FEATURES

- High Efficiency up to 90%
- Fixed Switching Frequency
- Six-Sided Continuous Shield
- 2:1 Wide Input Voltage Range
- 40 Watts Maximum Output power
- Standard 2.02” x 2.02” x 0.4” Package
- International Safety Standard Approval
- Single, Dual, Dual Positive (Total Output Current 8A), and Triple Outputs Available

UL E155800
TUV
CB
CE MARK

SPECIFICATIONS: *DB Series*

All specifications apply @ 25°C ambient unless otherwise noted

INPUT SPECIFICATIONS

Input Voltage Range ..... 12V nominal input 9-18VDC
24V nominal input 18-36VDC
48V nominal input 36-75VDC

Under Voltage Lockout
12V nominal input ..... DC-DC ON 9VDC
DC-DC OFF 8VDC
24V nominal input ..... DC-DC ON 17.8VDC
DC-DC OFF 16VDC
48V nominal input ..... DC-DC ON 36VDC
DC-DC OFF 34VDC

Input Filter ..... L-C Type

Input Voltage Variation ..... dv/dt ..... 5V/ms max
(Complies with ETS300 132 part 4.4)

Input Surge Voltage (100ms max) ..... 12V input 36VDC
24V input 50VDC
48V input 100VDC

Input Reflected Ripple Current (See Note 6) 40mAp-p
(nominal Vin and full load)

Start Up Time (nominal Vin and constant resistive load)
Power Up ..... 25ms typ.
Remote ON/OFF ..... 25ms typ.

Remote ON/OFF (See Note 7)
DC-DC ON ..... Open or 3.5V < Vr < 12V
DC-DC OFF ..... Short or 0V < Vr < 1.2V

Remote Off Input Current (nominal Vin) 2.5mA

OUTPUT SPECIFICATIONS

Output Voltage ..... see table

Voltage Accuracy (nom Vin and full load) ..... Single & Dual ..... ±1%
Triple (main) ..... ±1%
(auxiliary) ..... ±5%

Voltage Adjustability (See Note 1) ..... ±10%
(Single & Dual Outputs only-not including Dual positive & triple)

Output Current ..... see table

Output Power ..... 40 watts max.

Line Regulation (LL to HL at FL) ..... Single & Dual ..... ±0.5%
Triple (main) ..... ±1%
Triple (auxiliary) ..... ±5%

Load Regulation (See Note 3) ..... Single ..... ±0.5%
(10% to 100% FL) Dual ..... ±1%
Triple (main) ..... ±2%
(auxiliary) ..... ±5%

Load Cross Regulation (See Note 4) ..... Triple (main) ..... ±1%
Dual/Triple (auxiliary) ..... ±5%

OUTPUT SPECIFICATIONS (CONTINUED)

Minimum Load (See Note 2) ..... Single & Dual Positive 0%
Dual & Triple ..... 10% of FL

Ripple/Noise (See Note 5) ..... see table
(20MHz -Measured with a 104pF/50V MLCC)

Transient Response Recovery Time 250us
(25% load step change)

PROTECTION SPECIFICATIONS

Over Voltage Protection ..... 1.5V Output 3.9V
(Zener diode clamp) 1.8V Output 3.9V
2.5V Output 3.9V
3.3V Output 3.9V
5V Output 6.2V
12V Output 15V
15V Output 18V

Over Load Protection (% of FL at nominal input) ..... 150% max.

Short Circuit Protection ..... Hiccup, automatic recovery

Over Temperature Protection ..... 115°C typ.

GENERAL SPECIFICATIONS

Efficiency ..... see table

Switching Frequency (See Note 8) ..... 300KHz typ.

Isolation Voltage (Input to Output) ..... 1600VDC min.

Isolation Voltage (Input/Output to Case) ..... 1600VDC min.

Isolation Resistance ..... 10^9 ohms min.

Isolation Capacitance ..... 1000pF max.

