

Model 56SQ2 – AC/DC Power Supply, VME

Features



- 300 Watts, Typical
- Ruggedized
- Designed and Manufactured Per NAVMAT Guidelines
- EMI Filtering Designed to MIL-STD-461E
- Remote Error Sensing
- Extensive Signaling Options
- Transient Protection per MIL-STD-704 & Mil-Std-1399
- Holdup Time

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Description

The NAI 56SQ2 is a high power density, low profile VME power supply which accepts either a single phase 115Vac, or three phase input (*optional*). The 56SQ2 is ideally suited for VME & CPCI applications and is **designed to plug into a standard 6U rack**. All NAI power supplies are designed and qualified to the most stringent performance and environmental requirements.

Electrical Specifications

Input Characteristics:

Input	115/208 Vac, Single Phase nominal; 115Vac, Three Phase Optional
Frequency Range	47Hz to 440Hz
EMI/RFI Characteristics	Designed to meet requirements of MIL-STD-461E – CE102, CS101, CS114 a & b, CS116; CE101 (for Single phase units only)
Input Transient Protection	Per MIL-STD-704E (Three Phase and Single Phase); Per Mil-Std-1399 sec 300A (Single Phase only)

DC Output Characteristics:

Output Power	See Table 1; 300 watts typical at 85°C
Output Voltage	See Table 1; VME outputs standard
Efficiency	75% typical
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; with remote sense
PARD (Noise and Ripple)	50mv p-p max. 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, half to full load
Load Transient Under/Overshoot	5% of nominal output voltage set point (1.4v max)
Short Circuit Protection	Protected for continuous short circuit with automatic recovery
Current Limiting	All outputs 105% to 130%
OverVoltage Protection	Automatic electronic shutdown if outputs exceed 125% \pm 10%
Holdup Time	20 milliseconds at nominal load standard; 50 milliseconds optional; height changes to 2” (see note on sheet 6); 4 millisecond power fail warning per ANSI/VITA
Remote Error Sensing	Sensing pins compensate for up to 0.5-volt drop on all output leads
Isolation Voltage	1000 VDC input to output and input to case; 100 VDC output to case.
Insulation Resistance	50 Megohm at 50 VDC

Signal Types:

Enable (standard on all versions)	$V_{IL} = 1V$ max, $V_{IH} = 3V$ min. Input has an internal 1K Pull-up resistor to an internal +5Vdc supply. Floating or High enables switched outputs. Low will disable the switched outputs.
DC Good (see option sets, table 5)	Open collector output capable of sinking 50 mA. Output will be low (conducting) when outputs are within 5% of nominal value
Power Fail Warning (PFW) (see option sets, table 5)	Open collector output capable of sinking 50 mA. Output will be low (conducting) when input is insufficient to produce full power
Over Current (OC) (see option sets, table 5)	Open collector output capable of sinking 50 mA. Output will be low (conducting) when outputs are not in over-current limit.
AC Fail (ANSI/VITA) Option Set 3, table 5	Signal from power supply indicating status of input
Sys Reset (ANSI/VITA) Option Set 3, table 5	Signal from power supply indicating reset (such as a power up) in progress
Reset (ANSI/VITA) Option Set 3, table 5	Input to power supply via switch; resets system without power off applied
Share OK Option Set 4, table 5	Signal from power supply which gives status during current share operation
SCL Option Set 5, table 5	Via I ² C for overtemp monitor and overtemp shutdown
SDA Option Set 5, table 5	Via I ² C for overtemp monitor and overtemp shutdown

Physical/Environmental Specifications

Temperature Range	Operating: -40°C to +85°C at 100% load (Temperature measured at thermal seating plane; conduction via entire thermal seating plane); Storage: -55°C to +100°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-S901, ½ sine wave
Vibration	Per MIL-STD-810C, Method 514.2, Procedure 1A.
Acceleration	6 G's per MIL-STD-810C, Method 513.2, Procedure 11, and 14 G's per Procedure 1
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 Sheet 6
Salt Fog	Per MIL-STD-810C, Method 509.1
Sand/Dust/Fungus	Per MIL-STD-810C
Enclosure	Aluminum housing to aluminum Baseplate
Finish	Yellow Chem film IAW MIL-C-5541 Class 1A
Interface	Connector per Table 4
Weight	4.5lbs Typical

