Model 56M01
AC/DC POWER SUPPLY - 150 Watt
Single, Dual & Triple Outputs

Features

- High Power Density, Low Profile Packaging
- Switching Power Supply – Low Noise
- ESS Screening (Burn-In) and Temperature Cycling
- Designed and Manufactured Per NAVMAT Guidelines
- Full-Mil and COTS-Mil-Type Versions
- 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 Atlantics 56 Series is a family of high power density, low profile, AC/DC switch mode power supplies. This family extends from 25 Watt through 300 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 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 Voltage	115/230 VAC (±10%), See Table 2 and Table 3; 270VDC
Input Frequency	47Hz to 440Hz
EMI/RFI Characteristics	Designed to meet the requirements of MIL-STD-461C
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

DC Output Characteristics:

Output Power and Weight	See Table 1
Output Voltage	See Table 1
Efficiency	75% typical, for single output units, 66% for Triple output units, 70% for Dual output units
Output Voltage Tolerance	± 1%
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 max from nominal output voltage set point for 5V outputs, all other outputs 5%.

DC Output Characteristics (Continued):

Short Circuit Protection	Under any short circuit condition, continuous short circuit with Auto Recovery
Current Limiting	Limited to 130% of rated output
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 (Temperature measured at baseplate; conduction via baseplate only) Derate linearity to 67% 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 40°C Baseplate
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 = 28 ounces; Dual Output = 29 ounces; Triple Output = 30 ounces

Table 1. Output Power

Single		Dual		Triple	
Volts	**Amps**	**Volts**	**Amps**	**Volts**	**Amps**
12.0	12.5	±12.0	6.25	5, ±12	20.0, 2.1
15.0	10.0	±15.0	5.0	5, ±15	20.0, 1.7
24.0	6.3				
28.0	5.4				

Table 2. Pinout Designations (J1)

Pin	Single	Dual	Triple	Pin	Single	Dual	Triple
1	Input	Input	Input	14	Input	Input	Input
2	Input	Input	Input	15	Input	Input	Input
3	-TTL	NC	-TTL	16	Ground	NC	Ground
4	+TTL	NC	+TTL	17	-Output	Ground	-Output
5	NC	NC	+AUX	18	-Output	NC	-Output
6	NC	+TTL	+AUX CM	19	-Output	+Output 2	-Output
7	NC	-TTL	-AUX CM	20	-Output	+Output 2	-Output
8	NC	+Output 1	-AUX	21	-Output	+Sense 2	-Output
9	+Output	+Output 1	+Output	22	-Output	-Sense 2	-Output
10	+Output	+Sense 1	+Output	23	-Sense	-Output 2	-Sense
11	+Output	-Sense 1	+Output	24	+Output	-Output 2	+Output
12	+Output	-Output 1	+Output	25	+Output	NC	+Output
13	+Sense	-Output 1	+Sense				

Table 3. Input Connections for J1 Connector

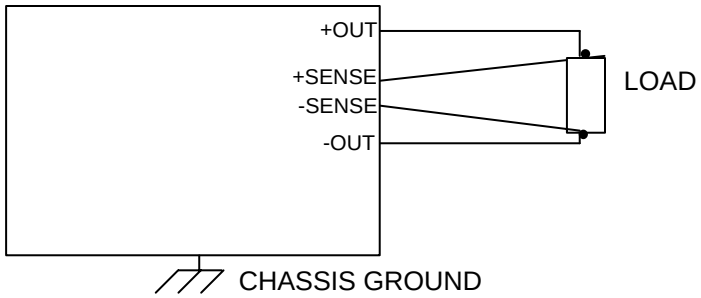
AC Input Type	
115 VAC, 1 Phase	1,2 (Neutral)
115 VAC, 3 Phase Delta	1, 14, 15
115 VAC, 3 Phase Wye	1, 14, 15, 2 (Neutral)
230 VAC, 1 Phase	1, 14
230 VAC, 3 Phase Delta	1, 14, 15
270 Vdc	1 (positive), 14 (return)

Connector Specifications

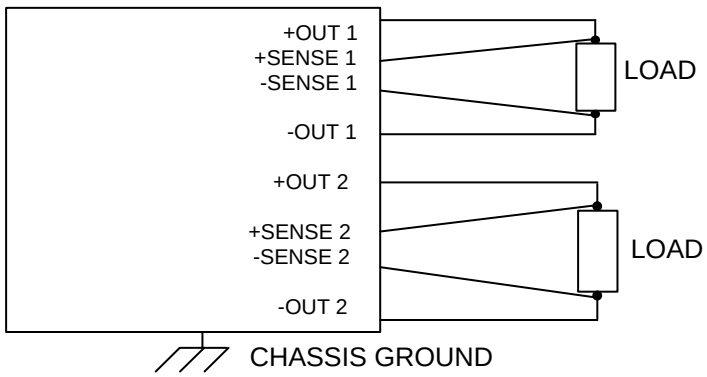
Connector	Part Number - Series
Unit Connector	DBMME25PR
Mating Connector	DBMM25S

