



Input Voltage up to 265 VAC  
1 or 2 outputs up to 30 VDC  
3000 VAC I/O Electric Strength Test Voltage



- Class II equipment (double or reinforced insulation)
- Short circuit protection
- Compact, low cost solution

### Model Selection

| Output 1                    |                           | Output 2                    |                           | Input Voltage<br>$V_i$     | Rated Power<br>$T_A = 50\text{ }^{\circ}\text{C}$<br>$P_{o\text{ tot}}$ [W] | Type      |
|-----------------------------|---------------------------|-----------------------------|---------------------------|----------------------------|-----------------------------------------------------------------------------|-----------|
| $V_{o\text{ nom}}$<br>[VDC] | $I_{o\text{ nom}}$<br>[A] | $V_{o\text{ nom}}$<br>[VDC] | $I_{o\text{ nom}}$<br>[A] |                            |                                                                             |           |
| 3.3                         | 3                         | -                           | -                         | 85 - 265 VAC<br>47 - 63 Hz | 10                                                                          | LHR1101-2 |
| 3.3                         | 7                         | -                           | -                         |                            | 23                                                                          | LGR1101-2 |
| 5                           | 2                         | -                           | -                         |                            | 10                                                                          | LHR1001-2 |
| 5                           | 5                         | -                           | -                         |                            | 25                                                                          | LGR1001-2 |
| 12                          | 0.84                      | -                           | -                         |                            | 10                                                                          | LHR1301-2 |
| 12                          | 2.1                       | -                           | -                         |                            | 25                                                                          | LGR1301-2 |
| 15                          | 0.67                      | -                           | -                         |                            | 10                                                                          | LHR1501-2 |
| 15                          | 1.7                       | -                           | -                         |                            | 25                                                                          | LGR1501-2 |
| 24                          | 0.42                      | -                           | -                         |                            | 10                                                                          | LHR1601-2 |
| 24                          | 1                         | -                           | -                         |                            | 24                                                                          | LGR1601-2 |
| +5                          | 2.5                       | +12                         | 1                         |                            | 24                                                                          | LGR2020-2 |
| +12                         | 0.42                      | -12                         | -0.42                     |                            | 10                                                                          | LHR2320-2 |
| +12                         | 1                         | -12                         | -1                        |                            | 24                                                                          | LGR2320-2 |
| +15                         | 0.335                     | -15                         | -0.335                    |                            | 10                                                                          | LHR2540-2 |
| +15                         | 0.8                       | -15                         | -0.8                      |                            | 24                                                                          | LGR2540-2 |

Model numbers highlighted in yellow or shaded are not recommended for new designs.

### Input

|                           |                                 |               |
|---------------------------|---------------------------------|---------------|
| Input voltage             | continuous range                | 85 - 265 V AC |
| Input frequency           |                                 | 47 - 63 Hz    |
| Inrush current limitation | by thermistor, $V_i = 230$ V AC | < 40 A        |

### Output

|                                |                                                              |           |
|--------------------------------|--------------------------------------------------------------|-----------|
| Efficiency                     | 230 V AC, $I_{o\ nom}$                                       | up to 86% |
| Output voltage switching noise | $V_{i\ nom}$ , $I_{o\ nom}$ , 20 MHz bandwidth, peak to peak | < 1 %     |
| Line regulation                | $V_{i\ min} - V_{i\ max}$ , $I_{o\ nom}$                     | ± 1 %     |
| Load regulation                | $V_{i\ nom}$ , 0 - $I_{o\ nom}$                              | ± 2 %     |
| Minimum load                   | single output models                                         | 0 %       |
|                                | dual output models recommended                               | 20 %      |
| Hold-up time                   | 230 V AC, $I_{o\ nom}$                                       | > 10 ms   |

### Protection

|                           |                        |           |
|---------------------------|------------------------|-----------|
| Output overload           | Hic-cup characteristic |           |
| No load and short-circuit |                        | protected |

### Control

|                |                           |        |
|----------------|---------------------------|--------|
| Trim for $V_o$ | single output models only | ± 10 % |
|----------------|---------------------------|--------|

