

## Series AME20-BJZ

### 20 Watt | AC-DC / DC-DC Converter

#### FEATURES:



- Input: 90-528VAC, 47-63Hz, or 100-745VDC
- Operating Temp: -40°C to +70°C
- Over current Protection
- I/O Isolation of 4000VAC
- Class II power supply
- Over Voltage Protection
- Up to 83% efficiency
- Short Circuit Protection

#### Models Single output



| Model          | Input Voltage (VAC/Hz) | Input Voltage (VDC) | Max Output wattage (W) | Output Voltage (V) | Output Current max (A) | Maximum capacitive load (μF) | Efficiency (%) |
|----------------|------------------------|---------------------|------------------------|--------------------|------------------------|------------------------------|----------------|
|                |                        |                     |                        |                    |                        |                              | 230 VAC        |
| AME20-3.3SBJZ  | 90-528/47-63           | 100-745             | 11.88                  | 3.3                | 3.6                    | 10,000                       | 74             |
| AME20-5SBJZ #  | 90-528/47-63           | 100-745             | 18                     | 5                  | 3.6                    | 10,000                       | 78             |
| AME20-9SBJZ    | 90-528/47-63           | 100-745             | 20                     | 9                  | 2.23                   | 7,000                        | 79             |
| AME20-12SBJZ # | 90-528/47-63           | 100-745             | 20                     | 12                 | 1.66                   | 5,000                        | 82             |
| AME20-15SBJZ # | 90-528/47-63           | 100-745             | 20                     | 15                 | 1.33                   | 3,000                        | 83             |
| AME20-24SBJZ # | 90-528/47-63           | 100-745             | 20                     | 24                 | 0.833                  | 1,000                        | 83             |

Note: Add suffix "-ST" for optional screw terminal bottom plate or "-STD" for optional DIN Rail screw terminal bottom plate. (ex. AME20-3.3SBJZ-ST, AME20-3.3SBJZ-STD).

#### Input Specifications

| Parameters                       | Conditions                 | Typical | Maximum | Units |
|----------------------------------|----------------------------|---------|---------|-------|
| Current (full load)              | 115 VAC                    |         | 800     | mA    |
|                                  | 230 VAC                    |         | 400     | mA    |
| Inrush current <2ms (cold start) | 115 VAC                    | 35      |         | A     |
|                                  | 230 VAC                    | 60      |         | A     |
| Leakage current                  | 230VAC/50Hz                |         | 0.25    | mA    |
| External fuse                    | Recommended slow blow type | 3.15    |         | A     |
| No load consumption              |                            |         | 0.75    | W     |

#### Output Specifications

| Parameters       | Conditions      | Typical | Maximum | Units  |
|------------------|-----------------|---------|---------|--------|
| Voltage accuracy | 3.3Vout         | ±3.0    |         | %      |
|                  | Others          | ±2.0    |         | %      |
| Line regulation  | (LL-HL)         | ±0.5    |         | %      |
| Load regulation  | 0-100% load     | ±1.0    |         | %      |
| Ripple & Noise*  | 20MHz bandwidth |         | 150     | mV p-p |
| Hold up time     | 230 VAC         | 35      |         | ms     |
|                  | 400 VAC         | 100     |         |        |

\*Tested as per the referenced Application Circuit.

#### Isolation Specifications

| Parameters           | Conditions              | Typical | Rated | Units |
|----------------------|-------------------------|---------|-------|-------|
| Tested I/O voltage   | Input to Output, 60 sec |         | 4000  | VAC   |
| Isolation resistance |                         | >1000   |       | MΩ    |

