



**THE DATASHEET OF  
LES20A24-3V3RAJ**





# Eighth-Brick Series

## Single output



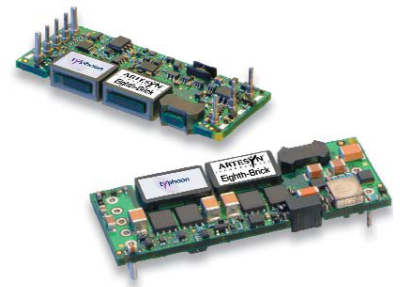
DC/DC CONVERTERS

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 converters
- Wide ambient temperature range, -40 °C to +85 °C
- 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
- 100 V, 100 ms input voltage transient rated
- Available RoHS compliant



This is a new high efficiency, open-frame, low profile, single board, isolated dc-dc converter series in an industry standard eighth-brick footprint that provides up to 100 W 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 18 Vdc to 36 Vdc and 36 Vdc to 75 Vdc and is available with output voltages of 1.2 V, 1.5 V, 1.8 V, 2.5 V, 3.3 V and 5.0 V. The output voltage is adjustable from 80% to 110% of the nominal value. The series also has a remote ON/OFF capability. Overcurrent, overvoltage and overtemperature protection features are included as standard. Full international safety approval including EN60950-1 VDE and UL/cUL60950, reduces compliance costs and time to market.



2 YEAR WARRANTY

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

### SPECIFICATIONS

#### 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)	60 mV to 150 mV typ. deviation 20 µs recovery

#### INPUT SPECIFICATIONS

Input voltage range	24 V nominal 48 V nominal	18-36 Vdc 36-75 Vdc
Input current	No load Remote OFF	50 mA 5 mA
Active high remote ON/OFF Logic compatibility	ON OFF	Open collector ref to -input Open circuit or >2.4 Vdc <0.4 Vdc
Undervoltage Lockout	24 Vin 48 Vin	Power up Power down Power up Power down
48 Vin Start-up time (See Note 2)	Power up Remote ON/OFF	17.5 V (typ.) 16.5 V (typ.) 35.5 V (typ.) 33.5 V (typ.) 15 ms (typ.) 15 ms (typ.)

#### EMC CHARACTERISTICS

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

#### GENERAL SPECIFICATIONS

Basic insulation	Input/output	2250 Vdc
Switching frequency	Fixed	480 kHz
Approvals and standards	(See Note 3)	EN60950-1 VDE UL/cUL 60950
Material flammability		UL94V-0
Weight		21 g (0.73 oz)
MTBF	Telcordia Tech SR-332	4,034,120 hours

#### ENVIRONMENTAL SPECIFICATIONS

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

Shortcircuit	Continuous
Overvoltage	Non-latching
Thermal	125 °C hot spot temperature with automatic recovery

#### International Safety Standard Approvals



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



VDE Certificate No. 40005017. File No. 10401-3336-0197  
CB Report and Certificate to IEC60950, Certificate No. DE1-31103



# Eighth-Brick Series

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

2

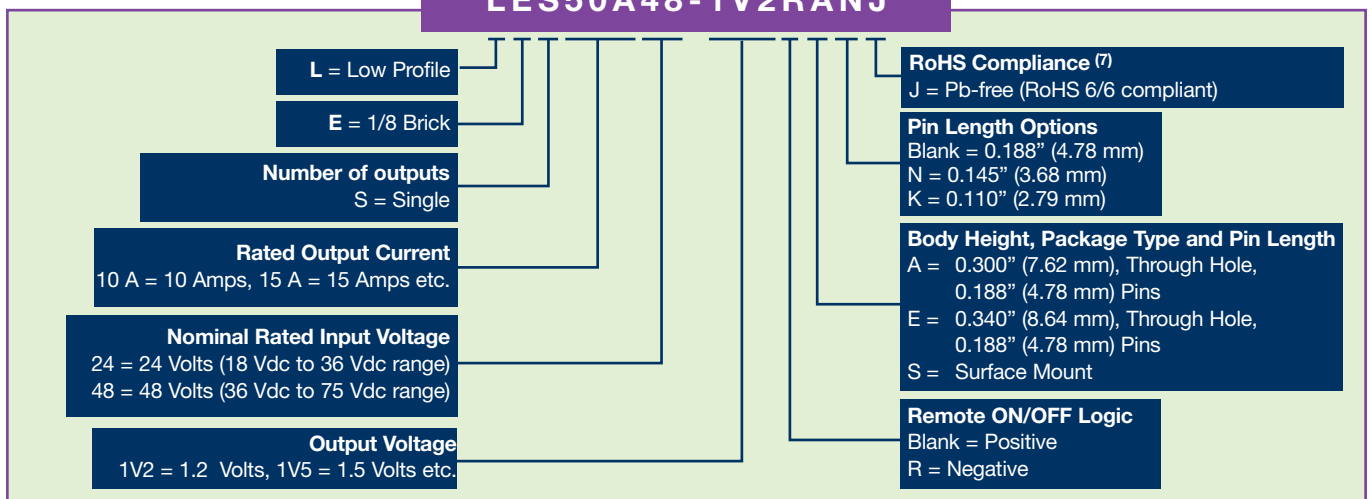
For the most current data and application support visit [www.artesyn.com/powergroup/products.htm](http://www.artesyn.com/powergroup/products.htm)

