6000 series

Single, Dual, Triple Output DC/DC Converter

Distributed By:
B.J. Wolfe Enterprises, Inc
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Features

- Synchronization
- Wide 2:1 Input Voltage Range
- Efficiency to 87%
- 6-Sided Continuous Shielding
- MTBF: 600,000 Hours

Descriptions

The 6000 series is a family of 60 W, high performance DC/DC converters. These converters are specifically designed to provide the flexibility, power density, and reliability required to fulfill local power needs in applications ranging from telecom switch systems to portable instrumentation. 24 models operate over 2:1 input ranges of 9 to 18, 18 to 36 or 36 to 72 VDC; providing single, dual or triple output combinations of 5, 12, 15, ±5, ±12, ±15, 5±12 and 5±15 VDC.

Input Characteristics

	Min	Typ	Max	Unit/Comments
Input Voltage Range				
12 VDC Input Models	9	12	18	VDC
24 VDC Input Models	18	24	36	VDC
48 VDC Input Models	36	48	72	VDC
Remote ON / OFF Control				
Supply ON				5.5 VDC or Open Circuit
Supply OFF				0 VDC to 0.8 VDC
Logic Referenced to Negative Input				
Input Filter				Pi Filter

Output Characteristics

	Min	Typ	Max	Unit/Comments
Output Voltage Accuracy				
Single & Dual Outputs			±1.0	% [1]
Triple Outputs - Primary			±1.0	% [1]
- Auxiliaries			±8.0	% [1]
Voltage Balance:				
Dual Outputs			±2.0	%; Equal Output Loads
Triple Outputs (Auxiliaries)			±100	mV; Equal Output Loads
Minimum Load			10%	Full Load
Line Regulation				
Single Outputs			±0.5	% [2]
Dual Outputs			±1.0	% [2]
Triple Outputs - Primary			±0.2	% [2]
- Auxiliaries			±3.0	% [2]
Load Regulation				
Single Outputs			±0.5	% [3]
Dual Outputs			±1.0	% [3]; Equal Loads
Triple Outputs - Primary			±0.5	% [3]
- Auxiliaries			±3.0	% [3]; Equal Loads
Ripple/Noise			±1.0	% Pk-Pk of Vout
Short Circuit Protection				Continuous, Automatic Recovery
Temperature Coefficient			±0.02	% per °C

General Characteristics

	Unit/Comments
Isolation Resistance	1 GOhm Min.
Isolation Voltage	1400 Vdc Min.
Efficiency	See Model Selection Chart
Switching Frequency	100 KHz Min.
Case Size (without heatsink)	2.56 x 4.56 x 0.75 in. 65 x 115.8 x 19 mm
Case Size (with heatsink)	2.56 x 4.56 x 1.25 in. 65 x 115.8 x 31.75 mm
Case Material	Coated Copper
Weight	14 oz. 395 grams
Shielding	6-sided, continuous
Shielding (Case K)	
12, 24 VDC Input Models	Pin 5 (- Vin)
48 VDC Input Models	Pin 1 (+ Vin)
Shielding (Case L)	Pin 7
MTBF	600,000 Hrs; 25°C Ground Benign

[1] = Output voltage at nominal line & FL
[2] = % Output voltage measured from min. input line to maximum
[3] = Output voltage measured from FL to 10% Load

