15kw AM Broadcast Transmitter
Model dmw15k-N^2

Quasar-sdg
TECNOLOGÍA DE LARGO ALCANCE

15.000 watts Transmisor de radiodifusión AM
Modelo dmw15k-N^2

General Features

The dmw15k-N^2: Is a 100% Solid State, modular-redundant equipment of brilliant and transparent sound. Composed for twelve (12) RF modulated power amplifier 2.300/2.500 watts peak each, high-capacity modulation 140% to nominal power and >87% efficiency. The dmw-N^2 series may include;

- ✓ RF Power Amplifier with hot plug-in/out (optional).
- ✓ Dual RF/PDM Exciter with automatic switching (optional).
- ✓ Anti-lightning output filter.
- ✓ Three-phase PDM modulation*
- ✓ LAN-IP telemetry
- ✓ SCR-controlled rectifier.
- ✓ Automatic power reduction with SWR greater than 1.7:1; transmitter do not put off air.
- ✓ Internal VDR transient suppressors.

Main Supply

The equipment has a +/- 15Vdc / 48V-1500W switching type auxiliary power supply, the main power is obtained through a single-phase dry transformer, 30kVA, which can operate at mains voltages of 240/440Vac 50/60Hz. The transformer output passes through a SCR-CONTROLLED linear rectifier common to all RF power units.

Control Units

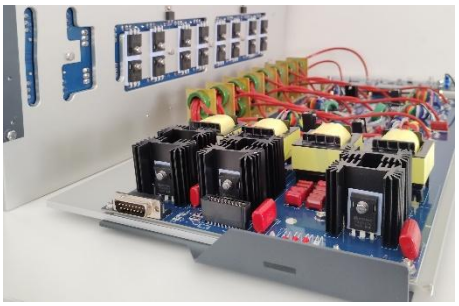
The control/monitor stage consists of the front panel metering, controller/display, and remote interface. The front panel of the exciter/control assembly provides local controls and a graphic user interface to display operating status, root cause fault detection, RF power, and critical dc voltage/current levels. The front panel is divided into three sections – system diagram, diagnostic display and control.

RF Drive and Modulation Generator

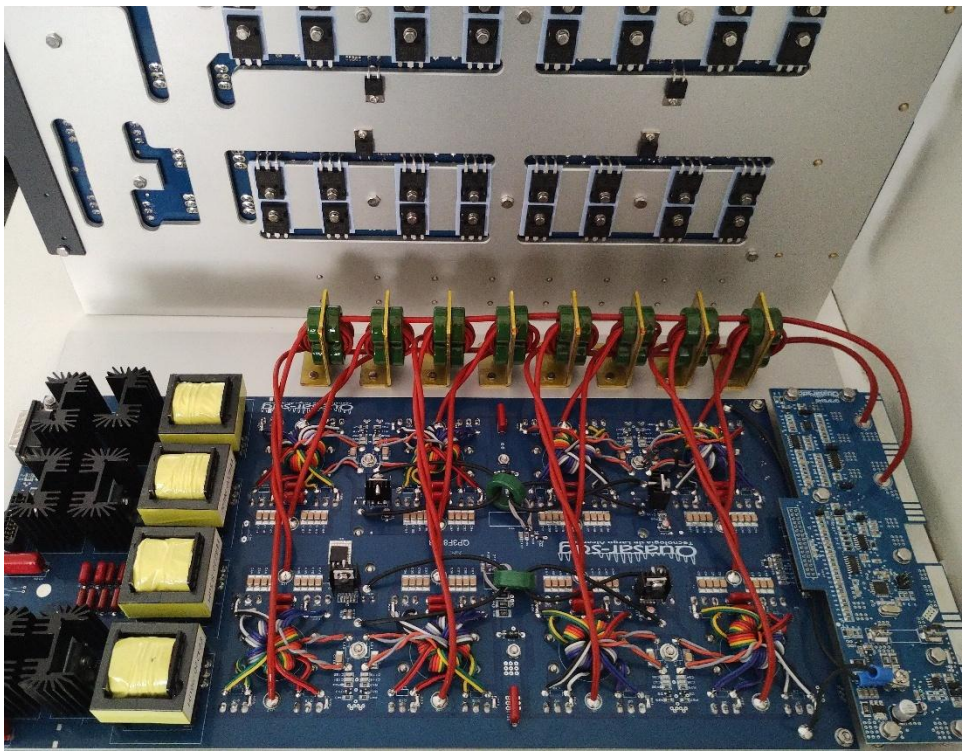
The carrier frequency and PWM signal allow selection for external or internal oscillator. The internal oscillator uses direct digital synthesis (DDS) to generate carrier frequencies within the AM broadcast band (535 kHz to 1,705 kHz). The output of a digital synthesizer integrated circuit is also divided by a factor of N to obtain ƒPDM frequency that ultimately determines the transmitter's pulse duration modulation (PDM) frequency. which is associated with a processor that allows us to modify the frequency of the carrier +/- 10khz in order to measure the width of the radiant system band without the need of an external frequency meter. The active RF drive signals are buffered using AND gates and then split for a final RF Carrier frequency. This digital signal is sending using differential line drivers to be applied to each RF Modulated Power Amplifier. The Equipment of the dmw-N series using PDM Interphase Polyphase modulation system, synchronized with the carrier frequency.

