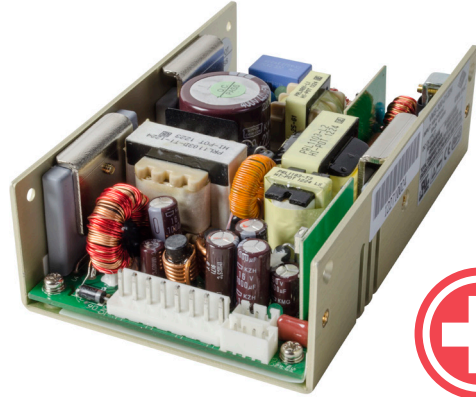


**SERIES: VMS-300 | DESCRIPTION: AC-DC POWER SUPPLY**
**FEATURES**

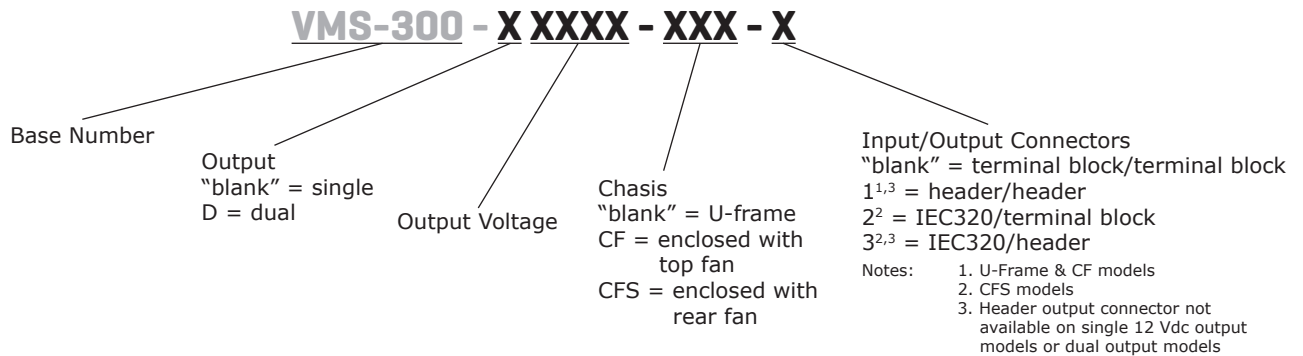
- up to 300<sup>2</sup> W continuous power
- 12.5 W/in<sup>3</sup> power density
- universal input (90~264 Vac)
- 12 Vdc auxiliary fan output
- over voltage, short circuit, and over temperature protections
- built-in active PFC function
- efficiency up to 85%



| MODEL              | output voltage |    | output current     | output power     | ripple and noise <sup>4, 5</sup> | efficiency |
|--------------------|----------------|----|--------------------|------------------|----------------------------------|------------|
|                    | (Vdc)          |    | max (A)            | max (W)          | max (mVp-p)                      | min (%)    |
| VMS-300-12         | 12             |    | 25 <sup>2</sup>    | 300 <sup>2</sup> | 120                              | 82         |
| VMS-300-15         | 15             |    | 20 <sup>2</sup>    | 300 <sup>2</sup> | 150                              | 82         |
| VMS-300-24         | 24             |    | 12.5 <sup>2</sup>  | 300 <sup>2</sup> | 240                              | 83         |
| VMS-300-36         | 36             |    | 8.33 <sup>2</sup>  | 300 <sup>2</sup> | 360                              | 84         |
| VMS-300-48         | 48             |    | 6.25 <sup>2</sup>  | 300 <sup>2</sup> | 480                              | 84         |
| VMS-300-D0512*     | V1             | 5  | 24 <sup>3</sup>    | 240 <sup>3</sup> | 50                               | 80         |
|                    | V2             | 12 | 13.33 <sup>3</sup> |                  | 120                              |            |
| VMS-300-D1224      | V1             | 12 | 13.33 <sup>3</sup> | 240 <sup>3</sup> | 120                              | 85         |
|                    | V2             | 24 | 6.67 <sup>3</sup>  |                  | 240                              |            |
| VMS-300-12-CF      | 12             |    | 25                 | 300              | 120                              | 82         |
| VMS-300-15-CF      | 15             |    | 20                 | 300              | 150                              | 82         |
| VMS-300-24-CF      | 24             |    | 12.5               | 300              | 240                              | 83         |
| VMS-300-36-CF      | 36             |    | 8.33               | 300              | 360                              | 84         |
| VMS-300-48-CF      | 48             |    | 6.25               | 300              | 480                              | 84         |
| VMS-300-D0512-CF*  | V1             | 5  | 24                 | 240 <sup>3</sup> | 50                               | 80         |
|                    | V2             | 12 | 13.33              |                  | 120                              |            |
| VMS-300-D1224-CF   | V1             | 12 | 13.33              | 240 <sup>3</sup> | 120                              | 85         |
|                    | V2             | 24 | 6.67               |                  | 240                              |            |
| VMS-300-12-CFS     | 12             |    | 25                 | 300              | 120                              | 82         |
| VMS-300-15-CFS     | 15             |    | 20                 | 300              | 150                              | 82         |
| VMS-300-24-CFS     | 24             |    | 12.5               | 300              | 240                              | 83         |
| VMS-300-36-CFS     | 36             |    | 8.33               | 300              | 360                              | 84         |
| VMS-300-48-CFS     | 48             |    | 6.25               | 300              | 480                              | 84         |
| VMS-300-D0512-CFS* | V1             | 5  | 24                 | 240 <sup>3</sup> | 50                               | 80         |
|                    | V2             | 12 | 13.33              |                  | 120                              |            |
| VMS-300-D1224-CFS  | V1             | 12 | 13.33              | 240 <sup>3</sup> | 120                              | 85         |
|                    | V2             | 24 | 6.67               |                  | 240                              |            |