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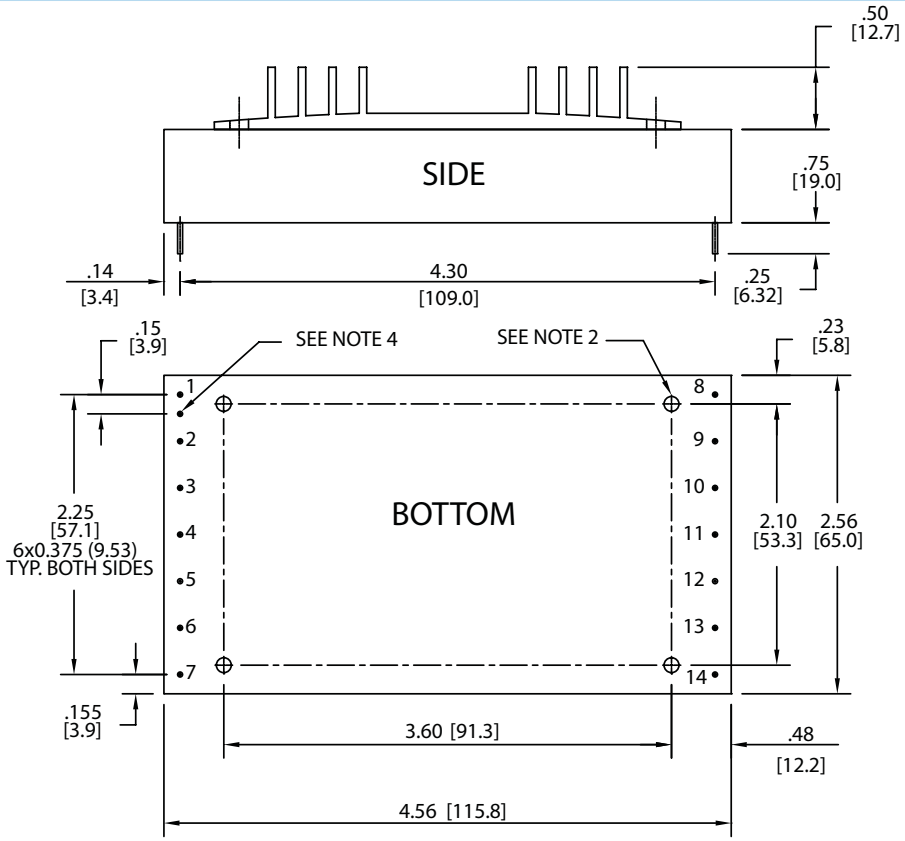
Environmental Specifications

	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-30		+70	°C; Ambient
Storage Temp. Range	-50		+115	°C
Cooling				Free-Air Convection

Outline Drawing - Case L



Pin Out Chart - Case L

Pin	Single	Dual	Triple
1	Sync	Sync	Sync
2	- Vin	-Vin	-Vin
3	- Vin	-Vin	-Vin
4	+ Vin	+Vin	+Vin
5	+ Vin	+Vin	+Vin
6	On/Off Control	On/Off Control	On/Off Control
7	Case	Case	Case
8	-Vout	-Sense	-5V Sense
9	-Vout	-Vout	-5V Output
10	+Vout	Common	+5V Output
11	+Vout	Common	+5V Sense
12	-Sense	Common	-Aux Vout
13	Trim	Trim	Aux Common
14	+Sense	+Vout	+Aux Vout

Notes (Case L):

1. Mounting inserts: 4-40 x .15 x 3.8 deep, 4 places.
2. All pins are gold plated brass alloy: .040 DIA ±.003 [1.0 DIA ±.08]
3. Case K is keyed between pin 1 and pin 2 to avoid improper insertion and connection.
4. A slow-blow fuse, rated at 2x line in max., in series with the input is recommended.
5. Unless otherwise specified dimensions are in inches (mm).

Tolerances	Inches	mm
	X.XX = ±0.02	X.X = ±0.5
	X.XXX= ±0.010	X.XX = ±0.25

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified.
External, low ESR, 10 microfarad (minimum) capacitor across output is recommended for operation.

