■ Features

- Smart charger for lithium batteries (Li-ion,LiFePO) and Lead-Acid batteries, max. output power up to 168W.
- GaN chip solution, compact and lightweight, high efficiency
- Built-in 4 stage charging curve(For Lithium batteries) and 3 stage charging curve(For Lead-Acid batteries)
- Universal AC input /(100~240Vac) with active PFC circuits
- Protection: Output Short Circuit / Output Over Voltage / Over Current / Battery Reverse Polarity Protection
- 1 years warranty

■ Applications

- Power tool solution
- Electric scooter charger
- Portable power devices
- Electric motorcycle\Electric sweeper

■ Description

The GaN170 series is a single output, desktop AC to DC charger with a maximum power of 168W. It is compact, lightweight, and highly efficient. It features 4 stage and 3 stage charging modes suitable for Lithium batteries (Li-ion, $LiFePO_4$, Lithium Manganese) and Lead-Acid batteries (Gel, Liquid, AGM) respectively.

■ Model Encoding

GaN170-XXXYYY

- YYY: Rated current, 2.8~12A, YYY=035 means 3.5A
- XXX: Rated voltage, 12~60V, XXX=576 means 57.6V
- GaN170: Series name

For Li-ion battery (*Only the adopted models are listed in table, for other output please reach our sales)*

MODEL			GaN170-126120	GaN170-168090	GaN170-294057	GaN170-420040	GaN170-546030	GaN170-588028
OUTPUT	Charge voltage		12.6V±1%	16.8V±1%	29.4V±1%	42.0V±1%	54.6V±1%	58.8V±1%
	Charge voltage range		7.5-12.6V	10.0-16.8V	17.5-29.4V	25.0-42.0V	32.5-54.6V	35-58.8V
	Charge current	200-240VAC	12.0A±10%	9A±10%	5.7A±10%	4.0A±10%	3.0A±10%	2.8A±10%
		100-120VAC	9.5A±10%	7.1A±10%	4.9A±10%	3.5A±10%	2.7A±10%	2.5A±10%
	Pre-charge current		2.4A±10%	1.8A±10%	1.14A±10%	0.8A±10%	0.6A±10%	0.56A±10%
	Charge-end current		≤1.2A ±20%	≤0.9A ±20%	≤0.57A ±20%	≤0.4A ±20%	≤0.3A ±20%	≤0.28A ±20%
	Rated power@AC220V		151.2W	151.2W	167.58W	168W	163.8W	164.64W
	Recommended battery capacity (Note.3)		30 - 100Ah	20 - 100Ah	10 - 50Ah	8 - 40Ah	6 - 30Ah	5 - 30Ah
	Leakage current from battery (Typ.)		≤2mA					
Charging Indication	LED indication		Red: Charging. Green: Full or Idle					
INPUT	Rated input voltage		110 / 240VAC 50 / 60Hz					
	Input voltage range(Note.4)		100-120VAC / 200-240VAC					
	Power factor (Typ.)		PF>0. 98@AC100Vfull load					
	Input current (Typ.)		100-120VAC / 200-240VAC					
	Inrush current (Typ.)		Cold start <75A @230VAC					
	Standby input power		<1W					
	Efficiency (Note.2)		93%	93%	93%	94%	94%	94%
PROTECTION	Short circuit (Note.5)		Yes					
	Over voltage		105% of the rated output voltage					
	Reverse polarity		Yes					
	Over temperature		Yes					
ENVIRONMENT	Working temperature		-10 - +40℃ (Refer to " Derating Curve")					
	Working humidity		0 - 90% RH					
	Storage temperature, humidity		-40 - +70℃, 0 - 95% RH					
	Cooling		Natural convection					
	Vibration resistance		10 - 50Hz, 2G 10min. 1cycle, 60min. each along X, Y, Z axes					
SAFETY&EMC (Note.6)	Max. temperature rise		< 40℃ on casing					
	Hi-Pot Insulation		i/p to o/p: 3000V (1 min)					
	Safety approval		IEC62368-1					
	EMC Emission		**Parameter**	**Standard**			**Test Level I Note**	
			Conducted	EN55032FCCPART15			Class B	
			Radiated	EN55032FCCPART15			Class B	
			Harmonic Current	EN61000-3-2			.....	
			Voltage Flicker	EN61000-3-3			.....	
	EMC IMMUNITY		EN61000-4-2，EN61000-4-3，EN61000-4-4，EN61000-4-5，EN61000-4-6，EN61000-4-8，EN61000-4-11					
OTHERS	MTBF		30000H					
	Dimension		114*68.4*29mm(L*W*H)					
	Weight		350g					

