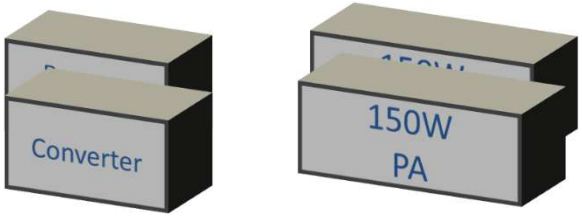
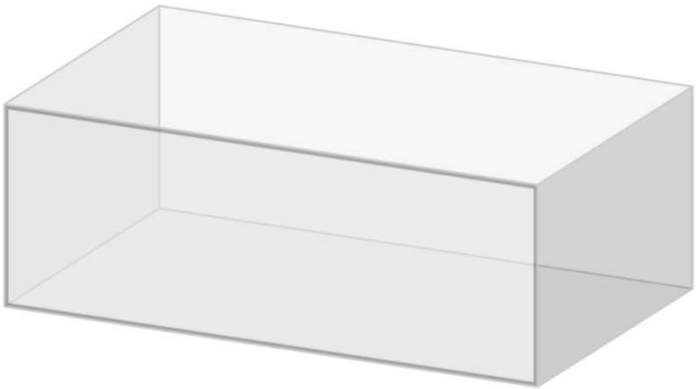
Genesis Construction - Modularity



- Modular design approach
  - Base PA design
    - Combined to achieve higher output power amplifiers
  - Common Preamp/Driver design
  - Common Converter design
    - Base IF Synthesizer assembly
    - Drop-in frequency dependent filters/mixer section
    - Common enclosure, digital hardware, firmware (software defined LO generation)
  - Common Master Controller with a single firmware
    - Software defined configuration
    - All functions are delegated to sub-component level
- Benefits
  - Technicians become familiar with a single design, speeding up tuning
  - Subcomponents can be mass produced and used in multiple products
  - Higher power can be achieved by combining
  - Less overhead from procurement, operations



Genesis 300W SSPA/B

Genesis Series – Product offering

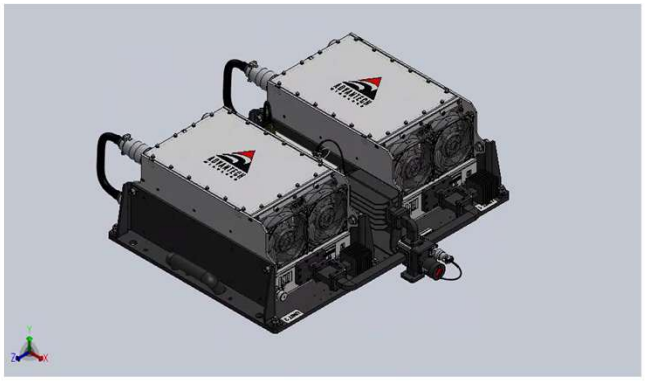
- Genesis (Small Box)
  - Ku-band GaN (Standard & Extended)
    - Power Class: 150W, 200W, 250W, 300W
  - C-band GaN (Standard & Extended)
    - Power Class: 200W, 250W, 300W, 400W
  - X-band GaN (Standard)
    - Power Class: 250W
  - Standard features
    - Removable Power Supplies
    - Removable Fan Trays
    - Reflected RF Power monitoring
    - Int/Ext reference Auto Sense (SSPB)
  - Options
    - SSPB
    - Input Sample Port
    - RX Rejection Filter
    - RCP Controller

