Scanning	LIB.

SPECIFICATION FOR APPROVAL

• **CUSTOMER**	**:**
• **ITEM**	**: Power Supply Unit.**
• **DESCRIPTION**	**:** Monitor Power Supply Unit
• **CUSTOMER P/NO**	**:**
• **SUPPLIER P/NO**	**: HNP-2400**
• **DATE**	**: 2017-01-12**

CUSTOMER'S APPROVED

APPROVED		
2017. . .		
MODEL	**Power Supply Unit**	
DESC	Monitor Power Supply Unit.	
PART NO	**HNP-2400**	
EN'GR	**CHKD**	**APPD**

*** REV NO: AA**

	CUIT	MECH	SAFETY	EMI
CHKD				
APPD				

REMARK

MAKER : HUNPOWER Co.,Ltd.

TEL : 82-32-668-7687

FAX : 82-32-668-7688

DOCUMENTATION FOR APPROVAL

Product	**Monitor Power Supply Unit**
Model Name	**HNP-2400**
Customer P/No.	

Written	Checked	Approved
연구소 2017.01.12 정채규	접수 2017.01.12 연구소	승인 2017.01.12 연구소

CONTENTS

Revision history

Rev No.	Contents	Date of approval	Checked	Remark
AA	Enactment	2017.01.11		

POWER SPECIFICATION

1. INTRODUCTION

1.1 Product Description

This specification defines the input, output, performance characteristics, environment, noise and safety requirements for a monitor power supply.

1.2 Parameter Specification

Unless specification otherwise, all parameters must be met over the limit of temperature Load, and input voltage.

2. ELECTRICAL REQUIREMENTS

2.1 Input Requirements

2.1.1 Input Voltages

- Normal Voltage: 220 ~ 240 Vrms
- Voltage Range : 180 ~ 264 Vrms

2.1.2 Input Frequency

- Normal Frequency: 50 ~ 60Hz
- Frequency range : 47 ~ 63Hz

2.1.3 Input Current

- under 3 Arms at 100Vac & load Max

2.1.4 Configuration

- 3 Conductors (Live, Neutral, F.G)

2.1.5 Input Fuse

- The live line side of the input shall have a fuse.

2.1.6 Primary Over Current Protection

- An adequate internal fuse on the AC input line shall be provided.

2.1.7 Inrush Current

The inrush current of power supply shall be less than the rating of its critical components (including bulk rectifiers and surge limiting device) for all condition of line voltage of 2.1.1

- Cold start: under 60Ap-p at AC 180Vac ~ 264Vac

2.1.8 Efficiency

The power supply efficiency shall be more than 80% measure at the 220Vac maximum load as specified in paragraph 2.2.1 with the AC input set at the nominal voltage.

2.1.9 Power Factor

- over than 0.9 at 180~264Vac & max load condition.

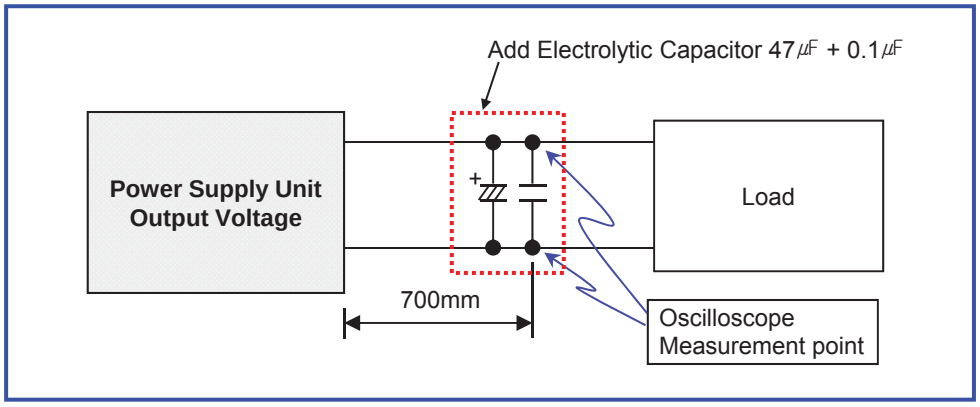
2.2 Output Requirements

2.2.1 Maximum Output Voltage and Current

Output Name	Output Typical (V)	Voltage Tolerance (%)	Output Current(A)	
			Min.	Max.
24V	24.0	±5	0	10A

2.2.2 Ripple and Noise

Ripple and noise are defined as periodic or random signal over frequency band of 10Hz to 20MHz.
Measurements shall be made with an oscilloscope with 20MHz bandwidth.



Output Voltage	24V
Ripple Voltage Range (mVp-p)	480mV

※ Ripple and noise are measured at the end of output cable which are added a 0.1uF ceramic capacitor and 47uF electrolytic capacitor.(connected parallel)

2.3 Power Output Protection

2.3.1 Over Current Protection(OCP)

The power supply shall not be damaged by a over current from the output to return Line.
Protection to be invoked if current exceed maximum rating about 10% or more.
The other lines shell be in maximum load condition

2.3.2 Short Circuit Protection(SCP)

An output short circuit is defined as output impedance of less than 0.1 ohms.
The power supply shall not be damaged by short between DC output and DC ground.

2.3.3 Specification of Protection operating

NO	Output Voltage Name	*1) Over Current Protection		Short Circuit Protection
		Range [A]	Protection	
1	24V	15A or more	Hicc-up	Shut Down

*1 The O.C.P point is measured when other output load is a maximum.
No hardware failure and No fire, when the output voltage decrease to 10%(Voltage Drop)

3. RELIABILITY

3.1 Mean Time Between Failure(MTBF)

The power supply shall be designed and produced to have a mean time between failures (MTBF) Of 40,000 operating hours at 90% confidence – level while operating under the following condition.

- AC input voltage : 230Vac
- Duty cycle : 6hours ON, 2hours OFF
- Ambient Temp. : 25 ± 2℃
- Humidity : prevailing condition

3.2 Life/Power On Hours

The power supply must be designed to operate for 40,000 power on hours.
About 5 years at an ambient temperature of 25℃

3.3 Burn-in Test Condition

More than 1 hours at 40℃(±5℃), Normal input voltage.
AC on/off must be test 1 time after burn-in.

Output Voltage	24V
Aging Load [A]	6.0A

☞ Test condition
- Test equipment: Electronic load → CR-mode(Continuously resistance)

4. SAFETY & EMS

4.1 Earth Leakage current

The power supply leakage current shall be less than 0.5mA

4.2 Hi-Pot Test(Dielectric withstand voltage)

① Primary to Secondary : 3.0KVac for 1 minute
→ 3.6KVac for 1 seconds (mass production)
② Primary to F.G : 1.5KVac for 1 minute
→ 1.8KVac for 1 seconds (mass production)
※ Cut-off current : 10mA

4.3 Insulation Resistance

Insulation resistance shall be 8MΩ or more at 500Vdc between primary Live, Neutral line and secondary.

4.4 Input AC Surge

The power supply withstand 300Vrms input for 10 seconds.

