

LG Chem, LGX E78 with NCM 712 chemistry.

This datasheet provides the description of the LGX E78. The datasheet is by ROAST and not made by Volkswagen or LG Chem.

Roast is in possession of 7 battery modules, taken from a crashed VW ID.3:

- 6 functional battery modules
- 1 dead battery module

Information in this datasheet is gathered by

- disassembly of the dead battery module, (where battery model was confirmed)
- measurement of components gathered from dead battery module
- test and measurement of the functional battery modules
- online sources, that describe the LGX E78

LG Chem, LGX E78, NCM 712 chemistry.	June 12 th , 2024	Version 1.2 (WIP)
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Yet to do:


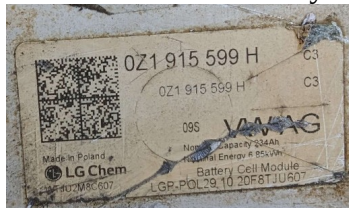
Current discharge/charge rate tests

Open circuit voltage tests

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Battery

		Note
Configuration	8s3p	24 cells in total
Model	LGX E78	
Nominal capacity	234 Ah	
		Printed on side of battery-cells
		
Nominal energy	6.85 kWh / 24.66 MJ	
Min voltage	20.8 V	Stated on module
Max voltage	33.6 V	Stated on module
Weight		Assuming min 2.6 V per cell
Battery terminal size	M8	Assuming max 4.2 V per cell
Battery mount size	M10	

Battery Cell

	Measurement	Other sources	Note
Dimension	51*9.5*0.9cm		
R internal	92 mΩ		Actual resistance might be lower, due to resistance in the measurement.
Chemistry	NCM 712		LGX E78 uses NCM 712.
Nominal Voltage		3.67 V	[2]
Gravimetric energy density		265 Wh/kg	[1]
Weight	1079.6 g	1073 g	[1]
Capacity		78 Ah	[1]

Battery Logic

What	Measurement	Other sources	Note
Fuse	0.6Ω		A class “G” fuse
Fuse dimension (WHL)	1,8mm*1mm*3.2mm		
Fuse amount	11 fuses.		

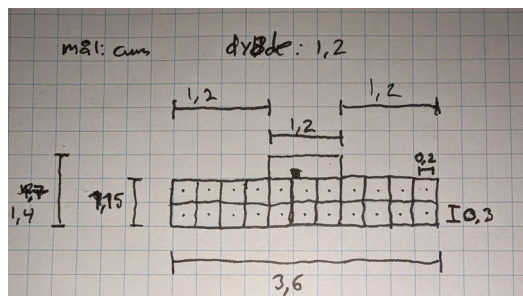
Termistor	8.84 k Ω	Resistance falls at temperature increase. 8.84k Ω room temperature.
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Termistor dimension (WHL) 1mm*0.9mm*1.8mm

Battery connector



Dimensions



Measurements at drawing is given in cm.
Depth of connectors is 9mm.

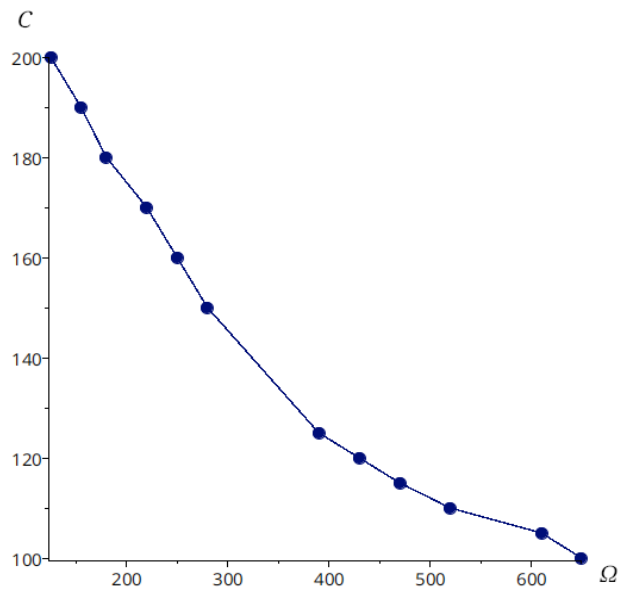
Measurement of voltage over terminals on battery modules (May 2nd, 2024)

