

Terms and conditions for the Tower Pro system expansion

Dear Customer,

Thank you for choosing Dynes lithium iron phosphate (LiFePO₄) energy storage systems. To ensure optimal use and to provide you with full information regarding the expansion of the battery system, we are providing the following statement.

1. General information

The Dynes Tower Pro energy storage system features a passive balancing system, which means there are specific conditions for its expansion, both within a single cluster as well as in a parallel system.

The expansion of the Tower Pro battery system should only be carried out under specific conditions to ensure the safety and proper operation of the installation.

1. Expansion should be carried out within a maximum of **3 years** (Suggested no more than **2 years**) of the installation being commissioned. This applies to increasing capacity both within a single cluster, as well as within a parallel system.
2. The difference between the production dates of the battery modules should not exceed **3 years** (Suggested no more than **2 years**) .
3. Only compatible and identical HV9640 module models should be used for the expansion. Please verify in advance that the expansion module is compatible with the original modules.
4. Any expansion must be discussed in advance with the Dynes technical support engineer
5. All work must be carried out by qualified technical personnel.
6. Please check the compatibility list of the inverter with the Tower Pro series in advance to ensure that the expanded system can operate normally.

2. Important information – parallel system

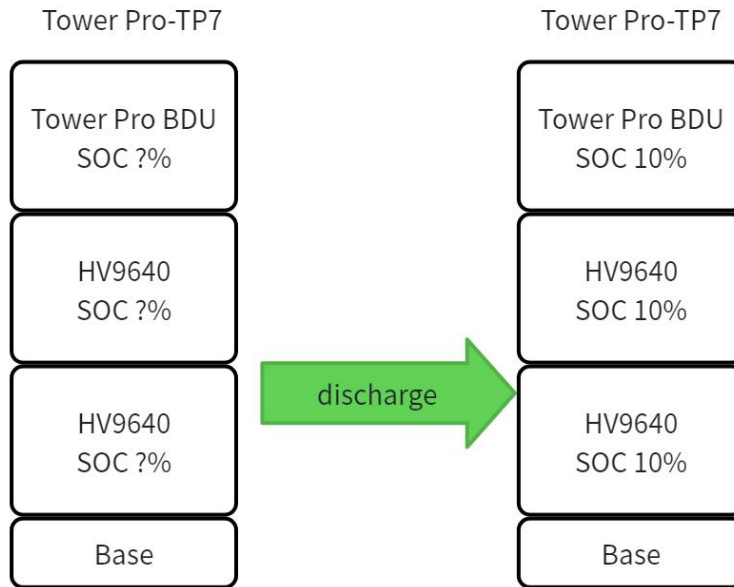
1. Parallel connections and all work must be carried out exclusively by qualified electricians.
2. This document is a summary and does not replace the full user manual. The parallel operation function is supported exclusively by the Tower Pro BDU units: A Combiner Box is required for parallel connections.

3. System capacity expansion

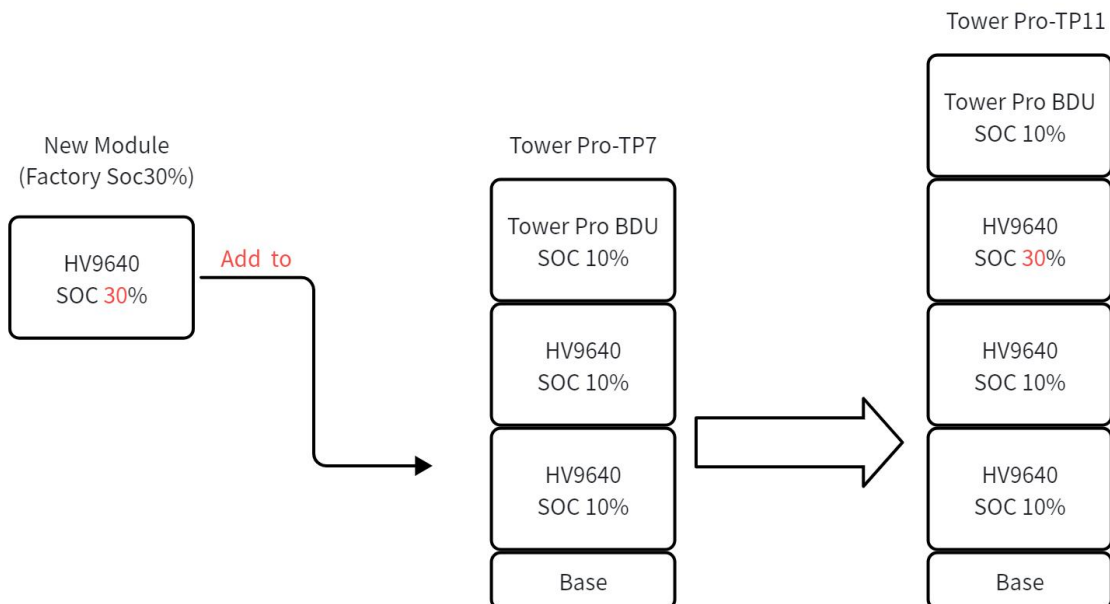
3.1 Using an inverter for module expansion.

