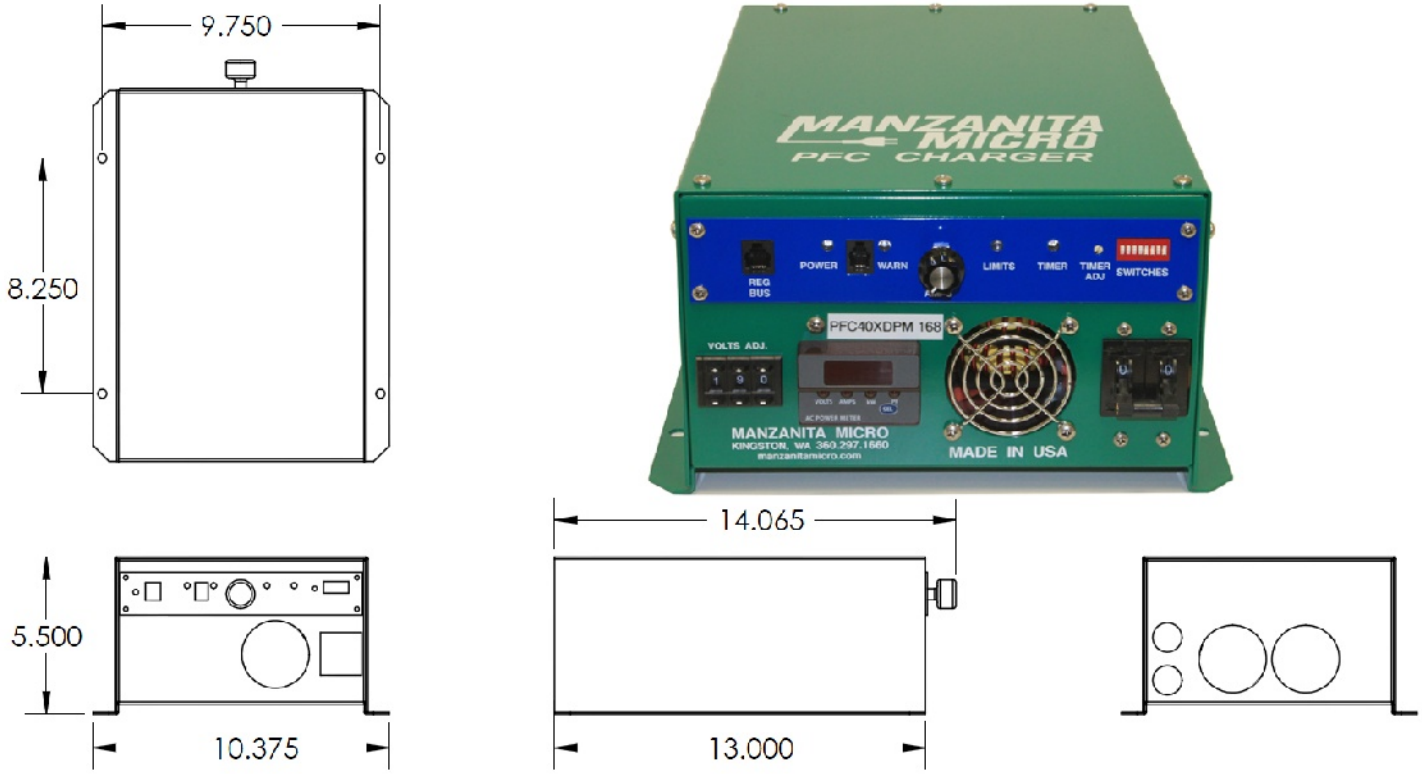
MANZANITA MICRO PFC-20/30/40 EV BATTERY CHARGER

The Manzanita Micro PFC-20, PFC-30 and PFC-40 chargers share the same size enclosure. With a fully adjustable output voltage for battery packs from 12 to 450VDC and power levels of up to 9.6kW we think you'll agree that there are no other EV battery chargers that are this flexible or powerful in such a small footprint.

