**1.1ReadDTCInformation (19 hex)**

* + 1. **Service description**

All general requirements about the service can be found in related section of *SGMW General Diagnostic Requirement Specification*.

**NOTE:** LAM supplier should provide SGMW with DTC list and the document about DTC setting condition which LAM supported.

**NOTE:** The maximum number of DTC that LAM can store simultaneously should be ten.

**NOTE:** If a DTC only supports a group snapshot data record, the maximum number of DTC snapshot record that LAM can store simultaneously should the same as the maximum number of DTC.

**NOTE:** From an attribute point of view, snapshot is divided into two parts: one is the general snapshot with one or more group data records for all the ECUs; Tthe other is local snapshot with one or more group data records for each specified ECU (LAM). The format and content about snapshot should be determined by SGMW and LAM Supplier together.

**NOTE:** If all fault memories are occupied, while the new DTC is generated, the Overflow strategy about stored DTCs and snapshot data records should be determined by SGMW and LAM supplier together.

**NOTE:** ECU supplier should provide the value of DTCStatusAvailabilityMask

* + 1. **Request message**
* 请求信息定义 子函数 =根据状态掩码的DTC报告编号

Table 12‑4 Request message definition (sub-function = reportNumberOfDTCByStatusMask)

子功能=按DTC编号报告DTC抓拍记录

|  |  |  |
| --- | --- | --- |
| A\_DataByte | Parameter Name | Hex value |
| #1 | ReadDTCInformation Request Service Id 读取DTC信息请求服务Id | 19 |
| #2 | reportType=[ 报告类型   * 根据状态掩码的DTC报告编号   reportNumberOfDTCByStatusMask   * 通过状态掩码报告DTC   reportDTCByStatusMask ] | 01  02 |
| #3 | DTCStatusMask DTC状态 | 00-FF |

请求消息定义

Table 12‑5 Request message definition (sub-function = reportDTCSnapshotRecordByDTCNumber)

|  |  |  |
| --- | --- | --- |
| A\_DataByte | Parameter Name | Hex value |
| #1 | ReadDTCInformation Request Service Id | 19 |
| #2 | reportType=reportDTCSnapshotRecordByDTCNumber报告类型=报告DTC快照记录按DTC编号 | 04 |
| #3  #4  #5 | DTCMaskRecord[]=[  DTCHighByte DTC高字节  DTCMiddleByte DTC中字节  DTCLowByte ] DTC低字节 | 00-FF  00-FF  00-FF |
| #6 | DTCSnapshotRecordNumber DTC快照记录号 | 01/FFa |
| * + 1. A value of FF hex requests the ECU to report all stored DTCSnapshot data records at once. | | |

Table 12‑6 Request message definition (Sub-function = reportSupportedDTC)支持DTC报告

|  |  |  |
| --- | --- | --- |
| A\_DataByte | Parameter Name | Hex value |
| #1 | ReadDTCInformation Request Service Id | 19 |
| #2 | reportType=reportSupportedDTC | 0A |

* + 1. **Positive response message**

Table 12‑7 Positive response message definition (sub-function = reportNumberOfDTCByStatusMask)

|  |  |  |
| --- | --- | --- |
| A\_DataByte | Parameter Name | Hex value |
| #1 | ReadDTCInformation Positive Response Service Id | 59 |
| #2 | reportType=reportNumberOfDTCByStatusMask  报告类型=按状态掩码划分的报告编号 | 01 |
| #3 | DTCStatusAvailabilityMask | 4B |
| #4 | ISO 15031-6 DTCFormat DTC格式 | 00 |
| #5  #6 | DTCCount[]=[  DTCCountHighByte  DTCCountLowByte ] | 00-FF  00-FF |