Taking the Expansion of Tower Pro TP7 to Tower Pro TP11 as an Example.

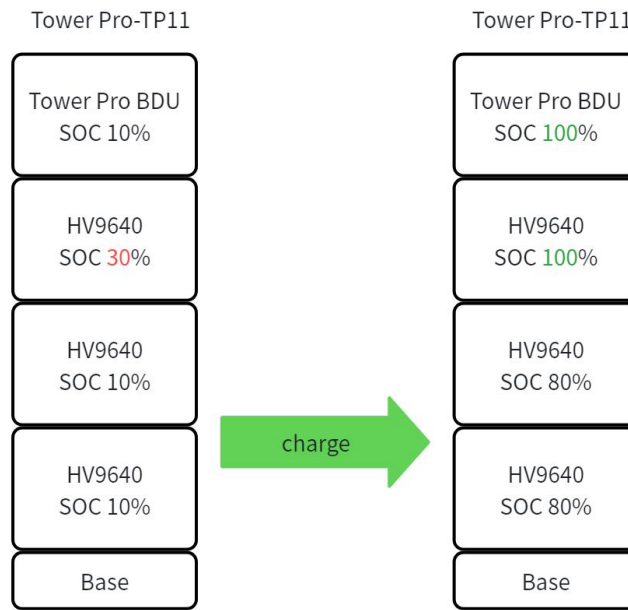
- ◆ Firstly, use an inverter to discharge the original Tower Pro system, ensuring that the SOC of the system $\leq 20\%$.



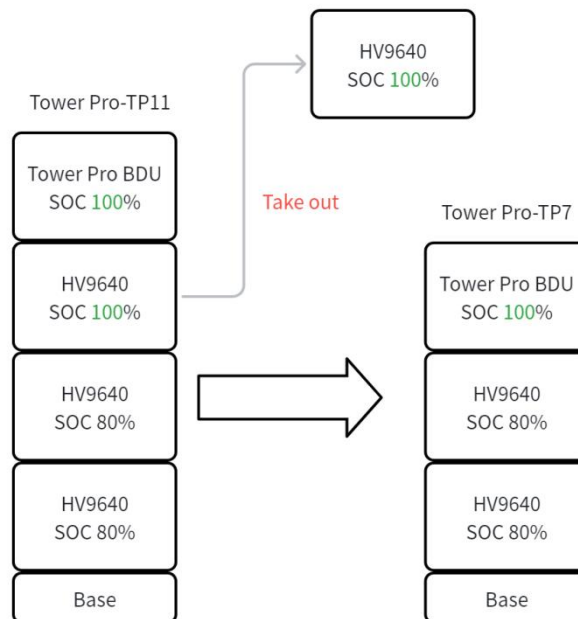
- ◆ Add the battery module to be expanded to the Tower Pro TP7 system, making it Tower Pro TP11