NOTE

1. Modification for charger specification may be required for different battery specification. Please contact battery vendor and Green digital power for details.
2. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
3. This is Green suggested range. Please consult your battery manufacturer for their suggestions about maximum charging current limitation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
5. This protection mechanism is specified for the case the short circuit occurs after the charger is turned on.
6. The battery charger is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives.

For LFP battery *(Only the adopted models are listed in table, for other output please reach our sales)*

MODEL			GaN170-144100	GaN170-288057	GaN170-360045	GaN170-432038	GaN170-576029
OUTPUT	Charge voltage		14.4V±1%	28.8V±1%	36.0V±1%	43.2V±1%	57.6V±1%
	Charge voltage range		10.0-14.4V	20.0-28.8V	25-36.0V	30-43.2V	40-57.6V
	Charge current	200-240VAC	10.0A±10%	5.7A±10%	4.5A±10%	3.8A±10%	2.9A±10%
		100-120VAC	8.3A±10%	4.9A±10%	4..0A±10%	3.4A±10%	2.6A±10%
	Pre-charge current		2.0A±10%	1.14A±10%	0.9A±10%	0.76A±10%	0.58A±10%
	Charge-end current		≤1.1A ±20%	≤0.57A ±20%	≤0.45A ±20%	≤0.38A ±20%	≤0.29A ±20%
	Rated power@AC220V		144W	164.16W	162W	164.16W	167.04W
	Recommended battery capacity Note.3		30 - 100Ah	20 - 100Ah	10 - 50Ah	8 - 40Ah	6 - 30Ah
	Leakage current from battery (Typ.)		≤2mA				
Charging Indication	LED indication		Red: Charging. Green: Full or Idle				
INPUT	Rated input voltage		110 / 240VAC 50 / 60Hz				
	Input voltage range Note.4		100-120VAC / 200-240VAC				
	Power factor (Typ.)		PF>0. 98@AC100Vfull load				
	Input current (Typ.)		2.2A@100VAC				
	Inrush current (Typ.)		Cold start <75A @230VAC				
	Standby input power		<1W				
	Efficiency (Typ.)		93%	93%	93%	94%	94%
PROTECTION	Short circuit Note.5		Yes				
	Over voltage		105% of the rated output voltage				
	Reverse polarity		Yes				
	Over temperature		Yes				
ENVIRONMENT	Working temperature		-10 - +40℃ (Refer to " Derating Curve")				
	Working humidity		0 - 90% RH				
	Storage temperature, humidity		-40 - +70℃, 0 - 95% RH				
	Cooling		Natural convection				
	Vibration resistance		10 - 50Hz, 2G 10min. 1cycle, 60min. each along X, Y, Z axes				
SAFETY&EMC (Note.6)	Max. temperature rise		< 40℃ on casing				
	Hi-Pot Insulation		i/p to o/p: 3000V (1 min)				
	Safety approval		IEC62368-1				
	EMC Emission		**Parameter**	**Standard**		**Test Level I Note**	
			Conducted	EN55032FCCPART15		Class B	
			Radiated	EN55032FCCPART15		Class B	
			Harmonic Current	EN61000-3-2		.....	
			Voltage Flicker	EN61000-3-3		.....	
	EMC IMMUNITY		EN61000-4-2，EN61000-4-3，EN61000-4-4，EN61000-4-5，EN61000-4-6，EN61000-4-8，EN61000-4-11				
OTHERS	MTBF		30000H				
	Dimension		114*68.4*29mm(L*W*H)				
	Weight		350g				

NOTE

1. Modification for charger specification may be required for different battery specification. Please contact battery vendor and Green digital power for details.
2. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
3. This is Green suggested range. Please consult your battery manufacturer for their suggestions about maximum charging current limitation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
5. This protection mechanism is specified for the case the short circuit occurs after the charger is turned on.
6. The battery charger is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives.

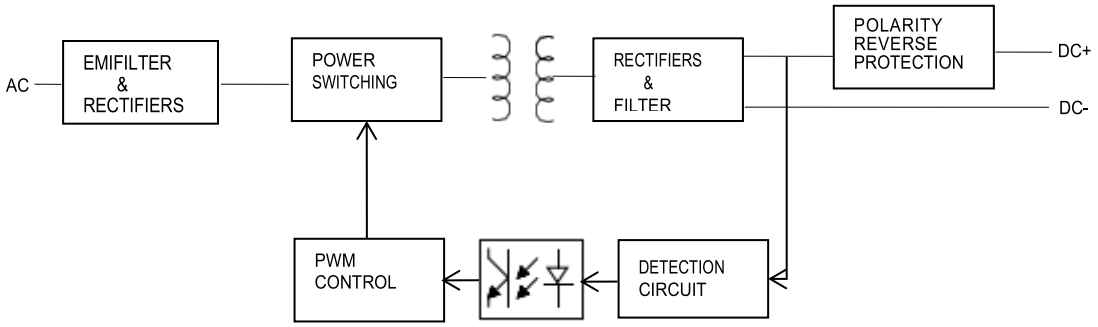
For Lead-Acid battery *(Only the adopted models are listed in table, for other output please reach our sales)*

MODEL			GaN170-148100	GaN170-296056	GaN170-444037	GaN170-592028
OUTPUT	Charge voltage		14.8V±1%	29.6V±1%	44.4V±1%	59.2V±1%
	Charge voltage range		10.0-14.8V	20.0-29.6V	30.0-44.4V	40.0-59.2V
	Float charge		13.8V±1%	27.6V±1%	41.4V±1%	55.2V±1%
	Charge current	200-240VAC	10.0A±10%	5.6A±10%	3.7A±10%	2.8A±10%
		100-220VAC	8.0A±10%	4.9A±10%	3.3A±10%	2.5A±10%
	Charge-end current		≤2.0A ±20%	≤1.12A ±20%	≤0.74A ±20%	≤0.56A ±20%
	Rated power@AC220V		148W	165.76W	164.28W	165.76W
	Recommended battery capacity Note.3		60 - 100Ah	30- 60Ah	20 - 40Ah	15 - 30Ah
	Leakage current from battery (Typ.)		≤2mA			
Charging Indication	LED indication		Red: Charging. Green: Full or Idle			
INPUT	Rated input voltage		110 / 240VAC 50 / 60Hz			
	Input voltage range Note.4		100-120VAC / 200-240VAC			
	Power factor (Typ.)		PF>0. 98@AC100Vfull load			
	Input current (Typ.)		2.2A@100VAC			
	Inrush current (Typ.)		Cold start <75A @230VAC			
	Standby input power		<1W			
	Efficiency (Typ.)		93%	93%	94%	94%
PROTECTION	Short circuit Note.5		Yes			
	Over voltage		105% of the rated output voltage			
	Reverse polarity		Yes			
	Over temperature		Yes			
ENVIRONMENT	Working temperature		-10 - +40℃ (Refer to " Derating Curve")			
	Working humidity		0 - 90% RH			
	Storage temperature, humidity		-40 - +70℃, 0 - 95% RH			
	Cooling		Natural convection			
	Vibration resistance		10 - 50Hz, 2G 10min. 1cycle, 60min. each along X, Y, Z axes			
SAFETY&EMC (Note.6)	Max. temperature rise		< 40℃ on casing			
	Hi-Pot Insulation		i/p to o/p: 3000V (1 min)			
	Safety approval		IEC62368-1			
	EMC Emission		**Parameter**	**Standard**	**Test Level I Note**	
			Conducted	EN55032FCCPART15	Class B	
			Radiated	EN55032FCCPART15	Class B	
			Harmonic Current	EN61000-3-2	.....	
			Voltage Flicker	EN61000-3-3	.....	
	EMC IMMUNITY		EN61000-4-2，EN61000-4-3，EN61000-4-4，EN61000-4-5，EN61000-4-6，EN61000-4-8，EN61000-4-11			
OTHERS	MTBF		**30000H**			
	Dimension		114*68.4*29mm(L*W*H)			
	Weight		350g			

