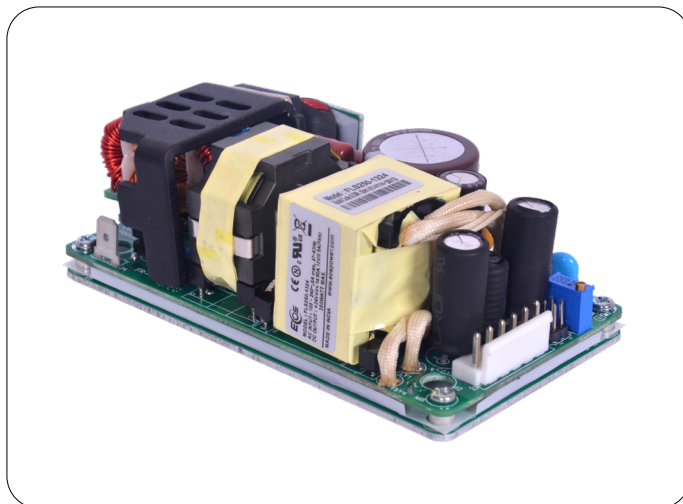


## 250 Watt

- 4.5 x 2.5 X 1.5
- Mounting as per 4 X 2 footprint / 3 X 5 footprint
- 250 Watt Convection Cooled & 350 Watt Forced Cooled
- Efficiency up to 94%
- -40 to 70 degree operating temperature
- High power density: 20.74 W/inch<sup>3</sup>
- 12 V Fan O/P / Thermal Shut-Down feature / Dual fusing
- Current Sharing (optional with ADD-ON card)
- 5 V STBY / PGPV Signal / Remote ON-OFF Feature (optional)
- 800K Hours, Telcordia -SR332-issue 3 MTBF
- No Load Power < 1W
- Available with metal enclosures / accessories



### Dimension

**FLS :** 4.5 x 2.5 x 1.5 Inches  
Form factor

The New FLS250 series is true fanless power up to 250W. this is a highly efficient power supply that can deliver up to 350W with air. The power supply is packed in 4.5" x 2.5" size having the option of industry-standard 2" x 4" or 3" x 5" like a mounting option. Also available in various type of casing option.

### 250 Watts

| Model Number | Description         | Voltage | Max. Load<br>(Convection) | Max. Load<br>(375 LFM) | Min. Load | Ripple <sup>1</sup> |
|--------------|---------------------|---------|---------------------------|------------------------|-----------|---------------------|
| FLS250-1X12  | with Screw Terminal | 12V     | 16.60A                    | 25.00A                 | 0.0A      | 2%                  |
| FLS250-1X12  | with JST Connector  | 12V     | 16.60A                    | 18.00A                 | 0.0A      | 2%                  |
| FLS250-1X15  | with Screw Terminal | 15V     | 13.30A                    | 20.00A                 | 0.0A      | 2%                  |
| FLS250-1X15  | with JST Connector  | 15V     | 13.30A                    | 18.00A                 | 0.0A      | 2%                  |
| FLS250-1X24  | with Screw Terminal | 24V     | 10.41A                    | 14.50A                 | 0.0A      | 1%                  |
| FLS250-1X24  | with JST Connector  | 24V     | 10.41A                    | 14.50A                 | 0.0A      | 1%                  |
| FLS250-1X30  | with Screw Terminal | 30V     | 8.30A                     | 11.60A                 | 0.0A      | 1%                  |
| FLS250-1X30  | with JST Connector  | 30V     | 8.30A                     | 11.60A                 | 0.0A      | 1%                  |
| FLS250-1X48  | with Screw Terminal | 48V     | 5.20A                     | 7.20A                  | 0.0A      | 1%                  |
| FLS250-1X48  | with JST Connector  | 48V     | 5.20A                     | 7.20A                  | 0.0A      | 1%                  |
| FLS250-1X58  | with Screw Terminal | 58V     | 4.30A                     | 6.0A                   | 0.0A      | 1%                  |
| FLS250-1X58  | with JST Connector  | 58V     | 4.30A                     | 6.0A                   | 0.0A      | 1%                  |

### Notes:

- For Screw Terminal version replace "X" above with "0", example FLS250-1024.
- For Header version replace "X" above with "3", example FLS250-1324
- Add Suffix "H" for I/P voltage operation up to 305VAC, example: FLS250-1024-H
- Add Suffix "B" for 3 X 5 Mounting option, example FLS250-1024-B
- For Power supply unit with L bracket (metal accessory option) add "-L" suffix at the end of model number
- For Power supply unit with U channel (metal accessory option) add "-U" suffix at the end of model number
- For Power supply unit with CK Cover kit (metal accessory option) add "-CK" suffix at the end of model number

- For Current Sharing (ADD-ON CARD) Option, (pls contact EOS RSM for further details and ordering)
- For 5V STBY / Remote ON-OFF / PGPF use model number FLS250-2XXX, (pls contact EOS RSM for further details and ordering).
- FLS250 -L Bracket, -U channel, - CK Metal Cover Kit Accessory Available. (pls contact EOS RSM for further details and ordering)

### Pin Connection

|                                        |           |                  |
|----------------------------------------|-----------|------------------|
| J1 (Input)                             | PIN 1     | AC LINE          |
|                                        | PIN 2     | NOT FITTED       |
|                                        | PIN 3     | AC NEUTRAL       |
| J2 Option 1 & 2<br>(Output)            | PIN 1,2,3 | V1 +VE           |
|                                        | PIN 4,5,6 | V1 -VE           |
| J4 (Earth)                             |           | Quick Disconnect |
| (J9)<br>Signal Connector               | PIN 1     | +VS              |
|                                        | PIN 2     | -VS              |
|                                        | PIN 3     | FAN -            |
|                                        | PIN 4     | FAN +            |
| J(310)<br>(Multifunction Connector)*** | PIN 1     | +5V              |
|                                        | PIN 2     | GND              |
|                                        | PIN 3     | GND              |
|                                        | PIN 4     | REMOTE ON/OFF    |
|                                        | PIN5      | PGPF             |

### Notes:

1. "\*\*\*" mark content available only in FLS250-2XXX series
2. Ripple is peak to peak with 20 MHz bandwidth and 10  $\mu$ F (Electrolytic capacitor) in parallel with a 0.1  $\mu$ F capacitor at rated line voltage and load ranges.
3. Specifications are for nominal input voltage, 25°C unless otherwise stated.
4. 250W with natural convection cooling at 100 to 264VAC.
5. 350W with Forced cooling at 100 to 264VAC.
6. Combine Output Power of Main Output, Fan supply and Standby shall not exceed max power rating.
7. Output ripple can be more than 1 % of the output voltage.
8. When used in Cover Kit, de-rate output power to 70% under all operating conditions.
9. "\*\*\*" Standby output voltage 5 V/ 0.5A(convection) with tolerance including set point accuracy, line and load regulation is +/-10 %.Ripple and noise is less than 5 %.

### Input

| Characteristic      | Minimum                   | Typical      | Maximum      | Units | Notes & Conditions                                   |
|---------------------|---------------------------|--------------|--------------|-------|------------------------------------------------------|
| Input Voltage       | 85                        |              | 264          | VAC   | De-rate linearly from 100% at 100VAC to 80% at 85VAC |
|                     | 120                       |              | 370          | VDC   |                                                      |
| Input Frequency     | 47                        |              | 63           | Hz    |                                                      |
| Input Current       |                           |              | 6.3          | A     |                                                      |
| Inrush Current      | 115 VAC - 25A             | 230VAC - 45A | 264 VAC -75A | A     |                                                      |
| No Load Input Power |                           |              | 1            | W     |                                                      |
| Power Factor        | exceeds 0.95 at Full Load |              |              |       |                                                      |

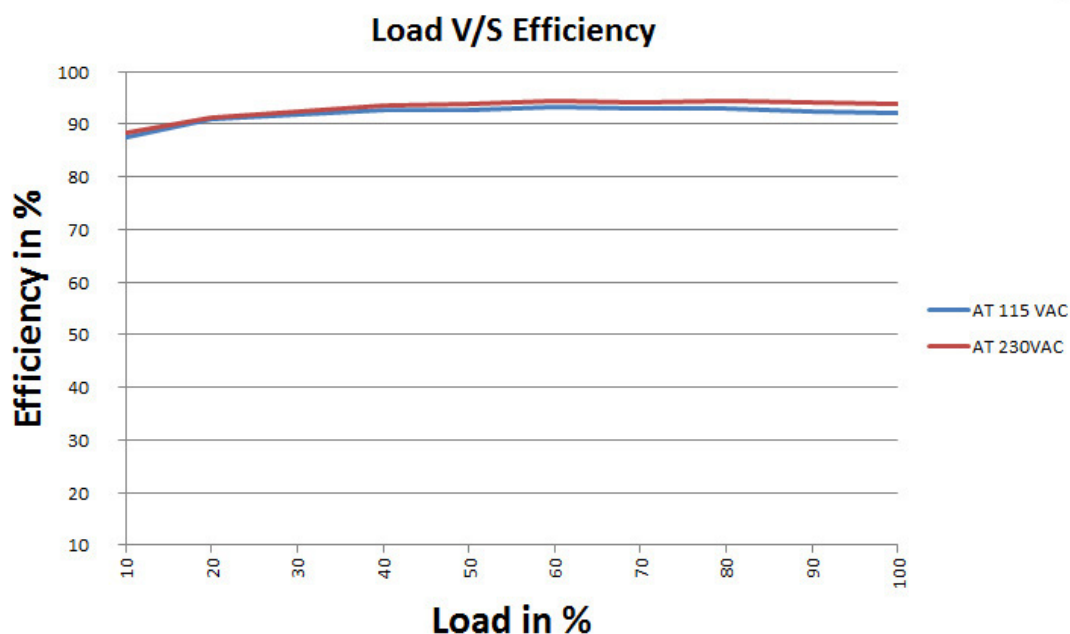
## Output

| Characteristic               | Minimum | Typical                                                                                    | Maximum | Units | Notes & Conditions |
|------------------------------|---------|--------------------------------------------------------------------------------------------|---------|-------|--------------------|
| Output Power                 |         | 250                                                                                        | 350     | W     |                    |
| Hold-up Time                 |         | 8mS                                                                                        |         |       | At 230 VAC         |
| Line Regulation              |         |                                                                                            | +/-0.5% |       |                    |
| Load Regulation              |         |                                                                                            | +/-0.5% |       |                    |
| Output Voltage Adjustability |         |                                                                                            | +/-3%   |       |                    |
| Rise Time                    |         | 55                                                                                         |         | ms    |                    |
| Set Point Tolerance          |         | +/-1%                                                                                      |         |       |                    |
| Over Current Protection      |         | > 110%                                                                                     |         |       |                    |
| Over Voltage Protection      |         | 110 to 140%                                                                                |         |       |                    |
| Transient Response           |         | 25% step load change, at 0.1A/uS slew rate, 50% duty cycle, 50Hz=4% , recovery time < 5 ms |         |       |                    |