### Safety and EMC

|                                |                                    |             |
|--------------------------------|------------------------------------|-------------|
| Safety marks                   | UL, CuL, LGA, CE                   |             |
| Electric strength test voltage | I/O                                | 3000 V AC   |
| Electrostatic discharge        | IEC/EN 61000-4-2, level 4 (15 kV)  | criterion A |
| Electromagnetic field          | IEC/EN 61000-4-3, level 3 (10 V/m) | criterion A |
| Electr.fast transient/burst    | IEC/EN 61000-4-4, level 3 (2 kV)   | criterion A |
| Surge                          | IEC/EN 61000-4-5, level 3 (2 kV)   | criterion A |
| Electromagnetic emissions      | CISPR 22/EN 55022, conducted       | class B     |

### Environmental

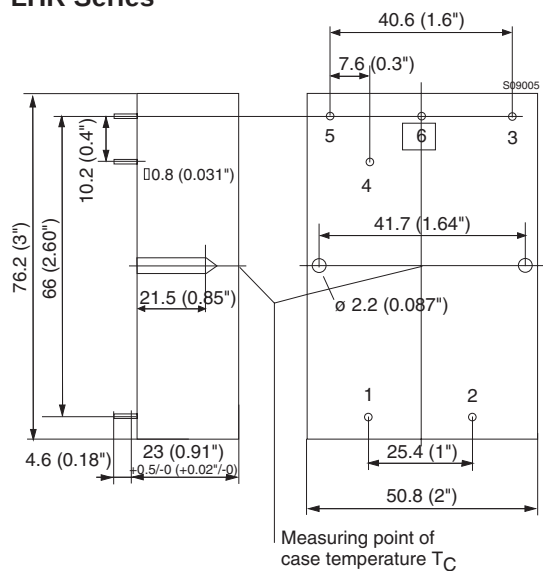
|                     |                                                 |                      |
|---------------------|-------------------------------------------------|----------------------|
| Ambient temperature | $V_{i\ nom}$ , $I_{o\ nom}$ , convection cooled | -10 to 50°C          |
| Storage temperature | non operational                                 | -40 to 100°C         |
| Relative humidity   | non condensing                                  | 5 - 95%              |
| Shock               | peak acceleration                               | 20 g <sub>n</sub>    |
| Random vibration    |                                                 | 2 g <sub>n rms</sub> |

## Mechanical Data

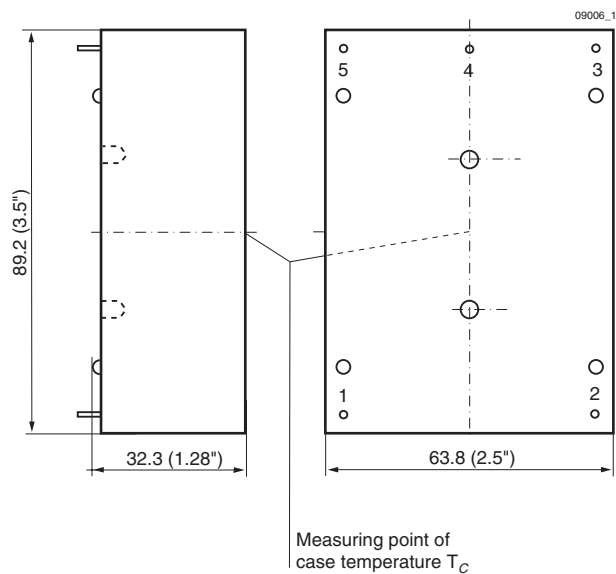
Tolerances  $\pm 0.3$  mm (0.012") unless otherwise indicated.



### LHR Series



### LGR Series



#### Pin Allocation

| Pin no. | Electrical determination              | LHR    |      | Single | LGR      |          |
|---------|---------------------------------------|--------|------|--------|----------|----------|
|         |                                       | Single | Dual |        | Dual +/- | Dual +/+ |
| 1       | Input voltage                         | L      | L    | L      | L        | L        |
| 2       | Input voltage                         | N      | N    | N      | N        | N        |
| 3       | Output voltage (positive)             | Vo+    | Vo+  | Vo+    | Vo+      | Vo1+     |
| 4       | Output voltage (negative)             | -      | -    | Vo-    | -        | -        |
|         | Output voltage (common return)        | -      | -    | -      | Com      | Com      |
|         | Control input Trim                    | Trim   | -    | -      | -        | -        |
| 5       | Output voltage (negative or positive) | -      | Vo-  | -      | Vo-      | Vo2+     |
|         | Output voltage (negative)             | Vo-    | -    | -      | -        | -        |
|         | Control input                         | -      | -    | Trim   | -        | -        |
| 6       | Output voltage (common return)        | n.c.   | Com  | -      | -        | -        |

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