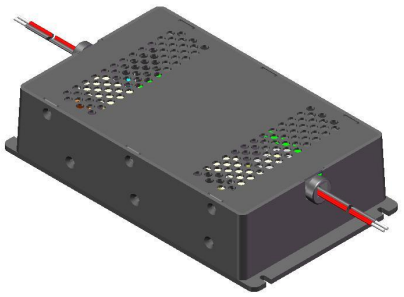
# New Energy DC/DC Converter
## BK350-800SXXG1N6 Series

## Typical Features

- Wide input voltage range 300-1500VDC
- No load power consumption ≤3W
- Efficiency 92%(Typ.)
- Switching frequency 100KHz
- Input anti-reverse, under voltage & over temperature protections
- Output over voltage, over current & short circuit protections
- Isolation voltage 4000VAC
- Compliant with UL1741/CSA-C22.2 No.107.1, IEC/EN62109
- Altitude during operation 5000m Max



## Application Field

**BK350-800SXXG1N6 *Series* ----** *Compact size & high efficiency DC-DC modular power supplies with compliance to UL1741/CSA-C22.2 No.107.1 & IEC/EN62109, wide input voltage range, low ripple, low temperature rise, low standby power consumption, high efficiency, high reliability, safety isolated and good EMC performance. This series of products can be widely used in the fields of Solar power generation, Energy storage and Industrial control, etc. The multiple protection functions can keep the power supply and the load safety under abnormal operating conditions.*

## Typical Product List

| Certification | Part No. | Output Specifications | | | Max Capacitive Load | Ripple & Noise @20MHz (Max) | Efficiency @Full Load 800VDC(Typ.) |
|---|---|---|---|---|---|---|---|
| | | Power | Voltage | Current | | | |
| | | （W） | Vo（V） | Io（m A） | u F | mVp-p | % |
| - | BK350-800S24G1N6 | 350 | 24 | 14600 | 2200 | 300 | 92 |
| - | BK350-800S28G1N6 | 350 | 28 | 12500 | 1500 | 300 | 92 |
| - | BK350-800S32G1N6 | 350 | 32 | 10938 | 1500 | 300 | 92 |

Note 1: The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 2: The full load efficiency should be in ±2% of the typical value in this table. The efficiency is calculated by the way that the full output power is divided by the input power.

Note 3: The Ripple and noise is tested by the twisted pair method, please refer to the following Test Instruction.

Note 4: Please contact Aipu sales for other output voltages requirement in this series but not in this table.

## Input Specifications

| Item | Operating Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Input Voltage Range | DC Input | 300 | 800 | 1500 | VDC |
| Input Current | 300VDC | - | - | 2.00 | A |
| | 1100VDC | - | - | 0.75 | |
| | 1500VDC | - | - | 0.60 | |
| Surge Current | 1500VDC | - | - | 100 | |
| No Load Power Consumption | 1500VDC | - | - | 3 | W |
| Under Voltage Protection | Start protection | 240 | - | 295 | VDC |

| | | | | | |
|---|---|---|---|---|---|
| | Recovery | 265 | - | 305 | |
| Recommended External Fuse | - | 6A/1500VDC (Necessary) | | | |
| Input Anti-inverse Connection | - | Available | | | |
| Hot Plug | - | Unavailable | | | |

## Output Specifications

| Item | | Operating condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Voltage Accuracy | | Full input voltage range, any load | - | ±2.0 | - | % |
| Linear Regulation | | Rated load | - | ±1.0 | - | |
| Load Regulation | | Nominal input voltage, 0%~100%load | - | ±2.0 | - | |
| Minimum Load | | Single output | 0 | - | - | % |
| Turn-on Delay | | Input 800VDC | - | - | 5000 | mS |
| Power-off Hold-up Time | | Input 800VDC | - | 10 | - | mS |
| Dynamic Response | Over-shoot | 25%~50%~25%<br>50%~75%~50% | -5.0 | - | +5.0 | % |
| | Recovery Time | | -5.0 | - | +5.0 | mS |
| Output Overshoot | | Full input voltage range | ≤10%Vo | | | % |
| Short Circuit Protection | | | Continuous, self-recovery | | | Hiccup |
| Drift Coefficient | | - | - | ±0.02% | - | %/℃ |
| Over-current Protection | | Full input voltage range | ≥110% Io, self-recovery | | | Hiccup |
| Over-voltage Protection | | Output 24VDC | ≤35 | | | V |
| | | Output 28VDC | ≤40 | | | |
| | | Output 32VDC | ≤45 | | | |

