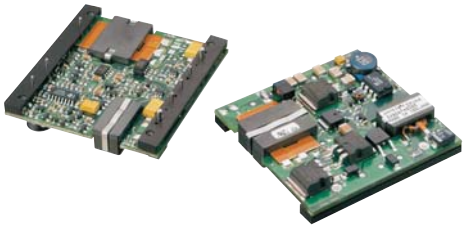
EXB50 Series

Single output

ARTESYN TECHNOLOGIES

- **High efficiency topology, 91% typical on EXB50-48S05J**
- **Industry standard footprint**
- **Wide operating temperature -40 °C to +70 °C (natural convection)**
- **60% to 110% output trim**
- **No minimum load**
- **Overvoltage and overtemperature protection**
- **Remote sense compensation**
- **Remote ON/OFF**
- **Available RoHS compliant**

RoHS 2002/95/EC



The EXB50 series of 50 Watt single-output isolated dc-dc converters are 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 24 V input models with 5 V, 3.3 V and 2 V outputs, and six 48 V input models with 12 V, 5 V, 3.3 V 2.5 V, 2 V and 1.8 V outputs. All models feature a wide input range, trimmable output voltage and a 10 A current rating (except the 12 V). Remote sense and remote ON/OFF facilities are included as standard, and the converters are comprehensively protected against overcurrent, overvoltage and overtemperature conditions.

c UL us TÜV

2 YEAR WARRANTY

SPECIFICATIONS

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

OUTPUT SPECIFICATIONS

Voltage adjustability		60% to 110%
Setpoint 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)	5 Hz to 20 MHz	100 mV pk-pk 20 mV rms
Transient response (See Notes 2 and 8)	24 V models 48 V models	3.0% peak deviation 2.0% peak deviation, 200 µs recovery to within total error band
Remote sense	(See Note 9)	10% o/p voltage change

INPUT SPECIFICATIONS

Input voltage range (See Note 14)	24 V nominal 48 V nominal 100 V 100 ms transient	18-36 Vdc 36-75 Vdc
Input current	24 V no load 24 V Remote OFF 48 V no load 48 V Remote OFF	85 mA max. 20 mA max. 60 mA max. 10 mA max.
Input current (max.) (See Note 4)	24 V models 48 V models	3.25 A max. @ Io max. and Vin = 18-36 Vdc 1.7 A max. @ Io max. and Vin = 36-75 Vdc
Input reflected ripple (See Note 6)	24 V models 48 V models	20 mA (pk-pk) typ. 50 mA (pk-pk) typ.
Remote ON/OFF Logic compatibility ON OFF	(See Note 15)	Open collector ref to -input Open circuit or >2 Vdc <1.2 Vdc

INPUT SPECIFICATIONS Continued

Undervoltage lockout	24 V Power up 24 V Power down 48 V Power up 48 V Power down	17 V max. 15 V min. 33.2 V max. 30.9 V min.
Start-up time (See Note 7)	Power up Remote ON/OFF	30 ms 25 ms

EMC CHARACTERISTICS

Conducted emissions	EN55022 (See Note 3) EN55022 (See Note 3)	Level A Level B
Radiated emissions	EN55022	Level A
Immunity:	(See Note 13)	
ESD air	EN61000-4-2 8 kV (NP), 15 kV (RP)	
ESD contact	EN61000-4-2 6 kV (NP), 8 kV (RP)	
Radiated field enclosure	EN61000-4-3 10 V/m (NP)	
Conducted (DC power)	EN61000-4-6 10 V (NP)	
Conducted (signal)	EN61000-4-6 10 V (NP)	

GENERAL SPECIFICATIONS

Efficiency		See table
Basic insulation	Input/output	1500 Vdc
Switching frequency	Fixed	300 kHz typ.
Approvals and standards (See Note 5)		IEC60950/EN60950, UL/cUL1950 CSA C22.2 No. 950
Material flammability		UL94V-0
Weight		50 g (1.77 oz)
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%

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Single output

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

OUTPUT POWER (MAX.)	INPUT VOLTAGE	OVP	OUTPUT VOLTAGE	OUTPUT CURRENT (MIN.)	OUTPUT CURRENT (MAX.)	EFFICIENCY (TYP.)	REGULATION		MODEL NUMBER [16,17]
							LINE	LOAD	
20 W	18-36 Vdc	2.4 Vdc	2 V	0 A	10 A	86.5%	±0.1%	±0.2%	EXB50-24S2V0J
33 W	18-36 Vdc	3.9 Vdc	3.3 V	0 A	10 A	89.0%	±0.1%	±0.2%	EXB50-24S3V3J[14]
50 W	18-36 Vdc	6 Vdc	5 V	0 A	10 A	90.0%	±0.1%	±0.2%	EXB50-24S05J
18 W	36-75 Vdc	2.15 Vdc	1.8 V	0 A	10 A	85.7%	±0.1%	±0.2%	EXB50-48S1V8J[15]
20 W	36-75 Vdc	2.45 Vdc	2 V	0 A	10 A	87.5%	±0.1%	±0.2%	EXB50-48S2V0J[15]
25 W	36-75 Vdc	2.95 Vdc	2.5 V	0 A	10 A	87.5%	±0.1%	±0.2%	EXB50-48S2V5J[15]
33 W	36-75 Vdc	4 Vdc	3.3 V	0 A	10 A	90.0%	±0.1%	±0.2%	EXB50-48S3V3J[14,15]
50 W	36-75 Vdc	6.15 Vdc	5 V	0 A	10 A	91.0%	±0.1%	±0.2%	EXB50-48S05J[15]
50 W	36-75 Vdc	14.2 Vdc	12 V	0 A	4.2 A	90.0%	±0.1%	±0.2%	EXB50-48S12J[15]

