



24.04

Build b1530521

Tool Certification Kit Overview



This document overviews and provides links to the component tool certification data presented within the QA MISRA 24.04 Tool Certification Kit. This Tool Certification Kit is applicable to QA MISRA version 24.04 only.

This document is not intended to be used as a replacement for the QA MISRA Manuals and other documentation supplied with QA MISRA.

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Introduction

This document is an overview of the QA-MISRA Tool Certification Kit content.

QA Systems believes that the QA-MISRA 24.04 Tool Certification Kit provides all the necessary data required for Software Tool certification defined the following safety standards (see table below).

The QA-MISRA 24.04 Product has been independently classified and certified by SGS-TÜV GmbH, an independent third-party certification body for functional safety, accredited by Deutsche Akkreditierungsstelle GmbH (DAKKS) [accreditation ID: D-PL-12088-01-01] as follows:

Reference	Title	Level
IEC 61508:2010	Functional safety of electrical/electronic/programmable electronic safety related systems	Up to SIL 4
EN 50657:2017	Railway Applications – Rolling Stock Applications – Software on Board Rolling Stock	Up to SW-SIL 4
ISO 26262:2018	Road Vehicles – Functional Safety	Up to ASIL D
EN 50128:2011	Railway applications – Communications, signalling and processing systems – Software for railway control and protection systems	Up to SW-SIL 4
IEC 62304:2015	Medical device software – Software lifecycle processes	Up to SW Safety Class C
IEC 60880:2006	Nuclear power plants – instrumentation and control systems important to safety – Software aspects for computer based systems performing category A functions	Category A

QA-MISRA Tool Description

QA-MISRA reports violations of statically checkable rules from coding guidelines such as MISRA C/C++, SEI CERT C/C++, etc. that can be automatically checked. Moreover, it reports violations of user-defined thresholds for code metrics as well as checks of style rules and generates call-graph and C++ class visualizations.

The tool takes a list of original non-preprocessed C/C++ source files and parses the source code to translate it into an intermediate representation on which it performs the checks for rule violations. Further checks are performed on the intermediate representation of the preprocessed code.

QA-MISRA outputs a list of violations of the checked coding rules. Each violation is reported together with information about the violated rule and the source code location where it occurs. The tool

stops with an error if indispensable data is missing or if source files cannot be correctly parsed and translated.

Key Benefits:

- Fast C/C++ coding standards compliance analysis
- Multiple coding standards checks in single tool
- Reduces effort wasted on assessing false positives
- Code quality insight metrics & visualizations
- Flexible permanent user licensing
- Certified for safety standards
- Improves code complexity, maintainability, portability
- Contextual rule explanations
- Configurable compliance rulesets & reports
- Full traceability of issues
- Robust finding classification
- Interactive result exploration
- Tracking and visualization of project progress and analysis revisions
- Full batch mode execution
- 3rd party integrations

QA-MISRA features a client-server model that decouples the user interface from the analysis process. The product is comprised of:

- QA-MISRA Server
- QA-MISRA Server Controller
- QA-MISRA Client

The QA-MISRA Client provides the functionality to define and modify analysis settings. It can be run in batch mode as well as with a graphical user interface in which results of the static analysers can be interactively explored.

Analysis execution is handled by the QA-MISRA Server that allows the sharing of analysis results between different users. The QA-MISRA Server can be started via the QA-MISRA Server Controller which also provides an interface for configuring the server settings.

Analysis projects are created by the Client but stored on the Server.

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QA-MISRA Tool Certification Kit Content

The QA-MISRA Tool Certification Kit is available for version 24.04 of QA-MISRA for each of the standards listed in the [Introduction](#) and contains:

1. The **SGS-TÜV certificate** for QA MISRA 24.04
2. The **SGS-TÜV Certification Report** for Functional Safety for QA-MISRA 24.04
3. This QA-MISRA 24.04 **Safety Manual**
4. The QA-MISRA 24.04 **Qualification Support Kit Datasheet**
5. The QA-MISRA 24.04 **Compliance Matrices**

1. SGS-TÜV Certificate for QA-MISRA 24.04

Certification of QA-MISRA was undertaken by SGS-TÜV GmbH, and the issued **certificate for QA-MISRA 24.04 (FS/71/220/24/1396)** is below. The certification status is also available to view on-line at the SGS-TÜV Certification Database by entering the certificate number at <https://www.sgs-tuev-saar.com/en/certification-database.html>