4.5 Surge & Impulse Test

① Lightning Surge : ±4kV(L1 ~ L2) 3 time, ±4kV(L1 ~ FG, L2 ~ FG) 3 times
② Impulse Noise Test : 2kV, Normal/Common mode, Polarity(+,-) / Phase(0˚ ~ 360˚)

4.6 RFI / EMI Standards

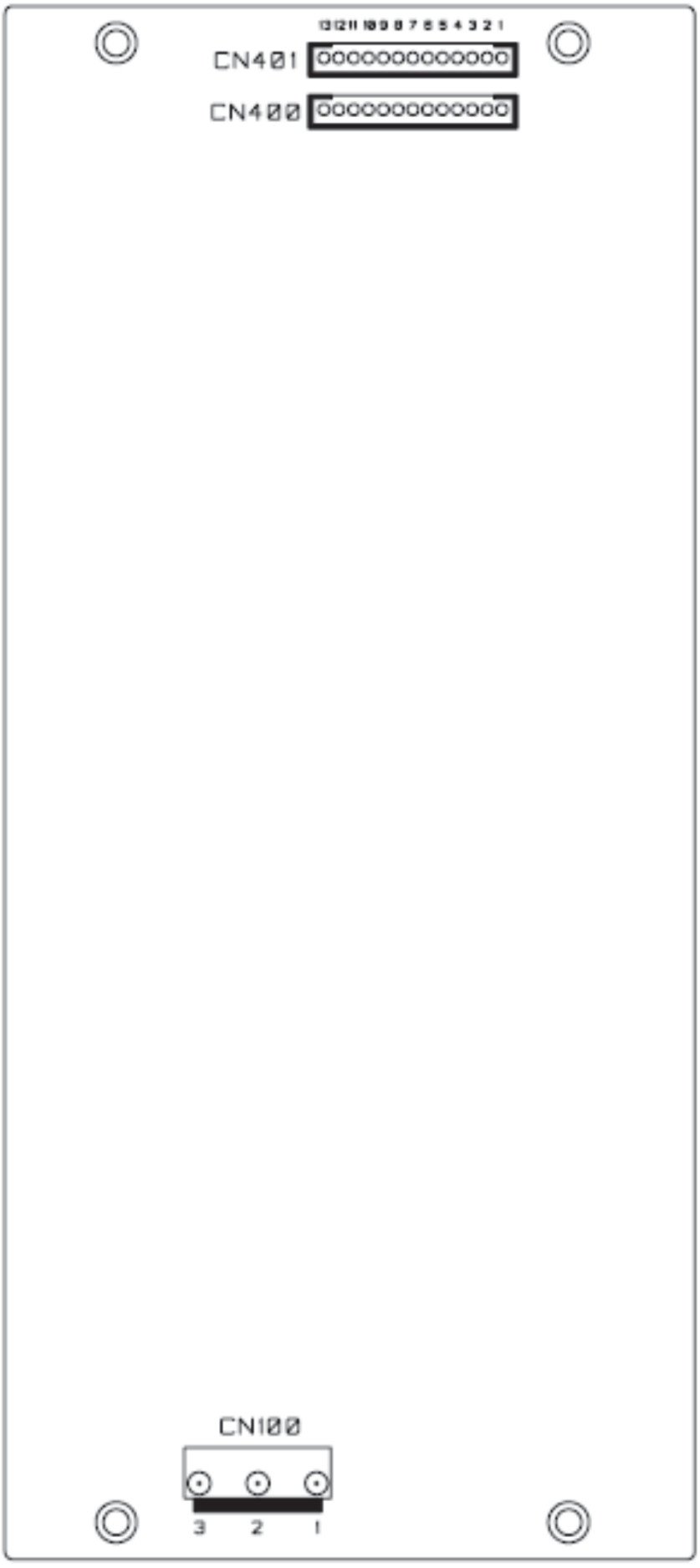
The power supply shall comply with a following RFI/EMI standards when tested in a system configuration.
- CISPR, class A

The limits shall be met with a margin of at least more than 5dB at all applicable frequencies.

4.7 Safety Standards

The Power Supply Unit shall be tested with the following safety standards.
- UL60950, UL6500
- IEC60950, IEC60065
- EN60950, EN60065

5. CONNECTOR PIN ASSIGNMENT & SPECIFICATION



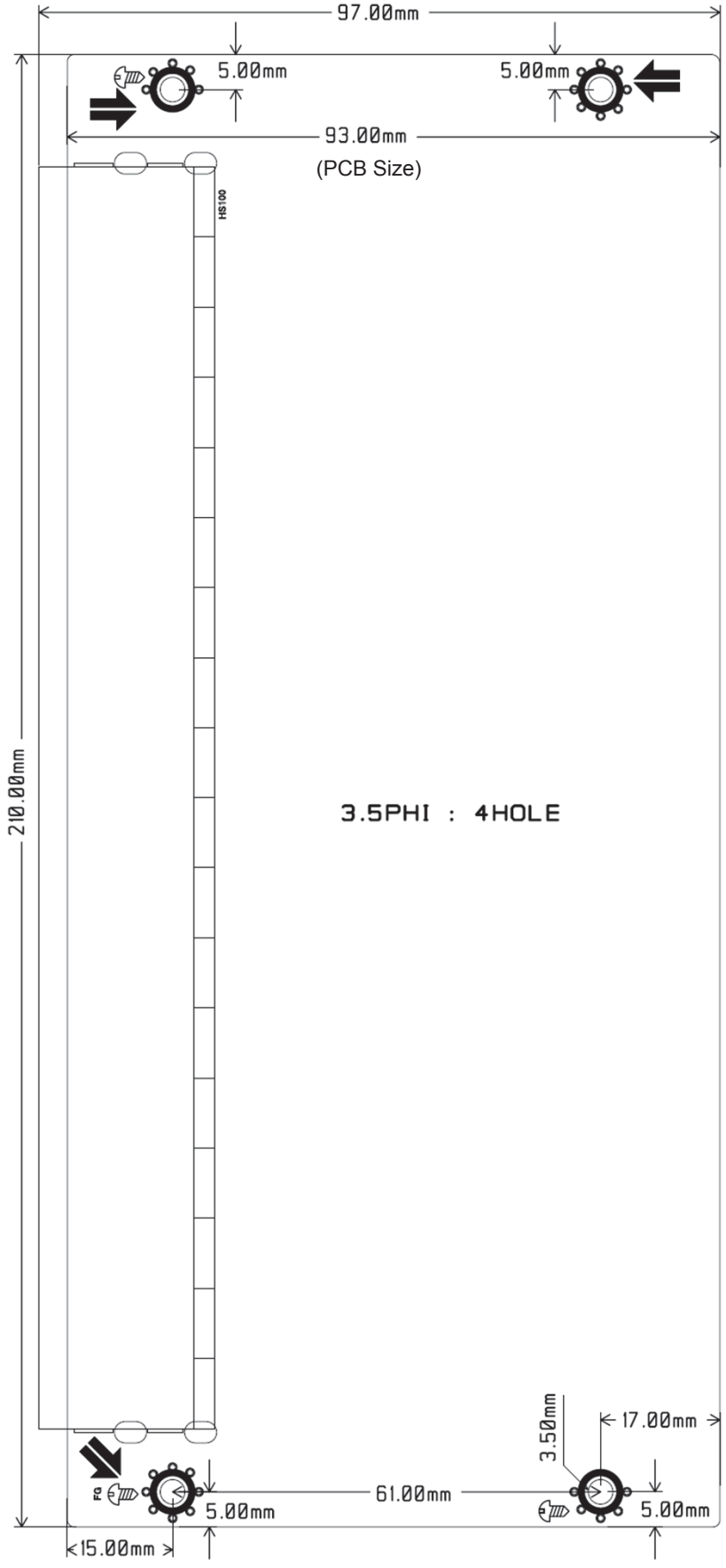
Location No.	Specification	Vendor
CN100	YW396-05AV	Yeon Ho
CN400	SMW200-13	Yeon Ho
CN401	SMW200-13	Yeon Ho

