

## 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



## 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% $\pm$ 10% typical
Over Voltage Protection	Automatic electronic shutdown if voltage exceeds 125% $\pm$ 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

## 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.

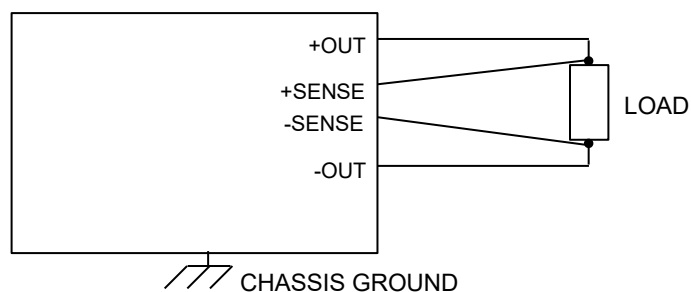
## Pinout Designations

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		

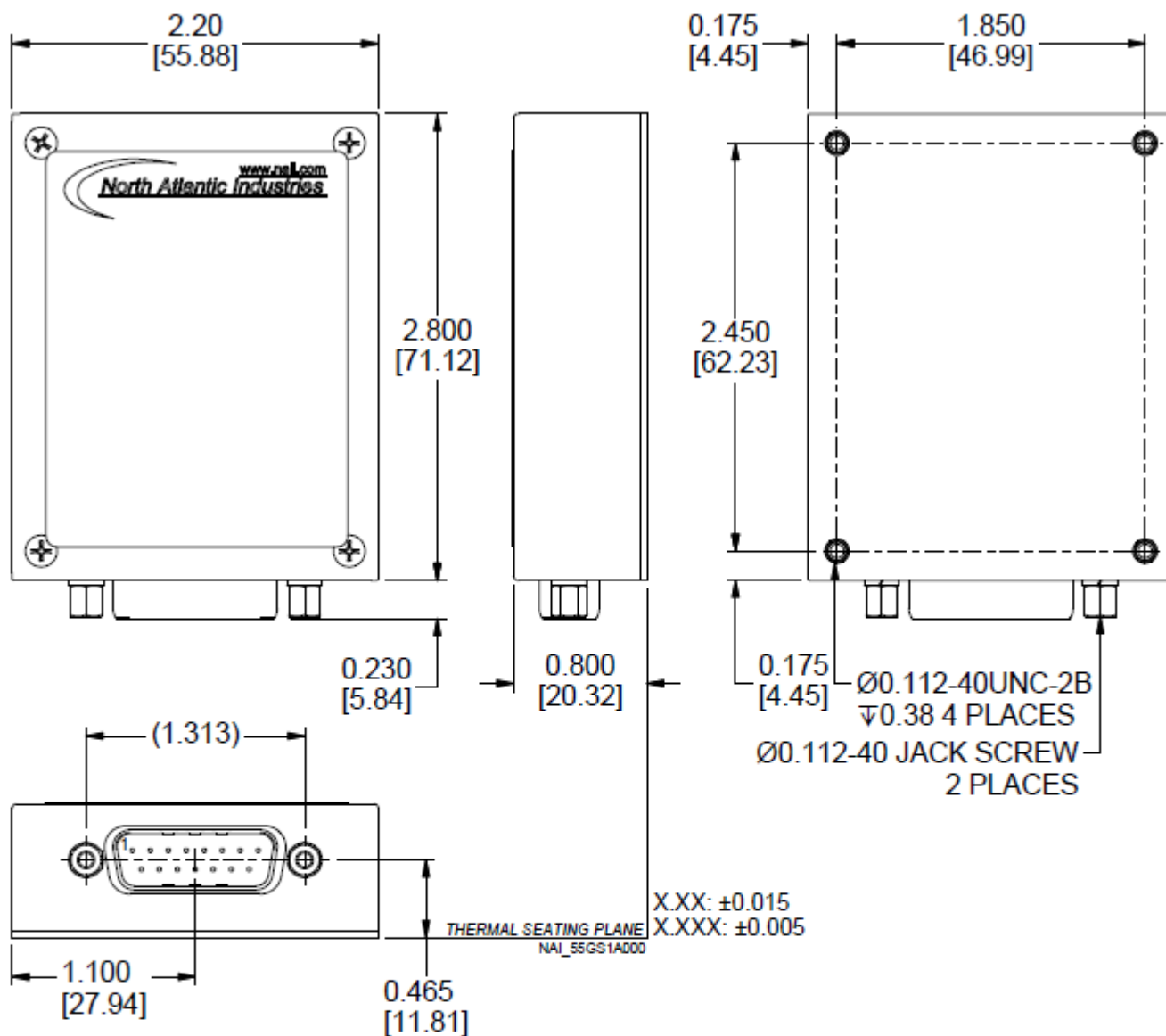
## Connector Specifications

Connector	Part Number - Series
Unit	DAMME15PR
Mating	DAMM15S