Notes

1 Measured as per recommended set-up. 150 mV pk-pk for EXB50-48S12J.
2 di/dt = 0.1 A/µs, Vin = 24/48 Vdc, Tc = 25 °C, load change = 0.5 Io max. to 0.75 Io max. and 0.75 Io max. to 0.5 Io 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 6.3 A HRC 200 V rated fuse on the 24 V and 3.15 A HRC 200 V rated fuse on the 48 V.
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 12 µH. 12 µH inductor in series with +Vin.
7 Start-up into resistive load.
8 EXB50-24S2V0J model has 5.0% max. deviation and 300 µs 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.

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

Notes Continued

12 Wide operating temperature on the EXB50-24S05J is -40 °C to +60 °C.
13 Input transient (48 V) ETS300 132-2 ETR283.
14 100 V, 100 ms transient applies to the EXB50-24S3V3J and the EXB50-48S3V3J models. Please add the suffix 'R03' to the model number e.g. EXB50-48S3V3R03J. This is also active low remote ON/OFF.
15 Active low remote ON/OFF available. Please add suffix '-R' to model number e.g. EXB50-48S3V3-RJ.
16 The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant. TSE RoHS 5/6 (non Pb-free) compliant versions may be available on special request, please contact your local sales representative for details.
17 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.

PROTECTION

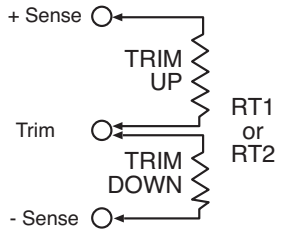
Short-circuit	Continuous
Over-voltage	Non-latching clamp
Thermal	120 °C hot spot temperature with automatic recovery

TELECOM SPECIFICATION

Central office interface A	ETS300-132-2, input voltage and current requirements

EXTERNAL OUTPUT TRIMMING

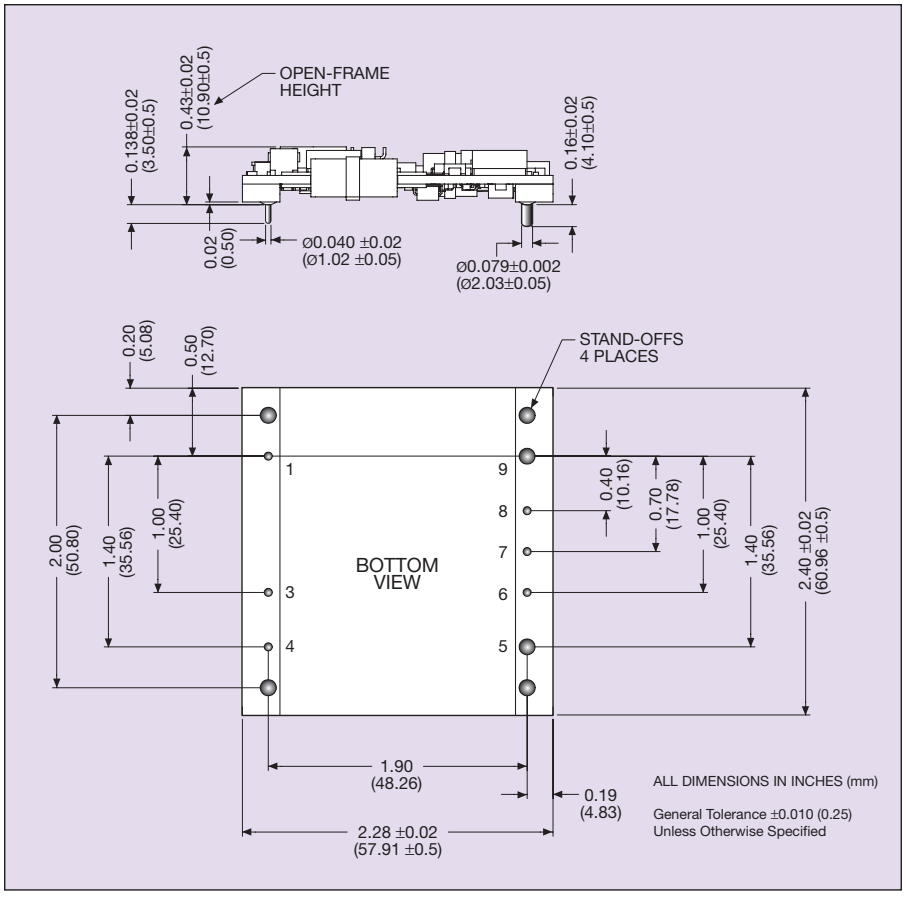
Output can be externally trimmed by using the method shown below.



International Safety Standard Approvals

UL/cUL CAN/CSA 22.2 No. 60950-00 : UL 60950
File No. E174104

TÜV Product Service. Certificate No. B 03 08 38572 036



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