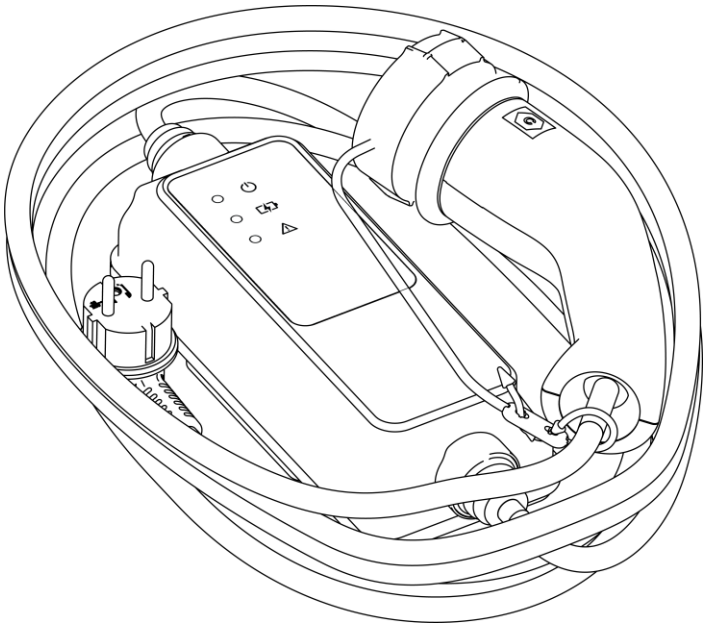
APTIV

Electric Vehicle Charging Equipment IC-CPD

(**I**n-**C**able **C**ontrol- and **P**rotection **D**evice)



User Manual

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Abbreviations

Abbreviation	Meaning
AC	Alternating Current
AMSL	Above Mean Sea Level
BEV	Battery Electric Vehicles
CEE	International Commission on rules for the approval of Electrical Equipment
EVSE	Electric Vehicle Supply Equipment
ICCB	In Cable Control Box = Function Box
IC-CPD	In Cable Control and Protection Device
IEC	The International Electrotechnical Commission
IP	Ingress Protection
LED	Light-Emitting Diode
N	Neutral
P	Phase
PE	Protective Earth
PHEV	Plug-in Hybrid Electric Vehicles

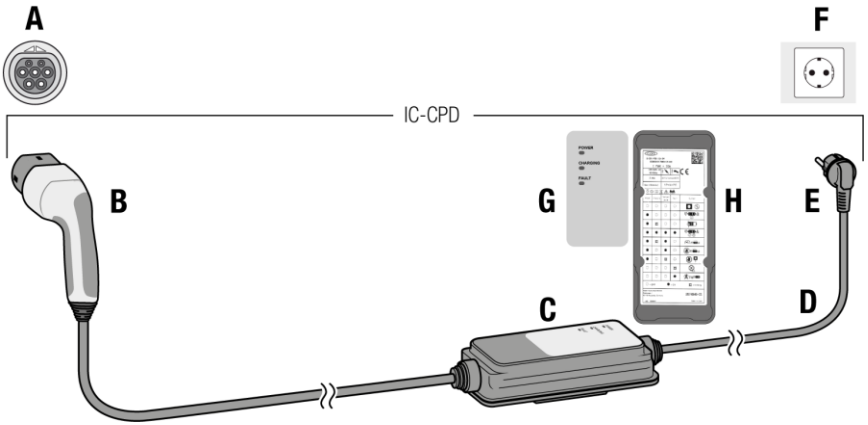
General information

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 regional customer service organisation responsible for your area please refer to the vehicle owner's manual.

IC-CPD overview

The individual system components are defined in the overview below.



Different components of the EVSE

Components:

A: Vehicle charging inlet
B: Vehicle connector with protective cap, Type 2
C: In-Cable Control Box (ICCB)
D: AC power cable
E: AC grid plug
F: Wall socket
G: Front label with 3 LEDs
H: Back label

Note: The protective cap of the vehicle connector which is part of delivery scope is not displayed in the above picture.

Warnings, symbols and pictograms used

Prior to charging your electric vehicle, it is necessary to carefully read and follow the instructions in this manual and the charging instructions in your vehicle owner's manual.

