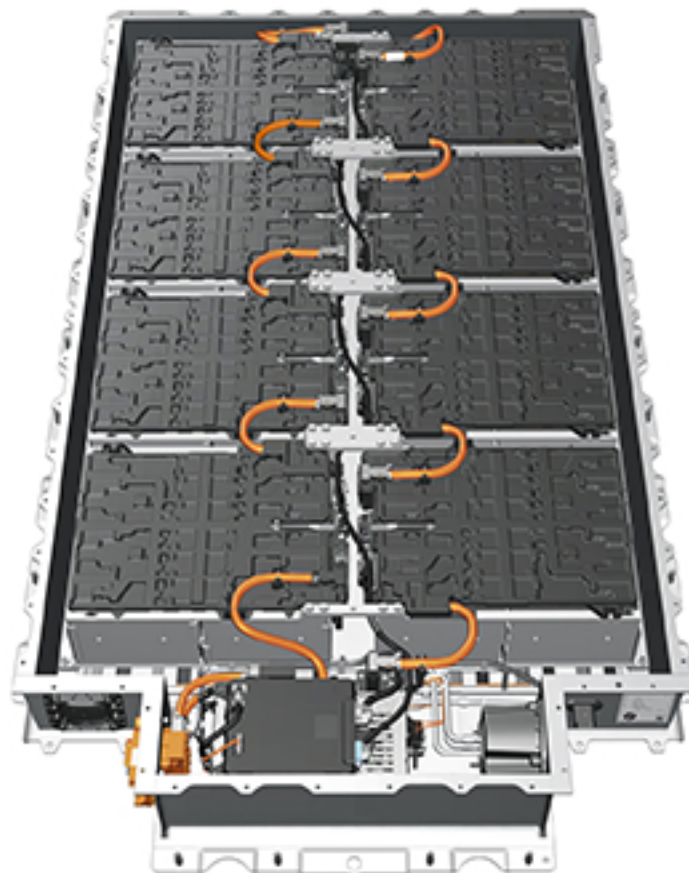


Reference Manual



I01 HIGH-VOLTAGE BATTERY 120 Ah



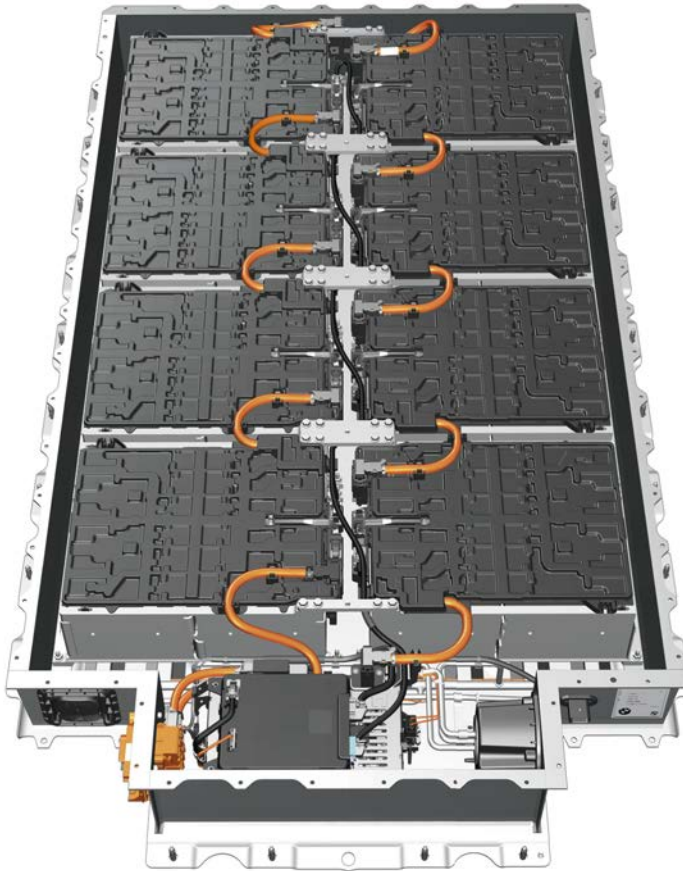
Technical Training

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Technical training.
Product information.

