56TS1 AC/DC Power Supply

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

Proudly made in the USA

Description

NAI's 56TS1 is a high power density, low profile, AC/DC switch mode power supply in a 500 Watt single output configuration. The 56TS1 accepts a three-phase, AC input and a +270 VDC input. This COTS unit provides a single full-power output (500 Watts) at a baseplate temperature of +85°C.

Standard features include remote error sensing, current share, ON/OFF control; and protection against transients, over voltage, over-current, and short-circuits. Choice of output voltages are available, and additional options and special units can be made available upon request.

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
- High Power Density, Low Profile Packaging
- Switching Power Supply – Low Noise
- 3 Phase Input and +270Vdc Input
- Designed and Manufactured Per NAVMAT Guidelines
- EMI Filtering Designed to MIL-STD-461
- Remote Error Sensing
- Enable/Disable
- Transient Protection per MIL-STD-704
- Current Share, with Share Monitoring

110 Wilbur Place, Bohemia, NY 11716 Tel: 631.567.1100 www.naii.com

Electrical Specifications

AC Input Characteristics	
Input	AC input: 115 VAC, 3 phase, L – N; DC input: 220 to 320 VDC (Input Tolerance ±10%)
Input Frequency Range	47 Hz to 440 Hz
EMI/RFI	Designed to meet the requirements of MIL-STD-461F; CE102
Input Transient Protection	Per MIL-STD-704A-F
Inrush Current	5 A peak
DC Output Characteristics	
Output Power	500 W
Output Voltage	+12Vdc, +24Vdc, +28Vdc or +48Vdc
Initial Output Setting Tolerance	± 2%
Efficiency	87% 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 measurements are made with a 20 MHz bandwidth instrument connected on load wires <5 inches from power supply and terminated with 1uF capacitors across load lines.
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 0 *or ground* inhibits (turns off) the output; a floating input acts as a logic 1 (output on)
Current Share	Allows for increased system wattage or redundancy by connecting 2 or more units
Share_OK*	Active Low Signal; High = Share Fault Condition, Low = Sharing Properly. (Can be used to drive an LED)
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

Volts	Current @ 85ºC
+12Vdc	41.7 A
+24 VDC	20.9 A
+28 VDC	17.9 A
+48 VDC	10.4 A

110 Wilbur Place, Bohemia, NY 11716 Tel: 631.567.1100 www.naii.com

Additional Specifications

Physical/Environmental	
Temperature Range	Operating: -55°C to +85°C; 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-810G, Method 516.6, Procedure 1; Hammer shock per MIL-S 901; ½ sine wave
Acceleration	6 G's per MIL-STD-810G, Method 513.6, Procedure II; 14 G's per Procedure 1
Vibration	Per MIL-STD-810G, Method 514.6, Procedure 1A
Reliability (MTBF)	200,000 hours, ground benign, at 40°C baseplate
Humidity	95% at 71°C per MIL-STD-810G, Method 507.5 (non-condensing)
Altitude	40,000 feet per MIL-STD-810G, Method 500.5, Category 6 Equipment
Dimensions	See page 6
Salt & Fog	Per MIL-STD-810G, Method 509.5
Sand/Dust/Fungus	Per MIL-STD-810G, Method 510.5; Per MIL-STD-810G, Method 508.6
Enclosure	Aluminum cover with aluminum baseplate
Finish	Yellow Chem film IAW MIL-DTL-5541, Class 3, Type 1
Interface	Connections via a D-subminiature connectors (see Connector Specifications Table)
Weight	2.25lbs Typical

All specifications are subject to change without notice.

Connector Specifications

Connector	Type	Part # - Series
(P1) Input Unit Connector	Sub D, 15 Pin Male	DEMM15PL, Male
Input Mating Connector*	Sub D, 15 Pin Female	DEMAM15S, Female
(J1) Output Unit Connector	Combo D, 13 Pin Female	Combo-D, Series 13WG, Female
Output Mating Connector*	Combo D, 13 Pin Male	Combo-D, Series 13WG, Male

***** Not Supplied

110 Wilbur Place, Bohemia, NY 11716 Tel: 631.567.1100 www.naii.com

Input Voltages & Pinout Designations

Pinout Designations

15 Pin Connector (P1)

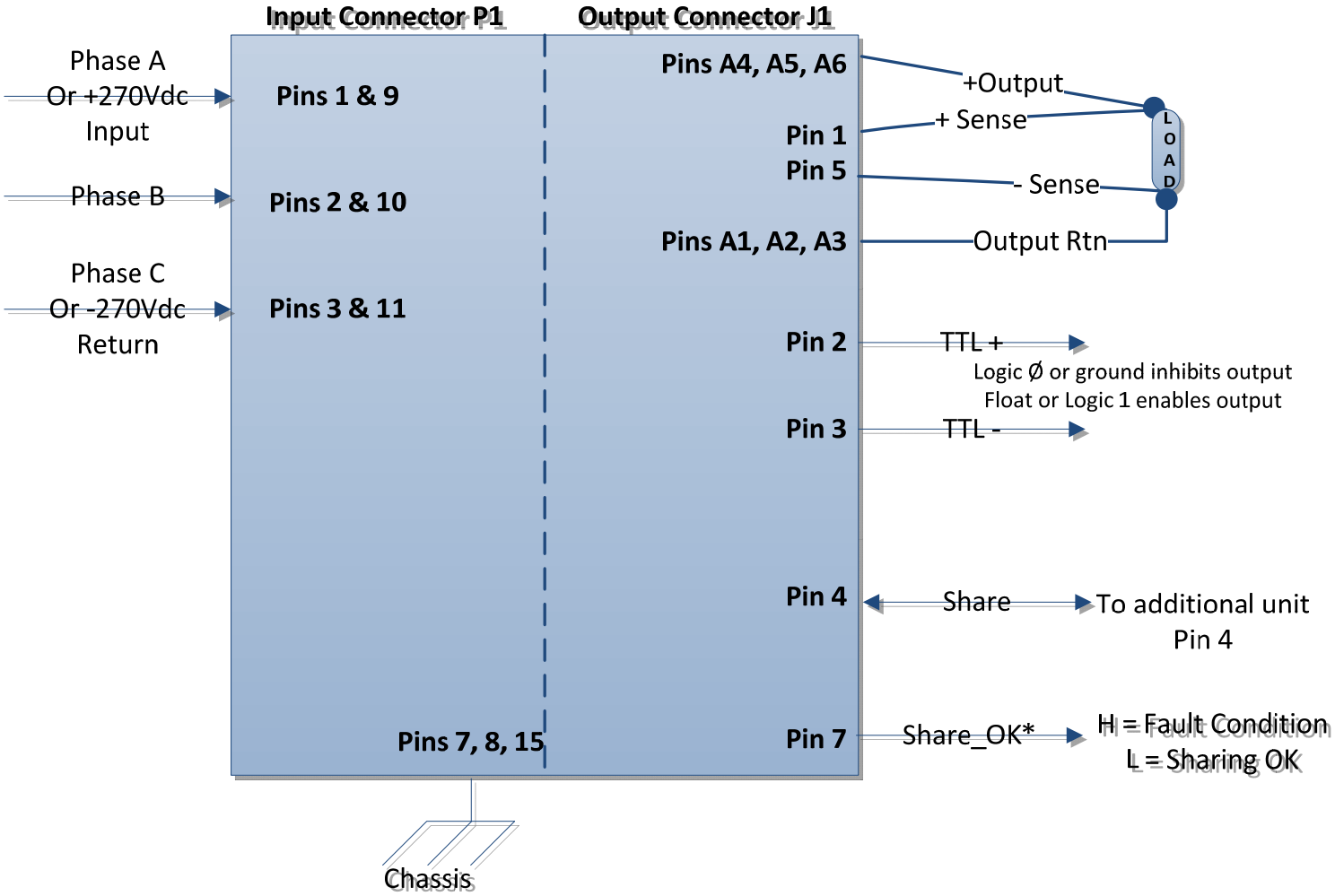
Pin No.	Function
1	INPUT PHASE A or +270Vdc
2	INPUT PHASE B
3	INPUT PHASE C or -270Vdc Return
4	N/C
5	N/C
6	N/C
7	CHASSIS GROUND
8	CHASSIS GROUND
9	INPUT PHASE A or +270Vdc
10	INPUT PHASE B
11	INPUT PHASE C or -270Vdc Return
12	N/C
13	N/C
14	N/C
15	CHASSIS GROUND

