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1 References

[1] AUTOSAR Template UML Profile and Modeling Guide
https:/svn2.autosar.org/repos2/22_Releases
AUTOSAR_TemplateModelingGuide

[2] Specification of RTE Software
https:/svn2.autosar.org/repos2/22_Releases
AUTOSAR_SWS_RTE.pdf

[3] Software Component Template
https:/svn2.autosar.org/repos2/22_Releases
AUTOSAR_SoftwareComponentTemplate.pdf

[4] AUTOSAR Model Persistence Rules for XML
https:/svn2.autosar.org/repos2/22_Releases
AUTOSAR_ModelPersistenceRulesforXML

[5] MISRA-C: 2004. Guidelines for the use of the C language in critical systems.

[6] AUTOSAR: Technical Overview
https:/svn2.autosar.org/repos2/22_Releases
AUTOSAR_TechnicalOverview

2 Scope

The limits of my language mean the limits of my world. Ludwig Wittgenstein

This document gives guidelines and conventions on using the AUTOSAR model elements in order to build AUTOSAR systems. It does **not** contain guidelines for the AUTOSAR meta model. This is already covered by [1].

3 How to read this document

All rules are identified by an ID.
The ID starts with “MR” for the Modeling Rules followed by three digits (MRxxx).
The ID starts with “NR” for the Naming Rules followed by three digits (NRxxx).

The provided XML examples conform to the AUTOSAR metamodel R2.0.0.

3.1 Conventions used

In requirements, the following specific semantics are used (taken from Request for Comment RFC 2119 from the Internet Engineering Task Force IETF)

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119. Note that the requirement level of the document in which they are used modifies the force of these words.

- MUST: This word, or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.
- MUST NOT: This phrase, or the phrase „SHALL NOT“, means that the definition is an absolute prohibition of the specification.
- SHOULD: This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
- SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
- MAY: This word, or the adjective „OPTIONAL“, means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation, which does not include a particular option, MUST be prepared to interoperate with another implementation, which does include the option, though perhaps with reduced functionality. In the same vein an implementation, which does include a particular option, MUST be prepared to interoperate with another implementation, which does not include the option (except, of course, for the feature the option provides.)

4 Requirements traceability

Document: AR_RS_SWC_System_Modeling

Requirement	***Satisfied by***
[MG001] Distinguish Standardized vs not standardized model elements of type ARElement	4.3.1 ARPackage: All standardized entities are placed in the “autosar” package. No non-standardized entities are in the “autosar” package.
[MG002] Name should reflect the purpose of the interface and/or data element	6.1, 6.4.2, 0
[MG005] Easy creation of names	6.3
[MG006] Model Elements names shall be self-explanatory	6.1, 6.4.2, 0, 6.4.4, 6.4.6, 6.4.7, 6.4.8
[MG007] Distinguish model elements of different model element suppliers of not standardized model elements	5
[MG010] Model Element Names shall follow semantic rules	6.3.1
[MG011] Model Element Names are composed by arranging standardized keywords	6.3
[MG012] Semantic of Model Element Names shall allow variable number of keywords	6.3.1
[MG014] Length restriction for short names of Identifiable	6.1,
[MG015] Interface and Data Type Names should indicate the vector length in case of a vector of individual data of the same type	6.3.1
[MG016] Names shall allow to indicate if the value is a direct measurement or a conditioned value	6.3 covers this requirement only partially. Values for keywords are needed
[MG017] Names should follow the ISO 8855 for English naming	6.1 covers this requirement only partially, standard is not mentioned.
[MG026] The naming convention shall provide an attribute to describe the data flow property	6.3 covers this requirement only partially.
[MG030] Use English as Standard Language for Names	6.1
[MG031] No Architectural Information in Names	6.4.6, 6.4.7
[MG034] Usage of Unique Keywords	6.3 Keywords are used to compose names
[MG039] Avoid usage of Trailing underscores	6.1
[MG040] Avoid sequences of underscores characters	6.1
[MG041] Do not rely on uppercase/lowercase difference only	6.1.
[MG045] Abstraction from methodology for domain experts	6.2
[MG048] Easy lookup of names in databases	6.3.1
[MG049] Support Identifiable already present in the MasterTable	6.4
[MG050] comprehensive long names	6.1, 6.2.1
[MG054] Provide guidelines how to resolve name conflicts	
[MG052] Definition of Package Structure	6.4.1
[MG053] Model shall be compliant to the Meta Model	5
[MG055] Continuous Data Type resolution should be a power of two	5
[MG056] Standardized model elements shall not contain non standardized elements	4, 6.4.1

5 Modeling Rules

[MR001] Model shall be compliant to the Meta Model.

[MR002] Continuous Data Type resolution should be a power of two.

[MR003] Use AR Package concept for SW-C to distinguish different suppliers of SW-C. This helps to trace SW-C supplier in case of errors due to the usage of non standardized elements within an AUTOSAR Package (e.g. the set of data that is in AUTOSAR Release 3.0 for WP10.x).

[MR004] Each not standardized element is identifiable by the Package Name (e.g. SW-C HORN has a Package Name different from the official AUTOSAR Name, e.g. SUPPLIER1)

5.1 Reuse of model element

5.1.1 Reuse of one interface for multiple port

[MR005] The reuse of interfaces is encouraged.

Example:
The *Temperature* interface is used for the *InsideTemperature* port and *OutsideTemperature* port of a component type.

5.1.2 Reuse of one data type for multiple interfaces

[MR006]The reuse of data types is encouraged.

Example:
The *Torque* data type is used in the interfaces *MinimumTorqueAtClutch* and *MaximumTorqueAtClutch*.

5.2 Use of multiple ComponentPrototypes

[MR007] If the same port P of multiple ComponentPrototypes $A_{1..n}$ of the same ComponentType is connected to another ComponentPrototype B, the name of the ports should be constructed by concatenating the name of the connected ComponentPrototype A_i and the name of the connected port P.

Example: The “Washer” ComponentType has an RPort “Activation”. There are three ComponentPrototypes of this type: “FrontWasher”, “RearWasher”, and “HeadLampWasher”. The WWManager ComponentType should have seprate PPorts that are connected to the RPorts of the three ComponentPrototypes. These PPorts should have the names “FrontWasherActivation”, “RearWasherActivation”, and “HeadLampWasherActivation”.

6 Naming Convention for AUTOSAR Model Elements

This section contains naming conventions for AUTOSAR model elements.

6.1 General Rules for Names

[NR001] The language for the names shall be English.

A model element name shows up as a SHORT-NAME in XML in, for example:
<SHORT-NAME>**MyName**</SHORT-NAME>

According to the rules for AUTOSAR XML files the short name has the type AR:IDENTIFIER (see the AUTOSAR Model Persistence Rules for XML) and is restricted by the following regular expression: `[a-zA-Z][a-zA-Z0-9_]{0,31}`

[NR002] This means that a short name must be between 1 and 32 characters long, shall begin with a letter and shall contain letters and numbers.

[NR003] As additional requirement to the MetaModel, underscores are not allowed in the short names.

Rules NR002 and NR003 lead to the following regular expression for short names: `[a-zA-Z][a-zA-Z0-9]{0,31}`

[NR004] Names shall not differ in capitalization only.

Do not distinguish names only from uppercase/lowercase format since the user can easily mix up names that differ only for capitalization. The following example lists not allowed name differentiation:
Short name 1: DoorLocked
Short Name2: doorLocked

[NR005] A name must be usable as valid identifier in source code for C, C++ and C-preprocessor.

The rationale behind this rule is, that some of the names are used by code generators, especially the RTE generator, to produce source code symbols. Since it would be difficult to state for each individual name if and in which context it will ever be used by generators, this general restriction is made.

[NR006] The names of elements shall document their meaning or use.

[NR007] No prefixes at all shall be used for AUTOSAR model identifiers (types, units, ports, interfaces, data elements...).

Reasons for not using prefixes:

- Shorter names, e.g. if it shows up in the RTE API in names as RTE_...
- If we had any prefix for e.g. interfaces, prefixes would have to be defined for all elements (ports, SWCs, data types,...).

- Prefixes can be introduced by code generators for the identifiers of programming language APIs.
- The information, whether some element is a Component, DataType, Interface, etc., is already contained in the structure of the XML file.

6.2 Relation between Model Level and the Implementation Level

This section describes the relation between the model level of AUTOSAR and the implementation level. A “model” in this chapter means an AUTOSAR model, i.e., an instance of the AUTOSAR meta model. “Implementation” means the realization of the model in a programming language, like C. For a more detailed explanation please see the “AUTOSAR Technical Overview” [6].

6.2.1 Length Restrictions

The RTE Specification 0 contains rules on how to map model-level names to generated names on implementation-level.

For example, an implementation-level name for a sender/receiver implicit write is created as follows:
Rte_IWrite_<runnable-entity-name>_<port-name>_<data-element-name>

This name is visible to the linker as an external identifier. MISRA [5] rule 1.4 requires that the significant part of such a name must not exceed 31 chars. Since AUTOSAR decided to allow a deviation from this rule, the size of the generated name can exceed 31. Taking into account that each single name from the model cannot exceed 32 characters, the name given above could have as much as
11 + 1 + 32 + 1 + 32 + 1 + 32 + 1 + 32 = 143 characters.

It is currently not yet decided, whether compilers/linkers must support this worst case for AUTOSAR or a lower limit for the total budget of the name size will be defined.

6.2.2 Data Types

[NR008] Data type names in an AUTOSAR model shall conform to C/C++ names for typedefs (e.g. they should not be C keywords).

The implementation level "typedef" names (generated by the RTE API generator) must be unique on an ECU to avoid compiler name clashes.

6.2.3 RTE rules of name mapping

- The following RTE requirements describe the mapping from modeling level to implementation level:
  - rte_sws_1143
  - rte_sws_1155

- rte_sws_1156
- rte_sws_1144

- Example: [1]
  - Name/Abbr of component type: **Washer / Was**
  - Name/Abbr of the component prototype: **FrontWasher / FnWas**
  - Name/Abbr of runnable entity: **monitor**
  - Name/Abbr of provide port: **OutsideTemperature / OutT**
  - Name/Abbr of sender-receiver interface of this port: **Temperature**
  - Name/Abbr the data element: **value / val**

  - According to the rte_sws rules the following name will be used at implemenation level (example):
    Std_ReturnType Rte_IRead_monitor_OutT_val(RTEInstance self);

  - The following name will be visible as an external name of the binary SWC: Rte_IRead_Was_monitor_OutT_val

6.2.4 Components and Ports

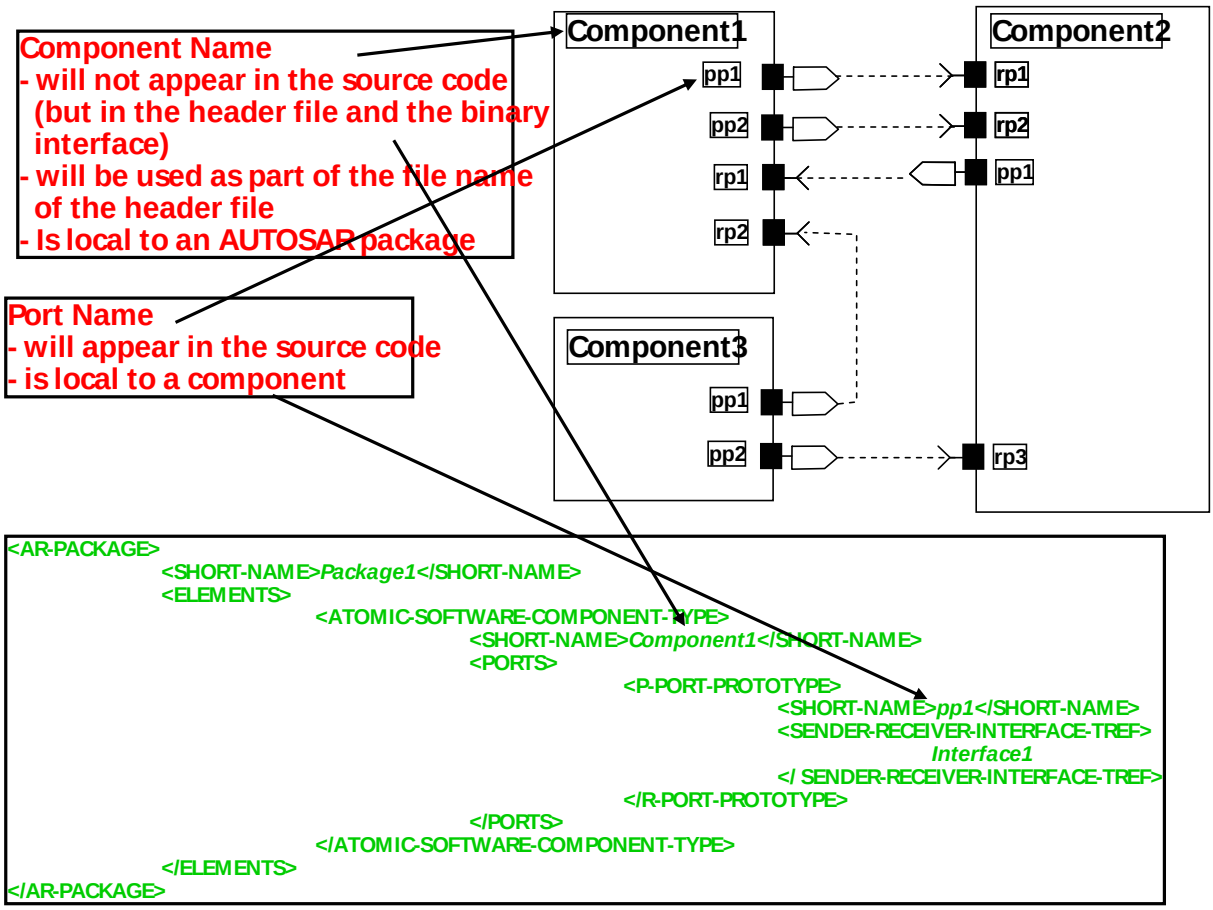

Figure 1: Components and ports

[1] The keywords and keyword abbreviations used in this example may not be consistent to the keyword list.

