

## 56RS3 AC/DC Power Supply

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



Proudly made  
in the USA

#### Description

NAI's 56RS3 is a 300-Watt AC/DC Power Supply that accepts a three-phase, AC input plus a +270 VDC input. This COTS unit provides a single full-power output up to 350 Watts at a baseplate temperature of +85°C or a single 350 Watt output at a baseplate temperature of +70°C.

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



## 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 $\pm 2\%$
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% $\pm 10\%$ constant current limit
Over Voltage Protection	Automatic electronic shutdown if voltage exceeds 125% $\pm 10\%$ ; 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 @ 85°C	Current @ 70°C
+15 VDC	20.0 A	N/A
+24 VDC	12.5 A	14.6 A
+28 VDC	10.7 A	12.5 A

## 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

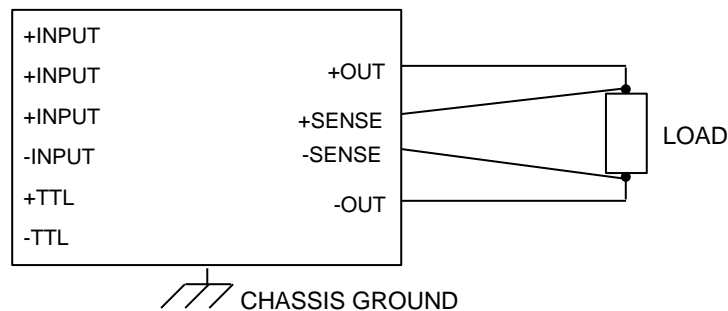
## Input Voltages & Pinout Designations

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)

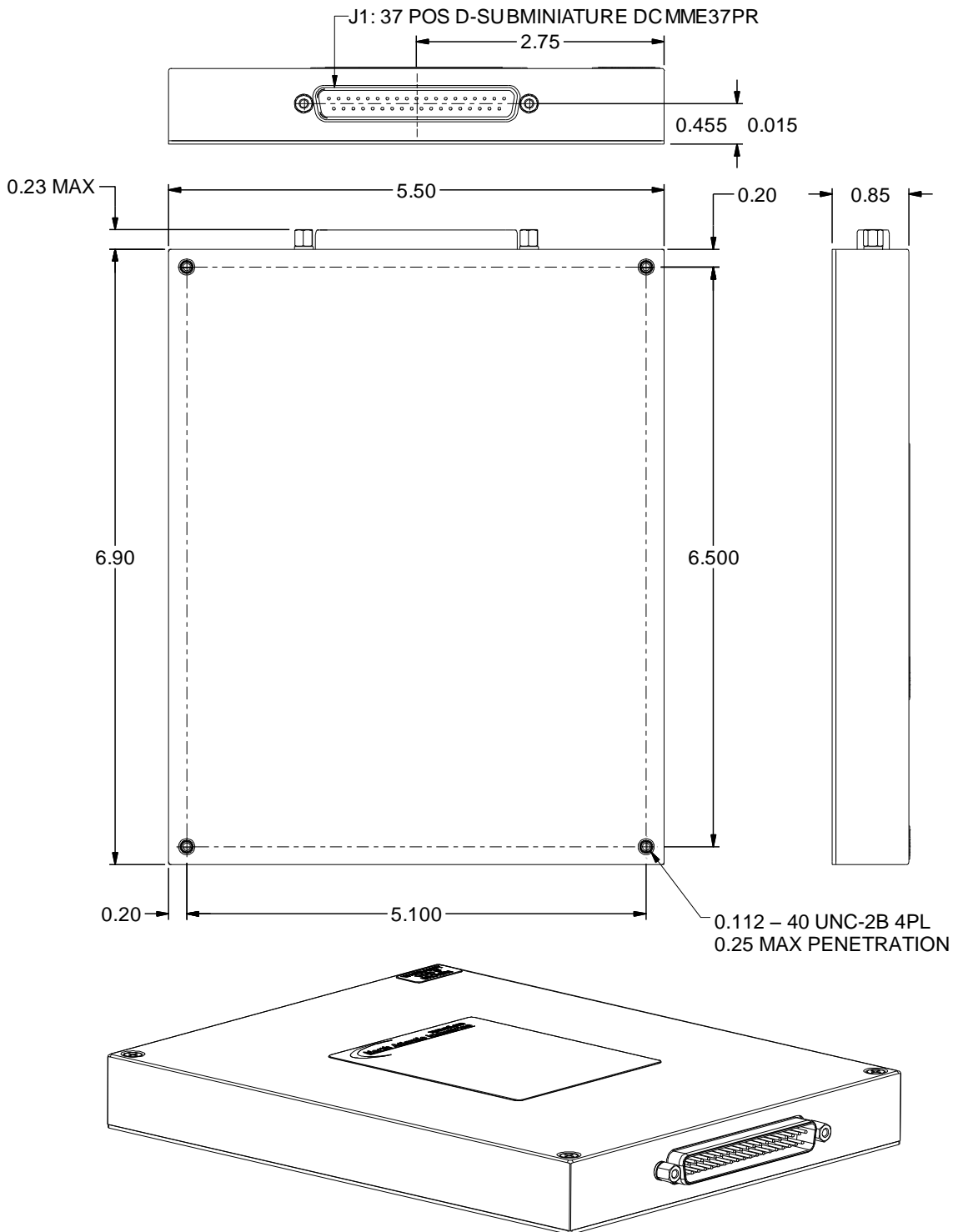
## Pinout Designations (J1)