## General

| Characteristic             | Minimum    | Typical        | Maximum | Units | Notes & Conditions       |
|----------------------------|------------|----------------|---------|-------|--------------------------|
| Efficiency                 | 92%        |                | 94%     |       | At 230 VAC               |
| Mean Time Between Failure  | 800K Hours |                |         |       | Telcordia -SR332-issue 3 |
| Isolation: Input to Output |            | 4000           |         | VDC   | ITAV                     |
| Input to Ground            |            | 2500           |         |       |                          |
| Leakage Current            |            | 300 uA Typical |         |       |                          |

## Efficiency Vs Load



## Environmental

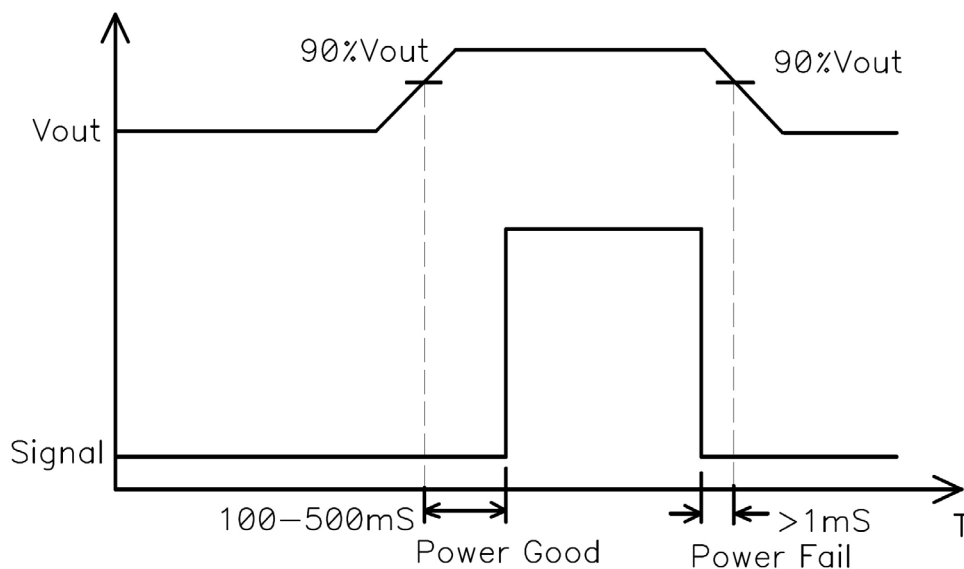
| Characteristic           | Minimum | Typical                              | Maximum | Units | Notes & Conditions                                                                                             |
|--------------------------|---------|--------------------------------------|---------|-------|----------------------------------------------------------------------------------------------------------------|
| Operating Temperature    | -40     |                                      | 70      | °C    | -40 to 0 startup is guaranteed with spec deviation.<br>70°C (Derated)                                          |
| Storage Temperature      | -40     |                                      | 85      | °C    |                                                                                                                |
| Relative Humidity        | 5       |                                      | 95      | %     |                                                                                                                |
| Operating Altitude       |         |                                      | 16,000  | ft    | RH, non-condensing                                                                                             |
| Short Circuit Protection |         | Hiccup mode                          |         |       |                                                                                                                |
| Switching Frequency      |         | PFC – 70 to 130 KHz ,PWM – 50-80 KHz |         |       |                                                                                                                |
| Cooling                  |         |                                      |         |       | 350W with 375 LFM forced air cooling at 100 to 264VAC<br>250W with natural convection cooling at 100 to 264VAC |

## Signals & Controls

| Characteristic   | Notes & Conditions                                                                                             |
|------------------|----------------------------------------------------------------------------------------------------------------|
| ***Power Good    | Is a TTL signal which goes high after main output reaches 90% of its set value.<br>The delay is 0.1 s to 0.5 s |
| ***Power Fail    | The same signal goes low at least 1ms before main output falls to 90% of set value at AC Power off             |
| ***Remote on/off | Shorting Pin 3 to Pin 4 enables main output while keeping the Pins open disables main output.                  |

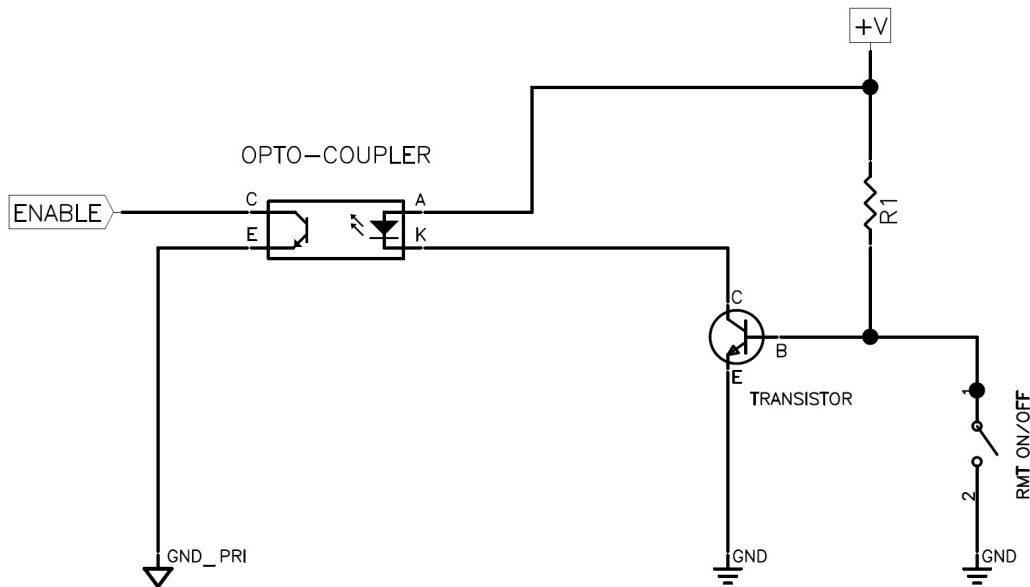
## Signals & Controls Drawing

### \*\*\*Power Good / Power Fail Signal



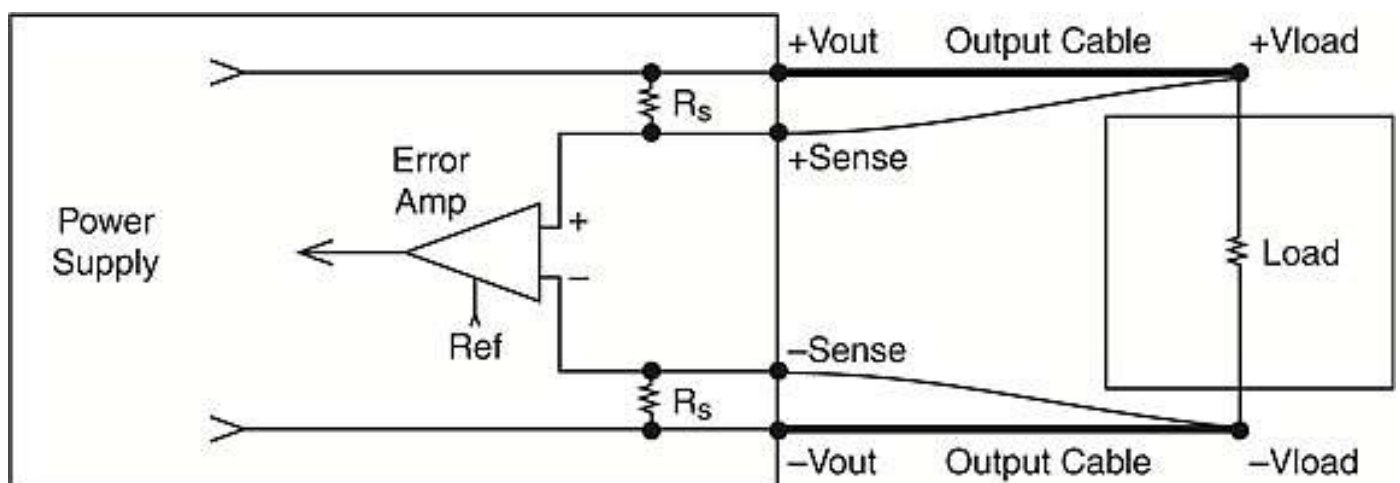
## Signals & Controls Drawing

### \*\*\* Remote ON OFF



## Signals & Controls Drawing

### Voltage Sense



## Mechanical Specifications

|                                                       |                                                                                                                                                                    |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AC Input Connector (J1)                               | Molex: 26-60-4030<br>Mating: 09-50-3031; Pins: 08-50-0106                                                                                                          |
| DC Output Connector (J2) Option 1<br>(Screw Terminal) | Molex: 39357 Series or equivalent                                                                                                                                  |
| DC Output Connector (J2) Option 2<br>(JST Connector)  | JST p/n: B6P-VH(LF)(SN)<br>Mating: JST p/n: VHR-6M; Pins: SVH-41T-P1.1                                                                                             |
| Signal Connector (J9)                                 | Molex Part No: 10-89-7041 or equivalent<br>Mating part no: 1053082204 ; Pins: 1053001100                                                                           |
| J(310)<br>(Multifunction Connector)***                | HEADER 5POS 2.54MM) P/N : P9102-40-12-1<br>Mating part no : CONN RCPT HSNG 5POS CST-100 II P/N :1375820-5<br>Pins : CONN SOCKET 22-26AWG CRIMP TIN P/N : 1375819-1 |
| Dimensions                                            | 4.5 x 2.5 x 1.58 inches<br>(114.30 x 63.5 x 40 mm)                                                                                                                 |
| Weight                                                | 400 gm approx                                                                                                                                                      |

## EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & Conditions                                                                       |
|------------|----------|------------|------------------------------------------------------------------------------------------|
| Conducted  | EN 55032 | Level B    | CISPR22-B, FCC PART15-B                                                                  |
| Radiated   | EN 55032 | Level A    | Level B with external core<br>(King core K5B RC 25x12x15-M or Equivalent in input cable) |

## EMC: Immunity

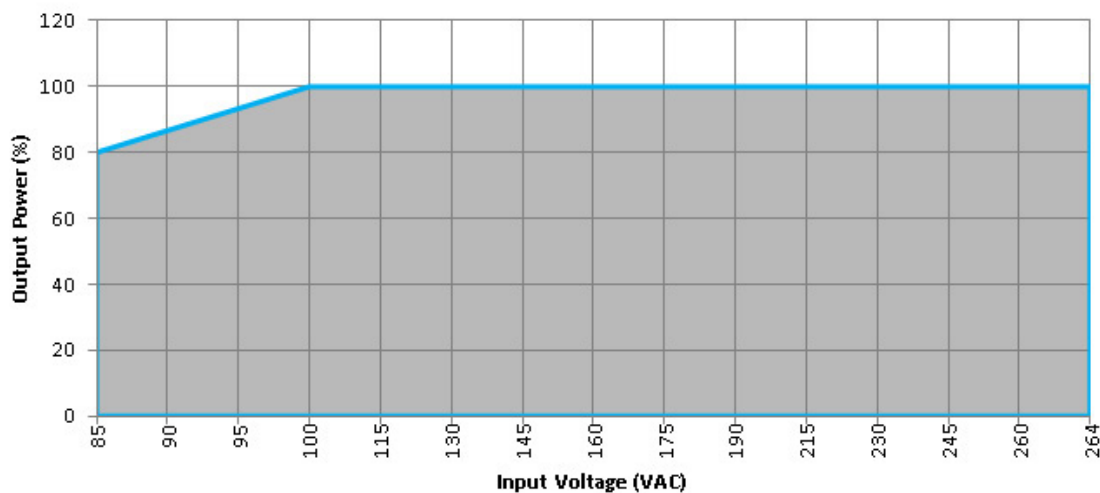
| Phenomenon                         | Standard      | Test Level | Criteria | Notes & Conditions |
|------------------------------------|---------------|------------|----------|--------------------|
| Input Current Harmonics            | EN 61000-3-2  |            | Class A  |                    |
| Voltage Fluctuation and Flicker    | EN 61000-3-3  |            |          | compliance         |
| ESD Immunity                       | EN 61000-4-2  | Level 3    | A        |                    |
| Radiated Field Immunity            | EN 61000-4-3  | Level 3    | A        |                    |
| Electrical Fast Transient Immunity | EN61000-4-4   | Level 3    | A        |                    |
| Surge Immunity                     | EN 61000-4-5  | Level 3    | A        |                    |
| Conducted Immunity                 | EN 61000-4-6  | Level 3    | A        |                    |
| Magnetic Field Immunity            | EN 61000-4-8  | Level 3    | A        |                    |
| Voltage dips, interruptions        | EN 61000-4-11 |            | A & B    |                    |

## Safety Approvals

| Safety Agency | Safety Standard              | Notes & Conditions |
|---------------|------------------------------|--------------------|
| CB            | IEC62368-1:2018              | ITAV               |
| Nemko         | EN62368-1:2020;A11           |                    |
| UL            | UL62368-1 ED 3.0             |                    |
| CSA           | CAN/CSA C22.2 No. 62368-1:19 |                    |
| CE Mark       | Complies with LVD Directive  |                    |

## Derating Curve

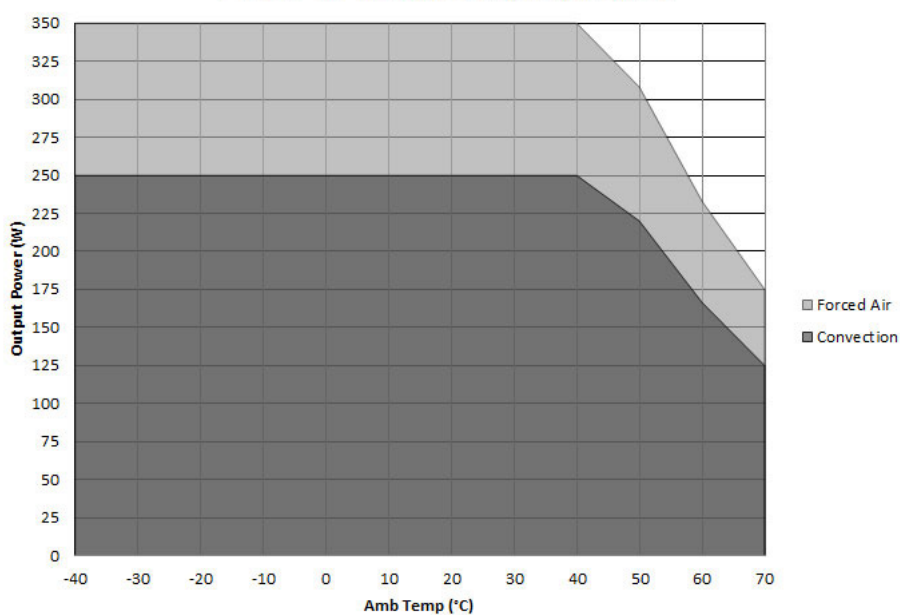
Output Derating v/s Input Voltage



De-rate linearly from 100% at 100VAC to 80% at 85VAC.

## Derating Curve

Power de-rating : 24V,30V,48V,58V

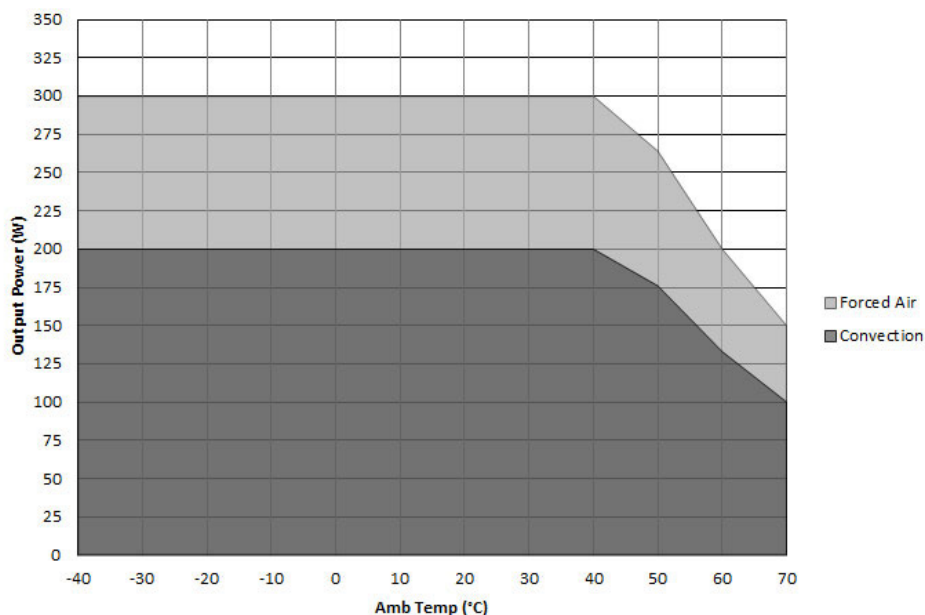


Convection load: 250W up to 40 °C. De-rate Between 40°C -50°C @ 1.2 % per °C above 50 °C @ 1.67 % per °C

Forced air cooled load: 350W up to 40 °C. De-rate Between 40°C -50°C @ 1.2 % per °C above 50 °C @ 1.67 % per °C

