ARCH ELECTRONICS CORP.

AC-DC Switching Power Supply

AQFV480U SERIES (CV Mode) 480 Watts

KEY FEATURES

- U Bracket Switching Power Supply
- Universal Input: 90-264 VAC
- Active P.F.C. Function, PF>0.95
- 300W Convection without FAN
- 480W Convection with 18CFM FAN
- Protections: Over Load / Over Voltage / Over Temperature / Short Circuit All by Auto-recovery
- Built-in Remote ON/OFF Control
- Built-in Remote Sense Function
- Built-in DC OK Signal
- Stand by 5V @ 0.3A
- Stand by 5V @ 0.6A with 18CFM FAN
- High Efficiency up to 92%
- Ultra Compact Size: 7.0 x 4.2 x 1.78 Inches
- 3-Year Product Warranty

Standard	A Type
	
	

Please refer to the types of terminal block; the pictures shown are for illustration purpose only, actual product may vary.

E199779 LEVEL3

ELECTRICAL SPECIFICATIONS

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

Model No.			AQFV480U-12S□	AQFV480U-24S□	AQFV480U-36S□	AQFV480U-48S□
Max Output Wattage (Convection) (W)			280W	280W	300W	300W
Max Output Wattage (18CFM FAN) (W)			480W			
Input	Voltage		90-264 VAC or 120-370 VDC			
	Frequency (Hz)		50-60 Hz			
	Current (Full load)		< 5.5 A max. (115 VAC) / < 3.0 A max. (230 VAC)			
	Inrush Current (<2ms)		< 50 A max. (115 VAC) / < 70 A max. (230 VAC)			
	Leakage Current		< 0.5 mA max.(240VAC 63Hz)			
	Power Factor		PF>0.95 (115 VAC) / PF>0.90 (230 VAC) at Full Load			
Output	Voltage (V.DC)		12V	24V	36V	48V
	Trim		±5% Output Voltage			
	Voltage Accuracy		±2%			
	Current (Convection) (A) max		23.33	11.66	8.33	6.25
	Current (18CFM FAN) (A) max		40	20	13.33	10
	Line Regulation (LL-HL) (typ.)		±0.5%			
	Load Regulation (5-100%) (typ.)		±1%			
	Minimum Load		5%			
	Maximum Capacitive Load		180000 uF	75000 uF	50000 uF	25000 uF
	Ripple & Noise (max.)		100mVp-p	200mVp-p	200mVp-p	300mVp-p
	Efficiency (Convection) (%)	Vin:115(V.AC)	88%	89%	90%	89%
		Vin:230(V.AC)	90%	91%	92%	91%
	Efficiency (18CFM FAN) (%)	Vin:115(V.AC)	85%	87%	89%	88%
		Vin:230(V.AC)	88%	90%	92%	91%
	Hold-up Time		10 ms min.			
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)		3000VAC or 4242VDC			
	Input-FG (V.AC)		1500V			
	Output-FG (V.AC)		500V			

AQFV480U SERIES (CV Mode) 480 Watts

ELECTRICAL SPECIFICATIONS

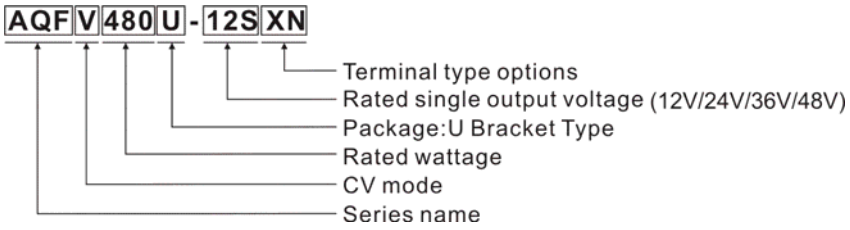
All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Model No.		AQFV480U-12S□	AQFV480U-24S□	AQFV480U-36S□	AQFV480U-48S□
Function	5V Stand by (18CFM FAN)	5VSB: 5V@0.6A ; Tolerance ±10% , Ripple & Noise: 100m Vp-p (max.)			
	DC OK Signal	Turn ON: 4~6V ; Turn OFF: 0~1V			
	Remote Control	+RC / -RC: Power ON=open ; Power OFF=short			
	FAN Control	12VDC / 0.5A max.			
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	>100,000 h @ 25°C (MIL-HDBK-217F)			
	Vibration	10~500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes.			
Physical	Dimensions (L x W x H)	7.0 x 4.2 x 1.78 Inches (177.8 x 106.5 x 45.0 mm) Tolerance ±0.5 mm			
	Weight	780 g			
Safety	Agency Approvals	UL60950-1, CE			
EMC	EMI (Conducted & Radiated Emission)	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. Strongly recommend to conduct this test with DC Voltage. If customer wishes to test with AC Voltage, please disconnect all Y-Capacitors within Arch power supply.
3. **CAUTION: Double pole, neutral fusing. Disconnect mains before servicing.**
   (ATTENTION : 2 poles avec fusible sur le neutre. Deconnecter le secteur avant intervention.)

