Bi-Directional Amplifiers

TTRM4505

5300-5900 MHz 25 W Bi-Directional Amplifier

Description

This class AB GaN 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

Over / Under / Reverse Voltage Protection
Over-Temperature Protection
Optional Heatsink
Tx / Rx Status Monitor
Forward Power Measurement
Temp. Monitor Output
Manual or Automatic Tx/Rx Switching Available

Specifications subject to change without notice. Typical performance at +12VDC at 25°C in a 50Ω system

Tx Specifications				
Parameter	**Min**	**Typ.**	**Max**	**Unit**
Operating Frequency	5300		5900	MHz
PSat Power Output		+44.0		dBm
Gain		25.0		dB
Gain Flatness		1.0		± dB
Input Return Loss	-15			dB
Operating Voltage	+10	+12	+14	VDC
Current Draw		2.2	2.4	A
Tx / Rx Switching Time		1.0	2.0	uS

Rx Specifications				
Parameter	**Min**	**Typ.**	**Max**	**Unit**
P1dB Power Output		+5.0		dBm
Gain		10.0		dB
Gain Flatness			1.0	± dB
Noise Figure		2.5		dB
OIP3		+15.0		dBm
Input Return Loss	-10			dB
Current Draw		100.0		mA

Triad RF Systems Inc. | 11 Harts Ln, Suite i, East Brunswick, NJ 08816
Tel: 1-(855) 558-1001 x1 | sales@triadrf.com

rev 07/24/19

TTRM4505

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Mechanical		
Parameter	**Value**	**Unit**
Dimensions (L x W x H)	5.3 x 3.25 x 0.6	in
RF Connectors (Input / Output)	SMA-F / SMA-F	--
DC / Control Connector	21 Pin Micro-D	--
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	0-95		%
Altitude	0-30,000		ft.
Shock / Vibration	MIL-STD-810 and equivalents		--
Max RF Input	17		dBm
PA Baseplate Shutoff Temperature	+85		°C

Input/Output Pins				
Amplifier Connector Type:		**21 Pin Micro-D Female**		
Triad Cable Part Number:		**CBL45**		
Pin Label	**Name**	**Description**	**Type**	**Level**
1-3,12-13	+VDC	Supply Voltage - Range Specified in Datasheet	Power	--
4	FWD DET	Tx Amp RMS Power Detector	Output	Analog
5	TEMP	Temp Monitor: Temp in DegC = (Vout - 0.5V) * 100	Output	Analog
6	RAD DET	Radio Input RMS Power Detector		
9-11,20-21	GND	+VDC Supply Return		
7	Status	BDA Status - TTL High = Normal Operation, TTL Low = Error Condition	Output	5V TTL
8	Tx/Rx	TTL High or No Connection = Tx, TTL Low = Rx	Input	3.3V TTL
19	SGND	Signal Ground		
14-18	Reserved	Reserved for future use	--	--

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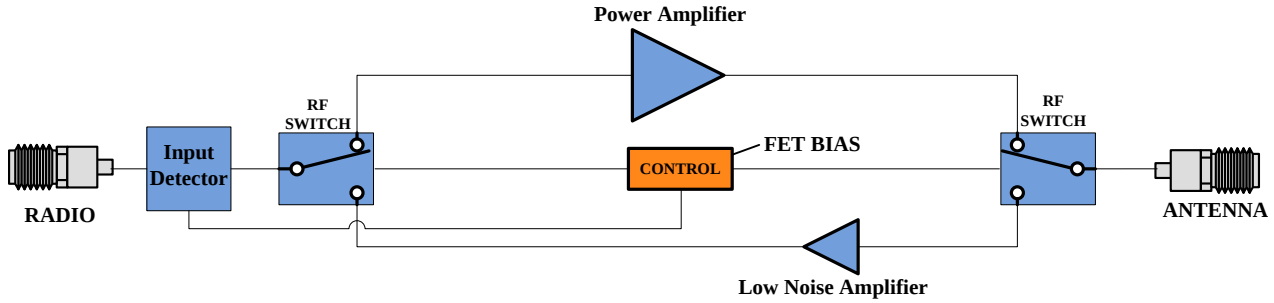
802-11g (20 MHz BW) Data Rate vs. Output Power			
OFDM Modulation	Data Rate	POut (W) Min.	EVM
64QAM	54 Mbps	5	≤ -27 dB
16QAM	36 Mbps	10	≤ -21 dB
QPSK	12 Mbps	16	≤ -15 dB
BPSK	9 Mbps	20	≤ -7 dB

