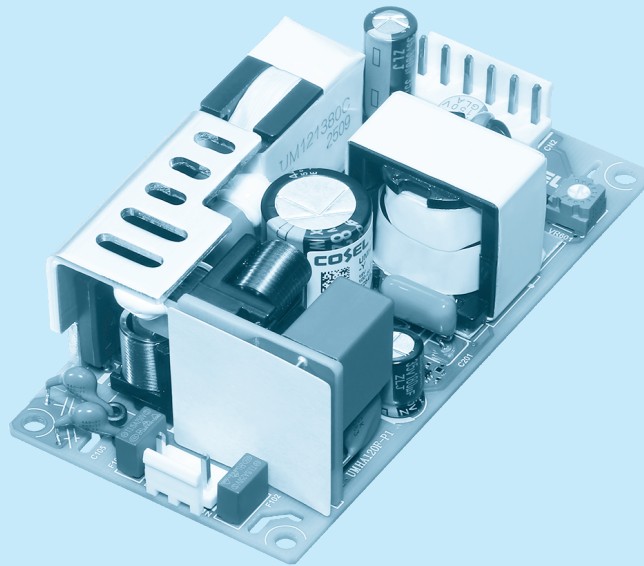




UMHA-series



Note:

As the UMHA series is classified as a component power supply, it cannot be declared an applied part, and therefore cannot be declared CF rated. However, the UMHA Series has been evaluated for and meets the requirements related for use in CF applications.

■ Feature

- For medical electric equipment
- Medical Isolation Grade 2MOPP
- 4kV isolation
- Suitable for CF application
- Low leakage current
- Power factor correction
- 2"×4" standard footprint
- Economical design

■ Safety agency approvals

ANSI/AAMI ES60601-1, EN60601-1 3rd,
C-UL (CAN/CSA-C22.2 No.60601-1)

■ CE marking

Low Voltage Directive
RoHS Directive

■ UKCA marking

Electrical Equipment Safety Regulations
RoHS Regulations

■ 5-year warranty (See Instruction Manual)

■ EMI

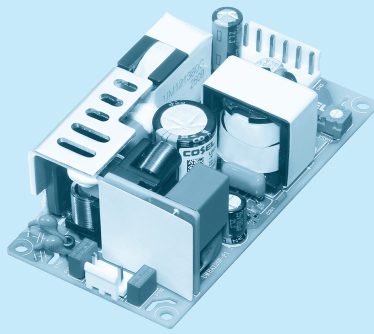
Complies with CISPR11-B, CISPR32-B, EN55011-B,
EN55032-B, FCC Part 15-B, FCC Part 18-B

■ EMS Compliance : EN61204-3, EN61000-6-2 IEC60601-1-2 (2014), EN60601-1-2 (2015)

- EN61000-4-2
- EN61000-4-3
- EN61000-4-4
- EN61000-4-5
- EN61000-4-6
- EN61000-4-8
- EN61000-4-11

UMHA120F

① **UMH** ② **A** ③ **120** ④ **F** ⑤ **-□** ⑥ **-□**



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Optional *7
T : Terminal block
C : with Coating

* Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	UMHA120F-12-Y	UMHA120F-15-Y	UMHA120F-18-Y	UMHA120F-24-Y	UMHA120F-48-Y
MAX OUTPUT WATTAGE[W]	120	120	120.6	120	120
DC OUTPUT	12V 10A	15V 8A	18V 6.7A	24V 5A	48V 2.5A

