



**Size:**  
4.29 x 2.30 x 1.18 inches  
109.0 x 58.5 x 30.0 mm

**Weight:**  
10.93oz (310g)

## FEATURES

- RoHS Compliant
- Class I and Class II Construction
- 3000VAC I/O Isolation
- 85~100 Watts Output Power
- High Efficiency up to 93%
- Fully Encapsulated Plastic Case
- Low Leakage Current < 250µA
- Remote ON/OFF Control
- Optional Screw Terminal
- Active PFC Function: > 0.95 (230VAC) and >0.99 (115VAC)
- 12V, 15V, 24V, and 48V Single Output Models
- PCB Mountable Switching Power Supply
- Universal Input Voltage Range: 90-264VAC (120-370VDC)
- Short Circuit, Over Power, and Over Voltage Protection
- Four M3 Mounting Holes on Bottom Side (Optional)
- Meets EN55022 Class B
- UL/cUL 60950-1, CE, and CB Safety Approvals

## DESCRIPTION

The PSAQC100 series of AC/DC power supplies provides up to 100 watts of output power in a 4.3" x 2.30" x 1.18" encapsulated PCB mountable package. This series consists of single output models with a universal input range of 90-264VAC (120-370VDC). Some features include remote ON/OFF control, low leakage current < 250µA, active PFC function, 3000VAC I/O isolation, and high efficiency up to 93%. This series is also protected against over power, over voltage, and short circuit conditions. All models are RoHS compliant and have UL/cUL 60950-1, CE, and CB safety approvals and meet EN55022 Class B.

## MODEL SELECTION TABLE

| Model Number | Input Voltage Range         | Output Voltage | Output Current              |          | Ripple & Noise <sup>(3)</sup> | Output Power | Efficiency | Maximum Capacitive Load |
|--------------|-----------------------------|----------------|-----------------------------|----------|-------------------------------|--------------|------------|-------------------------|
|              |                             |                | Min Load <sup>(1) (2)</sup> | Max Load |                               |              |            |                         |
| PSAQC100-12S | 90~264 VAC<br>(120~370 VDC) | 12 VDC         | 3%                          | 7.08A    | 120mVp-p                      | 85W          | 90%        | 50,000µF                |
| PSAQC100-15S |                             | 15 VDC         | 3%                          | 5.66A    | 150mVp-p                      | 85W          | 90%        | 40,000µF                |
| PSAQC100-24S |                             | 24 VDC         | 3%                          | 4.2A     | 200mVp-p                      | 100W         | 92%        | 6,000µF                 |
| PSAQC100-48S |                             | 48 VDC         | 3%                          | 2.1A     | 240mVp-p                      | 100W         | 93%        | 560µF                   |

## NOTES

1. A minimum loading on the output is required to maintain all specified regulations. Operation under no-load conditions will not damage these devices; however, they may not meet all listed specifications.
  2. The minimum load increases by 0.16% for every 1°C drop in temperature (at input = 90~219VAC)
  3. Ripple & noise is measured at 20MHz bandwidth, full load, and with 47µF and 0.1µF capacitors in parallel across the output.
  4. It is necessary to add a Varistor 14S471K in parallel on the L/N input side and a 10R/Ø15 Thermistor in series on the L input side.
  5. Screw terminal mechanical options available. Please call factory for ordering details.
  6. This product is Listed to applicable standards and requirements by UL.
- \*Due to advances in technology, specifications subject to change without notice.*

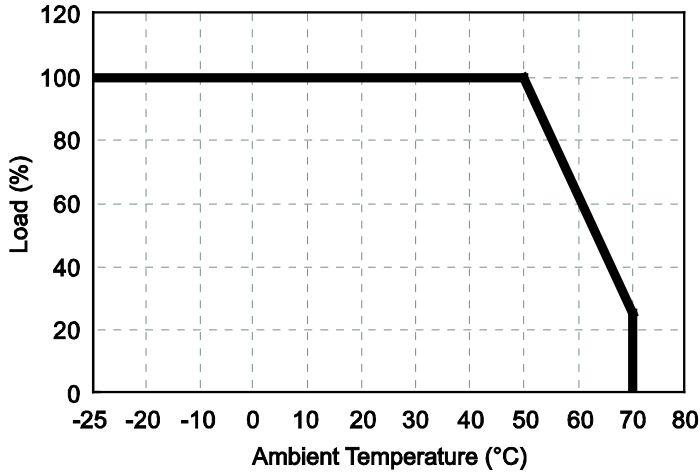
**TECHNICAL SPECIFICATIONS: PSAQC100 SERIES**

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.  
We reserve the right to change specifications based on technological advances.

