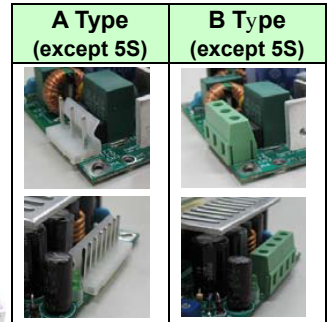


## KEY FEATURES

- Din Rail Switching Power Supply
- 180 Watt with 18CFM FAN for 12V to 48V Output Voltage
- 150 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-Year Product Warranty

## 120W SERIES



## ELECTRICAL SPECIFICATIONS

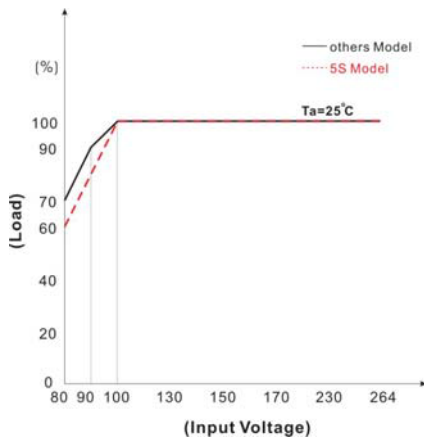
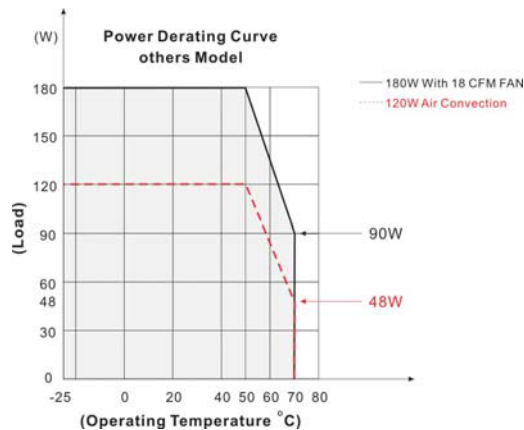
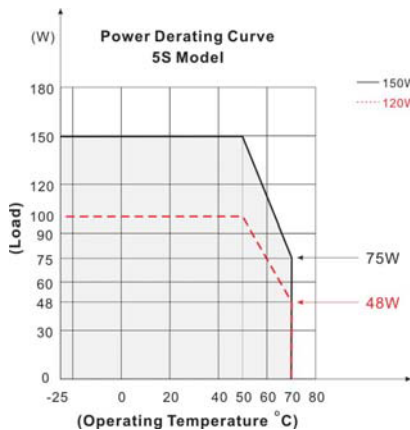
All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.

| Model No.              |                                     | FSP120HWVS005E                                                       | FSP120HWVS012E      | FSP120HWVS015E      | FSP120HWVS024E       | FSP120HWVS048E        |
|------------------------|-------------------------------------|----------------------------------------------------------------------|---------------------|---------------------|----------------------|-----------------------|
| 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<br>(30CFM FAN)                                                  | 0~15<br>(18CFM FAN) | 0~12<br>(18CFM FAN) | 0~7.5<br>(18CFM FAN) | 0~3.75<br>(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.                                                           |                     |                     |                      |                       |
| Protection             | Over Power Protection               | Auto recovery                                                        |                     |                     |                      |                       |
|                        | Over Voltage Protection             | Auto recovery ( > 125% Vout)                                         |                     |                     |                      |                       |
|                        | Short Circuit Protection            | Auto recovery                                                        |                     |                     |                      |                       |
| Isolation              | Input-Output (V.AC)                 | 4000VAC or 5656VDC                                                   |                     |                     |                      |                       |
|                        | 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 55032 class B                                       |                     |                     |                      |                       |
|                        | EMS (Noise Immunity)                | EN 55024                                                             |                     |                     |                      |                       |

