

ARCH AQF120E-180W AC-DC Switching Power Supply Datasheet

<http://www.manuallib.com/arch/aqf120e-180w-ac-dc-switching-power-supply-datasheet.html>

KEY FEATURES

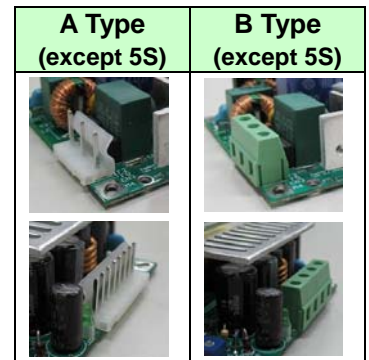
- Open Frame 100W Power Supply in 4.0" x 2.0" Size
- High Efficiency up to 93% Typical
- Active PFC Function, >0.95 (230Vac), >0.99 (115Vac)
- Universal Input: 90-264 VAC
- 100W Full Load at 50°C Under Free Air Convection
- Continuous Short Circuit Protection with Hiccup Mode and Auto Recover
- Low Leakage Current, <250uA
- EN55022 Class B Meets (pending)
- Class I and Class II Construction
- 3-Years Product Warranty

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KEY FEATURES

- Din Rail Switching Power Supply
- 180 Watt with 18CFM FAN for 12V to 48V Output Voltage
- 180 Watt with 30CFM FAN for 5V Output Voltage
- High Efficiency up to 93%
- Universal Input: 90-264 VAC
- Low Ripple and Noise
- With P.F.C. Function >0.95
- 120 Watt with Free Air Convection
- Ultra Compact Size: 5.0 x 3.24 x 1.5 Inches
- 3-Years Product Warranty


ELECTRICAL SPECIFICATIONS

| Model No. | AQF120E-5S | AQF120E-12S | AQF120E-15S | AQF120E-24S | AQF120E-48S | | |
|--|---|------------------------------|---|---------------------|---------------------|----------------------|-----------------------|
| Max Output Wattage (W) | 150 W (30CFM FAN) | 180 W (18CFM FAN) | | | | | |
| Max Output Wattage (W) | 120 W | | | | | | |
| Input | Voltage | | | | | | |
| | 90-264 VAC or 120-370 VDC (80-274 VAC or 110-390 VDC with Derating) | | | | | | |
| | 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.) | | 5V | 12V | 15V | 24V | 48V |
| | Voltage Accuracy | | ±2% | | | | |
| | Voltage Adj. Range (V.DC) | | 4.7~5.3V | 11.4~13.2V | 13.5~16V | 22.8~26.4V | 45.6~52V |
| | Current (18/30 CFM FAN)(A) max | | 0~30 (30CFM FAN) | 0~15 (18CFM FAN) | 0~12 (18CFM FAN) | 0~7.5 (18CFM FAN) | 0~3.75 (18CFM FAN) |
| | Current (Convection) (A) max | | 0~24 | 0~10 | 0~8 | 0~5 | 0~2.5 |
| | Line Regulation | | ±1% | | | | |
| | Load Regulation | | ±1% | | | | |
| | Minimum Load | | 5% | 1% | | | |
| | Maximum Capacitive Load | | 100,000µF | 40,000µF | 35,000µF | 20,000µF | 1,200µF |
| | Ripple & Noise (max.) | | 100mV | 50mV | 50mV | 100mV | 200mV |
| | Efficiency (typ.) | | 87% | 90% | 90% | 93% | 93% |
| | Hold-up Time | | 15 ms min. | | | | |
| | Switching Frequency | | 90 kHz | 100 kHz | | | |
| | Protection | Over Power Protection | | Auto recovery | | | |
| Over Voltage Protection | | Auto recovery (> 125% Vout) | | | | | |
| Short Circuit Protection | | Auto recovery | | | | | |
| Isolation | Input-Output (V.AC) | | 4000V | | | | |
| | Input-FG (V.AC) | | 2000V | | | | |
| | 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 | | >120,000 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) | | 5.0 x 3.24 x 1.5 Inches (127.0 x 82.2 x 38.1 mm) Tolerance ±0.5 mm | | | | |
| | Weight | | 400 g | | | | |
| | Cooling Method | | Free convection / 18 CFM FAN | | | | |
| Safety | Agency Approvals | | CE, UL60950-1(except 5S / 15S), CB(except 5S / 15S) | | | | |
| EMC | EMI (Conducted & Radiated Emission) | | EN61000-6-3 · 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.

