

# DIN EN ISO 18246:2017-12 (E)

## Electrically propelled mopeds and motorcycles - Safety requirements for conductive connection to an external electric power supply (ISO 18246:2015)

---

| <b>Contents</b>         |   | Page      |
|-------------------------|---|-----------|
| European foreword ..... |   | 4         |
| Foreword .....          |   | 5         |
| Introduction .....      |   | 6         |
| <b>1</b>                | <b>Scope</b> .....  | <b>7</b>  |
| <b>2</b>                | <b>Normative references</b> .....   | <b>7</b>  |
| <b>3</b>                | <b>Terms and definitions</b> .....  | <b>7</b>  |
| <b>4</b>                | <b>Environmental and operational conditions</b> .....   | <b>12</b> |
| <b>5</b>                | <b>General requirements</b> .....   | <b>12</b> |
| <b>6</b>                | <b>Connection between the plug or vehicle couplers and RESS of the vehicle</b> .....                              | <b>12</b> |
| 6.1                     | General connection .....  | 12        |
| 6.1.1                   | Connections among charger, RESS, and vehicle .....  | 12        |
| 6.1.2                   | General requirements for connection .....   | 13        |
| 6.1.3                   | Requirements for connection or no connection to the earth .....   | 14        |
| 6.1.4                   | Service life of the vehicle inlet .....   | 20        |
| 6.1.5                   | Vehicle behaviour during charging .....   | 20        |
| 6.2                     | A.C. connection .....   | 21        |
| 6.2.1                   | Requirements for the connection to a.c. supply network (mains) .....  | 21        |
| 6.2.2                   | Requirements of connection and/or disconnection process in a.c. contacts .....                                    | 21        |
| 6.2.3                   | Protection from unintended voltage for a.c. connection .....  | 21        |
| 6.3                     | D.C. connection .....   | 21        |
| 6.3.1                   | Requirements of connection and/or disconnection process in d.c. contacts .....                                    | 21        |
| 6.3.2                   | Protection from unintended voltage for d.c. connection .....  | 22        |
| 6.3.3                   | Specific requirements .....   | 22        |
| <b>7</b>                | <b>Protection of persons against electric shock</b> .....   | <b>22</b> |
| 7.1                     | General requirements .....  | 22        |
| 7.2                     | Requirements and measures for voltage class A on-board components .....   | 22        |
| 7.3                     | Requirements and measures for the voltage class B on-board charging system .....                                  | 22        |
| 7.3.1                   | Requirements for the on-board charging system .....   | 22        |
| 7.3.2                   | Protection under single failure conditions .....  | 23        |
| 7.3.3                   | Requirements of barrier/enclosures .....  | 23        |
| 7.3.4                   | Requirements of insulation .....  | 23        |
| 7.3.5                   | Requirements of potential equalization .....  | 23        |
| 7.4                     | Protection degrees .....  | 24        |
| 7.4.1                   | General .....   | 24        |
| 7.4.2                   | Requirements of the protection degree of barrier/enclosures against electric shock .....                          | 24        |
| <b>8</b>                | <b>Other requirements for the on-board charging system</b> .....  | <b>24</b> |
| 8.1                     | General test requirements of on-board equipment .....   | 24        |
| 8.2                     | Degree of protection of on-board equipment .....  | 24        |
| 8.3                     | Dielectric withstand characteristics of on-board equipment .....  | 25        |
| 8.3.1                   | Test voltage not conductively connected to the parts .....  | 25        |
| 8.3.2                   | Dielectric withstand voltage of voltage class A direct current part .....   | 26        |
| 8.4                     | Isolation resistance requirements of on-board equipment .....   | 26        |
| 8.4.1                   | General .....   | 26        |
| 8.4.2                   | Additional protection measures for the a.c. circuit connected to the d.c. circuit of the on-board equipment ..... | 26        |

|          |   |           |
|----------|---|-----------|
| 8.5      | Creepage distance of on-board equipment .....   | 27        |
| 8.6      | Clearance of on-board equipment.....  | 27        |
| 8.7      | Touch current.....  | 28        |
| 8.8      | Requirements for the emission of hazardous gases and other hazardous substances ..... | 28        |
| 8.9      | Environmental tests .....   | 29        |
|          | 8.9.1 General.....  | 29        |
|          | 8.9.2 Ambient air temperature.....  | 29        |
|          | 8.9.3 Ambient humidity.....   | 29        |
|          | 8.9.4 Ambient air pressure .....  | 29        |
| 8.10     | Permissible surface temperature.....  | 29        |
| 8.11     | Environmental conditions.....   | 29        |
| 8.12     | Unintentional charging system behaviour .....   | 30        |
| 8.13     | Electromagnetic compatibility.....  | 30        |
|          | 8.13.1 Susceptibility.....  | 30        |
|          | 8.13.2 Emissions .....  | 30        |
| 8.14     | Service .....   | 30        |
| <b>9</b> | <b>Marking, instructions, and indications.....</b>                                    | <b>30</b> |
|          | 9.1 Marking .....   | 30        |
|          | 9.2 Legibility.....   | 30        |
|          | 9.3 Connection instructions.....  | 31        |
|          | 9.4 Indication.....   | 31        |
|          | <b>Annex A (informative) Charging types.....</b>                                      | <b>32</b> |
|          | <b>Bibliography.....</b>  | <b>39</b> |