



SIB 61 25 23

2023-10-25

BEV - REASONS FOR NO/SLOW DC CHARGING COMPLAINT

MODEL

E-Series	Model Description
G26 BEV	i4 Gran Coupe (BEV)
G60 BEV	i5 Sedan Battery Electric Vehicle (BEV)
G70 BEV	i7 Sedan Battery Electric Vehicle (BEV)
i20	iX Sports Activity Vehicle (SAV)

SITUATION

The purpose of this Service Bulletin (SIB) is informational regarding DC (direct current) charging complaints on Gen 5 Battery Electric Vehicles (BEV). It serves as a supporting argument and is intended to help distinguish between a standard designed function or component operation from an actual system fault in a DC charging customer complaint (i.e., “DC Not charging or “DC charging too slow”.

Helpful “Tips and Tricks” have been included on each topic within the document that can be used as reference to aid in the diagnosis or in understanding the system.

The situation involves several possible causes:

1. Limitation of charging power by the charging station or charging app configuration.
2. Decreasing charging power at a very high state of charge (SoC).
3. Too frequent DC charging attempts within a short period of time.
4. The high-voltage battery is not at the ideal temperature.
5. Ageing of the high-voltage battery.

SOLUTION

For a detailed description of the above topics along with many useful tips and tricks to help understand the BEV vehicle DC charging system and to verify the related DC charging customer complaints, please download the attachment SI B61 25 23 - “BEV - Reasons for No/Slow DC Charging Complaint.

- B61 25 23 BEV - Reasons for No_Slow DC Charging Complaint.pdf

For more information regarding AC and DC charging please download the “Gen 5 Vehicle Quick Reference Guide for the Service Drive” attachment, also available on TIS.

- B61 25 23 Attachment Gen 5 Vehicle Quick Reference Guide for the Service Drive

The following subjects are discussed in this guide:

- What is AC vs. DC Charging
- Charging Socket
- BMW Flexible Fast Charger 2.0
- Vehicle Charging and what to expect (times, speeds)
- Battery Preconditioning
- Main factors affecting range
- Quick Links to BMW’s YouTube Tutorials

FEEDBACK REGARDING THIS BULLETIN

Technical Feedback	To submit feedback for the technical topic of this bulletin: Submit your feedback in the rating box at the top of this bulletin
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Warranty Feedback	To submit feedback for the CLAIMS section of this bulletin: Submit an IDS ticket to the Warranty Department, or use the chat available in the Warranty Documentation Portal
Parts Feedback	To submit feedback for the PARTS section of this bulletin: Submit an IDS ticket to the Parts Department

Supporting Materials

- [picture_as_pdf B61 25 23 Attachment Gen 5 Vehicle Quick Reference Guide for the Service Drive.pdf](#)
- [picture_as_pdf B61 25 23 Attachment BEV Reasons For NoSlow DC Charging Complaint .pdf](#)

BEV - Reasons For No/Slow DC Charging Complaint

The purpose of this Service Bulletin (SIB) is informational regarding DC charging complaints on Gen 5 Battery Electric Vehicles (BEV). It serves as a supporting argument and is intended to help distinguish between a standard designed function or component operation from an actual system fault in a DC charging customer complaint (i.e., “DC Not charging or “DC charging too slow”.

Helpful “Tips and Tricks” have been included on each topic within the document that can be used as reference to aid in the diagnosis or in understanding the system.

The situation involves several possible causes:

1. Limitation of charging power by the charging station or charging app configuration
2. Decreasing charging power at a very high state of charge (SOC)
3. Too frequent DC charging attempts within a short period of time
4. The high-voltage battery is not at the ideal temperature.
5. Ageing of high-voltage battery

1. Limitation of charging power by the charging station or charging app configuration

Possible cause for the situation #1 may be associated with the charging station/provider/installation:

- The maximum charging power of the vehicle is higher than that of the charging station.
- Quality state or internal fault of the charging station
- Charging station (installation/grid/post) current limitation with effect on the charging power
- Delayed increase in charging power at the charging station (installation/grid/post)
- Charging power of the charger is limited, as the power is divided amongst various chargers at that location.
- As DC charging is currently only available at public charging stations located in shopping malls, convenience/service stations and highway rest areas. The customer interacts with these charging stations via charging apps in their mobile phone.
 - Mobile charging apps require configuration and signing up with a valid email and a form of payment entered (even if the service is free, with the account).
 - Inconsistencies in the customer’s account information may result in the vehicle not charging at that facility/charger.

