E-Star Power Development Co., Ltd. (E-STAR)
6F., No. 114, Sec. 3, Minquan E. Rd., Songshan Dist., Taipei City 10543, Taiwan (R.O.C.)
Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

700W Open Frame type Single output power supply > PDF700S CMFC(D/D-P)

Features

- Universal Input Range 90~264Vac
- Efficiency up to 91.5%
- Class I
- Approval Safety IEC/EN/UL 62368-1 Ed 3.0
- Operating Altitude 5000m
- Remote On/Off
- Over Temperature Protection
- Over Voltage Protection
- Continuous Short Circuit Protection
- Chassis Mounting, Base Plate Cooled
- Built-In EMI Filter
- PDF700S-CMFD-P for Parallel Operation
- Compliance to CE102/RE101 of MIL-STD-461F

E176177

MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT NOTE 1	RIPPLE & NOISE NOTE 2	VOLTAGE ACCURACY NOTE 3	LINE REGULATION NOTE 4	LOAD REGULATION NOTE 4	%EFF. (Typ.) NOTE 5
PDF700S120-CMF□	12 V	58.4 A	120 mV	±1.0%	±0.5%	±0.5%	87.5%
PDF700S240-CMF□	24 V	29.2 A	240 mV	±1.0%	±0.5%	±0.5%	90%
PDF700S280-CMF□	28 V	25.0 A	280 mV	±1.0%	±0.5%	±0.5%	90.5%
PDF700S480-CMF□	48 V	14.6 A	480 mV	±1.0%	±0.5%	±0.5%	91%
PDF700S560-CMF□	56 V	12.5 A	560 mV	±1.0%	±0.5%	±0.5%	91.5%

Note:

1. When the baseplate temperature reaches 95℃, the unit will be OTP, the unit need sufficient convection and heat sink.
2. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to the output for ripple and noise measurement @20MHz BW.
3. Voltage accuracy is set at 60% load.
4. Line regulation is measured from 100V_{ac} to 264V_{ac} at full load. Load regulation is measured from 20% to 100% rated load.
5. Typical efficiency at 230V_{ac} and full load at 25℃.
6. The CMFC series does not have a parallel function. If parallel operation is required, it is recommended to use the CMFD series with the CSC01 module or the CMFD-P series alone.
7. □ = C or D or D-P
8. When the PDF700S560-CMFD-P is in operation, detailed voltage specifications can be found in the **output characteristics** table.

PART NUMBER

Series	Number of Outputs	Nominal Output Voltage	Chassis Mount Type	
PDF700	O	XXX	-YYY	Z
PDF700	S : Single	120 : 12V 240 : 24V 280 : 28V 480 : 48V 560 : 56V	-CMF : Chassis Mount built in Filter	C : Open Frame D : With Cover D-P : With Cover for Parallel

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TECHNICAL SPECIFICATIONS

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

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Continuous	All	90 120		264 370	V_{ac} V_{dc}
Operating Case Temperature	Measured at the center of base plate	All	-40		95	℃
Storage Temperature		All	-55		105	℃
Operating Altitude		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	47-63/440 Hz (Safety rating: 50/60 Hz)	All	47		440	Hz
Maximum Input Current	100% Load, V_{in}=100V_{ac}	All			9	A
Leakage Current		All			1	mA
Inrush Current	V_{in}=240V_{ac}, Cold Start at 25℃	All		35		A
Under Voltage Protection		All	63		77	V_{ac}
Power Factor	230V_{ac}/50Hz @ Full load	All		0.97		

