

## Features

- Universal input 85~264VAC or 120~370VDC
- Operating Temperature Range: -40~85°
- Approved to UKCA, CE, CB, cURus, FCC, RoHS & REACH
- Safety standards to IEC/EN/ANSI/AAMI 60601-1 & IEC/UL/EN 62368-1
- Efficiency up to 94%
- Single Output 12-53V DC



Ideal Power's 43MxH450-USxy 450W AC/DC Medical Power Supply Module Series are certified to cURus, UKCA, CE, FCC, CB, RoHS, REACH & EN 60601-1/ES 60601-1/IEC 62368-1/EN 62368-1/UL 62368-1 Standards and comply with the relevant Efficiency Regulations. These are primarily used in Medical, ITE, Audio & Video Industries and customised solutions are available upon request.

### Part Number Structure

43MxH	450	U	S	12	□	- F2
Series name*	Output Power (W)	Input Voltage (VAC)	Output Quantity	Output Voltage (VDC)	Protection Type	Options

**A:** Open type  
**E:** Enclosed type

**U:** Universal  
85 ~ 264

**S:** Single

**12:** 12V  
**15:** 15V  
**24:** 24V  
**28:** 28V  
**36:** 36V  
**48:** 48V  
**53:** 53V

**B:** CLASS II  
□: CLASS I

□: Fan connector with fixed fan speed control.  
**Y:** Fan connector with variable fan speed control.

For 43MEH450 only:  
Fixed fan speed  
**F1:** Fan 1, fan on the top  
**F2:** Fan 2, fan on the side

Variable fan speed  
**Y1:** Fan 1, fan on the top  
**Y2:** Fan 2, fan on the side

\*Replace x for required product type.

**Models**

Model Number	Input Range VAC	Output Voltage VDC	Output Current				Input Power @ No Load W	Efficiency %	Maximum Capacitor Load µF
			Natural Convection A	Conduction Cooling A	Forced Air Cooling				
					21CFM External Fan A	Internal Fan A			
43MAH450US12(-Y)	85~264	12	20.8	23.3	37.5	---	0.3	91	31250
43MEH450US12(-Y)	85~264	12	20.8	23.3	37.5	---	0.3	91	31250
43MEH450US12-F1(Y1)	85~264	12	---	---	---	37.5	0.4	91	31250
43MEH450US12-F2(Y2)	85~264	12	---	---	---	37.5	0.4	91	31250
43MAH450US15(-Y)	85~264	15	16.6	18.6	30.0	---	0.5	92	20000
43MEH450US15(-Y)	85~264	15	16.6	18.6	30.0	---	0.5	92	20000
43MEH450US15-F1(Y1)	85~264	15	---	---	---	30.0	0.8	92	20000
43MEH450US15-F2(Y2)	85~264	15	---	---	---	30.0	0.8	92	20000
43MAH450US24(-Y)	85~264	24	13.3	14.55	18.75	---	0.5	93	7820
43MEH450US24(-Y)	85~264	24	13.3	14.55	18.75	---	0.5	93	7820
43MEH450US24-F1(Y1)	85~264	24	---	---	---	18.75	0.8	93	7820
43MEH450US24-F2(Y2)	85~264	24	---	---	---	18.75	0.8	93	7820
43MAH450US28(-Y)	85~264	28	11.4	12.5	16.1	---	0.5	93	5750
43MEH450US28(-Y)	85~264	28	11.4	12.5	16.1	---	0.5	93	5750
43MEH450US28-F1(Y1)	85~264	28	---	---	---	16.1	0.8	93	5750
43MEH450US28-F2(Y2)	85~264	28	---	---	---	16.1	0.8	93	5750
43MAH450US36(-Y)	85~264	36	8.9	9.72	12.5	---	0.5	93	3500
43MEH450US36(-Y)	85~264	36	8.9	9.72	12.5	---	0.5	93	3500
43MEH450US36-F1(Y1)	85~264	36	---	---	---	12.5	0.8	93	3500
43MEH450US36-F2(Y2)	85~264	36	---	---	---	12.5	0.8	93	3500
43MAH450US48(-Y)	85~264	48	6.65	7.3	9.4	---	0.5	94	1960
43MEH450US48(-Y)	85~264	48	6.65	7.3	9.4	---	0.5	94	1960
43MEH450US48-F1(Y1)	85~264	48	---	---	---	9.4	0.8	94	1960
43MEH450US48-F2(Y2)	85~264	48	---	---	---	9.4	0.8	94	1960
43MAH450US53(-Y)	85~264	53	6.05	6.6	8.55	---	0.5	94	1600
43MEH450US53(-Y)	85~264	53	6.05	6.6	8.55	---	0.5	94	1600
43MEH450US53-F1(Y1)	85~264	53	---	---	---	8.55	0.8	94	1600
43MEH450US53-F2(Y2)	85~264	53	---	---	---	8.55	0.8	94	1600

