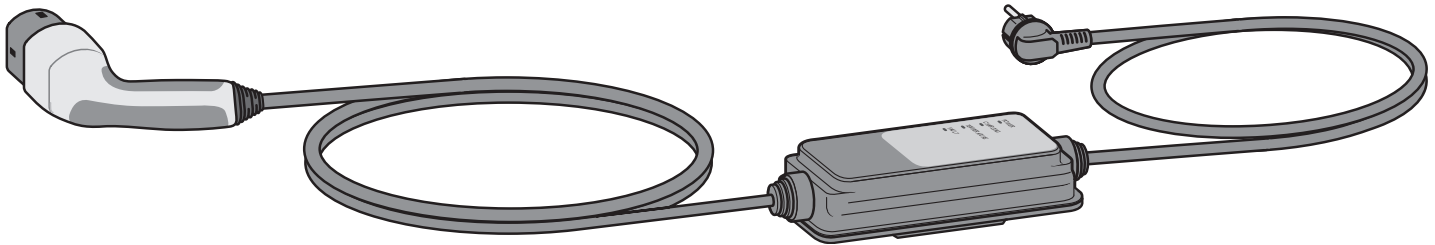


User Manual

Electric Vehicle Charging Equipment IC-CPD (In-Cable Control- and Protection Device)



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Electric Vehicle Charging Equipment IC-CPD

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Abbreviations

- BEV Battery Electric Vehicle
- PRCD-S Portable switching
Residual Current Device
- EVSE Electric Vehicle Supply Equipment
- FCC Federal Communications Commission
- ICCB In-Cable Control Box
- IC-CPD In-Cable
Control and Protection Device
- LED Light-Emitting Diode (indicator light)
- PHEV Plug-in Hybrid Electric Vehicle

1. General information

This User Manual is based on the latest product information at the time of publication. APTIV reserves the right to modify the product without prior notice. Any changes or modifications made to the product may result in loss of warranty if they are not carried out by an approved service workshop.

If you have any questions regarding the use of this product, please contact your service representative. For the customer service organisation responsible for your area please refer to the manual of your vehicle! 📄

Company information

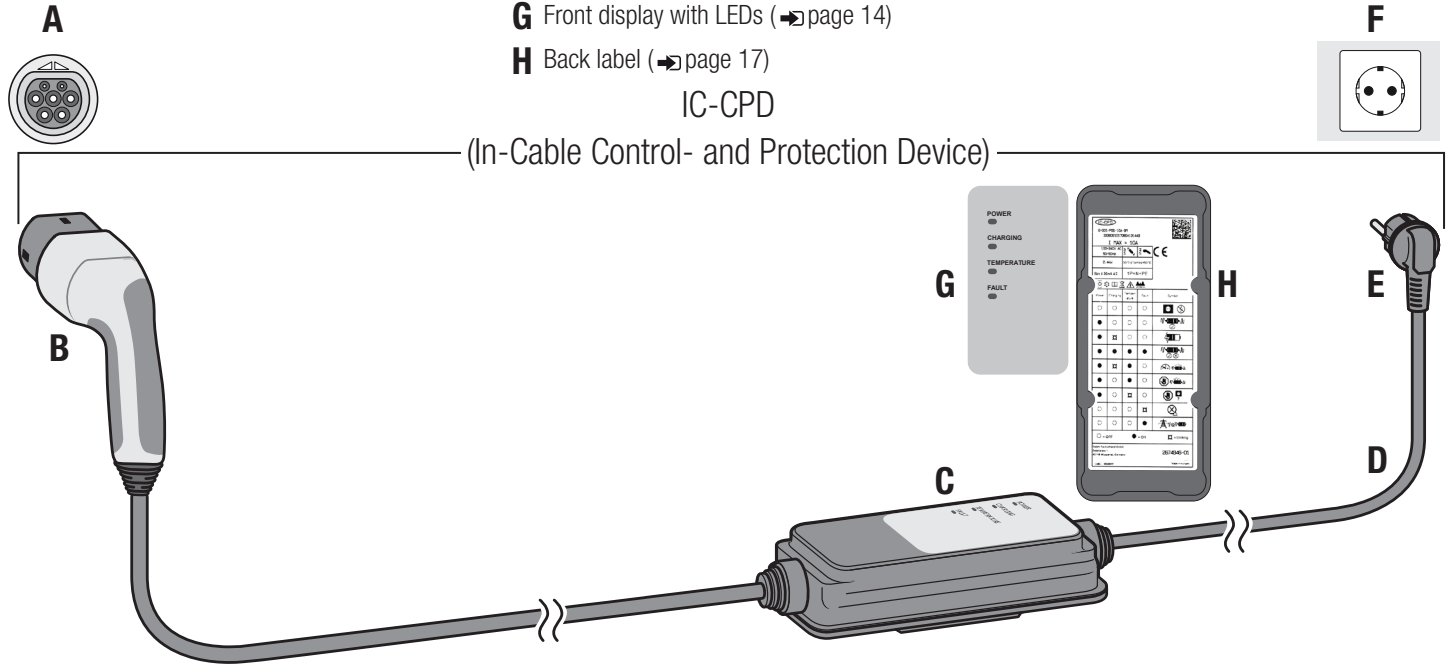
Aptiv Services Deutschland GmbH
Am Technologiepark 1
D-42119 Wuppertal
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2. IC-CPD Overview