#### General Specifications

| Parameters              | Conditions                | Typical   | Maximum | Units     |
|-------------------------|---------------------------|-----------|---------|-----------|
| Switching frequency     |                           | 65        |         | KHz       |
| Protection class        |                           | Class II  |         |           |
| Over current protection |                           | 130 - 400 |         | % of Iout |
| Over voltage protection | 3.3, 5Vout, Voltage clamp |           | 7.5     | VDC       |
|                         | 9Vout, Voltage clamp      |           | 15      | VDC       |
|                         | 12, 15Vout, Voltage clamp |           | 20      | VDC       |

|                          |  |   |    |         |
|--------------------------|--|---|----|---------|
|                          | 24Vout, Voltage clamp  |   | 30 | VDC     |
| Short circuit protection | Continuous, Hiccup, Auto recovery                                |   |    |         |
| Operating temperature    | See derating curve   | -40 to +70  |    | °C      |
| Storage temperature      |  | -40 to +85  |    | °C      |
| Temperature coefficient  |  | ±0.02   |    | % / °C  |
| Power derating           | +55 to +70°C   | 3   |    | % / °C  |
|                          | -40 to -10°C   | 1   |    | % / °C  |
|                          | 90 to 110VAC   | 2   |    | % / VAC |
|                          | 480 to 528VAC  | 0.417   |    | % / VAC |
| Cooling                  | Free air convection  |   |    |         |
| Humidity                 | Non condensing   |   | 95 | % RH    |
| Soldering temperature    | Wave soldering, duration 5 to 10s                                | 260   |    | °C      |
|                          | Manual soldering, duration 3 to 5s                               | 360   |    | °C      |
| Case material            | Plastic (flammability to UL 94V-0)                               |   |    |         |
| Weight                   | PCB mountable models   | 160   |    | g       |
|                          | With optional -ST mounting plate                                 | 210   |    | g       |
|                          | With optional -STD mounting plate                                | 250   |    | g       |
| Dimensions (L x W x H)   | PCB mountable models   | 70.00 x 48.00 x 30.0 mm (2.76 x 1.89 x 1.18 inches) |    |         |
|                          | With optional -ST mounting plate                                 | 96.1 x 54.0 x 38.5 mm (3.78 x 2.13 x 1.52 inches)   |    |         |
|                          | With optional -STD mounting plate                                | 96.1 x 54.0 x 43.1 mm (3.78 x 2.13 x 1.70 inches)   |    |         |
| MTBF                     | > 300 000 hrs (MIL-HDBK -217F, t <sub>a</sub> =+25°C)/ Full Load |   |    |         |

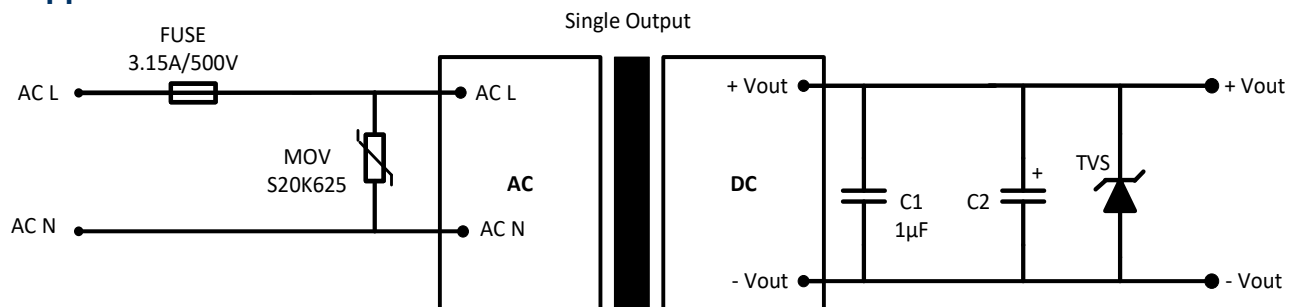
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage (115/230VAC) and at rated output load unless otherwise specified.

## Safety Specifications

### Parameters

|  |   |  |
|--|---|--|
| Agency approvals                           | UL 62368-1 (Only for the models marked #) |  |
| Standards                                  | Information Technology Equipment          | Designed to meet IEC/EN/UL 62368-1                                   |
|  | EMI - Conducted and radiated emission     | EN55032, class B   |
|  | Electrostatic Discharge Immunity          | IEC 61000-4-2: Contact ±6KV/Air ±8KV, Criteria B                     |
|  | RF, Electromagnetic Field Immunity        | IEC 61000-4-3: 10V/m, Criteria A                                     |
|  | Electrical Fast Transient/Burst Immunity  | IEC 61000-4-4: ±2KV, Criteria B                                      |
|  |   | IEC 61000-4-4: ±4KV, Criteria B with the recommended EMC circuit     |
|  | Surge Immunity                            | IEC 61000-4-5: L-L ±2KV, Criteria B                                  |
|  |   | IEC 61000-4-5: L-L ±4KV, Criteria B with the recommended EMC circuit |
| RF, Conducted Disturbance Immunity         | IEC 61000-4-6: 10Vrms, Criteria A         |  |
| Voltage dips, Short Interruptions Immunity | IEC 61000-4-11: 0-70%, Criteria B         |  |

