55GS1 DC/DC Converter

25-Watt Ruggedized Converter
Conduction-Cooled, Single Output

Proudly made

Description

NAI's 55GS1 is a COTS, 25-Watt DC/DC Converter that accepts a +28 VDC input and provides a single full-power output at a baseplate temperature of +100°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, switching 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: 5V, 12V, 15V
- Integrated EMI filtering per MIL-STD-461
- Input transient protection per MIL-STD-704
- High-power density
- Low-profile packaging
- Low noise
- Operates at full load through the entire -55°C to +100°C temperature range
- Contact factory for additional options and special unit

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Electrical Specifications

DC Input Characteristics	
Input	14 to 36 VDC; 40 VDC maximum with no damage (50 VDC maximum – optional)
EMI/RFI	Designed to meet the requirements of MIL-STD-461D; CE102
Input Transient Protection	Per MIL-STD-704D
DC Output Characteristics	
Output Power	25 Watts (see Output Power Table below)
Output Voltage	See Output Power Table below
Efficiency	70% 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)	50 mV p-p typical; 100 mV p-p maximum for 5 V 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 V maximum from nominal output voltage set point for 5.0 V outputs; all other outputs are 5%
Short Circuit Protection	Under any short circuit condition, output voltage drops to less than 1 V with automatic recovery
Current Limiting	120% ± 10% typical
Over Voltage Protection	Automatic electronic shutdown if voltage exceeds 125% ± 10%
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)
Isolation Voltage	500 VDC input to output and input to case; 100 VDC output to case
Insulation Resistance	50 Mega Ohm at 50 VDC

All specifications are subject to change without notice.

Output Power

Watts	Volts	Amps
25	5.0	5.0
25	12.0	2.1
25	15.0	1.7

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Additional Specifications

Physical/Environmental	
Temperature Range	Operating: -55°C to +100°C at 100% load (temperature measured at baseplate, conduction via baseplate only); 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; 14 G's per Procedure 1
Vibration	Per MIL-STD-810C, Method 514.2, Procedure 1A
Reliability (MTBF)	200,000 hours, ground benign, at 50°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 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 (see Connector Specifications Table below)
Weight	9 ounces

All specifications are subject to change without notice.

Pinout Designations

Pin No.	Function	Pin No.	Function
1	+ INPUT	9	- INPUT
2	N/U	10	N/U
3	- TTL (ON/OFF)	11	CHASSIS GND
4	+ TTL (ON/OFF)	12	+ SENSE
5	+ OUTPUT	13	- SENSE
6	+ OUTPUT	14	+ OUTPUT
7	- OUTPUT	15	- OUTPUT
8	- OUTPUT		

Connector Specifications

Connector	Part Number - Series
Unit	DAMME15PR
Mating	DAMM15S

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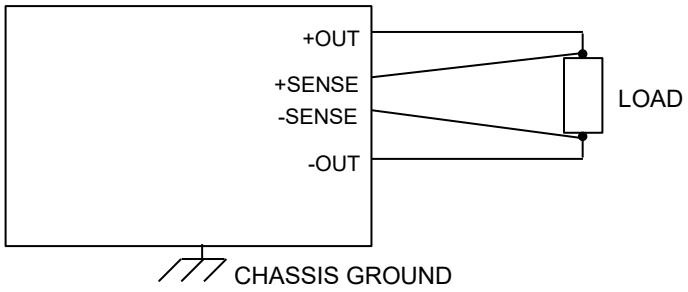
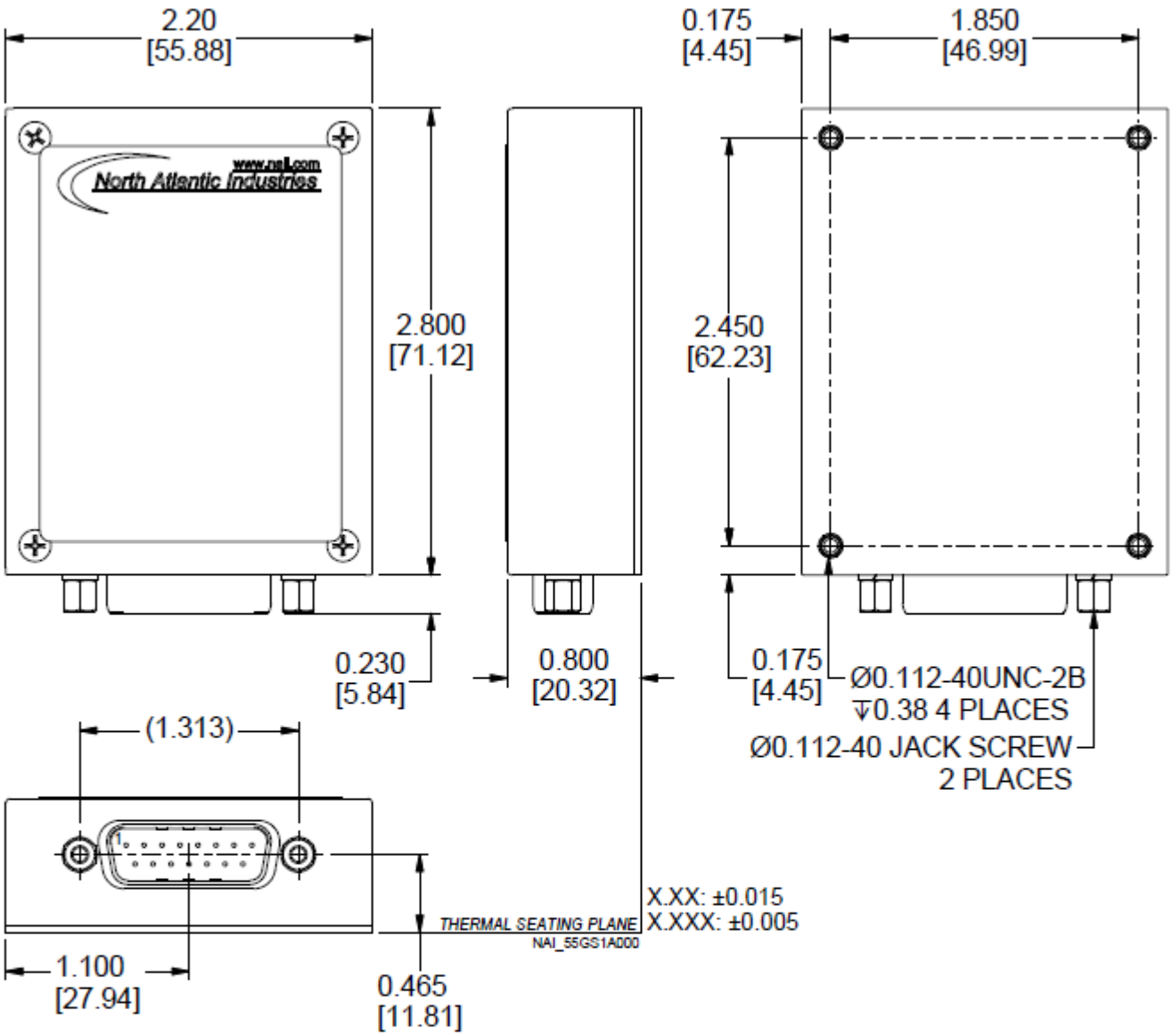
Output Wiring Diagram



Mechanical Layout



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Ordering Information

55 G S1 – 005 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 +100°C; Mil-Type Components.
  Designed to meet the requirements of MIL-STD-461C and MIL-STD-810C.
  Designed per NAVMAT Guidelines.
- **Output Voltages:**
  005 = 5 V
  012 = 12 V
  015 = 15 V
- **Outputs:** S1 = Single
- **Wattage:** G = 25 W
- **Series:** 55 = DC/DC (Low Voltage)

Example: 55GS1-012M0 = DC/DC (Low Voltage); 25 Watts; Single Output; +12 V; COTS-MIL-Type; Standard Testing

Code Table for Special Orders

Code	Description
55GS1-005XX-01	Potted. Designed to meet MIL-STD-810C, Procedure 1, Category 6, 70,000 feet. (Add 0.4 lbs. to weight of unit.)
55GS1-005M0-04	• Unit label IUID marking per MIL-STD-130, marked per customer requirements • Potted (Add 0.4 lbs. to weight of unit.)
55GS1-012M1-01	• Potted. Designed to meet MIL-STD-810C, Procedure 1, Category 6, 70,000 feet. (Add 0.4 lbs. to weight of unit.) • Includes 100% vibration Screening

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