See our application note that describes how this table was calculated and provides notes on in-system performance

High-Level Block Diagram



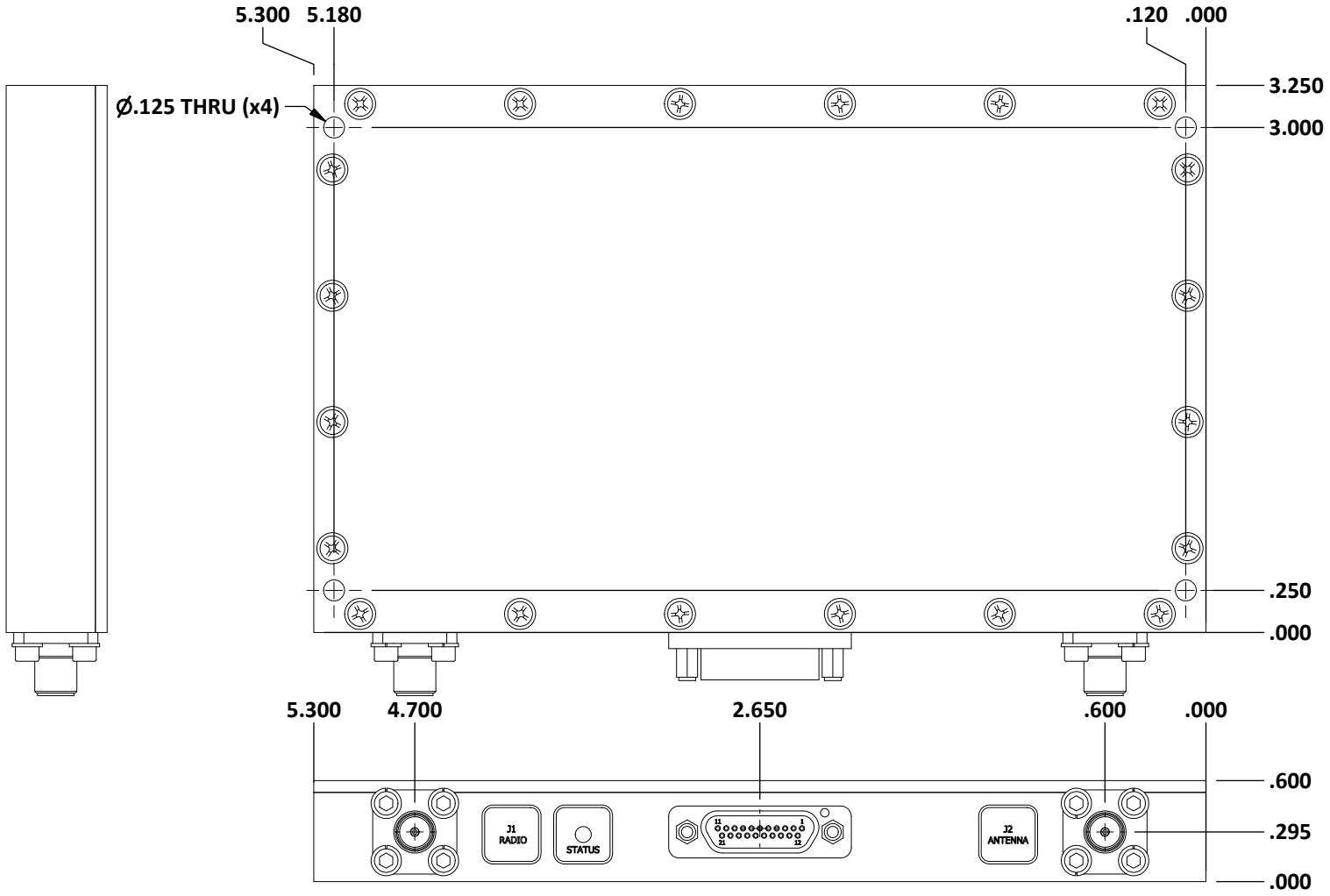
Ordering Guide – Configuration Information		
Model Number	Amplifier Option	Heat Sink Option
TTRMXXXX - XXX - XXX		