### Input Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Operating input voltage range	AC input		85	--	264	VAC
	DC input		120	--	370	VDC
Input frequency	AC input		47	--	63	Hz
Input current	100VAC and Full Load		--	--	5.8	A
	240VAC and Full Load		--	--	2.4	
No load input power	230VAC	43MAH(-Y), 43MEH(-Y)	12Vout	--	0.3	Watts
			others	--	0.5	
		43MEH -F□(Y□)	12Vout	--	0.5	
		others	--	0.8	--	
Leakage current	264VAC		--	--	100	µA
Power Factor			0.95	--	--	
Start-up time			--	--	2000	ms
Rise time			--	30	--	ms
Hold up time	115VAC and Full Load		--	14	--	ms
Input inrush current	230VAC		--	--	100	A
Input protection	Internal fuse in line and neutral		T6.3A/250VAC			
Main output remote control	Positive Logic Referenced to "-Control"	Main power ON	Open or 3 ~ 12 VDC			
	*Standby power always present	Main power OFF	Short or 0 ~ 1.2VDC			
		Input current of Control	-0.5	--	1	mA

### Output Specifications

Parameter	Conditions		Min	Typ	Max	Unit	
Output power	Forced air cooling	All	--	--	450	Watts	
		12Vout, 15Vout	--	--	280		
	Conduction cooling @ 230VAC	others	--	--	350		
		Natural convection @ 230VAC	12Vout, 15Vout	--	--		250
		others	--	--	320		
* Please refer to the derating curve for detailed rating.							
Initial set voltage accuracy	230VAC and Full Load		-1.0	--	+1.0	%	
Line regulation	Low Line to High Line at Full Load		-0.2	--	+0.2	%	
Load regulation	No Load to Full Load		-0.5	--	+0.5	%	
	10% Load to 90% Load		-0.4	--	+0.4		
Voltage adjustability	Maximum output deviation is inclusive of remote sense		-8	--	+8	%	
Minimum load			--	0	--	%	
Ripple and Noise	Measured by 20MHz bandwidth	With a 1µF/25V 1206 X7R MLCC	12Vout	--	250	--	mVp-p
			15Vout	--	300	--	
	With a 1µF/50V 1206 X7R MLCC	24Vout	--	240	--		
		28Vout	--	280	--		
		36Vout	--	360	--		
	With a 0.1µF/100V 1206 X7R MLCC	48Vout	--	480	--		
	53Vout	--	530	--			
Temperature coefficient			-0.02	--	+0.02	%/°C	
Transient response	Load step from 50 ~ 75% change at 2.5A/µs	Peak deviation	--	3	--	% Vout	
		Recovery time	--	600	--	µs	
Over voltage protection	% of Vout(nom); Latch mode		110	--	135	%	
Overload protection	% of lout rated; Hiccup mode		115	--	155	%	
Short circuit protection	Protection level 1 (nominal) Protection level 2 (instantaneous high current)		Continuous, automatics recovery Latch				
Standby power supply	Always present when AC supplied				5V / 2000mA		
Fan power supply	Fixed fan speed function				12V / 500mA		
Main output Power Good signal	Referenced to "GND"	Power good				Low	
		Power off				Open Collector	

**General Specifications**

Parameter	Conditions		Min	Typ	Max	Unit
Isolation voltage	1 minute (2MOPP insulation)	Input to Output	4000	--	--	VAC
		Input (Output) to F.G.	2500	--	--	
Isolation resistance	500VDC		0.1	--	--	GΩ
Switching frequency	230VAC, Full load	15Vout	--	75	--	kHz
		Other	--	65	--	
Safety approvals	IEC/ EN/ ANSI/AAMI ES 60601-1 IEC/ EN/ UL 62368-1					UL:E360199 UL:E193009 CB:UL(Demko)
Weight		43MAH(-Y)				462g(16.29oz)
		43MEH(-Y)				504g(17.77oz)
		43MEH -F1(Y1)				524g(18.48oz)
		43MEH -F2(Y2)				552g(19.47oz)
MTBF	MIL-HDBK-217F Ta=25°C, Full load					4.093 x 10 <sup>5</sup> hrs

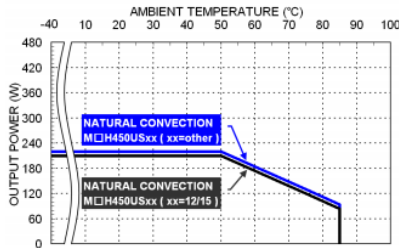
**Environmental Specifications**

Parameter	Conditions		Min	Typ	Max	Unit
Operating ambient temperature	With derating	43MAH(-Y), 43MEH(-Y)	-40	--	+85	°C
		43MEH -F□(Y□)	-40	--	+80	
Storage temperature range		43MAH, 43MEH	-40	--	+85	°C
		43MEH -F□(Y□)	-40	--	+80	
Over temperature protection	Internal thermistor ; Latch mode		110	--	125	°C
Operating altitude	With derating		--	--	5000	m
Shock						IEC60068-2-27
Vibration						IEC60068-2-6
Relative humidity	Non-condensing					5% to 95% RH

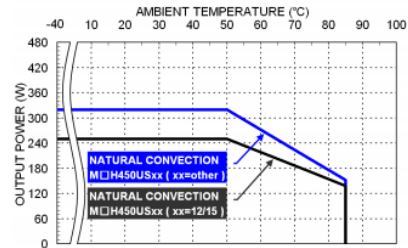
**EMC Specifications**

Parameter	Conditions		Level	
EMI	EN55011, EN55032, EN60601-1-2 and FCC Part 18 / 15	For optimum EMI performance, the power supply should be mounted to a metal plate grounded to all 4 mounting holes of the power supply. To comply with safety standards, this plate must be properly grounded to protective earth.	Conducted	Class B
			Radiated	Class A
Harmonic currents	EN61000-3-2	Full Load	Class A and D	
Voltage flicker	EN61000-3-3			
EMS	EN55024 and EN60601-1-2			
ESD	EN61000-4-2		Perf. Criteria A	
Radiated immunity	EN61000-4-3	3 V/m	Perf. Criteria A	
Fast transient	EN61000-4-4	± 2kV	Perf. Criteria A	
Surge	EN61000-4-5	DM ± 1kV and CM ± 2kV	Perf. Criteria A	
Conducted immunity	EN61000-4-6	20 Vr.m.s	Perf. Criteria A	
Power frequency magnetic field	EN61000-4-8	30A/m	Perf. Criteria A	
Dip and interruptions	EN61000-4-11			