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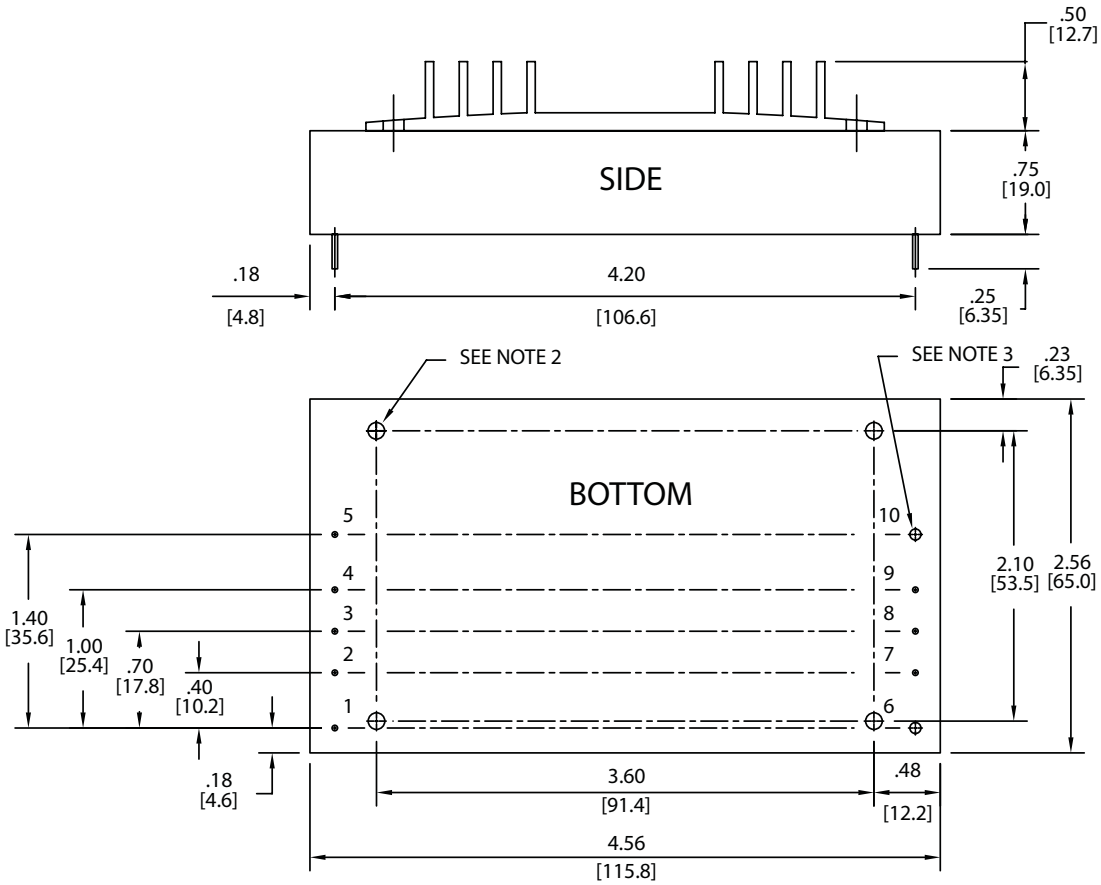
Outline Drawing - Case K



Pin Out Chart - Case K

Pin	Function
1	+Vin
2	Sync In
3	On/Off Control
4	Sync Out
5	-Vin
6	+Vout
7	+Sense
8	Trim
9	-Sense
10	- Vout

Notes (Case K):

1. Mounting inserts: 4-40 x .15 x 3.8 deep, 4 places.
2. All pins are gold plated brass alloy: .040 DIA ±.003 [1.0 DIA ±.08]
3. A slow-blow fuse, rated at 2x line in max., in series with the input is recommended.
4. Unless otherwise specified dimensions are in inches (mm).