6.2.5 Interfaces and Data Elements

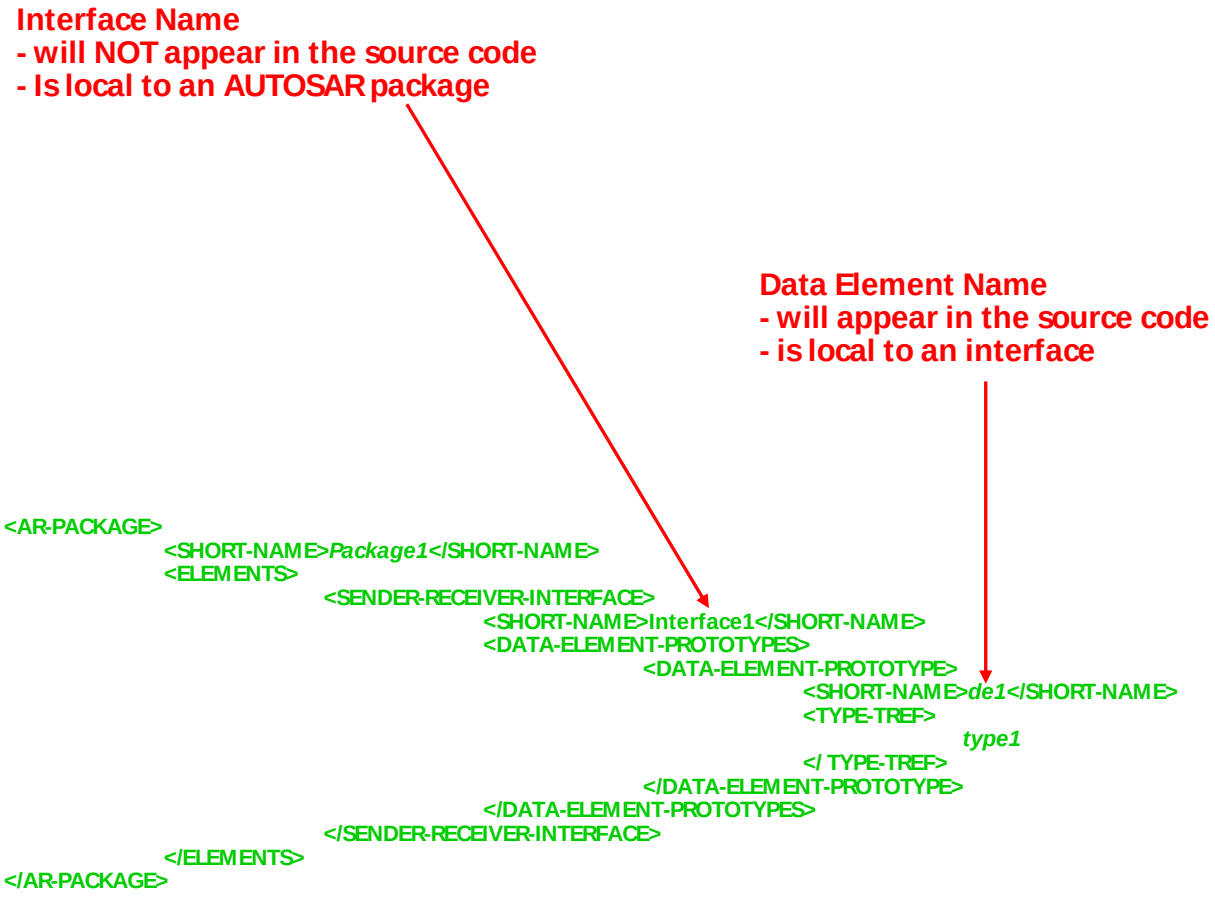

Figure 2: Interfaces and data elements

6.3 Usage of Keywords

Depending on its role in the component design, names for component types, ports, port interfaces or data elements can make use of the keywords and abbreviations for signal names, which are described in more detail in 6.3.1. The advantage is, that this results in relatively short names with established meaning.

[NR009] No underscores shall be used to separate keywords, because the RTE uses them to separate port names from Data Element names. Instead of underscores **capital letters** shall be used to separate the keywords.

6.3.1 Keyword Composition Semantic Rules

[NR010] Names are composed by concatenating predefined keywords.

[NR011] Each keyword shall start with an uppercase letter, or a number, followed by lowercase letters.

[NR013] Keywords shall be single English word. To shorten the names within maximum allowed numbers of characters keyword abbreviations are provided.

[NR018] A keyword (abbreviation) should not be a valid single English word unless the meanings of the keyword and the English word are the same. This avoids potential misunderstanding while reading short names.

[NR014] Short names shall contain keyword abbreviations only.

[NR015] Long names should contain keywords and use keyword abbreviations only if name length restrictions require it.

[NR016] Keywords and keyword abbreviations must be unique.

[NR017] Some terms of common usage in the automotive environment cannot be expressed by a single English word. In such a case the abbreviation and the keyword shall be identical.

Examples:

Keyword	Keyword Abbreviation	DefinitionEnglish
Engine	Eng	Engine
Abs	Abs	Antilock Braking System

Table 1 Example of common use keyword abbreviation

[NR018] In order to build readable and understandable names keywords must be arranged according to semantic rules. Such rules define **Fields** that must be used in a defined sequence:

Sequence	Field Name	Description	Rules and Examples
1	**Mean / Environment / Device**	Physical mean, environment. Define the element subject of **Action.**	It shall be a noun. It can be also a compound definition. Abbreviation or acronym cannot end with a digit. Examples for Mean: Fuel Examples for Environment: Air, Ambient Examples for Device: Accelerator, AcceleratorPedal, Engine
2	**Action / Physical Type**	Action or physical type conditioning or modifying the **Mean/Environment /Device.**	The Action shall be a verb. The Physical Type shall be a noun. It can be also a compound. Abbreviation or acronym cannot end with a digit. Examples for Action: Move, Pull, Release, Lock, OpenClose, ShiftUp Examples for Physical Type: Temperature, Speed

Sequence	Field Name	Description	Rules and Examples
3	**Condition / Qualifier**	Qualifies the **Mean / Environment / Device** or **Action** in terms of data flow, event issuing or expresses a particular condition of the signal in terms of numeric treatment, time validity, precision quality, location.	It shall be a noun or an adjective. It can be also a compound definition. Abbreviation or acronym cannot end with a digit. Examples for Condition: Absolute, Current, Old, New, Differential, AbsoluteEstimated, Examples for Qualifier: Request, Command, Status
4	**Index / Dimension**	Identifies the signal as part of a logically structured information or its dimension. Can be used to identify elements multiply instanced (index) or section of information.	It shall be a number, a single character, or an adjective describing the part**.** When used, it is always the last keyword in the sequence: Examples for Index: BrakeSwitch**1** Examples for Dimension: WheelSpeed**4**

Table 2 Fields

Fields are concatenated according to the **Sequence** column numbering:
MeanEnvironmentDevice*ActionPhysicaltype*ConditionQualifier*IndexDimension*

[NR034] Prepositions can not be classified as belonging to any of the semantic fields. Therefore their usage shall be limited. When they are used, they restart the sequence of the semantic fields. This leads to the following naming pattern:
MeanEnvironmentDevice*ActionPhysicaltype*ConditionQualifier*IndexDimension*Preposition MeanEnvironmentDevice*ActionPhysicaltype*ConditionQualifier*IndexDimension*Preposition …

[NR019] None of the fields are mandatory and fields can be repeated, i.e. names can be built by using an arbitrary number of fields.

[NR020] Only keywords classified as **Index/Dimension** can start with a number. When used, **Index/Dimension** field is always the last in the sequence of keywords.

The following examples are valid long names:
GearActual
Mirror*Move*Command
Engine*Speed*
Engine*Speed*Maximum

resulting in the following short names:
GearAct
Mirr*Move*Cmd

Eng*Spd*
Eng*Spd*Max

Keywords can be concatenated to build compound definitions.
Examples (long names):
BrakePedalSwitch*1*
VehicleBodyVerticalAccelerationBaseMeasured
***OpenClose*Request**
DamperStatusActive

resulting in the short names:
BrkPedlSwi*1*
VehBodyVertABaseMeasd
***OpenCls*Req**
DamprStsAcv

The following example shows the usage of prepositions:
Long Name:
Engine*Speed*At*Gear*Target
Short Name:
Eng*Spd*At*Gear*Tar

[NR021] The following table shows what **Fields** are allowed to compose names for different Model Elements.
All Model Elements but SW-COMPU-METHOD are listed since such element is not part of the Functional Interfaces Master Table.

Model Element	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index/Dimension
ARPackage	x			x
SenderReceiverInterface	x	x	x	x
DataElementPrototype	x	x	x	x
DataType	x	x	x	x
ComponentType	x	x	x	x
ComponentPrototype	x	x	x	x
PortType	x	x	x	x
Unit	x		x	

Table 3 Allowed combinations of keywords for meta model elements

The following examples show incorrect names:

Naming a PortType: **Maximum*Engine*Speed*** causes a keyword sequence error: **Condition/Qualifier** keyword cannot precede **Mean/Environment/Device** keyword. The correct sequencing is: **Engine*Speed*Maximum**

Naming a DataElementPrototype: **Mirr*Move*Cmd** causes a Forbidden Field name for Model Element error: **Mean/Environment/Device** and ***Action*** keywords cannot be used for DataElementPrototype. To workaround this define an interface **Mirr*Move*** having a data element named **Cmd**.

6.4 Model Elements

The naming conventions apply to the *ShortName* (*SHORT-NAME*) attribute and the *LongName (LONG-NAME)* of the element. The element must be a specialization of *Identifiable*. The elements are referred to by their meta-model name. The names in brackets are the XML element names.

To come to a reasonable naming conventions, for each element the objectives of the convention are described first.

[NR031] Long Names shall be constructed from keywords according to the rules given in Section 6.3.

[NR032] Short names shall be constructed from keyword abbreviations according to the rules given in Section 6.3.

6.4.1 ARPackage (AR-PACKAGE)

An ARPackage creates a name space. In one system package names have to be unique. Packages can have sub-packages.

The following rules are defined for the package structure:

- [NR022] Below the root an `ARPackage` called `AUTOSAR` shall be placed. Everything inside the top-level package AUTOSAR is standardized by the AUTOSAR consortium (see requirement [MG001], [MG056]). The top-level package name AUTOSAR is reserved by the AUTOSAR consortium and shall not be used elsewhere.
- [NR023] Within this `ARPackage` packages called `DataTypes`, `Units`, `SenderReceiverInterfaces`, and `Compositions` shall be placed.

These rules define the package structure for the standardized elements of the M1 modeling level. According to requirement MG056 the AUTOSAR package is a reserved name space. Only elements which are standardized by the AUTOSAR consortium shall be added to this name space. These elements shall not be modified.

The following figure shows an example for the resulting package structure.