Power Amplifier

The modulated RF amplifier consists of eight CLASS D H bridges, ALL INDEPENDENT, which are switched by three other complementary high-power HEXFET type switches PWM-0 °; PWM-120º and PWM-240º. The eight H bridges are combined in the same module through a serial combiner in order to achieve symmetry in the distribution of currents and powers of the H bridge, which guarantees greater stability and reliability in addition to obtaining a performance greater than 95% at nominal carrier power. For the RF drive, there are 4-Mosfet Drivers of 9Amper-peak each, which drive each H bridge, taking as input the TTL RF signal from the Signal Generator, *WITHOUT ADJUSTMENT OF ANY KIND*.



The dmw15k-N^2 transmitter has twelve (12) modulated RF amplifiers of 2,300/2.500 watts peak each, 27k6/30k watts peak for this model. The amplifier is designed as a single printed circuit board, mounted on a 5mm aluminum plate, which in addition to being the heat sink acts as a shield for the system. Each modulated RF amplifier has an electronic alarm control system, which electronically deactivates a defective module without interrupting the overall operation of the transmitter.



RF Final Combiner

Each modulated RF amplifier has a serial combiner internally. The modulated RF output of this amplifier is connected to the parallel combiner, the L-C network which, in addition to allowing the final impedance adaptation, the low impedance shunt capacitor allows the RF amplifiers modules tolerate high variations of the radiant system impedance, as well as being immune to atmospheric discharges. Additional it is possible to RF amplifier modules without the need to manipulate/modify the combiner.

Output Filter

The dmw15k-N^2 output filter is a passive bandpass filter with a parallel trap tuned to the Carrier frequency third harmonic. Its nominal output impedance is 50 Ω a the filter removes unwanted harmonics from the parallel combiner's output and provides the transmitter's final RF output. The filter also contains an adjusted spark-gap; RF current probe and a forward/reflected power probe. These probes monitor the RF and provide outputs that are monitored by protection circuits.

dmw15k-N² AM Broadcast Transmitters Specifications.

Output Power & Configuration:	12 RF Modulated Power Amplifier for 2.300/2.500 watts peak each. 15.000 watts@140% Modulation peak.
RF Power Level:	Four independent power level control P1 to P4. Local/Remote and programmable
Frequency Range:	525Khz / 1710Khz Setting one fixed channel
Frequency Stability:	+/- 1,5ppm to 0ºC – 40ºC
VSWR:	1.75 With automatic RF Power Level Reduction.
Impedance:	50-Ω unbalance.
RF output Connector:	1-5/8" or 7/8" EIA Type.
Spurious / Harmonics:	ITU-R SM.329-8 (≤ 50 mW from 9 kHz to 1 GHz)
Out-of-band emissions:	According to ITU-R SM.328-10
Modulation system:	Polyphase Pulse Duration Modulation (PDM)
Audio Input:	+/-10 dB to 600 Ohm balanced for 100% modulation
Internal Low-Pass filter Audio:	4.5Khz / 6.5Khz / 16Khz
Audio Response:	+/- 0.3 dB 30 Hz to 10 kHz
Audio distortion THD:	+/- 1% at 80% modulation
Peak Modulation:	140% peak to nominal power.
Carrier shift :	Better than 1%
S/N:	Better than -60 dB referred to 100% modulation 400Hz
Main Supply:	230Vac Delta / 400Vac Wey (+/-10%) 3-Phase 50-60Hz.
Power Factor:	0,95
Temp \Humidity Operation:	0-40C / 0%-95% No Cond.
Altitude:	0 to 4000 m.s.n.m.
Power consumption:	Better than 16.3kW without modulation / 20.4kW with 100% modulation
Overall Efficiency :	>/87%
Front Panel meter:	Auxiliary and Principal Voltage/ Currents AC/DC. Direct and Reverser Output Power and Temp-Ambient. RF Modulated power amplifier: Individual RF-drive, Temp, Voltage and Current.-
Local control:	Local / Remote, Transmitter On / Off, RF power Level P1 / P2 / P3 / P4, Status Alarms and Reset. Status Modem/Lan-IP Telemetry. Ethernet interface with HTML web server (Option) Serial interface RS 232 (Option) PC-USB and Bluetooth Serial Interface.
Cooling system:	Air cooling with internal fan assembly below the power block

Cooling air consumption approx. 450cfm/h External blower system with filtering and air ducts on request.

