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2008-08-13	3.1.1	AUTOSAR Administration	• Legal disclaimer revised
2007-12-21	3.0.1	AUTOSAR Administration	• Initial Release

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1 Related Documentation

[1] Requirements on SW-C and System Modeling
AUTOSAR_CP_RS_SWCModeling

[2] Generic Structure Template
AUTOSAR_FO_TPS_GenericStructureTemplate

[3] AUTOSAR XML Schema Production Rules
AUTOSAR_FO_TPS_XMLSchemaProductionRules

[4] Methodology for Classic Platform
AUTOSAR_CP_TR_Methodology

[5] Specification of RTE Software
AUTOSAR_CP_SWS_RTE

[6] MISRA C:2025 Guidelines for the use of the C language in critical systems, ISBN-13: 978-1911700197

[7] Software Component Template
AUTOSAR_CP_TPS_SoftwareComponentTemplate

[8] Standardization Template
AUTOSAR_FO_TPS_StandardizationTemplate

[9] System Template
AUTOSAR_CP_TPS_SystemTemplate

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 AUTOSAR_TemplateModelingGuide.pdf.

3 How to read this document

All rules are identified by an ID.

The ID starts with "TR_SWMG_" for the Modeling Rules followed by four digits (TR_SWMG_xxxx).

The ID starts with "TR_SWNR_" for the Naming Rules followed by four digits (TR_SWNR_xxxx).

The provided XML examples conform to the AUTOSAR metamodel.

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 follows.

Note that the requirement level of the document in which they are used modifies the force of these words.

- MUST: This word, or the adjective “LEGALLY REQUIRED”, means that the definition is an absolute requirement of the specification due to legal issues.
- MUST NOT: This phrase, or the phrase “MUST NOT”, means that the definition is an absolute prohibition of the specification due to legal issues.
- SHALL: This phrase, or the adjective “REQUIRED”, means that the definition is an absolute requirement of the specification.
- SHALL NOT: This phrase means that the definition is an absolute prohibition of the specification.
- SHOULD: This word, or the adjective “RECOMMENDED”, means 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”, means 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 market-

place 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, SHALL 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, SHALL be prepared to interoperate with another implementation, which does not include the option (except, of course, for the feature the option provides).

3.2 Acronyms and Abbreviations

- API: Application Programming Interface
- AR: AUTOSAR
- CAN: Controller Area Network
- ECU: Electronic Control Unit
- HMI: Human Machine Interface
- MISRA: Motor Industry Software Reliability Association
- RTE: Real Time Environment
- SW-C: Software Component
- WP: Work Package
- XML: eXtensible Markup Language

4 Requirements traceability

Requirements against this document are exclusively stated in the corresponding requirements document [1].

The following table references the requirements specified in [1] and provides information about individual specification items that fulfill a given requirement.

Requirement	Description	Satisfied by
[RS_SWMG_00001]	Distinguish Standardized vs not standardized model elements of type ARElement	[TR_SWMG_00003] [TR_SWMG_00004] [TR_SWMG_00017] [TR_SWMG_00018] [TR_SWNR_00022] [TR_SWNR_00023]
[RS_SWMG_00002]	Name shall reflect the purpose of the model element	[TR_SWMG_00009] [TR_SWMG_00011] [TR_SWNR_00004] [TR_SWNR_00006]
[RS_SWMG_00005]	Easy creation of names	[TR_SWNR_00010]
[RS_SWMG_00006]	Model Elements names shall be self-explanatory	[TR_SWMG_00009] [TR_SWMG_00011] [TR_SWNR_00004] [TR_SWNR_00006] [TR_SWNR_00037]
[RS_SWMG_00007]	Distinguish model elements of different model element suppliers	[TR_SWMG_00003] [TR_SWMG_00004] [TR_SWMG_00017] [TR_SWNR_00059]
[RS_SWMG_00010]	Model Element Names shall follow semantic rules	[TR_SWMG_00010] [TR_SWMG_00011] [TR_SWMG_00012] [TR_SWMG_00013] [TR_SWMG_00014] [TR_SWMG_00015] [TR_SWMG_00016] [TR_SWMG_00019] [TR_SWNR_00005] [TR_SWNR_00008] [TR_SWNR_00026] [TR_SWNR_00027] [TR_SWNR_00029] [TR_SWNR_00040] [TR_SWNR_00041] [TR_SWNR_00042] [TR_SWNR_00043] [TR_SWNR_00044] [TR_SWNR_00051] [TR_SWNR_00055] [TR_SWNR_00056] [TR_SWNR_00057] [TR_SWNR_00062] [TR_SWNR_00069] [TR_SWNR_00070] [TR_SWNR_00071] [TR_SWNR_00072] [TR_SWNR_00073]
[RS_SWMG_00011]	Model Element Names are composed by arranging standardized keywords	[TR_SWNR_00009] [TR_SWNR_00010] [TR_SWNR_00011] [TR_SWNR_00013] [TR_SWNR_00018] [TR_SWNR_00066]
[RS_SWMG_00012]	Semantic of Model Element Names shall allow variable number of keywords	[TR_SWNR_00019] [TR_SWNR_00020] [TR_SWNR_00034] [TR_SWNR_00050] [TR_SWNR_00058]
[RS_SWMG_00014]	Length restriction for short names of Identifiable	[TR_SWNR_00002]
[RS_SWMG_00016]	Names shall allow to indicate if the value is a direct measurement or a conditioned value	[TR_SWNR_00019] [TR_SWNR_00058]
[RS_SWMG_00017]	Names shall follow the ISO 8855 for English naming.	[TR_SWNR_00001]
[RS_SWMG_00030]	Use English as Standard Language for Names.	[TR_SWNR_00001] [TR_SWNR_00013]
[RS_SWMG_00031]	No Architectural Information in Names	[TR_SWNR_00007] [TR_SWNR_00035] [TR_SWNR_00036] [TR_SWNR_00048]
[RS_SWMG_00034]	Usage of Unique Keywords	[TR_SWNR_00066] [TR_SWNR_00067] [TR_SWNR_00068]
[RS_SWMG_00040]	Avoid sequences of underscores characters.	[TR_SWNR_00009]

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Requirement	Description	Satisfied by
[RS_SWMG_00041]	Do not rely on uppercase/lowercase difference only.	[TR_SWNR_00004] [TR_SWNR_00011]
[RS_SWMG_00048]	Easy lookup of names in databases	[TR_SWMG_00008]
[RS_SWMG_00049]	Support Identifiable already present in the MasterTable	[TR_SWMG_00018]
[RS_SWMG_00052]	Definition of Package Structure	[TR_SWMG_00008]
[RS_SWMG_00053]	Model shall be compliant to the Meta Model	[TR_SWMG_00001]
[RS_SWMG_00054]	Provide guidelines how to resolve name conflicts	[TR_SWNR_00001] [TR_SWNR_00002] [TR_SWNR_00004] [TR_SWNR_00005] [TR_SWNR_00006] [TR_SWNR_00007] [TR_SWNR_00008] [TR_SWNR_00009] [TR_SWNR_00010] [TR_SWNR_00011] [TR_SWNR_00013] [TR_SWNR_00017] [TR_SWNR_00018] [TR_SWNR_00019] [TR_SWNR_00020] [TR_SWNR_00022] [TR_SWNR_00023] [TR_SWNR_00026] [TR_SWNR_00027] [TR_SWNR_00029] [TR_SWNR_00034] [TR_SWNR_00035] [TR_SWNR_00036] [TR_SWNR_00037] [TR_SWNR_00040] [TR_SWNR_00041] [TR_SWNR_00042] [TR_SWNR_00043] [TR_SWNR_00044] [TR_SWNR_00048] [TR_SWNR_00050] [TR_SWNR_00051] [TR_SWNR_00055] [TR_SWNR_00056] [TR_SWNR_00057] [TR_SWNR_00058] [TR_SWNR_00059] [TR_SWNR_00062] [TR_SWNR_00063] [TR_SWNR_00064] [TR_SWNR_00065] [TR_SWNR_00066] [TR_SWNR_00067] [TR_SWNR_00068] [TR_SWNR_00069] [TR_SWNR_00070] [TR_SWNR_00071] [TR_SWNR_00072] [TR_SWNR_00073]
[RS_SWMG_00055]	Continuous Data Type resolution should be a power of two	[TR_SWMG_00004]
[RS_SWMG_00056]	Standardized model elements shall not contain non standardized elements	[TR_SWMG_00003] [TR_SWMG_00004] [TR_SWMG_00017] [TR_SWNR_00022]
[RS_SWMG_00057]	Modeling Guide shall support the AUTOSAR methodology	[TR_SWMG_00001]
[RS_SWMG_00059]	There shall be a single set of keywords	[TR_SWNR_00010]
[RS_SWMG_00060]	Applicability of Naming Convention	[TR_SWNR_00059]
[RS_SWMG_00061]	Naming convention shall be unique	[TR_SWNR_00001] [TR_SWNR_00002] [TR_SWNR_00004] [TR_SWNR_00005] [TR_SWNR_00006] [TR_SWNR_00007] [TR_SWNR_00063] [TR_SWNR_00064] [TR_SWNR_00065]
[RS_SWMG_00062]	Naming Convention shall rule Short Names and Long Names construction.	[TR_SWNR_00001] [TR_SWNR_00002] [TR_SWNR_00050] [TR_SWNR_00063] [TR_SWNR_00064] [TR_SWNR_00065]

Table 4.1: Requirements Tracing

5 Modeling Rules

[TR_SWMG_00001] Compliance to Autosar Meta Model

Upstream requirements: RS_SWMG_00053, RS_SWMG_00057

⌈Model shall be compliant to the Meta Model.⌋

[TR_SWMG_00003] Usage of AR Package concept for SW-Cs

Upstream requirements: RS_SWMG_00001, RS_SWMG_00007, RS_SWMG_00056

⌈Use AR Package concept for SW-C to distinguish different providers of SW-C.⌋

Ex: Autosar_AISpecification, Supplier1, Supplier2, OEM1

[TR_SWMG_00017] Usage of AR Package category

Upstream requirements: RS_SWMG_00001, RS_SWMG_00007, RS_SWMG_00056

⌈Use AR Package category to distinguish what is standardized, according to the provider of the ARPackage, from what is not.⌋

See document [2] for AR Package categories classification.

[TR_SWMG_00004] Separate packages for elements not defined by AUTOSAR partnership

Upstream requirements: RS_SWMG_00001, RS_SWMG_00007, RS_SWMG_00055, RS_SWMG_00056

⌈Each element not defined by the AUTOSAR partnership, shall be included in a AR Package different from the one officially released by AUTOSAR, i.e. the AR Package ShortName shall be changed (e.g. SUPPLIER1) and the category may be changed or not according to AR packages category classification and stakeholder specific standard elements handling.⌋

Recommendations:

- continuous Data Type resolution should be a power of two.

5.1 Reuse of model element

5.1.1 Reuse of one interface for multiple ports

The reuse of interfaces is encouraged.

Example:

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

[TR_SWMG_00011] Independence of Interfaces definition from variants

Upstream requirements: RS_SWMG_00002, RS_SWMG_00006, RS_SWMG_00010

⌈Do not define different interfaces to implement variants. Define one interface that is independent on the variant and define several ports using this interface which are dependent on the variant.⌋

Using one interface for multiple ports makes variant handling more understandable since the interfaces are not affected by the variant. Ports can be enabled or disabled depending on the selected variant.

Example:

Gasoline spark ignition engine management systems know the concept of a slow path and a fast path for torque intervention. Current diesel systems do not know this distinction.

The following modeling is not recommended:

- Define an interface TorqueInterventionSlow and an interface TorqueIntervention Fast.
- Define a port TorqeInterventionSlow with the interface TorqueInterventionSlow and a port TorqueInterventionFast with the interface TorqueInterventionFast.
- In a diesel variant the TorqueInterventionSlow port and interface are ignored.

The following modeling is recommended:

- Define an interface TorqueIntervention1.
- Define a port TorqueInterventionSlow and a port TorqueInterventionFast which both have the interface TorqueIntervention1.
- In a diesel variant the TorqueInterventionSlow port is disabled.

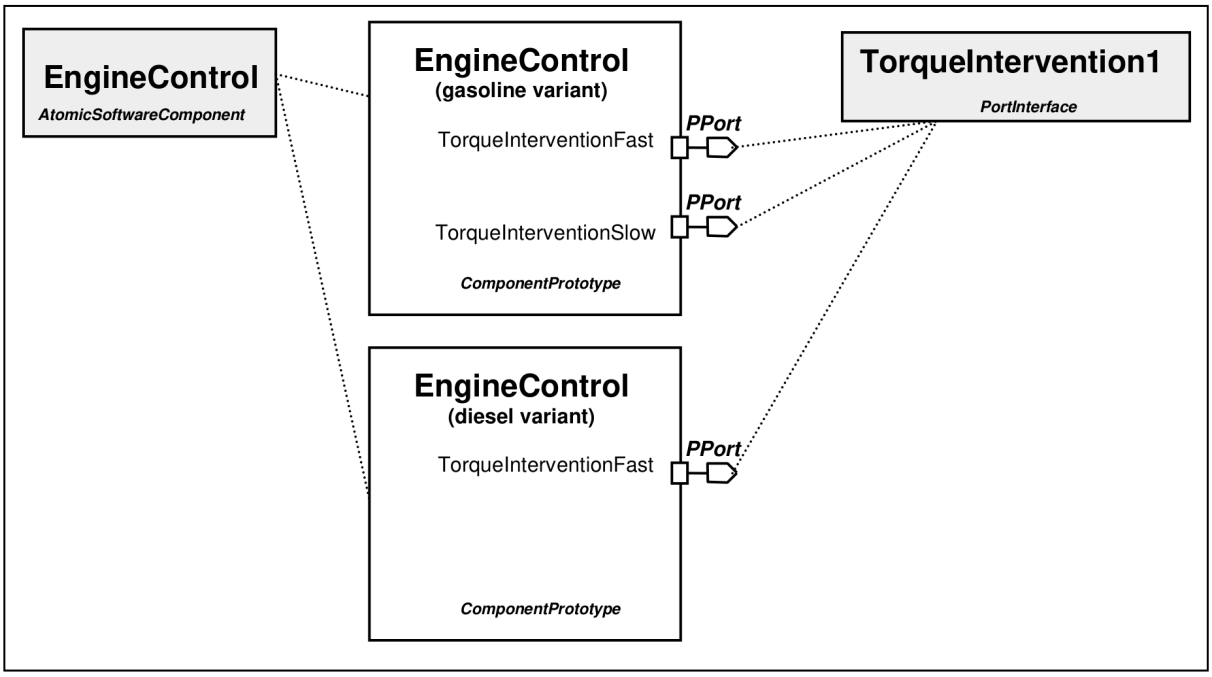


Figure 5.1: Re-use of PortInterfaces in Ports with variants.

Please note that in the example, as result of variant handling approach, the two ComponentPrototypes are of the same ComponentType.

5.1.2 Reuse of one data type for multiple interfaces

The reuse of data types is encouraged.

Example:

The Torque data type is used in the Data Elements of the interfaces MinimumTorqueAt Clutch and MaximumTorqueAtClutch.

5.2 Use of multiple ComponentPrototypes

If the same port P (either RPort or PPort) 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.

It is recommended to do the concatenation by means of a preposition (see chapter 6) in the following order:

<Port name>+<Preposition>+[<ComponentPrototype name>]

Example: The "Washer" ComponentType has an RPort "Activation". There are three ComponentPrototypes of this type: "WasherFront", "WasherRear", and "WasherHeadlamp". The WiperWasherManager ComponentType should have separate PPorts that

are connected to the RPorts of the three ComponentPrototypes. These PPorts should have the names "ActivationOfWasherFront", "ActivationOfWasherRear", and "ActivationOfWasherHeadlamp".

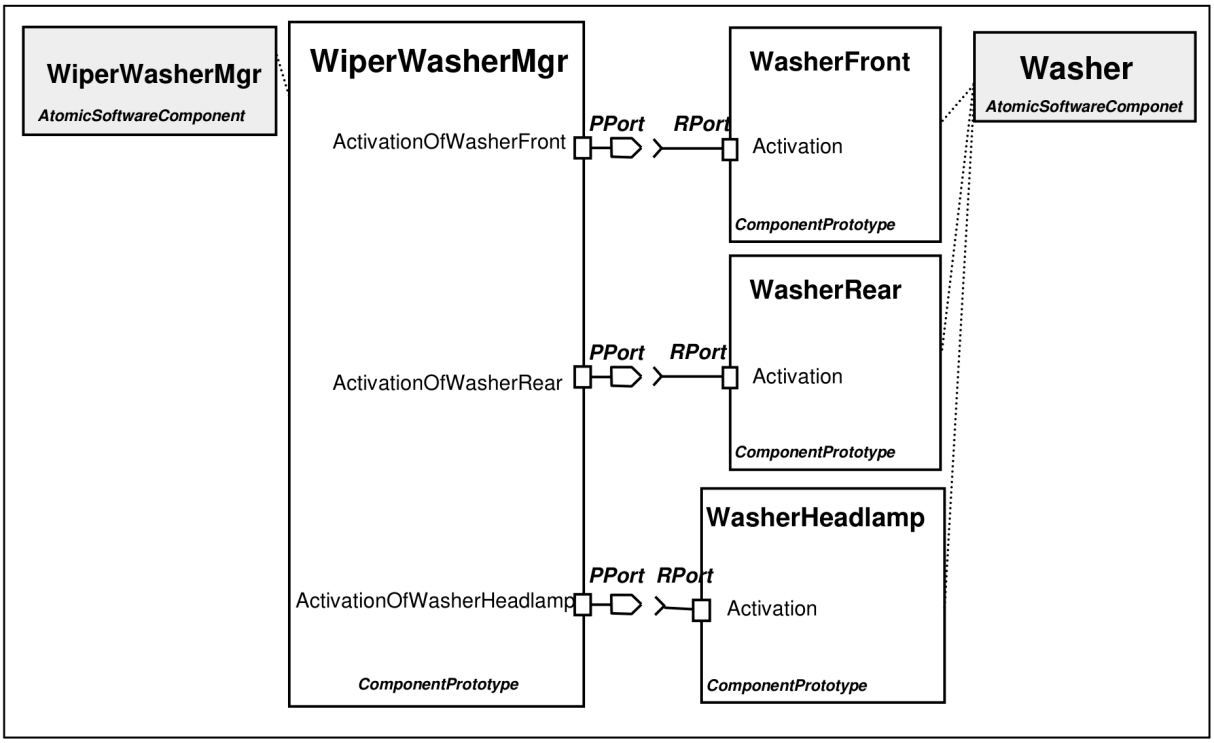


Figure 5.2: Ports of multiple ComponentPrototypes.

5.3 Clustering

[TR_SWMG_00008] Clustering

Upstream requirements: RS_SWMG_00048, RS_SWMG_00052

⌈Functional elements that belong together shall also be represented in the model together.⌋

The AUTOSAR meta model provides several features to support clustering of model elements. For example, interfaces can contain multiple data elements, record data types and array data types can contain multiple elements. The use of structuring features improves the structure and comprehensibility of the model.

5.3.1 Clustering through Sender Receiver Interfaces

If elements are clustered through Sender receiver Interfaces there is a choice between using three alternatives that have different behaviors and usually fit to different application scenarios:

A) Record data types,

- Elements of a record are transmitted atomically (in one block).
- Elements of record data types can have different data types.

B) Array data types

- Elements of arrays are transmitted atomically (in one block),
- All elements of an array have to use the same data type.

C) Interfaces with multiple data elements.

- The data elements of interfaces are transmitted separately.
- Data elements of interfaces can have different data types.

Examples for usage of these three alternatives are:

- To A): Use a record data type that includes the
  - Status and its value that belong together, e.g. for an actuator
  - Wheel dependent information that belong together,
  - Axle dependant information that belong together,
  - Value(s) and their derivation(s).
- To B): Use an array data type
  - Sending of dynamic configuration data, e.g. engine full-load curve, or retarder brake torque curve which may change when vehicle is driven, depending on temperature or altitude. This use case is common in commercial vehicles J1939 bus protocol on CAN.
- To C): Data that belongs together with independent update times:
  - Default for most signals, allows the system configurator most flexibility in scheduling communication.

The advantage to use a record instead of an array data type is that a separate name for each element is used.

5.4 Future extensibility

It is often necessary to adapt and extend model elements to cope with new requirements.

Defining or standardizing elements named "Reserved" (or with other names indicating a project dependent solution) with undefined meaning as placeholders for future extensions would lead to non standardized elements when customization is performed at a project level.

[TR_SWMG_00009] Placeholder model elements with undefined meaning not allowed

Upstream requirements: RS_SWMG_00002, RS_SWMG_00006

⌈Placeholder model elements with undefined meaning are not allowed.⌋

The following rules ensure forward compatibility of relevant model elements towards new AUTOSAR releases.

[TR_SWMG_00010] Standardized Enumeration DataTypes names differentiation

Upstream requirements: RS_SWMG_00010

⌈If a new application requires the modification of any attribute (Enumeration Values, Enumeration Value Names) of a standardized enumeration data type, the existing data type shall not be changed, but a new enumeration data type shall be created. The name of the new data type shall differ from the name of the original data type only in the sequence number.⌋

[TR_SWMG_00012] Standardized Continuous Datatypes names differentiation

Upstream requirements: RS_SWMG_00010

⌈If a new application requires the modification of any attribute (Resolution, Physical Limits, Offset, Unit) of a standardized continuous data type, the existing data type shall not be changed, but a new continuous data type shall be created. The name of the new data type shall differ from the name of the original data type only in the sequence number.⌋

[TR_SWMG_00013] Standardized Array DataTypes names differentiation

Upstream requirements: RS_SWMG_00010

⌈If a new application requires the modification of any attribute (number of elements, type of elements) of a standardized array data type, the existing data type shall not be changed, but a new array data type shall be created. The name of the new data type shall differ from the name of the original data type only in the sequence number.⌋

[TR_SWMG_00014] Standardized Record Datatypes names differentiation

Upstream requirements: RS_SWMG_00010

⌈If a new application requires the modification of any attribute (Number of Elements, Elements Name, Elements Type) of a standardized record data type, the existing data type shall not be changed, but a new record data type shall be created. The name of the new data type shall differ from the name of the original data type only in the sequence number.⌋

[TR_SWMG_00015] Standardized Sender-Receiver Interfaces names differentiation

Upstream requirements: RS_SWMG_00010

⌈If a new application requires the modification of any attribute (number of data elements, name of the data elements, type of the data elements) of a standardized sender-

receiver interface, the existing interface shall not be changed, but a new sender-receiver interface shall be created. The name of the new interface shall differ from the name of the original interface only in the sequence number.⌋

[TR_SWMG_00016] Standardized Client-Server Interfaces names differentiation

Upstream requirements: RS_SWMG_00010

⌈If a new application requires the modification of any attribute (operation name, number of arguments, argument names, argument data types, argument in/out property) of a standardized client-server interface, the existing interface shall not be changed, but a new interface shall be created. The name of the new interface shall differ from the name of the original interface only in the sequence number.⌋

[TR_SWMG_00019] Standardized PortPrototypeBlueprints names differentiation

Upstream requirements: RS_SWMG_00010

⌈If a new application requires the modification of the name (shortname) of a standardized PortPrototypeBlueprint, or any change in the referenced elements (port interfaces, application data types, unit) the existing PortPrototypeBlueprint shall not be changed, but a new PortPrototypeBlueprint shall be created. The name (shortname) of the new PortPrototypeBlueprint shall differ from the name of the original PortPrototypeBlueprint only in the sequence number. Changes in the descriptive elements of the PortPrototypeBlueprint (description, longname, introduction) not necessary lead to a new version of the PortPrototypeBlueprint except when the meaning of the original element is modified.⌋

6 Naming Convention for AUTOSAR Model Elements

This section contains naming conventions for AUTOSAR model elements.

This naming convention is applicable in any vehicle application domain of AUTOSAR.

[TR_SWNR_00059] Scope of naming convention

Upstream requirements: RS_SWMG_00007, RS_SWMG_00054, RS_SWMG_00060

⌈The naming convention applies to the following Model Elements:

- SwComponentTypes
- SwComponentPrototypes
- ApplicationDataTypes
- Units
- PhysicalDimensions
- PortInterfaces
- PortPrototypeBlueprints
- PortPrototypes
- DataPrototypes
- CompuMethods
- DataConstrs
- Keywords

⌋

The XML code which is shown in the document is compliant to the AUTOSAR schema xsd.

The Naming Convention defined in this document focus on defining rules for building contents of three main Autosar metamodel elements

- Attribute longName, derived from the abstract class MultilanguageReferrable
- Attribute shortName, derived from to the abstract class Referrable
- Keywords and keywords abbreviations

Attributes longName and shortName are common to all Autosar elements listed in [TR_SWNR_00059]. The concept of keyword abbreviation is rather closed to the keyword class definition [9] and will be discussed in chapter 6.4.

6.1 General Rules for Long Names

According to [2] Long Names (attribute longName) are targeted to humans readers and could be expressed in different languages. They contain the headline of the objects as single line text.

[TR_SWNR_00063] Mandatory Long Names in Application Inerfaces context

Upstream requirements: RS_SWMG_00054, RS_SWMG_00061, RS_SWMG_00062

⌈In the context of Application Interfaces Domain longName is a mandatory attribute even if its multiplicity is 0..1 in the Autosar MetaModel.⌋

[TR_SWNR_00064] Capital and lower letters in English Long Name construction

Upstream requirements: RS_SWMG_00054, RS_SWMG_00061, RS_SWMG_00062

⌈In order to improve readability:

- Every first word of a long name shall start with a capital letter.
- Articles (e.g. "a", "the"), Prepositions (e.g. "at", "by", "to") and Conjunctions (e.g. "and", "or") shall be expressed by small letters.
- All other words in the text line shall start with a capital letter.

⌋

[TR_SWNR_00065] Usage of spaces in Long Name construction

Upstream requirements: RS_SWMG_00054, RS_SWMG_00061, RS_SWMG_00062

⌈The Usage of spaces between words shall be mandatory.⌋

Additionally some specific recommendations are strongly suggested when dealing with long names constructions:

Usage of abbreviations:

- Abbreviations should be avoided as much as possible. If required, only well-known abbreviations should be used in long names.
- If present, all the abbreviations need to be explained in the description.
- Abbreviations for functionalities and systems should use the long name of the keywords (e.g. "ABS"). If the abbreviation is not very well known, put it into brackets, e.g. "Application Interfaces, (AI)".

Long Names constructions:

- Long names should not contain tailing numbers/sequence number in order to avoid the same long names for several entries
- The base of a long name should be the extended form of the short name.
- Order of words may be changed and additional terms may be added. Single terms may be exchanged in order to increase understandability.

- Maximal length of a long name should be limited to 80 characters, according to [2]. Exception: Long names of keywords follow different rules, see chapter 6.4.1.

6.2 General Rules for Short Names

In this chapter and in the rest of the document from now on, the term "name" refers to "short name" only.

[TR_SWNR_00001] The language for the names shall be English

Upstream requirements: RS_SWMG_00017, RS_SWMG_00030, RS_SWMG_00054, RS_SWMG_00061, RS_SWMG_00062

⌈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 document [3]) and is restricted by the following regular expression: [a-zA-Z][a-zA-Z0-9_]{0,127}

[TR_SWNR_00002] Length of Short Names

Upstream requirements: RS_SWMG_00014, RS_SWMG_00054, RS_SWMG_00061, RS_SWMG_00062

⌈A short name shall be between 1 and 128 characters long, shall begin with an alphabet, and shall consists of alphabets and numbers.⌋

[advisory_05000] Avoid usage of underscores at the end of Short Names ⌈Trailing and multiple consecutive underscores should not be used. Rationale: Readability is decreased. In some programming languages they are used for special purpose, so this usage may be confusing.⌋

Note that leading underscores cannot be used, as they are not allowed by the schema. Rationale: leading underscores are used for reserved names in programming languages (C,C++,Python,etc.) and even may clash with those when generating code based on the short names.

There is a usecase to compose a ShortName from different parts, which is the purpose of ShortNameFragments. This is the recommended approach, because it offers an unambiguous formalized method to describe parts, without relying on heuristics that may or may not apply to all elements. However, many existing models still use underscores in short names as separator between the different name parts. When working in such a model, underscores in ShortNames should be avoided, except the name is built by concatenating multiple (short) names of other elements. Also pre- and postfixes may be separated by underscores from the essential part of the name (e.g. usage of P_ or R_ for ports).

Rationale: short names of elements are often used to build further names of (esp. generated) artifacts depending on several elements. In this case underscores are widely used If the short name of a rather "atomic" element already contains an underscore, the separation is difficult to trace back (e.g. analyzing or debugging RTE code).

[TR_SWNR_00004] Differentiation based on capitalization not allowed

Upstream requirements: RS_SWMG_00002, RS_SWMG_00006, RS_SWMG_00041, RS_SWMG_00054, RS_SWMG_00061

⌈Within one name space ShortNames 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 name 2: doorLocked

[TR_SWNR_00005] Valid identifier in source code for C, C++ and C-preprocessor

Upstream requirements: RS_SWMG_00010, RS_SWMG_00054, RS_SWMG_00061

⌈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.

[TR_SWNR_00006] Short Names meaning

Upstream requirements: RS_SWMG_00002, RS_SWMG_00006, RS_SWMG_00054, RS_SWMG_00061

⌈The names of elements shall document their meaning or use.⌋

[TR_SWNR_00007] Usage of prefixes to identify kind of element not allowed

Upstream requirements: RS_SWMG_00031, RS_SWMG_00054, RS_SWMG_00061

⌈No prefixes related to the kind of the element shall be used in the name of the model elements covered by this Naming Convention, listed in TR_SWNR_00059.⌋

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.

6.3 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 refers to AUTOSAR Methodology document [4].

6.3.1 Length Restrictions

The RTE Specification [5] 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 [6] rule 5.1 requires that the significant part of such a name shall 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 128 characters, the name given above could have as much as

10 + 1 + 128 + 1 +128 + 1 + 128 = 397 characters.