## Derating Curve

Power de-rating : 12V,15V

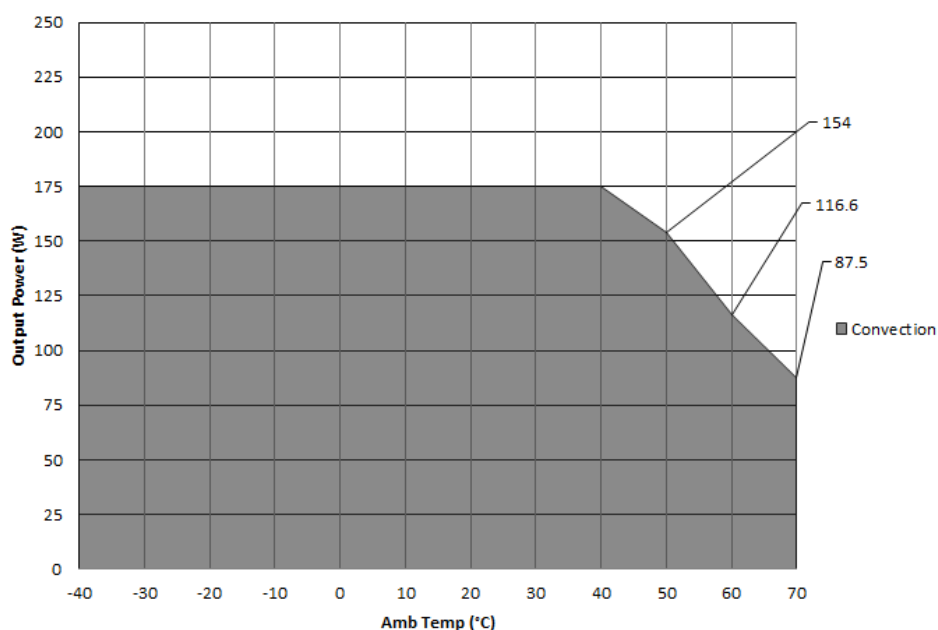


Convection load: 200W up to 40 °C. De-rate Between 40°C -50°C @ 1.2 % per °C above 50 °C @ 1.67 % per °C

Forced air cooled load: 300W up to 40 °C. De-rate Between 40°C -50°C @ 1.2 % per °C above 50 °C @ 1.67 % per °C

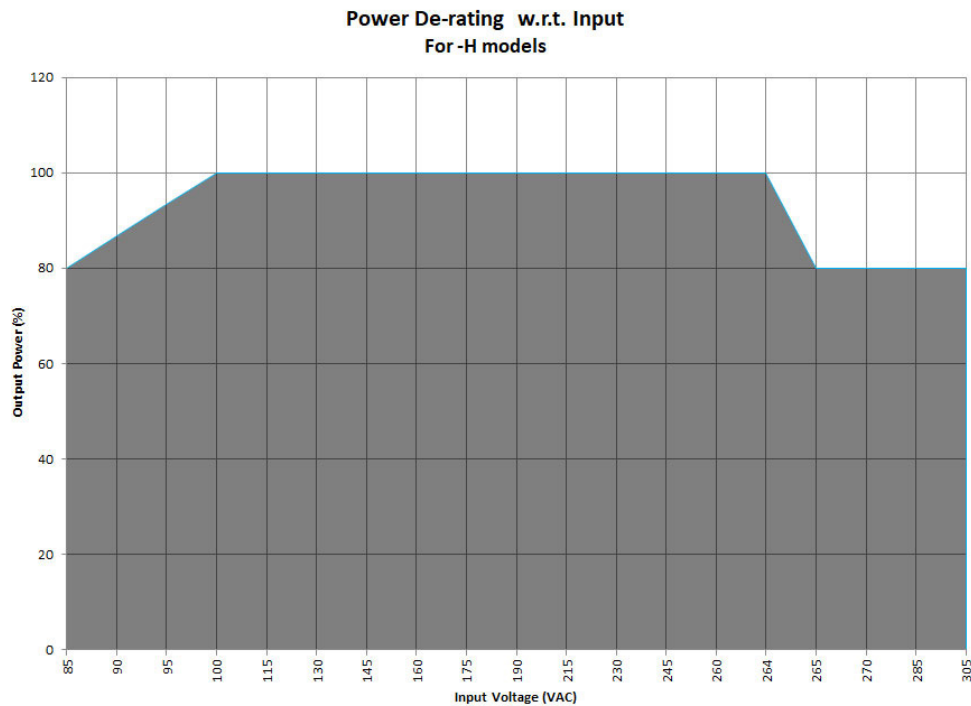
## Derating Curve

De-rating for CK Bracket



Convection load: 175W up to 40 °C. De-rate Between 40°C -50°C @ 1.2 % per °C above 50 °C @ 1.67 % per °C

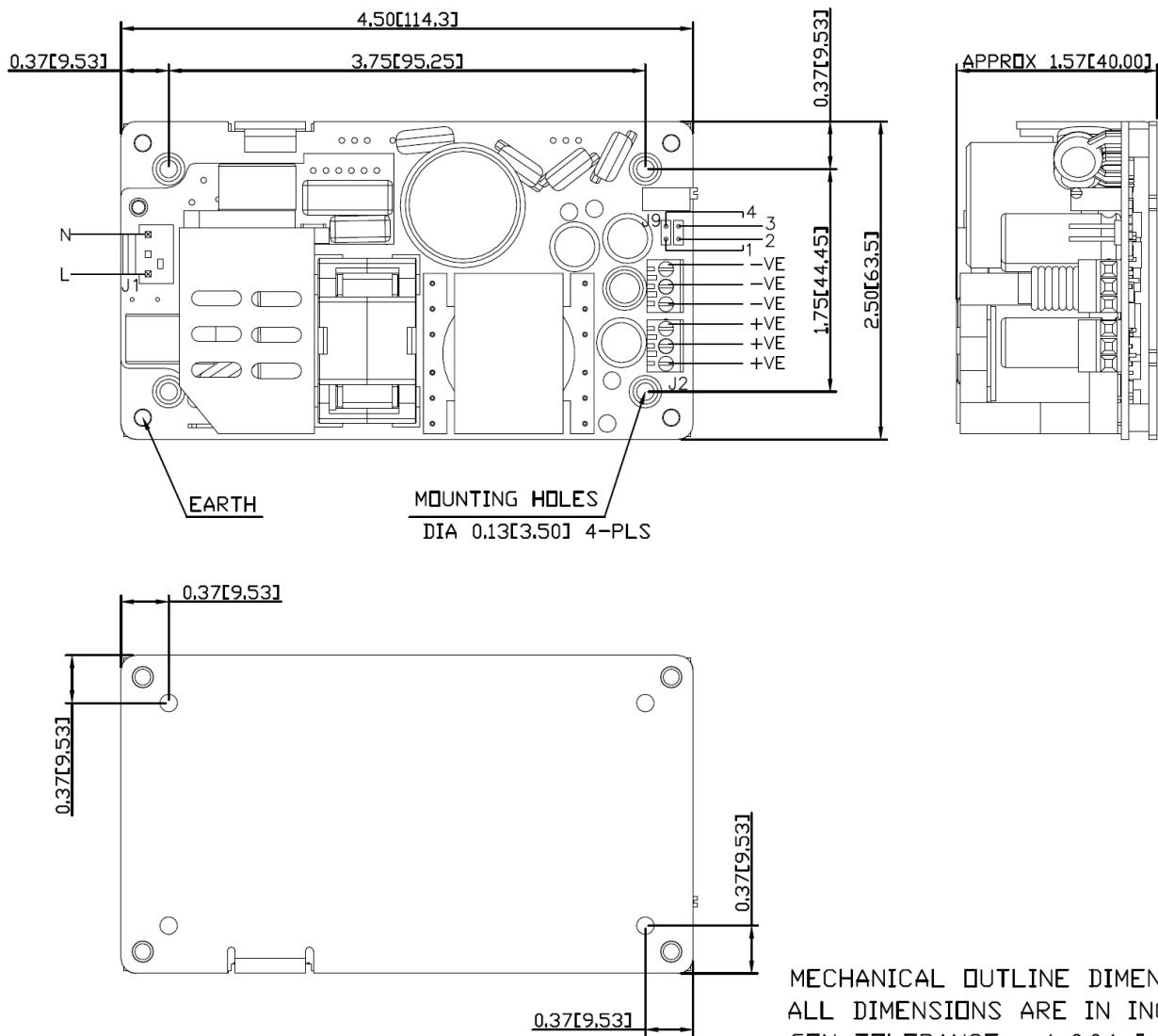
## Derating Curve



De-rate linearly from 100% at 100VAC to 80% at 85VAC & above 264VAC De-rate to 80%