Tip:

Signing up to the Electrify America charging plan, is easy, just follow the prompts within the My BMW App. Various free charging programs are offered and coverage differs depending on the vehicle.

Trick:

In cases where the charging app configuration is suspected, the customer can verify the vehicle will charge by connecting to a “known good” DC charger (outside that app network in question) or by simply bringing the vehicle to the dealer for charging verification.

Tip:

The customer can access the last charging events stored in their My BMW app. This information can be shared with their BMW Service Center to help aid in the charging complaint diagnosis.

BMW CHARGING HISTORY												
October 2023												
I4 EDRIVE40 (*****1580)												
Total charged ~ 179 kWh (*)			Charging sessions 8				Total cost -- (*)					
Plug-in date	Total mileage	State of charge when plugged in	Unplug date	State of charge when unplugged	Charging location	Location address	Cost*	Energy charged*	Energy rate 1	Energy rate 2	Charged time	Precondition for departure
10/16/2023 11:47AM	10,970 mi	71%	10/16/2023 5:17PM	100%	Charging location	Charging location address	-- USD	~ 25 kWh	--	--	2h 52min	On
10/14/2023 11:15AM	10,894 mi	82%	10/14/2023 5:19PM	100%	Charging location	Charging location address	-- USD	~ 15 kWh	--	--	1h 47min	On
10/13/2023 10:19AM	10,845 mi	30%	10/13/2023 7:16PM	100%	Charging location	Charging location address	-- USD	~ 61 kWh	--	--	6h 59min	On
10/3/2023 7:43PM	10,661 mi	88%	10/4/2023 7:27AM	100%	Charging location	Charging location address	-- USD	~ 10 kWh	--	--	1h 12min	On
10/2/2023 6:01PM	10,631 mi	79%	10/3/2023 7:38AM	100%	Charging location	Charging location address	-- USD	~ 19 kWh	--	--	2h 11min	On
10/1/2023 10:21PM	10,570 mi	74%	10/2/2023 7:34AM	100%	Charging location	Charging location address	-- USD	~ 24 kWh	--	--	2h 42min	On
10/1/2023 4:29PM	10,546 mi	71%	10/1/2023 5:31PM	81%	Charging location	Charging location address	-- USD	~ 9 kWh	--	--	1h 02min	On
10/1/2023 12:44PM	10,527 mi	60%	10/1/2023 2:33PM	78%	Charging location	Charging location address	-- USD	~ 16 kWh	--	--	1h 48min	On

The My BMW App stores the most recent charging history including the most important information about the last charging events. The information may be pertinent in many charging complaints that involve a specific charging station or charger location or even the charging power that was delivered. The data extracted can be helpful in identifying the root of the problem or the faulty charger that was used. However, it is up to the customer if they would like to share this with the BMW service center.

To access this the My BMW app charging history, follow the path below:

Open My BMW app > Charging > Charging history >Share > Select how you would like to share.

Tip:

The BMW Service Center can print and provide the customer a detailed “Charging Check report” of the vehicle’s High-voltage AC and DC charging system directly from the ISTA charging system test plan.

To verify the customer charging complaint, use ISTA charging history test plan as a diagnostic option in service. The charging history can be read out via a service function in the following path:

Service functions > Electric drive > Charging > Read the history of the last charging processes.

Note: Only the last 5 charging processes are stored and available to review.

Trick:

Do not to attempt to plug in a charger before the charging history is read out or the events that the customer has experienced and is complaining about will be erased.



HV charging plug blue LED indicating charging

Tip:

The charging indicator LED display at the HV charging plug should not be used as a diagnostic tool in service. This is designed as a quick indicator of charging state to the user (customer).

