

PRECISION ANALOG MEASURING MODULE



für power electronics & MCR-Technology

Technology field

Power electronics, MCR-Technology

Project requirements

The **aim of the project** was to develop and manufacture a precision measurement module that enables the simultaneous measurement of power, voltage and temperature with a connection to EtherCat and/or CAN-BUS. When using bidirectional intelligent resonance converters in combination with a buck converter bridge that acts as a boost converter in bidirectional direction, it is necessary to determine values for voltage, current and temperature very precisely, quickly and independent of temperature.

These analogue values must then be converted precisely and quickly into digital values and passed on with low latency times. In addition, an important requirement was that the measured values are stable to temperature changes. The development is intended to replace individual measuring modules with a cost-effective combined instrument that measures power and voltages. Further modules, such as for temperature measurement (PT100/PT1000) and a module for EtherCAT communication, are optionally available. Depending on the requirements, the measuring device can be configured flexibly. Communication to the control software is via CAN bus as standard or via EtherCAT for particularly low latency times.

Facts/Highlights

- High measuring accuracy: 32-bit AD converter, integrated PGA input stage, sampling rate up to 20 kHz
- Latency time < 100 µs via EtherCat
- Extremely low drift with temperature changes < 8 ppm/K
- Suitable for use in the high-voltage range according to DIN EN 61010-1
- Loss-free current measurement via resonance sensor

Services by KNESTEL

Analysis of potential, target price estimation, project management, specifications, project planning, development of software and hardware, electrical and mechanical design, EMC test, prototyping, series production

Mögliche Applikationen

- MCR
- Mechanical engineering
- Drive Technology
- Electro mobility & battery management
- Intelligent converters / inverters

About KNESTEL: Knestel has been developing and producing customized electronic and mechatronic special solutions in the fields of motor and machine control, frequency converters, image processing, MCR technology, software development, radio, bus systems and gas analysis for 40 years.

We support our customers from the idea to the finished implementation. Individual solutions and concepts - technically up to date. Our production - electronics manufacturing, device and switch cabinet construction, Production of subassemblies, assembly and mechanical processing - is equipped with the latest technology.