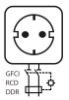
The following symbols may be found in your manual or on labels affixed to your IC-CPD:

	**Warning**: *Indicates a possibly impending danger. Failure to follow this instruction may lead to a* ***risk of fire*** *or 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**: *Please pay attention to a situation.* *Failure to follow this instruction may lead to* ***damage of the part.***

Table 1: Safety information

Safety instructions

This section explains the meaning of all affixed pictograms on the IC-CPD and provides safety guidelines to the user while handling the device, see Table 2.

	Please read the following instructions carefully: *Failure to follow this instruction may lead to a **risk of fire** or can result in **death** or **serious injury**.*
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.	
Do not touch the contacts on the vehicle charging inlet and on the IC-CPD charging equipment. Do not perform any modifications or repair tasks to electrical components. 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 a qualified technician (see service information on page 18).	
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.	
It is strongly recommanded to have a qualified technician check of the AC socket before using the IC-CPD. Incorrectly installed sockets can lead to electric shock or fire when charging the high voltage battery using the IC-CPD.	
The socket must be protected by a functioning residual current operated circuit breaker (RCCB).	
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.	
Do not use extension cords, cable drums, multiple sockets, (travel) adapters, timers, etc.	

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

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.

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.

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.

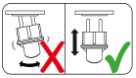
Please read the following instructions carefully:
Failure to follow the instructions may lead *to* ***light*** *or* ***minor injury***.

Keep sockets, plug connection and the IC-CPD charging equipment free of moisture, water, snow, ice and other liquids. Never immerse in water.
Do not store outside and do not expose to a direct jet of water or water splash.

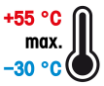
During normal operation, the wall socket or the wall plug of the IC-CPD may heat up. If the wall socket or the wall plug heats up unreasonably during charging, unplug the IC-CPD and have the wall socket replaced by a qualified electrician before you continue charging.

Do not disconnect the grid plug or vehicle connector while charging.

Make sure the grid plug is correctly and completely inserted.
Do not insert with an angle.



Only use this IC-CPD to charge electric vehicles equipped with an inlet. In order to determine whether the vehicle is equipped with a charging inlet, please refer to the vehicle owner's manual.

The IC-CPD charging equipment should not be operated by persons under the influence of drugs, alcohol or medications.	
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 the IC-CPD in potentially explosive ambients.	
	Please pay attention to the following instructions: Failure to follow the instructions may lead *to* ***damage of the part***
Do not use the IC-CPD charging equipment with coiled cables.	
Do not kink the charging cable.	
Do not wrap the charging cable or the power cord around the control unit or the charging connector.	
Do not drop or impact the charging cable.	
Do not operate or store the IC-CPD charging equipment outside the permissible ambient temperature range. • Operating temperature: -30 °C to +55 °C • Storage temperature: -40 °C to +85 °	
Protect from direct solar emission and high temperatures.	
Do not drive over any component of the IC-CPD.	
Do not drag the IC-CPD over any surface.	

This device is intended only for charging vehicles, which do not require ventilation during the charging process.
Do not attempt to connect to a vehicle if the charging inlet is not matching the vehicle connector.
Do not insert any objects in the vehicle charging inlet or in the IC-CPD charging equipment.
Disconnect the IC-CPD charging device from the socket during a thunderstorm.
Comply with the safety instructions in the installation manual and in the vehicle owner's manual.

Table 2: Used warnings, symbols and pictograms

Section 1: Intended use

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.

This IC-CPD consists of the following three major components:

1. AC power cable
2. ICCB
3. Vehicle connector

The system is designed to current industry standards and shall only be used for the vehicle with which it was delivered.

Country limitation:

It is prohibited to use your IC-CPD in a different country than the one it is intended for.
The applicable countries for each IC-CPD variant are defined in the table below.