I01 High-voltage Battery 120 Ah



BMW Service

Edited for the U.S. market by:
BMW Group University
Technical Training

ST1851

10/1/2018

General information

Symbols used

The following symbol is used in this document to facilitate better comprehension or to draw attention to very important information:



Contains important safety information and information that needs to be observed strictly in order to guarantee the smooth operation of the system.

Information status: May 2018

BMW Group vehicles meet the requirements of the highest safety and quality standards. Changes in requirements for environmental protection, customer benefits and design render necessary continuous development of systems and components. Consequently, there may be discrepancies between the contents of this document and the vehicles available in the training course.

The information contained in the training course materials is solely intended for participants in this training course conducted by BMW Group Technical Training Centers, or BMW Group Contract Training Facilities.

This training manual or any attached publication is not intended to be a complete and all inclusive source for repair and maintenance data. It is only part of a training information system designed to assure that uniform procedures and information are presented to all participants.

For changes/additions to the technical data, repair procedures, please refer to the current information issued by BMW of North America, LLC, Technical Service Department.

This information is available by accessing TIS at www.bmwcenternet.com.

Additional sources of information

Further information on the individual topics can be found in the following:

- Owner's Handbook
- Integrated Service Technical Application
- Aftersales Information Research (AIR)

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I01 High-voltage Battery 120 Ah

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I01 High-voltage Battery 120 Ah

1. Introduction

This reference manual describes the product adaptation as of 11/2018 in the I01. Numerous technical modifications have been made in the I01 to accommodate customer requests for greater range, more comfort and more options. The technical modifications at a glance:

- Increased range through increase in battery capacity to 120 Ah
- New 20" wheel rims
- New exterior colors
- New interior options

In the following, you can see a comparison of the technical data of the vehicles with 94 Ah and 120 Ah high-voltage batteries.



Battery	94 Ah	120 Ah
Approximate range*	114 miles	153 miles
Efficiency	12.5 kWh	12.5 kWh
Dynamics for 0- 60mph	7.2 s	6.8 s
Speed	93 mph	93 mph
Pollutant emissions with REX	9 g/km	9 g/km
Charging solutions	AC 1.2 kW, OUC, 28h AC 7.4 kW 4 h DC 50 kW 40 min	AC 1.2 kW, OUC, 38h AC 7.4 kW, 6 h DC 50 kW, 1 h

* BEV Vehicle without Range Extender (range subject to certain factors)

