ISO 6469-3:2021-10 (E)

Electrically propelled road vehicles - Safety specifications - Part 3: Electrical safety

Contents

Page

Foreword ..... **v**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Voltage classes **6**

5 General requirements **6**
5.1 Environmental and operational requirements 6
5.2 Marking 7
5.2.1 Marking of voltage class B electric components 7
5.2.2 Marking of voltage class B wiring 7

6 Requirements for protection of persons against electric shock **7**
6.1 General requirements 7
6.1.1 General requirements for connected sections of a circuit 7
6.1.2 General requirements for voltage class B1 7
6.1.3 General requirements for voltage class B2 8
6.2 Basic protection 8
6.3 Fault protection and additional measures 8
6.3.1 Equipotential bonding 8
6.3.2 Isolation resistance 9
6.3.3 Provisions for capacitive coupling and capacitive discharge 10
6.3.4 De-energization 11
6.3.5 Alternative protection measures 11
6.4 General requirements for protective provisions 12
6.4.1 General 12
6.4.2 Requirements for insulation 12
6.4.3 Requirements for protective barriers and protective enclosures 12
6.4.4 Requirements for connectors 13
6.4.5 Insulation coordination 13
6.5 Alternative approach for protection against electric shock 13

7 Protection against thermal incidents **13**
7.1 Overload protection 13
7.2 Short-circuit protection 13

8 Requirements for vehicle power supply circuit **14**

9 Owner's manual **14**

10 Test procedures **14**
10.1 General 14
10.2 Continuity test for equipotential bonding 14
10.3 Isolation resistance measurements for voltage class B2 electric circuits 14
10.3.1 Preconditioning and conditioning 14
10.3.2 Isolation resistance measurements of the balance of electric circuits 15
10.3.3 Isolation resistance measurement of the voltage class B2 electric power sources 15
10.3.4 Isolation resistance measurement of entire electric circuits 18
10.4 Test for isolation resistance monitoring system 18
10.5 Touch current 18
10.6 Withstand voltage test 19
10.6.1 General 19

10.6.2 Preconditioning and conditioning 19
10.6.3 Test procedure 19
10.6.4 Test criteria 20
10.7 Withstand voltage test for electric power sources which are not de-energized 20
10.7.1 General 20
10.7.2 Preconditioning and conditioning 21
10.7.3 Test 21
10.7.4 Test criteria 23
Bibliography **24**