

FEATURES

- Innovative (7+1)ART™ Architecture
- GaN Solid State Technology
- Frequency Range: 2.7 – 2.9GHz S-Band
- Nominal Output Peak Power: 12kW Min
- Graceful Operation: 10.4kW Min
- Power Gain: 71 dB Nominal at 0dBm Input
- Pulse Operation: 100uS and 10% Max
- Output Survivability: ∞ VSWR
- RF Output Interface: WR284 CPRF Waveguide
- Transmitter Efficiency: 30% Min
- Paralleling Redundancy Power Supply
- Forced Air Cooling Scheme
- Transmitter Availability: 99.99% Min
- Transmitter MTBCF: 80kHrs Min
- Transmitter Maintainability: Hot-Swap LRUs
- Compact DIMs: 20U Standard 19" EIA

DESCRIPTIONS

CTX09530 S-Band Solid State Transmitter (SSTx) utilizing Daico proprietary (m+n)ART Transmitter Architecture, where m=7 and n=1. CTX09530 is a custom designed high power transmitter that shall be capable of delivering 12kW peak power at 2.7-2.9GHz frequency range for ground-based Surveillance Radar application. This uniquely configured (m+n)ART transmitter supports 24/7 mission critical operation without interruption and demonstrates unprecedented availability, reliability, and maintainability.

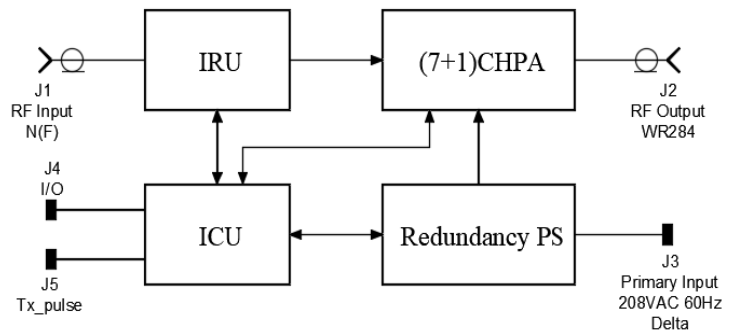
CTX09530 is a reliable high power entity consisting of a total of eight (8) identical Power Amplifier Units (PAUs), 7 out of the 8 PAUs are "online" and 1 PAU in "Standby" as a "redundant" or in-reserve unit. The PAU is designed utilizing Daico proprietary SSPA architecture and embedded with advanced GaN solid state technology. A total of four (4) power supply units (PSU) are in a parallel redundancy scheme to provide the needed DC voltages for SSTx system. This SSTx architecture features automatic failover, graceful power degradation, and hot-swap capabilities. The SSTx's major local replaceable units (LRUs) sub-assemblies include the PAUs, PSUs, the Divider-Switching Combiner Unit (DSCU), and Input Redundancy Units (IRU).