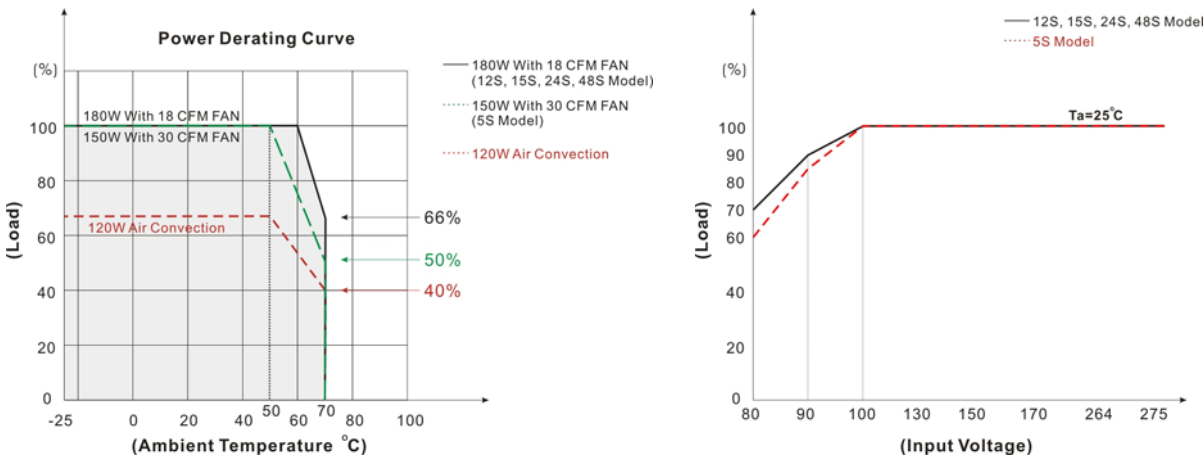
3.Hold-up Time measured at 90% Vout.

<http://www.archcorp.com.tw>

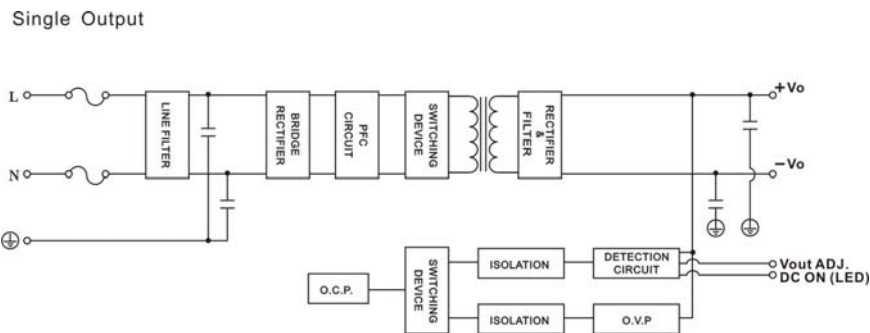
TEL: +886-2-26989508 FAX: +886-2-26981319

