CLAIMS

1. A battery module comprising:

at least two battery cells arranged to be coupled in series;

wherein the battery module is configured to be removably connectable to an adjacent first corresponding battery module by a first electrical connection; and

wherein the battery module is further configured to be removably connectable to the adjacent first corresponding battery module and further to an adjacent second corresponding battery module by at least one second electrical connection such that each battery cell comprised in the battery module is further arranged to be removably connectable to at least one battery cell comprised in the adjacent first and second battery modules by the at least one second electrical connection;

wherein the first electrical connection is a parallel electrical connection and is different from the at least one second electrical connection.

2. The battery module according to claim 1, wherein the battery module is further configured to be removably connectable in parallel to at least one external electric load by a parallel electrical connection.

3. The battery module according to claim 1, wherein the battery module is further configured to be removably connectable to a battery management system, BMS, unit by the at least one second electrical connection.

4. The battery module according to any one of the preceding claims, wherein the battery module further comprises a positive battery module terminal and a negative battery module terminal and is configured to be removably coupled in parallel to the adjacent first corresponding battery module by the first electrical connection via the positive battery module terminal and the negative battery module terminal such that an electric current path is formed between the positive and the negative terminals of the first electrical connection; and wherein the battery module is further configured to be removably coupled to the adjacent first corresponding battery module and further to the adjacent second corresponding battery module by the at least one second electrical connection such that each battery cell

comprised in the battery module is further arranged to be removably coupled to at least one battery cell comprised in the adjacent first and second battery modules by the at least one second electrical connection such that at least one signal path is formed between the battery module and the adjacent first and second battery modules via the at least one second electrical connection; wherein the formed electric current path is different from the formed at least one signal path.

5. The battery module according to any one of preceding claims, wherein each battery cell comprised in each battery module is arranged to be removably coupled to an adjacent battery cell in the same battery module via an individual serial connection plate.

6. The battery module according to claim 5, wherein each battery cell comprised in each battery module is arranged to be removably coupled to the individual serial connection plate via an electrically conductive adhesive element.

7. The battery module according to any of the preceding claims, wherein the first electrical connection and/or the at least one second electrical connection between the battery module and the adjacent first and second battery modules is formed via a conductive elastic and/or springing connection terminal.

8. A collocated battery module comprising:

a first battery module and a second battery module wherein each battery module comprises at least two battery cells arranged to be coupled in series; wherein the first and the second battery modules are configured to be removably coupled in parallel by a first electrical connection; and wherein the first and the second battery modules are further configured to be removably coupled by at least one second electrical connection such that each battery cell comprised in each battery module is further arranged to be removably coupled to at least one battery cell comprised in the other battery module by the at least one second electrical connection; wherein the first electrical connection is different from the at least one second electrical connection.

9. The collocated battery module according to claim 8, wherein each of the first and the second battery modules further comprises a positive battery module terminal and a negative battery module terminal, wherein each module is configured such that an electric current path is formed between the positive and the negative terminals of the first electrical connection; and wherein each module is further configured such that at least one signal path is formed between the first and the second battery modules via the at least one second electrical connection; wherein the formed electric current path is different from the formed at least one signal path.

10. The collocated battery module according to any of claims 8 or 9 wherein the collocated module is further configured to be removably coupled in parallel to an external electric load by the first electrical connection via the positive and the negative battery module terminals such that the electric current path is further formed between each battery module and the external electric load.

11. The collocated battery module according to any one of claims 9 or 10, wherein the collocated battery module is further configured to be removably coupled to one or more other collocated battery modules and/or to a single battery module by the at least one second electrical connection, such that the at least one signal path is further formed between each two adjacent collocated battery modules and/or between the adjacent collocated battery modules and the single battery modules.

12. The collocated battery module according to claim 11, wherein the collocated battery module and/or the single battery module is further configured to be removably connectable to a battery management system, BMS, unit by the at least one second electrical connection.

13. The collocated battery module according to claim 12, wherein the collocated battery module and/or the single battery module is further configured such that when removably coupled to the BMS unit, the at least one signal path is further formed between the collocated battery module and/or the single battery module and the BMS unit.

14. The collocated battery module according to any one of claims 8 - 13, wherein each battery cell comprised in each of the first and the second battery modules is arranged to be removably coupled to an adjacent battery cell in the same battery module via an individual serial connection plate.

15. The collocated battery module according to any one of claims 8 - 14, wherein each battery cell comprised in each of the first and the second battery modules is arranged to be removably coupled to the individual serial connection plate via an electrically conductive adhesive element.

16. The collocated battery module according to any one of claims 8 - 15, wherein the at least one second electrical connection is formed via a conductive elastic and/or springing connection terminal.

17. A modular battery system comprising:

one or more battery modules according to any one of claims 1 - 7 arranged to be removably coupled; and

a battery management system, BMS, unit arranged to be removably coupled to the one or more battery modules.

18. A method of connecting a first and a second battery module each module comprising at least two battery cells; the method comprising:

- removably coupling (501) the at least two battery cells, comprised in each of the first and the second battery modules, in series such that each battery cell comprised in each battery module is arranged to be removably coupled to an adjacent battery cell in the same battery module via an individual serial connection; and
- removably coupling (503) the first battery module and the second battery module such that the first and the second battery modules are removably coupled by a first electrical connection and at least one second electrical connection, wherein

the first electrical connection is different from the at least one second electrical connection.

19. The method according to claim 18, wherein the method further comprises:

- forming (505) an electric current path between the first and the second battery modules via the first electrical connection, wherein the first electrical connection is a parallel electrical connection; and
- forming (507) at least one signal path between the first and the second battery module via the at least one second electrical connection;

wherein the formed electric current path is different from the formed at least one signal path.