SPECIFICATIONS

	MODEL	UMHA120F-12-Y	UMHA120F-15-Y	UMHA120F-18-Y	UMHA120F-24-Y	UMHA120F-48-Y	
INPUT	VOLTAGE[VAC]	85 - 264 1φ					
	CURRENT[A]	ACIN 115V	1.2				
		ACIN 230V	0.6				
	FREQUENCY[Hz]	50/60(47-63)					
	EFFICIENCY[%]	ACIN 115V	91typ	92typ	92typ	92typ	92typ
		ACIN 230V	93typ	94typ	94typ	94typ	94typ
	INRUSH CURRENT[A]	ACIN 115V	25typ				
		ACIN 230V	50typ				
	POWR FACTOR	ACIN 115V	0.98				
ACIN 230V		0.92					
EARTH LEAKAGE CURRENT[μA]	ACIN 264V	30max					
PATIENT LEAKAGE CURRENT[μA]	ACIN 264V	10max					
OUTPUT	VOLTAGE[V]	12	15	18	24	48	
	CURRENT[A]	10	8	6.7	5	2.5	
	WATTAGE[W]	120	120	120.6	120	120	
	LINE REGULATION[mV] *1	48max	60max	72max	96max	192max	
	LOAD REGULATION[mV] *1	100max	120max	150max	150max	240max	
	RIPPLE NOISE [mVp-p] *2 lo=100%	150 (Bandwidth 20MHz)					
	TEMPERATURE REGULATION [mV]	0~+50°C	120max	150max	180max	240max	480max
	START-UP TIME[ms]	ACIN 115V	700typ				
		ACIN 230V					
	HOLD-UP TIME[ms]	16typ					
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	11.40 to 12.60		14.25 to 15.75	18.00 to 19.80	22.80 to 25.20	45.60 to 50.40	
OUTPUT VOLTAGE SETTING[V]	12.00 to 12.30		15.00 to 15.38	18.00 to 18.45	24.00 to 24.60	48.00 to 49.20	
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION [A]	Works over 105% of rating and recovers automatically					
	OVERVOLTAGE PROTECTION[V]	13.80 to 16.80	17.25 to 21.00	20.70 to 25.20	27.60 to 33.60	55.20 to 67.20	
ISOLATION	INPUT-OUTPUT	AC4,000V 1minute, DC500V 100MΩ min (At Room Temperature) 2MOPP					
	INPUT-FG	AC2,000V 1minute, DC500V 100MΩ min (At Room Temperature) 1MOPP					
	OUTPUT-FG	AC2,000V 1minute, DC500V 100MΩ min (At Room Temperature) 1MOPP					
ENVIRONMENT	OPERATING TEMP.,HUMID. *3	-20 to +70°C, 20 - 90%RH (Non condensing)					
	STORAGE TEMP.,HUMID.	-20 to +75°C, 20 - 90%RH (Non condensing)					
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G) , 3minutes period, 60minutes each along X, Y and Z axis					
	IMPACT	196.1m/s ² (20G) , 11ms, once each X, Y and Z axis					
SAFETY AND EMC	AGENCY APPROVALS	ANSI/AAMI ES60601-1, EN60601-1 3rd, C-UL (equivalent to CAN/CSA-C22.2 No.60601-1)					
	EMC EMISSION	Complies with CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, FCC Part15-B and FCC Part18-B					
	EMC IMMUNITY	Complies with EN61000-4-2, 3, 4, 5, 6, 8, 11					
	HARMONIC ATTENUATOR*4	Complies with IEC61000-3-2 Class A					
OTHERS	CASE SIZE/WEIGHT *5	50.8X32.1X101.6mm [2.0X1.26X4.0 inches] (W×H×D) / 160g max					
	COOLING METHOD	Convection					
WARRANTY	WARRANTY *6	5 years (subject to the operating conditions)					

*1 Consult us about dynamic load and input response. Measure the output voltage by using the average mode of the tester to deal with the burst operation at low (lo=0~10%typ) load.

*2 This is the result of measurement of the testing board with capacitors of 47μF and 0.1μF placed at 150 mm from the output terminals by a 20MHz oscilloscope or a ripple-noise meter equivalent to Keisoku-GikenRM104.

When the load factor is low (lo=0~10%typ), the switching power loss is reduced by burst operation, which will cause ripple noise to go beyond the specifications.

*3 Output power derating is required. Refer to "Derating"

*4 Please contact us about another class.

*5 Dimensions below PCB are not included.

*6 Consult us about details.

*7 The listed options may affect the published standard specifications. Please contact us for detailed product specifications and safety approvals.

