



20W Single Output Medical Grade Switching Power Supply

NFM-20 series



■ Features :

- Universal AC input / Full range
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Ultra-miniature size, light weight
- Cooling by free air convection
- Medical safety approved (2 x MOPP between primary to secondary)
- No load power consumption<0.75W
- 100% full load burn-in test
- Optional on-board type version available
- Fixed switching frequency at 90KHz
- High reliability
- Suitable for BF application with appropriate system consideration
- 3 years warranty

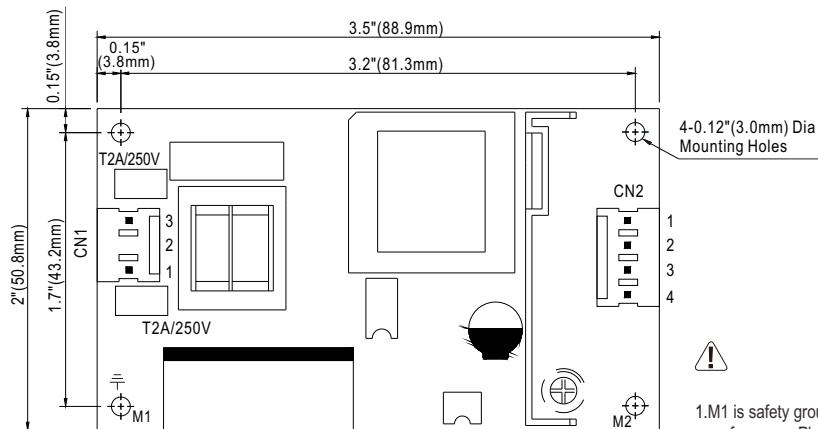


SPECIFICATION

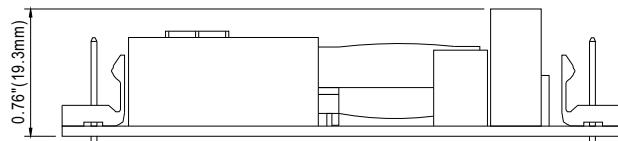
MODEL	NFM-20-3.3	NFM-20-5	NFM-20-12	NFM-20-15	NFM-20-24
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V
	RATED CURRENT	4.5A	4.4A	1.8A	1.4A
	CURRENT RANGE	0 ~ 4.5A	0 ~ 4.4A	0 ~ 1.8A	0 ~ 1.4A
	RATED POWER	14.85W	22W	21.6W	21W
	RIPLLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	150mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE	3.1 ~ 3.6V	4.5 ~ 5.4V	10.8 ~ 13.2V	13.5 ~ 16.5V
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±1.0%	±1.0%
	LINE REGULATION	±1.0%	±1.0%	±0.5%	±0.5%
	LOAD REGULATION	±1.5%	±1.5%	±0.5%	±0.5%
	SETUP, RISE TIME	500ms, 20ms/230VAC	500ms, 20ms/115VAC at full load		
INPUT	HOLD UP TIME (Typ.)	50ms/230VAC	15ms/115VAC at full load		
	VOLTAGE RANGE	85 ~ 264VAC	120 ~ 370VDC		
	FREQUENCY RANGE	47 ~ 440Hz			
	EFFICIENCY (Typ.)	71%	75%	81%	83%
	AC CURRENT (Typ.)	0.6A/115VAC	0.4A/230VAC		
	INRUSH CURRENT (Typ.)	COLD START 30A/115VAC	65A/230VAC		
PROTECTION	LEAKAGE CURRENT Note.6	Earth leakage current < 30μA/264VAC, Touch current < 100μA/264VAC			
	OVERLOAD	Above 105% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed			
	OVER VOLTAGE	3.8 ~ 4.46V	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V
ENVIRONMENT	OVER TEMPERATURE Note.5	Protection type : Shut off o/p voltage, clamping by zener diode			
	WORKING TEMP.	-20 ~ +60°C (Refer to "Derating Curve")			
	WORKING HUMIDITY	20 ~ 90% RH non-condensing			
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH			
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)			
SAFETY & EMC (Note 4)	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes			
	SAFETY STANDARDS	ANSI/AAMI ES60601-1, TUV EN60601-1, IEC60601-1 approved			
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP			
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC			
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH			
	EMC EMISSION	Compliance to EN55011(CISPR11), EN55032 (CISPR32) Class B, EN61000-3-2,-3			
OTHERS	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN60601-1-2, EN61204-3, medical level, criteria A			
	MTBF	487.8Khrs min. MIL-HDBK-217F (25°C)			
	DIMENSION	89*51*19.3mm (L*W*H)			
NOTE	PACKING	0.09Kg; 105pcs/10.5Kg/0.97CUFT			
	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com) 5. The over temperature protection (OTP) is the built-in function of the control IC (U1). The activating level described above is based on the specification provided by the IC manufacturer. 6. Touch current was measured from primary input to DC output.				

■ Mechanical Specification

Unit:inch(mm)



! 1.M1 is safety ground. For better EMC performance,Please secure an electrical connection between M1,M2 and chassis grounding.



AC Input Connector (CN1) : Molex 41791-03 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	Molex 2139 or equivalent	Molex 2478 or equivalent
2	No Pin		
3	AC/L		

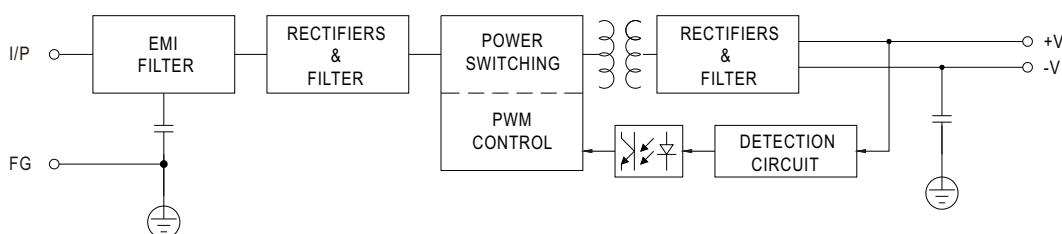
± : Grounding Required

DC Output Connector (CN2) : Molex 41791-04 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2	+V	Molex 2139 or equivalent	Molex 2478 or equivalent
3,4	-V		

■ Block Diagram

fosc : 90KHz



■ Derating Curve

■ Output Derating VS Input Voltage

