

GATEAIR DX-10 AM TRANSMITTER Digital Modulation



Virtual Tour



- All solid state
- Typically 86% overall efficiency
- Highly redundant
- Field proven with over 1500 DX transmitters on air
- Reliable
- Future compatibility
- Superior performance into any antenna system



THE BENEFITS OF DX



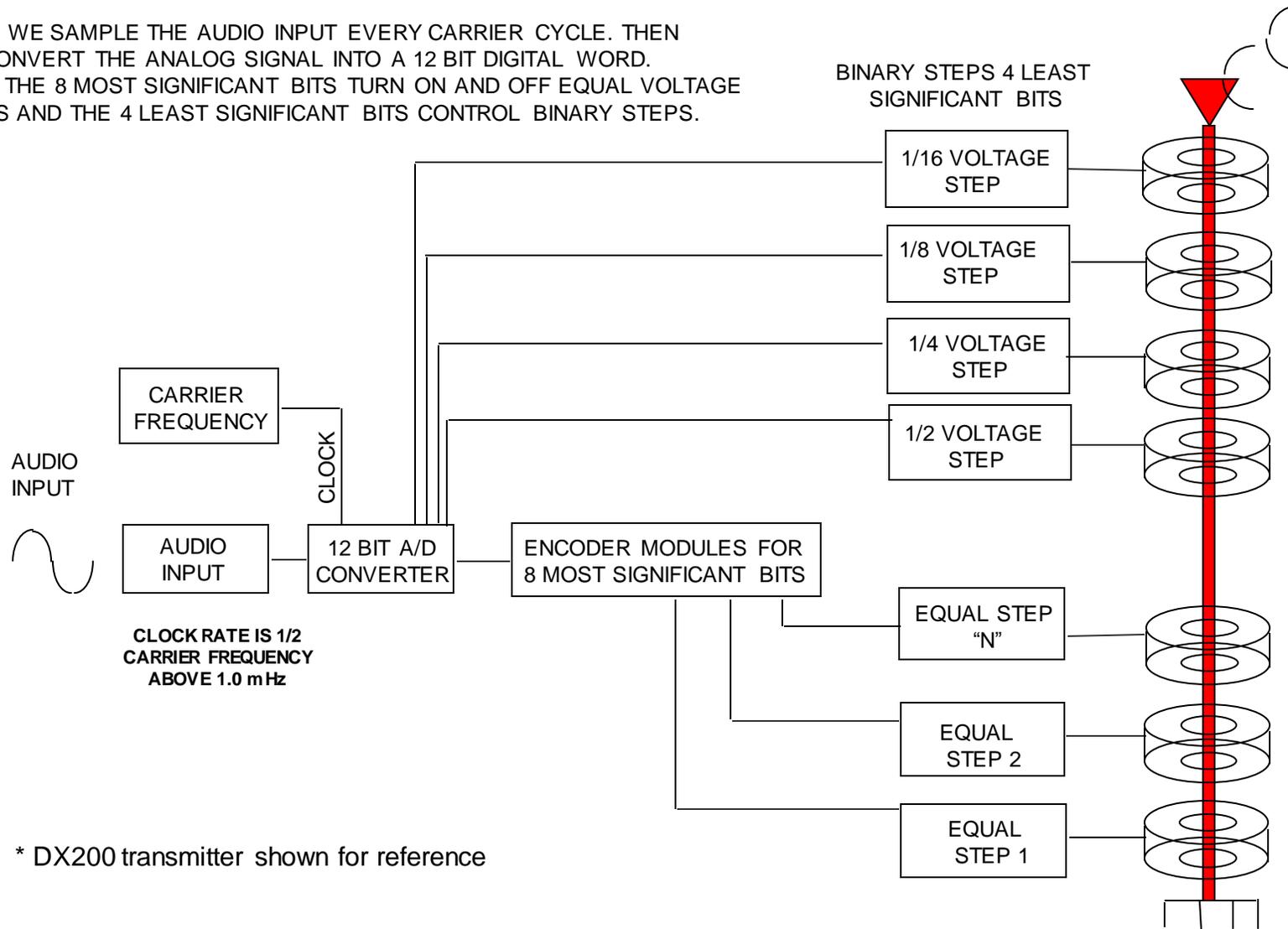
- Provides better signal coverage
 - High average modulation capability
 - Can modulate to 100% negative peaks
- Provides the lowest operating cost
 - Exceptional field reliability
 - Semi-annual maintenance only
- Superior audio performance
 - Direct digital synthesis of the RF envelope
- Future Digital Radio capable
 - DX transmitters have operated over the air in DRM and HD Radio



