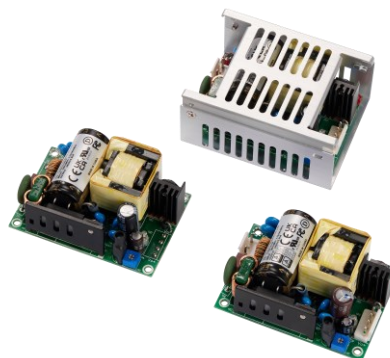




CFM81S SERIES 80 WATT OPEN FRAME AC-DC MODULES

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 91%
- 2"x 3" Open Frame Compact Size
- Class I and Class II
- No Load Power <0.3W
CFM81S480 No Load Power <0.35W
- Approval IEC/EN/UL 62368-1 Ed 3.0
- Approval IEC/EN 60335-1(For Wafer Versions)
- Approval EN 55032 Class B
and CISPR/FCC Class B
- Operating Altitude 5000m
- Continuous Short Circuit Protection
- Peak Load (2 Times of Rated Current (note7))



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	VOLTAGE ACCURACY NOTE1	RIPPLE & NOISE NOTE2	VOLTAGE ADJ. RANGE	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
CFM81S120	12 V	6.7 A	±1%	120 mV	11.4~12.6 V	±0.5%	±1%	89%
CFM81S150	15 V	5.36 A	±1%	150 mV	14.25~15.75 V	±0.5%	±1%	89%
CFM81S240	24 V	3.35 A	±1%	240 mV	22.8~25.2 V	±0.5%	±1%	90%
CFM81S480	48 V	1.67 A	±1%	480 mV	45.6~50.4 V	±0.5%	±1%	91%

Note:

1. Voltage accuracy is set at 100% full load.
2. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple & noise measurement @20MHz BW.
3. Line regulation is measured from 90V_{ac} to 264V_{ac} with 100% full load.
4. Load regulation is measured from 10% to 100% full load.
5. Typical efficiency at 230 V_{ac} and 100% full load at 25°C.
6. Standard input and output connectors (CN1 and CN2) wafer with TAIWAN KING PIN TERMINAL PVHI series and mate with JST housing VHR series and JST SVH-21/41T-P1.1 series crimp terminal.
7. PL (peak load function) lasting time < 10 seconds with a maximum 10% duty cycle.

PART NUMBER

Series	Number of Outputs	Nominal Output Voltage	Type
CFM81	X	XX	-XX (Option)
CFM81	S : Single	120 : 12V 150 : 15V 240 : 24V 480 : 48V	Blank : Wafer P : PCB Mount CA : Cover

Part Number Example:

CFM81S120-P: Open Frame, 80W, Single 12Vdc Output, PCB Mount



CFM81S Series

TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Safety approvals only to the AC input	All	90 120		264 370	V_{ac} V_{dc}
Operating Temperature	See Derating Curve	All	-30		80	°C
Storage Temperature		All	-30		85	°C
Operating Altitude	IEC/EN/UL 62368-1 IEC/EN 60335-1	All			5000	m

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range		All	100		240	V_{ac}
Input Frequency Range		All	50		60	Hz
Maximum Input Current	100% Load, $V_{in}=100V_{ac}$	All			1.7	A
Leakage Current		All			0.25	mA
Inrush Current	$V_{in}=240V_{ac}$, Cold start at 25°C	All			100	A