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V_{in}=115V_{ac} and 230V_{ac}, I_o=60% $I_{o\ max.}$, T_c=25℃	120-CMFC(D)	11.88	12	12.12	V_{dc}
		240-CMFC(D)	23.76	24	24.24	
		280-CMFC(D)	27.72	28	28.28	
		480-CMFC(D)	47.52	48	48.48	
		560-CMFC(D)	55.44	56	56.56	
	V_{in}=115V_{ac} and 230V_{ac}, Load=0W, T_c=25℃ (The output voltage of 560-CMFD-P need to be adjusted downward to avoid OVP, e.g. 56.7V and 54V on this table.)	120-CMFD-P	12.53	12.6	12.67	V_{dc}
		240-CMFD-P	25.07	25.2	25.33	
		280-CMFD-P	29.25	29.4	29.55	
		480-CMFD-P	50.14	50.4	50.66	
		560-CMFD-P	56.41	56.7	56.99	
	V_{in}=115V_{ac} and 230V_{ac}, Load=600W, T_c=25℃	120-CMFD-P	11.76	12	12.24	V_{dc}
		240-CMFD-P	23.52	24	24.48	
		280-CMFD-P	27.44	28	28.56	
		480-CMFD-P	47.04	48	48.96	
		560-CMFD-P	52.92	54	55.08	
Operating Output Current Range	V_{in}=115V_{ac} and 230V_{ac}, T_c=25℃ (When the PDF700S-CMFD-P is used in parallel, 85% of the total rated power is recommended)	120-CMFC(D)			58.4	A
		240-CMFC(D)			29.2	
		280-CMFC(D)			25.0	
		480-CMFC(D)			14.6	
		560-CMFC(D)			12.5	
		120-CMFD-P		50.0	58.4	A
		240-CMFD-P		25.0	29.2	
		280-CMFD-P		21.4	25.0	
		480-CMFD-P		12.5	14.6	
		560-CMFD-P		11.1	12.5	
Holdup Time	V_{in}=115V_{ac} (refer to the application note)	All		16		ms
Output Voltage Regulation						
Load Regulation	20% Load to 100% load	CMFC(D)			±0.5	%
	20% Load to 85.7% load (600W)	CMFD-P			±7	

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PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Line Regulation	V_{in}=High line to low line	All			±0.5	%
Output Voltage Trim Range	$P_o \leqq$ max. rated power, $I_o \leqq I_{o\_max.}$ (refer to the application note)	560-CMFC(D)	-5		+1.8	%
		Others-CMFC(D)	-5		+5	
	No load, (refer to the application note)	560-CMFD-P	0		+1.8	
		Others-CMFD-P	0		+5	
Over Current Protection	Hiccup mode, auto recovery	All	105		220	%
Over Voltage Protection	Latch off (recycle AC input to restart)	120-CMFC(D/D-P)			16.8	V_{dc}
		240-CMFC(D/D-P)			33.6	
		280-CMFC(D/D-P)			39.2	
		480-CMFC(D/D-P)			57.6	
		560-CMFC(D/D-P)			59.9	
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℃	120-CMFC(D/D-P)			120	mV
		240-CMFC(D/D-P)			240	
		280-CMFC(D/D-P)			280	
		480-CMFC(D/D-P)			480	
		560-CMFC(D/D-P)			560	
Load Capacitance	1. Input voltage is 115V_{ac} and 230V_{ac} 2. Output is max. load 3. Ambient temperature=25℃	120-CMFC(D/D-P)			58340	uF
		240-CMFC(D/D-P)			29170	
		280-CMFC(D/D-P)			25000	
		480-CMFC(D/D-P)			14590	
		560-CMFC(D/D-P)			12500	

EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Efficiency	1. Output is rated load 2. Input voltage is 230V_{ac}	120-CMFC(D/D-P)		87.5		%
		240-CMFC(D/D-P)		90		
		280-CMFC(D/D-P)		90.5		
		480-CMFC(D/D-P)		91		
		560-CMFC(D/D-P)		91.5		

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 Minute (without dielectric breakdown)	All			3000	V_{ac}
Input to Earth (Ground)	1 Minute (without dielectric breakdown)	All			2000	V_{ac}
Output to Earth (Ground)	1 Minute (without dielectric breakdown)	All			500	V_{ac}
Isolation Resistance	Input to output	All	100			MΩ

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency		All		220		kHz
Over Temperature Shutdown	Measured at the center of base plate, auto recovery	All		105		℃
Over Temperature Recovery				100		
Series Operation	Refer to the application note	All		Possible		
Parallel Operation	Refer to the application note	CMFC(D)		Not recommended		
		CMFD-P		Possible		

