Quasar-sdg
Tecnología de Largo Alcance

AM Broadcast Transmitter

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General Features

The dmw-1k5N: Is a 100% Solid State, modular-redundant equipment of brilliant and transparent sound. Composed for two (02) RF modulated power amplifier **1.750 watts peak each**, high capacity modulation 150% to nominal power and >87% efficiency. The dmw-N series may include; RF Power Amplifier hot Plug-Out, Dual RF; DUAL RF-AM Exciter with Automatic Change Over (Optional); PARALLEL RF Final COMBINER; Anti- LIGHTNING output filter design; GSM Remote control, LAN-ip (Optional); Power level compensator for main supply fluctuation and Power level reduction with a high VSWR Transmitter does not get put off air. All contained in a 19" 18U cabinet (800x600x600mm).

Main Supply

The equipment has an auxiliary supply switching +/-15Vdc-600W and the main supply of 3.75KVA The main supply can be work a single/Bi/phase AC system 198-250Vac.- transformer and full wave rectifier, common for 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 intenal oscillator. The internal oscillator use 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 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 RF modulated power amplifier consists of **four D-class H bridges ALL INDEPENDIENTS,** switching by another three HEXFET type high power switches and two complementary signals PWM-0°; PWM-120º and PWM-240º. All four 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, as well as obtaining a performance over the 95% to nominal power 1750Watts Carrier.

The **dmw1k5N** Transmitter has one power units equipped with two (02) RF modulated power amplifier 1.750 Watts peak each, 3.500 watts total peak for this model. The module amplifier is designed as one single printed circuit board, mounted on a 4mm aluminum plate, which apart from being the heatsink, acts as a shield for the system. Each unit supplies a completely modulated RF signal into the combining transformer. Thus, in case of a module fault, the service is maintained with only slightly reduced power but without reduction of quality performance.

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 dmw1k5N 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.

Dmw1k5N AM Broadcast Transmitters

Specifications dmw1k5-N

Output Power & Configuration:	1.000 watts more @150% peak or 1.500 watts more 100% modulation peak Two 1.750Watts peak RF Modulated Power Amplifier, 3.500 watts peak.
RF Power Level:	Four independent power level control P1 to P4. Local/Remote and programmable
Frequency Range:	525Khz / 1710Khz Setting one fiexed chanel
Frequency Stability:	+/- 1,5ppm to 0ºC – 40ºC
VSWR:	1.5 With automatic RF Power Level Reduction.
Impedance:	50-Ω unbalance.
RF output Connector:	N Female 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
Audio Response:	+/- 0.3 dB 30 Hz to 10 kHz
Audio distortion THD:	+/- 1% at 80% modulation
Peak Modulation:	150% peak to nominal power. 100% peak to 1.000 watts carrier.
Carrier shift :	Better than 1%
S/N:	Better than -60 dB referred to 100% modulation 400Hz
Main Supply:	**198**Vac / 250Vac (+/-10%) Sibgle/Bi-Phase 50-60Hz main supply/
Power Factror:	0,95
Temp \Humidity Operation:	0-40C / 0%-95% No Cond.
Altitude:	0 to 4000 m.s.n.m.
Power consumption:	Better than 1.1 kW without modulation / 1.34kW with 100% modulation
Overall Efficiency :	>/85%
Front Panel meter:	Auxiliary and Principal Voltage/ Currents AC/DC. Direct and Reverser Output Power and Temp-Ambiente. 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 GSM/GPRS/Lan-IP (Optional) Telemetry. Ethernet interface with HTML web server (Optional) Serial interface RS 232 (Option) PC-USB Serial Interface.

Cooling system:	Air cooling with internal fan assembly below the power block Cooling air consumption approx. 24cbm/h External blower system with filtering and air ducts on request
Dimensions WDH:	600 mm x 600 mm x 800 mm

Contact:

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Block Diagram dmw1k5N