Table 1. Output Power

Designation	Volts	Amps
V1	+5.0	30
V2	+12	2
V3	-12	2
V4 * see note 1	+3.3 *see note 1	20 * see note 1
V5 ** See note 2	+3.3	10

*Note 1: This voltage comes standard as a +3.3vdc @ 20 amps output. It can also be configured to, +5, +12, +15, +24, +26 or +28vdc @ 150 watts. V4 is also an isolated output.

** Note 2: V5 can be referenced to either the V1 or V4 rtn line

Table 2. Input Pinout Designations (J1)

Pins	3 Phase	1 Phase
A5, A6	Phase A	Hot
C5, C6	Phase B	Hot
B2	Phase C	Neutral
B9	Ground	Ground

Table 3. Output Pinout Designations (J2)

Pin(s)	Signal	Pin(s)	Signal
B2, B5	Out (V1)	A18	V1 Sense
B8, B11	V1, V2 & V3 Rtn	B19	Sense Rtn
B25	V4 Rtn	A14, B14, C14	Out (V3)
B22	Out (V4) *note 1	B18	V3 Sense
B17	Enable	A19	V2 Sense
A16	DC Good	A13, B13, C13	Out (V2)
A17	OverTemp	B31	Out (V5) *note 2
B16	Power Fail Warn	B28	V5 Rtn
C19	V4 Sense	C20	V5 Sense

*Note 1: V4 is isolated from other outputs. The return line can be connected at either the system motherboard or at the unit connector. The sense return is internally connected for the V4 output and becomes common when all other grounds are connected together.

** Note 2: V5 can be referenced to either the V1 or V4 rtn line

Table 4. Option Sets (refer to sheet 2 for signal descriptions)

Set #	Description
1	Standard, no additional options
2	Power Fail Warn (PFW), DC Good & Over Temp Warn Signals
3	ANSI/VITA Signaling, includes AC Fail, Sys Reset & Reset
4	Current Share option, plus following signals: Share OK, Power Fail Warn (PFW) & Over Temp Warn
5	Temperature monitoring & temperature shutdown when temperature reaches 95°C, via I ² C bus using SCL and SDA signals. Also has DC Good Signal
6	<ul style="list-style-type: none"> ○ Power Fail Warn (PFW), DC Good & Over Temp Warn Signals. ○ Enable signal pulled up internally and outputs will be disabled when an external low is applied. ○ Unit uses Calmark VHA260-4.80ET2LK wedgelocks in place of standard wedgelocks.
7	<ul style="list-style-type: none"> ○ Power Fail Warn (PFW), DC Good & Over Temp Warn Signals. ○ Enable signal pulled up internally and outputs will be enabled when an external low is applied. ○ Unit uses Calmark VHA260-4.80ET2LK wedgelocks in place of standard wedgelocks.