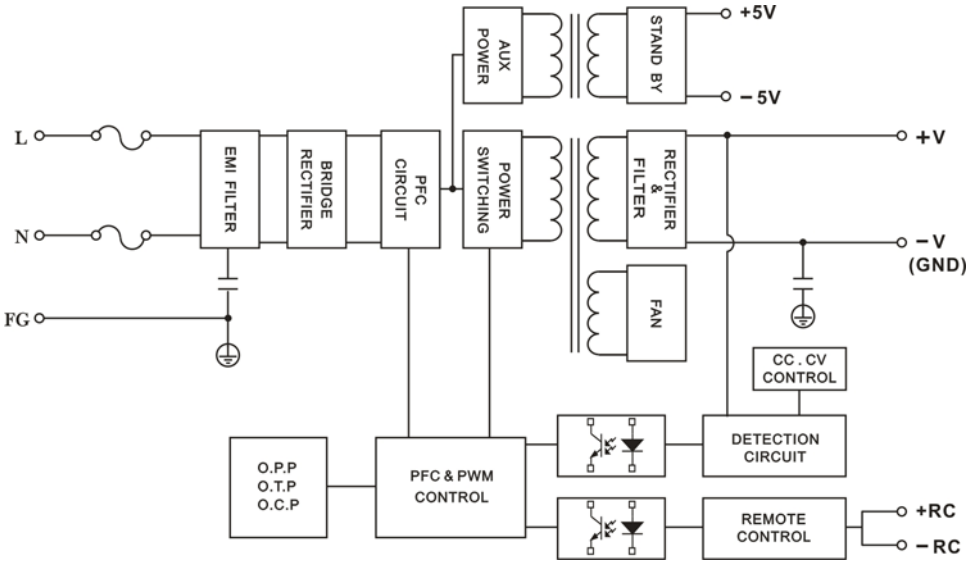
MODEL ENCODING



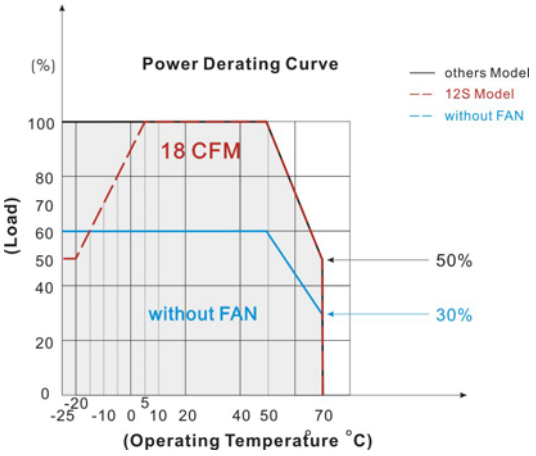
Type	Terminal type
XN	Standard type
AN	A type