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DERATING

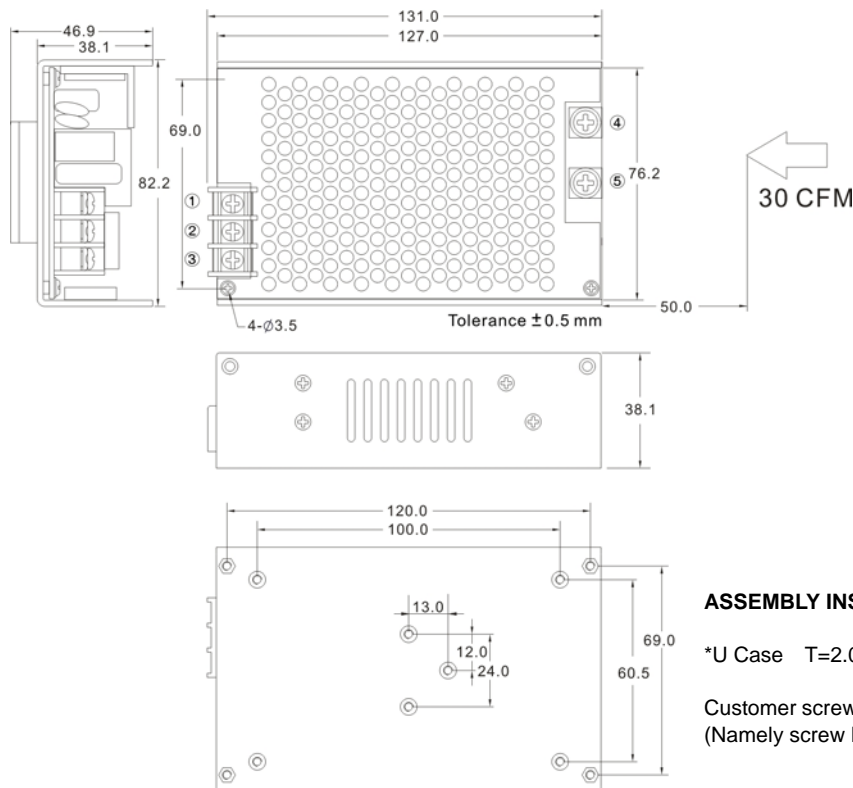


BLOCK DIAGRAM



MECHANICAL DIMENSION (Top View)

Standard (5S)

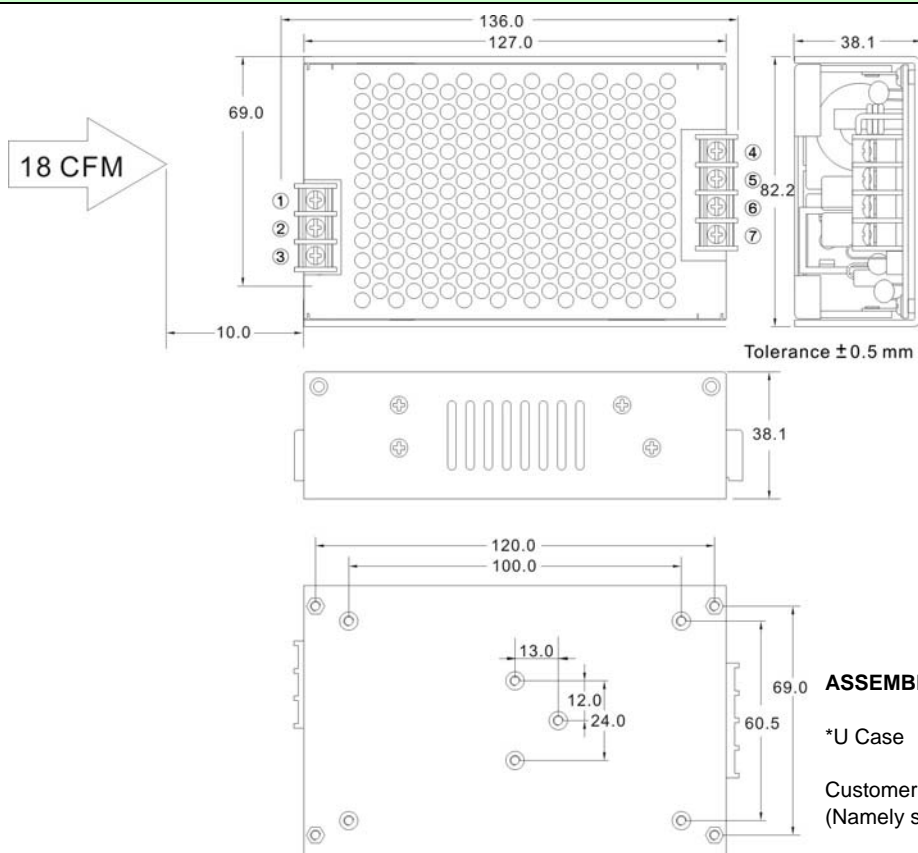


| PIN# | SINGLE |
|------|-----------|
| 1 | AC IN (L) |
| 2 | AC IN (N) |
| 3 | FG |
| 4 | +DC OUT |
| 5 | -DC OUT |

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)