Amplifier Options	
Suffix	Description
D01	Automatic Tx/Rx Switching
D02	Manual Tx/Rx Switching
DXX	Custom Amplifier Configuration (issued by Triad upon customer request)

Heat Sink Options	
Suffix	Description
(none)	No Heat Sink Included
HS	Standard Heat Sink
HSF	Heat Sink with Integrated Cooling Fan
HSX	Custom Heat Sink Configuration

MATERIAL: ALLOY 6061	FINISH: MIL-DTL-5541 TYPE 2 CLASS 3

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
0	INITIAL RELEASE	01/31/18	SC
1	E18365	08/13/18	SC
2	E20567	02/18/20	AK



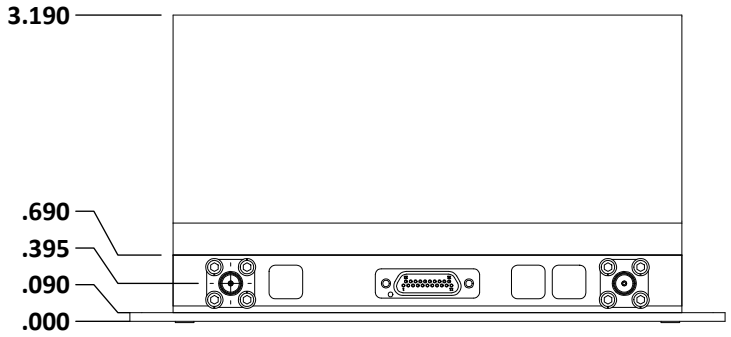
DRAWN	Anthony	2/18/2020
DESIGNED	DMC	5/11/2017
CHECKED		
ENG APPROVED		11/27/2019
MFG APPROVED		11/27/2019

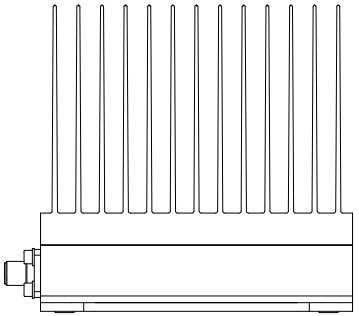
DIMENSIONS ARE IN INCHES
UNLESS SPECIFIED OTHERWISE
TOLERANCES
DECIMALS .XX ±.01 .XXX ±.005
FRACTIONS ±1/32
ANGLES ±2°

