

Make-Ps®

DC/DC CONVERTER

Single, Dual, Triple Output DC/DC Converter

DESCRIPTIONS

The 1100 series is a family of compact 8 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. All models are packaged in compact, low profile 2.0" X 2.0" X 0.4" metal cases.

OUTPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Output Voltage Accuracy				
Single & Dual Outputs			± 1.0	% ¹
Triple Outputs - Primary			± 1.0	% ¹
- Auxiliaries			± 5.0	% ¹
Output Voltage Adjustment			± 5.0	% ¹ ;
Voltage Balance:				
Dual Outputs			± 1.0	%; Equal Output Loads
Triple Outputs (Auxiliaries)			± 1.0	%; Equal Output Loads
Minimum Load			10%	Full Load
Line Regulation				
Single Outputs			± 0.5	% ²
Dual Outputs			± 0.5	% ²
Triple Outputs - Primary			± 0.2	% ²
- Auxiliaries			± 0.5	% ²
Load Regulation				
Single Outputs			± 0.2	% ³
Dual Outputs			± 1.0	% ³ ; Equal Loads
Triple Outputs - Primary			± 0.5	% ³
- Auxiliaries			± 5.0	% ³ ; Equal Loads
Ripple/Noise			± 1.0	% Pk-Pk of Vout
Short Circuit Protection				Continuous, Automatic Recovery
Transient Recovery Time		200		μ S to within 1% error band for 50% step load change
Temperature Coefficient			± 0.01	% per °C
Over Voltage Protection				See Model Selection Guide

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

1100 series

FEATURES

- 6 sided Continuous Shielding
- Synchronization and Output Trim
- Wide 2:1 Input Voltage Range
- Efficiency to 80%
- Input Filter meets requirements of MIL-STD-461C
- Meets MIL-STD-202 & MIL-STD-810F Test Conditions
- >700,000 Hours MTBF per MIL-HDBK-217F

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 : Dual input Pi Filter Network. Differential and common mode type. Meets the conditions of MIL-STD-461C CE01 test methods.				

GENERAL CHARACTERISTICS

	Unit/Comments
Dielectric Voltage Isolation:	500 VDC, Min.; Primary to secondary for 1 min. per MIL-STD-202F; Method 301
Isolation Resistance:	100 Mohm per MIL-STD-202F; Method 302, Test condition B
Acceleration:	Per MIL-STD-810E, Method 513.4, Procedure II. Operational test (Centrifuge) 12g's (Manned Aerospace Vehicles).
Shock:	Per MIL-STD-810E, Method 516.4. Procedure I. Functional shock 40g's.
Vibration:	Per MIL-STD-810E, Method 514.4, Procedure I, Category 6 (equipment installed in Helicopters).
Altitude:	Per MIL-STD-810E, Method 500.3, Procedure III. Rapid decompression, 40,000 ft.
Humidity:	Per MIL-STD-810E, Method 507.3, Procedure I. natural non-hazardous items, cycle I, 240 hours
Switching Frequency:	100kHz, Min.

Specification Notes:

1. Outputs are adjustable on single and dual output units only.
2. Voltage balance is measured with balanced loads applied.
3. Transient response is measured on the primary output for a 50% load change (50% load to full load).
4. Efficiency is specified at nominal input line and full load.

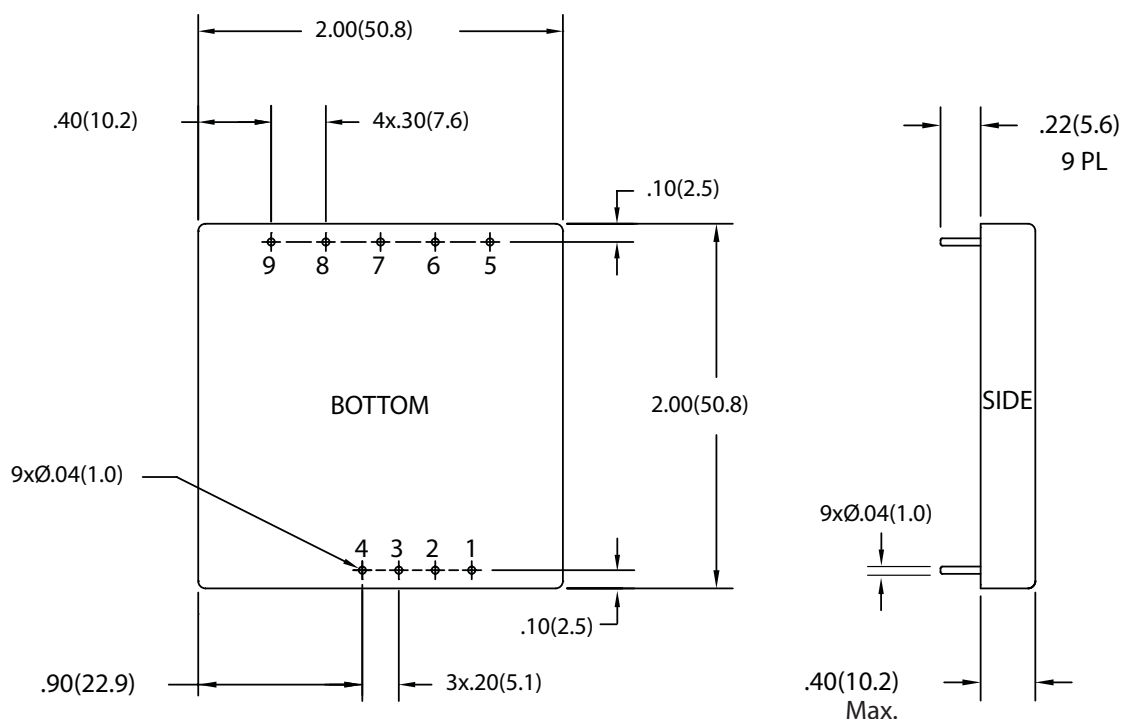
ENVIRONMENTAL SPECIFICATIONS

	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-55		+85	°C; Ambient
Storage Temp. Range	-60		+125	°C
Cooling				Free-Air Convection
EMI/RFI				Meets MIL-STD-461C, RE01 & VDE 0871 class B for radiated emissions (see "Shielding" on right)

PHYSICAL CHARACTERISTICS

	Unit/Comments
Case Size	2.0 X 2.0 X 0.40 inches (51 X 51 X 10.2 mm)
Case Material	Coated Metal
Shielding	Six-sided, Continuous
Shield Connection	
12V and 24V Input Models	Pin 3, Negative Input
48V Input Models	Pin 4, Positive Input
Weight	227 Grams / 2.8 oz

OUTLINE DRAWING



PIN OUT CHART

Pin	Single	Dual	Triple
1	Remote On/Off	Remote On/Off	Remote On/Off
2	Sync	Sync	Sync
3	- Vin	-Vin	- Vin
4	+ Vin	+Vin	+ Vin
5	NC	-Vout	-Vout (Aux)
6	Trim	Trim	Common (Aux)
7	- Vout	Common	-Vout
8	+ Vout	NC	+Vout
9	NC	+ Vout	+Vout (Aux)

NC = No Connection

Notes:

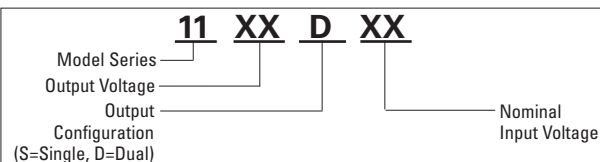
1. Unless otherwise specified dimensions are in inches (mm).

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

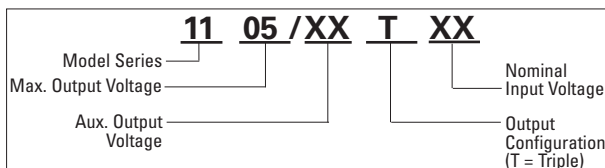
All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified.
External, low ESR, 10 microfarad (minimum) capacitor across output is recommended for operation.

How To ORDER

How to ORDER



How to ORDER



MODEL SELECTION CHART

Model	Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	Input Current (mA) No Load	Input Current (mA) Full Load	Primary Output Voltage (VDC)	Aux #1 Output Voltage (VDC)	Aux #2 Output Voltage (VDC)	Over Voltage (VDC)	Efficiency @ Full Load (%)
1105S12	12	9 - 18	45	840	5@1600	-	-	6.8	78
1112S12	12	9 - 18	45	877	12@665	-	-	15.0	76
1115S12	12	9 - 18	45	877	15@535	-	-	18.0	76
1105S24	24	18 - 36	34	422	5@1600	-	-	6.8	79
1112S24	24	18 - 36	34	438	12@665	-	-	15.0	76
1115S24	24	18 - 36	34	438	15@535	-	-	18.0	76
1105S48	48	36 - 72	32	210	5@1600	-	-	6.8	79
1112S48	48	36 - 72	32	220	12@665	-	-	15.0	76
1115S48	48	36 - 72	32	220	15@535	-	-	18.0	76
1105D12	12	9 - 18	45	830	±5@±800	-	-	±6.8	80
1112D12	12	9 - 18	45	877	±12@±335	-	-	±15.0	76
1115D12	12	9 - 18	45	877	±15@±270	-	-	±18.0	76
1105D24	24	18 - 36	34	422	±5@±800	-	-	±6.8	79
1112D24	24	18 - 36	34	438	±12@335	-	-	±15.0	76
1115D24	24	18 - 36	34	438	±15@270	-	-	±18.0	76
1105D48	48	36 - 72	32	210	±5@±800	-	-	±6.8	79
1112D48	48	36 - 72	32	220	±12@±335	-	-	±15.0	75
1115D48	48	36 - 72	32	220	±15@±270	-	-	±18.0	75
1105/12T12	12	9 - 18	50	865	5@1000	+12@125	-12@125	6.8/±15	77
1105/15T12	12	9 - 18	50	854	5@1000	+15@100	-15@100	6.8/±18	78
1105/12T24	24	18 - 36	45	427	5@1000	+12@125	-12@125	6.8/±15	78
1105/15T24	24	18 - 36	45	427	5@1000	+15@100	-15@100	6.8/±18	78
1105/12T48	48	36 - 72	35	213	5@1000	+12@125	-12@125	6.8/±15	78
1105/15T48	48	36 - 72	35	210	5@1000	+15@100	-15@100	6.8/±18	79