

(Specifications)

Product.	SMPS	Date.	2008.2.29
Model.	MSF15-S	Rev.	A
Customer.	STANDARD	Page.	1 / 3

MODEL/CHANNEL		Unit.	2R4	3R3	04	05
INPUT	Voltage , Frequency	[V]	AC100-240V (AC85 264V or DC120 370V), 50/60Hz (47 440Hz or DC)			
	Current	110V [A]	0.4	0.4	0.4	0.4
	Typ.	220V	0.2	0.2	0.2	0.2
	Efficiency	110V [%]	67	67	67	67
	Typ.	220V	67	67	67	67
	Power factor	110V -	-			
	Typ.	220V	-			
Inrush Current	110V [A]	20 (Ta=25 , Io=100% at cold Start)				
Typ.	220V	40 (Ta=25 , Io=100% at cold Start)				
Leakage Current	110V [mA]	0.4				
Max.	220V	0.75				
OUTPUT	Norminal Voltage	[V]	2.4	3.3	4	5
	Setting Voltage Range	[V]	2.37 2.43	3.26 3.33	3.96 4.04	4.95 5.05
	current	[A]	3.0	3.0	3.0	3.0
	Line Regulations	[mV]	25	25	25	25
	Load Regulations	[mV]	50	50	50	50
	Cross Regulations	[mV]	-	-	-	-
	Temperature Drift	[mV]	75	85	90	90
	Ripple Max.	[mV]	25	35	40	50
	Ripple & Noise Max.	[mV]	75	85	90	100
	Turn -on Time Typ.	[ms]	500 Max(AC IN 110V, Io=100%)			
	Hold -up Time Typ.	[ms]	20 typ(AC IN 110V, Io=100%)			
Function	Over Voltage Protection	[V]	ZENER DIODE			
	Over Current Protection	[A]	3.15 5.1	3.15 5.1	3.15 5.1	3.15 5.1
	Remote ON.OFF	-	-	-	-	-
	Remote Sensing	-	-	-	-	-
	Power Fail Signal	-	-	-	-	-
	Parallel/Series Operation	-	-			
	Cooling / O.T.P	-	Convection cooling			
Electrical Isolation	(1) Input - Output	-	AC 3.0KV 1min, cut-off: 20mA / DC 500V 100MΩ			
	(2) Input - F.G	-	AC 2.0KV 1min, cut-off: 20mA / DC 500V 100MΩ			
	(3) Output - F.G	-	AC 0.5KV 1min, cut-off:100mA / DC 500V 100MΩ			
Environment	Operating temp. & Humidity	-	-10 +50 , 30 90% RH (Non Condensing)			
	Storage temp. & Humidity	-	-20 +75 , 20 90% RH (Non Condensing)			
	Vibration	-	10 55Hz at 2G 3minutes period, 30minutes along X,Y and Z axis			
Dimension	Size(WxHxD) / Weight	mm / g	64 x 97.5 x 32		/ 200	
Safety	UL60950 -1, EN60950 -1	-	-	-	-	UL, C-UL, CE
Emission	Conducted Emission	-	Complied with FCC Part15 and EN55022 Class A Limits			

(Specifications)

Product.	SMPS	Date.	2008.2.29
Model.	MSF15-S	Rev.	A
Customer.	STANDARD	Page.	2 / 3

