

# ISO 26262-5:2018-12 (E)

## Road vehicles - Functional safety - Part 5: Product development at the hardware level

---

Contents	Page
Foreword .....	v
Introduction .....	vii
1 Scope .....	1
2 Normative references .....	2
3 Terms and definitions .....	2
4 Requirements for compliance .....	2
4.1 Purpose .....	2
4.2 General requirements .....	2
4.3 Interpretations of tables .....	3
4.4 ASIL-dependent requirements and recommendations .....	3
4.5 Adaptation for motorcycles .....	3
4.6 Adaptation for trucks, buses, trailers and semi-trailers .....	4
5 General topics for the product development at the hardware level .....	4
5.1 Objectives .....	4
5.2 General .....	4
6 Specification of hardware safety requirements .....	5
6.1 Objectives .....	5
6.2 General .....	6
6.3 Inputs to this clause .....	6
6.3.1 Prerequisites .....	6
6.3.2 Further supporting information .....	6
6.4 Requirements and recommendations .....	6
6.5 Work products .....	8
7 Hardware design .....	8
7.1 Objectives .....	8
7.2 General .....	9
7.3 Inputs to this clause .....	9
7.3.1 Prerequisites .....	9
7.3.2 Further supporting information .....	9
7.4 Requirements and recommendations .....	9
7.4.1 Hardware architectural design .....	9
7.4.2 Hardware detailed design .....	10
7.4.3 Safety analyses .....	11
7.4.4 Verification of hardware design .....	13
7.4.5 Production, operation, service and decommissioning .....	14
7.5 Work products .....	14
8 Evaluation of the hardware architectural metrics .....	14
8.1 Objectives .....	14
8.2 General .....	15
8.3 Inputs of this clause .....	16
8.3.1 Prerequisites .....	16
8.3.2 Further supporting information .....	16
8.4 Requirements and recommendations .....	16

<b>8.5</b>	<b>Work products .....</b>	<b>20</b>
<b>9</b>	<b>Evaluation of safety goal violations due to random hardware failures .....</b>	<b>20</b>
9.1	Objectives .....	20
9.2	General .....	20
9.3	Inputs to this clause .....	21
9.3.1	Prerequisites .....	21
9.3.2	Further supporting information .....	21
9.4	Requirements and recommendations .....	21
9.4.1	General .....	21
9.4.2	Evaluation of Probabilistic Metric for random Hardware Failures (PMHF) .....	22
9.4.3	Evaluation of Each Cause of safety goal violation (EEC) .....	25
9.4.4	Verification review .....	29
9.5	Work products .....	30
10	Hardware integration and verification .....	30
10.1	Objectives .....	30
10.2	General .....	30
10.3	Inputs of this clause .....	30
10.3.1	Prerequisites .....	30
10.3.2	Further supporting information .....	30
10.4	Requirements and recommendations .....	30
10.5	Work products .....	32
<b>Annex A (informative)</b>	<b>Overview of and workflow of product development at the hardware level</b>	<b>33</b>
<b>Annex B (informative)</b>	<b>Failure mode classification of a hardware element .....</b>	<b>36</b>
<b>Annex C (normative)</b>	<b>Hardware architectural metrics .....</b>	<b>38</b>
<b>Annex D (informative)</b>	<b>Evaluation of the diagnostic coverage .....</b>	<b>44</b>
<b>Annex E (informative)</b>	<b>Example calculation of hardware architectural metrics: "single-point fault metric" and "latent-fault metric" .....</b>	<b>66</b>
<b>Annex F (informative)</b>	<b>Example for rationale that objectives of Clause 9 in accordance with 4.2 are met .....</b>	<b>75</b>
<b>Annex G (informative)</b>	<b>Example of a PMHF budget assignment for an item consisting of two systems .....</b>	<b>82</b>
<b>Annex H (informative)</b>	<b>Example of latent fault handling .....</b>	<b>86</b>
<b>Bibliography</b>		<b>89</b>