

## DESCRIPTION

This class AB LDMOS module is designed for both military and commercial applications. It is capable of supporting any signal type and modulation format, including but not limited to 3-4G telecom, WLAN, OFDM, DVB, and CW/AM/FM. The latest device technologies and design methods are employed to offer high power density, efficiency, and linearity in a small, lightweight package.



## FEATURES

Optional Heatsink

Manual or Automatic Tx/Rx Switching Available

Specifications subject to change without notice. Typical performance at +28VDC at 25°C in a 50Ω system

| Tx SPECIFICATIONS      |      |       |     |      |
|------------------------|------|-------|-----|------|
| PARAMETER              | MIN  | TYP.  | MAX | UNIT |
| Operating Frequency    | 100  |       | 500 | MHz  |
| PSat Power Output      |      | +44.0 |     | dBm  |
| Gain                   | 29.0 | 30.0  |     | dB   |
| Gain Flatness          |      | 1.0   | 1.5 | ± dB |
| Input Return Loss      | -10  | -12   |     | dB   |
| Operating Voltage      | +27  | +28   | +30 | VDC  |
| Current Draw           |      | 2.0   | 4.0 | A    |
| Tx / Rx Switching Time |      | 1.0   | 2.0 | uS   |

| Rx SPECIFICATIONS |     |       |       |      |
|-------------------|-----|-------|-------|------|
| PARAMETER         | MIN | TYP.  | MAX   | UNIT |
| P1dB Power Output |     | +5.0  |       | dBm  |
| Gain              |     | 11.0  |       | dB   |
| Gain Flatness     |     | 0.5   | 1.3   | ± dB |
| Noise Figure      |     | 2.0   | 3.0   | dB   |
| OIP3              |     | +15.0 |       | dBm  |
| Input Return Loss | -8  | -10   |       | dB   |
| Current Draw      |     | 200.0 | 450.0 | mA   |

| MECHANICAL                     |                                                    |      |
|--------------------------------|----------------------------------------------------|------|
| PARAMETER                      | VALUE                                              | UNIT |
| Dimensions (L x W x H)         | 5.3 x 3.25 x 0.57                                  | in   |
| RF Connectors (Input / Output) | SMA-F / SMA-F                                      | --   |
| Cooling                        | Baseplate Conduction - Optional Heatsink Available | --   |
| Mounting                       | 4-40 Thru Holes                                    | --   |
| Weight                         | 13                                                 | oz.  |
| Weight With Heatsink           | 35                                                 | oz.  |

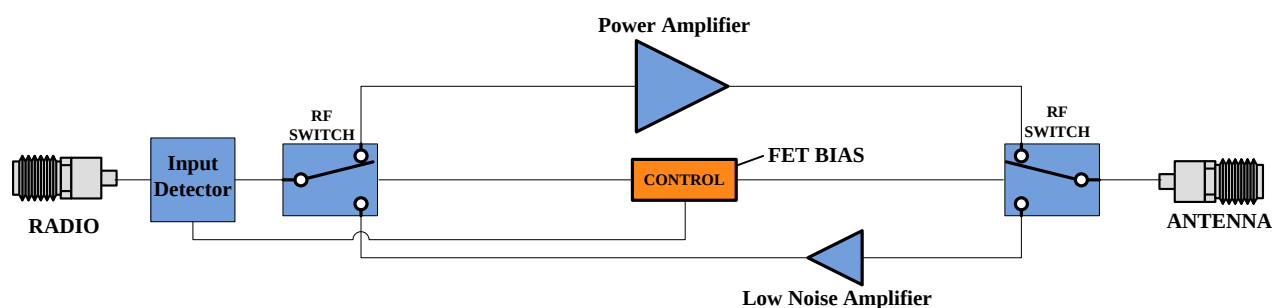
| ENVIRONMENTAL / PROTECTIONS           |                             |     |      |
|---------------------------------------|-----------------------------|-----|------|
| PARAMETER                             | MIN                         | MAX | UNIT |
| Operating Temperature (Housing Temp.) | -40                         | +85 | °C   |
| Humidity Range                        | 0-100                       |     | %    |
| Altitude                              | 0-30,000                    |     | ft.  |
| Shock / Vibration                     | MIL-STD-810 and equivalents |     | --   |
| Max RF Input                          | 17                          |     | dBm  |
| PA Baseplate Shutoff Temperature      | +90                         |     | °C   |