13 Pin Connector (J1)

Pin	*Function*	*Pin*	Function
A1	*-OUTPUT*	*1*	+SENSE
A2	*-OUTPUT*	*2*	+TTL
A3	*-OUTPUT*	*3*	-TTL
A4	*+OUTPUT*	*4*	Current Share
A5	*+OUTPUT*	*5*	-SENSE
A6	*+OUTPUT*	*6*	N/C
		7	Share OK

110 Wilbur Place, Bohemia, NY 11716 *Tel: 631.567.1100* *www.naii.com*

Output Wiring Diagram

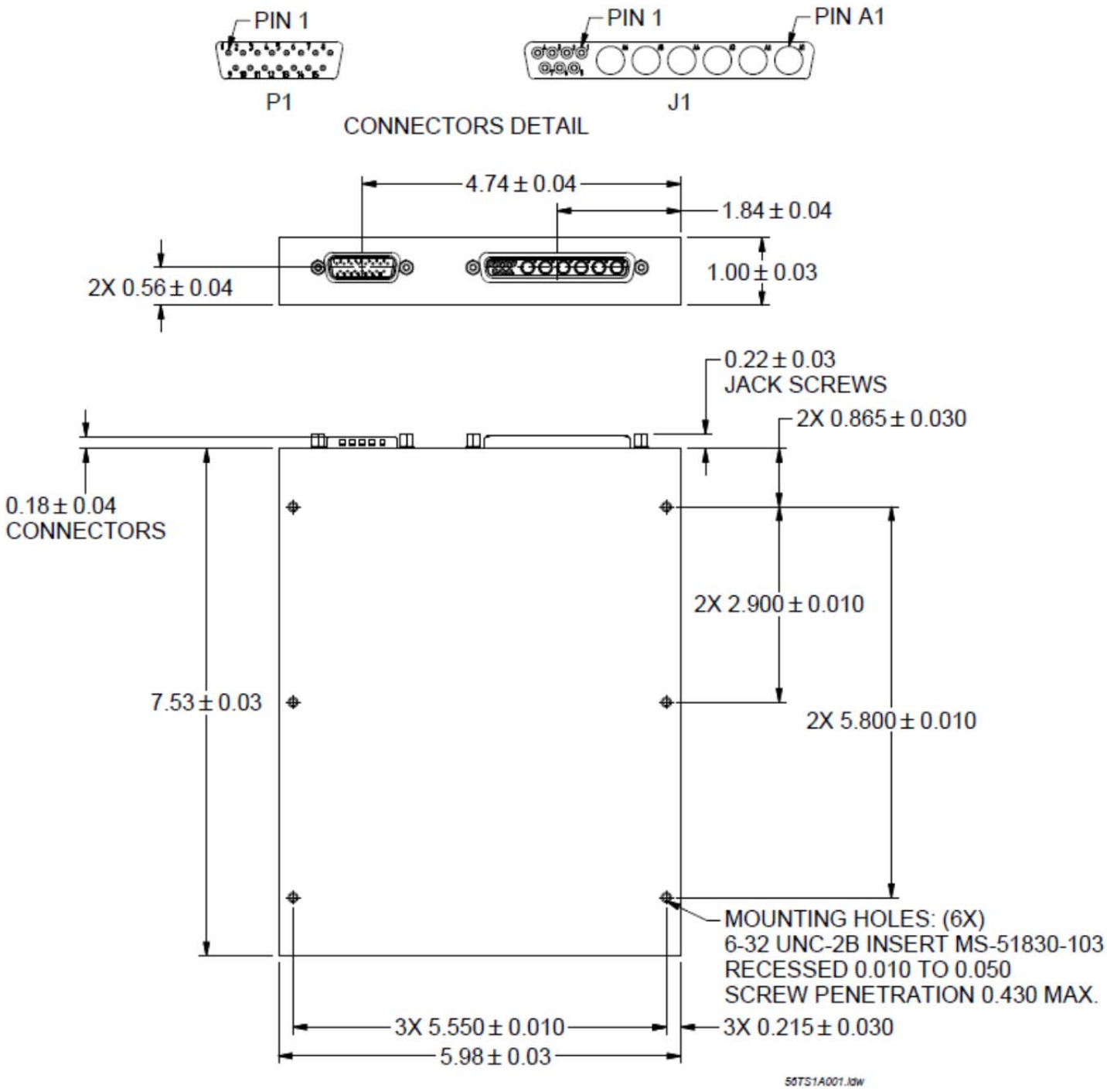


Not Connected Pins

INPUT	OUTPUT
