

ARCH AQC100 AC-DC Power Datasheet

<http://www.manuallib.com/arch/aqc100-ac-dc-power-datasheet.html>

KEY FEATURES

- .. Switching Power Module for PCB Mountable
- .. Fully Encapsulated Plastic Case
- .. Universal Input Range 90-264VAC
- .. <0.3W No Load Input Power
- .. High Average Efficiency (25%, 50%, 75%, 100% Load Points)
- .. Ultra Compact Size: 2.17" x 1.77" x 0.81" Inches
- .. Screw Terminal For Optional
- .. Isolation Class II
- .. Isolation 4KV AC
- .. CE, UL, Approval
- .. 3-Years Product Warranty

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KEY FEATURES

- Switching Power Module for PCB Mountable
- High Efficiency up to 93% Typical
- Active PFC Function, >0.95 (230Vac), >0.99 (115Vac)
- Universal Input: 90-264 VAC
- Low Leakage Current, <250uA
- Four M3 Mounting Holes Optional on Bottom Side
- Remote ON/OFF Control
- Screw Terminal For Optional
- EN55022 Class B Meets
- Class I and Class II Construction
- Continuous Short Circuit Protection with Hiccup Mode and Auto Recover
- 3-Years Product Warranty



ELECTRICAL SPECIFICATIONS

| Model No. | AQC100-12S | AQC100-15S | AQC100-24S | AQC100-48S |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|------------|------------|
| Max Output Wattage (W) | 85 W | 85W | 100W | 100W |
| Input | Voltage | | | |
| | 90-264 VAC or 120-370 VDC | | | |
| | Frequency (Hz) | | | |
| | 47-63 Hz | | | |
| | Current (Full load) | | | |
| | <2.0 A max. (115 VAC) / <1.0 A max. (230 VAC) | | | |
| Inrush Current (<2ms) | | | | |
| < 30 A max. (115 VAC) / < 60 A max. (230 VAC) | | | | |
| Leakage Current | | | | |
| < 0.5 mA max. | | | | |
| Power Factor | | | | |
| PF>0.99 (115 VAC) / PF>0.95 (230 VAC) at Full Load | | | | |
| Output | Voltage (V.DC.) | | | |
| | 12V | | | |
| | 15V | | | |
| | 24V | | | |
| | 48V | | | |
| | Voltage Accuracy | | | |
| | ±2% | | | |
| | Current (A) max | | | |
| | 7.08 | | | |
| | 5.66 | | | |
| | 4.2 | | | |
| 2.1 | | | | |
| Line Regulation (LL-HL) (typ.) | | | | |
| ±1% | | | | |
| Load Regulation (5-100%) (typ.) | | | | |
| ±1% | | | | |
| Minimum Load | | | | |
| 3% | | | | |
| Maximum Capacitive Load | | | | |
| 50,000µF | | | | |
| 40,000µF | | | | |
| 6,000µF | | | | |
| 1,000µF | | | | |
| Ripple & Noise max. | | | | |
| 120mV | | | | |
| 150mV | | | | |
| 200mV | | | | |
| 240mV | | | | |
| Efficiency (typ.) | | | | |
| 90% | | | | |
| 90% | | | | |
| 92% | | | | |
| 93% | | | | |
| Hold-up Time | | | | |
| 10 ms (110 VAC) min. | | | | |
| Switching Frequency | | | | |
| 100~133 kHz | | | | |
| Protection | Over Power Protection | | | |
| | Auto recovery, 105 ~ 180% rated output power | | | |
| | Over Voltage Protection | | | |
| Zener diode clamp | | | | |
| Short Circuit Protection | | | | |
| Auto recovery, Hiccup mode | | | | |
| Isolation | Input-Output (V.AC) | | | |
| | 3000V | | | |
| | Input-FG (V.AC) | | | |
| 1500V | | | | |
| Output-FG (V.AC) | | | | |
| 500V | | | | |
| Environment | Operating Temperature | | | |
| | -25°C...+70°C (with derating) | | | |
| | Storage Temperature | | | |
| | -25°C...+85°C | | | |
| | Temperature Coefficient | | | |
| | ±0.03%/°C (0~50°C) | | | |
| Humidity | | | | |
| 95% RH | | | | |
| MTBF | | | | |
| >250,000 h @ 25°C (MIL-HDBK-217F, Notice 1) | | | | |
| Vibration | | | | |
| 10~500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes. | | | | |
| Physical | Dimension (L x W x H) | | | |
| | 4.3 x 2.3 x 1.18 Inches (109.0 x 58.5 x 30.0 mm) Tolerance ±0.1 mm | | | |
| | Weight | | | |
| 310 g | | | | |
| Cooling Method | | | | |
| Free convection | | | | |
| Safety | Agency Approvals | | | |
| CE, UL60950-1, CB | | | | |
| EMC | EMI (Conducted & Radiated Emission) | | | |
| | EN61000-6-3 · EN 55022 class B (Conductive plane to be connected to safety earth) | | | |
| | EMS (Noise Immunity) | | | |
| EN 55024 · EN61000-4-2,3,4,5,6,8,11 | | | | |
| Surge | | | | |
| 2KV L-N, 4KV L N-FG | | | | |

1.All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.

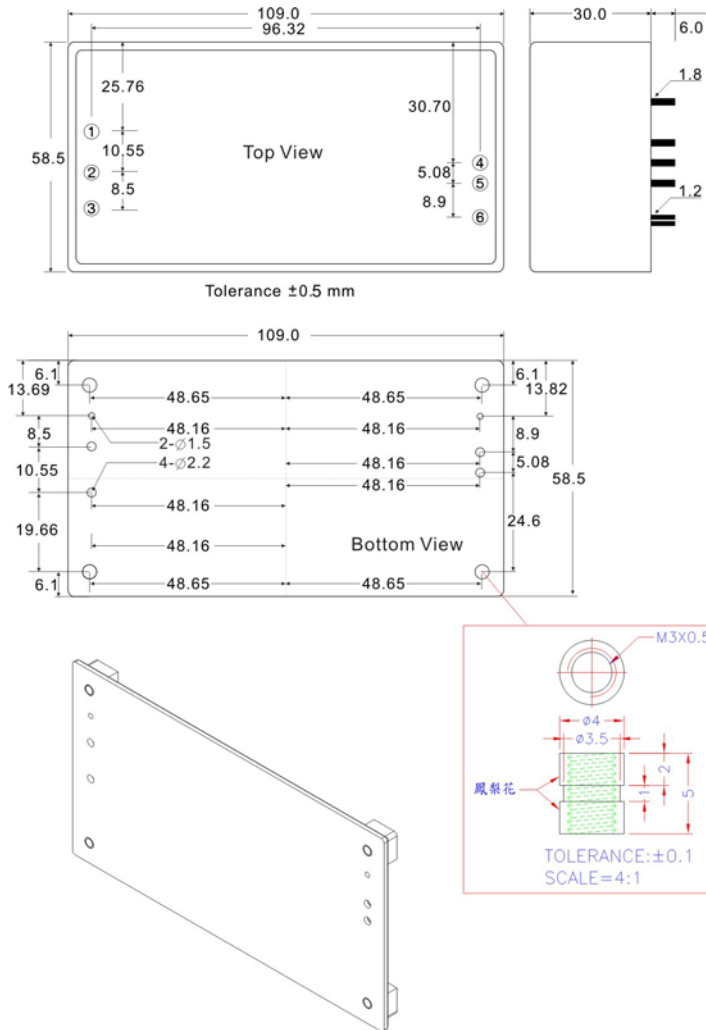
2.Ripple & Noise are measured at 20MHz of bandwidth with 0.1UF & 47UF parallel capacitor.

3.Hold-up Time measured at 90% Vout.

