

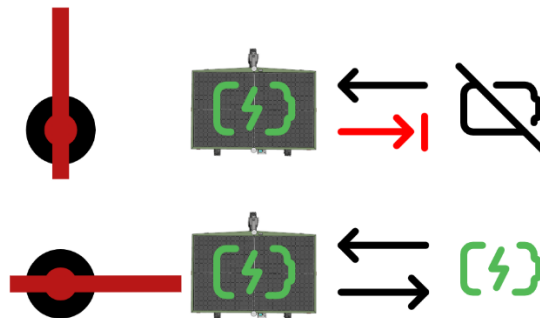
Power bank- how to use it

Quick explanation of how to use the power bank correctly

The power bank allows for runtime extension whenever needed. Thanks to the two 24V Lithium batteries, it provides plenty of energy also in those situations where the electricity production from the solar panels is not sufficient to ensure 24/7 operations (e.g. early or late months of the year) or when the energy consumption is particularly high.

In any case, whether you have a power bank or not, it is important to remember a few good practices to extend the runtime of your FD20:

- Passive trailers won't be used in seeding, so unmount them as they represent only a cost in term of energy.
- Let the robot drive in the field, with all the trailers up, before seeding. This would allow you to create tramlines, which greatly help driving efficiency, but also allow you to detect possible problematic spots which would appear later on during the real seeding/weeding operations (e.g. misplaced obstacle, a group of tall trees obscuring the GPS signal...)
- Don't work too deep, unless strictly necessary. Weed roots are located in the first 1-2 cm of the soil in the first growth stages. Moreover, working deep in the soil may bring to the surface dormant weed seeds.





The power bank is provided with a switch key and an explanation pictogram (images above) on the left side of the assembly:

- When the key is **VERTICAL**, it means that **the flow of energy can only go from the power bank to the robot**. This means that the solar panels will not charge the power bank. This **setting is ideal when the robot is currently working in the field** and the batteries are low on voltage and you don't expect the sunlight to provide enough energy to fulfill the needs of the operation. In this case, the power bank will charge the main batteries together with all of the energy produced from the solar panels in order to prioritize the seeding/weeding operation. This can be done for example in the evening, if the solar panels couldn't produce enough energy during the day. The power bank will ensure enough runtime for the night operations, while the morning, starting from the sunrise, all the energy produced from the solar panels can flow directly into the main batteries.
- When the key is **HORIZONTAL**, **the flow of energy can go both ways**, so the solar panels can actually charge the power bank. This **setting is ideal when the robot is parked outside and you are planning your FD20 to work in the field in a few days** and want to make sure that both the robot's and power bank's batteries are fully charged. Doing this, would allow you to top up the batteries at zero cost.
Having the power bank would allow you to do a battery rotation, if necessary. This means that you could remove a set of batteries from the main shelf, under the electrical panel, and charge them at home. At the same time, the robot will be running thanks to the power bank batteries. Whenever it becomes necessary to have fresh energy, but, at the same time, the production of solar energy is not sufficient to fulfill the needs, then you could replace the empty pack with the freshly charged battery pack and store them directly on the power bank shelf, which is easier to reach than the main shelf.

In any case, consider that **also in the sunniest day, the solar energy production WILL NOT be able to charge both the robot and the power bank batteries, when the robot is driving.** It is not recommended, from an energy-efficiency point of view, to keep discharged power-bank batteries mounted on the droid, when the FD20 is driving.