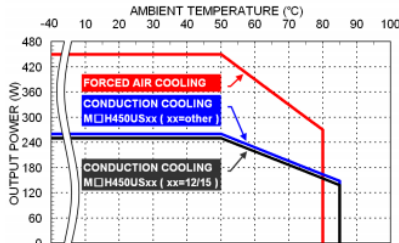
## Characteristic Curve



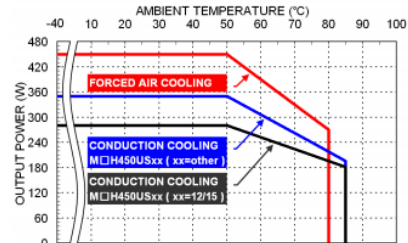
Derating Curve vs. Ambient Temperature  
Vin=115VAC and Natural convection



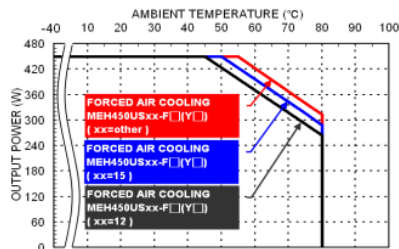
Derating Curve vs. Ambient Temperature  
Vin=230VAC and Natural convection



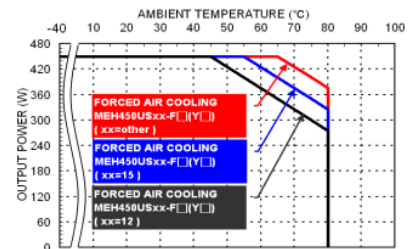
Derating Curve vs. Ambient Temperature  
Vin=115VAC and Conduction cooling tested by 43x24.8x0.12cm plate  
Forced air cooling with 21CFM (External Fan)



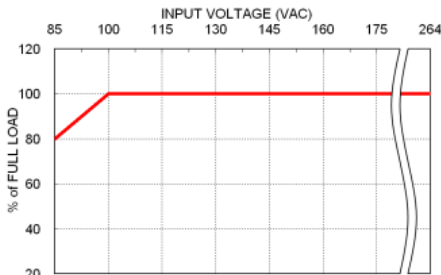
Derating Curve vs. Ambient Temperature  
Vin=230VAC and Conduction cooling tested by 43x24.8x0.12cm plate  
Forced air cooling with 21CFM (External Fan)



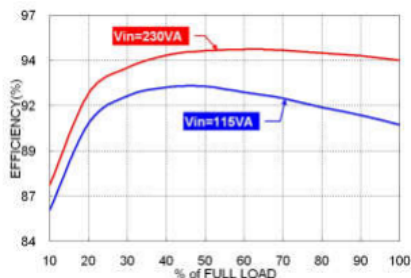
Derating Curve vs. Ambient Temperature  
Vin=115VAC and Forced air cooling (Internal Fan)



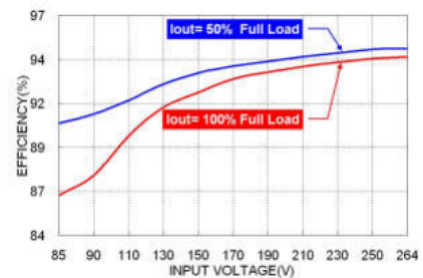
Derating Curve vs. Ambient Temperature  
Vin=230VAC and Forced air cooling (Internal Fan)



Derating Curve vs. Input Voltage 43MAH450



Efficiency vs. Output Load 43MxH450US24  
with Forced air cooling



Efficiency vs. Input Voltage 43MxH150US24  
with Forced air cooling

**Output Settings**

Output sensing function can be applied via connecting wires on CON3. Initially, Pin 7 and Pin 8 are shorted by a jumper set as default, shown as Fig. 1.