## Typical Application circuit



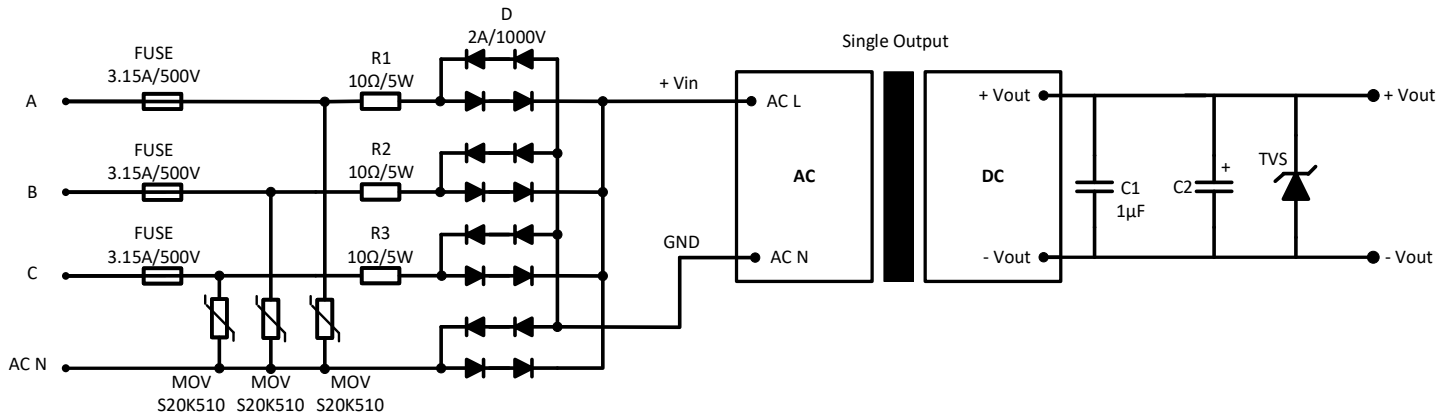
| Vout     | C2         | TVS |
|----------|------------|-----|
| 3.3 & 5V | 330 µF/50V | 7A  |
| 9V       |            | 12A |
| 12V      | 220 µF/50V | 20A |
| 15 & 24V |            | 30A |

### For filtering components:

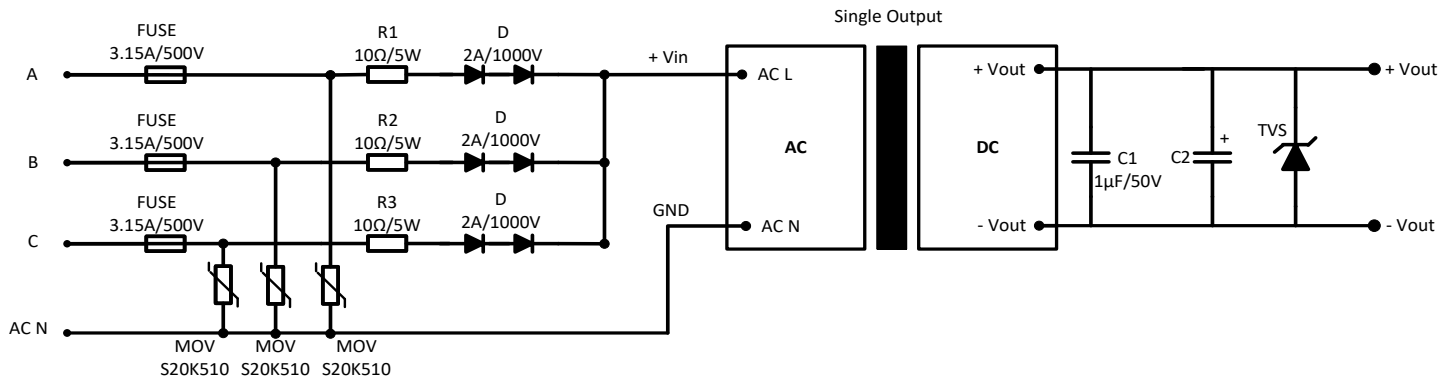
Choose capacitors with at least 20% voltage margin. The C2 capacitor is recommended to use electrolytic type with high frequency and low ESR rating. The C1 capacitor is recommended to use ceramic type for filtering high-frequency noise.