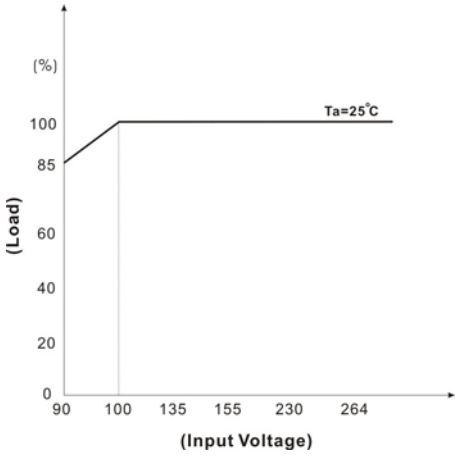
AQFV480U SERIES (CV Mode) 480 Watts

BLOCK DIAGRAM



DERATING

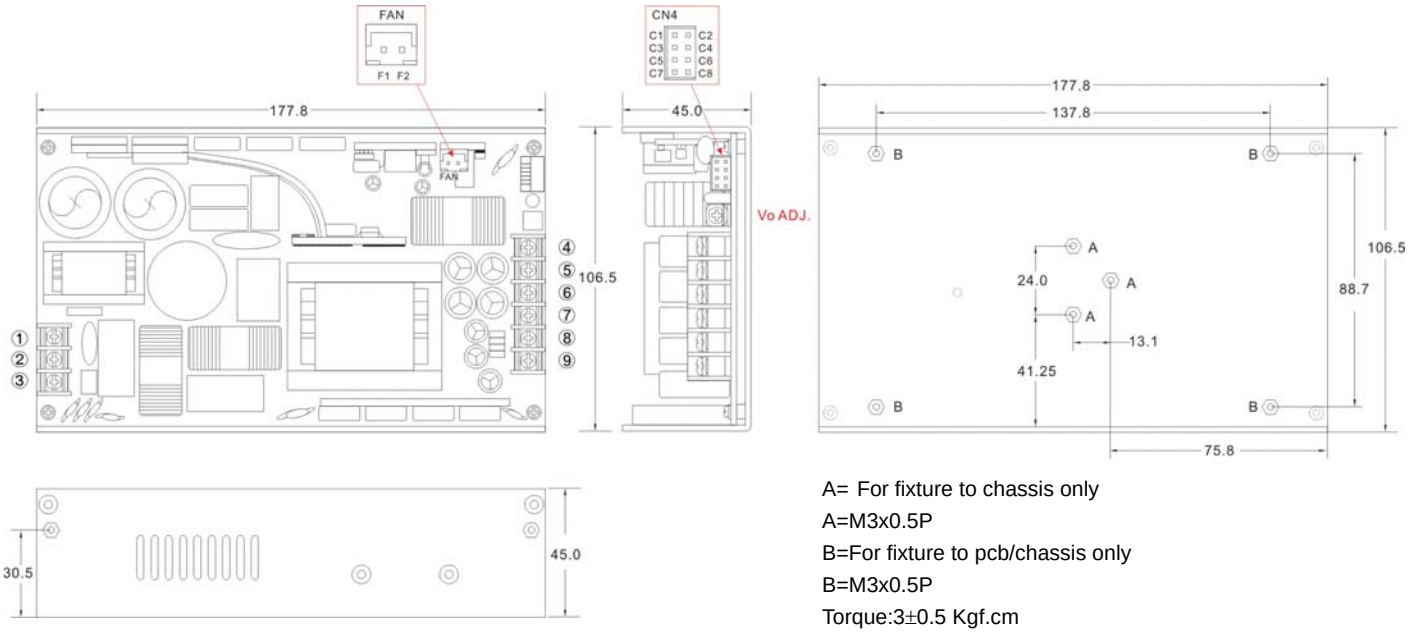




AQFV480U SERIES (CV Mode) 480 Watts

MECHANICAL DIMENSIONS (Top View)

Standard



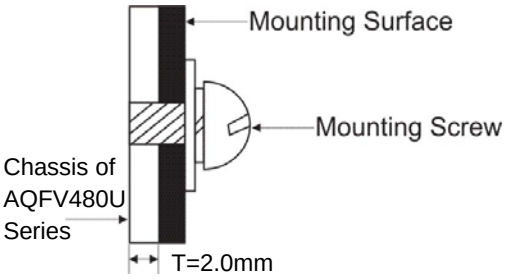
A= For fixture to chassis only
A=M3x0.5P
B=For fixture to pcb/chassis only
B=M3x0.5P
Torque:3±0.5 Kgf.cm

Brands					
PIN#	Single	Terminal			
1	AC IN (N)	DINKLE DT-49-B01W-03			
2	AC IN (L)				
3	⏚	—	—	—	—
4~6	+DC OUT	DINKLE DT-49-B01W-06			
7~9	-DC OUT				

ASSEMBLY INSTRUCTIONS

*U Case T=2.0mm

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



Connector Pin (CN4)

Brands		Cherng Weei		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
C1	+S	PHD-H20-2X4P	PHD-T20	PHDR-08VS	SPHD-001T-P0.5
C2	-S				
C3	+RC				
C4	-RC				
C5	DC-OK				
C6	GND				
C7	+5V SB				
C8	-5V SB				

Connector Pin (FAN)

Brands		Cherng Weei		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
F1	-DC	CX-H250-02	CX-T2501	XHP-2	SXH-002T-P0.6
F2	+DC				

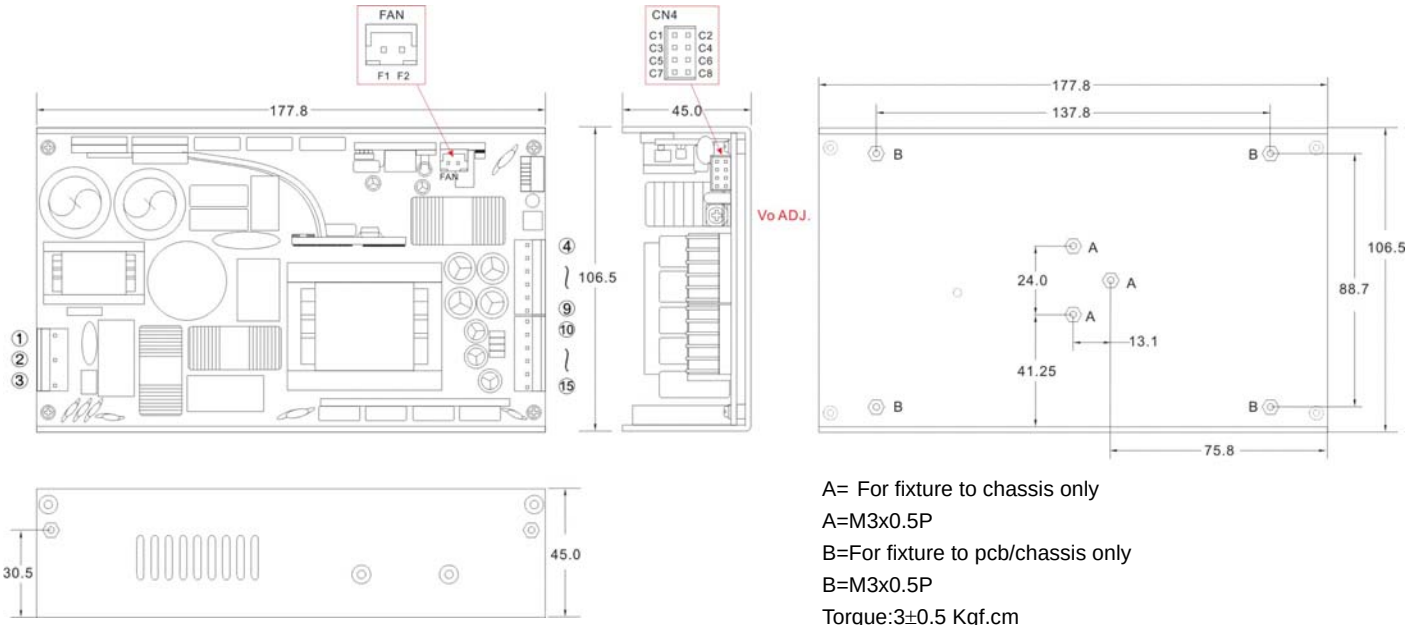
Standard

Please refer to the types of terminal block; the pictures shown are for illustration purpose only, actual product may vary.

AQFV480U SERIES (CV Mode) 480 Watts

MECHANICAL DIMENSIONS (Top View)

A Type



A= For fixture to chassis only
A=M3x0.5P
B=For fixture to pcb/chassis only
B=M3x0.5P
Torque:3±0.5 Kgf.cm

Brands		Alex		Molex	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
1	AC IN (N)	8639-05N2 8095-05N2	23T or 24T series 94T or 95T series	5195-05	5194T
2	AC IN (L)				
3	⏚				
4~9	+DC OUT	8639-06N2 8095-06N2	23T or 24T series 94T or 95T series	5195-06	5194T
10~15	-DC OUT				

Connector Pin (CN4)

Brands		Cherng Weei		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
C1	+S	PHD-H20-2X4P	PHD-T20	PHDR-08VS	SPHD-001T-P0.5
C2	-S				
C3	+RC				
C4	-RC				
C5	DC-OK				
C6	GND				
C7	+5V SB				
C8	-5V SB				

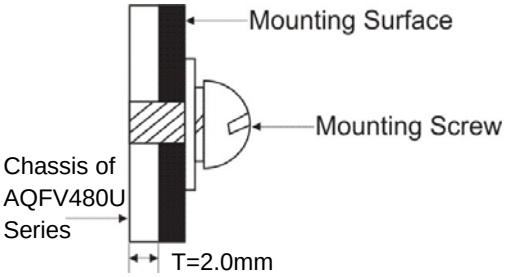
Connector Pin (FAN)

Brands		Cherng Weei		JST	
PIN#	Single	Mating Housing	Terminal	Mating Housing	Terminal
F1	-DC	CX-H250-02	CX-T2501	XHP-2	SXH-002T-P0.6
F2	+DC				

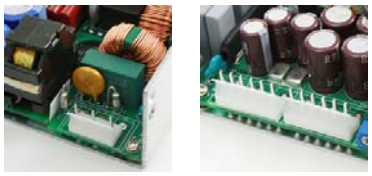
ASSEMBLY INSTRUCTIONS

*U Case T=2.0mm

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



A Type



Please refer to the types of terminal block; the pictures shown are for illustration purpose only, actual product may vary.

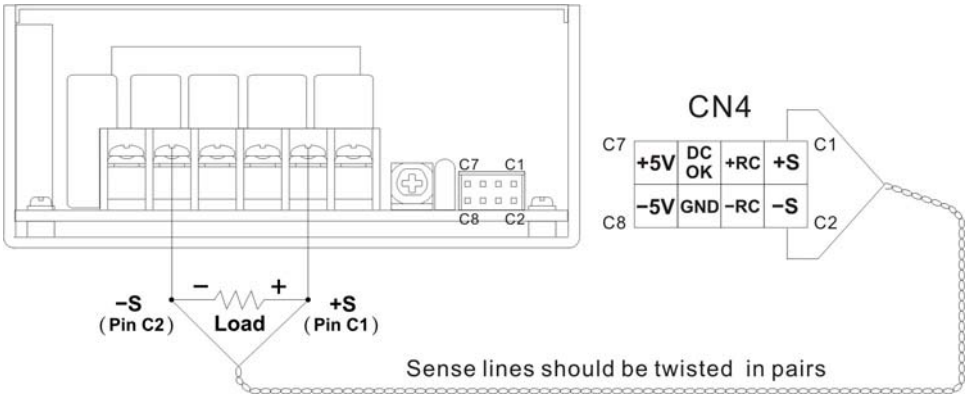
FUNCTION DESCRIPITON of CN4 :

Pin No.	Function	Description
C1	+S	Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V. (max.)
C2	-S	Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V. (max.)
C3	+RC	Turns the output on and off by electrical or dry contact between pin C4 (-RC), Short: Power OFF, Open: Power ON.
C4	-RC	Remote control ground.
C5	DC-OK	DC-OK Signal is a DC output, referenced to pinC6(DC-OK GND).
C6	GND	This pin connects to the negative terminal(-V). Return for DC-OK signal output.
C7	+5V SB	Stand by voltage output ground 4.5~5.5V, referenced to pin C8(-5V SB). The maximum load current is 0.6A.
C8	-5V SB	Stand by voltage output ground.

