DARFON

Lithium Batteries

B05LM

B09ULF

B12LF

Darfon offers three lithium battery options for it hybrid inverters, the B05LM, B09ULF and B12LF.

The B05LM is Darfon's lightweight battery solution. The B05LM is a 5kWh wall-mountable LNMC battery that weighs just under 100 pounds. Two B05LM batteries are required for a 9.8kWh energy storage system that can supply up 3.5kW of power to the essential load when there are no other power sources.

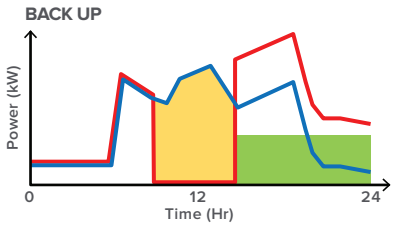
The B09ULF is an ideal battery solution for those who need quite a bit of energy storage but have limited space. The B09ULF is a 9.6kWh battery that can be installed floor-standing or wall-mounted. If you need more reserved energy, the B09ULF can be stacked for 19.2kWh.

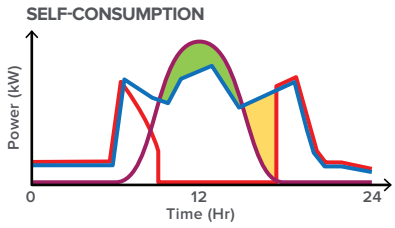
The B12LF is a 12kWh LFP battery cabinet. If needed, two B12LFs can be stacked for 24kWh of power. Even though the B12LF is 485 pounds, it has wheels so moving it around the installation site easily.

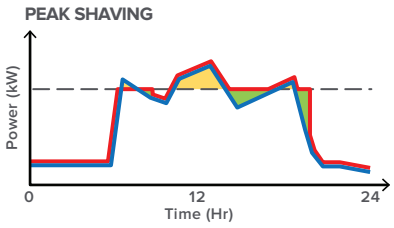
STORAGE CAPACITY

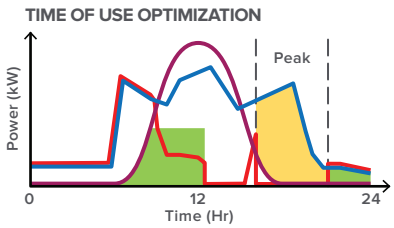
The storage capacity required will vary from site to site based on the purpose of the energy storage system. Some people will want a backup system in case of power outages, self-consume their excess solar production, peak-shave to reduce their electricty bill, optimize time-of-use rates, or to go off-grid.

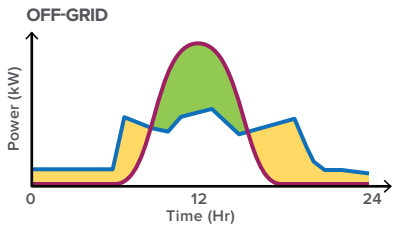
- Backing up the entire home is pretty unrealistic due to cost and space constraints. Typically, the refrigerator and other appliances or electronics deemed essential would backed up. To figure out the storage capacity, multiply the essential load by the number of hours of backup required.
- If the only goal is to self-consume excess solar production, then usable storage capacity needs to be equal to or greater than the excess solar production.
- For peak-shaving, the storage capacity should be equal to or greater than the peak usage minus the utility usage threshold. The utilitiy billing history should be referenced when determining peak usage and the threshold for utility usage.
- Time-of-use (TOU) has two functions: 1) Optimize TOU rate usage and 2) Solar arbitrage. In both, the batteries are charged during non-peak hours and discharged during peak. In arbitrage, any excess power is sold to the utility during peak hours. For TOU optimization, the storage capacity should exceed peak load usage. For arbitrage, the storage capacity needs to store all excess PV production, as well as, support the load and feedback to the grid during peak hours.
- For an off-grid system, the battery capacity will need to larger enough to support the load for more than 24 hours.

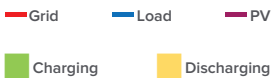












Note: Graphs are simulated and conceptual. They are not a representative of your usage.

