56RS3 AC/DC Power Supply

300-Watt Ruggedized Power Supply
Conduction-Cooled, Single Output

Proudly made

Description

NAI's 56RS3 is a 300-Watt AC/DC Power Supply that accepts a three-phase, AC input *or* a +270 VDC input. This COTS unit provides an power output of 300 Watts at a baseplate temperature of +85°C or output power of up 350 Watt output at a lowered baseplate temperature of +70°C. (refer to power derating table, page 2).

Standard features include remote error sensing; remote digital (TTL) turn on/off; and protection against transients, over voltage, over-current, and short-circuits. Options such as ESS vibration testing and choice of output voltages are available, and additional options and special units can be ordered.

This conduction-cooled power supply is specifically designed with NAVMAT component derating for rugged defense and industrial applications. It is also designed to meet the many harsh environmental requirements of military applications.

Features

- Ideal for rugged, conduction-cooled, military applications
- Standard output voltages: +15V, +24V, +28V
- Integrated EMI filtering per MIL-STD-461D
- Input transient protection per MIL-STD-704D
- High power density
- Low profile packaging
- Low noise
- Operates at full load through the entire -55°C to +85°C temperature range
- Contact factory for additional options and special units

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Electrical Specifications

AC Input Characteristics	
Input	AC input: 115 VAC, 3 phase, L – N; DC input: 220 to 320 VDC
Input Frequency Range	47 Hz to 440 Hz
EMI/RFI	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
Inrush Current	20 A peak
DC Output Characteristics	
Output Power	Up to 350 W (see Output Power Derating Table below)
Output Voltage	+15 VDC, +24 VDC or +28 VDC ±2%
Efficiency	80% typical
Line Regulation	Within 0.1% for low to high line changes at constant load
Load Regulation	0.1% for 0 to 100% of rated load at nominal input line
PARD (Noise and Ripple)	200 mV p-p (20 MHz bandwidth)
Load Transient Recovery	Output voltage returns to regulation limits within 0.5 msec (max), half to full load
Load Transient Under/Overshoot	5% max
Short Circuit Protection	Continuous short circuit with auto recovery
Current Limiting	120% ±10% constant current limit
Over Voltage Protection	Automatic electronic shutdown if voltage exceeds 125% ±10%; 0 V is latching, input power must be removed to reset 0 V
Remote Error Sensing	Compensates for up to 0.5 V 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)
Current Share (Optional)	Allows for increased system wattage or redundancy by connecting 2 or more units (see option code 01 in the Code Table, page 6)
Isolation Voltage	1000 VDC input to output and input to case; 200 VDC output to case
Insulation Resistance	50 Mega Ohm at 50 VDC

All specifications are subject to change without notice.

Output Power Derating

Volts	Current @ 85ºC	Current @ 70ºC
+15 VDC	20.0 A	N/A
+24 VDC	12.5 A	14.6 A
+28 VDC	10.7 A	12.5 A

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Additional Specifications

Physical/Environmental	
Temperature Range	Operating: -55°C to +85°C at 100% load; Storage: -55°C to +100°C; (temperature measured at baseplate, conduction-cooled via baseplate only)
Temperature Coefficient	0.01% per °C max
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; 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 Mechanical Layout (page 5)
Salt & Fog	Per MIL-STD-810C, Method 509.1
Sand/Dust/Fungus	Per MIL-STD-810C
Enclosure	Aluminum cover with aluminum baseplate
Finish	Chem film IAW MIL-C-5541, Class 1A
Interface	Connections via a D-subminiature connector (see Connector Specifications Table below)
Weight	38 ounces max

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Connector Specifications

Connector	Part # - Series
Unit	DCMME37PR
Mating	DCMM37S

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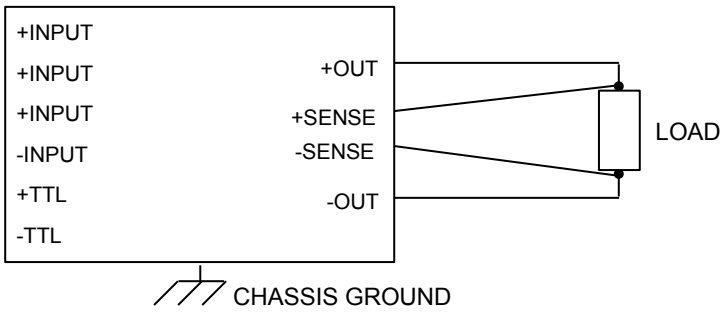
Input Voltages & Pinout Designations

Voltage	Pin No.
100 – 126 VAC, 47 – 440 Hz, 3 phase, 4 wire wye	1 & 20, 3 & 21, 4 & 23, 6 & 24 (Neutral)
220 – 320 VDC	1 & 20, 3 & 21 (Return) (May use any 2 of the 3 sets of inputs)

Pinout Designations (J1)