Instead:

- perform ISTA diagnosis,
- check fault codes,
- run the charging history test plan to verify the customer concerns and
- then the fault relevant charging test plans to verify why the car is not charging.

Instrument cluster charging indicator display (DC charger limitation).



Instrument cluster charging indicator display (DC charger limitation)

If a shaded area (//////) is displayed to the right of the charging bar in the instrument cluster charge indicator during the charging process, this indicates a restriction imposed by the charger or the infrastructure the charger is connected to. In this example, the vehicle is charging at a rate of 106 kW out of a possible 200 kW.

In the second example only 48 kW are being charged. Notice the shaded area (//////) displayed is larger.

2. Decreasing charging power at a very high state of charge (SOC)

During a typical charging session, the charging power decreases as the state of charge of the HV battery increases; this is designed as a protective function of the high-voltage battery.

Instrument cluster charging indicator display (vehicle charging rate limitation).



Instrument cluster charging rate indicator display

The blue shaded area displayed on the left of the charging bar, in the instrument cluster charge indicator during charging, indicates the charging rate “currently allowed” by the vehicle at this moment.

This value will be displayed in Kilowatts (kW) directly above the charge bar and will vary:

- depending on the charger used,
- the charge settings in the vehicle and
- will display a lower rate at the beginning and near the end of the charging session, especially due to battery temperature.

3. Too frequent DC charging attempts within a short period of time

When driving for a long time without stationary period with four DC charging processes in quick succession, there is a power reduction in the vehicle after the fifth charging process.

This is a standard protective function designed to prevent the high-voltage battery from ageing too quickly under repeated DC charging events without sufficient stationary time to balance the HV cells in the HV battery.

- The full charging power will be available again no later than 48 hours after the last DC charging process.
- The car may be driven to deplete the state of charge (SOC) further before charging again.

Tip:

In this case to restore the frequent DC charging limitation, it is recommended to drive the vehicle normally to deplete the state of charge further than usual (for example to 40% SOC) and perform the next charging session with an AC charger (if possible).

A Check Control message (CCM) is generated to alert the customer of when this protective function has triggered in the vehicle corresponding to “too frequent DC charging events without stationary period”.

The CCM is available from **I level 23-07-5xx** onwards with the information below.



Charging power temporarily reduced Check Control Message

Charging power reduced. Extended charging time.

DC charging power temporarily reduced to conserve the high-voltage battery. Full DC charging power available again after DC charging pause of up to 2 days.

4. The high-voltage battery is not at the ideal temperature.

This is a normal function when the high-voltage battery temperature limits are exceeded.

- The high-voltage battery is too **cold** to charge (due to excessively low outside temperature) and it has not yet had time to “precondition “to warm up the cells before the charging process started.
- The high-voltage battery is too **hot** to charge (due to excessively high outside temperature or spirited summer driving without cool down period.
- Inadequate cooling of the high-voltage battery due to faults in the HV battery cooling system, insufficient coolant quantity and/or refrigerant in air-conditioning (A/C) the system.

Tip:

It is a good practice to set preconditioning of the HV battery before charging in extreme (high or low) temperatures to avoid slow charging or having to wait at the charger while the battery ready's itself to charge.

From July 2022 vehicle production onwards, when the outside temperature is below 15 °C / 59 °F, a blue car with temperature symbol appears in the instrument cluster during charging to indicate to the driver a temperature related charging limitation has been enabled.



Instrument cluster charging indicator display (temperature limitation)

The “cell temperature too high / cell temperature too low” is specified in the Charging History test plan and available for up to 5 previous charging events stored.

ISTA Path:

Service functions > Electric drive > Charging > Read the history of the last charging processes.

Trick:

Setting the charging station location as a navigation destination or an intermediate destination (route optimized for charging), is also good practice so the high-voltage battery is automatically preconditioned to the ideal temperature to charge, if there is sufficient time to do so on the way to the destination.

Note:

Preconditioning preparation can also be activated manually as from vehicle production in November 2022 onwards.

5. Ageing of high-voltage battery

High-voltage battery state of health (SOH)

As with any battery and because of use, over time, the capacity of the high-voltage battery is reduced (therefore "SOH = battery condition" decreases).

