

# MEPG300 Series

300 W AC-DC Power Supply

Medical



The EOS Power MEPG300 Series of AC-DC power supplies accommodate a universal input voltage of 90 – 264 VAC, delivering up to 300 W of output power with forced air cooling. The power supplies are available in six single output voltages ranging from 12 V to 58 V.

The MEPG300 Series can be used in a broad array of space-constrained applications in which minimal power loss and easy thermal management are required.

RoHS compliant and CE marked, the power supplies are safety agency certified and meet the latest regulatory requirements.

## FEATURES

- New Efficient GaN power technology design
- Efficiency up to 94 %
- Form factor 4 x 2 x 1.6 in (101.6 x 50.8 x 40.64 mm)
- Output power up to 300 W (forced air cooling), or up to 250 W (convection cooling)
- High power density 23.43 W/inch<sup>3</sup>
- Operating temperature - 40 to +70°C
- Thermal shut-down feature / Dual fusing
- Available with metal enclosures / accessories
- IEC / EN / ANSI AAMI 60601-1 compliant
- MTBF > 800 000 hours
- Over temperature, OV, OC and SC protection

## APPLICATIONS

- Therapy Devices / Hospital Beds / Imaging Equipment
- Monitoring Devices / Surgical Devices
- Diagnostic Equipment / Dialysis Equipment
- Drug Pump / Home Health Care / Ultrasound



## 1. MODEL SELECTION

| MODEL NUMBER <sup>1</sup> | CONNECTION     | OUTPUT VOLTAGE [V] | MIN LOAD [A] | MAX LOAD [A] |         | RIPPLE <sup>3</sup> [%] |
|---------------------------|----------------|--------------------|--------------|--------------|---------|-------------------------|
|                           |                |                    |              | CONVECTION   | 375 LFM |                         |
| MEPG300-0012 <sup>2</sup> | Screw Terminal | 12                 | 0.0          | 15.00        | 20.84   | 2                       |
| MEPG300-0312 <sup>2</sup> | JST Connector  | 12                 | 0.0          | 15.00        | 18      | 2                       |
| MEPG300-1012 <sup>2</sup> | Screw Terminal | 12                 | 0.0          | 11.67        | 20.84   | 2                       |
| MEPG300-1312 <sup>2</sup> | JST Connector  | 12                 | 0.0          | 11.67        | 18      | 2                       |
| MEPG300-0015 <sup>2</sup> | Screw Terminal | 15                 | 0.0          | 12.00        | 16.67   | 2                       |
| MEPG300-0315 <sup>2</sup> | JST Connector  | 15                 | 0.0          | 12.00        | 16.67   | 2                       |
| MEPG300-1015 <sup>2</sup> | Screw Terminal | 15                 | 0.0          | 09.33        | 16.67   | 2                       |
| MEPG300-1315 <sup>2</sup> | JST Connector  | 15                 | 0.0          | 09.33        | 16.67   | 2                       |
| MEPG300-0024              | Screw Terminal | 24                 | 0.0          | 10.42        | 12.5    | 1                       |
| MEPG300-0324              | JST Connector  | 24                 | 0.0          | 10.42        | 12.5    | 1                       |
| MEPG300-1024              | Screw Terminal | 24                 | 0.0          | 8.33         | 12.5    | 1                       |
| MEPG300-1324              | JST Connector  | 24                 | 0.0          | 8.33         | 12.5    | 1                       |
| MEPG300-0030              | Screw Terminal | 30                 | 0.0          | 8.33         | 10      | 1                       |
| MEPG300-0330              | JST Connector  | 30                 | 0.0          | 8.33         | 10      | 1                       |
| MEPG300-1030              | Screw Terminal | 30                 | 0.0          | 6.67         | 10      | 1                       |
| MEPG300-1330              | JST Connector  | 30                 | 0.0          | 6.67         | 10      | 1                       |
| MEPG300-0048              | Screw Terminal | 48                 | 0.0          | 5.21         | 6.25    | 1                       |
| MEPG300-0348              | JST Connector  | 48                 | 0.0          | 5.21         | 6.25    | 1                       |
| MEPG300-1048              | Screw Terminal | 48                 | 0.0          | 4.17         | 6.25    | 1                       |
| MEPG300-1348              | JST Connector  | 48                 | 0.0          | 4.17         | 6.25    | 1                       |
| MEPG300-0058              | Screw Terminal | 58                 | 0.0          | 4.31         | 5.17    | 1                       |
| MEPG300-0358              | JST Connector  | 58                 | 0.0          | 4.31         | 5.17    | 1                       |
| MEPG300-1058              | Screw Terminal | 58                 | 0.0          | 3.45         | 5.17    | 1                       |
| MEPG300-1358              | JST Connector  | 58                 | 0.0          | 3.45         | 5.17    | 1                       |

<sup>1</sup> When used in Cover Kit, derate output power to 70% under all operating conditions, page 7.

<sup>2</sup> See Derating Curves, page 5.

<sup>3</sup> Output ripple can be more than 2 % of the output voltage at low load condition.

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.

All specifications are measured at nominal input voltage, 25°C, unless otherwise specified.

## 2. MODEL NUMBER KEY

### MEPG300 - Z X VV - YYY W - MMMM

#### Product Series

**MEPG300** = EOS Power GaN 300 W Series

#### Baseplate

0 = With base  
1 = Open frame

#### Type of Connector

0 = Screw terminal  
3 = JST connector

#### Output Voltage

12 = 12 V    15 = 15 V    24 = 24 V  
30 = 30 V    48 = 48 V    58 = 58 V

#### Accessories

Blank = Open frame  
U = U-channel  
L = L-bracket  
CK = Cover Kit  
CKF = Cover Kit with Fan  
(on top or inside)

#### Mounting Hole

Blank = 3.75 x 1.75 in  
G = 3.66 x 1.66 in

#### Minor Output Variations

Any alpha, numeric or alphanumeric character or blank



### 3. INPUT SPECIFICATIONS

| PARAMETER           | DESCRIPTION / CONDITIONS                                           | MIN | TYP | MAX | UNIT |
|---------------------|--------------------------------------------------------------------|-----|-----|-----|------|
| Input voltage       | Derate linearly from 100% at 115 VAC to 80% at 90 VAC <sup>4</sup> | 90  |     | 264 | VAC  |
| Input frequency     |                                                                    | 47  |     | 63  | Hz   |
| Input current       |                                                                    |     |     | 4   | A    |
| Inrush current      |                                                                    |     |     | 75  | A    |
| Leakage current     |                                                                    |     | 300 |     | μA   |
| Touch current       |                                                                    |     |     | 100 | μA   |
| No load input power |                                                                    |     |     | 2   | W    |
| Power factor        |                                                                    | 0.9 |     |     |      |

