

COTEK

BP-□□□□A Series Switch-Mode 3 Stage Battery Charger User's Manual



CE

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1. Important Safety Information



WARNING!

Before installing or using BP-□□□□A Battery Charger, you need to read following safety information carefully.

1-1. General Safety Precautions

- 1-1-1. Do not expose BP-□□□□A Battery Charger to water, mist, snow, or dust. To reduce the risk of fire, do not cover or obstruct the ventilation shaft.
Do not install BP-□□□□A Battery Charger in a zero-clearance Compartment. Overheating may occur.
- 1-1-2. To avoid the risk of fire and electronic shock, make sure that existing wiring is in good electrical condition and not undersize.
Do not operate BP-□□□□A Battery Charger with damaged or substandard wiring.
- 1-1-3. Do not charge non-rechargeable batteries.
- 1-1-4. Do not charge batteries in a non-ventilated enclosures.
- 1-1-5. Only the wire with IEC socket is allowed to plug to the battery charger.
- 1-1-6. If the power supply cord is damaged, it must be replaced by the manufacturer, the service agent, or a related qualified person in case of a hazard.

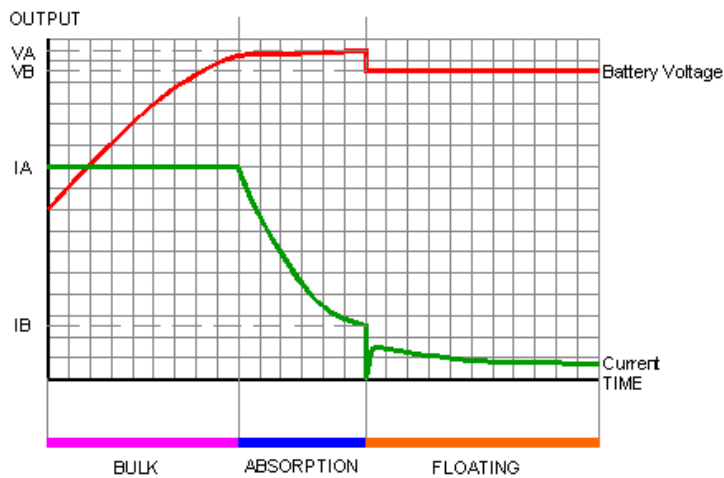
1-2. Battery Precautions

- 1-2-1.If battery acid contacts your skin or clothing, you shall wash it out with soap and water immediately. If battery acid contacts your eyes, you shall wash it out with cold running water for at 1 least 20 minutes and get medical attention immediately.
- 1-2-2.Never smoke or make a spark or flame in the vicinity of the battery or the engine.
- 1-2-3.Do not drop metals on the battery. The resulting spark or short-circuit on the battery or other electrical parts may cause an explosion.
- 1-2-4.Remove personal metal items such as rings, bracelets, necklaces, and watches when operating with lead-acid batteries. Doing so may cause short circuit and very high temperature, which can melt metal items and even burn you.

2. Features

- High-performance 3-stage charging effect
- 0.98 typical power factor
- Advanced 8 bit microprocessor control circuit
- Reverse polarity protected by fuse
- Ignition protection
- Output short circuit protection
- Over power protection
- Switch mode technology
- Statue of charge indication by LED
- Compact and lightweight design