Table 5. Testing Options

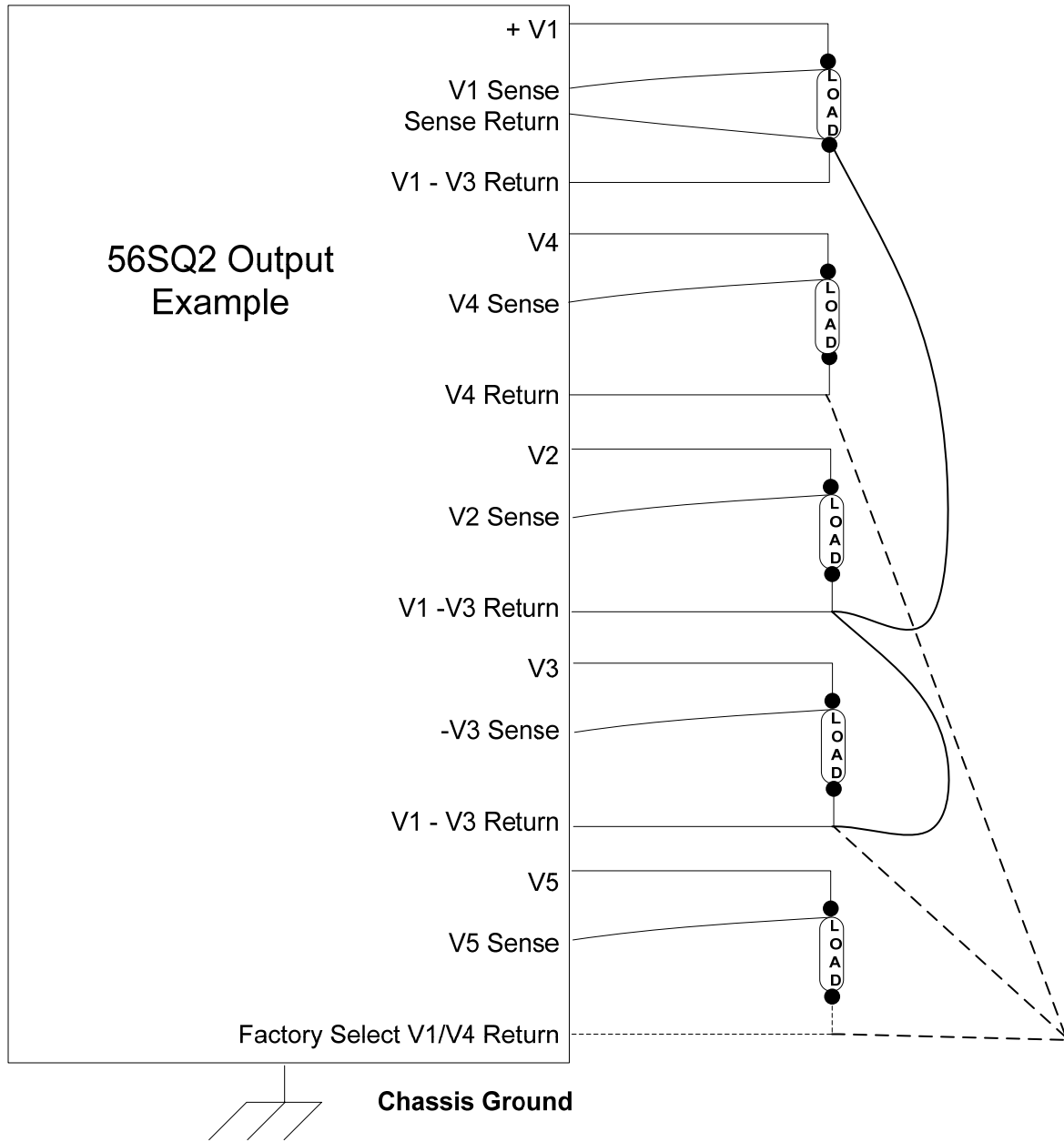
Option #	Description
1	Standard Testing, includes ESS Temperature cycling per NAVMAT
2	Optional Testing includes Standard Testing plus 100% vibration testing per NAVMAT

Table 6. Connectors

Connector/Pins	Part Number - Series
Input Unit Connector	DIN 41612 Type M/3, 12+2: Male
Input Mating Connector*	DIN 41612 Type M/3, 12+2: Female
Output Unit Connector	DIN 41612 Type M, 24+8: Male
Output Mating Connector*	DIN 41612 TYPE M, 24+8: Female