## Mechanical Drawing

### Screw terminal (1XXX/ 2XXX)

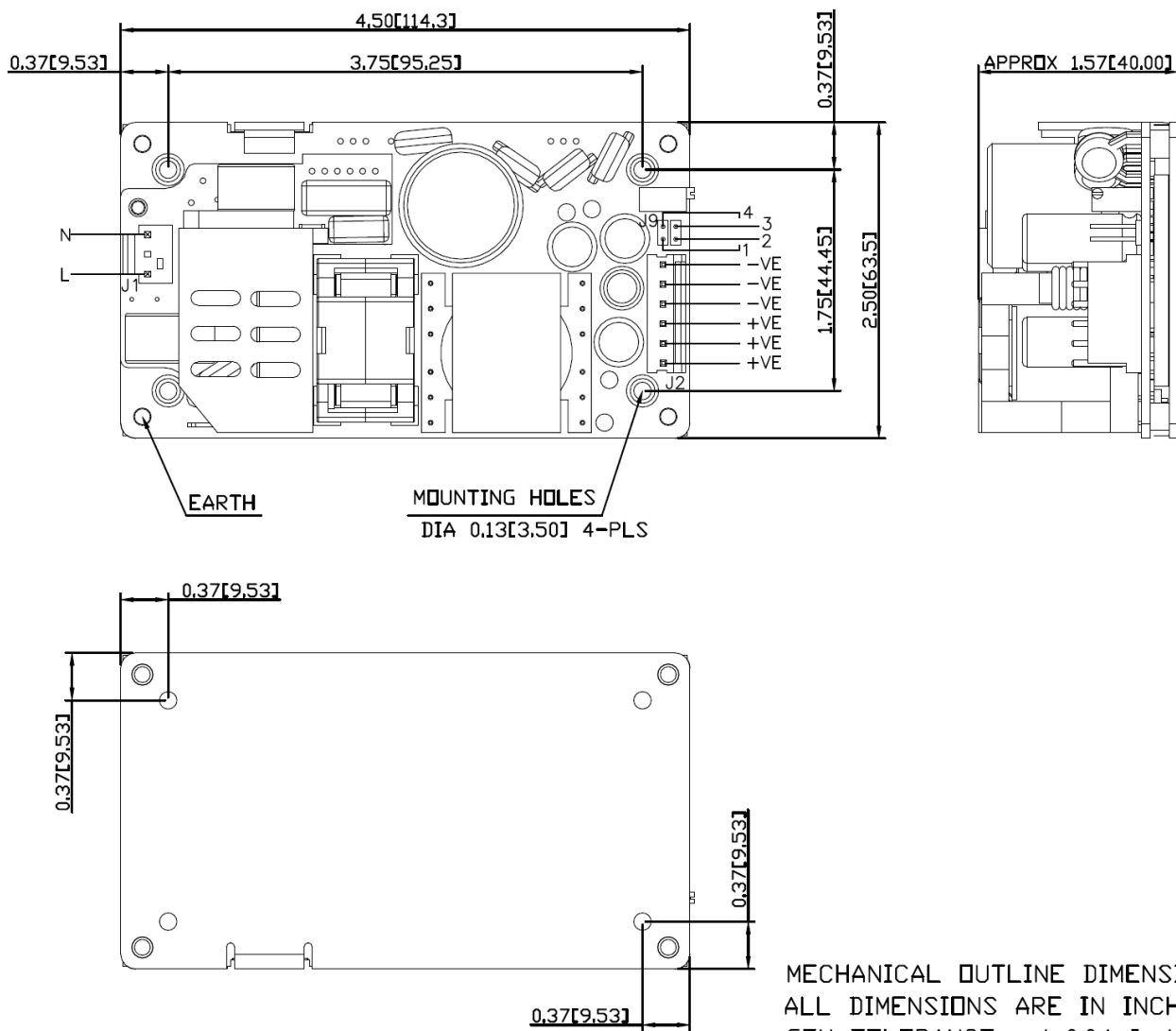


# Mechanical Drawing

## Header terminal (1XXX/ 2XXX)

NOTE:-

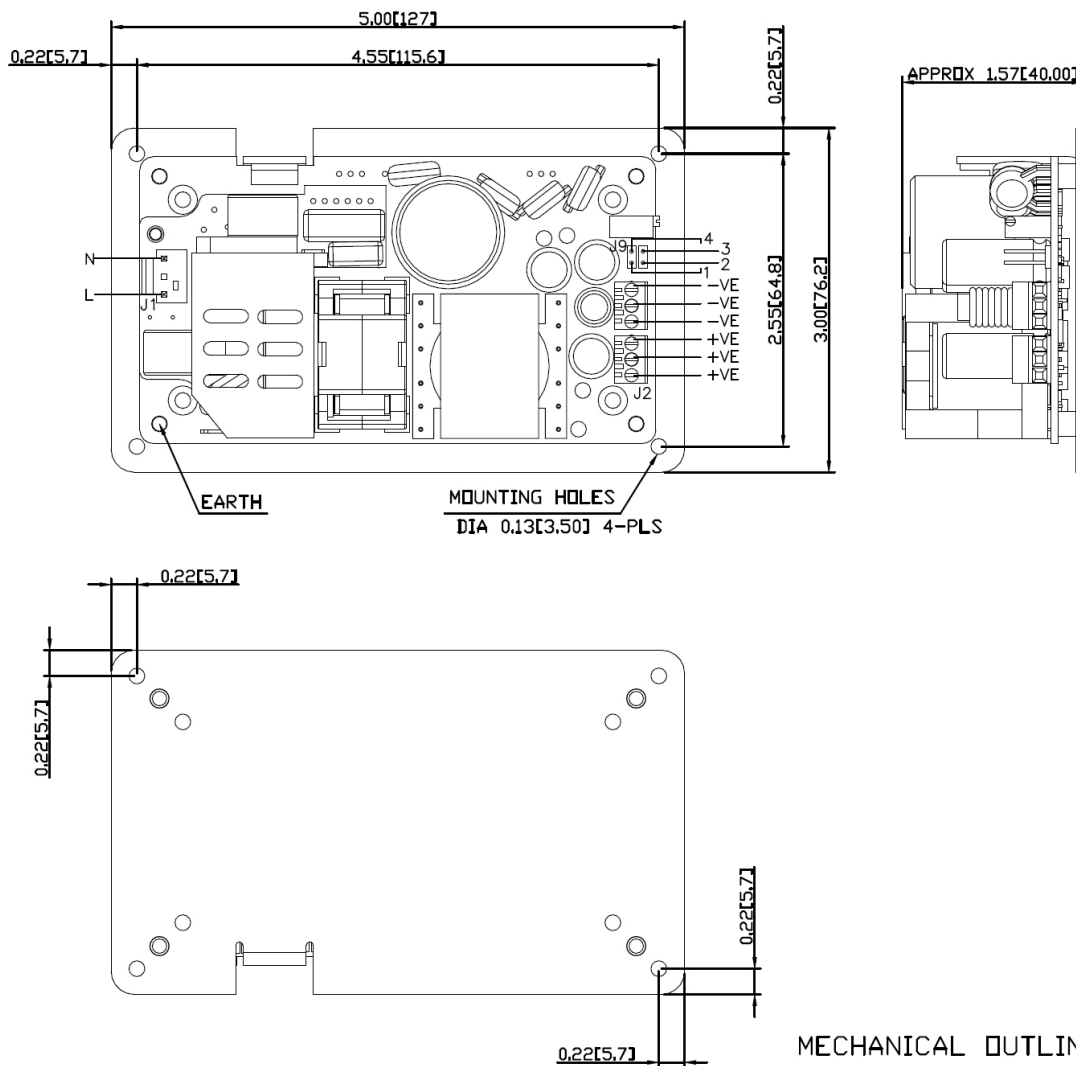
PLEASE REFER "FLS250 2.5X4.5 WITH 'L' CHANNEL" SPEC  
FOR CONNECTOR DETAILS ON PAGE NO.13.



MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN INCHES[MM]  
GEN TOLERANCE  $\pm 0.04$  [ $\pm 1.0$ MM]

## Mechanical Drawing

### Screw terminal (1XXX-B/ 2XXX-B)

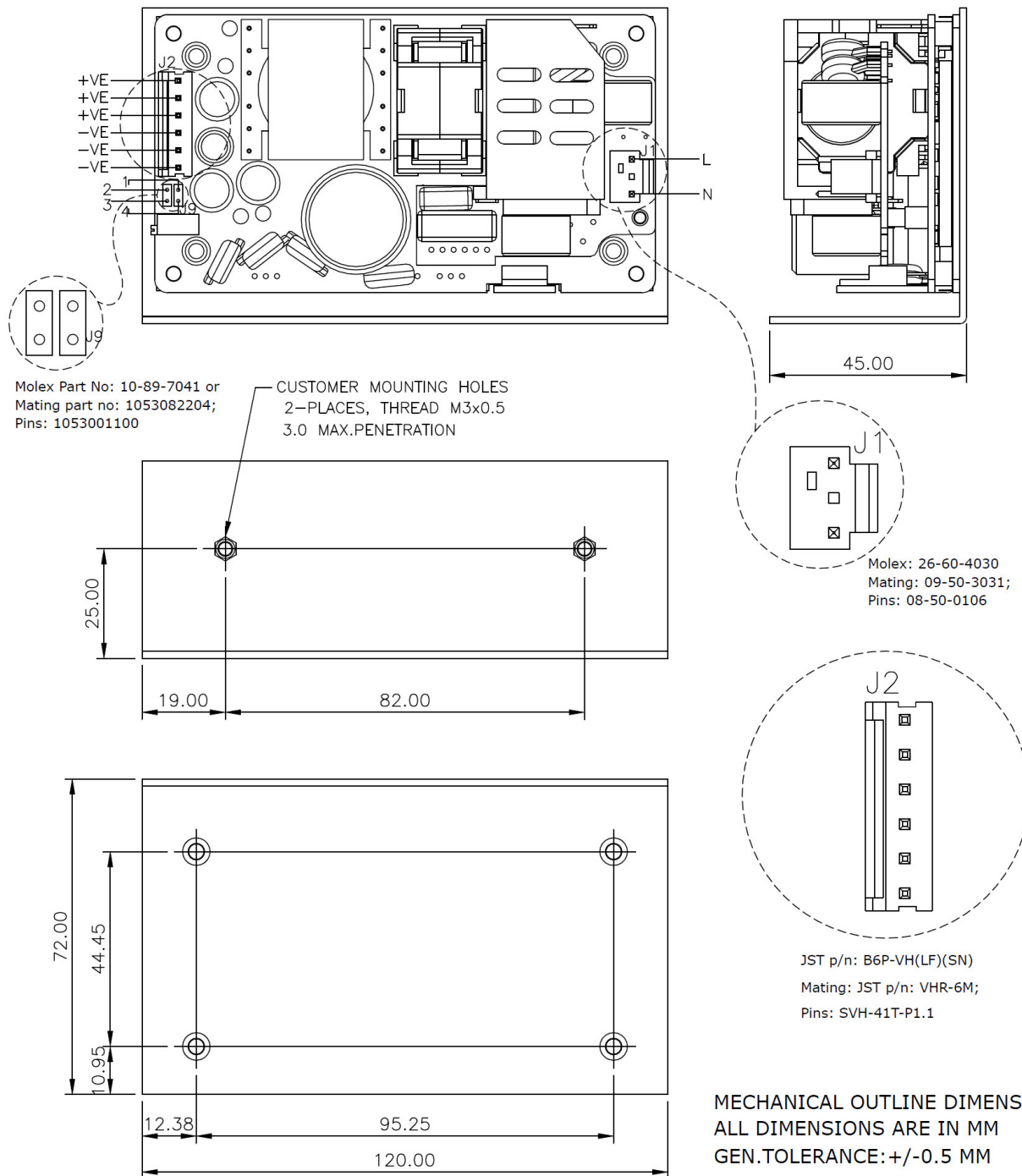


MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN INCHES[MM]  
GEN TOLERANCE  $\pm 0.04$  [ $\pm 1.0$ MM]