## General Specifications

| Item | Operating condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Switching Frequency | - | - | 100 | - | KHz |
| Operating Temperature | Refer to the temperature derating graph | -40 | - | +85 | ℃ |
| Storage Temperature | - | -40 | - | +85 | |
| Soldering Temperature | Wave soldering | 260±4℃, time 5-10S | | | |
| | Manual soldering | 360±8℃, time 4-7S | | | |
| Storage Humidity | - | - | - | 95 | %RH |
| Isolation Voltage | I/P-O/P, Test one Min., Leak current ≤10mA | 4000 | - | - | VAC |
| | I/P-PE, Test one Min., Leak current ≤10mA | 4000 | - | - | |
| | O/P-PE, Test one Min., Leak current ≤10mA | 4000 | - | - | |
| Insulation Resistance | I/P-O/P, @ 500VDC | 50 | - | - | MΩ |
| Safety Standard | - | IEC/EN62109-1, UL1741/CSA-C22.2 No.107.1 | | | |
| Vibration | - | 10-55Hz,10G,30 Min, along X,Y,Z | | | |

| | | |
|---|---|---|
| Safety Class | - | CLASS II |
| MTBF | MIL-HDBK-217F@ 25℃ | ＞300KH |

## Physical Characteristics

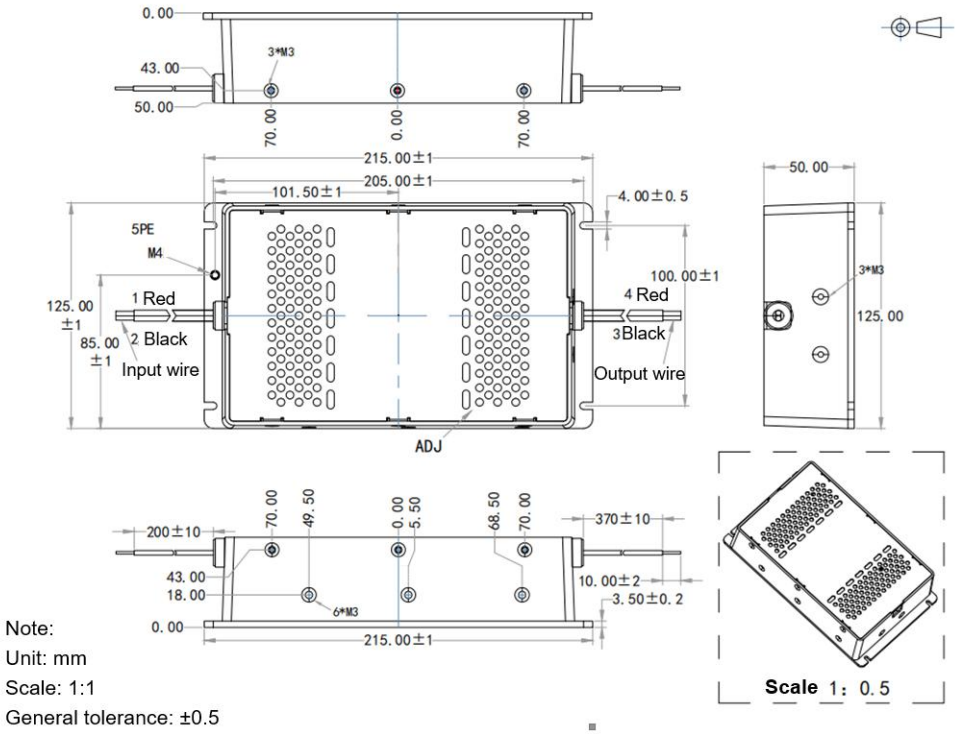
| | | |
|---|---|---|
| Case Material | | Metal |
| Dimensions | Horizontal package | 215.00 x 125.00 x 50.00 mm |
| Unit Weight | | 1500g（TYP） |
| Cooling Method | | Nature air |

