# typhoon Eighth-Brick Series

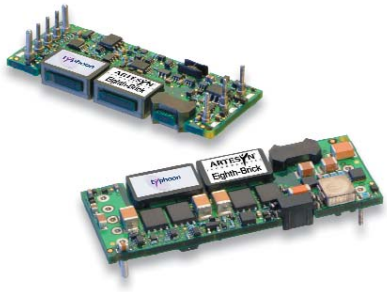
Single output

ARTESYN TECHNOLOGIES

DC/DC CONVERTERS | High Current, High Efficiency, Low Profile | 1

**NEW Product**

- **Ultra-high efficiency topology**
- **Industry standard eighth brick footprint (identical to quarter-brick pinout)**
- **Low profile through-hole version**
- **Low profile with 38% space savings over other quarter-brick brick converters**
- **Wide ambient temperature range, -40ºC to +85ºC**
- **80% to 110% output trim**
- **Monotonic start-up in normal and prebiased loads**
- **Basic insulation system**
- **Overvoltage and overtemperature protection**
- **Secondary side control, no optocouplers, fast transient response**
- **100V, 100ms input voltage transient rated**



This is a new high efficiency, open-frame, low profile, single board, isolated DC/DC converter series in an industry standard eight-brick footprint that provides up to 100W of output power. The series delivers very high output current at low voltages, and excellent useable power for today's high performance applications. The series features an input voltage range of 36 to 75VDC and is available with output voltages of 1.2V, 1.5V 1.8V, 2.5V, 3.3V and 5.0V. The output voltage is adjustable from 80% to 110% of the nominal value. The series also has a remote ON/OFF capability. Over-current, over-voltage and over-temperature protection features are included as standard. Full international safety approval including EN60950 VDE and UL/cUL60950, reduces compliance costs and time to market.

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**2 YEAR WARRANTY**

## SPECIFICATIONS

*All specifications are typical at nominal input, full load at 25°C ambient unless otherwise stated*

### OUTPUT SPECIFICATIONS

| | | |
|---|---|---|
| Voltage adjustability | | 80% to 110% |
| Minimum load | | 0% |
| Overshoot | At turn-on and turn-off | None |
| Undershoot | | None |
| Transient response (See Note 1) | | 60mV to 120mV typ. deviation 20µs recovery |

### INPUT SPECIFICATIONS

| | | |
|---|---|---|
| Input voltage range | 48V nominal | 36 to 75VDC |
| Input current | No load<br>Remote OFF | 50mA<br>5mA |
| Active high remote ON/OFF<br>Logic compatibility<br>ON<br>OFF | | Open collector ref to -input<br>Open circuit or >2.4VDC<br><0.4VDC |
| Undervoltage lockout | Power up<br>Power down | 35.5V (typ.)<br>33.5V (typ.) |
| Start-up time (See Note 2) | Power up<br>Remote ON/OFF | 15ms (typ.)<br>15ms (typ.) |

### EMC CHARACTERISTICS

| | | |
|---|---|---|
| Immunity: | | |
| ESD air enclosure | EN61000-4-2 8kV/6kV | (O/P within spec.) |
| Radiated field enclosure | EN61000-4-3 10V/m | (O/P within spec.) |
| Conducted | EN61000-4-6 10V | (O/P within spec.) |
| Input transients | 100V, 100ms | |

### GENERAL SPECIFICATIONS

| | | |
|---|---|---|
| Basic insulation | Input/output | 2250VDC |
| Switching frequency | Fixed | 480kHz |
| Approvals and standards | (See Note 3) | EN60950 VDE<br>UL/cUL 60950 |
| Material flammability | | UL94V-0 |
| Weight | | 21g (0.73oz) |
| MTBF | Telcordia Tech SR-332 | 4,034,120 hours |

### ENVIRONMENTAL SPECIFICATIONS

| | | |
|---|---|---|
| Thermal performance | Operating ambient. temperature | -40°C to +85°C |
| | Non-operating | -55°C to +125°C |

