

1. Record Nr.	UNINA9910824733303321
Autore	Paret Dominique
Titolo	FlexRay and its applications : real time multiplexed network / / Dominique Paret
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, 2012
ISBN	1-282-25406-5 9786613814715 1-119-96406-7 1-119-96405-9
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (336 p.)
Classificazione	TEC008070
Disciplina	629.2/72
Soggetti	FlexRay (Computer network protocol) Motor vehicles - Electronic equipment Motor vehicles - Automatic control Automotive computers Adaptive control systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Contents; Preface; List of Abbreviations; Part A: 'Secure Real Time' Applications; 1 Reminders about the CAN Protocol; 1.1 The Limitations of CAN; 1.2 'Event-Triggered' and 'Time-Triggered' Aspects; 1.2.1 The Probabilistic Side of CAN; 1.2.2 The Deterministic Side of Applications; 2 The TTCAN Protocol; 2.1 TTCAN - ISO 11898-4; 2.2 Session Layer; 2.3 Principle of Operation of TTCAN; 3 Emergence of 'X-by-Wire' Systems; 3.1 High Throughput and X-by-Wire; 3.2 Redundancy; 3.3 High-Level Application Requirements; 3.3.1 The Number of Communication Systems is Growing 3.3.2 The Electronic Architecture Must be Common to Several Vehicle Platforms 3.3.3 Some Things the Architecture of the Communication Network and the Nodes Must Allow; 3.4 High-Level Functional Requirements; 3.4.1 Speed of Communication; 3.4.2 Physical Layer; 3.4.3 Access to and Management of the Medium; 3.4.4 Synchronisation Method; 3.4.5 Network Topologies; 3.4.6 Requirements at System Level; Part B: The Flexray Concept and Its Communication Protocol; 4

The Genesis of FlexRay; 4.1 The TTP/C Protocol; 4.2 FlexRay; 4.2.1 The Genesis of FlexRay; 4.3 The FlexRay Consortium
 4.4 The Aim of FlexRay 4.4.1 A Flexible Configuration; 4.4.2 Solutions;
 5 FlexRay and Real Time; 5.1 Physical Time; 5.2 Local Time; 5.2.1 Local Clock; 5.2.2 'Clock Tick' and Microticks; 5.2.3 In Practice; 5.3 Global View at Network Level - Global Time; 5.3.1 Concept of Global Time; 5.3.2 Macrotick (MT); 5.3.3 And the Bit Time - What's Happening to it Inside There?; 5.4 Summarizing: Time and its Hierarchies in FlexRay; 6 The FlexRay Protocol; 6.1 History; 6.2 General - Channels, Cycles, Segments and Slots; 6.2.1 Philosophy of the Protocol
 6.2.2 Hierarchy and Overall Form of FlexRay Communication 6.3 Channels and Cycles; 6.3.1 Communication Channel(s); 6.3.2 Communication Cycle; 6.4 Segments; 6.4.1 A Little Philosophy about Static and Dynamic Segments and Their Purposes; 6.4.2 Slots and Minislots; 6.4.3 Static Segments and Slots; 6.4.4 Dynamic Segments and Minislots; 6.4.5 Summary; 6.5 Communication Frames; 6.5.1 Overview of Frames; 6.5.2 Common Constituent Parts of Static and Dynamic Frames; 6.5.3 Encapsulation and Coding of Frames of Logical Data in Slots and Minislots
 6.5.4 . . . for Frames which are Transported during Static and Dynamic Segments 6.6 'SW - Symbol Window' Segment; 6.7 'NIT - Network Idle Time' Segment; 7 Access to the Physical Layer; 7.1 Definition of Tasks; 7.2 Execution of the Communication Cycle; 7.3 Frame ID (11 Bits); 7.4 Arbitration Grid Level; 7.4.1 Basic Concepts; 7.4.2 Policy for Access to the Medium; 7.5 Conditions of Transmission and Access to the Medium during the Static Segment; 7.6 Conditions of Transmission and Access to the Medium during the Dynamic Segment; 7.6.1 Access to the Medium during the Dynamic Segment - Example 1
 7.6.2 Particular, Difficult Choice of Hierarchy of Frame ID - Example 2

Sommario/riassunto

"An authoritative yet highly accessible guide to the design and operation of the FlexRay bus, the latest protocol for automotive network communications A translation of the French edition, originally published in January 2011, this work is the result of numerous training courses that Dominique Paret has given in companies, and it provides detailed explanations of the design and operation of the FlexRay bus. Comprised of five parts the book covers: the FlexRay concept and its communication protocol; the FlexRay physical layer; synchronization and global time and; architecture of a node, components and development aid tools for hardware and software. Provides comprehensive treatment of the FlexRay network, including its implementation through a real automotive application Includes the latest specifications (Version 3) concluded by the FlexRay consortium widely expected to become the industry standard Written by an author with in-depth experience of automotive electronics, including FlexRay, and presenter of specialist training courses to the industry Includes a review of industrial tools to help design and implement a FlexRay based distributor application"--