MODEL/CHANNEL		Unit.	06	07	09	12
INPUT	Voltage , Frequency	[V]	AC100-240V (AC85 264V or DC120 370V), 50/60Hz (47 440Hz or DC)			
	Current	110V [A]	0.4	0.4	0.4	0.4
	Typ.	220V	0.2	0.2	0.2	0.2
	Efficiency	110V [%]	71	71	71	73
	Typ.	220V	71	71	71	73
	Power factor	110V -	-			
	Typ.	220V	-			
Inrush Current	110V [A]	20 (Ta=25 , Io=100% at cold Start)				
Typ.	220V	40 (Ta=25 , Io=100% at cold Start)				
Leakage Current	110V [mA]	0.4				
Max.	220V	0.75				
OUTPUT	Norminal Voltage	[V]	06	07	09	12
	Setting Voltage Range	[V]	5.94 6.06	6.93 7.07	8.91 9.09	11.88 12.12
	current	[A]	2.5	2.14	1.67	1.25
	Line Regulations	[mV]	30	45	45	60
	Load Regulations	[mV]	60	90	90	120
	Cross Regulations	[mV]	-	-	-	-
	Temperature Drift	[mV]	108	126	162	216
	Ripple Max.	[mV]	60	70	90	120
	Ripple & Noise Max.	[mV]	110	120	140	170
	Turn -on Time Typ.	[ms]	500 Max(AC IN 110V, Io=100%)			
	Hold -up Time Typ.	[ms]	20 typ(AC IN 110V, Io=100%)			
Function	Over Voltage Protection	[V]	ZENER DIODE			
	Over Current Protection	[A]	2.62 4.25	2.35 3.10	1.75 2.84	1.31 2.12
	Remote ON.OFF	-	-	-	-	-
	Remote Sensing	-	-	-	-	-
	Power Fail Signal	-	-	-	-	-
	Parallel/Series Operation	-	-			
	Cooling / O.T.P	-	Convection cooling			
Electrical Isolation	(1) Input - Output	-	AC 3.0KV 1min, cut-off: 20mA / DC 500V 100MΩ			
	(2) Input - F.G	-	AC 2.0KV 1min, cut-off: 20mA / DC 500V 100MΩ			
	(3) Output - F.G	-	AC 0.5KV 1min, cut-off:100mA / DC 500V 100MΩ			
Environment	Operating temp. & Humidity	-	-10 +50 , 30 90% RH (Non Condensing)			
	Storage temp. & Humidity	-	-20 +75 , 20 90% RH (Non Condensing)			
	Vibration	-	10 55Hz at 2G 3minutes period, 30minutes along X,Y and Z axis			
Dimension	Size(WxHxD) / Weight	mm / g	64 x 97.5 x 32		/ 200	
Safety	UL60950 -1, EN60950 -1	-	-	-	UL, C-UL, CE	UL, C-UL, CE
Emission	Conducted Emission	-	Complied with FCC Part15 and EN55022 Class A Limits			

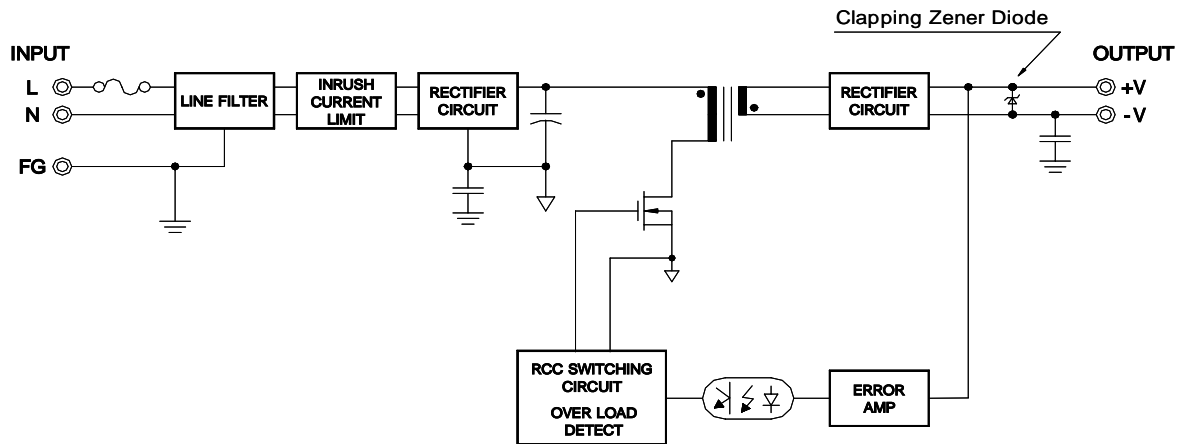
(Specifications)

Product.	SMPS	Date.	2008.2.29
Model.	MSF15-S	Rev.	A
Customer.	STANDARD	Page.	3 / 3

MODEL/CHANNEL		Unit.	15	24		
INPUT	Voltage , Frequency	[V]	AC100-240V (AC85 264V or DC120 370V), 50/60Hz (47 440Hz or DC)			
	Current	110V	0.4	0.4		
	Typ.	220V	0.2	0.2		
	Efficiency	110V	75	78		
	Typ.	220V	75	78		
	Power factor	110V	-			
	Typ.	220V	-			
Inrush Current	110V	[A]	20 (Ta=25 , Io=100% at cold Start)			
Typ.	220V		40 (Ta=25 , Io=100% at cold Start)			
Leakage Current	110V	[mA]	0.4			
Max.	220V		0.75			
OUTPUT	Norminal Voltage	[V]	15	24		
	Setting Voltage Range	[V]	14.85 15.15	23.76 24.24		
	current	[A]	1.0	0.62		
	Line Regulations	[mV]	75	120		
	Load Regulations	[mV]	150	240		
	Cross Regulations	[mV]	-	-		
	Temperature Drift	[mV]	270	432		
	Ripple Max.	[mV]	150	240		
	Ripple & Noise Max.	[mV]	200	290		
	Turn -on Time Typ.	[ms]	500 Max(AC IN 110V, Io=100%)			
	Hold -up Time Typ.	[ms]	20 typ(AC IN 110V, Io=100%)			
Function	Over Voltage Protection	[V]	ZENER DIODE			
	Over Current Protection	[A]	1.05 1.7	0.65 1.05		
	Remote ON.OFF	-	-	-		
	Remote Sensing	-	-	-		
	Power Fail Signal	-	-	-		
	Parallel/Series Operation	-	-			
	Cooling / O.T.P	-	Convection cooling			
Electrical Isolation	(1) Input - Output	-	AC 3.0KV 1min, cut-off: 20mA / DC 500V 100MΩ			
	(2) Input - F.G	-	AC 2.0KV 1min, cut-off: 20mA / DC 500V 100MΩ			
	(3) Output - F.G	-	AC 0.5KV 1min, cut-off:100mA / DC 500V 100MΩ			
Environment	Operating temp. & Humidity	-	-10 +50 , 30 90% RH (Non Condensing)			
	Storage temp. & Humidity	-	-20 +75 , 20 90% RH (Non Condensing)			
	Vibration	-	10 55Hz at 2G 3minutes period, 30minutes along X,Y and Z axis			
Dimension	Size(WxHxD) / Weight	mm / g	64 x 97.5 x 32		/	200
Safety	UL60950 -1, EN60950 -1	-	UL, C-UL, CE	UL, C-UL, CE		
Emission	Conducted Emission	-	Complied with FCC Part15 and EN55022 Class A Limits			

User's guide

1. BLOCK DIAGRAM



2. Terminal Connection

Mark	Pin Connection	Function
AC(L)	AC L	SMPS AC Terminal (Fuse in Line)
AC(N)	AC N	SMPS AC Terminal
F.G	Frame ground	SMPS AC , CASE
+	DC Output (+)	DC (+) Terminal
-	DC Output (-)	DC (-) Terminal

3. Function

3-1. (Adjustable output voltage range)

o 가 10%

3-2. (O.C.P : Over Current Protection)

o SMPS 가 110%

o short 가

User's guide

4. / (Series operation / Parallel operation)

4-1. A (Fig 1.) B (Fig 2.)