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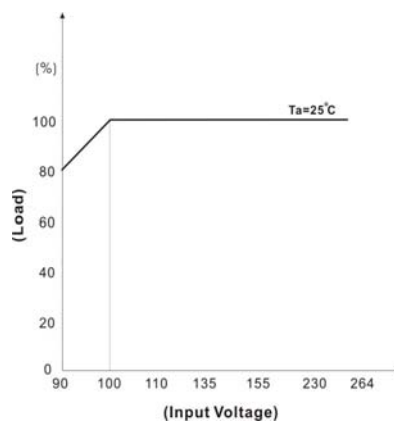
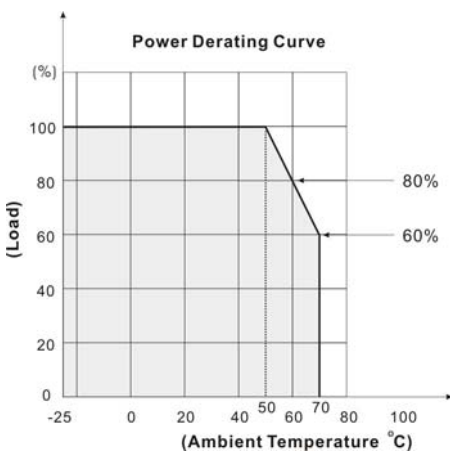
MECHANICAL DIMENSION (Top View)


| PIN# | Φ | SINGLE |
|-------------------------------------|------------------|-----------|
| 1 | 1.2 \pm 0.1%mm | AC IN (N) |
| 2 | 1.2 \pm 0.1%mm | AC IN (L) |
| 3 | 1.2 \pm 0.1%mm | FG |
| 4 | 1.2 \pm 0.1%mm | ON / OFF |
| (Provide +5Vdc Controlled External) | | |
| 5 | 1.8 \pm 0.1%mm | +DC OUT |
| 6 | 1.8 \pm 0.1%mm | -DC OUT |
| 7 | 1.2 \pm 0.1%mm | Trim |

Remark:

Please reserve the pin 4 hole on PCB.

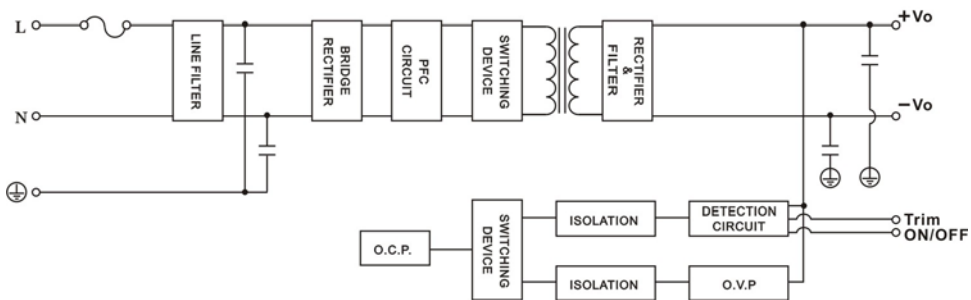
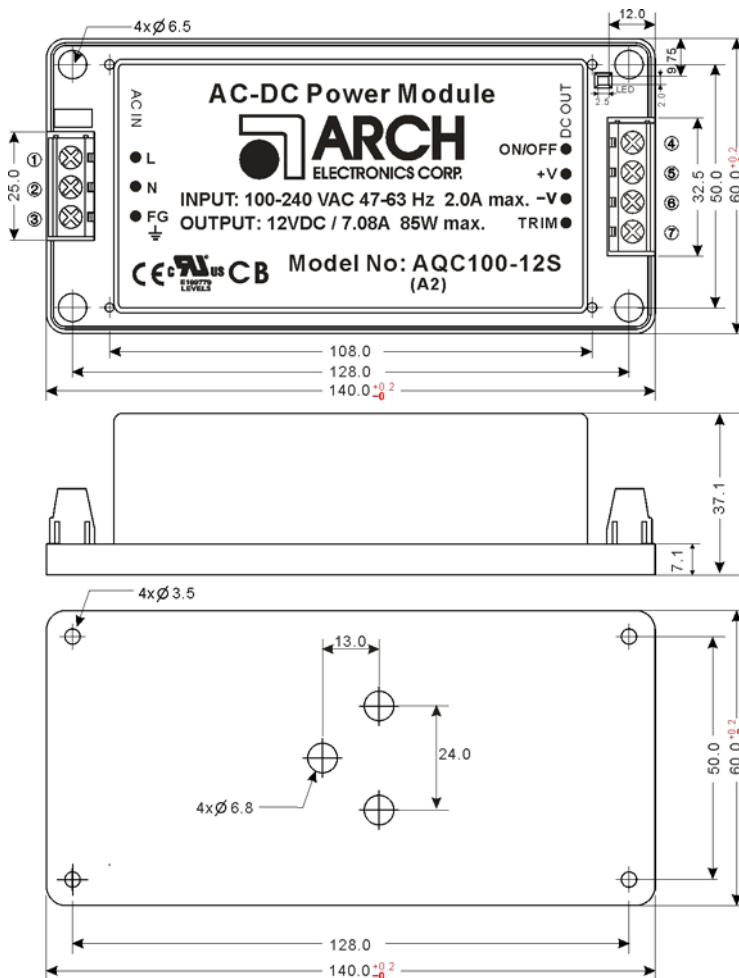
If the remote on/off function is not required, please connect the pin 4 circuit layout with pin6, or keep pin 4 floating.

DERATING


BLOCK DIAGRAM

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

Single Output


SCREW TERMINAL
AQC100-A2


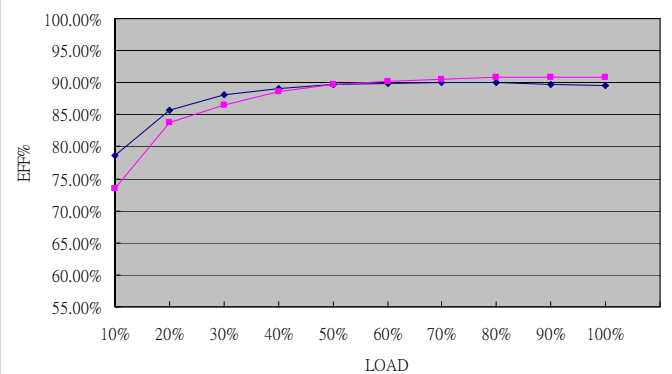
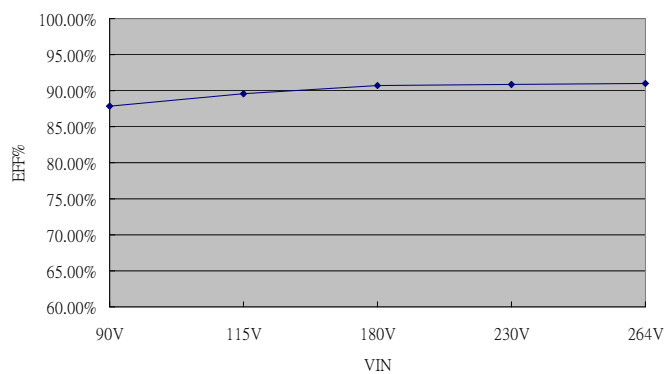
| PIN# | Single |
|------|-----------|
| 1 | AC IN (L) |
| 2 | AC IN (N) |
| 3 | FG |
| 4 | ON/OFF |
| 5 | +DC OUT |
| 6 | -DC OUT |
| 7 | Trim |

EFFICIENCY VERSUS LOAD
AQC100-12S
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%) | 87.87 | 89.51 | 90.67 | 90.88 | 90.96 |

LOAD VS Efficiency

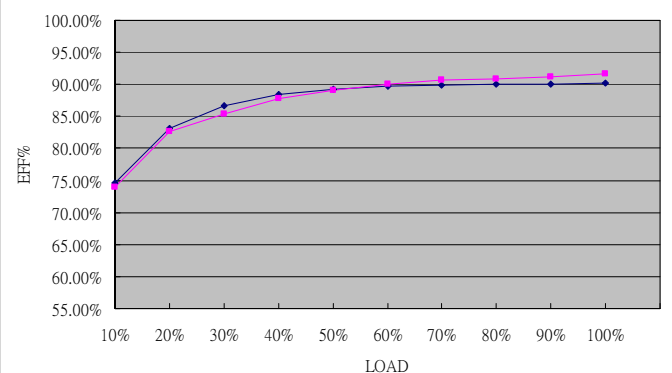
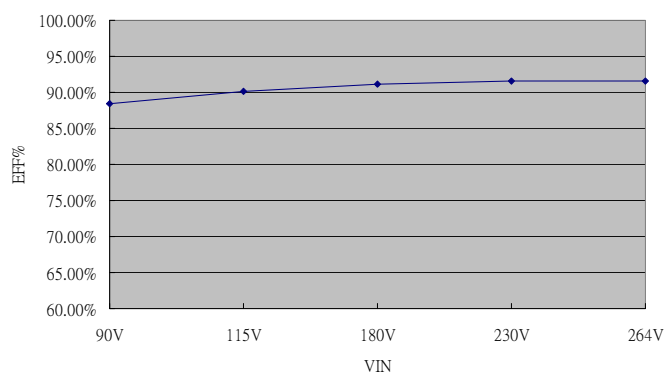
| Load (%) | 10 | 20 | 30 | 40 | 50 |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 78.62 | 85.67 | 88.07 | 89.14 | 89.76 |
| 230V (%) | 73.49 | 83.84 | 86.57 | 88.55 | 89.76 |
| Load (%) | 60 | 70 | 80 | 90 | 100 |
| 115V (%) | 89.95 | 90.00 | 90.02 | 89.77 | 89.51 |
| 230V (%) | 90.22 | 90.58 | 90.83 | 90.85 | 90.88 |