6.3.2 Data Types

[TR_SWNR_00008] Data type names shall conform to C/C++ names for typedefs

Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

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

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6.3.3 RTE rules of name mapping

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

- SWS_Rte_1153

- SWS_Rte_3837

Such SWS_Rte rules define the sequence in which model element ShortNames are concatenated to obtain generated function names in the RTE C Code.

Example:[1]

- ShortName of component type: Wshr
- ShortName of the component prototype: WshrFrnt
- ShortName of runnable entity: Monr
- ShortName of provide port: OutdT
- ShortName of sender-receiver interface of this port: T1
- ShortName the data element: Val

Examples of generated function names for rule SWS_Rte_3837:

Rte_IRead_Monr_OutdT_Val

Rte_IRead_Wshr_Monr_OutdT_Val

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

6.3.4 Components and Ports

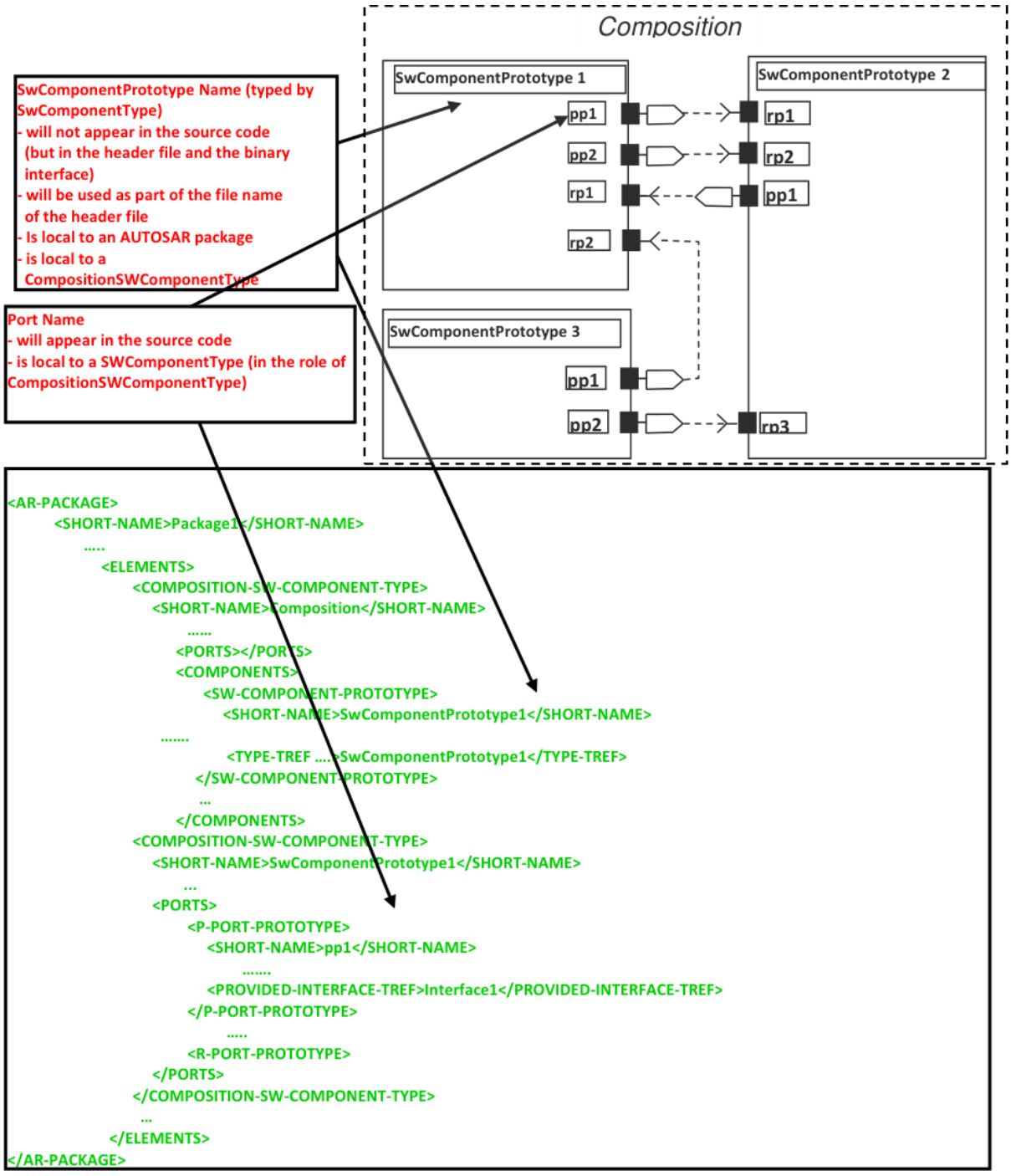


Figure 6.1: Components And Ports

The abstract SwComponentType cannot be instantiated, there can only be either a CompositionSwComponentType, a ParameterSwComponentType or a specialized inherited class of the AtomicSwComponentType class. See [7] for more details.

Such AtomicSwComponentTypes encapsulate the implementation of their functionality and behavior and merely expose well-defined connection points, called PortPrototypes, to the outside world.

CompositionSwComponentType, which are SwComponentTypes as well, may be aggregated in further CompositionSwComponentTypes, and their purpose is to allow existing software components aggregation.

In a CompositionSwComponentType the SwComponentTypes are occurring in specific roles which are called SwComponetPrototypes.

The figure above shows the scope of Components and Ports names.

SwComponentTypes names are local to an AR-Package therefore within an AR-Package there must not be two SwComponentTypes having the same name, i.e, the short-names shall be unique. This is explicitly required by RTE implementation since RTE generator rejects those configurations where multiple SwComponentTypes have the same short name (see [SWS_Rte_7190] in [5] for more details)

The same applies for:

- SwComponentPrototypes within a CompositionSwComponentType
- PortPrototypes within a SwComponentType.

See document [7] for detailed information on name space provided by Software Components.

Port names will appear in the RTE APIs, see RTE specifications [5].

The figure also shows that names of connected ports can be different (example: pp2 from Component3 connected to rp3 of Component2).

6.3.5 Sender Receiver Interfaces and Data Elements

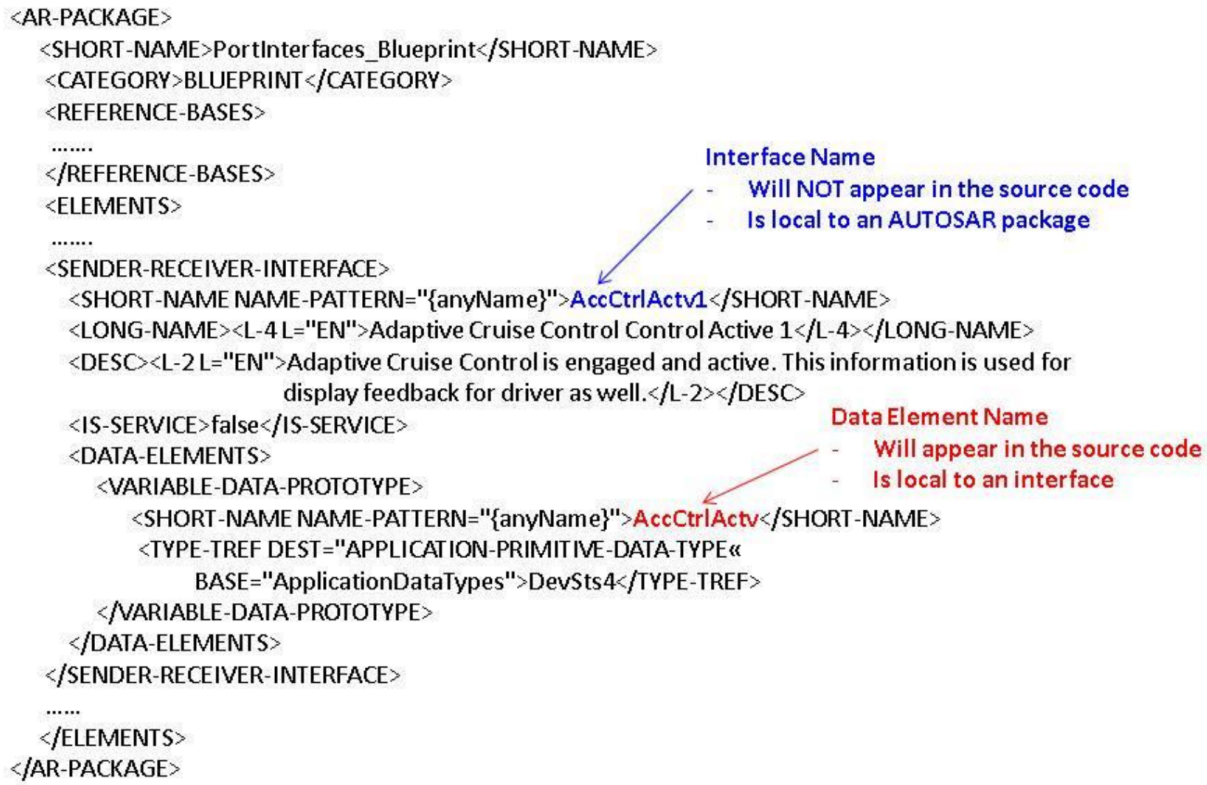


Figure 6.2: SenderReceiverInterfaces and Data Elements

The figure above shows the scope of SenderReceiverInterfaces and Data Elements names.

Interface names are local to an AR-Package therefore within an AR-Package there must not be two Interfaces having the same name, i.e, the short-names shall be unique.

The same applies for Data Elements i.e. within an Interface, Data Element names shall be unique.

See document [7] for detailed information on name space provided by Sender Receiver Interfaces.

Data Element names will appear in the RTE APIs, see RTE specifications [5].

6.3.6 Client Server Interfaces, Operations, and Arguments



Figure 6.3: ClientServerInterfaces and Operations

The figure above shows the scope of ClientServerInterfaces, Operations, and Argument names.

Interface names are local to an AR-Package therefore within an AR-Package there must not be two Interfaces having the same name, i.e, the short-names shall be unique.

The same applies for:

- Operations within a ClientServerInterface.
- Arguments within an Operation.

See document [7] for detailed information on name space provided by Client Server Interfaces.

Data Element names will appear in the RTE APIs, see RTE specifications [5].

6.4 Usage of Keywords

Depending on its role in the component design, short names for component types, ports, port interfaces or data elements can make use of the predefined keywords and their abbreviations, which are described in more detail in 6.4.1. The advantage is, that this results in relatively short names with established meaning.

6.4.1 Keyword Composition Semantic Rules

According to [8] each keyword is described by the following attributes:

- shortName: represent the unique name of the keyword, it's not involved in name construction
- longName: represent the long form of the keyword
- desc: represent the definition of the keyword
- introduction: verbal description of the use case (not used at the moment)
- abbrName: specifies the abbreviated name of the keyword and it's used to build shortNames
- classification: describe the semantic field of the keyword (Mean-Environment-Device, Action-PhysicalType, Condition-Qualifier, Index, Preposition)

If not differently specified in the rest of the document the term keyword will refer to the longName of the keyword, while the abbreviated name could be referred as "abbr Name attribute" or "keyword abbreviation" as well.

Example:

Definition of keyword describing the driver of a vehicle

longName : Driver

abbrName: Drvr

Usecases (shortName of ports using abbrName attribute): DrvrProf, DrvrDoorLockSt

[TR_SWNR_00009] Invalid usage of underscores for keywords separation

Upstream requirements: RS_SWMG_00011, RS_SWMG_00040, RS_SWMG_00054

⌈No underscores shall be used to separate keyword abbreviations (abbrName attribute) in short names, because the RTE uses them to separate port names from Data Element names. Instead of underscores capital letters shall be used to separate the keyword abbreviations.⌋

[TR_SWNR_00010] Building Short Names with Keywords

Upstream requirements: RS_SWMG_00005, RS_SWMG_00011, RS_SWMG_00054, RS_SWMG_00059

⌈Short names are composed by concatenating predefined keyword abbreviations (abbr Name attribute).⌋

[TR_SWNR_00011] Each keyword shall start with an uppercase letter, or a number, followed by lowercase letters or "-"

Upstream requirements: RS_SWMG_00011, RS_SWMG_00041, RS_SWMG_00054

⌈Each keyword shall start with an uppercase letter, or a number, followed by lowercase letters or "-".⌋

Examples: Keyword abbreviation (abbrName): "Apil",

Long Name of Keyword: "A-Pillar"

[TR_SWNR_00013] English as language for Keywords definition

Upstream requirements: RS_SWMG_00011, RS_SWMG_00030, RS_SWMG_00054

⌈A keyword shall be a single English word or a multiplier prefix, such as "kilo", "giga" or "milli". To shorten the names within maximum allowed numbers of characters keyword abbreviations (abbrName attribute) are provided.⌋

[TR_SWNR_00018] Rule for keyword abbreviation definition

Upstream requirements: RS_SWMG_00011, RS_SWMG_00054

⌈A keyword abbreviation (abbrName attribute) shall 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.⌋

The following example is not a valid short name, because non-abbreviated keywords are used: EngineSpd. The correct short name would be: EngN (N for rotational speed).

It could happen that some keywords which are different in their longName form need to be abbreviated in the same way, since different scientific or technical communities usually adopt well-know and wide accepted acronyms or abbreviations in their domain. These acronyms and abbreviations can be tha exactly the same, even if representing different contentsAccording to the definition of keyword class in [9] multiple meaning for keyword abbreviations can be handled by the following set of three rules (TR_SWNR_00066, TR_SWNR_00067 andTR_SWNR_00068)

[TR_SWNR_00066] Defined attributes of Keywords in Application Interfaces context

Upstream requirements: RS_SWMG_00011, RS_SWMG_00034, RS_SWMG_00054

⌈Each keyword shall have exactly one shortName, exactly one longName, exactly one desc, exactly one abbrName and exactly one classification.⌋

[TR_SWNR_00067] Multiple meanings through abbrName attribute

Upstream requirements: RS_SWMG_00034, RS_SWMG_00054

⌈Two or more different keywords can share the same abbrName.⌋

According to [2] and [8], if an Identifiable element is contained into another Identifiable element, the shortName of the contained Identifiable element shall be unique into the context of the Identifiable element that contains it (in this case Keywords are identifiable elements contained into the identifiable element KeywordSet)

As a consequence, each shortName shall be unique in the KeywordSet.

If keywords share the same abbrName it is recommended to use abbrName plus index for the shortName.

[TR_SWNR_00068] Rule for shortNames keywords definition in case of multiple meanings

Upstream requirements: RS_SWMG_00034, RS_SWMG_00054

⌈If a keyword abbreviation (attribute abbrName) is intended to have N different meanings, N keywords (elements belonging to the class Keyword) sharing the same value of abbrName attribute shall be present and each different meaning shall be described into the corresponding keyword desc attribute.⌋

Example:

shortName	longName	abbrName	desc	classification
Ch (*)	Charge	Ch	.....	Condition/qualifier
Ch1 (*)	Channel	Ch	.....	Condition/qualifier

Table 6.1: Example of shortName keywords definition in case of multiple meanings

(*) this example doesn't represent the current implementation but just one possible implementation preserving the uniqueness of the shortNames into the keywords package

[TR_SWNR_00017] Special Keywords as well-known acronyms

Upstream requirements: RS_SWMG_00054

⌈Some terms of common usage in the automotive environment cannot be expressed by a single English word. In such a case the abbreviation (abbrName) and the keyword (longName) shall be identical except for camelcase and adding "-".⌋

Examples: Keyword abbr.: "Abs", Long Name of Keyword: "ABS"

Keyword abbr.: "Nox", Long Name of Keyword: "NOx"

As an exception for the long name definition, in case of terms of common usage and well known acronyms (mainly keywords belonging to the set of keywords ruled by TR_SWNR_00017), the long name of the keyword can be expressed entirely by capital letters.

Examples:

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

Table 6.2: Example of keywords abbreviation of common usage

[TR_SWNR_00058] Semantic rules for readable and understandable names

Upstream requirements: RS_SWMG_00012, RS_SWMG_00016, RS_SWMG_00054

⌈

Sequence	Semantic Field Name	Description	Rules and Examples
1	Mean-Environment-Device	Physical mean, environment. Define the element subject of Action-PhysicalType.	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
3	Condition- Qualifier	Qualifies the Mean-Environment-Device or Action-PhysicalType 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, Old, New, AbsoluteEstimated, Examples for Qualifier: Request, Command, Status
4	*Index*	Identifies the signal as part of a logically structured information. 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: BrakeSwitch1
5	*Preposition*	Used for joining/ separating complex naming patterns made by several semantic fields	Example: EngNAndPosn CoolgReqFromSteer TqActAtClu

In order to build readable and understandable names, keywords shall be arranged according to semantic rules. Such rules define Semantic Fields that must be used in a defined sequence. All the predefined keywords and their corresponding keyword abbreviations are classified according to the semantic fields. This is specified using the classification attribute.

⌋

Semantic fields are concatenated according to the Sequence column numbering:

Mean-Environment-Device*Action-PhysicalType*Condition-Qualifier*Index* - this sequence is called FieldBlock.

[TR_SWNR_00019] Sematic fields not mandatory

Upstream requirements: RS_SWMG_00012, RS_SWMG_00016, RS_SWMG_00054

⌈None of the semantic fields are mandatory and semantic fields can be repeated, i.e. names can be built by using an arbitrary number of semantic fields.⌋

[TR_SWNR_00020] Indexes start with number

Upstream requirements: RS_SWMG_00012, RS_SWMG_00054

⌈Only keywords classified as Index shall start with a number. When used, Index field is always the last in the field block.⌋

The following examples are valid short names[2]:

GearAct

Mirr*Move*Cmd

Eng*N*

Eng*N*Max

Recommendation: if a semantic field contains more than one keyword they either have to be arranged in a natural English order or the most important keyword has to come first.

Example:

BrakePedalStatus

PedalBrake is not recommended, since "brake pedal" is a very well-known English term.

Other examples of compound definitions where not all semantic fields are present:

BrkPedlSwt*1*

VehBodyAVertBasMeasd

*OpenCls*Req

AcvDamprSt

To increase readability of names, a list of predefined Prepositions is provided within the standardized keyword list.

[TR_SWNR_00034] Arbitrary number of field blocks

Upstream requirements: RS_SWMG_00012, RS_SWMG_00054

⌈An arbitrary number of field blocks can be concatenated.⌋

[2]The keywords and keyword abbreviations used in the examples of this chapter may not be consistent to the keyword list

However, the number of field blocks should be limited. It is encouraged to separate each field block by adding an appropriate preposition. This leads to the following naming pattern:

Mean-Environment-Device*Action-PhysicalType*Condition-Qualifier*Index*Preposition

Portion of names separated by prepositions are called FieldBlocks:

FieldBlock1Preposition1FieldBlock2Preposition2...FieldBlockN.

The following example shows the usage of prepositions:

EngNAtGearTar

It's strongly recommended that each FieldBlock has a meaning independent of the other FieldBlocks.

Example:

The interface with the description "Generic interface for total powertrain torque at wheels" can not be represented by "PtTqAtWhlsTot". The FieldBlock "WhlsTot" has not the intended meaning, because "Tot" relates to "Tq". Therefore, one of the possible compliant solutions for the name is "PtTqTotAtWhls".

[TR_SWNR_00050] Order of FieldBlocks in case of usage of prepositions

Upstream requirements: RS_SWMG_00012, RS_SWMG_00054, RS_SWMG_00062

⌈If one or more prepositions are used to build a short name the most essential / important element has to be in the FieldBlock1. FieldBlocks that are following are refining the before mentioned FieldBlock.⌋

TR_SWNR_00050 ensures that the names start with most essential information and end with very special details.

Example:

The following interface description: "Driver request torque limitation if accelerator and brake pedal pressed at the same time and implausibilities have occurred." would result in the following name: Drvr*TqLimn*ReqForBrkAccrPedlImpy1. The whole interface describes a driver torque limitation request. Therefore, DrvrTqLimnReq is the most important FieldBlock. Hence it is the first FieldBlock.

The following examples show incorrect names:

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

6.5 Model Elements

The naming conventions apply to the ShortName (SHORT-NAME) attribute 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.

6.5.1 ARPackage (AR-PACKAGE)

An ARPackage creates a name space[3]. In one system package names have to be unique. Packages can have sub-packages.

The following rules are defined for the standardized package structure:

- **[TR_SWNR_00022] ARPackage AUTOSAR**

  Upstream requirements: RS_SWMG_00001, RS_SWMG_00054, RS_SWMG_00056

  ⌈According to [2] Chapter 4.2 *"Packages in AUTOSAR"*, below the root an ARPackage with LongName AUTOSAR and ShortName AUTOSAR shall be placed. Everything inside the top-level package AUTOSAR is released by the AUTOSAR partnership (see requirements RS_SWMG_00001, RS_SWMG_00056). The top-level package LongName and ShortName AUTOSAR is reserved by the AUTOSAR partnership and shall not be used elsewhere.⌋

- **[TR_SWNR_00023] Packages contained into ARPackage AUTOSAR**

  Upstream requirements: RS_SWMG_00001, RS_SWMG_00054

  ⌈Within this ARPackage "AUTOSAR" the following packages are contained (ShortNames):

  AISpecification, ApplicationDataTypes_Blueprint, CompuMethods_Blueprint, DataConstrs_Blueprint, PortInterfaces_Blueprint, PortPrototypeBlueprints_Blueprint, Collections_Blueprint, KeywordSets_Blueprint, ApplicationDataTypes_Example, BlueprintMappingSets_Example, CompuMethods_Example, DataConstrs_Example, PortInterfaces_Example, SwComponentTypes_Example, PhysicalDimensions, Units, LifeCycleInfoSets, Systems.⌋

These rules define the standardized package structure for the defined elements of the M2 [REF] modeling level. According to requirement [RS_SWMG_00056] the AUTOSAR package is a reserved name space.

[3] For a description of the name space concept see [3].

[TR_SWMG_00018] Policy of names standardization

Upstream requirements: RS_SWMG_00001, RS_SWMG_00049

⌈Only elements which are defined by the AUTOSAR partnership shall be added to this name space. These elements shall not be modified (see [2])⌋

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

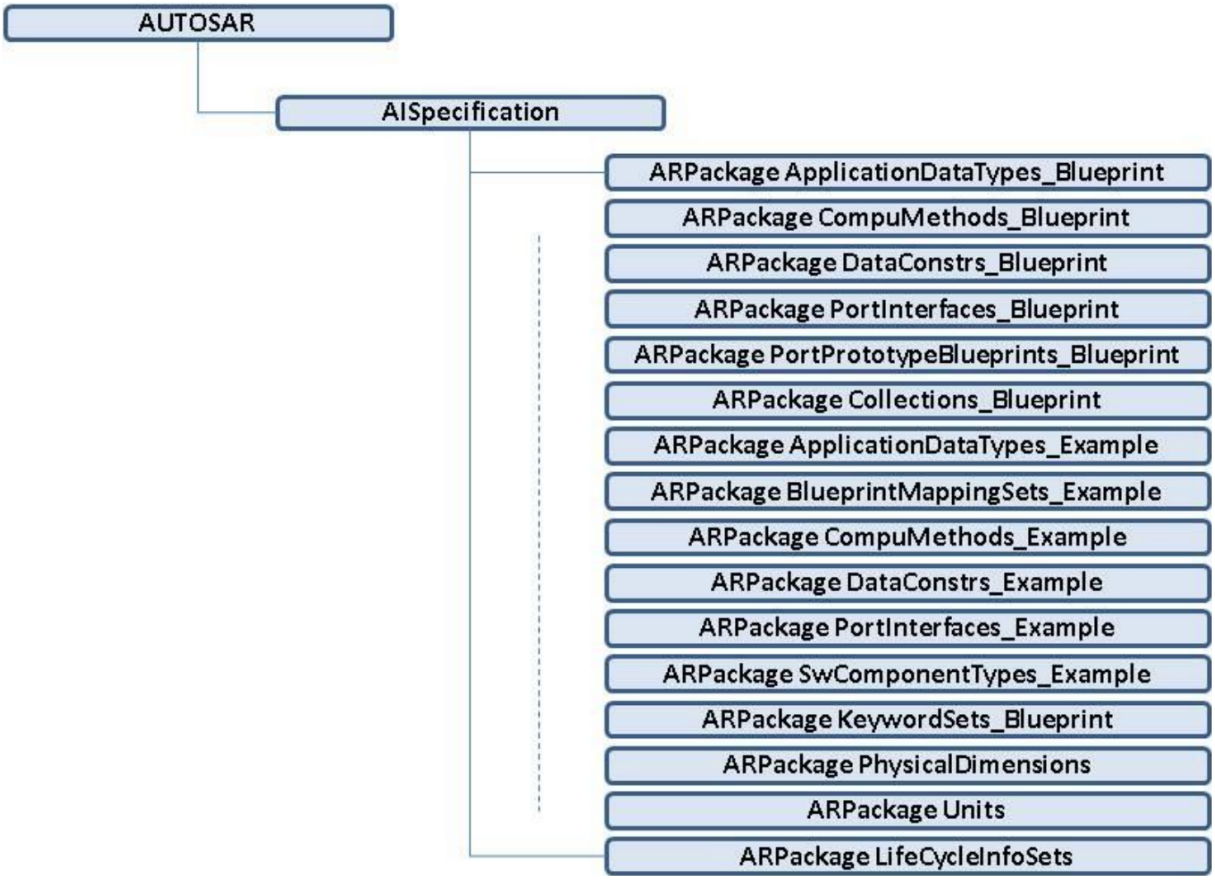


Figure 6.4: AUTOSAR Package structure

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As recommendation, names of non standardized AUTOSAR packages should follow the general rules defined in chapter 6.4.1.

ARPackage AUTOSAR does not have a category, while its sub-packages do.

Categories of the sub-packages are set as follows:

ARPackage	Category
PhysicalDimensions	**STANDARD**
Units	**STANDARD**
LifeCycleInfoSets	**STANDARD**
DataConstrs_Blueprint	**BLUEPRINT**
ApplicationDataTypes_Blueprint	**BLUEPRINT**

▽

△

CompuMethods_Blueprint	**BLUEPRINT**
PortInterfaces_Blueprint	**BLUEPRINT**
PortPrototypeBlueprints_Blueprint	**BLUEPRINT**
KeywordSets_Blueprint	**BLUEPRINT**
Collections_Blueprint	**BLUEPRINT**
ApplicationDataTypes_Example	**EXAMPLE**
BlueprintMappingSets_Example	**EXAMPLE**
CompuMethods_Example	**EXAMPLE**
PortInterfaces_Example	**EXAMPLE**
SwComponentTypes_Example	**EXAMPLE**
DataConstrs_Example	**EXAMPLE**
Systems	**EXAMPLE**

Table 6.3: Category of ARPackages

6.5.2 SenderReceiverInterface (SENDER-RECEIVER-INTERFACE)

[TR_SWNR_00051] Usage of sequence number in the Sender-Receiver Interfaces names

Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

⌈The interface name shall end with a sequence number to take into account the future evolution of interfaces.⌋

The rule [TR_SWNR_00051] for interfaces is similar to [TR_SWNR_00044] for data types.

Example:

```
<SENDER-RECEIVER-INTERFACE>
    <SHORT-NAME NAME-PATTERN="{anyName}">BattU1</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Battery Voltage</L-4></LONG-NAME>
    <DESC><L-2 L="EN">This interface provides the actual voltage level as
       measured at the battery.</L-2></DESC>
    <IS-SERVICE>false</IS-SERVICE>
    <DATA-ELEMENTS>
        <VARIABLE-DATA-PROTOTYPE>
            <SHORT-NAME NAME-PATTERN="{anyName}">BattU</SHORT-NAME>
            <TYPE-TREF DEST="APPLICATION-PRIMITIVE-DATA-TYPE" BASE="
               ApplicationDataTypes">U1</TYPE-TREF>
        </VARIABLE-DATA-PROTOTYPE>
    </DATA-ELEMENTS>
</SENDER-RECEIVER-INTERFACE>
```

Recommendations:

A SenderReceiverInterface should be a reusable element. The name should be independent of its concrete usage by components and ports and should only reflect its general purpose.

To allow reuse, the communication path (the indication of source or destination of ports using the interface) should not be encoded in the interface name.

The following short names are bad examples for interface names:

YawRateStdByEsc

YawRateStdBySecCtrlrYawRate

The interface name in this example shall be "YawRate1" and reused by two ports whose names could be "YawRateStdByEsc" and "YawRateStdBySecCtrlrYawRate".

6.5.3 VariableDataPrototype (VARIABLE-DATA-PROTOTYPE)

Objectives:

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

Rules:

- **[TR_SWNR_00026] Name reflecting data content**

  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈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, it is recommended to use the name Val (abbreviation of Value).⌋

Example:

```
<VARIABLE-DATA-PROTOTYPE>
  <SHORT-NAME NAME-PATTERN="{anyName}">Val</SHORT-NAME>
    <TYPE-TREF DEST="APPLICATION-PRIMITIVE-DATA-TYPE" BASE="
       ApplicationDataTypes">T1</TYPE-TREF>
</VARIABLE-DATA-PROTOTYPE>
```

- **[TR_SWNR_00027] Name reflecting operation**

  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈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: Cls (abbreviation of Close).

If no sensible name for the data element prototype can be found and the interface is used to indicate an operation, the name Oper (abbreviation of Operation) should be used.

- **[TR_SWNR_00029] Multiple data denoting same operations**

  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈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:
  UserTransmit UsrTx
  TelegramTransmit TelgrmTx
  ExteriorLightDisplay ExtrLiDisp
  ParkingLightDisplay PrkgLiDisp
  Remark: In the last two examples all keywords are classified as "Mean-Environment-Device" so they can be arranged in any order

Recommendations:

- Repeating the name of the enclosing interface in the name of the data element is allowed, but not recommended. Repetition of the name would result in redundant information and would reflect negatively in RTE generated function names (see chapter 6.3.3 for an example of distribution of information between interface name and data element name).

