

# 57J1

## 270 Vin DC/DC Converter

### 25 Watt Single and Dual Output



### Features

- High Power Density, Low Profile Packaging
- Full Output Power at +100°C Baseplate Temperature
- Switching Power Supply – Low Noise
- ESS Screening
- Designed and Manufactured Per NAVMAT Guidelines
- EMI Filtering Designed to MIL-STD-461
- Remote Error Sensing
- Remote Digital (TTL) Turn On/Off
- Transient Protection per MIL-STD-704

### Contents

Specifications.....	1
Electrical .....	1
Physical/Environmental.....	2
Output Power (Table 1).....	2
Pinout Designations (J1) (Table 2) .....	2
Connector Specifications.....	2
Output Wiring Diagram .....	3
Mechanical Layout .....	3
Mechanical Dimensions (Table 3).....	4
Ordering Information .....	4

### Description

North Atlantic Industries 57J1 is a high power density, low profile, DC/DC converter in 50 Watt single & dual output configurations. The 57J1 is ideally suited for rugged, military conduction cooled applications. All North Atlantic Industries DC/DC Converters are designed and qualified to the most stringent performance and environmental requirements.

### Electrical Specifications

#### DC Input Characteristics:

Input	170 to 355 VDC
EMI/RFI Characteristics	Designed to meet the requirements of MIL-STD-461
Input Transient Protection	Per MIL-STD-704E and MIL-STD-461C, CS06

#### DC Output Characteristics:

Output Power	50 Watts See Table 1
Output Voltage	5 VDC to 28VDC See Table 1
Efficiency	67 % minimum for 5V units, 72% minimum for all others
Line Regulation	Within 0.1% or 10mv (whichever is greater) for low to high line changes at constant load
Load Regulation	0.1% or 10mv (whichever is greater) for 0 to 100% of rated load at nominal input line
PARD (Noise and Ripple)	50 mV p-p typical; 100 mV p-p maximum for 5V outputs (20 MHz bandwidth); 1% of the output voltage, with a maximum of 200 mV p-p, for all other outputs (20 MHz bandwidth)
Load Transient Recovery	Output voltage returns to regulation limits within 0.5 msec (typical), half to full load
Load Transient Under/Overshoot	0.35 Volt maximum from nominal output voltage set point for 3.3 V and 5.0 V outputs, all other outputs are 5%.
Short Circuit Protection	Under any short circuit condition, continuous short circuit protection with Auto recovery

## DC Output Characteristics (Continued):

Current Limiting	120% $\pm$ 10% typical
OverVoltage Protection	Automatic electronic shutdown if voltage exceeds 115% $\pm$ 10% (auto recovery)
Remote Error Sensing	Compensates for up to 0.5-volt drop on output leads
Remote Turn On/Off	TTL logic 1 inhibits (turns off) the output; a floating input acts as a logic 0 (output on)
Isolation Voltage	1000 VDC input to output and input to case; 200 VDC output to case.
Insulation Resistance	50 Megohm at 50 VDC

## Physical/Environmental Specifications

Temperature Range	Operating: -55°C to +85°C at 100% load (Temperature measured at baseplate; conduction via baseplate only); Derate Linearity to 80% load at 100°C; Storage: -55°C to +125°C
Temperature Coefficient	0.01% per °C
Shock	30 G's each axis, per MIL-STD-810C, Method 516.2, Procedure 1. Hammer shock per MIL-S-901C
Acceleration	6 G's per MIL-STD-810C, Method 513.2, Procedure 11, and 14 G's per Procedure 1
Vibration	Per MIL-STD-810C, Method 514.2, Procedure 1A
Reliability	(MTBF) 200,000 hours, ground benign, at 50°C baseplate, per MIL-HDBK-217F
Humidity	95% at 71°C per MIL-STD-810C, Method 507.1 (non-condensing)
Altitude	40,000 feet per MIL-STD-810C, Method 504.1, Category 6 Equipment
Dimensions	See Table 3
Salt Fog	Per MIL-STD-810C, Method 509.1
Sand/Dust/Fungus	Per MIL-STD-810C
Enclosure	Aluminum housing to aluminum baseplate
Finish	Cover: Black anodized; Baseplate: chemfilm
Interface	Connections via a D-subminiature connector per Page 2 of this Data Sheet
Weight	Single Output = 17 ounces; Dual Output = 21 ounces