FUNCTION MANUAL :

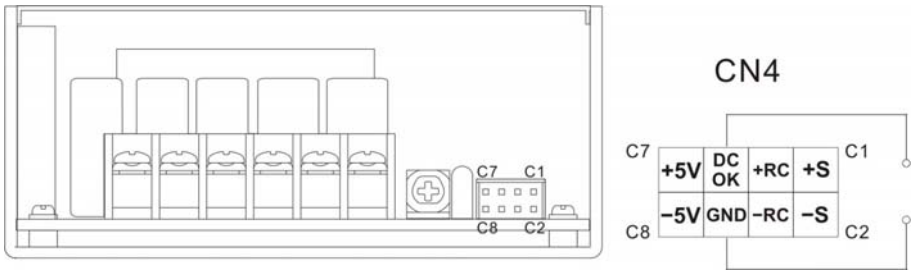
1. Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.5V. (max.)



2. DC-OK Signal

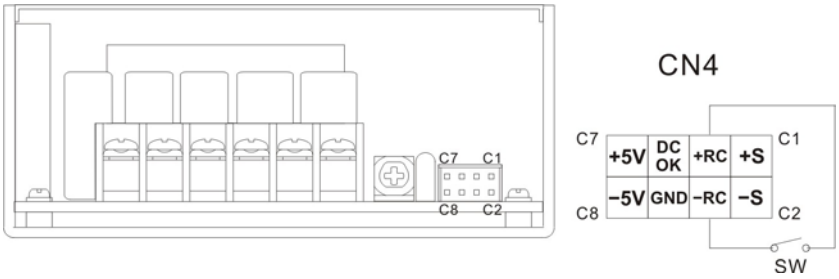
Between DC-OK(pinC5) and GND(pinC6)	Output Status
4~6V	ON
0~1V	OFF



3. Remote Control

It can be turned ON/OFF by using the "Remote Control" function.

Between RC+(pinC3) and RC-(pinC4)	Output Status
SW ON (Short)	OFF
SW OFF (Open)	ON



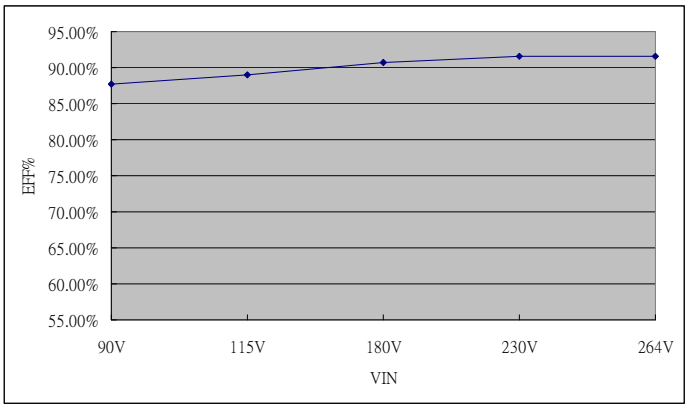
AQFV480U SERIES (CV Mode) 480 Watts

EFFICIENCY VERSUS LOAD (without FAN)

AQFV480U-12S

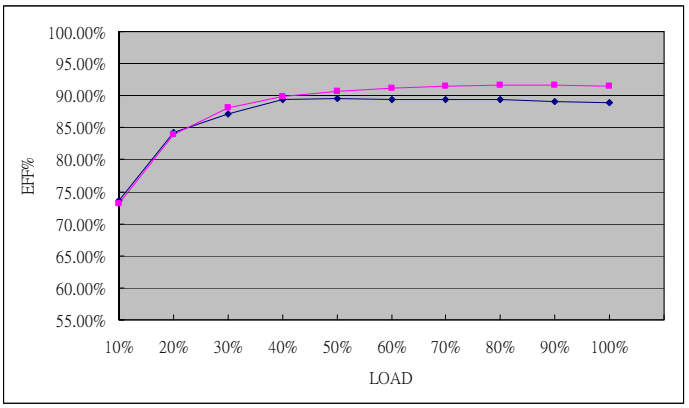
VIN VS Efficiency

Input Voltage (V)	90	115	180	230	264
Efficiency (%)	87.70	88.97	90.68	91.55	91.63