For the definition of the individual system components refer to the overview below.

- A** Vehicle charging inlet
- B** Vehicle connector (→ page 11)
- C** Control box (ICCB)
- D** AC power cable
- E** Power plug
- F** Grid socket
- G** Front display with LEDs (→ page 14)
- H** Back label (→ page 17)



3. Warnings, symbols and pictograms used

Warnings

DANGER

Indicates imminent danger.
Failure to follow this instruction will result in **death** or **serious injury**.

WARNING

Indicates a possibly impending danger.
Failure to follow this instruction can result in **death** or **serious injury**.


CAUTION

Indicates a dangerous situation.
Failure to follow this instruction can result in **light** or **minor injury**.

NOTE

Draws attention to a situation which, if not avoided, could result in material damage.

Symbols

 Reference to other sections in the User Manual

 Reference to other documents or instructions

 Handling instruction

3. Used warnings, symbols and pictograms

Pictograms



Instruction:
Follow instructions



Warning:
Electric voltage



Warning:
Hot surface



Warning:
Obstacles on the ground



Handle with care
Instruction:
Handle charging device with care



Prohibition:
No multiple sockets
and adapters



Prohibition:
No extension cables



Prohibition:
Do not kink the cable



Prohibition:
No direct sunlight,
no direct cover



Prohibition: Do not immerse in
water, do not expose to a direct jet
of water or splash water



Prohibition:
No contact with snow
or ice



Prohibition:
Do not use
the charging equipment
with coiled up cables



Prohibition:
Do not run over plug,
control box and cables



Prohibition:
Do not use the IC-CPD
if it is damaged



Prohibition: Do not carry out
repairs on the IC-CPD
and do not open it



Prohibition:
Do not unplug the power plug
during the charging process



Temperature range for start-up

4. Safety instructions

DANGER

Electric shock or fire hazards



Incorrectly installed sockets can lead to electric shock or fire when charging the high-voltage battery via the vehicle charging inlet.

- Operate the IC-CPD charging equipment in properly grounded power networks only
- The grid socket used for charging must be connected to a protected circuit that complies with local laws and standards
- The socket must be protected by a functioning residual current-operated circuit-breaker (RCCB)
- Comply with the safety instructions in the installation manual and in the vehicle manual

DANGER

Electric shock, short circuit, fire, explosion



Using a damaged or faulty charging cable or a damaged or faulty socket, improper use of the IC-CPD charging equipment or failure to comply with the precautions can cause short-circuits, electrocution, explosions, fire and burns.

- Do not use the IC-CPD charging device if it is damaged and/or soiled. Check cable and connector for damage and soiling before using them
- Do not use a socket that is worn-out or damaged. The power plug must be firmly seated in a socket in accordance with all local codes and ordinances



The operation of the IC-CPD charging equipment connected to a worn or damaged socket can result in serious injury or fire!

