

## Safety Specifications

|                       |                           |                                                                                                                                                                                       |
|-----------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety Standards      | - Medical Equipment       | EN 60601-1<br>IEC 60601-1<br>ANSI/AAMI ES 60601-1<br>2 x MOPP (Means Of Patient Protection)<br><a href="http://www.tracopower.com/overview/tp65">www.tracopower.com/overview/tp65</a> |
|                       | - Certification Documents |                                                                                                                                                                                       |
| Protection Class      |                           | Class I Prepared: Connection to PE<br>Class II Prepared: Reinforced Insulation                                                                                                        |
| Pollution Degree      |                           | PD 2: Office or Laboratory Environments                                                                                                                                               |
| Over Voltage Category |                           | OVC II                                                                                                                                                                                |

## EMC Specifications

|              |                                  |                                                                                                                                                                                       |
|--------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EMC Emission | - Conducted Emissions            | EN 60601-1-2 edition 4 (Medical Devices)<br>EN 55011 class B (internal filter)<br>EN 55032 class B (internal filter)<br>FCC Part 18, class B                                          |
|              | - Radiated Emissions             | EN 55011 class B (internal filter)<br>EN 55032 class B (internal filter)<br>FCC Part 18, class B                                                                                      |
|              | - Harmonic Current Emissions     | EN 61000-3-2, class A                                                                                                                                                                 |
|              | - Voltage Fluctuations & Flicker | EN 61000-3-3                                                                                                                                                                          |
| EMC Immunity | - Electrostatic Discharge        | EN 60601-1-2 edition 4 (Medical Devices)<br>Air: EN 61000-4-2, $\pm 15$ kV, perf. criteria A<br>Contact: EN 61000-4-2, $\pm 8$ kV, perf. criteria A                                   |
|              | - RF Electromagnetic Field       | EN 61000-4-3, 20 V/m, perf. criteria A                                                                                                                                                |
|              | - EFT (Burst)                    | EN 61000-4-4, $\pm 2$ kV, perf. criteria A                                                                                                                                            |
|              | - Surge                          | L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria A                                                                                                                                    |
|              | - Conducted RF Disturbances      | EN 61000-4-6, 20 Vrms, perf. criteria A                                                                                                                                               |
|              | - PF Magnetic Field              | EN 61000-4-8, 30 A/m, perf. criteria A                                                                                                                                                |
|              | - Voltage Dips & Interruptions   | 230 VAC / 50 Hz: EN 61000-4-11<br>30%, perf. criteria A, 25 periods<br>>95%, perf. criteria A, 0.5 periods<br>>95%, perf. criteria A, 1 period<br>>95%, perf. criteria B, 250 periods |
|              |                                  | 115 VAC / 60 Hz: EN 61000-4-11<br>30%, 25 periods, perf. criteria A<br>>95%, 0.5 periods, perf. criteria A<br>>95%, 1 period, perf. criteria A<br>>95%, 250 periods, perf. criteria B |

## General Specifications

|                           |                         |                                                                                                                |
|---------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------|
| Relative Humidity         |                         | 95% max. (non condensing)                                                                                      |
| Temperature Ranges        | - Operating Temperature | -40°C to +85°C                                                                                                 |
|                           | - Storage Temperature   | -40°C to +85°C                                                                                                 |
| Power Derating            | - High Temperature      | see application note<br><a href="http://www.tracopower.com/overview/tp65">www.tracopower.com/overview/tp65</a> |
|                           | - Low Input Voltage     | 4 %/V below 90V                                                                                                |
| Cooling system            |                         | Natural convection (no internal fan, 20 LFM)                                                                   |
| Altitude during Operation |                         | 5000 m max.                                                                                                    |
| Switching Frequency       |                         | 50 - 140 kHz (PWM) (Output 1)<br>750 kHz typ. (PWM) (Output 2)<br>510 kHz typ. (PWM) (Output 3)                |
| Insulation System         |                         | Reinfoced Insulation                                                                                           |
| Working Voltage (rated)   |                         | 258 VAC                                                                                                        |

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

|                                 |                              |                                                                                                                    |
|---------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Isolation Test Voltage          | - Input to Output, 60 s      | 5'657 VDC                                                                                                          |
|                                 | - Input to Case or PE, 60 s  | 3'535 VDC                                                                                                          |
|                                 | - Output to Case or PE, 60 s | 3'535 VDC                                                                                                          |
| Isolation Resistance            | - Input to Output, 500 VDC   | 100 MOhm min.                                                                                                      |
| Leakage Current<br>(at 264 VAC) | - Touch Current              | 75 µA max.                                                                                                         |
| Creepage                        |                              | 8 mm min.                                                                                                          |
| Clearance                       |                              | 8 mm min.                                                                                                          |
| Reliability                     | - Calculated MTBF            | 1'500'000 h (acc. to MIL-HDBK-217F<br>1'500'000 h for single output models<br>1'000'000 h for multi output models) |
| Environment                     | - Vibration                  | IEC 60068-2-6                                                                                                      |
|                                 | - Mechanical Shock           | IEC 60068-2-27                                                                                                     |
| Housing Material                |                              | Aluminium                                                                                                          |
| Connection Type                 |                              | Screw Terminal                                                                                                     |
| Weight                          | - single output              | 172 g                                                                                                              |
|                                 | - dual output                | 221 g                                                                                                              |
|                                 | - triple output              | 221 g                                                                                                              |
| Environmental Compliance        | - Reach                      | <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a>   |
|                                 | - RoHS                       | <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a>     |

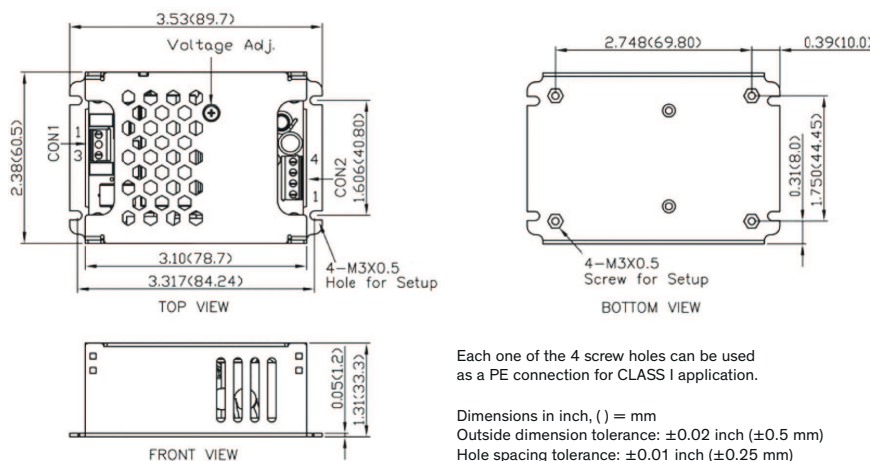
### Supporting Documents

Overview Link (for additional Documents)

[www.tracopower.com/overview/tp65](http://www.tracopower.com/overview/tp65)

### Outline Dimensions

#### Single Output Models



#### Screw Terminal

| Input (CON1) |          | Output (CON2) |          |
|--------------|----------|---------------|----------|
| Pin          | Function | Pin*          | Function |
| 1            | Line     | 1,2           | -Vout    |
| 3            | Neutral  | 3,4           | +Vout    |

\*Terminal rated for 10 A max.  
(at higher current connection has to be split)

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.