## NOTE

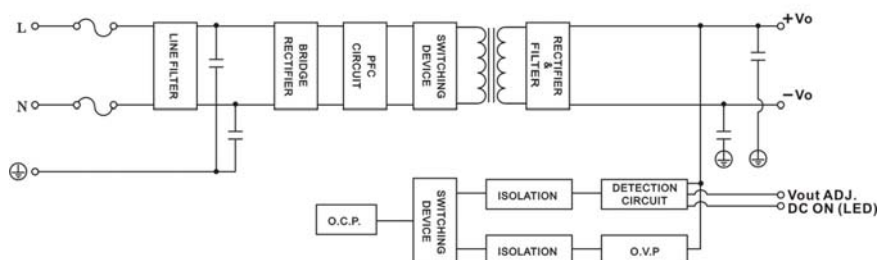
1. Ripple & Noise are measured at 20MHz of bandwidth with 0.1uF & 47uF parallel capacitor.
2. Hold-up Time measured at 90% Vout.
3. Strongly recommend to conduct this test with DC Voltage. If customer wishes to test with AC Voltage, please disconnect all Y-Capacitors within power supply .

## DERATING



## BLOCK DIAGRAM

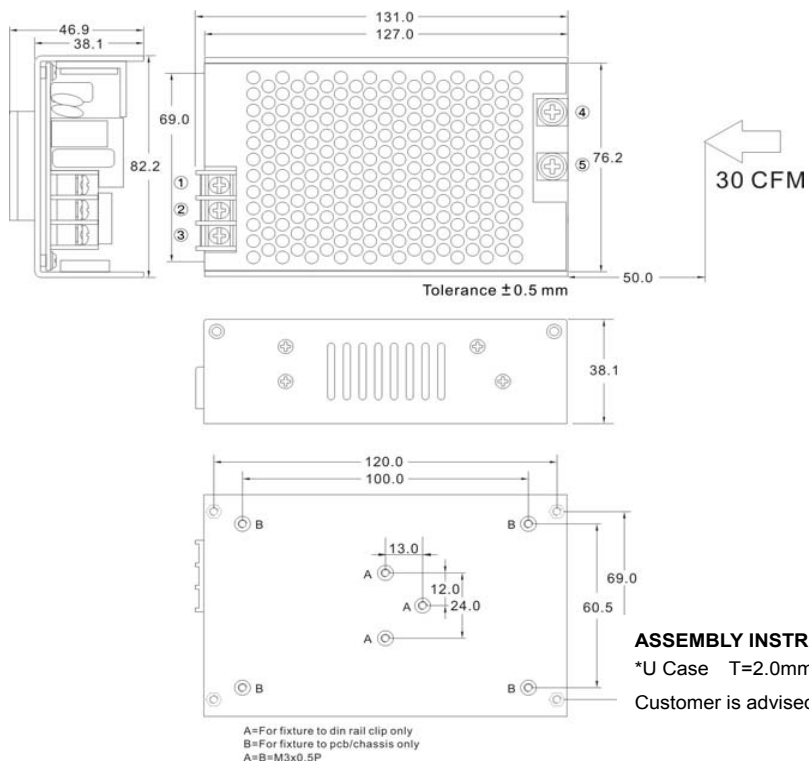
Single Output



### MECHANICAL DIMENSION ( Top View )

## 100W SERIES

### Standard (5V)



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

## ASSEMBLY INSTRUCTIONS

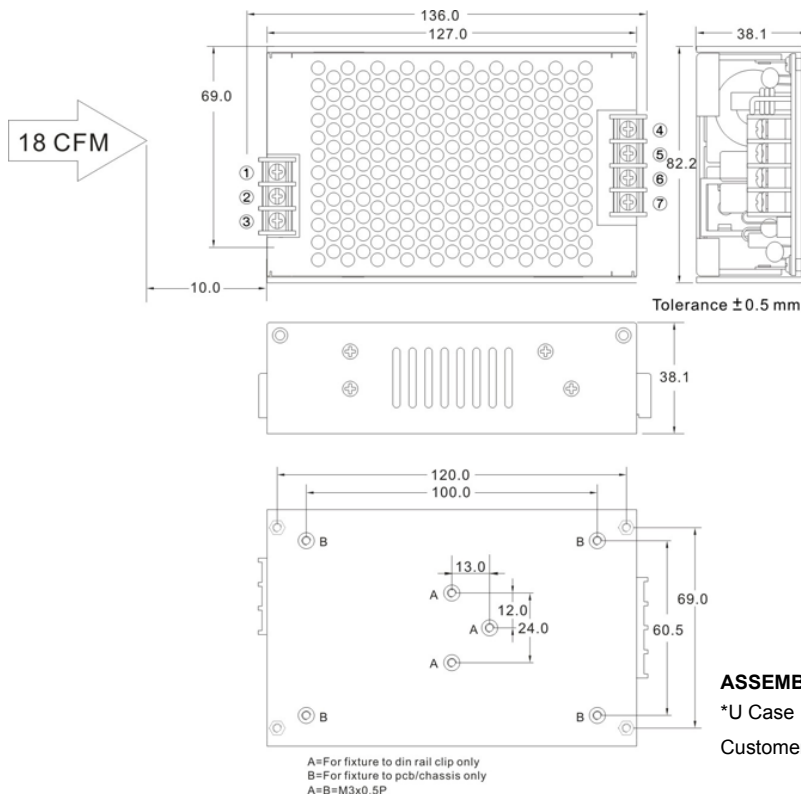
