



# FSP Battery Charger Solutions

## -Customized Design and Service-

FSP provides various battery charger solutions that are applicable to the 7S-16S battery module; the output power ranges from 84W-20KW, providing wide applications for different fields, including external chargers or on-board chargers. The optimized circuit design, programmable charging curve, and highly efficient heat dissipation processing can protect the battery effectively and prolong battery life, providing stable and lasting operation time while reducing costs. We provide customized service and design products that are most suitable for customer applications based on different battery specifications, usage environment conditions, and safety requirement assessments.

# Product Advantages and Applications

## Light Electric Vehicle Applications

Battery chargers that are suitable for handheld and portable devices. The products are lightweight and compact and are used in consideration of the various safety regulations for physical contact situations; for example the charger for electric bicycles. They have 90% high energy conversion efficiencies, miniaturized and portable design features, visualized charging status indications, and can charge under  $-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$  environments. The related products already passed safety certifications in many countries for your selection.

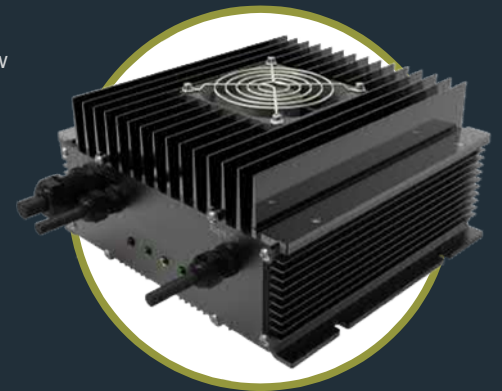
- . Four charging modes to maintain batteries performance.
- . Fan-less design with natural heat dissipation.
- . Built-in protections: OCP, OVP, OTP, SCP.
- . Safety certifications: IEC / UL variants.
- . Wide operation range.



## Electric Vehicle Applications

Battery chargers that are suitable for purely electric/hybrid power/range extender and other new energy transportations. The products have high conversion efficiencies and meets water-proof and dust-proof levels, able to operate normally under rigorous environments, ensuring smooth and stable operations of transportation.

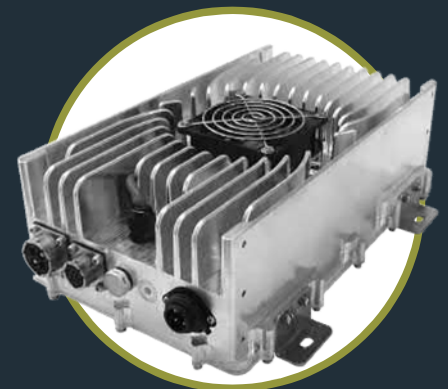
- . The CC-CV charging mode keeps the battery 100% performance.
- . Cooling design for rigorous environments ( $-30^{\circ}\text{C} \sim +85^{\circ}\text{C}$ ).
- . Water-proof and dust-proof up to IP67.
- . Temperature Monitoring.
- . Connection reverse protection.
- . High input voltage protection.
- . Optional CAN bus functionality.
- . For on-board / off-board applications.



## Industry Applications

Suitable for mobile warehouse machineries or handling equipment that need frequent high-level vibrations, impacts, and temperature changes (including refrigeration). FSP can customize highly reliable and high charging quality on-board chargers according to customer needs.

- . Active heat dissipation system can effectively extend the charger's life.
- . High reliability and charge quality.
- . Long usage time in different operating modes.
- . Multi products are available for different applications.
- . Optional CAN bus functionality.
- . For off-board EV application.