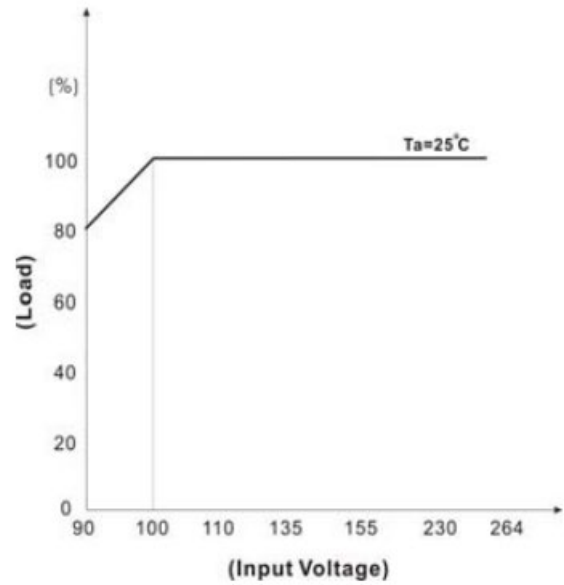
| SPECIFICATION                        |                 | TEST CONDITIONS                                                     | Min                                                  | Typ | Max   | Unit  |
|--------------------------------------|-----------------|---------------------------------------------------------------------|------------------------------------------------------|-----|-------|-------|
| INPUT SPECIFICATIONS                 |                 |                                                                     |                                                      |     |       |       |
| Input Voltage                        |                 | AC input voltage range                                              | 90                                                   |     | 264   | VAC   |
|                                      |                 | DC input voltage range                                              | 120                                                  |     | 370   | VDC   |
| Input Frequency                      |                 |                                                                     | 47                                                   |     | 63    | Hz    |
| Input Current                        |                 | At 115VAC and full load                                             |                                                      |     | 2.0   | A     |
|                                      |                 | At 230VAC and full load                                             |                                                      |     | 1.0   |       |
| Inrush Current (<2ms)                |                 | At 115VAC and cold start                                            |                                                      |     | 30    | A     |
|                                      |                 | At 230VAC and cold start                                            |                                                      |     | 60    |       |
| Power Factor                         |                 | At 115VAC and full load                                             | 0.99                                                 |     |       |       |
|                                      |                 | At 230VAC and full load                                             | 0.95                                                 |     |       |       |
| OUTPUT SPECIFICATIONS                |                 |                                                                     |                                                      |     |       |       |
| Output Voltage                       |                 |                                                                     | See Table                                            |     |       |       |
| Voltage Accuracy                     |                 |                                                                     | -2                                                   |     | +2    | %     |
| Output Trim                          |                 | See page 5                                                          | -5                                                   |     | +5    | %     |
| Line Regulation                      |                 | Low Line to High Line                                               | -1                                                   |     | +1    | %     |
| Load Regulation                      |                 | 5% - 100% full load                                                 | -1                                                   |     | +1    | %     |
| Output Power                         |                 |                                                                     | See Table                                            |     |       |       |
| Output Current                       |                 |                                                                     | See Table                                            |     |       |       |
| Minimum Load                         |                 | Increases by 0.16% for every 1°C drop in temperature (at 90~219VAC) | 3                                                    |     |       | %     |
| Ripple & Noise (20MHz BW)            |                 | Measured with 0.1μF and 47μF capacitors in parallel                 | See Table                                            |     |       |       |
| Max Capacitive Load                  |                 | At 230VAC                                                           | See Table                                            |     |       |       |
| Hold-up Time                         |                 | At 110VAC and 90% Vout                                              | 10                                                   |     |       | ms    |
| Temperature Coefficient              |                 | 0~50°C                                                              | -0.03                                                |     | +0.03 | %/°C  |
| PROTECTION                           |                 |                                                                     |                                                      |     |       |       |
| Short Circuit Protection             |                 |                                                                     | Hiccup mode, auto-recovery                           |     |       |       |
| Over Voltage Protection              |                 |                                                                     | Zener diode clamp                                    |     |       |       |
| Over Power Protection                |                 | Auto-recovery                                                       | 105                                                  |     | 108   | %     |
| GENERAL SPECIFICATIONS               |                 |                                                                     |                                                      |     |       |       |
| Efficiency                           |                 |                                                                     | See Table                                            |     |       |       |
| Switching Frequency                  |                 |                                                                     | 100                                                  |     | 133   | kHz   |
| Isolation Voltage                    | Input to Output |                                                                     | 3000                                                 |     |       | VAC   |
|                                      | Input to FG     |                                                                     | 1500                                                 |     |       |       |
|                                      | Output to FG    |                                                                     | 500                                                  |     |       |       |
| Leakage Current                      |                 |                                                                     |                                                      |     | 0.5   | mA    |
| ENVIRONMENTAL SPECIFICATIONS         |                 |                                                                     |                                                      |     |       |       |
| Operating Temperature                |                 | With derating (see derating curve)                                  | -25                                                  |     | +70   | °C    |
| Storage Temperature                  |                 |                                                                     | -25                                                  |     | +85   | °C    |
| Humidity                             |                 |                                                                     |                                                      |     | 95    | % RH  |
| Cooling                              |                 |                                                                     | Free air convection                                  |     |       |       |
| Vibration                            |                 | 10~500Hz, 10 min./1 cycle, 60 min. each along X, Y, Z axes          |                                                      | 2   |       | G     |
| MTBF                                 |                 | 25°C (MIL-HDBK-217F, Notice 1)                                      | 250,000                                              |     |       | hours |
| PHYSICAL SPECIFICATIONS              |                 |                                                                     |                                                      |     |       |       |
| Weight                               |                 |                                                                     | 10.93oz (310g)                                       |     |       |       |
| Dimensions (L x W x H)               |                 | Tolerance of ±0.1mm                                                 | 4.3 x 2.30 x 1.18 inches<br>(109.0 x 58.5 x 30.0 mm) |     |       |       |
| SAFETY & EMC                         |                 |                                                                     |                                                      |     |       |       |
| Safety Approvals                     |                 |                                                                     | UL60950-1 <sup>(6)</sup> , CE, CB                    |     |       |       |
| EMI (Conducted & Radiated Emissions) |                 | Conductive plane to be connected to safety earth                    | EN61000-6-3, EN 55022 Class B                        |     |       |       |
| EMS (Noise Immunity)                 |                 |                                                                     | EN55024, EN61000-4-2,3,4,5,6,8,11                    |     |       |       |
| Surge                                |                 |                                                                     | 2KV L-N, 4KV L N-FG                                  |     |       |       |