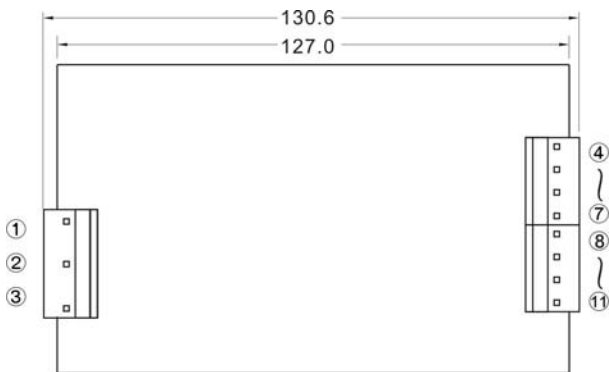
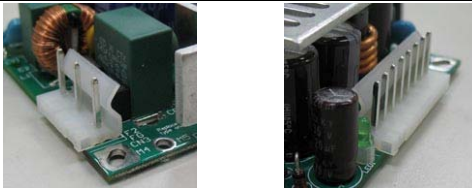
MECHANICAL DIMENSION (Top View)
Standard (12S 、 15S 、 24S 、 48S)


| PIN# | SINGLE |
|------|-----------|
| 1 | AC IN (L) |
| 2 | AC IN (N) |
| 3 | FG |
| 4 | +DC OUT |
| 5 | +DC OUT |
| 6 | -DC OUT |
| 7 | -DC OUT |

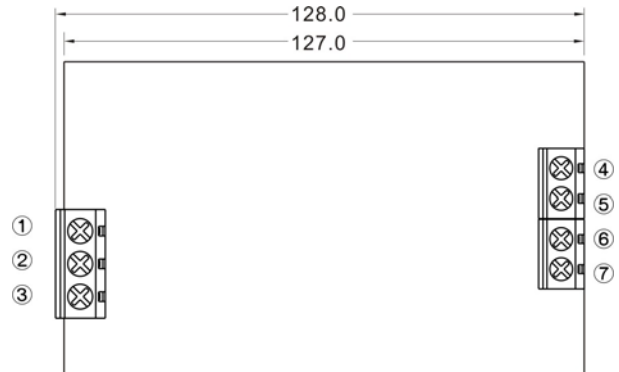
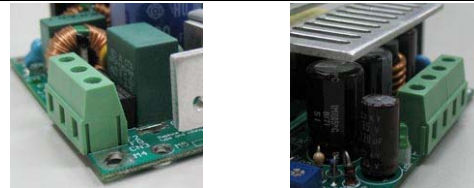
ASSEMBLY INSTRUCTIONS

*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)

A Type (except 5S)


| PIN# | Single |
|--------|-----------|
| 1 | AC IN (L) |
| 2 | AC IN (N) |
| 3 | FG |
| 4 ~ 7 | +DC OUT |
| 8 ~ 11 | -DC OUT |

B Type (except 5S)