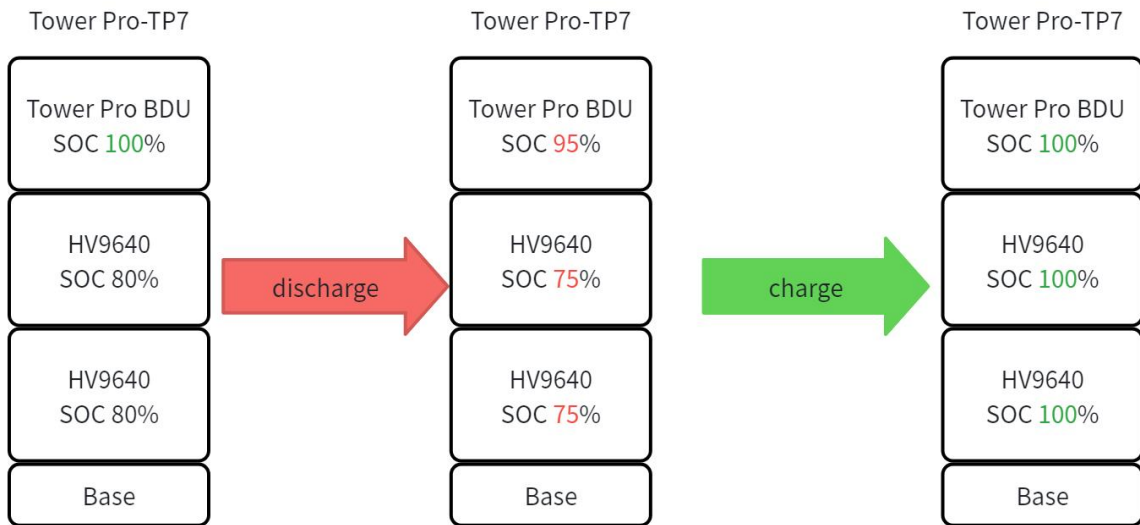
- ◆ Use the inverter to charge the TP11 until the SOC is 100% displayed on the inverter, so that both the BDU and the newly added module SOC are 100%.



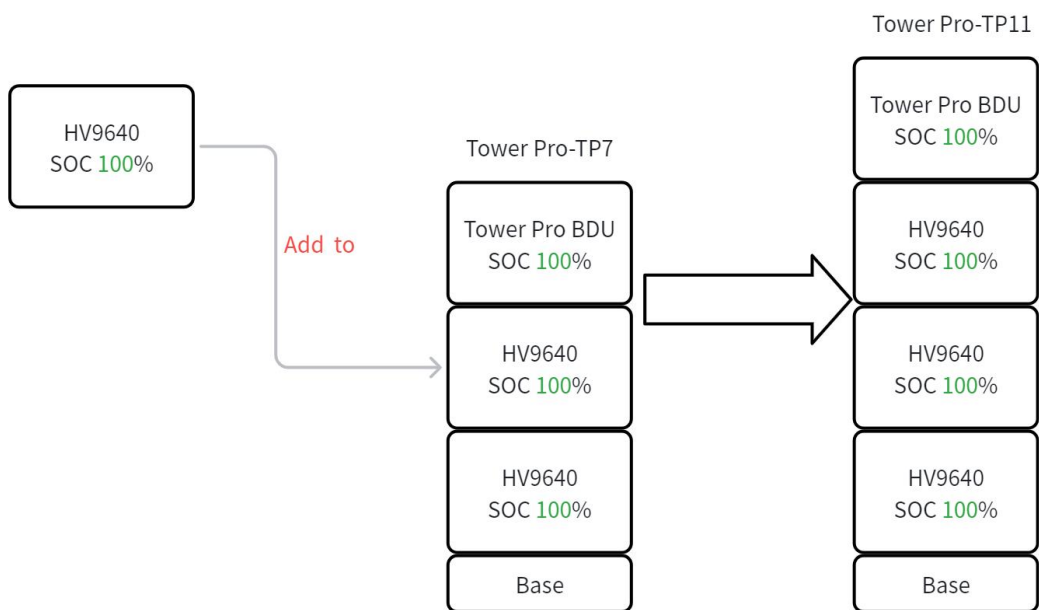
- ◆ Take out the new module



- ◆ Discharge the original system SOC to between 90~99%. Then continue charging until the inverter shows SOC 100%.

