ARCH ELECTRONICS CORP.

AC-DC Switching Power Supply

# AQF360F SERIES 360 Watts

## KEY FEATURES

- Enclosed Switching Power Supply
- Universal Input: 90-264 VAC
- With P.F.C. Function, PF>0.95
- Cooling by Built-in 12 VDC FAN
- 240W Convection without FAN
- Protections: Over Load / Over Voltage / Over Temperature / Short Circuit All by Auto-recovery
- Leakage Current <300uA
- High Power Density
- High Efficiency up to 93%
- RoHS Compliant Design
- Ultra Compact Size: 7.8 x 3.2 x 1.6 Inches
- 3-Years Product Warranty



| Standard | A Type |
|---|---|
|  |  |
|  |  |

CE cULus E199779 LEVEL3

## ELECTRICAL SPECIFICATIONS

| Model No. | | AQF360F-12S | AQF360F-24S | AQF360F-36S | AQF360F-48S | AQF360F-54S |
|---|---|---|---|---|---|---|
| Max Output Wattage (W) | | 360W | | | | |
| Input | Voltage | 90-264 VAC or 120-370 VDC | | | | |
| | Frequency (Hz) | 47-63 Hz | | | | |
| | Current (Full load) | < 4.0 A max. (115 VAC) / < 2.0 A max. (230 VAC) | | | | |
| | Inrush Current (<2ms) | < 30 A max. (115 VAC) / < 60 A max. (230 VAC) | | | | |
| | Leakage Current | < 0.3 mA max.(240VAC 63Hz) | | | | |
| | Power Factor | PF>0.98 (115 VAC) / PF>0.93 (230 VAC) at Full Load | | | | |
| Output | Voltage (V.DC.) | 12V | 24V | 36V | 48V | 54V |
| | Trim | 10.8 ~ 13.2V | 21.6 ~ 26.4V | 32.7 ~ 39.6V | 44 ~ 51V | 51.3 ~ 56.7V |
| | Voltage Accuracy | ±2% | | | | |
| | Current (Convection) (A) max | 30 | 15 | 10 | 7.5 | 6.66 |
| | Line Regulation (LL-HL) (typ.) | ±1% | | | | |
| | Load Regulation (5-100%) (typ.) | ±1% | | | | |
| | Minimum Load | 1% | | | | |
| | Maximum Capacitive Load | 85000 uF | 48000 uF | 21000 uF | 13000 uF | 7000 uF |
| | Ripple & Noise (max.) | 150mVp-p | 200mVp-p | | | |
| | Efficiency (typ.) | 89% | 91% | 92% | 93% | 93% |
| | Hold-up Time | 12 ms min. | | | | |
| | Switching Frequency | 75 kHz | | | | |
| Protection | Over Power Protection | Auto recovery | | | | |
| | Over Voltage Protection | Auto recovery | | | | |
| | Over Temperature | Auto recovery | | | | |
| | Short Circuit Protection | Auto-recovery | | | | |
| Isolation | Input-Output (V.AC) | 3000V | | | | |
| | Input-FG (V.AC) | 1500V | | | | |
| | Output-FG (V.AC) | 500V | | | | |
| Environment | Operating Temperature | -10°C…+70°C (with derating) | | | | |
| | Storage Temperature | -25°C…+85°C | | | | |
| | Temperature Coefficient | ±0.03%/°C ( 0~50°C ) | | | | |
| | Humidity | 95% RH | | | | |
| | MTBF | >120,000 h @ 25°C (MIL-HDBK-217F) | | | | |
| | Vibration | 10~500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes. | | | | |

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.

