



## STANDARD OCCASIONAL USE CABLE CHARGING COMPLAINT TROUBLESHOOTING

This Service Information bulletin supersedes SI B61 19 18 dated **November 2018**.

### What's New:

- The note below contains additional information regarding the OUC updated charging strategy.

### MODEL

F15 PHEV (X5 xDrive40e)	F30 PHEV (330e iPerformance)	G12 PHEV (740e xDrive iPerformance)	G30 PHEV (530e, 530e xDrive iPerformance)
I01 (i3 & i3 REx)	I12 (i8 Coupe)	I15 (i8 Roadster)	

### SITUATION

The customer may experience any of the following:

- The vehicle cannot be charged with the standard "Occasional Use Cable" (OUC) charging cable
- An indicator light on the OUC control panel lights up or flashes
- The charging procedure does not start, or aborts
- A "Fault" indicator light on the vehicle High Voltage (HV) charging socket lights up red
- The charging time with the OUC is too long
- The charging time is too long even though the "maximum" setting was selected in the vehicle

One or several of the following Check Control (CC) messages may be displayed to the customer



Note: The customer only sees the CC text in the vehicle displays. The ID code can be identified by the

Key Reader.

CC message	ID code
Check charging cable	ID 802 or ID 808
Grid power too low	ID 803
Charging not possible	ID 804

Additionally, the following fault codes may be stored in the EME (electrical machine electronics) fault memory:

- 222833 - Charge management: CC message 803, grid power too low
- 222834 - Charge management: CC message 804, charging not possible

- 222842 - Charge management function: Fault during the charging procedure

- 222846 - Charge management function: Fault during the charging procedure

## CAUSE

A fault when charging the vehicle can be due to various causes:

- The charging cable was not correctly plugged into the vehicle charging plug.
- The charging cable did not lock completely into position.
- The internal fuse (ground fault circuit-breaker) in the charging cable has detected a residual current and switches off.
- Voltage supply problems related to the charging infrastructure (public grid or customer home grid)



Note: When an under-voltage (below 90V AC) is detected in electrical power grid, the cable stops

charging. The cable will try to restart after 5 minutes if grid voltage rises to at least 90V. During this under-voltage condition, the red "FAULT" LED will be displayed on the OUC control panel. This may result in "Grid Faults" to be stored in the vehicle.



**To address this customer concern the OUC software (as of suffix 03 in the AI number, on the back label) has been upgraded with enhanced charging strategy.**

## PROCEDURE

In the event of a customer complaint, refer to "B611918 Attachment 1 High Voltage Charging Cable troubleshooting guide.pdf"



**Important warning for working on the high-voltage systems:**

**Only properly trained personnel, who have passed all applicable technical training courses, should perform any maintenance or repairs on any Hybrid or Electric Vehicle. Work performed by unqualified persons may result in severe injury or damage to the vehicle. Additional information is found in Repair Instruction 61 00... Observe safety instructions when handling electric vehicles.**



Note: For more information, refer to the OUC manufacturer's Safety Guidelines recommendations

(pages 4-9) in Second Gen. Occasional Use Cable Charger Manual. See Link below.

<https://www.bmw-tis.net/tiscode/userfiles/SecondGenOccasionalUseCableManual.pdf>

## PARTS INFORMATION

Part Number	Description	Quantity
61 44 6 818 634	Standard cable/ Mode 2 charge cable/ Standard charging cable with temperature sensor	1