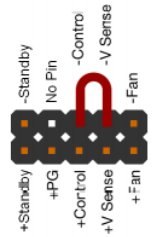
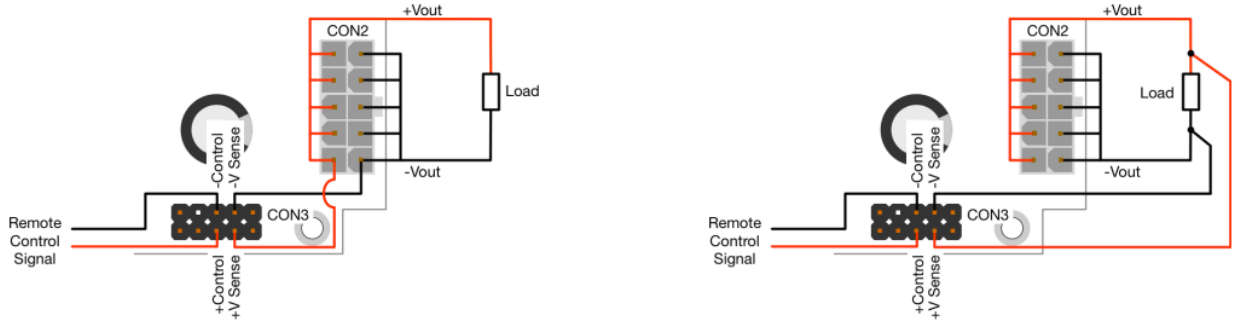
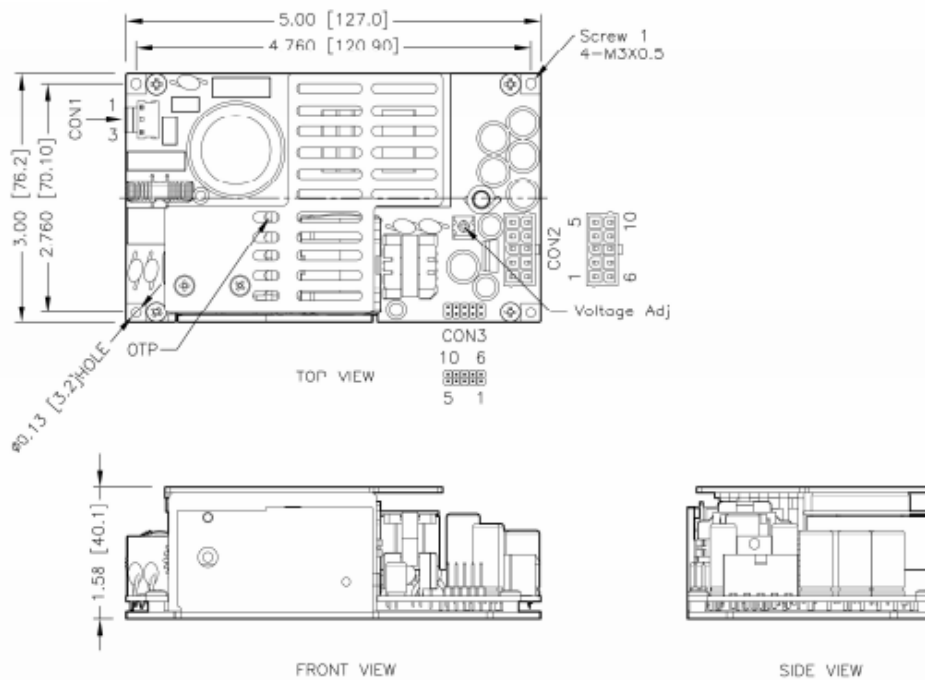


Fig. 1 Default connection

But if remote control function is to be used, the jumper on Pin 7 and Pin 8 should be removed. Since sense pins should not be left open for module stability, please follow the connections as below (Fig. 2).



(a) Sense pins connect to corresponding polarity of Vout pin (b) Sense pins connect to corresponding polarity terminal of load.  
 Fig. 2 Recommended output sensing connections

**Mechanical Drawing**
**43MAH450USXX (-Y)**


\*Either one of four screw holes can be considered as PE connection for CLASS I application.