- Do not remove the cover and do not open the housing. The device contains no parts that could be serviced by the user. Leave any servicing tasks to qualified personnel (see service information → page 21)
- Do not touch any parts inside the vehicle connector
- Do not apply any overvoltage to the IC-CPD charging equipment! For the socket voltages suitable for the device please refer to the specification on the back label
- Do not use extension cords, cable drums, multiple sockets, (travel) adapters, timers, etc.



4. Safety instructions

- Do not perform any modifications or repair tasks to electrical components and do not open the device



- Do not touch the contacts on the vehicle charging inlet and the IC-CPD charging equipment
- Keep sockets, plug connection and the IC-CPD charging equipment free of moisture, water, snow, ice and other liquids. Never immerse in water



- Disconnect the IC-CPD charging device from the socket during a thunderstorm
- Do not insert any objects in the vehicle charging inlet or in the IC-CPD charging equipment

- Clean the IC-CPD charging equipment only if the control unit is completely disconnected from the power grid and from the vehicle. Use a dry cloth for cleaning
- The IC-CPD charging equipment should not be operated by persons under the influence of drugs, alcohol or medications
- The IC-CPD charging equipment should not be operated by persons who are not familiar with its use or who have not read the User Manual
- Keep the IC-CPD charging equipment away from persons with disabilities and children who cannot assess the hazards involved with its handling
- While performing an unattended charging process unauthorized persons (e.g. playing children) should not have access to the IC-CPD charging equipment

⚠ WARNING

Explosion or fire hazards

In order to determine whether the vehicle is equipped with a charging inlet, please refer to the vehicle manual.

Components of the IC-CPD charging equipment can cause sparks and ignite flammable or explosive vapors.

- During charging ensure that the control box is located at least 20 inches (50 cm) above ground to reduce the risk of explosions, particularly in garages
- Do not use the charging and control device in potentially explosive ambients
- This device is intended only for charging vehicles, which do not require ventilation during the charging process

4. Safety instructions

NOTE

The charging and control device could be damaged

- Do not slide the IC-CPD charging equipment over sharp edges
- Avoid kinking the charging cable



- Do not run over plug, control box or cables



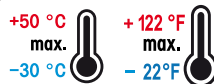
- Do not exert any unusual mechanical strain on the IC-CPD



Handle with care

- Do not operate the IC-CPD charging equipment outside the permissible ambient temperature range from -22 °F (-30 °C) to 122 °F (+50 °C).

Lower or higher temperatures can damage the device



- Do not attempt to connect not-matching vehicle connectors and charging inlets
- Do not use the IC-CPD charging equipment with coiled cables



Intended use

- Operate the charging cable directly connected to a fixed grid socket only
- It is prohibited to use the charging cable for vehicles from other manufacturers
- Improper use can result in malfunctions and damage to property. The charging equipment with integrated in-cable control and protection device (IC-CPD) from APTIV is a mobile charging device for electrical vehicles

(EVSE) with a mains connection for charging of battery-powered electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV)

The safe, user-friendly mobile IC-CPD (mode 2) allows the owners of electric vehicles to connect and charge their vehicles virtually everywhere to 100 V - 240 V AC current grids depending on the regional current grid and the device version.

The RCD type A (30 mA AC) must be installed in front of the IC-CPD

This system consists of three separate components that together offer a solid and reliable method of charging an electric vehicle.

1. AC power cable (plug type according to region) (➔ pages 3 and 12)
2. Control box ICCB (➔ pages 3 and 13)
3. Vehicle connector type (according to region) (➔ pages 3 and 11)

For Singapore only:

Final electrical circuit of the household shall be equipped with the overcurrent protection device in accordance to IEC 60947-2, IEC 60947-6-2, IEC 61009-1 or with the relevant parts of the IEC 60898 series or the IEC 60269 series.

5. Main features

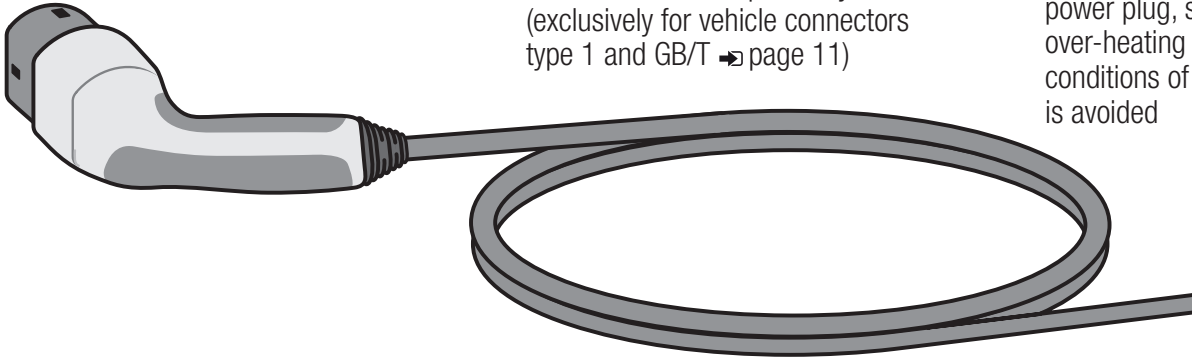
- Levels of safety for the user, the electric vehicle and the IC-CPD charging equipment
- Ground monitoring (model-dependent)
 - Your version is equipped with ground monitoring if it displays the following symbol on its back label
- Versions with ground monitoring do not work in power grids without protective conductor
- Four LEDs (detailed description of the front display → page 14)
- Charging circuit breaker (PRCD-S) with automatic re-closure of the circuit
- Push-button controlled lock for a secure connection between the IC-CPD charging equipment and the vehicle connector (for type 1 and GB/T only, → page 11)
- The IC-CPD charging equipment is for indoor and outdoor use. For further information, please refer to the back label (→ page 17)



6. User benefits and features

This IC-CPD charging equipment allows you to charge your battery-powered electric vehicle (BEV) or plug-in hybrid electric vehicle (PHEV) without any additional device. The user-friendly plug system makes the vehicle connector fit directly into the charging inlet of the vehicle and the existing electrical infrastructure.

The IC-CPD charging equipment provides a standard grounded power connection to residential building sockets from 100 V to 240 V 50/60 Hz (depending on the model variant) and a charging current of 6 A up to 16 A according to the specifications on the back label of the control box of your device. ↗



Vehicle cable:

- IEC 62196-1 Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 1: General requirements
- IEC 62196-2 Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories
- Microswitch-based proximity switch (exclusively for vehicle connectors type 1 and GB/T ↗ page 11)

- Knurled knob for easy, slip-proof locking control (exclusively for vehicle connector type 1 and GB/T ↗ page 11)
- Ergonomic rubber grip for optimal support
- When the vehicle charging inlet and grid socket are properly connected, all terminal interfaces and terminals are fully protected against contact
- Temperature monitoring
 - The IC-CPD continually monitors the temperature inside the power plug, so that any over-heating under certain conditions of the power plug is avoided

7. Available vehicle charging inlets and vehicle connectors

Depending on the country-specific equipment, different vehicle charging inlets and vehicle connectors are provided.



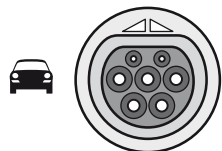
Use only the charging equipment approved for your country.

Vehicle charging inlet

Vehicle connector

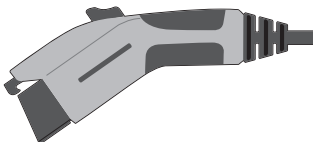
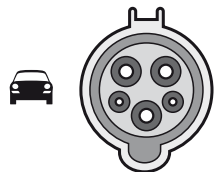
Type

Available charging inlets



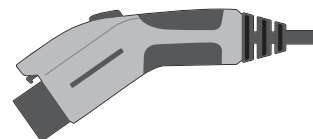
IEC 62196-2
Type 2

- Two 3 mm contact sleeves for control contact
- Two 6 mm contact sleeves for line
- A 6 mm contact sleeve for grounding contact



IEC 62196-2/SAE-J1772-2009
Type 1

- Two 1.5 mm contact sleeves for control contact
- Two 3.6 mm contact sleeves for line
- A 2.8 mm contact sleeve for grounding contact







GB/T 20234.2
Type GB/T

- Two 3 mm contact pins for control contact
- Two 6 mm contact pins for line
- A 6 mm contact sleeve for grounding contact













8. Available power cables for industrial sockets















For charging at optimum charging speed, use only the following power plugs. The maximum charging capacity is up to 3.6 kW (depending on the power grid/house connection and on-board charger).

