MALAYSIAN STANDARD

MS 61851-1:2013

Electric vehicle conductive charging system - Part 1: General requirements (IEC 61851-1:2010, MOD)

ICS: 43.120

Descriptors: electric vehicle, EV, charging system, requirements

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Committee representation

The Industry Standards Committee on Generation, Transmission and Distribution of Energy (ISC E) under whose authority this Malaysian Standard was adopted, comprises representatives from the following organisations:

Association of Consulting Engineers Malaysia
Atomic Energy Licensing Board
Department of Standards Malaysia
Federation of Malaysian Manufacturers
Jabatan Kerja Raya Malaysia
Malaysian Association of Standards Users
Malaysian Cable Manufacturers Association
Malaysian Electrical Appliances and Distributors Association
Malaysian Green Technology Corporation
Ministry of Domestic Trade, Co-operatives and Consumerism
Ministry of International Trade and Industry
Persatuan Kontraktor Elektrikal dan Mekanikal Melayu Malaysia
SIRIM Berhad (Secretariat)
SIRIM QAS International Sdn Bhd
Suruhanjaya Komunikasi dan Multimedia Malaysia
Suruhanjaya Tenaga
Tenaga Nasional Berhad
The Electrical and Electronics Association of Malaysia
The Institution of Engineers, Malaysia
Universiti Teknologi Malaysia

The Technical Committee on LVDC Supply, Storage and EV Charging which recommended the adoption of the IEC Standard as Malaysian Standard consists of representatives from the following organisations:

Jabatan Kerja Raya Malaysia

Malaysian Automotive Association

Malaysian Green Technology Corporation

Perusahaan Otomobil Nasional Sdn Bhd

SIRIM Berhad (Secretariat)

SIRIM QAS International Sdn Bhd

Suruhanjaya Tenaga

TNB Research Sdn Bhd

Universiti Tenaga Nasional

Co-opted members:

Hager Engineering (M) Sdn Bhd

Panasonic System Engineering (M) Sdn Bhd

Schneider Electric Industries (M) Sdn Bhd

Voltron Battery (M) Sdn Bhd

National foreword

The adoption of the IEC Standard as a Malaysian Standard was recommended by the Technical Committee on LVDC Supply, Storage and EV Charging under the authority of the Industry Standards Committee on Generation, Transmission and Distribution of Energy.

This Malaysian Standard is a modified adoption of IEC 61851-1:2010, *Electric vehicle conductive charging system - Part 1: General requirements*, published by the International Electrotechnical Commission (IEC) with the following modifications:

a) in the source text, "this International Standard" should read "this Malaysian Standard";

b) the comma which is used as a decimal sign (if any), to read as a point;

c) Mode 1 is not applicable for Malaysia due to safety concerns;

d) reference to International Standards should be replaced by corresponding Malaysian Standards as follows:

Referenced International Standards	Corresponding Malaysian Standards
IEC 60038, *IEC standard voltages*	MS IEC 60038, *IEC standard voltages*
IEC 60068-2-30, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 + 12 h cycle)*	MS IEC 60068-2-30, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)*
IEC 60068-2-78, *Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state*	MS IEC 60068-2-78, *Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state*
IEC 60364-4-41, *Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock*	MS IEC 60364-4-41, *Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock*
IEC 60529, *Degrees of protection provided by enclosures (IP Code)*	MS IEC 60529, *Degrees of protection provided by enclosures (IP Code)*
IEC/TR 60755, *General requirements for residual current operated protective devices*	MS 60755, *General requirements for residual current operated protective devices*
IEC 60947-3, *Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*	MS IEC 60947-3, *Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*
IEC 60950-1, *Information technology equipment - Safety - Part 1: General requirements*	MS IEC 60950-1, *Information technology equipment - Safety - Part 1: General requirements*