Output – Wiring Diagram

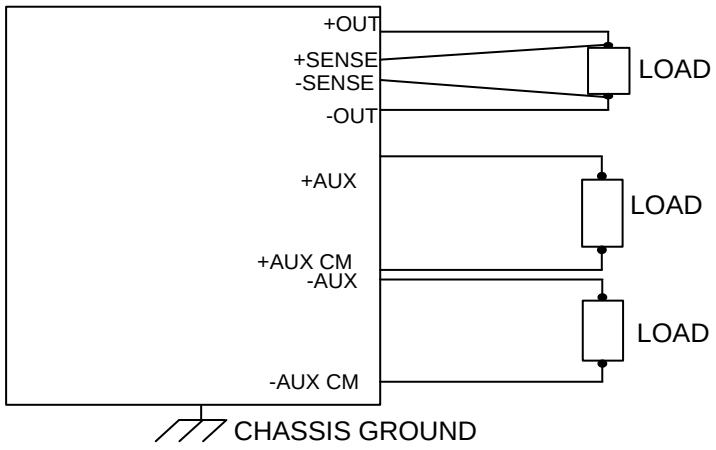
Single Output



Dual Output



Triple Output



Mechanical Layout

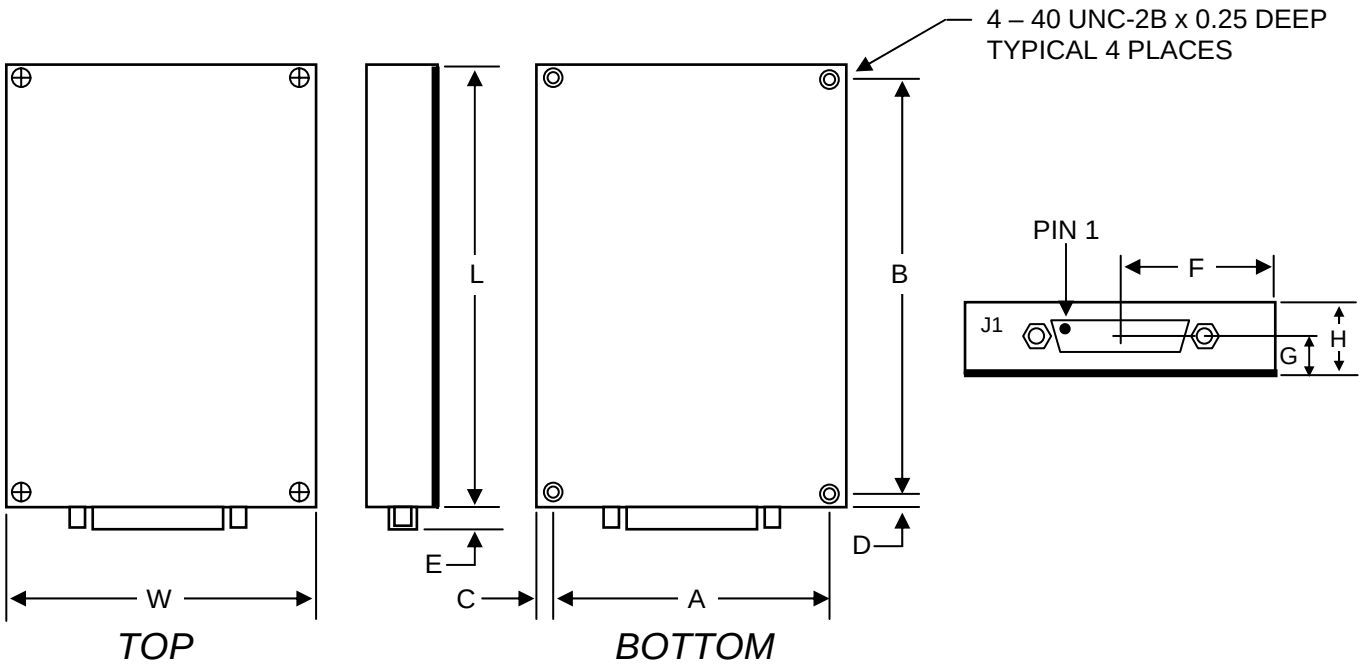


Table 4. Mechanical Dimensions

Case*	Units	A	B	F	L	W
1	Inches	4.10	5.35	2.25	5.75	4.5
1	mm	104.14	135.89	57.15	146.05	114.3
2	Inches	4.35	5.60	2.38	6.00	4.75
2	mm	110.49	142.24	60.45	152.4	120.65

*Use Case 1 for Single Converter; Use Case 2 for Dual and Triple Converters

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 PS-56M01 Series (150 Watt AC/DC Converter)

56 M S1 - 012 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	Triple Output
000 = *	000 = *	000 = *
012 = 12 V	012 = ±12 V	512 = 5 V, ±12 V
015 = 15 V	015 = ±15 V	515 = 5 V, ±15 V
024 = 24 V		
028 = 28 V	*Special Voltage - See Code Table Below	

OUTPUTS: S1 = Single
D1 = Dual
T1 = Triple

WATTAGE: M = 150 W

SERIES: 56 = AC/DC

Example: *56MS1-012H0 = AC/DC; 150 Watt; Single Output; +12 V; Full-Mil-Type; Standard Testing*
56MD1-012M1 = AC/DC; 150 Watt; Dual Output; ±12 V; COTS-Mil-Type; ESS Vibration Testing
56MT1-515M1 = AC/DC; 150 Watt; Triple Output; 5 V, ±15 V; COTS-Mil-Type: ESS Vibration Testing

Consult Factory for Additional Options and/or Special Units

Code Table for "Specials"

Code	Code Description
56MS1-028M0-01	7.5 Amp peak current limit
56MS1-028M0-02	Standard unit encapsulated with potting
56MS1-028M0-03	Standard 56MS1-028M0 modified as follows: 7.5 Amp peak current limit Encapsulated with potting, Bonding surface around the baseplate mounting points (screw holes) protected with a Class 3 coating IAW MIL-C-5541E.