# AQF360F SERIES 360 Watts

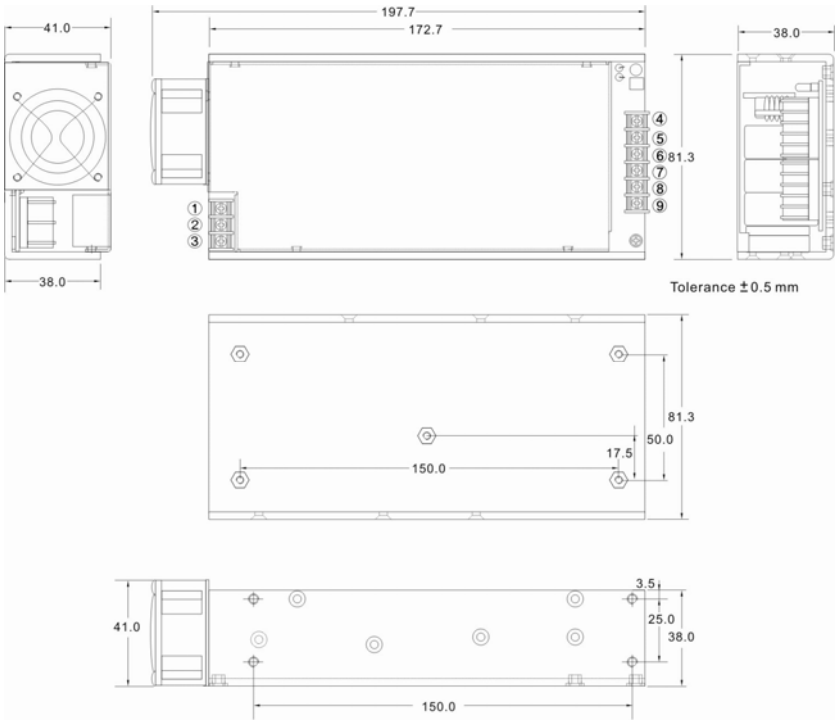
## ELECTRICAL SPECIFICATIONS

| Model No. | | AQF360F-12S | AQF360F-24S | AQF360F-36S | AQF360F-48S | AQF360F-54S |
|---|---|---|---|---|---|---|
| Physical | Dimension (L x W x H) | 7.8 x 3.2 x 1.6 Inches (197.7 x 81.3 x 41.0 mm ) Tolerance ±0.5 mm | | | | |
| | Weight | 746 g | | | | |
| | Cooling Method | Cooling by Built-in DC FAN | | | | |
| Safety | Agency Approvals | CE, UL60950 | | | | |
| EMC | EMI (Conducted & Radiated Emission) | EN 55022 class B | | | | |
| | EMS (Noise Immunity) | EN 55024 | | | | |

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.

## MECHANICAL DIMENSION ( Top View )

### Standard




| PIN# | SINGLE |
|---|---|
| 1 | FG |
| 2 | AC IN (N) |
| 3 | AC IN (L) |
| 4~6 | +DC OUT |
| 7~9 | -DC OUT |





### A Type







| PIN# | SINGLE |
|---|---|
| 1 | FG |
| 2 | AC IN (N) |
| 3 | AC IN (L) |
| 4~9 | +DC OUT |
| 10~15 | -DC OUT |

# AQF360F SERIES 360 Watts

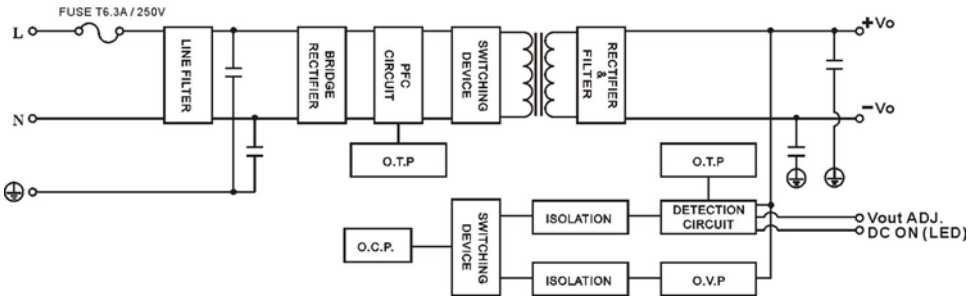
**ASSEMBLY INSTRUCTIONS**

*U Case T=2.0mm

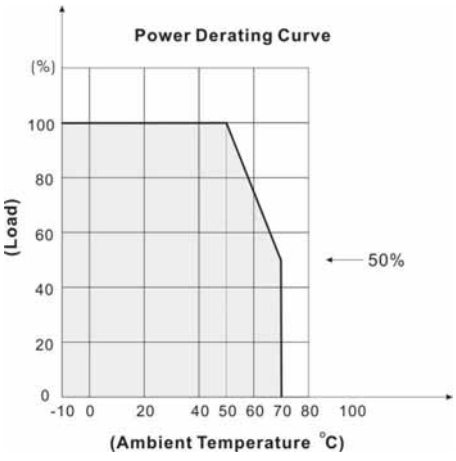
Customer screws into the length of the case no higher than 0.5mm
(Namely screw length for load plate thickness plus 2.5mm