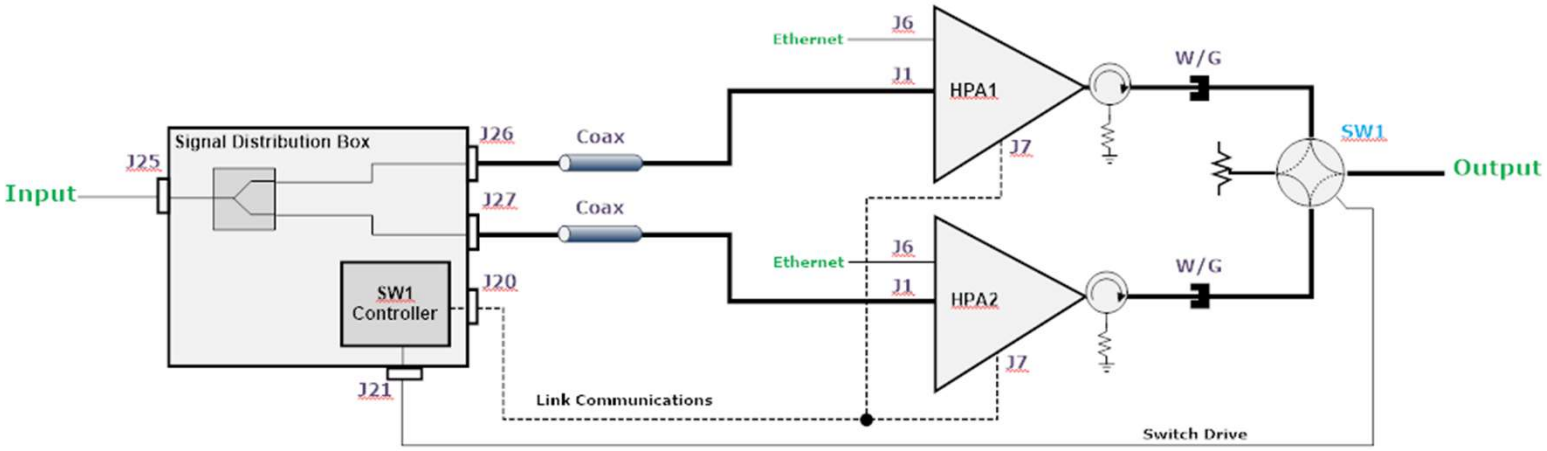
Genesis Series – Product offering

- Genesis-HP (Larger Box)
  - Ku-band GaN (Standard & Extended)
    - Power Class: 400W, 500W
  - C-band GaN (Standard & Extended)
    - Power Class: 600W, 800W
  - C-band GaAs (Standard & Extended)
    - Power Class: 500W
  - LS-band GaN
    - Power Class: 700W
  - Standard features
    - Removable Fan Trays
    - Int/Ext reference Auto Sense (SSPB)
  - Options
    - SSPB
    - Input Sample Port
    - RX Rejection Filter
    - RCP Controller

Genesis - Redundancy Options

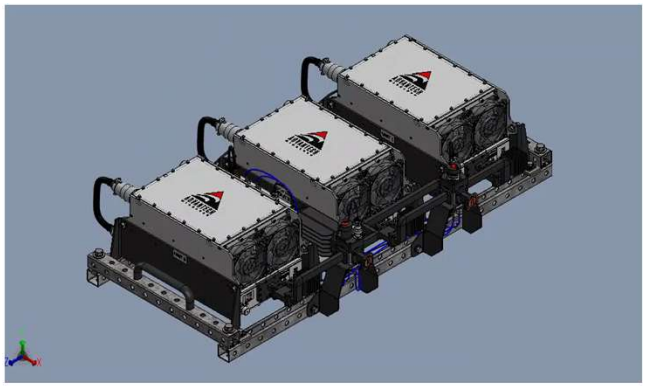
- 1:1 Redundancy
  - Genesis Frame options
    - A-Frame / Stand Mount
  - POC Controlled M&C
  - RCP optional w/ limited functionality
  - Antenna/Load Switch Option