## WARRANTY INFORMATION

Not applicable

## **ATTACHMENTS**

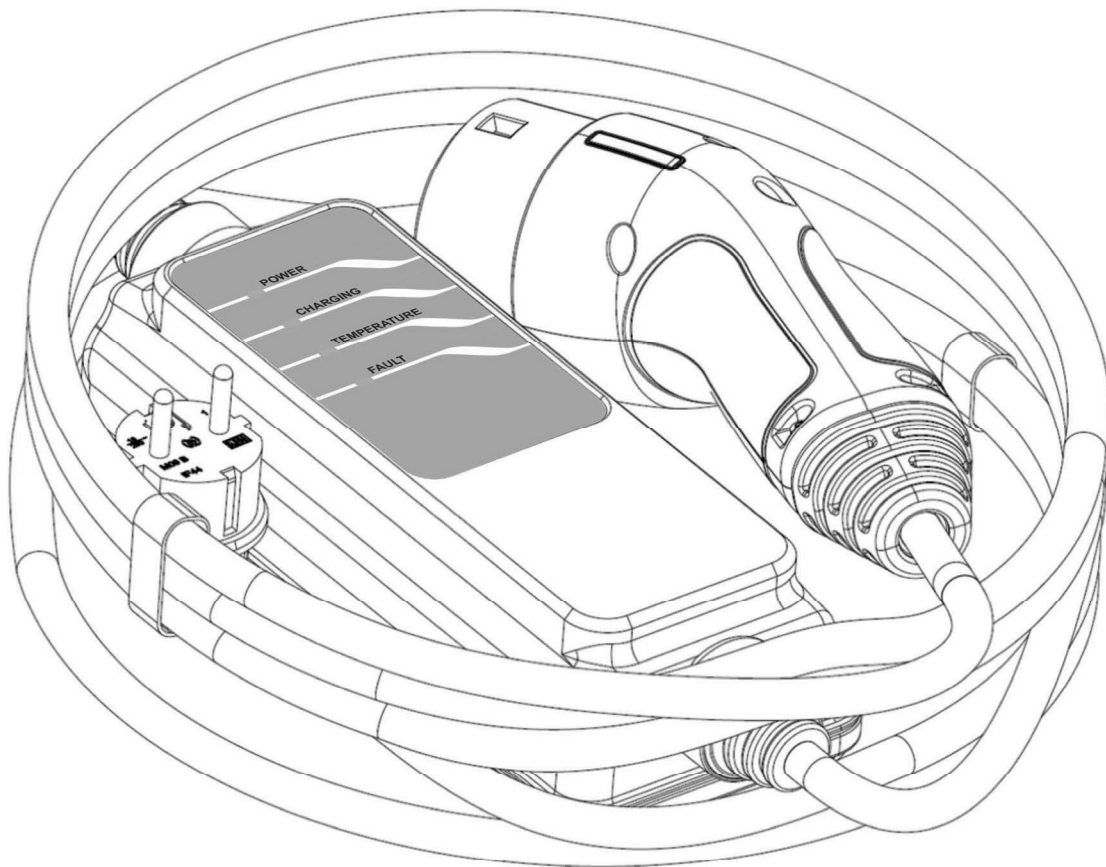
View PDF attachment [B611918 Attach 2 Second Gen. Occasional Use Cable Manual.](#)

View PDF attachment [B611918 Attachment 1 High Voltage Charging Cable troubleshooting guide.](#)

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# DELPHI

INNOVATIVE INFRASTRUCTURE FOR ELECTRIC AND HYBRID VEHICLE



## User's Manual

Delphi IC-CPD for International Applications



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## Please Note

This manual reflects the latest information on the product at the time of release. Delphi reserves the right to change the product without prior notice. Any changes or modifications to this product other than by an authorized service facility can void the warranty of this product.

Should you have any questions regarding the use of this product, please contact your customer service representative. Refer to Section 11: Customer Support to find your local Customer Support.

## ► Abbreviation

<b>AC</b> .....	Alternating current
<b>BEV</b> .....	Battery Electric Vehicle
<b>CCID</b> .....	Charger Circuit Interrupt Device
<b>EVSE</b> .....	Electric Vehicle Supply Equipment
<b>FCC</b> .....	Federal Communications Commission
<b>ICCB</b> .....	In-cable control box
<b>IC-CPD</b> .....	In-cable control and protection device
<b>LED</b> .....	Light Emitting Diode
<b>PHEV</b> .....	Plug-in Hybrid Electric Vehicle
<b>RFI</b> .....	Radio Frequency Interference

## ► Definitions

To ensure a proper understanding of all parties involved please refer to the drawing below for a definition of the separate parts of the system.