## DERATING

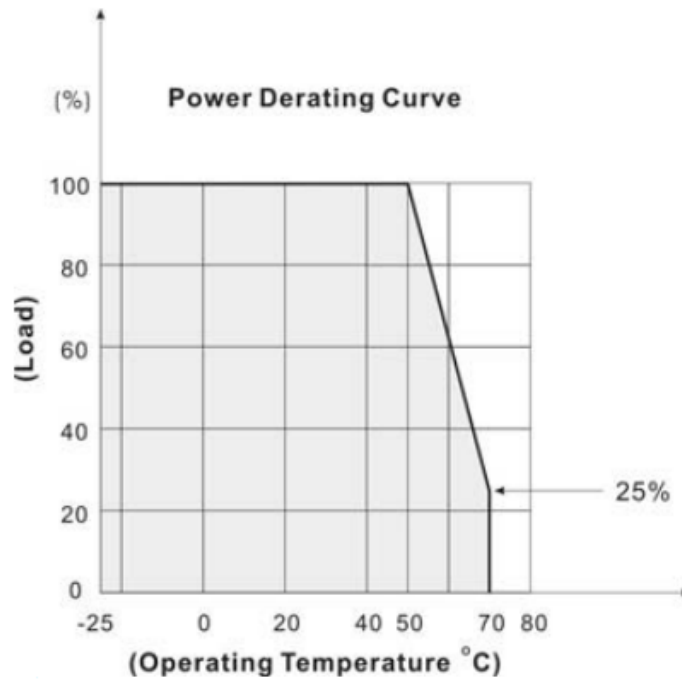
Load vs Ambient Temperature



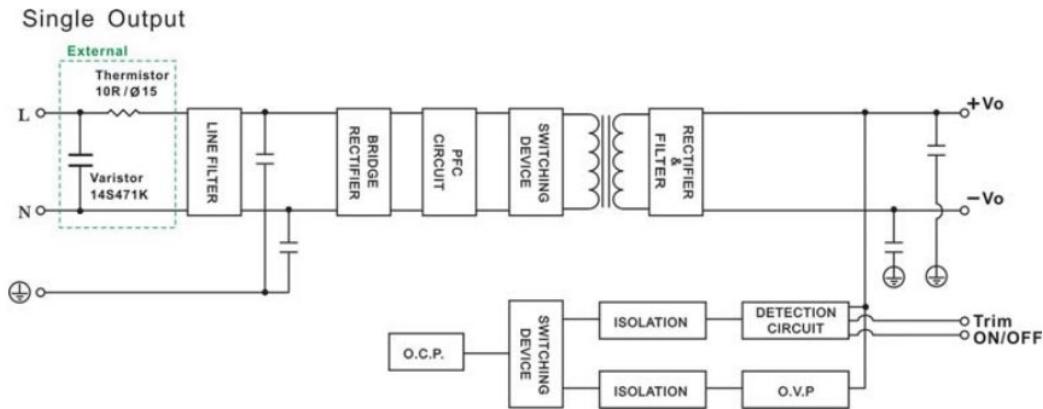
Load vs Input Voltage



Power Derating Curve



## BLOCK DIAGRAM

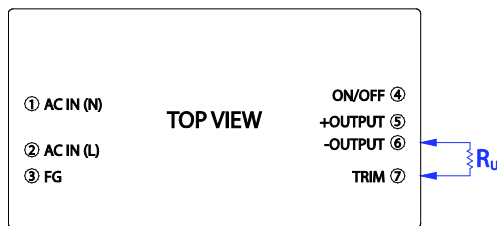


|           | 12S  |         | 15S  |         | 24S  |         | 48S |         |
|-----------|------|---------|------|---------|------|---------|-----|---------|
| Trim → -V | +5%  | 0%      | +5%  | 0%      | +5%  | 0%      | +5% | 0%      |
|           | 85KΩ | ~ 1.5M  | 95KΩ | ~ 1.7M  | 90KΩ | ~ 4M    | 85Ω | ~ 15M   |
| Trim → +V | 0%   | -5%     | 0%   | -5%     | 0%   | -5%     | 0%  | -5%     |
|           | 1.5M | ~ 220kΩ | 4M   | ~ 300KΩ | 4M   | ~ 600KΩ | 15M | ~ 1.5MΩ |

## OUTPUT TRIM

Output voltage adjustability is for single output models only. Output voltage set-point adjustment allows the user to increase or decrease the output voltage set-point of a module. This is accomplished by connecting an external resistor between the TRIM pin and either the +OUTPUT or -OUTPUT pins. With an external resistor between the TRIM and -OUTPUT pins, the output voltage set-point increases. With an external resistor between the TRIM and +OUTPUT pins, the output voltage set-point decreases.

### Trim Up



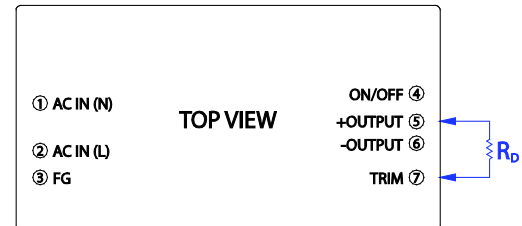
| PSAQC100-12S |                     |                 |
|--------------|---------------------|-----------------|
| Trim         | V <sub>out,up</sub> | R <sub>up</sub> |
| 0%           | 12.00V              | 1500kΩ          |
| 1%           | 12.12V              | 1217kΩ          |
| 2%           | 12.24V              | 934kΩ           |
| 3%           | 12.36V              | 651kΩ           |