1. All dimensions in inch [mm]
2. Tolerance : x.xx±0.02 [x.x±0.5]  
x.xxx±0.01 [x.xx±0.25]
3. Screw 1 locked torque : MAX 5.2Kgf-cm/0.51N.m

**Connectors & Connections**
**CON1 – Input Connector**

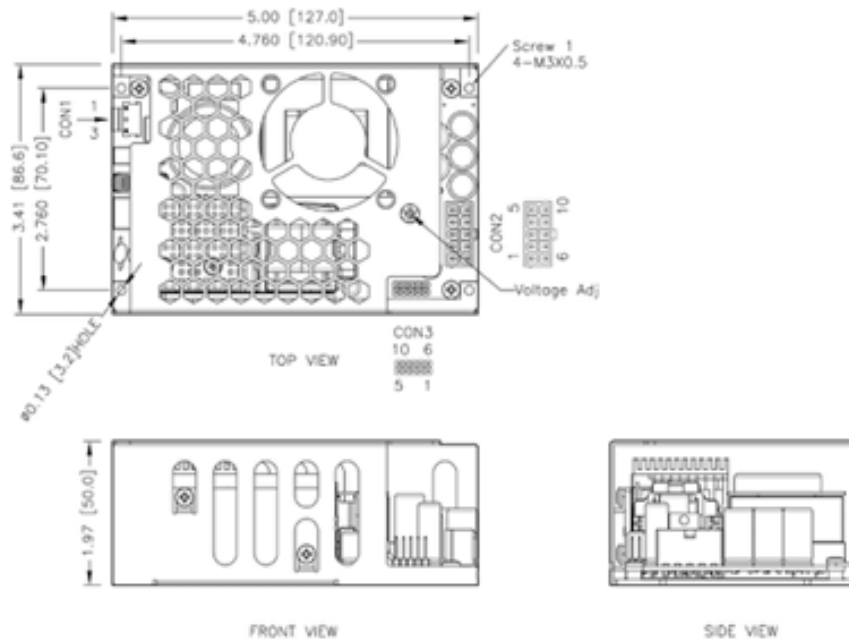
Pin Number	AC Input	Mates with
Pin 1	Line	Molex housing: 09-50-8031
Pin 3	Neutral	Molex crimp terminals: 2478,6838,45570

**CON2 – Output Connector**

Pin	Output	Mates with
Pin 1,2,3	-Vout	Molex housing: 39-01-2105
Pin 4,5,6	+Vout	Molex crimp terminals: 5556,45750

**CON3 – Aux Connector**

Pin	Signal	Pin	Signal	Mates with
Pin 1	+Fan	Pin 6	-Fan (GND)	Mates with Molex housing: 90143-0008 Molex crimp terminals: 90119
Pin 2	+V Sense	Pin 7	-V Sense	
Pin 3	+Control	Pin 8	-Control (GND)	
Pin 4	+PG	Pin 9	No Pin	
Pin 5	+Standby	Pin 10	-Standby (GND)	

**Mechanical Drawing**
**43MEH450USXX (-Y)**


\*Either one of four screw holes can be considered as PE connection for CLASS I application.

1. All dimensions in inch [mm]
2. Tolerance : x.xx±0.02 [x.x±0.5]  
x.xxx±0.01 [x.xx±0.25]
3. Screw 1 locked torque : MAX 5.2Kgf-cm/0.51N.m

**Connectors & Connections**
**CON1 – Input Connector**

Pin Number	AC Input	
Pin 1	Line	Mates with Molex housing: 09-50-8031 Molex crimp terminals: 2478,6838,45570
Pin 3	Neutral	