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature ..... -40°C to +85°C (with derating)

Storage Temperature ..... -55°C ~ +105°C

Maximum Case Temperature ..... +100°C

Relative Humidity ..... 5% to 95% RH

Temperature Coefficient ..... ±0.02% / °C max.

Thermal Impedance (See Note 10)
Natural Convection ..... 9.2°C / Watt
Heat-Sink with 20LFM ..... 7.6°C/Watt
Heat-Sink with 500LFM ..... 2.8°C/Watt

Thermal Shock MIL-STD-810D

Vibration ..... 10~55Hz, 10G, 30 minutes along X, Y, and Z

MTBF (See Note 9) ..... 1.398 x 10^6 hrs

SPECIFICATIONS (CONTINUED)

All specifications apply @ 25°C ambient unless otherwise noted

PHYSICAL SPECIFICATIONS

Weight ..... 60g (2.11 oz)

Dimensions ..... 2.02 x 2.02 x 0.40 inches (51.3 x 51.3 x 10.2 mm)

Case Material ..... Nickel-coated copper

Base Material ..... Non-conductive black FR4

Potting material ..... Epoxy (UL94-V0)

Shielding ..... six – sided

SAFETY & EMC (See Note 11)

Approvals and Standards ..... IEC60950-1, UL60950-1 (See Note 16), EN60950-1

Conducted Emissions ..... EN55022 ..... Class A

Radiated Emissions ..... EN55022 ..... Class A

ESD ..... EN61000-4-2 ..... Perf. Criteria B

Radiated Immunity ..... EN61000-4-3 ..... Perf. Criteria A

Fast Transient ..... EN61000-4-4 ..... Perf. Criteria B

Surge ..... EN61000-4-5 ..... Perf. Criteria B

Conducted Immunity ..... EN61000-4-6 ..... Perf. Criteria A

Due to advances in technology, specifications subject to change without notice

OUTPUT VOLTAGE / CURRENT RATING CHART

Model Number	Input Range	Output Voltage	Output Current	Output Ripple & Noise	Input Current (13)	Efficiency (14)	Max Capacitive Load (15)	UL Approval (16)
DB12S1.5-12	12VDC (9 – 18 VDC)	1.5 VDC	8000mA	50mVp-p	1250mA	84%	45000µF	-
DB12S1.8-14		1.8 VDC	8000mA	50mVp-p	1538mA	82%	37700µF	-
DB12S2.5-20		2.5 VDC	8000mA	50mVp-p	2083mA	84%	27000µF	-
DB12S3.3-26		3.3 VDC	8000mA	50mVp-p	2683mA	86%	21000µF	-
DB12S5-40		5 VDC	8000mA	50mVp-p	4065mA	86%	13600µF	-
DB12S12-40		12 VDC	3333mA	75mVp-p	4065mA	86%	2360µF	-
DB12S15-40		15 VDC	2666mA	75mVp-p	4015mA	87%	1510µF	-
DB12D12-40		±12 VDC	±1800mA	120mVp-p	4444mA	85%	±1200µF	-
DB12D15-40		±15 VDC	±1400mA	150mVp-p	4321mA	85%	±750µF	-
DB12D3.3-5-33		3.3 / 5 VDC	4A / 4A (total 8A)(12)	100mVp-p	3416mA	85%	11000 / 6800µF	-
DB12T3.3-12-31		3.3 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	3063mA	84%	13000 / ±330µF	-
DB12T3.3-15-31		3.3 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	3000mA	84%	13000 / ±110µF	-
DB12T5-12-40		5 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	4024mA	86%	6800 / ±330µF	-
DB12T5-15-40		5 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	3963mA	86%	6800 / ±110µF	-
DB24S1.5-12	24VDC (18 – 36 VDC)	1.5 VDC	8000mA	50mVp-p	649mA	81%	45000µF	-
DB24S1.8-14		1.8 VDC	8000mA	50mVp-p	759mA	83%	37700µF	-
DB24S2.5-20		2.5 VDC	8000mA	50mVp-p	1016mA	86%	27000µF	-
DB24S3.3-26		3.3 VDC	8000mA	50mVp-p	1325mA	87%	21000µF	UL60950-1
DB24S5-40		5 VDC	8000mA	50mVp-p	1961mA	89%	13600µF	UL60950-1
DB24S12-40		12 VDC	3333mA	75mVp-p	2048mA	88%	2360µF	UL60950-1
DB24S15-40		15 VDC	2666mA	75mVp-p	1985mA	89%	1510µF	UL60950-1
DB24D12-40		±12 VDC	±1800mA	120mVp-p	2169mA	87%	±1200µF	-
DB24D15-40		±15 VDC	±1400mA	150mVp-p	2108mA	87%	±750µF	-
DB24D3.3-5-33		3.3 / 5 VDC	4A / 4A (total 8A)(12)	100mVp-p	1689mA	86%	11000 / 6800µF	-
DB24T3.3-12-31		3.3 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	1512mA	85%	13000 / ±330µF	UL60950-1
DB24T3.3-15-31		3.3 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	1481mA	85%	13000 / ±110µF	UL60950-1
DB24T5-12-40		5 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	1989mA	87%	6800 / ±330µF	UL60950-1
DB24T5-15-40		5 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	1958mA	87%	6800 / ±110µF	UL60950-1
DB48S1.5-12	48VDC (36 – 75 VDC)	1.5 VDC	8000mA	50mVp-p	321mA	82%	45000µF	-
DB48S1.8-14		1.8 VDC	8000mA	50mVp-p	375mA	84%	37700µF	-
DB48S2.5-20		2.5 VDC	8000mA	50mVp-p	508mA	86%	27000µF	-
DB48S3.3-26		3.3 VDC	8000mA	50mVp-p	655mA	88%	21000µF	UL60950-1
DB48S5-40		5 VDC	8000mA	50mVp-p	969mA	90%	13600µF	UL60950-1
DB48S12-40		12 VDC	3333mA	75mVp-p	1000mA	89%	2360µF	UL60950-1
DB48S15-40		15 VDC	2666mA	75mVp-p	992mA	89%	1510µF	UL60950-1
DB48D12-40		±12 VDC	±1800mA	120mVp-p	1084mA	87%	±1200µF	-
DB48D15-40		±15 VDC	±1400mA	150mVp-p	1054mA	87%	±750µF	-
DB48D3.3-5-33		3.3 / 5 VDC	4A / 4A (total 8A)(12)	100mVp-p	823mA	88%	11000 / 6800µF	-
DB48T3.3-12-31		3.3 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	747mA	86%	13000 / ±330µF	UL60950-1
DB48T3.3-15-31		3.3 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	732mA	86%	13000 / ±110µF	UL60950-1
DB48T5-12-40		5 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	982mA	88%	6800 / ±330µF	UL60950-1
DB48T5-15-40		5 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	967mA	88%	6800 / ±110µF	UL60950-1

NOTES

1. For single output: Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +Vsense should be connected to its corresponding +OUTPUT and likewise the -Vsense should be connected to its corresponding –OUTPUT.
2. Dual and triple outputs require a minimum 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specifications.
3. Load regulation for triple output:
   Main output (V1): 10% to 100% with 10% to 100% balanced on auxiliaries.
   Auxiliary outputs (V2 and V3): 10% to 100% balanced on all outputs.
4. Cross regulation for dual output: asymmetrical load 25% / 100% FL
   Cross regulation for triple output:
   Main output 100% load, auxiliary 100%, other auxiliary25% to 100%.
   Auxiliary outputs (V2 and V3): main output 100% load, auxiliary 100%, other auxiliary 25% to 100% or main output 25% auxiliary 25%, other auxiliary 25% to 100%.
5. The models of DBXXD3.3-5-33 are specified with 1µF ceramic output capacitors.
6. Please add an external filter at converter input terminals when measuring input reflected ripple, as in Figure 1.
   L: Simulated source impedance of 12µH. C: Nippon chemi-con KMF series, 220µF/100V
7. The ON/OFF control pin voltage is referenced to the negative input.
8. Switching frequency for dual outputs: master (5Vo) 300KHz slave (3.3Vo) 500KHz
9. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40ºC. (Ground fixed and controlled environment).
10. Heat sink is optional. Please call factory for ordering details.
11. An external filter capacitor is required for EMC testing. The capacitor should be capable of handing 1A ripple current for 12V/24V/48V models. We suggest: Nippon chemi-con KMF series, 220µF/100V, ESR 90mΩ.
12. Any condition of dual output (3.3V / 5V) rated Iout current, not to exceed 8A of total output current.
13. Maximum value at nominal input voltage and full load.
14. Typical value at nominal input voltage and full load.
15. Test at minimum Vin and constant resistive load.
16. UL approval can be added to any products not currently listed if required.