| 4%           | 12.48V              | 368kΩ           |
| 5%           | 12.60V              | 85kΩ            |

| PSAQC100-15 |                     |                 |
|-------------|---------------------|-----------------|
| Trim        | V <sub>out,up</sub> | R <sub>up</sub> |
| 0%          | 15.00V              | 1700kΩ          |
| 1%          | 15.15V              | 1379kΩ          |
| 2%          | 15.30V              | 1058kΩ          |
| 3%          | 15.45V              | 737kΩ           |
| 4%          | 15.60V              | 416kΩ           |
| 5%          | 15.75V              | 95kΩ            |

| PSAQC100-24S |                     |                 |
|--------------|---------------------|-----------------|
| Trim         | V <sub>out,up</sub> | R <sub>up</sub> |
| 0%           | 24.00V              | 4000kΩ          |
| 1%           | 24.24V              | 3218kΩ          |
| 2%           | 24.48V              | 2436kΩ          |
| 3%           | 24.72V              | 1654kΩ          |
| 4%           | 24.96V              | 872kΩ           |
| 5%           | 25.20V              | 90kΩ            |

| PSAQC100-48S |                     |                 |
|--------------|---------------------|-----------------|
| Trim         | V <sub>out,up</sub> | R <sub>up</sub> |
| 0%           | 48.00V              | 15000kΩ         |
| 1%           | 48.48V              | 12017kΩ         |
| 2%           | 48.96V              | 9034kΩ          |
| 3%           | 49.44V              | 6051kΩ          |
| 4%           | 49.92V              | 3068kΩ          |
| 5%           | 50.40V              | 85kΩ            |