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	$V_{in}=90V_{ac}\sim 264V_{ac}$, $I_o=I_o \text{ max.}$, $T_c=25^\circ\text{C}$	CFM81S120 CFM81S150 CFM81S240 CFM81S480	11.88 14.85 23.76 47.52	12 15 24 48	12.12 15.15 24.24 48.48	V_{dc}
Operating Output Current Range	$V_{in}=90V_{ac}\sim 264V_{ac}$, See Derating Curve	CFM81S120 CFM81S150 CFM81S240 CFM81S480			6.7 5.36 3.35 1.67	A
Holdup Time	$V_{in}=115V_{ac}$	All		12		ms
Output Voltage Regulation						
Load Regulation	10% Load to full load	All			± 1.0	%
Line Regulation	V_{in} =High line to low line	All			± 0.5	%
Over Voltage Protection	Built-in a TVS component to clamp output voltage	CFM81S120 CFM81S150 CFM81S240 CFM81S480			16.2 18.9 31.5 58.8	V_{dc}
Output Ripple and Noise	1. Add a 0.1uF ceramic capacitor and a 10uF aluminum electrolytic capacitor to output 2. Oscilloscope is 20MHz band width 3. Ambient temperature=25°C	CFM81S120 CFM81S150 CFM81S240 CFM81S480			120 150 240 480	mV
Load Capacitance	1. $V_{in}=115V_{ac}$ and $230V_{ac}$ 2. Output is max. load 3. Ambient temperature=25°C	CFM81S120 CFM81S150 CFM81S240 CFM81S480			13400 11000 6700 3340	uF
Efficiency	1. Input voltage is $230V_{ac}$ 2. Output is rated load 3. Ambient temperature=25°C	CFM81S120 CFM81S150 CFM81S240 CFM81S480		89 89 90 91		%



CFM81S Series

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 Minute	All			3000	V _{ac}
Isolation Resistance	Input to output	All	100			MΩ

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	P _{out} =max. rated power	All		65		kHz

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I _o =100%; T _a =25°C per MIL-HDBK-217F I _o =100%; T _a =25°C Telcordia SR332	All	410 3100	580		k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5, Table 516.5-I 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X、Y、Z axis, 1 hour (each axis),. Total 3 hrs.	All		4		g
Weight		CFM81S CFM81S-P CFM81S-CA		135 133 174		grams
Dimensions	Open Frame (Wafer)	All	3.000x2.000x1.339 Inches (76.20x50.80x34.00 mm)			
	P (PCB Mount)		3.000x2.000x1.413 Inches (76.20x50.80x35.90mm)			
	CA (Cover)		3.200x2.441x1.575 Inches (81.28x62.00x40.00mm)			
Safety	Class I, Class II, IEC/EN/UL 62368-1 (Ed 3.0), IEC/EN 60335-1 (For Wafer Versions)					
EMC Emission	EN 55032 Class B, 47 CFR FCC Part 15 Subpart B, Oct.2014 EN 61000-3-2:2019, EN 61000-3-3:2013+A1:2019, EN 61000-6-3:2021, EN 61000-6-4:2019, EN 61204-3:2018					Class B
Conducted Disturbance	EN 55032, EN 61204-3:2018, EN 61000-6-3:2021, EN 61000-6-4:2019, Class B, 47 CFR FCC Part 15 Subpart B					Class B
Radiated Disturbance	EN 55032, EN 61204-3:2018, EN 61000-6-3:2021, EN 61000-6-4:2019, Class B, 47 CFR FCC Part 15 Subpart B					Class B
Harmonic Current Emissions	EN 61000-3-2:2019					
Voltage Fluctuations & Flicker	EN 61000-3-3:2013+A1:2019					
EMC Immunity	EN 55035, EN 61204-3:2018, EN 61000-6-1:2019, EN 61000-6-2:2019					
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008, Air Discharge: ±8kV, Contact Discharge: ±4kV					Criterion A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2020					Criterion A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, ±1kV, ±2kV					Criterion A
Surge	IEC 61000-4-5:2014+A1:2017, L-N: ±0.5kV, ±1kV, L-E(Ground): ±0.5kV, ±1kV, ±2kV					Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013+COR1:2015					Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8:2009					Criterion A
Voltage Dips	IEC 61000-4-11:2020, Dip: 30% Reduction, Dip >95% Reduction					Criterion A
Voltage Interruptions	IEC 61000-4-11:2020, >95% Reduction					Criterion B
Application Note Link			CFM81S Series App Notes			