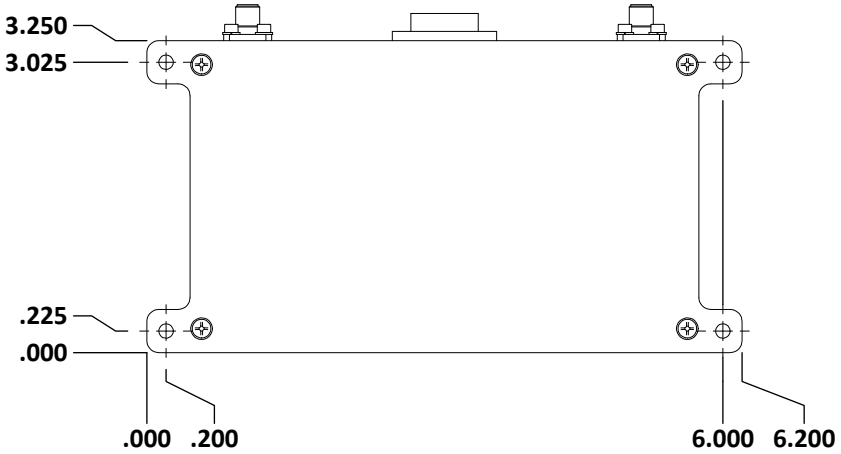
TRIAD RF SYSTEMS
11 HARTS LANE SUITE I
EAST BRUNSWICK, NJ 08816
855-558-1001

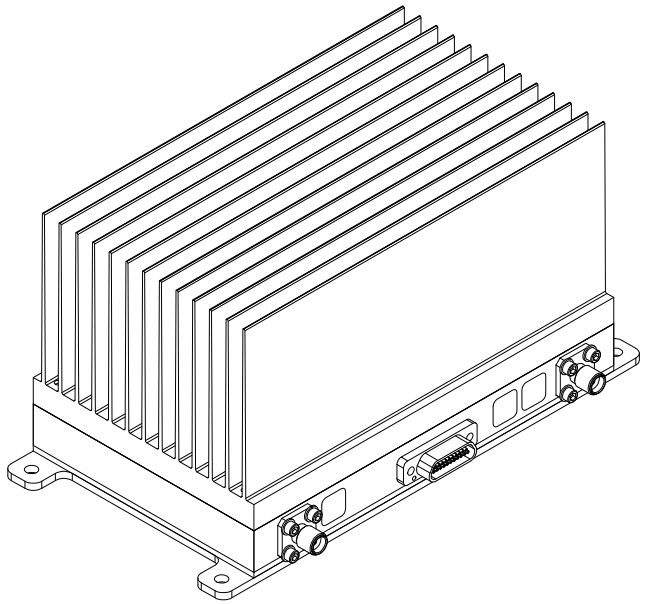
SIZE	DWG NO.	REV
A	OL_170	
SCALE: NONE	CAGE CODE 67DZ3	SHEET 1 OF 5