### Trim Down



| PSAQC100-12S |                       |                   |
|--------------|-----------------------|-------------------|
| Trim         | V <sub>out,down</sub> | R <sub>down</sub> |
| 0%           | 12.00V                | 1500kΩ            |
| 1%           | 11.88V                | 1244kΩ            |
| 2%           | 11.76V                | 988kΩ             |
| 3%           | 11.64V                | 732kΩ             |
| 4%           | 11.52V                | 476kΩ             |
| 5%           | 11.40V                | 220kΩ             |

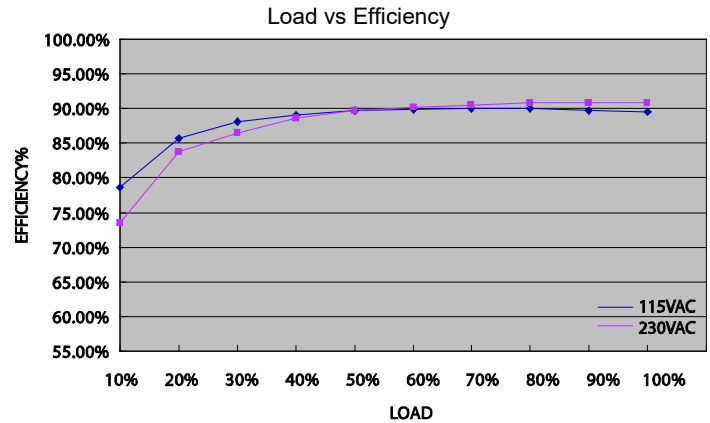
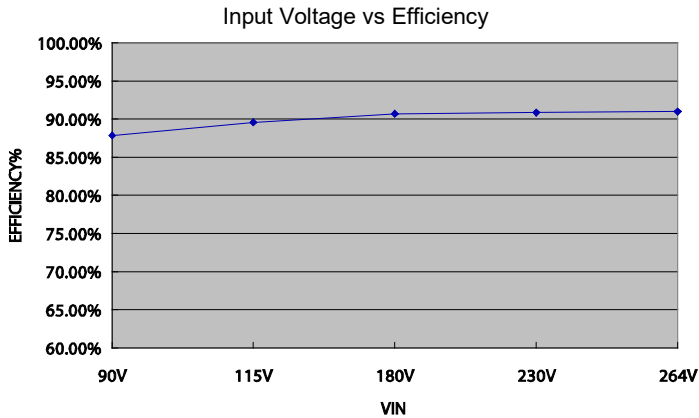
| PSAQC100-15 |                       |                   |
|-------------|-----------------------|-------------------|
| Trim        | V <sub>out,down</sub> | R <sub>down</sub> |
| 0%          | 15.00V                | 1700kΩ            |
| 1%          | 14.85V                | 1420kΩ            |
| 2%          | 14.70V                | 1140kΩ            |
| 3%          | 14.55V                | 860kΩ             |
| 4%          | 14.40V                | 580kΩ             |
| 5%          | 14.25V                | 300kΩ             |

| PSAQC100-24S |                       |                   |
|--------------|-----------------------|-------------------|
| Trim         | V <sub>out,down</sub> | R <sub>down</sub> |
| 0%           | 24.00V                | 4000kΩ            |
| 1%           | 23.76V                | 3320kΩ            |
| 2%           | 23.52V                | 2640kΩ            |
| 3%           | 23.28V                | 1960kΩ            |
| 4%           | 23.04V                | 1280kΩ            |
| 5%           | 22.80V                | 600kΩ             |

| PSAQC100-48S |                       |                   |
|--------------|-----------------------|-------------------|
| Trim         | V <sub>out,down</sub> | R <sub>down</sub> |
| 0%           | 48.00V                | 15000kΩ           |
| 1%           | 47.52V                | 12300kΩ           |
| 2%           | 47.04V                | 9600kΩ            |
| 3%           | 46.56V                | 6900kΩ            |
| 4%           | 46.08V                | 4200kΩ            |
| 5%           | 45.60V                | 1500kΩ            |