- Notes:
1. Peak power of 600 W within 500  $\mu$ s only applies to single output models
  2. Total continuous output power will not exceed 300 W with 25 CFM forced air, 150 W without fan.
  3. Total combined continuous output power will not exceed 240 W with 25 CFM forced air, 120 W without fan.
  4. Measured at 10 kHz ~ 20 MHz, with 0.1  $\mu$ F ceramic and 22  $\mu$ F electrolytic parallel capacitors
  5. 1% minimum load is required to maintain the ripple and regulation (10% for dual output models)
  6. \* Discontinued model.

## PART NUMBER KEY



## INPUT

| parameter               | conditions/description   | min | typ        | max      | units  |
|-------------------------|--|-----|------------|----------|--------|
| voltage                 |  | 90  |            | 264      | Vac    |
| frequency               |  | 47  |            | 63       | Hz     |
| current                 | at 90 Vac, cold start  |     |            | 5        | A      |
| inrush current          | at 115 Vac, cold start<br>at 230 Vac, cold start                           |     |            | 35<br>70 | A<br>A |
| power factor correction | single output models pass EN61000-3-2 Class D<br>dual output models        |     | --<br>0.95 |          |        |
| leakage current         | at 264 Vac   |     |            | 0.3      | mA     |
| input fuse              | 5 A / 250 V inserted in primary  |     |            |          |        |
| remote ON/OFF           | designated as INH on pin 4 of CN3, requires a low signal to inhibit output |     |            |          |        |

## OUTPUT

| parameter           | conditions/description   | min            | typ      | max            | units             |
|---------------------|--|----------------|----------|----------------|-------------------|
| load regulation     | single output models<br>dual output models   |                | ±1<br>±5 |                | %<br>%            |
| transient response  | returns to within 1% in <2.5 ms for a 50% load change and the peak transient does not exceed 5%  |                |          |                |                   |
| start-up time       | at 230 Vac   |                |          | 1              | s                 |
| hold-up time        | at 120 Vac, 80% load   | 16             |          |                | ms                |
| adjustability       | user adjustable  |                | ±5       |                | %                 |
| switching frequency | PFC<br>PWM<br>PWM dual output models   | 50<br>65<br>45 |          | 70<br>75<br>55 | kHz<br>kHz<br>kHz |
| fan drive           | 12 Vdc / 300 mA for external fan   |                |          |                |                   |
| fan fail (FF)       | designated as FF on pin 3 of CN3, open collector output rated for 28 Vdc/5 mA sink current max., goes high when a fan failure is detected      |                |          |                |                   |
| power good (PG)     | designated as PG on pin 1 of CN3, open collector, goes high 100-500 ms after DC regulation and goes low at least 1ms before loss of regulation |                |          |                |                   |