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GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100%, T_a=25℃ per MIL-HDBK-217F I_o=100%, T_a=25℃, Telcordia SR332	All	160 840			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meets MIL-STD-810F Table 516.5,Table 516.5-I 10ms, each axis 3 times(±X, ±Y,±Z axis)	All		75		g
Vibration	Meets MIL-STD-810F Table 514.5C-VIII,15~2000Hz, X, Y, Z axis, 1hr (each axis),. total 3 hrs.	All		4		g
Weight		CMFC CMFD(D-P)		760 870		grams
Dimensions		CMFC CMFD(D-P)	9.45x4.33x1.587 Inches (240x110x40.30 mm) 9.45x4.33x1.654 Inches (240x110x42.00 mm)			
Case Material		CMFC CMFD(D-P)	Aluminum Base Aluminum Base and Aluminum Cover			
Safety	Class I, IEC/EN/UL 62368-1				Ed 3.0	
EMC Emission	EN 55032				Class A	
Conducted Disturbance	EN 55032				Class A	
Radiated Disturbance	EN 55032				Class A	
Harmonic Current Emissions	EN 61000-3-2:2019+A1:2021					
Voltage Fluctuations & Flicker	EN 61000-3-3:2013+A2:2021					
EMC Immunity	EN 55035					
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, ±2kV, L-E(ground): ±0.5kV, ±1kV, ±2kV, ±4kV				Criterion A (±2kV) Criterion B (±4kV)	
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	
MIL-STD-461F EMI	Compliance to, CE102, RE101					

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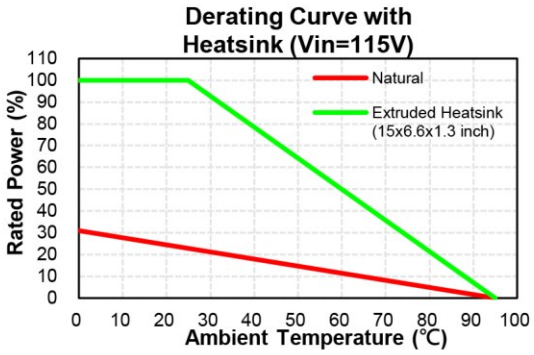
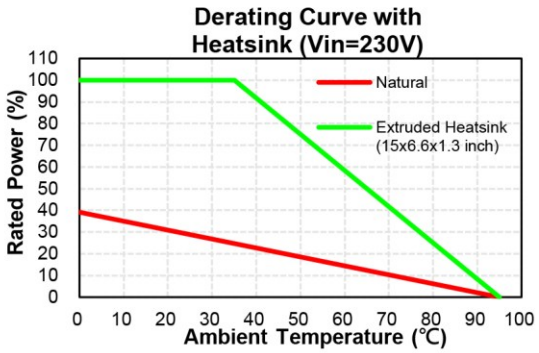
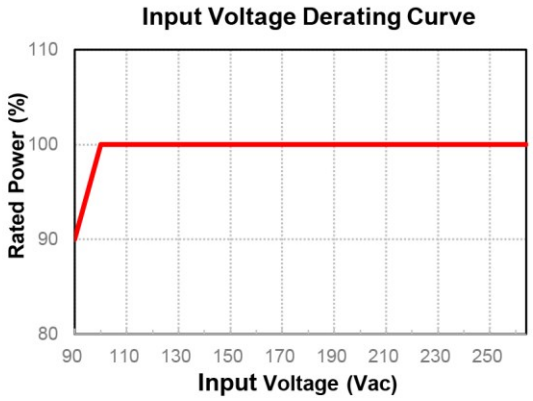
CHARACTERISTIC CURVE