The maximum current depends on the battery condition and is reduced if necessary.

The values are relatively proportional, so that, for example, at 90% battery condition, about 90% of the maximum charge current is still available.

Determination of battery condition (SOH) is assessed by testing the battery capacity via ISTA service function.

The path is as follows:

Vehicle management > Troubleshooting > Function structure > Electric drive > High-voltage battery unit > High-voltage battery: Evaluate battery condition.

The following sources of information about "charging".

- The vehicle's owner's manual,
- Technipedia
- Charging the high-voltage battery unit FUB
- DC charging FUB
- Target values / procedure in case of customer complaint involving charging of the high-voltage battery in Aftersales Information Research (AIR).

For more information regarding AC and DC charging please download the "Gen 5 Vehicle Quick Reference Guide for the Service Drive" SIB 61 25 23 attachment, also available on TIS.

Following Subjects are discussed in this guide:

- What is AC vs. DC Charging
- Charging Socket
- BMW Flexible Fast Charger 2.0
- Vehicle Charging and what to expect (times, speeds)
- Battery Preconditioning
- Main factors affecting range
- Quick Links to BMW's YouTube Tutorials

OVERVIEW. INTRODUCTION.

This Quick Reference Guide may be used to assist customers directly in the service drive. It applies to Battery Electric Vehicles (BEV) and does not fully apply to Hybrid Vehicles (PHEV).

It will provide some guidance to determine whether vehicle behavior is normal, as intended or caused by outside influence.

Following Subjects are featured in this guide:

- What is AC vs. DC Charging
- Charging Socket
- BMW Flexible Fast Charger 2.0
- Vehicle Charging and what to expect (times, speeds)
- Battery Pre-Conditioning
- Main factors affecting range
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The intention of this guide is to enhance the customer experience by preventing unnecessary service visits.

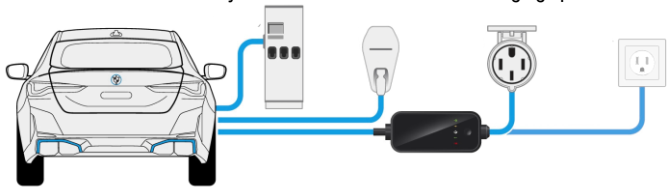
Note: This guide is for informational and customer consultation purposes and **DOES NOT** replace diagnosis by qualified Service Personnel.

Note: This guide **IS NOT** intended for distribution to customers or to be used as marketing material. Its sole purpose is to support Service Advisors at BMW centers to address certain customer concerns.

Note: This guide **DOES NOT** serve as a substitute for any manuals or guides provided by BMW through official communication channels.

CHARGING. CHARGING OPTIONS.

All BMW Generation 5 battery electric vehicles offer several charging options.



DC Chargers:

Charging speeds up to 200kW.



Third Party Wallbox (typically 240 V):

Charging speeds up to 11kW.



At Home Charging using Flexible Fast Charger (240 V):

Charging speeds up to 9.6 kW.

i NEMA 14-50 required



Standard receptacle (120 V):

With proper use of a BMW FFC charging speeds of about 1 kW.

Charging speed



Charging speeds may vary depending on several factors including but not limited to battery pre-condition, infrastructure, ambient temperature. **Slower charging speeds may not indicate** a vehicle malfunction. If the vehicle does not indicate a malfunction please advise the customers to try different modes of charging. This includes different types of charging or charging stations.

CHARGING.

AC VS. DC.

What is the difference between AC, DC and HPC charging? General differences are charging times and charging speeds.

AC Charging: AC Power supplied by the electrical grid is found in every household. AC charging power varies between 1 and 11 kW (i). The on-board charging device (CCU) will convert the AC power to DC power and charge the battery. It is the most cost-effective solution to charge at home or at work.

DC Charging: DC Charging stations (approx. 50 kW) convert the AC electricity provided by the regular grid to DC power in a similar way as a cell phone charger. By converting the power outside the vehicle, higher power and efficiency can be reached.

High Power Charging (HPC): This is a DC charging method to provide power of more than 50 up to 350 kW (i), allowing shorter charging times.