There are no input voltage settings to change, simply plug into any AC wall outlet from 100 to 250 volts and 40 to 80 hertz. Current is easily adjustable allowing users to fine tune the unit to pull the maximum amount of amps from whatever outlet is available. Starting in 2011 all PFC-30 and PFC-40 chargers come standard with built-in digital input current meters allowing quick and precise amperage adjustments. The small size, flexible input and output ranges and ease of user adjustable features make Manzanita Micro chargers an exceptional on-board charging solution so your electric vehicle should never encounter a single phase outlet it cannot use. It is no wonder Manzanita Micro chargers are used in electric vehicles in countries all across the globe.



The PFC-20, PFC-30 and PFC-40 series chargers weigh in at approximately 18 pounds (8.2 kg)

The maximum outermost dimensions including foot flanges and protrusions are approximately:
14” L x 10.5” W x 5.75” H (358mm x 264mm x 145mm)

Input Voltage Range : 100 to 240VAC 40-80Hz computer grade pure sine wave
Output Voltage Range : 12 to 450VDC (+/- 1 volt)
Operating Temp Range : -20° F to +120° F (-28.8° C to +48.8° C)
Power Consumption : Up to 9.6kW ~ PFC40 / 7.2kW ~ PFC30 / 4.8kW ~ PFC20

The 20, 30 or 40 nomenclature is indicative of how many amps that charger is rated to draw from the AC line. Unlike some other chargers, this is the rated continuous load and all units are thoroughly tested to their rated limits before leaving Manzanita Micro. Chargers can be set up to accept SAE J1772 communication.

www.manzanitamicro.com phone: (360) 297-1660 email: sales@manzanitamicro.com

MANZANITA MICRO

PFC-20/30/40

EV BATTERY CHARGER

	PFC-20	PFC-30	PFC-40
Input voltage range	100-250 Volts AC		
Line frequency	40-80 Hz		
Output voltage range	12-450 Volts DC		
Input current range	0.2 to 20 Amps AC	0.2 to 30 Amps AC	0.3 to 40 Amps AC
Standard output	0 to 20 Amps DC	0 to 40 Amps DC*	0 to 40 Amps DC
Output -buck enhanced	0 to 30 Amps DC	0 to 40 Amps DC	0 to 40 Amps DC
Standby current	0.2 Amps DC	0.2 Amps DC	0.3 Amps DC
Air cooling path	In the back, out the front		
Cooling fan control	Thermostat controlled variable speed fans are standard features on air cooled units		
Input cable	#10-3 SO Cable	#10-3 SO Cable	#6-4 SO cable
Input connector	Unterminated	NEMA 14-30	NEMA 14-50
Output cable	#10-3 SO Cable	#8-3 SO Cable	#4-3 SO cable
Output connector	50 Amp Andersen Gray		
Input protection	30 amp 240 volt breaker	30 amp 240 volt breaker	50 amp 240 volt breaker
Output protection (stock)	30 amp 450 VDC clip mount fuse	50 amp 450 VDC stud mount fuse	60 amp 450 VDC stud mount fuse
Output protection (with buck enhancement)	50 amp 450 VDC stud mount fuse	50 amp 450 VDC stud mount fuse	60 amp 450 VDC stud mount fuse
Mounting bolt holes	4 each 5/16 inch		
Charger type	Switch mode PFC		
Topology	Two transistor fly back		
Isolation input to output	None, negative terminal of input bridge rectifier is connected to battery negative		
Charge algorithm	Constant current then constant voltage		
Current adjustment	Front panel knob or optional connection on rear		
Voltage adjustment	Front panel recessed 20 turn trim pot (20 volts per turn) or optional digipot		
Charge timer modes	NO timeout		
Starts at Constant Current Stage			
Starts at Constant Voltage Stage			
Starts when first BMS unit commands it			
Charge timer settings	Zero to 150 minutes in 10 minute increments		
Switching frequency	50 kHz		
Power factor into 400V	Typically >.99		
Efficiency into 400V	Typically >90%		
Full power current ripple (peak to peak)	2X the average DC value		

*All PFC-30 & 40 chargers are buck enhanced so a PFC-30 is capable of moving up to 40A into a low voltage pack but a PFC-40 is better for H.V. packs. Maximum power levels are 4.8kW, 7.2kW and 9.6kW for PFC-20, 30 and 40 respectively. Detailed power input and output graphs are available at: manzanitamicro.com

www.manzanitamicro.com phone: (360) 297-1660 email: sales@manzanitamicro.com