<sup>4</sup> Refer to Derating curves

### 4. OUTPUT SPECIFICATIONS<sup>5</sup>

| PARAMETER                    | DESCRIPTION / CONDITIONS                                                                          | MIN  | TYP | MAX  | UNIT |
|------------------------------|---------------------------------------------------------------------------------------------------|------|-----|------|------|
| Output power                 | Forced air cooling 375 LFM (115 to 264 VAC)                                                       |      |     | 300  | W    |
|                              | Convection cooling (180 to 264 VAC)                                                               |      |     | 250  |      |
|                              |                                                                                                   |      |     | 200  |      |
| Efficiency                   | At 230 VAC                                                                                        | 92   |     | 94   | %    |
| Hold-up time                 |                                                                                                   |      | 8   |      | ms   |
| Line regulation              |                                                                                                   | -0.5 |     | +0.5 | %    |
| Load regulation              |                                                                                                   | -0.5 |     | +0.5 | %    |
| Output voltage adjustability |                                                                                                   | -3   |     | +3   | %    |
| Rise time                    |                                                                                                   |      | 55  |      | ms   |
| Set point tolerance          |                                                                                                   | -1   |     | +1   | %    |
| Transient response           | Max excursion 5%; 50% step load change at 0.1 A/μs slew rate, 50% duty cycle, 50 Hz Recovery time |      | 5   |      | ms   |
| Switching frequency          | PFC PWM                                                                                           | 100  | 130 | 200  | kHz  |
| Start up delay               | 115/230 VAC Full Load                                                                             |      |     | 2    | s    |
| Drift                        | After 20 minutes warm-up                                                                          | -0.2 |     | 0.2  | %    |
| Over / Undershoot            | Turn On / Off                                                                                     |      |     | 5    | %    |
| Temperature coefficient      |                                                                                                   |      |     | 0.02 | %/°C |

<sup>5</sup> Specifications are for nominal input voltage 230 VAC, 25°C unless otherwise stated.

### 5. PROTECTIONS

| PARAMETER                | DESCRIPTION / CONDITIONS   | MIN | TYP | MAX | UNIT |
|--------------------------|----------------------------|-----|-----|-----|------|
| Over current protection  | Hiccup mode; auto recovery | 110 |     |     | %    |
| Over voltage protection  | Hiccup mode; auto recovery | 110 |     | 140 | %    |
| Short circuit protection | Hiccup mode; auto recovery |     |     |     |      |



## 6. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER             | DESCRIPTION / CONDITIONS                                            | MIN | TYP | MAX   | UNIT |
|-----------------------|---------------------------------------------------------------------|-----|-----|-------|------|
| Operating temperature | -40 to 0°C start-up is guaranteed with spec. deviation <sup>6</sup> | -40 |     | +70   | °C   |
| Storage temperature   |                                                                     | -40 |     | +85   | °C   |
| Humidity              | Relative                                                            | 5   |     | 95    | %    |
| Altitude              | Operating, RH, non-condensing                                       |     |     | 16000 | ft   |
|                       | Non operating, non-condensing                                       |     |     | 40000 | ft   |

<sup>6</sup> Output ripple can be more than 10 % of the output voltage.

## 7. EMC SPECIFICATIONS

| PARAMETER                   | DESCRIPTION / CONDITIONS                                                      | CLASS / LEVEL / CRITERION |
|-----------------------------|-------------------------------------------------------------------------------|---------------------------|
| Conducted emissions         | EN 55011, CISPR22-B, FCC PART15-B                                             | Level B                   |
| Radiated emissions          | EN 55011,                                                                     | Level A                   |
|                             | With external core (King core K5B RC 25x12x15-M or equivalent in input cable) | Level B                   |
| Harmonic current            | EN 61000-3-2                                                                  | Class A                   |
| Fluctuation and Flicker     | EN 61000-3-3                                                                  | Compliance                |
| ESD immunity                | EN 61000-4-2                                                                  | Level 4, Criterion A      |
| Radiated field immunity     | EN 61000-4-3                                                                  | Level 3, Criterion A      |
| Electrical fast transient   | EN 61000-4-4                                                                  | Level 3, Criterion A      |
| Surge immunity              | EN 61000-4-5                                                                  | Level 3, Criterion A      |
| Conducted immunity          | EN 61000-4-6                                                                  | Level 3, Criterion A      |
| Magnetic field immunity     | EN 61000-4-8                                                                  | Level 4, Criterion A      |
| Voltage dips, interruptions | EN 61000-4-11                                                                 | Criterion A & B           |

## 8. SAFETY SPECIFICATIONS

| PARAMETER                  | DESCRIPTION / CONDITIONS                                                | MIN  | TYP     | MAX | UNIT |
|----------------------------|-------------------------------------------------------------------------|------|---------|-----|------|
| Safety approvals           | IEC 60601-1, EN 60601-1<br>ANSI/AAMI ES 60601-1 & CSA C22.2, No.60601-1 |      | Medical |     |      |
| Equipment protection class | Class I                                                                 |      |         |     |      |
| Isolation                  | Input to Output (2x MOPP)                                               | 4400 |         |     | VAC  |
|                            | Input to Ground (1x MOPP)                                               | 1500 |         |     |      |
|                            | Output to Ground (1x MOPP)                                              | 1500 |         |     |      |
| MTBF                       | Telcordia -SR332-issue 3                                                | 800  |         |     | khrr |

## 9. CONNECTORS & PIN DESCRIPTION

| CONNECTION       | PIN             | PIN         | DESCRIPTION | CONNECTOR      | MANUFACTURER PN                                                                                                                  |
|------------------|-----------------|-------------|-------------|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| AC Input         | J1              | Pin 1       | AC LINE     |                | Molex: 26-60-4030<br>Mating: 09-50-3031; Pins: 08-50-0106                                                                        |
|                  |                 | Pin 2       | NOT FITTED  |                |                                                                                                                                  |
|                  |                 | Pin 3       | AC NEUTRAL  |                |                                                                                                                                  |
| DC Output        | J1 <sup>7</sup> | Pin 1       | AC LINE     |                | TYCO: 5-1376382-1 or equivalent<br>Mating: 1376388-1 (TYCO) or equivalent                                                        |
|                  |                 | Pin 2       | AC NEUTRAL  |                |                                                                                                                                  |
|                  | J2              | Pin 1, 2, 3 | V1 +VE      | Screw terminal | 6-32 inches Screw Pan HD Vertical<br>Mating: Designed to accept Ring Tongue Terminal AMP: 8-31886-1                              |
|                  |                 | Pin 4, 5, 6 | V1 -VE      | JST connector  |                                                                                                                                  |
|                  |                 |             |             |                | JST p/n: B6P-VH(LF)(SN)<br>Mating: JST p/n: VHR-6M or MOLEX p/n: 511440600 or TE connectivity p/n: 2132781-6, Pins: SVH-41T-P1.1 |
|                  | J2 <sup>7</sup> | Pin 1, 2    | V1 +VE      |                | Molex: 39-28-1043 or equivalent<br>Mating : 39-01-2040 (Molex) or equivalent                                                     |
|                  |                 | Pin 3, 4    | V1 -VE      |                |                                                                                                                                  |
| Aux Output (Fan) | J3              | Pin 1       | FAN +       |                | Molex: 22-05-7025<br>Mating: 50-37-5023                                                                                          |
|                  |                 | Pin 2       | FAN -       |                |                                                                                                                                  |