4-2. 가 가 (Fig 4.) 가 SMPS

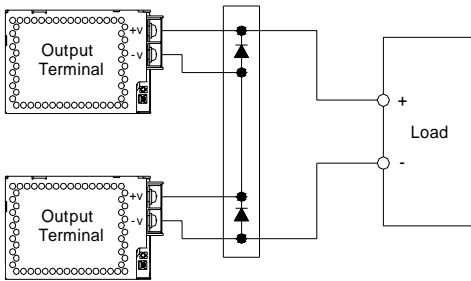


Fig 1. A

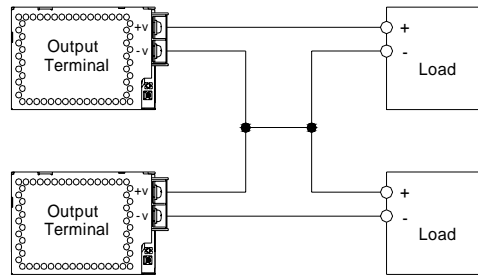


Fig 2. B

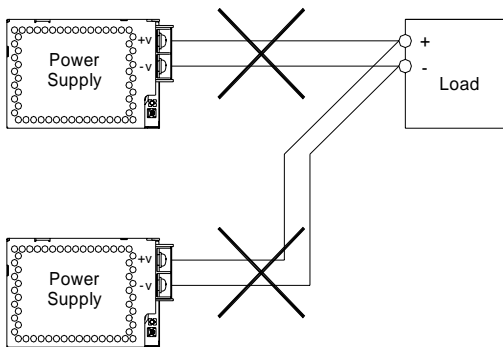


Fig 3. A (가)

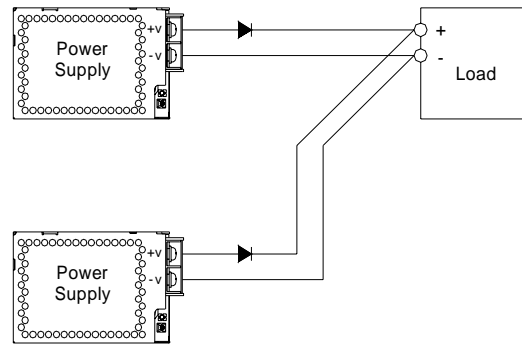


Fig 4. B (Back up)

User's guide

5. 실장방법 (Mounting method)

5-1. 본 제품은 자연냉각 방식의 제품으로 아래와 같이 방열실장을 하여 주시기 바랍니다.

- o 통풍을 고려한 배치를 검토하여 주십시오.
- o 여러대를 실장할 경우 제품간 간격을 띄어 주십시오.
- o 강제 공냉을 시켜 주시면 방열효과는 더욱 좋아집니다.

