CTX09660-1
1.175-1.375GHz/4.0kW L-Band Solid State HPA

FEATURES

Innovative HPA Architecture
GaN Solid State Power Technology
Frequency Range: 1.175-1.375GHz L-Band
High Peak Power: 4.0kW Min
Outstanding Power Density: 42W/in^3
Long Pulse Operation: 2mS and 6%
Excellent Power Efficiency: 50% Typical
Output Survivability: ∞ VSWR
RF Interface: Blind Mate TNC/TNC
DC & I/O Interface: Blind Mate Micro-D
I/O Interface Protocol: RS-485
Vertical Thermal Interface
Operation Modes: Online/Standby/Offline
Excellent Maintainability: Hot-Swappable

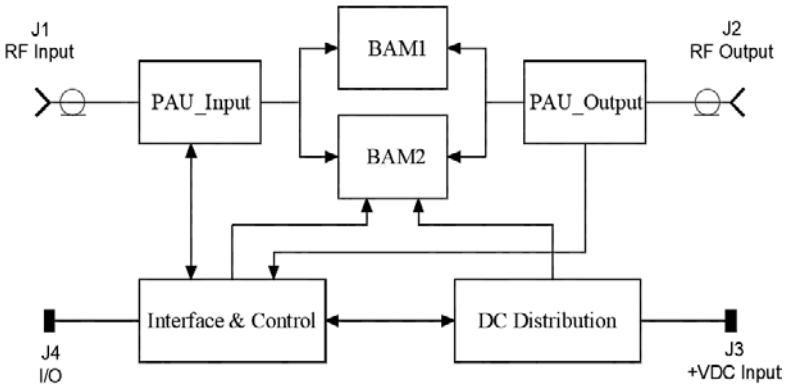
DESCRIPTIONS

CTX09660-1 is an L-Band Solid State HPA utilizing Daico's patented "T-Plate" High Power Amplifier architecture, which enables both high power density and high reliability. CTX09660-1 is a custom designed high power amplifier that shall be capable of delivering 4.0kW peak power at 1.175-1.375GHz frequency range for a ground base Radar transmitter application. This uniquely configured HPA supports 24/7 mission critical operation utilized in a higher power building block and demonstrates unprecedented availability, reliability, and maintainability.

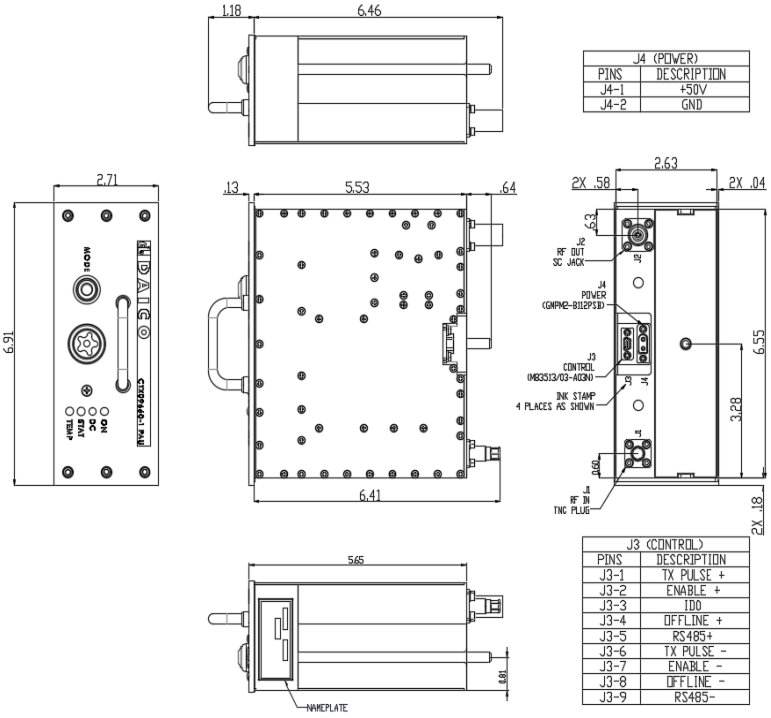
The RF chain of 9660-1 Power Amplifier Unit (PAU) consists of PAU_Input, Basic Amplifier Modules (BAMs), and PAU_Out modules. The GaN BAMs are the core modules, which shall be capable of amplifying the input to 2.4kW level each with +50VDC supply and an "Enable" bias. PAU_Input includes an input directional coupler to sample the input RF signal a switch to control the input, a gain/phase adjustor to align RF amplitude and phase. PAU_Out includes a hybrid combiner (COM) to sum outputs from the BAMs, an isolator (ISO) to provide ultimate protection to the PAU, and a directional coupler to send forward and reflected RF samplings to a PAU_Det which shall interface with the PAU_Ctrl module. Nominal RF input power is +40dBm (10W) at J1, and its RF output power shall be >+66.0dBm (4.0kW) peak power at J2.

APPLICATIONS: L-Band Pulse High Power Amplifier

FUNCTIONAL BLOCK DIAGRAM



OUTLINE DRAWINGS



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Product Specification

Parameter		Value			Unit	Comments
		Min	Typical	Max		
Electrical						
Operating Frequency		1.175		1.375	GHz	Upper and Lower -1dB Point
RF Input Power, peak			40.0 (10W)	41.0	dBm	Nominal Output Power
Linear Dynamic Range		10			dB	>26.5dB gain at 27dBm
RF Output Power, peak		66.00 (4.0kW)	66.23 (4.2kW)	67.35	dBm	100µS pulse width
				67.0		2mS pulse width
RF Output Power, avg.		240	252	300	W	2mS 6.0% duty factor
Harmonic Output	2nd	30			dBc	
	3rd	40				
	Others	40				
Spurious Output		60			dBc	962-1212MHz
Input/Output VSWR				1.5:1		14dB return loss minimum
Output VSWR Survival			∞ :1			
Pulse Width		5		2000	µS	Protection: >2200±10µS
Pulse Duty Factor			6.0%	7.0%	%	Protection: >(7.2 ± 0.2)%
Rise/Fall Time		20			nS	10% to 90%/90% to 10% power points
Pulse Droop			0.5	0.8	dB	10% to 90% of 2mS pulse
Pulse Phase Variation				TBD	degree	10% to 90% of 2mS pulse
Amplitude Match			±0.3	±0.4	dB	Unit-to-Unit
Phase Match			±4	±6	degree	Unit-to-Unit
Power Efficiency		48	50		%	
Primary Power (+50V) maximum Current			10.0	12.0	A	2mS 6% Pulse: 600W maximum
Physical and Thermal						
Outline Dimensions		5.65” x 6.55” x 2.63”			Inches	Nominal L x W x H
Weight				6	Lbs	
Connectors	RF Input, J1	TNC plug				Blind Mate/Smooth Bore
	RF Output, J2	TNC PLUG				Blind Mate/Smooth Bore
	I/O, J3	Micro-D, 9 Pins, See Outline				PN: M83513/03-C03N
	DC Input, J4	Micro-D, 2 Pins, See Outline				PN: GMPM2-D112PSB
Heat Dissipation Max		237.6	245.7	276.2	W	At 4.5% duty factor
Heat Interface Area		1.63” x 6.75”				See Outline Drawing

Typical Performance: Not Available