Pin	CN100	CN400 CN401
1	ACB	P-DIM
2	ACL	A-DIM
3	FG	EN
4		GND
5		GND
6		GND
7		GND
8		GND
9		+24V
10		+24V
11		+24V
12		+24V
13		+24V

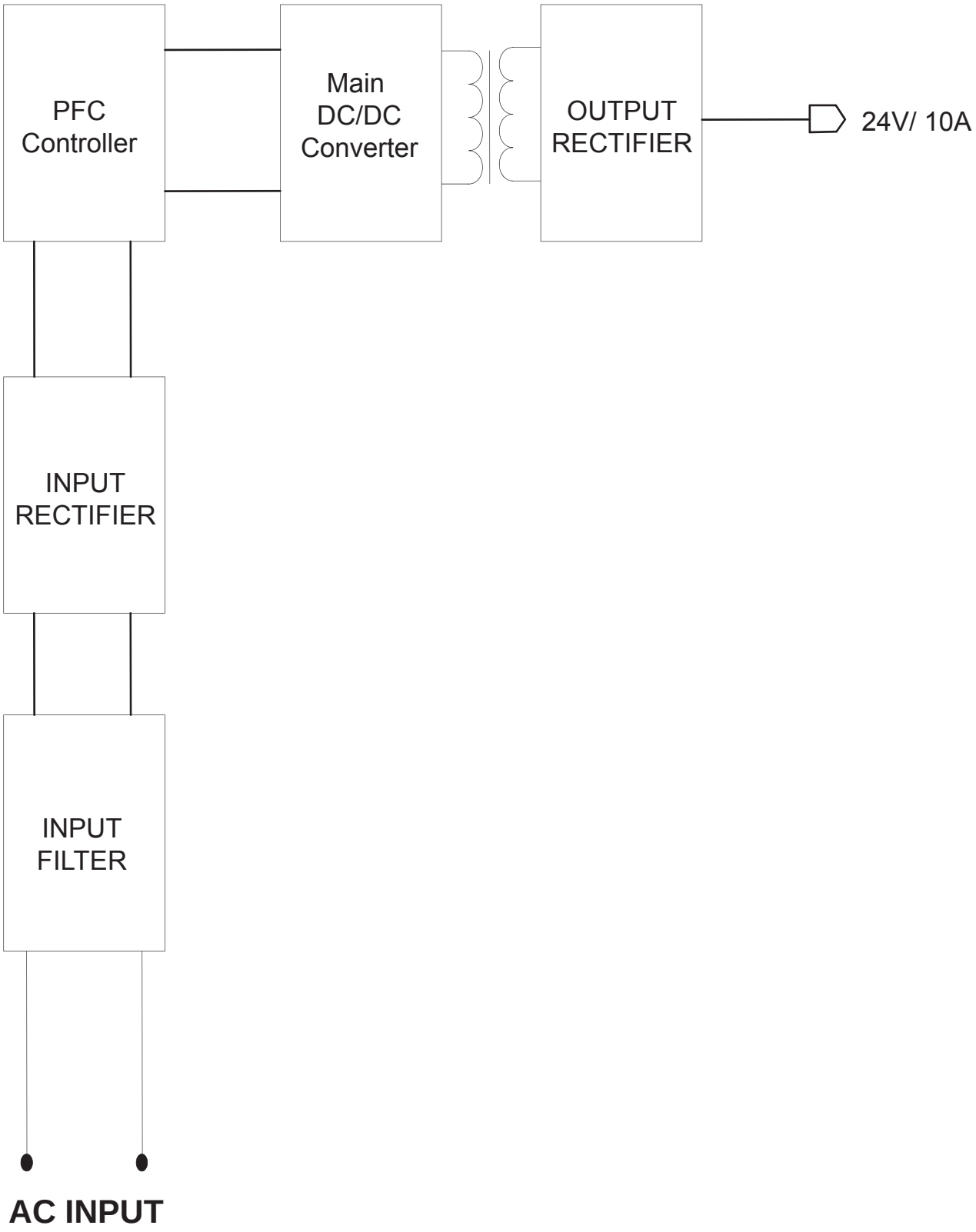
6. PSU ASSEMBLY DIMENSION

- Size : 97(W) × 210(L) Height : 36mm max (distance between PCB and component)
- Weight : 660g max

* PCB size : 93mm(W) X 210mm(L)