Tolerances	Inches	mm
	X.XX = ±0.02	X.X = ±0.5
	X.XXX= ±0.010	X.XX = ±0.25

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified.
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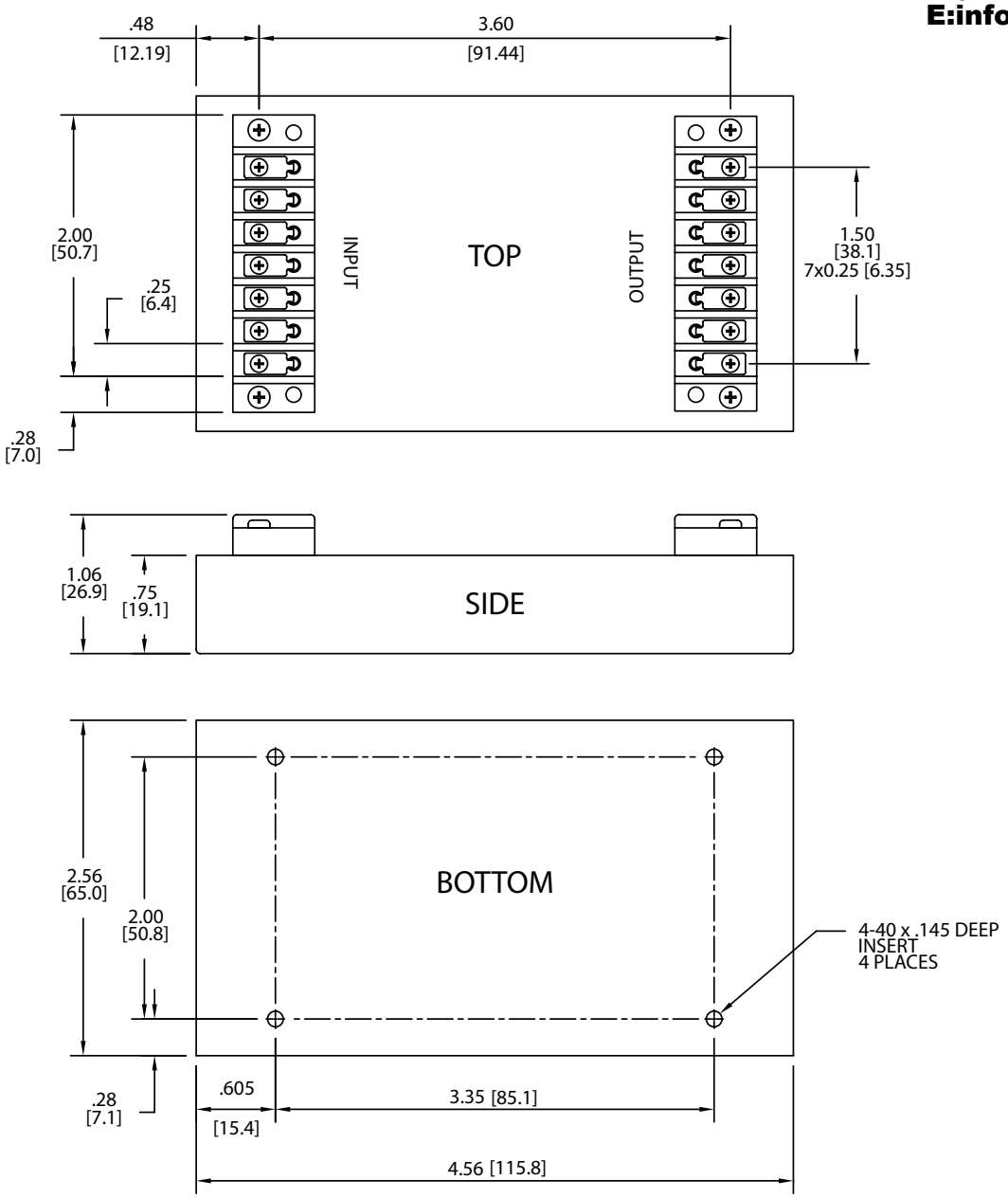
Outline Drawing - Case C Terminal Block



Notes (Case C)

1. Mounting inserts: 4-40 x .15 x 3.8 deep, 4 places.
2. A slow-blow fuse, rated at 2x line in max., in series with the input is recommended.
3. Unless otherwise specified dimensions are in inches (mm).

Tolerances	Inches	mm
	X.XX = ±0.02	X.X = ±0.5
	X.XXX= ±0.010	X.XX = ±0.25

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified.
External, low ESR, 10 microfarad (minimum) capacitor across output is recommended for operation.

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How To Order

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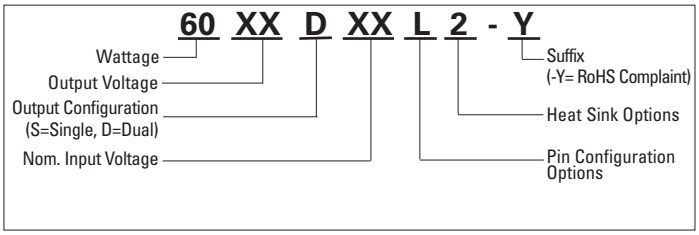
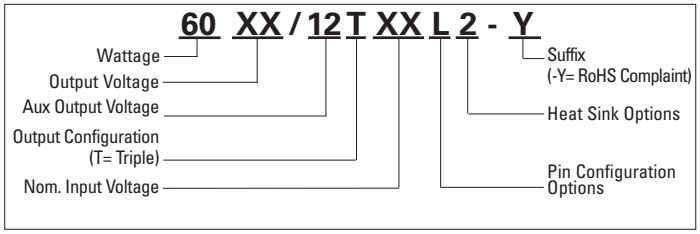
How to Order Single & Dual Output Models



How to Order Triple Output Models



Ordering Information

1. Pin Configuration Options:
   1.1" Case K" 10 pin configuration is standard. Omit "K" from number.
   1.2 "Case L" optional 14 pin configuration, add "L" to the number. Example: 6005D48L.
   1.3 "Case C" optional terminal blocks configuration, add "C" to the number.
2. Heat Sink Options:
   2.1 Heat sink (CD-HS01) is standard on Case K and L.
   2.2 For optional heat sink CD-HS02, add "2" immediately after the case letter. Example: 6005D48L2.
3. RoHS Options: For RoHS compliant models add "-Y" suffix to the number. Example: 6005D48L2-Y.

Model Selection Chart

Model	Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	Input Current (mA) No Load	Input Current (mA) Full Load	Output Voltage (VDC)	Output Current (mA)	Over Voltage (VDC)	Efficiency @ Full Load (%)
6005S12	12	9 - 18	45	5342	5.0	10.0	6.8	78
6012S12	12	9 - 18	45	6500	12.0	5.0	15.0	77
6015S12	12	9 - 18	45	6173	15.0	4.0	18.0	81
6005D12	12	9 - 18	45	5342	±5.0	±5.0	±6.8	78
6012D12	12	9 - 18	45	6500	±12.0	±2.5	±15.0	77
6015D12	12	9 - 18	45	6410	±15.0	±2.0	±18.0	78
6005S24	24	18 - 36	34	2572	5.0	10.0	6.8	81
6012S24	24	18 - 36	34	3125	12.0	5.0	15.0	80
6015S24	24	18 - 36	34	3086	15.0	4.0	18.0	81
6005D24	24	18 - 36	40	2572	±5.0	±5.0	±6.8	81
6012D24	24	18 - 36	45	3125	±12.0	±2.5	±15.0	80
6015D24	24	18 - 36	45	3086	±15.0	±2.0	±18.0	81
6005S48	48	36 - 72	32	1255	5.0	10.0	6.8	83
6012S48	48	36 - 72	34	1543	12.0	5.0	15.0	81
6015S48	48	36 - 72	34	1543	15.0	4.0	18.0	81
6005D48	48	36 - 72	35	1255	±5.0	±5.0	±6.8	83
6012D48	48	36 - 72	35	1488	±12.0	±2.5	±15.0	84
60155D48	48	36 - 72	35	1440	±15.0	±2.0	±18.0	87
6005/12T12	12	9 - 18	45	6410	5/±12.0	6/±1.25	6.8/±15.0	78
6005/15T12	12	9 - 18	45	6410	5/±15.0	6/±1.00	6.8/±18.0	78
6005/12T24	24	18 - 36	45	3010	5/±12.0	6/±1.25	6.8/±15.0	83
6005/15T24	24	18 - 36	45	3010	5/±15.0	6/±1.00	6.8/±18.0	83
6005/12T48	48	36 - 72	34	1490	5/±12.0	6/±1.25	6.8/±15.0	84
6005/15T48	48	36 - 72	34	1490	5/±15.0	6/±1.00	6.8/±18.0	84

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