2-1. Battery Charging Curve



IuU Charging Characteristic

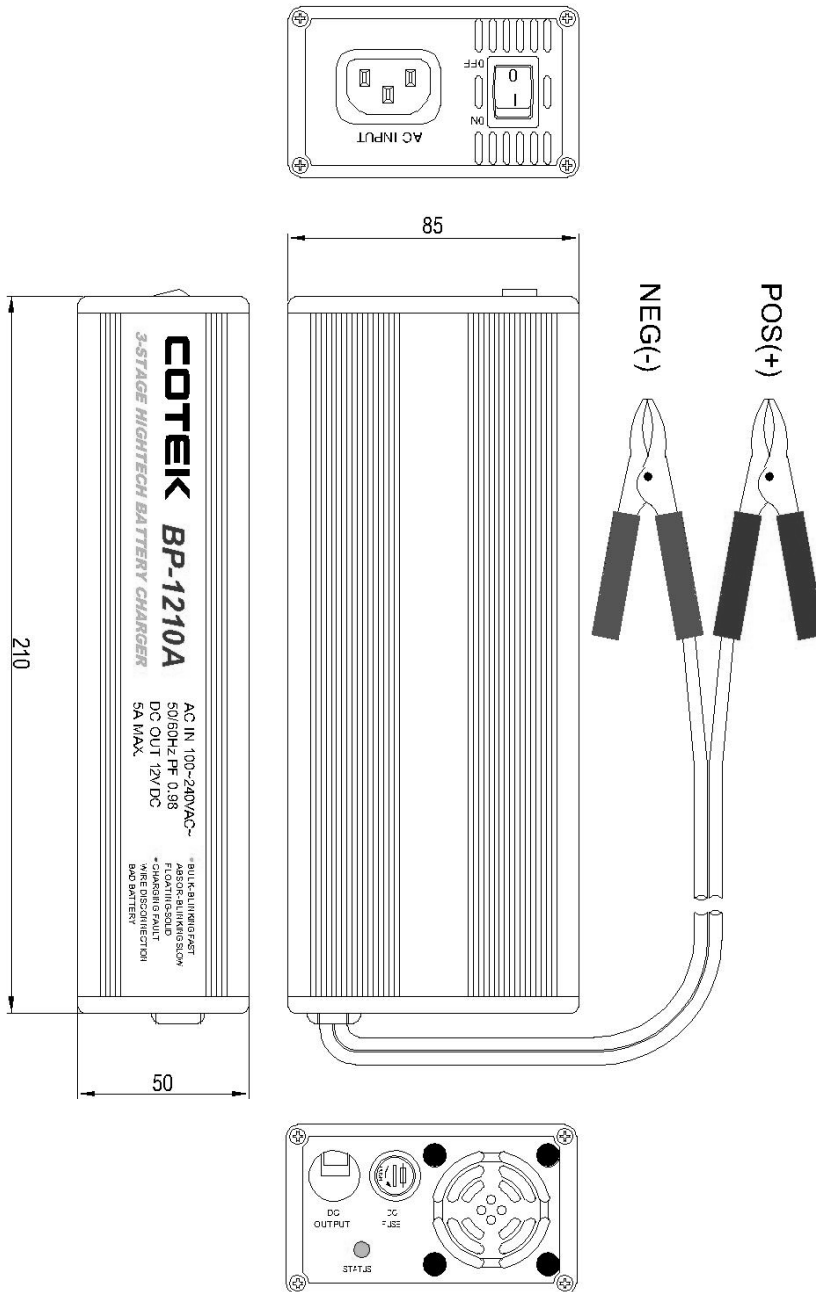
| Model | 12V / 5A | 12V / 10A | 24V / 5A | 24V / 3A |
|-------|----------|-----------|----------|----------|
| VA | 14.4V | 14.4V | 28.8V | 28.8V |
| VB | 13.6V | 13.6V | 27.2V | 27.2V |
| IA | 5A | 10A | 5A | 2.5A |
| IB | 0.75A | 1.5A | 0.75A | 0.38A |