### PROTECTION

| | |
|---|---|
| Short-circuit | Continuous |
| Over-voltage | Non-latching |
| Thermal | 125ºC hot spot temperature with automatic recovery |

**International Safety Standard Approvals**

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UL/cUL CAN/CSA 22.2 No. 60950-00 : UL 60950
File No. E135734

VDE

VDE Certificate No. 40005017

CB Report and Certificate to IEC60950, Certificate No. DE1-19783

For the most current data and application support visit www.artesyn.com/powergroup/products.htm

**NEW Product**

| OUTPUT VOLTAGE | INPUT CURRENT (MAX.) (4) | INPUT RIPPLE CURRENT (5) | OUTPUT CURRENT (MAX.) | EFFICIENCY (TYP.) | REGULATION | | | RIPPLE & NOISE (pk - pk) | MODEL NUMBER |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | SET POINT ACCURACY MAX | LINE | LOAD | | |
| **EIGHTH-BRICK SINGLE OUTPUT VALUE MODELS** | | | | | | | | | |
| 1.2V | 0.98A | 100mA | 25A | 88.0% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES25A48-1V2 |
| 1.5V | 1.21A | 100mA | 25A | 89.5% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES25A48-1V5 |
| 1.8V | 1.43A | 100mA | 25A | 90.5% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES25A48-1V8 |
| 2.5V | 1.62A | 150mA | 20A | 90.0% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES20A48-2V5 |
| 3.3V | 2.11A | 150mA | 20A | 91.0% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES20A48-3V3 |
| 5.0V | 1.59A | 100mA | 10A | 92.0% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES10A48-5V0 |
| **EIGHTH-BRICK SINGLE OUTPUT PERFORMANCE MODELS** | | | | | | | | | |
| 1.2V | 1.98A | 150mA | 50A | 86.0% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES50A48-1V2 |
| 1.5V | 1.91A | 150mA | 40A | 88.5% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES40A48-1V5 |
| 1.8V | 2.30A | 150mA | 40A | 90.0% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES40A48-1V8 |
| 2.5V | 1.99A | 200mA | 25A | 89.5% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES25A48-2V5 |
| 3.3V | 2.65A | 200mA | 25A | 90.5% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES25A48-3V3 |
| 5.0V | 2.30A | 150mA | 15A | 90.5% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES15A48-5V0 |
| **EIGHTH-BRICK SINGLE OUTPUT ULTRA MODELS** | | | | | | | | | |
| 2.5V | 3.20A | 150mA | 40A | 91.0% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES40A48-2V5 |
| 3.3V | 3.20A | 150mA | 30A | 90.5% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES30A48-3V3 |
| 5.0V | 3.20A | 150mA | 20A | 92.0% | ±1.5% | ±0.1% | ±0.2% | 60mV | LES20A48-5V0 |