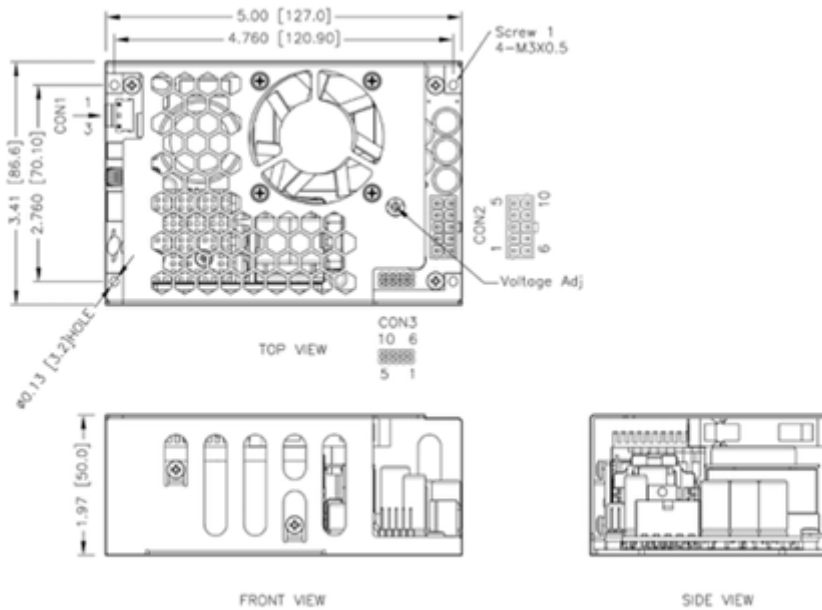
**CON2 – Output Connector**

Pin 1,2,3	-Vout	Mates with Molex housing: 39-01-2105 Molex crimp terminals: 5556,45750
Pin 4,5,6	+Vout	

**CON3 – Aux Connector**

Pin 1	+Fan	Pin 6	-Fan (GND)	Mates with Molex housing: 90143-0008 Molex crimp terminals: 90119
Pin 2	+V Sense	Pin 7	-V Sense	
Pin 3	+Control	Pin 8	-Control (GND)	
Pin 4	+PG	Pin 9	No Pin	
Pin 5	+Standby	Pin 10	-Standby (GND)	



**Mechanical Drawing**
**43MEH450USXX -F1 (-Y)**


\*Either one of four screw holes can be considered as PE connection for CLASS I application.

1. All dimensions in inch [mm]
2. Tolerance :  $x.xx \pm 0.02$  [ $x.x \pm 0.5$ ]  
 $x.xxx \pm 0.01$  [ $x.xx \pm 0.25$ ]
3. Screw 1 locked torque : MAX 5.2Kgf-cm/0.51N.m

**Connectors & Connections**
**CON1 – Input Connector**

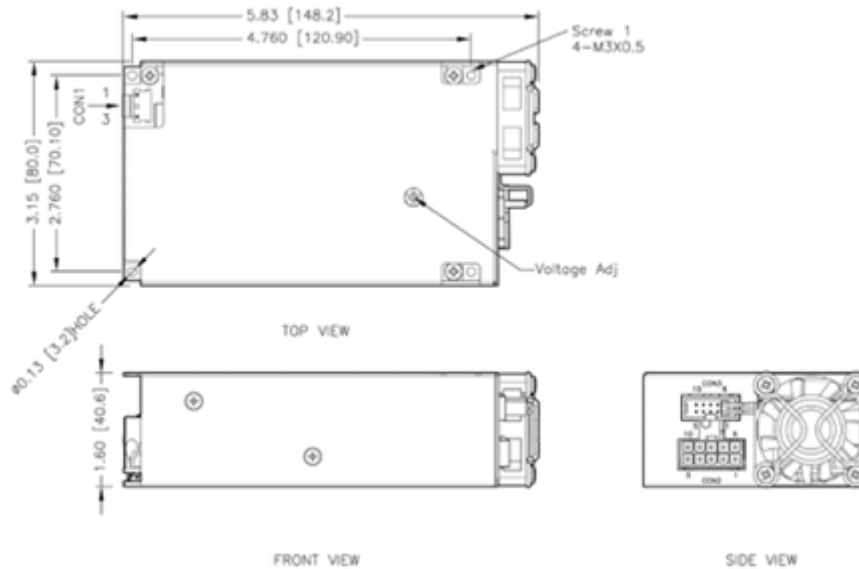
Pin Number	AC Input	Mates with Molex housing: 09-50-8031 Molex crimp terminals: 2478,6838,45570
Pin 1	Line	
Pin 3	Neutral	

