SIEMENS

Programming Styleguide• 10/2016

Check List for Programming Styleguide for S7-1200/S7-1500

TIA Portal

https://support.industry.siemens.com/cs/ww/de/view/81318674

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1 General Information

Test subject

File name / project / library	Version	Creation date

Developer

Name	
Department	
Phone	

System tester

Name	
Department	
Phone	
Date of test	

2 Check List

In the following check lists, all guidelines are labelled as

- **R**: rule
- **S**: suggestion, recommodation

The Status column is filled in as follows:

- **OK** Everything OK
- **X** Rule/recommendation not observed → Comment in 3.2 Error list
- **N/A** Rule/suggestion not applicable in the test project/library

2.1 Basic rules

Table 2-1

Rule	Description	Status
1.	Block/s without errors after compiling. Possible warnings are checked and evaluated.	
2.	All required PLC data types exist in the project/library.	

2.2 General specifications

2.2.1 Specifications and customer requirement

Table 2-2

Rule	Description	Status
3.	R: rule violations are documented in the program code and were discussed.	

2.2.2 Settings in TIA Portal

Table 2-3

Rule	Description	Status
4.	R: the language is always consistent in PLC programming as well as in the HMI (English, German, ...).	
5.	R: the editing and reference language is set to English (United States).	
6.	S: the user interface language used in the TIA Portal is English (United States).	
7.	R: Mnemonic (language setting for programming languages) must be set to “International”.	
8.	R: tab characters are not permitted in the source text. Indentations must be realized with two space characters.	

2.2.3 Identifier

Table 2-4

Rule	Description	Status
9.	R: the identifiers are all composed in English language.	
10.	R: it is not permitted to use identifiers with the same name that only differ in upper and lower case.	
11.	R: identifiers are defined in camelCasing notation.	
12.	S: identifiers have a maximal length of 24 characters.	
13.	R: special characters or blanks are not used.	
14.	R: only meaningful identifiers are used.	
15.	S: the uniform abbreviations are used correctly.	
16.	S: only one abbreviation per identifier is used.	

2.3 PLC programming

2.3.1 Program blocks and sources

Table 2-5

Rule	Description	Status
17.	S: only short, functional names are used for blocks.	
18.	R: all identifiers of blocks start with a capital letter.	
19.	R: instances have the prefix ‘inst’ / ‘Inst’.	
20.	S: auto numbering is activated in all blocks.	
21.	S: the line length in the program editor is max. 80 characters long.	
22.	R: no sources (SCL, STL) are used.	
23.	S: SCL is preferably used as programming language.	
24.	R: if possible, multi-instances are always used.	
25.	R: DBs are stored in the load memory in exceptional cases only.	
26.	R: within a block, only local tags are used.	
27.	E: use of global constants is prevented.	
28.	R: important test tags are not defined as temp tags.	
29.	R: all FCs, FBs, have the attribute “Block can be used as know-how protected”.	
30.	S: the program code is sufficiently documented with block and line comments.	
31.	S: only // comments are used.	
32.	R: the template (block header) for the block description is used for all blocks.	
33.	R: Input, Output and InOut tags (formal parameters) have no prefix.	
34.	R: data exchange between blocks is performed exclusively via the block interfaces.	
35.	S: elementary data types are defined correctly as In, Out or InOut (if the value is written within or outside of the block).	
36.	S: many tags are transferred as PLC datatypes.	
37.	R: no STRUCT data types are used.	

Rule	Description	Status
38.	S: structured tags are transferred as InOut.	
39.	S: Output tags are only written once.	

2.3.2 Tag declaration

Table 2-6

Rule	Description	Status
40.	R: the static tags are only called locally.	
41.	R: static tags have the prefix “stat”.	
42.	R: temp tags have the prefix “temp”.	
43.	R: all constants are written in CAPITAL LETTERS. Several words in the name are separated by underscore.	
44.	R: all constants are only used locally.	
45.	S: constants are used for polling values unequal to 0.	
46.	S: the name of an array is always plural.	
47.	S: array indices starts with 0 and end with a constant.	
48.	R: PLC data types have the prefix “type”.	
49.	R: all temp tags are initialized in the program before they are read.	
50.	R: the initialization is performed in the usual representation of the respective data type.	
51.	S: actual parameters of TOs are initialized with -1.0.	

2.3.3 Instructions

Table 2-7

Rule	Description	Status
52.	S: before and after operands, there is a space character.	
53.	S: expressions are in brackets.	
54.	S: for partial conditions a line break is inserted.	
55.	R: condition section and instruction section are separated by a line break.	
56.	S: conditions in instructions are correctly indented.	
57.	R: all CASE instructions have an ELSE branch.	
58.	S: CASE instructions are used instead of several ELSIF branches.	
59.	R: all instructions are correctly indented.	
60.	R: the error codes of called blocks are evaluated.	

2.3.4 Programming according to PLCopen

Table 2-8

Rule	Description	Status
61.	R: for all parameters with standard meaning regarding functionality according to PLCopen V2.0, the respective standard identifiers are used.	
62.	R: all blocks with execute have the Output parameters busy and done.	
63.	R: all blocks with enable have at least the Output parameter valid.	

2.3.5 Error handling and diagnosis

Table 2-9

Rule	Description	Status
64.	R: errors are correctly displayed at the outputs error and status.	
65.	S: at formal parameter status, return codes are output by means of the defined number bands.	
66.	S: in the case of errors, the blocks are stopped and the error code for the first error remains pending until it is acknowledged.	
67.	S: Output status is used for state and error codes of instruction.	
68.	S: Output statusID is used for identification of error source.	
69.	S: Output statusID and offset is used with nested blocks.	
70.	S: the default diagnostic structure is used.	
71.	S: the diagnostic structure is retentive.	

2.3.6 Tables, traces, measurements

Table 2-10

Rule	Description	Status
72.	R: PascalCase notation (first letter in upper case) is used for... • PLC tag tables • watch tables • traces • measurements	

2.3.7 Libraries

Table 2-11

Rule	Description	Status
73.	S: the library identifier starts with an L and has the maximal length of 8 characters.	
74.	R: all elements in the library have the prefix of the library name.	
75.	R: FCs, FB and PLC data types are stored in the library as types.	
76.	R: elements in the library are stored in the folder following a meaningful system.	
77.	R: the version system of the library follows the programming styleguide.	
78.	S: HMI OS templates are used.	

3 Test Results

3.1 Notes

The **system tester** notes all violated rules/recommendations in the column explanations and the related rule number in column rule.

The **developer** writes in the correction column, how a note was edited.

Verification of test result by the developer	

3.2 Error list

Table 3-1

Rule	Explanation (system tester)	Correction (developer)

3.2 Error list

Rule	Explanation (system tester)	Correction (developer)

4 Links & Literature

Table 1-2

	Topic	Title
\1\	Siemens Industry Online Support	https://support.industry.siemens.com
\2\	Download page of the entry	https://support.industry.siemens.com/cs/ww/de/view/81318674
\3\	Programming Guideline for S7-1200/1500	https://support.industry.siemens.com/cs/ww/en/view/81318674

5 History

Table 5-1

Version	Date	Modifications
V1.1	06/2015	First version
V1.2	10/2016	Adjustments and corrections