HEITEC
engineering solutions

System solution for spectrophotometer

HEITEC has applied its extensive expertise to a leading specialist supplier of spectrophotometers and has taken over the design and manufacturing of the electronics for a laboratory device. The customer manufactures spectrophotometric instruments for the analysis of samples in very small volumes, which are particularly used in biological, chemical and pharmaceutical laboratories.

For the spectrophotometer, HEITEC designed the electronic hardware on the basis of the defined system requirements and selected all the electronics. While the previous version was already developed by HEITEC on the basis of a Qseven plug-in module, the latest device meets the need for more powerful graphics and greater performance and uses a plug-in processor module in the SMARC 2.0 form factor from a technology partner that can be plugged on by a simple mechanism. In order to realize extensive functionality in a minimum of space, the design of the carrier board is based directly on the shape of the housing.

The final instrument (NanoPhotometer®) is for example used for concentration determination of nucleic acids or proteins in laboratories of industry and research. While with the predecessor unit the measurement of only one sample was possible, now up to 12 liquid samples can be applied in parallel and measured one after the other with a motor-driven analysis unit. For mobile use, the compact size of only 200 mm in depth and width and 120 mm in height and battery operation of up to 3 hours are particularly important.

Compactness, cost and energy efficiency played just as important a role in the selection of electronics and components as technical aspects. For control, data management and precise analysis results, extensive functions and numerous interfaces had to be implemented, such as a touch controller interface, an LVDS interface to the TFT panel, the integration of an audio codec for coding audio streams, HDMI, WLAN, USB, LAN and a controlled foil heating system. Some of these functions are covered by the integrated embedded FPGA. Other important requirements were efficient thermal management and energy-efficient operation, as the device is battery-powered and maintenance-free, i.e. must function reliably.

HEITEC is responsible for supply chain management, documentation, complete manufacturing and testing of the carrier board for the project.

Innovation in the smallest space

Rear view of the housing with all common interfaces

Up to 12 samples can be applied at the same time by using a positioning aid

Technical Summary

- Customized design housing
- D x W x H: 200 mm x 200 mm x 120 mm
- SMARC 2.0 CPU module with Intel Celeron N3350
- Custom Carrier Board
- Embedded FPGA by Lattice
- Efficient heat management

Customer benefits

- Prototype development and manufacturing from a single source
- Support and development across evolution cycles
- Support for thermal design and EMC testing
- Selection of suitable components
- Future-proof, due to SMARC 2.0 standard

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