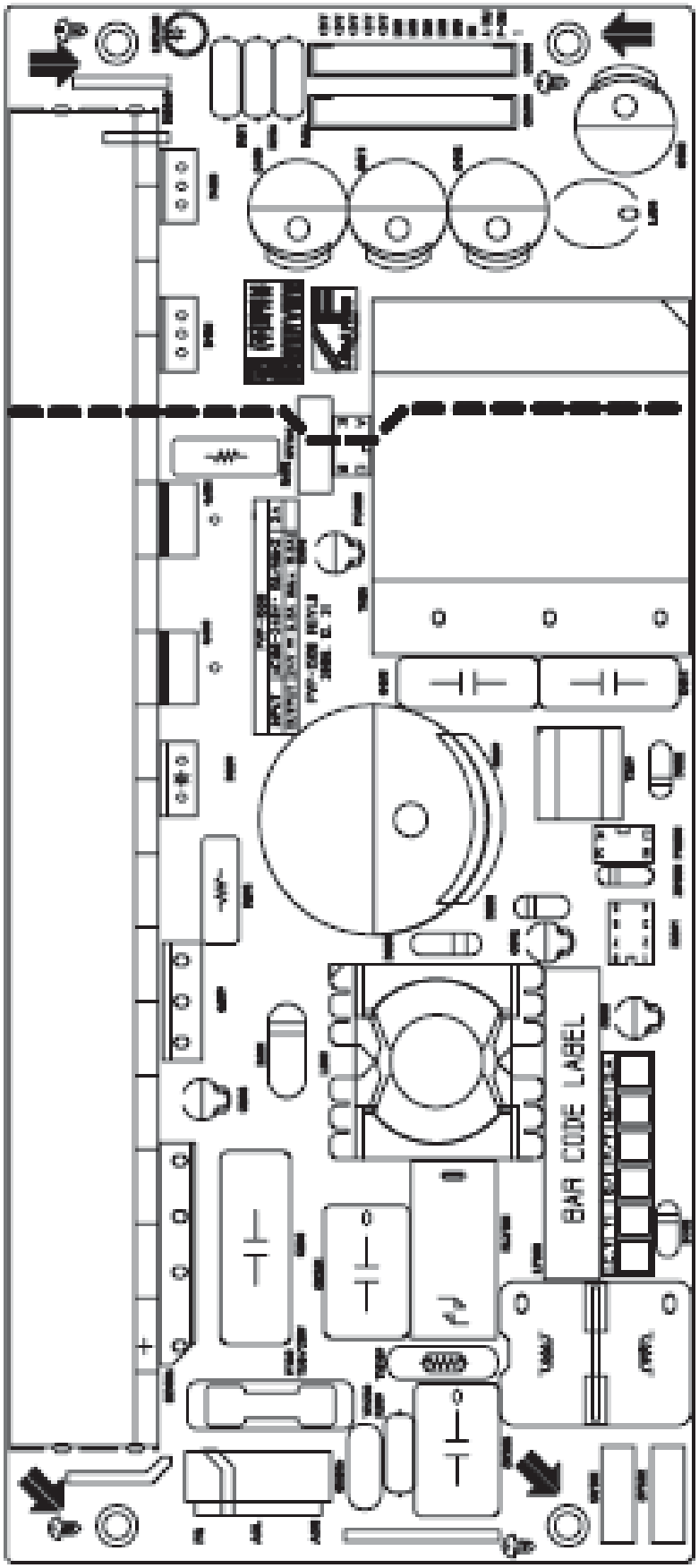


POWER BLOCK DIAGRAM

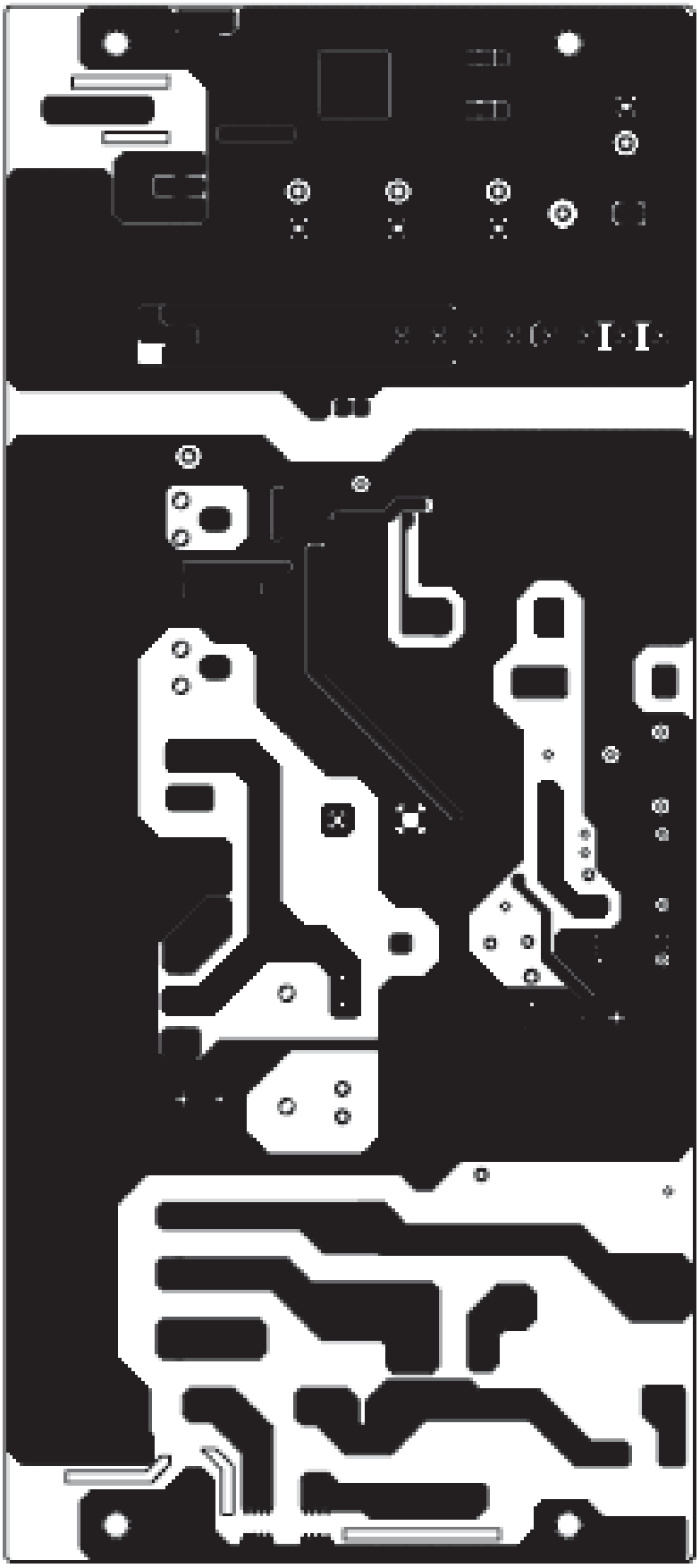

PFC
Controller
Main
DC/DC
Converter
OUTPUT
RECTIFIER
24V/ 10A
INPUT
RECTIFIER
INPUT
FILTER
AC INPUT