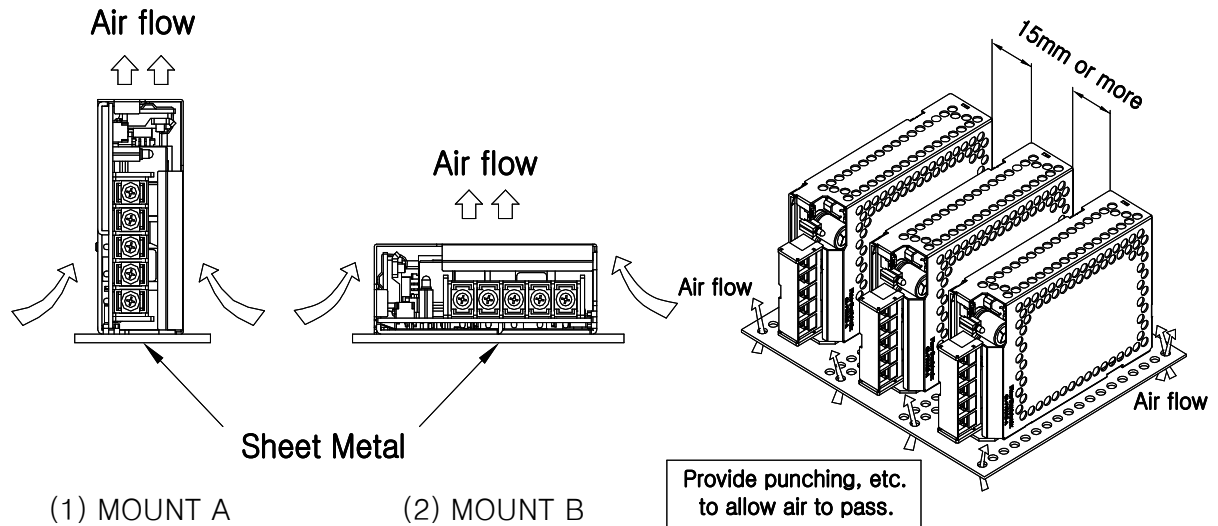


Fig 1. 기본 실장법

Fig 2. 응용 실장법

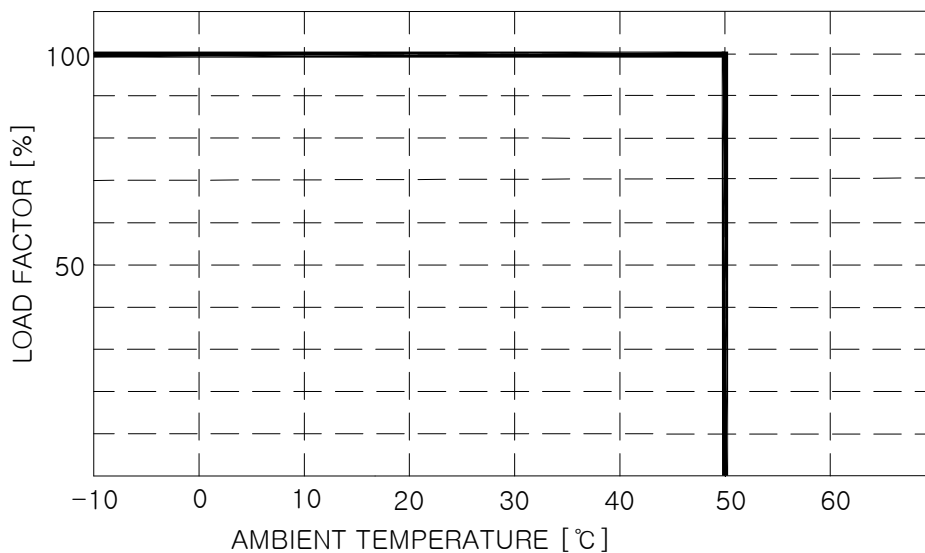
※ 상기 그림의 SMPS는 동작 설명을 위한 그림으로 실제 제품의 모양과는 다를 수 있습니다.

6. Output derating curve

6-1. 본 제품은 실장방법 (Mount A, Mount B) 에 따라 제품의 output derating curve를 고려하여야 합니다.

6-2. Output derating curve

6-2-1. MSF15-S



User's guide

7. 사용시 주의사항

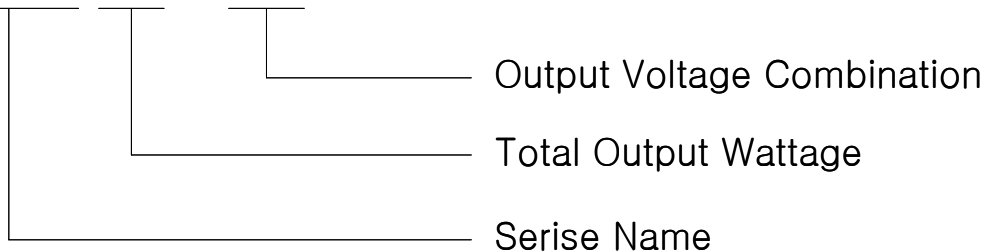
- 본 제품의 사용에 앞서 사용하고자 하는 용도에 맞는 용량의 제품임을 반드시 확인 바랍니다.
- 배선용 전선에는 종류에 따라 전압 및 전류의 허용치가 정해져 있으므로 본 제품과의 연결할 때 적절한 정격용량의 배선을 사용하시기 바랍니다.
- 본 제품의 내부나 입출력 단자 주위에 이물질이 들어가는 경우 부품의 파손 등 제품 고장의 원인이 되므로 주의 바랍니다.
- 안전과 제품의 신뢰성을 위하여 다음의 장소에서는 사용하지 마십시오.
 - 물기 및 화기가 닿기 쉬운 장소
 - 통풍이 잘되지 않으며 주위온도가 높은 장소
 - 이물질 및 먼지가 많은 장소
 - 휘발성 및 인화성 물질이 있는 곳
 - 습기가 많은 장소
 - 진동 및 충격이 심한 장소

8. 품질보증

- 제품의 품질보증기간 내에 정상적인 사용으로 발생한, 성능, 기능상의 하자에 대해서는 무상으로 수리해 드립니다. 단, 소비자의 고의 또는 과실로 인한 경우는 유상으로 수리해 드립니다.
- 본 제품의 품질보증 기간은 3년이며, 제품의 품질을 높이기 위하여 외관 및 규격은 소비자에게 통보없이 변경될 수 있습니다.