6.5.4 ApplicationDataType

The following classes are subclasses of the class ApplicationDataType in the AUTOSAR meta model. Therefore, the naming convention applies also to these classes:

ApplicationPrimitiveDataType (APPLICATION-PRIMITIVE-DATA-TYPE)

ApplicationRecordDataType (APPLICATION-RECORD-DATA-TYPE)

ApplicationArrayDataType (APPLICATION-ARRAY-DATA-TYPE)

Rules:

- **[TR_SWNR_00056] The name shall reflect the meaning of the type**

  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈The name shall reflect the meaning of the type.⌋

- **[TR_SWNR_00057] Usage of prefixes not allowed**

  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈No prefixes, such as "t_" shall be used in the type name.⌋

- **[TR_SWNR_00055] Information about array length not allowed in names**

  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈No numbers shall be used in an ApplicationArrayDataType name to specify its length.⌋

- **[TR_SWNR_00044] Usage of sequence number in the datatypes names**

  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈The data type name shall end with a sequence number to take into account the future evolution. This rule shall also be applied to distinguish data types, which represent the same physical entity, but with different ranges or resolution i.e. names of such data types shall differ only for the sequence number.⌋

Example:

Temperature1 T1

Temperature2 T2

Temperature3 T3

The rules TR_SWNR_00044 ensures the reusability of the data types.

- **[TR_SWNR_00048] No information about communication in names**

  Upstream requirements: RS_SWMG_00031, RS_SWMG_00054

  ⌈To allow reuse, the communication path shall not be encoded in the data type name.⌋

Example XML:

```
<APPLICATION-PRIMITIVE-DATA-TYPE>
    <SHORT-NAME NAME-PATTERN="{anyName}">U1</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Voltage 1</L-4></LONG-NAME>
    <DESC><L-2 L="EN">Generic data type for voltage</L-2></DESC>
    <CATEGORY>VALUE</CATEGORY>
    <SW-DATA-DEF-PROPS>
    <SW-DATA-DEF-PROPS-VARIANTS>
        <SW-DATA-DEF-PROPS-CONDITIONAL>
        <SW-CALIBRATION-ACCESS>READ-ONLY</SW-CALIBRATION-ACCESS>
        <COMPU-METHOD-REF DEST="COMPU-METHOD" BASE="CompuMethods">U1</COMPU
            -METHOD-REF>
        <DATA-CONSTR-REF DEST="DATA-CONSTR" BASE="DataConstrs">U1</DATA-
            CONSTR-REF>
        <SW-INTENDED-RESOLUTION>0.1</SW-INTENDED-RESOLUTION>
        <UNIT-REF DEST="UNIT" BASE="Units">Volt</UNIT-REF>
        </SW-DATA-DEF-PROPS-CONDITIONAL>
    </SW-DATA-DEF-PROPS-VARIANTS>
    </SW-DATA-DEF-PROPS>
</APPLICATION-PRIMITIVE-DATA-TYPE>
```

6.5.5 CompuMethod (COMPU-METHOD)

COMPU-METHOD shortnames elements fullfill naming convention rules.

Specific name patterns shall be followed in order to distinguish special use cases:

- **[TR_SWNR_00069] Generic CompuMethod per Unit for category IDENTICAL**
  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈Generic CompuMethod per Unit for category IDENTICAL shall follow the following pattern: {shortName of Unit}Identcl (mandatory)⌋

- **[TR_SWNR_00070] Generic CompuMethod per Unit for category LINEAR**
  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈Generic CompuMethod per Unit for category LINEAR (to support reuse of CompuMethods for specific resolutions) shall follow the following pattern: {short Name of Unit}Lnr{sequence number} (mandatory after release 4.2.1 for new compuMethod creation)⌋

- **[TR_SWNR_00071] Generic CompuMethod for category TEXTTABLE**
  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈Generic CompuMethod for category TEXTTABLE (typically used for enumeration types) shall follow the following pattern: {shortName of the corresponding ApplicationDataType} (mandatory)⌋

Examples:

1. IDENTICAL CompuMethod (as it would be for float implementation, no compu scales required)

```
<COMPU-METHOD>
    <SHORT-NAME NAME-PATTERN="{anyName}">KelvinIdentcl</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Kelvin Identical</L-4></LONG-NAME>
    <CATEGORY>IDENTICAL</CATEGORY>
    <UNIT-REF BASE="Units" DEST="UNIT">Kelvin</UNIT-REF>
</COMPU-METHOD>
```

2. LINEAR CompuMethod

```
<COMPU-METHOD>
    <SHORT-NAME NAME-PATTERN="{anyName}">VoltLnr1</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Voltage 1</L-4></LONG-NAME>
    <DESC><L-2 L="EN">Generic data type for voltage</L-2></DESC>
    <CATEGORY>LINEAR</CATEGORY>
    <UNIT-REF BASE="Units" DEST="UNIT">Volt</UNIT-REF>
    <COMPU-PHYS-TO-INTERNAL>
        <COMPU-SCALES>
            <COMPU-SCALE>
                <LOWER-LIMIT INTERVAL-TYPE="CLOSED">0</LOWER-LIMIT>
                <UPPER-LIMIT INTERVAL-TYPE="CLOSED">25.2</UPPER-LIMIT>
                <COMPU-RATIONAL-COEFFS>
                    <COMPU-NUMERATOR>
```

```
                        <V>0</V>
                        <V>1</V>
                    </COMPU-NUMERATOR>
                    <COMPU-DENOMINATOR>
                        <V>0.1</V>
                    </COMPU-DENOMINATOR>
                </COMPU-RATIONAL-COEFFS>
            </COMPU-SCALE>
        </COMPU-SCALES>
    </COMPU-PHYS-TO-INTERNAL>
</COMPU-METHOD>
```

3. TEXTTABLE CompuMethod (for Enumeration datatype)

```
<COMPU-METHOD>
    <SHORT-NAME NAME-PATTERN="{anyName}">AckSt1</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Acknowledge Status 1</L-4></LONG-NAME>
    <CATEGORY>TEXTTABLE</CATEGORY>
    <UNIT-REF BASE="Units" DEST="UNIT">NoUnit</UNIT-REF>
    <COMPU-INTERNAL-TO-PHYS>
        <COMPU-SCALES>
            <COMPU-SCALE>
                <DESC><L-2 L="EN">0 = NotAcpt (Request not accepted.)</L-2>
                    </DESC>
                <LOWER-LIMIT INTERVAL-TYPE="CLOSED">0</LOWER-LIMIT>
                <UPPER-LIMIT INTERVAL-TYPE="CLOSED">0</UPPER-LIMIT>
                <COMPU-CONST>
                    <VT>NotAcpt</VT>
                </COMPU-CONST>
            </COMPU-SCALE>
            <COMPU-SCALE>
                <DESC><L-2 L="EN">1 = Acpt (Request accepted.)</L-2></DESC>
                <LOWER-LIMIT INTERVAL-TYPE="CLOSED">1</LOWER-LIMIT>
                <UPPER-LIMIT INTERVAL-TYPE="CLOSED">1</UPPER-LIMIT>
                <COMPU-CONST>
                    <VT>Acpt</VT>
                </COMPU-CONST>
            </COMPU-SCALE>
        </COMPU-SCALES>
    </COMPU-INTERNAL-TO-PHYS>
</COMPU-METHOD>
```

6.5.6 SwComponentType (COMPOSITION-SW-COMPONENT-TYPE)

The naming convention applies to the following subclasses of the class SwComponent Type:

ApplicationSwComponentType

CompositionSwComponentType

SensorActuatorSwComponentType

ParameterSwComponentType

Objectives:

- Avoid name clashes within the package
- Classification of components
- Not for component prototypes (see 6.5.7)

Rules

- **[TR_SWNR_00035] Prefixes referring specific domains not allowed for Sw ComponentTypes**

  Upstream requirements: RS_SWMG_00031, RS_SWMG_00054

  ⌈Using a prefix to indicate the application domain (such as powertrain, body, chassis) of the SwComponentType is not allowed.⌋

Recommendations:

- Use a noun or concatenation of nouns. Example SensorSpeed SnsrSpd
- The name should be understandable.

Examples

VehicleSpeed VehSpd

VehicleMotionDemand VehMtnDmd

WiperWasher WiprWshr

Example (to shorten the example, some lines have been removed):

```
<COMPOSITION-SW-COMPONENT-TYPE>
    <SHORT-NAME>KeyPad</SHORT-NAME>
    <PORTS>
        <P-PORT-PROTOTYPE>
            <SHORT-NAME>DrvrDoorKeyPad</SHORT-NAME>
            <LONG-NAME><L-4 L="EN">Driver Door Keypad</L-4></LONG-NAME>
            <DESC><L-2 L="EN">Request to activate central locking master
                from the driver door key pad</L-2></DESC>
            <PROVIDED-INTERFACE-TREF DEST="SENDER-RECEIVER-INTERFACE" BASE=
                "PortInterfaces_Blueprint">LockgCenReq1</PROVIDED-INTERFACE-
                TREF>
        </P-PORT-PROTOTYPE>
            <!--...some ports skipped-->
        <P-PORT-PROTOTYPE>
            <SHORT-NAME>KeyPadOfLidRe</SHORT-NAME>
            <LONG-NAME><L-4 L="EN">Rear Lid Keypad</L-4></LONG-NAME>
            <DESC><L-2 L="EN">Request to activate central locking master on
                the rear lid from lid key pad</L-2></DESC>
            <PROVIDED-INTERFACE-TREF DEST="SENDER-RECEIVER-INTERFACE" BASE=
                "PortInterfaces_Blueprint">LockgCenReq1</PROVIDED-INTERFACE-
                TREF>
        </P-PORT-PROTOTYPE>
    </PORTS>
    <COMPONENTS>
```

```
        <SW-COMPONENT-PROTOTYPE>
            <SHORT-NAME>KeyPadMgr</SHORT-NAME>
            <LONG-NAME><L-4 L="EN">KeyPadManager</L-4></LONG-NAME>
            <DESC><L-2 L="EN">Key Pad Manager</L-2></DESC>
            <TYPE-TREF DEST="COMPOSITION-SW-COMPONENT-TYPE" BASE="
               SwComponentTypes_Example">KeyPadMgr</TYPE-TREF>
        </SW-COMPONENT-PROTOTYPE>
    </COMPONENTS>
    <CONNECTORS>
        <DELEGATION-SW-CONNECTOR>
            <SHORT-NAME>delcon_0</SHORT-NAME>
                <INNER-PORT-IREF>
                    <P-PORT-IN-COMPOSITION-INSTANCE-REF>
                        <CONTEXT-COMPONENT-REF DEST="SW-COMPONENT-PROTOTYPE
                            " BASE="SwComponentTypes_Example">KeyPad/
                            KeyPadMgr</CONTEXT-COMPONENT-REF>
                             <TARGET-P-PORT-REF DEST="P-PORT-PROTOTYPE" BASE
                                ="SwComponentTypes_Example">KeyPadMgr/
                                DrvrDoorKeyPad</TARGET-P-PORT-REF>
                    </P-PORT-IN-COMPOSITION-INSTANCE-REF>
                </INNER-PORT-IREF>
                <OUTER-PORT-REF DEST="P-PORT-PROTOTYPE" BASE="
                   SwComponentTypes_Example">KeyPad/DrvrDoorKeyPad</OUTER-
                   PORT-REF>
            </DELEGATION-SW-CONNECTOR>
        <!-- ... some delegation ports skipped -->
    </CONNECTORS>
</COMPOSITION-SW-COMPONENT-TYPE>
```

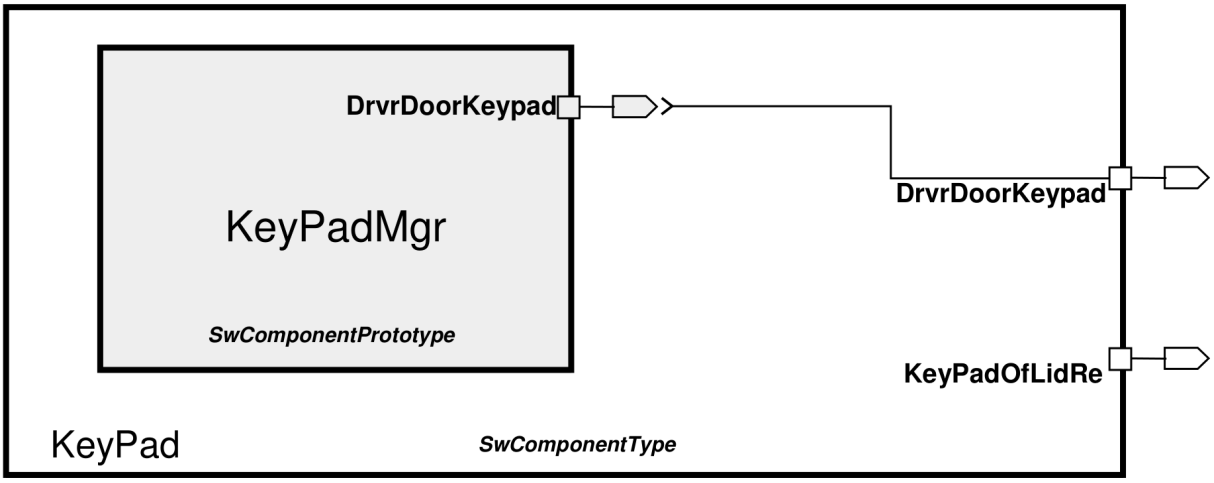


Figure 6.5: Example of SwComponentType

6.5.7 System (SYSTEM)

Even if not in the scope of this document, it's important to know that the top level element of an AUTOSAR System Description is represented by the System element. The System description defines five major elements: Topology, Software, Communication, Mapping and Mapping, Constraints.

With respect to [9] and [7], in AUTOSAR, Software Components can either be atomic or may consist of a composition of other Software Components and CompositionSw ComponentType. In order to assemble non-trivial applications from AUTOSAR components, such compositions can be built up hierarchically, until the outermost Composition SwComponentType forms a kind of top-level composition.

The System element directly aggregates the root software composition, containing all software components in the System in a hierarchical structure.

This element is not required when the System description is used for a network-only use-case.

Moreover, for the purpose of this document the System element always references the highest level of SW Composition, called TopLv (Top Level), and can be modeled just once.

```
<AR-PACKAGE>
    <SHORT-NAME>Systems</SHORT-NAME>
    <CATEGORY>EXAMPLE</CATEGORY>
    <REFERENCE-BASES>
        <REFERENCE-BASE>
        <SHORT-LABEL>SwComponentTypes</SHORT-LABEL>
        <PACKAGE-REF DEST="AR-PACKAGE">/SWCModelingGuide_Examples</PACKAGE-
            REF>
        </REFERENCE-BASE>
    </REFERENCE-BASES>
    <ELEMENTS>
        <SYSTEM>
        <SHORT-NAME>System</SHORT-NAME>
        <CATEGORY>SYSTEM_DESCRIPTION</CATEGORY>
        <ROOT-SOFTWARE-COMPOSITIONS>
            <ROOT-SW-COMPOSITION-PROTOTYPE>
            <SHORT-NAME>TopLvl</SHORT-NAME>
            <SOFTWARE-COMPOSITION-TREF BASE="SwComponentTypes" DEST="
                COMPOSITION-SW-COMPONENT-TYPE">TopLvl</SOFTWARE-COMPOSITION-
                TREF>
            </ROOT-SW-COMPOSITION-PROTOTYPE>
        </ROOT-SOFTWARE-COMPOSITIONS>
        </SYSTEM>
    </ELEMENTS>
</AR-PACKAGE>
```

6.5.8 SwComponentPrototype (SW-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:

- **[TR_SWNR_00036] Prefixes referring specific domains not allowed for Sw ComponentPrototypes**

  Upstream requirements: RS_SWMG_00031, RS_SWMG_00054

  ⌈Using a prefix to indicate the application domain (such as powertrain, body, chassis) of the SwComponentPrototype is not allowed.⌋

Recommendations:

- 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. An example on how to name multiple SwComponentPrototypes is given in section5.2.

Example: DoorLe, DoorRi

Example:

```
<SW-COMPONENT-PROTOTYPE>
    <SHORT-NAME>MgrOfMirrAdjAutReqByUsr</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">ManagerOfMirrorAdjustmentAutomaticRequestByUser<
       /L-4></LONG-NAME>
    <DESC><L-2 L="EN">Component treating the Automatic mirror movement
       requests - memory recall.</L-2></DESC>
    <TYPE-TREF DEST="COMPOSITION-SW-COMPONENT-TYPE" BASE="SwComponentTypes"
       >MgrOfMirrAdjAutReqByUsr</TYPE-TREF>
</SW-COMPONENT-PROTOTYPE>
```

6.5.9 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

PortPrototypes can be connected as long as they are typed with compatible PortInterfaces. Please refer to document [7] for such compatibility rules.

Example:

Short-Name: EmgyLockg

```
<R-PORT-PROTOTYPE>
    <SHORT-NAME>EmgyLockg</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Emergency Locking</L-4></LONG-NAME>
    <DESC><L-2 L="EN">User request for emergency locking in case of danger.
       </L-2></DESC>
    <REQUIRED-INTERFACE-TREF DEST="SENDER-RECEIVER-INTERFACE" BASE="
       PortInterfaces">LockUnlckReq1</REQUIRED-INTERFACE-TREF>
</R-PORT-PROTOTYPE>
```

6.5.10 Units (UNIT)

Objectives:

- Shall be unique.

Rules:

- **[TR_SWNR_00040] Formulas containing "x to power of 2"**
  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈If the unit is a formula containing "x to the power of 2" the short name shall contain "Sqd" (abbreviation of keyword "Squared").⌋

- **[TR_SWNR_00041] Formulas containing "x to power of 3"**
  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈If the unit is a formula containing "x to the power of 3" the short name shall contain "Cubd" (abbreviation of keyword "Cubed").⌋

- **[TR_SWNR_00042] Formulas containing "x to power greater than 3"**
  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈If the unit is a formula containing "x to the power of number >3" the short name shall contain ToPwrOf<number>.⌋

- **[TR_SWNR_00043] Formulas containing division**
  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈If the unit is a formula containing a division the short name shall contain "Per"⌋

- **[TR_SWNR_00073] Special characters in Display Names**
  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈To describe formula expressions in Display names of Units, the following list of special characters shall be applied:⌋

Formula expression	Use
multiplication	*
division	/
square	^2
cubic	^3
square root	^(1/2)
cubic root	^(1/3)
x root	^(1/x)
y/x root	^(y/x)
Micro	μ

△

Percent	%
Per mil	‰
Ohm	Ω
No unit	-
Opening Bracket	(
Closing Bracket	)

Table 6.4: List of special characters in Display Names

- Recommendation: it's recommended to use brackets in specific order to clearly identify physical meanings in Display Names of Units. Example: Instead of writing J/Kg*K, we recommend to write (J/Kg)*K or (J*K)/Kg, based on the physical meaning

Examples:

```
<UNIT>
    <SHORT-NAME>NwtPerMtr</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Newton Per Meter</L-4></LONG-NAME>
    <DESC><L-2 L="EN">surface tension (derived from SI units)</L-2></DESC>
    <DISPLAY-NAME>N/m</DISPLAY-NAME>
    <FACTOR-SI-TO-UNIT>1</FACTOR-SI-TO-UNIT>
    <PHYSICAL-DIMENSION-REF DEST="PHYSICAL-DIMENSION" BASE="
       PhysicalDimensions">M1TiNeg2</PHYSICAL-DIMENSION-REF>
</UNIT>

<UNIT>
    <SHORT-NAME>MtrPerSecCubd</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Meter Per Second Cubed</L-4></LONG-NAME>
    <DESC><L-2 L="EN">jerk (derived from SI units), also called jolt (esp.
       in British English), surge or lurch, is the rate of change of
       acceleration; more precisely, the derivative of acceleration with
       respect to time, the second derivative of velocity, or the third
       derivative of displacement.</L-2></DESC>
    <DISPLAY-NAME>m/s^3</DISPLAY-NAME>
    <FACTOR-SI-TO-UNIT>1</FACTOR-SI-TO-UNIT>
    <PHYSICAL-DIMENSION-REF DEST="PHYSICAL-DIMENSION" BASE="
       PhysicalDimensions">Len1TiNeg3</PHYSICAL-DIMENSION-REF>
</UNIT>
```

6.5.11 Physical Dimensions

Physical Dimensions are used to entirely describe and classify elements inside the Units Package. Each unit's physical dimension is represented as generic combination of 7 base physical quantities: electrical current, luminous intensity, time, mass, amount of substance, thermodynamic temperature, length , with specific exponents.

The short name of a physical dimension is built as a sequence of keywords expressing the seven basic physical quantities with corresponding numbers expressing correct exponents. Physical quantities whose exponents are equal to 0 are not mentioned in

the short name of the physical dimension.In specific cases in which uniqueness must be guaranteed, specific indexes can be used.

The following grammar shall be used:

[TR_SWNR_00072] Long and short name of Physical Dimensions

Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

⌈The following grammar shall be used:

ShortNamePhysDimension : ({Dim}* | NoDimension)(_{Index})

Dim :: {PhysDim}(Neg){Number}

PhysDim :: Len | M | Ti | I | T | Amnt | Lumi

Index: 1, 2, 3, 4, 5, 6, 7, ...

Examples

Ex 1: existing "Len1TiNeg1" remains unchanged and then "Len1TiNeg1_1" could be created according the needs.

Ex 2: "Len2M1TiNeg2" for torque and "Len2M1TiNeg2_1" for Energy

Longnames shall describe physical meaning.⌋

Ex 1: Unit: Nm

shortname: "Len2M1TiNeg2" for torque

longname : Torque

```
<PHYSICAL-DIMENSION>
    <SHORT-NAME>Len2M1TiNeg2</SHORT-NAME>
    <LONG-NAME>
        <L-4 L="EN">Torque</L-4>
    </LONG-NAME>
    <LENGTH-EXP>2</LENGTH-EXP>
    <MASS-EXP>1</MASS-EXP>
    <TIME-EXP>-2</TIME-EXP>
</PHYSICAL-DIMENSION>
```

Ex 2: Unit : Joule

shortname: "Len2M1TiNeg2_1" for energy

longname : Energy

```
<PHYSICAL-DIMENSION>
    <SHORT-NAME>Len2M1TiNeg2_1</SHORT-NAME>
    <LONG-NAME>
        <L-4 L="EN">Energy</L-4>
    </LONG-NAME>
    <LENGTH-EXP>2</LENGTH-EXP>
    <MASS-EXP>1</MASS-EXP>
    <TIME-EXP>-2</TIME-EXP>
</PHYSICAL-DIMENSION>
```

6.5.12 Enumerations

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

Example:

```
<APPLICATION-PRIMITIVE-DATA-TYPE>
  <SHORT-NAME NAME-PATTERN="{anyName}">UsrReqForWipg1</SHORT-NAME>
  <LONG-NAME><L-4 L="EN">User Request For Wiping</L-4></LONG-NAME>
  <DESC><L-2 L="EN">It represents the selection of the interval time or the
      speed of the wiper requested by the user. The exact timings and wipe
     speeds are not standardized and need therefore to be parameterized.</L
     -2></DESC>
    <CATEGORY>VALUE</CATEGORY>
      <SW-DATA-DEF-PROPS>
        <SW-DATA-DEF-PROPS-VARIANTS>
          <SW-DATA-DEF-PROPS-CONDITIONAL>
            <SW-CALIBRATION-ACCESS>READ-ONLY</SW-CALIBRATION-ACCESS>
            <COMPU-METHOD-REF DEST="COMPU-METHOD" BASE="CompuMethods">
               UsrReqForWipg1</COMPU-METHOD-REF>
            <DATA-CONSTR-REF DEST="DATA-CONSTR" BASE="DataConstrs">
               UsrReqForWipg1</DATA-CONSTR-REF>
          </SW-DATA-DEF-PROPS-CONDITIONAL>
        </SW-DATA-DEF-PROPS-VARIANTS>
      </SW-DATA-DEF-PROPS>
</APPLICATION-PRIMITIVE-DATA-TYPE>

<COMPU-METHOD>
  <SHORT-NAME NAME-PATTERN="{anyName}">UsrReqForWipg1</SHORT-NAME>
  <LONG-NAME><L-4 L="EN">User Request For Wiping</L-4></LONG-NAME>
  <CATEGORY>TEXTTABLE</CATEGORY>
    <COMPU-INTERNAL-TO-PHYS>
      <COMPU-SCALES>
        <COMPU-SCALE>
          <DESC><L-2 L="EN">4 = UsrReqForWipgSpdHi</L-2></DESC>
          <LOWER-LIMIT INTERVAL-TYPE="CLOSED">4</LOWER-LIMIT>
          <UPPER-LIMIT INTERVAL-TYPE="CLOSED">4</UPPER-LIMIT>
          <COMPU-CONST><VT>UsrReqForWipgSpdHi</VT></COMPU-CONST>
        </COMPU-SCALE>
        <COMPU-SCALE>
          <DESC><L-2 L="EN">2 = UsrReqForWipgIntl</L-2></DESC>
          <LOWER-LIMIT INTERVAL-TYPE="CLOSED">2</LOWER-LIMIT>
          <UPPER-LIMIT INTERVAL-TYPE="CLOSED">2</UPPER-LIMIT>
          <COMPU-CONST><VT>UsrReqForWipgIntl</VT></COMPU-CONST>
        </COMPU-SCALE>
        <COMPU-SCALE>
          <DESC><L-2 L="EN">3 = UsrReqForWipgSpdLo</L-2></DESC>
          <LOWER-LIMIT INTERVAL-TYPE="CLOSED">3</LOWER-LIMIT>
          <UPPER-LIMIT INTERVAL-TYPE="CLOSED">3</UPPER-LIMIT>
          <COMPU-CONST><VT>UsrReqForWipgSpdLo</VT></COMPU-CONST>
        </COMPU-SCALE>
        <COMPU-SCALE>
          <DESC><L-2 L="EN">0 = UsrReqForWipgOff</L-2></DESC>
          <LOWER-LIMIT INTERVAL-TYPE="CLOSED">0</LOWER-LIMIT>
          <UPPER-LIMIT INTERVAL-TYPE="CLOSED">0</UPPER-LIMIT>
```

```
          <COMPU-CONST><VT>UsrReqForWipgOff</VT></COMPU-CONST>
        </COMPU-SCALE>
        <COMPU-SCALE>
          <DESC><L-2 L="EN">1 = WipgStrikeSngReqByUsr</L-2></DESC>
          <LOWER-LIMIT INTERVAL-TYPE="CLOSED">1</LOWER-LIMIT>
          <UPPER-LIMIT INTERVAL-TYPE="CLOSED">1</UPPER-LIMIT>
          <COMPU-CONST><VT>WipgStrikeSngReqByUsr</VT></COMPU-CONST>
        </COMPU-SCALE>
      </COMPU-SCALES>
    </COMPU-INTERNAL-TO-PHYS>
</COMPU-METHOD>
```

In the Application Domain, but not only, a common use case is representing by the existence of two or more enumeration datatypes sharing the same enumeration label with different value:

e.g:

enum datatype CluSt1 defines Opend = 0

enum datatype LockSt2 defines Opend = 1

In order to allow the definition of different enumeration datatypes sharing the same enumeration labels but with different point range, the RTE layer provides a specific mechanism to solve configuration errors that otherwise would arise.

This is also necessary in order to handle enumeration constants supplied by Basic Software modules which all use their own prefix convention. Such Enumeration constant names have to be unique in the whole AUTOSAR system.

Skipping implementation details of the RTE layer (please see [5]), it can be resumed that before generating the final code the RTE combines some specific information coming from the CompuMethod used for the enumeration datatype definition and other specific information derived from the set of data that each SW-C declares to use.

All these information guarantee the uniqueness of the enumeration labels into the software architecture. If the set of information required by the RTE is not complete, the RTE generator shall reject this input as an invalid configuration.

6.5.13 ClientServerInterface (CLIENT-SERVER-INTERFACE)

While modeling a ClientServerInterface, names for the following attributes shall be also defined:

- OperationPrototype
- ArgumentPrototype

Rules:

- **[TR_SWNR_00062] Usage of sequence number in the Client-Server Interfaces names**

  Upstream requirements: RS_SWMG_00010, RS_SWMG_00054

  ⌈The interface name shall end with a sequence number to take into account the future evolution of interfaces.⌋

- The name of OperationPrototype attribute shall follow rule [TR_SWNR_00029] in place for VariableDataPrototype (see 6.5.3)
- The name of ArgumentPrototype attribute shall follow all the rules in place for VariableDataPrototype (see 6.5.3)

Recommendations:

- A ClientServerInterface should be a reusable element. The name of interface should be independent of its concrete usage by components and ports and should only reflect its general purpose.
- To allow reuse, the communication path (the indication of source or destination of ports using the interface) shall not be encoded in the interface name.
- The name of ArgumentPrototype attribute should follow all the recommendation in place for VariableDataPrototype (see 6.5.3)
- The name of OperationPrototype attribute should start with a keyword classified as "Action / Physical Type"

Example for OperationPrototype:

Short-Name: SetEveSt

6.5.14 ParameterInterface (PARAMETER-INTERFACE)

To this model element, same rules and recommendations as for SenderReceiverInterface (see chapter 6.5.2) apply.

6.5.15 ParameterDataPrototype (PARAMETER-DATA-PROTOTYPE)

Objectives:

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

To this model element, same rules and recommendations as for VariableDataPrototype (see chapter 6.5.3) apply.

6.5.16 DataConstrs (DATA-CONSTRS)

DATA-CONSTRS shortname elements fullfill naming convention rules..