POWER PCB DRAWING

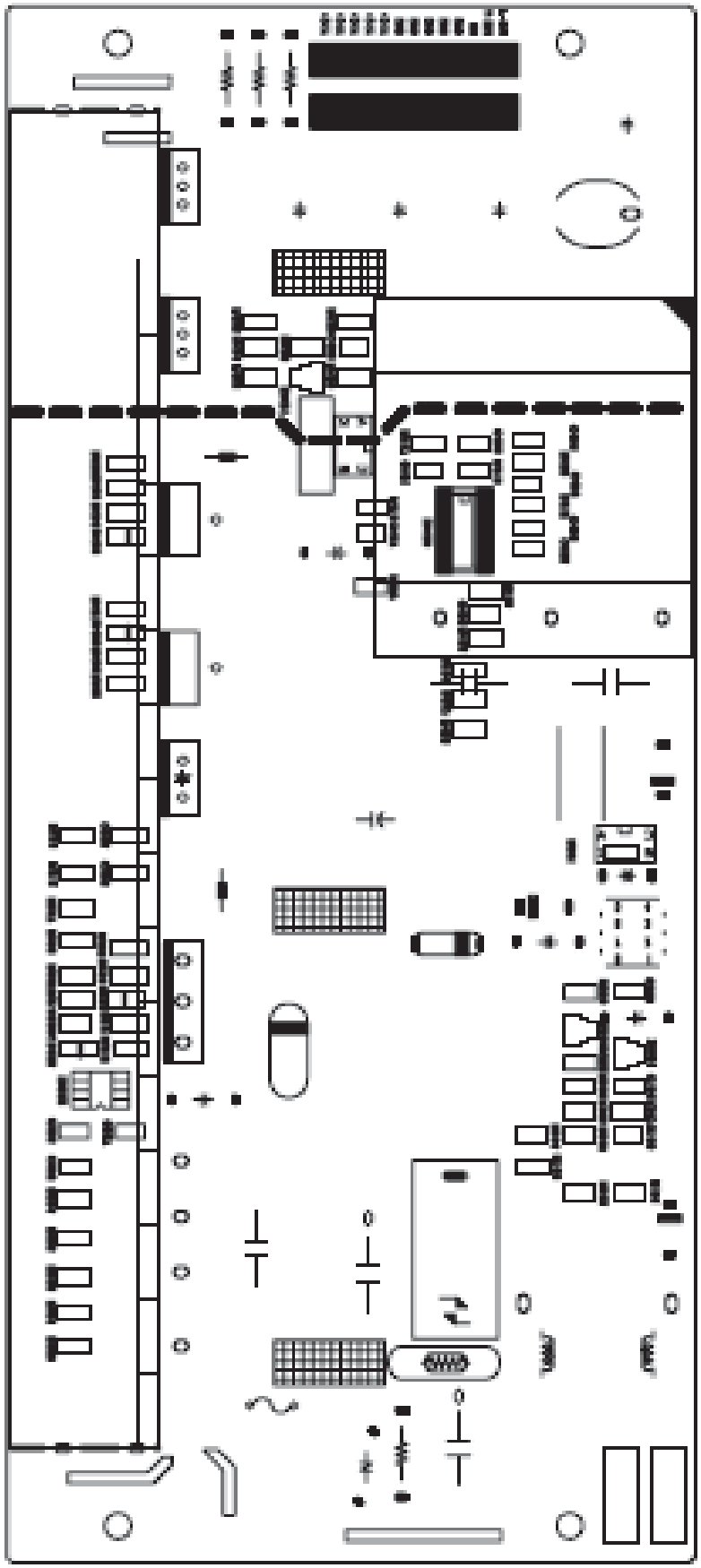
TOP - SILK



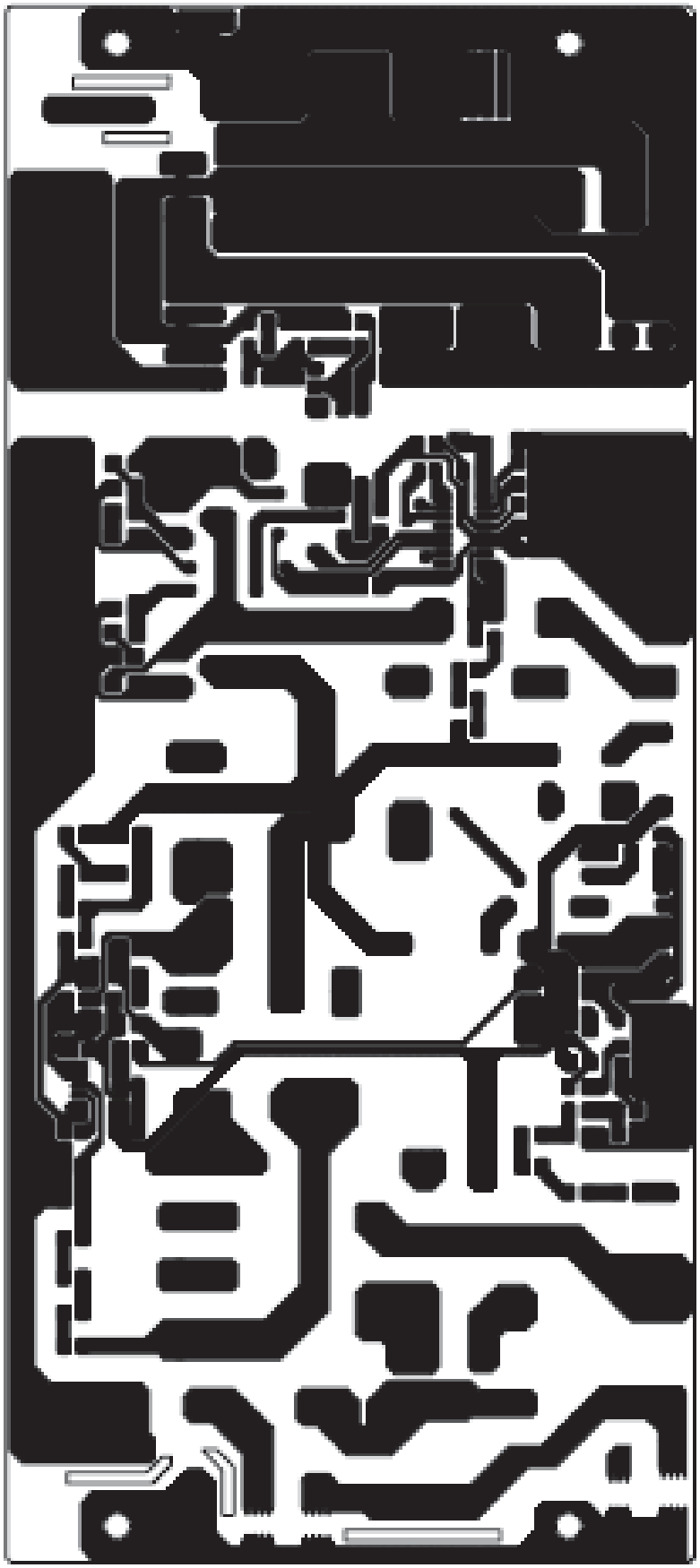
TOP - ELECT



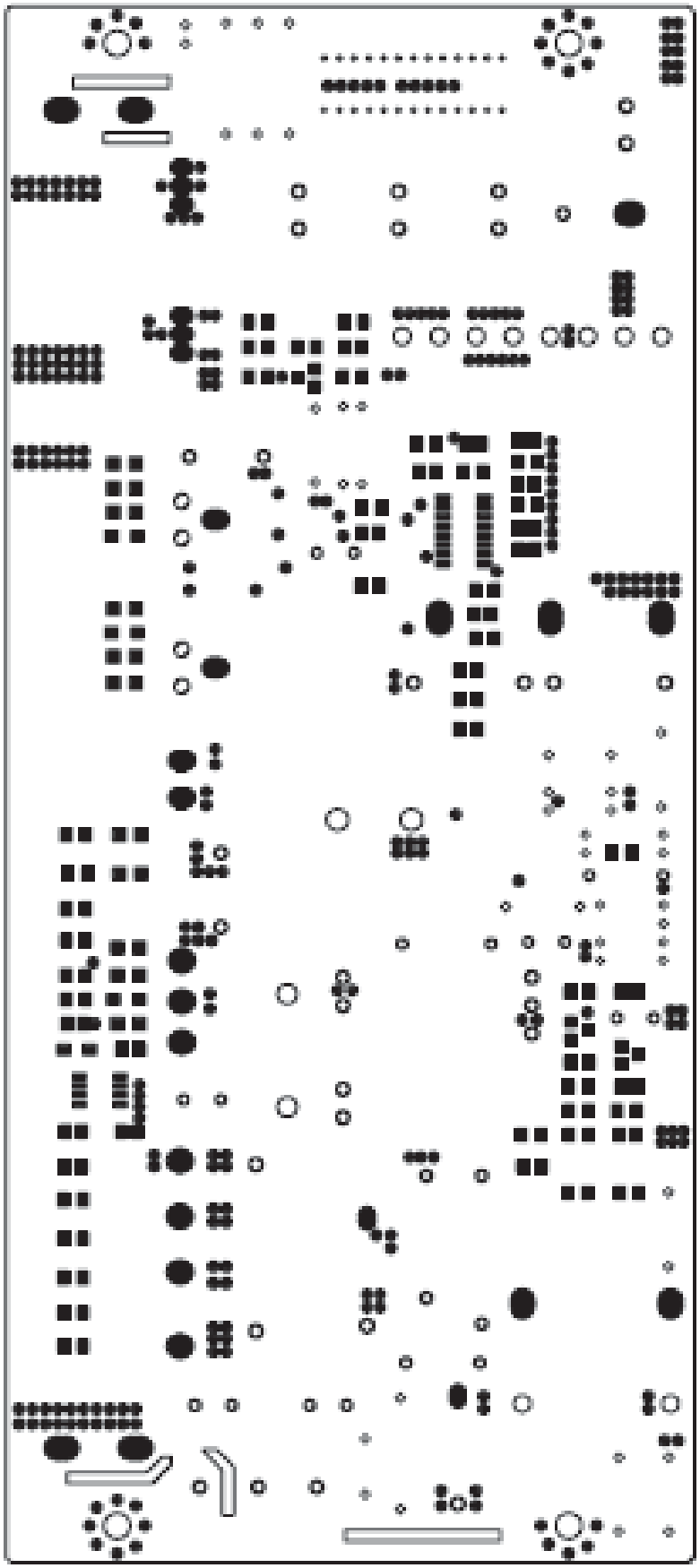
BOTTOM-SILK



BOTTOM - ELECT

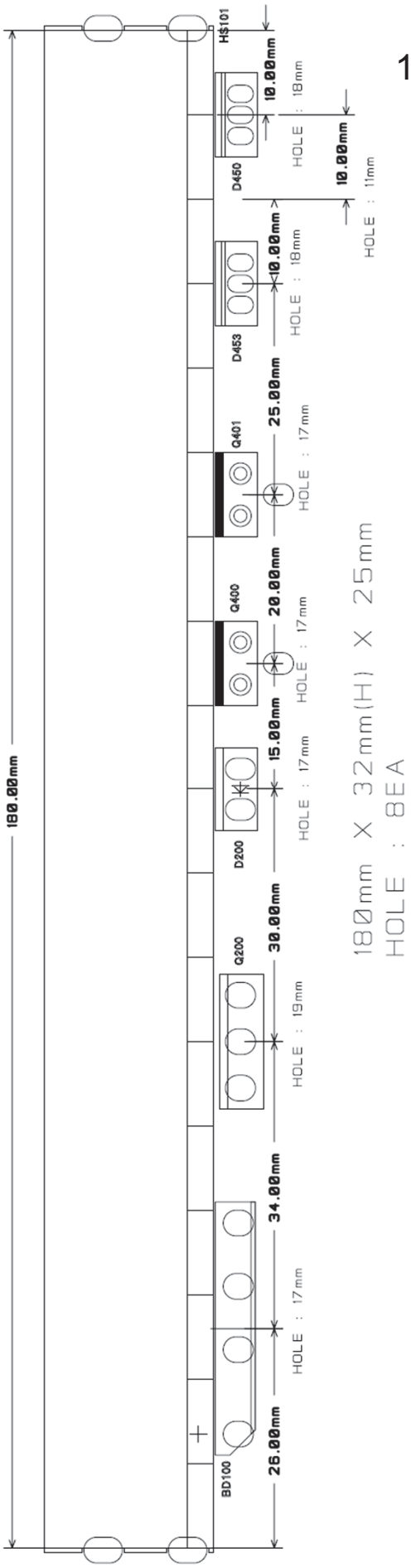


BOTTOM-SOLDER MASK

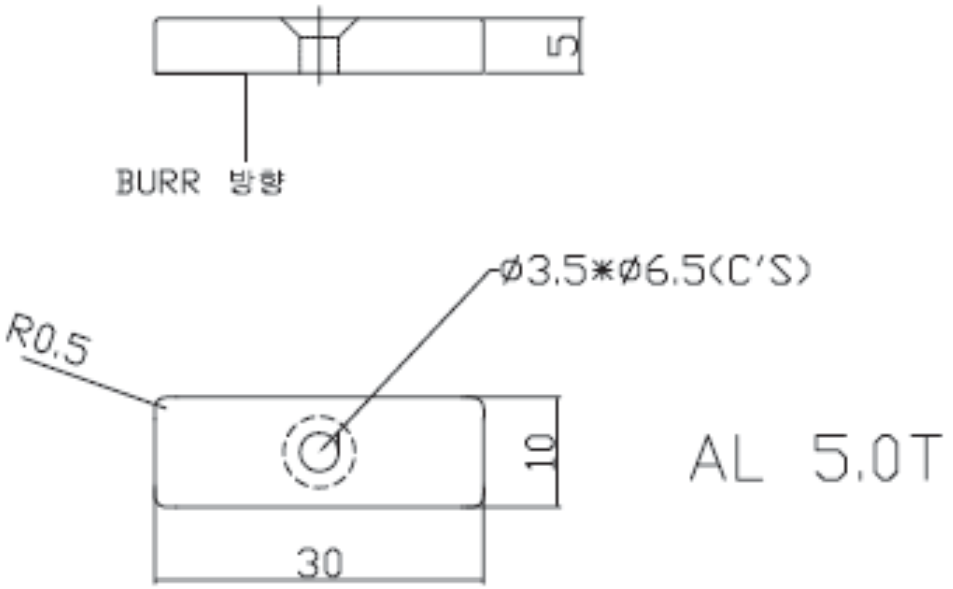


Mechanical Schematic DRAWING

HNH-015A
180mm X 25mm X 32mm



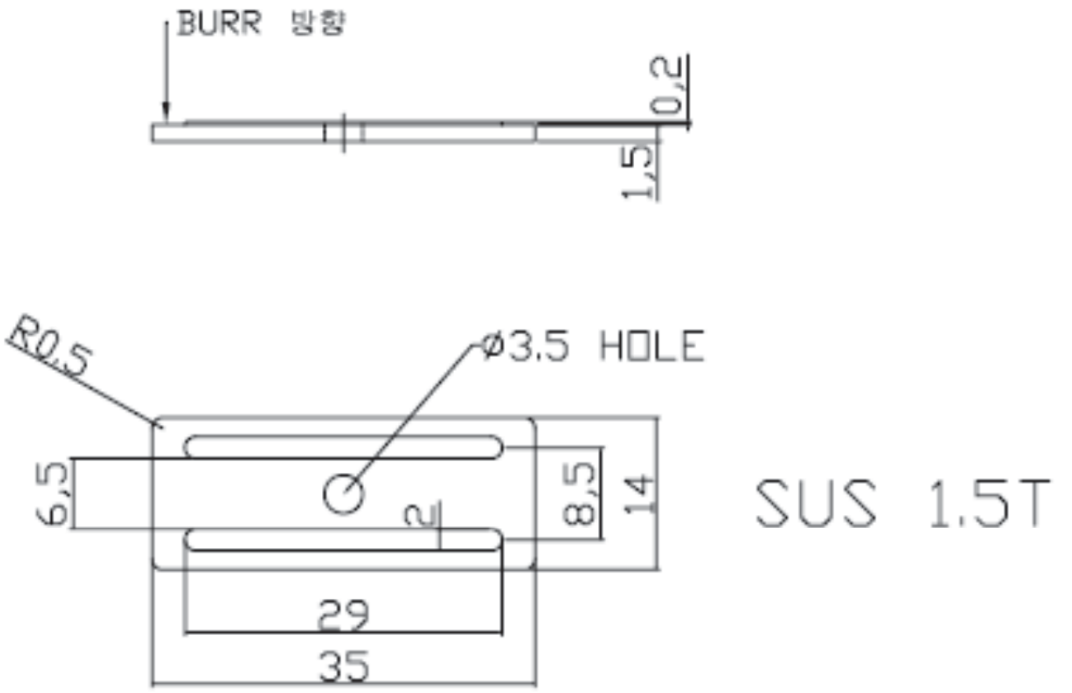
주문처	(주)파워뷰	PART NO.	PVH-042A



일반공차	기본치수	1급	2급	3급	4급
	~5 이하	0.05	0.09	0.2	0.3
