



Features

- . Wide input 90V to 264VAC, 50~60Hz suitable for worldwide
- . Output voltage selectable from 14.6V to 58.8Vdc
- . Class B Conducted and Radiated EMI for information devices
- . 2 stage charging characteristic with 2 color LED indicator
- . Fully enclosed plastic case cooling by free air convection
- . High Efficiency up to 88% and power factor up to 0.98
- . Over Temperature / Reverse Connection / Short Circuit Protections

Safety Standards

- . IEC60335-1:2010+A1:2013 + A2:2016 /IEC60335-2-29 CB
- . UL1310:2018 Ed.7+R:09 + CSA C22.2#223:2015 Ed.3
- . EN 60335-2-29 /EN60335-1:2012 for European Union
- . AS/NZS 60335.2.29: 2017 for Australia and New Zealand
- . J61558-1/J61558-2-16 /J3000 /J55014-1 for Japan market.

Product Description:

It is a highly reliable 90W desktop style battery charger solution with wide range 90-264Vac input and single output available from 14.6V to 58.8Vdc for different voltage batteries. Equipped with a standard IEC320-C8 AC inlet. The entire series supplies different models which is suitable for 12V/24V/36V/48V lead-acid batteries and Li-ion batteries. This 90W series battery charger is widely used in charging electric bicycles, tricycles, scooters, power tools and other electric-related equipment.

With the efficiency up to 88% and built-in active PFC with PF>0.98, this 90W battery charger is designed according to worldwide satisfy standards. The entire series utilizes the 94V-0 flame retardant plastic housing and the temperature resistance is up to 120 degrees.



Technical Specification

Typ. Model	AP-PN90CH01460060	AP-PN90CH02920030	AP-PN90CH02940030	AP-PN90CH04200020	AP-PN90CH05460016
Output					
Output Voltage	14.6VDC	29.2VDC	29.4VDC	42VDC	54.6VDC
Charging Current	6A	3A	3A	2A	1.6A
Output Power	87.6W Max.	87.6W Max.	88.2W Max.	84W Max.	87.36W Max.
Voltage Accuracy	±0.2V	±0.2V	±0.2V	±0.2V	±0.2V
Ripple & Noise	200mVp-p	200mVp-p	250mVp-p	300mVp-p	400mVp-p
Standby Power	≤0.21W	≤0.21W	≤0.21W	≤0.21W	≤0.21W
Input					
Input voltage	90 - 264Vac or 127- 374Vdc				
Input Frequency	50-60Hz (When the input is AC)				
Input Current	2A Max. @ 100 ~240Vac 50/60Hz input				
Inrush Current	100A Max. @ 100 ~240Vac 50/60Hz input				
Power Factor	>0.98 @ 120Vac 60Hz input; >0.95 @230Vac 50Hz input				
Efficiency (Typ.)	88%	88%	88%	88%	88%
Leakage Current	≤0.25mA @ full input range				
Protections					
Over temperature	Shut down o/p voltage, re-power on to recover				
Short Circuit	When Short Circuit happened ,charger will turn off. No damage.				
Reverse Connection	When the battery is polarity reversed ,the charger will cut off the connection between the circuit and the battery				
Environmental					
Operation Temperature	-10°C to +40°C, 10%RH to 90%RH				
Operation Altitude	≤2000m @ full load and rated operating temperatures				
MTBF	≥50000Hrs @ full load and rated operating temperatures				
Mechanical					
Dimensions (W x L x H)	141.0 x 60.0 x 33.0mm (5.55 x 2.36 x 1.30 inch)				
Unit Weight	450g±15 grams				
Packing Information	25pcs/ Carton, carton dimensions:47*37*20cm, 12.5kgs/ Carton				