## EMC Performances

| Total Item | | Sub Item | Test Standard | Performance/Class |
|---|---|---|---|---|
| EMC | EMI | CE | CISPR32/EN55032 | CLASS A |
| | | RE | CISPR32/EN55032 | CLASS A |
| | EMS | RS | IEC/EN61000-4-3 | 10V/m Perf.Criteria A |
| | | CS | IEC/EN61000-4-6 | 10Vr.m.s Perf.Criteria A |
| | | ESD | IEC/EN61000-4-2 | Contact ±6KV / Air ±8KV Perf.Criteria B |
| | | Surge | IEC/EN61000-4-5 | Line to line ±1KV / line to ground ±2KV Perf.Criteria B |
| | | EFT | IEC/EN61000-4-4 | ±4KV Perf.Criteria B |

## Mechanical dimensions

| Terminals | | Function |
|---|---|---|
| Input | 1 Red | Vin+ |
| | 2 Black | Vin- |
| Output | 3 Black | Vo- |
| | 4 Red | Vo+ |
| Case | 5 PE | PE |




Note:
Unit: mm
Scale: 1:1
General tolerance: ±0.5

| Package code | Dimensions L x W x H | |
|---|---|---|
| G1 | 215.00 x 125.00 x 50.00 mm | 8.465 × 4.921 × 1.969 inch |

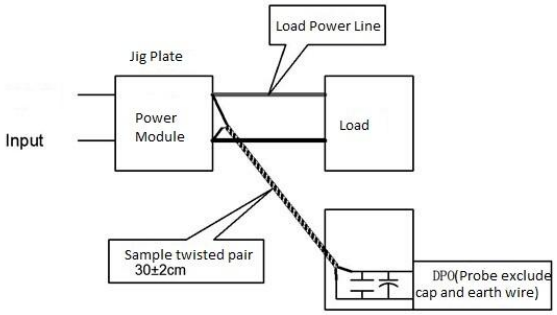
## Terminals Function Description

| Terminal No. | 1 (Red) | 2 (Black) | 3 (Black) | 4 (Red) | 5 (Case) |
|---|---|---|---|---|---|
| Single（S） | Vin+ | Vin- | Vo- | Vo+ | PE |

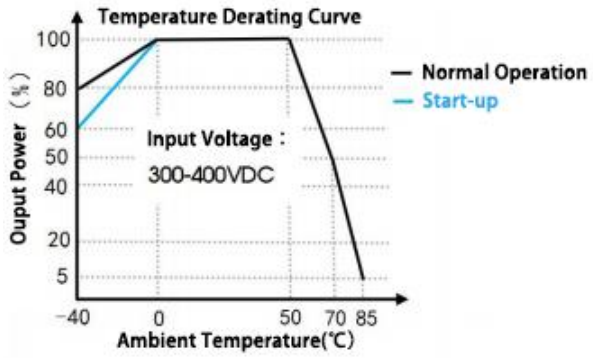
## Ripple & Noise Test Instruction (Twisted Pair Method, 20MHZ bandwidth)

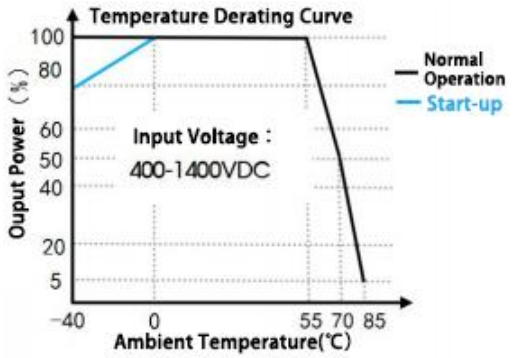
1) The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which bandwidth should be set at 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set on the Sample Mode.