# Mechanical Drawing

## FLS250 2.5 X 4.5 with L-Bracket



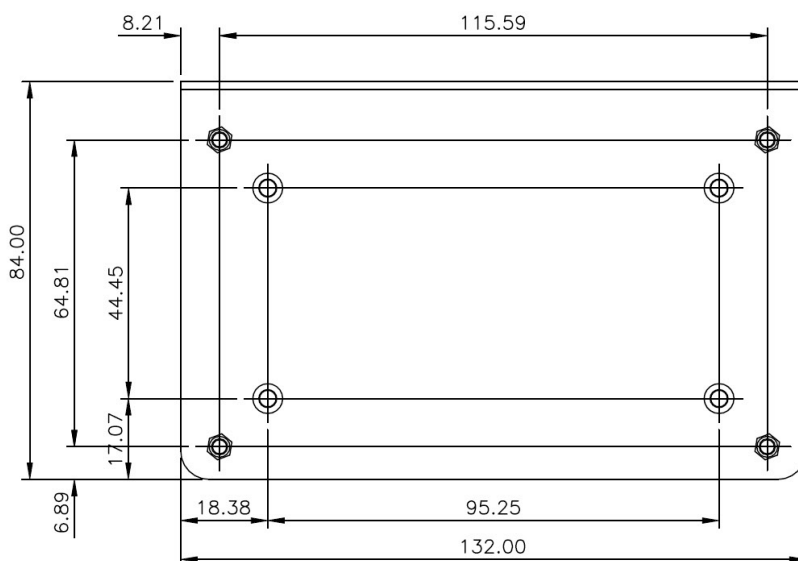
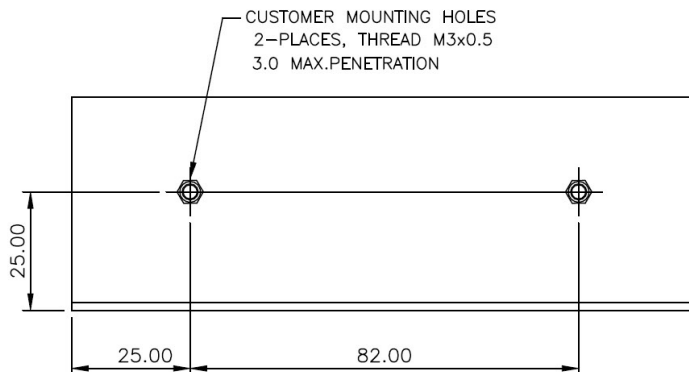
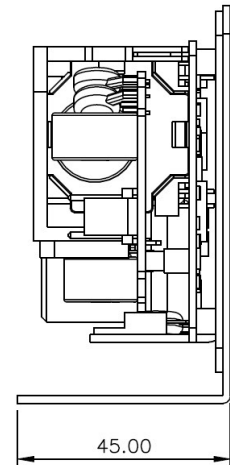
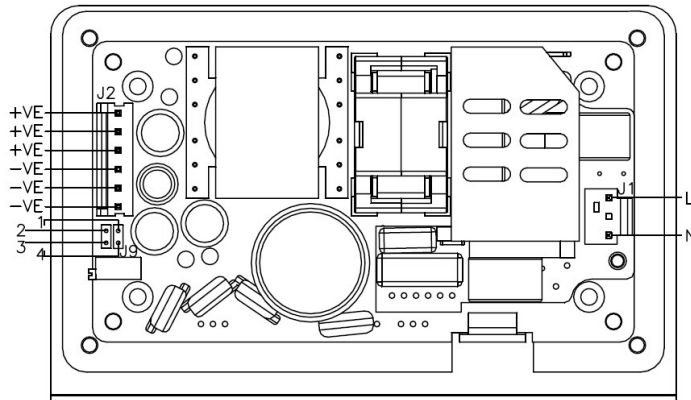
MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN MM  
GEN.TOLERANCE: +/-0.5 MM

## Mechanical Drawing

### FLS250 3 X 5 with L -Bracket

NOTE:-

PLEASE REFER "FLS250 2.5X4.5 WITH 'L' CHANNEL" SPEC  
FOR CONNECTOR DETAILS ON PAGE NO.13.

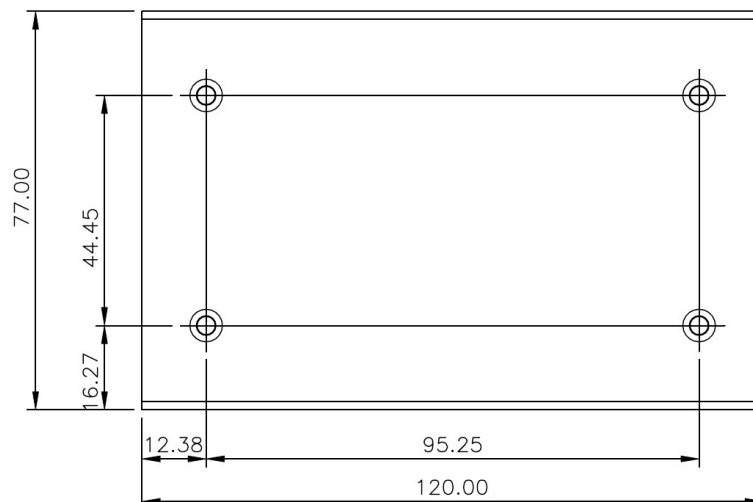
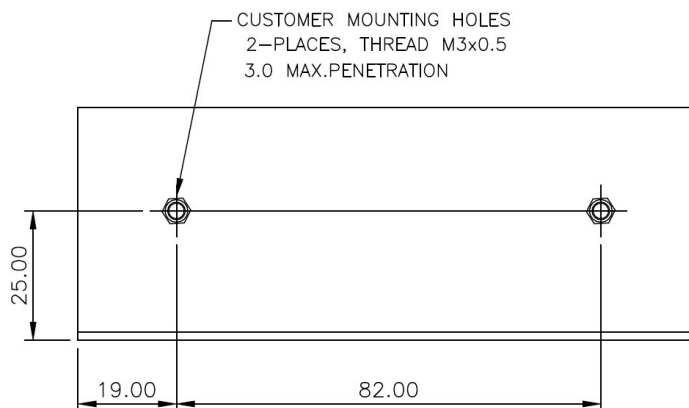
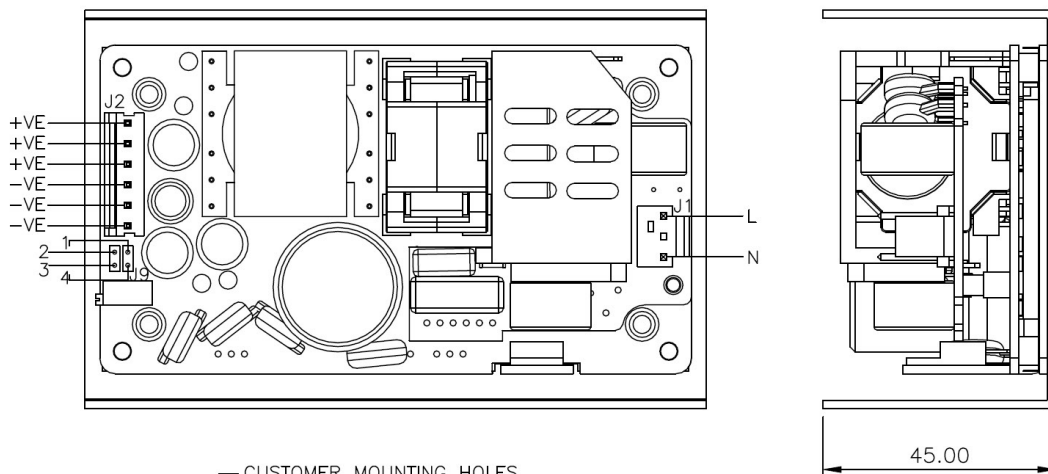


MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN MM  
GEN.TOLERANCE:  $\pm 0.5$  MM

## Mechanical Drawing

### FLS250 2.5 X 4.5 with U Channel

NOTE:-  
PLEASE REFER "FLS250 2.5X4.5 WITH 'L' CHANNEL" SPEC  
FOR CONNECTOR DETAILS ON PAGE NO.13.