Group	Destination country	Customer Part number	Rated current I_n	Grid plug
1	AUSTRIA, BELGIUM, CZECH REPUBLIC, EGYPT, GERMANY, GREECE, KAZAKHSTAN, LUXEMBOURG, NETHERLANDS, NORWAY,POLAND, PORTUGAL, SLOVAKIA, SPAIN, SWEDEN, UKRAINE	24060164	10A	CEE 7/7
2	FRANCE, FINLAND	24060166	8A	CEE 7/7
3	SWITZERLAND	24060168	8A	SN 441011
4	DENMARK	24060169	6A	AFSNIT 107-2-D1
5	CHILE, ITALY, URUGUAY	24060170	10A	CEI 23-50
6	BRAZIL	24060160	8A	NBR 14136
7	UNITED KINGDOM, IRELAND	24060161	10A	BS 1363
8	COLOMBIA, ECUADOR, PERU	24060162	10A	NEMA 5-15
9	ISRAEL	24060165	10A	CEE 16/3
10	AUSTRALIA, NEW ZEALAND	24060167	8A	AS 3112
11	ARGENTINA	24060175	8A	IRAM 2073
12	JAPAN	24060172	15A	JIS-C 8303

Refer to the back label of your IC-CPD for the part number information. If you have a doubt about applicable country, please contact your regional customer service for assistance.

Section 2: User benefits and features

The IC-CPD charging equipment provides a standard grounded power connection to residential building sockets of 230 V - 50/60 Hz and a charging current of 6 A up to 10 A according to the specifications on the back label of the control box of your device.

ICCB:

- Re-closure
    - Allows charging to resume after certain faults and 300s wait.
    - If faults are cleared no user intervention is required for charging restart.
- Temperature monitoring
    - The ICCB continually monitors the temperature inside the box and thus prevents overheating under certain conditions.
- Protection class: IP67
- Sleep Mode and Wake Up Mode
    - The ICCB transits to sleep mode when the connector is not plugged into the vehicle inlet for a period of 5 minutes.
    - The ICCB wakes up automatically when the connector is plugged into the vehicle inlet.
- Ground monitoring
    - The ICCB measures the protective conductor resistance and stops the charging process if the measured value is too high.
- Residual current detection device
    - 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.

Vehicle connector :

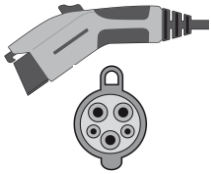
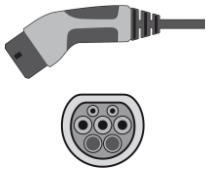
- When the vehicle charging inlet and grid socket are properly connected, all terminal interfaces and terminals are fully protected against contact.
- Protection cap to achieve IP55.

AC Gridcord:

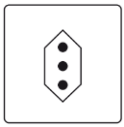
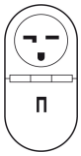
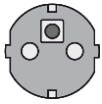
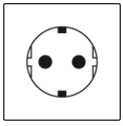
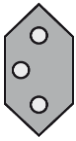
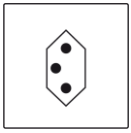
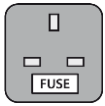
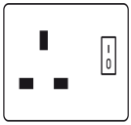
- Country-specific plug
    - The IC-CPD has a plug (E/F, G, J or K) compliant to your country-specific requirements to ensure a safe and convenient charging cycle.
- Temperature monitoring
    - The IC-CPD continually monitors the temperature inside the power plug, so that any over-heating of the power plug is avoided.

Section 3: Matching vehicle charging inlets and vehicle connectors

The IC-CPD is equipped with a Type 2 vehicle connector and the below pictures show the matched charging inlet.

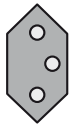
Vehicle Connector type	Vehicle Connector appearance	Vehicle charging inlet appearance
IEC 62196-2 Type 1		
IEC 62196-2 Type 2		

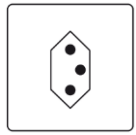
Section 4: Available power cables for domestic sockets

Grid plug type	Grid plug appearance	Socket appearance
CEE 16/3 industrial		
CEI 23-50 Type L		
JIS C8303 (JWDS-0033) Type B		
NEMA 5-15 Type B		
CEE 7/7 Type E/Type F		
SN 441011 Type J		
BS 1363 Type G		
AS 3112 Type I		

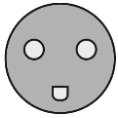
IRAM 2073
Type I

NBR 14136
Type N





AFSNIT 107-2 D1
Type K



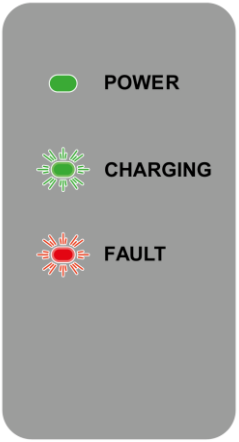
Section 5: Front display of the ICCB

The front display of the IC-CPD is equipped with three indicator lights:

1.  **POWER (green)** is illuminated: Electricity from the grid is on and the IC-CPD is ready for use

2.  **CHARGING (green)** flashing: A flashing light indicates that energy is delivered to the vehicle

3.  **FAULT (red)** flashing: 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 19)

Section 6: How to use the charging cord

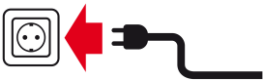
Operate your IC-CPD only in the following way:

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

Note: Completely uncoil the cable of the IC-CPD charging equipment.