DIGITAL MODULATION IS SIMPLE

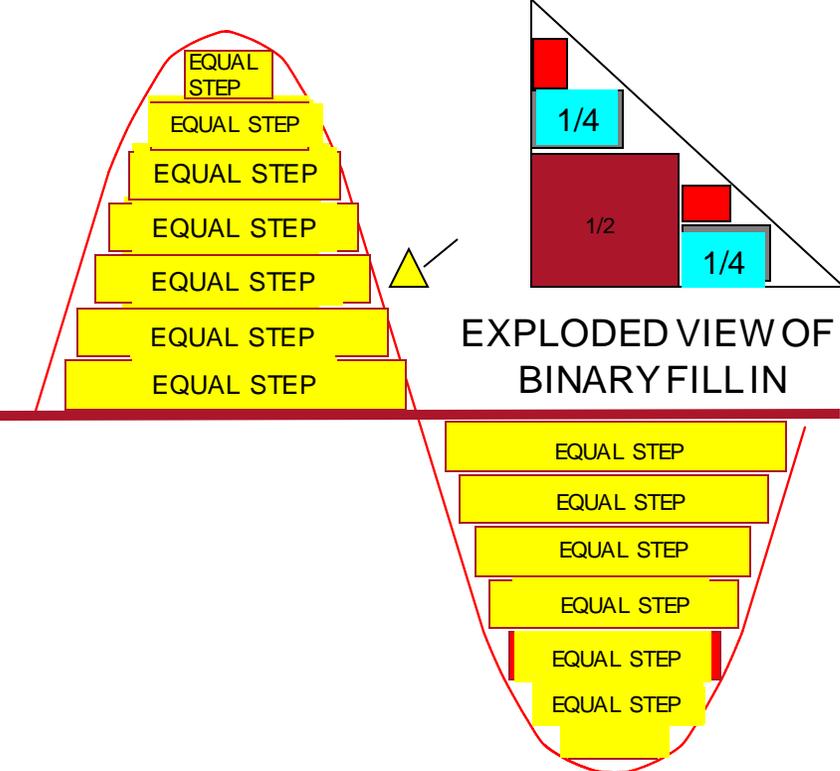


FIRST WE SAMPLE THE AUDIO INPUT EVERY CARRIER CYCLE. THEN WE CONVERT THE ANALOG SIGNAL INTO A 12 BIT DIGITAL WORD. THEN THE 8 MOST SIGNIFICANT BITS TURN ON AND OFF EQUAL VOLTAGE STEPS AND THE 4 LEAST SIGNIFICANT BITS CONTROL BINARY STEPS.