National foreword *(continued)*

Referenced International Standards	Corresponding Malaysian Standards
IEC 61000-6-1, *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments*	MS IEC 61000-6-1, *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments*
IEC 61000-6-3, *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments*	MS IEC 61000-6-3, *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments*
IEC 61008-1, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - General rules*	MS IEC 61008-1, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - General rules*
IEC 61009-1, *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - General rules*	MS IEC 61009-1, *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - General rules*
IEC 61180-1, *High-voltage test techniques for low-voltage equipment - Part 1: definitions, test and procedure requirements*	MS IEC 61180-1, *High-voltage test techniques for low-voltage equipment - Part 1: definitions, test and procedure requirements*
IEC 62196-1, *Plugs, socket-outlets, vehicle couplers and vehicle inlets - Conductive charging of electric vehicles - Part 1: Charging of electric vehicles up to 250 A a.c. and 400 A d.c.*	MS IEC 62196-1, *Plugs, socket-outlets, vehicle couplers and vehicle inlets - Conductive charging of electric vehicles - Part 1: Charging of electric vehicles up to 250 A a.c. and 400 A d.c.*
IEC 60068-2-1, *Environmental testing - Part 2-1: Tests - Test A: Cold*	MS IEC 60068-2-1, *Environmental testing - Part 2-1: Tests - Test A: Cold*
IEC 60068-2-14,*Environmental testing - Part 2: Tests - Test N: Change of temperature*	MS IEC 60068-2-14,*Environmental testing - Part 2: Tests - Test N: Change of temperature*
IEC 60364-5-53, *Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control*	MS IEC 60364-5-53, *Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control*
IEC 60364-6, *Low-voltage electrical installations - Part 6 Verification*	MS IEC 60364-6, *Low-voltage electrical installations - Part 6 Verification*
IEC 60947-1, *Low-voltage switchgear and controlgear - Part 1: General rules*	MS IEC 60947-1, *Low-voltage switchgear and controlgear - Part 1: General rules*

National foreword *(concluded)*

Referenced International Standards	Corresponding Malaysian Standards
IEC 60947-6-1:2005, *Low-voltage switchgear and controlgear - Part 6-1: Multiple function equipment - Transfer switching equipment*	MS IEC 60947-6-1:2005, *Low-voltage switchgear and controlgear - Part 6-1: Multiple function equipment - Transfer switching equipment*
IEC 61540, *Electrical accessories - Portable residual current devices without integral overcurrent protection for household and similar use (PRCDs)*	MS IEC 61540, *Electrical accessories - Portable residual current devices without integral overcurrent protection for household and similar use (PRCDs)*
IEC 61851-21, *Electric vehicle conductive charging system - Part 21: Electric vehicle requirements for conductive connection to an a.c./d.c. supply*	MS IEC 61851-21, *Electric vehicle conductive charging system - Part 21: Electric vehicle requirements for conductive connection to an a.c./d.c. supply*
IEC 62196-2, *Plugs, socket-outlets and vehicle couplers - Conductive charging of electric vehicles - Part 2: Dimensional interchangeability requirements for a.c. pin and contact-tube accessories*	MS IEC 62196-2, *Plugs, socket-outlets and vehicle couplers - Conductive charging of electric vehicles - Part 2: Dimensional interchangeability requirements for a.c. pin and contact-tube accessories*

Mode 3 Case C charging is recommended for public charging infrastructure in Malaysia.

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.

NOTE. MOD on the front cover indicates a modified standard i.e. a standard adapted from an International Standard with permitted technical deviations, which are clearly identified and explained. The changes in structure are permitted provided that the altered structure permits easy comparison of the content of the two standards. Modified standards also include the changes permitted under identical correspondence.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –

Part 1: General requirements

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61851-1 has been prepared by IEC technical committee 69: Electric road vehicles and electric industrial trucks.

This second edition cancels and replaces the first edition published in 2001. It constitutes a technical revision.

The main changes with respect to the first edition of this standard are the following:

– revision of connector definitions and current levels (Clause 8);
– modification definition of pilot wire to pilot function;
– division of Clause 9 to create Clauses 9 and 11;
– Clause 9: specific requirements for inlet, plug and socket–outlet;
– Clause 11: EVSE requirements: the basic generic requirements for charging stations;
– renumbering of annexes;

– deletion of previous Annex A and integration of charging cable requirements into new Clause 10;
– Annex B becomes Annex A and is normative for all systems using a PWM pilot function with a pilot wire;
– Annex C becomes Annex B;
– replacement of previous Annex D (coding tables for power indicator) with B.4 in Annex B using new values;
– new informative Annex C describing an alternative pilot function system.

The text of this standard is based on the following documents:

FDIS	Report on voting
69/173/FDIS	69/179/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61851 series, under the general title: *Electric vehicle conductive charging system* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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