| INPUT/OUTPUT PINS         |            |                                                 |        |          |
|---------------------------|------------|-------------------------------------------------|--------|----------|
| AMPLIFIER CONNECTOR TYPE: |            | 15 PIN MICRO-D FEMALE                           |        |          |
| TRIAD CABLE PART NUMBER:  |            | CBL20                                           |        |          |
| PIN LABEL                 | NAME       | DESCRIPTION                                     | TYPE   | LEVEL    |
| 1-4                       | +VDC       | Supply Voltage - Range Specified in Datasheet   | Power  | --       |
| 5                         | Sig. GND   | Return for all Signal and CTRL Pins             | --     | --       |
| 6                         | Gain CTRL  | High=No Gain Change, Low=Gain Reduced by 3dB    | Input  | 3.3V TTL |
| 7                         | Status     | TTL Lo = Internal Fault                         | Output | 3.3V TTL |
| 8                         | TEMP       | Temp Monitor: Temp in DegC = (Vout - 0.5V) *100 | Output | Analog   |
| 9-12                      | GND        | +VDC Supply Return                              | Power  | --       |
| 13-14                     | N/C        | No Connection                                   | --     | --       |
| 15                        | TX/RX CTRL | Hi = TX, Lo = RX                                | Input  | 3.3V TTL |

| 802-11G (20 MHz BW) DATA RATE VS. OUTPUT POWER |           |               |               |
|------------------------------------------------|-----------|---------------|---------------|
| OFDM MODULATION                                | DATA RATE | POUT (W) MIN. | EVM           |
| 64QAM                                          | 54 Mbps   | 6             | $\leq -27$ dB |
| 16QAM                                          | 36 Mbps   | 11            | $\leq -21$ dB |
| QPSK                                           | 12 Mbps   | 13            | $\leq -15$ dB |
| BPSK                                           | 9 Mbps    | 20            | $\leq -7$ dB  |

See our [application note](#) that describes how this table was calculated and provides notes on in-system performance