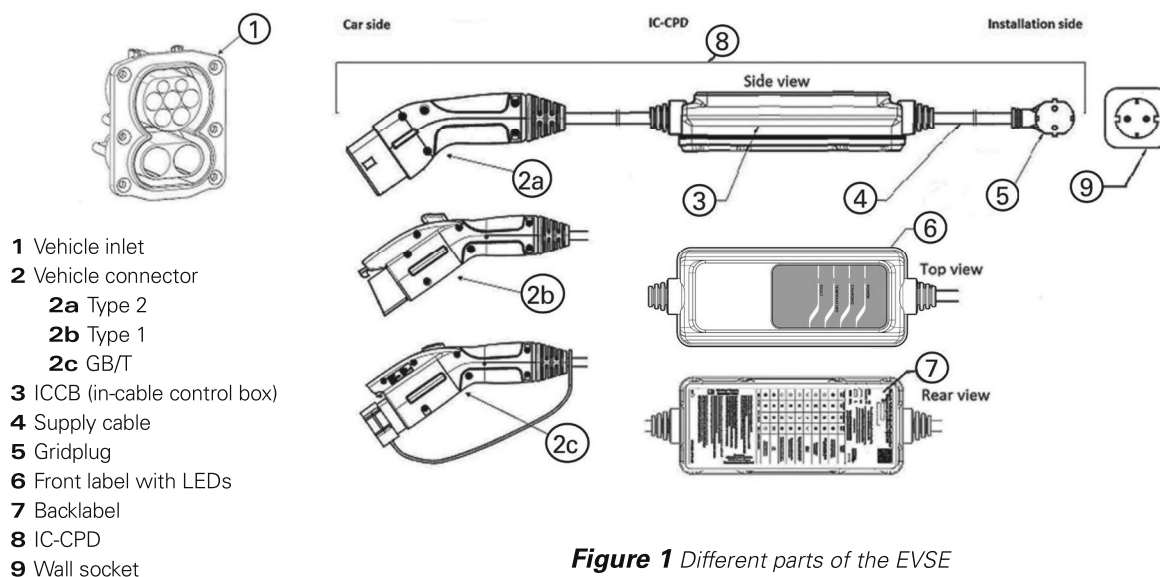





Figure 1 Different parts of the EVSE

## ► Safety Information

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:

	<b>Note:</b> <i>This means "Pay particular attention!"</i> Notes contain helpful suggestions.
	<b>Caution:</b> <i>This symbol means "Be careful!"</i> You may damage the equipment permanently.
	<b>Warning:</b> <i>This symbol represents "Danger!"</i> You are in a situation that could cause heavy injuries. Before you work on any electrical equipment, be aware of the hazards involved with electrical circuitry and standard practices for preventing accidents.









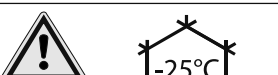
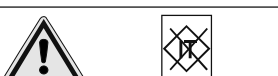




## ► Safety Guidelines

This section serves to explain the meaning of all affixed pictograms on the IC-CPD and provide safety guidelines to the user while handling the device.