Table 12‑8 Positive response message definition (sub-function = reportDTCByStatusMask, reportSupportedDTC)

|  |  |  |
| --- | --- | --- |
| A\_DataByte | Parameter Name | Hex value |
| #1 | ReadDTCInformation Positive Response Service Id | 59 |
| #2 | reportType=[  reportDTCByStatusMask  reportSupportedDTC ] | 02  0A |
| #3 | DTCStatusAvailabilityMask | 4B |
| #4  #5  #6  #7  #8  #9  #10  #11  :  #n-3  #n-2  #n-1  #n | DTCAndStatusRecord[] = [  DTCHighByte #1  DTCMiddleByte #1  DTCLowByte #1  statusOfDTC #1  DTCHighByte #2  DTCMiddleByte #2  DTCLowByte #2  statusOfDTC #2  :  DTCHighByte #m  DTCMiddleByte #m  DTCLowByte #m  statusOfDTC #m ] | 00-FF  00-FF  00-FF  00-FF  00-FF  00-FF  00-FF  00-FF  :  00-FF  00-FF  00-FF  00-FF |
| **NOTE: If reportType = reportSupportedDTC:**   * + 1. LAM should report the status of all the DTC's which is supported by LAM.     2. LAM should report the status at the time of receiving the requirement. | | |

Table 12‑9 Positive response message definition (sub-function = reportDTCSnapshotRecordByDTCNumber)

肯定响应消息定义(子函数=按DTC号报告DTC快照记录)

|  |  |  |
| --- | --- | --- |
| A\_DataByte | Parameter Name | Hex value |
| #1 | ReadDTCInformation Positive Response Service Id | 59 |
| #2 | reportType=reportDTCSnapshotRecordByDTCNumber | 04 |
| #3  #4  #5  #6 | DTCAndStatusRecord[]=[  DTCHighByte  DTCMiddleByte  DTCLowByte  statusOfDTC ] DTC状态 | 00-FF  00-FF  00-FF  00-FF |
| #7 | DTCSnapshotRecordNumber#1 | 01 |
| #8 | DTCSnapshotRecordNumberOfIdentifiers#1 | 08 |
| #9  #10  #11  #12  #13  #14  #15  #16  #17  #18  #19  #20  #21  #22  #23  #24  #25  #26  #27  #28  #29  #30  #31  #32  #33  #34  #35  #36  #37  #38  #39  #40  #41  #42  #43  #44 | DTCSnapshotRecord[]#1=[  ECU Voltage DataIdentifier(MSB)a  ECU Voltage DataIdentifier(LSB)a  ECU Voltagea  Motor Actual Speed DataIdentifier(MSB)a  Motor Actual Speed DataIdentifier(LSB)a  Motor Actual Speed (High Byte)a  Motor Actual Speed (Low Byte)a  Vehicle Speed DataIdentifier(MSB)a  Vehicle Speed DataIdentifier(LSB)a  Vehicle Speed (High Byte)a  Vehicle Speed (Low Byte)a  Vehicle Odometer DataIdentifier(MSB) a  Vehicle Odometer DataIdentifier(LSB) a  Vehicle Odometer (High Byte)  Vehicle Odometer (Second Byte)  Vehicle Odometer (third Byte)  Vehicle Odometer(LowByte)  Low Speed Alarm pause switch status DataIdentifier(MSB)  Low Speed Alarm pause switch status DataIdentifier(LSB)  Low Speed Alarm pause switch status  Low Speed Alarm pause indicator status DataIdentifier(MSB)  Low Speed Alarm pause indicator status DataIdentifier(LSB)  Low Speed Alarm pause indicator status  Buzzer Status DataIdentifier(MSB)  Buzzer Status DataIdentifier(LSB)  Buzzer Status  Global Real Time DataIdentifier(MSB)  Global Real Time DataIdentifier(LSB)  Global Real Time (High Byte)  Global Real Time (Second Byte)  Global Real Time (Third Byte)  Global Real Time (Fourth Byte)  Global Real Time (Fifth Byte)  Global Real Time (Sixth Byte)  Global Real Time (LowByte) | F0  11  00-FF  F0  12  00-FF  00-FF  F0  13  00-FF  00-FF  F0  14  00-FF  00-FF  00-FF  00-FF  C9  84  00-FF  C9  85  00-FF  C9  86  00-FF  F0  10  00-FF  00-FF  00-FF  00-FF  00-FF  00-FF  00-FF |
| a. This part is the general Snapshot for all ECUs, detailed definitions of general snapshot record can be found in chapter 12.2.3.2 of “*SGMW General Diagnostic Requirement Specification*”.  b. For SGMW EV-project will be not support, all ECUs should be padded with “FF”. | | |

Table 12‑10 definition of ECU Voltage of DTCSnapshotRecord

DTC快照记录的ECU电压定义

| **Data Name** | **#of bytes** | **Unit** | **Scaling** | **Offset** | **Min.** | **Max.** |
| --- | --- | --- | --- | --- | --- | --- |
| ECU Voltage | 1 | v | 0.1 | 0 | 0 | 25.5 |

Table 12-11 definition of Motor Actual Speed of DTCSnapshotRecord

定义电机实际转速的DTC快照记录

| **Data Name** | **#of bytes** | **Unit** | **Scaling** | **Offset** | **Min.** | **Max.** |
| --- | --- | --- | --- | --- | --- | --- |
| Motor Actual Speed | 2 | rpm | 1 | -16384 | -16384 | 16383 |
| NOTE: The default value of signal is FFFF(hex) when the engine speed signal is invalid or can not be obtained.  注意:当发动机转速信号无效或不能工作时，信号的默认值为FFFF(hex) | | | | | | |

Table 12‑12 definition of Vehicle Speed of DTCSnapshotRecord

定义DTC快照记录的车速

| **Data Name** | **#of bytes** | **Unit** | **Scaling** | **Offset** | **Min.** | **Max.** |
| --- | --- | --- | --- | --- | --- | --- |
| Vehicle Speed | 2 | km/h | 0.015625 | 0 | 0 | 1023.984375 |
| NOTE: The default value of signal is FFFF(hex) when the vehicle speed signal is invalid or can not be obtained.  注意:当发动机转速信号无效或不能工作时，信号的默认值为FFFF(hex) | | | | | | |

Table 12‑13 definition of Vehicle Odometer of DTCSnapshotRecord

DTC快照记录的车辆里程表定义

| **Data Name** | **#of bytes** | **Unit** | **Scaling** | **Offset** | **Min.** | **Max.** |
| --- | --- | --- | --- | --- | --- | --- |
| Vehicle Odometer | 4 | km | 0.015625 | 0 | 0 | 67108863 |
| NOTE: The default value of signal is FFFFFFFF(hex) when the vehicle odometer signal is invalid or can not be obtained.  注意:当发动机转速信号无效或不能工作时，信号的默认值为FFFF(hex) | | | | | | |

Table 12‑14 definition of **Low Speed Alarm pause switch status** of DTCSnapshotRecord

定义DTC快照记录的低速报警暂停开关状态

|  |  |  |  |
| --- | --- | --- | --- |
| **Byte No.** | **Description** | **Data Type** | **Comments** |
| data #1 | Low Speed Alarm pause switch status  低速警示暂停开关状态 | Hex | 0x00= OFF  0x01= ON |

Table 12‑15 definition of **Low Speed Alarm pause indicator status** of DTCSnapshotRecord

定义DTC快照记录的低速报警暂停指示器状态

|  |  |  |  |
| --- | --- | --- | --- |
| **Byte No.** | **Description** | **Data Type** | **Comments** |
| data #1 | Low Speed Alarm pause indicator status  低速警示暂停指示灯状态 | Hex | 0x00= OFF  0x01= ON |

Table 12‑16 definition of **Buzzer Status** of DTCSnapshotRecord

DTC快照记录蜂鸣器状态定义

|  |  |  |  |
| --- | --- | --- | --- |
| **Byte No.** | **Description** | **Data Type** | **Comments** |
| data #1 | Buzzer Status  警示音状态 | Hex | 0x00= OFF  0x01= ON |

Table 12‑17definition of Global Real Time of DTCSnapshotRecord

DTC快照记录的全局实时定义

|  |  |  |  |
| --- | --- | --- | --- |
| **Byte No.** | **Description** | **Data Type** | **Default Value (Hex)** |
| data #1 | Year(high byte) | BCD | the real year |
| data #2 | Year(low byte) | BCD |
| data #3 | Month | BCD | the real month |
| data #4 | Day | BCD | the real day |
| data #5 | Hour | BCD | the real hour |
| data #6 | Minute | BCD | the real minute |
| data #7 | Second | BCD | the real second |
| Note: The value of this signal should be the latest valid value if the Global Real Time can not be obtained.  注意:如果无法获得全局实时，则此信号的值应为最新有效值。 | | | |

* + 1. **Supported negative response codes** 支持否定响应码

Table 12‑18 Supported negative response codes

|  |  |
| --- | --- |
| Hex | Description |
| 12 | **subFunctionNotSupported** 子功能不支持 |
| 31 | **requestOutOfRange** 请求超出范围 |
| 13 | **incorrectMessageLengthOrInvalidFormat** 消息长度不正确或格式无效 |

**NOTE:** In addition to the NRC which listed in the table above, LAM should comply with the requirement of the notes defined in chapter 9.4 of the document *SGMW General Diagnostic Requirement Specification*.

注:除了上表所列的NRC外，LAM应符合SGMW通用诊断要求规范第9.4章中定义的注释要求。

**1.2ReadDataByIdentifier (22 hex)**

**1.2.1Service description**

All general requirements about the service can be found in related section of *SGMW General Diagnostic Requirement Specification*.

**NOTE:** The maximum number of data Identifier that can be simultaneously requested isFive. 注意:可以同时请求的数据标识符的最大数量是5。

**NOTE:** The DID which used to identify the general data record for all the ECUs called vehicle-manufacturer-specific DID, the definition about vehicle-manufacturer-specific DID can be found in chapter C.1 of Annex C. The DID which used to identify the individual data record for each ECU called ECU-supplier-specific DID, the definition about ECU-supplier-specific DID can be found in in chapter C.2 of Annex C.

* + 1. **Request message**

Table 11‑1 Request message definition 请求消息定义

|  |  |  |
| --- | --- | --- |
| A\_DataByte | Parameter Name | Hex value |
| #1 | ReadDataByIdentifier Request Service Id | 22 |
| #2  #3 | dataIdentifier[]#1=[  byte #1(MSB)  byte #2(LSB) ] | 00-FF  00-FF |
| : | : | : |
| #n-1  #n | dataIdentifier[]#ma=[  byte #1(MSB)  byte #2(LSB) ] | 00-FF  00-FF |
| * + 1. m≤3 | | |

* + 1. **Positive response message 肯定响应码**

Table 11‑2 Positive response message definition

|  |  |  |
| --- | --- | --- |
| A\_DataByte | Parameter Name | Hex value |
| #1 | ReadDataByIdentifier Response Service Id | 62 |
| #2  #3 | dataIdentifier[]#1=[  byte #1(MSB)  byte #2(LSB) ] | 00-FF  00-FF |
| #4  :  #(k-1)+4 | dataRecord[]#1=[  data #1  :  data #k a] | 00-FF  :  00-FF |
| : | : | : |
| #n-(o-1)-2  #n-(o-1)-1 | dataIdentifier[]#mb=[  byte #1(MSB)  byte #2(LSB) ] | 00-FF  00-FF |
| #n-(o-1)  :  #n | dataRecord[]#mb=[  data #1  :  data #o a] | 00-FF  :  00-FF |
| * + 1. The number of data# depends on specified dataIdentifier in chapter C.1 and chapter C.2 of Annex C.     2. m≤3 | | |

* + 1. **Supported negative response codes 否定响应码**

Table 11‑3 Supported negative response codes

|  |  |
| --- | --- |
| Hex | Description |
| 31 | **requestOutOfRange 超出请求范围** |
| 13 | * **incorrectMessageLengthOrInvalidFormat** 消息长度不正确或格式无效 |
| 22 | * **conditionsNotCorrect** 条件不正确 |

**NOTE:** In addition to the NRC which listed in the table above, LAM should comply with the requirement of the notes defined in chapter 9.4 of the document *SGMW General Diagnostic Requirement Specification*.

注:除了上表所列的NRC外，LAM应符合SGMW通用诊断要求规范第9.4章中定义的注释要求。

发送：22F190

接收：62F190