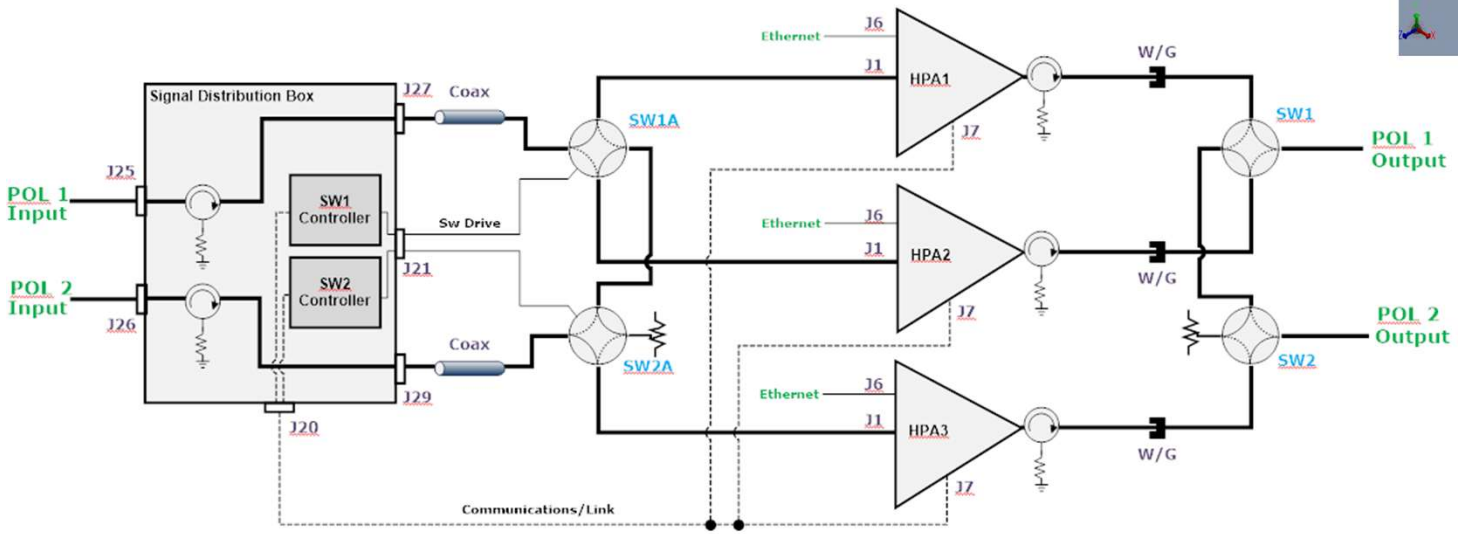




Genesis - Redundancy Options

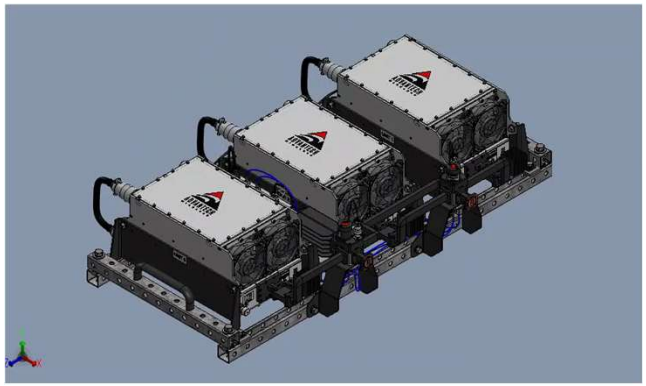
- Dual Polarity 1:2 Redundancy
  - POC Controlled
  - RCP optional w/ limited functionality