AQC100-15S
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%) | 88.41 | 90.17 | 91.11 | 91.59 | 91.53 |

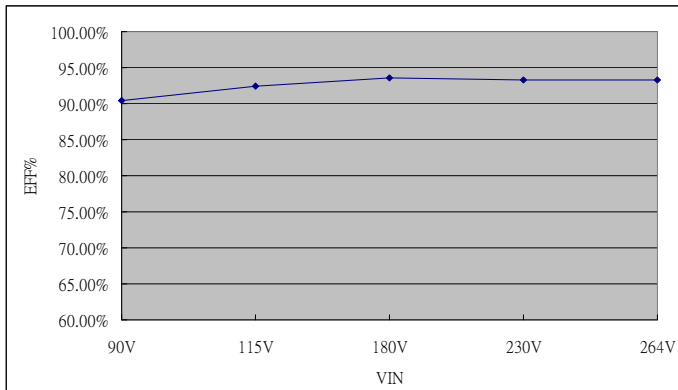
LOAD VS Efficiency

| 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 |

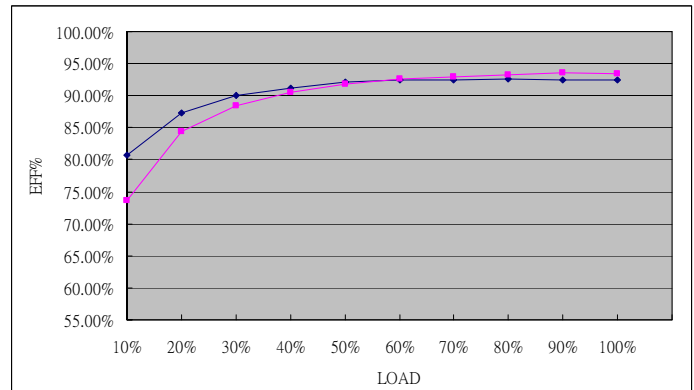


EFFICIENCY VERSUS LOAD
AQC100-24S
VIN VS Efficiency

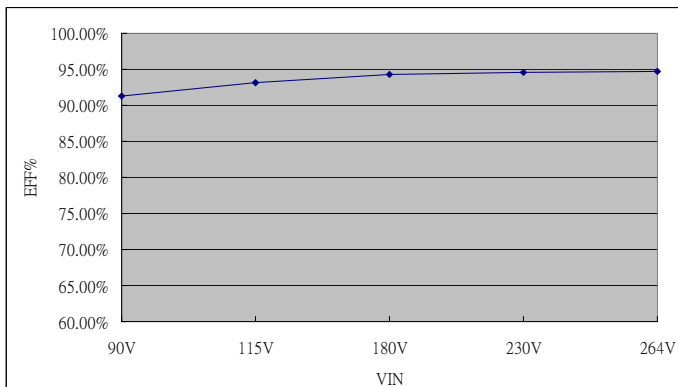
| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%) | 90.45 | 92.45 | 93.62 | 93.35 | 93.26 |


LOAD VS Efficiency

| Load (%) | 10 | 20 | 30 | 40 | 50 |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 80.71 | 87.31 | 90.00 | 91.22 | 92.10 |
| 230V (%) | 73.64 | 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 |


AQC100-48S
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 |