\*U Case T=2.0mm

Customer is advised to screw into the threads no more than 2.0mm

## MECHANICAL DIMENSION ( Top View )

## 100W SERIES

## Standard (12V、15V、24V、48V)



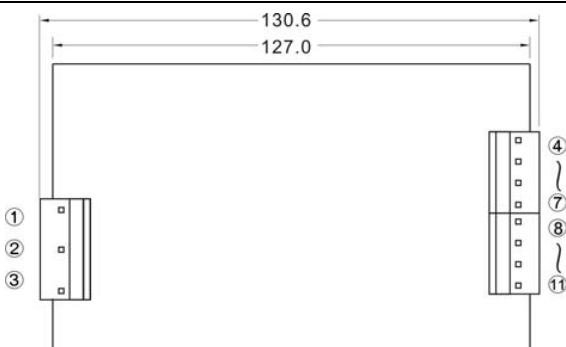
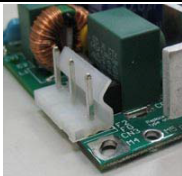
| PIN# | Single    |
|------|-----------|
| 1    | AC IN (L) |
| 2    | AC IN (N) |
| 3    | FG        |
| 4    | +DC OUT   |
| 5    | +DC OUT   |
| 6    | -DC OUT   |
| 7    | -DC OUT   |

## ASSEMBLY INSTRUCTIONS

\*U Case T=2.0mm

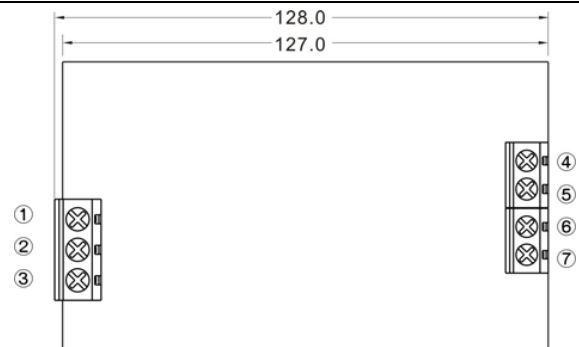
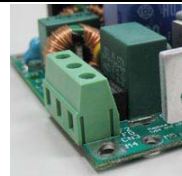
Customer is advised to screw into the threads no more than 2.0mm

## A Type (except 5V)



| 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   |

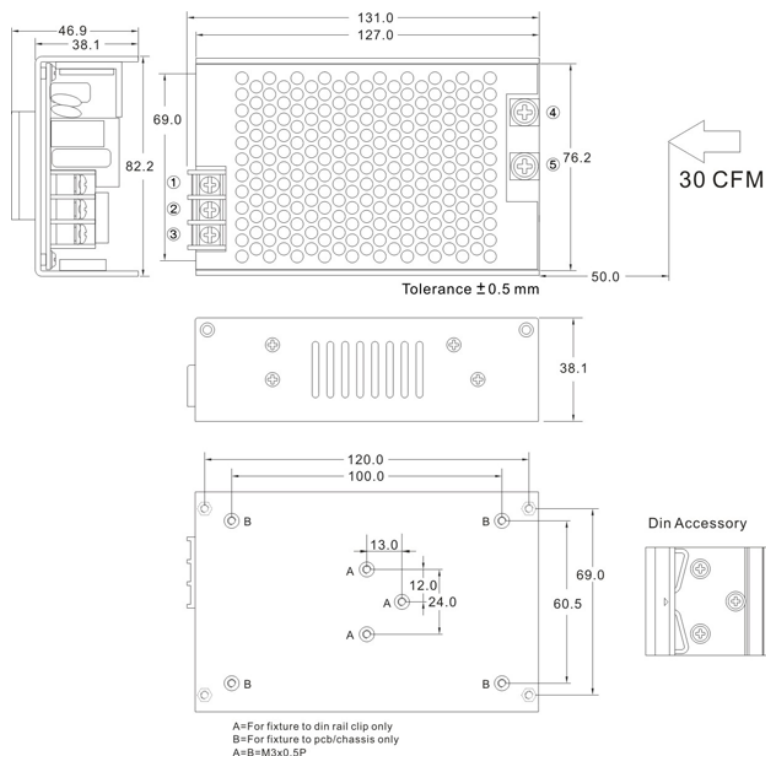
# Din Rail Kit

## DRK

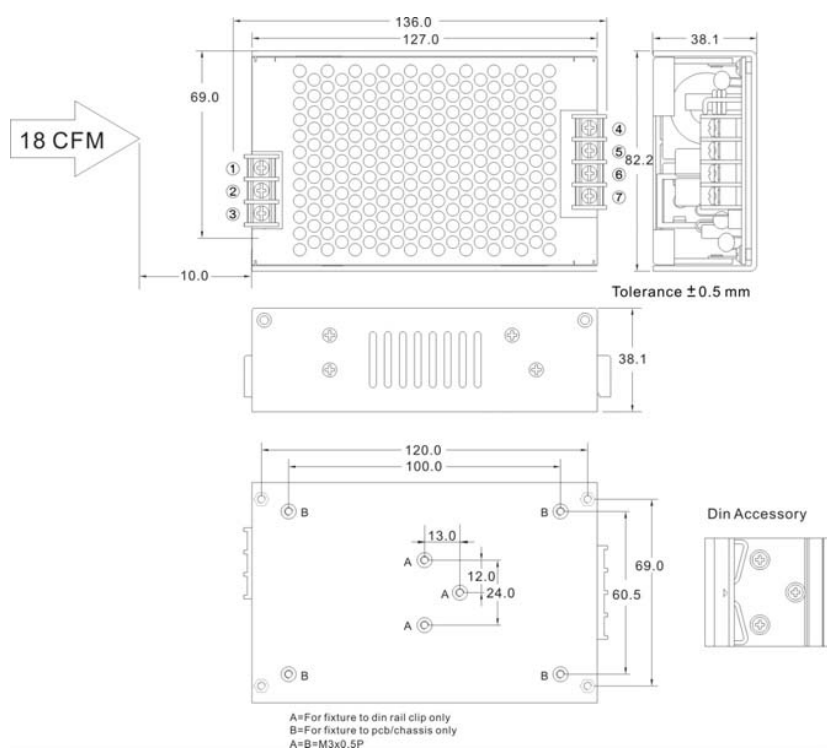


| PIN# | 5S        | 12S,15S,24S,48S |
|------|-----------|-----------------|
| 1    | AC IN (L) | AC IN (L)       |
| 2    | AC IN (N) | AC IN (N)       |
| 3    | FG        | FG              |
| 4    | +DC OUT   | +DC OUT         |
| 5    | -DC OUT   | +DC OUT         |
| 6    | —         | -DC OUT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