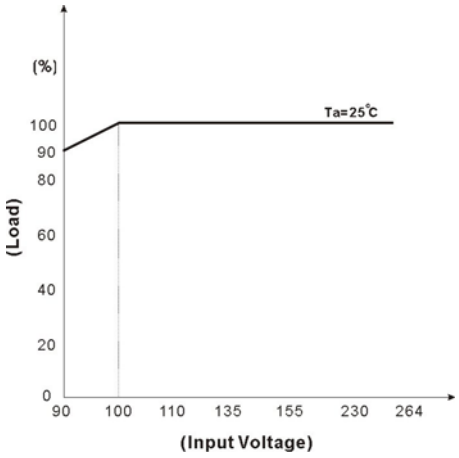
## BLOCK DIAGRAM

Single Output




## DERATING



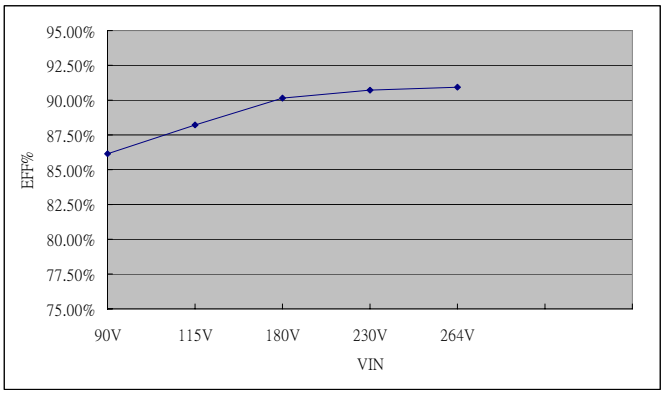



## EFFICIENCY VERSUS LOAD

### AQF360F-12S

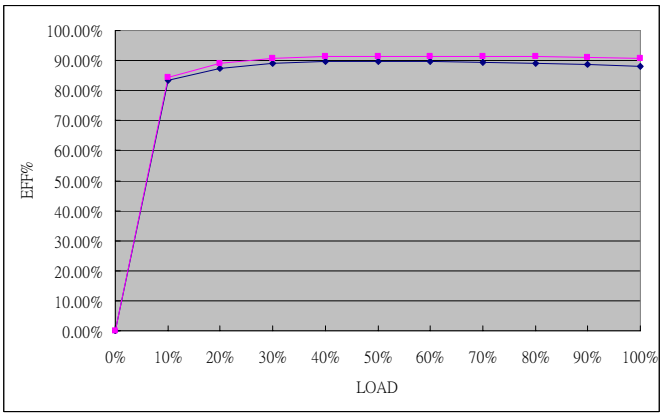
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|---|---|---|---|---|---|
| Efficiency (%) | 86.12 | 88.20 | 90.15 | 90.69 | 90.95 |




LOAD VS Efficiency

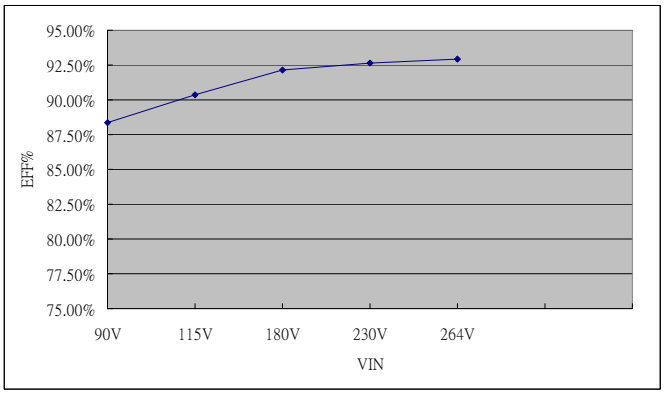
| Load (%) | 0 | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|---|
| 115V (%) | 0 | 83.25 | 87.43 | 89.02 | 89.67 | 89.80 |
| 230V (%) | 0 | 84.38 | 88.94 | 90.75 | 91.24 | 91.49 |
| Load (%) | 60 | 70 | 80 | 90 | 100 | |
| 115V (%) | 89.64 | 89.39 | 89.00 | 88.65 | 88.20 | |
| 230V (%) | 91.46 | 91.38 | 91.22 | 91.02 | 90.09 | |




