Arm Safety Ready Portfolio

Safety Ready

Functional safety is a system's ability to detect, diagnose and safely mitigate the occurrence of a fault, preventing harm to people and the environment. It is key for developing safety-critical applications in markets such as automotive, industrial and robotics. Arm offer products, tools, platforms and software to enable functional safety, thereby accelerating time to market for deploying these safety-critical applications.

Safety packages contain documentation, artifacts or evidence and specific safety claims and certificates that Arm hold for an individual IP, providing partners with information to support their safety argumentation and as evidence for safety assessors.

Development tools include Software Test Libraries (STL), Functional Safety Run-Time System (FuSa RTS) and Arm Compiler for Embedded FuSa.

Components of Arm Safety Packages

Safety Manual

This provides an overview of the product, the specification of any fault detection and reporting mechanisms included with the IP, assumptions of use and the results of assessment activities.

Safety Analysis Reports

As a minimum, the safety package includes a detailed Failure Mode, Effects, and Diagnostic Analysis (FMEDA) for the IP.

The FMEDA provides a clear view of the failure modes for the different IP subblocks, their effects at the IP boundaries, and the coverage achieved by any safety mechanisms included with the IP. A Dependent Failure Analysis (DFA) is provided where applicable.

This document analyses the source of common cause failures in the IP and the mitigation that either Arm or the partner should implement to address identified common cause failures.

Development Interface Report (DIR)

Arm delivers a standardized agreement using the DIR with partners. The DIR clarifies the ISO 26262 activities that Arm takes responsibility for, and provides a full view of the standard activities, work products, and mapping.

Arm provides this standardized DIR instead of a specific Development Interface Agreement (DIA) for distributed development in accordance with ISO 26262:2018.

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Levels of Functional Safety Support

Arm defines two levels of functional safety support to our partners:

Standard Level

Evaluation enablement product, ISO 26262 Part 8 Clause 13 or Route 3s IEC 61508 Part 3

- Applicable to some IP developed before 2018, see below table
- Safety package is provided with all its components
- No independent assessment or certification is provided

Extended Level

SEooC with safety claims

- Applicable to most and all future Arm AE products, see below table
- Safety package is provided with all its components
- ASIL and SIL claims on the avoidance of systematic faults and hardware metrics depending on the product
- Independently assessed and certified by a third-party assessor

Arm Safety Ready Portfolio Comparison Table

Arm IP	Level of Functional Safety Support	Software Test Libraries	FuSa RTS	Arm Compiler for Embedded FuSa	Available in Arm Flexible Access
Cortex-A CPUs					
Cortex-A78AE	Extended	In development		✓	
Cortex-A78C	Extended			✓	
Cortex-A78	Extended			✓	
Cortex-A76AE	Extended			✓	
Cortex-A76	Extended			✓	
Cortex-A75	Standard			✓	
Cortex-A72	Standard	Available in 2022		✓	
Cortex-A65AE	Extended			✓	

Arm IP	Level of Functional Safety Support	Software Test Libraries	FuSa RTS	Arm Compiler for Embedded FuSa	Available in Arm Flexible Access
Cortex-A CPUs					
Cortex-A65	Extended			✓	
Cortex-A57	Standard			✓	
Cortex-A55	Extended	Available in 2022		✓	
Cortex-A53	Standard	✓		✓	✓
Cortex-A35	Standard			✓	✓
Cortex-A34	Standard			✓	✓
Cortex-A32	Standard			✓	✓
Cortex-R CPUs					
Cortex-R52+	Extended	Available in 2022		✓	
Cortex-R52	Extended	✓		✓	✓
Cortex-R5	Extended	✓		✓	✓
Cortex-M CPUs					
Cortex-M85	Extended	Available in 2023			
Cortex-M55	Extended	Available in 2023		✓	✓
Cortex-M33	Extended	✓		✓	✓
Cortex-M23	Extended			✓	✓
Cortex-M7	Extended		✓	✓	✓
Cortex-M4	Standard	✓	✓	✓	✓
Cortex-M3	Standard	✓	✓	✓	✓
Cortex-M0+	Standard	✓	✓	✓	✓

Arm IP	Level of Functional Safety Support	Software Test Libraries	FuSa RTS	Arm Compiler for Embedded FuSa	Available in Arm Flexible Access
Mali GPUs					
Mali-G78AE	Extended	N/A			
Mali ISPs					
Mali-C71AE	Extended	N/A			
System IP					
GIC-600AE	Extended	N/A			
MMU-600AE	Extended	N/A			
CMN-600AE	Extended	N/A			

For more information, contact your Arm account manager today or explore the Arm Safety Ready portfolio in more detail here: https://developer.arm.com/solutions/automotive/ip-for-automotive/safety-packages.