LOAD VS Efficiency

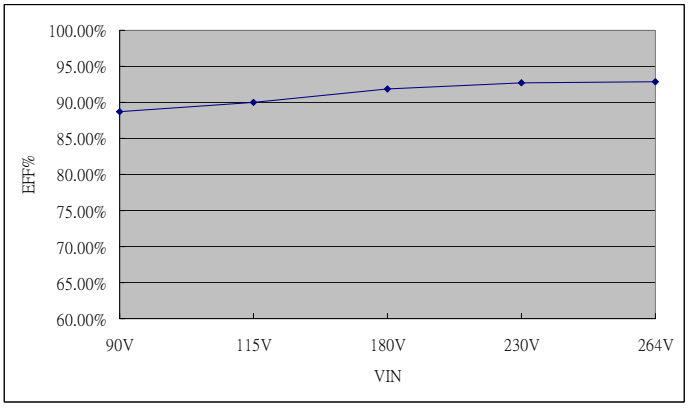
Load (%)	10	20	30	40	50
115V (%)	73.70	84.20	87.18	89.37	89.51
230V (%)	73.11	83.95	88.09	89.80	90.63
Load (%)	60	70	80	90	100
115V (%)	89.46	89.35	89.37	89.07	88.97
230V (%)	91.18	91.54	91.59	91.62	91.55



AQFV480U-24S

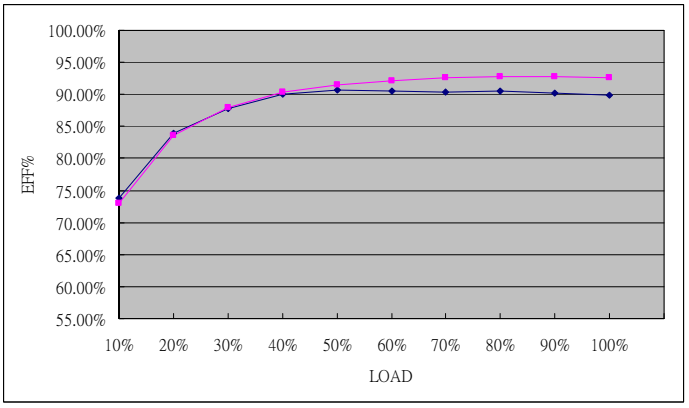
VIN VS Efficiency

Input Voltage (V)	90	115	180	230	264
Efficiency (%)	88.70	89.95	91.82	92.66	92.85



LOAD VS Efficiency

Load (%)	10	20	30	40	50
115V (%)	73.81	83.92	87.82	90.05	90.66
230V (%)	73.06	83.67	88.00	90.34	91.51
Load (%)	60	70	80	90	100
115V (%)	90.55	90.42	90.48	90.20	89.95
230V (%)	92.14	92.60	92.84	92.84	92.66



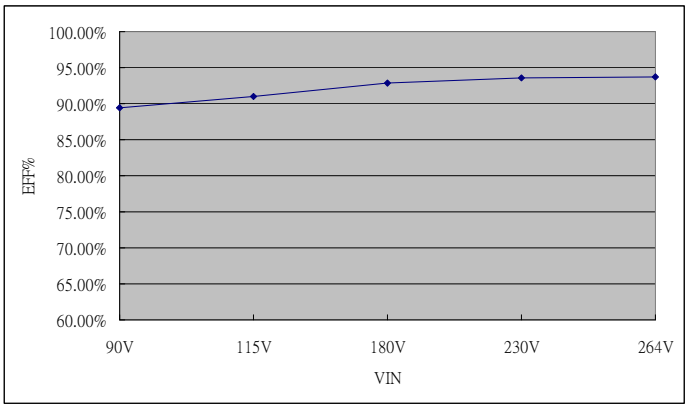
AQFV480U SERIES (CV Mode) 480 Watts

EFFICIENCY VERSUS LOAD (without FAN)

AQFV480U-36S

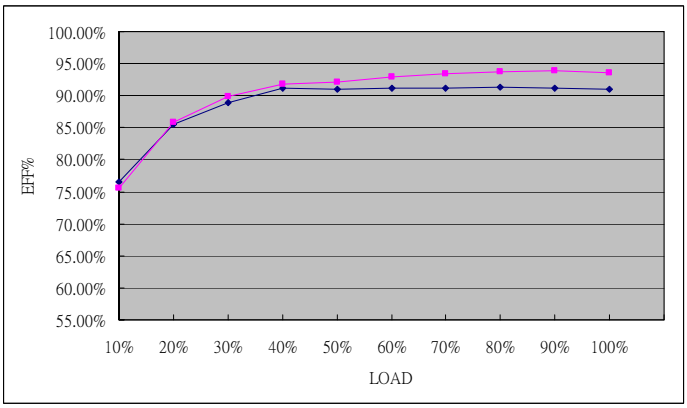
VIN VS Efficiency

Input Voltage (V)	90	115	180	230	264
Efficiency (%)	89.44	90.93	92.86	93.51	93.67



LOAD VS Efficiency

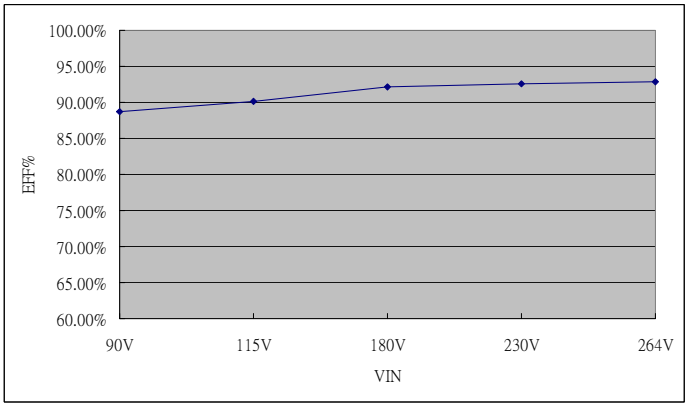
Load (%)	10	20	30	40	50
115V (%)	76.49	85.57	88.88	91.19	91.04
230V (%)	75.50	85.84	89.81	91.73	92.09
Load (%)	60	70	80	90	100
115V (%)	91.16	91.20	91.39	91.21	90.93
230V (%)	92.91	93.48	93.80	93.94	93.51