* DX200 transmitter shown for reference

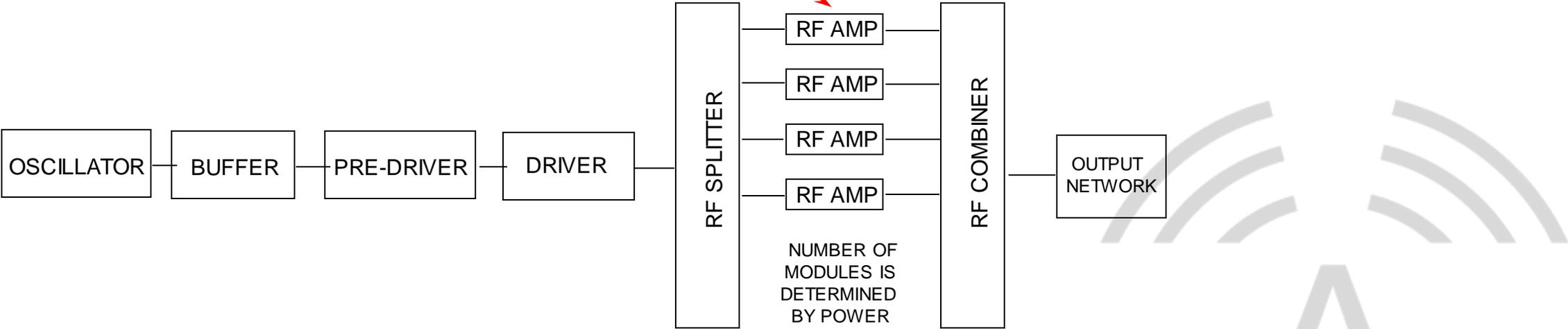




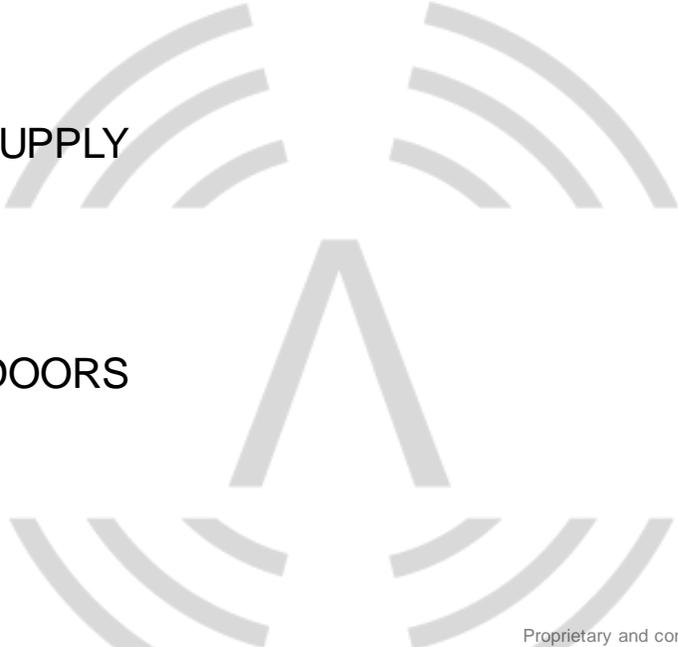
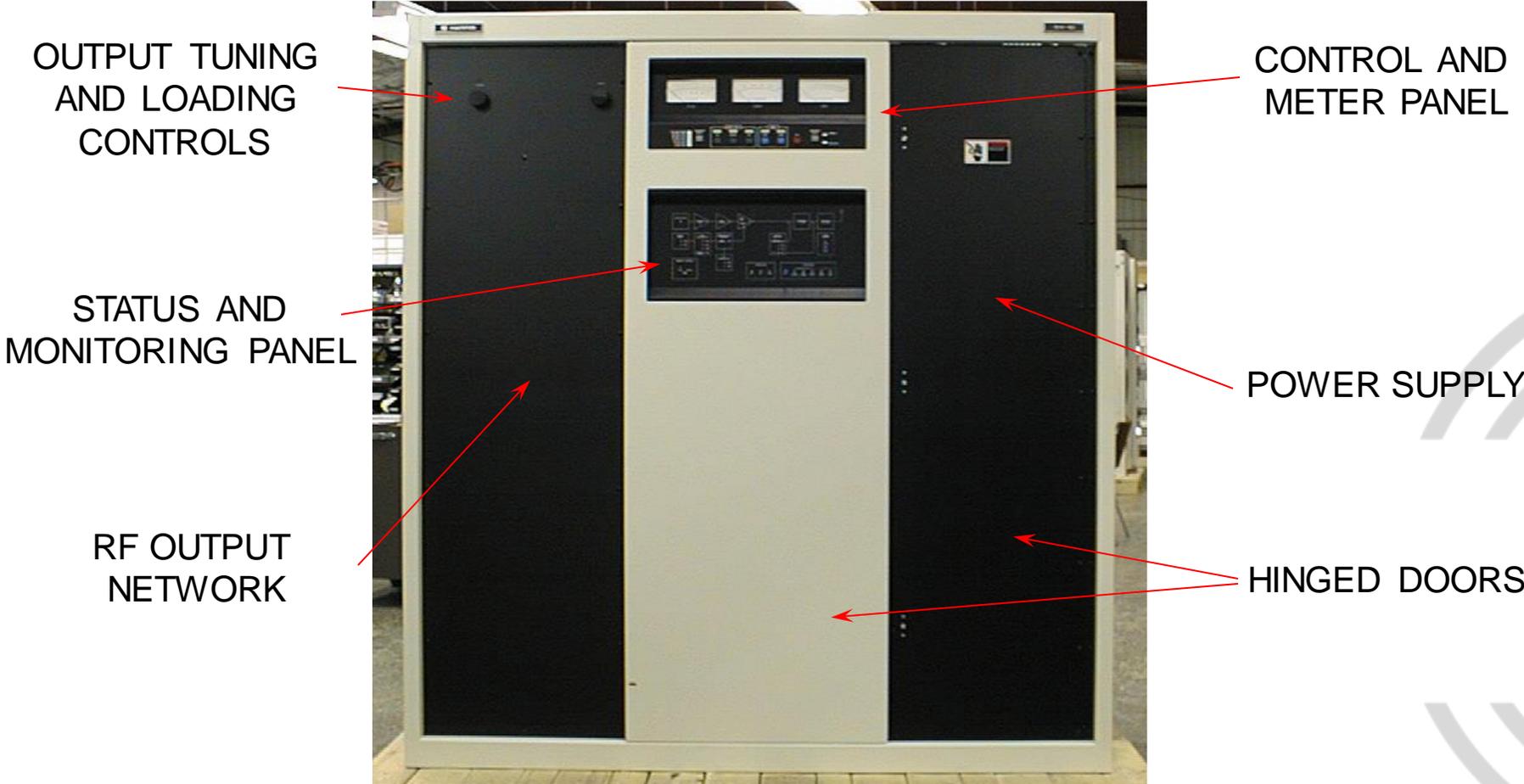
DIGITAL MODULATION IN THE RF CHAIN