Example:

```
<DATA-CONSTR>
  <SHORT-NAME NAME-PATTERN="{anyName}">Flg1</SHORT-NAME>
  <DATA-CONSTR-RULES>
    <DATA-CONSTR-RULE>
      <INTERNAL-CONSTRS>
        <LOWER-LIMIT INTERVAL-TYPE="CLOSED">0</LOWER-LIMIT>
        <UPPER-LIMIT INTERVAL-TYPE="CLOSED">1</UPPER-LIMIT>
      </INTERNAL-CONSTRS>
    </DATA-CONSTR-RULE>
  </DATA-CONSTR-RULES>
</DATA-CONSTR>
```

6.5.17 Blueprintable Elements in Application Interfaces Domain

AUTOSAR metamodel provides and supports mechanism to allow users to create and expand model elements starting from a well defined model elements base.

Its goal is to provide the possibility of deriving elements with enhancing features and attributes that can be used in different contexts (e.g series projects).(for more details and for a complete definition of Blueprint mechanism and meta model UML classes at each AUTOSAR level, please refer to [8])

This blueprint mechanism is mainly based on three entities :

- Blueprint: acts as the predefinition of the element. Basically it follows the same structure as the derived elements.
- Blueprinted Element:

  acts as the element which was derived from the Blueprint. These elements are derived from blueprints mainly by copy and refine. This "refine" may add

  further attribute values'
- Blueprint Mapping: acts as a reference between blueprints and their derived elements. The main purpose of this blueprint mapping is the ability to validate for each derived elements that they conform the the blueprint.

Focusing on the Application Interfaces domain the goal is to promote the reuse of model elements outside the scope of SwComponentType.

Blueprintable elements are collected into a sort of stand alone elements library from which derived elements (for example PortPrototypes) can be created, refined and plugged into SWComponentsProtoTypes.

Blueprintable elements have no impact on the AUTOSAR RTE level (impact covered by derive prototype elements)

There are different types of Blueprintable elements in the Application Interface domain. They are collected into different packages categorized as BLUEPRINT:

- DataConstrs
- ApplicationDataTypes
- CompuMethods
- PortInterfaces
- PortPrototypeBlueprints
- Keywords
- Collections

In the scope of Application Interfaces, the general rules for compliance of blueprint and blueprinted elements are strictly followed [8].

Derived elements from blueprint are allowed to change longName, desc (description) and introduction attributes, while a specific attribute, called namePattern is specified if the shortName, respectively a symbol, is not fixed but intended to be defined when objects are derived from blueprints (e.g. in series projects).

The shortName of the derived obiects shall follow the pattern defined in namePattern attribute.

The complete syntax used by the namePattern attribute is defined in [8] and it will not be reported here in detail.

Nevertheless since this syntax nearly leads to any possible solution for building short Names, it's strongly suggested that it's used to stick with rules for shortName construction, already defined for each kind of elements in this document.

Even if no obligatory pattern is defined and the value of the attribute is 'anyName', the following use cases and relative syntax usage are strongly recommended:

- Use case 1: element used once (one derived element): {blueprintName}
- Use case 2: element used twice or more (two or more derived elements): {blueprintName}({<Keyword>}) $_{0..n}$

where {blueprintName} represents the shortName / shortLabel / symbol of the applied blueprint.

Special attention will be payed now to PortPrototypeBlueprint elements since the following considerations are also valid for other blueprintable elements in general (Please check [8] for more specific details).

6.5.18 PortPrototypeBlueprint (PORT-PROTOTYPE-BLUEPRINT)

For the scope of this document a PortPrototypeBlueprint has the following characteristics:

- It is an ARElement and does therefore not require any element other than an ARPackage as context. It is therefore not necessary to involve "auxiliary" model elements into the definition of a standardized "application interface" for the mere purpose of conforming to the AUTOSAR meta-model.
- The structure of the created PortPrototype is indistinguishable from a PortPrototype created without taking a PortPrototypeBlueprint as a blueprint. A PortPrototypeBlueprint can be taken as the blueprint for as many PortPrototypes as required.
- It can only be used for the standardization of "application interfaces". A PortPrototypeBlueprint does not play any role in the formal description of any SwComponentType or related model artifacts. To be sure, the existence of a PortPrototypeBlueprint has no impact on the AUTOSAR RTE.
- Derived PortPrototypes may have more attributes than the PortPrototypeBlueprint
- The attributes of derived PortPrototypes are copied from the PortPrototypeBlueprint with one exception, the attribute namePattern that may not be copied.

The attribute namePattern represents the pattern which shall be used to build the shortName of the derived elements (in this case PortPrototypes).

This allows to change the shortName of a PortPrototype derived from a PortPrototypeBlueprint according to predefined rules.

[TR_SWNR_00037] Indication of provided/required operation or data

Upstream requirements: RS_SWMG_00006, RS_SWMG_00054

⌈The PortPrototypeBlueprint shall indicate the operation or data that is provided/required by the port.⌋

```
<AR-PACKAGE>
  <SHORT-NAME>PortPrototypeBlueprintsBlueprint</SHORT-NAME>
  <CATEGORY>BLUEPRINT</CATEGORY>
  <REFERENCE-BASES>
    <REFERENCE-BASE>
      <SHORT-LABEL>PortInterfaces</SHORT-LABEL>
      <PACKAGE-REF DEST="AR-PACKAGE">/AUTOSAR/AISpecification/
          PortInterfaces_Blueprint</PACKAGE-REF>
    </REFERENCE-BASE>
  </REFERENCE-BASES>
  <ELEMENTS>

  <!-- ... -->

  <PORT-PROTOTYPE-BLUEPRINT>
```

```
    <SHORT-NAME NAME-PATTERN="{anyName}">DrvrProf</SHORT-NAME>
    <LONG-NAME><L-4 L="EN">Driver Profile</L-4></LONG-NAME>
    <DESC><L-2 L="EN">Status of current selected personalization profile
       from profile manager. It is a common profile selectable from
       transponder, remote key, keyless access, Human Machine Interface (
       HMI),...</L-2></DESC>
    <INTERFACE-REF DEST="SENDER-RECEIVER-INTERFACE" BASE="PortInterfaces">
       ProfPenSt1</INTERFACE-REF>
  </PORT-PROTOTYPE-BLUEPRINT>

  <!-- ... -->

  </ELEMENTS>
</AR-PACKAGE>
```

6.5.19 Keywords

Keywords, which represent a set of basic elements for short names construction, are collected into one package, named KeywordSets_Blueprint, and categorized as BLUEPRINT in order to support the addition of long names and documentation in different languages.

Rules for using keywords and their abbreviated names (in the role of abbrName attribute) in shortName construction are described in chapter 6.3.1.

Example :

```
<AR-PACKAGE>
  <SHORT-NAME>KeywordSets_Blueprint</SHORT-NAME>
  <CATEGORY>BLUEPRINT</CATEGORY>
    <ELEMENTS>
      <KEYWORD-SET>
        <SHORT-NAME>KeywordList</SHORT-NAME>
        <LONG-NAME><L-4 L="EN">AUTOSAR Keywords and Keywords Abbreviations<
           /L-4></LONG-NAME>
        <KEYWORDS>
          <KEYWORD>
            <SHORT-NAME>Idx0</SHORT-NAME>
            <LONG-NAME><L-4 L="EN">0</L-4></LONG-NAME>
            <DESC><L-2 L="EN">Index 0. This keyword is used to express the
               number zero in form of an index</L-2></DESC>
            <ABBR-NAME>0</ABBR-NAME>
            <CLASSIFICATIONS>
              <CLASSIFICATION>Index</CLASSIFICATION>
            </CLASSIFICATIONS>
          </KEYWORD>

          <!-- ... -->

          <KEYWORD>
            <SHORT-NAME>Abs</SHORT-NAME>
            <LONG-NAME><L-4 L="EN">Abs</L-4></LONG-NAME>
            <DESC><L-2 L="EN">antilock braking system</L-2></DESC>
```

```
            <ABBR-NAME>Abs</ABBR-NAME>
            <CLASSIFICATIONS>
              <CLASSIFICATION>Mean-Environment-Device</CLASSIFICATION>
            </CLASSIFICATIONS>
          </KEYWORD>
          <KEYWORD>
            <SHORT-NAME>Abslt</SHORT-NAME>
            <LONG-NAME><L-4 L="EN">Absolute</L-4></LONG-NAME>
            <DESC><L-2 L="EN">Absolute value</L-2></DESC>
            <ABBR-NAME>Abslt</ABBR-NAME>
            <CLASSIFICATIONS>
              <CLASSIFICATION>Condition-Qualifier</CLASSIFICATION>
            </CLASSIFICATIONS>
          </KEYWORD>

          <!-- ... -->

        </KEYWORDS>
      </KEYWORD-SET>
    </ELEMENTS>
</AR-PACKAGE>
```

6.5.20 Guidelines for Float Datatype representation at Application Level

The Software Component Template [7] does not specify clearly how to realize float application datatype. Three level of datatype abstraction are present in Autosar: Application datatypes, Implementation datatypes and Base types.

Usage of float datatype in general impact at low levels of data implementation.

An extract of final arxml at ECU level would be the following:

```
<AR-PACKAGE>
  <SHORT-NAME>AUTOSAR_PlatformTypes</SHORT-NAME>
  <AR-PACKAGES>
    <AR-PACKAGE>
      <SHORT-NAME>SwBaseTypes</SHORT-NAME>
      <ELEMENTS>
        <!-- ... -->
        <SW-BASE-TYPE>
          <SHORT-NAME>float32</SHORT-NAME>
          <LONG-NAME>
            <L-4 L="EN">Float</L-4>
          </LONG-NAME>
          <CATEGORY>FIXED_LENGTH</CATEGORY>
          <BASE-TYPE-SIZE>32</BASE-TYPE-SIZE>
          <BASE-TYPE-ENCODING>IEEE754</BASE-TYPE-ENCODING>
          <MEM-ALIGNMENT>32</MEM-ALIGNMENT>
          <BYTE-ORDER>MOST-SIGNIFICANT-BYTE-LAST</BYTE-ORDER>
        </SW-BASE-TYPE>
        <!-- ... -->
      </ELEMENTS>
    </AR-PACKAGE>
    <AR-PACKAGE>
```

```
      <SHORT-NAME>ImplementationDataTypes</SHORT-NAME>
      <LONG-NAME>
        <L-4 L="EN">AUTOSAR Platform types</L-4>
      </LONG-NAME>
      <ELEMENTS>
        <!-- ... -->
        <IMPLEMENTATION-DATA-TYPE>
          <SHORT-NAME>float32</SHORT-NAME>
          <LONG-NAME>
            <L-4 L="EN">Float</L-4>
          </LONG-NAME>
          <CATEGORY>VALUE</CATEGORY>
          <INTRODUCTION>
            <TRACE>
              <SHORT-NAME>PLATFORM041</SHORT-NAME>
              <CATEGORY>SPECIFICATION_ITEM</CATEGORY>
              <P>
                <L-1 L="EN">This standard AUTOSAR type shall be mapped as a
                    single precision (32 bit) floating-point number.</L-1>
              </P>
            </TRACE>
          </INTRODUCTION>
          <SW-DATA-DEF-PROPS>
            <SW-DATA-DEF-PROPS-VARIANTS>
              <SW-DATA-DEF-PROPS-CONDITIONAL>
                <BASE-TYPE-REF DEST="SW-BASE-TYPE">/AUTOSAR_PlatformTypes/
                    SwBaseTypes/float32</BASE-TYPE-REF>
              </SW-DATA-DEF-PROPS-CONDITIONAL>
            </SW-DATA-DEF-PROPS-VARIANTS>
          </SW-DATA-DEF-PROPS>
        </IMPLEMENTATION-DATA-TYPE>
        <!-- ... -->
      </ELEMENTS>
    </AR-PACKAGE>
  </AR-PACKAGES>
</AR-PACKAGE>
```

In order to take into account some preliminary requirements for the usage of float datatypes definition at Application Level, some reccomendations are defined:

Recommendations at PortprototypeBlueprint level:

- Use Always 1:1 scaling: e.g. internal representation = 10.1 Physical Value 10.1Pa
- Only single precision calculations shall be done (float 64 is not recommended)
- In case the target ECU is known do not use float if the RAM/Stack resources are more critical than CPU load.
- Float should always be used together with SI Unit as physical representation.
- Float is strictly recommended if for one and the same signal either large range and low precision or small range and high precision is required. Examples:
  - Float is strictly recommended for Pressure ([Pa])

  - Float is strictly recommended for Injection Quantity ([kg])
- Float should not be used whenever integer precision is sufficient (e.g. Temperature ([K]))

Recommendations for the usage of Float data types in AUTOSAR for Flat Instance Descriptors (SW Signals):

- The compatibility rules of AUTOSAR meta model have to be fulfilled
- Any physical display representation can be used.

Application datatype which are supposed to implemented with float datatypes simply differ from other continuos value datatypes in

- Compumethod:

They refer to the corresponding IDENTICAL compumethod related to involved Unit

- DataConstrs: unlimited ([-INF..+INF]) range, defined once into Application level by dataconstrs element RngUnlimd
- swIntendedResolution:

the default value 0.0000001 represents machine epsilon for 32bits, IEEE754 (ISO C standard; C, C++ and Python language constants)

E.g T6, float datatype for temperature:

Definition of ApplicationDatatype:

```
<APPLICATION-PRIMITIVE-DATA-TYPE>
  <SHORT-NAME NAME-PATTERN="{anyName}">T6</SHORT-NAME>
  <LONG-NAME><L-4 L="EN">Temperature 6</L-4> </LONG-NAME>
  <DESC> <L-2 L="EN">Generic data type for temperature</L-2> </DESC>
  <CATEGORY>VALUE</CATEGORY>
  <INTRODUCTION>
    <P> <L-1 L="EN">Examples for usage: glow plugs temperature, oil
       temperature, environment temperature, temperature differences
                    Remark: use for floating point implementation</L-1>
    </P>
  </INTRODUCTION>
  <SW-DATA-DEF-PROPS>
    <SW-DATA-DEF-PROPS-VARIANTS>
      <SW-DATA-DEF-PROPS-CONDITIONAL>
        <SW-CALIBRATION-ACCESS>READ-ONLY</SW-CALIBRATION-ACCESS>
        <COMPU-METHOD-REF BASE="CompuMethods" DEST="COMPU-METHOD">
           KelvinIdentcl</COMPU-METHOD-REF>
        <DATA-CONSTR-REF BASE="DataConstrs" DEST="DATA-CONSTR">RngUnlimd</
           DATA-CONSTR-REF>
        <SW-INTENDED-RESOLUTION>0.0000001</SW-INTENDED-RESOLUTION>
        <UNIT-REF BASE="Units" DEST="UNIT">Kelvin</UNIT-REF>
      </SW-DATA-DEF-PROPS-CONDITIONAL>
    </SW-DATA-DEF-PROPS-VARIANTS>
  </SW-DATA-DEF-PROPS>
</APPLICATION-PRIMITIVE-DATA-TYPE>
```

Definition of CompuMethod

```
<COMPU-METHOD>
  <SHORT-NAME NAME-PATTERN="{anyName}">KelvinIdentcl</SHORT-NAME>
  <LONG-NAME> <L-4 L="EN">Kelvin Identical</L-4> </LONG-NAME>
  <DESC/>
  <CATEGORY>IDENTICAL</CATEGORY>
  <UNIT-REF BASE="Units" DEST="UNIT">Kelvin</UNIT-REF>
</COMPU-METHOD>
```

Definition of unlimited DataConstrs

```
<DATA-CONSTR>
  <SHORT-NAME NAME-PATTERN="{anyName}">RngUnlimd</SHORT-NAME>
  <LONG-NAME><L-4 L="EN">Range Unlimited</L-4></LONG-NAME>
  <DATA-CONSTR-RULES>
    <DATA-CONSTR-RULE>
      <PHYS-CONSTRS>
        <LOWER-LIMIT INTERVAL-TYPE="CLOSED">-INF</LOWER-LIMIT>
        <UPPER-LIMIT INTERVAL-TYPE="CLOSED">+INF</UPPER-LIMIT>
      </PHYS-CONSTRS>
    </DATA-CONSTR-RULE>
  </DATA-CONSTR-RULES>
</DATA-CONSTR>
```

A AI Specification Keyword Set

Short Name	Abbreviation	Long Name	Description	Classification
A	A	Acceleration	This keyword is used to give the physical value of acceleration. It is the value of gaining speed.	Action-PhysicalType
Abnorm	Abnorm	Abnormal		Condition-Qualifier
Abort	Abort	Abort		Action-PhysicalType
Abs	Abs	ABS	Antilock Braking System	Mean-Environment-Device
Abslt	Abslt	Absolute	Absolute value	Condition-Qualifier
Absnt	Absnt	Absent		Condition-Qualifier
Abv	Abv	Above		Preposition
Ac	Ac	AC	Alternating Current / Voltage	Condition-Qualifier
Ac1	Ac	AC	Air Conditioner or Air Conditioning (A/C).	Mean-Environment-Device
Acc	Acc	ACC	Adaptive Cruise Control	Mean-Environment-Device
Acco	Acco	Accommodation		Condition-Qualifier
Accr	Accr	Accelerator		Mean-Environment-Device
Accy	Accy	Accuracy	The accuracy of a measurement method respectively the quality of signals are defined in ISO 5725: The "accuracy" (Genauigkeit) is described by the two terms "trueness" (Richtigkeit) and "precision" (Präzision).With the condition, that the "Precision" is homogenously spread over it's whole range, the fomula "Accuracy = Trueness + 0,5 Precision" decribes the accuracy.	Condition-Qualifier
Ack	Ack	Acknowledge		Action-PhysicalType
Ackd	Ackd	Acknowledged		Condition-Qualifier
Acos	Acos	Arccosine	Inverse function of cosine	Condition-Qualifier
Acoust	Acoust	Acoustic		Condition-Qualifier
Acpt	Acpt	Accept		Action-PhysicalType
Acptd	Acptd	Accepted		Condition-Qualifier
Acq	Acq	Acquire		Action-PhysicalType
Acqd	Acqd	Acquired		Condition-Qualifier
Acqn	Acqn	Acquisition	e.g. signal acquisition	Condition-Qualifier
Acrt	Acrt	Accurate		Condition-Qualifier
Acry	Acry	Accuracy		Condition-Qualifier
Acs	Acs	Access		Action-PhysicalType
Acsy	Acsy	Accessory		Mean-Environment-Device
Act	Act	Actual		Condition-Qualifier
Actn	Actn	Action		Condition-Qualifier
Actr	Actr	Actuator		Mean-Environment-Device
Acttn	Acttn	Actuation		Action-PhysicalType

△

Short Name	Abbreviation	Long Name	Description	Classification
Actv	Actv	Active		Condition-Qualifier
Actvd	Actvd	Activated		Condition-Qualifier
Actvn	Actvn	Activation		Action-PhysicalType
Actvt	Actvt	Activate		Action-PhysicalType
Adas	Adas	Adas	Advanced driver assistance systems (ADAS) are systems developed to automate/adapt/enhance vehicle systems for safety and better driving.	Mean-Environment-Device
Adbtc	Adbtc	Adiabatic		Condition-Qualifier
Adc	Adc	ADC	Analog Digital Converter	Mean-Environment-Device
Add	Add	Additive		Condition-Qualifier
Addl	Addl	Additional		Condition-Qualifier
Adh	Adh	Adhesion		Action-PhysicalType
Adj	Adj	Adjust		Action-PhysicalType
Adjmt	Adjmt	Adjustment		Action-PhysicalType
Admin	Admin	Administration	administration, administrator	Condition-Qualifier
Adpd	Adpd	Adapted		Condition-Qualifier
Adpn	Adpn	Adaptation		Condition-Qualifier
Adpr	Adpr	Adapter		Mean-Environment-Device
Adpv	Adpv	Adaptive		Condition-Qualifier
Adr	Adr	Address		Condition-Qualifier
Adsorb	Adsorb	Adsorb		Action-PhysicalType
Adsorpn	Adsorpn	Adsorption		Condition-Qualifier
Adv	Adv	Advance		Condition-Qualifier
Aecd	Aecd	AECD	Auxiliary Emission Control Devices	Condition-Qualifier
Afim	Afim	Air-Fuel Imbalance Monitor (AFIM)	The air to fuel imbalance monitor is designed to detect differences in the air to fuel ratio between cylinders per engine bank.	Mean-Environment-Device
Aft	Aft	After		Preposition
Ag	Ag	Angle		Action-PhysicalType
Age	Age	Age		Condition-Qualifier
Aged	Aged	Aged		Condition-Qualifier
Aggrvd	Aggrvd	Aggravated		Condition-Qualifier
Agi	Agi	Aging		Condition-Qualifier
Agr	Agr	Angular		Condition-Qualifier
Agt	Agt	Agent	E.g. Reducing Agent, Cooling Agent	Mean-Environment-Device
Ahd	Ahd	Ahead		Condition-Qualifier
Ai	Ai	AI	Application Interfaces	Mean-Environment-Device
Aid	Aid	Aid		Action-PhysicalType
Air	Air	Air	Also used as definition of "fresh gas"	Mean-Environment-Device
Airb	Airb	Airbag	airbag	Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Aj	Aj	Antijerk	Avoiding high-frequent small or abrupt movements, quick changes of torque applied.	Mean-Environment-Device
Ajar	Ajar	Ajar		Condition-Qualifier
Alg	Alg	Algorithm		Condition-Qualifier
Algn	Algn	Align		Action-PhysicalType
Algnd	Algnd	Aligned		Condition-Qualifier
All	All	All		Condition-Qualifier
Allw	Allw	Allow		Action-PhysicalType
Allwbl	Allwbl	Allowable		Condition-Qualifier
Allwd	Allwd	Allowed		Condition-Qualifier
Alpha	Alpha	Alpha		Condition-Qualifier
Alrm	Alrm	Alarm		Condition-Qualifier
Alrmd	Alrmd	Alarmed		Condition-Qualifier
Alt	Alt	Alternator	alternator	Mean-Environment-Device
Alti	Alti	Altitude		Action-PhysicalType
Altv	Altv	Alternative		Mean-Environment-Device
Alv	Alv	Alive		Condition-Qualifier
Alwys	Alwys	Always	At all times	Condition-Qualifier
Amb	Amb	Ambient		Mean-Environment-Device
Ammonia	Nh3	Ammonia	A pungent colorless gaseous alkaline compound of nitrogen and hydrogen NH3 that is very soluble in water and can easily be condensed to a liquid by cold and pressure	Action-PhysicalType
Amnt	Amnt	Amount	a total number or quantity, e.g. amount of substance.	Action-PhysicalType
Amp	Amp	Amplitude		Condition-Qualifier
Amplfr	Amplfr	Amplifier		Mean-Environment-Device
Ampr	Ampr	Ampere		Mean-Environment-Device
Amt	Amt	AMT	Automated Manual Transmission	Mean-Environment-Device
An	An	Analog		Condition-Qualifier
Anchrfitg	Anchrfitg	Anchorfitting		Mean-Environment-Device
Ancllry	Ancllry	Ancillary		Mean-Environment-Device
And	And	And	Preposition	Preposition
Ande	Ande	Anode	The electrode of an electrochemical cell at which oxidation occurs.	Mean-Environment-Device
Antcpt	Antcpt	Anticipate		Action-PhysicalType
Antcptd	Antcptd	Anticipated		Condition-Qualifier
Antcptn	Antcptn	Anticipation		Condition-Qualifier
Anti	Anti	Anti		Condition-Qualifier

▽

△

Short Name	Abbreviation	Long Name	Description	Classification
Antisub	Antisub	Antisubmarine	Term used in restraint systems for automotive applications related to an Airbag that upon deployment prevents a front row passenger from diving below the dashboard by lifting the person's lower body. Thus, the person is brougth into a better position relative to the main Front Airbag.	Mean-Environment-Device
Antithft	Antithft	Antitheft		Mean-Environment-Device
Any	Any	Any		Condition-Qualifier
Ape	Ape	APE	Outer Pump Electrode. Electrode of a lambda sensor facing directly the exhaust gas.	Mean-Environment-Device
Api	Api	Application Programming Interface	An Application Programming Interface is a set of definitions and protocols to build and integrate application sofftware.	Mean-Environment-Device
Apil	Apil	Apil	A-Pillar of a car	Mean-Environment-Device
Appch	Appch	Approach		Action-PhysicalType
Appl	Appl	Application		Mean-Environment-Device
Appld	Appld	Applied		Condition-Qualifier
Apply	Apply	Apply		Action-PhysicalType
Approx	Approx	Approximate		Condition-Qualifier
Approxn	Approxn	Approximation	A number, amount, etc. that is not exact, but almost correct.	Action-PhysicalType
Aprvd	Aprvd	Approved		Condition-Qualifier
Ar	Ar	Area		Action-PhysicalType
Ar1	Ar	AUTOSAR		Mean-Environment-Device
Arbd	Arbd	Arbitrated		Condition-Qualifier
Arbn	Arbn	Arbitration		Action-PhysicalType
Arch	Arch	Architecture	A description of system, software or hardware elements, of the relations among them, and of the properties of both elements and relations.	Mean-Environment-Device
Area	Area	Area		Action-PhysicalType
Arg	Arg	Argument		Condition-Qualifier
Arm	Arm	Arm	Intended as the action of arming some device	Action-PhysicalType
Armed	Armed	Armed		Condition-Qualifier
Arming	Arming	Arming	Intended as the action of arming some device	Action-PhysicalType

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Short Name	Abbreviation	Long Name	Description	Classification
Armtr	Armtr	Armature	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.	Mean-Environment-Device
Arthm	Arthm	Arithmetic		Condition-Qualifier
Ary	Ary	Array		Condition-Qualifier
Asc	Asc	ASC	Acceleration Slip Control	Mean-Environment-Device
Ascd	Ascd	Ascending	Ascending, increasing	Condition-Qualifier
Ascn	Ascn	Antiscanning		Mean-Environment-Device
Asep	Asep	Additional Sound Emission Provisions (ASEP)	Additional Sound Emission Provisions - extra sound emitting elements built in, e.g. to make electric vehicles receptable for humans	Mean-Environment-Device
Asgn	Asgn	Assign		Action-PhysicalType
Ash	Ash	Ash	e.g. in Ash Soot Factor	Mean-Environment-Device
Ashtray	Ashtray	Ashtray		Mean-Environment-Device
Asic	Asic	ASIC	Application Specific Integrated Circuit	Mean-Environment-Device
Asin	Asin	Arcsine	Inverse function of sine	Condition-Qualifier
Asr	Asr	ASR	Anti Slip Regulation	Mean-Environment-Device
Assc	Assc	Assistance	assistance. this keyword expresses the availability of an electronic assistance for a component or system	Mean-Environment-Device
Assi	Assi	Assist		Action-PhysicalType
Assid	Assid	Assisted		Condition-Qualifier
Asst	Asst	Assistant	assistant. For example: the electronic brake assistant.	Mean-Environment-Device
Asw	Asw	ASW	Application Software	Mean-Environment-Device
Asymc	Asymc	Asymmetrical		Condition-Qualifier
Asymtry	Asymtry	Asymmetry		Condition-Qualifier
Async	Async	Asynchronous		Condition-Qualifier
At	At	At	Preposition for location, time, presence	Preposition
At1	At	AT	Automatic Transmission	Mean-Environment-Device
Ata	Ata	Ata	American Trucking Associations Diagnostics Bus	Condition-Qualifier
Atan	Atan	Arctangent	The inverse function of the tangent function.	Condition-Qualifier
Atch	Atch	Attach		Action-PhysicalType
Atm	Atm	Atmosphere		Mean-Environment-Device
Atmpt	Atmpt	Attempt		Condition-Qualifier
Atnms	Atnms	Autonomous	independent	Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Attn	Attn	Attenuator	The attenuator switch is a part of the power stage which drives the piezo injectors.	Condition-Qualifier
Audio	Audio	Audio		Action-PhysicalType
Australia	Australia	Australia		Condition-Qualifier
Aut	Aut	Automatic		Condition-Qualifier
Auth	Auth	Authorize		Action-PhysicalType
Authent	Authent	Authentication		Condition-Qualifier
Authn	Authn	Authorization		Action-PhysicalType
Autrk	Autrk	Autarkic	self-sustaining	Condition-Qualifier
Aux	Aux	Auxiliary		Condition-Qualifier
Avd	Avd	Avoid		Action-PhysicalType
Avdbl	Avdbl	Avoidable		Condition-Qualifier
Avl	Avl	Available		Condition-Qualifier
Avrg	Avrg	Average		Condition-Qualifier
Avs	Avs	AVS	Adjustment Value Service	Condition-Qualifier
Awd	Awd	AWD	All Wheel Drive	Mean-Environment-Device
Axis	Axis	Axis	E. g. might be used in Axis1st, Axis2nd, Axis3rd	Mean-Environment-Device
Axle	Axle	Axle		Mean-Environment-Device
Axles	Axles	Axles	Front and rear axle	Mean-Environment-Device
B	B	Magnetic Flux Density	Amount of magnetic flux through Unit Area taken perpendicular to the direction of magnetic flux (B=μH with μ= permeability of the medium and H = magnetic field)	Action-PhysicalType
Back	Back	Back	anatomic human back	Mean-Environment-Device
Backed	Backed	Backed		Condition-Qualifier
Backl	Backl	Backlash	A sudden backward movement or reaction/the play between adjacent movable parts (as in a series of gears)	Condition-Qualifier
Backlite	Backlite	Backlite		Mean-Environment-Device
Backlt	Backlt	Backlit		Condition-Qualifier
Backw	Backw	Backward		Condition-Qualifier
Bal	Bal	Balance		Action-PhysicalType
Ballstc	Ballstc	Ballistic		Condition-Qualifier
Band	Band	Band		Condition-Qualifier
Bar	Bar	Bar	As unit of measure	Mean-Environment-Device
Baro	Baro	Barometric		Condition-Qualifier
Bas	Bas	Base	Pre-processed sensor data, model free, abstraction of the sensor hardware.	Condition-Qualifier
Basc	Basc	Basic		Condition-Qualifier
Batt	Batt	Battery		Mean-Environment-Device