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

3. Insert the power plug carefully into the the socket.



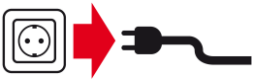
4. Wait until the Power LED lights up continuously.

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 and plug the protection cap.



9. Store the IC-CPD charging equipment in a safe place and do not wrap the cable around the control unit or vehicle connector.

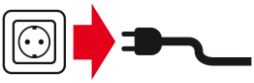
Section 7: Troubleshooting and manual Reset

After a residual current detection (The FAULT LED flashes three times, followed by a short break), a manual reset is required to recover the IC-CPD.

Proceed as follows:

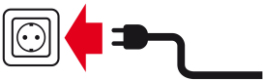
1. Remove the vehicle connector from the vehicle's charging inlet.

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.

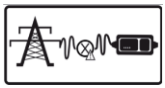
7. The charging process restarts automatically.

Note:

If the FAULT LED flashes continuously red after or during the charging process, do not use the device; contact your regional customer service.

Section 8: Control unit LED pattern guide

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

Power	Charging	Fault	Pictogram/ Symbol	Description
○	○	○		Not connected to the power supply or power is not available from infrastructure.
●	●	●		Charging cable is currently performing an integrated self-test.
●	○	○		Connected only to power supply or both infrastructure and EV but no charging in process.
●	✱	○		Connected to the power supply and to the EV and charging is in progress.
✱	✱	○		Slow charging process due to increased temperature of the ICCB or of the grid plug. The charging process can take longer. Protect the IC-CPD charging equipment from direct sunlight.
●	●	○		Connected to the power supply and to the EV. EV is on standby for the charge or EV charge is finished.
○	○	●		Fault of the charging cable. No charging allowed. If fault indication shows up again after manual reset, the device must be checked by the regional customer service before next charging.
✱	○	●		The power grid is down or cannot be used for charging with this device. The grid socket must be checked by a qualified electrician.

● = ON ○ = OFF ✱ = Flashing

Table 3: Explanation Of The Visual Information

Section 9: General specifications

Electrical specifications

Power:	max. 3,6 kW (depending on the model variant)
Rated Current:	max. 16 A (depending on the model variant)
Rated voltage:	230 V ~
Voltage System:	1P+N+PE
Grid frequency:	50 Hz - 60 Hz
Residual Current $I_{\Delta n}$, AC /DC	30mA / 6mA
Overvoltage category:	II
Protection Class of the ICCB:	IP67

Dimensions and weight

Dimensions of the IC-CPD charger:	95 mm x 220 mm x 59 mm (wxhxd)
Weight of the IC-CPD charger:	Approx. 2.35 kg

Environmental conditions

Operating temperature:	-30 °C to +55 °C
Storage temperature:	-40 °C to +85 °C
Humidity:	Up to 95%, non-condensing
Altitude:	max. 5,000 m above sea level

Guidelines and standards

Directives of the European Union:	• 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 international regulations. If necessary, the respective declaration of conformity can be made available

Section 10: Maintenance and care

To reduce hazards of electric shock and damage to the device, clean the plugs and the housing with utmost caution. Only start cleaning your IC-CPD after disconnecting it from the grid.

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.

Section 11: Product change

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

Section 12: Disposal

The disposal of decommissioned devices must be in accordance with the applicable country specific and regional laws and guidelines. 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 regional customer service.

Dispose of the packing material in the respective collection bins for cardboard, paper and plastics.

Section 13: 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 regional customer service 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 regional customer service staff.
For your responsible customer service, please refer to the vehicle owner's manual.

Section 14: Service

Please contact your regional customer service for assistance.
For the contact data, please refer to your vehicle owner's manual.

APTIV

Customer Technical Center

Am Technologiepark 1
42119 Wuppertal, Deutschland
Tel: [49] 202.291.0