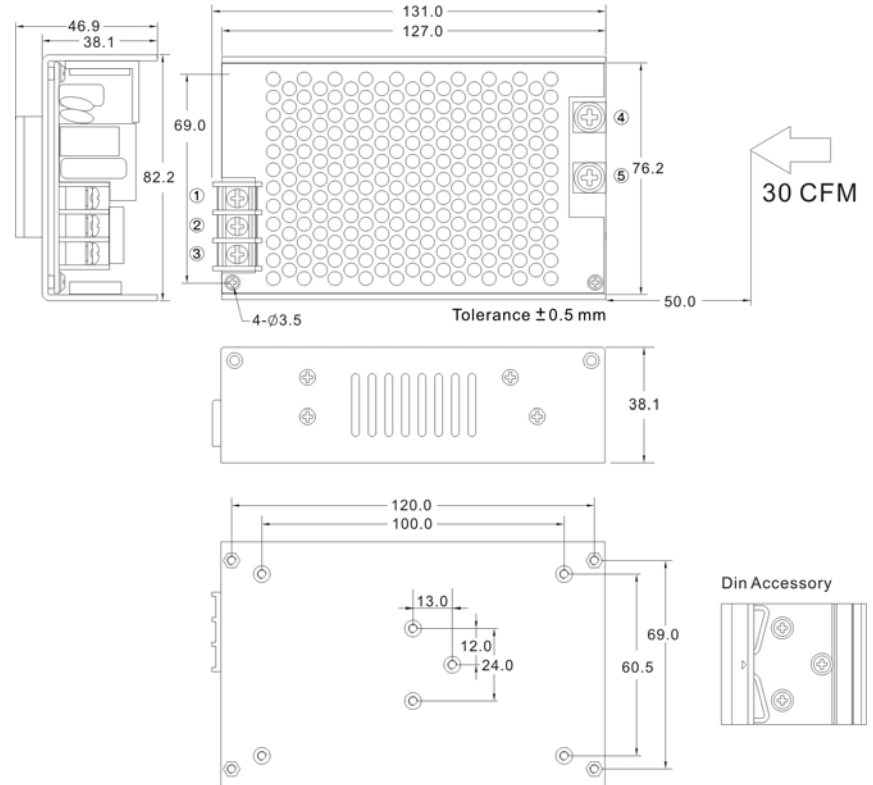
| PIN# | Single |
|-------|-----------|
| 1 | AC IN (L) |
| 2 | AC IN (N) |
| 3 | FG |
| 4 ~ 5 | +DC OUT |
| 6 ~ 7 | -DC OUT |