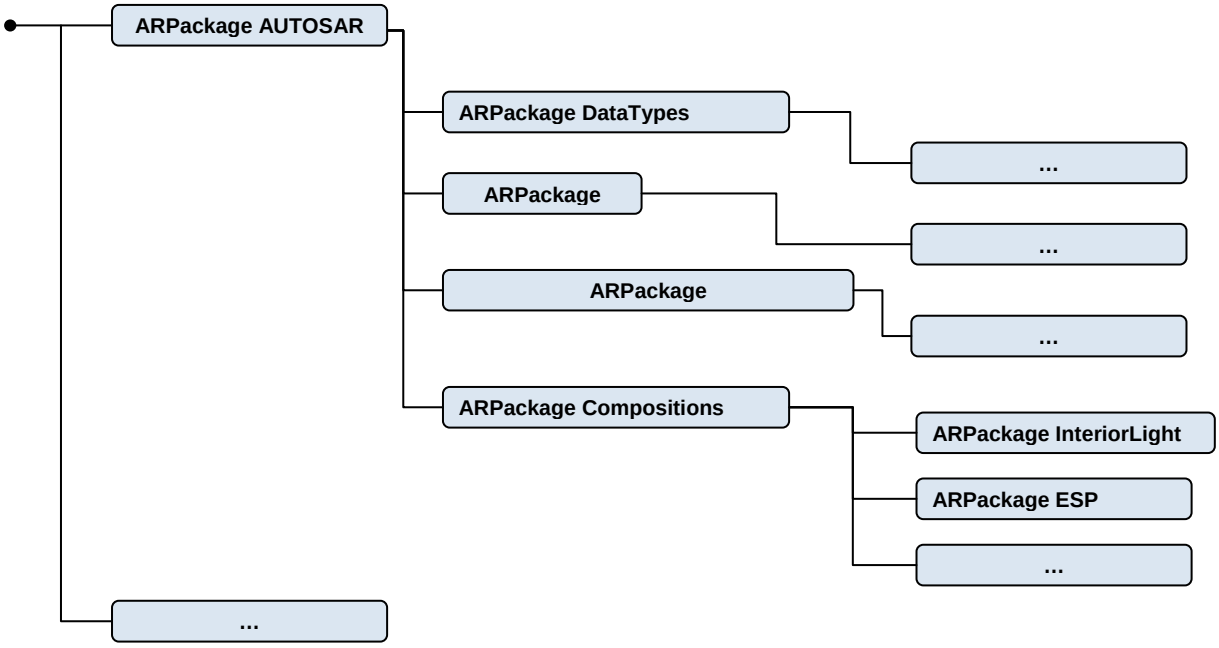

Figure 3: AUTOSAR Package structure

6.4.2 SenderReceiverInterface (SENDER-RECEIVER-INTERFACE)

Recommendations:

[NR024] A SenderReceiverInterface is a reusable element. So if reuse is intended, the name should be independent of its concrete usage by components and ports and should only reflect its general purpose.

Example:

```
<SENDER-RECEIVER-INTERFACE>
    <SHORT-NAME>BatU</SHORT-NAME>
    <LONG-NAME>BatteryVoltage</LONG-NAME>
    <DESC>Provides the actual voltage level as measured at the battery.</DESC>
    <DATA-ELEMENTS>
        <DATA-ELEMENT-PROTOTYPE>
            <SHORT-NAME>value</SHORT-NAME>
            <DESC></DESC>
            <TYPE-TREF>/AUTOSAR/DataTypes/BatV</TYPE-TREF>
            <IS-QUEUED>false</IS-QUEUED>
        </DATA-ELEMENT-PROTOTYPE>
    </DATA-ELEMENTS>
</SENDER-RECEIVER-INTERFACE>
```

[NR025] To allow reuse, the communication path shall not be encoded in the interface name.

The following names are bad examples for interface names:
SSM2EPBRequestedVehicleBrakeTorque
SSM2ESPRequestedVehicleBrakeTorque
The interface name in this example shall be “RequestedVehicleBrakeTorque” and the names of the ports could be “SSM2EPBRequestedVehicleBrakeTorque” and “SSM2ESPRequestedVehicleBrakeTorque”.

6.4.3 DataElementPrototype (DATA-ELEMENT-PROTOTYPE)

Objectives:

- Should only be significant relative to the SenderReceiverInterface.
- Shall be a unique name per SenderReceiverInterface.

Recommendations:

- [NR026] The name shall reflect the content of the data. If no sensible name for the data element can be found and the interface is used to indicate a data transfer, the name `Value` should be used.
- [NR027] If the data element prototype contains no value information, but an operation, the name shall reflect the operation that is driven by the data element prototype.
  Example: `Close`.
- [NR028] If no sensible name for the data element prototype can be found and the interface is used to indicate an operation, the name `Operation` should be used.
- [NR029] If the SenderReceiverInterface contains more than one data element prototype denoting the same operation, a “Mean/Environment/Device” keyword must be used to differentiate the operations. (Here “operation” is not used in the sense of ClientServerInterface operations, but as an operation or action which is triggered by a SenderReceiver communication. “Operation” is also not identical to the semantic field “Action”.)
  Example:
  `ExteriorLightDisplay` `ExtLiDisp`
  `ParkingLightDisplay` `PrkgLiDisp`
  Remark: In the above example “Display” is used as “Action/Physical Type”. Hence it is after the “Mean/Environment/Device” keyword.

- [NR030] Data element prototype names should start with capital letters. If they contain multiple words, the words should be visibly separated by starting them with upper case letters.

Example:

```
<DATA-ELEMENT-PROTOTYPE>
    <SHORT-NAME>value</SHORT-NAME>
    <DESC></DESC>
    <TYPE-TREF>/AUTOSAR/DataTypes/BatV</TYPE-TREF>
    <IS-QUEUED>false</IS-QUEUED>
</DATA-ELEMENT-PROTOTYPE>
```

6.4.4 DataType (DATA-TYPE)

The following classes are subclasses of the class DataType in the AUTOSAR meta model. Therefore, the naming convention applies also to these classes.
PrimitiveType (PRIMITIVE-TYPE)
CompositeType (COMPOSITE-TYPE)
ArrayType (ARRAY-TYPE)

Recommendations:

- [NR031] The name shall reflect the meaning of the type.
- The name will show up at implementation level via “typedef”
- [NR032] No prefixes, such as “t_” shall be used in the type name.
- [NR044] If there are several data types, which represent the same physical entity, but with different ranges or resolution, the name shall reflect the use case of the different types. If no such generic use case can be found, the type names shall end with a sequence number. No meaning should then be associated with the number.

The rule NR044 ensures the reusability of the types.

Example: Temperature1, Temperature2, Temperature3

Example XML:

```
<PRIMITIVE-TYPE>
    <SHORT-NAME>BatV</SHORT-NAME>
    <LONG-NAME>BatteryVoltage</LONG-NAME>
    <DESC>It represents the battery voltage level</DESC>
    <SEMANTICS-REF>/AUTOSAR/DataTypes/compu/BatV</SEMANTICS-REF>
    <TYPE-REF>/AUTOSAR/DataTypes/UInt8</TYPE-REF>
</PRIMITIVE-TYPE>
```

6.4.5 CompuMethod (SW-COMPU-METHOD)

[NR033] SW-COMPU-METHOD elements must be placed in their own package to avoid name clashes with the types they are used in. This allows using the same name for the type and the CompuMethod.

Example:

```
<COMPU-METHOD>
     <SHORT-NAME>BatV</SHORT-NAME>
     <LONG-NAME>BatteryVoltage</LONG-NAME>
     <CATEGORY>LINEAR</CATEGORY>
     <UNIT-REF>/AUTOSAR/Units/volt</UNIT-REF>
     <COMPU-PHYS-TO-INTERNAL>
         <COMPU-SCALES>
             <COMPU-SCALE>
                 <COMPU-RATIONAL-COEFFS>
                     <COMPU-NUMERATOR>
                         <V>0</V>
```

```
                        <V>0,1</V>
                      </COMPU-NUMERATOR>
                      <COMPU-DENOMINATOR>
                        <V>1</V>
                      </COMPU-DENOMINATOR>
                    </COMPU-RATIONAL-COEFFS>
                  </COMPU-SCALE>
                </COMPU-SCALES>
              </COMPU-PHYS-TO-INTERNAL>
            </COMPU-METHOD>
```

6.4.6 ComponentType (COMPONENT-TYPE)

The following classes are subclasses of the class ComponentType in the AUTOSAR metamodel. Therefore, the naming convention applies also to these classes.
CompositionType (COMPOSITION-TYPE)
AtomicSoftwareComponentType (ATOMIC-SOFTWARE-COMPONENT-TYPE)
SensorActuatorSoftwareComponentType (SENSOR-ACTUATOR-SOFTWARE-COMPONENT-TYPE)

Objectives:

- Avoid name clashes within the package
- Classification of components
- Not for component prototypes (see 6.4.7)

Recommendations:

- Use a noun or concatenation of nouns.
  Example

`SensorSpeed`	`SnsrSpd`

- [NR035] Using a prefix to indicate the application domain (such as powertrain, body, chassis) of the ComponentType is **not** allowed.

- The name should be understandable.

- Names shall be constructed from keywords, where applicable, see 6.3.

  Examples

`VehicleSpeed`	`VehSpd`
`VehicleMotionDemand`	`VehMtnDmd`
`WiperWasher`	`WiprWas`

Example:

```
<COMPOSITION-TYPE>
   <SHORT-NAME>RemKey</SHORT-NAME>
   <LONG-NAME>RemoteKey</LONG-NAME>
   <PORTS>
    <P-PORT-PROTOTYPE>
     <SHORT-NAME>CarFindr</SHORT-NAME>
     <LONG-NAME>CarFinder</LONG-NAME>
     <PROVIDED-INTERFACE-TREF>/AUTOSAR/Interfaces/CarFindrReq</PROVIDED-INTERFACE-TREF>
    </P-PORT-PROTOTYPE>
    <P-PORT-PROTOTYPE>
     <SHORT-NAME>AccessRemoteKey</SHORT-NAME>
     <PROVIDED-INTERFACE-TREF>/AUTOSAR/Interfaces/CenLckgReq</PROVIDED-INTERFACE-TREF>
    </P-PORT-PROTOTYPE>
    </PORTS>
```

```
  <COMPONENTS/>
  <CONNECTORS/>
</COMPOSITION-TYPE>
```

6.4.7 ComponentPrototype (COMPONENT-PROTOTYPE)

Objectives of naming conventions for component prototypes (which are the instances of each component type):

- avoid name clashes within the composition
- classification of components

These names are not used within the API to the RTE.

Rules:

- Use a noun or concatenation of nouns.

[NR036] Using a prefix to indicate the application domain (such as powertrain, body, chassis) of the ComponentPrototype is **not** allowed.

The name should be understandable. In case a composition contains more than one instance of the same component type, the prototype name should reflect the role of this specific instance in the composition.

Example: `LeftDoor`, `RightDoor`

Example:

```
<COMPONENT-PROTOTYPE>
     <SHORT-NAME>CenLckgMst</SHORT-NAME>
     <LONG-NAME>CentralLockingMaster</LONG-NAME>
     <TYPE-TREF>/AUTOSAR/ComponentTypes/CenLckgMst</TYPE-TREF>
</COMPONENT-PROTOTYPE>
```

6.4.8 PortPrototype (P-PORT-PROTOTYPE, R-PORT-PROTOTYPE)

Objectives:

- should only be significant relative to the SW component (e.g. left, right etc.)
- unique name per component

Recommendations:

- [NR037] The PortPrototype shall indicate the operation or data that is provided/required by the port

Example:
Long-Name: Status
Short-Name: Sts

DON'TS:

- [NR038] Do not include the component name in the port name.

Example:

```
<R-PORT-PROTOTYPE>
 <SHORT-NAME>PassDoorLckSt</SHORT-NAME>
 <LONG-NAME>PassengerDoorLockState</LONG-NAME>
 <REQUIRED-INTERFACE-TREF>/AUTOSAR/Interfaces/LckSt</REQUIRED-INTERFACE-TREF>
</R-PORT-PROTOTYPE>
```

6.4.9 Units (UNIT)

Objectives:

- Shall be unique.

Recommendations:

- [NR040] If the unit is a formula containing “power of 2” the name shall contain “Squared”
- [NR041] If the unit is a formula containing “power of 3” the name shall contain “Cubed”
- [NR042] If the unit is a formula containing “power of >3” the name shall contain `ToPwrOf<number>`.
- [NR043] If the unit is a formula containing a division the name shall contain “Per”

Example:

```
<UNIT>
    <SHORT-NAME>DegCgrd</SHORT-NAME>
    <LONG-NAME>DegreeCentigrade</LONG-NAME>
    <DISPLAY-NAME>degC</DISPLAY-NAME>
</UNIT>

<UNIT>
    <SHORT-NAME>MtrPerSecCubd</SHORT-NAME>
    <LONG-NAME>MeterPerSecondCubed</LONG-NAME>
    <DISPLAY-NAME>m/s^3</DISPLAY-NAME>
</UNIT>

<UNIT>
    <SHORT-NAME>NwtPerMtr</SHORT-NAME>
    <LONG-NAME>NewtonPerMeter</LONG-NAME>
    <DISPLAY-NAME>N/m</DISPLAY-NAME>
</UNIT>
```

6.4.10 Enumerations

There is no explicit support for enumeration types in the metamodel. Enumerations are modeled by using a PrimitiveType and a CompuMethod.

Example:

```
<PRIMITIVE-TYPE>
        <SHORT-NAME>GearLvrPsn</SHORT-NAME>
```

```
        <LONG-NAME>GearLeverPosition</LONG-NAME>
        <DESC>Only defined for automatic transmissions. Based on the lever position.</DESC>
        <SEMANTICS-REF>/AUTOSAR/DataTypes/enum/GearLvrPsn</SEMANTICS-REF>
        <TYPE-REF>/AUTOSAR/DataTypes/UInt3</TYPE-REF>
</PRIMITIVE-TYPE>

<AR-PACKAGE>
   <SHORT-NAME>enum</SHORT-NAME>
   <ELEMENTS>
      <COMPU-METHOD>
        <SHORT-NAME>GearLvrPsn</SHORT-NAME>
        <LONG-NAME>GearLeverPosition</LONG-NAME>
        <CATEGORY>TEXTTABLE</CATEGORY>
        <DESC>Enumeration{ N, P, R, D, S, D1, D2, D3 }</DESC>
        <COMPU-INTERNAL-TO-PHYS>
            <COMPU-SCALES>
                <COMPU-SCALE>
                    <DESC>0 = N</DESC>
                    <LOWER-LIMIT>0</LOWER-LIMIT>
                    <UPPER-LIMIT>0</UPPER-LIMIT>
                    <COMPU-CONST><VT>N</VT></COMPU-CONST>
                </COMPU-SCALE>
                <COMPU-SCALE>
                    <DESC>1 = P</DESC>
                    <LOWER-LIMIT>1</LOWER-LIMIT>
                    <UPPER-LIMIT>1</UPPER-LIMIT>
                    <COMPU-CONST><VT>P</VT></COMPU-CONST>
                </COMPU-SCALE>
                <COMPU-SCALE>
                    <DESC>2 = R</DESC>
                    <LOWER-LIMIT>2</LOWER-LIMIT>
                    <UPPER-LIMIT>2</UPPER-LIMIT>
                    <COMPU-CONST><VT>R</VT></COMPU-CONST>
                </COMPU-SCALE>
                <COMPU-SCALE>
                    <DESC>3 = D</DESC>
                    <LOWER-LIMIT>3</LOWER-LIMIT>
                    <UPPER-LIMIT>3</UPPER-LIMIT>
                    <COMPU-CONST><VT>D</VT></COMPU-CONST>
                </COMPU-SCALE>
                <COMPU-SCALE>
                    <DESC>4 = S</DESC>
                    <LOWER-LIMIT>4</LOWER-LIMIT>
                    <UPPER-LIMIT>4</UPPER-LIMIT>
                    <COMPU-CONST><VT>S</VT></COMPU-CONST>
                </COMPU-SCALE>
                <COMPU-SCALE>
                    <DESC>5 = D1</DESC>
                    <LOWER-LIMIT>5</LOWER-LIMIT>
                    <UPPER-LIMIT>5</UPPER-LIMIT>
                    <COMPU-CONST><VT>D1</VT></COMPU-CONST>
                </COMPU-SCALE>
                <COMPU-SCALE>
                    <DESC>6 = D2</DESC>
                    <LOWER-LIMIT>6</LOWER-LIMIT>
                    <UPPER-LIMIT>6</UPPER-LIMIT>
                    <COMPU-CONST><VT>D2</VT></COMPU-CONST>
                </COMPU-SCALE>
                <COMPU-SCALE>
                    <DESC>7 = D3</DESC>
                    <LOWER-LIMIT>7</LOWER-LIMIT>
                    <UPPER-LIMIT>7</UPPER-LIMIT>
                    <COMPU-CONST><VT>D3</VT></COMPU-CONST>
                </COMPU-SCALE>
            </COMPU-SCALES>
        </COMPU-INTERNAL-TO-PHYS>
    </COMPU-METHOD>
   </ELEMENTS>
</AR-PACKAGE>
```

7 Appendix: Keywords

Keyword	*Keyword Abbreviation*	*DefinitionEnglish*	*Mean / Environment / Device*	*Action / Physical Type*	*Condition / Qualifier*	*Index / Dimension*	*Use Case (long names)*
0		Index 0. This keyword is used to express the number zero in form of an index				x	
1		Index 1. This keyword is used to express the number one in form of an index				x	BrakePedalSwitch**1**
2		Index 2. This keyword is used to express the number two in form of an index				x	BrakePedalSwitch**2**
3		Index 3. This keyword is used to express the number three in form of an index				x	
4		Index 4. This keyword is used to express the number four in form of an index				x	
5		Index 5. This keyword is used to express the number five in form of an index				x	
6		Index 6. This keyword is used to express the number six in form of an index				x	
7		Index 7. This keyword is used to express the number seven in form of an index				x	
8		Index 8. This keyword is used to express the number eight in form of an index				x	
9		Index 9. This keyword is used to express the number nine in form of an index				x	
1d		index 1D. used for location of oxigen sensors (4 banks and 2 sensors) - Parameter Identification 1D according with ISO15031-5. 2 banks and 4 sensors are identified by the index 13				x	
4wd	4wd	The four wheel drive is a feature of some cars where four wheels are used to transmit the force of the engine to the ground.			x		
Abs	Abs	antilock braking system	x				**Abs**ControlActivation
Absolute	Absv	absolute value			x		BodyPitchAngle**Absolute**Estimated
Ac	Ac	alternating current/voltage	x				
Acc	Acc	Adaptive Cruise Control	x				**Acc**
Acceleration	A	This keyword is used to give the physical value of acceleration. It is the value of gaining speed.		x			WheelVertical**Acceleration**Estimated
Accelerator	Accr		x				**Accelerator**PedalRatio
Access	Acs			x			**Access**RequestKeyless
Accommodation	Acco				x		
Acknowledge	Ack				x		
Acknowledged	Ackd				x		
Acoustic	Aco				x		
Acquire	Acq			x			
Acquired	Acqd				x		
Acquisition	Acqn				x		
Action	Actn	action for function calls. The keyword ACTION is used to express function calls. All ACTION-calls are collected in a document 'action_collection.xls' in the Naming-folder.			x		Mirror**Action**Status
Activate	Acvt			x			
Activated	Acvd				x		

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Activation	Acvn			x			AbsControl**Activation**
Active	Acv		x		x		**Active**DamperStatus
Actual	Act				x		Gear**Actual**
Actuator	Actr		x				Brake**Actuator**Mode
Adapter	Adpr		x				MirrorActuator**Adapter**
Adaptive	Adpv				x		
Additional	Addl		x		x		**Additional**SteeringAngleFront
Additive	Add				x		
Address	Adr				x		
Adhesion	Adh			x			
Adjust	Adj			x			MirrorManual**Adjust**Request
Adjustment	Adjmt			x			
Advance	Adv				x		
After	Aft		x				
Aging	Agi				x		
Aid	Aid			x			Pull**Aid**Command
Air	Air	Also used as definition of "fresh gas"	x				Ambient**Air**Temperature
Airbag	Airb	airbag	x				
Alarm	Alrm				x		**Alarm**RequestVisual
Allowable	Allwbl				x		EngineMode**Allowable**Requests
Allowed	Allwd				x		TorqueAtClutchMaximum**Allowed**ForTransmissionProtection
Alternative	Altv		x				
Alternator	Alt	alternator	x				**Alternator**DeactivationFlag
Altitude	Alti	in case of class = "Physical meaning": Unit must be [m]			x		
Ambient	Amb		x				**Ambient**AirTemperature
Amount	Amnt			x			Rain**Amount**Status
Ampere	Ampr		x				
Amplitude	Amp				x		RoadExcitation**Amplitude**
Amt	Amt	automated manual transmission. use: LV_PUMP_AMT_ON activation of hydraulic pump for AMT-actuator supply	x				**Amt**
Analog	An				x		
And	And	Preposition	x	x	x		TqAtCrksftBySlow**And**FastPathMin
Angle	Ag			x			BodyPitch**Angle**AbsoluteEstimated
Angular	Agr				x		Wheel**Angular**VelocityStandard
Anti	Anti		x				**Anti**TheftSystem
Application	Appl		x				
Arbitrated	Arbd				x		DeltaTorqueRequestedFront**Arbd**
Arbitration	Arbn			x			Acceleration**Arbitration**Result
Area	Ar			x			

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Armature	Arm	This keyword described the constructional element of an armature. It should be used e.g. for calculations of the armature movement of a coil actuator.	x				
Array	Ary				x		
Ash	Ash		x				
Asr	Asr	anti slip regulation (Acceleration Slip Control)	x				
Assist	Assi	assistant (assistance). this keyword expresses the availability of an electronic assitant or assistance for a component or system. For example: the electronic brake assistant.	x				Brake**Assist**Request
Assistant	Asi	assistant (assistance). this keyword expresses the availability of an electronic assitant or assistance for a component or system. For example: the electronic brake assistant.	x				
Assisted	Assid		x				
Asw	Asw	Application Software	x				
Asynchronous	Async		x				
At	At	Preposition for location, time, presence	x	x	x		Torque**At**ClutchMaximum
Ata	Ata	American Trucking Associations Diagnostics Bus. The SAE (Society of Automotive Engineers) in conjunction with the ATA (American Trucking Associations) established the J1708/J1587 diagnostics bus for trucks	x				
Attenuator	Attn	The attenuator switch is a part of the powerstage which drives the piezo injectors.			x		
Autarkic							
Authorization	Authn			x			
Authorize	Auth			x			
Automatic	Aut				x		Mirror**Automatic**MoveRequest
Auxiliary	Aux				x		
Available	Avl				x		TqImdt**Available**ForPtcAtCrksft**Max**
Awd	Awd	All Wheel Drive	x				**Awd**PtTqDistributionToWheels4Req
Axis	Axis		x				**Axis**PositionStatus
Axle	Axle		x				Front**Axle**ActiveStabilizerStatus
B1	B1	misfire type			x		
B4	B4	misfire type			x		
Back	Back				x		
Backlit	Backlt				x		
Backlite	Backlite		x				
Balance	Bal			x			DynamicHandling**Balance**Coefficient
Balancing	Baln			x			
Bank	Bank		x				Road**Bank**Acceleration
Bar	Bar	As unit of measure	x				
Barometric	Baro				x		
Base	Bas	Preprocessed sensor data, model free, abstraction of the sensor hardware.			x		PitchRate**Base**
Battery	Bat		x				**Battery**Voltage
Bdc	Bdc	bottom dead center	x				
Beginning	Beg				x		

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Belt	Blt	seat belt. this keyword is used to express the seat belt, which is a kind of security rope to keep the passenger in the seat in case of an accident.	x				
Bench	Bench	bench mode. During OBD I / OBD II diagnoses and error management validation and tuning, the bench mode has to be used so as to force some failures.	x				
Bi	Bi	Prefix for double					
Bit	Bit				x		
Blind	Bli				x		
Blink	Blink			x			
Block	Blk				x		
Blocked	Blkd				x		
Bls	Bls	brake light switch	x				
Board	Bd		x				
Body	Body		x				**Body**PitchAngleAbsoluteEstimated
Boolean	Bool				x		
Boost	Boost	A general expression to increase performance for a short period of time or to give a higher output. e.g. to give high voltage output or to support the combustion engine with additional torque (e.g. with a Integrated Starter Generator) for acceleration	x				
Boot	Boot				x		
Bottom	Botm		x				
Bounce	Bnce		x				
Bracket	Brkt		x				
Brake	Brk		x				**Brake**ActuatorMode
Bridge	Brdg	bridge contact			x		
Brightness	Bri			x			Outside**Brightness**Status
Bsw	Bsw	Basic Software. This keyword is used to describe a certain functional relationship with the infrastructural part of the software. Do not mix up with INFR which gives the architectural relationship, e.g. in an Action call.	x				
Buffer	Buf				x		
Burner	Brnr		x				
Burning	Brng			x	x		
Bus	Bus				x		
Button	Btn		x				EpbControl**Button**State
Buzzer	Buz				x		
By	By	Preposition	x	x	x		TqAtCrksftRealized**By**SlowPathMin
Bypass	Byp	BYP shall describe a component of a bypass.		x			SlipControl**Bypass**Request
Byte	Byte	byte			x		
C2	C2	class 2. class 2 is a GM version of J1850			x		
Cabin	Cbn		x				
Cac	Cac	Charged Air Cooler	x				
Calculated	Clcd				x		
Calculation	Clcn			x			
Calibration	Cal				x		
Call	Call				x		

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Camshaft	Camsft		x				
Can	Can	Controller Area Network	x				
Cancel	Cncl			x			
Cancelled	Cncld				x		
Candela	Cd	Unit of measure of luminous intensity	x				
Canister	Cstr		x				
Capability	Cpby				x		SensorDetection**Capability**
Capacity	Cp	this keyword is used to express the Physical Meaning of a capacity (e.g. thermal capacity of oil)		x			
Car	Car		x				**Car**FinderRequest
Carried	Carrd				x		
Case	Case		x				
Catalyst	Cat		x				
Centigrade	Cgrd		x				Degree**Centigrade**
Center	Ce				x		
Central	Cen		x		x		**Central**LockingStatus
Chamber	Chmb		x				
Change	Chg			x			
Changeable	Chgb				x		
Channel	Chn	This keyword is used to express a channel. A channel is a defined port (of a bundle of ports) of a data line.			x		
Characteristic	Chartc			x			
Charcoal	Chrcl		x				
Charge	Ch				x		
Charger	Chrgr		x				
Chassis	Chassis		x				**Chassis**Number
Check	Chk				x		
Checksum	Cks				x		
Child	Chd		x				**Child**ProtectionDiagnosisRequest
Choke	Choke	Choking, choke line. this keyword is used to describe the appearance of choking effects in an (air-)stream, e.g. at the choke line of a turbocharger (which is a characteristic parameter)	x				
Circuit	Circ		x				
Circumference	Circum	Used in the meaning of the wheel circumference CIR_WHEEL	x				
Circumferential	Circuml				x		WheelSpeed**Circumferential**Standard
Clamp	Clmp			x			**Clamp**Control
Clamped	Clmpd				x		
Class	Class				x		
Cleaner	Clnr		x				
Cleaning	Clng	Cleaning. this keyword describes the the action of cleaning e.g. a component.			x		
Clear	Clr			x			
Cleared	Clrd				x		
Climatisation	Clima			x			
Clock	Clk				x		
Close	Cls			x			Open**Close**Request
Closed	Clsd				x		Open**Closed**Status