2-2. Electrical Characteristics

| Model | | BP-1210A | BP-1205A | BP-2405A | BP-2403A |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
| Output | DC Voltage Range | 14.4V | 14.4V | 28.8V | 28.8V |
| | Rated Current | 10A | 5A | 5A | 2.5A |
| | Current Range | 0 ~ 10A | 0 ~ 5A | 0 ~ 5A | 0 ~ 2.5A |
| | Rated Power (max.) | 144W | 72W | 144W | 72W |
| | Battery Charger Mode | 3 - stage Battery Chargers (Refer to Battery Charging Curve) | | | |
| | Indication LED | Refer to LED Status | | | |
| Input | Voltage Range | 88 ~ 264VAC | | | |
| | Frequency Range | 47Hz ~ 63Hz | | | |
| | Efficiency (Typ.) at 230Vac | 80% | 78% | 83% | 80% |
| | AC Current (Max.) | 1.9 A / 90VAC 0.95A / 180VAC | | | |
| | Inrush Current (Typ.) | Cold Start 30A / 230VAC | | | |
| | Leakage Current | < 0.75mA / 240VAC | | | |
| Protection | Over Load | 102~110% rated output power Protection type : Constant current limiting, Hiccup mode, recovers automatically after fault condition is removed | | | |
| | Over Temperature | 85°C ± 5°C (TH1) detect on heat sink Protection type : Shut down output voltage, recovers automatically after temperature goes down | | | |
| Environment | Working Temp. | - 20°C ~ 50°C | | | |
| | Working Humidity | 20 ~ 90% RH non-condensing | | | |
| | Storage Temp., Humidity | - 40 ~ +85°C | | | |
| | Temp.Coefficient | ± 0.03% / °C (0 ~ 50°C) | | | |
| | Vibration | 10 ~ 500Hz, 1G 0.5Oct/min, period for 60min. Each along X,Y,Z axes | | | |
| Safety & EMC | Safety Standards | IEC 60950-1, 1st Edition (2001) ; EN 60950-1, 1st Edition (2001+A11) | | | |
| | Withstand Voltage | I/P - O/P:3KVAC I/P - FG:1.5KVAC O/P-FG:0.5KVAC, 1 minute | | | |
| | Isolation Resistance | I/P - O/P, I/P - FG, O/P - FG:100M Ohms/500VDC | | | |
| | EMI Conduction & Radiation | EN 55022 : 2006 Class B | | | |
| | Harmonic Current | EN 61000-3-2 : 2006 ; EN 61000-3-3 :1995+A1 : 2001+A2 : 2005 ; EN 55024 : 1998+A1:2001+A2 : 2003 ; | | | |
| | EMS Immunity | IEC 61000-4-2 Edition 1.2 : 2001 -04 ; IEC 61000-4-4 : 2004 IEC 61000-4-5 Edition 1.1 : 2001-04 ; IEC 61000-4-6 Edition 2.1 : 2004-1 IEC 61000-4-8 Edition 1.1 : 2001-03 ; IEC 61000-4-11 Second Edition : 2004-03 | | | |
| Others | MTBF Compliance: MIL-HDBK-217F | 343.3 KHRS | 343.1 KHRS | 302.2 KHRS | 265.5 KHRS |
| | Dimension (L*W*H) (mm) | 210 (L) x 85 (W) x 50 (H) mm / 8.26 (L) x 3.34 (W) x 1.96 (H) Inch | | | |
| | Packing | 1 kg. / 2.2 Lbs. | | | |
| Note | <p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>2. The power supply is considered a component which will be installed into a final equipment.</p> <p>3. The final equipment must be re-confirmed that it still meets EMC directives.</p> | | | | |

*Note : The specifications are subject to change without notice.