AQFV480U-48S

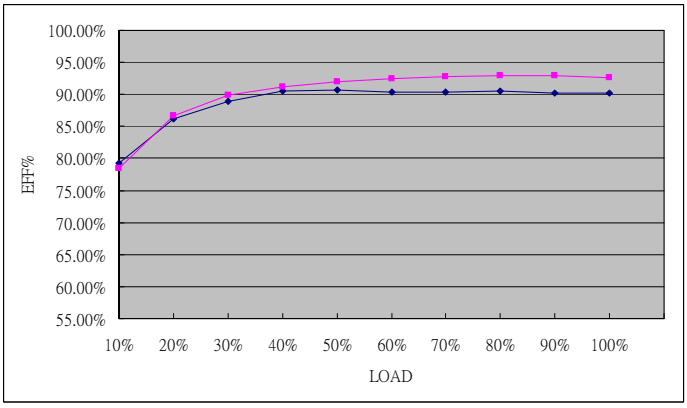
VIN VS Efficiency

Input Voltage (V)	90	115	180	230	264
Efficiency (%)	88.71	90.17	92.11	92.60	92.82



LOAD VS Efficiency

Load (%)	10	20	30	40	50
115V (%)	79.27	86.24	88.90	90.50	90.68
230V (%)	78.44	86.67	89.83	91.11	91.94
Load (%)	60	70	80	90	100
115V (%)	90.41	90.36	90.48	90.21	90.17
230V (%)	92.44	92.70	92.90	92.89	92.60

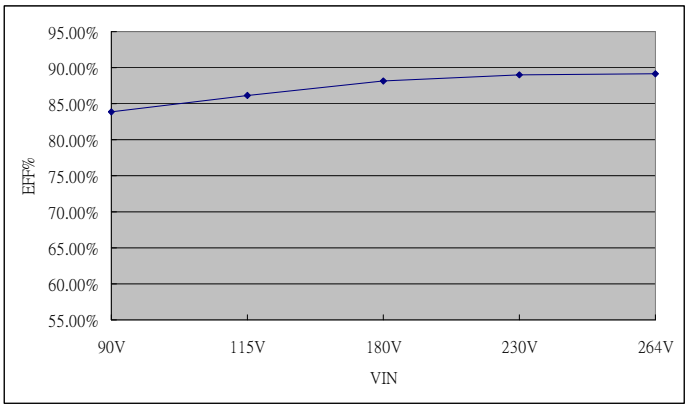


EFFICIENCY VERSUS LOAD (with 18CFM FAN)

AQFV480U-12S

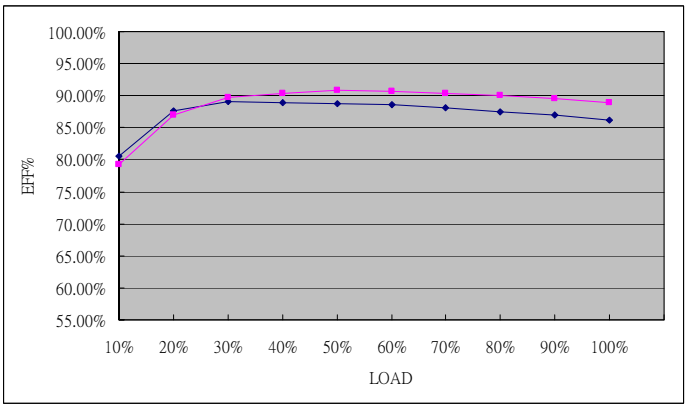
VIN VS Efficiency

Input Voltage (V)	90	115	180	230	264
Efficiency (%)	83.90	86.17	88.12	88.97	89.15



LOAD VS Efficiency

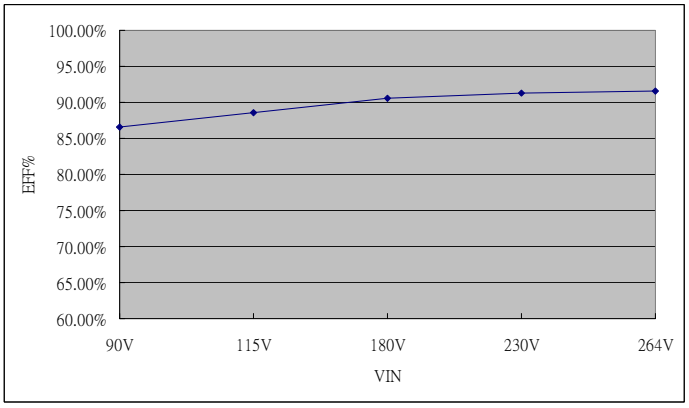
Load (%)	10	20	30	40	50
115V (%)	80.55	87.57	89.04	88.85	88.71
230V (%)	79.24	87.06	89.66	90.39	90.81
Load (%)	60	70	80	90	100
115V (%)	88.59	88.16	87.53	86.93	86.17
230V (%)	90.62	90.38	89.98	89.55	88.97