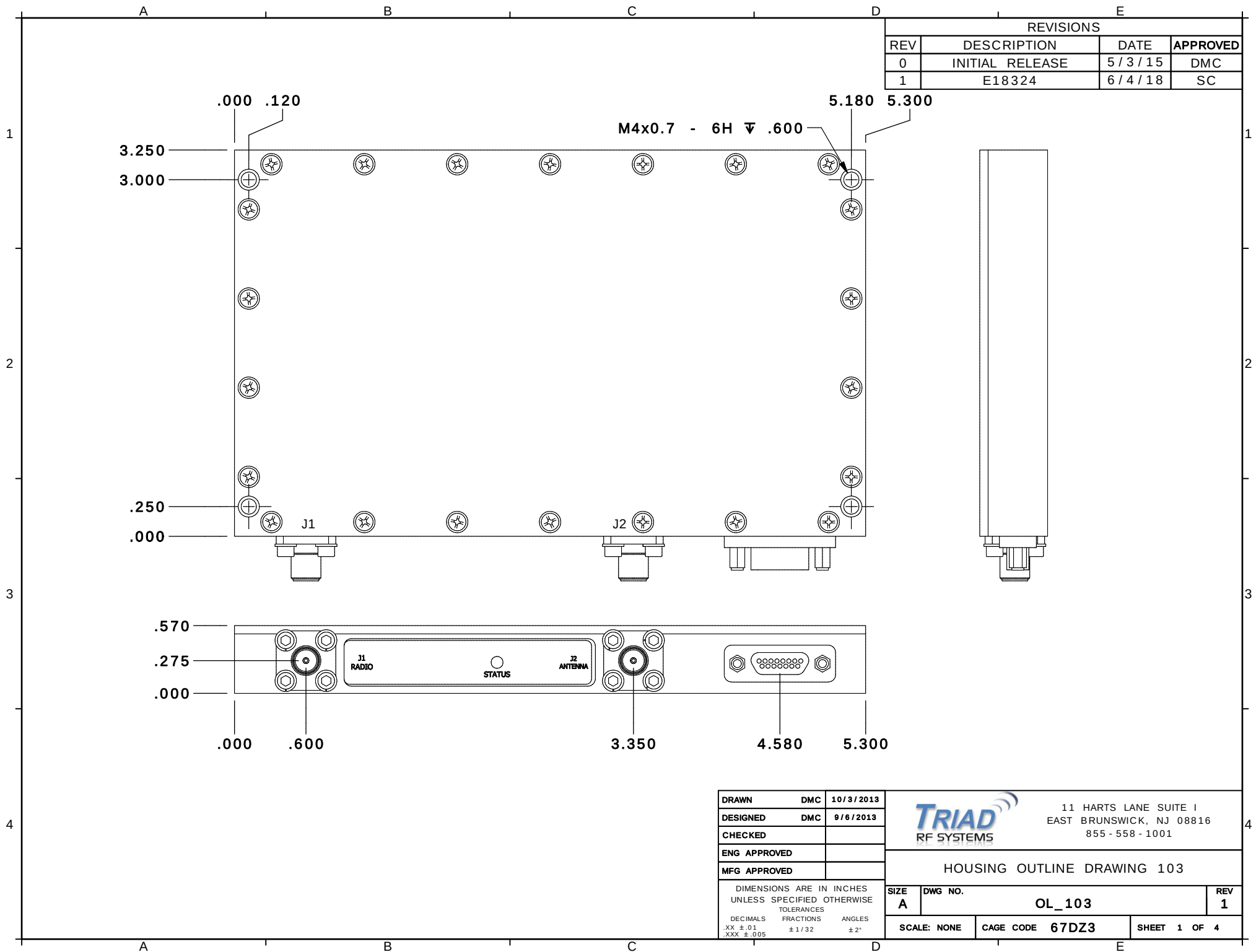
## High-Level Block Diagram



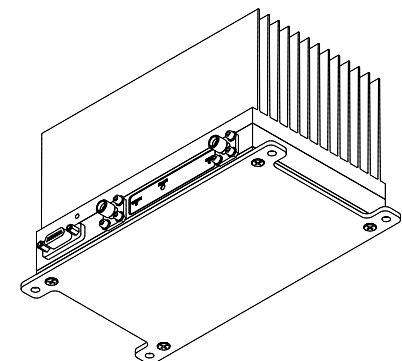
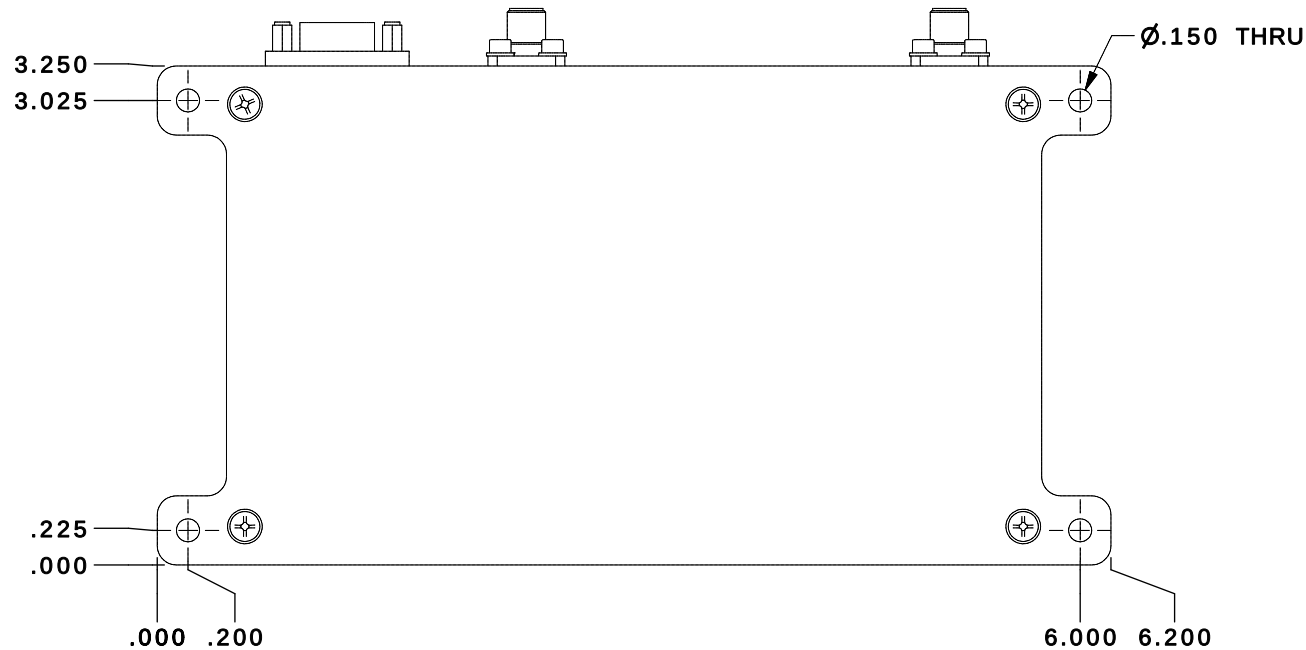
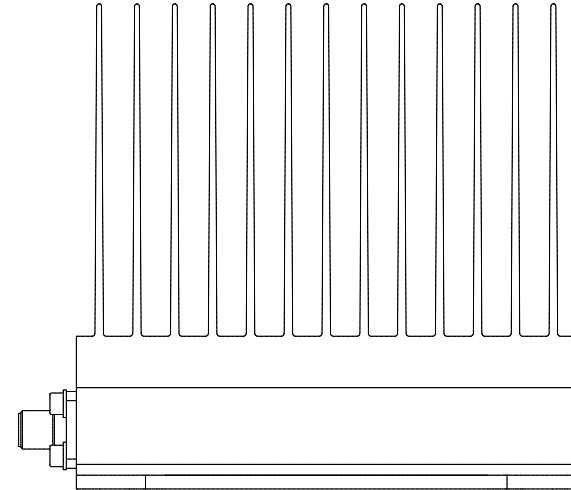
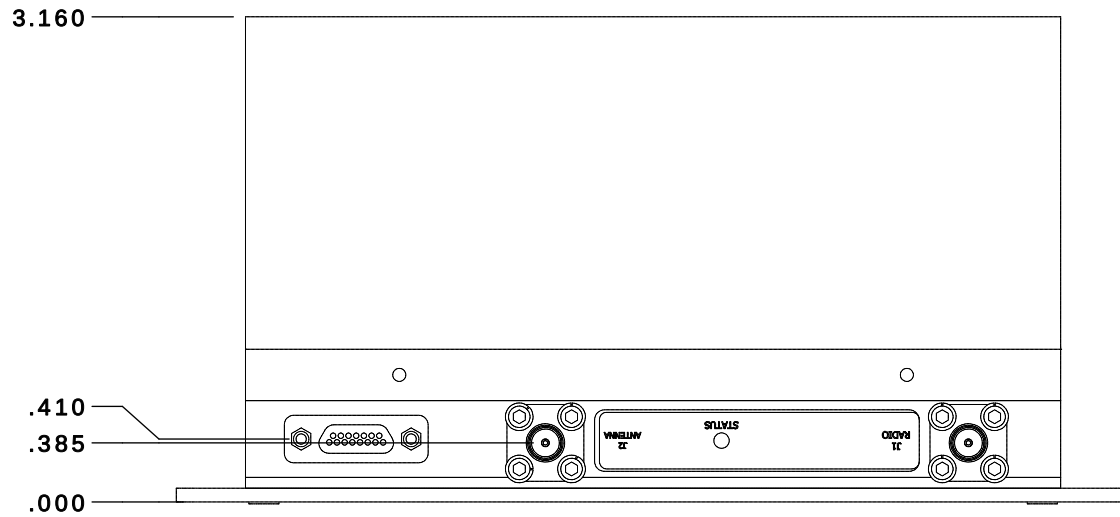
## Ordering Guide – Configuration Information

| Model Number    | Amplifier Option | Heat Sink Option |
|-----------------|------------------|------------------|
| <b>TTRMXXXX</b> | <b>- XXX</b>     | <b>- XXX</b>     |

| Amplifier Options |                                                                        | Heat Sink Options |                                       |
|-------------------|------------------------------------------------------------------------|-------------------|---------------------------------------|
| Suffix            | Description                                                            | Suffix            | Description                           |
| D01               | Automatic Tx/Rx Switching                                              | (none)            | No Heat Sink Included                 |
| D02               | Manual Tx/Rx Switching                                                 | HS                | Standard Heat Sink                    |
| DXX               | Custom Amplifier Configuration (issued by Triad upon customer request) | HSF               | Heat Sink with Integrated Cooling Fan |
|                   |                                                                        | HSX               | Custom Heat Sink Configuration        |