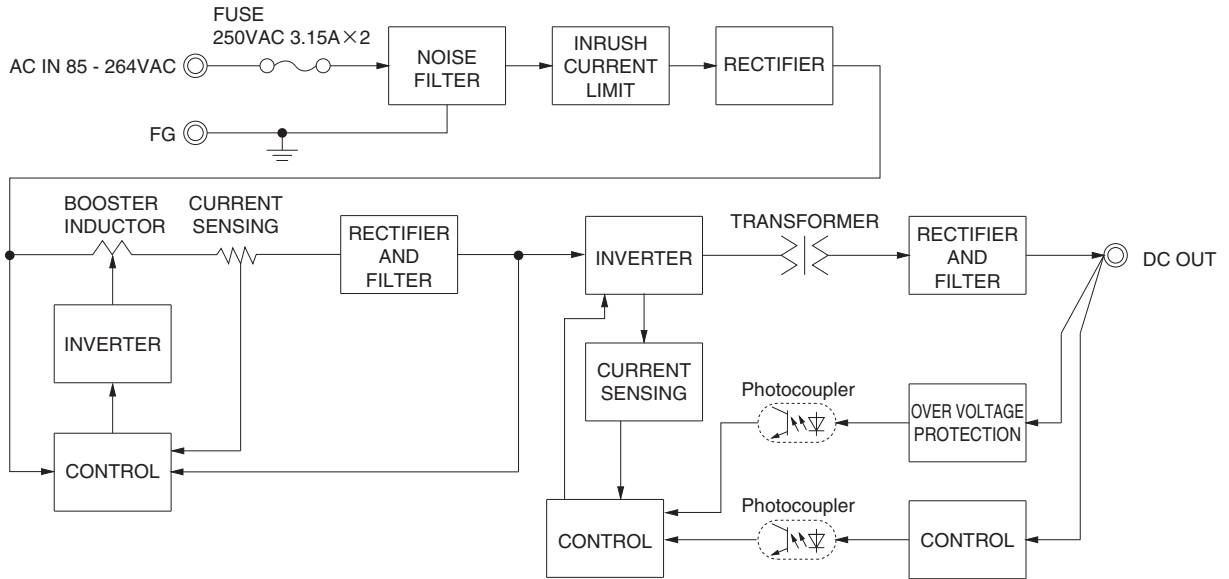
* All parameters not specially mentioned are measured at ACIN 230V, rated load and 25°C of ambient temperature.

* Do not use the power supply in overcurrent conditions or in unspecified input voltage ranges. Otherwise the internal components may be damaged.

* Parallel operation is not possible with this model.

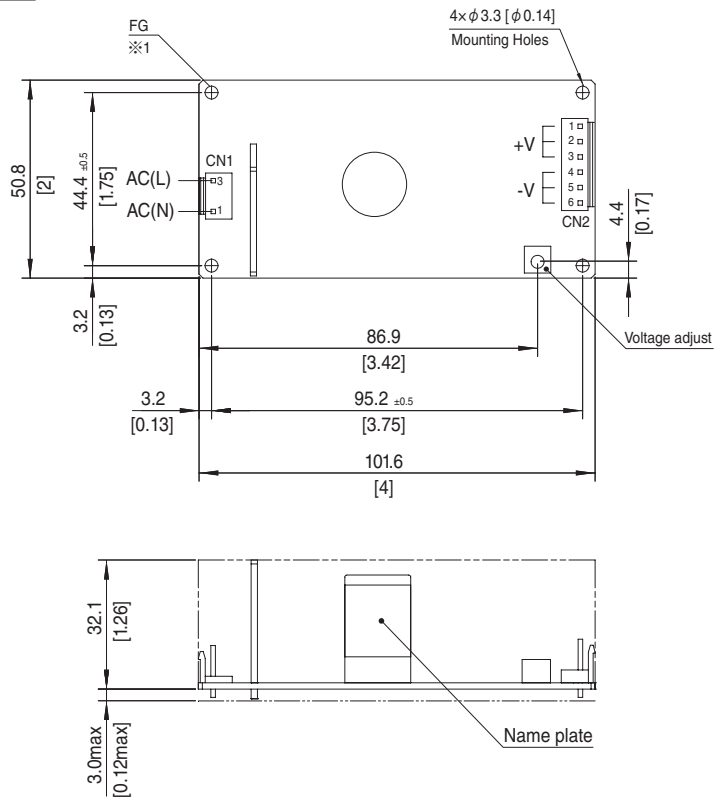
* Acoustic noise may be heard from the power supply when used for pulse load.

Block diagram



External view

Standard type



Mating connector and terminal of CN1, CN2

I/O Connector	Mating Connector	Terminal	Mfr.
CN1	B2P3-VH	VHR-3N Reel : SVH-21T-P1.1 Loose piece : BVH-21T-P1.1	J.S.T.
CN2	B6P-VH	VHR-6N Reel : SVH-21T-P1.1 Loose piece : BVH-21T-P1.1	J.S.T.