Although a charging station may offer higher charging speeds, BMW Gen 5 BEVs are limited to max. 11 kW AC as well as 200 kW DC charging.

It is recommended to keep the charge between 10% - 80% unless more range is required.

CHARGING. CHARGING SOCKET AND LIGHTS.

BMW Gen 5 Battery Electric Vehicles feature an indicator light next to the charge port which will indicate the current charging status.



White: Ready to accept charger.



Yellow (pulsing): Communication between charger and vehicle is established.



Blue (permanent): Ready to charge in future (Charging in Timeslot).



Blue (pulsing): Charging.



Green (permanent): Charging completed or target SoC reached.



Red (pulsing): Fault detected.

i A red pulsing light may not indicate a vehicle error.

Charger Lock



AC: Charger will be locked in port when vehicle is locked (Headunit settings can be changed to unlock after charge is completed).

DC: Charger will be locked in port during communication state between charger and vehicle.

AC CHARGING. BMW FLEXIBLE FAST CHARGER.

BMW's Flexible Fast Charger (FFC) provides charging speeds up to 9.6 kW.



The new BMW FFC 2.0 provides error mode detections to identify an error source. Errors are indicated on the FFC with the following symbols.



Charging status bar:

Pulse Orange: Booting, Pulse Blue: Charging
Permanent Blue: Ready



Infrastructure:

Permanent Red: Power supply issue



Flexible Fast Charger:

Permanent Red: Charger Error



Vehicle:

Permanent Red: Vehicle Error



Temperature:

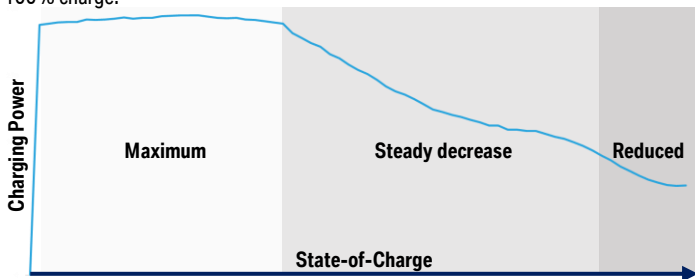
Permanent Red: Overtemperature detected



Any combination of status lights indicates different modes and errors. To verify possible errors manually restart the Charger. For further information **please see charger manual.**

DC CHARGING. CHARGING TIMES.

Charging times vary due to the chemical composition of the vehicle's battery and its state of charge (SoC). High power charging is characterized by three segments between 0-100% charge.



Factors reducing optimal charging times include but are not limited to:



Charging station:

Charging station output may not reach nominal values due to derating (controlled reduction of power).



Vehicle State-of-Charge:

Very low (<10%) or high (>80%) SoC at start of charging may reduce maximum charge power.



Battery Temperature:

If pre-conditioning was not completed the battery may be limited to what charging power can be accepted.



Interior Climate Pre-Conditioning:

Climate control operation, based on ambient conditions, may need some of the power which could be used for charging the battery.



Use AC chargers (including Flexible Fast Charger) for daily charging. Use DC and High Power DC chargers when you need to increase your electric driving range in a short period of time.

DC CHARGING. BATTERY PRE-CONDITIONING.

Battery pre-conditioning is used to adjust the battery's temperature to enable optimal efficiency when charging at low or high ambient temperatures.



Using **BMW Navigation eRoutes** as intended will ensure automatic preconditioning of the battery and optimal high-power DC charging especially **during hot and cold weather** conditions.

The vehicle will use the time until arrival to bring the battery into the optimal temperature range so that the vehicle can accept the highest available charging power.



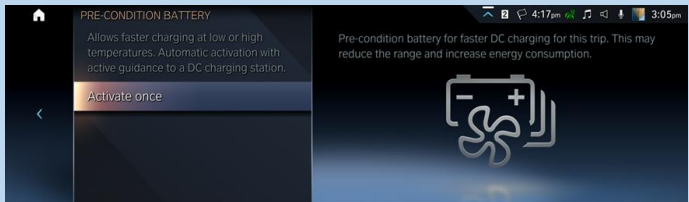
Charging powers of up to 200 kW are supported. Maximum actual charging power depends on factors such as vehicle SoC and available infrastructure (charging station).