- ➔ Take account of page 20 „Specifications“.
- ☑ Comply with the instructions in the vehicle manual.

Socket	Connector	Type
		IEC 60309-2 CEE 16/3 Camping type
		JIS C 8303 (JWDS-0033)

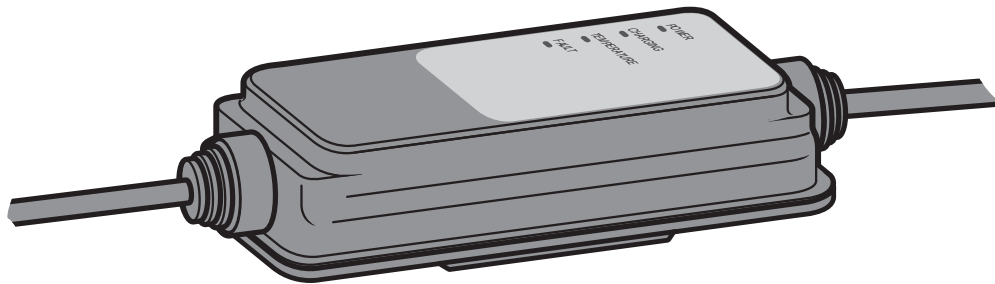
9. Power cables for electrical domestic sockets are available in different country's versions

Socket	Connector	Type
		NEMA-5-15 Type B
		CEE 7/7 Type E/Type F „Schuko“
		BS 1363 Type G
		AS 3112 Type I
		GB 2099.1 Type I
		SEV 1011 Type J

Socket	Connector	Type
		AFSNIT 107-2 D1 Type K
		CEI 23-50 Type L
		SANS 164-1 Type M
		NBR 14136 Type N
		TIS 166-2549 Type O
		IRAM 2073 Type I
		CNS 690 Type B





ICCB:

- IEC 61851-1 Electric vehicle conductive charging system – Part 1: General requirements
- Ground monitoring
 - Depending on the equipment, the ICCB measures the protective conductor resistance and stops the charging process if the measured value is too high
- Charging circuit breaker PRCD-S (protection device against electric shock)
 - Detects fault currents and disables the charging process
 - A self-test that avoids the need of a monthly review after power-up and before each charging cycle
- Charging circuit breaker ON/OFF
 - Permits the charging process to be resumed after certain errors and a waiting period of 5 minutes
 - If the error has been corrected, no user intervention is required
- Temperature monitoring
 - The ICCB continually monitors the temperature inside the box and thus prevents overheating under certain conditions



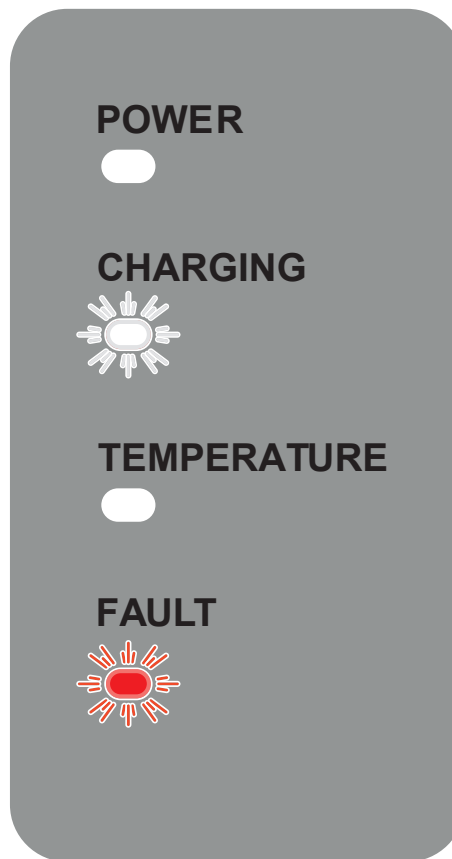
10. Front display of the ICCB

The front panel of the IC-CPD is equipped with four indicator lights:

1.  **POWER** is illuminated:
Electricity from the grid is on and the IC-CPD is ready for use
2.  **CHARGING** flashing:
A flashing light indicates that energy is delivered to the vehicle
3.  **TEMPERATURE** is illuminated:
The internal temperature exceeds a certain value
4.  **FAULT** flashing red:
Shows a failure of the charging system

According to the operating mode, the IC-CPD charging equipment emits different combinations of continuously illuminated and/or flashing LEDs.

(For additional explanations, see ➔ page 17)



11. Operation


For the operation of your IC-CPD charging equipment, observe the following instructions:

1. Read fully and understand the vehicle manual and the instructions for the IC-CPD charging equipment

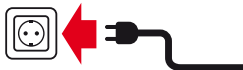


- ▶ Completely uncoil the cable of the IC-CPD charging equipment



- 
 Ensure that the cables are routed correctly over their entire length, in order to avoid stumbling

3. Insert the power plug into the socket



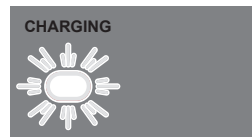
4. Wait until the Power LED lights up continuously



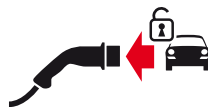
5. Insert the vehicle connector into the vehicle's charging inlet



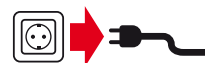
6. The charging process begins automatically



7. To interrupt the charging process, unlock the vehicle charging inlet and remove the vehicle connector



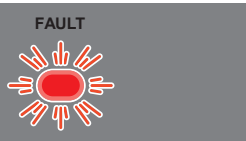
8. Remove the power plug from the socket



9. Keep the IC-CPD charging equipment in a safe place

12. Troubleshooting

1. Display: The FAULT LED flashes three times, followed by a short break

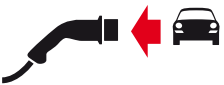


2. Check the socket or protect the IC-CPD charging equipment from direct sunlight or elevated temperatures

13. Fault rectification

Proceed as follows:

1. Remove the vehicle connector from the vehicle's charging inlet



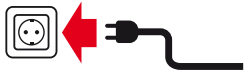
2. Remove the power plug from the socket



3. Wait for approximately 5 seconds



4. Insert the power plug carefully into the socket



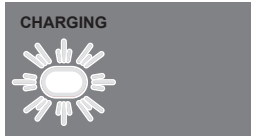
5. Wait until the Power LED lights up continuously



6. Insert the vehicle connector into the vehicle's charging inlet



7. The charging process restarts automatically

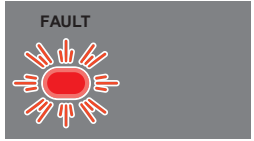


NOTE



If the FAULT LED flashes continuously red after or during the charging process, do not use the device;

contact your regional customer service (➔ page 21).



14. Back label of the ICCB

POWER	CHARGING	TEMPERATURE	FAULT	Pictogram	Description
					No electrical power supply detected
					IC-CPD ready for use
					Charging
					The IC-CPD is currently running a self-test
					Slow charging process due to increased temperature. The charging process can take longer
					Charging interruption due to increased temperature of the ICCB. Check the grid socket or protect the IC-CPD charging equipment from direct sunlight
					Interruption of the charging process due to increased temperature in the power plug
					Fault (➔ page 16)
					The power grid is down or cannot be used for charging with this device. The grid socket must be checked by a trained electrician

= ON

= OFF

= Flashing

15. Maintenance and care

⚠ DANGER

Electric shock, short circuit, fire, explosion

Warning! To reduce hazards of electric shock and damage to the device, clean the plugs and the housing with utmost caution.



Clean the IC-CPD charging equipment with a dry cloth. Do not use any cleaning agents or flammable solvents, such as alcohol or benzene.