## Part Number System with Options

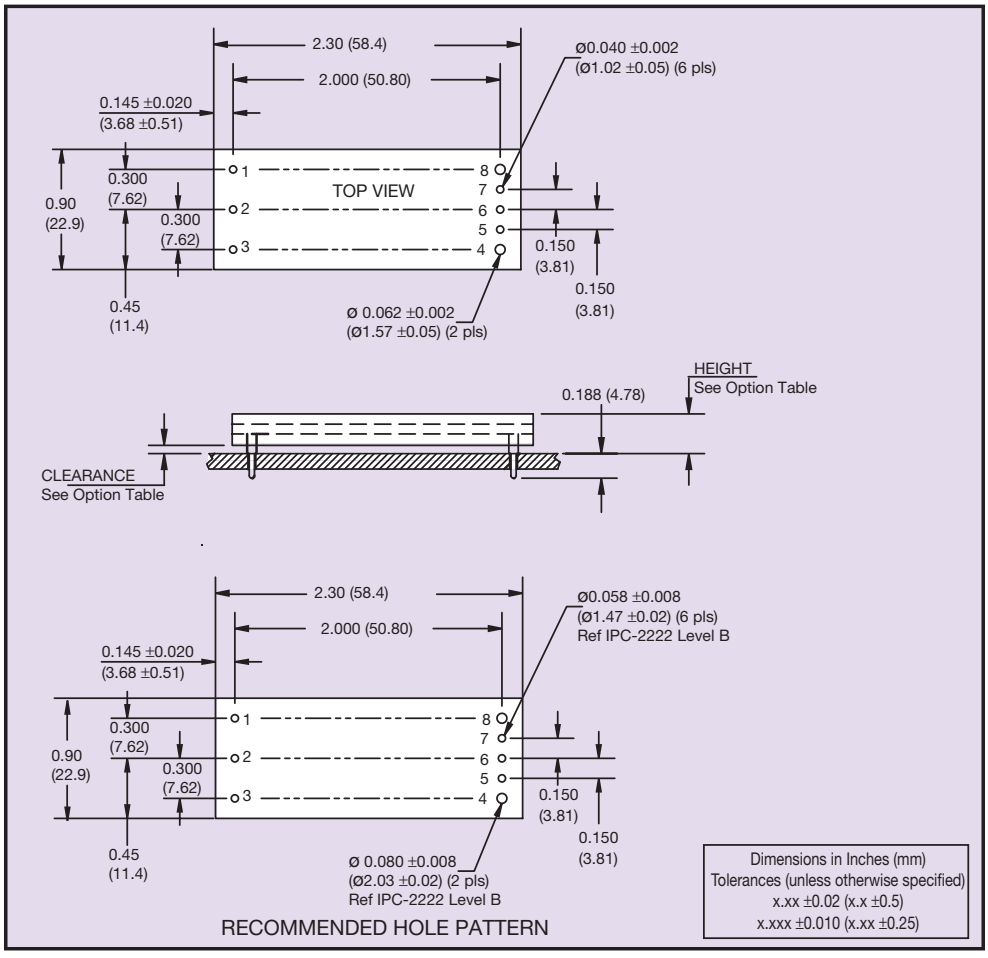
**LES50A48-1V2RA**

- **L** = Low Profile
- **E** = 1/8 Brick
- **Number of outputs**: S = Single
- **Rated Output Current**: 10A = 10 Amps, 15A = 15 Amps etc.
- **Nominal Rated Input Voltage**: 48 = 48 Volts (36 to 75V range)
- **Body Height, Package Type and Pin Length**:
  - A = 0.300" (7.62 mm), Through Hole, 0.188" (4.78 mm) Pins
  - E = 0.340" (8.64 mm), Through Hole, 0.188" (4.78 mm) Pins
  - S = Surface Mount (6)
- **Remote ON/OFF Logic**: Blank = Positive, R = Negative
- **Output Voltage**: 1V2 = 1.2 Volts, 1V5 = 1.5 Volts etc.

## Notes

1. di/dt = 1A/µs, Vin = 48VDC, Tc = 25°C, load change = 50% to 75% Io max. and 75% to 50% Io max. Deviation varies by model. For further details see long form data sheets.
2. Start-up into resistive load.
3. This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
4. Recommended input fusing is up to 10A HRC 200V rated fuse.
5. Peak to peak measured with no external Pi filter. Significant reduction possible with external filter. See Application Note 138 for further details.
6. Please consult factory to check availability.

**CAUTION: Hazardous internal voltages and high temperatures. Ensure that unit is not user accessible.**



RECOMMENDED HOLE PATTERN

| DIMENSION OPTIONS | | |
|---|---|---|
| OPTION | CLEARANCE | HEIGHT |
| | ±0.016 (0.41) | +0.022 (0.56)<br>-0.030 (0.76) |
| A | 0.030 (0.76) | 0.300 (7.62) |
| E | 0.070 (1.78) | 0.340 (8.64) |

| PIN CONNECTIONS | |
|---|---|
| PIN NUMBER | FUNCTION |
| 1 | Vin+ |
| 2 | ON/OFF |
| 3 | Vin- |
| 4 | Vout- |
| 5 | Sense- |
| 6 | Trim |
| 7 | Sense+ |
| 8 | Vout+ |