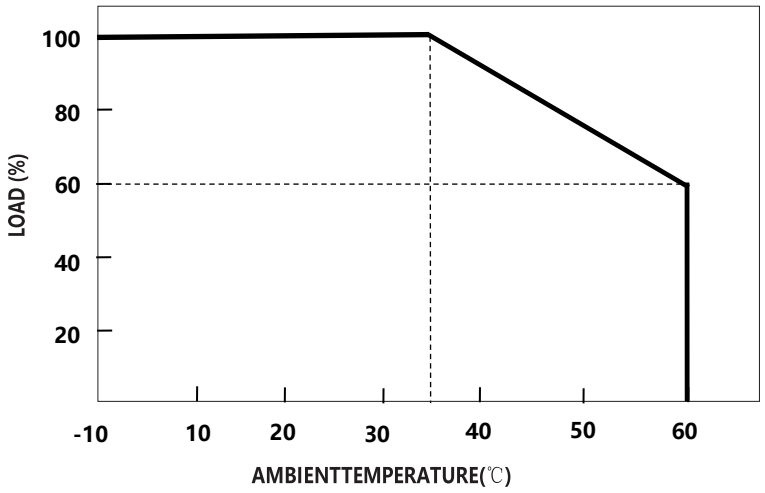
NOTE

1. Modification for charger specification may be required for different battery specification. Please contact battery vendor and Green digital power for details.
2. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
3. This is Green suggested range. Please consult your battery manufacturer for their suggestions about maximum charging current limitation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
5. This protection mechanism is specified for the case the short circuit occurs after the charger is turned on.
6. The battery charger is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives.