General advice for operation:

	<b>Warning:</b> Read the entire manual carefully before operating your IC-CPD!
	<p><b>Warning:</b> Unplug your IC-CPD before cleaning the unit.</p> <p><b>Warning:</b> Children are <b>not</b> allowed to operate this device. Adult supervision is mandatory when children are in proximity to an IC-CPD that is in use.</p> <p><b>Warning:</b> This device is intended only for charging vehicle not requiring ventilation during charging.</p> <p><b>Warning:</b> Risk of electric shock. <b>DO NOT</b> remove cover or attempt to open the enclosure. No user serviceable parts inside. Refer servicing to qualified user personnel. See Customer Support section for service information.</p> <p><b>Warning:</b> <b>DO NOT</b> touch the interior of the vehicle connector of the IC-CPD.</p>
	<p><b>Caution: Only use</b> this IC-CPD to charge electric vehicle equipped with an inlet. See the vehicle owner's manual to determine whether the vehicle is equipped with an inlet.</p> <p><b>Caution:</b> The AC outlet has to be checked by a qualified electrician before using the IC-CPD.</p> <p><b>Caution: DO NOT</b> use a wall socket that is worn or damaged. The AC wall plug must fit tightly into a wall socket which has to be in a good condition. Using the charger with a worn or damaged wall socket may cause serious injuries or fire!</p> <p><b>Caution: DO NOT</b> apply overvoltage to the IC-CPD! For suitable voltage please refer to the rating printed on the backlabel.</p> <p><b>Caution: DO NOT</b> try to connect a mismatching vehicle connector and vehicle inlet!</p> <p><b>Caution: DO NOT</b> use the IC-CPD when cables are wound up.</p>
	<p><b>Note:</b> Do not use in commercial garages.</p> <p><b>Note (for Italy only):</b> Mode 2 charging is prohibited in the public environment and public space.</p>
	<b>Note:</b> Do not dispose of the IC-CPD! Refer to your local dealer in case of a faulty product.

Explanation of Back label Pictograms

	<b>Warning: DO NOT</b> use this product if there is any damage to the unit.
	<b>Warning:</b> To reduce the risk of fire or electric shock, <b>DO NOT</b> use this device with an extension cord.
	<b>Caution: DO NOT</b> use a multiple socket.
	<b>Caution:</b> Ensure that the IC-CPD is always stored in a safe and dry condition. <b>DO NOT</b> fully submerge the IC-CPD. Avoid pouring or dripping water or other liquids over it. Ensure that all plugs and cables are free of moisture before using the IC-CPD. Never connect the IC-CPD to the mains with wet or moist hands or when IC-CPD is wet. For a detailed information of water- and dust-resistance please refer to classification printed on backlabel.
	<b>Caution:</b> The AC outlet has to contain an RCD and has to comply with local requirements.
	<b>Caution:</b> To reduce the risk of electric shock, connect <b>only</b> to properly grounded outlets!
	<b>Caution:</b> Ensure to position IC-CPD's supply cable in a way that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
	<b>Caution:</b> During normal operation, the wall socket or the wall plug of the IC-CPD may feel warm. If the wall socket or the wall plug feels hot during charging, stop the charging process immediately, unplug the coupler from the car, unplug IC-CPD from the wallsocket and have the wall socket replaced by a qualified electrician before you continue charging.
	<b>Caution:</b> This IC-CPD is designed for a minimum ambient temperature of -30° C operation and -40° C storage. Exceeding these temperatures may cause harm to the device and is not recommended.
	<b>Caution:</b> If this symbol is printed on the backlabel of your IC-CPD, the device is not intended to be used in grids without protective conductor!
	<b>Caution:</b> If this symbol is printed on the backlabel of your IC-CPD, the device has no switching function on the protective conductor path.
	<b>Caution:</b> Do not fold or kink the cables of the ICCB.
	<b>Caution:</b> Handle the ICCB with care. Missuse will cause permanent damage.
	<b>Caution:</b> Protect the device from direct sunlight and high temperatures.

## ► Section 1: Introduction

Delphi's In-cable control and protection device (IC-CPD) is a type of portable Electric Vehicle Supply Equipment (EVSE) with a cord connector for a convenient charging of Battery Electric Vehicle (BEV) and Plug-in Hybrid Electric Vehicle (PHEV).