		
CERTIFICATE NO FS/71/220/24/1396 PAGE 1/1 ZERTIFIKAT NR. SEITE(N)		
LICENCE HOLDER & MANUFACTURER GENEHMIGUNGSGRÄBER & HERSTELLER AbsInt Angewandte Informatik GmbH Science Park 1 66123 Saarbrücken Germany		
PROJECT NO-ID PROJEKT-NR./ID TOZJ-AU02	LICENSED TEST MARK GENEHMIGTES PRÜFZEICHEN 	
Certified product(s) Zertifizierte(n) Produkt(e) QA-MISRA Release 24.04, Build 15305216		
Tested according to Geprüft nach IEC 61508:2010; clause 7.4.4 ISO 26262-6:2018 EN 50128:2011 IEC 60880:2006 IEC 62304:2015 EN 50657:2017		
Technical Data and Parameter Technische Daten und Parameter Suitable for verification of safety-related software acc. to: - ISO 26262 up to ASIL D - IEC 61508 up to SIL 4, class T2 tool - EN 50128 up to SIL 4, class T2 tool - IEC 62304 up to SW safety Class C - IEC 60880 for category A functions - EN 50657 up to SIL 4, class T2 tool		
The certificate is based on voluntary tests. The compliance of the certified product against the requirements of above listed functional safety standards was evaluated. Any changes to the design, components or processing may require repetition of some parts of the certification to retest the certification. All applicable requirements of the testing and certification regulations of SGS-TÜV Saar GmbH have to be complied, see www.sgs-tuev-saar.com/tm-cm and www.sgs-tuev-saar.com/sgs-cm.		
Certification Body for Functional Safety and Cyber Security SGS-TÜV Saar GmbH Zertifizierungsstelle für Funktionale Sicherheit und Cyber Sicherheit SGS-TÜV Saar GmbH 		Munich, Mai 22, 2024  Gudrun Neumann SGS-TÜV Saar GmbH, Hohenmaate, 56, 61119 München, Deutschland / Germany Website: www.sgs-tuev-saar.com E-Mail: ts@sgs.com

2. SGS-TÜV Certification Report for QA-MISRA 24.04

The [SGS-TÜV Certification Report N° T0ZJ0005](#) for QA-MISRA 24.04 (Build b1530521) contains the classification and evaluation results of the tool certification undertaken by SGS-TÜV GmbH for QA-MISRA 24.04 according to the following software safety standards:

- > ISO 26262:2018
- > IEC 61508:2010
- > EN 50128:2011
- > IEC 62304:2015
- > IEC 60880:2006
- > EN 50657:2017

It provides evaluation details and states that no deviations were found during the assessment of QA-MISRA regarding the requirements of the aforementioned software safety standards.

3. QA-MISRA 24.04 Safety Manual

The QA-MISRA 24.04 [Safety Manual](#) discusses the relationship between the tool and the software safety standards listed in the [Introduction](#). It also details the tool Use Cases and Workflow.

Section 1.1.4 of the QA-MISRA Safety Manual explains the relationship between QA-MISRA and the Absint tool Astrée and its RuleChecker component, and that except for the naming, QA-MISRA and RuleChecker are technically identical.

Section 3 of the QA-MISRA Safety Manual provides guidance on Tool Qualification for QA-MISRA according to the safety standards listed in the [Introduction](#). Where a tool user wishes to use the QA-MISRA Tool Certification Kit, this kit and following the Use Cases and Workflow within the Safety Manual are sufficient for users to demonstrate compliance with the tool suitability for these software safety standards

QA-MISRA tool users may also wish to use the QA-MISRA Qualification Support Kit (QSK) to comply with tool qualification requirements of the software safety standards listed in the [Introduction](#), or to qualify the tool for other standards such as DO-178C/DO330. For example, for the ISO 26262 standard, the chapter 11.4.6 covering Software Tool Qualification defines several methods of qualification according to the tool Confidence Level. The Safety Manual reports that methods 1b and 1d are covered by the Tool Life Cycle Data reports in the QA-MISRA Qualification Support Kit (QSK) and method 1c is covered by the requirements-based test suite in the QA-MISRA QSK.

The QSK content is described in the QA MISRA 24.04 [Qualification Support Kit Datasheet](#).

4. QA MISRA 24.04 Qualification Support Kit Datasheet

The QA-MISRA Qualification Support Kit (QSK) has been designed to facilitate tool qualification of QA-MISRA. It aims at demonstrating the correct functioning of the tool in the operational context of the tool user with respect to the relevant tool-influencing parameters like options, code constructs, etc. The QA-MISRA QSK automatically executes a full tool qualification verification test suite on the installed tool configuration and generates the necessary reports for tool qualification.

The QA-MISRA QSK is available under a Non-Disclosure Agreement from QA Systems and for an additional fee.

The QA-MISRA 24.04 [QSK Datasheet](#) provides an overview of the comprised elements:

- specification of the tool functional requirements,
- test cases and test case procedures,
- requirements trace data (traceability matrix),
- test suite and execution framework and tool lifecycle data.

5. QA-MISRA 24.04 Compliance Matrices

Three documents are contained in the QA-MISRA Tool Certification Kit which together provide full compliance matrices for all the latest versions of the relevant coding guidelines standard and classify the degree of support provided by QA-MISRA 24.04 for each individual rule.

The coding guideline standards covered by the QA-MISRA Compliance Matrices in the Certification Kit are:

- > [MISRA C++:2023](#)
- > [AUTOSAR C++](#)
- > [MISRA C:2023](#)
- > [CWE \(Common Weakness Enumeration\)](#)
- > [SEI CERT C/C++:2016](#)
- > [JSF AV C++](#)
- > [ISO/IEC TS 17961:2013](#)
- > [HIS Metrics](#)

All versions of the coding guidelines supported by QA-MISRA 24.04 are contained in the a3c Compliance document installed with the product.

- END OF DOCUMENT -