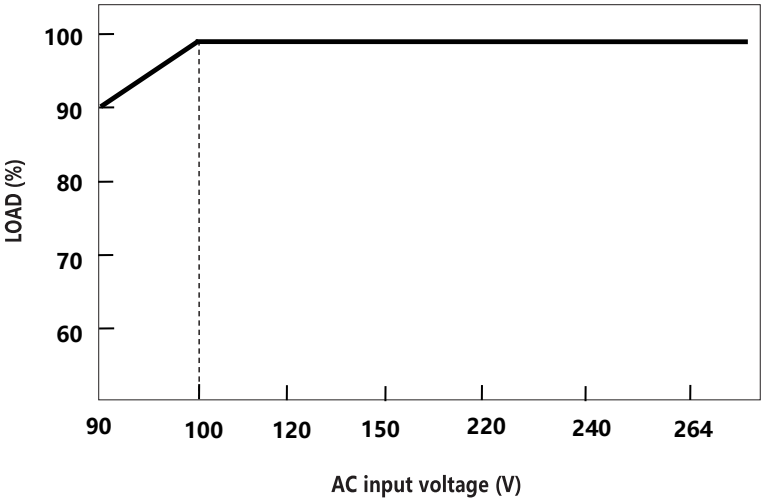
Block Diagram



Derting Curve

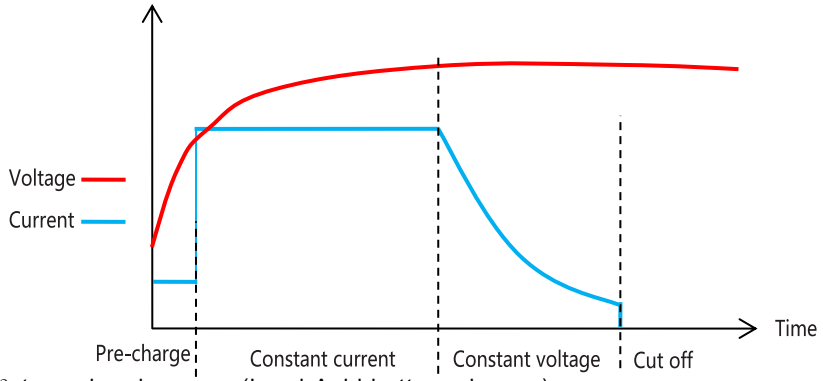


Static Characteristics

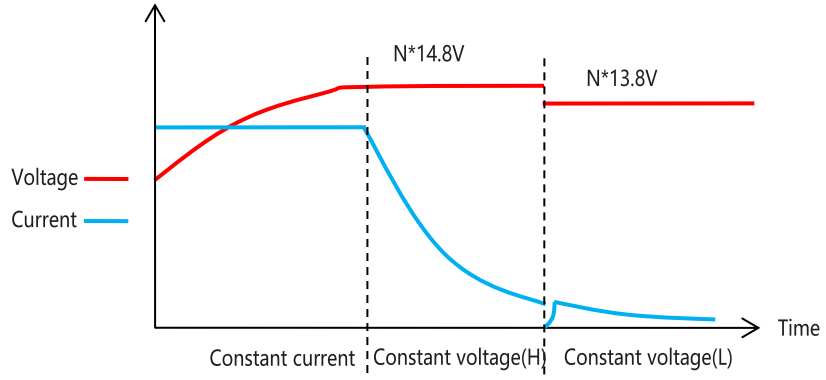
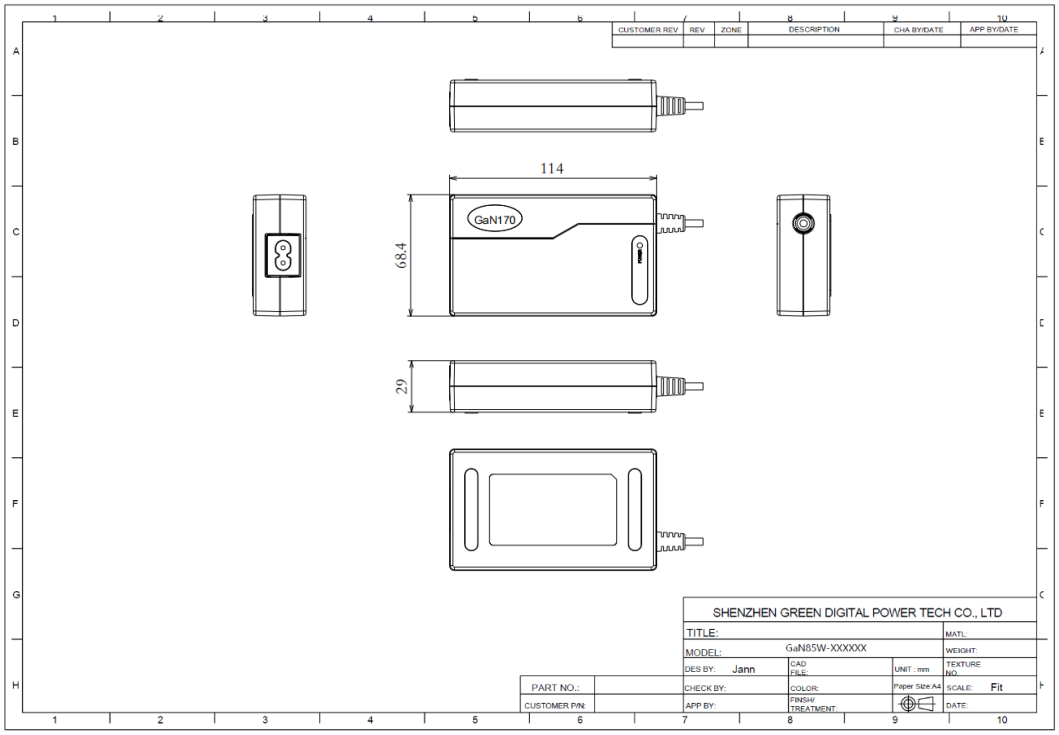


Charging Curve

◎ 4 stage charging curve(Li-ion battery charger)



◎ 3stage charging curve(Lead-Acid battery charger)



Mechanical specification