## EFFICIENCY VS LOAD CURVES

### PSAQC100-12S



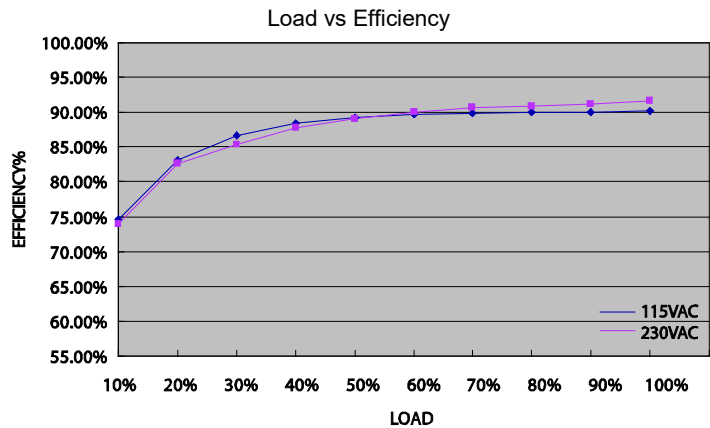
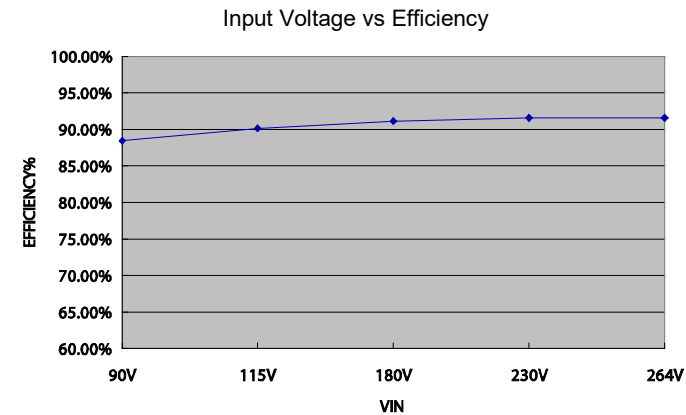
LOAD VS Efficiency

| Load (%) | 10    | 20    | 30    | 40    | 50    |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 78.62 | 85.67 | 88.07 | 89.14 | 89.76 |
| 230V (%) | 73.49 | 83.84 | 86.57 | 88.55 | 89.76 |

| Load (%) | 60    | 70    | 80    | 90    | 100   |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 89.95 | 90.00 | 90.02 | 89.77 | 89.51 |
| 230V (%) | 90.22 | 90.58 | 90.83 | 90.85 | 90.88 |

### PSAQC100-15S



LOAD VS Efficiency

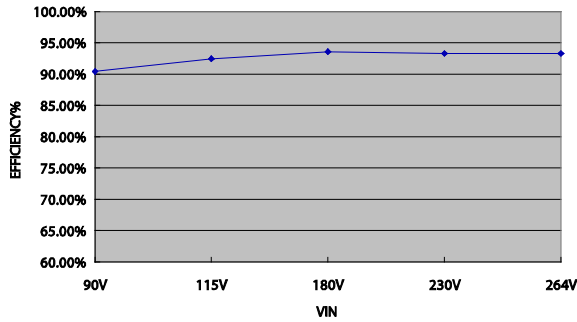
| Load (%) | 10    | 20    | 30    | 40    | 50    |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 74.53 | 83.09 | 86.59 | 88.41 | 89.20 |
| 230V (%) | 73.94 | 82.70 | 85.31 | 87.77 | 89.14 |

| Load (%) | 60    | 70    | 80    | 90    | 100   |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 89.70 | 89.93 | 89.99 | 90.11 | 90.17 |
| 230V (%) | 89.97 | 90.63 | 90.91 | 91.15 | 91.59 |

**PSAQC100-24S**

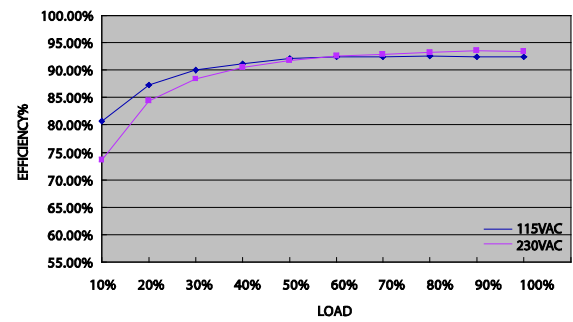
Input Voltage vs Efficiency



VIN VS Efficiency

| Input Voltage (V) | 90    | 115   | 180   | 230   | 264   |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%)    | 90.45 | 92.45 | 93.62 | 93.62 | 93.26 |