I01 High-voltage Battery 120 Ah

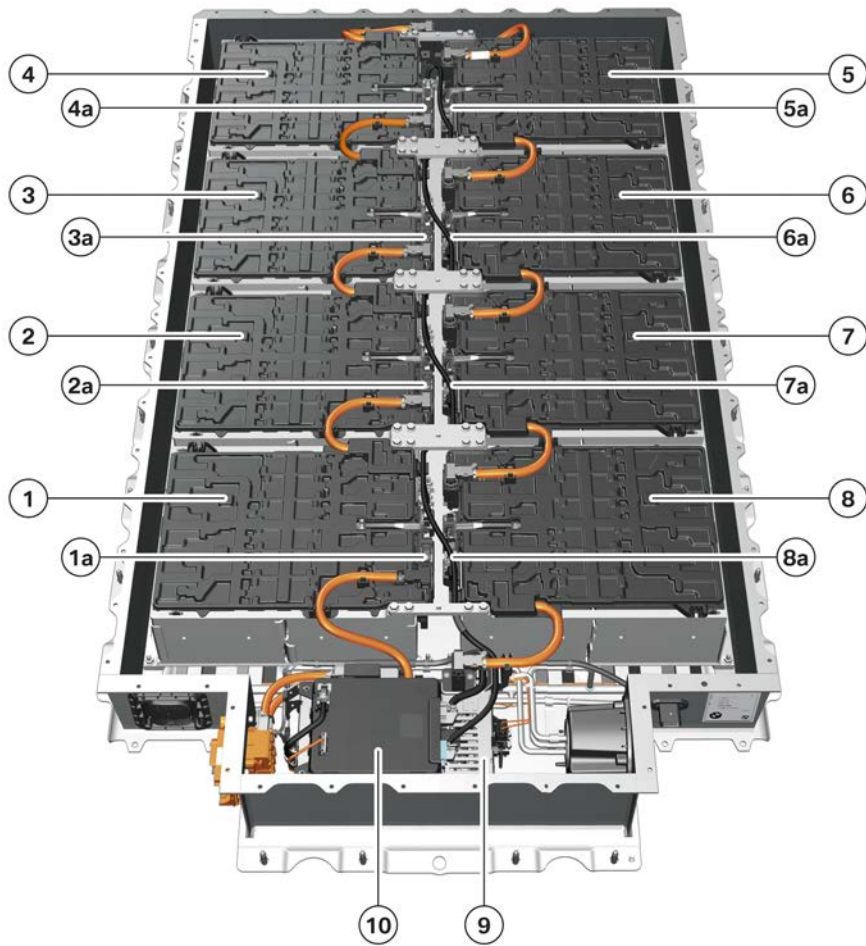
2. High-voltage Battery 120 Ah

To increase the range of the vehicle, the capacity of the cells has been increased to 120 Ah. The previous battery cells had a capacity of 94 Ah. Here you see an overview of the data of the two high-voltage battery units with 94 Ah and 120 Ah:

	High-voltage battery unit, 94 Ah, 2016	High-voltage battery unit, 120 Ah, 2018
Number of cells	96 (serial)	96 (serial)
Number of cell modules	8	8
Cell module dimensions	304 x 410 x 143.5 mm	304 x 410 x 143.5 mm
Cell module weight	60 lbs	65 lbs
Nominal total voltage	350 V	352 V
Maximum total voltage	398 V	403 V
Minimum total voltage	259 V	268 V
Nominal energy content	33 kWh	42.2 kWh
Effective energy content	28 kWh	38 kWh
Total weight	564 lbs	600 lbs
Cooling system	R1234yf refrigerant	R1234yf refrigerant
Heating	1000 W	1000 W

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2. High-voltage Battery 120 Ah



TE13-0277

120 Ah high-voltage battery unit

Index	Explanation
1	Cell module 1
1a	Cell Supervision Circuit (CSC) for cell module 1
2	Cell module 2
2a	Cell Supervision Circuit (CSC) for cell module 2
3	Cell module 3
3a	Cell Supervision Circuit (CSC) for cell module 3
4	Cell module 4
4a	Cell Supervision Circuit (CSC) for cell module 4
5	Cell module 5
5a	Cell Supervision Circuit (CSC) for cell module 5
6	Cell module 6
6a	Cell Supervision Circuit (CSC) for cell module 6
7	Cell module 7

I01 High-voltage Battery 120 Ah

2. High-voltage Battery 120 Ah

Index	Explanation
7a	Cell Supervision Circuit (CSC) for cell module 7
8	Cell module 8
8a	Cell Supervision Circuit (CSC) for cell module 8
9	Safety box
10	Battery management electronics

2.1. Technical changes

The technical modifications to the high-voltage battery unit concern only the cell modules. In order to accommodate the increased weight of the cell modules, the base of the trough was already reinforced for the 94 Ah version and designed the same for the 120 Ah version. The cell modules have not changed in their dimensions or in their design. Only the capacity of the individual battery cells has increased. This increases the weight of the cell modules. The remaining components, such as the battery management electronics and safety box, have not changed. Nor has the cooling system or the electrical heating changed.

2.2. Repairs and exchanges

In case of repair and possible exchange, the cell modules may be replaced only by equivalent modules. Replacement of a 94 Ah cell module with a 120 Ah cell module is not permitted. Mixed installation is **not permitted**, as the battery management electronics cannot detect the differences in capacity and the cell symmetries would diverge from one another.

2.3. Visual inspection of the battery unit after an accident

In the event of an accident in which at least an airbag or the safety battery terminal is deployed, a visual inspection must be performed according to repair instructions REH-HIN-P-6125-8.

If the vehicle was obviously involved in a serious accident while stopped (parked, loading), but no airbag or safety battery terminal deployed, a visual inspection according to repair instructions REH-HIN-P-6125-8 is again required.

The visual inspection comprises the following areas:

- Check the attachment points of the high-voltage battery unit as to whether they have broken off, are bent or are deformed.
- The electrical connections must be checked for damage.
- The venting unit and the refrigerant connections must be checked for damage.

I01 High-voltage Battery 120 Ah

2. High-voltage Battery 120 Ah

- The housing of the high-voltage battery unit must be checked for cracks and holes, dents and deformations.
- Remove the housing cover and carry out a visual inspection for discernible damage.
- The visual inspection should especially attend to the attachment points of the cell modules, to the lid of the safety box and to the deformation of the refrigerant tubing.