Cleaning or any other contact with chemicals can damage the device and is prohibited.

16. Product change

⚠ CAUTION!



Any changes or modifications made to the product, which are not carried out by an authorized service workshop, result in the loss of FCC Compliance and are prohibited.

17. Disposal



The disposal of decommissioned devices must be in accordance with the applicable country- specific and regional laws and guide-

lines. Equipment and batteries must never be disposed of with domestic waste.

- Decommissioned equipment must be placed in a collection facility for electronic waste or disposed of via your dealer
- Dispose of the packing material in the respective collection bins for cardboard, paper and plastics

18. Warranty information

APTIV ensures that this product will be free from defects in material and workmanship as well as from design errors for a period of one (1) year from the original purchase date. In the event a product is found to be defective in material, manufacturing or construction within this warranty period, APTIV will, at its discretion, repair or replace the defective product. Repair parts and/or replacement products can

be replaced at the discretion of APTIV with either new or reconditioned products. This limited warranty does not include the repair of damage due to improper installation, incorrect connection of peripherals, external electrical interference, accident, disaster, misuse or any changes made in the product that are not approved in writing by APTIV. Any service repairs, which are not covered by the limited warranty, shall be performed at the rates, terms and conditions applicable at the time of the repair.


Any other express or implied warranties in relation to this product, including the warranty of general suitability and fitness for a particular purpose, are hereby excluded. In some countries, the exclusion of implied warranties is not permitted, so the above disclaimer may not apply in your situation.

If the product does not conform to the above warranty, your exclusive remedy shall be the replacement or repair of the defective product, as fully described above. Under no circumstances shall APTIV, a sales or service representative or the parent company be held liable to the customer or any third party for any damages that exceed the purchase price of the product. This limitation applies to damages of any kind, including any direct or indirect

damages, lost profits, lost savings or special, incidental damages, punitive or consequential damages, whether due to a breach of contract, tort or any other means, or if such damages are based on the use or improper use of the product, even if APTIV or an authorized representative or dealer of APTIV has been advised by third parties about the possibility of such damages or any other claim.

In some countries, the exclusion of incidental or consequential damages is not permitted for some products, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may have other rights, which vary from country to country.

Please contact your customer service staff. For your responsible customer service, please refer to the manual of your vehicle! 

19. Specifications

Electrical specification

Power:	max. 3.8 kW (depending on model and version)
Rated current:	max. 16 A (depending on the model variant)
Rated voltage:	1-phase: 100 - 240 V ~ (depending on the model variant)
Grid frequency:	50 Hz - 60 Hz
Overvoltage category:	II
Rated short-time withstand current:	< 10 kA rms
Residual current device:	Type A
Protection class:	II
IP protection class:	IP67 (ICCB)
Variants of the power plug:	Page 12 Available power plugs for industrial sockets Available power plugs for domestic sockets
Variants of the vehicle charging inlets and vehicle connectors:	Page 11 Available vehicle charging inlets and vehicle connectors

Dimensions and weight

Dimensions of the IC-CPD charger:	Approx. 3.74 in. x 8.66 in. x 2.32 in. (95 mm x 220 mm x 59 mm) (wxhxd)
Weight of the IC-CPD charger:	Approx. 5.18 lbs. (2.35 kg)

Environmental conditions

Operating temperature:	-22 °F to +122 °F (-30 °C to +50 °C)
Storage temperature:	-40 °F to +158 °F (-40 °C to +70 °C)
Humidity:	Up to 95%, non-condensing
Altitude:	max. 16,404 ft (5,000 m) above sea level
For Singapore only:	max. 6561 ft (2,000 m)

Guidelines and standards

Directives of the European Union:	<ul style="list-style-type: none"> • 2014/35/EU, 2014/30/EU • 2011/65/EU
Standards:	This IC-CPD charging equipment meets all applicable IEC and EN standards and regulations in the context of national legislation, as well as the European and inter-national regulations. If necessary, the respective declaration of conformity can be made available

20. Service

Please contact your local dealer for assistance.

For the contact data, please refer to your vehicle's owner manual! 📄



21. Optional spacer (depending on model)

Remove the spacer when not needed:

