

## **Note on the use of Electric Vehicle (EV) Adapter Device**

The automotive standards<sup>1</sup> on conductive charging for Electric Vehicles (EVs) have defined charging methods and communication signals, and the designs of EV vehicle connectors<sup>2</sup>, plugs<sup>3</sup>, vehicle inlets<sup>4</sup> and socket outlets<sup>5</sup> might vary in respect to the different standards in the EV models adopted by the vehicle manufacturers.

### **EV charging standards in Hong Kong and Chinese Mainland**

2. EV charging standards in Hong Kong in general support Alternating Current (AC) and Direct Current (DC) charging. Most of the EVs adopt IEC 62196 “Type 2” (hereafter named as “Type 2”) as the AC charging standard, and Combined Charging System “Type 2” (hereafter named as “CCS2”)<sup>6</sup> as the DC charging standard, whereas the EV charging standard in the Chinese Mainland, regardless of AC or DC charging, adopts national standard GB/T 20234. In this regard, Hong Kong’s EV vehicle connectors in Type 2 or CCS2 standards are not compatible to the EVSE in the Mainland adopting national standard GB/T 20234, unless appropriate electrical devices, for example, an adapter, is applied by vehicle owner concerned.

### **Electric Vehicle Adapter Device and Points to Note**

3. Currently., there are electrical devices (hereafter named as “EV Adapter Device”) including adapter cable, plug adapters, etc., available in the market that is said to be able to convert EV charging standards from its own to another so that Hong

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<sup>1</sup> The three most common automotive standards on conductive charging for EVs are GuoBiao (GB) of China, International Electrotechnical Commission (IEC), Society of Automotive Engineers (SAE) of United States. In addition, CHAdeMO is a standard related to Direct Current (DC) quick charging.

<sup>2</sup> It is defined as part of a vehicle coupler integral with, or intended to be attached to, the flexible cable connected to the Alternating Current (AC) supply network (mains).

<sup>3</sup> It is defined as part of a plug and socket-outlet integral with or intended to be attached to the flexible cable connected to the socket-outlet.

<sup>4</sup> It is defined as part of a vehicle coupler incorporated in, or fixed to, the EV or intended to be fixed to it.

<sup>5</sup> It is defined as part of a plug and socket-outlet intended to be installed with the fixed wiring.

<sup>6</sup> Some EVs might adopt IEC 62196 “Type 1” and CHAdeMO as the standards for AC and DC charging respectively.

Kong's local EVs can adapt to EV supply equipment (EVSE)<sup>7</sup> of different standards to perform AC charging in slow or medium speeds.

4. Before using any of these EV Adapter Devices, vehicle owners should note the following:

- Consult the concerned vehicle manufacturers of EVs;
- Be fully aware of regional and model-specific variations for the standard of EV vehicle connectors and/or plugs to ensure their compatibility before charging of their EVs; and
- Ensure the EV Adapter Device has been type tested for compliance with the following standards for the safe use of EV Adapter Device:

Standard of EVSE to be adopted by the EV Adapter Device	Conformity to Standard
GB	GB/T 20234
IEC	IEC 61851, IEC 62196
SAE	SAE J1772
CHAdeMO	CHAdeMO

- If the EV Adapter Device is designed for outdoor use, it should conform to test certificate for ingress protection rating in accordance with IEC 60529, and obtain certificate of IP 54 or above.

#### EV in Hong Kong using Charging Facilities in Chinese Mainland

5. Taking the EVs in Hong Kong that commonly adopt Type 2 AC charging standard as an example, such EVs need to be equipped with a “GB/T to Type 2” AC EV Adapter Device to use most of AC charging facilities in Chinese Mainland.

6. Vehicle owners should also pay attention to whether the EV Adapter Device and its accessories (including the flexible cable connected to the socket) are suitable for outdoor use.

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<sup>7</sup> It is defined as Conductors, including the phase, neutral and protective earth conductors, the EV couplers, attachment plugs, and all other accessories, devices, power outlets or apparatuses installed specifically for the purpose of delivering energy from the premises wiring to the EV and allowing communication between them if required. Example: wallbox unit and charging pole

7. In addition, it is also noticed that some EV charging service providers in Chinese Mainland have provided EVSE using the Type 2 or CCS2 as the EV charging standard in order to cater for the demand of “Northbound Travel for Hong Kong Vehicles”. Car owners should choose suitable EVSE to charge their EV in Chinese Mainland.

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September 2024