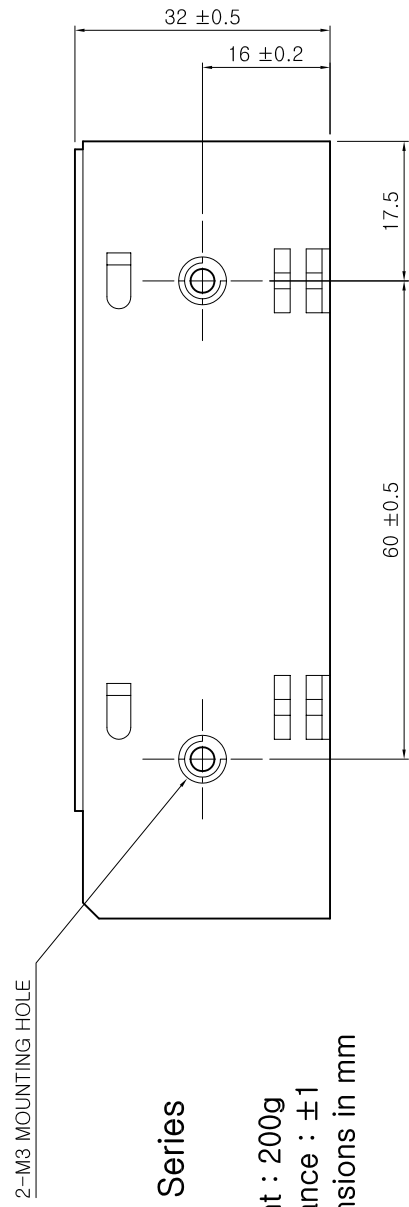
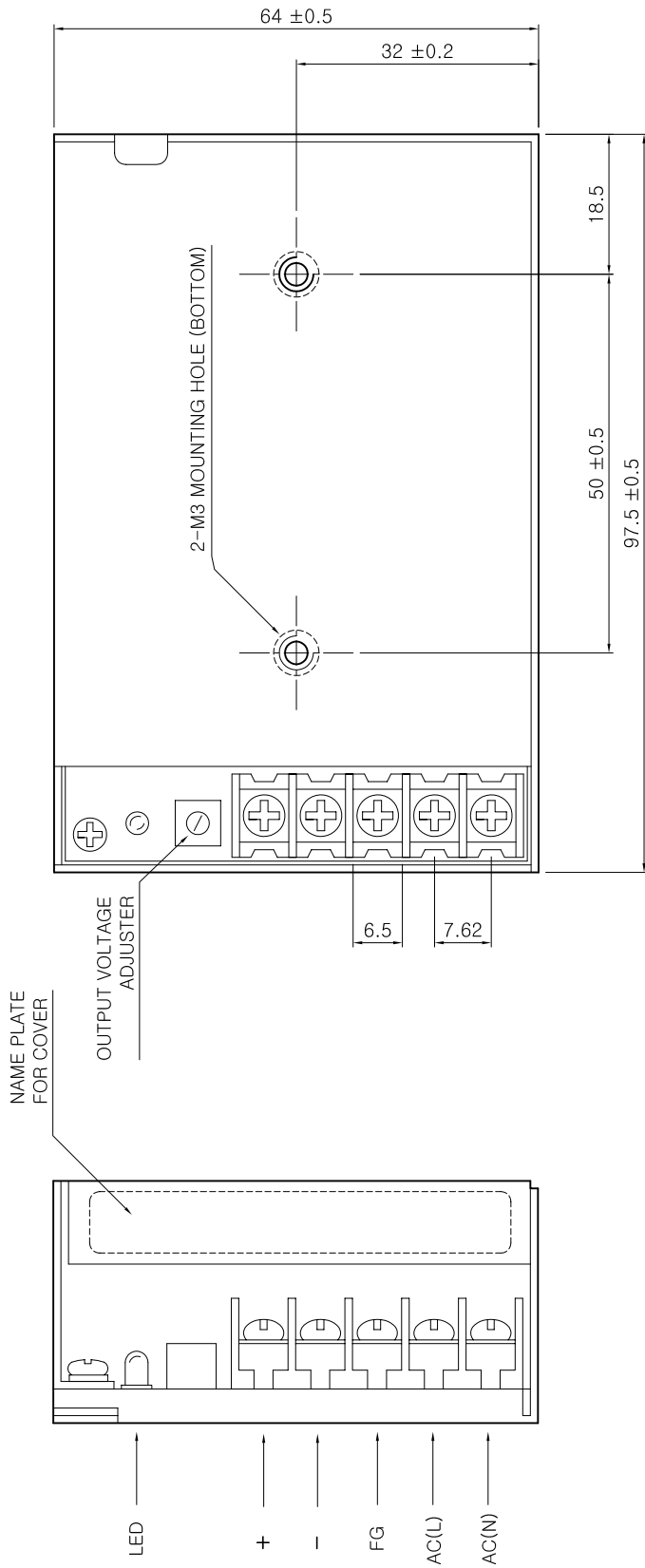
8. ORDERING INFORMATION