**CON2 – Output Connector**

Pin 1,2,3	-Vout	Mates with Molex housing: 39-01-2105 Molex crimp terminals: 5556,45750
Pin 4,5,6	+Vout	

**CON3 – Aux Connector**

Pin 1	+Fan	Pin 6	-Fan (GND)	Mates with Molex housing: 90143-0008 Molex crimp terminals: 90119
Pin 2	+V Sense	Pin 7	-V Sense	
Pin 3	+Control	Pin 8	-Control (GND)	
Pin 4	+PG	Pin 9	No Pin	
Pin 5	+Standby	Pin 10	-Standby (GND)	

**Mechanical Drawing**
**43MEH450USXX -F1 (-Y)**


\*Either one of four screw holes can be considered as PE connection for CLASS I application.

1. All dimensions in inch [mm]
2. Tolerance :  $x.xx \pm 0.02$  [ $x.x \pm 0.5$ ]  
 $x.xxx \pm 0.01$  [ $x.xx \pm 0.25$ ]
3. Screw 1 locked torque : MAX 5.2Kgf-cm/0.51N.m

**Connectors & Connections**
**CON1 – Input Connector**

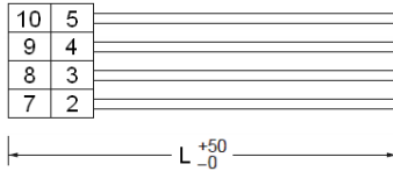
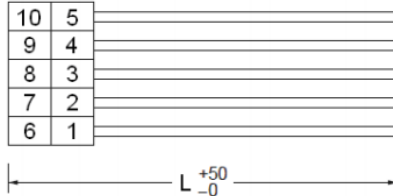
Pin Number	AC Input	
Pin 1	Line	Mates with Molex housing: 09-50-8031 Molex crimp terminals: 2478,6838,45570
Pin 3	Neutral	

**CON2 – Output Connector**

Pin 1,2,3	-Vout	Mates with Molex housing: 39-01-2105 Molex crimp terminals: 5556,45750
Pin 4,5,6	+Vout	

**CON3 – Aux Connector**

Pin 1	+Fan	Pin 6	-Fan (GND)	Mates with Molex housing: 90143-0008 Molex crimp terminals: 90119
Pin 2	+V Sense	Pin 7	-V Sense	
Pin 3	+Control	Pin 8	-Control (GND)	
Pin 4	+PG	Pin 9	No Pin	
Pin 5	+Standby	Pin 10	-Standby (GND)	

**Optional Parts**
**7N-0265-F :**

**7N-0266-F :**

**CON3 – Housing**

Pin 2	+V Sense	Gray	26AWG
Pin 3	+Control	Orange	26AWG
Pin 4	+PG	Blue	26AWG
Pin 5	+Standby	Red	26AWG
Pin 7	-V Sense	Green	26AWG
Pin 8	-Control (GND)	Brown	26AWG
Pin 9	No wire	---	---
Pin 10	-Standby (GND)	black	26AWG

Length (L): 500mm typical

**CON3 – Housing**

Pin 1	+Fan	Yellow	26AWG
Pin 2	+V Sense	Gray	26AWG
Pin 3	+Control	Orange	26AWG
Pin 4	+PG	Blue	26AWG
Pin 5	+Standby	Red	26AWG
Pin 6	-Fan (GND)	Brown	26AWG
Pin 7	-V Sense	Green	26AWG
Pin 8	-Control (GND)	Brown	26AWG
Pin 9	No wire	---	---
Pin 10	-Standby (GND)	black	26AWG