*Not Supplied

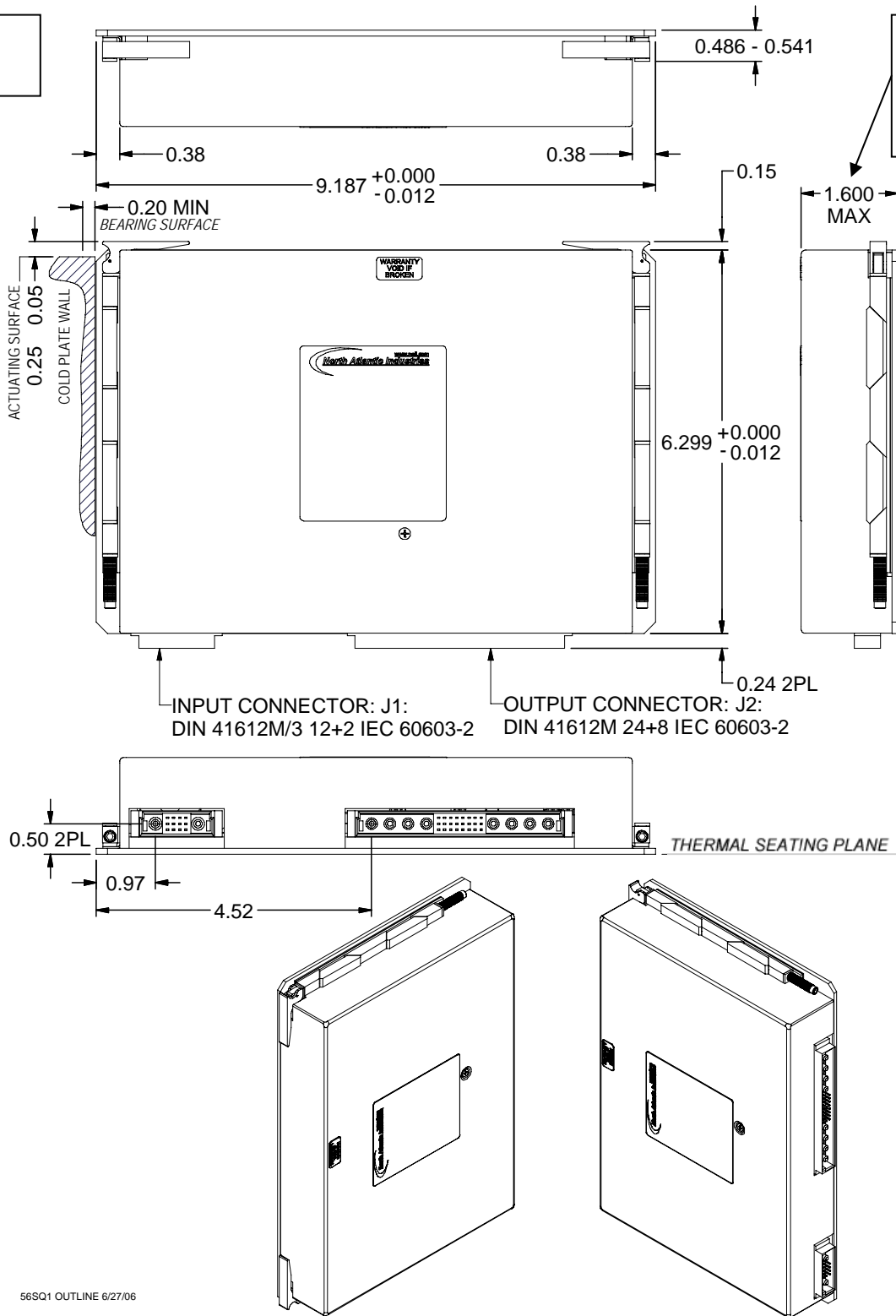
56SQ2 Output Diagram Example



Mechanical Layout 56SQ2

Note:
All Dimensions are shown in inches

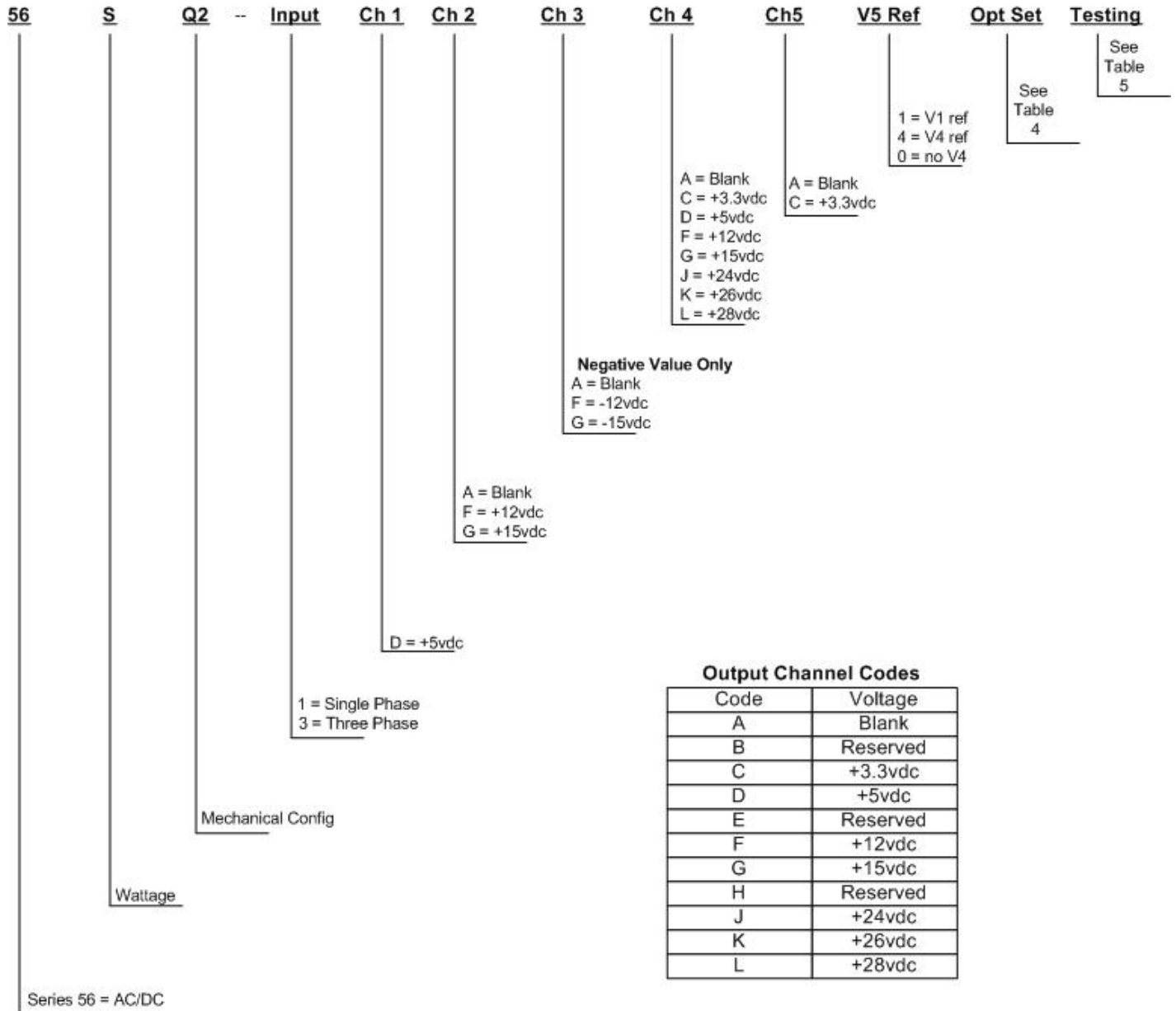
Note:
Height increases to 2.0" with 50 millisecond holdup time option



56SQ1 OUTLINE 6/27/06

Ordering Information for 56SQ2

For all Outputs,
refer to Table 1,
Output Power



Output Channel Codes

Code	Voltage
A	Blank
B	Reserved
C	+3.3vdc
D	+5vdc
E	Reserved
F	+12vdc
G	+15vdc
H	Reserved
J	+24vdc
K	+26vdc
L	+28vdc

Consult Factory for Additional Options and/or Special Units