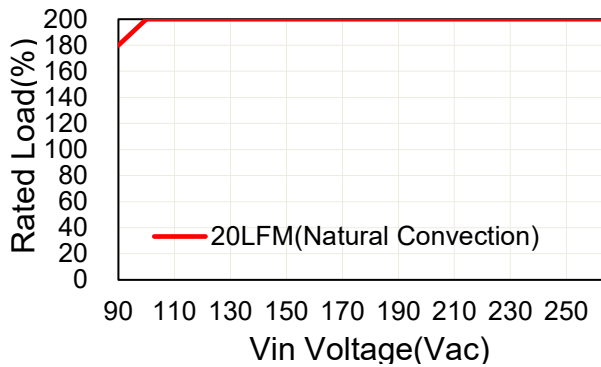


CFM81S Series

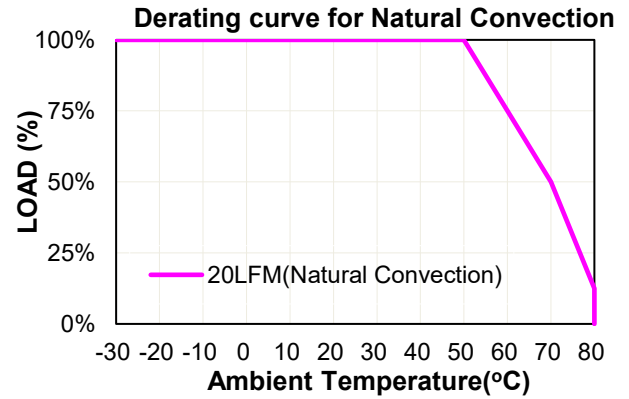
CHARACTERISTIC CURVE

Power Derating Curve

Peak Load Vin De-Rating

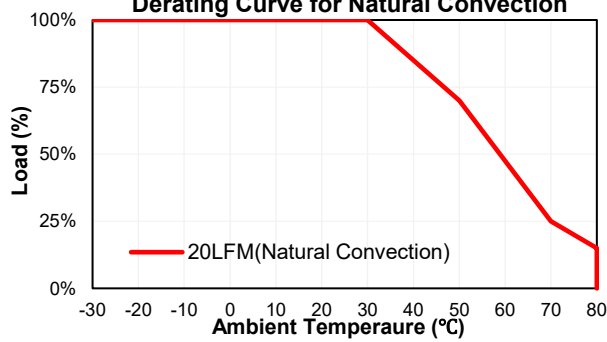


Power Derating



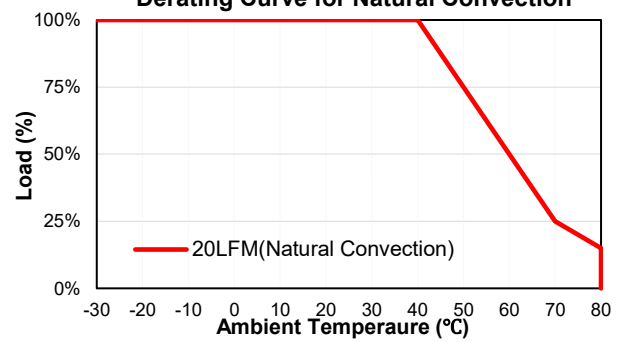
CFM81S120-CA

Derating Curve for Natural Convection



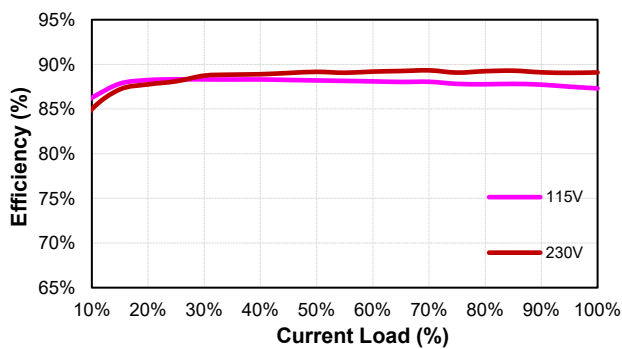
CFM81S150/240/480-CA

Derating Curve for Natural Convection

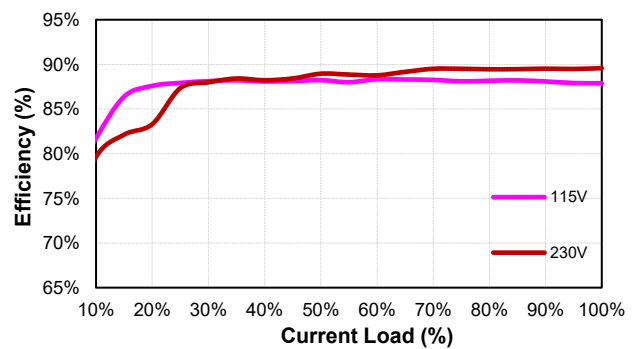


Performance Data

CFM81S120 (Eff Vs Io)