<sup>7</sup> AC Input (J1) and DC Output (J2) connectors for MEPG300-1XXX-G models

## 10. MECHANICAL SPECIFICATIONS

| PARAMETER  | DESCRIPTION / CONDITIONS                                              | MIN                                  | TYP | MAX | UNIT     |
|------------|-----------------------------------------------------------------------|--------------------------------------|-----|-----|----------|
| Dimensions | MEPG300-0XXX [with base]                                              | 101.6 x 50.8 x 40.64<br>4 x 2 x 1.6  |     |     | mm<br>in |
|            | MEPG300-1XXX [Open frame]                                             | 101.6 x 50.8 x 36.40<br>4 x 2 x 1.43 |     |     | mm<br>in |
| Weight     |                                                                       |                                      | 300 |     | g        |
| Cooling    | Forced air cooling (375 LFM)<br>Convection cooling (natural air flow) |                                      |     |     |          |

## 11. DERATING CURVES

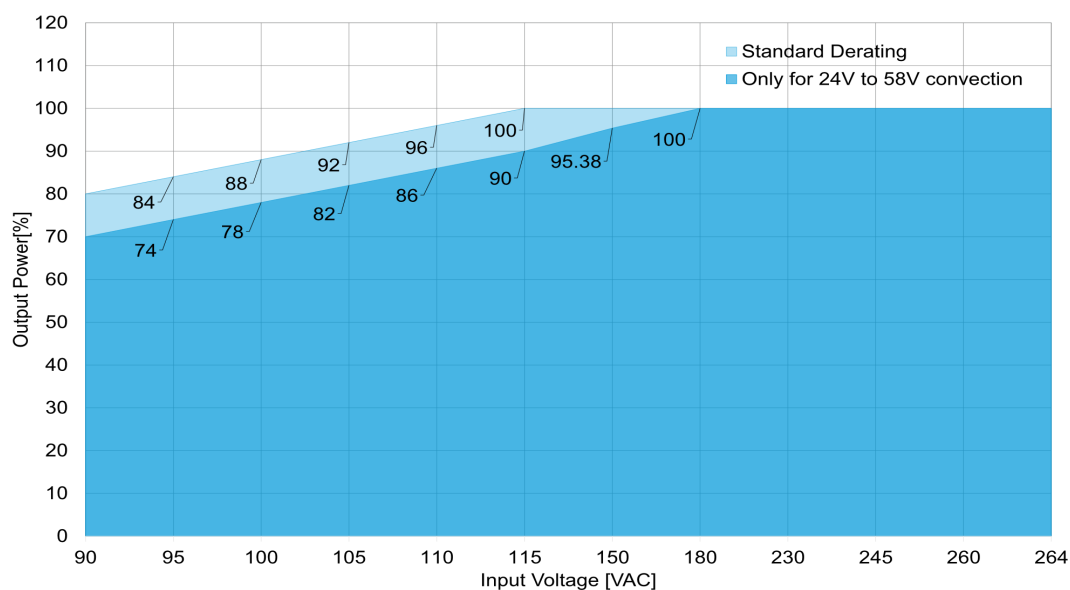
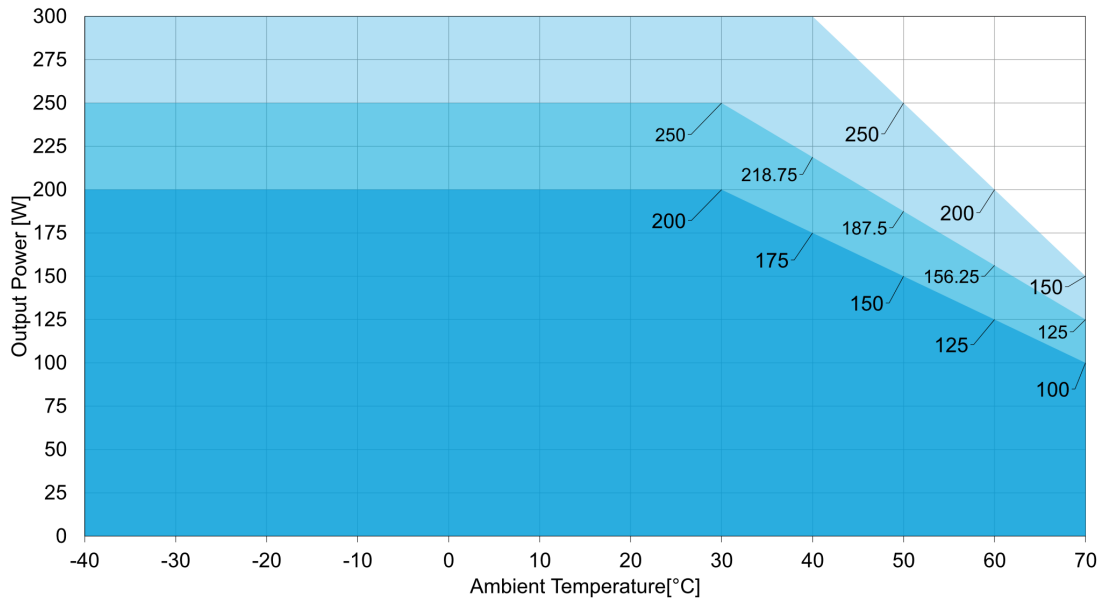


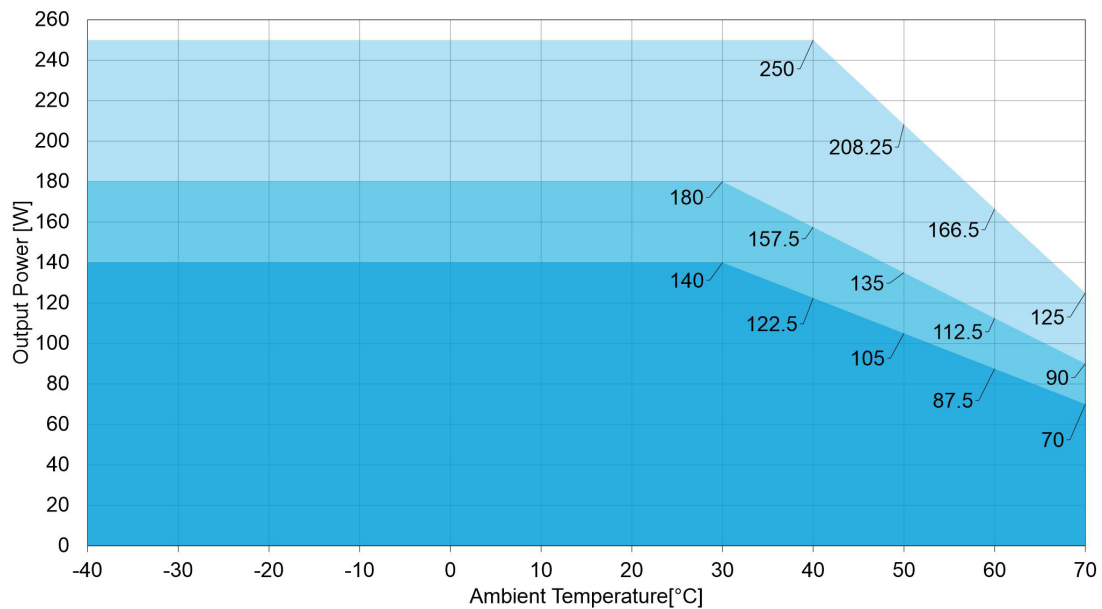
Figure 1. Output Power Derating w.r.t. Input voltage





Notes: Convection load: 200 W up to 30°C; derate above 30°C @ 1.25% per °C (MEPG300-1XXX models)  
 Convection load: 250 W up to 30°C; derate above 30°C @ 1.25% per °C (MEPG300-0XXX models)  
 Forced air load: 300 W up to 40°C; derate above 40°C @ 1.67% per °C

Figure 2. Power Derating of 24 V, 30 V, 48 V & 58 V models (Open frame / L channel / U bracket options)



Notes: Convection load: 140 W up to 30°C; derate above 30°C @ 1.25% per °C (MEPG300-1XXX models)  
 Convection load: 180 W up to 30°C; derate above 30°C @ 1.25% per °C (MEPG300-0XXX models)  
 Forced air load: 250 W up to 40°C; derate above 40°C @ 1.67% per °C

Figure 3. Power Derating of 12 V & 15 V models (Open frame / L channel / U bracket options)

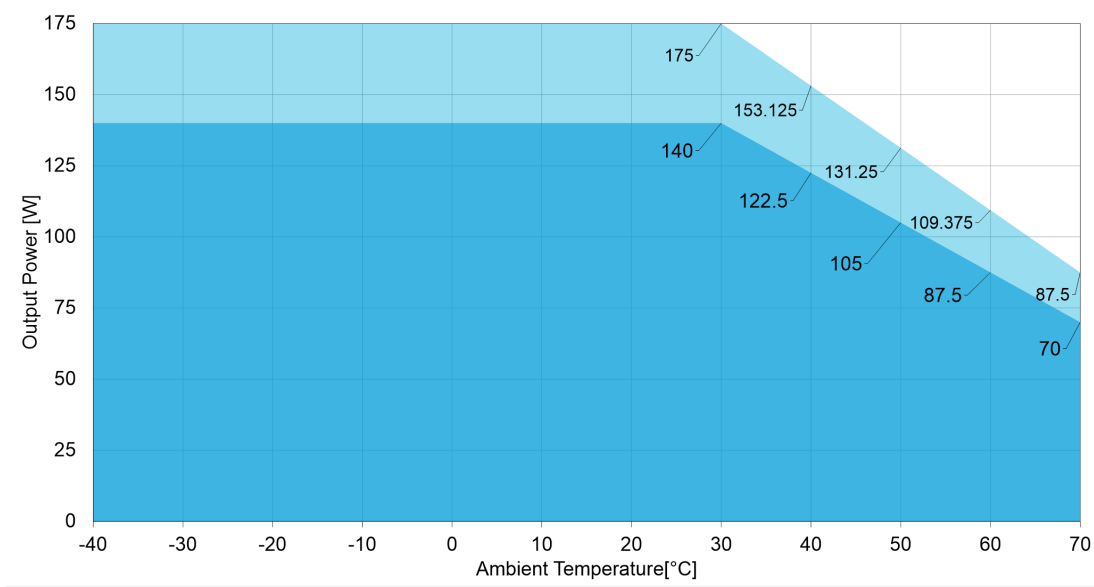


Figure 4. Power Derating of 24 V, 30 V, 48 V & 58 V models (Cover kit option)

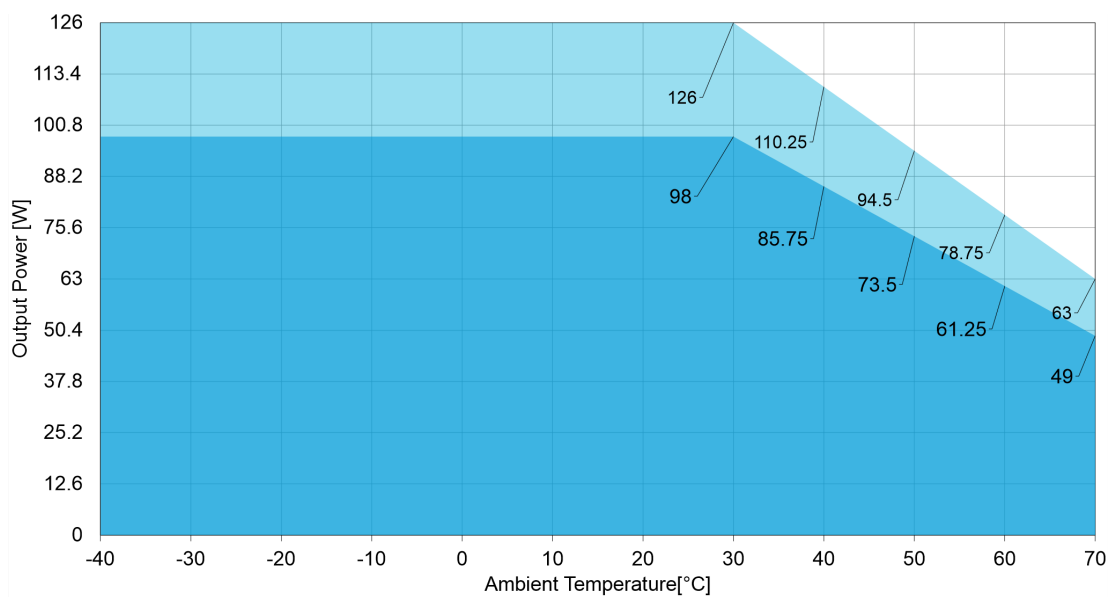


Figure 5. Power Derating of 12 V & 15 V models (Cover kit option)



## 12. MECHANICAL DRAWINGS

### MEPG300-0XXX MODELS

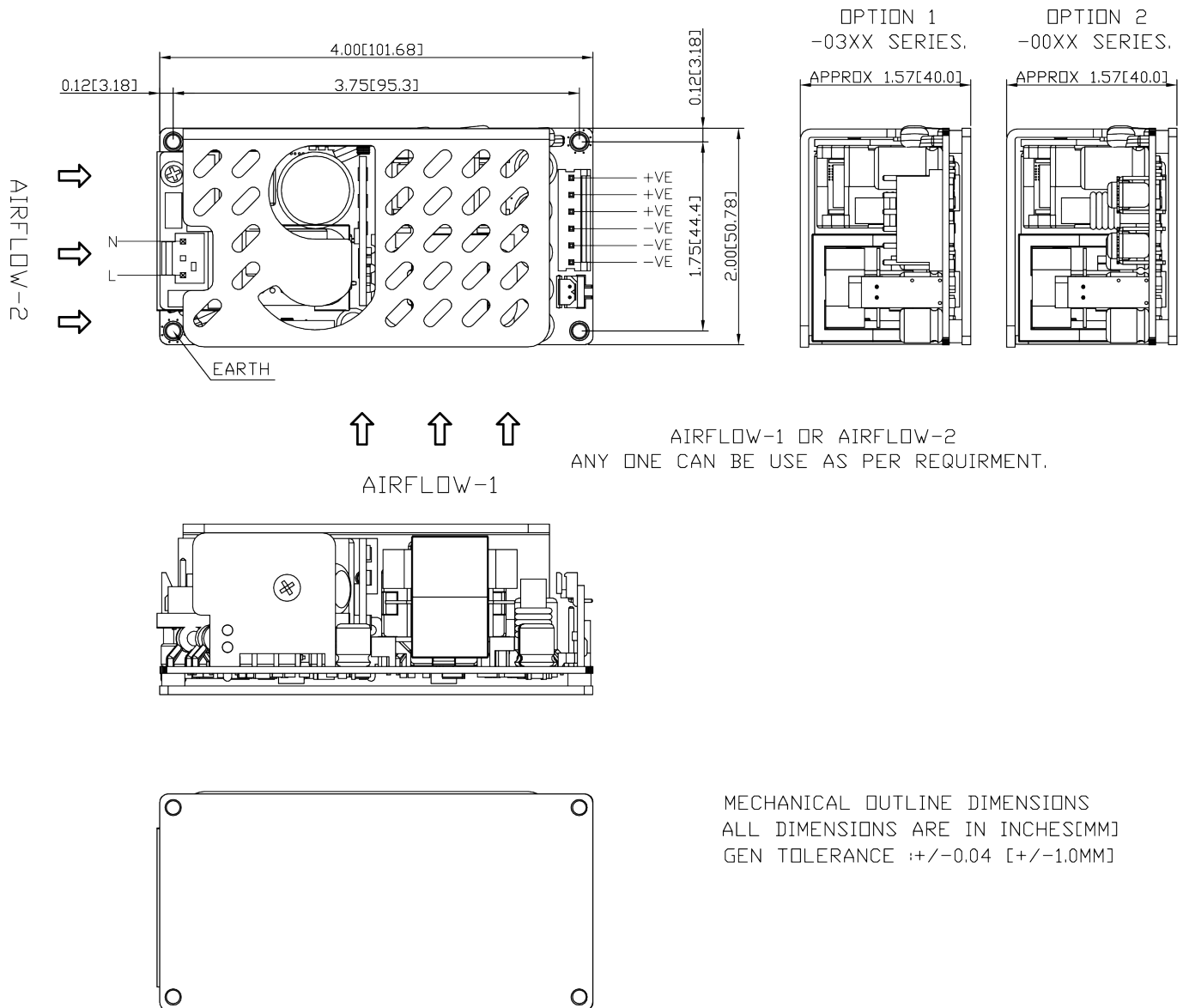


Figure 6. Mechanical Drawing – MEPG300-0XXX models

MEPG300-1XXX MODELS

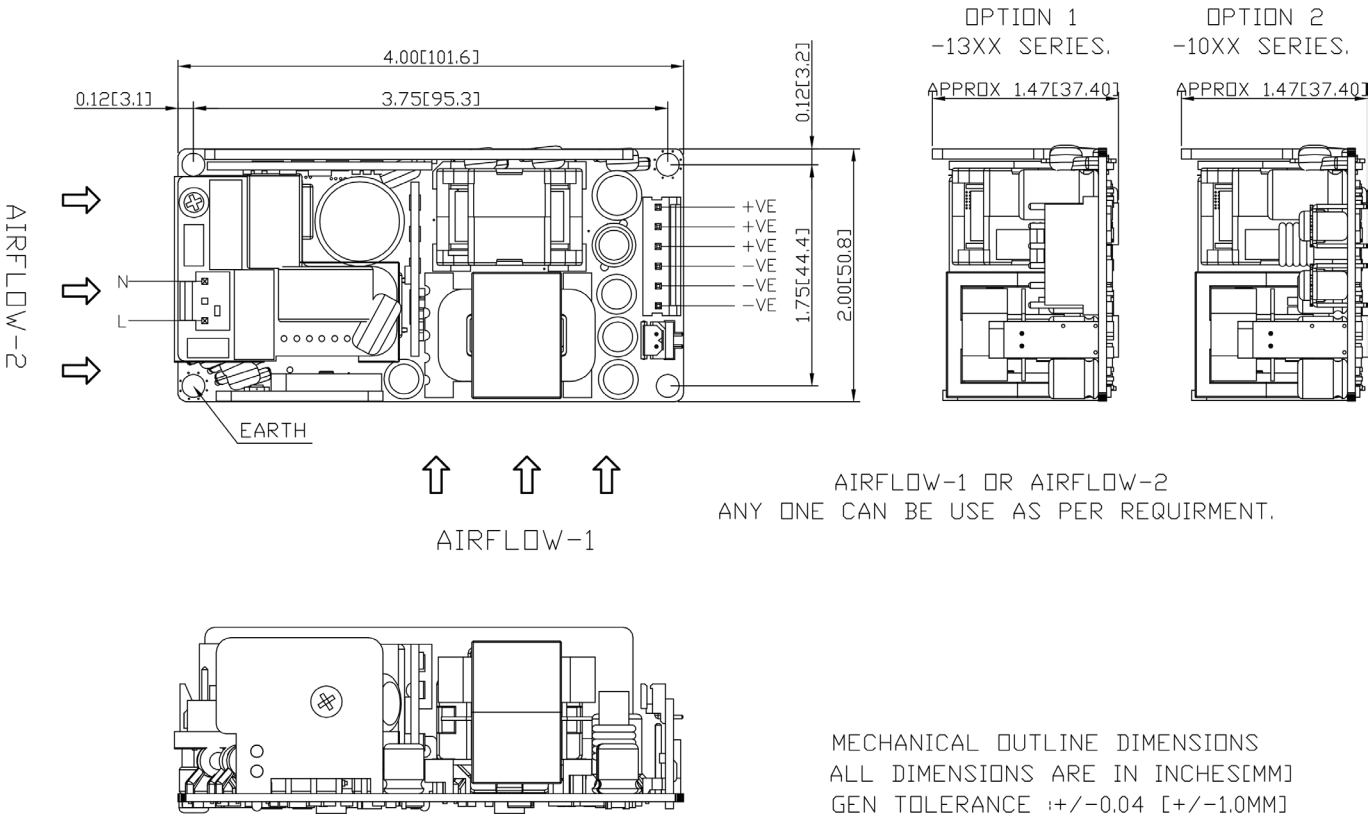