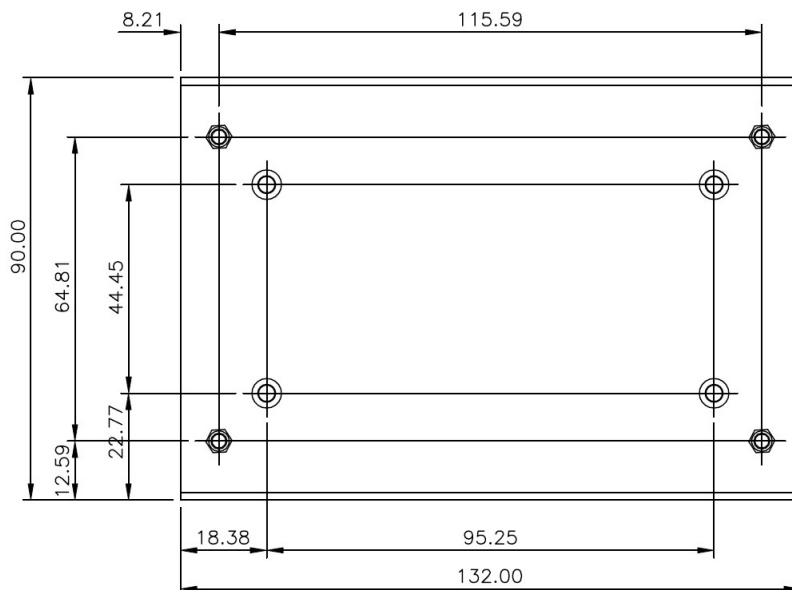
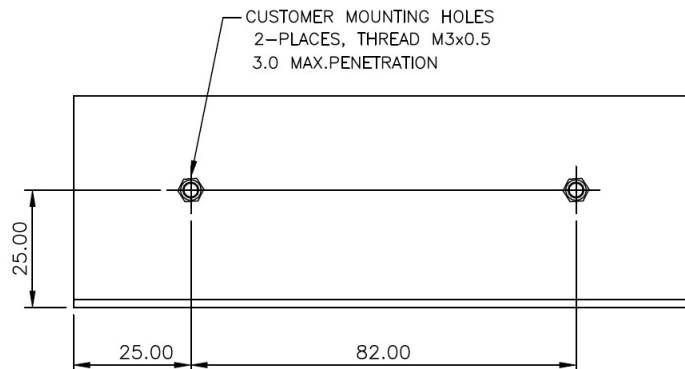
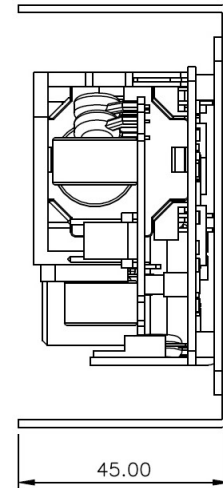
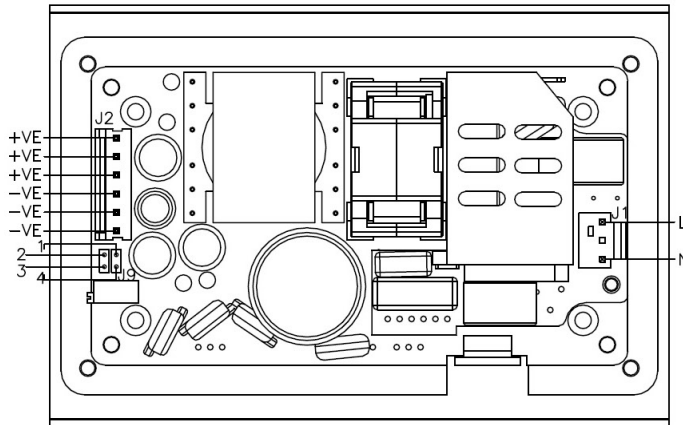
MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN MM  
GEN.TOLERANCE: +/-0.5 MM

## Mechanical Drawing

### FLS250 3 X 5 with U Channel

NOTE:-

PLEASE REFER "FLS250 2.5X4.5 WITH 'L' CHANNEL" SPEC  
FOR CONNECTOR DETAILS ON PAGE NO.13.



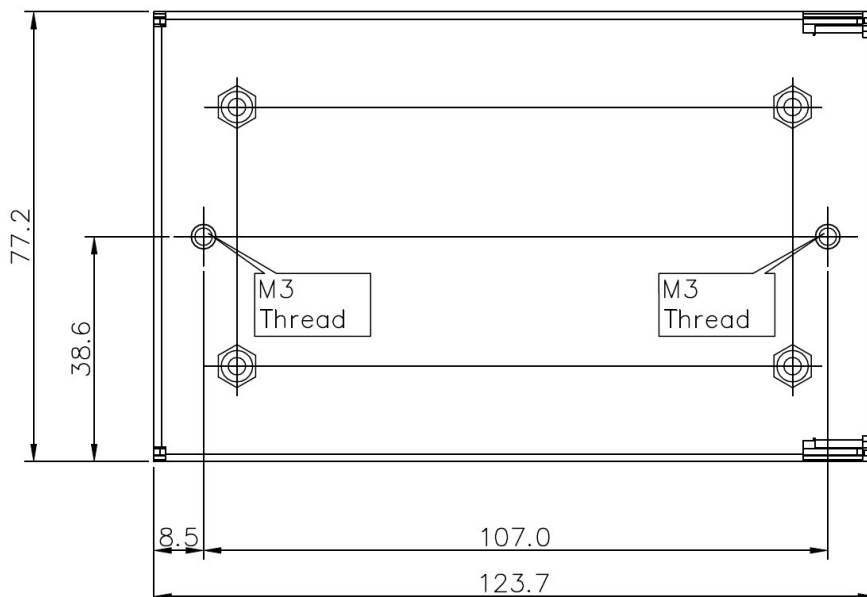
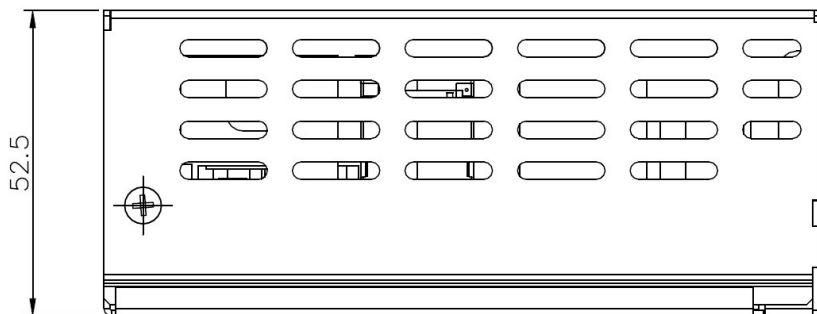
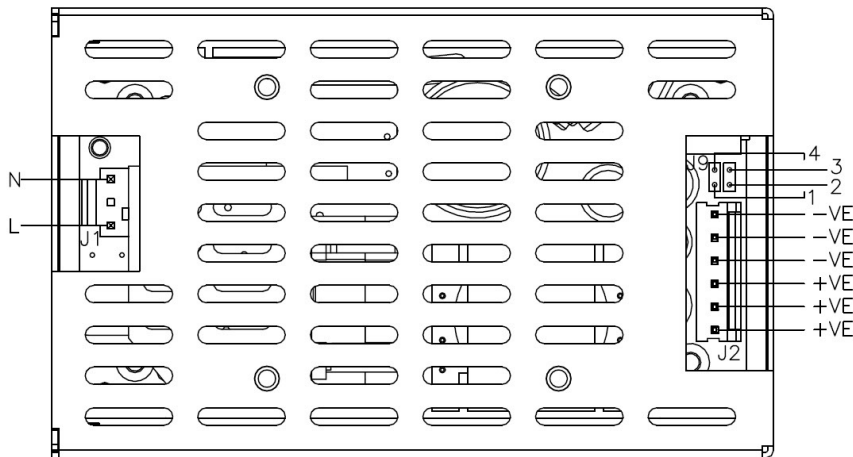
MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN MM  
GEN.TOLERANCE:  $\pm 0.5$  MM

## Mechanical Drawing

### FLS250 2.5 X 4.5 with Cover kit

NOTE:-

PLEASE REFER "FLS250 2.5X4.5 WITH 'L' CHANNEL" SPEC  
FOR CONNECTOR DETAILS ON PAGE NO.13.



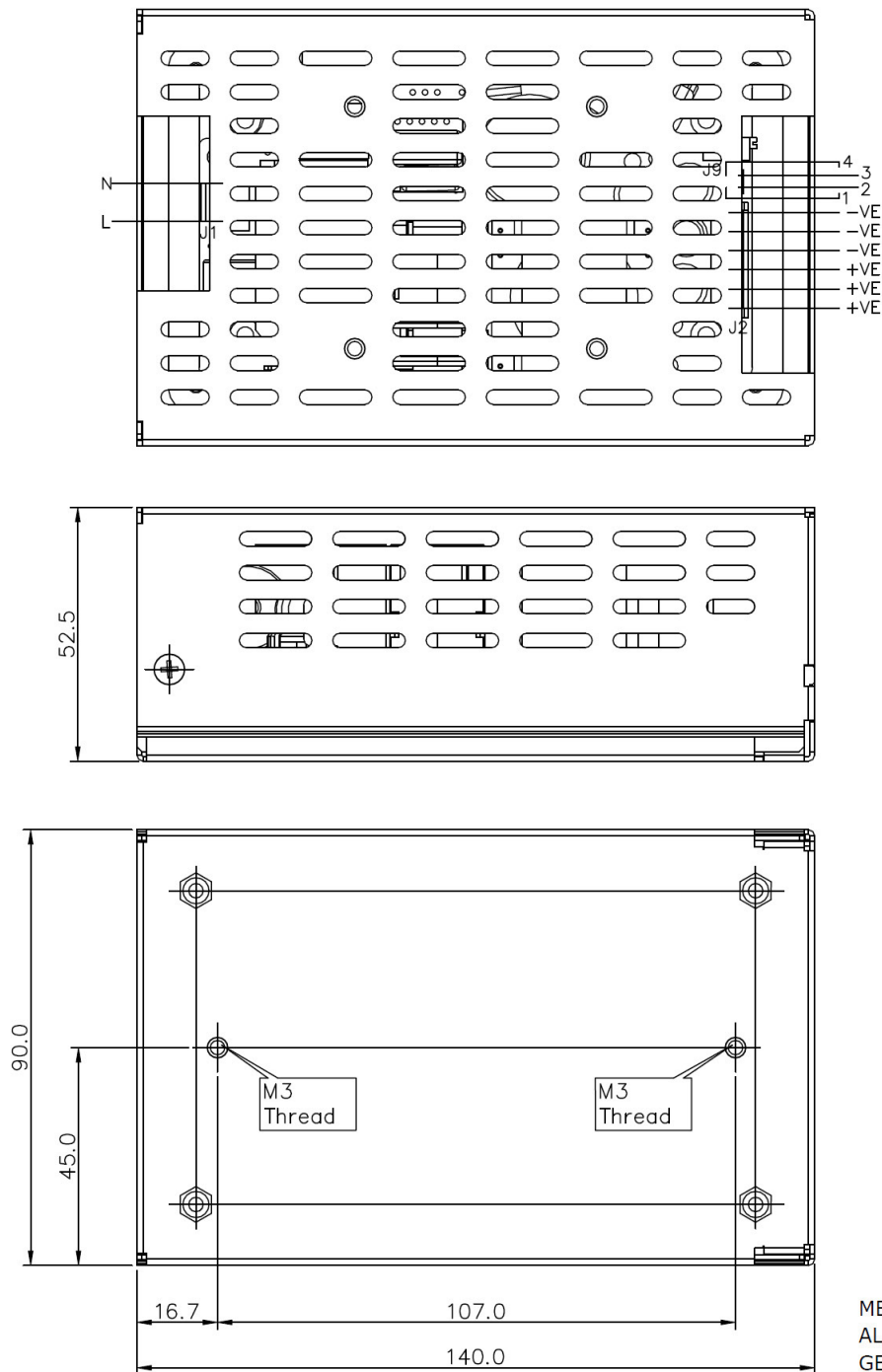
MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN MM  
GEN.TOLERANCE: +/-0.5 MM

## Mechanical Drawing

### FLS250 3 X 5 with Cover Kit

NOTE:-

PLEASE REFER "FLS250 2.5X4.5 WITH 'L' CHANNEL" SPEC  
FOR CONNECTOR DETAILS ON PAGE NO.13.