Din Rail Kit

AQF120E-180W-DRK

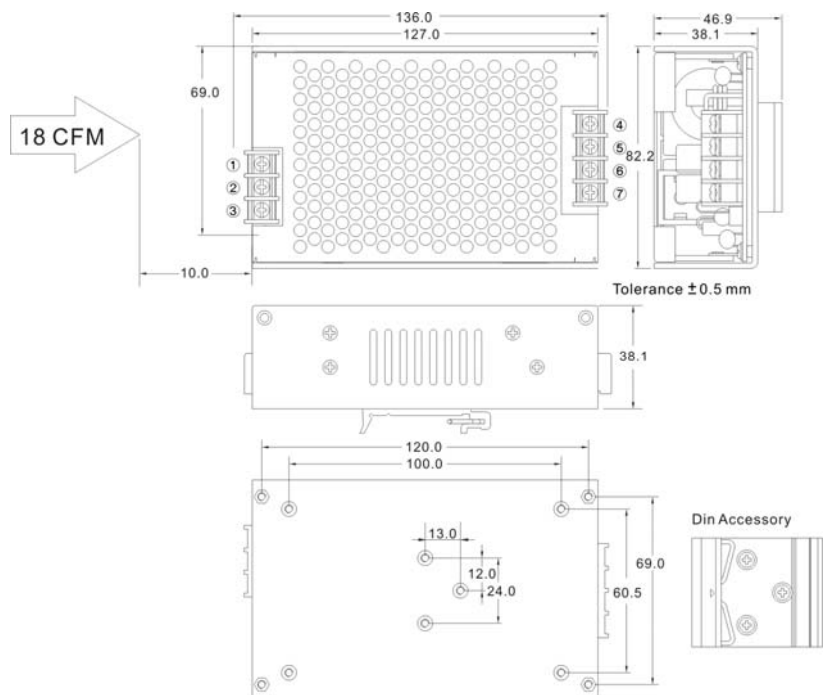


AQF120E-5S-DRK



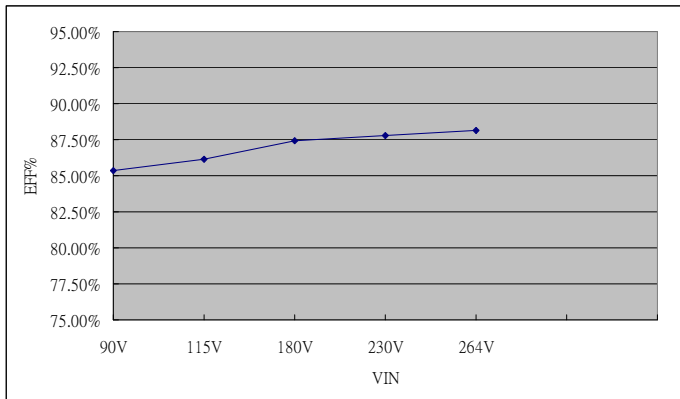
| PIN# | 5S | 12S,15S,24S,48S |
|------|-----------|-----------------|
| 1 | AC IN (L) | AC IN (L) |
| 2 | AC IN (N) | AC IN (N) |
| 3 | FG | FG |
| 4 | +DC OUT | +DC OUT |
| 5 | -DC OUT | +DC OUT |
| 6 | — | -DC OUT |
| 7 | — | -DC OUT |

AQF120E-12S 、 15S 、 24S 、 48S-DRK

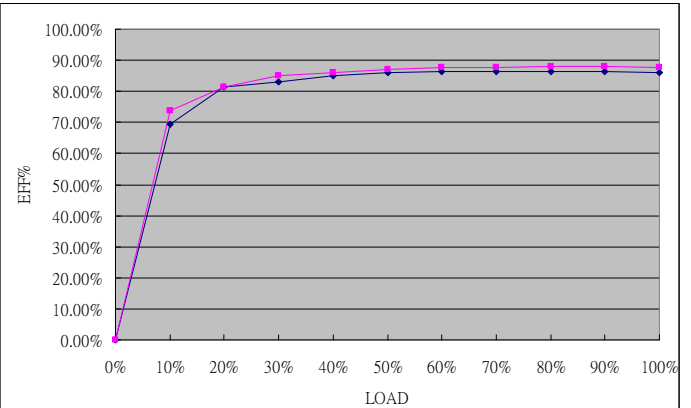


EFFICIENCY VERSUS LOAD
AQF120E-5S
VIN VS Efficiency

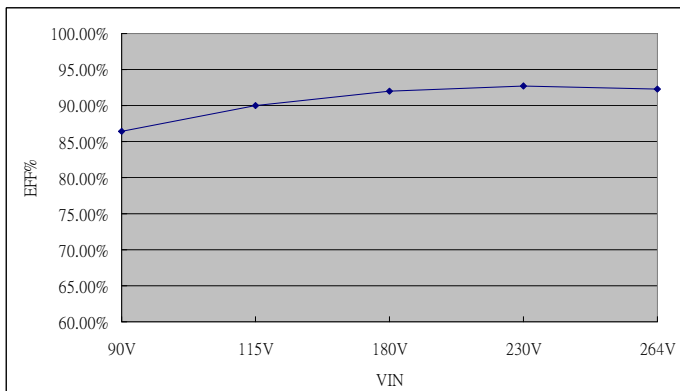
| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%) | 85.37 | 86.17 | 87.46 | 87.76 | 88.14 |


LOAD VS Efficiency

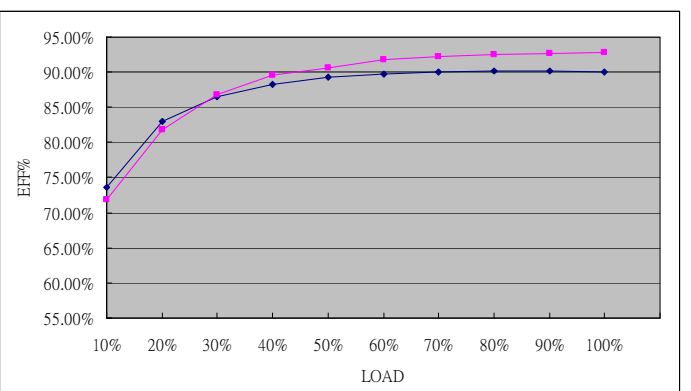
| Load (%) | 10 | 20 | 30 | 40 | 50 |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 69.59 | 81.53 | 83.15 | 84.92 | 85.96 |
| 230V (%) | 73.66 | 81.49 | 85.04 | 86.21 | 87.16 |
| Load (%) | 60 | 70 | 80 | 90 | 100 |
| 115V (%) | 86.44 | 86.45 | 86.37 | 86.48 | 86.20 |
| 230V (%) | 87.57 | 87.75 | 87.98 | 87.94 | 87.80 |