## PROTECTIONS

| parameter                   | conditions/description                                 | min | typ | max | units |
|-----------------------------|--|-----|-----|-----|-------|
| over voltage protection     | latch down and auto restart                            |     |     | 130 | %     |
| over current protection     | auto restart   | 110 |     | 140 | %     |
| short circuit protection    | auto restart with no damage from a short on any output |     |     |     |       |
| over temperature protection | auto restart   |     | 110 |     | °C    |

## SAFETY & COMPLIANCE

| parameter         | conditions/description   | min     | typ | max | units |
|-------------------|--|---------|-----|-----|-------|
| isolation voltage | primary to secondary at 10 mA for 3 seconds  | 4,000   |     |     | Vac   |
|                   | primary to chassis at 10 mA for 3 seconds  | 1,500   |     |     | Vac   |
|                   | primary to core at 10 mA for 3 seconds   | 1,500   |     |     | Vac   |
| safety approvals  | UL 60601-1, EN 60601-1, IEC 60601-1 (Edition 3.1)  |         |     |     |       |
| EMI/EMC           | EN 60601-1-2 (4th Edition), EN 55011 Class B, EN 61000-3-(2,3), IEC 61000-4-(2,3,4,5,6,8,11) |         |     |     |       |
| MTBF              | as per MIL-HDBK-217F at 30°C   | 100,000 |     |     | hours |
| RoHS              | 2011/65/EU   |         |     |     |       |

## ENVIRONMENTAL

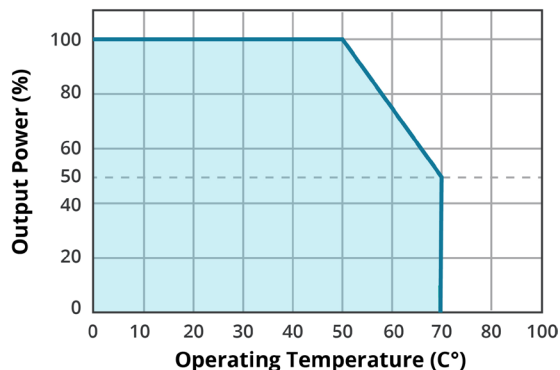
| parameter             | conditions/description                            | min | typ | max | units |
|-----------------------|---|-----|-----|-----|-------|
| operating temperature | see derating curve                                | 0   |     | 70  | °C    |
| storage temperature   |   | -20 |     | 85  | °C    |
| operating humidity    | non-condensing                                    | 5   |     | 90  | %     |
| storage humidity      | non-condensing                                    | 5   |     | 95  | %     |
| vibration             | 5 ~ 50 Hz, acceleration $\pm 7.35$ m/s*s per axis |     |     |     |       |

## CONNECTORS

| parameter                      | conditions/description  |
|--------------------------------|---|
| input connector (CN1)          | U-frame and CF<br>Terminal Block: Howder M3 screws 3 pin 6.35 mm center<br>Part No. HD-601-3P; PCB Labeling: L=Line; N=Neutral; G=Chassis Ground<br>Header: CHYAO SHIUNN JS-1120-05<br>Mating: JST VHR-5N or equivalent (5 pin, 3 used) |
|                                | CFS<br>Terminal Block: Howder HD-602-3P<br>Input plug: IEC320 Inlet   |
| output connector (CN2)         | single output models<br>Terminal block: Dinkle P830N, M5 screws<br>Header: CHYAO SHIUNN JS-1120-06<br>Mating: JST VHR-6N or equivalent (6 pin)  |
|                                | dual output models<br>Terminal block: Howder HD-816-3P, M3 screws   |
| output pin assignment          | single output models<br>Terminal block: Pin 1 = -V, Pin 2 = +V<br>Header: Pins 1~3 = V-, Pins 4~6 = V+  |
|                                | dual output models<br>Terminal block: Pin 1 = V2, Pin 2 = RTN, Pin 3 = V1   |
| logical signal connector (CN3) | Mating JST XHP-4 or equivalent (CHYAO SHIUNN JS-2001-04);<br>Mating Pins: JST SXH-002T-P0.6 FOR AWG 30 to 26  |
| fan driver connector (FAN1)    | Mating connector is JST P/N XHP-3 (3 pins 0.98 pitch) or equivalent (CHYAO SHIUNN JS-2001-03)   |

## DERATING CURVE

TEMPERATURE DERATING CURVE



### Single Output

U-Frame at 300 W max. with 25 CFM forced air cooling, at 150 W max. convection  
 CF up to 300 W max.  
 CFS up to 300 W max.

