

# ISO 14229-1:2006-12 (E)

## Road vehicles - Unified diagnostic services (UDS) - Part 1: Specification and requirements

---

| Contents   | Page      |
|--|-----------|
| <b>Foreword .....</b>  | <b>v</b>  |
| <b>Introduction .....</b>  | <b>vi</b> |
| <b>1 Scope .....</b>   | <b>1</b>  |
| <b>2 Normative references .....</b>                                    | <b>2</b>  |
| <b>3 Terms and definitions .....</b>                                   | <b>3</b>  |
| <b>4 Symbols and abbreviated terms .....</b>                           | <b>5</b>  |
| <b>5 Conventions .....</b>   | <b>5</b>  |
| <b>6 Application layer services .....</b>                              | <b>6</b>  |
| <b>6.1 General .....</b>   | <b>6</b>  |
| <b>6.2 Format description of application layer services .....</b>      | <b>8</b>  |
| <b>6.3 Format description of standard service primitives .....</b>     | <b>8</b>  |
| <b>6.4 Format description of remote service primitives .....</b>       | <b>10</b> |
| <b>6.5 Service data unit specification .....</b>                       | <b>13</b> |
| <b>7 Application layer protocol .....</b>                              | <b>19</b> |
| <b>7.1 General definition .....</b>                                    | <b>19</b> |
| <b>7.2 Protocol data unit specification .....</b>                      | <b>19</b> |
| <b>7.3 Application protocol control information .....</b>              | <b>19</b> |
| <b>7.4 Negative response/confirmation service primitive .....</b>      | <b>21</b> |
| <b>7.5 Server response implementation rules .....</b>                  | <b>22</b> |
| <b>8 Service description conventions .....</b>                         | <b>29</b> |
| <b>8.1 Service description .....</b>                                   | <b>29</b> |
| <b>8.2 Request message .....</b>                                       | <b>30</b> |
| <b>8.3 Positive response message .....</b>                             | <b>32</b> |
| <b>8.4 Supported negative response codes (NRC_) .....</b>              | <b>34</b> |
| <b>8.5 Message flow examples .....</b>                                 | <b>34</b> |
| <b>9 Diagnostic and communication management functional unit .....</b> | <b>36</b> |
| <b>9.1 Overview .....</b>  | <b>36</b> |
| <b>9.2 DiagnosticSessionControl (10 hex) service .....</b>             | <b>36</b> |
| <b>9.3 ECURestart (11 hex) service .....</b>                           | <b>42</b> |
| <b>9.4 SecurityAccess (27 hex) service .....</b>                       | <b>45</b> |
| <b>9.5 CommunicationControl (28 hex) service .....</b>                 | <b>52</b> |
| <b>9.6 TesterPresent (3E hex) service .....</b>                        | <b>55</b> |
| <b>9.7 AccessTimingParameter (83 hex) service .....</b>                | <b>58</b> |
| <b>9.8 SecuredDataTransmission (84 hex) service .....</b>              | <b>63</b> |
| <b>9.9 ControlDTCSetting (85 hex) service .....</b>                    | <b>69</b> |
| <b>9.10 ResponseOnEvent (86 hex) service .....</b>                     | <b>73</b> |
| <b>9.11 LinkControl (87 hex) service .....</b>                         | <b>91</b> |
| <b>10 Data transmission functional unit .....</b>                      | <b>97</b> |
| <b>10.1 Overview .....</b>   | <b>97</b> |
| <b>10.2 ReadDataByIdentifier (22 hex) service .....</b>                | <b>97</b> |

|      |   |     |
|------|---|-----|
| 10.3 | <b>ReadMemoryByAddress</b> (23 hex) service .....   | 102 |
| 10.4 | <b>ReadScalingDataByIdentifier</b> (24 hex) service .....   | 106 |
| 10.5 | <b>ReadDataByPeriodicIdentifier</b> (2A hex) service .....  | 112 |
| 10.6 | <b>DynamicallyDefineDataIdentifier</b> (2C hex) service .....   | 123 |
| 10.7 | <b>WriteDataByIdentifier</b> (2E hex) service .....   | 143 |
| 10.8 | <b>WriteMemoryByAddress</b> (3D hex) service .....  | 146 |
| 11   | <b>Stored data transmission functional unit</b> .....   | 152 |
| 11.1 | <b>Overview</b> .....   | 152 |
| 11.2 | <b>ClearDiagnosticInformation</b> (14 hex) service .....  | 152 |
| 11.3 | <b>ReadDTCInformation</b> (19 hex) service .....  | 154 |
| 12   | <b>InputOutput control functional unit</b> .....  | 208 |
| 12.1 | <b>Overview</b> .....   | 208 |
| 12.2 | <b>InputOutputControlByIdentifier</b> (2F hex) service .....  | 209 |
| 13   | <b>Remote activation of routine functional unit</b> .....   | 224 |
| 13.1 | <b>Overview</b> .....   | 224 |
| 13.2 | <b>RoutineControl</b> (31 hex) service .....  | 225 |
| 14   | <b>Upload download functional unit</b> .....  | 231 |
| 14.1 | <b>Overview</b> .....   | 231 |
| 14.2 | <b>RequestDownload</b> (34 hex) service .....   | 231 |
| 14.3 | <b>RequestUpload</b> (35 hex) service .....   | 234 |
| 14.4 | <b>TransferData</b> (36 hex) service .....  | 237 |
| 14.5 | <b>RequestTransferExit</b> (37 hex) service .....   | 242 |
|      | <b>Annex A (informative) Global parameter definitions</b> .....   | 250 |
|      | <b>Annex B (normative) Diagnostic and communication management functional unit data parameter definitions</b> ..... | 257 |
|      | <b>Annex C (normative) Data transmission functional unit data parameter definitions</b> .....                       | 259 |
|      | <b>Annex D (normative) Stored data transmission functional unit data parameter definitions</b> .....                | 272 |
|      | <b>Annex E (normative) Input output control functional unit data parameter definitions</b> .....                    | 289 |
|      | <b>Annex F (normative) Remote activation of routine functional unit data parameter definitions</b> .....            | 290 |
|      | <b>Annex G (informative) Examples for addressAndLengthFormatIdentifier parameter values</b> .....                   | 291 |
|      | <b>Bibliography</b> .....   | 293 |