Should examination of the attachment points of one or more cell modules ascertain that the attachment points are no longer at a right angle to the cell module and therefore are deformed, **all cell modules** must be replaced.

2.4. Upgrade of the 94 Ah high-voltage battery to 120 Ah




The I01 is a very durable product owing to its material concept. To keep pace with progress in battery technology and to show the flexibility of the LifeDrive concept, a battery upgrade is required. Therefore an increase of the battery capacity to 120 Ah has been made starting 11/2018. This measure has certain prerequisites:

- Retrofitting to multi-phase AC charging is not planned. Charging with 7.4 kW AC (Wallbox) or DC should be possible, as otherwise the charging times will increase considerably.
- A combination of the 120 Ah high-voltage battery and REX range extender is available.

I01 High-voltage Battery 120 Ah

3. Charging functions

These charging functions are also adopted for the 120 Ah high-voltage battery. The following table gives an overview of the charging possibilities for vehicles with 120 Ah batteries as of 11/2018:

	Possible charging unit	Variant	Maximum charging power	Phases
	Occasional Use Cable	Standard equipment	1.2 kW	1-phase
	Wallbox	Optional equipment rapid charging (Level 2)	7.4 kW	1-phase
	DC charger	Optional equipment rapid charging (Level 3)	50 kW	3-phase

I01 High-voltage Battery 120 Ah

3. Charging functions

3.1. Standard Occasional Use Cable (Level 1)

The vehicle comes equipped with the standard occasional use cable (OUC). With Level 1 charging the electrical machine electronics (EME) includes an AC/DC converter with a maximum power of 3.7 kW, but the supplied occasional use cable (OUC) is only able to transmit up to 1.2 kW charging power to the EME, depending on the infrastructure.

As of 03/2017, a completely new developed charging cable has been used in all versions worldwide. This new development became necessary as a new international standard for charging cables came into effect in the middle of the year and the charging cables therefore had to be adapted.

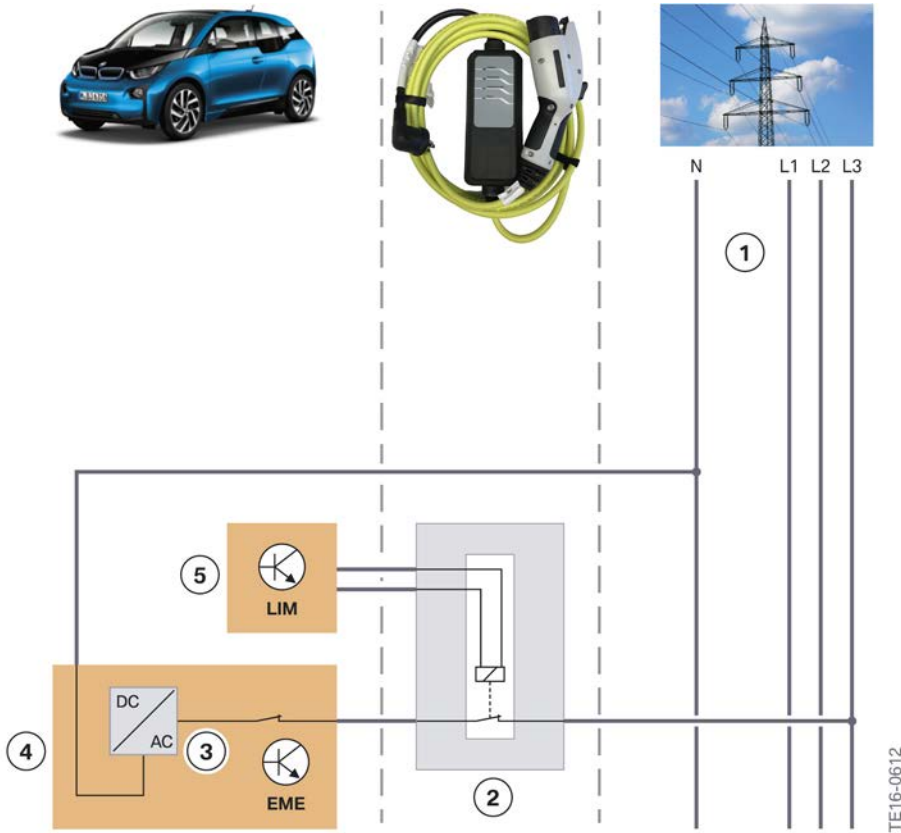
The difference to the previous charging cable is that better watertightness is ensured and that the contacts of the main plug are monitored by two temperature sensors. The temperature monitoring serves to protect the main plug. On detection of an elevated temperature, the charge current in the EVSE (Electrical Vehicle Supply Equipment) is reduced.