**Table 1. Output Power**

Single		Dual	
Volts	Amps	Volts	Amps
5.0	10.0	$\pm$ 5.0	5.0
12.0	4.2	$\pm$ 12.0	2.1
15.0	3.4	$\pm$ 15.0	1.7
24.0	2.1		
28.0	1.8		

**Table 2. Pinout Designations (J1)**

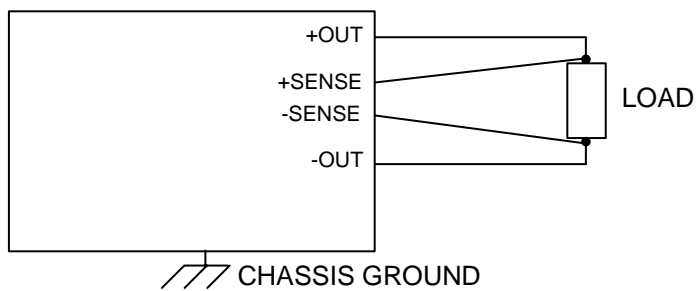
Pin	Single	Dual	Pin	Single	Dual
1	+Vin	+Vin	9	-Vin	-Vin
2	NC	N/C	10	NC	N/C
3	-TTL (ON/OFF)	-TTL (ON/OFF)	11	CHAS GND	CHAS GND
4	+TTL (ON/OFF)	+TTL (ON/OFF)	12	-SENSE	-SENSE 1
5	+SENSE	+SENSE 1	13	-OUTPUT	+OUTPUT 2
6	+OUTPUT	+OUTPUT 1	14	-OUTPUT	-OUTPUT 2
7	+OUTPUT	-OUTPUT 1	15	-OUTPUT	-SENSE 2
8	+OUTPUT	+SENSE 2			

## Connector Specifications

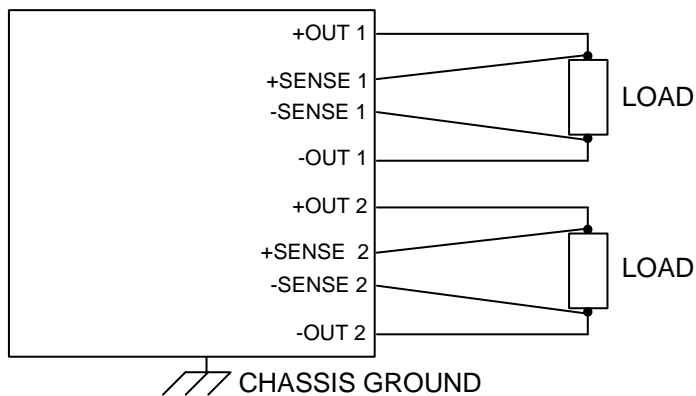
Connector	Part Number - Series
Unit Connector	DAMME15PR
Mating Connector	DAMM15S