Figure 7. Mechanical Drawing – MEPG300-1XXX models

## MEPG300-1XXX-G

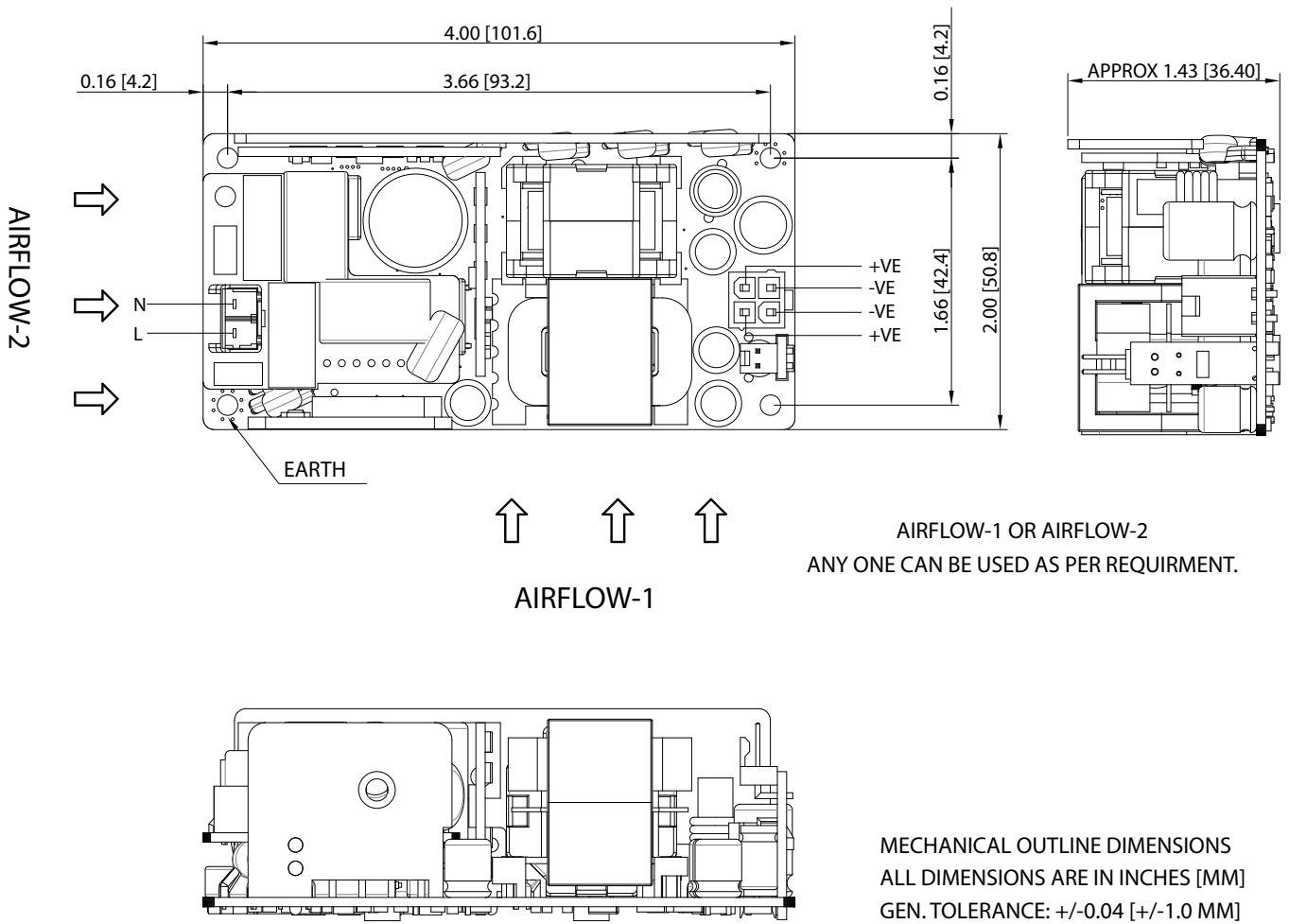


Figure 8. Mechanical Drawing – MEPG300-1XXX-G models

MEPG300-0XXX-L