### Dual Output

U-Frame at 240 W max. with 25 CFM forced air cooling, at 120 W max. convection  
 CF up to 240 W max.  
 CFS up to 240 W max.

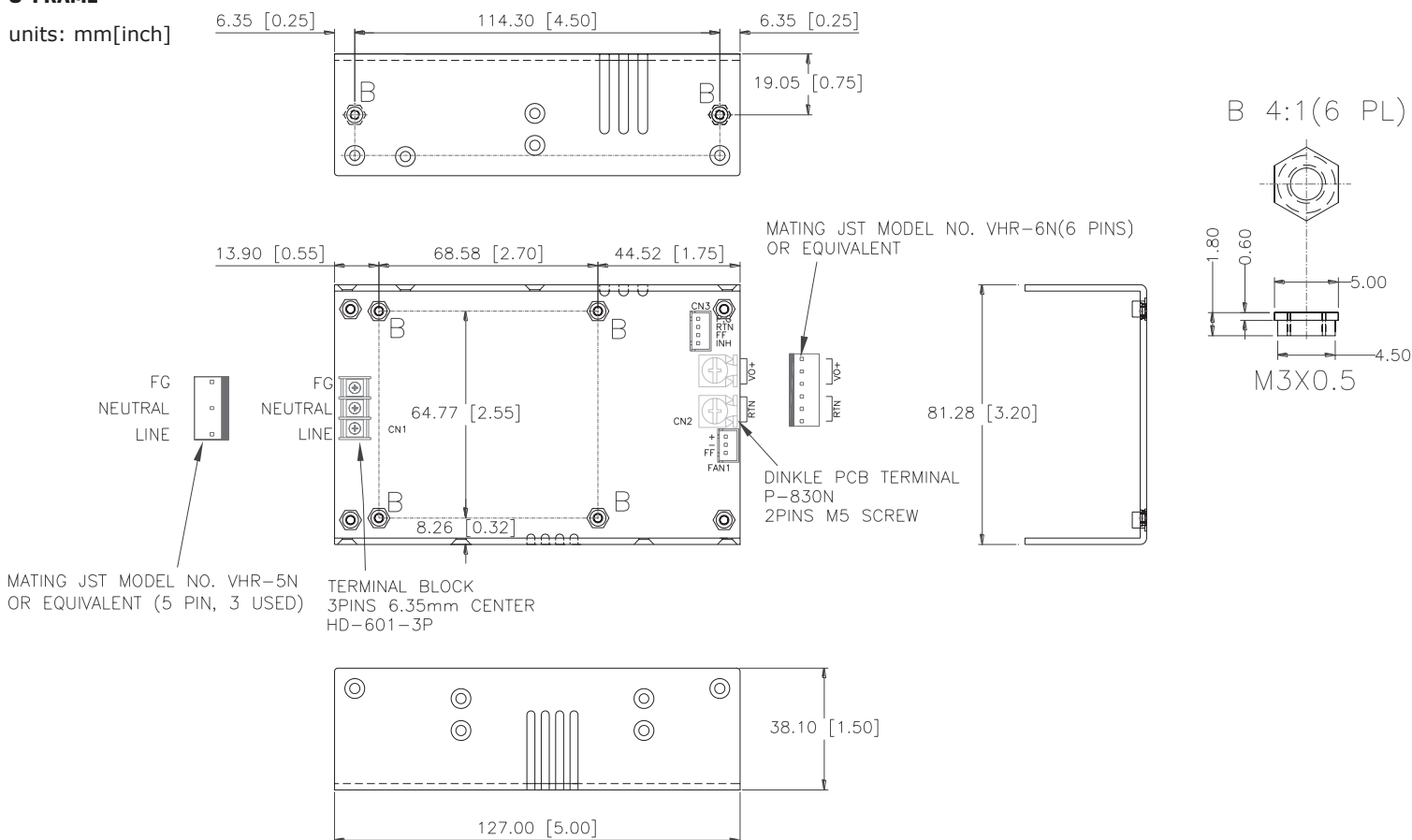
## MECHANICAL

| parameter  | conditions/description                            | min | typ | max | units |
|------------|---|-----|-----|-----|-------|
| dimensions | U-Frame: 127 x 81.28 x 38.1 (5 x 3.2 x 1.5 inch)  |     |     |     | mm    |
|            | CF: 127 x 81.28 x 50.8 (5 x 3.2 x 2 inch)         |     |     |     | mm    |
|            | CFS: 165.1 x 81.28 x 40.64 (6.5 x 3.2 x 1.6 inch) |     |     |     | mm    |
| weight     | U-frame   |     |     | 500 | g     |
|            | CF  |     |     | 600 | g     |
|            | CFS   |     |     | 650 | g     |

## MECHANICAL DRAWING - SINGLE OUTPUT MODELS

### U-FRAME

units: mm[inch]

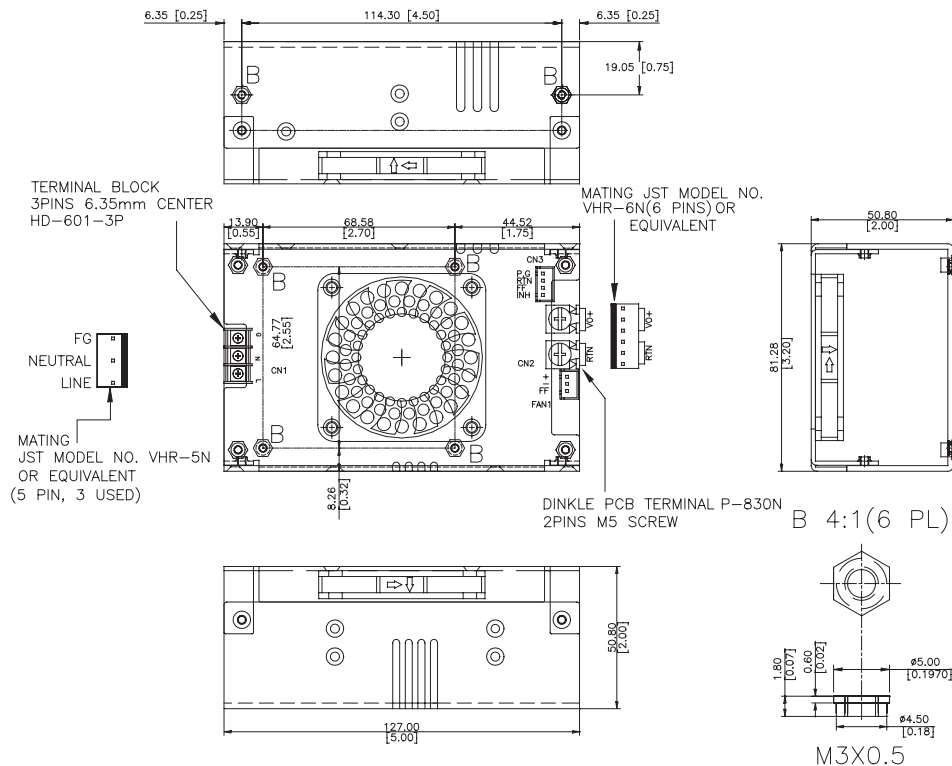


Note: 1. Mounting hole max screw depth is 4.0mm (M3x0.5 Inserts).

## MECHANICAL DRAWING - SINGLE OUTPUT MODELS (CONTINUED)

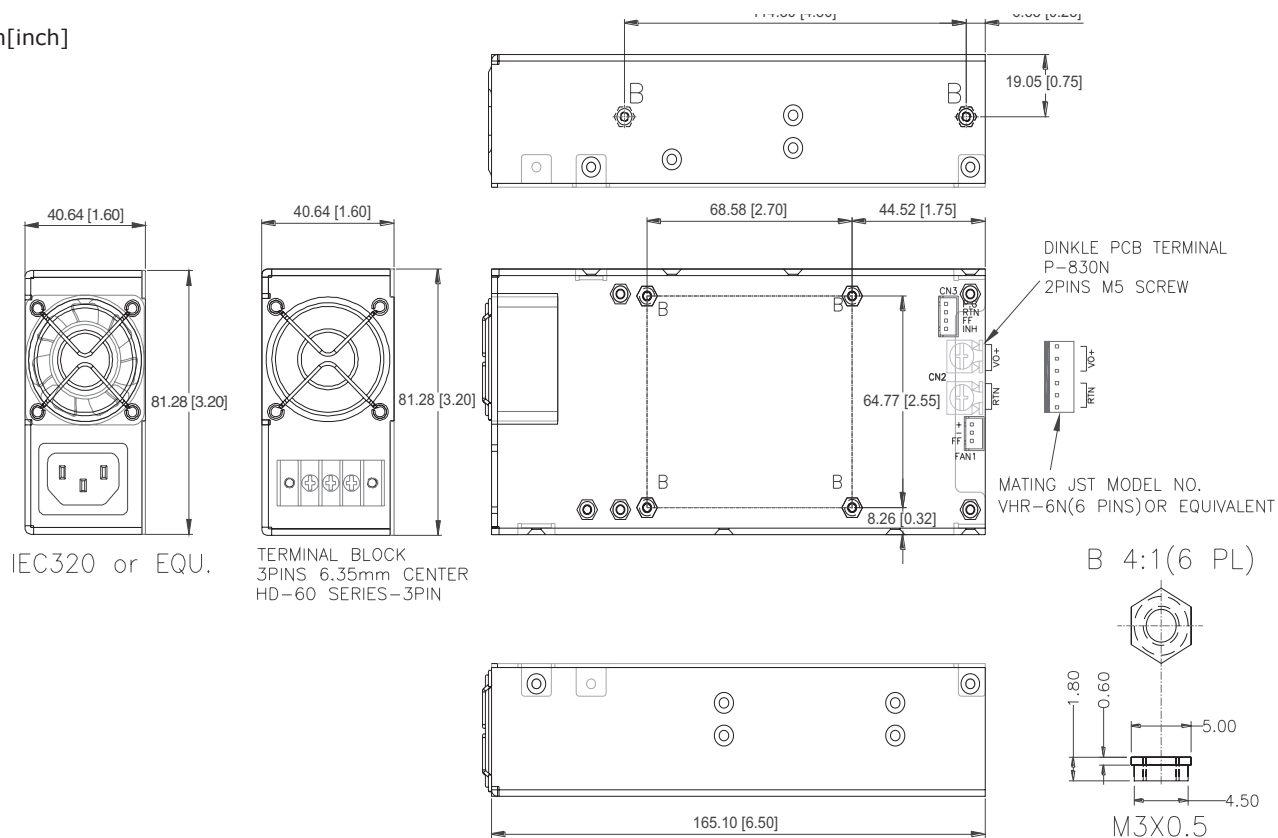
### CF

units: mm[inch]



### CFS

units: mm[inch]

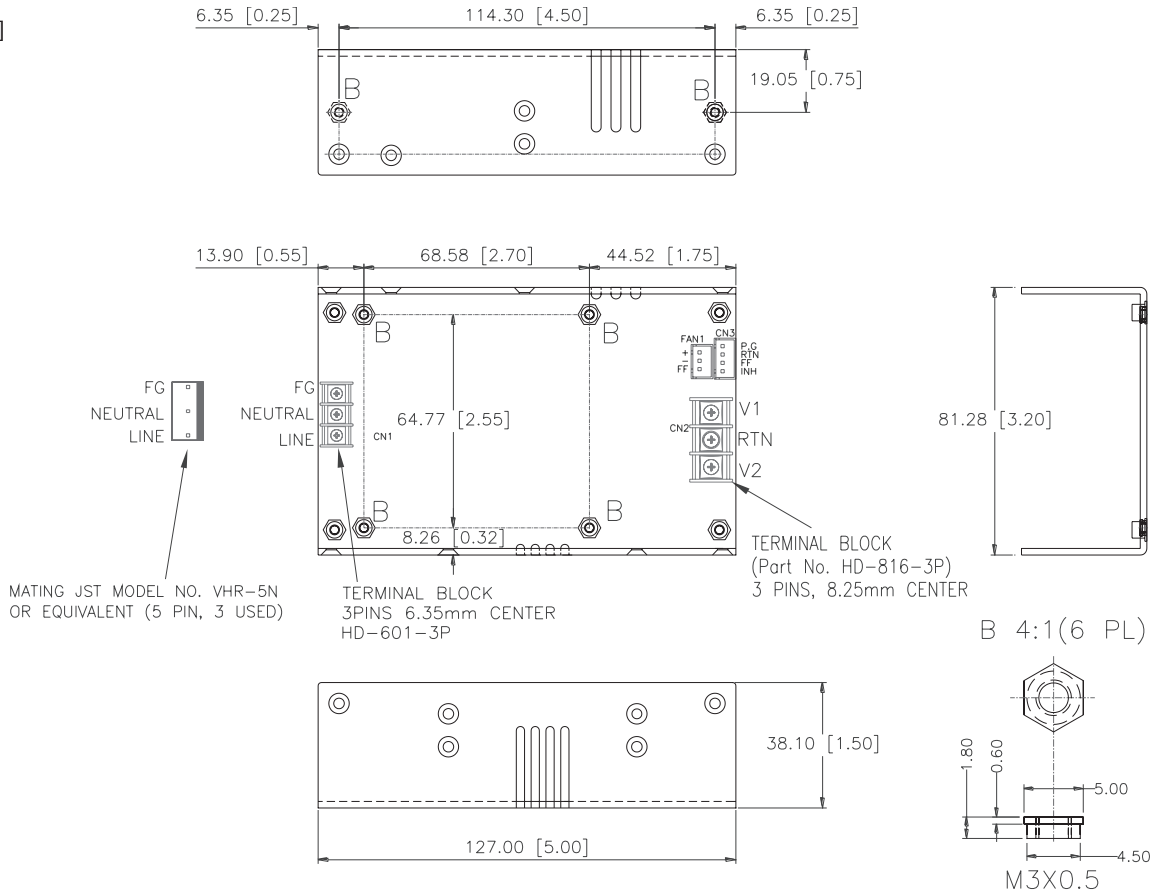


Note: 1. Mounting hole max screw depth is 4.0mm (M3x0.5 Inserts).

## MECHANICAL DRAWING - DUAL OUTPUT MODELS

### U-FRAME

units: mm[inch]

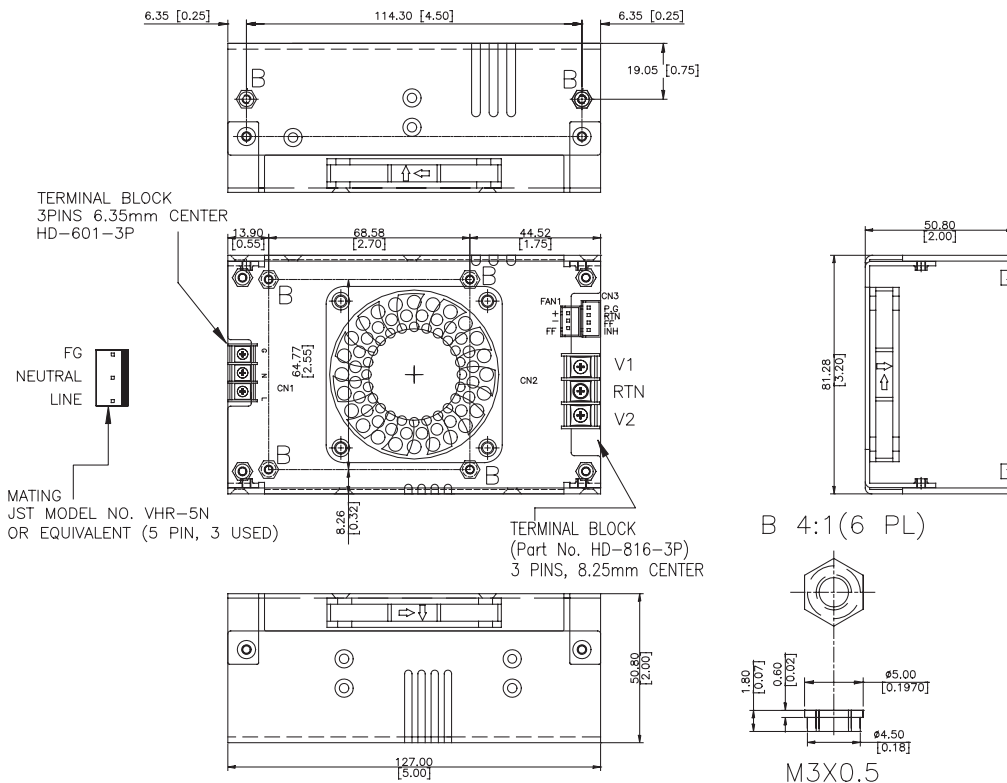


Note: 1. Mounting hole max screw depth is 4.0mm (M3x0.5 Inserts).

## MECHANICAL DRAWING - DUAL OUTPUT MODELS (CONTINUED)

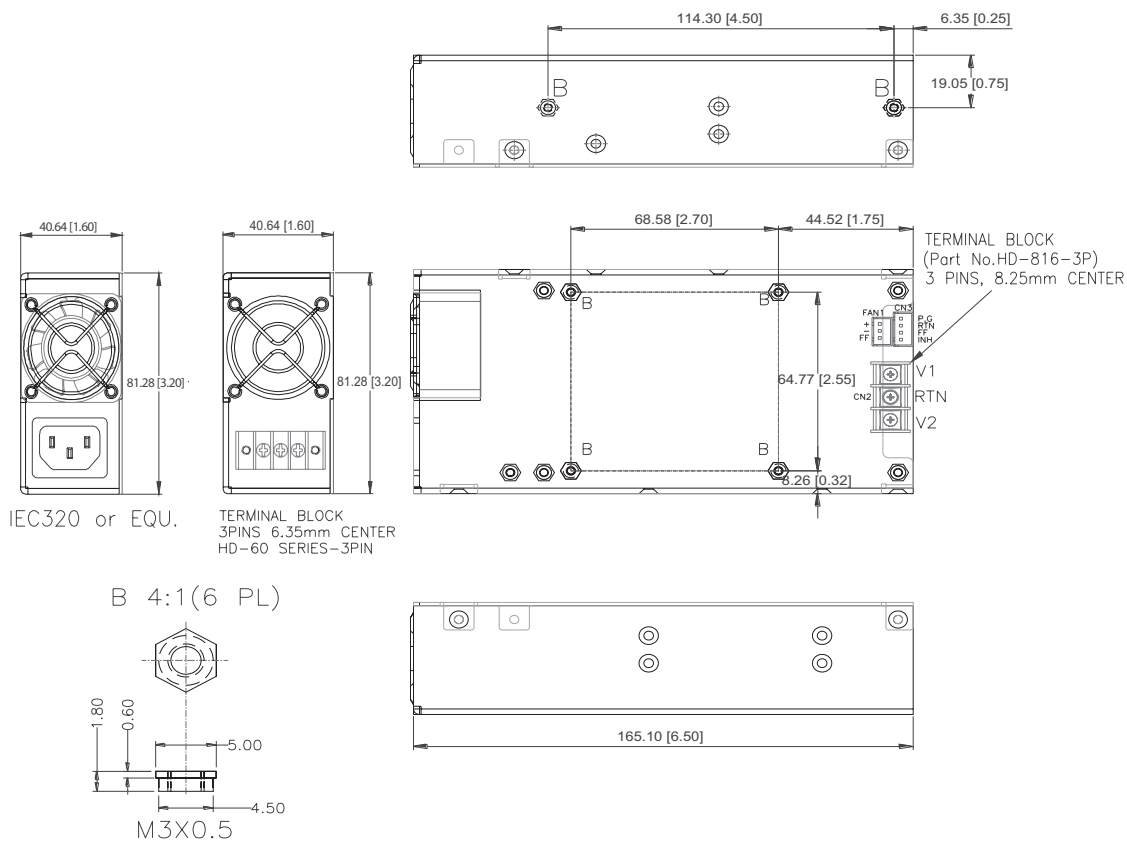
### CF

units: mm[inch]



### CFS

units: mm[inch]



Note: 1. Mounting hole max screw depth is 4.0mm (M3x0.5 Inserts).

## REVISION HISTORY

| rev. | description  | date       |
|------|--|------------|
| 1.0  | initial release  | 08/14/2012 |
| 1.01 | updated part number key, derating curve, misc. updates                 | 09/24/2012 |
| 1.02 | updated spec   | 04/25/2013 |
| 1.03 | updated spec   | 07/03/2013 |
| 1.04 | removed connector options  | 08/05/2013 |
| 1.05 | added connector options  | 10/21/2013 |
| 1.06 | added 2 mounting holes for internal fan on "CF" models                 | 04/23/2015 |
| 1.07 | updated datasheet  | 05/05/2016 |
| 1.08 | updated to safety Edition 3.1 and EMC 4th Edition                      | 07/24/2018 |
| 1.09 | company logo updated   | 12/17/2020 |
| 1.10 | derating curve updated   | 05/05/2021 |
| 1.11 | discontinued model VMS-300-D0512, VMS-300-D0512-CF & VMS-300-D0512-CFS | 06/07/2022 |

The revision history provided is for informational purposes only and is believed to be accurate.



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