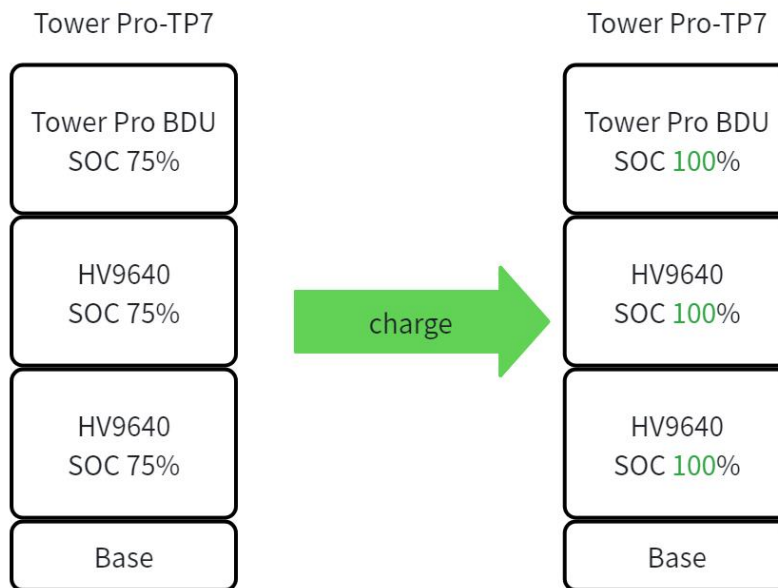


- ◆ Finally, add the new module back into the system, and the expansion is complete.

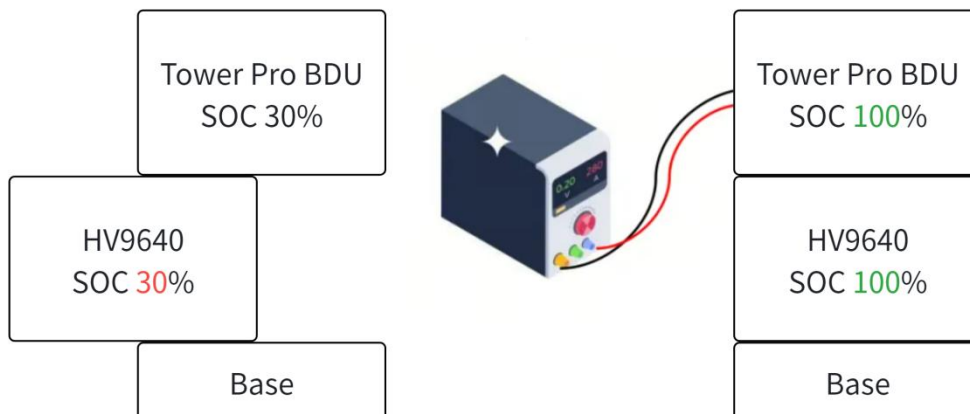


3.2 Expansion using a DC charger

1. Charge the existing system to 100% SOC and maintain this charge level.



2. Install the new module together with the BDU control unit and the base.



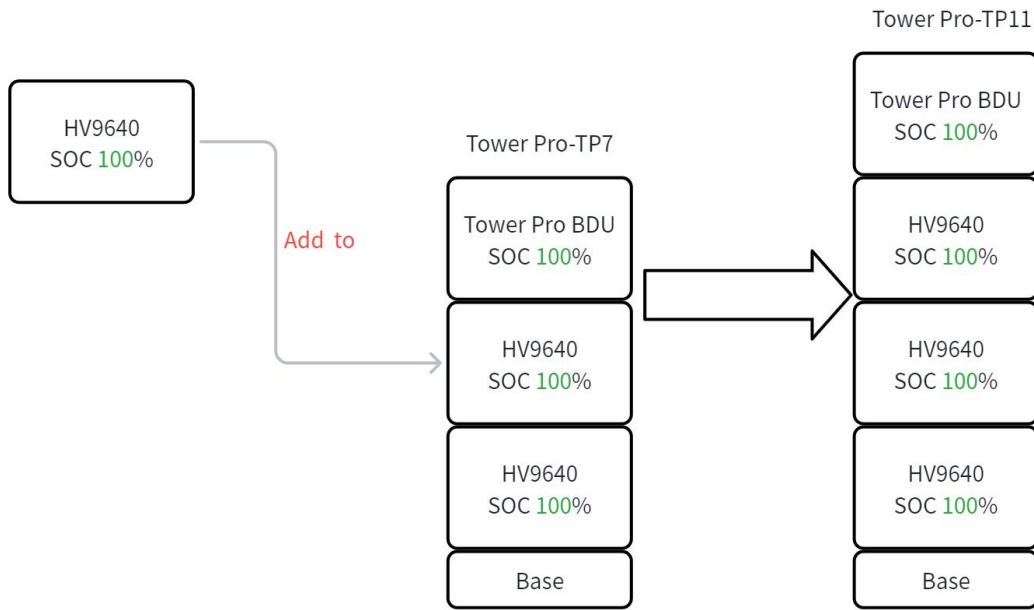
3. Charge the new module using a DC charger.

- Charging parameters:

Voltage: 108 V; Current: 8 A (if the charger supports a lower current, you can charge at a lower current).