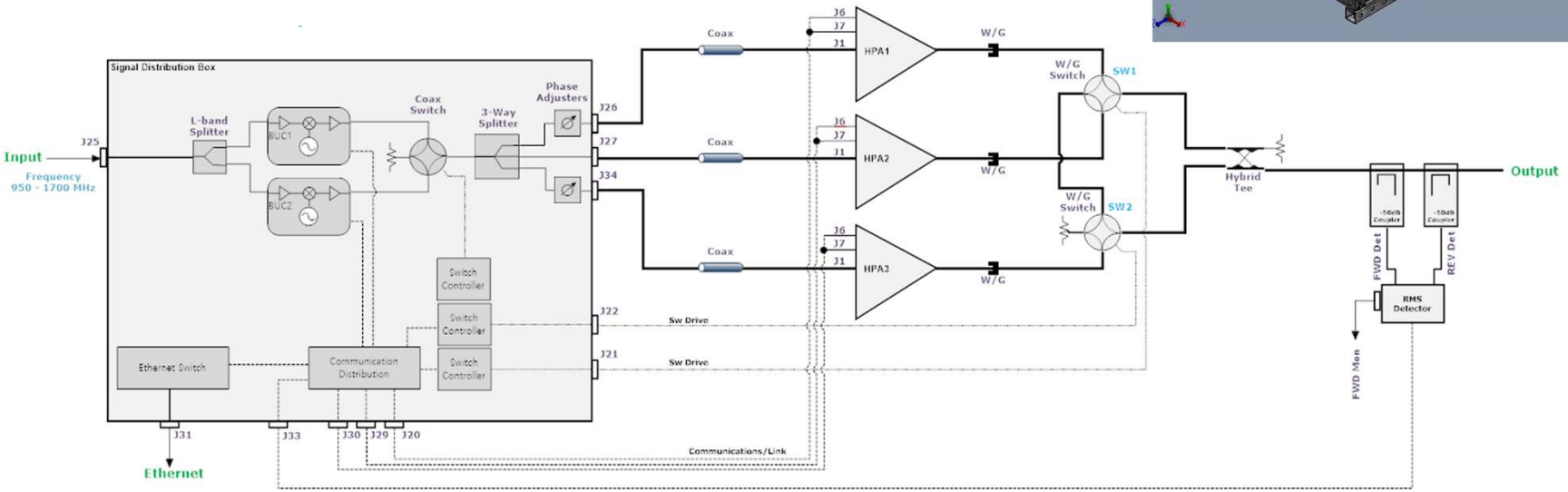




Genesis - Redundancy Options

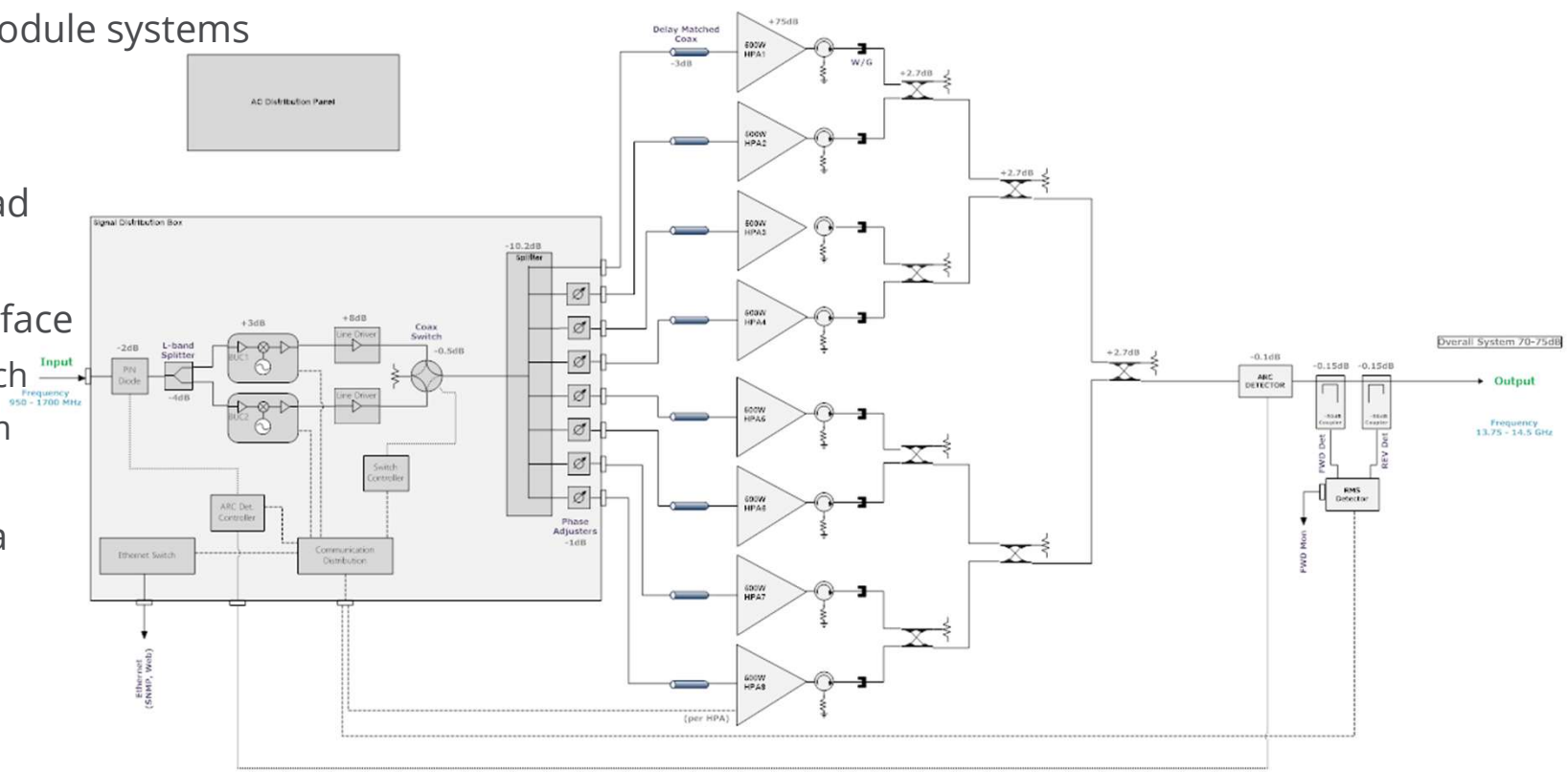
- 1:2 Phase Combined Redundancy
  - Built in Ethernet Switch/Customer interface port
  - SSPA and SSPB option
  - Antenna/Load Switch option





Genesis – Summit III

- Available in 4, 8, 16 module systems
- SSPA or SSPB
- ARC Detection
- Optional Antenna/Load switch
- Single Customer Interface
  - Built-in Ethernet Switch
  - Discrete System alarm
  - Ext. Mute input
- Full system control via POC architecture



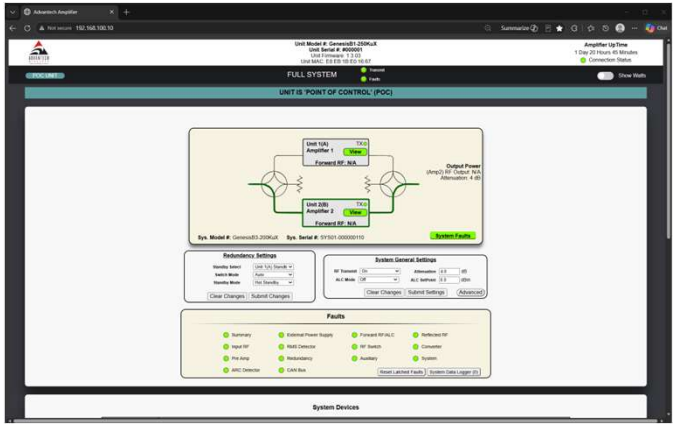
Genesis - M&C Features

- Hardware Interfaces
  - Ethernet (Web, SNMPv1,v2,v3, UDP)
  - Serial (RS485, RS232)
- Software Interfaces
  - Embedded Web server
  - MIB file for NMS Server
  - Windows based software
    - Supports (Web, SNMP, UDP, Serial)
- Features
  - Diagnostic Report Generator – In-field support
  - Fault Logging (with SNTP server support and RTC support)
  - Field configuration change (i.e. upgrade from standalone to 1:1 system)
- Remote Control Unit
  - Available for Standalone, Simple 1:1, Simple Dual POL 1:2
  - Not recommended as standard issue due to limited features – Replaced by POC architecture

M&C Embedded Webserver

- Modern, Comprehensive Web page
  - Full Amplifier or Entire System at a glance
  - Clear indication of faults
- Dynamically Populated
  - Adapt to the specific use case
    - Display amplifier and internal component information if unit is configured for standalone operation
    - Will display a system mimic panel if the unit is part of a full system (1:1 Redundancy, 1:2, Summit III, etc.)
- Advanced Diagnostics
  - Shows details of internal amplifier components
  - Shows details of system level components
  - Separate Unit and System fault logger
- Technical Support
  - Built-in “Diagnostics Report” generator
    - Sent to customer service for fast diagnostics of unit/system
    - Provides full unit and system information in a single file.

Standalone Unit

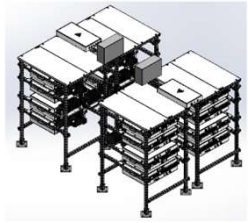


1:1 Redundancy Unit

POC: Point of Control - Explained

- POC is Advantech's Flying Master scheme for multi-amplifier systems
  - Single amplifier controls operational settings for the entire system
  - In charge of synchronizing all amplifiers
  - Machine to Machine (M2M) communication takes place over dedicated CAN Bus
    - Proprietary CAN protocol
  - User Communication to the system takes place over Ethernet (SNMP or Web) to POC Address
    - A dedicated POC Address automatically assigned to POC amplifier
  - Common Settings that are shared when system is in POC mode
    - Transmit Enable
    - Attenuation
    - Standby Select
    - Switch Mode
    - Standby Mode
    - POC IP Address, Gateway, Subnet Mask
  - Non-POC units (if IP Management setting is set to Auto) will have an IP Address of relative to the POC IP Address
    - POC IP Address + Hardware Address + 1
      - Amplifier 1 with Hardware Address = 0: 192.168.100.10 (POC unit)
      - Amplifier 2 with Hardware Address = 1: 192.168.100.12

Genesis Series – Available Power Class

																
	Genesis					**Genesis-HP**				**Summit III (4 Module)**		**Summit III (8 Module)**			**Summit III (16 Module)**	
Ku Band (13.75 - 14.5GHz) (14.0 - 14.5GHz)	150W	200W	250W	300W	-	400W	500W	-	-	1150W	1410W	-	2140W	2630W	3980W	4900W
C Band (5.85-6.425) (5.85 - 6.725 GHz)	-	200W	250W	300W	400W	-	500W (GaAs)	600W	800W	2000W	2500W	3kW (GaAs)	3700W	4675W	6900W	8700W
X Band (7.9 - 8.4GHz)	-	-	250W	-	-	-	-	-	-	-	-	-	-	-	-	-
L/S Band (1.75 - 2.12GHz)	-	-	-	-	-	-	-	-	700W	-	-	-	-	-	-	-