Modules Turn On and Off with Modulation



DX 10 FRONT VIEW



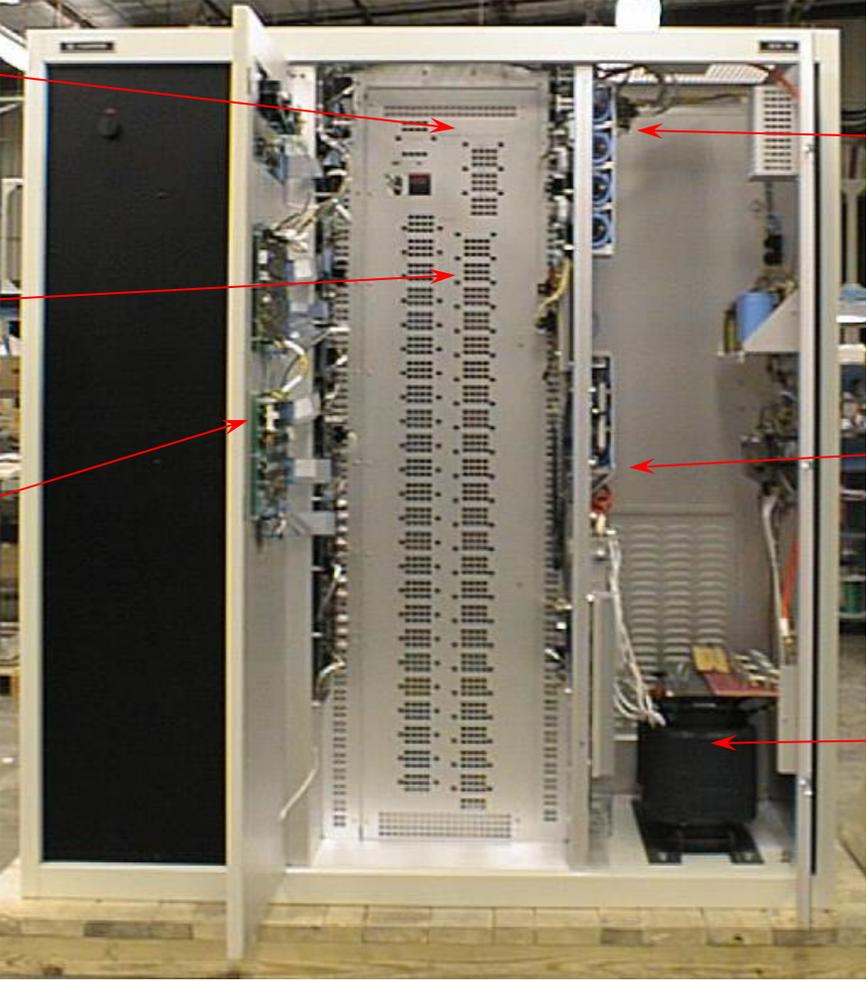
DX 10 FRONT VIEW - OUTSIDE DOORS OPEN



RF DRIVER SECTION

POWER AMPLIFIER CABINET

CONTROLLER



POWER SUPPLY DISTRIBUTION

RECTIFIER ASSEMBLY

POWER SUPPLY TRANSFORMER

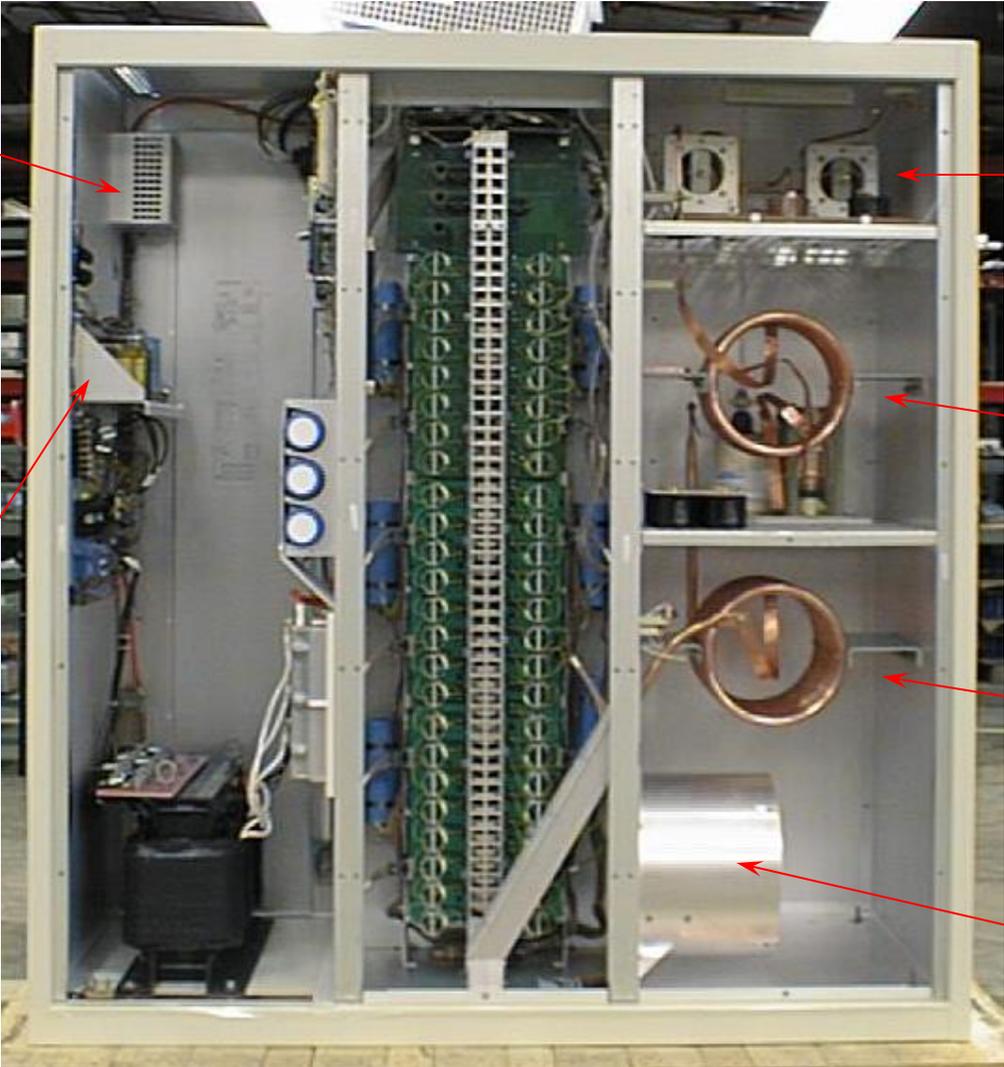


DX 10 REAR VIEW



STEP START ASSEMBLY

LOW VOLTAGE POWER SUPPLY

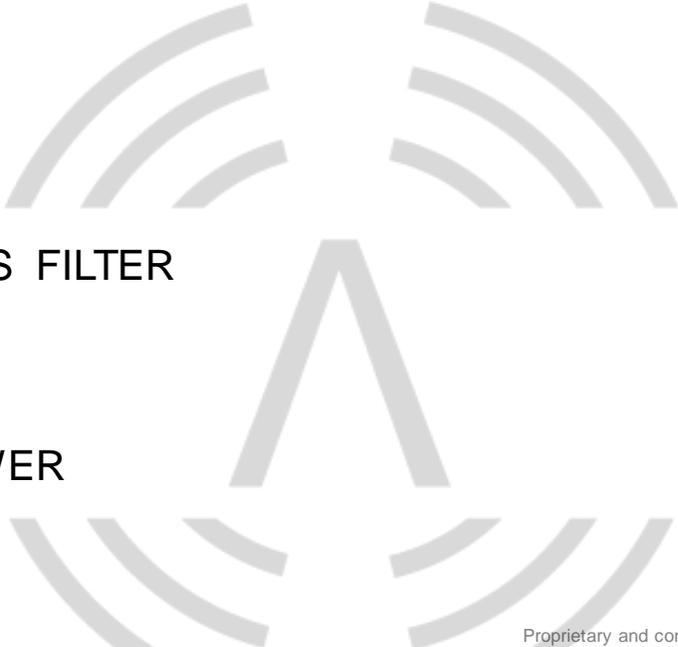


“T” MATCHING NETWORK

MATCHING CIRCUIT

BANDPASS FILTER

BLOWER



FRONT PANEL CONTROL, STATUS, AND METERING



EASY TO READ METERS



POWER CONTROL

