

Preface

Controller Area Network—CAN—is a communication protocol, which had been developed by R. Bosch GmbH in the beginning of the 1980s. The design focus was to support robust applications in cars. The protocol then was introduced to the market in cooperation of Bosch and Intel. In the year 1990 Mercedes Benz was the first car manufacturer who applied CAN in a series application, in the S-class car for networking of body electronics. The first suppliers of CAN modules at that time were Intel and Motorola. Currently almost all minor and major semiconductor manufacturers have CAN products in their portfolio. In 1997 24 million CAN interfaces were produced in 1 year; 2 years later there were already more than three times as many. Currently there will probably be more than a billion per year.

In the CAN introduction phase—in the end of the 80s and the beginning of the 90s—mostly so called “stand-alone” solutions were offered, which could be easily connected to any type of micro-controller. This strategy fostered the broad application of CAN, because CAN application was not only limited to the micro-controller families of the pioneer semiconductor manufacturers. Since the 90s more and more integrated solutions—CAN together with a microcontroller on one single chip—were launched on the market. However the so called transceiver—the interface between the analogue signals on the bus lines and the digital signals of the CAN controller—is even still today typically implemented in a separate chip due to its different semiconductor technology. The integrated version of CAN and micro-controller saves die size and connecting pins, increases reliability and reduces cost. These factors and the CAN quality itself are some reasons for the overwhelming CAN market dissemination. Currently, CAN communication networking is applied widely in cars, but also in avionics, trains, military applications, industrial controls, etc.

The big interest in CAN is mirrored by the huge amount of publications related to CAN. This is another reason for this newly revised second edition of the English-language CAN book, which corresponds to the 5th edition of the German-language CAN book. This edition addresses the various issues and questions when applying CAN for communication networks. As such, there is a short introduction into the CAN basics. Furthermore, problems and solutions are discussed for the

physical layout of networks including EMC issues and topology layout. Additionally, quality issues and, especially, test techniques are addressed. A special feature of this CAN book is that all the technical details have been contributed by different authors who are widely known specialists in their field of expertise.

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