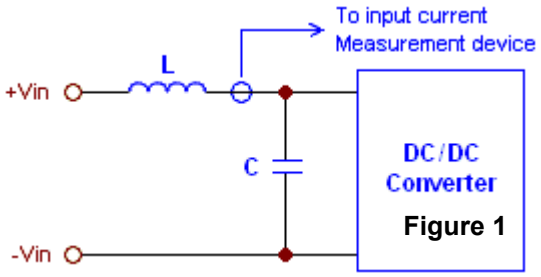
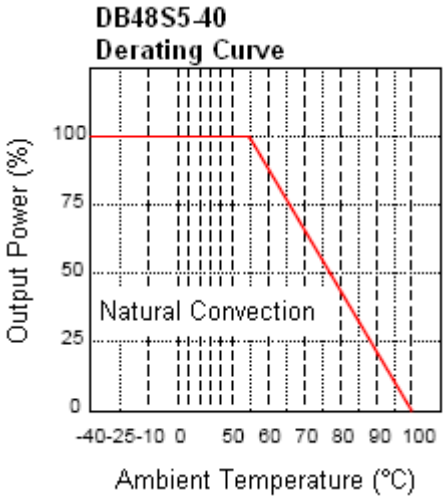
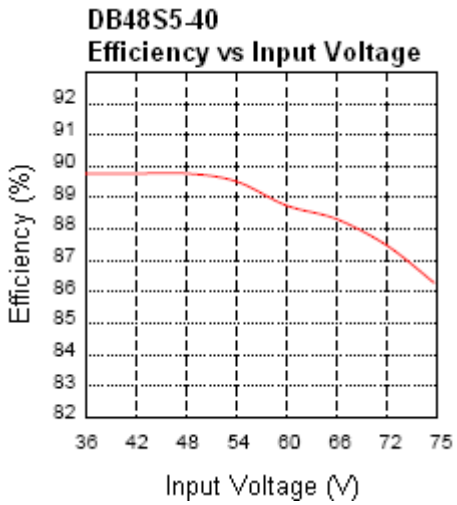
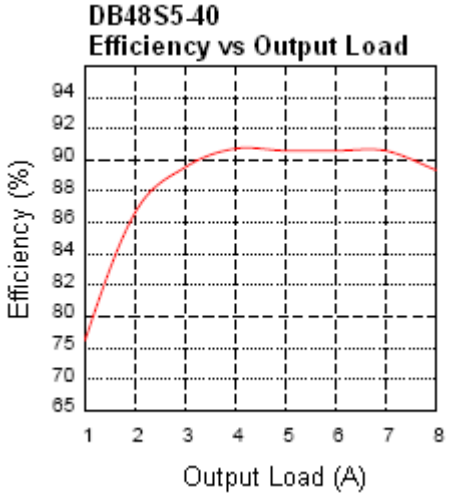