### 3 Phase 4 Wire EMC recommended circuit

Full-wave Rectification for 4KV differential mode inrush standard

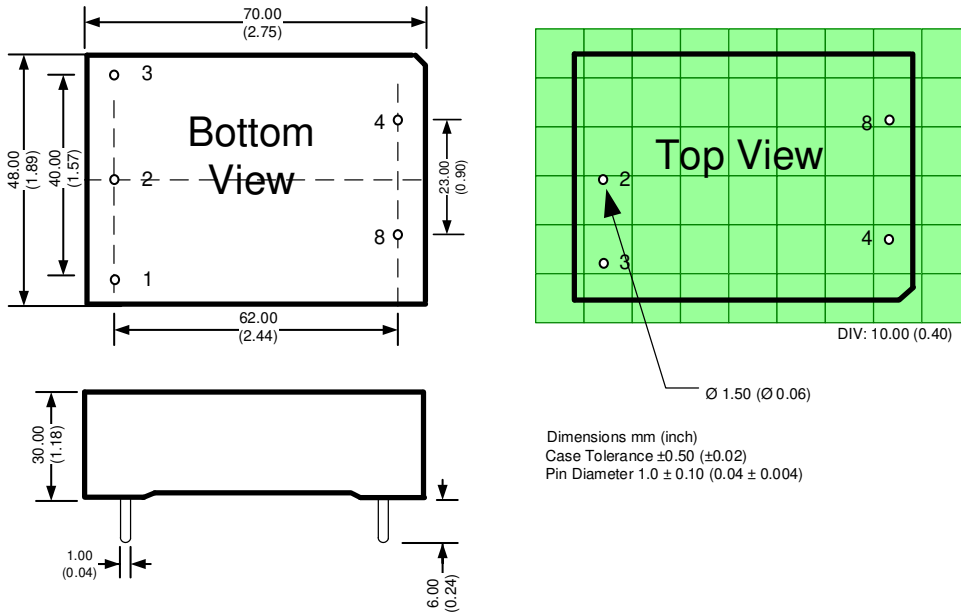


Half-wave Rectification for 4KV differential mode inrush standard



| Vout     | C2         | TVS |
|----------|------------|-----|
| 3.3 & 5V | 220 μF/50V | 7A  |
| 9V       |            | 12A |
| 12V      |            | 20A |
| 15 & 24V |            | 30A |