HEATSINK









DRAWN	Anthony	2/18/2020			
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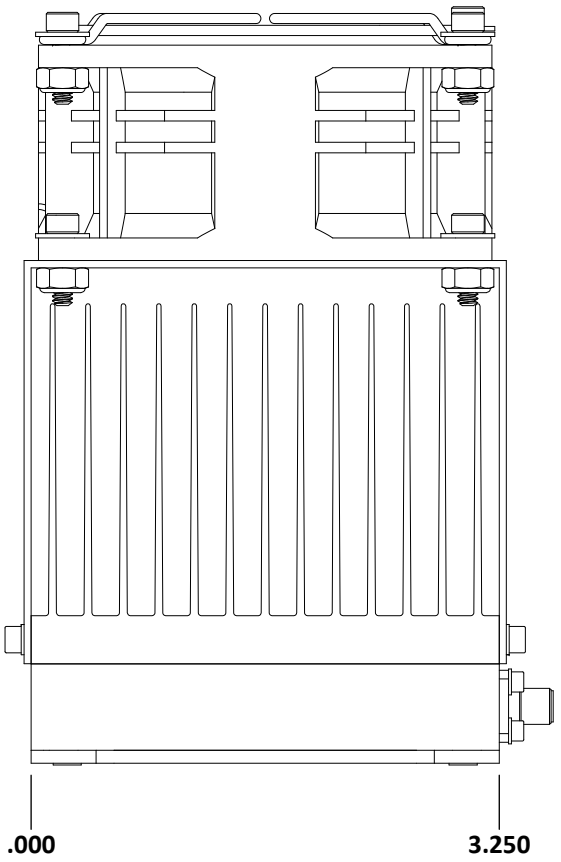
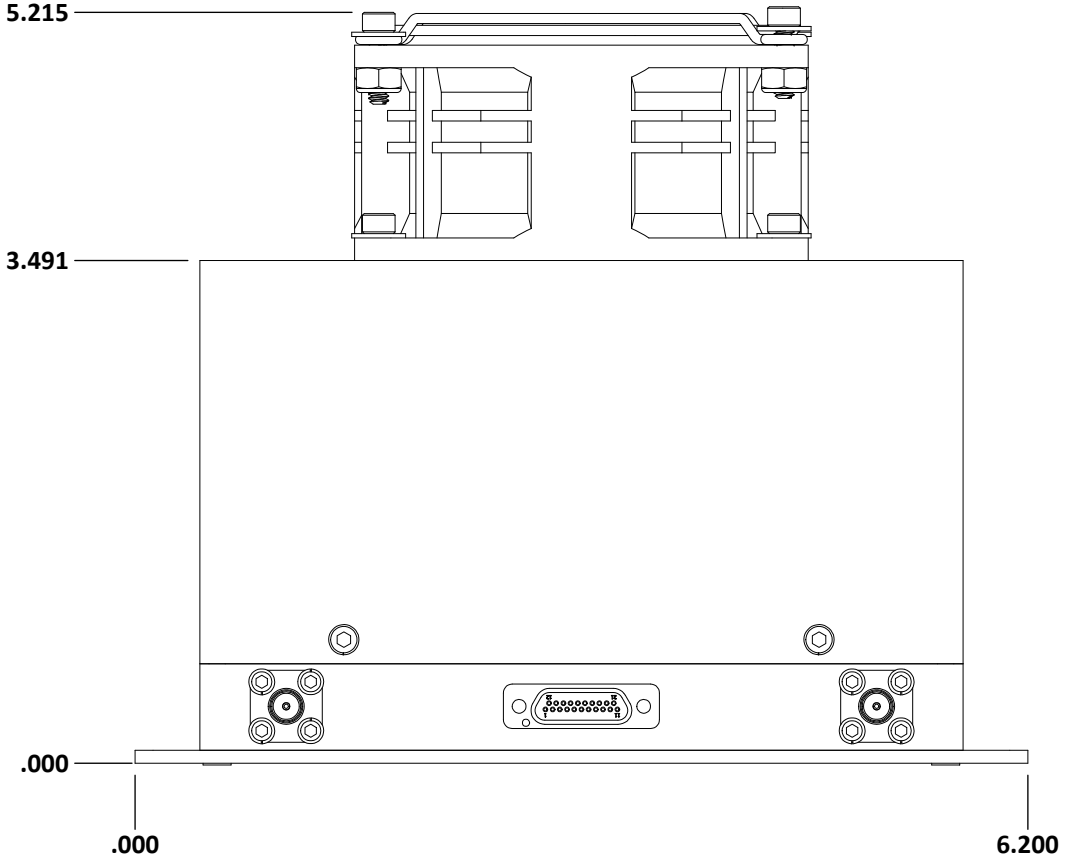
CHECKED			SIZE A	DWG NO. OL_170	REV
ENG APPROVED		11/27/2019			
MFG APPROVED		11/27/2019	SCALE: NONE	CAGE CODE 67DZ3	SHEET 2 OF 5





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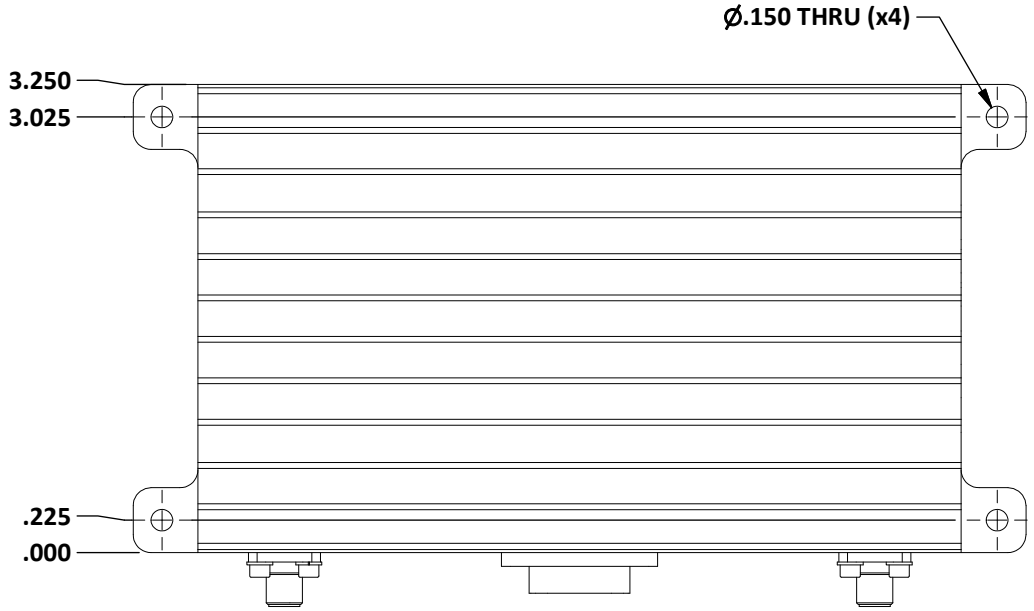
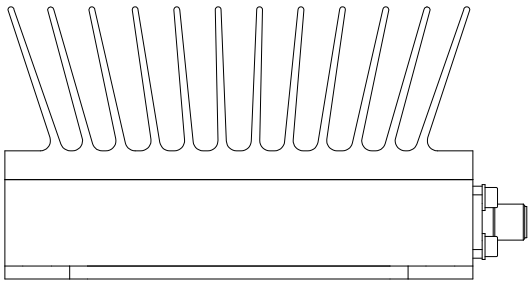
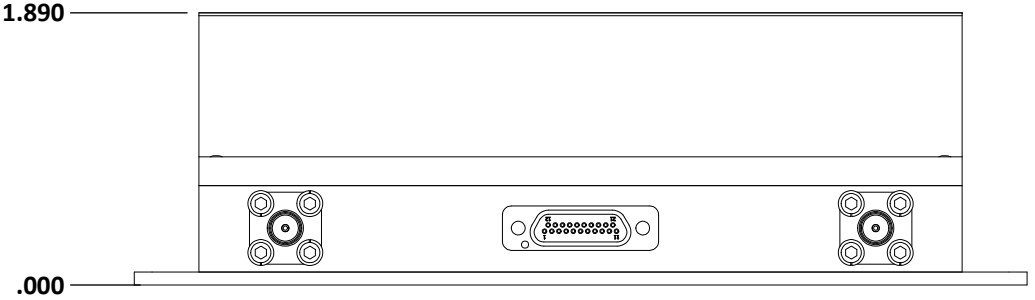
LOW PROFILE OPTION
CONFIRM USABILITY WITH TRIAD BEFORE ORDERING