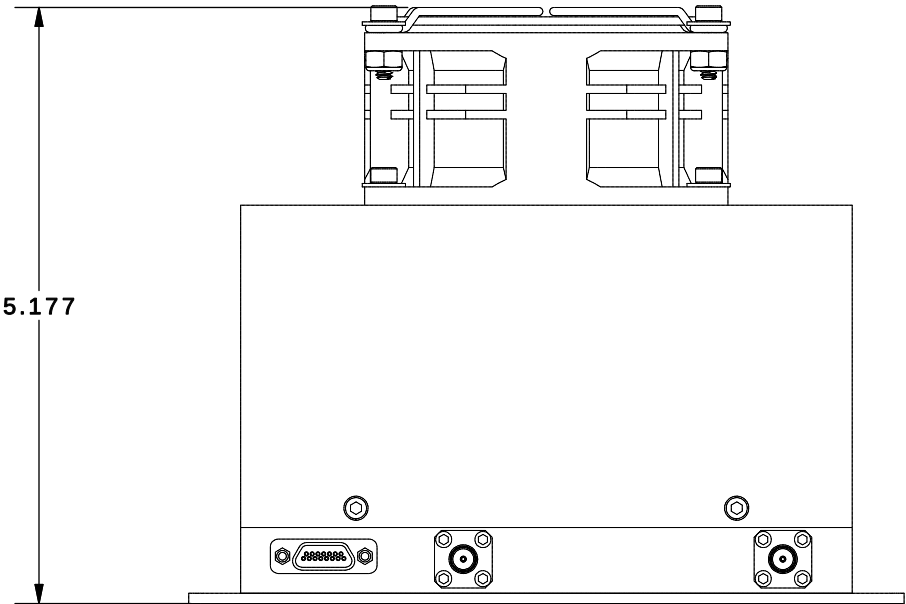
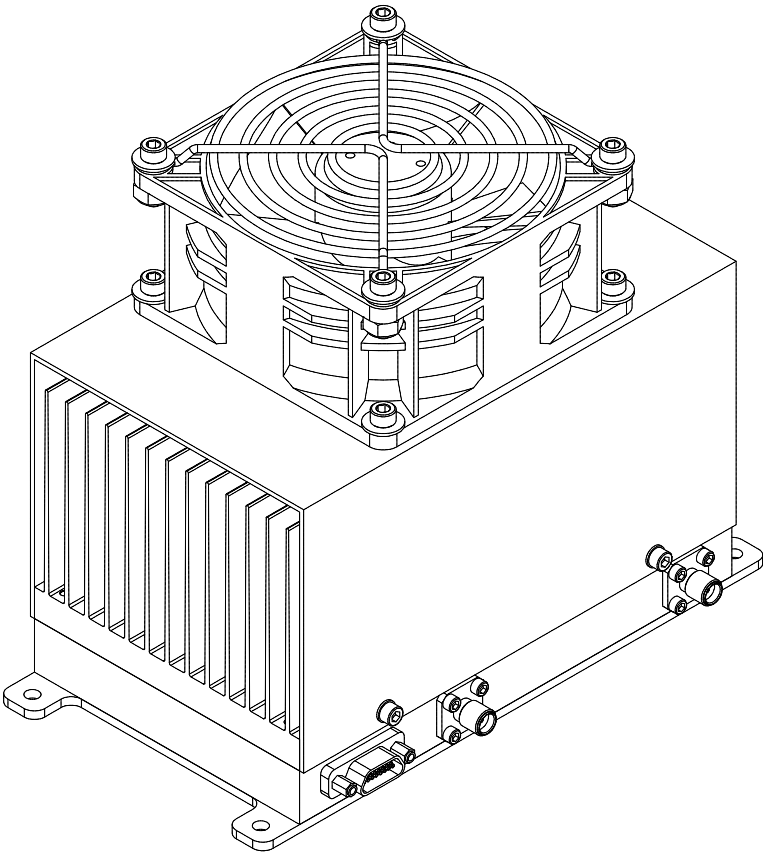