# Light Electric Vehicle

## Battery Chargers



SPECIFICATIONS	24V (6S/7S) BATTERY CHARGER		
MODEL	FSP059-7S2AC8	FSP147-7S5AC8	FSP235-7S8AC18
<b>DC OUTPUT</b>			
Output Voltage (max.)	29.4 V	29.4 V	29.4 V
Output Current (max.)	2.0 A	5.0 A	8.0 A
Output Power (max.)	59 W	147 W	235 W
Efficiency	≥ 90%		
<b>AC INPUT</b>			
Input Voltage Range	90 Vac ~ 264 Vac	198 Vac ~ 264 Vac	90 Vac ~ 264 Vac
Input Frequency Range	47 Hz ~ 63 Hz		
<b>MECHANICAL</b>			
Dimensions	128 x 67 x 32 mm	177 x 86 x 32 mm	177 x 86 x 32 mm
Weight	300 g	560 g	680 g
Cooling	Convection		
<b>ENVIRONMENTAL</b>			
Enclosure	IP 50		
Operating Temperature	-10°C ~ +40°C		
Safety	CE, CSA		

SPECIFICATIONS	36V (10S) BATTERY CHARGER					
MODEL	FSP063-10S1AC8	FSP168-10S4AC8	FSP252-10S6AC18	FSP084-10S2AC8H	FSP168-10S4AC8H	FSP252-10S6AC8H
<b>DC OUTPUT</b>						
Output Voltage (max.)	42.0 V	42.0 V	42.0 V	42.0 V	42.0 V	42.0 V
Output Current (max.)	1.5 A	4.0 A	6.0 A	2.0 A	4.0 A	6.0 A
Output Power (max.)	63 W	168 W	252 W	84 W	168 W	252 W
Efficiency	≥ 90%					
<b>AC INPUT</b>						
Input Voltage Range	90 Vac ~ 264 Vac			180 Vac ~ 264 Vac		
Input Frequency Range	47 Hz ~ 63 Hz			47 Hz ~ 63 Hz		
<b>MECHANICAL</b>						
Dimensions	128 x 67 x 32 mm	177 x 86 x 32 mm	177 x 86 x 32 mm	128 x 67 x 32 mm	177 x 86 x 32 mm	177 x 86 x 32 mm
Weight	300 g	560 g	680 g	300 g	560 g	680 g
Cooling	Convection					
<b>ENVIRONMENTAL</b>						
Enclosure	IP 50					
Operating Temperature	-10°C ~ +40°C					
Safety	CE, CSA					

# Light Electric Vehicle

## Battery Chargers

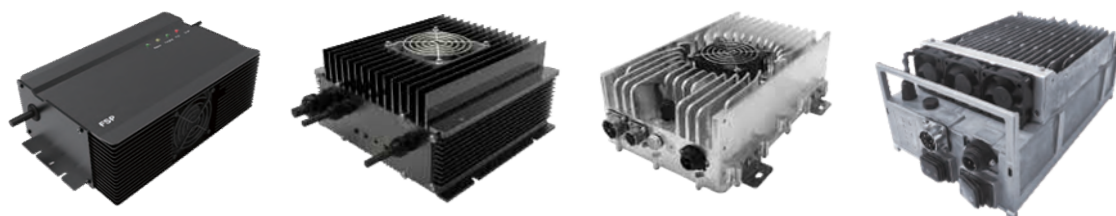


SPECIFICATIONS	48V (12S/13S/14S) BATTERY CHARGER				
MODEL	FSP151-12S3AC8	FSP164-13S3AC8	FSP176-14S3AC8	FSP235-14S4AC18	FSP246-13S4A5C18
<b>DC OUTPUT</b>					
Output Voltage (max.)	50.4 V	54.6 V	58.8 V	58.8 V	54.6 V
Output Current (max.)	3.0 A	3.0 A	3.0 A	4.0 A	4.5 A
Output Power (max.)	151 W	164 W	176 W	235 W	246 W
Efficiency	≥ 90%				
<b>AC INPUT</b>					
Input Voltage Range	90 Vac ~ 264 Vac				
Input Frequency Range	47 Hz ~ 63 Hz				
<b>MECHANICAL</b>					
Dimensions	177 x 86 x 32 mm	177 x 86 x 32 mm	177 x 86 x 32 mm	177 x 86 x 32 mm	177 x 86 x 32 mm
Weight	560 g	540 g	560 g	680 g	680 g
Cooling	Convection				
<b>ENVIRONMENTAL</b>					
Enclosure	IP 50				
Operating Temperature	-10°C ~ +40°C				
Safety	CE, CS				

