

# 56M1

## AC/DC POWER SUPPLY 150 Watt Single & Dual Outputs



### Features

- High Power Density, Low Profile Packaging
- Switching Power Supply – Low Noise
- Accepts Multiple AC inputs or +270Vdc Input
- 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
Input Connection for J1 Connector (Table 3).....	3
Connector Specifications .....	3
Output Wiring Diagram .....	3
Mechanical Layout .....	4
Mechanical Dimensions (Table 4).....	4
Ordering Information .....	5

### Description

North Atlantic Industries 56M1 is a high power density, low profile, AC/DC switch mode power supply in a 150 Watt single and dual output configuration. The 56M1 is ideally suited for rugged, military conduction cooled applications. All North Atlantic Industries AC/DC Power Supplies are designed and qualified to the most stringent performance and environmental requirements

### Electrical Specifications

#### AC Input Characteristics:

Input Voltage	115/230 VAC ( $\pm 10\%$ ), See Table 2 and Table 3; 270VDC
Input Frequency	47Hz to 440Hz
EMI/RFI Characteristics	Designed to meet the requirements of MIL-STD-461D; CE102
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, 70% for Dual output units
Output Voltage Tolerance	$\pm 1\%$
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% $\pm$ 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

**Table 1. Output Power**

Single		Dual	
Volts	Amps	Volts	Amps
12.0	12.5	$\pm$ 12.0	6.25
15.0	10.0	$\pm$ 15.0	5.0
24.0	6.3		
28.0	5.4		

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

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

**Table 3. Input Connections for J1 Connector**

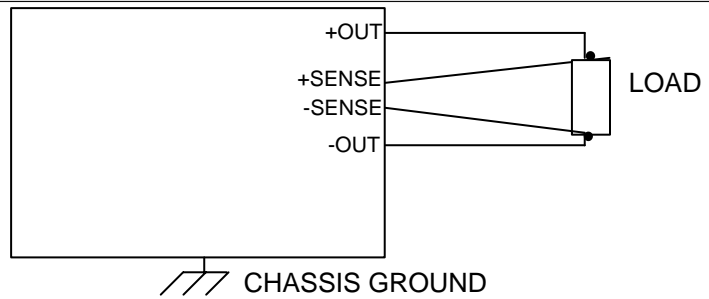
AC Input Type	
115 VAC, 1 Phase	1,2 (Neutral)
115 VAC, 3 Phase Delta	1, 14, 15
115 VAC, 3 Phase Wye	1, 14, 15, 2 (Neutral)
230 VAC, 1 Phase	1, 14
230 VAC, 3 Phase Delta	1, 14, 15
270 Vdc	1 (positive), 14 (return)

## Connector Specifications

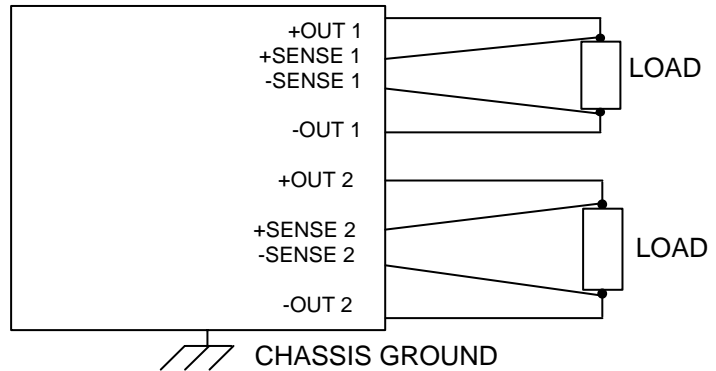
Connector	Part Number - Series
Unit Connector	DBMME25PR
Mating Connector	DBMM25S

## Output – Wiring Diagram

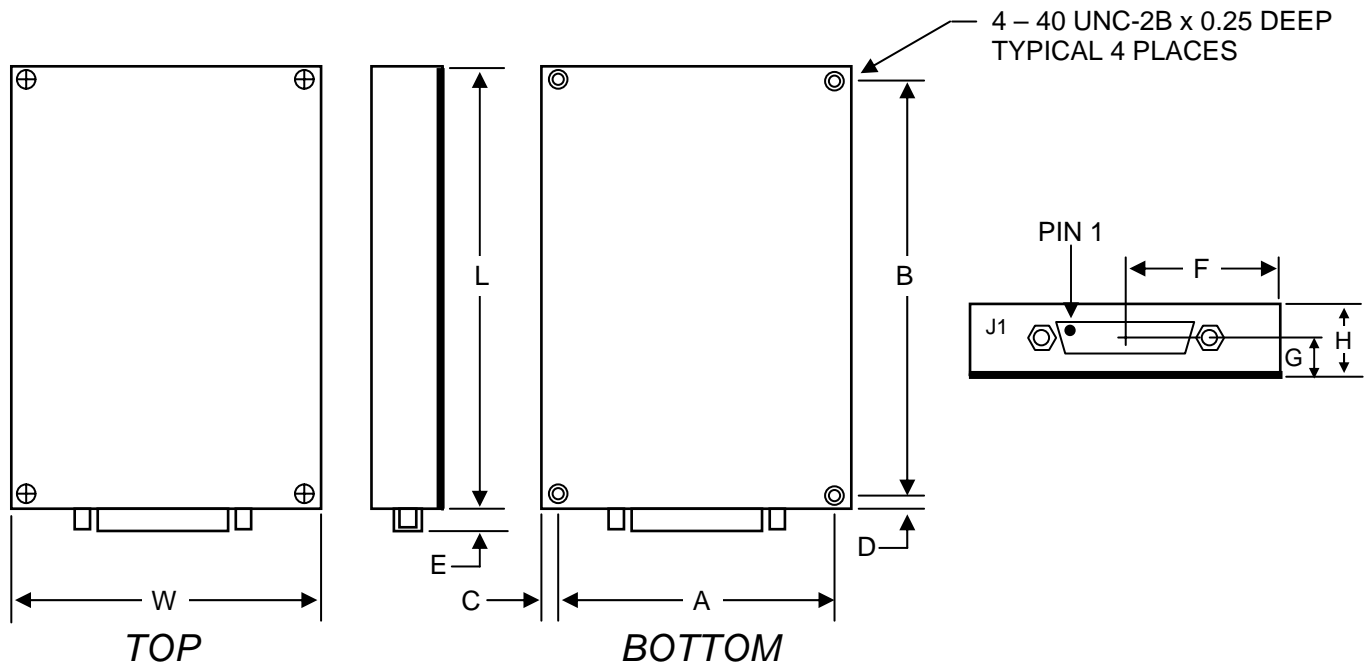
### Single Output



### Dual Output



# 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 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 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.

**OUTPUT VOLTAGE(s):**

<u>Single Output</u>	<u>Dual Output</u>
000 = *	000 = *
012 = 12 V	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:** M = 150 W

**SERIES:** 56 = AC/DC

**Example:** 56MD1-012M1 = AC/DC; 150 Watt; Dual Output; ±12 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.

## 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