# HEATSINK



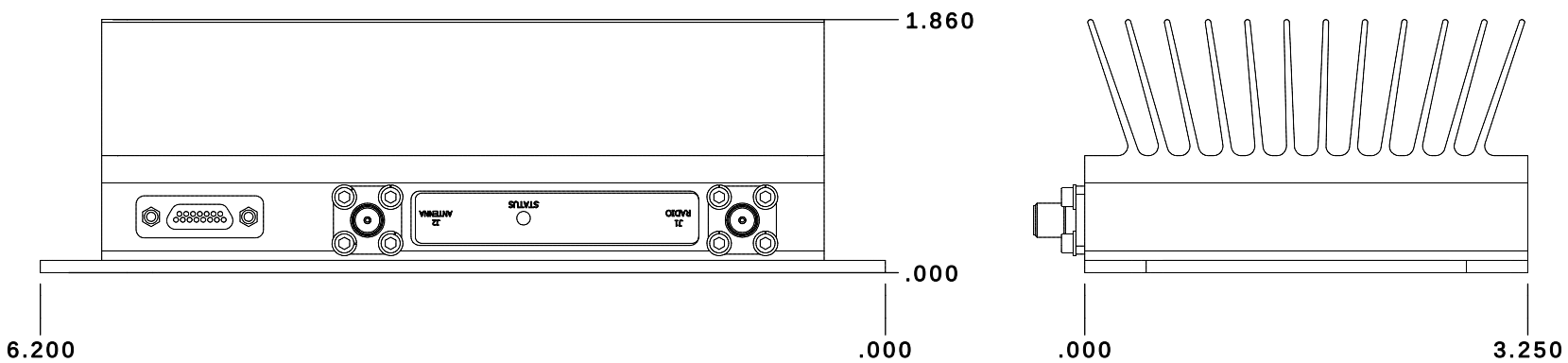
|              |     |           |                             |                 |              |
|--------------|-----|-----------|-----------------------------|-----------------|--------------|
| DRAWN        | DMC | 10/3/2013 | HOUSING OUTLINE DRAWING 103 |                 |              |
| DESIGNED     | DMC | 9/6/2013  |                             |                 |              |
| CHECKED      |     |           | SIZE                        | DWG NO.         | REV          |
| ENG APPROVED |     |           | A                           | OL_103          | 1            |
| MFG APPROVED |     |           | SCALE: NONE                 | CAGE CODE 67DZ3 | SHEET 2 OF 4 |

HEATSINK AND FAN



|              |     |           |                             |                 |              |
|--------------|-----|-----------|-----------------------------|-----------------|--------------|
| DRAWN        | DMC | 10/3/2013 | HOUSING OUTLINE DRAWING 103 |                 |              |
| DESIGNED     | DMC | 6/11/2015 |                             |                 |              |
| CHECKED      |     |           | SIZE                        | DWG NO.         | REV          |
| ENG APPROVED |     |           | A                           | OL_103          | 1            |
| MFG APPROVED |     |           | SCALE: NONE                 | CAGE CODE 67DZ3 | SHEET 3 OF 4 |

LOW PROFILE HEATSINK OPTION  
CONTACT TRIAD FOR SAFE OPERATING  
CONDITIONS REQUIRED FOR USE OF LOWER  
HEIGHT HEATSINK



|              |     |           |                             |                 |              |  |
|--------------|-----|-----------|-----------------------------|-----------------|--------------|--|
| DRAWN        | DMC | 10/3/2013 | HOUSING OUTLINE DRAWING 103 |                 |              |  |
| DESIGNED     | DMC | 9/6/2013  |                             |                 |              |  |
| CHECKED      |     |           | SIZE                        | DWG NO.         | REV          |  |
| ENG APPROVED |     |           | A                           | OL_103          | 1            |  |
| MFG APPROVED |     |           | SCALE: NONE                 | CAGE CODE 67DZ3 | SHEET 4 OF 4 |  |