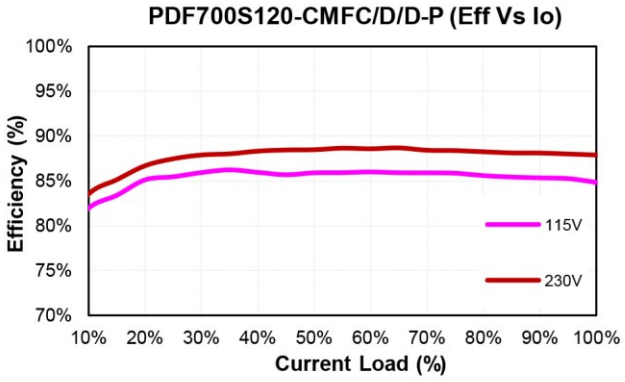
Power Derating Curve

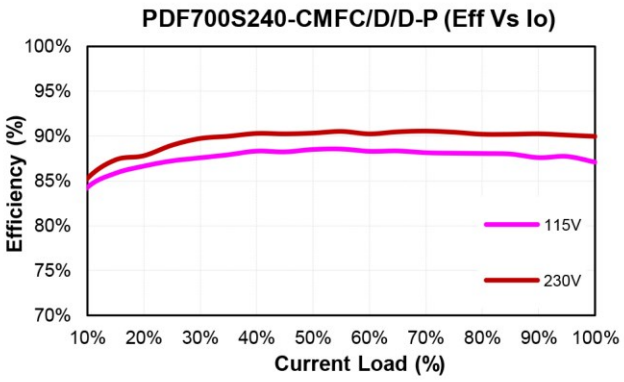


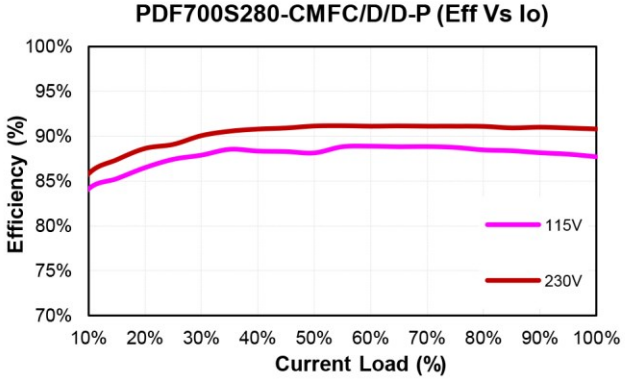


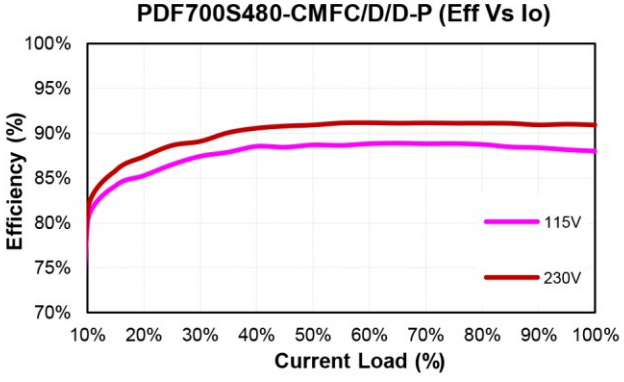


Performance Data









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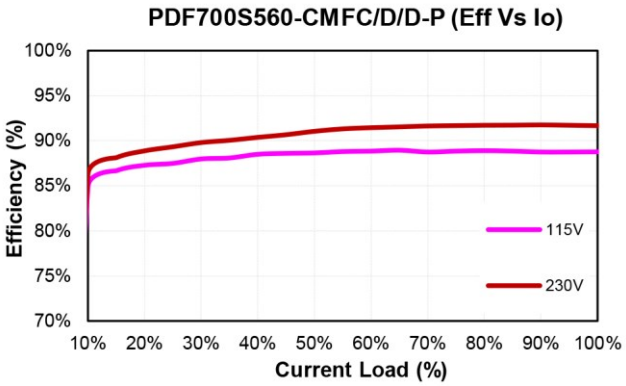

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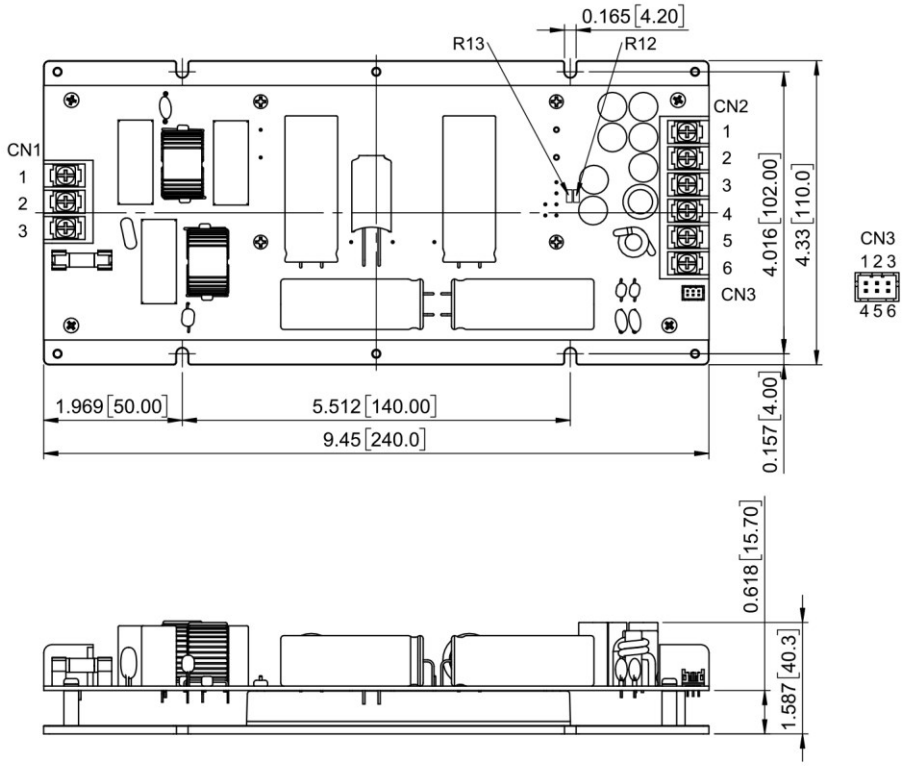
MECHANICAL SPECIFICATION



CMFC

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) :
DINKLE DT-49-B01W-03 or equivalent

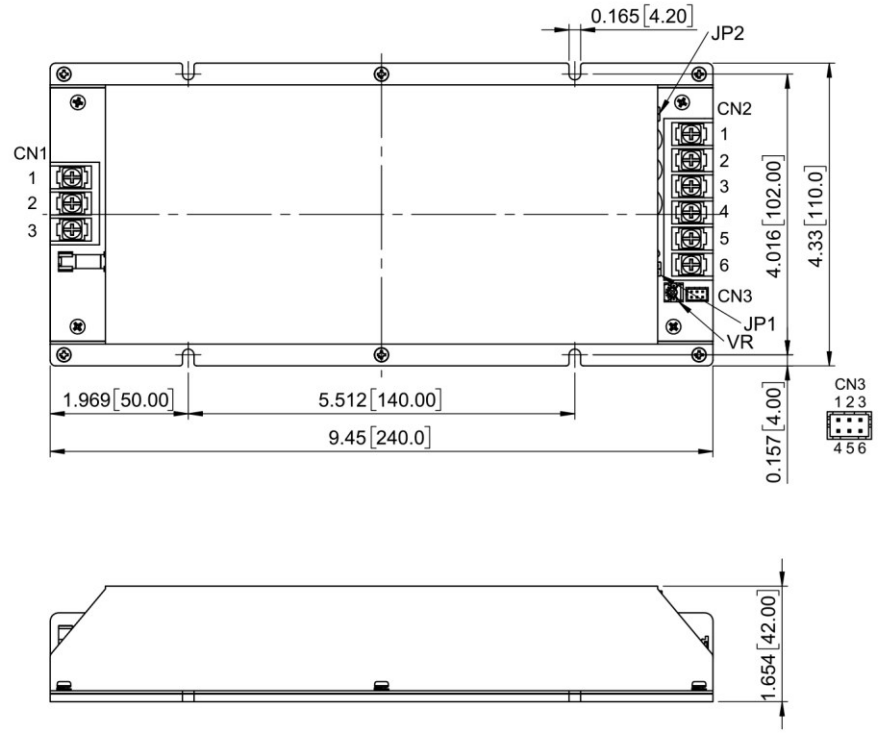
Pin	Function	Mating Wire Range
1	FG	12~22 AWG
2	AC1	
3	AC2	

DC Output Connector(CN2) :
DINKLE DT-49-B01W-06 or equivalent

Pin	Function	Mating Wire Range
1	-Vo	12~22 AWG
2	-Vo	
3	-Vo	
4	+Vo	
5	+Vo	
6	+Vo	

DC Output Connector(CN3) :
LCU P220V-2x3 or equivalent

Pin	Function	Mating Housing	Terminal
1	ON/OFF+	LCU H220G1-2X3 or equivalent	LCU T220 or equivalent
2	IOG		
3	NC		
4	ON/OFF-		
5	NC		
6	NC		



