



- **High efficiency topology, 90% typical at 3.3V**
- **Industry standard footprint**
- **Wide baseplate temperature, -40°C to +100°C (natural convection)**
- **90% to 110% output trim**
- **No minimum load**
- **Overvoltage protection**
- **Remote on/off**

The EXB250 is a new high efficiency, open frame, isolated 165 Watt converter series in an industry standard half-brick footprint. The EXB250 delivers very high output current at low voltages, and excellent useable power density for today's high end applications. The design takes advantage of open frame construction to provide a low weight, low thermal impedance baseplate design. The seven models in the series feature an input voltage range of 33 to 75VDC and are available in output voltages of 12V, 5V, 3.3V, 2.5V, 1.8V, 1.5V and 1.2V. The output voltage on each model is adjustable from 90% to 110% of the nominal value. Typical efficiencies for the models are 90% for the 3.3V, 88% for the 2.5V and 87% for the 1.8V version. The EXB250 series also has a remote on/off capability. Overcurrent and overvoltage protection features are included as standard. With full international safety approval including EN60950 (TÜV Rheinland) and UL/cUL1950, the EXB250 reduces compliance costs and time to market.

[ 2 YEAR WARRANTY ]



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

OUTPUT SPECIFICATIONS		
Voltage adjustability		90% to 110%
Set point accuracy		±1.6% max.
Line regulation	1V2 Model	±0.2% max.
Low line to high line	All other models	±0.1% max.
Load regulation	Full load to min. load	±0.2% max.
Minimum load		0%
Overshoot	At turn-on and turn-off	None
Undershoot	1.2V, 1.5V, 1.8V, 2.5V and 3.3V models	None
Ripple and noise	5Hz to 20MHz	60mV pk-pk 20mV rms
Transient response (See Note 1)		6% max. deviation 150µs recovery to within total error band
INPUT SPECIFICATIONS		
Input voltage range	48Vin nominal	33 to 75VDC
Input current	No load Remote OFF	145mA max. 35mA max.
Input current (max.) (See Note 3)		5.7A max. @ Io max. and Vin = 33 to 75V
Input reflected ripple	(See Note 5)	350mA (pk-pk) typ.
Active high remote ON/OFF Logic compatibility ON OFF		(See Note 7) Open collector ref to -input Open circuit or >4.0VDC <1.2VDC
Undervoltage lockout	Power up Power down	32.5V (typ.) 30.5V (typ.)
Start-up time (See Note 6)	Power up Remote ON/OFF	10ms (typ.) 3ms (typ.)

EMC CHARACTERISTICS		
Conducted emissions	EN55022 (See Note 2) EN55022 (See Note 2)	Level A Level B
Immunity:		
ESD air	EN61000-4-2 8kV (NP), 15kV (NP)	
ESD contact	EN61000-4-2 6kV ((NP), 8kV (NP)	
Radiated field enclosure	EN61000-4-3 10V/m (NP)	
Conducted (DC power)	EN61000-4-6 10V (NP)	
Conducted (signal)	EN61000-4-6 10V (NP)	
Input transients	ETS 300 132-2, ETR 283	
GENERAL SPECIFICATIONS		
Efficiency		See table
Operational	Input/output Input/baseplate	1500VDC 1500VDC
Switching frequency	Fixed	400kHz typ.
Approvals and standards (See Note 4)		EN60950 (TÜV Rheinland) UL/cUL1950
Material flammability		UL94V-0
Weight		73g (2.6oz)
MTBF	MIL-HDBK-217F @ 40°C, 100% load ground benign	>224,000 hours
ENVIRONMENTAL SPECIFICATIONS		
Thermal performance	Operating baseplate temperature Non-operating	-40°C to +100°C -40°C to +125°C

**International Safety Standard Approvals**

**cULus** UL/cUL : UL1950 File No. E135734  
**TÜV** TÜV Rheinland Certificate No. R2174184  
 CB Scheme No. US-TUVR-1085

# 72 to 165 Watt High efficiency DC/DC converters

OUTPUT POWER (MAX.)	INPUT VOLTAGE	OVP	OUTPUT VOLTAGE	OUTPUT CURRENT (MIN.)	OUTPUT CURRENT (MAX.)	EFFICIENCY (TYP.)	REGULATION		MODEL NUMBER <sup>(7,8,9)</sup>
							LINE	LOAD	
72W	33-75VDC	1.44VDC	1.2V	0A	60A	84.0%	±0.2%	±0.2%	EXB250-48S1V2
90W	33-75VDC	1.8VDC	1.5V	0A	60A	85.5%	±0.1%	±0.2%	EXB250-48S1V5
108W	33-75VDC	2.2VDC	1.8V	0A	60A	87.0%	±0.1%	±0.2%	EXB250-48S1V8
150W	33-75VDC	3.0VDC	2.5V	0A	60A	88.0%	±0.1%	±0.2%	EXB250-48S2V5
165W	33-75VDC	4.0VDC	3.3V	0A	50A	90.0%	±0.1%	±0.2%	EXB250-48S3V3
165W	33-75VDC	6.0VDC	5.0V	0A	33A	91.7%	±0.1%	±0.2%	EXB250-48S05
165W	33-75VDC	14.4VDC	12.0V	0A	13.75A	92.0%	±0.1%	±0.2%	EXB250-48S12

## Notes

- $di/dt = 0.1A/\mu s$ ,  $V_{in} = 48VDC$ ,  $T_c = 25^\circ C$ , load change = 0.5  $I_o$  max. to 0.75  $I_o$  max. and 0.75  $I_o$  max. to 0.5  $I_o$  max.
- The EXB250 meets level A and level B conducted emissions only with external components connected before the input pins to the converter. See Application Note 119.
- Recommended input fusing is a 10A HRC 200V rated fuse.
- This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- Measured with no external Pi filter. Significant reduction possible with external filter. See Application Note 119.
- Start-up into resistive load.
- Active low remote On/Off is available. Standard product is active high. When ordering active low parts, designate with the Suffix '-R', e.g EXB250-48S3V3-R.
- When ordering 0.145" pin lengths designate with the Suffix '-N', if the product is already a '-R' suffix product then the suffix will be '-RN'
- When ordering 0.110" pin lengths designate with the Suffix '-K', if the product is already a '-R' suffix product then the suffix will be '-RK'

## PROTECTION

Short circuit protection	Continuous
Overvoltage protection	Non-latching clamp

## TELECOM SPECIFICATION

Central office interface A	ETS300-132-2, input voltage and current requirements
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**CAUTION: Hazardous internal voltages and high temperatures. Ensure that unit is not user accessible.**

## PIN CONNECTIONS

PIN NUMBER	FUNCTION
1	+Vin
2	Remote On/Off
3	No Function
4	-Vin
5	-Vout
6	-Sense
7	Trim
8	+Sense
9	+Vout