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Bay	Bay	Bay	Space , e.g. engine bay, parking bay	Mean-Environment-Device
Bcu	Bcu	BCU	(High Voltage) Battery Control Unit	Mean-Environment-Device
Bd	Bd	Board		Mean-Environment-Device
Bdc	Bdc	BDC	Bottom Dead Center	Condition-Qualifier
Beam	Beam	Beam		Action-PhysicalType
Bel	Bel	Bel	bel (decibel)	Condition-Qualifier
Belgium	Belgium	Belgium		Condition-Qualifier
Bench	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.	Mean-Environment-Device
Beta	Beta	Beta	ß, Greek character, offently used for indexing	Condition-Qualifier
Bfr	Bfr	Before		Preposition
Bgn	Bgn	Begin		Action-PhysicalType
Bhv	Bhv	Behave		Action-PhysicalType
Bhvr	Bhvr	Behaviour		Condition-Qualifier
Bicycle	Bicycle	Bicycle		Mean-Environment-Device
Bif	Bif	Bi-fuel	Bi-fuel	Mean-Environment-Device
Bilnr	Bilnr	Bilinear	e.g. in bilinear interpolation	Condition-Qualifier
Bio	Bio	Biological		Condition-Qualifier
Bit	Bits	Bit	Smallest unit of data that a computer can process and store	Mean-Environment-Device
Bitws	Bitws	Bitwise	Used for bitwise functions, e.g. Bitwise And (&)	Condition-Qualifier
Bkt	Bkt	Bucket	E.g. for excavator or wheel loader applications	Mean-Environment-Device
Bkup	Bkup	Backup		Condition-Qualifier
Blb	Blb	Bulb		Mean-Environment-Device
Bli	Bli	Blind		Condition-Qualifier
Blink	Blink	Blink		Action-PhysicalType
Blk	Blk	Block		Condition-Qualifier
Blkd	Blkd	Blocked		Condition-Qualifier
Blnk	Blnk	Blank	e.g. blank out engine fuel injection, for specifying a gap	Condition-Qualifier
Blow	Blow	Blow		Action-PhysicalType
Blowr	Blowr	Blower		Mean-Environment-Device
Bls	Bls	BLS	Brake Light Switch	Mean-Environment-Device
Blstr	Blstr	Bolster		Mean-Environment-Device
Blt	Blt	Belt	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.	Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Blueprint	Blueprint	Blueprint		Condition-Qualifier
Bmp	Bmp	Bumper		Mean-Environment-Device
Bms	Bms	BMS	Battery Management System	Mean-Environment-Device
Bnce	Bnce	Bounce		Mean-Environment-Device
Bncg	Bncg	Bouncing		Condition-Qualifier
Bnd	Bnd	Bound		Condition-Qualifier
Bndls	Bndls	Boundless		Condition-Qualifier
Bnk	Bnk	Bank		Mean-Environment-Device
Body	Body	Body		Mean-Environment-Device
Bol	Bol	Begin of live	Beginning of Life - e.g. in the context of battery: System state of a battery shortly after manufacturing	Condition-Qualifier
Bolt	Bolt	Bolt	e. g. as in Lock Bolt	Mean-Environment-Device
Boost	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	Action-PhysicalType
Boot	Boot	Boot		Condition-Qualifier
Botm	Botm	Bottom		Mean-Environment-Device
Box	Box	Box		Mean-Environment-Device
Bp	Bp	Bandpass		Condition-Qualifier
Bpil	Bpil	Bpil	B-Pillar of a car	Mean-Environment-Device
Brazil	Brazil	Brazil		Condition-Qualifier
Brdg	Brdg	Bridge	bridge contact	Condition-Qualifier
Break	Break	Break		Action-PhysicalType
Brg	Brg	Bearing	e.g. in compressor bearing, engine bearing	Mean-Environment-Device
Bri	Bri	Brightness		Action-PhysicalType
Brk	Brk	Brake		Mean-Environment-Device
Brkg	Brkg	Braking		Action-PhysicalType
Brkn	Brkn	Broken		Condition-Qualifier
Brkt	Brkt	Bracket		Mean-Environment-Device
Brn	Brn	Burn		Action-PhysicalType
Brng	Brng	Burning		Action-PhysicalType
Brnr	Brnr	Burner		Mean-Environment-Device
Bsw	Bsw	BSW	Basic Software	Mean-Environment-Device
Btn	Btn	Button		Mean-Environment-Device
Buc	Buc	Buckle	Part of supplement restraint system to protect occupant in case of crash	Mean-Environment-Device
Bucd	Bucd	Buckled	Buckling of occupant	Condition-Qualifier
Buf	Buf	Buffer		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Burst	Burst	Burst	To emerge or spring suddenly or Describes, that a signal is considered as a sequence of events. Burst is an established term in signal processing	Condition-Qualifier
Bus	Bus	Bus	used for the vehicle and not as a data bus	Mean-Environment-Device
Busy	Busy	Busy		Condition-Qualifier
Buz	Buz	Buzzer		Condition-Qualifier
Bw	Bw	Bandwidth		Condition-Qualifier
By	By	By	Preposition	Preposition
Byp	Byp	Bypass		Action-PhysicalType
Byp1	Byp	Bypass		Mean-Environment-Device
Cache	Cache	Cache	Memory for temporary storage of data for fast access	Mean-Environment-Device
Cal	Cal	Calibration		Condition-Qualifier
Calc	Calc	Calculate		Action-PhysicalType
Calcd	Calcd	Calculated		Condition-Qualifier
Calcn	Calcn	Calculation		Action-PhysicalType
Call	Call	Call		Condition-Qualifier
Calrc	Calrc	Caloric		Condition-Qualifier
Camr	Camr	Camera	A device that records an image of an object	Mean-Environment-Device
Camsft	Camsft	Camshaft		Mean-Environment-Device
Can	Can	CAN	Controller Area Network	Mean-Environment-Device
Canada	Canada	Canada		Condition-Qualifier
Canng	Canng	Canning	e.g: Catalyst Canning	Mean-Environment-Device
Cap	Cap	Capacitor	Capacitor used to store energy in an electric field (AUTOSAR BSW)	Mean-Environment-Device
Car	Car	Car		Mean-Environment-Device
Carb	Carb	CARB	Californian Air Resource Board	Condition-Qualifier
Carbon	Carbon	Carbon		Mean-Environment-Device
Case	Case	Case		Mean-Environment-Device
Cat	Cat	Catalyst		Mean-Environment-Device
Cavtn	Cavtn	Cavitation		Mean-Environment-Device
Cbk	Cbk	Callback	Callback + Callback functions	Action-PhysicalType
Cbl	Cbl	Cable	An assembly of electrical conductors insulated from each other but laid up together (as by being twisted around a central core), for example in electrical cable	Mean-Environment-Device
Cbn	Cbn	Cabin		Mean-Environment-Device
Cco	Cco	Cylinder cut-off	Deactivation of single cylinders	Mean-Environment-Device
Ccp	Ccp	CCP	CAN Calibration Protocol	Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Cd	Cd	Candela	Unit of measure of luminous intensity	Mean-Environment-Device
Cdn	Cdn	Condition		Condition-Qualifier
Cdng	Cdng	Conditioning		Action-PhysicalType
Cdnr	Cdnr	Conditioner		Mean-Environment-Device
Cds	Cds	Coast Down Shift	A Coast Down Shift is an automatic transmission behavior where the gearbox shifts to a lower gear while the vehicle is decelerating (coasting), without the driver pressing the accelerator.	Condition-Qualifier
Cell	Cell	Cell		Mean-Environment-Device
Cen	Cen	Central		Condition-Qualifier
Centi	Centi	Centi		Mean-Environment-Device
Centr	Centr	Center		Condition-Qualifier
Centrfgl	Centrfgl	Centrifugal		Condition-Qualifier
Ceramic	Ceramic	Ceramic		Mean-Environment-Device
Cfg	Cfg	Configuration		Condition-Qualifier
Cfgd	Cfgd	Configured		Condition-Qualifier
Cfm	Cfm	Confirmation		Condition-Qualifier
Cfmd	Cfmd	Confirmed		Condition-Qualifier
Cgrd	Cgrd	Centigrade		Mean-Environment-Device
Ch	Ch	Channel	This keyword is used to express a channel. A channel is a defined port (of a bundle of ports) of a data line.	Condition-Qualifier
Chain	Chain	Chain		Mean-Environment-Device
Chartc	Chartc	Characteristic		Condition-Qualifier
Chassis	Chassis	Chassis		Mean-Environment-Device
Chd	Chd	Child		Mean-Environment-Device
Chemcl	Chem	Chemical	Chemical in "chemical catalyst heating"	Condition-Qualifier
Chg	Chg	Change		Action-PhysicalType
Chill	Chill	Chill		Condition-Qualifier
Chillr	Chillr	Chiller		Mean-Environment-Device
Chimer	Chimer	Chimer		Mean-Environment-Device
China	China	China		Condition-Qualifier
Chirp	Chirp	Chirp		Action-PhysicalType
Chk	Chk	Check		Condition-Qualifier
Chks	Chks	Checksum		Condition-Qualifier
Chmb	Chmb	Chamber		Mean-Environment-Device
Choke	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)	Mean-Environment-Device
Chrg	Chrg	Charge		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Chrgn	Chrgn	Charging		Action-PhysicalType
Chrgr	Chrgr	Charger		Mean-Environment-Device
Cigarette	Cigarette	Cigarette		Mean-Environment-Device
Cilc	Cilc	Cylinder-Individual Lambda Control	Cylinder-Individual Lambda Control	Mean-Environment-Device
Circ	Circ	Circuit		Mean-Environment-Device
Circum	Circum	Circumference	Used in the meaning of the wheel circumference	Mean-Environment-Device
Circuml	Circuml	Circumferential		Condition-Qualifier
City	City	City		Condition-Qualifier
Class	Class	Class		Condition-Qualifier
Classn	Classn	Classification		Action-PhysicalType
Claw	Claw	Claw	e.g. claw couplings are used within automated transmission instead of clutches	Mean-Environment-Device
Clima	Clima	Climatisation		Action-PhysicalType
Climb	Climb	Climb	e.g. climb mode	Condition-Qualifier
Clk	Clk	Clock		Condition-Qualifier
Cllsn	Cllsn	Collision		Action-PhysicalType
Clmg	Clmg	Claiming	Address Claiming	Action-PhysicalType
Clmp	Clmp	Clamp		Action-PhysicalType
Clmpd	Clmpd	Clamped		Condition-Qualifier
Cln	Cln	Clean		Condition-Qualifier
Clng	Clng	Cleaning		Condition-Qualifier
Clnr	Clnr	Cleaner		Mean-Environment-Device
Clnt	Clnt	Client	A computer in a network that uses the services (such as access to files or shared peripherals) provided by a server	Condition-Qualifier
Clog	Clog	Clog	Similar to dirty, e.g. clog filter.	Condition-Qualifier
Clr	Clr	Clear		Action-PhysicalType
Clrd	Clrd	Cleared		Condition-Qualifier
Cls	Cls	Close		Action-PhysicalType
Clsd	Clsd	Closed		Condition-Qualifier
Clstr	Clstr	Cluster		Mean-Environment-Device
Clu	Clu	Clutch		Mean-Environment-Device
Cmb	Cmb	Combustion		Mean-Environment-Device
Cmd	Cmd	Command		Condition-Qualifier
Cmft	Cmft	Comfort	comfort. this keyword is used to express something as comfortable or convenient	Condition-Qualifier
Cmn	Cmn	Common	common. for common environmental data (stored with all failures of one project).	Condition-Qualifier
Cmng	Cmng	Coming		Action-PhysicalType
Cmp	Cmp	Compensation		Action-PhysicalType

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Short Name	Abbreviation	Long Name	Description	Classification
Cmpbl	Cmpbl	Compatible		Condition-Qualifier
Cmpblty	Cmpblty	Compatibility		Condition-Qualifier
Cmpl	Cmpl	Complete		Condition-Qualifier
Cmplx	Cmplx	Complex		Condition-Qualifier
Cmpn	Cmpn	Compression		Condition-Qualifier
Cmpr	Cmpr	Compressor	This keyword is used to express a component producing a compressed (= with raised pressure) working medium, e.g. air, refrigerant.	Mean-Environment-Device
Cmptmt	Cmptmt	Compartment		Mean-Environment-Device
Cmu	Cmu	Commutation		Condition-Qualifier
Cncl	Cncl	Cancel		Action-PhysicalType
Cncld	Cncld	Cancelled		Condition-Qualifier
Cnct	Cnct	Connect		Action-PhysicalType
Cnctn	Cnctn	Connection		Condition-Qualifier
Cnctr	Cnctr	Connector		Mean-Environment-Device
Cndctvty	Cndctvty	Conductivity		Action-PhysicalType
Cng	Cng	CNG	Compressed Natural Gas	Mean-Environment-Device
Cns	Cns	Consumption		Condition-Qualifier
Cnse	Cnse	Consume		Action-PhysicalType
Cnsr	Cnsr	Consumer		Mean-Environment-Device
Cnt	Cnt	Count		Action-PhysicalType
Cntct	Cntct	Contact	used in the sense of contact or contactor e.g. in "close contact", "contactor open", "contact defect" or "high-voltage contactors"	Mean-Environment-Device
Cntnr	Cntnr	Container		Mean-Environment-Device
Cntr	Cntr	Counter	Also applicable to running indexes.	Condition-Qualifier
Cntxt	Cntxt	Context	e.g. CAN frame context	Condition-Qualifier
Cnv	Cnv	Convert		Action-PhysicalType
Cnvc	Cnvc	Convection		Condition-Qualifier
Cnvn	Cnvn	Conversion		Action-PhysicalType
Cnvr	Cnvr	Converter		Condition-Qualifier
Cnvtb	Cnvtb	Convertible		Condition-Qualifier
Cnvtn	Cnvtn	Convention		Condition-Qualifier
Co	Co	CO	Carbon Monoxide	Mean-Environment-Device
Co2	Co2	CO2	Carbon dioxide, Chemical molecule CO2	Mean-Environment-Device
Coach	Coach	Coach	motor coach, often simply called a bus	Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Coast	Coast	Coasting	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).	Action-PhysicalType
Cod	Cod	Code		Condition-Qualifier
Coeff	Coeff	Coefficient		Condition-Qualifier
Cog	Cog	COG	Center of Gravity	Mean-Environment-Device
Cohrncy	Cohrncy	Coherency		Action-PhysicalType
Cohrnt	Cohrnt	Coherent		Condition-Qualifier
Coil	Coil	Coil		Mean-Environment-Device
Cok	Cok	Coke	Coke, Coking Deposits on devices, which are very often in contact with the burning remainders of carbon based fuels, caused e.g. by incompletely burned fuel. There are special strategies to recognise or to prevent the building of these deposits.	Condition-Qualifier
Col	Col	Column		Condition-Qualifier
Cold	Cold	Cold		Condition-Qualifier
Coll	Coll	Collector		Mean-Environment-Device
Collct	Collct	Collect		Action-PhysicalType
Collctd	Collctd	Collected		Condition-Qualifier
Collctn	Collctn	Collection		Condition-Qualifier
Com	Com	Communication		Condition-Qualifier
Comp	Comp	Comparison		Condition-Qualifier
Compu	Compu	Computation		Condition-Qualifier
Con	Con	Constant		Condition-Qualifier
Conc	Conc	Concentration		Action-PhysicalType
Conds	Conds	Condense		Action-PhysicalType
Consctv	Consctv	Consecutive		Condition-Qualifier
Consist	Consist	Consist		Action-PhysicalType
Consistnc	Consistnc	Consistence		Condition-Qualifier
Consold	Consold	Consolidated	A consolidated physical value is either the measured physical value or an estimated one.	Action-PhysicalType
Constr	Constr	Constraint		Condition-Qualifier
Contmn	Contmn	Contamination	soiled, stained, corrupted, or infected	Condition-Qualifier
Contns	Contns	Continuous		Condition-Qualifier
Contrb	Contrb	Contribute		Action-PhysicalType
Contrbn	Contrbn	Contribution		Condition-Qualifier
Conv	Conv	Convolution	Complication or intricacy of form, design, or structure	Condition-Qualifier
Cool	Cool	Cool		Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Coolg	Coolg	Cooling	This keyword is used to describe the cooling system e.g. of the engine. A cooling request can be fulfilled by air, coolant, or other cooling systems or refrigerants.	Action-PhysicalType
Coolr	Coolr	Cooler		Mean-Environment-Device
Coolt	Coolt	Coolant		Mean-Environment-Device
Coor	Coor	Coordinate		Condition-Qualifier
Coord	Coord	Coordinated		Condition-Qualifier
Coords	Coords	Coordinates	Numerical values, which describe the position of a point.	Condition-Qualifier
Coorn	Coorn	Coordination		Condition-Qualifier
Coorr	Coorr	Coordinator		Condition-Qualifier
Copy	Copy	Copy		Condition-Qualifier
Core	Core	Core		Condition-Qualifier
Cornr	Cornr	Corner		Mean-Environment-Device
Cornrg	Cornrg	Cornering		Action-PhysicalType
Corr	Corr	Correct		Condition-Qualifier
Corrd	Corrd	Corrected		Condition-Qualifier
Corrl	Corrl	Correlate		Action-PhysicalType
Corrln	Corrln	Correlation		Condition-Qualifier
Corrn	Corrn	Correction		Condition-Qualifier
Cot	Cot	Coated		Condition-Qualifier
Coulomb	Coulomb	Coulomb	Unit of measure for Electric charge	Mean-Environment-Device
Coupl	Coupl	Coupling	It is the keyword for any linkage of software modules or functionalities or to express a kind of strict connection between two otherwise not linked parts.	Condition-Qualifier
Coupld	Coupld	Coupled		Condition-Qualifier
Couplr	Couplr	Coupler		Mean-Environment-Device
Course	Course	Course		Mean-Environment-Device
Cover	Cover	Cover		Mean-Environment-Device
Cp	Cp	Capacity	this keyword is used to express the Physical Meaning of a capacity (e.g. thermal capacity of oil)	Action-PhysicalType
Cpby	Cpby	Capability		Condition-Qualifier
Cpil	Cpil	Cpil	C-Pillar of a car	Mean-Environment-Device
Cpl	Cpl	Complement		Condition-Qualifier
Cpt	Cpt	Component		Condition-Qualifier
Cpv	Cpv	CPV	Canister Purge Valve	Mean-Environment-Device
Crash	Crash	Crash		Mean-Environment-Device
Crawl	Crawl	Crawl		Action-PhysicalType
Crc	Crc	CRC	Cyclic Redundancy Check	Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Crd	Crd	Cardan	A vehicle component for transmitting mechanical power and torque and rotation, usually used to connect other components of a drivetrain that cannot be connected directly because of distance or the need to allow for relative movement between them.	Mean-Environment-Device
Creat	Creat	Create		Action-PhysicalType
Crit	Crit	Critical		Condition-Qualifier
Crk	Crk	Crank		Action-PhysicalType
Crkcs	Crkcs	Crankcase		Mean-Environment-Device
Crksft	Crksft	Crankshaft		Mean-Environment-Device
Crp	Crp	Creep	example: creep mode of automatic transmission	Action-PhysicalType
Crs	Crs	Cruise		Mean-Environment-Device
Crv	Crv	Curve		Mean-Environment-Device
Crvt	Crvt	Curvature		Action-PhysicalType
Crypto	Crypto	Cryptography		Mean-Environment-Device
Cs	Cs	Chip-select	Chip select or slave select is the name of a control line in digital electronics used to select one (or a set) of integrated circuits (commonly called "chips") out of several connected to the same computer bus	Mean-Environment-Device
Csa	Csa	Current Sense Amplifier	Current sense amplifiers accurately amplify small voltages.	Mean-Environment-Device
Cstr	Cstr	Canister		Mean-Environment-Device
Cta	Cta	Criteria		Condition-Qualifier
Ctde	Ctde	Cathode	The electrode of an electrochemical cell at which reduction occurs.	Mean-Environment-Device
Ctrl	Ctrl	Control		Condition-Qualifier
Ctrld	Ctrld	Controlled		Condition-Qualifier
Ctrlr	Ctrlr	Controller		Mean-Environment-Device
Ctrsft	Ctrsft	Countershaft		Mean-Environment-Device
Ctry	Ctry	Country		Mean-Environment-Device
Cub	Cub	Cubic		Condition-Qualifier
Cubd	Cubd	Cubed		Condition-Qualifier
Cum	Cum	Cumulative	increasing by successive additions	Condition-Qualifier
Cur	Cur	Current		Condition-Qualifier
Curb	Curb	Curb	American English for Kerb	Mean-Environment-Device
Curt	Curt	Curtain		Mean-Environment-Device
Cush	Cush	Cushion		Mean-Environment-Device
Cust	Cust	Customer		Mean-Environment-Device
Cut	Cut	Cut		Action-PhysicalType

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Cv	Cv	Commercial Vehicle	A commercial vehicle is any type of motor vehicle used for transporting goods or paying passengers.	Mean-Environment-Device
Cvt	Cvt	CVT	Continuous Variable Transmission	Mean-Environment-Device
Cyc	Cyc	Cycle		Condition-Qualifier
Cyl	Cyl	Cylinder		Mean-Environment-Device
D	D	D	Differential part of a control structure	Condition-Qualifier
Dampg	Dampg	Damping		Condition-Qualifier
Dampr	Dampr	Damper		Mean-Environment-Device
Das	Das	DAS	Driver Assistance System	Mean-Environment-Device
Dash	Dash	Dashpot		Condition-Qualifier
Data	Data	Data		Action-PhysicalType
Date	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.	Action-PhysicalType
Day	Day	Day		Mean-Environment-Device
Dayti	Dayti	Daytime		Mean-Environment-Device
Dbg	Dbg	Debug		Condition-Qualifier
Dbl	Dbl	Double		Condition-Qualifier
Dbnd	Dbnd	Deadband		Action-PhysicalType
Dc	Dc	DC	Direct Current/Voltage	Condition-Qualifier
Dcc	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.	Mean-Environment-Device
Dcdc	Dcdc	Converter (DCDC)	A DC-to-DC converter is an electronic circuit or electromechanical device that converts a source of direct current (DC) from one voltage level to another. A power inverter, inverter or invertor is a power electronic device or circuitry that changes direct current (DC) to alternating current (AC).	Mean-Environment-Device
Dcha	Dcha	Discharge		Condition-Qualifier
Dcm	Dcm	DCM	Diagnostic Communication Manager	Mean-Environment-Device
Dcop	Dcop	Decoupling	to eliminate an interrelationship	Condition-Qualifier
Dct	Dct	DCT	Dual Clutch Transmission	Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Dcyc	Dcyc	Driving Cycle	A driving cycle is a series of data points representing the speed of a vehicle versus time.	Condition-Qualifier
De	De	Deviation		Condition-Qualifier
Deactvd	Deactvd	Deactivated		Condition-Qualifier
Deactvn	Deactvn	Deactivation		Condition-Qualifier
Deactvt	Deactvt	Deactivate		Action-PhysicalType
Dead	Dead	Dead		Condition-Qualifier
Deb	Deb	Debounce		Action-PhysicalType
Dec	Dec	Decrease	decrease, decrementation. this keyword is used to express the stepwise descent of a value or counter.	Action-PhysicalType
Decel	Decel	Deceleration		Condition-Qualifier
Deci	Deci	Deci	Unit extension use: decibel (DeciBel, display name dB)	Condition-Qualifier
Decod	Decod	Decode		Action-PhysicalType
Deep	Deep	Deep		Condition-Qualifier
Def	Def	Define		Action-PhysicalType
Defd	Defd	Defined		Condition-Qualifier
Definite	Definite	Definite	e.g. definite path from navigation system	Condition-Qualifier
Defn	Defn	Definition		Condition-Qualifier
Defrst	Defrst	Defrost		Action-PhysicalType
Defu	Defu	Defueling	defueling. It shall be used to describe the action of taking fuel out of the tank.	Condition-Qualifier
Deg	Deg	Degree		Mean-Environment-Device
Degraded	Degraded	Degraded		Condition-Qualifier
Del	Del	Delete		Action-PhysicalType
Delta	Delta	Delta		Condition-Qualifier
Dem	Dem	DEM	Diagnostic Event Manager	Mean-Environment-Device
Den	Den	Deny	Deny, Denied, Not Accepted	Condition-Qualifier
Denox	Denox	DENOX	System Reduction of Nox Emission	Action-PhysicalType
Dens	Dens	Density		Action-PhysicalType
Dep	Dep	Depression		Condition-Qualifier
Deploy	Deploy	Deploy		Action-PhysicalType
Deploymt	Deploymt	Deployment		Condition-Qualifier
Deriv	Deriv	Derive		Action-PhysicalType
Dern	Dern	Derating	In electronics, derating is the operation of a device at less than its rated maximum capability to prolong its life. Typical examples include operations below the maximum power rating, current rating, or voltage rating.	Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Des	Des	Desired		Condition-Qualifier
Desat	Desat	Desaturation	The effect of desaturation which, e.g. can occur in electric / electronic /magnetic components.	Condition-Qualifier
Desc	Desc	Descending	to proceed in a sequence or gradation from higher to lower	Condition-Qualifier
Descr	Descr	Description		Condition-Qualifier
Desorpn	Desorpn	Desorption		Condition-Qualifier
Desox	Desox	Desulphurization		Mean-Environment-Device
Dest	Dest	Destination		Condition-Qualifier
Det	Det	Detect		Action-PhysicalType
Detn	Detn	Detection		Action-PhysicalType
Detrm	Detrm	Determined		Condition-Qualifier
Dev	Dev	Device		Mean-Environment-Device
Devlp	Devlp	Develop		Action-PhysicalType
Dew	Dew	Dew	Dew Point	Mean-Environment-Device
Df	Df	Dual-fuel	Engines that can operate using a mixture of two different fuels are called dual fuel engines.	Condition-Qualifier
Dfct	Dfct	Defect		Condition-Qualifier
Dfi	Dfi	Direct Fuel Injection (DFI)	Direct Fuel Injection is a fuel injection system for internal combustion engines. It injects fuel directly into the combustion chamber, unlike manifold injection systems, which inject fuel into the intake manifold so that it mixes with the incoming airstream before reaching the combustion chamber.	Mean-Environment-Device
Dft	Dft	Default	default	Condition-Qualifier
Dftl	Dftl	Differential	A special transmission, used in drive train context	Mean-Environment-Device
Dht	Dht	Denavit-Hartenberg Transformation	The Denavit-Hartenberg transformation is a systematic method used in robotics to represent the kinematic relationships between joints and links of robotic arms using a set of parameters.	Condition-Qualifier
Di	Di	Disable		Condition-Qualifier
Diag	Diag	Diagnosis		Action-PhysicalType
Diagc	Diagc	Diagnostic		Mean-Environment-Device
Diam	Diam	Diameter	This name describes the component size, e.g. of driving wheels	Condition-Qualifier
Dif	Dif	Difference		Condition-Qualifier
Difsn	Difsn	Diffusion		Condition-Qualifier
Dig	Dig	Digital		Condition-Qualifier