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Closure	Clsr				x		
Clutch	Clu		x				TorqueAt**Clutch**Maximum
Cng	Cng	compressed natural gas	x				
Co	Co	carbon monoxide. carbon monoxide is one of the main exhaust gas pollutants of a combustion engine	x				
Coasting	Coast	situation of vehicle, where the clutch is kept open and the vehicle is moving by its own inertia, e.g. rolling downhill (coast driving state of a vehicle is a typical transmission / clutch function).		x			
Coated	Cot				x		
Code	Cod				x		
Coefficient	Coeff				x		DynamicHandlingBalance**Coefficient**
Cog	Cog	Center of Gravity		x			**Cog**PositionEstimated
Coil	Coil		x				
Cold	Cold				x		
Collector	Coll		x				
Collision	Cllsn			x			**Collision**Mitigation
Column	Col				x		
Combustion	Cmb		x	x			**Combustion**Engine, Engine**Combustion**Status
Comfort	Cmft	comfort. this keyword is used to express something as comfortable or convenient	x	x	x		**Comfort**AccelerationCommandInterface
Coming	Cmng		x		x		**Coming**HomeLeavingHomeRequest
Command	Cmd				x		Brightness**Command**
Common	Cmn	common. for common environmental data (stored with all failures of one project).			x		
Communication	Com				x		
Commutation	Cmu				x		
Comparison	Comp				x		
Compartment	Cmptmt		x				
Compensation	Cmp				x		Roll**Compensation**LevelActual
Complement	Cpl				x		
Complete	Cmpl				x		
Component	Cpt				x		
Compression	Cmpn				x		
Compressor	Cmpr	This keyword is used to express a component producing a compressed (= with raised pressure) working medium, e.g. air, refrigerant.	x				AirConditioning**Compressor**TorqueRequest
Concentration	Conc			x			
Condition	Cdn				x		TorqueAtCrankshaftForPtcAtOptimum**Condition**Maximum
Conditioner	Cdnr		x				
Conditioning	Cdng		x		x		Air**Conditioning**CompressorTorqueRequest
Configuration	Cfg				x		
Configured	Cfgd				x		
Confirmation	Cfm				x		

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Confirmed	Cfmd				x		
Constant	Con				x		
Consumption	Cns				x		
Continuous	Contns				x		
Control	Ctl			x			BodyLevel**Control**
Controlled	Ctld				x		
Controller	Ctlr		x				
Convection	Cnvc				x		
Conversion	Cnvn			x			EngineToWheelTorque Ratio**Conversion**
Converter	Cnvr				x		
Convertible	Cnvtb		x				**Convertible**Roof
Coolant	Coolt		x				
Cooling	Coolg	This keyword is used to describe the cooling system e.g. of the engine. A cooling request can be fulfilled by air, coolant, ECF, CWP, etc.	x		x		FromSteeringTo**Coolin g**Request
Coordinated	Coord				x		
Coordination	Coorn				x		
Coordinator	Coorr		x		x		
Copy	Copy				x		
Corrected	Corrd				x		
Correction	Corrn				x		EngineTorque**Correcti on**Dynamic
Correlation	Corrln				x		
Coulomb	C	Unit of measure for Electric charge	x				
Count	Ct				x		
Counter	Ctr	Also applicable to running indexes.		x	x		
Countershaft	Ctrsft	counter shaft. the keyword CNTS for a counter shaft is used to express the existance of this mechanical component.	x				Gearbox**Countershaft** Activated
Country	Ctry		x				**Country**Code
Coupled	Coupld				x		
Coupling	Coupl	It is the keyword for any linkage of software modules or functionalities or to express a kind of strict connection between two elsewise not linked parts.			x		
Cpu	Cpu	central processing unit	x				
Crankcase	Crkcs		x				
Crankshaft	Crksft		x				EngineTorqueAt**Cranks haft**Actual
Crash	Crash		x				**Crash**Status
Crawl	Crawl			x			
Criteria	Cta				x		
Critical	Crit				x		
Cruise	Crs		x				
Cubic	Cub				x		
Cubed	Cubd				x		
Current	Cur				x		
Customer	Cus		x				
Cut	Cut				x		
Cutoff	Cutoff			x			
Cvt	Cvt	continuous variable transmission	x				
Cycle	Cyc				x		
Cylinder	Cyl		x				

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
D	D	Differential part of a control structure			x		
Damper	Dampr		x				Active**Damper**Status
Damping	Dampg				x		
Das	Das	Driver Assistant Steering	x				AbsFront**Das**DriverTorqueRequest
Dashboard	Dshb		x				**Dashboard**Brightness
Dashpot	Dash				x		
Data	Da			x			Variance**Data**Type
Date	Date	date, point of time. This keyword is used to refer to a precise moment or a specific date. This can be a "time stamp" or a calendar date as well.			x		
Dc	Dc	direct current/voltage			x		
Dcc	Dcc	distance cruise control. In case of cruise control on, the distance to the vehicle ahead is measured. If the distance falls below a defined limit, the vehicle speed is reduced automatically.	x				
Dct	Dct	Dual Clutch Transmission	x				
Deactivation	Deac				x		Alternator**Deactivation**Flag
Deadband	Dbnd			x			BrakeActuator**Deadband**Lower
Debounce	Deb			x			
Deceleration	Dece	deceleration. formerly DEACC introduced by Mr. Kunz			x		
Decrease	Dec	decrease, decrementation. this keyword is used to express the stepwise descent of a value or counter.			x		
Default	Dft	default			x		
Defective	Dfct				x		
Defueling	Defu	defueling. It shall be used to describe the action of taking fuel out of the tank.			x		
Degree	Deg		x				**Degree**Centigrade
Delay	Dly				x		
Delta	Delta				x		FrontArb**Delta**TorqueRequested
Demand	Dmd				x		HoldOn**Demand**State
Density	Dens			x			
Depression	Dep				x		
Desired	Des				x		
Detected	Detd				x		Kickdown**Detected**
Detection	Detn			x			Sensor**Detection**Capability
Deviation	De				x		
Device	Dev		x				
Dew	Dew	Dew Point	x				
Diagnosis	Diag			x			ChildProtection**Diagnosis**Request
Diagnostic	Diagc		x				**Diagnostic**Monitor
Diameter	Diam	This name describes the component size, e.g. of driving wheels			x		
Diesel	Dsl		x				
Difference	Dif				x		FrontWheelEstimatedLoad**Difference**
Differential	Dftl	drive train context	x				Active**Differential**YawStabilityControlStatus

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Digital	Dig				x		
Diluition	Dil				x		
Dim	Dim	used as compound with Ligth	x				Global**Dim**LightCommand
Direction	Dir				x		Driving**Direction**Intended
Directory	Dire				x		
Disable	Di				x		ParkingLight**Disable**
Disappear	Disa	disappear. used, in order to define a state of failure: "disappeared failure"		x			
Discharge	Dcha				x		
Discrete	Dis				x		
Disk	Dsk		x				
Displacement	Dpl				x		
Display	Disp	In both meanings, the display (Component) and to display (Characteristic)	x	x			
Displayed	Dispd	In both meanings, the display (Component) and to display (Characteristic).			x		SpeedSetpoint**Displayed**
Distance	Dst			x			TravelledWheel**Distance**Standard
Distribution	Dibtn				x		RollMoment**Distribution**
Division	Div				x		
Door	Door	use: LV_DOOR_OPEN driver door is open	x				**Door**Status
Down	Dwn				x		
Downhill	Dwnhl		x				
Downstream	Ds				x		
Dprt	Dprt	Derivative part of a control structure			x		
Drag	Drg	resistance, caused by mechanical, aerodynamical of topographical influences, being effective against a movement			x		
Drift	Drift				x		
Drive	Drv	drive (gear engaged)			x		
Driver	Drvr	Driver of the vehicle.	x				**Driver**PresenceFlag
Drivetrain	Dt				x		**Drivetrain**Open
Driving	Drvg	Action of driving the vehicle.	x				**Driving**DirectionIntended
Drop	Drp				x		
Dry	Dry	dry. dry is the opposite of lubricated in case of friction			x		
Dual	Dual		x				
Dummy	Dummy				x		
Duration	Dur				x		
Duty	Duty			x			
Dynamic	Dyn		x				**Dynamic**HandlingBalanceCoefficient
Dynamometer	Dyno		x				
E2p	E2p	e2prom	x				
Economy	Eco	economy. related to the detection of driver type either an economy/comfort oriented or a sportive/power requesting driver can be distinguished.			x		
Ecu	Ecu	electronic control unit	x				
Edge	Edge				x		
Edit	Edit			x			

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Effective	Efc				x		
Efficiency	Eff			x			
Egr	Egr	exhaust gas recirculation	x				
Ehb	Ehb	electro hydraulic brake. ECU get CAN messages from EHB system.	x				
Elapsed	Elpd				x		
Electric	Elt		x		x		**Electric**Machine
Electrical	Eltl		x		x		
Electronic	Eltc		x		x		
Electronically	Eltcly		x		x		
Electropneumatic	Eltpnm		x		x		
Element	Elm		x				
Emission	Emi		x				
Emulated	Emuld				x		
Emulation	Emuln				x		
Enable	Ena				x		
Enabled	Enad				x		
Enabling	Enag				x		
End	End				x		
Energy	Egy			x			
Engaged	Engd				x		ParkGear**Engaged**
Engagement	Engg	engagement. to express the situation of engaging e.g. a gear from neutral position / transmission gutter until synchronisation performed.	x				
Engine	Eng		x				**Engine**CombustionStatus
Enhanced	Enhd				x		
Enhancement	Enht				x		
Enrichment	Enchm				x		
Entry	Entry			x			
Environmental	Envtl		x				
Epb	Epb	Electric Parking Brake	x				**Epb**ActuatorMode
Equal	Equ				x		
Equipment	Equip		x				
Equivalent	Equiv				x		
Error	Err	The signal information of a defect is named with the keyword ERR. The physical meaning of ERR is the error itself.			x		Lamp**Error**Status
Esc	Esc	electronic stability control	x				**Esc**MapShiftRequest
Estimated	Estimd				x		BodyPitchAngleAbsolute**Estimated**
Estimation	Estimn				x		
Estimator	Estimr				x		
Evaluation	Evln			x			**Evaluator**WipingAutomatic
Evaluator	Evlr		x				**Evaluator**WipingAutomatic
Evaporative	Evap		x				
Event	Eve				x		
Exceed	Exc			x			
Excenter	Excr				x		
Exception	Excpn				x		

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Excitation	Exct	the keyword EXCT is used to express the technical effect of excitation, e.g. in connection with a current or a voltage in a generator		x			Road**Excitation**Amplitude
Exhaust	Exh				x		
Exotherm	Exo		x				
Expansion	Exp	This keyword can be used for the expansion phase of the engine cycle.			x		
Experiment	Expt	experiment. EXPT is the keyword for the "EXPERIMENT". In opposite to the keyword TEST, it is not used to check an existing functionality, but to try something new.			x		
Export	Exprt			x			
Extended	Extd		x				**Extended**RangeRollRateBase
Exterior	Extr		x				
External	Ext				x		LightDisable**External**
Extrapolation	Extrpn			x			
Factor	Fac	factor , coefficient		x			
Fade	Fade			x			
Failure	Fai				x		
Falling	Fall				x		
Fan	Fan		x				
Farad	Frd	Unit of measure for Electric capacitance	x				
Fast	Fast				x		TorqueAtClutchRequested**Fast**Maximum
Fault	Flt		x				Light**Fault**Status
Favourable	Fav				x		
Feedback	Fb			x			Locking**Feedback**Request
Field	Fie				x		
File	File		x				
Filling	Fillg			x			
Filter	Fil				x		
Filtered	Fild				x		AcceleratorPedalRatio**Filtered**
Finder	Findr		x				Car**Finder**Request
Fine	Fine				x		
First	First				x		
Flag	Flg				x		AlternatorDeactivation**Flag**
Flank	Flk		x				
Flap	Flap		x				Tank**Flap**
Flash	Fls				x		
Flashing	Flsg				x		
Flood	Flood				x		
Flow	Flow	is used as example in the definition of CRCV: FLOW_CRCV			x		
Fluctuation	Fluc				x		
Fluid	Fld				x		
Flywheel	Flywh		x				
Fm	Fm	frequency modulation	x				
Follower	Fol				x		
For	For	Preposition	x	x	x		TqAtCrksft**For**PtcAtOptimumCdnMax
Force	F	describes the physical parameter 'force'		x			Damper**Force**Estimated

