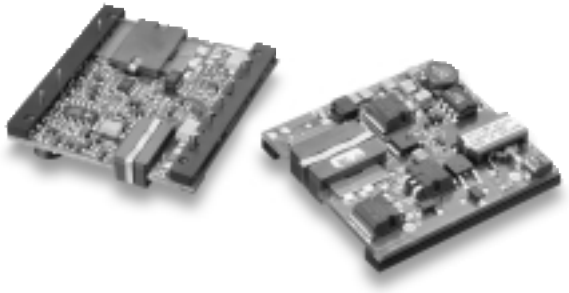
ARTESYN TECHNOLOGIES

EXB50 SERIES

Single output



- **High efficiency topology, 91% typical on EXB50-48S05**
- **Industry standard footprint**
- **Wide operating temperature -40°C to +70°C**
- **60% to 110% output trim**
- **No minimum load**
- **Overvoltage and overtemperature protection**
- **Remote sense compensation**
- **Remote on/off**

The EXB50 series of 50 Watt single-output isolated DC/DC converters is specifically designed to meet the power needs of low-voltage silicon. Housed in an open-frame package with an industry-standard footprint, these latest-generation converters offer efficiencies as high as 91%. The series comprises three 24V-input models with 5V, 3.3V and 2V outputs, and four 48V-input models with 12V, 5V, 3.3V and 2V outputs. All models feature a wide input range, trimmable output voltage and a 10A current rating (except the 12V). Remote sense and remote on/off facilities are included as standard, and the converters are comprehensively protected against over-current, over-voltage and over-temperature conditions.

[2 YEAR WARRANTY]

CE (LVD) VDE

SPECIFICATION

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

OUTPUT SPECIFICATIONS		
Voltage adjustability		60% to 110%
Set point accuracy		±1.5% max.
Line regulation	Low line to high line	0.1% max.
Load regulation	Full load to min. load	0.2% max.
Total error band		±3.0%
Minimum load		0%
Overshoot	At turn-on and turn-off	None
Undershoot		None
Ripple and noise (See Note 1)	5Hz to 20MHz	100mV pk-pk 20mV rms
Transient response (See Notes 2 and 8)	24V models 48V models	3.0% peak deviation 2.0% peak deviation, 200µs recovery to within total error band
Remote sense	(See Note 9)	10% o/p voltage change
INPUT SPECIFICATIONS		
Input voltage range (See Note 14)	24Vin nominal 48Vin nominal 100V 100ms Transient	18 to 36VDC 36 to 75VDC
Input current	24V: No load 24V: Remote OFF 48V: No load 48V: Remote OFF	85mA max. 20mA max. 60mA max. 10mA max.
Input current (max.) (See Note 4)	24V models 48V models	3.25A max. @ Io max. and Vin = 18 to 36V 1.7A max. @ Io max. and Vin = 36 to 75V
Input reflected ripple (See Note 6)	24V models 48V models	20mA (pk-pk) typ. 50mA (pk-pk) typ.
Active high remote ON/OFF Logic compatibility ON OFF		Open collector ref to -input Open circuit or >2VDC <1.2VDC

INPUT SPECIFICATIONS CONTD.		
Undervoltage lockout	24Vin: power up 24Vin power down 48Vin: power up 48Vin: power down	17Vmax 15Vmin 33.2Vmax 30.9Vmin
Start-up time (See Note 7)	Power up Remote ON/OFF	30ms 25ms
EMC CHARACTERISTICS		
Conducted emissions Radiated emissions Immunity: ESD air ESD contact Radiated field enclosure Conducted (DC power) Conducted (signal)	EN55022 (See Note 3) EN55022 (See Note 3) EN55022 (See Note 13) EN61000-4-2 8kV (NP), 15kV (RP) EN61000-4-2 6kV (NP), 8kV (RP) EN61000-4-3 10V/m (NP) EN61000-4-6 10V (NP) EN61000-4-6 10V (NP)	Level A Level B Level A
GENERAL SPECIFICATIONS		
Efficiency		See table
Basic insulation	Input/output	1500VDC
Switching frequency	Fixed	300kHz typ.
Approvals and standards (See Note 5) Material flammability	IEC60950/EN60950, UL/cUL1950 CSA C22.2 No. 950 UL94V-0	
Weight		50g (1.77oz)
MTBF	MIL-HDBK-217F @ 25°C 100% load ground benign	270,000 hours
ENVIRONMENTAL SPECIFICATIONS		
Thermal performance (See Notes 11 & 12)	Operating ambient temperature (natural convection) Non-operating	-40°C to +70°C -55°C to +125°C
ETS 300 019-2-3		Classes T3.1 to T3.5
Altitude (See Note 10)	3,000 metres 10,000 metres	Derate max. output current by 20% Derate max. output current by 50%

20 to 50 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
							LINE	LOAD	
20W	18-36VDC	2.4VDC	2.0V	0A	10A	86.5%	±0.1%	±0.2%	EXB50-24S2V0
33W	18-36VDC	3.9VDC	3.3V	0A	10A	89%	±0.1%	±0.2%	EXB50-24S3V3
50W	18-36VDC	6.0VDC	5.0V	0A	10A	90%	±0.1%	±0.2%	EXB50-24S05
20W	36-75VDC	2.45VDC	2.0V	0A	10A	87.5%	±0.1%	±0.2%	EXB50-48S2V0
33W	36-75VDC	4.00VDC	3.3V	0A	10A	90.0%	±0.1%	±0.2%	EXB50-48S3V3
50W	36-75VDC	6.15VDC	5.0V	0A	10A	91.0%	±0.1%	±0.2%	EXB50-48S05
50W	36-75VDC	14.2VDC	12.0V	0A	4.2A	90.0%	±0.1%	±0.2%	EXB50-48S12

Notes

1 Measured as per recommended set-up. 150mV pk-pk for EXB50-48S12
2 di/dt = 0.1A/µs, Vin = 24/48VDC, Tc = 25°C, load change = 0.5 lo max. to 0.75 lo max. and 0.75 lo max. to 0.5 lo max.
3 The EXB50 meets level A and level B conducted emissions only with external components connected before the input pins to the converter.
4 Recommended input fusing is a 6.3A HRC 200V rated fuse on the 24V and 3.15A HRC 200V rated fuse on the 48V.
5 This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
6 Simulated source impedance of 12µH. 12µH inductor in series with +Vin.
7 Start-up into resistive load.
8 EXB50-24S2V0 model has 5.0% max. deviation and 300µs recovery.
9 Maximum output deviation is 10% inclusive of trim.
10 Contact factory for operation at higher altitude.
11 See Application Note 113 for Derating Curves.
12 Wide operating temperature on the EXB50-24S05 is -40°C to + 60°C
13 Input transient (48V) ETS300 132-2 ETR283
14 Applies to 3V3 version only. Please add suffix 'R03' to the model number e.g. EXB50-48S3V3R03. This is also active low remote on/off.

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

PROTECTION	
Short circuit protection	Continuous
Overvoltage protection	Non-latching clamp
Thermal protection	120°C hot spot temperature with automatic recovery
TELECOM SPECIFICATION	
Central office interface A	ETS300-132-2, input voltage and current requirements

PIN CONNECTIONS	
PIN NUMBER	FUNCTION
1	- Vin
2	No Pin
3	Remote ON/OFF
4	+ Vin
5	+ Vout
6	+ Sense
7	Trim
8	- Sense
9	- Vout

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.