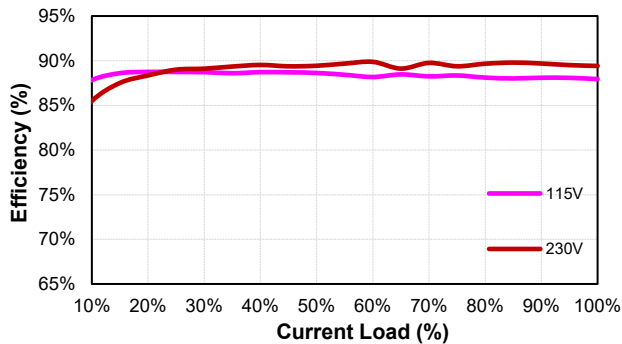
CFM81S150 (Eff Vs Io)



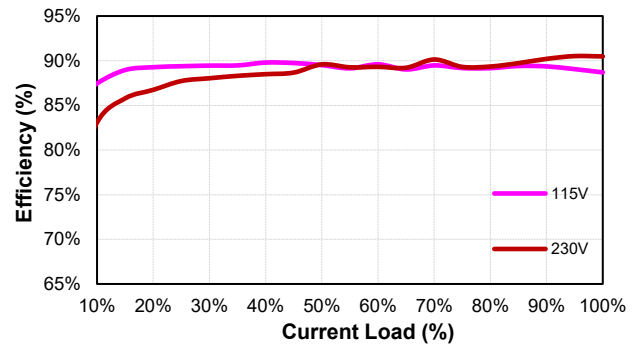


CFM81S Series

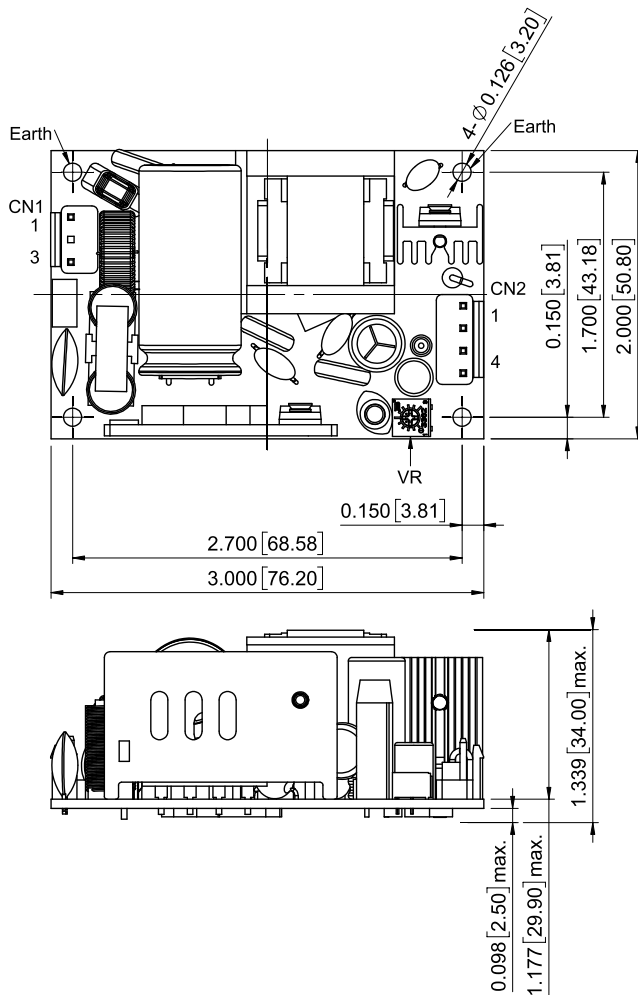
CFM81S240 (Eff Vs Io)



CFM81S480 (Eff Vs Io)



MECHANICAL SPECIFICATION



CFM81SXXX

All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020
Millimeters: x.x=±0.7, x.xx=±0.50