### AQF360F-24S

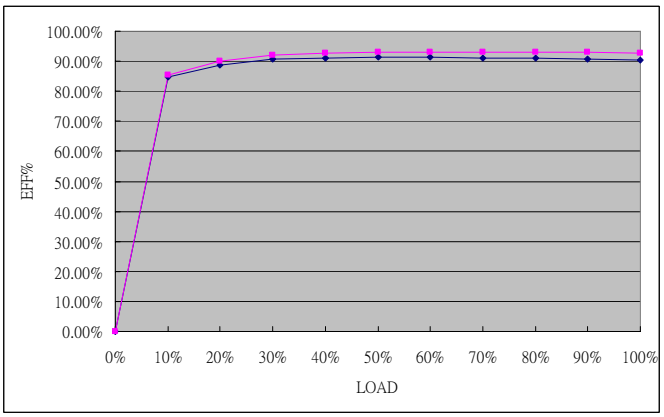
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|---|---|---|---|---|---|
| Efficiency (%) | 88.36 | 90.35 | 92.13 | 92.67 | 92.96 |




LOAD VS Efficiency

| Load (%) | 0 | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|---|
| 115V (%) | 0 | 84.77 | 88.62 | 90.54 | 91.14 | 91.33 |
| 230V (%) | 0 | 85.54 | 90.08 | 92.06 | 92.62 | 92.99 |
| Load (%) | 60 | 70 | 80 | 90 | 100 | |
| 115V (%) | 91.32 | 91.18 | 90.98 | 90.70 | 90.35 | |
| 230V (%) | 93.08 | 93.08 | 93.02 | 92.91 | 92.67 | |

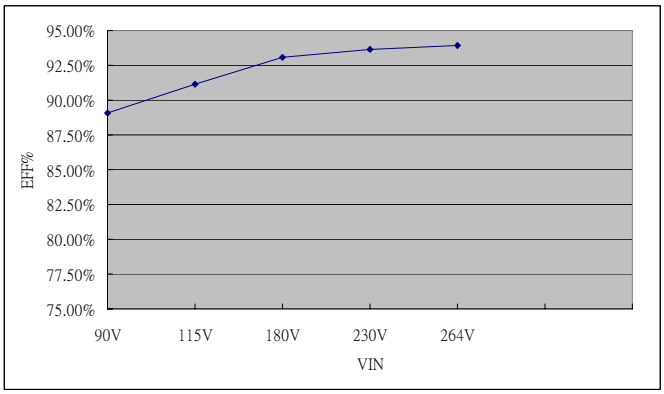


## EFFICIENCY VERSUS LOAD

### AQF360F-36S

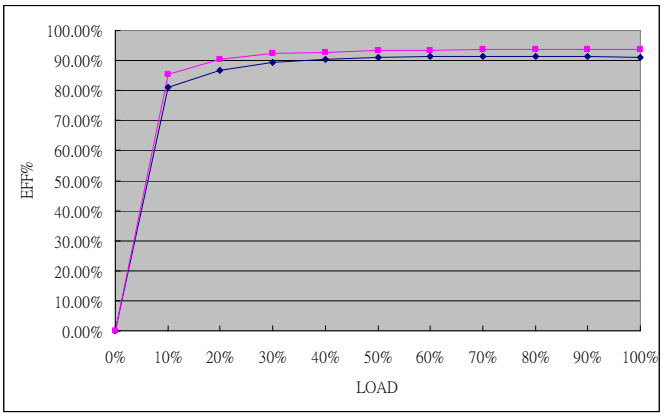
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|---|---|---|---|---|---|
| Efficiency (%) | 89.04 | 91.17 | 93.06 | 93.64 | 93.93 |