### Dimensions

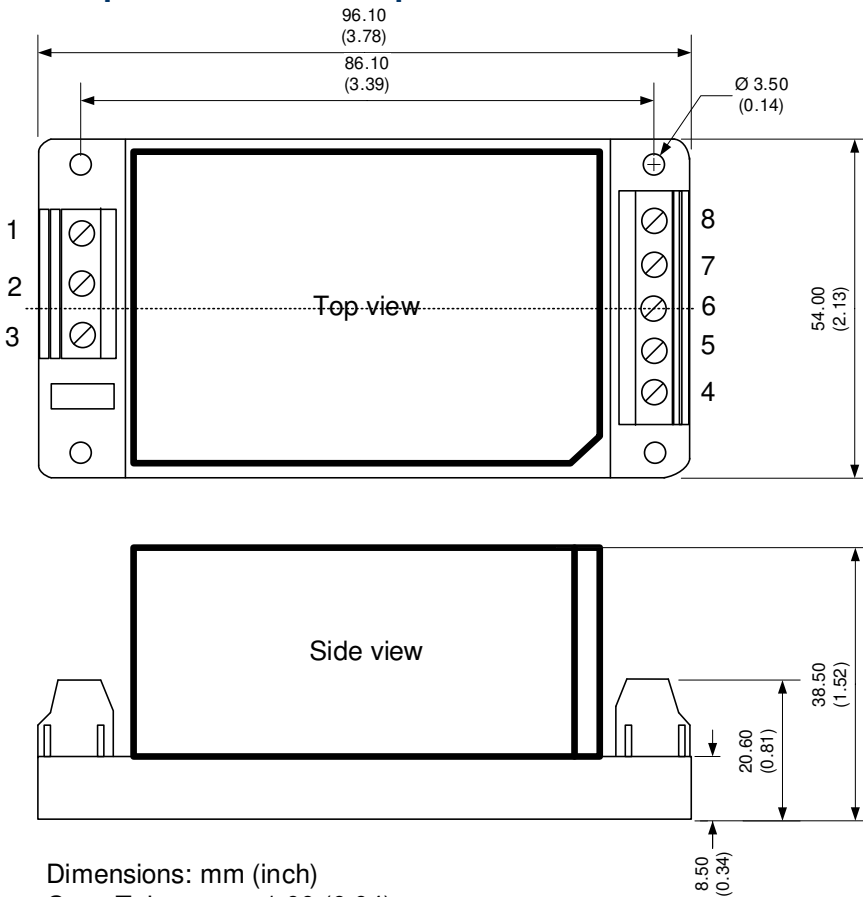


### Pin Out Specifications

| Pin | Single               |
|-----|----------------------|
| 1   | NA (No Pin Present)  |
| 2*  | AC Input (N) or (L1) |
| 3*  | AC Input (L) or (L2) |
| 4   | + V output           |
| 5   | - V output           |

\* Note: Input Pins 1 and 2 can be "N" and "L" respectively when the input voltage is supplied from a single phase.  
Input Pins 1 and 2 can be "L1" and "L2" respectively when the input voltage is supplied from 3 phase line to line voltage 208-480Vac (208 Y/ 120V 3-phase, 240 Y/ 120V 3-phase, 400 Y/ 230V 3-phase or 480 Y/ 277V 3-phase).