AC Input Connector(CN1):TKP PVHI-03N2 or equivalent

Pin	Function	Mating Housing	Terminal
1	ACN	JST VHR-3N or equivalent	JST SVH-21T-P1.1 or equivalent
2	-		
3	ACL		

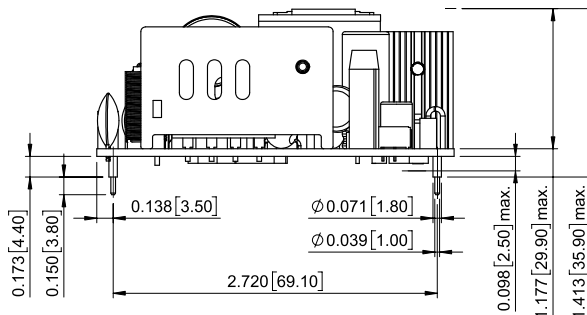
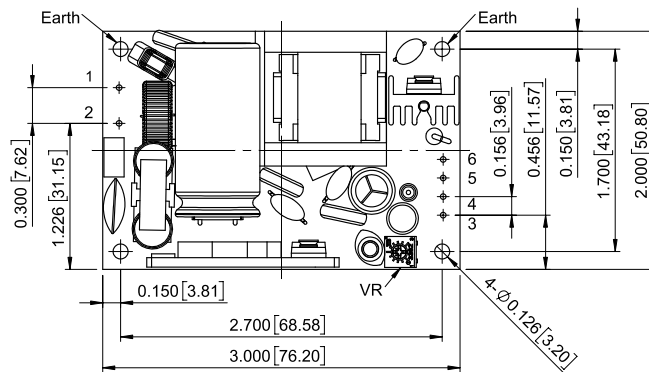
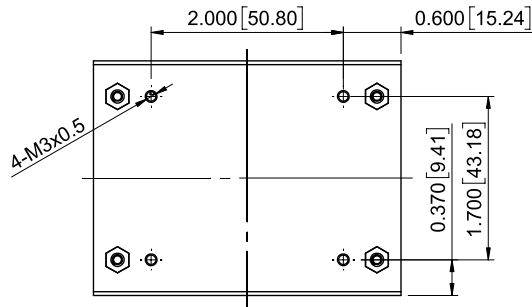
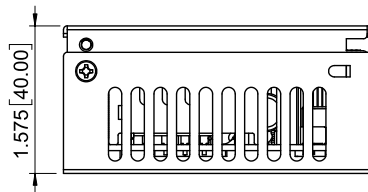
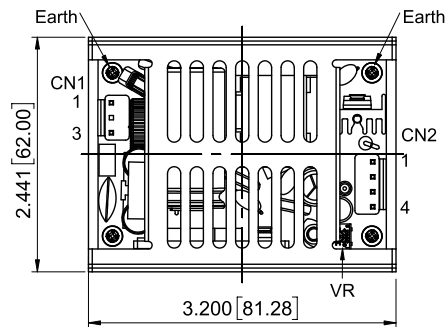
DC Output Connector(CN2):TKP PVHI-04 or equivalent

Pin	Function	Mating Housing	Terminal
1	-Vout	JST VHR-4N or equivalent	JST SVH-21T-P1.1 or equivalent
2	-Vout		
3	+Vout		
4	+Vout		



CFM81S Series

MECHANICAL SPECIFICATION



CFM81SXXX-CA

All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020
Millimeters: x.x=±0.7, x.xx=±0.50

AC Input Connector(CN1):TKP PVHI-03N2 or equivalent

Pin	Function	Mating Housing	Terminal
1	ACN	JST VHR-3N or equivalent	JST SVH-21T-P1.1 or equivalent
2	-		
3	ACL		

DC Output Connector(CN2):TKP PVHI-04 or equivalent

Pin	Function	Mating Housing	Terminal
1	-Vout	JST VHR-4N or equivalent	JST SVH-21T-P1.1 or equivalent
2	-Vout		
3	+Vout		
4	+Vout		

CFM81SXXX-P

All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020
Millimeters: x.x=±0.7, x.xx=±0.50

Pin Connection

Pin	Function
1	ACN
2	ACL
3	+Vout
4	+Vout
5	-Vout
6	-Vout

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