

VANGUARD[®]

Fi Series – Fixed Battery Packs

Leader of the pack in power, safety, and performance.

Durable

- > Multiple protective features tested to withstand harsh conditions, including extreme temperatures, impact, vibration and dirt.

Battery Management System

- > Monitors temperatures and voltages of each cell bank to ensure safe operations.

Unique CMA (Cell Module Assembly) Design

- > For efficient power and safety.

Flexibility

- > Single CANbus J1939 communication protocol allows OEMs to communicate with the battery's J1939 (automotive standard) CANbus.

Assembled In The U.S.A.

- > Designed, engineered, and assembled in the U.S.A. at Vanguard's advanced battery manufacturing facility with automation capabilities that improve product quality and safety.

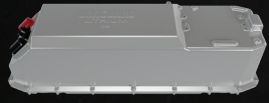


BATTERY TECHNICAL SPECIFICATIONS



SPECIFICATION	48V 1.5 kWh [†]	48V 3.5 kWh [†]	48V 5.0 kWh [†]
ENCLOSURE MATERIALS	Aluminum	Aluminum	Aluminum
NOMINAL VOLTAGE	51.4 V	51.6 V	51.6 V
DISCHARGE CUTOFF VOLTAGE	35.0 V	35.0 V	35.0 V
DISCHARGE CURRENT, NOMINAL	29 A	67 A	100 A
DISCHARGE CURRENT, MAX. CONTINUOUS	100 A	134 A	200 A
DISCHARGE CURRENT, 10S SURGE	‡	200 A	300 A
NOMINAL CAPACITY (PER IEC61960)	28.4Ah	67.5 Ah	98.7 Ah
NOMINAL ENERGY (PER IEC61960)	1.5 kWh	3.5 kWh	5.1 kWh
DISCHARGE TEMPERATURE RANGE	-40°C to +60°C	-20°C to +60°C	-20°C to +60°C
PARALLEL CAPABLE	Yes	Yes	Yes
MARKETED DURABILITY	Up to 1,000 cycles to 80% initial capacity	Up to 2,000 cycles to 80% initial capacity	Up to 2,000 cycles to 80% initial capacity
CHARGING			
CHARGE VOLTAGE (PER IEC61960)	58.8 V	58.8 V	58.8 V
CHARGE TEMPERATURE RANGE	0°C to +45°C	0°C to +45°C	0°C to +45°C
CHARGE TIME WITH 1050W VANGUARD® CHARGER	N/A	4 Hours	5.5 Hours
CHARGE TIME WITH 1425W VANGUARD CHARGER	1.25 Hours	3 Hours	4 Hours
CHARGE TIME WITH 3000W VANGUARD CHARGER	N/A	2 Hours	2.5 Hours
DIMENSIONS/WEIGHT			
PACK FRAME DIMENSIONS (L×W×H), INCHES	10.1 x 5.1 x 14.6	19.9 x 11.5 x 10.5	23.3 x 10.5 x 14.4
PACK FRAME DIMENSIONS (L×W×H), MILLIMETERS	256 x 131 x 371	482 x 272 x 266	597 x 266 x 362
PACK WEIGHT	11.6kg (25.5 lbs)	30kg (66lbs)	38.6kg (85lbs)

[†] Total energy measured using a 0.2C discharge per IEC 61960-3:2017. [‡] Battery packs are not currently in production are subject to changes at time of production launch. [§]3S surge of 180A.



48V 5.0 kWh [†]	48V 7.0 kWh [†]	48V 7.0 kWh [†]	48V 10.0 kWh [*]
Aluminum	Aluminum	Aluminum	Polymer
51.6 V	51.6 V	51.6 V	51.6 V
35.0 V	35.0 V	35.0 V	35.0 V
100 A	134 A	134 A	100 A
200 A	200 A	200 A	200 A
300 A	400 A	400 A	300 A
98.7 Ah	135.9 Ah	135.9 Ah	197.4 Ah
5.1 kWh	7.0 kWh	7.0 kWh	10.2 kWh
-20°C to +60°C	-20°C to +60°C	-20°C to +60°C	-20°C to +60°C
Yes	Yes	Yes	Yes
Up to 2,000 cycles to 80% initial capacity	Up to 2,000 cycles to 80% initial capacity	Up to 2,000 cycles to 80% initial capacity	Up to 2,000 cycles to 80% initial capacity
58.8 V	58.8 V	58.8 V	58.8 V
0°C to +45°C	0°C to +45°C	0°C to +45°C	0°C to +45°C
5.5 Hours	8 Hours	8 Hours	9.5 Hours
4 Hours	6 Hours	6 Hours	8 Hours
2.5 Hours	3 Hours	3 Hours	4 Hours
34.5 × 11.2 × 10.4	23.3 × 10.5 × 14.4	34.5 × 11.2 × 10.4	24.5 × 17.3 × 14.4
877 × 281 × 262	597 × 266 × 362	877 × 281 × 262	624 × 439 × 366
40.8kg (90lbs)	46.3kg (102lbs)	47.6kg (105lbs)	95.3kg (210lbs)

VANGUARD

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