	Terminal Voltage [V]
Module 1	28.81
Module 2 (battery with 18 dead cells)	6.72
Module 3	28.3
Module 4	29.26
Module 5	26.32
Module 6	28.81
Module 7	23.43

Thermistor and fuse placement



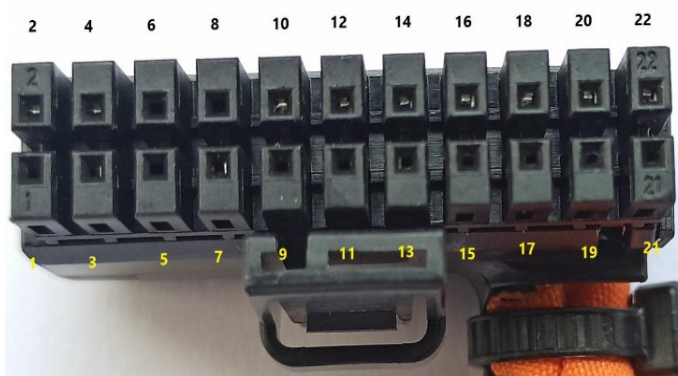
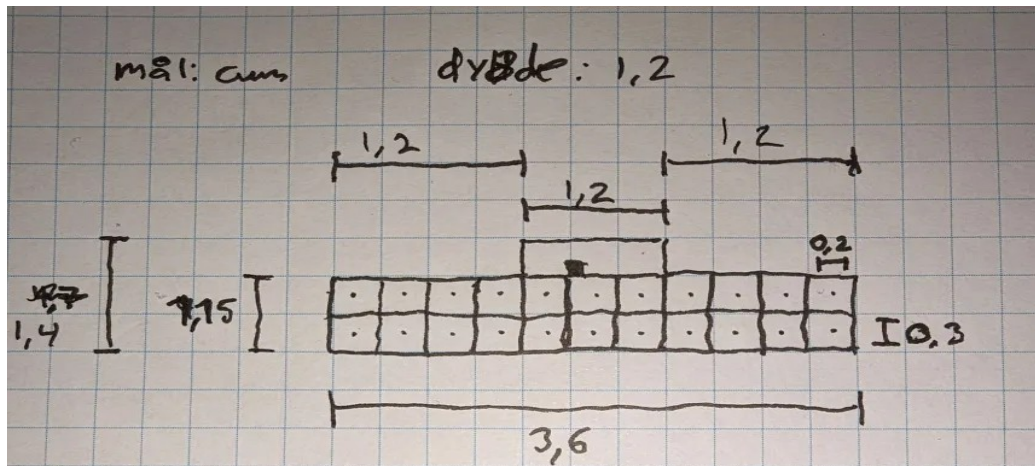
Thermistor resistances at temperatures in celsius



MEB Connector Pinout

Pin Description

- 1 Module + (Cell 8 positive), CMU power positive
- 2 Cell 8+
- 3 Cell 6+
- 4 Cell 7+
- 5 Cell 4+
- 6 Cell 5+
- 7 Cell 4+
- 8 Cell 4+
- 9 12
- 10 Cell 4+
- 11 Cell 4+
- 12 9
- 13 Cell 2+
- 14 Cell 3+
- 15 Ve- / Module negative / first cell negative
- 16 Cell 1+
- 17 Module - (Ve-), CMU power negative
- 18 Not connected
- 19 Termistor 1+
- 20 Termistor 2+
- 21 Termistor 1-
- 22 Termistor 2-



Other sources

- [1] <https://pushevs.com/2021/03/30/ncm-712-by-lg-chem-e66a-and-e78-battery-cells/>
- [2] <https://www.aboutenergy.io/cell-library/lg-chem-e78>
- [3] <https://surelyev.com/specs/389/lgx-e78-ncm712>
- [4] https://www.lgensol.com/assets/file/LGES_spec_sheet_modules_2022.pdf
- [5] <https://gosavetime.com/specifications-lgx-e78-battery-cell-lg-chem/>
- [6] <https://cleantechnica.com/2020/05/13/everything-you-ever-wanted-to-know-about-the-volkswagen-meb-battery-pack-and-more/>
- [7] <https://www.globalfleet.com/en/manufacturers/global/features/battery-series-volkswagen-boost-performance-through-dry-coating?t%5B0%5D=Battery%20Technology&curl=1>
- [8] <https://www.evspecifications.com/en/model/7caa12f>
- [9] <https://www.evcreate.com/using-volkswagen-meb-battery-modules/>