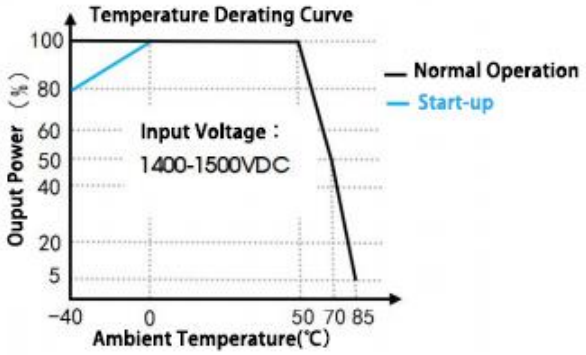
2) The test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be start after input power on.

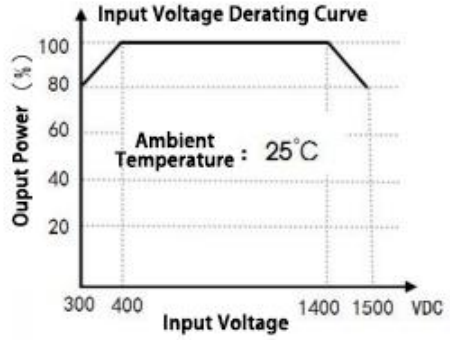


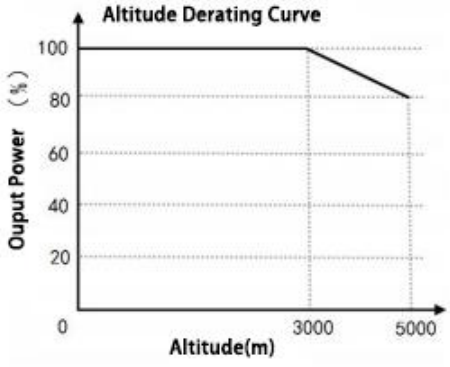

## Product Characteristics Graphs



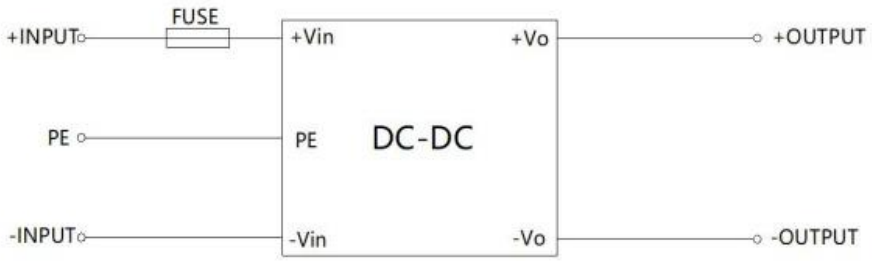




Note 1: The output power should be derated based on the input voltage derating graph at input 300-400VDC & 1400-1500VDC.

Note 2: This product should operate at the natural air condition, please contact us if it could be used at a closed space.

## Recommended Circuit for Application

**Typical application circuit diagram**




| Part No. | FUSE |
|---|---|
| BK350-800SXXG1N6 | 6A /1500VDC, Necessary |

### Application Notice

1.The products should be used according to the specifications in this datasheet, otherwise it could be permanently damaged.

2. A fuse should be connected at input.

3. The product performance in this datasheet cannot be guaranteed if it works at a lower load than the minimum load defined.

4. The product performance in this datasheet cannot be guaranteed if it works at over-load condition.

5. Unless otherwise specified, all values or indicators in this datasheet are tested at Ta=25℃, humidity<75%RH, nominal input voltage and rated load (pure resistance load).

6. All values or indicators in this datasheet had been tested based on Aipupower test specifications.

7.The specifications are specially for the parts listed in this datasheet, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.

8. Aipupower can provide customization service.

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