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Format	Fmt				x		
Freewheeling	Fw				x		
Frequency	Frq			x			RoadExcitation**Frequency**
Friction	Fric	Friction torque from turbo charger			x		Brake**Friction**Status
From	From	Preposition	x	x	x		**From**SteeringToCoolingRequest
Front	Frnt				x		AdditionalSteeringAngle**Front**
Frozen	Frzn				x		
Fsm	Fsm	Fail Safe Mode. FSM describes one state of a state machine which is entered in case of failure. FSM is rather hardware-related and independent from Limp-Home or Monitoring functionalities.	x				
Fuel	Fu		x				
Full	Full		x				**Full**ActiveSuspensionStatus
Function	Fct	Purpose			x		XyzSteering**Function**Status
Functional	Fctl				x		
Functionality	Fcty	Feature			x		
Gain	Gain				x		
Gap	Gap				x		
Gas	Gas		x				
Gasoline	Gsl	This keyword is used to express the fuel type "gasoline".	x				
Gear	Gear		x				**Gear**Actual
Gearbox	Gearb		x				**Gearbox**CountershaftActivated
Generated	Gend				x		
Generator	Genr		x				Pulse**Generator**Mode
Generic	Gen		x				
Get	Get			x			
Gigahertz	Ghz	Unit of measure for frequency	x				
Global	Glb				x		DimLight**Global**Command
Glow	Glw		x				
Governor	Govr		x				
Grade	Grd		x				
Gradient	Grdt	gradient/slope			x		AcceleratorPedal**Gradient**
Gravity	Grv	This keyword describes the force of attraction between to masses, well known as gravity.	x				
Ground	Gnd		x				
Half	Half	half, semi-. This keyword is used to characterize something for being only one part of two that make a whole item. Example: the time for a half engine segment.			x		
Handbrake	Hndbrk		x				**Handbrake**Switch
Handling	Hndlg		x				Dynamic**Handling**BalanceCoeff
Hardware	Hw	This keyword is used to express a relationship to Hardware within a functionality or an environmental tools, e.g. Labcar.	x				
Head	Hea		x				
Header	Hd				x		

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Heal	Heal	This keyword is needed for functions that try to heal a failure. E.g. an actuator or a control valve is blocked due to a dirt particel. A free-shaking control signal can lead to releasing the partikel from the actuator.		x			
Heat	Heat		x				
Heated	Heatd		x				
Heater	Heatr		x				
Heating	Heatg				x		
Hectopascal	Hpa	Unit of measure for pressure	x				
Hertz	Hz	Unit of measure for frequency	x				
Height	Hei			x			Ride**Height**LevelEstimatedFront
High	Hi				x		
Hill	Hill		x				
History	His	for data stored in history memory			x		
Hmi	Hmi	Human-Machine Interface	x				
Hold	Hld			x			**Hold**OnDemandState
Home	Home		x				Coming**Home**Leaving**Home**Req
Homogeneous	Hom	this keyword is used to describe the method of homogeneous injection in a general way (in all variants it may occur). Homogeneous injection means: the whole cylinder volume is filled with a mixture of fuel and air with a constant air-fuel-ratio allover wh			x		
Hood	Hood	engine hood. e.g. for use LV_HOOD_OPEN engine hood is open	x				
Hot	Hot				x		
Hotel	Htl		x				**Hotel**Mode
Hour	Hr	Unit of measure for time	x				
Housing	Housg		x				
Hp	Hp	high pressure	x				
Hud	Hud	head up display. This keyword is used to express the feature of show information right in the field of view of the driver, e.g. by mirroring it onto the wind screen.	x				
Humidity	Hum	the keyword HUM is used to assign the amount of water in a gas or a gaseous mixture. Example: the humidity in the exhaust gas.			x		
Hybrid	Hyb	Any vehicle that combines two or more sources of power that can directly or indirectly provide propulsion power is a hybrid			x		
Hydraulic	Hyd	used to characterize hydraulic components			x		
Hysteresis	Hys				x		
I	I	Electric current		x			
I2c	I2c	i2c bus (similar spi)			x		
Ic	Ic	integrated circuit			x		
Ice	Ice	This keyword expresses an interrelation with ice or with an icy environment, e.g. a functionality to improve the drivability on frosted streets.	x				
Identifier	Id				x		
Idle	Idle		x				
Ignition	Ig		x				

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Immediate	Imdt	this keyword is used to assign a requirement of minimum delay time or the need to take action as soon as possible.			x		
Immediately	Imdty				x		Torque**Immediately**AvailableForPtcAtCrankshaftMaximum
Immobilizer	Imob		x				
Implausibility	Imply				x		TorqueLimitationForBrakeAndAcceleratorPedal**Implausibility**Request
Import	Imprt			x			
Impossible	Impo				x		
Impulse	Imp		x				
In	In	Preposition for location or condition	x	x	x		Rsc**In**Control
Inclination	Incln			x			Road**Inclination**Acceleration
Increase	Inc	This keyword is used to express a stepwise accretion of a value or counter		x			
Increment	Inct	This keyword is used to express a stepwise accretion of a value or counter			x		
Index	Idx			x	x		
Indicated	Indcd				x		
Indication	Indcn				x		Direction**Indication**
Indicator	Indcr		x				
Individual	Ind				x		
Inductive	Indu				x		
Inertia	J	this keyword is used to express the physical effect that the mass of a body is interacting against its acceleration		x			
Information	Info				x		YawStability**Information**
Inhibition	Inh				x		AccOrCruShift**Inh**Req
Initial	Ini				x		
Initialization	Inin				x		
Injection	Inj			x			
Injector	Injr		x				
Input	Inp		x		x		Transmission**Input**Speed
Inside	Insd			x			BrightnessSt**Outside**
Instance	Inst	This keyword is used for the characterisation e.g. of a diagnosis. The instance of the intake air temperature diagnosis is TIA. (DIAG_INST = TIA)			x		
Intake	Intk		x				**Intake**ManifoldAirPressure
Integer	Intgr				x		
Integral	Intgl				x		
Intended	Intd				x		DrivingDirection**Intended**
Intensity	Inten			x			BrakeLights**Intensity**
Intercooler	Ico		x				
Interface	If				x		ComfortAccelerationCommand**Interface**
Intermediary	Intery				x		
Intermediate	Inter				x		
Intermittent	Intm				x		

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Interior	Intr		x				**Interior**LightRequest
Internal	Int				x		EngineTorqueLosses**Internal**
Interpolation	Intrpn			x			
Interpreter	Itp	For the networklayer of KWP2000			x		
Interrupt	It			x			
Interval	Intl				x		
Intervention	Intv			x			
Inverse	Ivs				x		
Invert	Ivt			x			
Irreversible	Irrv	this keyword is used to express something can not return to a previous status, e.g.inCruise Control deactivation: IRV means in this case that cruise can not be activated again in the same driving cycle once a deactivation occured			x		
Jam	Jam			x			
Jerk	Jerk		x				
Joule	Jou	Unit of measure for energy, work	x				
Jump	Jmp			x			
Kelvin	K	Unito of measure for temperature	x				
Key	Key		x				Mechanical**Key**Access Request
Keyless	Keyls				x		AccessRequest**Keyless**
Kickdown	Kickdw		x				**Kickdown**Detected
Kilogram	Kg		x				
Kilohertz	Khz	Unit of measure for frequency	x				
Kilometer	Km	kilometer	x				
Knock	Knk		x				
Kp	Kp	proportional amplification. this keyword is used to express an proportional amplification in the context of control engineering	x				
Kr	Kr	gain for discret control structures. This keyword is used in control engineering context as gain for discret control structures	x				
Lambda	Lam	Air/Fuel Ratio		x			
Lamp	Lamp	this keyword is used do describe the component of a lamp, e.g in the display of the instrument panel	x				**Lamp**ErrorStatus
Large	Lrg				x		
Last	Lst				x		
Latch	Ltch		x				Release**Latch**Request
Lateral	Lat				x		**Lateral**AccelerationBase
Lead	Lead		x		x		Driver**Lead**TorqueAtClutchRequest
Leak	Leak	The powerstage for the piezo injectors has a special hardware (leakage compensation) to avoid discharging of capacities.			x		
Lean	Lean				x		
Learn	Lrn			x			
Learning	Lrng				x		
Leaving	Lvng			x			ComingHome**Leaving**HomeReq
Left	Le				x		
Length	Len		x				Vehicle**Length**

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Level	Lvl				x		RollCompensation**Level**Actual
Lever	Lvr		x				Gear**Lever**Position
Lid	Lid		x				**Lid**RearState
Light	Li		x				Parking**Light**Disable
Lighting	Ltg				x		
Limit	Lim				x		
Limitation	Limn			x			PowertrainTorqueAtWheelsMaximumTotalForVehicleSpeedSafety**Limitation**
Limited	Limd				x		
Limiter	Limr		x				
Lin	Lin	local interconnect network. LIN is a commonly used abbreviation for a bus system	x		x		
Line	Line		x				
Linear	Lnr	used for description of linear qualities			x		
Load	Loa	Unit must be percent		x			FrontWheel**Load**EstimatedDiff
Lock	Lock			x			**Lock**Command
Locked	Lockd				x		
Locking	Lockg		x				Central**Locking**Request
Logical	Logl		x				
Long	Long				x		
Longitudinal	Lgt	longitudinal			x		PowertrainTorqueAtWheelsRequestedTotalFor**Longitudinal**Control
Loop	Loop		x				
Loss	Loss				x		EngineTorque**Losses**Internal
Lost	Lost				x		
Low	Lo				x		
Lower	Lowr				x		ActuatorAcceDeadband**Lower**
Lp	Lp	low pressure	x				
Machine	Mac		x				
Magnetic	Mag		x				
Magnitude	Mgn				x		
Main	Mai				x		
Maintenance	Mntn				x		
Manage	Mng			x			
Management	Mngt	Used for the realisation of the combustion management within the design guidelines for Simulink/Matlab to construct names of the module.			x		TheActTqAtCluWoutShiftEnergy**Mng**
Manager	Mgr				x		
Manifold	Mnfld		x				
Manual	Man				x		Mirror**Manual**AdjustRequest
Map	Map		x				Esp**Map**ShiftRequest
Mapping	Mpg				x		
Marked	Mkd	useful to define some data as "marked".			x		

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Market	Mkt	the keyword MKT is used to express market in the meaning of delivery areas, e.g. to characterize deviances in a component or function due to different customer market requirements.	x				
Mask	Mask	this keyword is used to characterize a masking of a certain value to separate it from the non-masked one.			x		
Mass	M			x			Vehicle**Mass**Estimated
Massage	Massg			x			**Massage**AdjustReques t
Master	Mst				x		CentralLocking**Master**
Mathematical	Mat				x		
Maximum	Max				x		TorqueAtClutch**Maximu m**
Measure	Meas				x		
Measured	Measd				x		VehicleBodyVerticalAcc elerationBase**Measure d**
Mechanic	Mec				x		
Mechanical	Mecl		x		x		**Mechanical**KeyAccess Req
Megahertz	Mhz	Unit of measure for frequency	x				
Memorise	Memr			x			
Memorized	Memd				x		
Memory	Mem		x				**Memory**PositionStoreR equest **Memory**MirrorPositionS tatus
Message	Msg		x		x		
Meter	Mtr		x				**Meter**PerSecond
Method	Meth			x			
Micrometer	Micron		x				
Microsecond	Micros		x				
Middle	Mid				x		
Mileage	Milg			x			**Mileage**
Millimeter	Mm	Unit of measure for length	x				
Millisecond	Ms	Unit of measure for time	x				
Minimum	Min				x		TorqueAtWheel**Minimu m**
Minute	Mins	Unito of measure for time	x				
Mirror	Mirr		x				**Mirror**ManualAdjustRe quest
Misfire	Misf			x			
Misfiring	Misfg				x		
Missing	Miss				x		
Mitigation	Mtgtn				x		Collision**Mitigation**
Mode	Mod				x		BrakeActuator**Mode**
Model	Mdl		x				
Modulation	Modln			x			
Mole	Mol		x				
Moment	Mom		x				Roll**Moment**Distribution
Momentum	Momtm			x			
Monitor	Monr		x				Diagnostic**Monitor**
Monitoring	Mon			x			
Motion	Mtn			x			Vehicle**Motion**State

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Motor	Mot		x				ActiveSteer**Motor**Angle FrontBase
Mounted	Mntd				x		
Mounting	Mntg			x			
Move	Move			x			MirrorAuto**Move**Request
Movement	Movmt				x		
Msr	Msr	deceleration slip control			x		
Mt	Mt	manual shifted transmission	x				
Multimedia	Mmed		x				
Multiple	Mpl				x		
Multiplexer	Mux		x				
N	N	rotational speed. used for all kinds of rotational speeds (in a common sense). The formerly use of N and N_32 for engine speed is still accepted but at least for interfaces to drivetrain functionalities, N_ENG is recommended to express engine speed.		x			
Nack	Nack	no acknowledge			x		
Name	Name		x		x		
Natural	Nat				x		
Negation	Negn				x		
Negative	Neg				x		
Network	Net	NET describes all kind of networks in general, e. g. an electric network consisting of any type of consumsers and generators. voltage range not defined (14V, 42 V, ...)	x				
Neutral	Neut				x		
New	New				x		
Newton	Nwt		x				
Night	Night		x				**Night**PanelRequest
Nonlinear	Nlnr	nonlinear. used for description of non linear characteristics (e.g. for an optional additional nonlinear correction)			x		
Node	Nod	NOD is the basic keyword for a junction or joining of lines or ways. The battery node is used to control the battery voltage of the Labcar to generate the appropriate battery voltage for the ECU.	x				
Noise	Noise				x		
Nominal	Nom				x		
Normal	Norm	this keyword is used to describe something as being in the most common mode, e.g. a state machine has a state normal when running properly witout disturbance. Do not mix it with BAS for description of fulfilling a basic or minimum requirement.			x		
Not	Not	Preposition for negation	x	x	x		WheelTorqueRequest**Not**Activated
Now	Now	in this moment			x		
Nox	Nox	nox. This keyword is used to describe the nitrogen oxides (NOx) part of the emissions of a combustion engine.	x				
Nozzle	Noz		x				
Number	No	this keyword is used to express a numbering in physical meaning (the corresponding unit is "piece"). The utilization in the keyword class "Characteristic" is tolerated for old names (before 04/2002)		x			Chassis**Number**

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Observe	Obs			x			
Occupant	Occpt		x				
Of	Of	Preposition	x	x	x		
Off	Off				x		
Offset	Ofs			x			YawRate**Offset**Standard
Ohm	Ohm	Unit of measure for electric resistance	x				
Oil	Oil		x				Transmission**Oil**Temperature
Ok	Ok				x		
Old	Old	in the calculation period n, the keyword OLD assigns a value from the period (n-1).			x		
On	On				x		
One	One				x		EngineTorqueInterventionType**One**RequestedByPtc
Open	Open			x	x		**Open**CloseRequest
Opening	Opg	Used to describe the opening of a valve or similar actuator (e.g.idle speed actuator). The opening is described in percent of the opening range (0 to 100%) to be independent of component details. Keyword will be used for inverse IMM (C008).			x		
Operation	Oper		x		x		**Operation**ModeStatus
Optimum	Optm				x		TqAtCrksftForPtcAt**Optimum**CdnMax
Optional	Opt				x		
Orientation	Orntn			x			Vehicle**Orientation**
Os	Os	operating system			x		
Oscillate	Osc	This keyword is used to describe occurrences of pulsation or oscillation		x			
Oscillation	Oscn	This keyword is used to describe occurrences of pulsation or oscillation			x		
Output	Out				x		
Outside	Outd			x			BrightnessSt**Outside**
Over	Over				x		
Overflow	Ovf				x		
Overheated	Ovrheatd				x		BrakeActuator**Overheated**
Overheating	Ovrheatg				x		
Overload	Ovld	The keyword is used for an electrical actuator, if the requested power exceeds the allowed longtime power limit. The overload must be possible for a certain time.			x		
Overridden	Ovrdn				x		VlcRequest**Overridden**ByDriverRequest
Override	Ovrd			x			TractionControl**Override**
Oxidation	Oxd				x		
Pad	Pad		x				Key**Pad**
Panel	Pan		x				Mirror**Panel**AutomaticAdjustmentRequest
Parameter	Prm	ACTION Parameter. PRM is used exclusively to identfy any Parameter of any ACTION call. It is mandatory to start every Parameter with "PRM_". Any other use of this keyword is not allowed.			x		
Parity	Par				x		

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Park	Park			x			
Parking	Prkg		x				**Parking**LightDisable
Partial	Ptl	this keyword expresses the characterization of "only partly, not completely"			x		
Pascal	Pa	Unit of measure for pressure	x				
Passenger	Pass		x				
Passive	Pas				x		
Path	Pah		x				TorqueAtCrankshaftForPtcRealizedBySlow**Path**
Pattern	Pat				x		
Peak	Peak				x		
Pedal	Pedl		x				Accelerator**Pedal**Ratio
Pedestrian	Ped		x				
Pending	Pnd	This keyword is used to build the "pending" fault used in the error management aggregate defined by the the ISO 15031-5.5 service $07.			x		
Per	Per	Preposition	x	x	x		Meter**Per**Second
Percent	Perc				x		
Percentage	Percg				x		
Period	Perd				x		
Personal	Prsnl				x		
Personalization	Pen				x		**Personalization**ProfileStatus
Phase	Pha				x		
Physical	Phy				x		
Pi	Pi				x		
Pid	Pid	pid. proportional integral differential			x		
Pin	Pin		x				
Pinion	Pinion		x				FrontSteer**Pinion**Angle**Base**
Piston	Pist	central component in a combustion engine. It serves to transform the gas pressure within the cylinder into a movement. The keyword is used e.g. to express the name for piston temperature	x				
Pitch	Pitch				x		Body**Pitch**AngleAbsoluteEstimated
Plant	Pla	Simulation items containing the plant, I.e. the simulation of the "real world", start with the keyword PLA.	x				
Plausible	Plaus				x		
Pneumatic	Pnm	used e.g. for description of pneumatic actuators (such as recirculation valve actuator or wastegate actuator)			x		
Pointer	Ptr				x		
Port	Port				x		
Position	Posn			x			GearLever**Position**
Positive	Pos				x		
Post	Post				x		
Potentiometer	Poti		x				
Power	Pwr	Also valid for Power Supply	x	x			**Power**SteeringLoadActual
Powertrain	Pt		x				Tot**Pt**TqAtWhlReqByVehLgtCtrlMax
Pprt	Pprt	proportional part of a control structure			x		

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
Pre	Pre	used to express any kind of pre-processing like e.g. for pre-injection TI_PRE			x		
Precharge	Prec				x		
Predicted	Pred				x		EngineTorqueAtTargetGear**Predicted**
Preliminary	Prel				x		
Premature	Prem				x		
Preparation	Prep	this characteristic is used to express a general status of preperation, e.g. processing of certain tasks before an activation of a certain component or functionality			x		
Presence	Pres			x			Driver**Presence**Flag
Present	Prest				x		
Pressed	Psd				x		BrakePedal**Pressed**
Pressure	P			x			AmbientAir**Pressure**
Prevention	Prevn				x		ComfortGearShift**Prevention**
Previous	Prev				x		
Primary	Prim				x		
Priority	Prio				x		
Profile	Prof			x			Personalization**Profile**Status
Program	Prog				x		
Programming	Progm				x		
Progress	Progs				x		ShiftIn**Progress**
Progression	Progrn				x		
Project	Prj				x		
Property	Ppty		x		x		Dynamic**Property**
Proportional	Prop				x		
Propulsive	Prp	opposite of drag resistance. Notion of positive forces generated by a system. Example: for a car, we can list internal combustion engine + starter/generator + electrical engine			x		
Protected	Protd				x		
Protection	Protn			x			Child**Protection**DiagnosisRequest
Ptc	Ptc	Power Train Controller	x				
Pull	Pu			x			**Pull**AidCmd
Pulse	Pls	a pulse is a simple electrical signal with a defined shape	x				**Pulse**GeneratorMode
Pump	Pmp	use if the component cannot be assigned to one particular functionality. e.g. the same pump can be used for AMT as well as for PSTE	x				TransmissionOil**Pump**LoadActual
Purge	Purg			x			
Purging	Purgg	this keyword expresses a characteristic relationship with the operation of purging (e.g. a filter or a catalyst)			x		
Push	Push	push (start), towing, power on driving, press. keyword for push or active towing (e.g. if a vehicle has to be started by towing, a button is pressed, if there is positive torque inside powertrain)		x			
Put	Put			x			
Pwm	Pwm	pulse width modulation			x		
Pyrometer	Pyro	this keyword is used to express a relationship to a pyrometer which is a contactless	x				

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
		instrument to measure high temperatures					
Quality	Qly	This keyword is used to express the word 'quality'			x		
Quantity	Qnty			x			
Quotient	Quo				x		
Radian	Rad	As unit of measure for angles	x				
Radiator	Radr	a radiator is a component, that sens out heat. It can be found e.g. in the cooling circiut of a car.	x				
Radius	Rd			x			Wheel**Radius**Tolerance Coefficient
Rail	Rail	common rail. This keyword shall be used to express the common rail, which is a core component in some fuel system configurations (esp. diesel). It is a high pressure fuel container mostly in form of a tube and located close to the engine.	x				
Rain	Rain		x				
Ram	Ram	Random Access Memory	x				
Ramp	Ramp				x		
Random	Rnd				x		
Range	Rng			x			RollRateBaseWith**Range**Extended
Rate	Rate	this keyword is used to express a rate in physical meaning. The utilization in the keyword class "Characteristic" is tolerated for old names (before 04/2002)		x			Pitch**Rate**Base
Ratio	Rat	RATIO is used to describe a value gained from a proportion of other values. The unit of RATIO must be [-] (no unit).		x			AcceleratorPedal**Ratio**
Raw	Raw	Unprocessed sensor data.			x		
Recirculation	Rcl	recirculation		x			
Reactivation	Reac				x		
Read	Read			x			
Ready	Rdy	readiness identification			x		**Ready**BrakeRequest
Real	Real	Real part			x		
Realized	Relzd				x		TqAtCrksft**Realized**BySlowPathMin
Rear	Re				x		**Rear**SteerGradientMaximum
Receive	Rx			x			
Reception	Rxn				x		
Reciprocal	Recpr				x		Meter**Reciprocal**
Record	Rec				x		
Reduction	Redn				x		
Reference	Ref				x		YawRate**Reference**Value
Refuel	Refu			x			
Regeneration	Rgn				x		
Regular	Rgl	this keyword is used to describe e.g. a process as being in a normal status in sense of correctness. It is behaving like wanted (it behaves like wanted to treat a disturbance), it is not out of order. It is the opposite of WRG.			x		
Reinforce	Reinf			x			
Relative	Rel				x		BodyRollAngle**Relative**Measured

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Relay	Rly		x		x		
Release	Rels		x				**Release**LatchRequest
Relevant	Rlv				x		
Remote	Rem				x		KeyAccessRequest**Remote**
Repeat	Rep			x			
Repetition	Repn				x		
Reprogrammation	Rpg				x		
Request	Req				x		MirrorManAdjust**Request**
Requested	Reqd				x		
Required	Rqrd				x		
Reserve	Resv		x				Torque**Reserve**RequestFromEngineToPtc
Reset	Rst				x		
Residual	Resi				x		
Resistance	R	Unit must be Ohm		x			
Resolution	Resl	In the module <Vehicle speed calculation> it is necessary to distinguish between the normal resolution VS (1 km/h) and VS_H_RES (0.01 km/h).			x		
Response	Resp				x		
Restart	Rstrt				x		
Result	Res				x		AccelerationArbitration**Result**
Resume	Resu				x		
Retard	Rtd				x		
Retarder	Rtdr				x		
Reverse	Rvs				x		
Reversible	Rvsb	This keyword is used to express something can return to a previous status, e.g. in Cruise Control deactivation: RV means in this case that cruise can be activated again in the same driving cycle once a deactivation occured.			x		
Revolution	Rev	As unit of measure	x				
Rho	Rho	density		x	x		
Rich	Rich				x		
Ricirculation	Rcrltn				x		
Ride	Ride			x			**Ride**HeightLevelEstimatedFront
Right	Ri	right			x		
Rise	Rise				x		
Rising	Risng				x		
Road	Road	ithis keyword is used to express the conditions a street can apply to the vehicle. This can be in the meaning of simulation or in the meaning chassis dyno against road use.	x		x		**Road**ExcitationAmplitude
Roll	Roll		x				**Roll**CompensationLevelActual
Roller	Rollr				x		
Rolling	Rollg				x		
Rollover	Rlov	Info from airbag control unit			x		
Rom	Rom	read only memory	x				
Ron	Ron	research octane number		x			
Roof	Roof		x				

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Rotation	Rot	This keyword is used to express circular motions.			x		
Rotational	Rotl	This keyword is used to express circular motions.			x		Wheel**Rotational**DirectionStandard
Roughness	Roughns			x			
Row	Row		x				
Rpm	Rpm	As unit of measure for frequency	x				
Run	Run			x			
Running	Runng				x		
Runtime	Rt				x		
Sae	Sae	SAE International standard. SAE international is an Engineering Society crating standards and norms. The Keyword SAE in the context of Naming Convention shall be used to indicate that a certain variable or interface is defined according to the norms of SAE.	x				
Safety	Sfty			x			PowertrainTorqueAtWheelsMaximumTotalForVehicleSpeed**Safety**Limitation
Sale	Sale			x			
Sample	Sample		x		x		
Saturation	Satn			x			
Save	Save			x			
Saved	Saved				x		
Scale	Sca				x		
Scan	Scan			x			
Scanner	Scanr		x				
Scavenging	Scav	The process of pushing fresh gas from the inlet into the exhaust by having big overlap of opened inlet and outlet valve, especially at charged engines is called scavening.			x		
Scheduler	Sdl				x		
Seat	Seat		x				
Seating	Seatg				x		
Second	Sec	As an adjective or as time unit	x	x			MeterPer**Second**
Security	Secu				x		
Seed	Seed				x		
Segment	Seg		x				
Segmented	Segd		x				
Selected	Seld				x		
Selection	Seln	SELN is used to assign e.g. the selection of a certain fuctionality (one out of several strategies) or component (one of several gears, sensors,..) as well as in simulation to select a single entry of an Array by putting SELN at the end of the name			x		
Send	Snd			x			
Sensing	Sen				x		
Sensitivity	S				x		
Sensor	Snsr		x				**Sensor**DetectionCapability
Sequence	Seq				x		
Sequential	Seql				x		
Serial	Serl				x		
Serie	Ser		x				

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Service	Srv	a service is a processing routine within a certain functionality. This keyword is used to nominate such services.			x		
Servo	Servo				x		
Set	Set				x		
Setpoint	Sp				x		EngineSpeed**Setpoint**
Shaft	Sft	a shaft is a rotating rod, carrying out a certain task or transmitting a force in a powertrain. Example: outbox gearbox shaft.			x		
Shield	Shd				x		
Shift	Shift			x			ComfortGear**Shift**Prevention
Short	Sho	short trip			x		
Shortening	Shong			x			
Shup	Shup	shift up		x			Gear**Shup**RequestFromDriver
Shutter	Shttr		x				
Side	Side	This keyword is intended for common consideration of inlet and exhaust side.			x		
Signal	Sig				x		
Signaling	Signg				x		
Simulated	Simd				x		
Simulation	Simn				x		
Single	Sng				x		
Sinus	Sin				x		
Slave	Slave				x		
Sliding	Sldg				x		Root**Sliding**Status
Slip	Slip			x			**Slip**ControlBypassRequest
Slope	Slop				x		
Slow	Slow				x		TqAtCrksftRealizedBy**Slow**PathMin
Smart	Smt	more and more electronic components take over tasks that had been done before by a central processing unit. Such components are seen as "intelligent" or "smart", whereas the second expression is the one used more generally.			x		
Smoothing	Smotng			x			
Software	Sw		x				
Soi	Soi	start of injection. Unit must be angle			x		
Solenoid	Soln		x				
Soon	Soon				x		
Source	Src				x		
Spare	Spare				x		
Specific	Spc	for specific environmental data (stored individualy with particular failures of one project).			x		
Speed	Spd				x		WheelCircumference**Speed**Standard
Spi	Spi	serial peripheral interface			x		
Spontaneous	Spo	this Keyword characterizes a sudden, unexpected occurrence. E.g. a not pre-arranged catalyst regeneration phase.			x		
Sport	Spt	Related to the (short- and long term) detection of driver type either an economic/comfort oriented or a sportive/ power requesting driver			x		

Keyword	Keyword Abbreviation	DefinitionEnglish	Mean / Environment / Device	Action / Physical Type	Condition / Qualifier	Index / Dimension	Use Case (long names)
		can be distinguished.					
Spring	Sprg		x				**Spring**ForcesEstimated
Square	Sq	the Keyword SQ is used ot describe the relationship of a Functional Data to the arithmetic procedure of multiplication of a value with itself.			x		
Squared	Sqd				x		
Ssm	Ssm	Stand Still Manager	x		x		Bod**Ssm**BrakeActuator Status
Stability	Staby		x		x		ActiveDftlYaw**Stability** ControlSt
Stabilization	Stabn			x			
Stabilizer	Stabr		x				Active**Stabilizer**Status
Stable	Stab				x		
Stage	Stg		x				
Stall	Stall		x				
Stalling	Stallg				x		
Stamp	Stamp			x			DateTime**Stamp**
Standard	Std	Signals that are computed by a model, offset compensated and/or filtered, which can be combination of more than one base signals.			x		WheelCircumSpeed**Standard**
Standardization	Stdn				x		
Standby	Stb				x		
Start	Strt			x			
Starter	Strtr		x				
Starting	Strtg				x		
State	St	Redefinition of the old keyword STATE (created before 1995), suiting to the use of describing states of an states automaton. Unit is [-].			x		Clutch**State**Actual
Static	Stat				x		
Stationary	Staty	This keyword is used to describe a situation, where a movable part is at rest or a certain condition does not change			x		
Statistic	Stc				x		
Status	Sts			x	x		ActiveDamper**Status**
Steering	Steer	This keyword is used to express the steering of a car.	x	x			**Steering**WheelAngleBase
Step	Step				x		
Steradian	Srad	As a unit of measure for solid angle	x				
Stiffness	Stfn	stiffness is the grade of hardness of a material, e.g. in a damper: it is composed of a spring (stiffness part: force proportional to displacement) and a fluid friction (viscous part: force proportional to speed)			x		Stabilizer**Stiffness**Actual
Stimulation	Sti	The stimulation descibes the inputs for testing of functions.			x		
Stoichiometric	Stoi				x		
Stop	Stop			x			
Store	Store			x			PositionMemory**Store**Request
Strategy	Stgy				x		

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Stratified	Strat	stratified. this keyword is used to describe the method of stratified injection in a general way (in all variants it may occur). Stratified injection means: only a small amout of fuel deposited to the spark plug is being burned, all other areas in the cylinder have a			x		
Stroke	Stk				x		
Structure	Struct				x		
Stuck	Stuck	the keyword STUCK is used to express e.g. a "stuck reading" coolant temperature sensor. This is an official expression of the CARB (Californian Air Resources Board) and is used in term of OBD II requirements.			x		
Substitute	Sub				x		
Subtractive	Subt				x		
Subtype	Subtyp				x		Transmission**Subtype**
Suction	Suctn			x			
Sulphur	Su		x				
Sum	Sum				x		
Supercharger	Scha		x				
Superior	Sup				x		
Supplementary	Sppl				x		
Supply	Sply			x			Power**Supply**Status
Suppress	Supp			x			
Surge	Surge	surging, surge line. this keyword is used to describe the appearance of surging effects in an (air-)stream, e.g. at the surge line of a turbocharger (which is a characteristic parameter)			x		
Suspension	Susp				x		FullActive**Suspension**Status
Suspicion	Suspc				x		
Swirl	Swirl		x				
Switch	Swt		x				BrakePedal**Switch**1
Switchable	Swil				x		**Switchable**SpringCtrlTuningActual
Symptom	Sym				x		
Synchronization	Syncn				x		
Synchronize	Sync			x			
Synchronized	Syncd				x		
System	Sys		x				PtTqAtWheelsFromTransSys4Act
Table	Tbl				x		
Tank	Tank	this keyword is used to express the container of a liquid e.g. the fuel tank	x				
Target	Tar				x		GearRatio**Target**
Tau	Tau	Time constant of a control sys. (-> P, I, D!)			x		
Tdc	Tdc	top dead center			x		
Telematics	Telm		x				
Temperature	T			x			AmbientAir**Temperature**
Temporary	Tmp				x		
Term	Term				x		
Test	Test				x		
Theft	Thft		x				Anti**Theft**System
Theoretical	Theo				x		TqAtCluWoutShiftEnerg

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							yMng**Theo**Act
Thermal	Therm				x		
Thermo	Thermo				x		
Thermostat	Th		x				
Three	Three				x		
Threshold	Thd				x		
Throttle	Thr		x				
Tightness	Tgtnss			x			
Time	Ti	Time, duration		x			
Timer	Tmr	this keyword is used to express a timer. A timer is counter for a defined time span.			x		
Tinting	Tintg	Action of changing the color of an object			x		Mirror**Tinting**Command
Tip	Tip				x		
Tire	Tire		x				**Tire**Temperature
Titanium	Tit		x				
Tn	Tn	time constant for discret ctl structures. This keyword is used in control engineering context as time constant for discret control structures			x		
To	To	toward something,…..	x	x	x		Engine**To**WheelTorque RatioConversion
Toggle	Tog				x		**Toggle**Request
Tolerance	Tolr			x			WheelRadius**Tolerance** Coefficient
Tooth	Tooth				x		
Top	Top		x				Move**Top**Incline
Torque	Tq			x			**Torque**AtClutchMaximu m
Torsion	Tors				x		
Total	Tot				x		RoadWheelAngleFront **Total**Request
Tout	Tout	time out			x		
Traction	Trac			x			Override**Traction**Contr ol
Trailer	Trlr	a wheeled but not motorized vehicle which can be pulled by a motorized vehicle	x				**Trailer**Status
Transfer	Trf				x		
Transient	Tra				x		
Transition	Tran				x		
Transmission	Trsm	In a mechanical context	x				**Transmission**InputSpe ed
Transmit	Tx	In a communication protocol context		x			
Transversal	Trv	transversal in opposite to longitudinal. e.g. used for acceleration			x		
Trap	Trap			x			
Trapping	Trapg	In case of scavening the total fresh gas flowing into the cylinder is bigger than the mass air flow staying in the cylinder. The ratio of the mass air flow in the cylinder to the total mass air flow is called TRAPPING efficency (EFF_TRAP)			x		
Travel	Trvl			x			Spring**Travel**
Travelled	Trvld				x		**Travelled**WheelDistanc eStandard
Treatment	Treat				x		
Trigger	Trig				x		
Trip	Trip				x		

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Trouble	Tro				x		
Trunk	Tr		x				
Tube	Tube	the keyword TUBE expresses any kind of a pipe, for instance the exhaust .			x		
Tumble	Tumb				x		
Tuning	Tun				x		DamperControl**Tuning** Actual
Turbine	Trb	To describe a turbine (turbine wheel) in general, e.g. in a hydraulic torque converter or in a turbocharger	x				
Turbulence	Trbl	Flow regime characterized by chaotic stochastic property changes			x		
Type	Typ				x		VarianceData**Type**
Two	Two				x		EngineTorqueInterventionType**Two**RequestedByPtc
Uds	Uds	Unified Diagnostic Services. UDS (Unified Diagnostic Services) is a new world-wide standard for Diagnostics according to ISO14229-1	x				
Unfavourable	Unfav				x		
Unit	Unit				x		
Unlock	Unlck			x			Lock**Unlock**Request
Up	Up			x			GearShitf**Up**RequestFromDriver
Update	Upd			x			
Upper	Uppr				x		ActuatorAcceDeadband**Upper**
Upstream	Us				x		
Use	Use	compiler switch	x				
User	Usr		x				
Vacuum	Vac				x		
Vag	Vag	vag tester protocol	x				
Valid	Vld				x		
Validity	Vldy				x		
Value	Val				x		BrakePedal**Value**
Valve	Vlv				x		
Vapor	Vap				x		
Variable	Var		x		x		
Variance	Vari			x			**Variance**DataType
Variant	Vrnt				x		
Vcc	Vcc	supply voltage		x			
Vcv	Vcv	high pressure pump volume control valve	x				
Vector	Vect				x		
Vehicle	Veh		x				**Vehicle**BodyVerticalAccelerationBaseMeasured
Velocity	V			x			WheelAngular**Velocity** Standard
Vent	Vent		x				
Ventilation	Ventn			x			
Version	Vers				x		
Vertical	Vert				x		WheelForcesEstimated**Vertical**

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Vin	Vin	vehicle identification number. this keyword is used to decribe the vehicle identification number. This is certain code which is unique for every vehicle and is used for its identification.	x				
Virtual	Virt				x		AcceleratorPedal**Virtua**lRatio
Viscousity	Vcos	viscosity describes the thickness of a fluid, e.g. in a damper: it is composed of a spring (stiffness part: force proportional to displacement) and a fluid friction (viscous part: force proportional to speed)			x		
Visibility	Visy				x		
Visual	Vis				x		AlarmRequest**Visual**
Volt	Volt	As unit of measure for voltage	x				
Voltage	U			x			Battery**Voltage**
Volume	Vol			x			
Volumetric	Volmc				x		
Wait	Wait			x			
Warm	Wrm				x		
Warning	Warn				x		
Washer	Wshr		x				
Washing	Wshng			x			
Water	Wtr		x				
Watt	Watt	As unit of measure for power	x				
Way	Way				x		
Wheighting	Whtng			x			
Wheel	Whl	Describes the component of the vehicle. Different to the somewhat confusing existing keyword "Wheel", ther is no relation to the physical meaning.	x				**Wheel**VerticalAccelerationEstimated
Wide	Wide	keyword is used to specify gear box type, which is distinguished via variant coding (wide ratio: long transmission ratio for lower rpm. closed ratio: sports transmission ratio)			x		
Width	Width				x		Vehicle**Width**
Window	Win		x				
Windscreen	Wind		x				
Wiper	Wipr		x				
Wiping	Wipg			x			
Wish	Wish	Describes the component of the vehicle. Different to the somewhat confusing existing keyword "Wheel", ther is no relation to the physical meaning.	x		x		
With	With	preposition	x	x	x		
Within	Within	preposition	x	x	x		BrakeActuatorStatusForBod**Within**Rsc
Without	Wout	preposition	x	x	x		TqAtClu**Wout**ShiftEnergyMngTheoAct
Word	Word				x		
Work	W	Energy		x			
Write	Wr			x			
Wrong	Wrg	in opposite to ERR, the keyword WRG is used to express a mismatch which does not have to be treated by error management diagnosis.			x		
Yaw	Yaw		x		x		ActiveDifferential**Yaw**StabilityControlStatus

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Zero	Zero	used to express the number zero			x		