New charging cable as of 03/2017

I01 High-voltage Battery 120 Ah

3. Charging functions



Schematic wiring diagram for standard charging

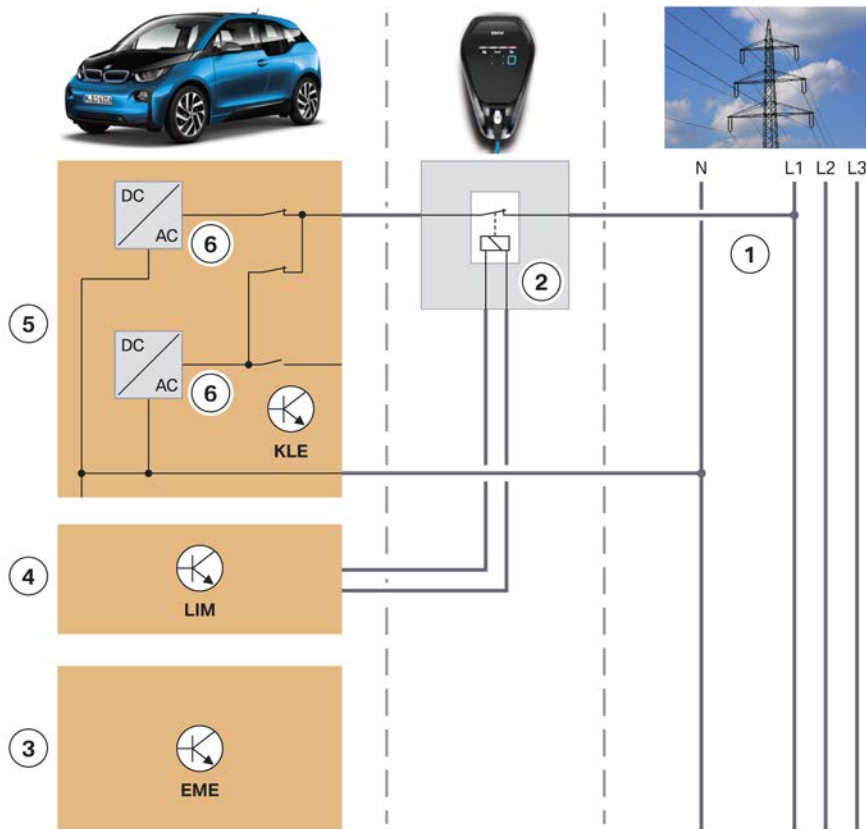
Index	Explanation
1	AC grid of the infrastructure
2	Charging cable with EVSE
3	AC/DC converter
4	Electrical machine electronics
5	Charging interface module

I01 High-voltage Battery 120 Ah

3. Charging functions

3.2. Wallbox Charger up to 7.4 kW (Level 2)

Use of the wallbox charger (Level 2) up to 7.4 kW is possible for all vehicles (OE 4U8). The new convenience charging electronics contains two AC/DC converters each with 3.7 kW. The standard AC/DC converter in the electrical machine electronics is not present. The building infrastructure must contain a Wallbox with 7.4 kW connected load (1-phase 220 V @ 32 A). During charging, the 1-phase charging power is distributed between the two AC/DC converters in the convenience charging electronics. See the following wiring diagram:



Schematic wiring diagram of 7.4 kW charging

Index	Explanation
1	AC grid of the infrastructure
2	Wallbox
3	Electrical machine electronics
4	Charging interface module
5	New convenience charging electronics
6	AC/DC converter

I01 High-voltage Battery 120 Ah

3. Charging functions

3.3. DC charging up to 50 kW (Level 3)

DC charging up to 50 kW (Level 3) is possible for all vehicles (OE 4U7). All vehicles contain a special charging plug and the convenience charging electronics is equipped with two separate switch contactors for DC charging.



DC charging station

TE13-0708