<Pin Assignments>

CN1		CN2	
Pin No.	Input	Pin No.	Output
1	AC(N)	1, 2, 3	+V
2	AC(L)	4, 5, 6	-V
3			

※ Dimensions in mm, [] =inches

※ Tolerance : ±1 [±0.04]

※ Weight : 160g max

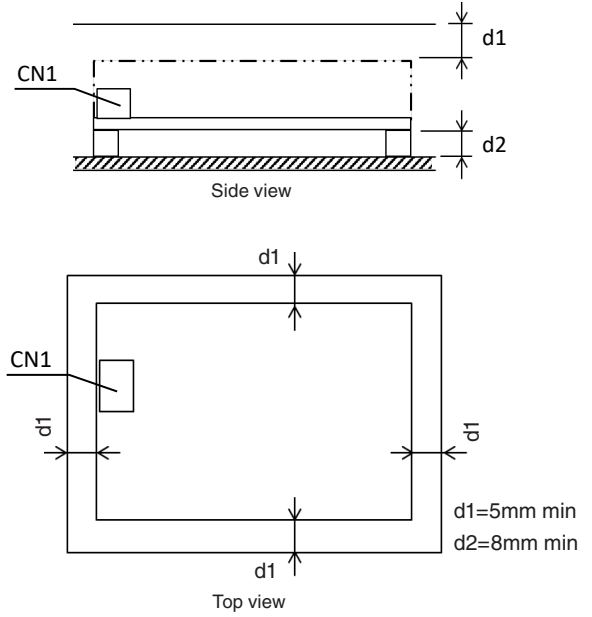
※ PCB Material/thickness : FR-4/1.6 [0.06]

※1 The mounting hole is for FG connection.

Assembling and Installation Method

■ When the power supply is used with natural convection cooling, the standard mounting position is horizontal.

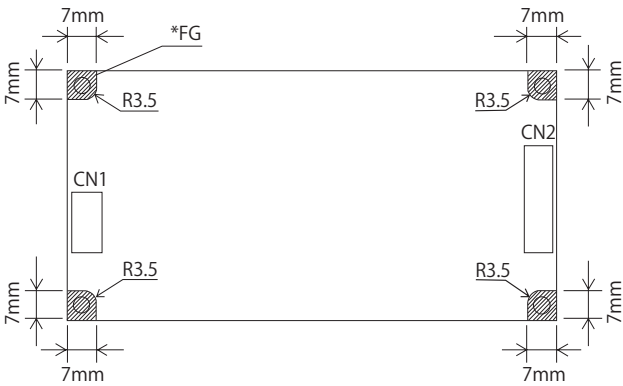
■ AC voltage exists on the primary side. Therefore, in order to prevent electric shock, or to meet the leakage current requirements of the safety standard, you need to ensure the proper insulation distance.



Mounting screw

■ The mounting screws should be M3. The hatched area indicates the proper area for mounting hardware.

UMHA120F

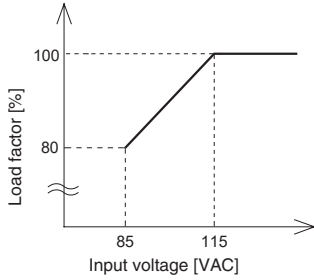


* Recommend to electrically connect FG to metal chassis for reducing noise.

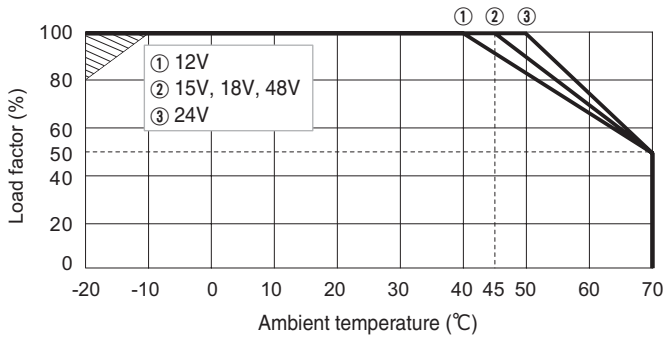
- The mounting screws should be M3.
The hatched area indicates the proper area for mounting hardware.
- This power supply is manufactured by SMD technology.
Stress to the PCB such as twisting or bending may cause damage to the unit, please handle with care.

Derating

● Derating curve for input voltage



● Ambient temperature derating curve at rated input



- The ambient temperature should be measured 5 to 10 cm away from the power supply so that it won't be influenced by the heat from the power supply. Please consult us for more details.
- The shaded area is the derating required at start-up.

Instruction Manual

- Please read the "Instruction Manual" and "Before using our product" before you use our product.

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current [A]	Rated input fuse	Inrush current protection circuit	PCB/Pattern			Parallel operation
						Material	Single sided	Double sided	
UMHA120F	Active filter	15 to 300	1.2	250V 3.15A	Thermistor	FR4		Yes	No
	LLC resonant converter	50 to 280							