MSF15-05



Dimension

MSF15-S Single Output



※NAME PLATE ; MSF15 Series

MSF15-05 Fine Suntronix	
INPUT : 85 - 264VAC	~ 0.4A
50/60Hz	
OUTPUT : 5V	-9A
MADE IN KOREA	
S160219502	

- * Weight : 200g
- * Tolerance : ± 1
- * Dimensions in mm

INPUT ()

- o Input Voltage (): AC() (110VAC, 220VAC) DC()
(5VDC, 12VDC)
- o Input Current (): 가
- o Input Wattage (): SMPS
- o Input Frequency (): AC() 50Hz, 60Hz(60Hz)
- o Input Efficiency ():
- o Inrush Current ():
- o Leakage Current (): 1 Capacitor
- o Power Factor ():

OUTPUT ()

- o Output Voltage (): DC()
- o Output Current (): DC()
- o Output Wattage (): SMPS가 DC (X)
- o Line Regulation (): AC() DC()
DC()
- o Load Regulation (): min~100% DC()
- o Cross Regulation (): SMPS min~100%
DC()
- o Temperature Drift (): SMPS DC()
- o Ripple & Noise (): DC()
- o Turn on Time (): DC() 90%
- o Hold up Time (): DC() 90%

FUNCTION ()

o Over Current Protection (OCP,) : SMPS
SMPS

o Over Voltage Protection (OVP,) : SMPS가 DC()
SMPS가 DC()

o Over Temperature Protection (OTP,) : SMPS 가

o Remote ON/OFF (RC or CNT,) : SMPS ON/OFF

o Remote Sensing (+S, -S,) : SMPS 가

o Load Detect (LD,) :

o Adjustable Output Voltage (V.R,) : SMPS
가 TRM

o Power Fail Signal (P.F,)

1) P.F : 가

2) P.F : SMPS

o Low Voltage alarm (LV alarm,) : SMPS

o Power alarm (PR alarm,) : SMPS AC , FAN
(P.F, LV alarm, FAN alarm)

o Parallel / Series Operation (/) : SMPS
가

o Voltage Balance (VB,) : 가

o Current Balance (CB,) : 가
가

o Frame Gnd(FG), AC Gnd(ACG) : Frame Ground, AC Ground

ELECTRICAL ISOLATION ()

o Electrically Isolated Input-Output (-) : AC()
DC()

o Electrically Isolated Input-Case, FG (- ,) : AC()

o Electrically Isolated Output-Case, FG (- ,) : DC()

ENVIRONMENT ()

o Operating Temp and Humidity (&) : SMPS

o Storage Temp and Humidity (&) : SMPS ,

o Vibration () : SMPS가

ETC ()

o Safety () :

o Safety Regulation () :

o Line Conducted RF Voltage () :