4	6
5	
6	
12	
13	
14	

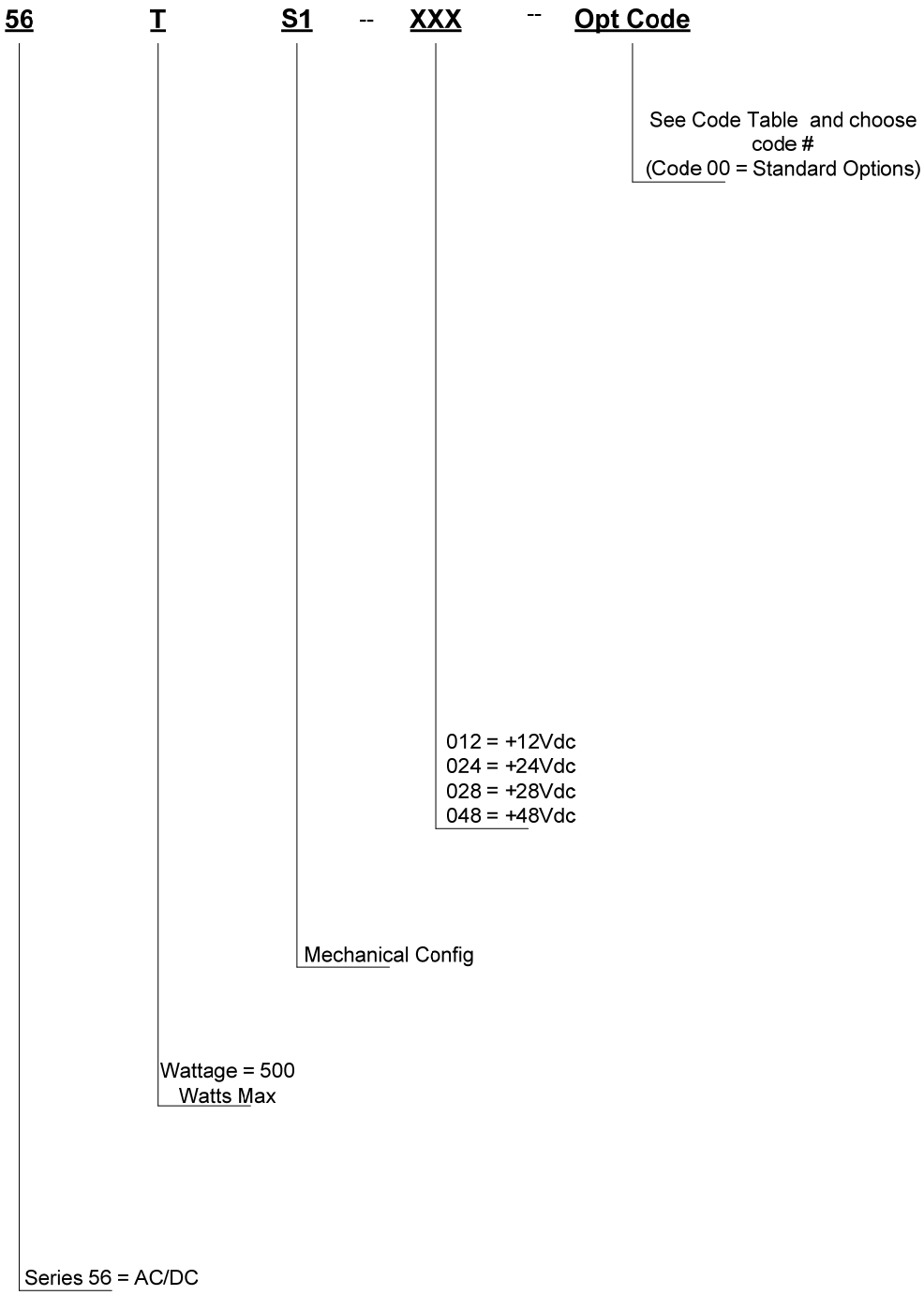
110 Wilbur Place, Bohemia, NY 11716 Tel: 631.567.1100 www.naii.com

Mechanical Layout Diagram



110 Wilbur Place, Bohemia, NY 11716 Tel: 631.567.1100 www.naii.com

Ordering Information



Code	Description
00	Standard Unit, no additional options

110 Wilbur Place, Bohemia, NY 11716 Tel: 631.567.1100 www.naii.com