Pin No.	Function	Pin No.	Function	Pin No.	Function	Pin No.	Function
1	PHASE A	11	N/C	20	PHASE A	29	-TTL (ON/OFF)
2	N/C	12	CURRENT SHARE	21	PHASE B	30	N/C
3	PHASE B	13	+SENSE	22	N/C	31	-SENSE
4	PHASE C	14	+OUTPUT	23	PHASE C	32	+OUTPUT
5	N/C	15	+OUTPUT	24	NEUTRAL	33	+OUTPUT
6	NEUTRAL	16	+OUTPUT	25	N/C	34	+OUTPUT
7	N/C	17	-OUTPUT	26	N/C	35	-OUTPUT
8	N/C	18	-OUTPUT	27	CHASSIS GND	36	-OUTPUT
9	N/C	19	-OUTPUT	28	N/C	37	-OUTPUT
10	+TTL (ON/OFF)						

Output Wiring Diagram



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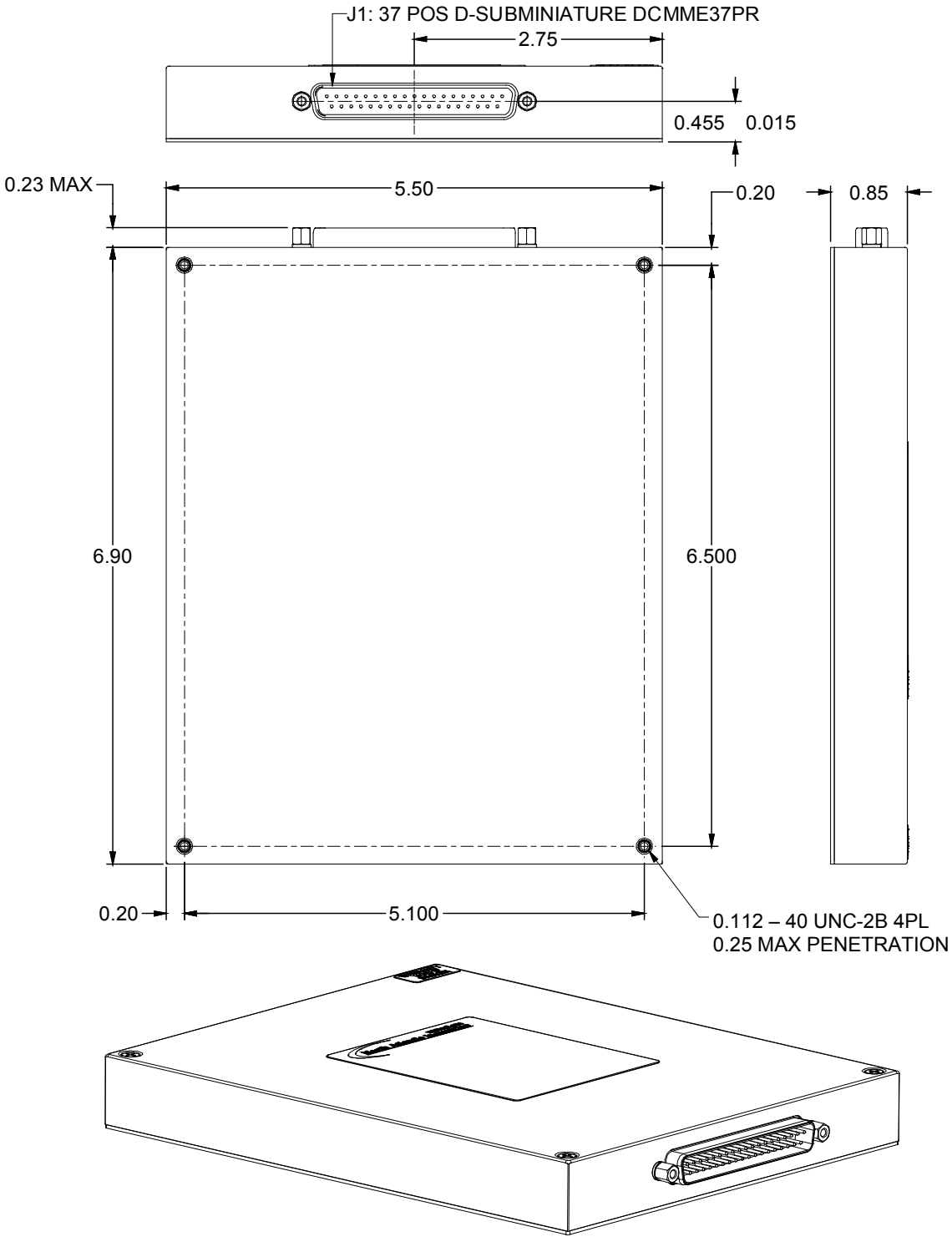
Mechanical Layout



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Ordering Information

56 R S3 – 028 M 0 – XX

- **Code:** Used only for Special Orders (see Code Table below).
- **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 and MIL-STD-810C.
  Designed per NAVMAT Guidelines.
- **Output Voltages:** 000 = Special Voltage, see Code Table below.
  024 = 24 V
  028 = 28 V
- **Outputs:** S3 = Single
- **Wattage:** R = 300 W
- **Series:** 56 = AC/DC

Example: 56RS3-028M0-01 = AC/DC; 300 Watt; Single Output; 28 V; COTS-Mil-Type; Standard Testing; Current Share

Code Table for Special Orders

Code	Description
01	Current share option installed
02	Output voltage set to +29 VDC; Current share option installed

Consult Factory for Additional Options and/or Special Units

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