	5~18 이하	0.06	0.1	0.3	0.4
	18~50 이하	0.1	0.15	0.4	0.6
	50~180 이하	0.2	0.3	0.8	1.2
	180~500 이하	0.3	0.5	1.2	2.0
	500~1000 이하	0.5	1.0	2.5	4.0

품 명	Heat Sink	NOTE	주1) 찍힘, 긁힘, 등 외관이상 없을 것. 주2) 모든 BURR는 제거 할 것. 주3) 제품승인을 득한 후 양산할 것.		1-ø3.5
규 격	30 x 10 x 5t				
모 델 명	PVP-1560				
도 번	PVH-042A				
ALLOY & TEMPER	AL1050	DATE	2010.01.15	SCALE	
DESIGNED / CHECKED	APPROVED / APPROVED	DRAWING NO.		SHAPR NO.	

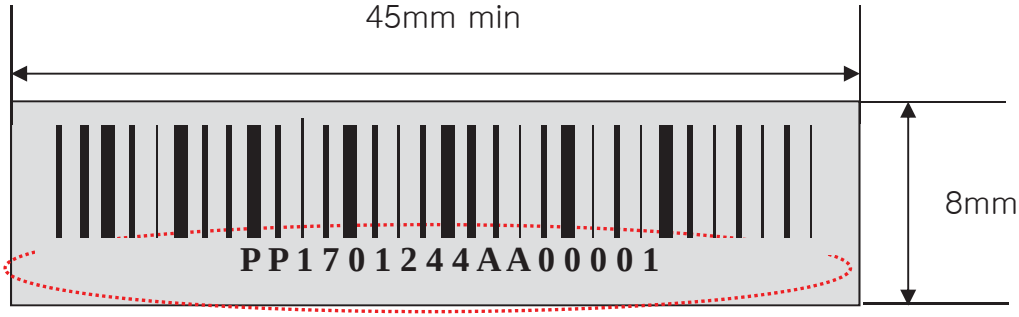
주문처	(주)파워뷰	PART NO.	PVH-043A



치수허용차	1급	2급	3급	4급
~5 이하	0.05	0.1	0.2	0.3
5~18 이하	0.05	0.1	0.3	0.4
18~50 이하	0.1	0.15	0.4	0.6
50~180 이하	0.1	0.2	0.6	1.0
180~500 이하	0.2	0.3	1.2	2.0
500~1000 이하	0.3	1.0	2.5	4.0

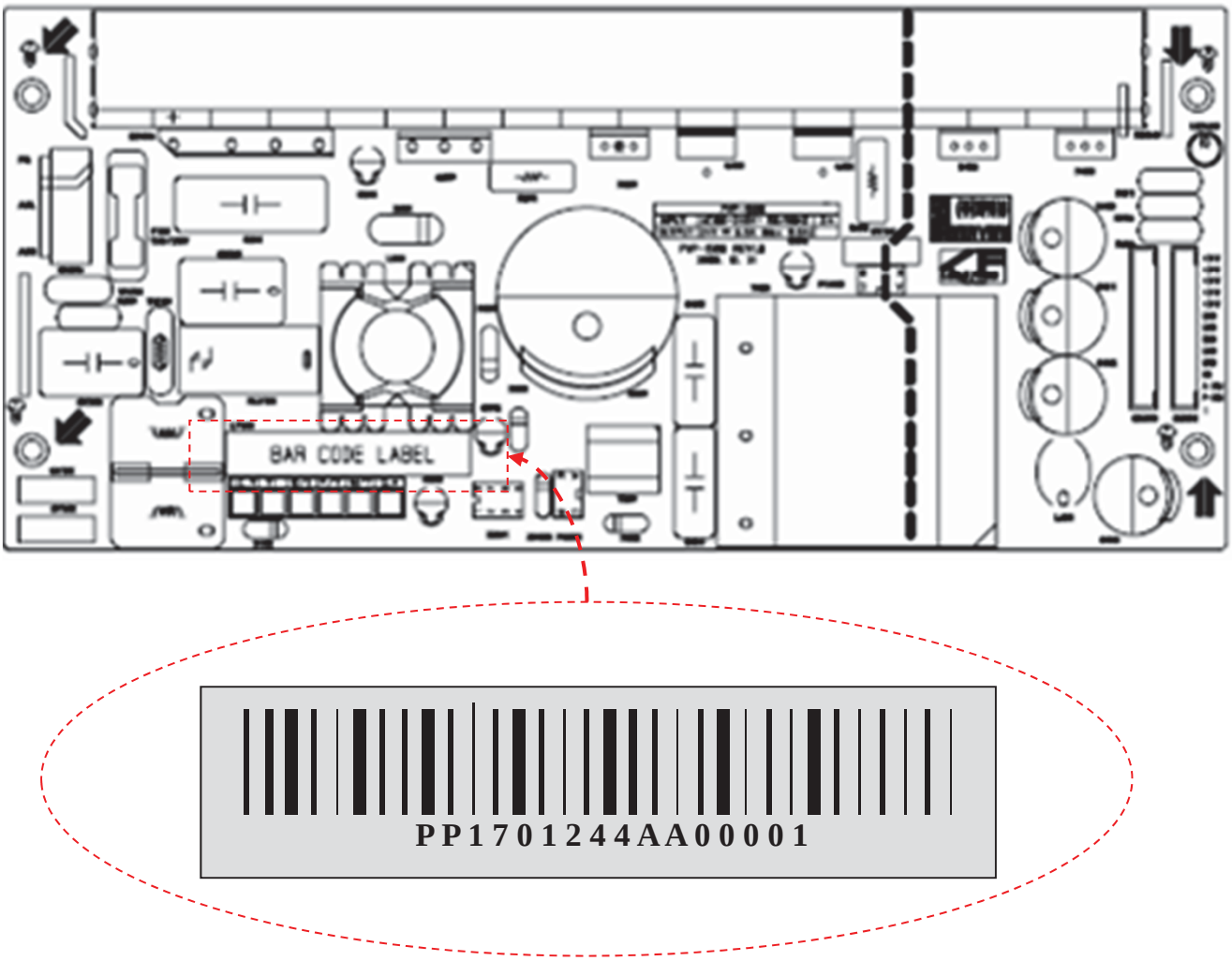
품 명	Heat Sink	NOTE	※1) 찍힘, 긁힘, 등 외관이상 없을 것. ※2) 모든 BURR는 제거 할 것. ※3) 제품승인을 득한 후 양산할 것.		1-Ø3.5
규 격	35 x 14 x 1.5t				
모 델 명	PVP-1560				
도 번	PVH-043A				
ALLOY & TEMPER	SUS1.5t	DATE	2010.01.15	SCALE	
DESIGNED / CHECKED	APPROVED / APPROVED	DRAWING NO.		SHAPR NO.	

