

ISO 17458-2:2013-02 (E)

Road vehicles - FlexRay communications system - Part 2: Data link layer specification

Contents	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms, definitions, symbols and abbreviated terms	1
3.1 Terms and definitions	1
3.2 Symbols	7
3.3 Abbreviated terms	7
4 Document overview	10
5 Conventions	11
5.1 General	11
5.2 Notational conventions	11
5.3 SDL conventions	12
5.4 Bit rates	15
5.5 Roles of a node in a FlexRay cluster	15
5.6 Synchronisation methods	15
5.7 Network topology considerations	19
5.8 Example node architecture	24
6 Protocol operation control	29
6.1 Principles	29
6.2 Description	31
6.3 The protocol operation control process	37
7 Coding and Decoding	59
7.1 Principles	59
7.2 Description	59
7.3 Coding and decoding process	77
7.4 Bit strobing process	96
7.5 Wakeup pattern decoding process	99
8 Frame Format	103
8.1 Overview	103
8.2 FlexRay header segment (5 bytes)	103
8.3 FlexRay payload segment (0 - 254 bytes)	108
8.4 FlexRay trailer segment	111
8.5 CRC calculation details	111
9 Media Access Control	113
9.1 Principles	113
9.2 Description	123
9.3 Media access control process	126
10 Frame and Symbol processing	143
10.1 Principles	143

10.2	Description	143
10.3	Frame and symbol processing process	149
11	Wakeup and Startup	161
11.1	General	161
11.2	Cluster wakeup	162
11.3	Communication startup and reintegration	167
12	Clock synchronisation	190
12.1	Introduction	190
12.2	Time representation	191
12.3	Synchronisation process	193
12.4	Startup of the clock synchronisation	200
12.5	Time measurement	204
12.6	Correction term calculation	208
12.7	Clock correction	220
12.8	Sync frame configuration	223
12.9	Time gateway interface	225
13	Controller Host Interface	226
13.1	Principles	226
13.2	Description	227
13.3	Interfaces	228
Annex A (normative) System parameters		268
A.1	Protocol constants	268
A.2	Performance constants	270
Annex B (normative) Configuration constraints		271
B.1	General	271
B.2	Bit rates	271
B.3	Parameters	272
B.4	Calculation of configuration parameters for nodes in a TT-D cluster	281
B.5	Configuration of cluster synchronisation method and node synchronisation role	334
B.6	Calculation of configuration parameters for nodes in a TT-L cluster	335
B.7	Calculation of configuration parameters for nodes in a TT-E cluster	336
Annex C (normative) Wakeup application notes		345
C.1	Scope	345
C.2	Wakeup initiation by the host	345
C.3	Host reactions to status flags signalled by the communication controller	348
C.4	Retransmission of wakeup patterns	349
C.5	Transition to startup	349
C.6	Wakeup during operation	350
Bibliography		352