

SAFETY FC CONTROL

Performance Level e certified control with frequency converter



for power electronics, MSR technology

Project requirements

The **aim of the project** was to develop and manufacture a frequency converter-based machine controller. In order to enable its use in machines that pose a danger to people, the core requirement was to achieve safety level PL e. As soon as a hazardous area protection, such as a light barrier, is interrupted, the motor control must be stopped. In this case, the objective was for the motor to rotate in the opposite direction in order to be able to free a trapped person, for example. Two CPU's and a special algorithm, combined with monitoring methods, fulfill these requirements and make it possible to reach the highest safety level! For a worldwide use there are assembly variants for the 230V or 110V voltage network. Tolerances also cover the use in other networks, such as Japan (100V). Pushbuttons, light barriers, temperature sensors can be connected and evaluated directly on the board. For extended operation, the machine control communicates with an external HMI. The connection option to an edge controller and the Knestel cloud platform is future-oriented.

Facts & Highlights

- Safety level PL e certified
- Input voltage: variable, depending on the configuration 1~ AC 230V or 110V
- Maximum power consumption from the 1~ AC mains supply
- Output power 2 kW for 3~ AC motor
- Rotational direction monitoring of the motor
- Integrated evaluation & control of analog and digital inputs and outputs
- Safety algorithm in two CPUs, special procedure in case of error
- Algorithmics for operation and service
- Interface for HMI (Human-Machine-Interface)
- Isolated network area
- Connectivity to Knestel Edge Controller and Knestel Cloud Platform

Services by KNESTEL

Potential analysis, target price estimation, project management, functional specification, project planning, development software & hardware, electrical and mechanical design, EMC test, prototyping, series production

Possible Applications

- Power electronics
- MSR Technology
- Mechanical engineering

About **KNESTEL**: For 40 years we have been developing and producing customized electronic and mechatronic special solutions in the fields of motor and machine control, frequency converters, image processing, MSR technology, software development, radio, bus systems and trace gas analysis.

We support our customers from the idea to the finished implementation. Individual solutions and concepts

- technically up to date. Our production - electronics production, device and switch cabinet construction, Production of subassemblies, assembly and mechanical processing - is equipped with the latest technology.