Power Bar-code Label DRAWING



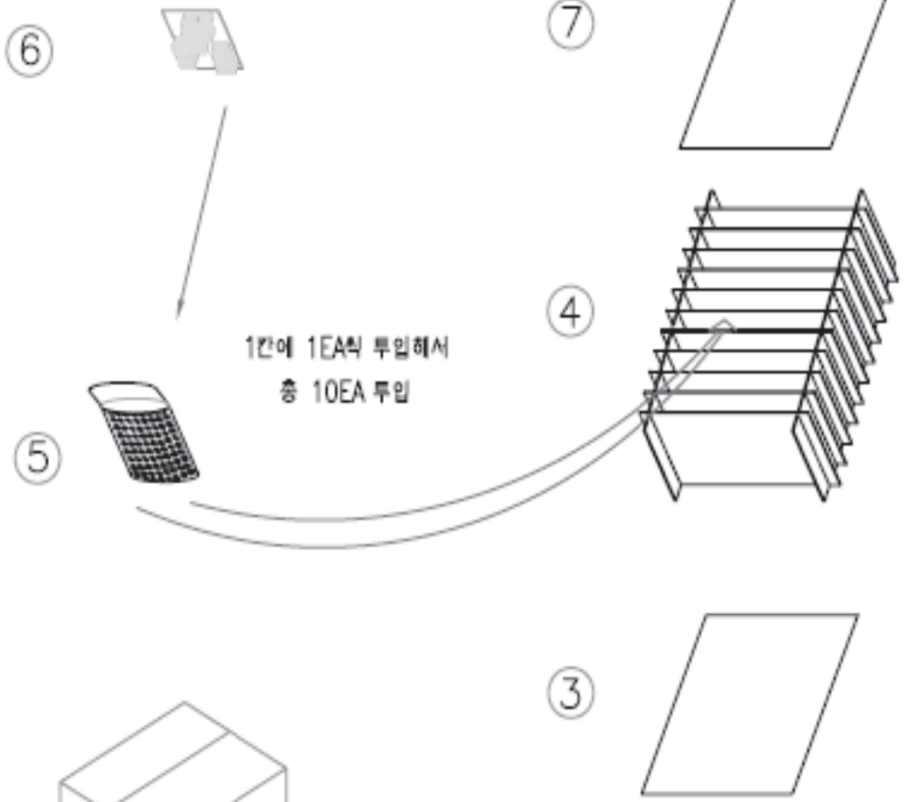
PP1701244AA00001

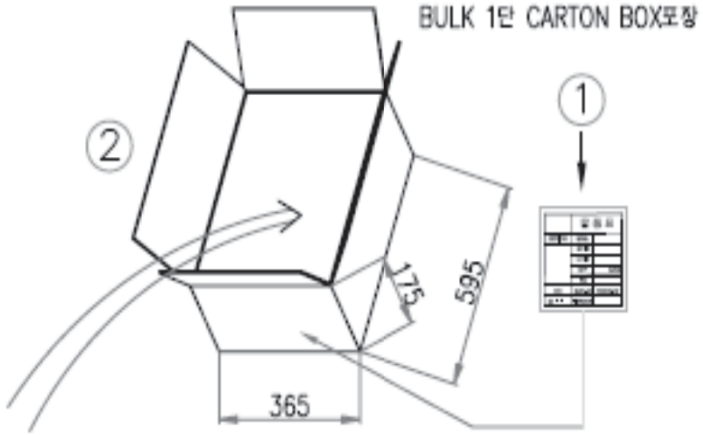
일 련 번 호 :	00001,00002,…
제 품 REV :	AA,AB,AC, …
MODEL NO.:	244: PVP-2400
제 조 주 차:	01 : 1주차
제 조 년 도:	17 : 2017년
M o d e l :	P: Power Board
V e n d o r :	P: HU&POWER



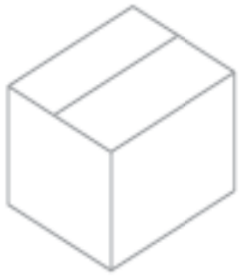
POWER PACKING DRAWING

번호	적용일시	변 경 내 역	변 경 사 유	작성자
1	- -			
2	- -			





NO	DESCRIPTION	MATERIAL	Q'TY
7	PAD	S/W(5t±1) 265X595	1/10
6	POWER SUPPLY	PVP-1560	10/10
5	BUBBLE BAG	280x240	10/10
4	BULK		
3	PAD	S/W(5t±1) 365X595	1/10
2	CARTON BOX	D/W(5t±2) 365X595X175	1/10
1	물 품 표		1/10



포장 완료 상태

NO.	ITEM	MAT	Q'TY	UNIT	DRAWING NO.	REMARKS

Designed by	Checked by	Approved by
09.02.16	09.02.16	09.02.16
S.CH.BYUN	CH.G.JEONG	N.S.KIM

MAT.	-
FINISH	-
SCALE	n/s
UNIT	mm
ANGLE	3rd

품 명	PVP-1560 포장 방법		
모 델	PACKING		
품 번	참고도면	Sheet	Rev.
도 번	참고도면	1/1	A

A4(297 x 210)