TEST REPORT

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	VOLTAGE ACCURACY	-0.2V ~ +0.2V	I/P:90VAC~264VAC O/P:FULL~MIN. LOAD / Ta:25°C	-0.09V ~ +0.12V	P
2	CONTINUOUS OUTPUT CURRENT	6A	I/P:230VAC /I/P:115VAC O/P:CV=12V / Ta:25°C	5.96A /230VAC 5.85A/115VAC	P
3	LED INDICATOR	Charging (CC): RED Floating charging: GREEN	I/P:230VAC O/P: SETTING / Ta:25°C	>0.516A, LED: RED <0.485A, LED: GREEN	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	VOLTAGE RANGE	90VAC~264VAC	I/P:TESTING O/P:FULL LOAD / Ta:25°C	81V~264V	P
2	FREQUENCY RANGE	50HZ - 60HZ (Typ) NO DAMAGE OSC	I/P: 100VAC ~ 240VAC O/P:FULL~MIN LOAD / Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.96 / 230VAC 0.98 / 115VAC	I/P:230VAC IP: 115VAC O/P: FULL LOAD & Ta:25°C	PF=0.972 / 230VAC PF=0.993 / 115VAC	P
4	EFFICIENCY	88% (Typ)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	90.5%	P
5	AVERAGE EFFICIENCY	>88% (LEVEL VI)	I/P:115/230VAC &O/P:25%、50%、75%、 100% LOAD & Ta:25°C	88.93% (115VAC) 89.7696% (230VAC)	P
6	AC CURRENT	2.0A (Max)	I/P:100VAC & O/P:FULL LOAD Ta:25°C	1.58A	P
7	NO LOAD POWER CONSUMPTION	<0.21W	I/P: 230VAC /O/P:NO LOAD Ta:25°C	0.17W	P
8	INRUSH CURRENT	<80A COLD START	I/P: 230VAC / O/P:FULL LOAD Ta:25°C	56.65A	P
9	LEAKAGE CURRENT	< 0.25mA	I/P:240VAC & O/P:Min LOAD Ta:25°C	L-FG:0.16mA N-FG:0.15mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	OVER LOAD PROTECTION	95 ~ 115%	I/P:230VAC I/P:115VAC O/P:TESTING Ta:25°C	100.8% /230VAC 100.8% /115VAC Constant current limiting recovers automatically after fault condition is removed	P
2	OVER VOLTAGE PROTECTION	14.8V ~ 16.0	I/P:230VAC /I/P:115VAC O/P:MIN LOAD Ta:25°C	15.05V /230VAC 14.98V /115VAC Shut down o/p voltage, re-power on to recover	P
3	SHORT PROTECTION	SHORT OUTPUT 1 HOUR NO DAMAGE	I/P:264VAC O/P:FULL LOAD & Ta:25°C	NO DAMAGE HICCUP MODE	P
4	REVERSE CONNECTION	REVERSE CONNECTION for 1H NO DAMAGE	I/P: 230VAC O/P: TESTING Ta:25°C	Shut down O/P voltage, no damage. Re-power on to recover	P

SAFETY TEST & E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P- FG: 2KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:0.6 KVAC/min Ta:25°C	I/P-O/P:1.729mA I/P-FG: 3.425mA O/P-FG:0.485mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ O/P-FG:9999 MΩ NO DAMAGE	P
3	CONDUCTION	BS EN/EN55014(CISPR32), FCC PART 15 / CISPR22 CAN	I/P: 230 VAC (50HZ) O/P: FULL/50% LOAD Ta: 25°C	PASS Test by certified Lab	P
4	RADIATION	BS EN/EN55014(CISPR32), FCC PART 15 / CISPR22 CAN	I/P: 230 VAC (50HZ) O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab	P
5	SURGE	BS EN/EN61000-4-5 LIGHT INDUSTRY L-N: 1KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA B	P
6	E.S.D	BS EN/EN61000-4-2 LIGHT INDUSTRY AIR: 8KV / Contact: 4KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA B	P

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	LINDA	JUDY	ZHANG DL