

ISO 5474-3:2024-06 (E)

Electrically propelled road vehicles - Functional and safety requirements for power transfer between vehicle and external electric circuit - Part 3: DC power transfer

Contents

Page

Foreword.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	2
4 System architecture.....	3
5 Environmental and operational conditions.....	3
6 Safety requirements.....	3
6.1 General.....	3
6.2 Protection of persons against electric shock.....	4
6.2.1 General.....	4
6.2.2 Compatibility with external safety devices.....	4
6.2.3 Insulation resistance.....	5
6.2.4 Touch current.....	5
6.2.5 Insulation coordination.....	6
6.2.6 Protective conductor.....	6
6.2.7 Basic protection when connected to an external electric circuit.....	7
6.2.8 Requirements for unmated vehicle contacts.....	7
6.2.9 Withstand capability during insulation resistance check before charging.....	7
6.2.10 Monitoring continuity of protective conductor.....	7
6.2.11 Insulation resistance monitoring system.....	7
6.3 Protection against thermal incident.....	8
6.3.1 Requirements for normal operation.....	8
6.3.2 Overcurrent protection.....	8
6.3.3 Residual energy after disconnection related to thermal incident.....	9
6.3.4 Arc protection.....	9
6.3.5 Voltage withstand capability.....	10
6.3.6 Voltage class B contact temperature.....	10
6.4 Vehicle movement.....	11
6.5 AC or DC electric power at the same contacts.....	11
7 Electromagnetic compatibility (EMC).....	12
8 Protection in case of unintended power transfer.....	12
9 Functional requirements.....	12
9.1 General.....	12
9.2 Disconnection device.....	12
9.3 Control pilot functions.....	13
9.4 Compatibility with external insulation monitoring.....	13
9.5 Specific requirements for the vehicle inlet.....	13
9.6 Control of the latching device of the vehicle coupler.....	13
10 Additional requirements for reverse power transfer.....	13
11 Owner's manual and marking.....	14
12 Test procedure.....	14
12.1 General.....	14
12.2 Resistance of protective conductor.....	14
12.3 Insulation resistance.....	14

12.4	Withstand voltage test	14
12.4.1	Withstand voltage test between voltage class B contacts and electric chassis / PE.....	14
12.4.2	Differential mode overvoltage withstand test for vehicle power supply circuit.....	14
12.4.3	Withstand voltage test – reversed voltage during insulation resistance check.....	15
12.5	Touch current.....	16
12.6	Voltage class B contact over temperature.....	17
12.7	Monitoring continuity of protective conductor test	19
Annex A (informative) Y capacitance measurement		21
Annex B (informative) Outlook on megawatt charging applications		25
Annex C (informative) Examples for conformance tests of voltage class A protective provisions for fault protection		29
Bibliography		33