Manual pre-conditioning is available through the vehicle's head unit or the **myBMW** App whenever it is needed.

Charging
Management



Pre-Conditioning



Pre-conditioning may take up to 30 min. Please account for enough lead-time before high-power DC charging.

RANGE. HOW IS RANGE DETERMINED.

All BMW light-duty vehicles are subject to EPA (Environmental Protection Agency) regulation and testing. “Driving Range” on the Monroney Label is based on a federally mandated EPA test cycle. Actual achieved range may vary based on various factors.

Deviations from standardized driving profiles may adversely affect range. All Gen 5 BMWs feature a state-of-the-art system to monitor actual driving patterns and environmental conditions. **The vehicle adapts** to a customer’s driving style over time and **displays available range accordingly**.

Factors affecting range calculation include but are not limited to:



- Average speed and acceleration
- Use of regenerative modes
- Average environmental circumstances, e.g. ambient temperature, road conditions
- Tire size
- Average utilization of climate control

Adaptations are learned values over time. The vehicle may take some time to adapt range prediction to a new driving pattern.



Please allow time for adaptation after vehicle programming. Software upgrades may affect current adaptations for a short period.

Follow the Flowcodes to see recommendations on how to increase range easily and effectively:

How to maximize your BMW EV's Range



Part I: Preparation



Part II: Driving

RANGE.

WHAT AFFECTS RANGE.

Range can be affected by a variety of outside influences. A deviation from the officially communicated range for a vehicle may be normal and may not require a customer to visit the dealership.



Larger tires increase overall weight and the contact surface to the ground and therefore friction. Range may decrease.

① Ensure the tires are properly inflated. Refer to Label on B-Pillar.



Significantly **high or low temperatures** may affect range due to the battery's characteristics. High and low temperatures cause the battery to decrease its ability to maintain high efficiency.



Sustained high speeds lead to higher surface friction and wind drag and therefore decrease range.

① Lowering average speeds may increase range.



High payloads lead to higher overall weight. **Higher weight** requires **more energy** to move the vehicle and hence reduce range.

① Ensure that no unnecessary payload is carried (e.g., trunk).



Climate control uses electric systems to adjust temperatures. **Large differences** between ambient/interior temperature reduce range.

① Set temperature control to desired temperature in **Auto-Mode**.



Driving behavior such as **fast acceleration or speed** may unfavorably affect the vehicle's range. While the vehicle adapts to the driver a sustained above-average driving style may lead to less available range.











Steep roads and unfavorable road conditions may lead to lower range. Stop-and-Go traffic may affect range.

① Utilizing regenerative mode (**B**) may positively affect range.

DISPLAY. INSTRUMENT CLUSTER.

The charge state indicator light in the instrument cluster shows the SoC of the high-voltage battery. When all bars are filled, the high-voltage battery is fully charged. Even if no bars are filled, the high-voltage system is still under high voltage. Information regarding the charging process is shown on the charging screen.

AC	Charging the vehicle with an AC Charger such as BMW's FFC.	DC	Charging the vehicle with a DC charging cable.
120kW	Current charging capacity.	max. 9A	Maximum charging current or currently set current limit.
	Charging cable locked.		Charging cable unlocked.
80 % 	Set target SoC.		Departure time set.
	One-time departure time set.		Climate control activated at departure time. Flashing: Active.
	Blinking: heating active.		Yellow: charging capacity of charger is not available or limited.



The **shaded area in the charge bar** indicates a limitation in the charging capacity. This may occur due to the connected charging infrastructure and other limiting factors.

The **user manual** included with every vehicle provides more detailed information.

QUICK LINKS. BMW BEV GUIDES.

For more videos and guides please scan the Flowcodes below or visit BMW USA's YouTube site.



Trip Planning using BMW Navigation



How to use public charging



How to use the BMW Wallbox Charger

Service Drive Quick Reference Guide published by BMW Technical Service (USA).
Valid at the time of publication (April 2023) for BMW Gen 5 Battery Electric Vehicles.