AQF120E-12S
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|-------------------|-------|-------|-----|-------|------|
| Efficiency (%) | 86.45 | 89.96 | 92 | 92.77 | 92.3 |

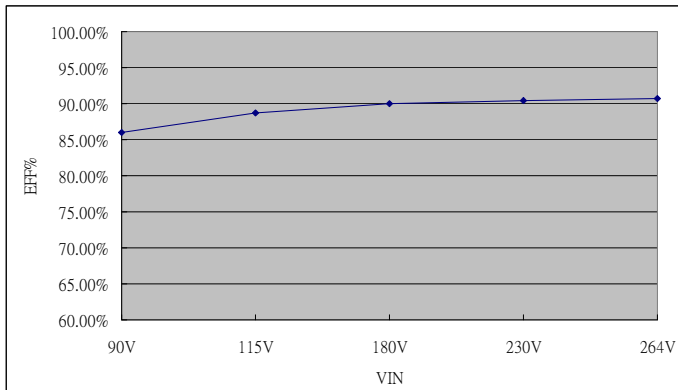

LOAD VS Efficiency

| Load (%) | 10 | 20 | 30 | 40 | 50 |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 73.62 | 82.98 | 86.43 | 88.26 | 89.27 |
| 230V (%) | 71.83 | 81.82 | 86.81 | 89.54 | 90.58 |
| Load (%) | 60 | 70 | 80 | 90 | 100 |
| 115V (%) | 89.72 | 89.95 | 90.11 | 90.1 | 89.96 |
| 230V (%) | 91.74 | 92.18 | 92.53 | 92.62 | 92.77 |

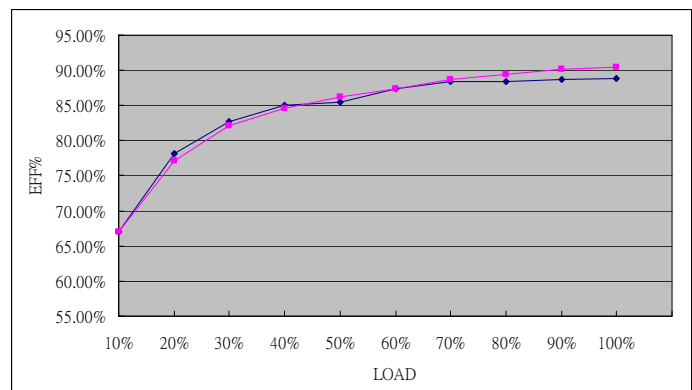


EFFICIENCY VERSUS LOAD
AQF120E-15S
VIN VS Efficiency

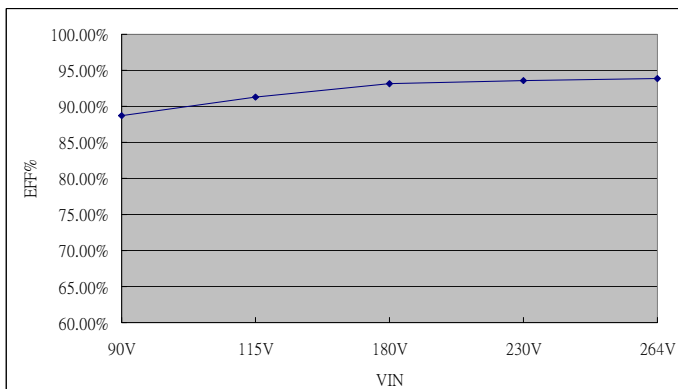
| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%) | 86.03 | 88.78 | 90.06 | 90.45 | 90.75 |