**NEW Product**

OUTPUT VOLTAGE	INPUT CURRENT (MAX.) (4)	INPUT RIPPLE CURRENT (5)	OUTPUT CURRENT (MAX.)	EFFICIENCY (TYP.)	REGULATION			RIPPLE & NOISE (pk - pk)	MODEL NUMBER (7,8)
					SET POINT ACCURACY (MAX.)	LINE	LOAD		
<b>48 Vin VALUE MODELS</b>									
1.2 V	0.98 A	100 mA	25 A	88%	±1.5%	±0.1%	±0.2%	60 mV	LES25A48-1V2J
1.5 V	1.21 A	100 mA	25 A	89.5%	±1.5%	±0.1%	±0.2%	60 mV	LES25A48-1V5J
1.8 V	1.43 A	100 mA	25 A	90.5%	±1.5%	±0.1%	±0.2%	60 mV	LES25A48-1V8J
2.5 V	1.62 A	150 mA	20 A	90%	±1.5%	±0.1%	±0.2%	60 mV	LES20A48-2V5J
3.3 V	2.11 A	150 mA	20 A	91%	±1.5%	±0.1%	±0.2%	60 mV	LES20A48-3V3J
5.0 V	1.59 A	100 mA	10 A	92%	±1.5%	±0.1%	±0.2%	60 mV	LES10A48-5V0J
<b>48 Vin PERFORMANCE MODELS</b>									
1.2 V	1.98 A	150 mA	50 A	86%	±1.5%	±0.1%	±0.2%	60 mV	LES50A48-1V2J
1.5 V	1.91 A	150 mA	40 A	88.5%	±1.5%	±0.1%	±0.2%	60 mV	LES40A48-1V5J
1.8 V	2.30 A	150 mA	40 A	90%	±1.5%	±0.1%	±0.2%	60 mV	LES40A48-1V8J
2.5 V	1.99 A	200 mA	25 A	89.5%	±1.5%	±0.1%	±0.2%	60 mV	LES25A48-2V5J
3.3 V	2.65 A	200 mA	25 A	90.5%	±1.5%	±0.1%	±0.2%	60 mV	LES25A48-3V3J
5.0 V	2.30 A	150 mA	15 A	91.5%	±1.5%	±0.1%	±0.2%	60 mV	LES15A48-5V0J
<b>48 Vin ULTRA MODELS</b>									
2.5 V	3.20 A	150 mA	40 A	91%	±1.5%	±0.1%	±0.2%	60 mV	LES40A48-2V5J
3.3 V	3.20 A	150 mA	30 A	90.5%	±1.5%	±0.1%	±0.2%	60 mV	LES30A48-3V3J
5.0 V	3.20 A	150 mA	20 A	92%	±1.5%	±0.1%	±0.2%	60 mV	LES20A48-5V0J
<b>24 Vin MODELS</b>									
1.8 V	2.40 A	50 mA	20 A	91%	±1.5%	±0.1%	±0.2%	35 mV	LES20A24-1V8J
3.3 V	4.25 A	170 mA	20 A	90%	±1.5%	±0.1%	±0.2%	60 mV	LES20A24-3V3J

