

ISO 15031-5:2015-08 (E)

Road vehicles - Communication between vehicle and external equipment for emissions-related diagnostics - Part 5: Emissions-related diagnostic services

Contents		Page
Foreword		vi
Introduction		vii
1	Scope	1
2	Normative references	1
3	Terms, definitions, and abbreviated terms	2
3.1	Terms and definitions	2
3.2	Abbreviated terms	4
4	Conventions	6
5	Document overview	6
6	Technical requirements	6
6.1	General requirements	6
6.2	Diagnostic service requirements	6
6.2.1	Multiple responses to a single data request	6
6.2.2	Application timing parameter definition	7
6.2.3	Minimum time between requests from external test equipment	18
6.2.4	Data not available	26
6.2.5	Maximum values	36
6.2.6	Invalid signals	36
6.3	Diagnostic message format	36
6.3.1	Addressing method	36
6.3.2	Maximum message length	37
6.3.3	Request/Response message format	37
6.3.4	Response code parameter definition	38
6.3.5	Header byte definition of ISO 9141-2, ISO 14230-4, and SAE J1850	39
6.3.8	Non-data bytes included in diagnostic messages with SAE J1850	40
6.3.9	Non-data bytes included in diagnostic messages with ISO 9141-2 and ISO 14230-4	41
6.4	Byte order convention	41
6.5	Allowance for expansion and enhanced diagnostic services	41
6.6	Definition of PIDs for services 0116 and 0216	41
6.7	Format of data to be displayed	41
7	Diagnostics service definition for ISO 9141-2, ISO 14230-4, and SAE J1850	42
7.1	Service 0116 -- Request current powertrain diagnostic data	42
7.1.1	Functional description	42
7.1.2	Message data bytes	42
7.1.3	Parameter definition	43
7.1.4	Message example	44
7.2	Service 0216 -- Request powertrain freeze frame data	47
7.2.1	Functional description	47
7.2.2	Message data bytes	48
7.2.3	Parameter definition	49
7.2.4	Message example	49
7.3	Service 0316 -- Request emission-related diagnostic trouble codes	51
7.3.1	Functional description	51

7.3.2	Message data bytes	52
7.3.3	Parameter definition	53
7.3.4	Message example	53
7.4	Service 0416 -- Clear/reset emission-related diagnostic information	56
7.4.1	Functional description	56
7.4.2	Message data bytes	56
7.4.3	Parameter definition	57
7.4.4	Message example	57
7.5	Service 0516 -- Request oxygen sensor monitoring test results	58
7.5.1	Functional description	58
7.5.2	Message data bytes	58
7.5.3	Parameter definition	59
7.5.4	Message example	61
7.6	Service 0616 -- Request On-board monitoring test results for specific monitored systems	63
7.6.1	Functional description	63
7.6.2	Message data bytes	64
7.6.3	Parameter definition	65
7.6.4	Message example	66
7.7	Service 0716 -- Request emission-related diagnostic trouble codes detected during current or last completed driving cycle	68
7.7.1	Functional description	68
7.7.2	Message data bytes	68
7.7.3	Parameter definition	69
7.7.4	Message example	69
7.8	Service 0816 -- Request control of on-board system, test, or component	69
7.8.1	Functional description	69
7.8.2	Message data bytes	69
7.8.3	Parameter definition	71
7.8.4	Message example	71
7.9	Service 0916 -- Request vehicle information	72
7.9.1	Functional description	72
7.9.2	Message data bytes	72
7.9.3	Parameter definition	73
7.9.4	Message example	74
8	Diagnosticservice definition for ISO15765-4	91
8.1	Service 0116 -- Request current powertrain diagnostic data	91
8.1.1	Functional description	91
8.1.2	Message data bytes	92
8.1.3	Parameter definition	94
8.1.4	Message example	94
8.2	Service 0216 -- Request powertrain freeze frame data	97
8.2.1	Functional description	97
8.2.2	Message data bytes	98
8.2.3	Parameter definition	100
8.2.4	Message example	100
8.3	Service 0316 -- Request emission-related diagnostic trouble codes	103
8.3.1	Functional description	103
8.3.2	Message data bytes	104
8.3.3	Parameter definition	104
8.3.4	Message example	104
8.4	Service 0416 -- Clear/Reset emission-related diagnostic information	106
8.4.1	Functional description	106
8.4.2	Message data bytes	107
8.4.3	Parameter definition	107
8.4.4	Message example	107
8.5	Service 0516 -- Request oxygen sensor monitoring test results	108
8.6	Service 0616 -- Request on-board monitoring test results for specific monitored systems	108
8.6.1	Functional description	108

8.6.2	Message data bytes	109
8.6.3	Parameter definition	112
8.6.4	Message example	117
8.7	Service 0716 -- Request emission-related diagnostic trouble codes detected during current or last completed driving cycle	119
8.7.1	Functional description	119
8.7.2	Message data bytes	120
8.7.3	Parameter definition	120
8.7.4	Message example	120
8.8	Service 0816 -- Request control of on-board system, test, or component	120
8.8.1	Functional description	120
8.8.2	Message data bytes	121
8.8.3	Parameter definition	123
8.8.4	Message example	123
8.9	Service 0916 -- Request vehicle information	124
8.9.1	Functional description	124
8.9.2	Message data bytes	125
8.9.3	Parameter definition	126
8.9.4	Message example	127
8.10	Service 0A16 -- Request emission-related diagnostic trouble codes with permanent status	138
8.10.1	Functional description	138
8.10.2	Message data bytes	139
8.10.3	Parameter definition	139
8.10.4	Message example	139
	Bibliography	140