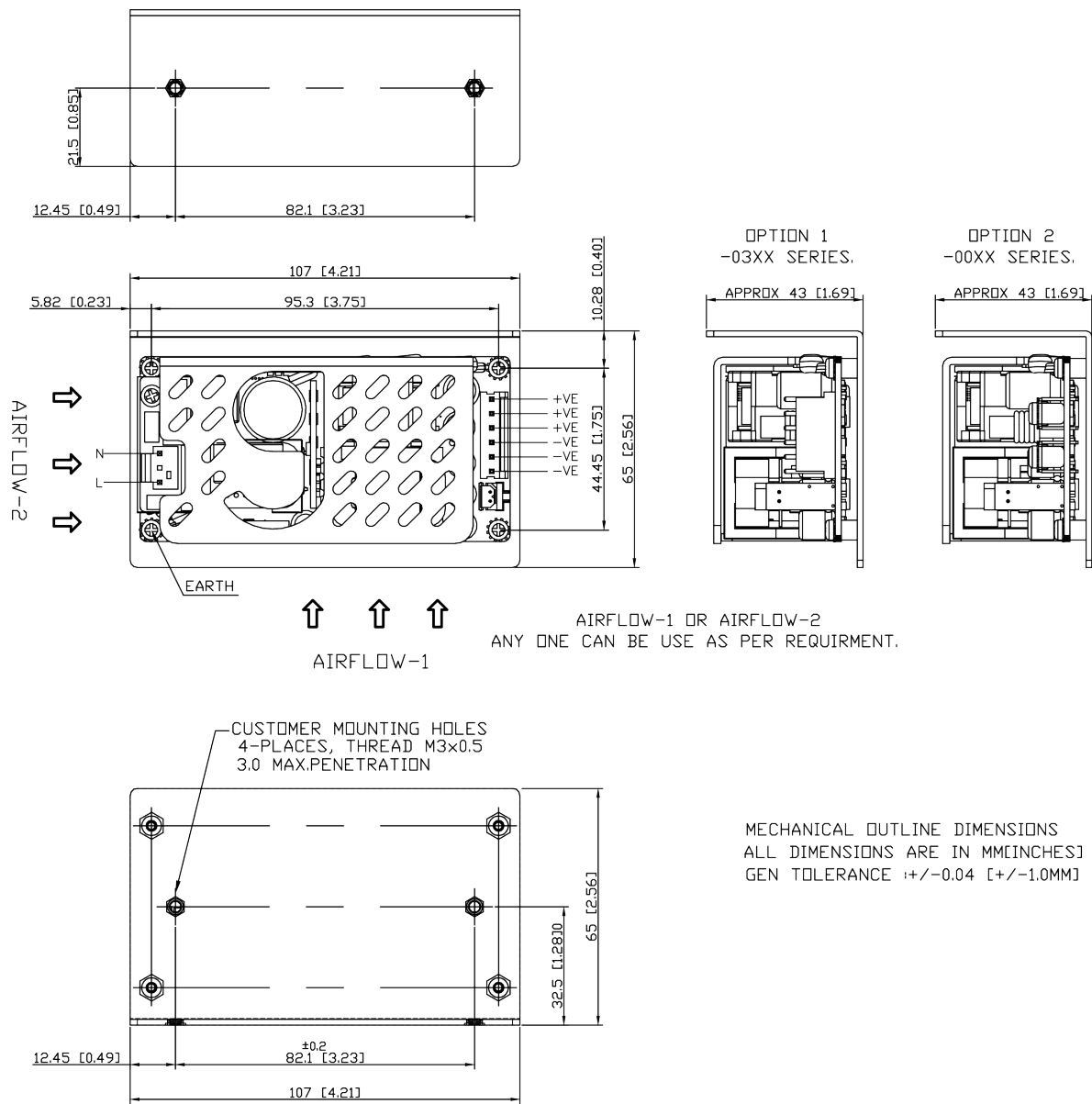


Figure 9. Mechanical Drawing – MEPG300-0XXX-L



MEPG300-0XXX-U

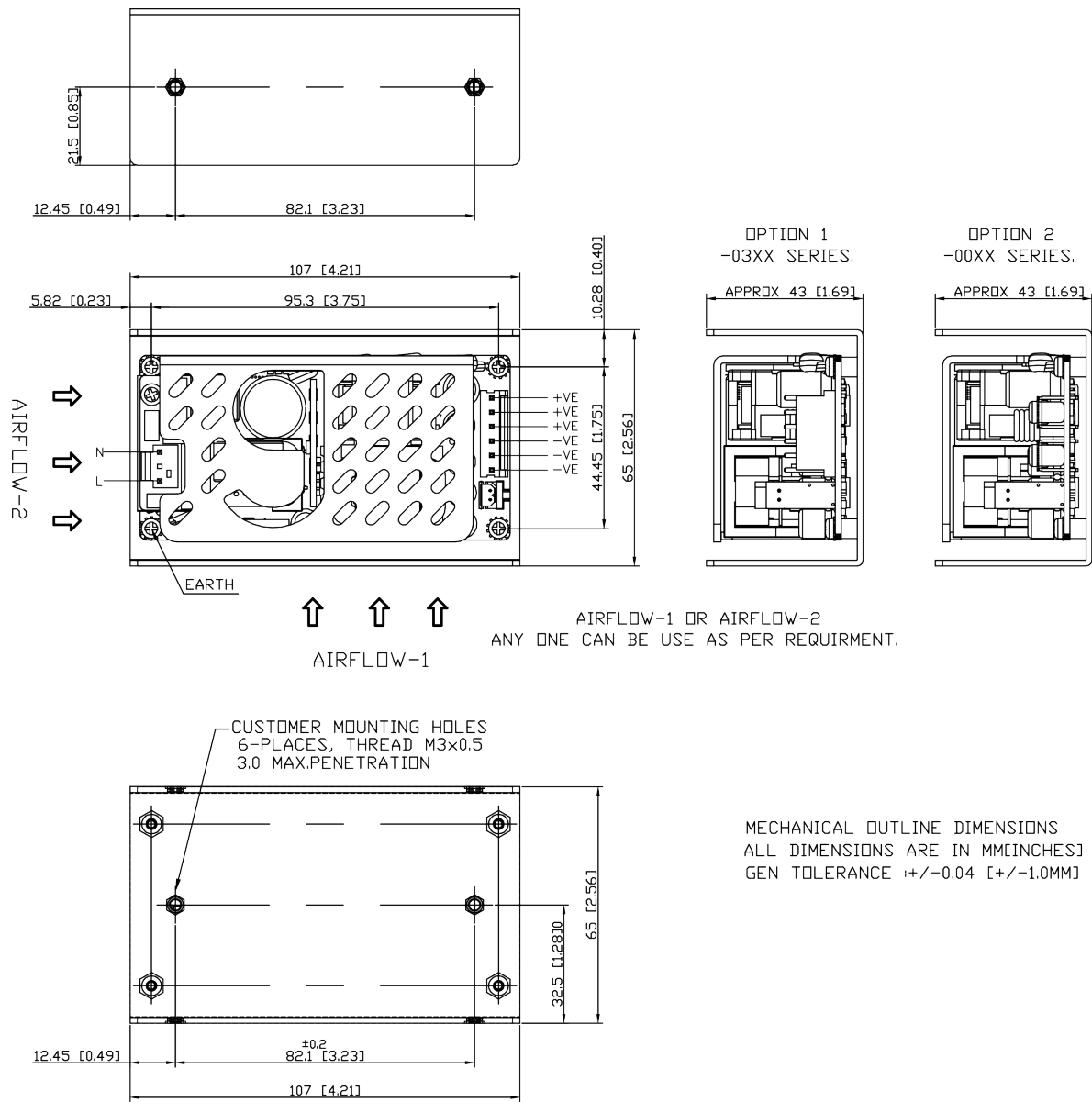
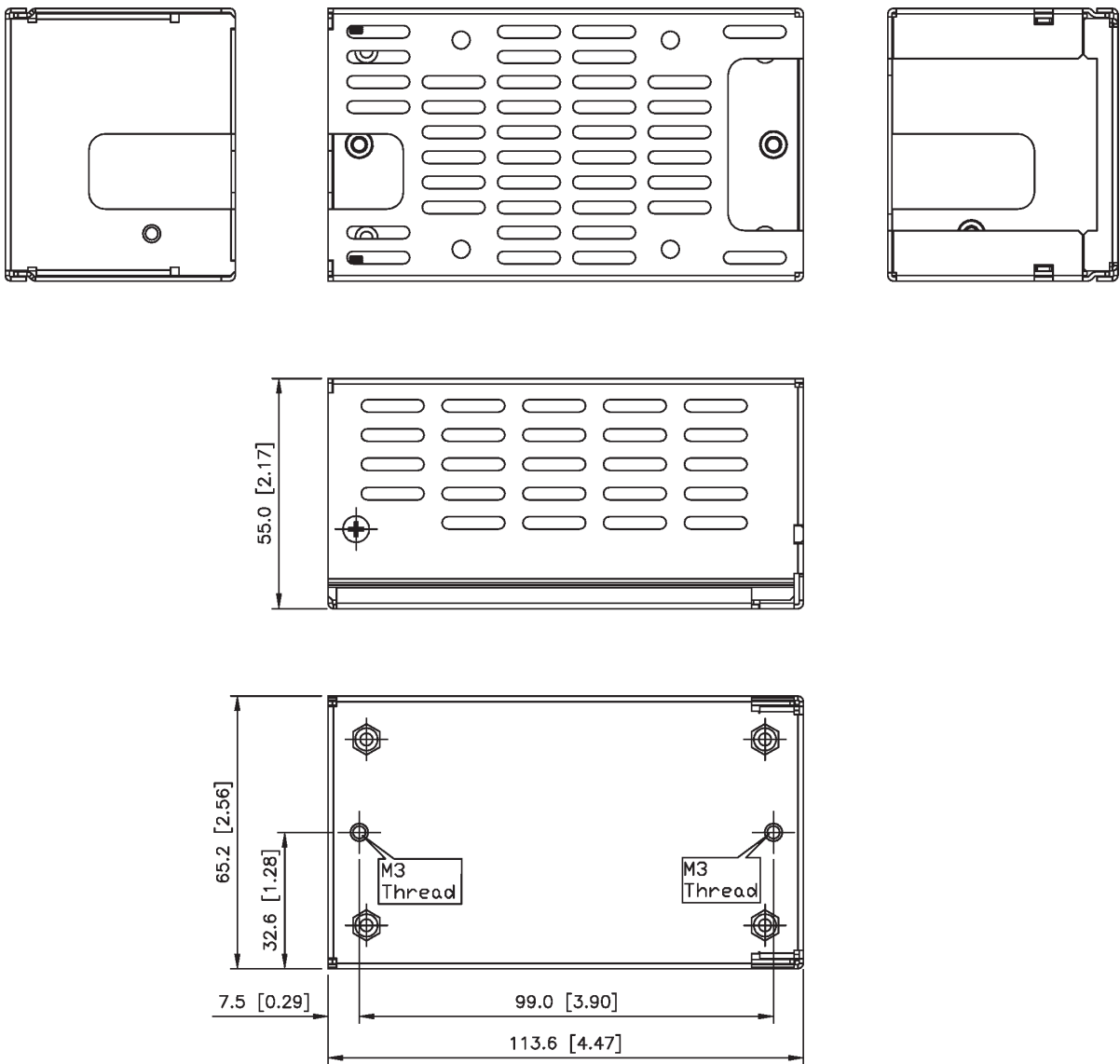


