% – an effect which could be proven repeatedly in real applications using competing products.

The Interfaces of FC72



Technical Specifications of FC71

With air cooling

Supply via external Power Supply PS10			
20 kVA	I_r : 29 A	I_p : 50 A	480 x 300 x 260 mm
30 kVA	I_r : 44 A	I_p : 70 A	480 x 300 x 260 mm
40 kVA	I_r : 58 A	I_p : 100 A	480 x 350 x 260 mm
55 kVA	I_r : 80 A	I_p : 120 A	480 x 450 x 260 mm

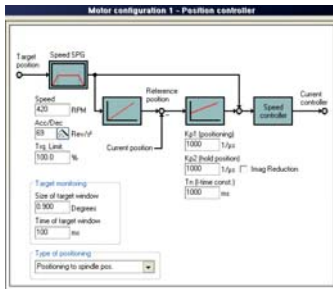
With water cooling

Supply via external Power Supply PS10			
80 kVA	I_r : 116 A	I_p : 145 A	480 x 500 x 260 mm
100 kVA	I_r : 145 A	I_p : 181 A	480 x 550 x 260 mm
125 kVA	I_r : 181 A	I_p : 217 A	480 x 650 x 260 mm
150 kVA	I_r : 217 A	I_p : 217 A	480 x 650 x 260 mm

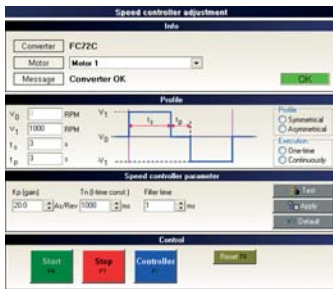
I_r = rated current, I_p = peak current. Stated currents are rms values. The device dimensions are defined as height x width x depth, related to the mounting dimensions.

Software for Initial Operation and Parameterization: vector7x

The software vector7x is used for parameterizing the frequency converters and for optimizing the application. Various tools allow easy optimization of the controller.



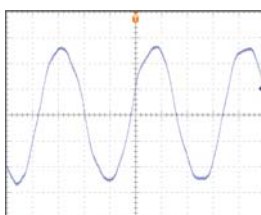
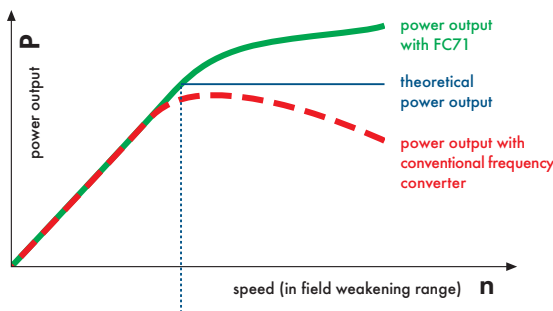
The graph-supported parameterization of the position controller allows optimizing the tool change or the behavior in threading operations.



The parameterization of the speed controller can be optimized while the motor is running.

The active filter of FC71...

... allows an increase of the output voltage in order to reach the maximum performance at the shaft.



The filter produces a sinusoidal voltage at the output allowing reduction of losses and unnecessary heating of the spindle to a large extent.

Technical Specifications of FC72

Compact devices with integrated power supply & air cooling

3 x 480 V mains supply (AC)			
8 kVA	I_r : 12 A	I_p : 18 A	390 x 170 x 235 mm
13 kVA	I_r : 19 A	I_p : 29 A	390 x 170 x 235 mm
20 kVA	I_r : 29 A	I_p : 50 A	460 x 220 x 235 mm
30 kVA	I_r : 44 A	I_p : 60 A	460 x 220 x 235 mm

With air cooling

Supply via external Power Supply PS10			
40 kVA	I_r : 58 A	I_p : 100 A	480 x 350 x 260 mm
55 kVA	I_r : 80 A	I_p : 120 A	480 x 350 x 260 mm
70 kVA	I_r : 101 A	I_p : 140 A	480 x 350 x 260 mm

With water cooling

Supply via external Power Supply PS10			
100 kVA	I_r : 145 A	I_p : 200 A	480 x 350 x 260 mm
125 kVA	I_r : 181 A	I_p : 230 A	480 x 350 x 260 mm
150 kVA	I_r : 217 A	I_p : 245 A	480 x 350 x 260 mm
170 kVA	I_r : 250 A	I_p : 250 A	480 x 350 x 260 mm

I_r = rated current, I_p = peak current. Stated currents are rms values. The device dimensions are defined as height x width x depth, related to the mounting dimensions.

FC71 and FC72 for 200 V supply voltage: For applications with 200 V mains supply devices with equivalent output currents are provided on request. The low voltage of 200 V results in a reduction of the output power.

Technical Specifications of PS10

The Power Supply PS10 with air cooling supplies FC71 and FC72 with energy. Alternatively, an existing power supply in the machine can be used for supplying the frequency converters.

3 x 480 V mains supply (AC)		
26 kW	30 kVA	480 x 150 x 260 mm
48 kW	55 kVA	480 x 150 x 260 mm
86 kW	100 kVA	480 x 300 x 260 mm
120 kW	150 kVA	480 x 300 x 260 mm

Voltage limits at 480 V: 400 V -10% up to 480 V +10%
The device dimensions are defined as height x width x depth, related to the mounting dimensions.

Subject to changes and errors.



- **CNC Controllers**
- **Drive Electronics**
- **Feed-in Technology**

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