North Atlantic Industries
Logitek Division

56J1 SERIES

AC/DC POWER SUPPLY - 50 Watt Single and Dual Outputs

Features

- High Power Density, Low Profile Packaging
- Full Output Power at +85°C Baseplate Temperature, derated for 100°C
- Accepts Multiple AC inputs or +270Vdc Input
- ESS Screening (Burn-In) and Temperature Cycling
- Designed and Manufactured Per NAVMAT Guidelines
- Full-Mil and COTS-Mil-Type Versions (form, fit, and function identical)
- EMI Filtering Designed to MIL-STD-461
- Remote Error Sensing
- Remote Digital (TTL) Turn On/Off
- Transient Protection per MIL-STD-704

Contents

Description

North Atlantic Industries' 56 Series is a family of high power density, low profile, AC/DC switch mode power supplies. This family extends from 25 Watt through 1,500 Watt in single, dual, and triple configurations. The 56 Series is ideally suited for airborne, shipboard, ground mobile and C^3I applications. All North Atlantic Industries AC/DC Power Supplies, as well as DC/DC Converters, are designed and qualified to the most stringent performance and environmental requirements. Full-Mil units receive ESS Screening, including burn-in and temperature cycling.

Electrical Specifications

AC Input Characteristics:

Input	115/230 VAC; 270Vdc See Table 2 and Table 3
EMI/RFI Characteristics	Designed to meet the requirements of MIL-STD-461D
Input Transient Protection	Per MIL-STD-704D; For nominal 115 VAC input: 180 VAC for 0.1 second For nominal 230 VAC input: 292 VAC for 0.1 second
Input Frequency	47Hz to 440Hz

DC Output Characteristics:

Output Power	See Table 1
Output Voltage	See Table 1
Efficiency	75% typical for single output units, 72% for dual output units
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	Limited to 130% of rated current
OverVoltage Protection	Automatic electronic shutdown if voltage exceeds 125% ±10%
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, 400Hz input (Temperature measured at baseplate; conduction via baseplate only); See Table 1 for deratings. 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 4
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 = 10 ounces; Dual Output = 11 ounces

Table 1. Output Power

Volts	Current @ 400hz & 85°C	Current @ 400hz & 100°C	Current @ 60hz & 71°C	Current @ 60hz & 100°C
3.3	8	6	6.4	5
5	8	6	6.4	5
12	4.2	3.1	3.3	2.5
15	3.4	2.5	2.7	2
24	2.1	1.6	1.67	1.25
28	1.8	1.35	1.4	1
+/- 5	4	3	3.2	2.5
+/- 12	2.1	1.6	1.67	1.25
+/- 15	1.7	1.25	1.35	1

Table 2. Pinout Designations (J1)

Pin	Single	Dual	Pin	Single	Dual
1	INPUT	INPUT	9	INPUT	INPUT
2	INPUT	INPUT	10	INPUT	INPUT
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	NC	-SENSE 2
8	NC	+SENSE 2			

Table 3. Input Connections for J1 Connector

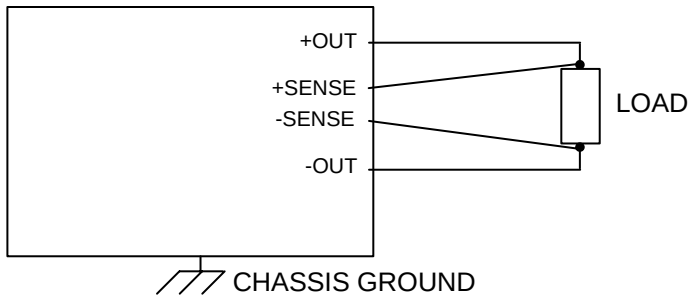
AC Input Type	
115 VAC, 1∅	1 & 2 (Neutral)
115 VAC, 3∅ Δ	1, 9 & 10
115 VAC, 3∅, Y	1,9,10, 2 (Neutral)
230 VAC, 1∅	1,9 or 1,10 or 9,10
230 VAC, 3∅ Δ	1, 9, 10
270Vdc	1 (positive), 9 (return)

Connector Specifications

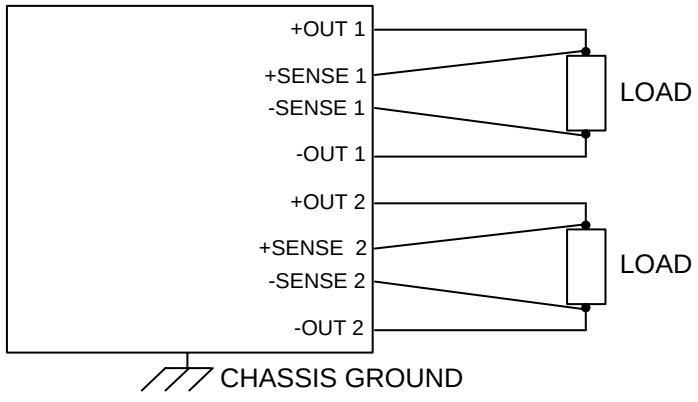
Connector	Part Number - Series
Unit Connector	DAMME15PR
Mating Connector	DAMM15S