Load vs Efficiency



LOAD VS Efficiency

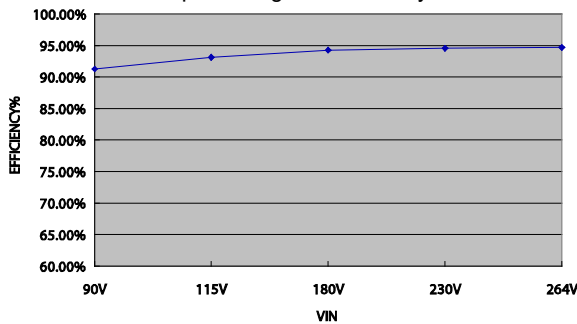
| Load (%) | 10    | 20    | 30    | 40    | 50    |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 80.71 | 87.31 | 90.00 | 91.22 | 92.10 |
| 230V (%) | 73.63 | 84.39 | 88.42 | 90.56 | 91.76 |

| Load (%) | 60    | 70    | 80    | 90    | 100   |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 92.41 | 92.51 | 92.53 | 92.47 | 92.45 |
| 230V (%) | 92.54 | 92.97 | 93.28 | 93.52 | 93.35 |

**PSAQC100-48S**

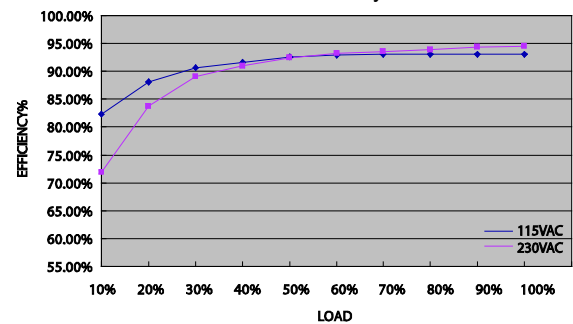
Input Voltage vs Efficiency



VIN VS Efficiency

| Input Voltage (V) | 90    | 115   | 180   | 230   | 264   |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%)    | 91.22 | 93.13 | 94.24 | 94.59 | 94.66 |

Load vs Efficiency

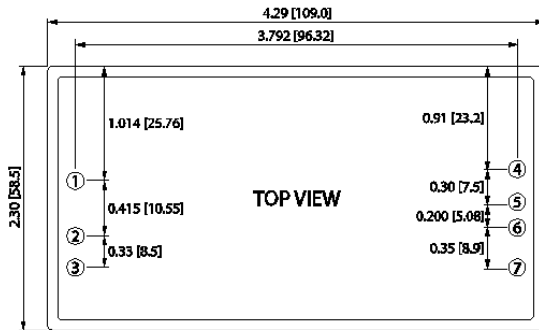


| Load (%) | 10    | 20    | 30    | 40    | 50    |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 82.39 | 88.10 | 90.73 | 91.67 | 92.58 |
| 230V (%) | 71.87 | 83.73 | 89.12 | 91.05 | 92.41 |

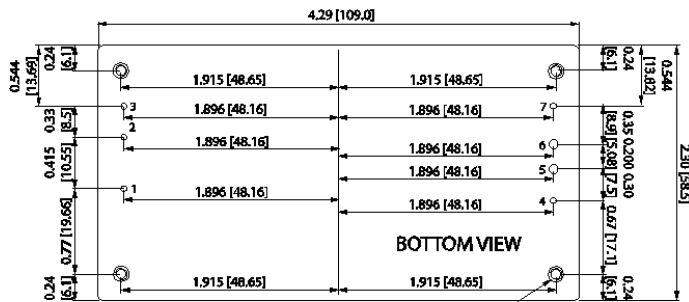
  

| Load (%) | 60    | 70    | 80    | 90    | 100   |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 92.92 | 93.02 | 93.11 | 93.16 | 93.13 |
| 230V (%) | 93.18 | 93.63 | 93.95 | 94.32 | 94.59 |