2-3. Mechanical Drawing

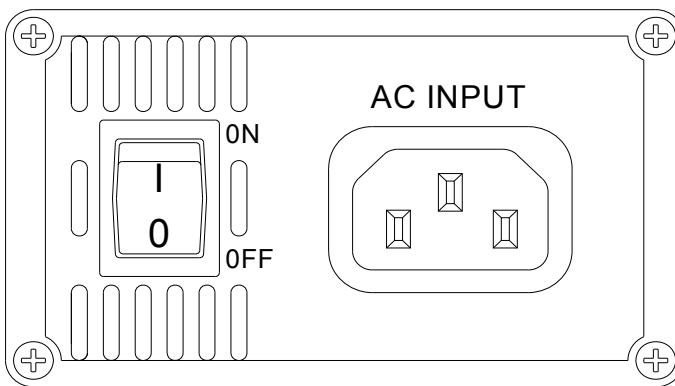


3. Instructions

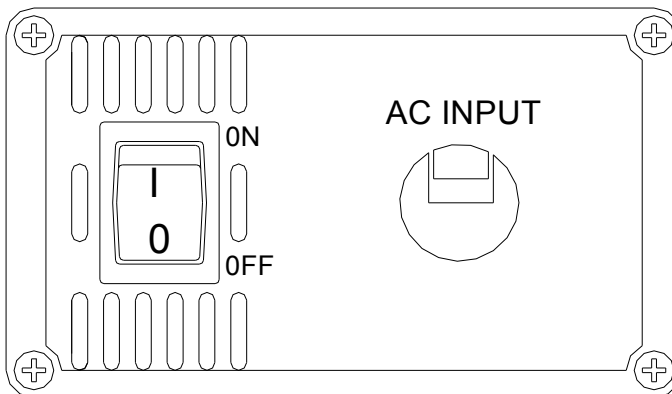
BP-□□□□A series are high frequency switch-mode 3-stage battery chargers equipped with micro-controller and PFC circuit to manage battery intelligently and to provide highly reliable operations. Before using BP-□□□□A, read all instructions and precautions marking on this manual.

3-1. Front Panel Operation :

3-1-1. Front view :



IEC RECEPTACLE TYPE



POWER CORD TYPE

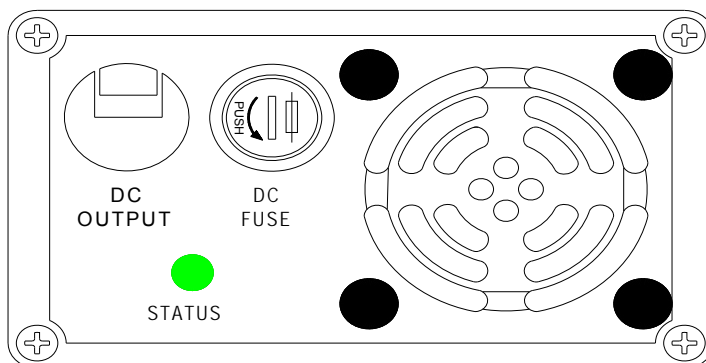
3-1-2.ON / OFF switch :

Power ON / OFF switch, leave the status OFF during installation.

3-1-3.LED Status

| Charging Status | LED Signal | LED Indication |
|----------------------------------------------|------------|------------------|
| Bulk Charge | | Fast Green Blink |
| Absorption Charge | ----- | Slow Green Blink |
| Floating Charge | ————— | Solid Green |
| Charging Failure or Wire Disconnection | ----- | Red Blink |

3-2. Rear Panel Operation :



3-2-1.Ventilation Shaft :

Be sure to keep it a distance (at least one inch) from surrounding things.

3-2-2.DC Output Terminals :

Connect it to 12V/24V batteries.

【+】 indicates positive, 【-】 indicates negative. Reverse polarity connection will blow the internal fuse and may damage BP-□□□□A permanently.

3-3. Troubleshooting :

| Problems and Symptoms | Possible Cause | Solutions |
|-----------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------|
| "Red" LED blink | Battery is disconnected | Check the battery connection. |
| | Polarity reverse | Place proper polarity. Check DC fuse. If broken, replace the same rating fuse. |
| | DC fuse broken | Check DC output fuse |
| LED light off | No AC power delivering | Check input power connection. |
| | Thermal shutdown | Make sure the ventilation shaft is not obstructed. Improve ventilation. Lower the temperature Surrounding it. |

3-4. Battery Type Selections :

Sealed lead acid and open lead acid batteries are as follows :

| Model No. | Battery Capacity (Min.) | Battery Capacity (Max.) |
|-----------|-------------------------|-------------------------|
| BP-1205A | 12V / 15Ah | 12V / 50Ah |
| BP-1210A | 12V / 30Ah | 12V / 100Ah |
| BP-2403A | 24V / 7.5Ah | 24V / 25Ah |
| BP-2405A | 24V / 15Ah | 24V / 50Ah |

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