## 5V-DRK



## 12V · 15V · 24V · 48V-DRK

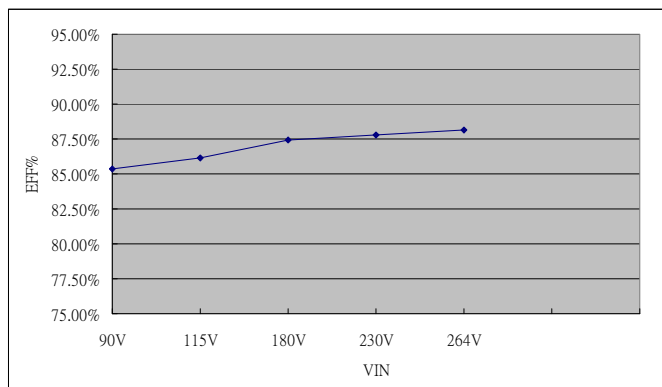


# EFFICIENCY VERSUS LOAD

## OUTPUT 5V

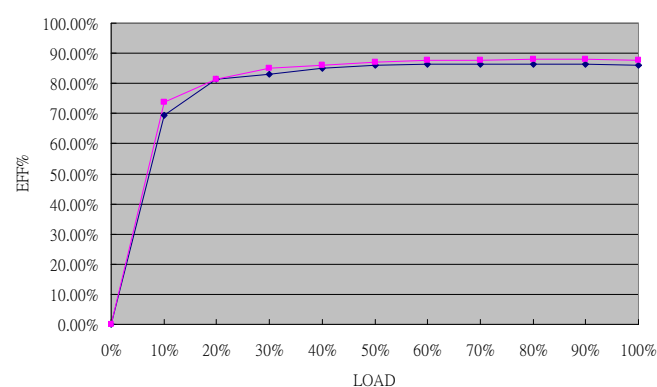
VIN VS Efficiency

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



LOAD VS Efficiency

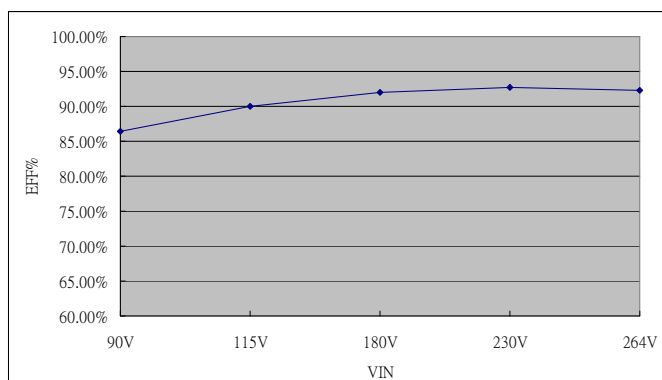
| Load (%) | 10    | 20    | 30    | 40    | 50    |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 69.59 | 81.53 | 83.15 | 84.92 | 85.96 |
| 230V (%) | 73.66 | 81.49 | 85.04 | 86.21 | 87.16 |
| Load (%) | 60    | 70    | 80    | 90    | 100   |
| 115V (%) | 86.44 | 86.45 | 86.37 |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