CMFD

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) :
DINKLE DT-49-B01W-03 or equivalent

Pin	Function	Mating Wire Range
1	FG	12~22 AWG
2	AC1	
3	AC2	

DC Output Connector(CN2) :
DINKLE DT-49-B01W-06 or equivalent

Pin	Function	Mating Wire Range
1	-Vo	12~22 AWG
2	-Vo	
3	-Vo	
4	+Vo	
5	+Vo	
6	+Vo	

DC Output Connector(CN3) :
LCU P220V-2x3 or equivalent

Pin	Function	Mating Housing	Terminal
1	TRIM	LCU H220G1-2X3 or equivalent	LCU T220 or equivalent
2	-S		
3	ON/OFF-		
4	IOG		
5	+S		
6	ON/OFF+		

DC Output Connector(JP1&JP2) :
LCU P301G-02-G1 or equivalent

Pin	Function	Mating Housing	Terminal
JP1	Short +S&+Vo	LCU H301G-02 or equivalent	LCU T306 or equivalent
JP2	Short -S&-Vo		

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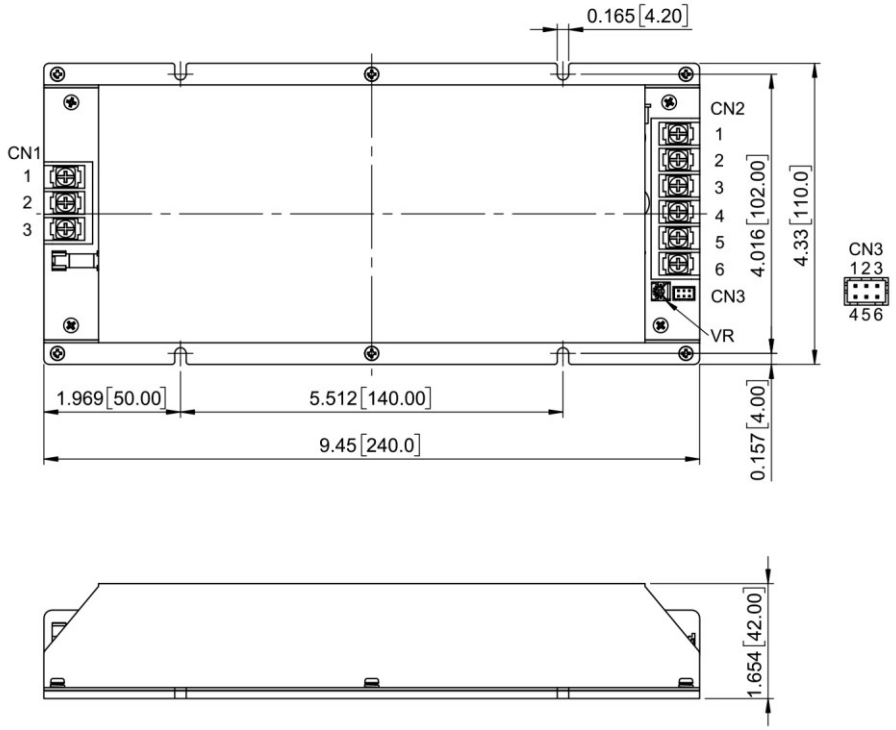
MECHANICAL SPECIFICATION



CMFD-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

AC Input Connector(CN1) :
DINKLE DT-49-B01W-03 or equivalent

Pin	Function	Mating Wire Range
1	FG	12~22 AWG
2	AC1	
3	AC2	

DC Output Connector(CN2) :
DINKLE DT-49-B01W-06 or equivalent

Pin	Function	Mating Wire Range
1	-Vo	12~22 AWG
2	-Vo	
3	-Vo	
4	+Vo	
5	+Vo	
6	+Vo	

DC Output Connector(CN3) :
LCU P220V-2x3 or equivalent

Pin	Function	Mating Housing	Terminal
1	-Vo	LCU H220G1-2X3 or equivalent	LCU T220 or equivalent
2	NC		
3	ON/OFF-		
4	IOG		
5	NC		
6	ON/OFF+		