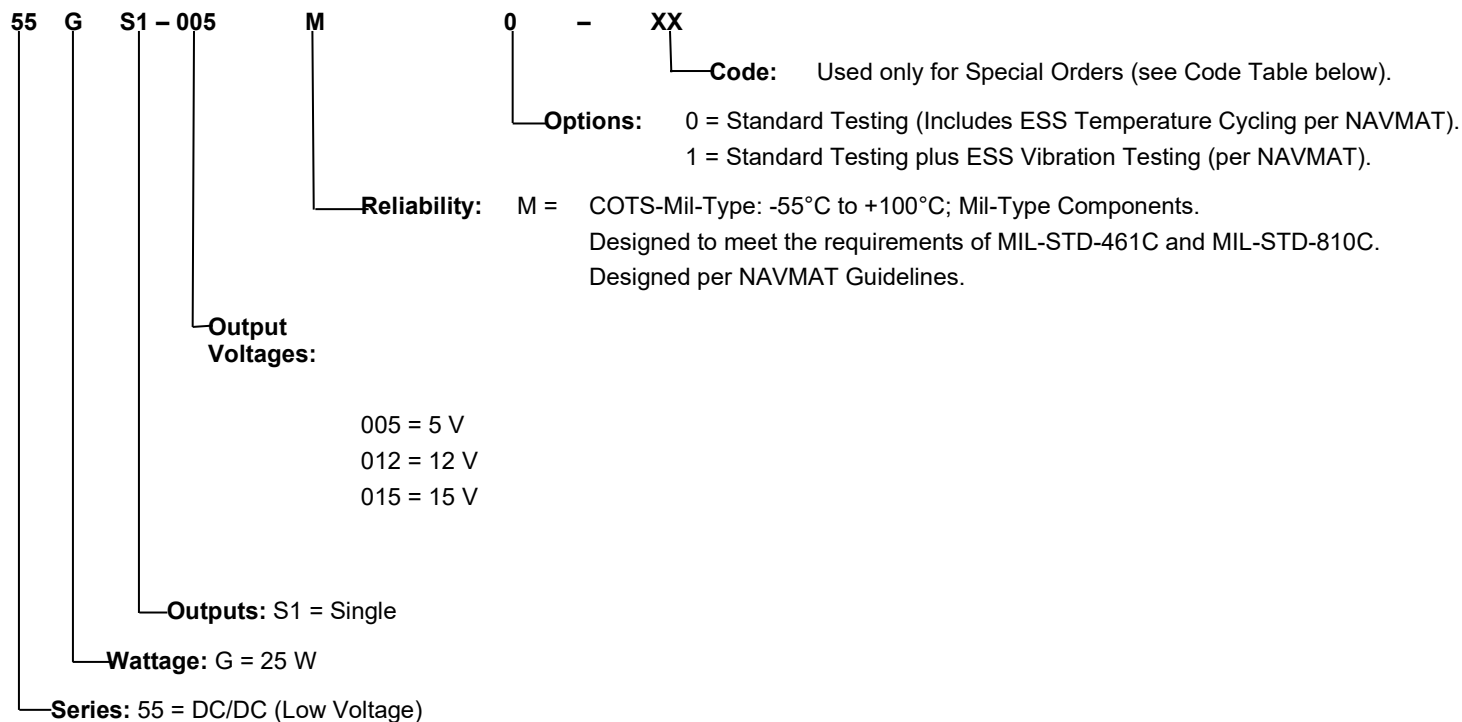
## Output Wiring Diagram



## Mechanical Layout



## Ordering Information



**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	<ul style="list-style-type: none"> <li>Unit label IUID marking per MIL-STD-130, marked per customer requirements</li> <li>Potted (Add 0.4 lbs. to weight of unit.)</li> </ul>
55GS1-005M1-05	<ul style="list-style-type: none"> <li>IUID Label</li> <li>Potted (Add 0.4 lbs. to weight of unit)</li> <li>Includes 100% vibration screening option</li> </ul>

**Consult Factory for Additional Options and/or Special Units**