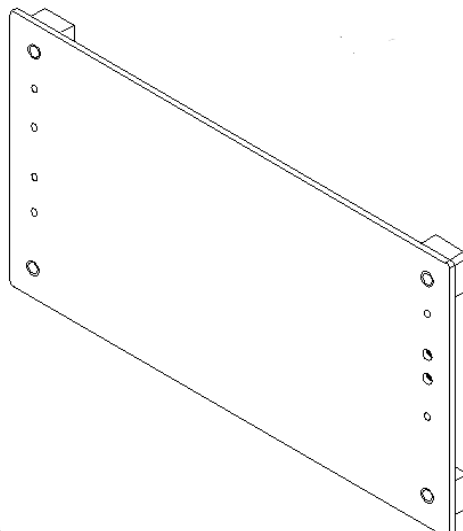
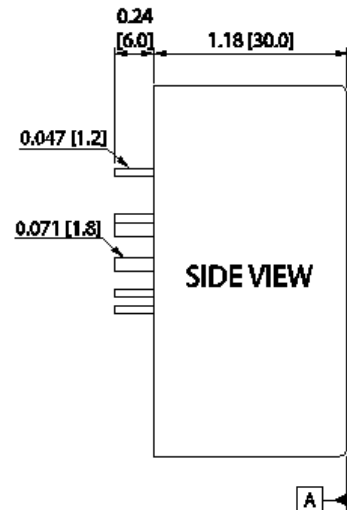
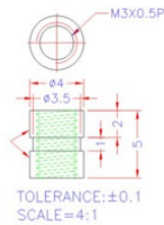
MECHANICAL DRAWING



| PIN# | Φ         | Single                     |
|------|-----------|----------------------------|
| 1    | 1.2±0.1mm | AC IN (N)                  |
| 2    | 1.2±0.1mm | AC IN (L)                  |
| 3    | 1.2±0.1mm | FG                         |
| 4    | 1.2±0.1mm | ON/OFF                     |
|      |           | (Provide +5VDC Controlled) |
| 5    | 1.8±0.1mm | +DC OUT                    |
| 6    | 1.8±0.1mm | -DC OUT                    |
| 7    | 1.2±0.1mm | Trim                       |



M3 X 0.5 FULL THREAD-THRU 4X  
CAUTION: Mounting hardware protrusion into unit must not exceed a maximum depth of 0.20 [5.0] from surface-A



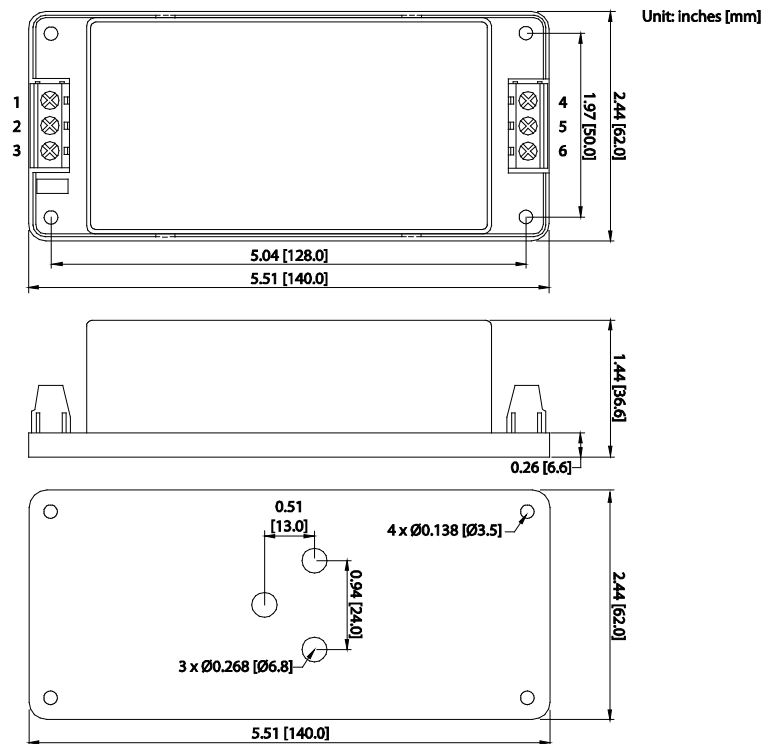
- NOTES:**
1. Unit: inches (mm)
  2. Tolerance: ±0.004 [±0.1]
  3. Pin Diameter Tolerance: ±0.004 [±0.1]
  4. Reserve Pin 4 hole on the PCB. If Remote On/Off function is not being used, connect Pin 4 circuit layout with Pin 6 or keep Pin 4 floating.
  5. All dimensions are for reference only.

## SCREW TERMINAL OPTIONS

### PSAQC100-A2



| PIN CONNECTIONS |            |
|-----------------|------------|
| PIN             | ASSIGNMENT |
| 1               | AC IN (L)  |
| 2               | AC IN (N)  |
| 3               | FG         |
| 4               | ON/OFF     |
| 5               | +OUTPUT    |
| 6               | -OUTPUT    |
| 7               | TRIM       |



## COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

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