

Abstract

By now even the cheap sensors and actuators contain embedded micro controllers to create more complex systems than before. Thus the user can receive diagnostics informations from these devices and configure them for his purposes. This demand makes IO-Link protocol more and more popular in the automation industry. With the IO-Link communications these „smart devices” can be easily configured and failures can be recognized during operation.

By using the developed device such smart devices can be integrated into an IO-Link system that have RS-232 interface (e.g. barcodescanner, xerox machine, RF-ID devices, etc.). The converter has to provide various range of parameters like data rate, number of stop bits, parity, etc. to satisfy the demands of most devices. It is a challenge to carry out the data transmission without any problems between the acyclic IO-Link and cyclic RS-232 communication.

The first step of development was the creation of the circuit diagram and then the layout design of the printed circuit. After that I built the hardware and tested its operation. Finally I developed the embedded software. The most difficult part of this project was the firmware which consumed the most development time.

I made my MSc thesis at Balluff Electronics Company. The company department where I work is specialized in the development of IO-Link communications devices.