Figure 1

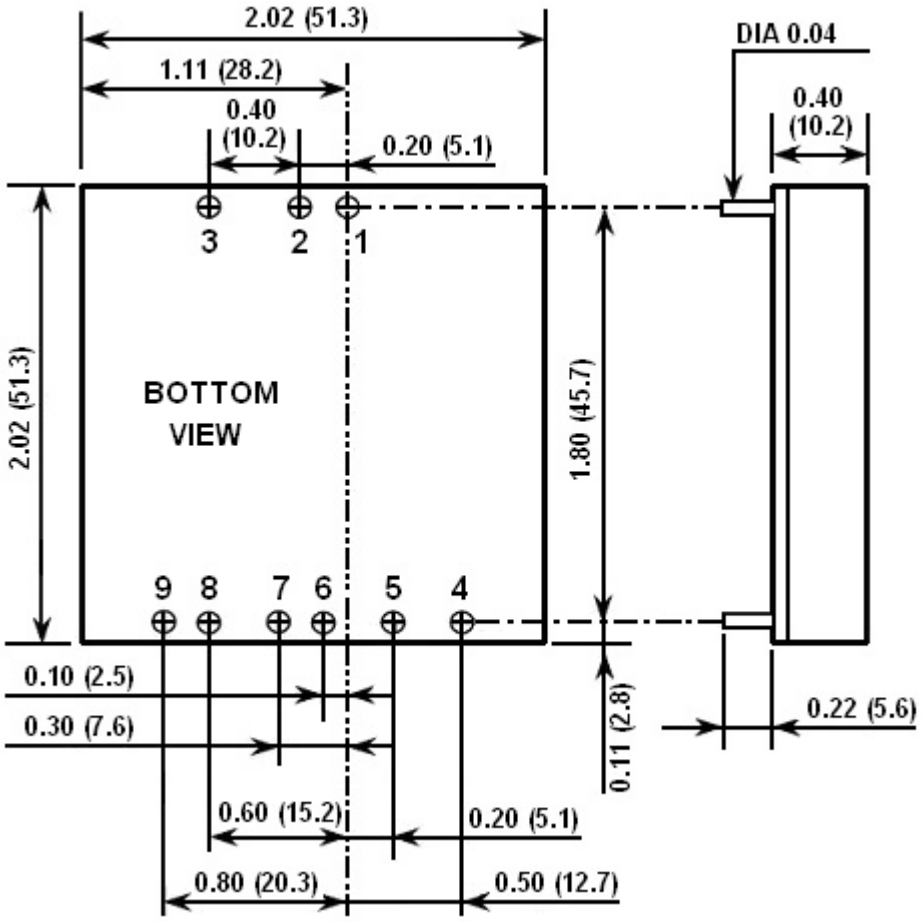
DERATING CURVES & EFFICIENCY GRAPHS







MECHANICAL DRAWING

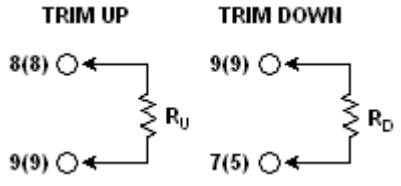


1. All dimensions in inches (mm)
   Tolerance: X.XX±0.02 (X.X±0.5)
   X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.014 (0.35)

PIN CONNECTION				
PIN	**SINGLE**	**DUAL**	**DUAL POSITIVE**	**TRIPLE**
1	+Input	+Input	+Input	+Input
2	-Input	-Input	-Input	-Input
3	CTRL	CTRL	CTRL	CTRL
4	NC	No Pin	3.3V	+AUX
5	-Sense (Note 1)	+Output	3.3V RTN (Com)	Com
6	+Sense (Note 1)	Com	NC	-AUX
7	+Output	Com	NC	+Output
8	-Output	-Output	5V	-Output (Com)
9	Trim	Trim	5V RTN (Com)	NC

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.
( ) for dual output trim



COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

Phone: ☎(603)778-2300
Toll Free: ☎(888)597-9255
Fax: ☎(603)778-9797
E-mail: sales@wallindustries.com
Web: www.wallindustries.com
Address: 37 Industrial Drive
Exeter, NH 03833