This safe, easy-to-use, Level 2, portable IC-CPD allows EV owners to charge their vehicle anywhere from 120V AC or 230V AC service, depending on the regional grid and your version. The Delphi IC-CPD is listed as Electric Vehicle Supply Equipment with ETL according to UL standards.

This system consists of three major components, which together deliver a robust and reliable opportunity to charge an electric vehicle.

1. AC gridcord (plug type dictated by region) (Figure 1: 4+5)
2. ICCB – In-cable control box (Figure 1: 3)
3. Vehicle cord (connector type dictated by region) (Figure 1: 2)

## ► Section 2: Primary Functions

- Multiple levels of safety for the user, the EV and the charging equipment
- Ground Monitor (if applicable)
  - Your version has a Ground Monitoring if the following pictogram is applied to the backlabel:
  - Versions with Ground Monitoring will not work with IT systems!
- Four LED indicators (for a more detailed explanation please refer to Section 5: Front label):
  - Power: input power present
  - Charging: output power provided to the vehicle
  - Temperature: temperature at ICCB or grid plug high
  - Fault: problem either on supply, ICCB or car side
- Charger Circuit Interrupt Device (CCID20) with automatic re-closure
- Pushbutton-controlled latch for safe and secure connection from IC-CPD to the vehicle (Only for Type 1 and GB/T vehicle connector)
- Compliance to industry standards, including but not limited to:
  - SAE J1772
  - IEC 62752
  - IEC 61851
  - GB/T 18487
  - NEC Article 625
  - FCC
- ICCB is indoor and outdoor rated (IP67/Nema 3S).



## ► Section 3: Benefits and features

This IC-CPD enables you to charge your BEV/PHEV without any additional device. Equipped with a user-friendly plug-system the vehicle connector directly fits into the matching vehicle inlet and the existing electrical infrastructure. The ICCB provides a standard, grounded grid connection to residential 100 - 240V at 50/60 Hz with charging current from 6A to 16A depending on the information present on the backlabel of your device.

### ICCB:

- IEC 61851-1 Electric vehicle conductive charging system – Part 1: General requirements
- Ground Monitor
  - Depending on the version, the ICCB measures the resistance to protective earth and interrupts the charging in case the measured value is too high
- CCID20 (shock protection device)
  - Detects ground fault currents and disables charging
  - Self-test after power up and prior to every charging cycle eliminates the need for monthly testing by the user
- Re-closure
  - Allows charging to resume after certain faults and 300s wait
  - If faults are cleared no user intervention is required
- Temperature monitoring
  - The ICCB constantly monitors the temperature inside the box to prevent the box from overheating under certain conditions

### Vehicle Cord:

- 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
- Micro-switch based proximity switch (Only Type 1 and GB/T vehicle connector)
- Knurled button for easy, non-slip latch control (Only Type 1 and GB/T vehicle connector)
- Ergonomic, rubberized handle for maximum grip
- All terminal interfaces and crimps sealed from environment when properly mated to a vehicle inlet.

### AC Gridcord:

- Country-specific plug
  - The IC-CPD has a plug compliant to your country-specific requirements to ensure a safe and convenient charging cycle.
- Temperature monitoring
  - Depending on the version, the temperature on the contacts of the gridplug is constantly measured to prevent the plug from overheating under certain conditions

## ► Section 4: Operation

Operate your IC-CPD only in the following way:

1. Read and follow the entire IC-CPD and vehicle manual carefully.
  - Note: Do not use the IC-CPD when cables are wound up.**
2. Connect the gridplug carefully to the AC wall socket.
3. Ensure proper positioning of the entire length of the cable to avoid tripping over it.
4. Wait until the Power LED steadily shines green.
5. Connect the vehicle connector into the vehicle inlet of your vehicle.
6. Charging will commence automatically.
7. To stop charging, unlock your vehicle inlet and remove the vehicle connector from the inlet.
8. Disconnect the gridplug from the wall socket and safely store the IC-CPD.

## ► Section 4.1: Troubleshooting

Cause: The «FAULT» LED flashes red three times, followed by a small pause

Remedy: Proceed as follows:

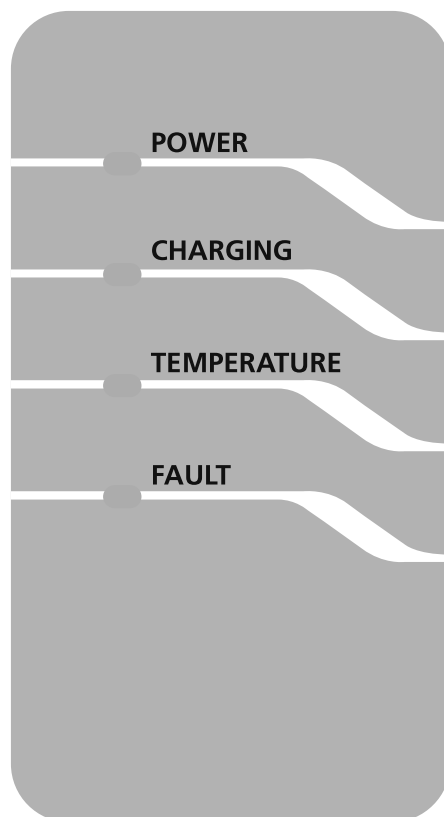
1. Remove the vehicle connector from the inlet
2. Disconnect the gridplug from the wall socket.
3. Wait for about 5 seconds.
4. Connect the gridplug carefully to the AC wall socket.
5. Wait until the Power LED steadily shines green.
6. Connect the vehicle connector into the vehicle inlet of your vehicle.
7. Charging will restart automatically

**Note:** If the «FAULT» LED of the IC-CPD flashes red after or during this procedure, **stop using the device** and contact your local service partner.

## ► Section 5: Label

The front panel on the IC-CPD has 4 indicator lights:

1. **Power** (green) indicates that power from the grid is available and the IC-CPD is ready to be used.
2. **Charging** (blue) indicates via a pulse that energy is being transferred .
3. **Temperature** (amber) indicates the rise of the internal temperature or the temperature of the grid above a certain level.
4. **Fault** (red) indicates a fault in the charging system.



**Figure 2** Front Label

Depending on the operation mode of your IC-CPD you may see different combinations of LEDs shining/flashing at the same time.

For further explanation please refer to Figure 3.

Power	Charging	Temperature	Fault	Pictogram/ Symbol	Description
○	○	○	○		No electrical power supply detected.
●	○	○	○		IC-CPD ready for operation.
●	⊗	○	○		Charging in progress.
●	●	●	●		IC-CPD is currently performing an integrated self-test.
●	⊗	●	○		Decreased charging capability due to increased temperature. Charging may take longer.
●	○	●	○		Charging inhibited due to temperature out of range. Check wallplug or protect IC-CPD from direct solar emission.
●	○	⊗	○		Charging procedure interrupted. Please check external connection.
○	○	○	⊗		Fault. (see §4.1)
○	○	○	●		The connected power grid has a failure or is not allowed to be used with this Equipment. The AC outlet has to be checked by a qualified electrician.

● = ON      ○ = OFF      ⊗ = flashin

Figure 3 Explanation visual information

## ► Section 6: General Specifications

Delphi's IC-CPD can be used with Battery Electric Vehicle (BEV) and Plug-in Hybrid Electric Vehicle (PHEV). Delphi's engineers can provide customized designs for global applications, based on local supply voltage and regional grid plug interface. The following table outlines the general specifications of this unit. The exact specifications of your version can be found on the backlabel.