Warranty: From 12 months to 2 years*

2-year warranty paying for factory installation service, ask your seller

Dimensions WDH: 600 mm x 800 mm x 1820 mm 530Kgr.

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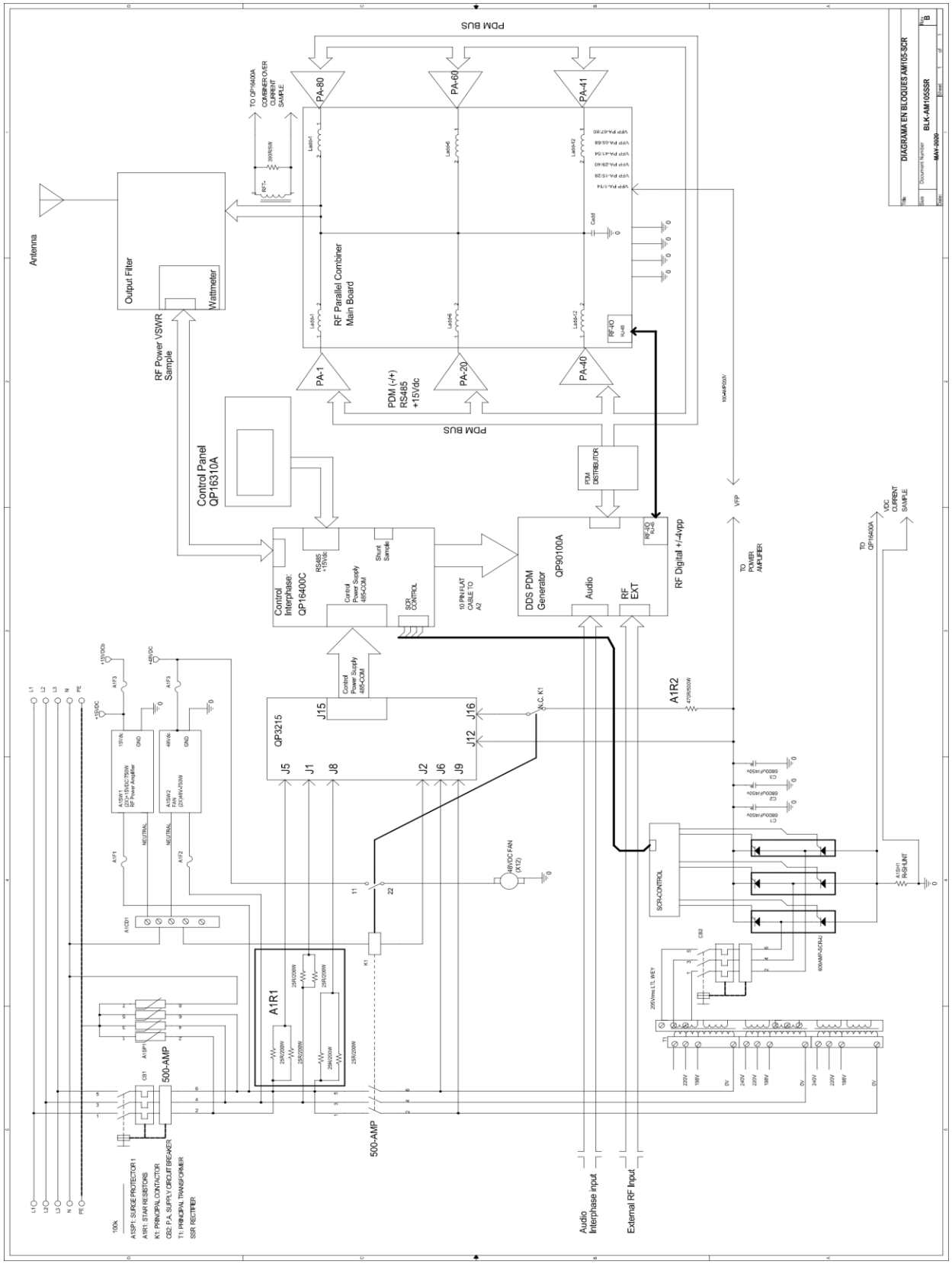
dmw15kw block diagram.



AM 15.000 watts + 140% modulation peak
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NOTE: