

## 600 Watts

- Single and Dual Outputs
- Up to 900 W Peak Power on Single Output Versions
- Power Good, Remote On/Off and Remote Sense
- Connector Options
- Forced-cooled
- U-Channel & End-Fan Versions Fit 1U Applications
- 3 Year Warranty



The SMH600 series provide up to 600 W in a low profile (1.6") chassis mount format. Single outputs are available from 3.3 – 60 VDC and there are three dual output models offering combinations from 5V to 24 VDC. The full power rating is available from 90 – 264 VAC input in ambient temperatures up to 50 °C providing power solutions for global use without the need for de-rating. All models comply with level B for both conducted and radiated emissions.

### Dimensions:

#### SMH:

8.00 x 5.00 x 1.60" (203.0 x 127.0 x 40.64 mm)

#### SMH-EF:

9.10 x 5.00 x 1.60" (231.1 x 127.0 x 40.64 mm)

#### SMH-TF:

8.00 x 5.00 x 2.20" (203.0 x 127.0 x 55.8 mm)

### Models & Ratings

| Output | Output 1 <sup>(3)</sup> |          | Output 2 |         | Model Number <sup>(2)</sup> |
|--------|-------------------------|----------|----------|---------|-----------------------------|
|        | Voltage                 | Current  | Voltage  | Current |                             |
| 330 W  | 3.3 VDC                 | 100.00 A |          |         | SMH600PS03                  |
| 500 W  | 5.0 VDC                 | 100.00 A |          |         | SMH600PS05                  |
| 600 W  | 12.0 VDC                | 50.00 A  |          |         | SMH600PS12                  |
| 600 W  | 15.0 VDC                | 40.00 A  |          |         | SMH600PS15                  |
| 600 W  | 18.0 VDC                | 33.33 A  |          |         | SMH600PS18                  |
| 600 W  | 24.0 VDC                | 25.00 A  |          |         | SMH600PS24                  |
| 600 W  | 36.0 VDC                | 16.60 A  |          |         | SMH600PS36                  |
| 600 W  | 48.0 VDC                | 12.50 A  |          |         | SMH600PS48                  |
| 600 W  | 54.0 VDC                | 11.10 A  |          |         | SMH600PS54                  |
| 600 W  | 60.0 VDC                | 10.00 A  |          |         | SMH600PS60                  |
| 500 W  | +5.0 VDC                | 50.00 A  | +12.0 V  | 33.33 A | SMH600PD0512                |
| 500 W  | +5.0 VDC                | 50.00 A  | +24.0 V  | 16.67 A | SMH600PD0524                |
| 600 W  | +12.0 VDC               | 33.33 A  | +24.0 V  | 16.67 A | SMH600PD1224                |

### Notes

1. Add suffix '-EF' to model number for end fan type, '-TF' for top fan type.
2. Standard models have screw terminals.  
For optional Molex input connector add suffix '-F-', for optional Molex output connector add suffix '-G' and for optional Molex input and output connectors add suffix '-FG'. Molex output terminals are not available on 3V3 and 5V single output versions or 0512 and 0524 dual output versions.  
For optional IEC320-C14 inlet on end fan types add suffix '-K'
3. Output peak power of 900 W for 500  $\mu$ s is available on single output models.

### Summary

| Characteristic        | Minimum                                                    | Typical    | Maximum | Units   | Notes & Conditions                                 |
|-----------------------|------------------------------------------------------------|------------|---------|---------|----------------------------------------------------|
| Input Range           | 90                                                         |            | 264     | VAC     |                                                    |
| Signals               |                                                            |            |         |         | Power Good                                         |
| Efficiency            |                                                            | 90 / 89    |         | %       | Single output / Dual output at 230 V and full load |
| Operating Temperature | 0                                                          |            | +70     | °C      | Derate at 2.5%/°C from +50 °C to +70 °C            |
| Weight                |                                                            | 3.53 (1.6) |         | lb (kg) | End fan '-EF' version                              |
| EMC                   | EN55032 Level B Conducted & Radiated, EN61000-4, EN61000-3 |            |         |         |                                                    |
| Safety Approvals      | EN62368-1, UL62368-1, CSA62368-1 via cUL                   |            |         |         |                                                    |

## Input

| Characteristic        | Minimum            | Typical | Maximum | Units | Notes & Conditions         |
|-----------------------|--------------------|---------|---------|-------|----------------------------|
| Input Voltage         | 90                 |         | 264     | VAC   |                            |
| Input Frequency       | 47                 |         | 63      | Hz    |                            |
| Input Current         |                    | 6       |         | A     | 115 VAC (3.0 A at 230 VAC) |
| Inrush Current        |                    | 70      |         | A     | 230 VAC (35 A at 115 VAC)  |
| Power Factor          |                    | >0.9    |         |       | EN61000-3-2 class A        |
| Earth Leakage Current |                    | <1.0    |         | mA    | 264 VAC                    |
| Input Protection      | T10.0 A/250 V fuse |         |         |       |                            |

## Output

| Characteristic                | Minimum                                                                              | Typical      | Maximum | Units   | Notes & Conditions                                                           |
|-------------------------------|--------------------------------------------------------------------------------------|--------------|---------|---------|------------------------------------------------------------------------------|
| Output Voltage                | 3.3                                                                                  |              | 60      | VDC     | See Models and Ratings table                                                 |
| Output Voltage Trim           |                                                                                      | ±5           |         | %       | V1 (V2 of dual output models will track by same % of adjustment)             |
| Initial Set Accuracy          |                                                                                      | ±1           |         | %       |                                                                              |
| Minimum Load                  | 1 / 10                                                                               |              |         | %       | Single / Dual (for regulation)                                               |
| Start Up Delay                |                                                                                      |              | 2.0     | s       | 115 VAC                                                                      |
| Start Up Rise Time            |                                                                                      | 40           |         | ms      | PD1224 model typically 50 ms                                                 |
| Hold Up Time                  | 10                                                                                   | 13           |         | ms      | 115 VAC                                                                      |
| Drift                         |                                                                                      |              | ±0.5    | %       | After 20 min warm up                                                         |
| Line Regulation               |                                                                                      |              | ±0.5    | %       |                                                                              |
| Load Regulation               |                                                                                      | ±1 / ±3 / ±5 |         | %       | Single / Dual V1 / Dual V2 outputs                                           |
| Over/Undershoot               |                                                                                      | 1.5          | 5       | %       |                                                                              |
| Transient Response            |                                                                                      |              | ±5      | %       | Deviation, recovery to within 1% in 500 µs for a 50% load change             |
| Ripple & Noise                |                                                                                      |              | 1       | % pk-pk | Measured at 20 MHz BW and 10 µF electrolytic and 0.1 µF ceramic at terminals |
| Overvoltage Protection        |                                                                                      |              | 130     | %       | V1 recycle AC input to reset                                                 |
| Overload Protection           | 110                                                                                  |              | 140     | %       |                                                                              |
| Short Circuit Protection - V1 |                                                                                      |              |         |         | Trip and restart, auto recovery                                              |
| Remote On/Off                 | Applying short circuit between Remote On/Off pin and signal return turns output off. |              |         |         |                                                                              |
| Remote Sense                  | Compensates for 0.5 V max. voltage drop on single output models only.                |              |         |         |                                                                              |

## General

| Characteristic                                                    | Minimum | Typical    | Maximum | Units             | Notes & Conditions                                 |
|-------------------------------------------------------------------|---------|------------|---------|-------------------|----------------------------------------------------|
| Efficiency                                                        |         | 90 / 89    |         | %                 | Single output / Dual output at 230 V and full load |
| Isolation: Input to Output<br>Input to Ground<br>Output to Ground |         |            | 3000    | VAC               |                                                    |
|                                                                   |         |            | 1500    | VAC               |                                                    |
|                                                                   |         |            | 250     | VDC               |                                                    |
| Switching Frequency                                               |         | 60 / 28    |         | kHz               | PFC / PWM                                          |
| Power Density                                                     | 9.37    |            |         | W/in <sup>3</sup> | For U Channel Versions                             |
| Signals                                                           |         |            |         |                   | Power Good                                         |
| Mean Time Between Failure                                         | 115     |            |         | kHrs              | MIL-HDBK-217F at 25 °C GB                          |
| Weight                                                            |         | 3.53 (1.6) |         | lb (kg)           | End fan ' -EF' version                             |

## Environmental

| Characteristic        | Minimum | Typical | Maximum | Units | Notes & Conditions                                                                                       |
|-----------------------|---------|---------|---------|-------|----------------------------------------------------------------------------------------------------------|
| Operating Temperature | 0       |         | +70     | °C    | Derate at 2.5%/°C from +50 °C to +70 °C                                                                  |
| Storage Temperature   | -20     |         | +85     | °C    |                                                                                                          |
| Cooling               |         |         |         |       | Forced-cooled. -EF and -EF versions have inbuilt one fan. Speed increases when output exceeds 2 A approx |
| Operating Altitude    |         |         | 3000    | m     |                                                                                                          |
| Vibration             | 5       |         | 50      | Hz    | Acceleration 7.35 ms <sup>-2</sup> on 3 axes                                                             |

## EMC: Emissions

| Phenomenon       | Standard    | Test Level | Notes & Conditions     |
|------------------|-------------|------------|------------------------|
| Conducted        | EN55032     | Level B    |                        |
| Radiated         | EN55032     | Level B    |                        |
| Harmonic Current | EN61000-3-2 | Class A    | Class C for loads ≥70% |
| Voltage Flicker  | EN61000-3-3 |            |                        |

## EMC: Immunity

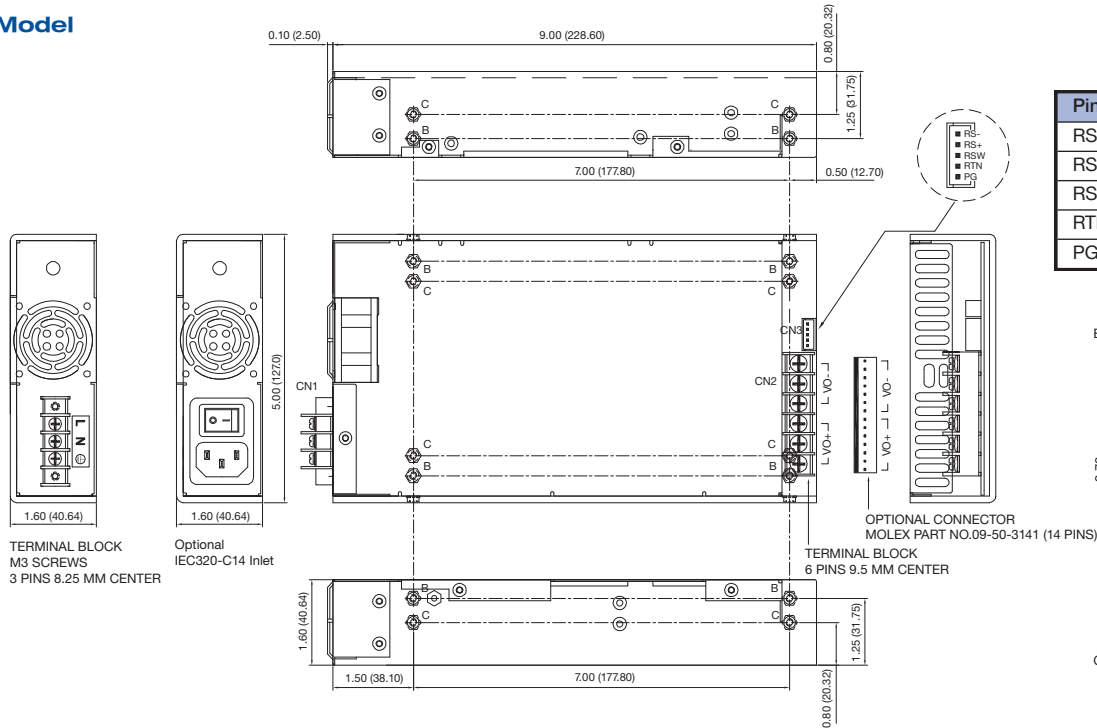
| Phenomenon             | Standard     | Test Level                                             | Criteria      | Notes & Conditions          |
|------------------------|--------------|--------------------------------------------------------|---------------|-----------------------------|
| ESD                    | EN61000-4-2  | Level 3                                                | A             |                             |
| Radiated               | EN61000-4-3  | Level 2                                                | A             |                             |
| EFT                    | EN61000-4-4  | Level 2                                                | A             |                             |
| Surges                 | EN61000-4-5  | Installation class 3                                   | A             |                             |
| Conducted              | EN61000-4-6  | Level 2                                                | A             |                             |
| Dips and Interruptions | EN61000-4-11 | DIP: 30% 10 ms<br>DIP: 60% 100 ms<br>INT: 100% 5000 ms | A<br>A/B<br>B | Highline (<420 W) / Lowline |

## Safety Approvals

| Safety Agency | Safety Standard                  | Notes & Conditions |
|---------------|----------------------------------|--------------------|
| UL            | UL62368-1                        |                    |
| CSA           | CSA62368-1 via cUL               |                    |
| TUV           | EN62368-1                        |                    |
| CE            | Meets all applicable directives  |                    |
| UKCA          | Meets all applicable legislation |                    |

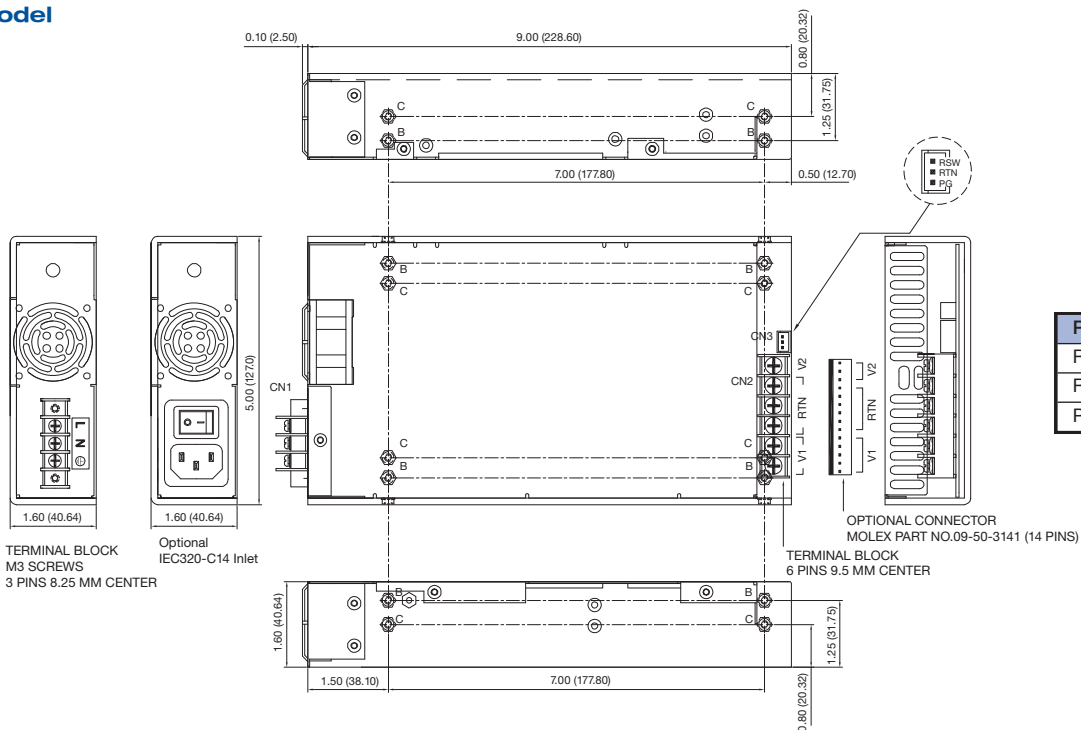
### Mechanical Details - End Fan (-EF)

#### Single Model



| Pin | Description           |
|-----|-----------------------|
| RS- | Negative remote sense |
| RS+ | Positive remote sense |
| RSW | Remote On/Off         |
| RTN | Signal Return         |
| PG  | Power Good            |

#### Dual Model



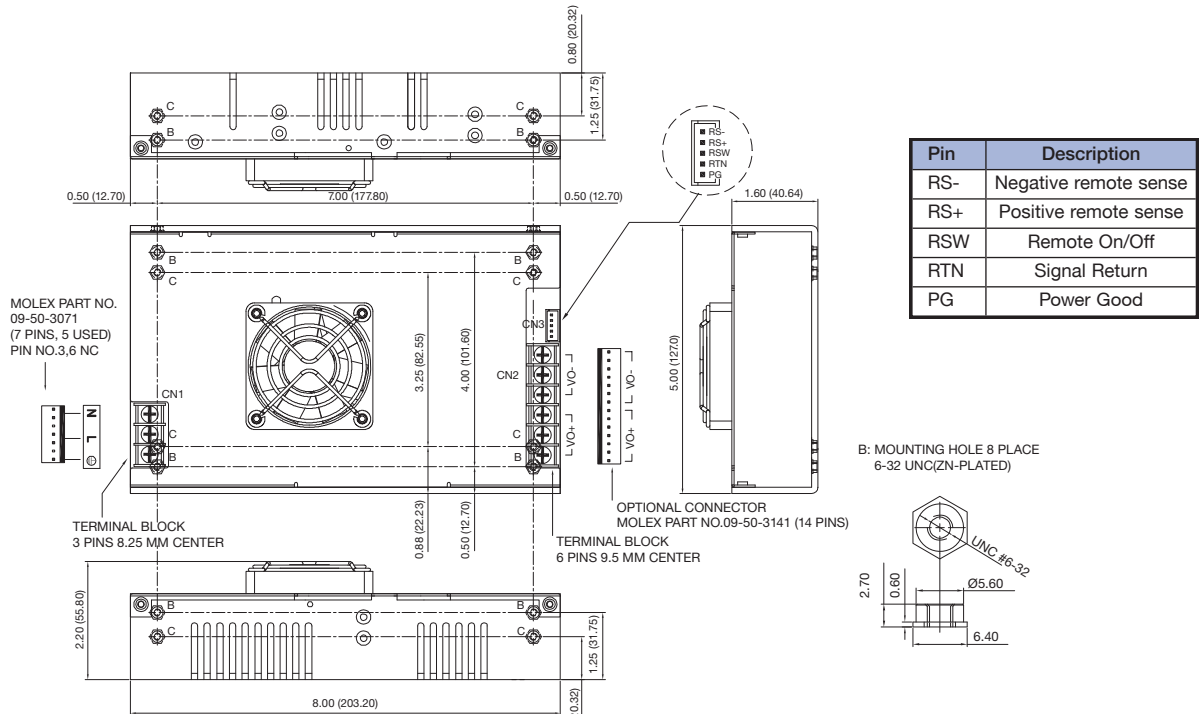
| Pin | Description   |
|-----|---------------|
| RSW | Remote On/Off |
| RTN | Signal Return |
| PG  | Power Good    |

#### Notes

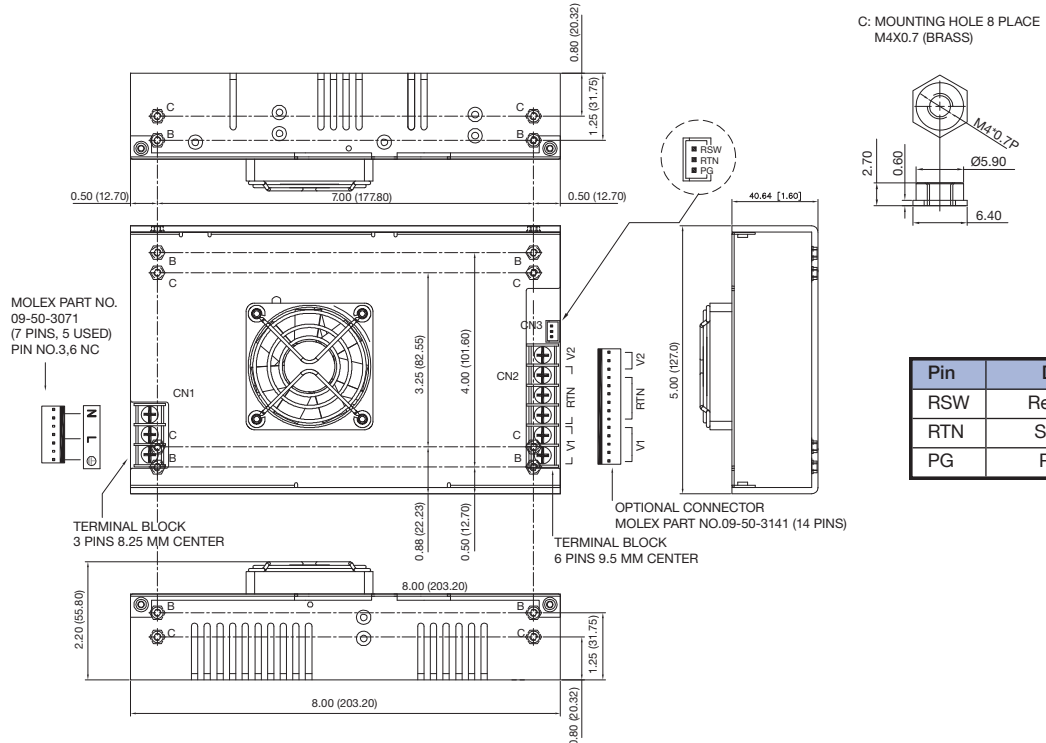
1. All dimensions in inches (mm).
2. Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
3. Maximum mounting screws penetration : 0.15 (3.81) on bottom side and 0.25 (6.35) on both sides.
4. Weight: 3.53 lbs (1.6 kg)
5. Fan output not available

## Mechanical Details - Top Fan (-TF)

## Single Model



## Dual Model

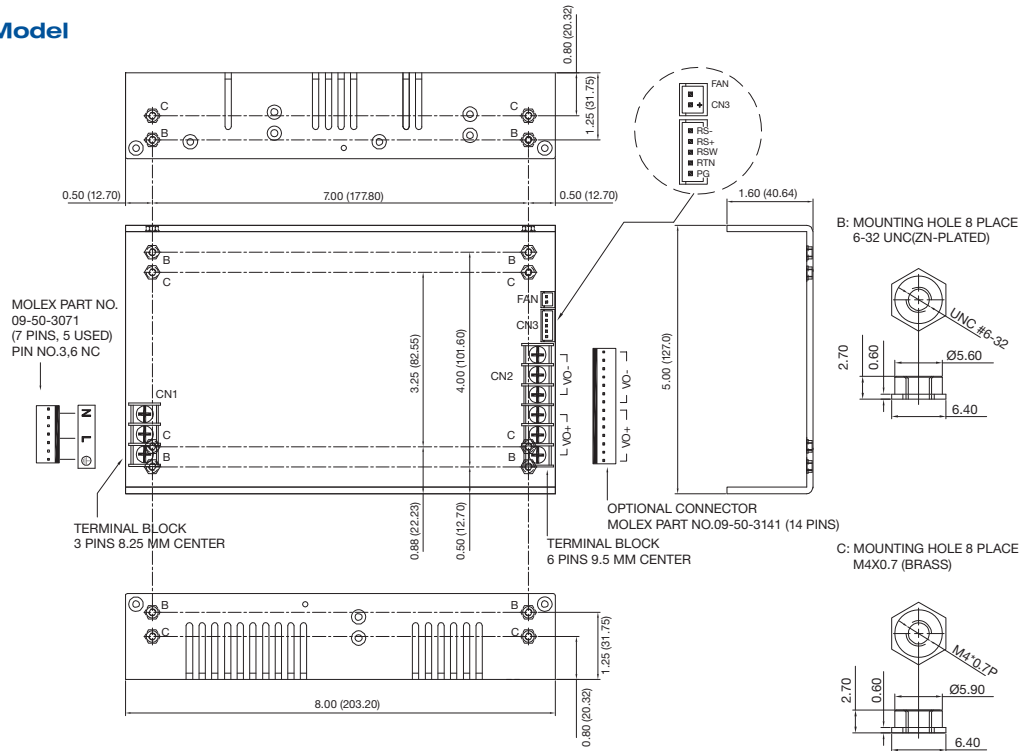


## Notes

1. All dimensions in inches (mm).
2. Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
3. Maximum mounting screws penetration : 0.15 (3.81) on bottom side and 0.25 (6.35) on both sides.
4. Weight: 2.87 lbs (1.3 kg)
5. Fan output not available

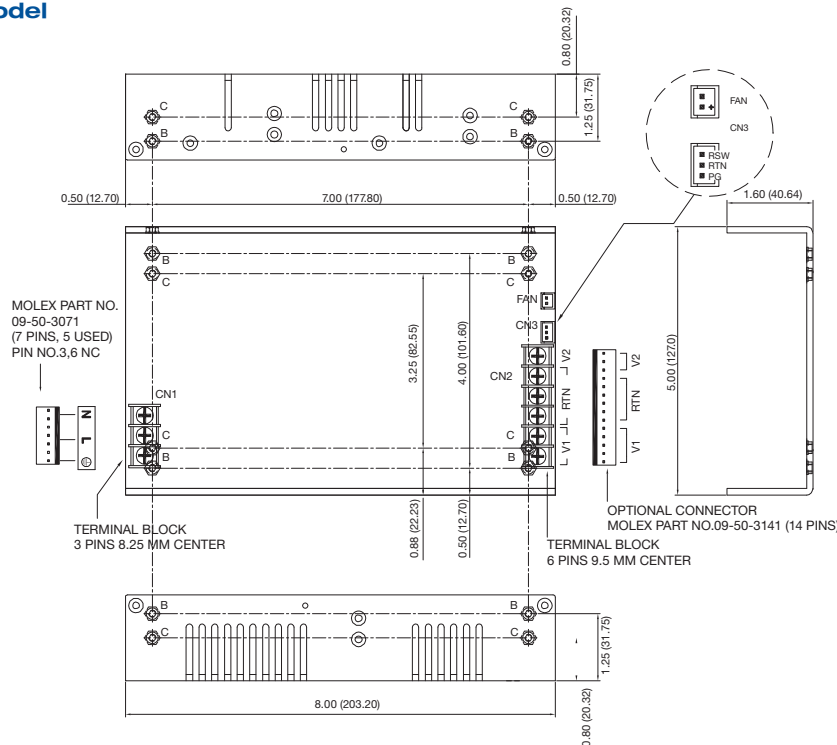
### Mechanical Details - U-Channel

#### Single Model



| Pin | Description           |
|-----|-----------------------|
| RS- | Negative remote sense |
| RS+ | Positive remote sense |
| RSW | Remote On/Off         |
| RTN | Signal Return         |
| PG  | Power Good            |

#### Dual Model



| Pin | Description   |
|-----|---------------|
| RSW | Remote On/Off |
| RTN | Signal Return |
| PG  | Power Good    |

#### Notes

1. All dimensions in inches (mm).
2. Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
3. Maximum mounting screws penetration : 0.15 (3.81) on bottom side and 0.25 (6.35) on both sides.
4. Weight: 2.65 lbs (1.2 kg)

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