Output – Wiring Diagram

Single Output



Dual Output



Mechanical Layout

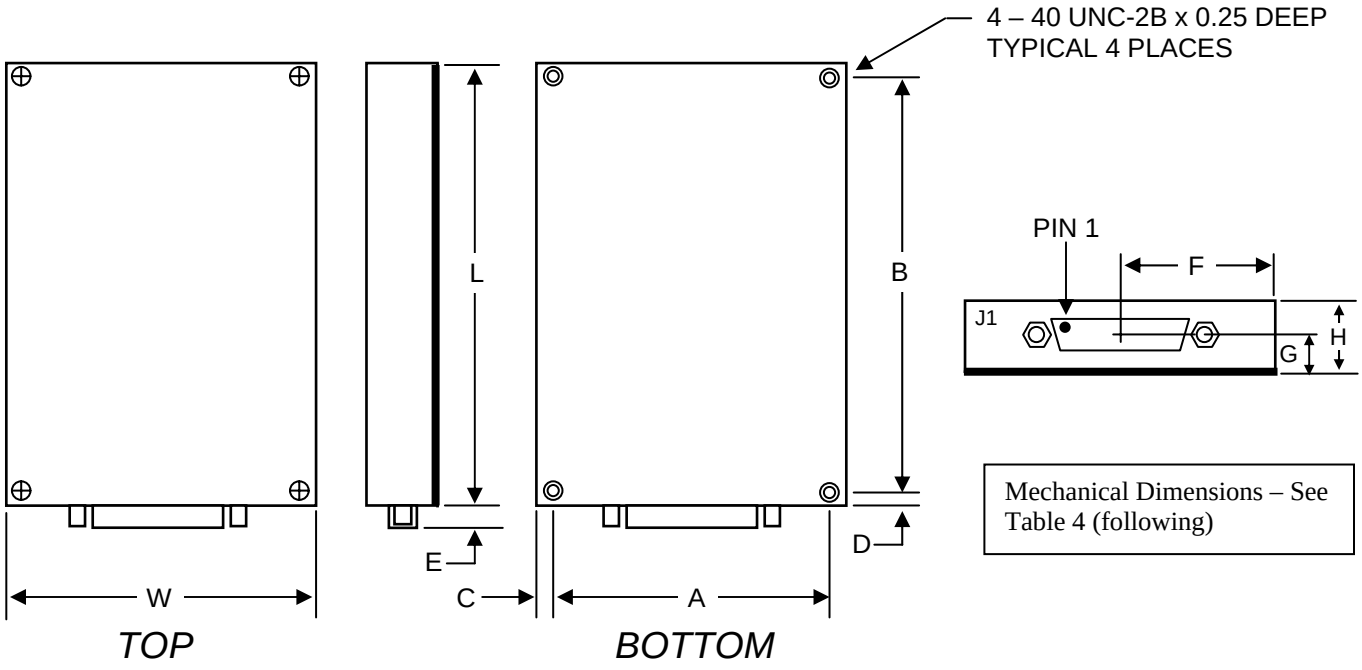


Table 4. Mechanical Dimensions

Case*	Units	L	W	A	B	F
1	Inches	4.0	3.25	2.85	3.60	1.63
1	mm	101.6	82.6	72.4	91.44	41.4
2	Inches	4.85	3.5	3.10	4.45	1.75
2	mm	123.1	88.9	78.4	113.03	44.45

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

Notes

Dimensions C & D are 0.2” (5.1 mm)
Dimension E is 0.23” (5.84 mm)
Dimension G is 0.455” (11.56 mm)
Dimension H is 0.8” (20.3 mm)

Ordering Information for 56J01 Series (50 Watt AC/DC Power Supply)

56 J D1 - 005 H 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:

H = Full-Mil: -55°C to +85°C, Hi-Rel Mil Grade Components, Designed to meet the requirements of MIL-STD-461C, Designed to meet the requirements of MIL-STD-810C, Designed per NAVMAT Guidelines

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.

OUTPUT VOLTAGE(s):

Single Output	Dual Output
000 = *	
003 = 3.3 V	
005 = 5 V	005 = ±5 V
012 = 12V	012 = ±12 V
015 = 15 V	015 = ±15 V
024 = 24 V	
028 = 28 V	*Special Voltage - See Code Table Below

OUTPUTS: S1 = Single
D1 = Dual

WATTAGE: J = 50 W

SERIES: 56 = AC/DC

Example: *56JS1-005H1 = AC /DC; 50 Watt; Single Output; +5 V; Full-Mil-Type; ESS Vibration Testing*
56JD1-012M0 = AC /DC; 50 Watt; Dual Output; ±12 V; COTS-Mil-Type; Standard Testing

Consult Factory for Additional Options and/or Special Units

Code Table for "Specials"

Code	Code Description
03	Encapsulated, Altitude to 70,000 feet per MIL-STD-810C, Method 504.1, Category 6 Equipment (Add 0.9 lbs. to weight).