<b>Service Entrance</b>	120/230V, up to 16A, single phase, 2-wire with safety ground
<b>ICCB Dimensions</b>	Length: 220 mm Width: 95 mm Depth: 59 mm
<b>Operation Temperatures</b>	-30°C to +50°C
<b>Storage Temperatures</b>	-40°C to +70°C
<b>Operating Height</b>	Up to 5000m AMSL
<b>SAE J1772-defined Terminal Interface (see versions list)</b>	Two 3.6 mm power terminals One 2.8 mm ground terminal Two 1.5 mm control terminals for pilot and proximity signals
<b>Type 2 defined Terminal Interface (see versions list)</b>	Two 6 mm power terminals One 6 mm ground terminal Two 3 mm control terminals for pilot and proximity signals
<b>GB-T defined Terminal Interface (see versions list)</b>	Two 6 mm power terminals One 6 mm ground terminal Two 3 mm control terminals for pilot and proximity signals
<b>IP 67/Type 3 Enclosures</b>	

## ► Section 7: Standards

This IC-CPD has been developed according to the requirements of international standards, including but not limited to:

- IEC 61851-1/-22
- IEC 62196-1/-2
- IEC 62752
- SAE J1772
- GB/T 1002.1
- GB/T 2099.1
- GB/T 18487.1
- GB/T 20234.1

## ► Section 8: Maintenance

The Delphi IC-CPD requires no maintenance other than occasional cleaning. Only start cleaning your IC-CPD after disconnecting it from the grid!



**Warning!** To reduce the risk of electrical shock or equipment damage, be cautious while cleaning the connectors and case.

Clean the IC-CPD using a soft cloth lightly moistened with mild detergent solution. Never use any type of abrasive pad, scouring powder or flammable solvents such as alcohol or benzene. Avoid contact with Oil, fuel or other chemicals.

## ► Section 9: FCC Information

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This product has been designed to protect against Radio Frequency Interference (RFI). However there are some instances where high powered radio signals or nearby RF-producing equipment (such as digital phones, RF communications equipment, etc.) could affect operation.

If interference to your charge station is suspected, we suggest the following steps be taken before consulting your Delphi Sales and Service Representative for assistance:

1. Reorient or relocate nearby electrical appliances or equipment during charging.
2. Turn off nearby electrical appliances or equipment during charging.



**Caution:** Changes or modifications to this product by other than an authorized service facility may avoid FCC compliance.

## ► Section 10: Warranty Information

Delphi warrants this product to be free from defects in material, manufacture and design for a period of one year after the date of purchase. If this product is defective in materials, manufacture or design during this warrant period, Delphi will, at its option, repair or replace the product. Repair parts and/or replacement products may be either new or reconditioned at Delphi's discretion. This limited warranty does not include service to repair damage from improper installation, improper connections with peripherals, external electrical fault, accident, disaster, misuse, abuse or modifications to the product not approved in writing by Delphi. Any service repair outside the scope of this limited warranty shall be at applicable rates and terms then in effect.

All other express an implied warranties for this product including the warranties of merchantability and fitness for a particular purpose, are hereby disclaimed. Some states do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

If this product is not as warranted above, your sole and exclusive remedy shall be repair or replacement as provided above. In no event will Delphi, any of its authorized sales and service representatives, or its parent company be liable to the customer or any third party for any damages in excess of the purchase price of the product. This limitation applies to damages of any kind including any direct or indirect damages, lost profits, lost saving or other special, incidental, exemplary or consequential damages whether for breach of contract, tort or otherwise or whether arising out of the use of or inability to use the product, even if Delphi or an authorized Delphi representative or dealer has been advised of the possibility of such damages or of any claim by any other party. Some states do not allow the exclusion or limitation of incidental damages for some products, so the above limitation or exclusion may not apply to you.

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

## ► Section 11: Customer Supports

Call your Delphi Service Representative at any time, 24 hours a day at the number below. If your call is made after business hours or on weekends, please leave your name, telephone number, and a brief description of the problem. A Field Service Representative will call back at the earliest opportunity.