- Once the SOC exceeds 90%, reduce the charging current to 5 A. The SOC level can be monitored via the Dyness app provided the Wi-Fi antenna is connected to the local Wi-Fi network.
- SOC 100% is confirmed by the absence of charging current or the disengagement of the relay in the BDU (a characteristic clicking sound).

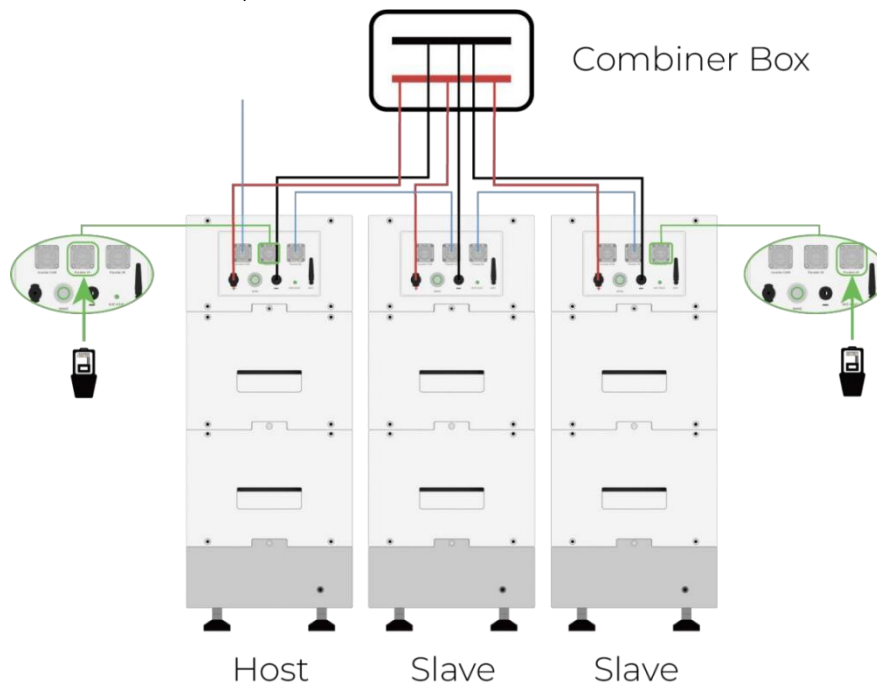
- 4. Add the fully charged module to the existing system.



3.3 Expansion with a second cluster (parallel system)

1. Both clusters must have a SOC level of 100% and the number of modules in the two clusters should be kept the same(All modules must have the same version).
2. The voltage difference between the clusters must be less than **20 V**.
3. The difference in operating time between the clusters must be ≤ 3 years (Suggested no more than **2 years**) .
4. The connection must be made using the Combiner Box.
5. A maximum of 12 clusters can be connected in parallel.
6. For multi cluster parallel systems, the communication line connection between clusters is Host's Parallel 2 to the second cluster's(Slave) Parallel 1and so on. Then connect a 120 Ω CAN resistor to the port of the host parallel 1and the last slave parallel 2. Ensure the stability of CAN communication.

Take three clusters for example:



4. Recommended system verification after expansion

Once the expansion is complete, the following should be carried out:

1. System functional tests – 2 full operating cycles from 100% to 10%.
2. Verification of current and voltage parameters.
3. Safety inspection of the installation.

5. Risks and precautions

Incorrect expansion may lead to:

1. Overheating.
2. Short circuits.
3. System damage.
4. Fire hazards.
5. Incorrect system operating parameters.
6. Incorrect display of the state of charge (SOC) indicator.
7. Loss of energy storage capacity.
8. Loss of warranty

6. Warranty conditions

Unauthorized or incorrect modifications may result in the loss of the warranty. It is recommended that you consult Dyness support before carrying out any work.

7. Disclaimer

Dyness accepts no liability for installation failures, battery damage or safety incidents resulting from unauthorized or incorrectly performed actions. Please carry out the installation under the supervision of a qualified specialist. Upgrades must be carried out in accordance with these instructions and following mandatory consultation with the manufacturer's after-sales support team **(Please fill in your email address here)**

8. Contact

If you have any questions or require technical support, please contact our customer service department:

Email: **(Please fill in your email address here)**

Website: www.dyness.com

Thank you for your trust and support. We do our utmost to provide you with solutions and services of the highest standard.