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Dil	Dil	Dilution		Condition-Qualifier
Dim	Dim	Dim	used as compound with Light	Action-PhysicalType
Dimension	Dimension	Dimension		Action-PhysicalType
Dio	Dio	DIO	Digital Input/Output	Mean-Environment-Device
Dir	Dir	Direction		Condition-Qualifier
Dire	Dire	Directory		Condition-Qualifier
Dis	Dis	Discrete		Condition-Qualifier
Disa	Disa	Disappear	disappear. used, in order to define a state of failure: "disappeared failure"	Action-PhysicalType
Disad	Disad	Disabled		Action-PhysicalType
Disarm	Disarm	Disarm		Action-PhysicalType
Disarmed	Disarmed	Disarmed		Condition-Qualifier
Discnct	Discnct	Disconnect		Action-PhysicalType
Disengmt	Disengmt	Disengagement		Condition-Qualifier
Disp	Disp	Display	In both meanings, the display (Component) and to display (Characteristic)	Mean-Environment-Device
Dispd	Dispd	Displayed		Condition-Qualifier
Distbn	Distbn	Distribution		Condition-Qualifier
Div	Div	Division		Condition-Qualifier
Dly	Dly	Delay	Delay, delayed - to express a postponing, hindering, or causing something to occur more slowly than normal	Condition-Qualifier
Dma	Dma	Direct memory access (DMA)	Direct memory access (DMA) is a feature of many computer systems that allows certain hardware subsystems to access main system memory independently of the central processing unit (CPU). [University of Colorado Boulder]	Mean-Environment-Device
Dman	Dman	Deadman's switch	A dead man's switch is a switch that is designed to be activated or deactivated if the human operator becomes incapacitated, such as through abandonment, drowsiness, loss of consciousness, death, or being bodily removed from control. Originally applied to switches on a vehicle or machine, it has since come to be used to describe other intangible uses, as in computer software.	Condition-Qualifier
Dmd	Dmd	Demand		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Dod	Dod	Depth of discharge (DOD)	DoD represents the percentage of the total battery capacity that has already been used.	Action-PhysicalType
Dom	Dom	Domain		Mean-Environment-Device
Done	Done	Done	e.g. plausibility check done	Condition-Qualifier
Door	Door	Door		Mean-Environment-Device
Dpd	Dpd	Dependency	dependency, dependence, dependent	Condition-Qualifier
Dpl	Dpl	Displacement		Condition-Qualifier
Drain	Drn	Drain	To draw off liquid gradually or completely	Condition-Qualifier
Drg	Drg	Drag	resistance, caused by mechanical, aerodynamical of topographical influences, being effective against a movement	Condition-Qualifier
Drift	Drift	Drift		Condition-Qualifier
Droop	Droop	Droop		Condition-Qualifier
Drp	Drp	Drop		Condition-Qualifier
Drv	Drv	Drive	drive (gear engaged)	Condition-Qualifier
Drvblty	Drvblty	Drivability	The term driveability describes the driver's complex subjective perception of the interactions between himself and the vehicle, e.g. associated to longitudinal acceleration aspects, like, e.g. jerk-free acceleration or deceleration.	Condition-Qualifier
Drvg	Drvg	Driving	Action of driving the vehicle.	Action-PhysicalType
Drvn	Drvn	Driven		Condition-Qualifier
Drvr	Drvr	Driver	Driver of the vehicle.	Mean-Environment-Device
Drvr1	Drvr	Driver	Example: as in device driver.	Mean-Environment-Device
Dry	Dry	Dry	dry. dry is the opposite of lubricated in case of friction	Condition-Qualifier
Ds	Ds	Down-stream	down-stream or down stream or downstream	Condition-Qualifier
Dsgn	Dsgn	Designate		Action-PhysicalType
Dshb	Dshb	Dashboard	can also be used in the sense of instrument cluster, instrument panel	Mean-Environment-Device
Dsk	Dsk	Disk		Mean-Environment-Device
Dsl	Dsl	Diesel		Mean-Environment-Device
Dst	Dst	Distance		Action-PhysicalType
Dstbc	Dstbc	Disturbance		Condition-Qualifier
Dstcn	Dstcn	Distinction	Perceiving someone or something as being not the same or treating sb./st.as separate or different.	Condition-Qualifier
Dstr	Dstr	Destruct		Action-PhysicalType
Dstrn	Dstrn	Destruction		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Dt	Dt	Drivetrain		Mean-Environment-Device
Dtc	Dtc	DTC	Diagnostic Trouble Code	Condition-Qualifier
Dtd	Dtd	DTD	Drivetrain Torque Distribution	Mean-Environment-Device
Dthr	Dthr	Dither	Dither used in control and signal processing	Action-PhysicalType
Dtr	Dtr	Diagnostic Test Result (DTR)	Status produced after diagnostic tests	Condition-Qualifier
Dual	Dual	Dual		Condition-Qualifier
Dummy	Dummy	Dummy		Condition-Qualifier
Dump	Dump	Dump		Action-PhysicalType
Durg	Durg	During		Preposition
Durn	Durn	Duration		Condition-Qualifier
Duty	Duty	Duty		Condition-Qualifier
Dwell	Dwell	Dwell	Dwell, Dwelling	Condition-Qualifier
Dwn	Dwn	Down		Condition-Qualifier
Dwnld	Dwnld	Download		Condition-Qualifier
Dyn	Dyn	Dynamic		Condition-Qualifier
Dyno	Dyno	Dynamometer		Mean-Environment-Device
Easy	Easy	Easy		Condition-Qualifier
Ec	Ec	EC	European Community	Condition-Qualifier
Eco	Eco	Economy	economy. related to the detection of driver type either an economy/comfort oriented or a sportive/power requesting driver can be distinguished.	Condition-Qualifier
Ecu	Ecu	ECU	Electronic Control Unit	Mean-Environment-Device
Edge	Edge	Edge		Condition-Qualifier
Edit	Edit	Edit		Action-PhysicalType
Eep	Eep	EEPROM	Electrically Erasable Programmable Read-Only Memory	Mean-Environment-Device
Efc	Efc	Effective		Condition-Qualifier
Eff	Eff	Efficiency		Action-PhysicalType
Effort	Effort	Effort		Condition-Qualifier
Egr	Egr	EGR	Exhaust Gas Recirculation	Mean-Environment-Device
Egy	Egy	Energy		Action-PhysicalType
Egypt	Egypt	Egypt		Condition-Qualifier
Ehb	Ehb	EHB	Electro Hydraulic Brake	Mean-Environment-Device
Elec	Elec	Electric	Used in the sense of electric or electrical	Condition-Qualifier
Electc	Electc	Electronic		Condition-Qualifier
Elevn	Elevn	Elevation	Measured angle from horizon	Action-PhysicalType
Elm	Elm	Element		Mean-Environment-Device
Elpd	Elpd	Elapsed		Condition-Qualifier
Eltpnm	Eltpnm	Electropneumatic		Condition-Qualifier
Em	Em	EM	Electrical Machine	Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Emc	Emc	Electromagnetic Compatibility	Electromagnetic compatibility (EMC) is the ability of electrical equipment and systems to function acceptably in their electromagnetic environment, by limiting the unintentional generation, propagation and reception of electromagnetic energy which may cause unwanted effects.	Condition-Qualifier
Emf	Emf	EMF	Electromotive "force" is not a force (measured in newtons) but a potential, or energy per unit of charge, measured in volts.	Action-PhysicalType
Emgy	Emgy	Emergency		Mean-Environment-Device
Emi	Emi	Emission		Mean-Environment-Device
Empc	Empc	Empirical	Originating in or based on observation or experience, like e.g. for expressing empirical model, empirical modelling etc.	Condition-Qualifier
Empty	Empty	Empty		Condition-Qualifier
Emul	Emul	Emulate		Action-PhysicalType
Emuld	Emuld	Emulated		Condition-Qualifier
Emuln	Emuln	Emulation		Condition-Qualifier
Ena	Ena	Enable		Condition-Qualifier
Enad	Enad	Enabled		Condition-Qualifier
Enag	Enag	Enabling		Condition-Qualifier
Enchmt	Enchmt	Enrichment		Condition-Qualifier
End	End	End		Condition-Qualifier
Enf	Enf	Enforced		Condition-Qualifier
Eng	Eng	Engine		Mean-Environment-Device
Engd	Engd	Engaged		Condition-Qualifier
Engh	Engh	Enough		Condition-Qualifier
England	England	England		Condition-Qualifier
Engmt	Engmt	Engagement	engagement. to express the situation of engaging e.g. a gear from neutral position / transmission gutter until synchronisation performed.	Mean-Environment-Device
Enhd	Enhd	Enhanced		Condition-Qualifier
Enhmt	Enhmt	Enhancement		Condition-Qualifier
Enth	Enth	Enthalpy	The sum of the internal energy of a body or system	Action-PhysicalType
Entr	Entr	Enter		Action-PhysicalType
Entrc	Entrc	Entrance		Mean-Environment-Device
Entry	Entry	Entry		Action-PhysicalType
Env	Env	Environment		Mean-Environment-Device
Envtl	Envtl	Environmental		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Eoi	Eoi	EOI	End of Injection	Condition-Qualifier
Eol	Eol	EOL	End of Line	Condition-Qualifier
Epb	Epb	EPB	Electric Parking Brake	Mean-Environment-Device
Equ	Equ	Equal		Condition-Qualifier
Equid	Equid	Equipped		Condition-Qualifier
Equip	Equip	Equipment		Mean-Environment-Device
Equiv	Equiv	Equivalent		Condition-Qualifier
Erase	Erase	Erase		Action-PhysicalType
Err	Err	Error	information of a defect	Condition-Qualifier
Esc	Esc	ESC	Electronic Stability Control	Mean-Environment-Device
Escl	Escl	Electronic Steering Column Lock (ESCL)	Electrical Steering Column Lock (ESCL) is a device to electrically lock/unlock the steering handle. Steering Column Lock is superior in vehicle theft prevention and passenger safety.	Mean-Environment-Device
Estim	Estim	Estimate		Action-PhysicalType
Estimd	Estimd	Estimated		Condition-Qualifier
Estimn	Estimn	Estimation		Condition-Qualifier
Estimr	Estimr	Estimator		Condition-Qualifier
Eta	Eta	Eta	Typically used for eta factor, efficiency, factor depending on viscosity	Action-PhysicalType
Etc	Etc	ETC	Electronic Throttle Control	Mean-Environment-Device
Eth	Eth	Ethernet		Mean-Environment-Device
Ethnl	Ethnl	Ethanol	A simple alcohol with the chemical formula C2-H5-OH.	Condition-Qualifier
Ev	Ev	EV	Electric Vehicle	Mean-Environment-Device
Evap	Evap	Evaporative		Condition-Qualifier
Evapr	Evapr	Evaporator		Mean-Environment-Device
Eve	Eve	Event		Condition-Qualifier
Even	Even	Even		Condition-Qualifier
Ever	Ever	Ever		Condition-Qualifier
Evl	Evl	Evaluate		Action-PhysicalType
Evln	Evln	Evaluation		Action-PhysicalType
Evlr	Evlr	Evaluator		Mean-Environment-Device
Exact	Exact	Exact		Condition-Qualifier
Excd	Excd	Exceed		Action-PhysicalType
Excdd	Excdd	Exceeded		Condition-Qualifier
Exch	Exch	Exchange		Action-PhysicalType
Excl	Excl	Exclude		Action-PhysicalType
Exclsn	Exclsn	Exclusion		Action-PhysicalType
Exclv	Exclv	Exclusive	Restricted in distribution, use, or appeal	Condition-Qualifier
Excpn	Excpn	Exception		Condition-Qualifier
Excr	Excr	Excenter		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Exct	Exct	Excitation	the keyword is used to express the technical effect of excitation, e.g. in connection with a current or a voltage in a generator	Action-PhysicalType
Excvr	Excvr	Excavator	Power-operated shovel	Mean-Environment-Device
Exe	Exe	Execute	To carry out fully or put completely into effect	Condition-Qualifier
Exh	Exh	Exhaust	The escape of used gas or vapor from an engine, or the escaped gas.	Condition-Qualifier
Exist	Exist	Exist		Action-PhysicalType
Exotherm	Exotherm	Exothermal		Condition-Qualifier
Exp	Exp	Expansion	This keyword can be used for the expansion phase of the engine cycle.	Condition-Qualifier
Expc	Expc	Expect	Expect, Expected; to consider probable, certain, reasonable, due, necessary, bound in duty, or obligated	Condition-Qualifier
Expi	Expi	Expire	To exceed its period of validity	Condition-Qualifier
Expl	Expl	Explicit	Fully revealed or expressed without vagueness, implication, or ambiguity; leaving no question as to meaning or intent	Condition-Qualifier
Exprt	Exprt	Export		Action-PhysicalType
Expt	Expt	Experiment	experiment. In contrast to the keyword Test, it is not used to check an existing functionality, but to try something new.	Condition-Qualifier
Ext	Ext	External		Condition-Qualifier
Extd	Extd	Extended		Condition-Qualifier
Extn	Extn	Extend		Action-PhysicalType
Extr	Extr	Exterior		Mean-Environment-Device
Extrpn	Extrpn	Extrapolation		Action-PhysicalType
F	F	Force	describes the physical parameter 'force'	Action-PhysicalType
Fac	Fac	Factor	factor, coefficient	Action-PhysicalType
Facd	Facd	Faced		Condition-Qualifier
Factry	Factry	Factory		Condition-Qualifier
Fade	Fade	Fade		Action-PhysicalType
Fail	Fail	Fail		Condition-Qualifier
Faild	Faild	Failed		Condition-Qualifier
Failr	Failr	Failure		Condition-Qualifier
Fall	Fall	Falling		Condition-Qualifier
Fan	Fan	Fan		Mean-Environment-Device
Far	Far	Far	To be found a long distance away, opposite to near	Condition-Qualifier
Fast	Fast	Fast		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Fav	Fav	Favourable		Condition-Qualifier
Fb	Fb	Feedback		Action-PhysicalType
Fct	Fct	Function	Purpose	Condition-Qualifier
Feat	Feat	Feature	A prominent part or characteristic	Mean-Environment-Device
Fft	Fft	Fast Fourier Transform	A fast Fourier transform (FFT) is an algorithm that computes the discrete Fourier transform (DFT) of a sequence, or its inverse (IDFT). A Fourier transform converts a signal from its original domain (often time or space) to a representation in the frequency domain and vice versa.	Condition-Qualifier
Fid	Fid	FID	Functional Identifier	Condition-Qualifier
Fie	Fie	Field		Condition-Qualifier
Fil	Fil	Filter		Condition-Qualifier
Fild	Fild	Filtered		Condition-Qualifier
File	File	File		Mean-Environment-Device
Fillg	Fillg	Filling		Action-PhysicalType
Film	Film	Film		Mean-Environment-Device
Fim	Fim	FIM	Function Inhibition Manager	Mean-Environment-Device
Final	Final	Final		Condition-Qualifier
Findr	Findr	Finder		Mean-Environment-Device
Fine	Fine	Fine		Condition-Qualifier
Finshd	Finshd	Finished		Condition-Qualifier
First	First	First		Condition-Qualifier
Fixa	Fixa	Fixation		Action-PhysicalType
Fixd	Fixd	Fixed		Condition-Qualifier
Flank	Flank	Flank		Mean-Environment-Device
Flap	Flap	Flap		Mean-Environment-Device
Flash	Flash	Flash	Flash used as verb in the sense of blinking e.g. of an indicator	Action-PhysicalType
Fld	Fld	Fluid		Mean-Environment-Device
Flexfu	Flexfu	Flex-Fuel	flexible fuel vehicle, flex-fuel engines etc., sometimes also Flex Fuel or FlexFuel	Condition-Qualifier
Flg	Flg	Flag	Flag is a binary value.	Condition-Qualifier
Flo	Flo	Float	A computer number format that (...) represents a wide dynamic range of values by using a floating point.	Condition-Qualifier
Flood	Flood	Flood		Condition-Qualifier
Flow	Flow	Flow		Condition-Qualifier
Flpr	Flpr	Flipper		Mean-Environment-Device
Fls	Fls	Flash	Flash as device used for flash programming	Mean-Environment-Device
Flsg	Flsg	Flashing		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Flt	Flt	Fault		Mean-Environment-Device
Fluc	Fluc	Fluctuation		Condition-Qualifier
Flx	Flx	Flux	Flux like e.g. in physical quantity "magnetic flux"	Action-PhysicalType
Fly	Fly	Fly		Condition-Qualifier
Flybck	Flybck	Flybackconverter	DC/DC converter based on Flyback topology	Mean-Environment-Device
Flywh	Flywh	Flywheel		Mean-Environment-Device
Fm	Fm	FM	Frequency Modulation	Mean-Environment-Device
Fmale	Fmale	Female		Condition-Qualifier
Fmt	Fmt	Format		Condition-Qualifier
Fob	Fob	Fob	Transponder device in the Key	Mean-Environment-Device
Fog	Fog	Fog		Mean-Environment-Device
Fol	Fol	Follower		Condition-Qualifier
Fold	Fold	Fold		Action-PhysicalType
Folw	Folw	Follow		Action-PhysicalType
Footwell	Footwell	Footwell	Space for vehicle occupants legs	Mean-Environment-Device
For	For	For	Preposition	Preposition
Foulg	Foulg	Fouling	e.g. used in detection of the fouling of the exhaust gas recirculation (EGR) line	Condition-Qualifier
Fr	Fr	Flexray		Mean-Environment-Device
Frd	Frd	Farad	Unit of measure for Electric capacitance	Mean-Environment-Device
Free	Free	Free		Condition-Qualifier
Fric	Fric	Friction	Resistance against a movement	Condition-Qualifier
Frm	Frm	Frame		Condition-Qualifier
Frnt	Frnt	Front		Condition-Qualifier
From	From	From	Preposition	Preposition
Frq	Frq	Frequency		Action-PhysicalType
Frsh	Frsh	Fresh		Condition-Qualifier
Frz	Frz	Freeze		Action-PhysicalType
Frzn	Frzn	Frozen		Condition-Qualifier
Fu	Fu	Fuel		Mean-Environment-Device
Full	Full	Full		Condition-Qualifier
Fuse	Fuse	Fuse		Mean-Environment-Device
Fusn	Fusn	Fusion		Condition-Qualifier
Fw	Fw	Freewheeling		Condition-Qualifier
Fwd	Fwd	Forward		Condition-Qualifier
Gain	Gain	Gain		Condition-Qualifier
Gap	Gap	Gap		Action-PhysicalType
Gas	Gas	Gas		Mean-Environment-Device
Gate	Gate	Gate		Mean-Environment-Device
Gatewy	Gatewy	Gateway		Mean-Environment-Device

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Gauss	Gauss	Gaussian	Gaussian functions are often used to represent the probability density function of a normally distributed random variable	Condition-Qualifier
Gbx	Gbx	Gearbox		Mean-Environment-Device
Gdi	Gdi	GDI	Gasoline Direct Injection	Mean-Environment-Device
Gear	Gear	Gear		Mean-Environment-Device
Gen	Gen	Generic		Condition-Qualifier
Gen1	Gen	Generate		Action-PhysicalType
Gend	Gend	Generated		Condition-Qualifier
Generic	Generic	Generic		Condition-Qualifier
Genn	Genn	Generation		Condition-Qualifier
Genr	Genr	Generator		Mean-Environment-Device
Germany	Germany	Germany		Condition-Qualifier
Get	Get	Get		Action-PhysicalType
Giga	Giga	Giga		Mean-Environment-Device
Glass	Glass	Glass		Mean-Environment-Device
Glb	Glb	Global		Condition-Qualifier
Glv	Glv	Glove		Mean-Environment-Device
Glw	Glw	Glow		Mean-Environment-Device
Gnd	Gnd	Ground		Mean-Environment-Device
Govr	Govr	Governor		Mean-Environment-Device
Gpio	Gpio	General Purpose Input/Output (GPIO)	A general-purpose input/ output (GPIO) is an uncommitted digital signal pin on an integrated circuit or electronic circuit (e.g. MCUs/ MPUs) board that can be used as an input or output, or both, and is controllable by software.	Mean-Environment-Device
Gpt	Gpt	GPT	General Purpose Timer	Mean-Environment-Device
Gr	Gr	Gram	Unit of measure for mass	Mean-Environment-Device
Grd	Grd	Grade		Mean-Environment-Device
Grdt	Grdt	Gradient	gradient/slope	Action-PhysicalType
Grid	Grid	Grid		Mean-Environment-Device
Grip	Grip	Grip	example: Maximum desired engine torque for grip adaptation	Action-PhysicalType
Group	Group	Group		Condition-Qualifier
Grvy	Grvy	Gravity	This keyword describes the force of attraction between to masses, well known as gravity.	Mean-Environment-Device
Gsl	Gsl	Gasoline	This keyword is used to express the fuel type "gasoline".	Mean-Environment-Device
Gsm	Gsm	GSM	Global System for Mobile Communications	Mean-Environment-Device
Gulf	Gulf	Gulf		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
H2	H2	H2	Chemical element Hydrogen diatomic (H2)	Mean-Environment-Device
HC	HC	Hydrocarbon		Preposition
HEV	HEV	Hev	Hybrid Electric Vehicle	Mean-Environment-Device
Half	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.	Condition-Qualifier
Hall	Hall	Hall	as used in Hall Sensor	Mean-Environment-Device
Halt	Halt	Halt		Condition-Qualifier
Hard	Hard	Hard		Condition-Qualifier
Hbrnt	Hbrnt	Hibernate		Action-PhysicalType
Hc	Hc	Hydrocarbon		Mean-Environment-Device
Hd	Hd	Head		Mean-Environment-Device
Hdlamp	Hdlamp	Headlamp		Mean-Environment-Device
Hdphn	Hdphn	Headphone		Mean-Environment-Device
Hdr	Hdr	Header		Condition-Qualifier
Hdrest	Hdrest	Headrest	Headrest of seats	Mean-Environment-Device
Heal	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 particle. A free-shaking control signal can lead to releasing the particle from the actuator.	Action-PhysicalType
Heat	Heat	Heat		Mean-Environment-Device
Heatd	Heatd	Heated		Condition-Qualifier
Heatg	Heatg	Heating		Action-PhysicalType
Heatr	Heatr	Heater		Mean-Environment-Device
Hecto	Hecto	Hecto	Unit of measure for pressure	Mean-Environment-Device
Hei	Hei	Height		Action-PhysicalType
Hev	Hev	HEV	Hybrid Electric Vehicle	Mean-Environment-Device
Hi	Hi	High		Condition-Qualifier
Hil	Hil	Hardware in the Loop	Hardware in the Loop for the testing of embedded systems	Condition-Qualifier
Hill	Hill	Hill		Mean-Environment-Device
Hist	Hist	History	for data stored in history memory	Condition-Qualifier
Hitch	Hitch	Hitch		Action-PhysicalType
Hld	Hld	Hold		Action-PhysicalType
Hmi	Hmi	HMI	Human-Machine Interface	Mean-Environment-Device
Hndbrk	Hndbrk	Handbrake		Mean-Environment-Device
Hndl	Hndl	Handle	The physical device for opening a door	Mean-Environment-Device
Hndlg	Hndlg	Handling		Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Hom	Hom	Homogeneous	e. g. used in homogeneous injection	Condition-Qualifier
Home	Home	Home		Mean-Environment-Device
Hood	Hood	Hood	e. g. engine hood	Mean-Environment-Device
Hoop	Hoop	Hoop		Mean-Environment-Device
Horn	Horn	Horn		Mean-Environment-Device
Hot	Hot	Hot		Condition-Qualifier
Hozl	Hozl	Horizontal		Condition-Qualifier
Hp	Hp	Highpass		Condition-Qualifier
Hr	Hr	Hour	Unit of measure for time	Mean-Environment-Device
Htl	Htl	Hotel		Mean-Environment-Device
Hud	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.	Mean-Environment-Device
Hum	Hum	Humidity	the keyword is used to assign the amount of water in a gas or a gaseous mixture. Example: the humidity in the exhaust gas.	Condition-Qualifier
Hvac	Hvac	HVAC	Heating Ventilation and Air Conditioning	Mean-Environment-Device
Hvy	Hvy	Heavy		Condition-Qualifier
Hw	Hw	Hardware	This keyword is used to express a relationship to Hardware within a functionality or an environmental tools, e.g. Labcar.	Mean-Environment-Device
Hyb	Hyb	Hybrid	Any vehicle that combines two or more sources of power that can directly or indirectly provide propulsion power is a hybrid	Condition-Qualifier
Hyd	Hyd	Hydraulic	used to characterize hydraulic components	Condition-Qualifier
Hyddyn	Hyddyn	Hydrodynamic		Condition-Qualifier
Hys	Hys	Hysteresis		Condition-Qualifier
Hz	Hz	Hertz	Unit of measure for frequency	Mean-Environment-Device
Hzrd	Hzrd	Hazard		Mean-Environment-Device
I	I	I	Electric current	Action-PhysicalType
Ice	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.	Mean-Environment-Device
Ico	Ico	Intercooler		Mean-Environment-Device
Icu	Icu	ICU	Input Capture Unit	Mean-Environment-Device
Id	Id	Identifier		Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Ideal	Ideal	Ideal	e.g. ideal computed vehicle speed for curve	Condition-Qualifier
Identcl	Identcl	Identical		Condition-Qualifier
Idle	Idle	Idle		Condition-Qualifier
Idn	Idn	Identification		Condition-Qualifier
Idx	Idx	Index		Condition-Qualifier
Idx0	0	0	Index 0. This keyword is used to express the number zero in form of an index	Index
Idx0th	0th	0th	This keyword is used to express the order in form of an index.	Index
Idx1	1	1	Index 1. This keyword is used to express the number one in form of an index	Index
Idx1d	1d	1d	index 1D. used for location of oxygen sensors (4 banks and 2 sensors) - Parameter Identification 1D according with ISO15031-5. 2 banks and 4 sensors are identified by the index 13	Index
Idx1st	1st	1st	This keyword is used to express the order in form of an index.	Index
Idx2	2	2	Index 2. This keyword is used to express the number two in form of an index	Index
Idx2nd	2nd	2nd	Second. This keyword is used to express the order in form of an index.	Index
Idx3	3	3	Index 3. This keyword is used to express the number three in form of an index	Index
Idx3rd	3rd	3rd	This keyword is used to express the order in form of an index.	Index
Idx4	4	4	Index 4. This keyword is used to express the number four in form of an index	Index
Idx4th	4th	4th	This keyword is used to express the order in form of an index.	Index
Idx5	5	5	Index 5. This keyword is used to express the number five in form of an index	Index
Idx5th	5th	5th	This keyword is used to express the order in form of an index.	Index
Idx6	6	6	Index 6. This keyword is used to express the number six in form of an index	Index
Idx6th	6th	6th	This keyword is used to express the order in form of an index.	Index

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Short Name	Abbreviation	Long Name	Description	Classification
Idx7	7	7	Index 7. This keyword is used to express the number seven in form of an index	Index
Idx7th	7th	7th	This keyword is used to express the order in form of an index.	Index
Idx8	8	8	Index 8. This keyword is used to express the number eight in form of an index	Index
Idx8th	8th	8th	This keyword is used to express the order in form of an index.	Index
Idx9	9	9	Index 9. This keyword is used to express the number nine in form of an index	Index
Idx9th	9th	9th	This keyword is used to express the order in form of an index.	Index
If	If	Interface		Condition-Qualifier
Ign	Ign	Ignition		Mean-Environment-Device
Illmn	Illmn	Illumination		Action-PhysicalType
Imdt	Imdt	Immediate	this keyword is used to assign a requirement of minimum delay time or the need to take action as soon as possible.	Condition-Qualifier
Img	Img	Image		Mean-Environment-Device
Imob	Imob	Immobilizer		Mean-Environment-Device
Imobn	Imobn	Immobilisation	Immobilisation	Action-PhysicalType
Imp	Imp	Impulse		Mean-Environment-Device
Impct	Impct	Impact		Action-PhysicalType
Impo	Impo	Impossible		Condition-Qualifier
Imprt	Imprt	Import		Action-PhysicalType
Imps	Imps	Implausible		Condition-Qualifier
Impy	Impy	Implausibility		Condition-Qualifier
In	In	In	Preposition for location or condition	Preposition
Inacrt	Inacrt	Inaccurate		Condition-Qualifier
Inc	Inc	Increase	This keyword is used to express a stepwise accretion of a value or counter	Action-PhysicalType
Incl	Incl	Incline		Action-PhysicalType
Inclg	Inclg	Including		Action-PhysicalType
Incln	Incln	Inclination		Action-PhysicalType
Inct	Inct	Increment	This keyword is used to express a stepwise accretion of a value or counter	Condition-Qualifier
Ind	Ind	Individual		Condition-Qualifier
Indcd	Indcd	Indicated		Condition-Qualifier
Indcn	Indcn	Indication		Condition-Qualifier
Indcr	Indcr	Indicator		Mean-Environment-Device
India	India	India		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Indonesia	Indonesia	Indonesia		Condition-Qualifier
Indt	Indt	Induction	The process by which an electrical conductor becomes electrified when near a charged body, by which a magnetizable body becomes magnetized when in a magnetic field or in the magnetic flux set up by a magnetomotive force, or by which an electromotive force is produced in a circuit by varying the magnetic field linked with the circuit.	Condition-Qualifier
Indu	Indu	Inductive		Condition-Qualifier
Inert	Inert	Inert		Condition-Qualifier
Info	Info	Information		Condition-Qualifier
Infra	Infra	Infra	e.g. in infra-red, infra-structure, infra-sound, infrasonic sound	Condition-Qualifier
Inhb	Inhb	Inhibit		Action-PhysicalType
Inhbn	Inhbn	Inhibition		Action-PhysicalType
Ini	Ini	Initial		Condition-Qualifier
Inin	Inin	Initialization		Condition-Qualifier
Inj	Inj	Injection		Action-PhysicalType
Injr	Injr	Injector		Mean-Environment-Device
Innr	Innr	Inner		Condition-Qualifier
Inp	Inp	Input		Condition-Qualifier
Insd	Insd	Inside		Mean-Environment-Device
Insert	Insert	Insert		Action-PhysicalType
Inst	Inst	Instance	This keyword is used for the characterisation e.g. of a diagnosis, instance of the intake air temperature diagnosis	Condition-Qualifier
Int	Int	Internal		Condition-Qualifier
Intd	Intd	Intended		Condition-Qualifier
Inten	Inten	Intensity		Action-PhysicalType
Inter	Inter	Intermediate		Condition-Qualifier
Interdom	Interdom	Interdomain		Mean-Environment-Device
Intery	Intery	Intermediary		Condition-Qualifier
Intgl	Intgl	Integral		Condition-Qualifier
Intgr	Intgr	Integer		Condition-Qualifier
Intk	Intk	Intake	Keyword Intake will also be used in the sense of Inlet	Mean-Environment-Device
Intl	Intl	Interval		Condition-Qualifier
Intm	Intm	Intermittent		Condition-Qualifier
Intr	Intr	Interior		Mean-Environment-Device
Intrpn	Intrpn	Interpolation		Action-PhysicalType
Intrpt	Intrpt	Interrupt		Action-PhysicalType
Intrsn	Intrsn	Intrusion	The act of wrongfully entering a protected area	Condition-Qualifier

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Intv	Intv	Intervention		Action-PhysicalType
Intvg	Intvg	Intervening		Condition-Qualifier
Intxcn	Intxcn	Intoxication	User under influence of drugs (e.g. alcohol)	Condition-Qualifier
Invld	Invld	Invalid		Condition-Qualifier
Io	Io	IO	Input/Output	Mean-Environment-Device
Ion	Ion	Ion	as used in Lithium Ion Battery	Mean-Environment-Device
Irrv	Irrv	Irreversible	this keyword is used to express that something can not return to a previous status, e.g. in Cruise Control deactivation it means in this case that cruise can not be activated again in the same driving cycle once a deactivation occurred	Condition-Qualifier
Italy	Italy	Italy		Condition-Qualifier
Itp	Itp	Interpreter	For the network layer of KWP2000	Condition-Qualifier
Ivs	Ivs	Inverse		Condition-Qualifier
Ivt	Ivt	Invert		Action-PhysicalType
Ivtr	Ivtr	Inverter	e.g. inverter in electric cars	Mean-Environment-Device
J	J	Inertia	this keyword is used to express the physical effect that the mass of a body is interacting against its acceleration	Action-PhysicalType
Jam	Jam	Jam		Action-PhysicalType
Japan	Japan	Japan		Condition-Qualifier
Jerk	Jerk	Jerk		Mean-Environment-Device
Jmp	Jmp	Jump		Action-PhysicalType
Jou	Jou	Joule	Unit of measure for energy, work	Mean-Environment-Device
Kd	Kd	Kickdown		Mean-Environment-Device
Keep	Keep	Keep	e.g. for active Safety Systems like Lane Keep Aid	Action-PhysicalType
Kelvin	Kelvin	Kelvin	Unit of measure for temperature	Mean-Environment-Device
Key	Key	Key		Mean-Environment-Device
Keyls	Keyls	Keyless		Condition-Qualifier
Keyword	Keyword	Keyword		Mean-Environment-Device
Ki	Ki	Ki	integral gain, Integral amplification, used in software control loops e.g. damper control or lambda control	Action-PhysicalType
Kilo	Kilo	Kilo		Mean-Environment-Device
Knee	Knee	Knee	knee of human body	Mean-Environment-Device
Knk	Knk	Knock		Mean-Environment-Device
Knob	Knob	Knob		Mean-Environment-Device
Korea	Korea	Korea		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Kp	Kp	Kp	proportional gain, proportional amplification, used in software control loops e.g. damper control or lambda control	Action-PhysicalType
L	L	Liter	unit of measure for volume	Mean-Environment-Device
Lam	Lam	Lambda	Air/Fuel Ratio	Action-PhysicalType
Lamp	Lamp	Lamp	this keyword is used do describe the component of a lamp, e.g. in the display of the instrument panel	Mean-Environment-Device
Lane	Lane	Lane		Mean-Environment-Device
Language	Language	Language		Mean-Environment-Device
Lat	Lat	Lateral		Condition-Qualifier
Lati	Lati	Latitude	e.g. position from navigation system	Condition-Qualifier
Ldn	Ldn	Loudness		Action-PhysicalType
Le	Le	Left		Condition-Qualifier
Lead	Lead	Lead	e.g. lead cylinder	Mean-Environment-Device
Leak	Leak	Leak	The power stage for the piezo injectors has a special hardware (leakage compensation) to avoid discharging of capacities.	Condition-Qualifier
Lean	Lean	Lean		Condition-Qualifier
Led	Led	LED	Light Emitting Diode	Mean-Environment-Device
Len	Len	Length		Action-PhysicalType
Lft	Lft	Lift	Movement from a lower to a higher position, or the distance of the movement.	Condition-Qualifier
Lgt	Lgt	Longitudinal	longitudinal	Condition-Qualifier
Li	Li	Light		Mean-Environment-Device
Lib	Lib	Library		Condition-Qualifier
Lid	Lid	Lid		Mean-Environment-Device
Lighter	Lighter	Lighter		Mean-Environment-Device
Lim	Lim	Limit		Condition-Qualifier
Limd	Limd	Limited		Condition-Qualifier
Limn	Limn	Limitation		Action-PhysicalType
Limp	Limp	Limp	example: Timeout camshaft sensor limp home	Action-PhysicalType
Limr	Limr	Limiter		Mean-Environment-Device
Lin	Lin	LIN	Local Interconnect Network	Mean-Environment-Device
Line	Line	Line		Mean-Environment-Device
List	List	List		Mean-Environment-Device
Lnch	Lnch	Launch		Action-PhysicalType
Lnr	Lnr	Linear	used for description of linear qualities	Condition-Qualifier
Lo	Lo	Low		Condition-Qualifier
Load	Load	Load	Unit must be percent	Action-PhysicalType
Lobe	Lobe	Lobe	as used in the case of single lobe cam	Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Lock	Lock	Lock		Action-PhysicalType
Lockd	Lockd	Locked		Condition-Qualifier
Lockg	Lockg	Locking		Action-PhysicalType
Locn	Locn	Location	Position	Action-PhysicalType
Log	Log	Logarithmic	Logarithmic, Logarithm (AUTOSAR BSW)	Condition-Qualifier
Logl	Logl	Logical		Condition-Qualifier
Long	Long	Long		Condition-Qualifier
Longi	Longi	Longitude	e.g. position from navigation system	Condition-Qualifier
Loop	Loop	Loop		Mean-Environment-Device
Loss	Loss	Loss		Condition-Qualifier
Lost	Lost	Lost		Condition-Qualifier
Lowr	Lowr	Lower		Condition-Qualifier
Lp	Lp	Lowpass		Condition-Qualifier
Lpg	Lpg	LPG	Liquified Petroleum Gas	Mean-Environment-Device
Lrg	Lrg	Large		Condition-Qualifier
Lrn	Lrn	Learn		Action-PhysicalType
Lrng	Lrng	Learning		Condition-Qualifier
Lst	Lst	Last		Condition-Qualifier
Ltch	Ltch	Latch		Mean-Environment-Device
Ltcy	Ltcy	Latency		Condition-Qualifier
Ltg	Ltg	Lighting		Condition-Qualifier
Lum	Lum	Lumbar		Mean-Environment-Device
Lumi	Lumi	Lumi	Luminous Intensity, used for measuring luminous Intensity	Action-PhysicalType
Lvl	Lvl	Level		Action-PhysicalType
Lvlg	Lvlg	Leveling		Action-PhysicalType
Lvng	Lvng	Leaving		Action-PhysicalType
Lvr	Lvr	Lever		Mean-Environment-Device
M	M	Mass		Action-PhysicalType
Mac	Mac	Machine		Mean-Environment-Device
Mag	Mag	Magnetic		Condition-Qualifier
Mai	Mai	Main		Condition-Qualifier
Malaysia	Malaysia	Malaysia		Condition-Qualifier
Male	Male	Male		Condition-Qualifier
Man	Man	Manual		Condition-Qualifier
Map	Map	Map		Mean-Environment-Device
Mask	Mask	Mask	this keyword is used to characterize a masking of a certain value to separate it from the non-masked one.	Condition-Qualifier
Massg	Massg	Massage		Action-PhysicalType
Mat	Mat	Mathematical		Condition-Qualifier
Max	Max	Maximum		Condition-Qualifier
Mcu	Mcu	MCU	Microcontroller Unit	Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Mdl	Mdl	Model		Mean-Environment-Device
Meas	Meas	Measure		Condition-Qualifier
Measd	Measd	Measured		Condition-Qualifier
Mec	Mec	Mechanic		Condition-Qualifier
Mecl	Mecl	Mechanical		Condition-Qualifier
Med	Med	Medium		Condition-Qualifier
Mega	Mega	Mega		Mean-Environment-Device
Mem	Mem	Memory		Mean-Environment-Device
Memd	Memd	Memorized		Condition-Qualifier
Memr	Memr	Memorise		Action-PhysicalType
Method	Method	Method		Condition-Qualifier
Mexico	Mexico	Mexico		Condition-Qualifier
Mgn	Mgn	Magnitude		Condition-Qualifier
Mgr	Mgr	Manager		Condition-Qualifier
Micro	Micro	Micro		Mean-Environment-Device
Micro1	Micro	Micro		Condition-Qualifier
Mid	Mid	Middle		Condition-Qualifier
Mil	Mil	MIL	Malfunction Indication Lamp	Mean-Environment-Device
Milg	Milg	Mileage		Action-PhysicalType
Milli	Milli	Milli		Mean-Environment-Device
Min	Min	Minimum		Condition-Qualifier
Mins	Mins	Minute	Unit of measure for time	Mean-Environment-Device
Mirr	Mirr	Mirror		Mean-Environment-Device
Misc	Misc	Miscellaneous		Condition-Qualifier
Misf	Misf	Misfire		Action-PhysicalType
Misfg	Misfg	Misfiring		Condition-Qualifier
Miss	Miss	Missing		Condition-Qualifier
Mkr	Mkr	Marker		Condition-Qualifier
Mkt	Mkt	Market	This keyword 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.	Mean-Environment-Device
Mmed	Mmed	Multimedia		Mean-Environment-Device
Mnfld	Mnfld	Manifold		Mean-Environment-Device
Mng	Mng	Manage		Action-PhysicalType
Mngt	Mngt	Management		Condition-Qualifier
Mntd	Mntd	Mounted		Condition-Qualifier
Mntg	Mntg	Mounting		Action-PhysicalType
Mntn	Mntn	Maintenance		Condition-Qualifier
Mod	Mod	Mode		Condition-Qualifier
Modln	Modln	Modulation		Action-PhysicalType
Mol	Mol	Mole	is used as unit for the amount of substance	Mean-Environment-Device
Mom	Mom	Moment		Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Momtm	Momtm	Momentum		Action-PhysicalType
Mon	Mon	Monitoring		Action-PhysicalType
Monr	Monr	Monitor		Mean-Environment-Device
Mot	Mot	Motor		Mean-Environment-Device
Motorcycle	Motorcycle	Motorcycle		Mean-Environment-Device
Move	Move	Move		Action-PhysicalType
Movg	Movg	Moving		Action-PhysicalType
Movmt	Movmt	Movement		Condition-Qualifier
Mpg	Mpg	Mapping		Action-PhysicalType
Mpl	Mpl	Multiple		Condition-Qualifier
Msg	Msg	Message		Condition-Qualifier
Msr	Msr	MSR	Engine drag torque control (also known in german language as "Motorschlepp-momentregelung" from which the acronym is derived).	Condition-Qualifier
Mst	Mst	Master		Condition-Qualifier
Mt	Mt	MT	Manual shifted Transmission	Mean-Environment-Device
Mtgtn	Mtgtn	Mitigation		Condition-Qualifier
Mth	Mth	Month		Mean-Environment-Device
Mtn	Mtn	Motion		Action-PhysicalType
Mtr	Mtr	Meter		Mean-Environment-Device
Mtrac	Mtrac	Memory access tracer	Tracer to log memory accesses and other system events to help analyze and understand the memory access patterns and cache line behavior of code.	Condition-Qualifier
Mtrc	Mtrc	Metric		Condition-Qualifier
Mtrx	Mtrx	Matrix		Condition-Qualifier
Multi	Multi	Multi		Condition-Qualifier
Mux	Mux	Multiplexer		Mean-Environment-Device
N	N	Speed	Rotatory speed, also referred to as speed of rotation measured in rad/s, rpm or equivalents. Examples: EngN = Engine speed [rpm], WhlN = Wheel speed [rpm]	Action-PhysicalType
N2	N2	Nitrogen	Chemical element Nitrogen molecule (N2)	Mean-Environment-Device
Nano	Nano	Nano		Mean-Environment-Device
Nat	Nat	Natural		Condition-Qualifier
Nav	Nav	Navigation		Mean-Environment-Device
Near	Near	Near		Condition-Qualifier
Neg	Neg	Negative		Condition-Qualifier
Negn	Negn	Negation		Condition-Qualifier

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Net	Net	Network	describes all kind of networks in general, e. g. an electric network consisting of any type of consumers and generators	Mean-Environment-Device
Neut	Neut	Neutral		Condition-Qualifier
New	New	New		Condition-Qualifier
Night	Night	Night		Mean-Environment-Device
Nlnr	Nlnr	Nonlinear	nonlinear. used for description of non linear characteristics (e.g. for an optional additional nonlinear correction)	Condition-Qualifier
Nm	Nm	NM	Network Management	Mean-Environment-Device
No	No	No	Opposite of "yes"	Preposition
Nod	Nod	Node	keyword for a junction or joining of lines or ways	Mean-Environment-Device
Noise	Noise	Noise		Condition-Qualifier
Nom	Nom	Nominal		Condition-Qualifier
Norm	Norm	Normal	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 without disturbance. Do not mix it with Basic for description of fulfilling a basic or minimum requirement.	Condition-Qualifier
Not	Not	Not		Preposition
Notif	Notif	Notification		Condition-Qualifier
Now	Now	Now	in this moment	Condition-Qualifier
Nox	Nox	NOx	Nitrogen oxides, part of the emissions of a combustion engine.	Mean-Environment-Device
Noz	Noz	Nozzle		Mean-Environment-Device
Nr	Nr	Number	this keyword is used to express a numbering in physical meaning	Action-PhysicalType
Nrdc	Nrdc	Nordic		Condition-Qualifier
Nv	Nv	Nv	Non volatile	Condition-Qualifier
Nvm	Nvm	NVM	Non Volatile Memory	Mean-Environment-Device
Nwt	Nwt	Newton		Mean-Environment-Device
O2	O2	O2	Oxygen molecule	Mean-Environment-Device
Obd	Obd	OBD	On Board Diagnosis	Mean-Environment-Device
Obj	Obj	Object		Mean-Environment-Device
Obs	Obs	Observe		Action-PhysicalType
Obslt	Obslt	Obsolete		Condition-Qualifier
Obstcl	Obstcl	Obstacle		Mean-Environment-Device
Obstrcn	Obstrcn	Obstruction		Condition-Qualifier
Obsvr	Obsvr	Observer		Mean-Environment-Device
Occpt	Occpt	Occupant		Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Odd	Odd	Odd		Condition-Qualifier
Of	Of	Of	Preposition	Preposition
Off	Off	Off		Condition-Qualifier
Offroad	Offroad	Offroad		Condition-Qualifier
Offs	Offs	Offset		Action-PhysicalType
Ohm	Ohm	Ohm	Unit of measure for electric resistance	Mean-Environment-Device
Oil	Oil	Oil		Mean-Environment-Device
Ok	Ok	OK		Condition-Qualifier
Old	Old	Old	in the calculation period n, the keyword OLD assigns a value from the period (n-1).	Condition-Qualifier
On	On	On		Preposition
On1	On	On		Condition-Qualifier
Only	Only	Only		Preposition
Open	Open	Open		Action-PhysicalType
Opend	Opend	Opened		Condition-Qualifier
Opener	Opener	Opener		Mean-Environment-Device
Oper	Oper	Operation		Condition-Qualifier
Opt	Opt	Optional		Condition-Qualifier
Optic	Optic	Optical		Condition-Qualifier
Optm	Optm	Optimum		Condition-Qualifier
Optn	Optn	Option		Condition-Qualifier
Or	Or	Or		Preposition
Orntn	Orntn	Orientation		Action-PhysicalType
Os	Os	OS	Operating System	Mean-Environment-Device
Osc	Osc	Oscillate		Action-PhysicalType
Oscn	Oscn	Oscillation	This keyword is used to describe occurrences of pulsation or oscillation	Condition-Qualifier
Out	Out	Out		Preposition
Outd	Outd	Outside	Used for outdoor and outside	Mean-Environment-Device
Outl	Outl	Outlet	Outlet (e.g. camshaft)	Condition-Qualifier
Outp	Outp	Output		Condition-Qualifier
Outr	Outr	Outer		Condition-Qualifier
Over	Over	Over		Condition-Qualifier
Ovf	Ovf	Overflow		Condition-Qualifier
Ovld	Ovld	Overload	The keyword is used for an electrical actuator, if the requested power exceeds the allowed long-time power limit. The overload must be possible for a certain time.	Condition-Qualifier
Ovrd	Ovrd	Override		Action-PhysicalType
Ovrdn	Ovrdn	Overridden		Condition-Qualifier
Ovrheatd	Ovrheatd	Overheated		Condition-Qualifier
Ovrheatg	Ovrheatg	Overheating		Action-PhysicalType
Ovrrn	Ovrrn	Overrun	Exceeding a certain limit	Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Ovs	Ovs	Oversteering	Understeer and oversteer are vehicle dynamics terms used to describe the sensitivity of the vehicle to changes in steering angle ... in any given steady-state maneuver beyond the Ackermann steer angle. The Ackermann steer angle is the steer angle at which the vehicle would travel about a curve when there is no lateral acceleration required (at negligibly low speed). [Wikipedia] Oversteering is when the rear of the vehicle slides outward, causing the vehicle to turn more sharply than intended.	Condition-Qualifier
Own	Own	Own		Condition-Qualifier
Oxd	Oxd	Oxidation		Condition-Qualifier
P	P	Pressure		Action-PhysicalType
Pa	Pa	Pascal	Unit of measure for pressure	Mean-Environment-Device
Pad	Pad	Pad		Mean-Environment-Device
Paddl	Paddl	Paddle		Mean-Environment-Device
Page	Page	Page		Condition-Qualifier
Pah	Pah	Path		Mean-Environment-Device
Pan	Pan	Panel		Mean-Environment-Device
Panic	Panic	Panic		Action-PhysicalType
Par	Par	Parity		Condition-Qualifier
Parent	Parent	Parent	e.g. "Parent street segment" used in context of route guidance from navigation system	Condition-Qualifier
Park	Park	Park		Action-PhysicalType
Part	Part	Part		Condition-Qualifier
Pas	Pas	Passive		Condition-Qualifier
Pase	Pase	PASE	Passive Start and Entry (PASE), keyless access.	Mean-Environment-Device
Pass	Pass	Passenger		Mean-Environment-Device
Passd	Passd	Passed		Condition-Qualifier
Pat	Pat	Pattern		Condition-Qualifier
Pck	Pck	package, pack	Hierarchical element, representing a collection of coherent entities/ functionalities/instances.	Condition-Qualifier
Pdu	Pdu	PDU	Protocol Data Unit	Mean-Environment-Device
Peak	Peak	Peak		Condition-Qualifier
Ped	Ped	Pedestrian		Mean-Environment-Device
Pedl	Pedl	Pedal		Mean-Environment-Device
Pelv	Pelv	Pelvis	pelvis of human body	Mean-Environment-Device
Pen	Pen	Personalization		Condition-Qualifier
Per	Per	Per	Preposition	Preposition

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Short Name	Abbreviation	Long Name	Description	Classification
Perc	Perc	Percent		Action-PhysicalType
Perd	Perd	Period		Condition-Qualifier
Perml	Perml	Permille		Condition-Qualifier
Permtn	Permtn	Permutation		Condition-Qualifier
Perox	Perox	Peroxide		Mean-Environment-Device
Pfi	Pfi	PFI	Port Fuel Injection	Mean-Environment-Device
Pha	Pha	Phase		Condition-Qualifier
Phev	Phev	PHEV	Plug-in Hybrid Electric Vehicle	Mean-Environment-Device
Philippine	Philippine	Philippine		Condition-Qualifier
Phy	Phy	Physical		Condition-Qualifier
Pi	Pi	Pi		Condition-Qualifier
Pico	Pico	Pico		Mean-Environment-Device
Pid	Pid	PID	Proportional Integral Derivative, as widely used in "PID Controller".	Condition-Qualifier
Pin	Pin	Pin		Mean-Environment-Device
Pinion	Pinion	Pinion		Mean-Environment-Device
Pipe	Pipe	Pipe		Mean-Environment-Device
Pist	Pist	Piston	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	Mean-Environment-Device
Pitch	Pitch	Pitch		Action-PhysicalType
Pitchovr	Pitchovr	Pitchover		Action-PhysicalType
Pla	Pla	Plant		Mean-Environment-Device
Plate	Plate	Plate		Mean-Environment-Device
Plaus	Plaus	Plausible		Condition-Qualifier
Pll	Pll	PLL	Phase Locked Loop	Mean-Environment-Device
Plow	Plow	Plow	for example for snow plow, etc.	Mean-Environment-Device
Pls	Pls	Pulse	a pulse is a simple electrical signal with a defined shape	Mean-Environment-Device
Pm	Pm	Particulate matter	Microscopic particles of solid or liquid matter suspended in the air.	Condition-Qualifier
Pmp	Pmp	Pump		Mean-Environment-Device
Pnd	Pnd	Pending	This keyword is used to build the "pending" fault used in the error management aggregate defined by the ISO 15031-5.5 service $07.	Condition-Qualifier
Pnm	Pnm	Pneumatic	used e.g. for description of pneumatic actuators (such as recirculation valve actuator or waste gate actuator)	Condition-Qualifier
Polarity	Polarity	Polarity		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Pole	Pole	Pole	e.g. magnetic pole	Condition-Qualifier
Polling	Polling	Polling		Action-PhysicalType
Pool	Pool	Pool		Mean-Environment-Device
Port	Port	Port		Condition-Qualifier
Pos	Pos	Positive		Condition-Qualifier
Posn	Posn	Position		Action-PhysicalType
Posng	Posng	Positioning		Action-PhysicalType
Post	Post	Post		Preposition
Poti	Poti	Potentiometer		Mean-Environment-Device
Ppty	Ppty	Property		Condition-Qualifier
Pr	Pr	Pr	Prandtl number	Action-PhysicalType
Pre	Pre	Pre	used to express any kind of pre-processing like e.g. for pre-injection	Preposition
Prec	Prec	Precharge		Condition-Qualifier
Pred	Pred	Predicted		Condition-Qualifier
Prel	Prel	Preliminary		Condition-Qualifier
Prem	Prem	Premature		Condition-Qualifier
Prep	Prep	Prepare		Action-PhysicalType
Prepn	Prepn	Preparation	this characteristic is used to express a general status of preparation, e.g. processing of certain tasks before an activation of a certain component or functionality	Condition-Qualifier
Pres	Pres	Presence		Condition-Qualifier
Prev	Prev	Previous		Condition-Qualifier
Prevn	Prevn	Prevention		Condition-Qualifier
Prfmnc	Prfmnc	Performance		Condition-Qualifier
Prim	Prim	Primary		Condition-Qualifier
Prio	Prio	Priority		Condition-Qualifier
Prj	Prj	Project		Condition-Qualifier
Prjn	Prjn	Projection		Condition-Qualifier
Prkg	Prkg	Parking		Mean-Environment-Device
Prm	Prm	Parameter		Condition-Qualifier
Prmnt	Prmnt	Permanent		Condition-Qualifier
Probl	Probl	Probable	e.g. probable path from nagivation system	Condition-Qualifier
Problty	Problty	Probability		Condition-Qualifier
Proc	Proc	Process		Action-PhysicalType
Prof	Prof	Profile		Action-PhysicalType
Prog	Prog	Program		Condition-Qualifier
Progd	Progd	Programmed		Condition-Qualifier
Progm	Progm	Programming		Condition-Qualifier
Progs	Progs	Progress		Condition-Qualifier
Progsn	Progsn	Progression		Condition-Qualifier
Prohb	Prohb	prohibit		Action-PhysicalType

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Short Name	Abbreviation	Long Name	Description	Classification
Prop	Prop	Proportional		Condition-Qualifier
Prot	Prot	Protect		Action-PhysicalType
Protd	Protd	Protected		Condition-Qualifier
Protn	Protn	Protection		Action-PhysicalType
Prototype	Prototype	Prototype		Condition-Qualifier
Prp	Prp	Propulsive	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	Condition-Qualifier
Prpn	Prpn	Propulsion		Condition-Qualifier
Prsnl	Prsnl	Personal		Condition-Qualifier
Prsnt	Prsnt	Present		Condition-Qualifier
Psbl	Psbl	Possible		Condition-Qualifier
Psd	Psd	Pressed		Condition-Qualifier
Pt	Pt	Powertrain		Mean-Environment-Device
Ptc	Ptc	PTC	Power Train Controller	Mean-Environment-Device
Ptco	Ptco	Positive temperature coefficient (heater)	Positive temperature coefficient (heater): An electronic element which provides temperature dependend resistance, the higher the temperature the higher the resistance. This is used for heating purpose.	Mean-Environment-Device
Ptcol	Ptcol	Protocol	Set of rules and guidelines, e.g. for communication purpose, like, e.g. CAN communication, Charging communication	Mean-Environment-Device
Ptl	Ptl	Partial	this keyword expresses the characterization of "only partly, not completely"	Condition-Qualifier
Ptr	Ptr	Pointer		Condition-Qualifier
Ptra	Ptra	Pointer to array	A pointer is a programming language object whose value refers directly to (or points to) another value stored elsewhere in the computer memory using its address (in this case: address of an array)	Condition-Qualifier
Puddle	Puddle	Puddle		Mean-Environment-Device
Pull	Pull	Pull		Action-PhysicalType
Purfr	Purfr	Purifier	Filter which cleans the air used in an HVAC of an vehicle	Mean-Environment-Device
Purg	Purg	Purge		Action-PhysicalType

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Push	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)	Action-PhysicalType
Put	Put	Put		Action-PhysicalType
Pwd	Pwd	Password		Condition-Qualifier
Pwm	Pwm	PWM	Pulse Width Modulation	Condition-Qualifier
Pwr	Pwr	Power		Action-PhysicalType
Pwr1	Pwr	Power		Mean-Environment-Device
Pyro	Pyro	Pyrometer	this keyword is used to express a relationship to a pyrometer which is a contactless instrument to measure high temperatures	Mean-Environment-Device
Q	Q	Q	Electric charge	Action-PhysicalType
Qlfr	Qlfr	Qualifier		Condition-Qualifier
Qly	Qly	Quality	This keyword is used to express the word 'quality'	Condition-Qualifier
Qnty	Qnty	Quantity		Condition-Qualifier
Query	Query	Query		Condition-Qualifier
Quick	Quick	Quick		Condition-Qualifier
Quo	Quo	Quotient		Condition-Qualifier
R	R	Resistance	Unit must be Ohm	Action-PhysicalType
Rad	Rad	Radian	As unit of measure for angles	Mean-Environment-Device
Radio	Radio	Radio		Mean-Environment-Device
Radr	Radr	Radiator	a radiator is a component, that senses out heat. It can be found e.g. in the cooling circuit of a car.	Mean-Environment-Device
Rail	Rail	Rail	Examples: Common Rail, Fuel Pressure Rail. The common rail 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.	Mean-Environment-Device
Rain	Rain	Rain		Mean-Environment-Device
Ram	Ram	RAM	Random Access Memory	Mean-Environment-Device
Ramp	Ramp	Ramp		Condition-Qualifier
Rat	Rat	Ratio	RATIO is used to describe a value gained from a proportion of other values. The unit of RATIO must be [-] (no unit).	Action-PhysicalType
Rate	Rate	Rate	this keyword is used to express a rate in physical meaning	Action-PhysicalType
Raw	Raw	Raw	Unprocessed sensor data.	Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Rbd	Rbd	Rebound		Condition-Qualifier
Rbf	Rbf	Radial Basis Function	In the field of mathematical modeling, a radial basis function network is an artificial neural network that uses radial basis functions as activation functions for have many uses, including function approximation, time series prediction, classification, and system control.	Condition-Qualifier
Rcnd	Rcnd	Recognized		Condition-Qualifier
Rcrltn	Rcrltn	Ricirculation		Condition-Qualifier
Rcv	Rcv	Recovery	A healing or an upturn, e.g. as after a depression	Action-PhysicalType
Rd	Rd	Radius		Action-PhysicalType
Rdnt	Rdnt	Redundant		Condition-Qualifier
Rdr	Rdr	Radar		Mean-Environment-Device
Rdy	Rdy	Ready	readiness identification	Condition-Qualifier
Re	Re	Rear		Condition-Qualifier
Re1	Re	Re	Reynolds Number	Mean-Environment-Device
Reactn	Reactn	Reaction		Action-PhysicalType
Reacvn	Reacvn	Reactivation		Condition-Qualifier
Read	Read	Read		Action-PhysicalType
Reading	Reading	Reading		Action-PhysicalType
Real	Real	Real	Real part	Condition-Qualifier
Rec	Rec	Record		Condition-Qualifier
Recalcn	Recalcn	Recalculation		Action-PhysicalType
Recall	Recall	Recall		Condition-Qualifier
Recirc	Recirc	Recirculation		Action-PhysicalType
Recpr	Recpr	Reciprocal		Condition-Qualifier
Red	Red	Reduce		Condition-Qualifier
Redn	Redn	Reduction		Condition-Qualifier
Ref	Ref	Reference		Condition-Qualifier
Refgnt	Refgnt	Refrigerant	A refrigerant is a substance or mixture, usually a fluid, used in a heat pump and refrigeration cycle.	Condition-Qualifier
Refrsh	Refrsh	Refresh		Action-PhysicalType
Refu	Refu	Refuel		Action-PhysicalType
Regn	Regn	Region		Condition-Qualifier
Reinf	Reinf	Reinforce		Action-PhysicalType
Rejctd	Rejctd	Rejected		Condition-Qualifier
Rel	Rel	Relative		Condition-Qualifier
Reld	Reld	Released		Condition-Qualifier
Rels	Rels	Release		Action-PhysicalType
Relzd	Relzd	Realized		Condition-Qualifier
Rem	Rem	Remote		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Rep	Rep	Repeat		Action-PhysicalType
Replcmt	Replcmt	Replacement		Condition-Qualifier
Repn	Repn	Repetition		Condition-Qualifier
Reprog	Reprog	Reprogramming	Software update	Action-PhysicalType
Req	Req	Request		Condition-Qualifier
Reqd	Reqd	Requested		Condition-Qualifier
Res	Res	Result		Condition-Qualifier
Resd	Resd	Reserved		Condition-Qualifier
Resi	Resi	Residual		Condition-Qualifier
Resl	Resl	Resolution		Condition-Qualifier
Resp	Resp	Response		Condition-Qualifier
Rest	Rest	Rest		Condition-Qualifier
Restore	Restore	Restore		Action-PhysicalType
Restrctn	Restrctn	Restriction		Action-PhysicalType
Restrnt	Restrnt	Restraint		Mean-Environment-Device
Resu	Resu	Resume		Condition-Qualifier
Resv	Resv	Reserve		Condition-Qualifier
Rev	Rev	Revolution	As unit of measure	Mean-Environment-Device
Rex	Rex	REX	Range Extender	Mean-Environment-Device
Rgl	Rgl	Regular	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.	Condition-Qualifier
Rgln	Rgln	Regulation		Condition-Qualifier
Rgn	Rgn	Regeneration		Condition-Qualifier
Rho	Rho	Rho	density	Action-PhysicalType
Ri	Ri	Right	right	Condition-Qualifier
Rich	Rich	Rich		Condition-Qualifier
Ride	Ride	Ride		Action-PhysicalType
Rise	Rise	Rise		Action-PhysicalType
Risk	Risk	Risk		Condition-Qualifier
Risng	Risng	Rising		Condition-Qualifier
Rke	Rke	RKE	Remote Keyless Entry	Mean-Environment-Device
Rlv	Rlv	Relevant		Condition-Qualifier
Rlvc	Rlvc	Relevance		Condition-Qualifier
Rly	Rly	Relay		Mean-Environment-Device
Rmn	Rmn	Reminder		Mean-Environment-Device
Rnd	Rnd	Random		Condition-Qualifier
Rng	Rng	Range		Action-PhysicalType
Road	Road	Road	this keyword is used to express the conditions a street can apply to the vehicle	Mean-Environment-Device
Roll	Roll	Roll		Action-PhysicalType

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Rollbar	Rollbar	Rollbar	(Active) safety roll bar to protect passengers	Mean-Environment-Device
Rollg	Rollg	Rolling		Action-PhysicalType
Rollovr	Rollovr	Rollover	Info from airbag control unit	Action-PhysicalType
Rollr	Rollr	Roller		Mean-Environment-Device
Rom	Rom	ROM	Read Only Memory	Mean-Environment-Device
Ron	Ron	RON	Research Octane Number	Action-PhysicalType
Roof	Roof	Roof		Mean-Environment-Device
Rot	Rot	Rotation	This keyword is used to express circular motions.	Condition-Qualifier
Rotl	Rotl	Rotational		Condition-Qualifier
Rotor	Rotor	Rotor		Mean-Environment-Device
Roty	Roty	Rotary		Condition-Qualifier
Roughns	Roughns	Roughness		Action-PhysicalType
Route	Route	Route	e.g. used in context of route guidance from navigation system	Condition-Qualifier
Row	Row	Row		Mean-Environment-Device
Rpm	Rpm	RPM	Revolutions per Minute, used as unit of measure of frequency	Mean-Environment-Device
Rqrd	Rqrd	Required		Condition-Qualifier
Rsa	Rsa	RSA	Republic of South Africa	Condition-Qualifier
Rsc	Rsc	RSC	Roll Stability Control	Mean-Environment-Device
Rst	Rst	Reset		Condition-Qualifier
Rstrt	Rstrt	Restart		Condition-Qualifier
Rt	Rt	Runtime		Condition-Qualifier
Rtd	Rtd	Retard		Condition-Qualifier
Rtdr	Rtdr	Retarder		Condition-Qualifier
Rte	Rte	RTE	Run-Time Environment	Mean-Environment-Device
Rti	Rti	Real Time	In computing and technology, real-time (or Echtzeit in German) describes systems that process data and provide results without noticeable delay, ensuring that outputs are available within a predetermined time window. [Wikipedia]	Condition-Qualifier
Rtmd	Rtmd	Runtime Manipulation Detection	Detection of SW manipulation during runtime, e.g., using Cipher-Based Message Authentication Code (CMAC)	Condition-Qualifier
Rtrctr	Rtrctr	Retractor	Part of supplement restraint system to protect occupant in case of crash	Mean-Environment-Device
Rule	Rule	Rule		Condition-Qualifier
Run	Run	Run		Action-PhysicalType
Runng	Runng	Running		Condition-Qualifier
Rvs	Rvs	Reverse		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Rvsb	Rvsb	Reversible	This keyword is used to express that something can return to a previous status, e.g. in Cruise Control deactivation: It means in this case that cruise can be activated again in the same driving cycle once a deactivation occurred.	Condition-Qualifier
Rvsg	Rvsg	Reversing		Action-PhysicalType
Rx	Rx	Receive		Action-PhysicalType
Rxn	Rxn	Reception		Condition-Qualifier
Rxr	Rxr	Receiver		Mean-Environment-Device
S	S	Siemens	Unit of measure for conductance	Mean-Environment-Device
Sae	Sae	Society of Automotive Engineers (SAE)	SAE International is a global professional association and standards organization. The scope of its activities beyond automotive engineering and the automotive industry includes aerospace and other transport industries, as well as commercial vehicles including autonomous vehicles such as self-driving cars, trucks, surface vessels, drones, and related technologies.	Condition-Qualifier
Safe	Safe	Safe		Condition-Qualifier
Sail	Sail	Sailing	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). The engine might be shut of.	Condition-Qualifier
Sale	Sale	Sale		Action-PhysicalType
Sample	Sample	Sample		Condition-Qualifier
Sat	Sat	Satellite	For position data obtained from satellite systems	Mean-Environment-Device
Satn	Satn	Saturation		Action-PhysicalType
Save	Save	Save		Action-PhysicalType
Saved	Saved	Saved		Condition-Qualifier
Sca	Sca	Scale		Condition-Qualifier
Scan	Scan	Scan		Action-PhysicalType
Scanr	Scanr	Scanner		Mean-Environment-Device
Scav	Scav	Scavenging	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 scavenging.	Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Scr	Scr	SCR	Selective Catalytic Reduction (System)	Mean-Environment-Device
Scrn	Scrn	Screen		Mean-Environment-Device
Sdl	Sdl	Scheduler		Condition-Qualifier
Seat	Seat	Seat		Mean-Environment-Device
Seatg	Seatg	Seating		Condition-Qualifier
Sec	Sec	Second	Used as "2nd"	Condition-Qualifier
Sec1	Sec	Second	Used as time unit	Mean-Environment-Device
Sector	Sector	Sector		Condition-Qualifier
Secu	Secu	Security		Condition-Qualifier
Seed	Seed	Seed		Condition-Qualifier
Seg	Seg	Segment		Mean-Environment-Device
Segd	Segd	Segmented		Condition-Qualifier
Sel	Sel	Select		Action-PhysicalType
Seld	Seld	Selected		Condition-Qualifier
Self	Self	Self		Condition-Qualifier
Seln	Seln	Selection	Seln is used to assign e.g. the selection of a certain functionality (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	Condition-Qualifier
Sen	Sen	Sensing		Action-PhysicalType
Sent	Sent	SENT	Single Edge Nibble Transmission (Protocol)	Mean-Environment-Device
Seq	Seq	Sequence		Condition-Qualifier
Seql	Seql	Sequential		Condition-Qualifier
Ser	Ser	Serie		Mean-Environment-Device
Serl	Serl	Serial		Condition-Qualifier
Servo	Servo	Servo		Condition-Qualifier
Session	Session	Session		Condition-Qualifier
Set	Set	Set		Action-PhysicalType
Sev	Sev	Severity		Action-PhysicalType
Sfty	Sfty	Safety		Mean-Environment-Device
Shaft	Shaft	Shaft	a shaft is a rotating rod, carrying out a certain task or transmitting a force in a powertrain. Example: outbox gearbox shaft.	Condition-Qualifier
Shd	Shd	Shield		Condition-Qualifier
Shift	Shift	Shift	Used e.g. in up shift (Shift Up) or down shift (ShiftDwn) or gear shift (GearShift) (synonyms: upshift, downshift, gearshift, UpShift, DownShift etc.).	Action-PhysicalType
Shiftr	Shiftr	Shifter		Mean-Environment-Device

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Sho	Sho	Short	short trip	Condition-Qualifier
Shong	Shong	Shortening		Action-PhysicalType
Sht	Sht	Shut	e.g. to shut down; do not introduce a special keyword for the noun "Shutdown" but the content can be expressed using the combination of "Sht" and "Dwn"	Action-PhysicalType
Shttr	Shttr	Shutter		Mean-Environment-Device
Side	Side	Side	This keyword is intended for common consideration of inlet and exhaust side.	Condition-Qualifier
Sig	Sig	Signal		Condition-Qualifier
Sill	Sill	Sill		Mean-Environment-Device
Simd	Simd	Simulated		Condition-Qualifier
Simn	Simn	Simulation		Condition-Qualifier
Simple	Simple	Simple		Condition-Qualifier
Sin	Sin	Sinus		Condition-Qualifier
Size	Size	Size		Condition-Qualifier
Skip	Skip	Skip		Action-PhysicalType
Slave	Slave	Slave		Condition-Qualifier
Sld	Sld	Slide		Action-PhysicalType
Sldg	Sldg	Sliding		Action-PhysicalType
Sleep	Sleep	Sleep		Condition-Qualifier
Slip	Slip	Slip		Action-PhysicalType
Slop	Slop	Slope		Condition-Qualifier
Slow	Slow	Slow		Condition-Qualifier
Small	Small	Small		Condition-Qualifier
Smk	Smk	Smoke		Mean-Environment-Device
Smotng	Smotng	Smoothing		Action-PhysicalType
Smt	Smt	Smart	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.	Condition-Qualifier
Snd	Snd	Send		Action-PhysicalType
Sng	Sng	Single		Condition-Qualifier
Snow	Snow	Snow	for example for snow mode or snow plow, etc.	Condition-Qualifier
Snsr	Snsr	Sensor		Mean-Environment-Device
Snvty	Snvty	Sensitivity		Condition-Qualifier
Soc	Soc	State of Charge (SOC)	Critical aspect, e.g. of battery management systems (BMS), providing insights into the remaining charge of a battery	Condition-Qualifier

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Sofc	Sofc	Solid Oxide Fuel Cell	A Solid Oxide Fuel Cell (SOFC) is a high temperature fuel cell. It is highly resistant regarding carbon.	Mean-Environment-Device
Soft	Soft	Soft		Condition-Qualifier
Soi	Soi	SOI	Start of Injection. Unit must be angle	Condition-Qualifier
Soln	Soln	Solenoid		Mean-Environment-Device
Soon	Soon	Soon		Condition-Qualifier
Soot	Soot	Soot	used in the sense of soot or smut	Mean-Environment-Device
Sound	Sound	Sound		Action-PhysicalType
Soundr	Soundr	Sounder		Mean-Environment-Device
Sox	Sox	SOx	Sulphur Oxide	Mean-Environment-Device
Sp	Sp	Setpoint		Condition-Qualifier
Spare	Spare	Spare		Condition-Qualifier
Spc	Spc	Specific	for specific environmental data (stored individually with particular failures of one project).	Condition-Qualifier
Spcl	Spcl	Special		Condition-Qualifier
Spd	Spd	Speed	Speed only for use cases when neither N for rotatory speeds, nor V for translatory speeds are applicable	Action-PhysicalType
Spi	Spi	SPI	Serial Peripheral Interface	Condition-Qualifier
Spkr	Spkr	Speaker	e.g. loudspeaker	Mean-Environment-Device
Split	Split	Split		Condition-Qualifier
Sply	Sply	Supply		Action-PhysicalType
Spo	Spo	Spontaneous	This keyword characterizes a sudden, unexpected occurrence. E.g. a not pre-arranged catalyst regeneration phase.	Condition-Qualifier
Spol	Spol	Spoiler	A device to modify air flow in order to increase fuel efficiency or improve handling in automobiles.	Mean-Environment-Device
Sppl	Sppl	Supplementary		Condition-Qualifier
Sprg	Sprg	Spring		Mean-Environment-Device
Sprk	Sprk	Spark		Action-PhysicalType
Spt	Spt	Sport	Related to the (short- and long term) detection of driver type either an economic/ comfort oriented or a sportive/ power requesting driver can be distinguished.	Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Sq	Sq	Square	the Keyword is used to describe the relationship of a Functional Data to the arithmetic procedure of multiplication of a value with itself.	Condition-Qualifier
Sqd	Sqd	Squared		Condition-Qualifier
Sqrt	Sqrt	Sqrt	square root	Condition-Qualifier
Srad	Srad	Steradian	As a unit of measure for solid angle	Mean-Environment-Device
Src	Src	Source		Condition-Qualifier
Srv	Srv	Service	a service is a processing routine within a certain functionality. This keyword is used to nominate such services.	Condition-Qualifier
Ssm	Ssm	SSM	Stand Still Manager	Mean-Environment-Device
Ssr	Ssr	Solid State Relay	A solid state relay (SSR) is an electronic switching device that switches on or off when an external voltage (AC or DC) is applied across its control terminals. They serve the same function as an electromechanical relay, but solid-state electronics contain no moving parts and have a longer operational lifetime.	Mean-Environment-Device
St	St	State	Used for both, "state" and "status".	Condition-Qualifier
Stab	Stab	Stable		Condition-Qualifier
Stabn	Stabn	Stabilization		Action-PhysicalType
Stabr	Stabr	Stabilizer		Mean-Environment-Device
Staby	Staby	Stability		Condition-Qualifier
Stall	Stall	Stall		Action-PhysicalType
Stallg	Stallg	Stalling		Condition-Qualifier
Stamp	Stamp	Stamp		Action-PhysicalType
Stand	Stand	Stand		Action-PhysicalType
Standg	Standg	Standing		Action-PhysicalType
Stat	Stat	Static		Condition-Qualifier
Stator	Stator	Stator		Mean-Environment-Device
Staty	Staty	Stationary	This keyword is used to describe a situation, where a movable part is at rest or a certain condition does not change	Condition-Qualifier
Stb	Stb	Standby		Condition-Qualifier
Stc	Stc	Statistic		Condition-Qualifier
Stck	Stck	Stack	An orderly pile or heap	Mean-Environment-Device
Std	Std	Standard	e.g. as in standard deviation	Condition-Qualifier
Stdn	Stdn	Standardization		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Steer	Steer	Steering	This keyword is used to express the steering of a car.	Mean-Environment-Device
Step	Step	Step		Condition-Qualifier
Stfn	Stfn	Stiffness	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)	Action-PhysicalType
Stg	Stg	Stage	Examples: Power Stage / Powerstage	Mean-Environment-Device
Stgy	Stgy	Strategy		Condition-Qualifier
Sti	Sti	Stimulation	The stimulation describes the inputs for testing of functions.	Condition-Qualifier
Still	Still	Still		Condition-Qualifier
Stk	Stk	Stroke		Condition-Qualifier
Stn	Stn	Station	Equipment or place used usually for performing a particular job, e.g. charging station, railway station	Mean-Environment-Device
Stoi	Stoi	Stoichiometric		Condition-Qualifier
Stop	Stop	Stop		Action-PhysicalType
Store	Store	Store		Action-PhysicalType
Storg	Storg	Storage		Action-PhysicalType
Strat	Strat	Stratified	e. g. used in stratified injection	Condition-Qualifier
Strike	Strike	Strike		Action-PhysicalType
Strt	Strt	Start		Action-PhysicalType
Strtd	Strtd	Started		Condition-Qualifier
Strtg	Strtg	Starting		Condition-Qualifier
Strtr	Strtr	Starter		Mean-Environment-Device
Struct	Struct	Structure		Condition-Qualifier
Sts	Sts	Status		Condition-Qualifier
Stuck	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.	Condition-Qualifier
Su	Su	Sulphur		Mean-Environment-Device
Sub	Sub	Substitute		Condition-Qualifier
Subt	Subt	Subtractive		Condition-Qualifier
Subtyp	Subtyp	Subtype		Condition-Qualifier
Suctn	Suctn	Suction		Action-PhysicalType
Sum	Sum	Sum		Condition-Qualifier
Sun	Sun	Sun		Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Sup	Sup	Super	example: super charger	Preposition
Supp	Supp	Suppress		Action-PhysicalType
Suppsn	Suppsn	Superposition		Action-PhysicalType
Supr	Supr	Superior		Condition-Qualifier
Surf	Surf	Surface	The exterior or upper boundary of an object, fluid or body.	Mean-Environment-Device
Surge	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)	Condition-Qualifier
Surrndgs	Surrndgs	Surroundings		Mean-Environment-Device
Susp	Susp	Suspension		Mean-Environment-Device
Suspc	Suspc	Suspicion		Condition-Qualifier
Suv	Suv	SUV	Sport Utility Vehicle	Mean-Environment-Device
Sw	Sw	Software		Mean-Environment-Device
Swil	Swil	Switchable		Condition-Qualifier
Swirl	Swirl	Swirl		Mean-Environment-Device
Switzerland	Switzerland	Switzerland		Condition-Qualifier
Swt	Swt	Switch		Mean-Environment-Device
Sym	Sym	Symptom		Condition-Qualifier
Symc	Symc	Symmetrical		Condition-Qualifier
Symtry	Symtry	Symmetry		Condition-Qualifier
Sync	Sync	Synchronize		Action-PhysicalType
Syncd	Syncd	Synchronized		Condition-Qualifier
Syncn	Syncn	Synchronization		Condition-Qualifier
Sys	Sys	System		Mean-Environment-Device
T	T	Temperature		Action-PhysicalType
Tacho	Tacho	Tachometer	Tachometer or Speedometer. A component displaying the current speed of the vehicle	Mean-Environment-Device
Tachog	Tachog	Tachograph	Component recording or registering the values of the tachometer or speedometer	Mean-Environment-Device
Taiwan	Taiwan	Taiwan		Condition-Qualifier
Tank	Tank	Tank		Mean-Environment-Device
Tar	Tar	Target		Condition-Qualifier
Tau	Tau	Tau	Time constant of a control system (P, I, D).	Condition-Qualifier
Tbl	Tbl	Table		Condition-Qualifier
Tcs	Tcs	TCS	Traction Control System	Mean-Environment-Device
Tdc	Tdc	TDC	Top Dead Center	Condition-Qualifier
Telgrm	Telgrm	Telegram		Mean-Environment-Device
Telltl	Telltl	Telltale		Mean-Environment-Device
Telm	Telm	Telematics		Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Tensnr	Tensnr	Tensioner		Mean-Environment-Device
Term	Term	Term		Condition-Qualifier
Terminal	Terminal	Terminal		Mean-Environment-Device
Test	Test	Test		Condition-Qualifier
Tgtnss	Tgtnss	Tightness		Action-PhysicalType
Th	Th	Thermostat		Mean-Environment-Device
Thailand	Thailand	Thailand		Condition-Qualifier
Thd	Thd	Threshold		Condition-Qualifier
Theo	Theo	Theoretical		Condition-Qualifier
Therm	Therm	Thermal		Condition-Qualifier
Thermo	Thermo	Thermo		Condition-Qualifier
Thorax	Thorax	Thorax	thorax of human body	Mean-Environment-Device
Thr	Thr	Throttle		Mean-Environment-Device
Thrd	Thrd	Third		Condition-Qualifier
Ti	Ti	Time	Time, duration	Action-PhysicalType
Tilt	Tilt	Tilt		Action-PhysicalType
Tintg	Tintg	Tinting	Action of changing the color of an object	Condition-Qualifier
Tip	Tip	Tip		Condition-Qualifier
Tire	Tire	Tire		Mean-Environment-Device
Tit	Tit	Titanium		Mean-Environment-Device
Tmp	Tmp	Temporary		Condition-Qualifier
Tmr	Tmr	Timer	this keyword is used to express a timer. A timer is counter for a defined time span.	Condition-Qualifier
Tn	Tn	Tn	time constant for discrete control structures. This keyword is used in control engineering context as time constant for discrete control structures	Condition-Qualifier
To	To	To	toward something,.....	Preposition
Tog	Tog	Toggle		Condition-Qualifier
Tolr	Tolr	Tolerance		Action-PhysicalType
Tooth	Tooth	Tooth		Condition-Qualifier
Top	Top	Top		Mean-Environment-Device
Tors	Tors	Torsion		Condition-Qualifier
Tot	Tot	Total		Condition-Qualifier
Touch	Touch	Touch	To cause to be briefly in contact or conjunction with something, e.g. soft-touch (soft landing)	Action-PhysicalType
Touchd	Touchd	Touched		Condition-Qualifier
Tout	Tout	Tout	time out	Condition-Qualifier
Tow	Tow	Tow		Action-PhysicalType
Tp	Tp	TP	Transport Protocol	Mean-Environment-Device
Tq	Tq	Torque		Action-PhysicalType
Tr	Tr	Trunk		Mean-Environment-Device

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Short Name	Abbreviation	Long Name	Description	Classification
Tra	Tra	Transient		Condition-Qualifier
Trac	Trac	Traction		Action-PhysicalType
Tran	Tran	Transition		Condition-Qualifier
Transpt	Transpt	Transport	e.g. to indicate a specific car/ ecu mode (transport mode)	Condition-Qualifier
Trap	Trap	Trap		Action-PhysicalType
Trapg	Trapg	Trapping	In case of scavenging 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 efficiency	Condition-Qualifier
Trb	Trb	Turbine	To describe a turbine (turbine wheel) in general, e.g. in a hydraulic torque converter or in a turbocharger	Mean-Environment-Device
Trbl	Trbl	Turbulence	Flow regime characterized by chaotic stochastic property changes	Condition-Qualifier
Trbo	Trbo	Turbo		Mean-Environment-Device
Trck	Trck	Tracking, Track	Awareness of a fact, progression, or condition	Condition-Qualifier
Trcv	Trcv	Transceiver		Mean-Environment-Device
Treat	Treat	Treatment		Condition-Qualifier
Trf	Trf	Transfer		Condition-Qualifier
Trig	Trig	Trigger		Condition-Qualifier
Trip	Trip	Trip		Condition-Qualifier
Trlr	Trlr	Trailer	a wheeled but not motorized vehicle which can be pulled by a motorized vehicle	Mean-Environment-Device
Tro	Tro	Trouble		Condition-Qualifier
Trpz	Trpz	Trapezoid, Trapezium	In geometry, a trapezoid is a quadrilateral that has at least one pair of parallel sides.	Condition-Qualifier
Trsm	Trsm	Transmission	In a mechanical context	Mean-Environment-Device
Truck	Truck	Truck		Mean-Environment-Device
Trv	Trv	Transversal	transversal in opposite to longitudinal. e.g. used for acceleration	Condition-Qualifier
Trvl	Trvl	Travel		Action-PhysicalType
Trvld	Trvld	Travelled		Condition-Qualifier
Tube	Tube	Tube	the keyword TUBE expresses any kind of a pipe, for instance the exhaust .	Condition-Qualifier
Tumb	Tumb	Tumble		Condition-Qualifier
Tun	Tun	Tuning		Condition-Qualifier
Turn	Turn	Turn		Action-PhysicalType
Twli	Twli	Twilight		Mean-Environment-Device
Tx	Tx	Transmit	In a communication protocol context	Action-PhysicalType

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Short Name	Abbreviation	Long Name	Description	Classification
Txt	Txt	Text		Condition-Qualifier
Typ	Typ	Type		Condition-Qualifier
U	U	Voltage		Action-PhysicalType
Udp	Udp	UDP	User Datagram Protocol	Mean-Environment-Device
Uds	Uds	UDS	Unified Diagnostic Services. Unified Diagnostic Services is a standard for Diagnostics according to ISO14229-1	Mean-Environment-Device
Uego	Uego	UEGO	Universal Exhaust Gas Oxygen Sensor	Mean-Environment-Device
Ukwn	Ukwn	Unknown		Condition-Qualifier
Ults	Ults	UltraSound	Ultrasonic, Ultrasound is sound with frequencies greater than 20 kilohertz.	Condition-Qualifier
Undefd	Undefd	Undefined		Condition-Qualifier
Under	Under	Under		Condition-Qualifier
Unfav	Unfav	Unfavourable		Condition-Qualifier
Unique	Unique	Unique		Condition-Qualifier
Unit	Unit	Unit		Condition-Qualifier
Univ	Univ	Universal	Including or covering all or a whole collectively or distributively without limit or exception	Condition-Qualifier
Unlck	Unlck	Unlock		Action-PhysicalType
Unlckd	Unlckd	Unlocked		Condition-Qualifier
Unlimd	Unlim	Unlimited		Condition-Qualifier
Up	Up	Up		Action-PhysicalType
Upd	Upd	Update		Action-PhysicalType
Uppr	Uppr	Upper		Condition-Qualifier
Upw	Upw	Upward		Condition-Qualifier
Urb	Urb	Urban		Condition-Qualifier
Urea	Urea	Urea		Mean-Environment-Device
Urg	Urg	Urgent	e.g. like in urgent or urgency signal	Condition-Qualifier
Us	Us	Up-stream	up-stream or up stream or upstream	Condition-Qualifier
Usa	Usa	USA	United States of America	Condition-Qualifier
Use	Use	Use		Action-PhysicalType
Used	Used	Used		Condition-Qualifier
Usg	Usg	Usage		Condition-Qualifier
Usr	Usr	User		Mean-Environment-Device
V	V	Velocity	Translatory speed, also referred to as speed of translation or translational speed. Value at this instant of time, no direction, measured in m/s, km/h or equivalents. Examples: Veh V = Vehicle speed [km/h]	Action-PhysicalType
Vac	Vac	Vacuum		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Val	Val	Value		Condition-Qualifier
Van	Van	Van		Mean-Environment-Device
Vanity	Vanity	Vanity		Mean-Environment-Device
Vap	Vap	Vapor		Condition-Qualifier
Vari	Vari	Variance		Action-PhysicalType
Vcc	Vcc	Vcc	supply voltage	Action-PhysicalType
Vcos	Vcos	Viscosity	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)	Action-PhysicalType
Vcv	Vcv	VCV	Volume Control Valve, e.g. used in "high pressure pump volume control valve".	Mean-Environment-Device
Vect	Vect	Vector		Condition-Qualifier
Veh	Veh	Vehicle		Mean-Environment-Device
Vent	Vent	Vent		Mean-Environment-Device
Ventn	Ventn	Ventilation		Action-PhysicalType
Vers	Vers	Version		Condition-Qualifier
Vert	Vert	Vertical		Condition-Qualifier
Vietnam	Vietnam	Vietnam		Condition-Qualifier
Vin	Vin	VIN	Vehicle Identification Number. This keyword is used to describe the vehicle identification number. This is certain code which is unique for every vehicle and is used for its identification.	Mean-Environment-Device
Virt	Virt	Virtual		Condition-Qualifier
Vis	Vis	Visual		Condition-Qualifier
Visy	Visy	Visibility		Condition-Qualifier
Vlc	Vlc	VLC	Vehicle Longitudinal Control	Mean-Environment-Device
Vld	Vld	Valid		Condition-Qualifier
Vldt	Vldt	Validate		Action-PhysicalType
Vlv	Vlv	Valve		Condition-Qualifier
Vol	Vol	Volume		Action-PhysicalType
Volmc	Volmc	Volumetric		Condition-Qualifier
Volt	Volt	Volt	As unit of measure for voltage	Mean-Environment-Device
Vrnt	Vrnt	Variant		Condition-Qualifier
Vvt	Vvt	VVT	Variable Valve Timing	Mean-Environment-Device
W	W	Work	Energy	Action-PhysicalType
Wait	Wait	Wait		Action-PhysicalType
Wall	Wall	Wall		Mean-Environment-Device
Warn	Warn	Warning		Condition-Qualifier
Watt	Watt	Watt	As unit of measure for power	Mean-Environment-Device
Way	Way	Way		Condition-Qualifier

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Short Name	Abbreviation	Long Name	Description	Classification
Wdg	Wdg	Watchdog		Mean-Environment-Device
Wear	Wear	Wear		Condition-Qualifier
Wedge	Wedge	Wedge		Mean-Environment-Device
Wet	Wet	Wet	Containing, covered with, or soaked with liquid	Condition-Qualifier
Wght	Wght	Weight		Mean-Environment-Device
Whl	Whl	Wheel		Mean-Environment-Device
Whls	Whls	Wheels		Mean-Environment-Device
Wide	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)	Condition-Qualifier
Width	Width	Width	Used in the sense of width or breadth, e.g. wheel width or wheel breadth	Condition-Qualifier
Win	Win	Window		Mean-Environment-Device
Wind	Wind	Windscreen		Mean-Environment-Device
Wind1	Wind	Wind	wind in the sense of breeze	Mean-Environment-Device
Wipg	Wipg	Wiping		Action-PhysicalType
Wipr	Wipr	Wiper		Mean-Environment-Device
Wire	Wire	Wire	Electrical connection media	Mean-Environment-Device
Wirels	Wirels	Wireless	Used for Wireless connection	Condition-Qualifier
Wish	Wish	Wish		Action-PhysicalType
Wishd	Wishd	Wished		Condition-Qualifier
With	With	With	preposition	Preposition
Within	Within	Within	preposition	Preposition
Wntr	Wntr	Winter		Condition-Qualifier
Wo	Wo	Without	preposition	Preposition
Word	Word	Word		Condition-Qualifier
World	World	World		Condition-Qualifier
Wr	Wr	Write		Action-PhysicalType
Wrg	Wrg	Wrong	is used to express a mismatch which does not have to be treated by error management diagnosis	Condition-Qualifier
Wrm	Wrm	Warm		Condition-Qualifier
Wrpr	Wrpr	Wrapper		Mean-Environment-Device
Wrst	Wrst	Worst		Condition-Qualifier
Wshng	Wshng	Washing		Action-PhysicalType
Wshr	Wshr	Washer		Mean-Environment-Device
Wthr	Wthr	Weather		Condition-Qualifier
Wtr	Wtr	Water		Mean-Environment-Device

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Short Name	*Abbreviation*	*Long Name*	*Description*	*Classification*
Xcp	Xcp	XCP	Universal Measurement and Calibration Protocol XCP / extended universal calibration protocol (ASAM standard)	Mean-Environment-Device
Xpos	Xpos	Xposition	X position	Action-PhysicalType
Yaw	Yaw	Yaw		Action-PhysicalType
Yes	Yes	Yes		Condition-Qualifier
Ypos	Ypos	Yposition	Y position	Action-PhysicalType
Yr	Yr	Year		Mean-Environment-Device

Table A.1: Overview AI Specification Keyword Sets

B Change history of AUTOSAR traceable items

Please note that the lists in this chapter also include traceable items that have been removed from the specification in a later version. These items do not appear as hyperlinks in the document.

B.1 Traceable item history of this document according to AUTOSAR Release R26-11

B.1.1 Added Advisories in R26-11

none

B.1.2 Changed Advisories in R26-11

none

B.1.3 Deleted Advisories in R26-11

none

B.1.4 Added Specification Items in R26-11

none

B.1.5 Changed Specification Items in R26-11

none

B.1.6 Deleted Specification Items in R26-11

none

B.2 Traceable item history of this document according to AUTOSAR Release R25-11

B.2.1 Added Advisories in R25-11

Number	Heading
[advisory_05000]	Avoid usage of underscores at the end of Short Names

Table B.1: Added Advisories in R25-11

B.2.2 Changed Advisories in R25-11

none

B.2.3 Deleted Advisories in R25-11

none

B.2.4 Added Specification Items in R25-11

none

B.2.5 Changed Specification Items in R25-11

none

B.2.6 Deleted Specification Items in R25-11

Number	Heading
[TR_SWNR_00003]	Forbidden usage of underscores in Short Names

Table B.2: Deleted Specification Items in R25-11

B.3 Traceable item history of this document according to AUTOSAR Release R24-11

B.3.1 Added Specification Items in R24-11

none

B.3.2 Changed Specification Items in R24-11

none

B.3.3 Deleted Specification Items in R24-11

none