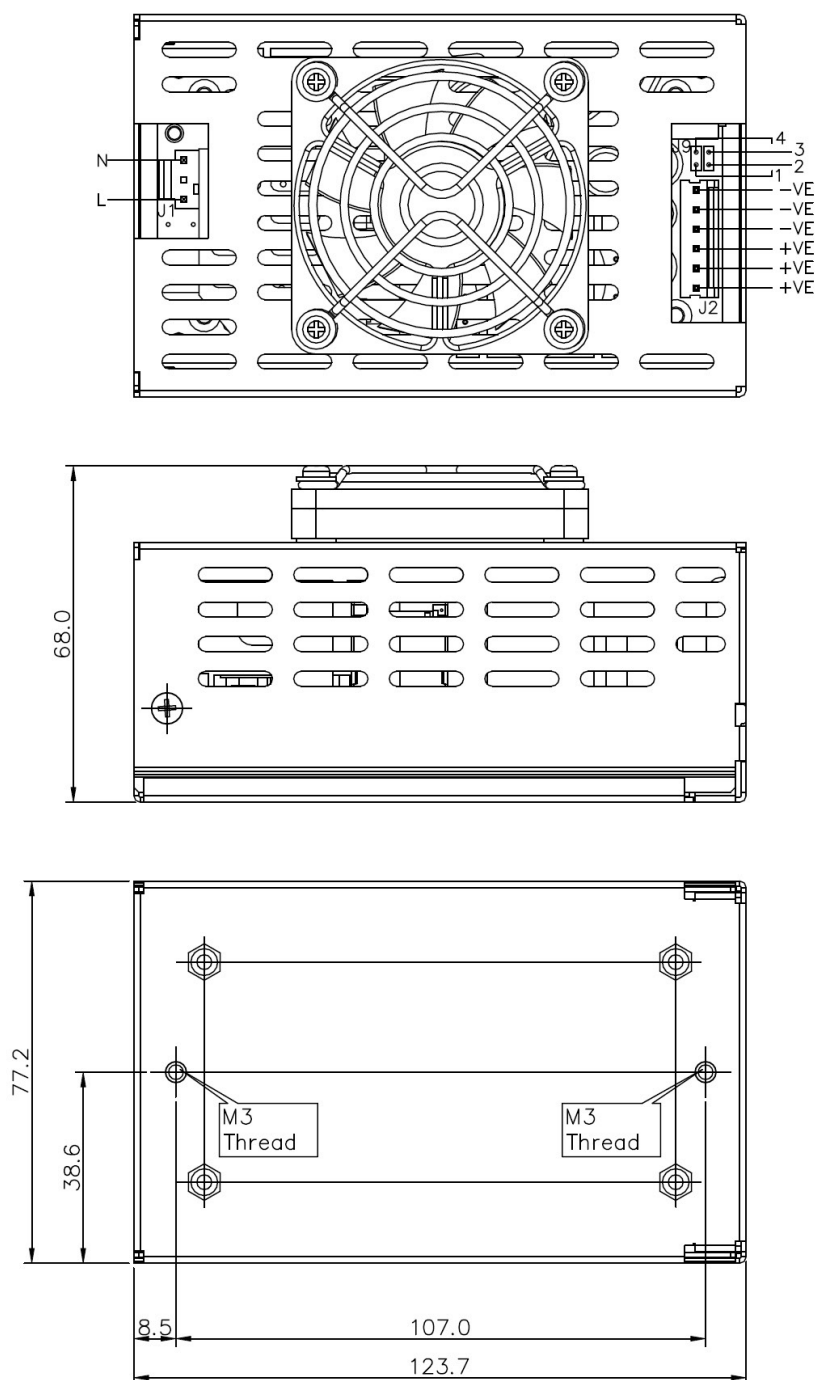
MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN MM  
GEN.TOLERANCE:  $\pm 0.5$  MM

## Mechanical Drawing

### FLS250 2.5 X 4.5 with Cover kit - Fan

NOTE:-

PLEASE REFER "FLS250 2.5X4.5 WITH 'L' CHANNEL" SPEC  
FOR CONNECTOR DETAILS ON PAGE NO.13.



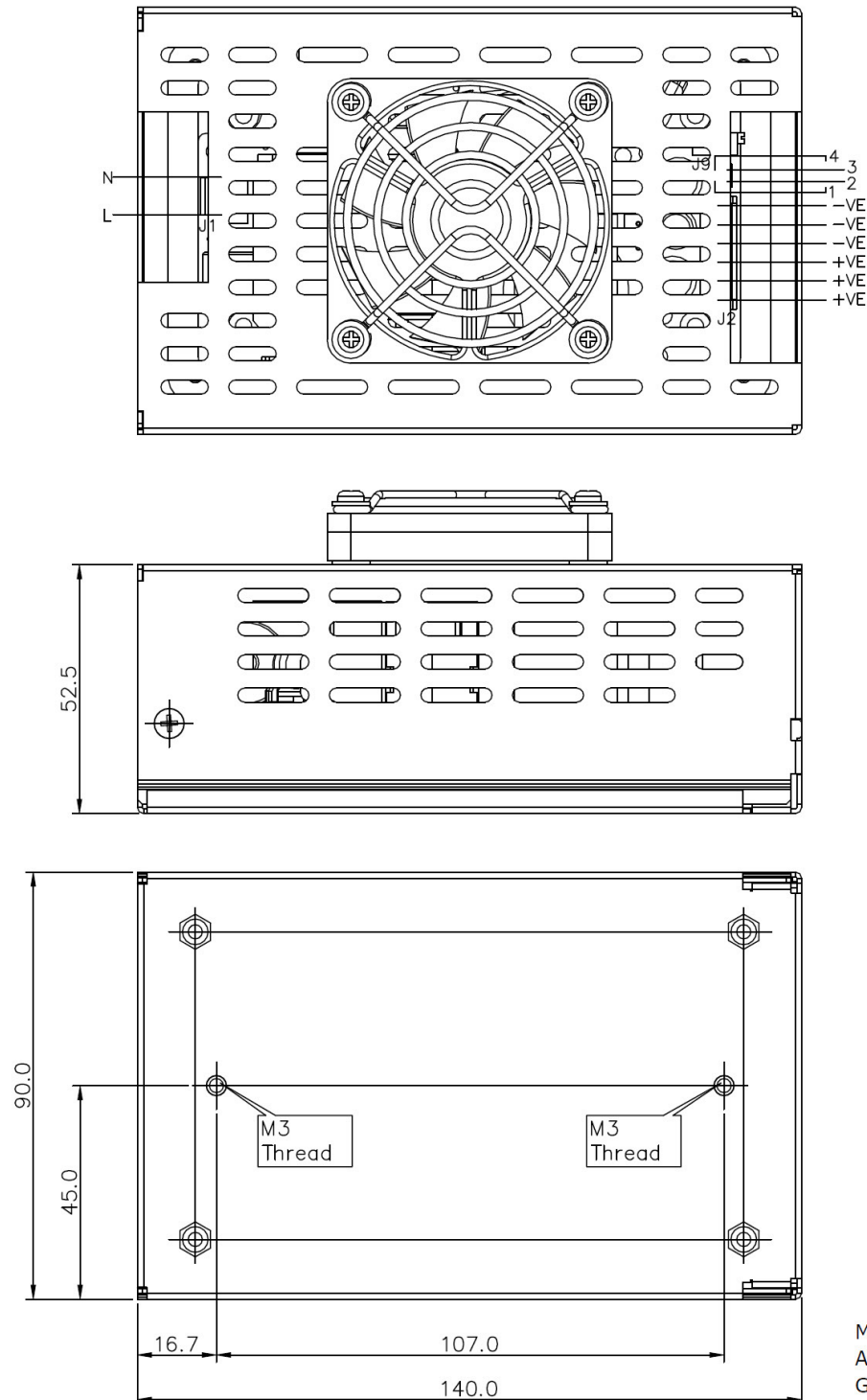
MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN MM  
GEN.TOLERANCE:  $\pm 0.5$  MM

## Mechanical Drawing

### FLS250 3 X 5 with Cover kit - Fan

NOTE:-

PLEASE REFER "FLS250 2.5X4.5 WITH 'L' CHANNEL" SPEC  
FOR CONNECTOR DETAILS ON PAGE NO.13.



MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN MM  
GEN.TOLERANCE: +/-0.5 MM

## Mechanical Drawing

### COVER KIT WITH SIDE FAN

