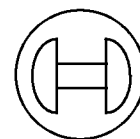


# BOSCH



## CAN Specification

Version 2.0

1991, Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1

The document as a whole may be copied and distributed without restrictions. However, the usage of it in parts or as a whole in other documents needs the consent of Robert Bosch GmbH. Robert Bosch GmbH retains the right to make changes to this document without notice and does not accept any liability for errors.

Imported into Framemaker 4 by:

Chuck Powers, Motorola MCTG Multiplex Applications, April 5, 1995.



### **Recital**

The acceptance and introduction of serial communication to more and more applications has led to requirements that the assignment of message identifiers to communication functions be standardized for certain applications. These applications can be realized with CAN more comfortably, if the address range that originally has been defined by 11 identifier bits is enlarged

Therefore a second message format ('extended format') is introduced that provides a larger address range defined by 29 bits. This will relieve the system designer from compromises with respect to defining well-structured naming schemes. Users of CAN who do not need the identifier range offered by the extended format, can rely on the conventional 11 bit identifier range ('standard format') further on. In this case they can make use of the CAN implementations that are already available on the market, or of new controllers that implement both formats.

In order to distinguish standard and extended format the first reserved bit of the CAN message format, as it is defined in CAN Specification 1.2, is used. This is done in such a way that the message format in CAN Specification 1.2 is equivalent to the standard format and therefore is still valid. Furthermore, the extended format has been defined so that messages in standard format and extended format can coexist within the same network.

This CAN Specification consists of two parts, with

- Part A describing the CAN message format as it is defined in CAN Specification 1.2;
- Part B describing both standard and extended message formats.

In order to be compatible with this CAN Specification 2.0 it is required that a CAN implementation be compatible with either Part A or Part B.

#### **Note**

CAN implementations that are designed according to part A of this or according to previous CAN Specifications, and CAN implementations that are designed according to part B of this specification can communicate with each other as long as it is not made use of the extended format.

# PART A

1	INTRODUCTION.....	4
2	BASIC CONCEPTS.....	5
3	MESSAGE TRANSFER .....	10
3.1	Frame Types .....	10
3.1.1	DATA FRAME .....	10
3.1.2	REMOTE FRAME .....	15
3.1.3	ERROR FRAME.....	16
3.1.4	OVERLOAD FRAME.....	17
3.1.5	INTERFRAME SPACING.....	18
3.2	Definition of TRANSMITTER/RECEIVER .....	20
4	MESSAGE VALIDATION .....	21
5	CODING .....	22
6	ERROR HANDLING.....	23
6.1	Error Detection .....	23
6.2	Error Signalling.....	23
7	FAULT CONFINEMENT.....	24
8	BIT TIMING REQUIREMENTS .....	27
9	INCREASING CAN OSCILLATOR TOLERANCE.....	31
9.1	Protocol Modifications .....	31

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.