Figure 11. Mechanical Drawing – MEPG300-0XXX-U



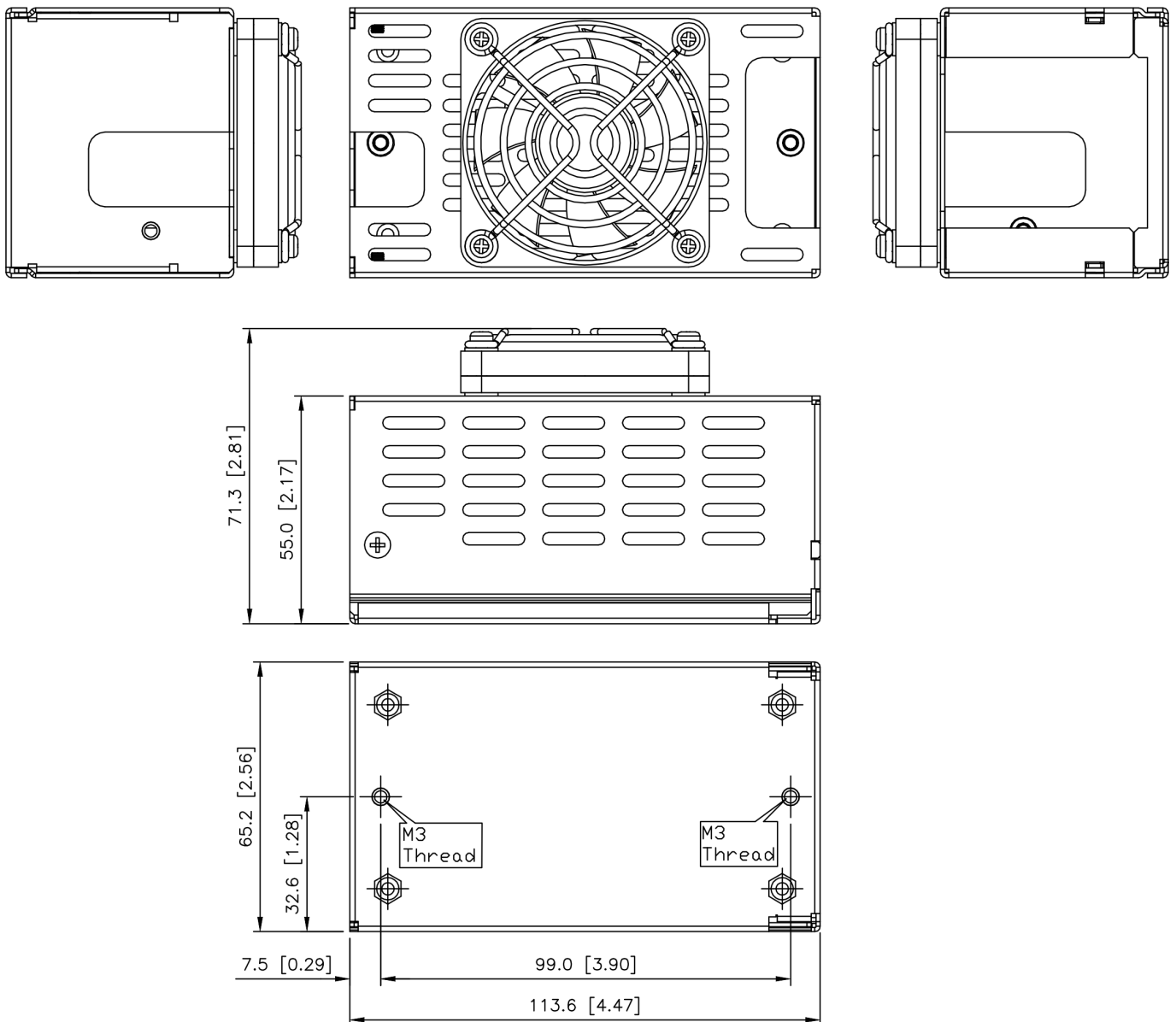
MEPG300-XXXX-CK



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

Figure 13. Mechanical Drawing – MEPG300-XXXX-CK models

## MEPG300-XXXX-CKF



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

Figure 14. Mechanical Drawing – MEPG300-XXXX-CKF models

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[MEPG300-0348](#) [MEPG300-1012-U](#) [MEPG300-1030](#) [MEPG300-1348](#) [MEPG300-1358-U](#) [MEPG300-0012](#)  
[MEPG300-0024-U](#) [MEPG300-0312-CKF](#) [MEPG300-0358-CKF](#) [MEPG300-1058-U](#) [MEPG300-1324-U](#) [MEPG300-](#)  
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