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Lithium Batteries

SPECIFICATIONS	B05LM	B09ULF	B12LF
Capacity@ 25°C	4.88kWh (95.4Ah)	9.6kWh (200Ah)	12kWh (250Ah)
Battery Chemistry	LNMC	Lithium Ferrite Phosphate	LFP
Nominal Voltage	51.1V	48V	48V
Cont. Charge Power	2.2kW (3kW with 2 units)	5kW	5kW
Discharge Power	2.2kW (3kW with 2 units)	5.7kW	9.6kW
Peak Discharge Power	2.3kW (3.7kW with 2 units)	9.6kW	15kW
Cont. Charge	44A (66A with 2 units)	100A	100A
Discharge Current	44A (66A with 2 units)	120A	200A
Terminal Type / Location	KST BMC2S / Side	Amphenol C10-730187 / Front	Amphenol HVSP-0R6-MHX / Front
Depth of Discharge (DOD)	80%	100%	100%
Cycle Life [80%DOD, @25°C]	2500 Cycles	6000 cycles	6000 cycles
Communication Interface	RS485	RS485 Standard MODBUS protocol, CAN2.0 (Option)	RS485 Standard MODBUS protocol
Battery Management System	OVP, UVP, OTP, UTP, OCP, SCP	OVP, UVP, OTP, UTP, OCP, SCP	OVP, UVP, OTP, UTP, OCP, SCP
Scalable	Up to 2 units	Up to 2 units	Up to 2 units
Product Weight	45.2kg (99.6 lbs)	125kg (275.6 lbs)	220kg (485.0 lbs)
Product Dimensions (WxHxD)	71x61x16.7cm (28x24x6.6in)	570x1150x285mm (22.4x45.3x11.2in)	600x1100x600mm (23.6x43.3x23.6in)
Installation Method	Wall-mount	Wall-Mounted or Floor-Standing	Free-Standing
Protection Rating	NEMA 1 / IP20	NEMA 4 / IP55	NEMA 1 / IP20
Operating Temperature	-10 to 45°C (14 to 113°F)	-10 to 45°C (14 to 113°F)	-20 to 60°C (-4 to 140°F)
Min. Cold Charge Temperature	0°C (32°F)	-10°C (14°F)	0°C (32°F)
Storage Temperature	-40 to 60°C (-40 to 140°F)	-20 to 40°C (-4 to 104°F)	-40 to 60°C (-40 to 140°F)
Compliance	UL1642, UN38.3, CE	UL1642, UN38.3, IEC62619, UL1973	EN 61000 [ch 4.2, 4.3, 4.5, 4.6], EN55022, EMC (CE), UL1642, UN38.3
Warranty	5 Years	5 Years	5 Years

CALCULATING BATTERY USAGE TIME

One of the most common questions regarding energy storage is, “How many hours will the batteries last?” It seems like a simple question, but the answer is anything but simple. To calculate usage time, you need to know how the energy storage system will be used, and that varies from person to person.

The section below can be used to estimate usage time. 1) Take the sum of the power rating of all the appliances that will be on the load. 2) Make sure the sum is less than the continuous AC output, otherwise it will overload and shutdown. 3) Take the storage capacity and divide it by the sum of the load. This will give you the approximate usage time for the batteries.

Appliances	Power Rating (kW)
Total AC Load	

Storage Capacity	9.8kWh	9.6kWh	19.2kWh	12kWh	24kWh
Battery Model	B05LM	B09ULF	B09ULF	B12LF	B12LF
No. of Batteries	2	1	2	1	2
Cont. AC Output with Battery* (SOC @ 20%)	2.7kW	5.5kW	5.5kW	5.5kW	5.5kW
Cont. AC Output with Battery* (SOC @ 100%)	3.5kW	5.5kW	5.5kW	5.5kW	5.5kW
Total AC Load					
Usage Time (Storage Capacity/Total AC Load)					


Refrigerator 100W


Freezer 660W


Well Pump 800W


Sump Pump 800W


Microwave 1500W


LCD TV 150W

Cable Box 140W


Lights 100W


Air Purifier 50W


Furnace Fan 295W


AC (Central) 3500W


AC (Window) 660W

*Continuous AC output is based on the use of one hybrid inverter. If a larger continuous AC output is required, please see H5001STK brochure.

For more product information, visit us at www.darfonsolar.com