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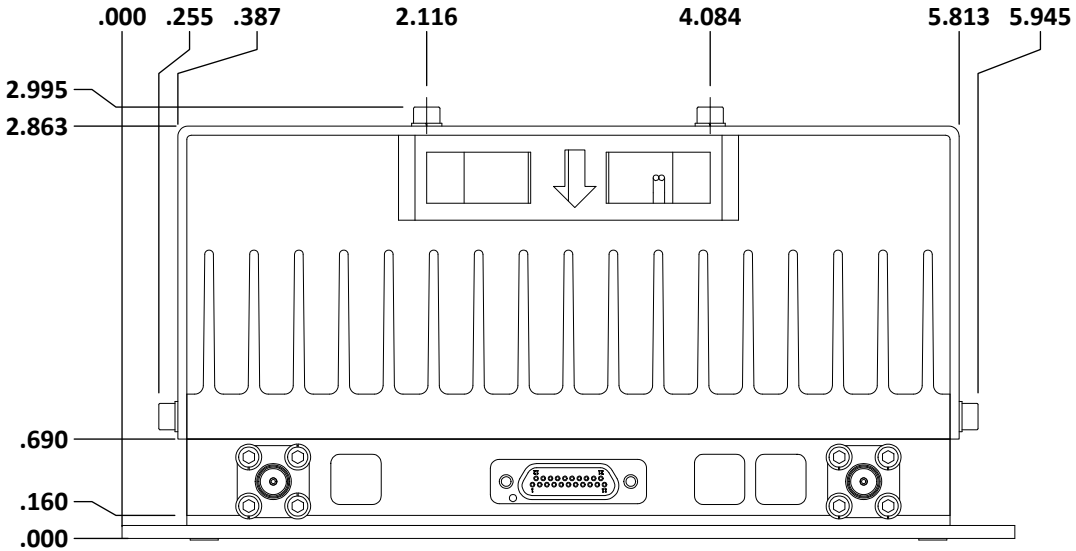
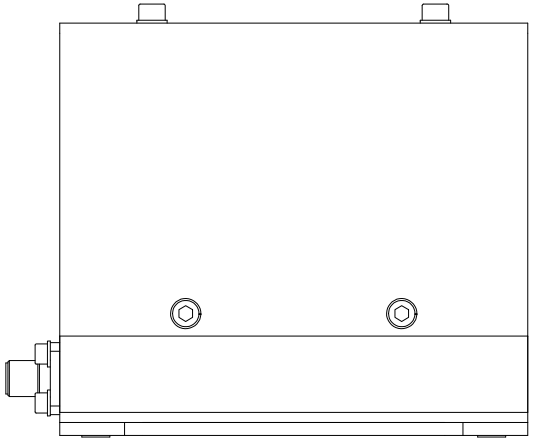
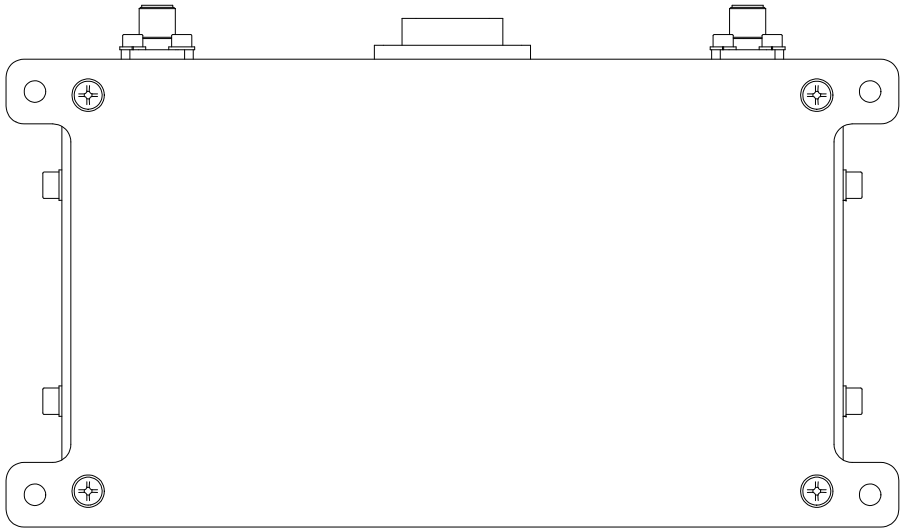
SIZE	DWG NO.	REV
A	OL_170	

SCALE: NONE | CAGE CODE 67DZ3 | SHEET 4 OF 5

LOW PROFILE HEATSINK FAN







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