LOAD VS Efficiency

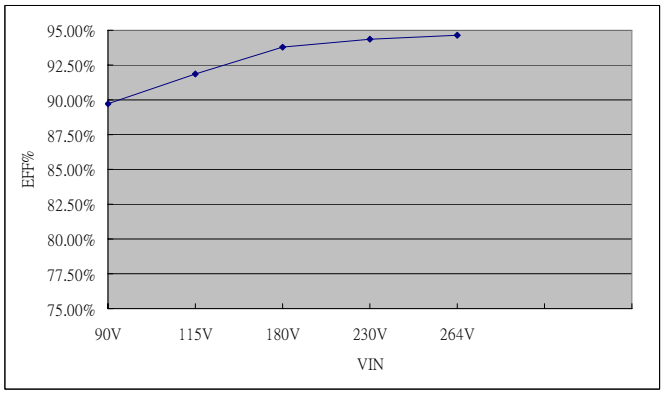
| Load (%) | 0 | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|---|
| 115V (%) | 0 | 80.96 | 86.76 | 89.39 | 90.51 | 91.01 |
| 230V (%) | 0 | 85.51 | 90.25 | 92.24 | 92.82 | 93.39 |
| Load (%) | 60 | 70 | 80 | 90 | 100 | |
| 115V (%) | 91.21 | 91.36 | 91.37 | 91.31 | 91.17 | |
| 230V (%) | 93.46 | 93.68 | 93.76 | 93.68 | 93.64 | |




### AQF360F-48S

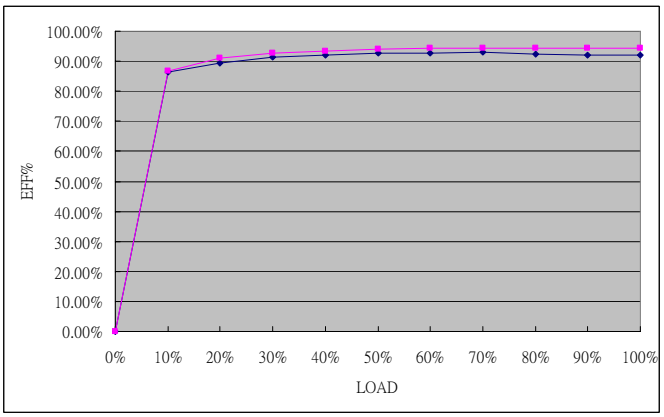
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|---|---|---|---|---|---|
| Efficiency (%) | 89.75 | 91.89 | 93.79 | 94.36 | 94.67 |




LOAD VS Efficiency

| Load (%) | 0 | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|---|
| 115V (%) | 0 | 86.43 | 89.33 | 9143 | 92.17 | 92.58 |
| 230V (%) | 0 | 8680 | 90.87 | 92.74 | 93.47 | 94.02 |
| Load (%) | 60 | 70 | 80 | 90 | 100 | |
| 115V (%) | 92.58 | 93.00 | 92.38 | 92.18 | 91.89 | |
| 230V (%) | 94.02 | 94.23 | 94.24 | 94.40 | 94.36 | |

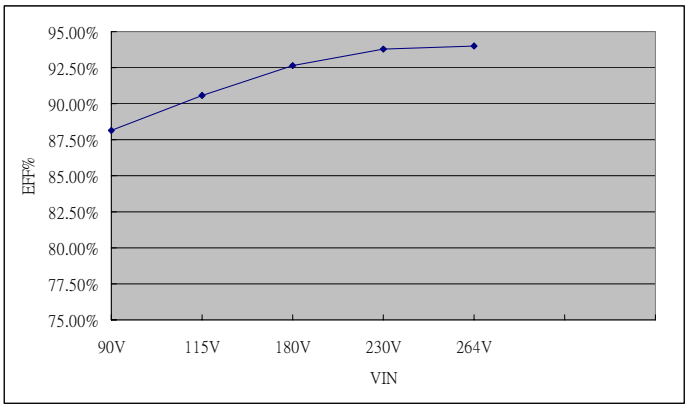


## EFFICIENCY VERSUS LOAD

### AQF360F-54S

VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|---|---|---|---|---|---|
| Efficiency (%) | 88.12 | 90.58 | 92.65 | 93.79 | 93.99 |




LOAD VS Efficiency

| Load (%) | 0 | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|---|
| 115V (%) | 0.00 | 86.37 | 88.87 | 89.82 | 90.28 | 90.91 |
| 230V (%) | 0.00 | 88.59 | 91.67 | 92.80 | 93.35 | 93.66 |
| Load (%) | 60 | 70 | 80 | 90 | 100 | |
| 115V (%) | 90.98 | 90.96 | 90.95 | 90.87 | 90.58 | |
| 230V (%) | 93.79 | 93.83 | 93.86 | 93.80 | 93.79 | |