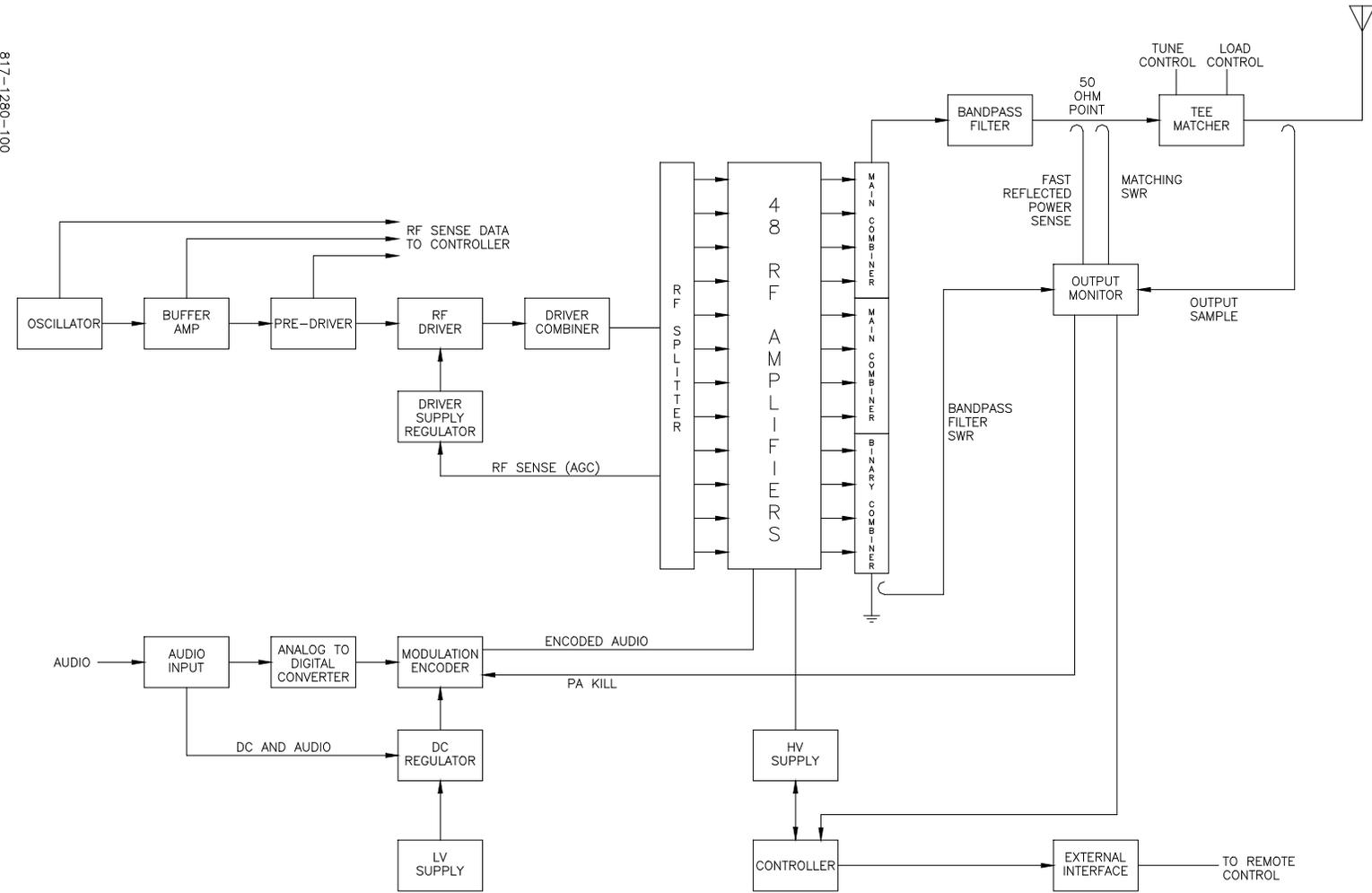
- LOW
- MEDIUM
- HIGH
- RAISE
- LOWER



BI-COLOR
RED/GREEN
STATUS LED'S
IN TRANSMITTER
BLOCK DIAGRAM
LAYOUT



DX 10 BLOCK DIAGRAM



817-1280-100

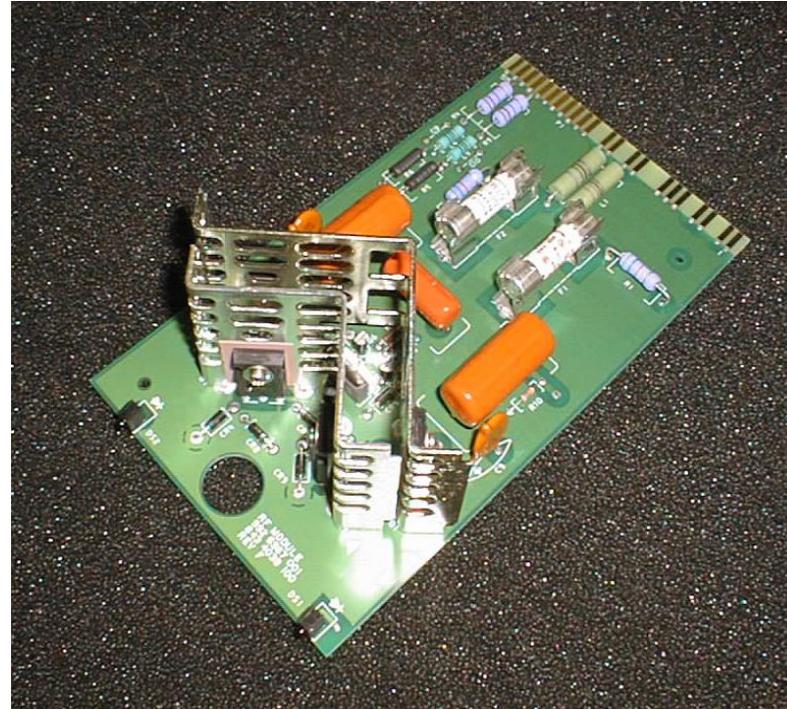


- Dual oscillators with automatic switchover
- Dual predriver amplifiers
- 3 RF driver amplifiers
 - One driver is regulated forming an RF AGC
 - RF driver amplifiers are the same as the PA amplifiers
 - RF drivers operate from 1/2 PA amplifier power supply



THE “H” BRIDGE MODULE

- Simple field repairable RF amplifier module
- Each half of the module is individually fused
- Uses (4) standard irf-350 FET transistors
- Over 6 million hours MTBF
- 48 RF amplifiers
 - 42 equal steps
 - 6 binary steps
- +145% positive peak modulation capability
- 17 RF amplifiers on for 10 KW carrier
- At 100% modulation 34 RF amplifiers are turned on - 8 RF amplifiers still in reserve (may be used as spares)
- “Electronic” patching of RF amplifiers available while the transmitter is on air



KEY VALUE POINTS TO REMEMBER



- Harris patented Direct Digital Synthesis for high efficiency, high performance in the medium and high power segments
 - Field proven technology (worldwide customer base: 1500-plus units on air)
 - High efficiency (80% plus)
 - Digital ready (IBOC and DRM)
 - Internal DRM modulator
- Soft Fail” RF configuration keeps you on the air
- Proportional VSWR fold back provides safe operation into poor loads
- Automatic AC restart after loss of power returns to previous mode
- Good power factor, low line harmonics
- WEB Interface supports remote diagnostics and logging
- ISO 9001 accredited manufacturing facility
- Very fast, easy installation



Thank you for taking the Virtual Tour of the DX 10 AM transmitter