LOAD VS Efficiency

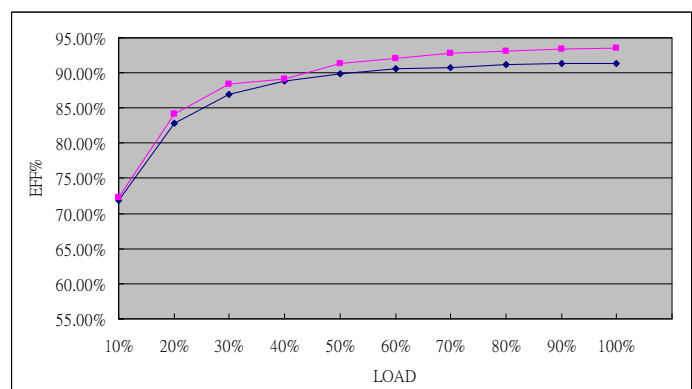
| Load (%) | 10 | 20 | 30 | 40 | 50 |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 67.05 | 78.17 | 82.74 | 85.07 | 85.52 |
| 230V (%) | 67.05 | 77.17 | 82.17 | 84.61 | 86.14 |
| Load (%) | 60 | 70 | 80 | 90 | 100 |
| 115V (%) | 87.40 | 88.34 | 88.44 | 88.67 | 88.78 |
| 230V (%) | 87.39 | 88.68 | 89.5 | 90.14 | 90.45 |


AQF120E-24S
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%) | 88.78 | 91.27 | 93.11 | 93.52 | 93.81 |

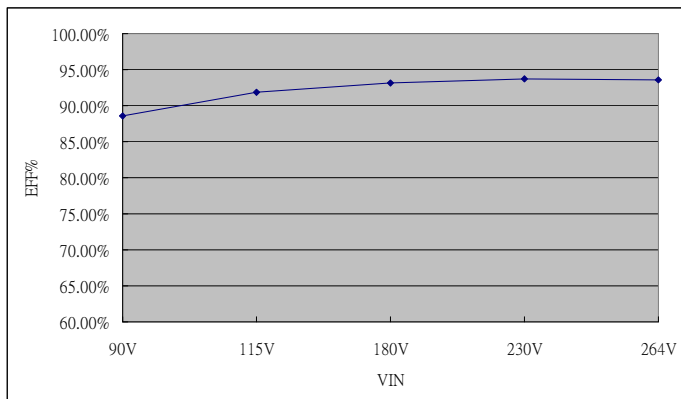

LOAD VS Efficiency

| Load (%) | 10 | 20 | 30 | 40 | 50 |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 71.89 | 82.79 | 86.97 | 88.9 | 89.82 |
| 230V (%) | 72.3 | 84.22 | 88.46 | 89.21 | 92.29 |
| Load (%) | 60 | 70 | 80 | 90 | 100 |
| 115V (%) | 90.54 | 90.78 | 91.13 | 91.4 | 91.27 |
| 230V (%) | 92.14 | 92.86 | 93.14 | 93.44 | 93.52 |



EFFICIENCY VERSUS LOAD
AQF120E-48S
VIN VS Efficiency

| Input Voltage (V) | 90 | 115 | 180 | 230 | 264 |
|-------------------|-------|-------|-------|-------|-------|
| Efficiency (%) | 88.56 | 91.86 | 93.20 | 93.76 | 93.61 |


LOAD VS Efficiency

| Load (%) | 10 | 20 | 30 | 40 | 50 |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 74.99 | 83.9 | 87.25 | 89.17 | 90.01 |
| 230V (%) | 67.31 | 79.29 | 84.97 | 88.18 | 89.99 |
| Load (%) | 60 | 70 | 80 | 90 | 100 |
| 115V (%) | 90.69 | 91.18 | 91.46 | 91.84 | 91.86 |
| 230V (%) | 91.24 | 92.15 | 92.84 | 93.36 | 93.76 |