## OUTPUT 12V

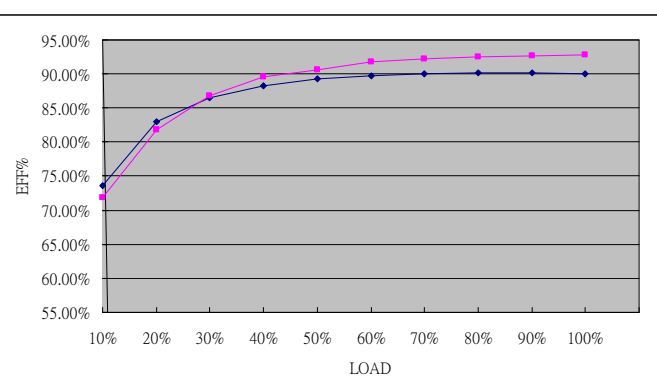
VIN VS Efficiency

| 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 |

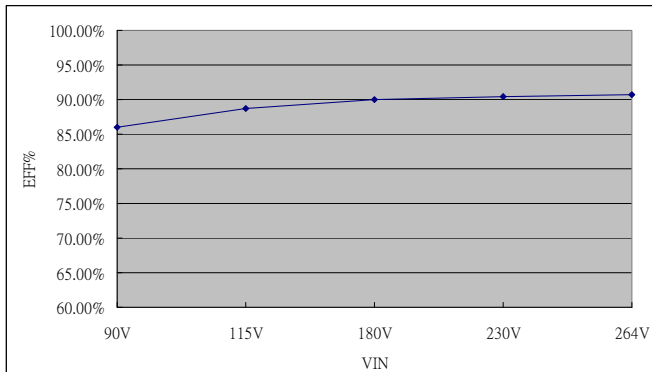


# EFFICIENCY VERSUS LOAD

## OUTPUT 24V

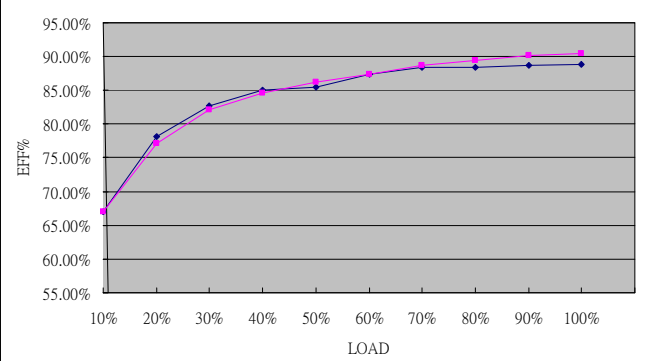
VIN VS Efficiency

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



LOAD VS Efficiency

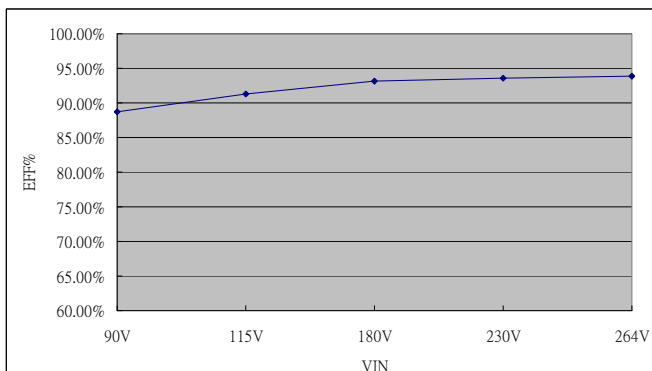
| Load (%) | 10    | 20    | 30    | 40    | 50    |
|----------|-------|-------|-------|-------|-------|
| 115V (%) | 67.05 | 78.17 | 82.74 | 85.07 | 85.52 |
| 230V (%) | 67.05 | 77.17 | 82.17 | 84.61 | 86.14 |
| Load (%) | 60    | 70    | 80    | 90    | 100   |
| 115V (%) | 87.40 | 88.34 | 88.44 |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



## OUTPUT 24V

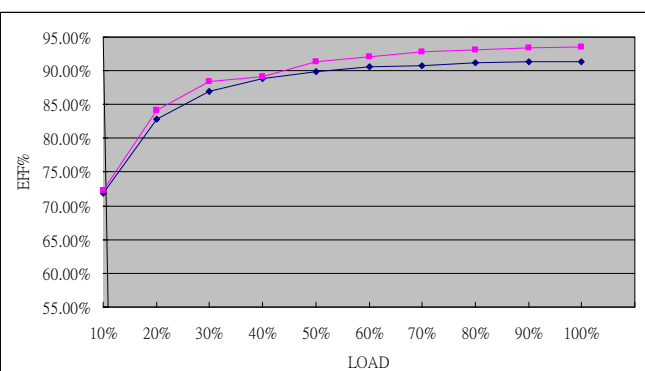
VIN VS Efficiency

| 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 |

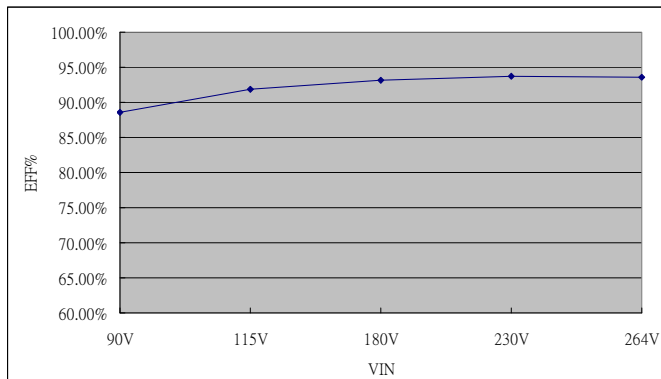


## EFFICIENCY VERSUS LOAD

### OUTPUT 48V

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 |