Technical Support & Customer Service:  
**1.877.GO.DELPHI** (1.877.463.3574)  
Monday-Friday: 9 a.m. - 5 p.m. / Eastern Time  
Saturday & Sunday: Closed

### *Regional Support*

For your regional Service Representative please refer to the contact details printed on the back label of your product or the user manual of your car.




## High Voltage (HV) charging cable troubleshooting guide



### Important warning for working on the high-voltage systems:

Only properly trained personnel, who have passed all applicable technical training courses, should perform any maintenance or repairs on any Hybrid or Electric Vehicle. Work performed by unqualified persons may result in severe injury or damage to the vehicle. Additional information is found in Repair Instruction 61 00... Observe safety instructions when handling electric vehicles.

In the event of a customer complaint, proceed as follows:

	<p>1. Perform a visually inspection of the Occasional Use Charging cable (OUC) for external damage.</p> <p>Replace the OUC if damage is found.</p> <p> <b>Note: All standard OUC chargers perform an automatic reset (self-test) when the power input plug is unplugged from the A/C grid wall outlet, and immediately plugged back in.</b></p> <p> <b>Note: The Second Generation OUC charger is easily identified by its bright yellow electrical cord. The updated OUC has a lower output current (10A) compared to its predecessor which may result in longer charging times. See the attached link to the manual for more specifications.</b></p>
--	--

2. Perform the following diagnostic procedure for the OUC:

1. Disconnect the charging plug from vehicle.
2. Disconnect the OUC plug from the A/C wall outlet.
3. Wait 5 seconds.
4. Re-connect the OUC plug to the A/C wall outlet.
5. Wait until the Power LED shines green steadily.
  - a. if not, go to step 8
6. Connect the OUC to the vehicle charge socket again.
7. Charging should start automatically.
8. If there is still an indicator light (displayed or flashing) on the OUC control panel:
  - a. Perform fault diagnosis according to the instructions displayed on the rear surface of the control panel or according to the operating instructions of the OUC.

Refer to section 5 of the charging cable manual:

<https://www.bmw-tis.net/tiscode/userfiles/SecondGenOccasionalUseCableManual.pdf>



3. If the Power LED indicator shines green steadily on the OUC control panel after the charger self-test:

- Connect the OUC to the vehicle charging socket, and push it in until it latches securely.



Note: Make certain that the charging cable connector fits correctly in the charging socket and latches properly.

3a. If the charging procedure **does not start**, proceed as follows:

- Check whether the charging procedure starts with a “**Known Good**” standard OUC
- If the charging procedure starts with the “Known Good” OUC; replace the defective OUC
- Submit a PuMA case titled “OUC Replacement”

3b. If the charging procedure **does not start** with a “Known Good” OUC:

- Run diagnosis with the latest ISTA version and follow the recommended test plans

3c. If the charging procedure **starts** without problems:

- Perform the charging test plan diagnosis with ISTA to verify the charger is functioning properly, and charging according to specifications
- If no faults could be identified either on the OUC or vehicle; the problem may be caused by the charging infrastructure such as the public electric grid or the customer home grid

If so, and if the issue continues:

- Ask the customer to use a different (dedicated) electrical outlet for charging the vehicle
- Also (if possible) verify that the home grid connection corresponds to charging recommendations

### Charging cable voltage supply recommendations

When charging with the standard OUC charger only use:

- A properly grounded, dedicated wall outlet (only used for charging),
- capable of supplying a minimum of 15A,
- and if necessary, qualified and tested by a licensed electrician.

**Do Not** use the standard OUC charger in combination with:

- Electrical extension cords
- Multi-outlet power strips
- Voltage surge protectors



Note:

For more information refer to the OUC manufacturer's Safety Guidelines recommendations (pages 4-9) in Attachment link:

<https://www.bmwtis.net/tiscode/userfiles/SecondGenOccasionalUseCableManual.pdf>