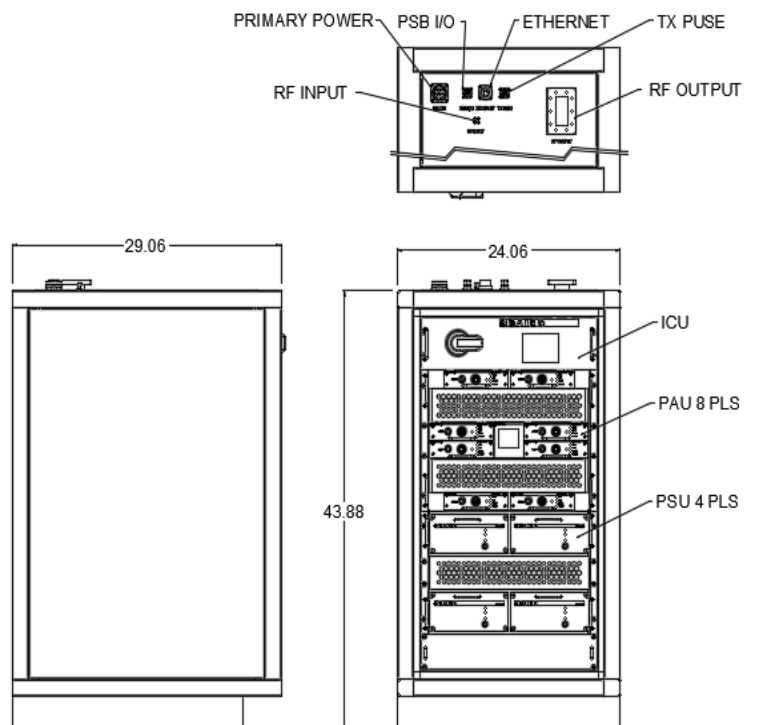
Design Proposal

APPLICATIONS: S-Band Radar Transmitter

FUNCTIONAL BLOCK DIAGRAM



OUTLINE DRAWINGS



CTX09530 2.7-2.9GHz/12kW Solid State Transmitter

Product Specification

	Parameter Description	Value	Unit	Note
SSTx Architecture	Transmitter Topology	(m+n)ART™	-	(7+1)ART
	PAU Redundancy	14.3%	-	PAU: Power Amp Unit
	DAU Redundancy	100%	-	DAU: Driver Amp Unit
	Overall PSU Redundancy	33.3%	-	PSU: Power Supply Unit
	Amplifier Technology	SSPA	-	SSPA: GaN Solid State Power Amplifier
Transmitter Electrical Characteristics	Operating Frequency	2.7 – 2.9	GHz	S-Band
	Output Peak Power	12	KW	Min; 10.4kW Min for (6+2) Graceful Operation
	RF Input Power	0	dBm	Nominal
	RF Input VSWR/Output VSWR	1.3:1/1.3:1		Max
	Overall Transmitter Efficiency	30%	-	Min; ($P_{out\ avg.} / P_{in\ AC}$)
	Pulse Width	1-100	µs	Min-Max;
	Pulse Duty	10%	-	Max; Repetition Rate: 500-1150/Sec
	Pulse Amplitude Droop	0.5	dB	Max
	Pulse Phase Droop	40	degree	Max
	Pulse to Pulse Amplitude Stability	0.005	dBrms	Max
	Pulse to Pulse Phase Stability	0.1	deg.rms	Max
	Image Rejection	70	dB	Min
	Output Spurious Components	60	dBc	Min
	Output Harmonic Components	2 nd : 40 Others: 60	dBc dBc	Min Min
Interface /Mechanical	RF Inputs	TNC	Female	Interface to SPS System
	RF Output	WR284 CPRF	Waveguide	
	Digital I/O	RS485	-	25-pin 38999 to SPS (signal processing Sys.)
	AC Input	208V, 3Φ, 60Hz	AC	Delta Configuration
	Overall 19" Rack Dimensions	24"x30"x41"	Inch	W x D x H, Nominal
	Transmitter Weight	800	lb	Nominal
	Cooling Method	Forced Air	-	
Environmental	Operating Ambient Temperature	0 - 50	°C	
	Relative Humidity	65%		Max, Non-condensing
	Surge Immunity	EN61000-4-5	-	
	Conducted RF Emissions	EN55022	-	Class B
	Radiated RF Emissions	EN55022	-	Class B
	Conducted RF Immunity	EN61000-4-6	-	
	Radiated RF Immunity	EN61000-4-3	-	
	Safety Standards	EN60950-1	-	
Reliability	Built in Test (BIT)	90% Faults/LRU	-	Details in 900Axxxx IDD
	Protections	Over Pulse Width, Over Duty, VSWR	-	Others Defined in 900Axxxx IDD
	MTBCF	80K	Hour	Min, Ground Base
	MTTR	30	Minute	Max
	Transmitter Availability	99.99%	-	
	Preventive Maintenance	1	6 months	Max, Unman Operational

Typical Performance

Not Available