# Output – Wiring Diagram

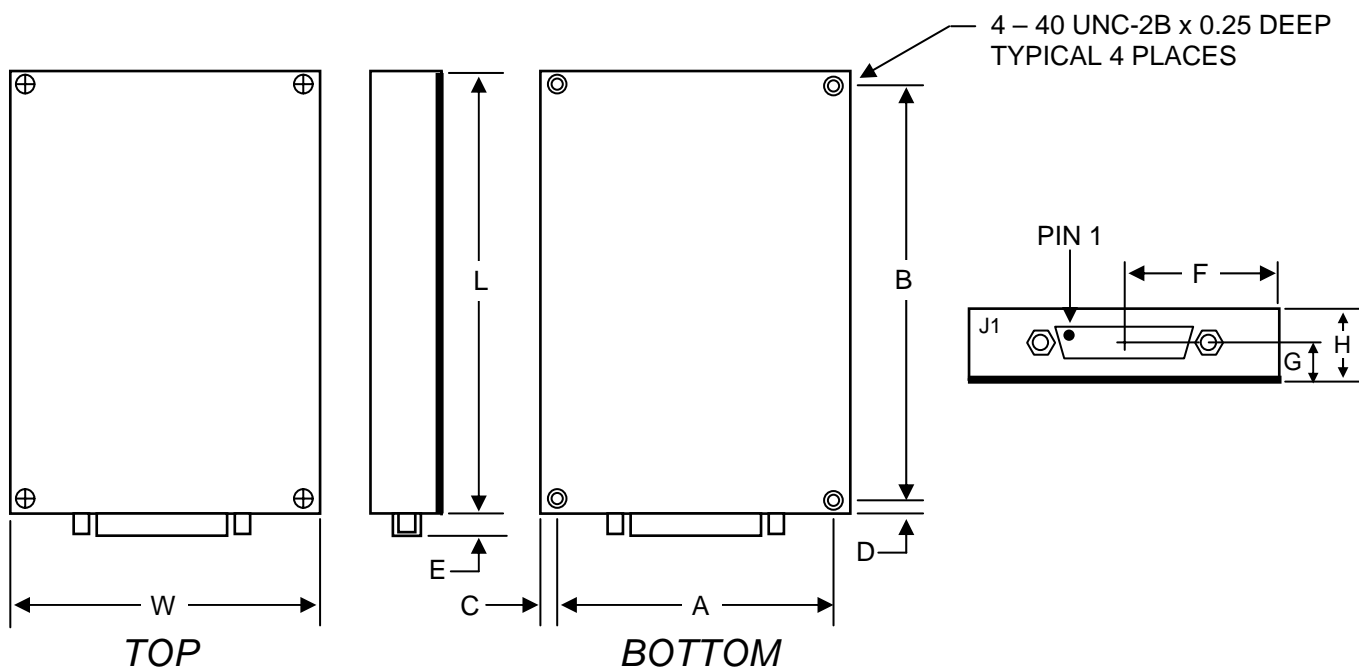
## Single Output



## Dual Output



# Mechanical Layout



Mechanical Dimensions – See Table 3 (following)

**Table 3. Mechanical Dimensions**

Case*	Units	L	W	A	B	F
1	Inches	4.5	3.75	2.85	4.5	1.87
1	mm	114.3	95.25	72.39	114.3	47.49
2	Inches	5.35	4.0	3.1	4.45	2.0
2	mm	135.89	101.6	78.74	113.03	50.8

\*Use Case 1 for Single Converter; Use Case 2 for Dual Converter

**Notes**

- Dimension C is .45" (11.43 mm)
- Dimension D is 0.2" (5.08 mm)
- Dimension E is 0.23" (5.84 mm)
- Dimension G is 0.47" (11.94 mm)
- Dimension H is 1.0" (25.4 mm)

**Ordering Information for PS-57J1 (50 Watt DC/DC Converter)**

**57 J D1 - 005 M 0 - XX**

**CODE** (Used only for "Specials")

**OPTIONS:** 0 = Standard Testing (Includes ESS Temperature Cycling per NAVMAT)  
1 = Standard Testing plus ESS Vibration Testing (per NAVMAT)

**RELIABILITY:**

M = **COTS-Mil-Type:** -55°C to +85°C, Mil-Type Components, Designed to meet the Requirements of MIL-STD-461C, Designed to meet the requirements of MIL-STD-810C, Designed per NAVMAT Guidelines.

<b>OUTPUT VOLTAGE(s):</b>	<u>Single Output</u>	<u>Dual Output</u>
	000 = *	000 = *
	005 = 5 V	005 = ±5 V
	012 = 12V	012 = ±12 V
	015 = 15 V	015 = ±15 V
	024 = 14 V	
	028 = 28 V	

\*Special Voltage - See Code Table Below

**OUTPUTS:** S1 = Single  
D1 = Dual

**WATTAGE:** J = 50 W

**SERIES:** 57 = DC/DC (High Voltage)

**Example:** 57JD1-012M0 = DC /DC (High Voltage); 50 Watt; Dual Output; ±12 V; COTS-Mil-Type; Standard Testing

**Consult Factory for Additional Options and/or Special Units**

**UNITRONIX Pty Ltd**  
PO Box 486, Morisset NSW 2264  
NSW: Tel: 61 2 4977 3511 Fax: 61 2 4977 3522  
WA: Tel: 61 8 9455 2424 Fax: 61 8 9455 2458  
unitsyd@unitronix.com.au www.unitronix.com.au