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)						

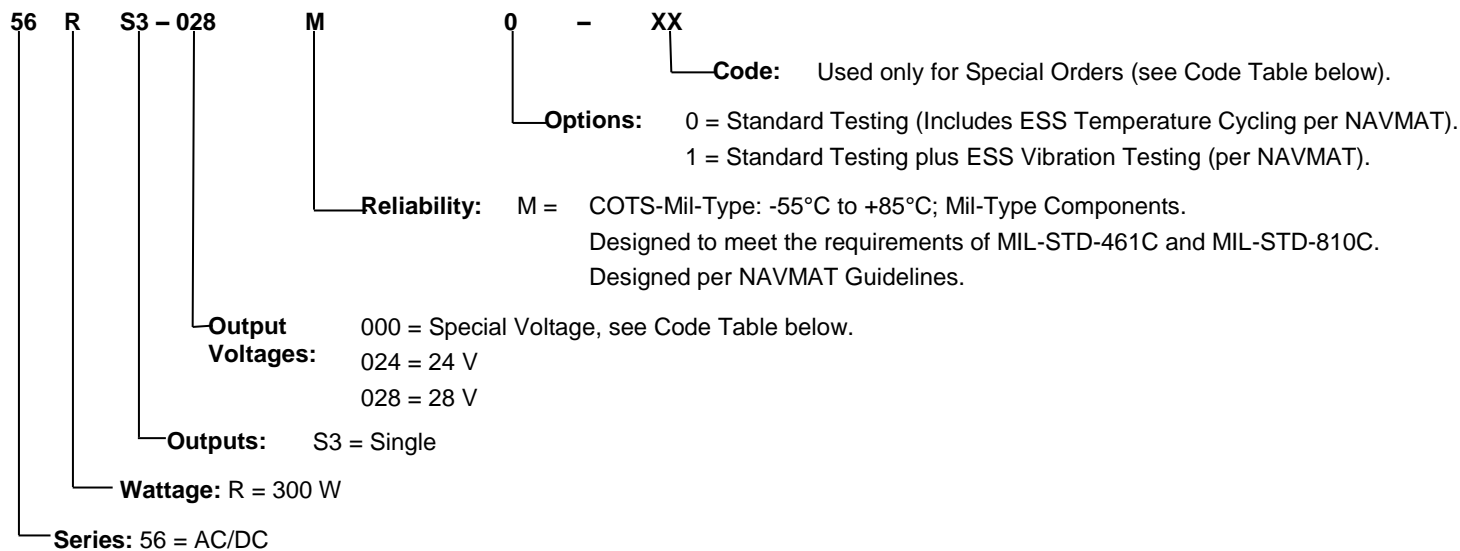
## Output Wiring Diagram



## Mechanical Layout



## Ordering Information



**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**