

# ES-XC SERIES

## Triple output

For new design-ins see the BXA15 Series Instead

- 2:1 input range
- Isolated outputs
- Six-sided shield
- UL approved (48V input versions)
- Short circuit protection
- Efficiency to 82%
- No derating to 71°C
- Remote on/off control on XC models
- OVP on all outputs



**2 YEAR WARRANTY**

The ES Series 15 Watt isolated DC/DC converters feature a wide input voltage range with a ratio 2:1. The input voltage ranges are 9-18VDC, 18-36VDC, and 36-72VDC. The ES series provides three different triple output combinations: 5/±12, 5/±15, 5/+12/-5VDC. With output power up to 15 Watts, these units are ideal for applications where input voltage varies considerably and outputs power TTL, CMOS, op-amps, or A/D, D/A converters. The ES series is packaged in a PC-mountable

2.56 x 3.0 x 0.83 inch case and has a six sided continuous shield for EMI/RFI protection. These units also have input/output isolation of 500VDC. Overvoltage protection is standard on all outputs. Other pertinent specifications include: operating temperature range of -25°C to +71°C with no derating, short circuit protection and operating efficiency as high as 82%.

### SPECIFICATION

ALL SPECIFICATIONS ARE TYPICAL AT NOMINAL INPUT, FULL LOAD AND 25°C UNLESS OTHERWISE STATED

OUTPUT SPECIFICATIONS		
Voltage accuracy	5V outputs 12V and 15V outputs	±2.0% ±3.0%
Line regulation	LL-HL, all outputs	±1.0%
Load regulation	All outputs	±5.0%
Ripple and noise	5Hz to 20MHz	10mV rms max. 75mV pk-pk, max.
Temperature coefficient	All outputs	±0.05%/°C, max.
Overvoltage protection (All outputs)	+5V outputs 12V outputs 15V outputs	6.8V 15V 18V
Short circuit protection	Outputs to common, See Note 6	Continuous
INPUT SPECIFICATIONS		
Input voltage range	12VDC 24VDC 48VDC	9-18VDC 18-36VDC 36-72VDC
Input filter See Note 9	Low ESR capacitor	
No load input current	12VDC 24VDC 48VDC	50mA 40mA 30mA
Remote ON/OFF Logic compatibility	CMOS or open collector TTL +5.5VDC or open circuit max. 1.8VDC	
$E_c$ -ON $E_c$ -OFF	5mA	
Shutdown idle current	5mA	
Input resistance	0VDC < $E_{in}$ < 9VDC; 100kΩ	
Control common	Referenced to input minus	

GENERAL SPECIFICATIONS		
Efficiency	9-18VDC 18-36VDC 36-72VDC	78% 80% 82%
Isolation voltage	Input/Output	500VDC, min.
Switching frequency	Fixed	100kHz
Approvals and standards	Safety - 48V input models	UL478
Case material	Black coated metal with non-conductive base	
Material flammability	UL94V-0	
Weight	Case	170g (6.0oz)
MTBF	MIL-HDBK-217E	840,000 Hours
ENVIRONMENTAL SPECIFICATIONS		
Thermal performance	Operating ambient Non-operating amb. Case Derating	-25°C to +71°C -55°C to +100°C +95°C, max. None required
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating Non operating	10,000 feet max. 40,000 feet max.

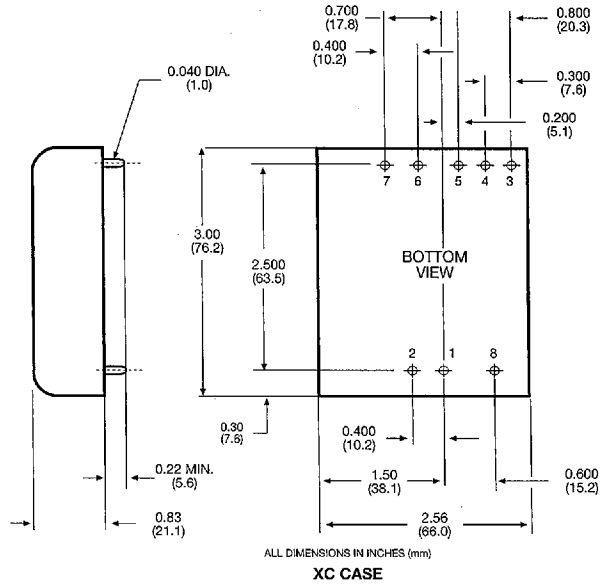
# 15 Watt Wide input DC/DC converters

INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT (1)	INPUT CURRENT (2)	TYPICAL EFFICIENCY	REGULATION (3)		MODEL NUMBER
					LINE (4)	LOAD (5)	
9-18VDC	5±12VDC	1500±310mA	1.6A	78%	±1.0%	±5.0%	ES12T12/310XC
9-18VDC	5±15VDC	1500±250mA	1.6A	78%	±1.0%	±5.0%	ES12T15/250XC
18-36VDC	5±12VDC	1500±310mA	0.78A	80%	±1.0%	±5.0%	ES24T12/310XC
18-36VDC	5±15VDC	1500±250mA	0.78A	80%	±1.0%	±5.0%	ES24T15/250XC
36-72VDC	5±12VDC	1500±310mA	0.38A	82%	±1.0%	±5.0%	ES48T12/310XC
36-72VDC	5±15VDC	1500±250mA	0.38A	82%	±1.0%	±5.0%	ES48T15/250XC
36-72VDC	+5/+12/-5VDC	1500/+310/500mA	0.38A	82%	±1.0%	±5.0%	ES48T05/500XC

**Notes**


- Maximum total power from all outputs is limited to 15 Watts but no output should be allowed to exceed its maximum current.
- Nominal input 12, 24 or 48VDC at full load.
- Maximum.
- Measured from high line to low line.
- Measured from full load to no load.
- Thermal shutdown is provided for long-term short-circuit and overload conditions.
- Minimum current required to maintain specified regulation.
- Overshoot protection threshold.
- Fixed frequency design provides for easier input filtering and better noise performance.

PIN CONNECTIONS	
PIN	XC CASE
1	+ Input
2	- Input
3	+ Output
4	Common
5	- Output
6	+5V Output
7	No Pin
8	Remote On/Off



OUTPUT LOADING AND PROTECTION TABLE (6)					
OUTPUT	VOLTAGE	AMPS			
		MIN (7)	NOM	MAX (1)	OVP (8)
1	+5	0.250	1.5	2.0	6.8V
2 and 3	+12 or -12	0.100	0.31	0.50	15V
2 and 3	+15 or -15	0.100	0.25	0.50	18V
2 and 3	+12 and -5	0.10/0.10	0.31/0.5	0.5/0.5	15V/6.8V

**International Safety Standard Approvals**

 UL478 File No. E131987 (48V input units)



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