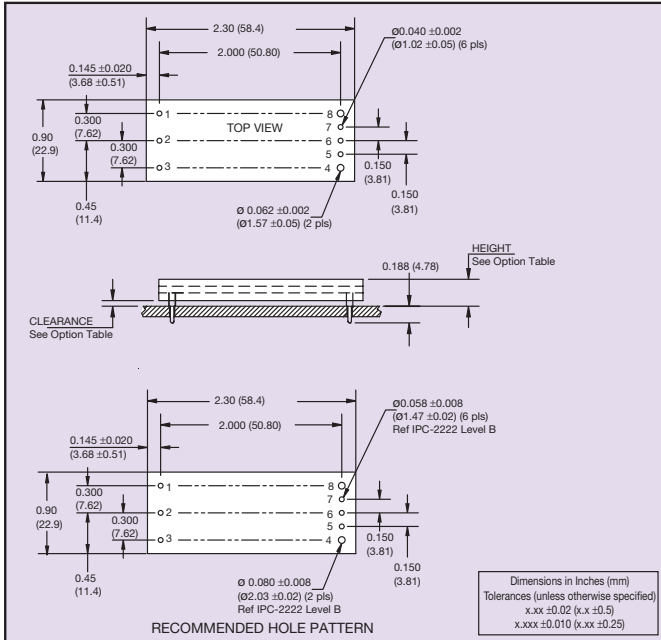
**Part Number System with Options**

**LES50A48-1V2RANJ**



**Notes**

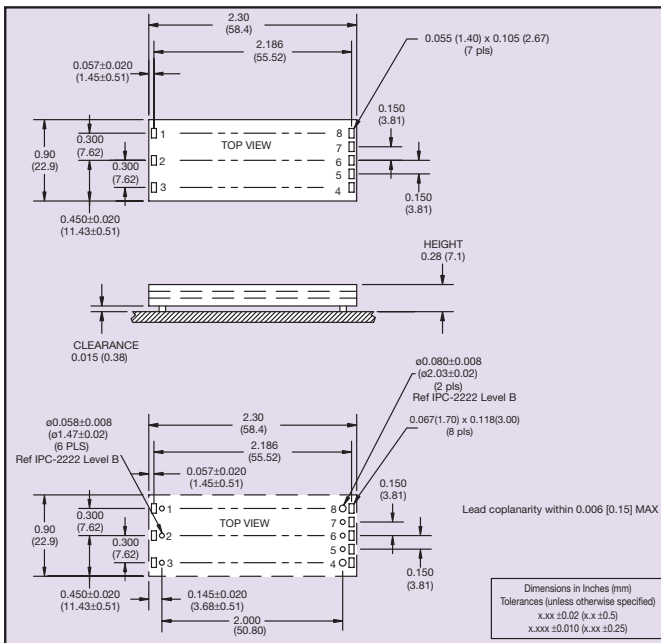
- 1 di/dt = 1 A/μs, Vin = 24 or 48 Vdc, Tc = 25 °C, load change = 50% to 75% lo max. and 75% to 50% lo max. Deviation varies by model. For further details see long form data sheets.
- 2 Start-up into resistive load.
- 3 This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- 4 Recommended input fusing is up to 10 A HRC 200 V 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 Active low Remote ON/OFF is available. Standard product is Active High. When ordering active low parts, designate with the Suffix 'R' e.g. **LES50A48-1V2RAJ**.
- 7 TSE RoHS 5/6 (non Pb-free) compliant versions may be available on special request, please contact your local sales representative for details.
- 8 NOTICE: Some models do not support all options. Please contact your local Artesyn representative or use the on-line model number search tool at <http://www.artesyn.com/powergroup/products.htm> to find a suitable alternative.



DIMENSION OPTIONS		
OPTION	CLEARANCE	HEIGHT
	±0.016 (0.41)	+0.022 (0.56) -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	PIN NUMBER	FUNCTION
1	+Vin	5	-Sense
2	ON/OFF	6	Trim
3	-Vin	7	+Sense
4	-Vout	8	+Vout

Through-hole Mechanical Drawing, Dimension Options and Pinout Table



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

Surface-mount Mechanical Drawing and Pinout Table

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Please consult our website for the following items: ✓ Application Note ✓ Longform Data Sheets

[www.artesyn.com](http://www.artesyn.com)

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