SPECIFICATIONS	48V (12S/13S/14S) BATTERY CHARGER		
MODEL	FSP151-12S3AC8H	FSP164-13S3AC8H	FSP176-14S3AC8H
<b>DC OUTPUT</b>			
Output Voltage (max.)	50.4 V	54.6 V	58.8 V
Output Current (max.)	3.0 A	3.0 A	3.0 A
Output Power (max.)	151 W	164 W	176 W
Efficiency	≥ 90%		
<b>AC INPUT</b>			
Input Voltage Range	180 Vac ~ 264 Vac		
Input Frequency Range	47 Hz ~ 63 Hz		
<b>MECHANICAL</b>			
Dimensions	177 x 86 x 32 mm	177 x 86 x 32 mm	177 x 86 x 32 mm
Weight	560 g	560 g	560 g
Cooling	Convection		
<b>ENVIRONMENTAL</b>			
Enclosure	IP 50		
Operating Temperature	-10°C ~ +40°C		
Stafety	CE, CSA		

# Electric Vehicle / Industry

## Battery Chargers



SPECIFICATIONS	ON-BOARD BATTERY CHARGER (OBC)			
MODEL	FSP600-1UAC01	FSP2000-1UAC01	FSP1800C-1Q01A	FSP2800C-2Q01
<b>DC OUTPUT</b>				
Output Voltage (max.)	58.8 V / 54.6V / 50.4V	58.8 V / 54.6V / 50.4V	28.0V ~ 60.0V	180V ~ 302V
Output Current (max.)	10.0 A	34.0 A	30.0 A	10.0 A
Output Power (max.)	600 W	2000 W	1800 W	2800 W
AUX Voltage	-	-	11.4V ~ 12.6V	13.8V ~ 14.8V
Efficiency	≥ 90%	≥ 90%	≥ 90%	≥ 90%
<b>AC INPUT</b>				
Input Voltage Range	90 Vac ~ 264 Vac	90 Vac ~ 264 Vac	90 Vac ~ 264 Vac	195 Vac ~ 264 Vac
Input Frequency Range	47 Hz ~ 63 Hz	47 Hz ~ 63 Hz	47 Hz ~ 63 Hz	47 Hz ~ 63 Hz
<b>MECHANICAL</b>				
Dimensions	202 x 132 x 69 mm	214 x 200 x 105 mm	300 x 190 x 91 mm	309 x 168 x 264 mm
Weight	2.2 kg	4.5 kg	5.5 kg	5.2 kg
Cooling	Fan Cooling	Fan Cooling	Fan Cooling	Fan Cooling
<b>COOMMUNICATION</b>				
CANBus	Optional	Optional	Optional	Optional
<b>ENVIRONMENTAL</b>				
Enclosure	IP 65	IP 65	IP 65	IP 65
Operating Temperature	-15°C ~ +40°C	-20°C ~ +50°C	-25°C ~ +60°C	-10°C ~ +45°C
Safety	CE	not available	CE	not available

SPECIFICATIONS	OFF-BOARD BATTERY CHARGER	
MODEL	FSP600-1UBC01	FSP2000-1UBC01
<b>DC OUTPUT</b>		
Output Voltage (max.)	58.8 V / 54.6V / 50.4V	58.8 V / 54.6V / 50.4V
Output Current (max.)	10.0 A	34.0 A
Output Power (max.)	600 W	2000 W
AUX Voltage	-	-
Efficiency	≥ 90%	≥ 90%
<b>AC INPUT</b>		
Input Voltage Range	90 Vac ~ 264 Vac	90 Vac ~ 264 Vac
Input Frequency Range	47 Hz ~ 63 Hz	47 Hz ~ 63 Hz
<b>MECHANICAL</b>		
Dimensions	202 x 132 x 69 mm	214 x 200 x 105 mm
Weight	2.2 kg	4.5 kg
Cooling	Fan Cooling	Fan Cooling
<b>COOMMUNICATION</b>		
CANBus	-	-
<b>ENVIRONMENTAL</b>		
Enclosure	IP 54	IP 54
Operating Temperature	-15°C ~ +40°C	-20°C ~ +50°C
Safety	processing	not available