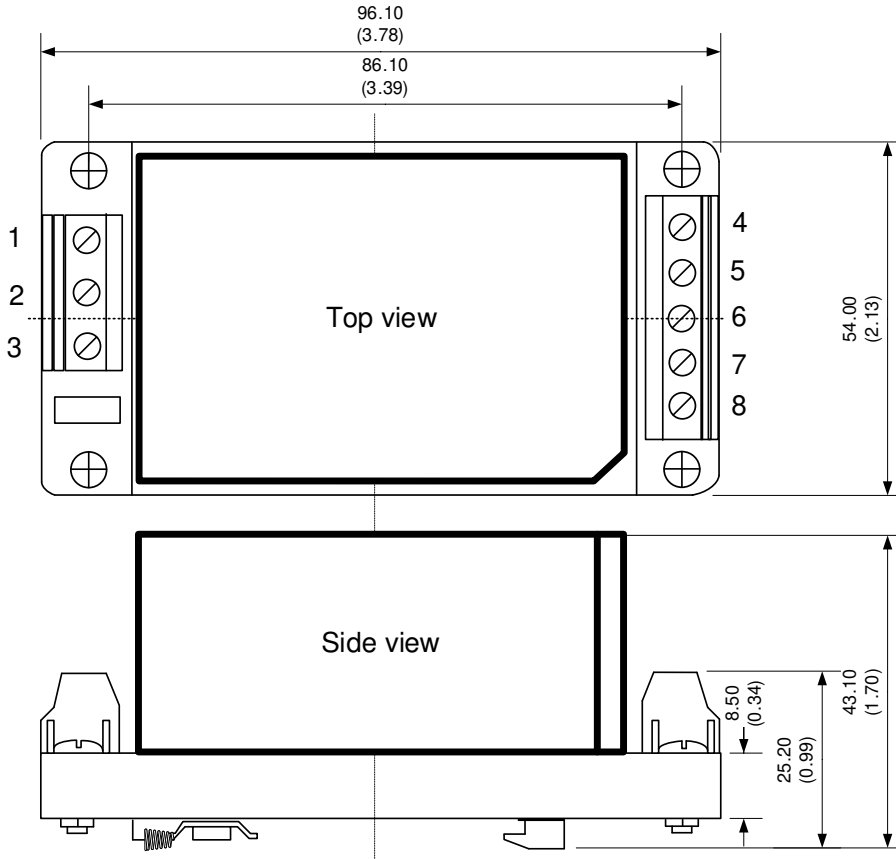
### With optional -ST bottom plate



### Pin Out Specifications

| Pin | Single       |
|-----|--------------|
| 1   | No Pin       |
| 2   | AC Input (N) |
| 3   | AC Input (L) |
| 4   | +V Output    |
| 5   | No Pin       |
| 6   | No Pin       |
| 7   | No Pin       |
| 8   | -V Output    |

**With optional -STD bottom plate**

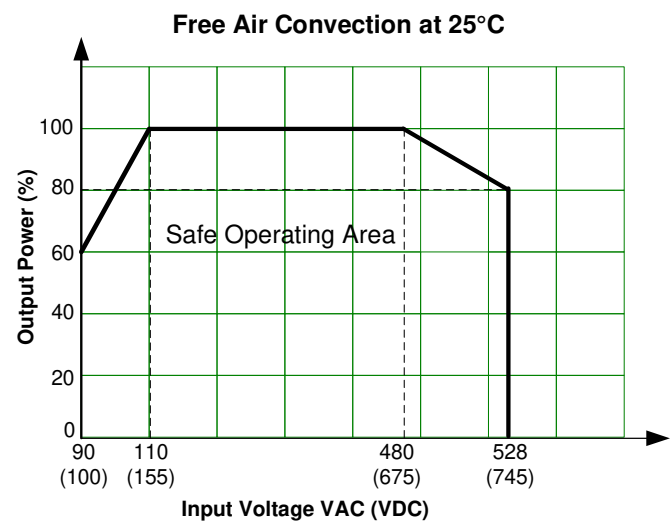
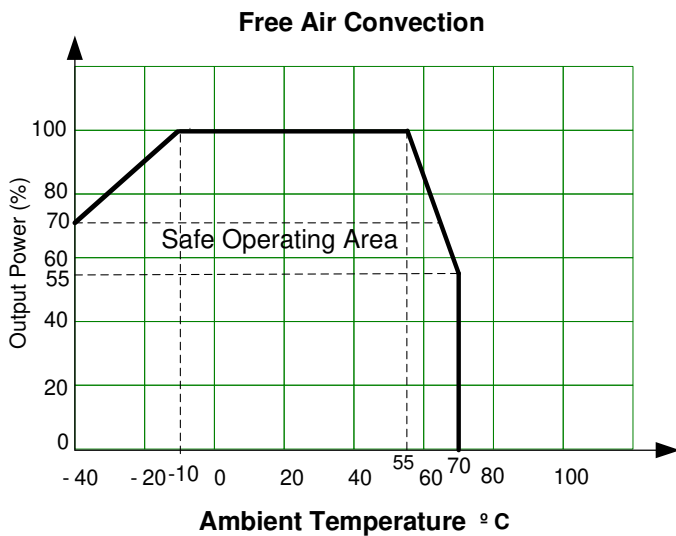


**Pin Out Specifications**

| Pin | Single       |
|-----|--------------|
| 1   | No Pin       |
| 2   | AC Input (N) |
| 3   | AC Input (L) |
| 4   | +V Output    |
| 5   | No Pin       |
| 6   | No Pin       |
| 7   | No Pin       |
| 8   | -V Output    |

Dimensions: mm (inch)  
 Case Tolerance: ± 1.00 (0.04)  
 Wire gauge: 24-12AWG  
 Tightening torque: 0.4N-m max.  
 DIN Rail TS35

**Derating**



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