AQFV480U-24S

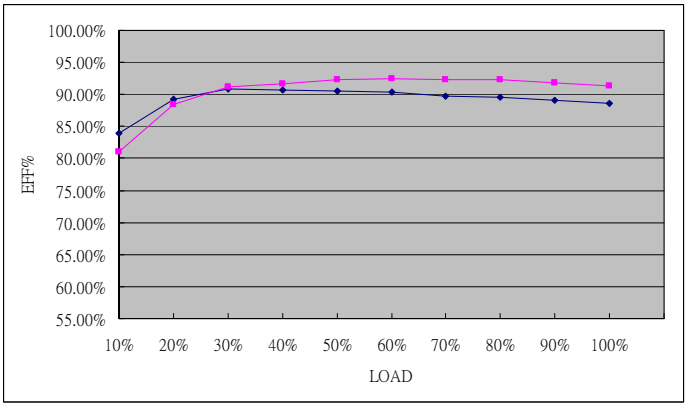
VIN VS Efficiency

Input Voltage (V)	90	115	180	230	264
Efficiency (%)	86.51	88.60	90.58	91.32	91.56



LOAD VS Efficiency

Load (%)	10	20	30	40	50
115V (%)	83.91	89.22	90.81	90.61	90.53
230V (%)	81.02	88.37	91.11	91.72	92.35
Load (%)	60	70	80	90	100
115V (%)	90.36	89.66	89.56	89.10	88.60
230V (%)	92.48	92.36	92.23	91.74	91.32



AQFV480U SERIES (CV Mode) 480 Watts

EFFICIENCY VERSUS LOAD (with 18CFM FAN)

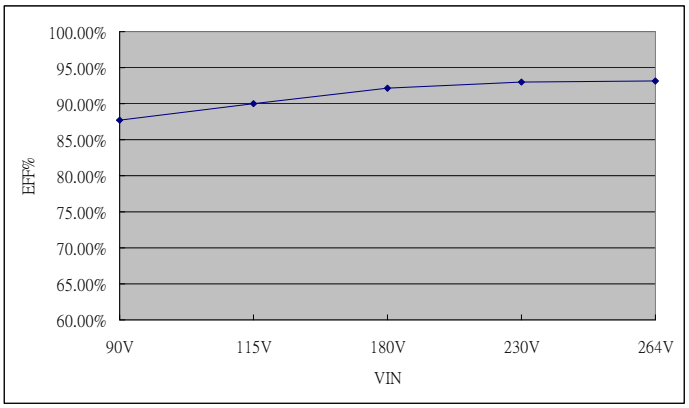
AQFV480U-36S

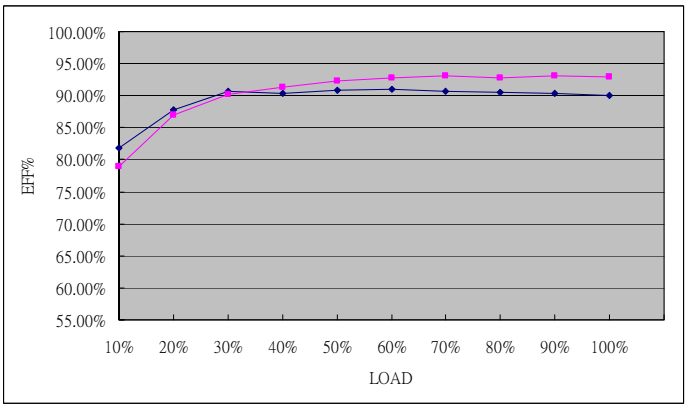
VIN VS Efficiency

Input Voltage (V)	90	115	180	230	264
Efficiency (%)	87.75	89.98	92.19	92.96	93.21

LOAD VS Efficiency

Load (%)	10	20	30	40	50
115V (%)	81.77	87.84	90.61	90.36	90.80
230V (%)	78.91	87.02	90.20	91.32	92.36
Load (%)	60	70	80	90	100
115V (%)	91.05	90.75	90.49	90.30	89.98
230V (%)	92.80	93.04	92.80	93.03	92.96





AQFV480U-48S

VIN VS Efficiency

Input Voltage (V)	90	115	180	230	264
Efficiency (%)	87.25	89.33	91.21	92.26	92.48

LOAD VS Efficiency

Load (%)	10	20	30	40	50
115V (%)	81.82	87.48	89.68	89.51	90.09
230V (%)	79.23	86.44	90.02	90.77	91.90
Load (%)	60	70	80	90	100
115V (%)	89.92	90.07	89.75	89.78	89.33
230V (%)	91.94	92.33	92.18	92.37	92.26