

INSTRUCTION MANUAL

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POLYCHROMATIC ACOUSTO-OPTIC
EIGHT CHANNEL RF DRIVER MODULE

MODEL NUMBER:

N64040-75-.1-8CH-16-M

DOC. APPROVAL:



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INTRODUCTION

N64040-75-.1-8CH-16-M

This eight channel PCAOM driver module has improved extinction ratio and rise/fall time, fine tuning for bragg angles, 16 wavelengths per channel, and many more features compared to our previous system. The analog modulation has an RF extinction ratio of -60dbc. The TTL modulation extinction ratio is also -60dbc. Both ports (analog and TTL) have an RF extinction ratio of -80dbc when both are turned off.

The rise/fall time of the driver is 50 nanoseconds. For a 2.0mm beam in the PCAOM the system will support a modulation rate greater than 100Khz. Each channel has a 10 KHz/step fine tuning control. Once the PCAOM bragg angle is set for one wavelength this angle adjustment should not be touched again. If the PCAOM efficiency at a different wavelength is not peaked, then change the fine tune control on the driver in single steps and press the reset button.

The output power (factory set) can be easily adjusted. Each channel has an easy to access trimpot with a range adjustment of 50 to 250 mw.

Each channel has 16 preset wavelengths to choose from. To change the wavelength selection for any or all channels dial in the new wavelength and press the reset button.

The output sample port (TP1) provides a -20db sample of the actual output frequency.

The pin outs for the D connector are silk screened on the housing (Refer to figure 3 for pin outs).

SECTION II

DESCRIPTION

The PC AOM driver generates the precise RF frequency to select the proper laser wavelength out of the visible light spectrum (refer to figure 1). The driver has eight channels. Each channel can be set to sixteen different wavelengths. These wavelengths are factory set to cover all the common laser wavelengths in the visible spectrum. If requested NEOS will set the wavelengths as specified on a custom basis. Any combination of the sixteen wavelengths can be selected for the eight channels.

The extinction ratio (light on to light off) must be high for most applications. There are two ports for modulation input a differential AM analog port and a TTL blanking port. The RF extinction ratio of this driver can be as high as -80dbc when both ports are turned off. The analog port requires a 0 to 5 volt input and can be either single ended or differential. Differential is used to cancel common mode noise. To use the input single ended either ground the minus input and apply a positive signal to the plus input or ground the plus input and apply a negative signal to the minus input. The control voltage transfer function is linear and the input impedance is 10K Ω , therefore the driver can be easily driven from existing pc boards (refer to figure 2).

The driver generates all RF signals by indirect synthesis. The frequency can be tuned in 10Khz steps to accommodate for any variations in the PCAOM. This is done by turning a rotary hex switch and pressing a reset button.

The driver comes in either a system or module configuration. The system comes in a 3½" x 19" rack mounted box and has a set of eight push button CW/Normal switches to allow for testing when a computer or other modulating source is not available.

SECTION III
SPECIFICATIONS

<u>PARAMETER</u>	<u>SPECIFICATION</u>
Number of Channels	Eight
Frequency Stability	$\pm 0.01\%$
Power Out	50-250mW/channel
Wavelengths per channel	16
Fine tuning	10Khz steps
Rise/Fall Time	50 ns max
Analog Inputs(8)	0-5V into 10K Ω
Blanking Inputs(8)	TTL, 4.7K Ω . No input or a High is not blanked, TTL low blanked.
Extinction Ratio	Analog -60dbc TTL -60dbc Both < -80dbc
Power	+24VDC @ 0.5 Amps +15VDC @ 3.5 Amps - 15VDC @ 0.2 Amps
Size	10.5" x 6" x 1.59"
Connectors	RF out BNC Female Data in 25 pin D-Sub female TP1(-20db) SMB Male

SECTION IV
OPERATING PROCEDURE

A. Inputs/Outputs:

J1 Blanking Modulation Input - This input accepts TTL level signals and modulates the carrier. When a TTL "1" or high is input to this port there is no blanking for the selected wavelength. When a TTL low "0" is input the selected wavelength is blanked.

AM Input - 0 to 5 volts differential input with 10K Ω input impedance. To use this input single ended ground one side "+" or "-" and apply the proper signal to other side.

B. Turn On Procedure:

1. Before applying power connect the RF output to a load capable of dissipating 1 watt or connect to a "good" PCAOM.
2. Apply +24, +15, -15VDC to the proper voltage feedthru with ground connected any lug.
3. Input proper modulation signal into driver, measure power and frequency or measure light wavelength and diffraction efficiency.
4. The system is working when 50-250mw of RF power at proper frequency is measured into a 50 ohm load for each channel.

C. Wavelength Change:

Each channel has 16 preset wavelengths to choose from. The desired wavelength can be selected by changing (λ) switch to the desired wavelength and pushing the reset button. The fine tuning of the frequency is accomplished by adjusting the fine tune switch and pushing reset button. See PCAOM manual for how to tune the PCAOM system.

NOTE: Never have two channels tuned to the same wavelength.

SECTION V

FIGURES

Insert drawings: 45A8309, 45A8308, 45A9744, 45A8132A

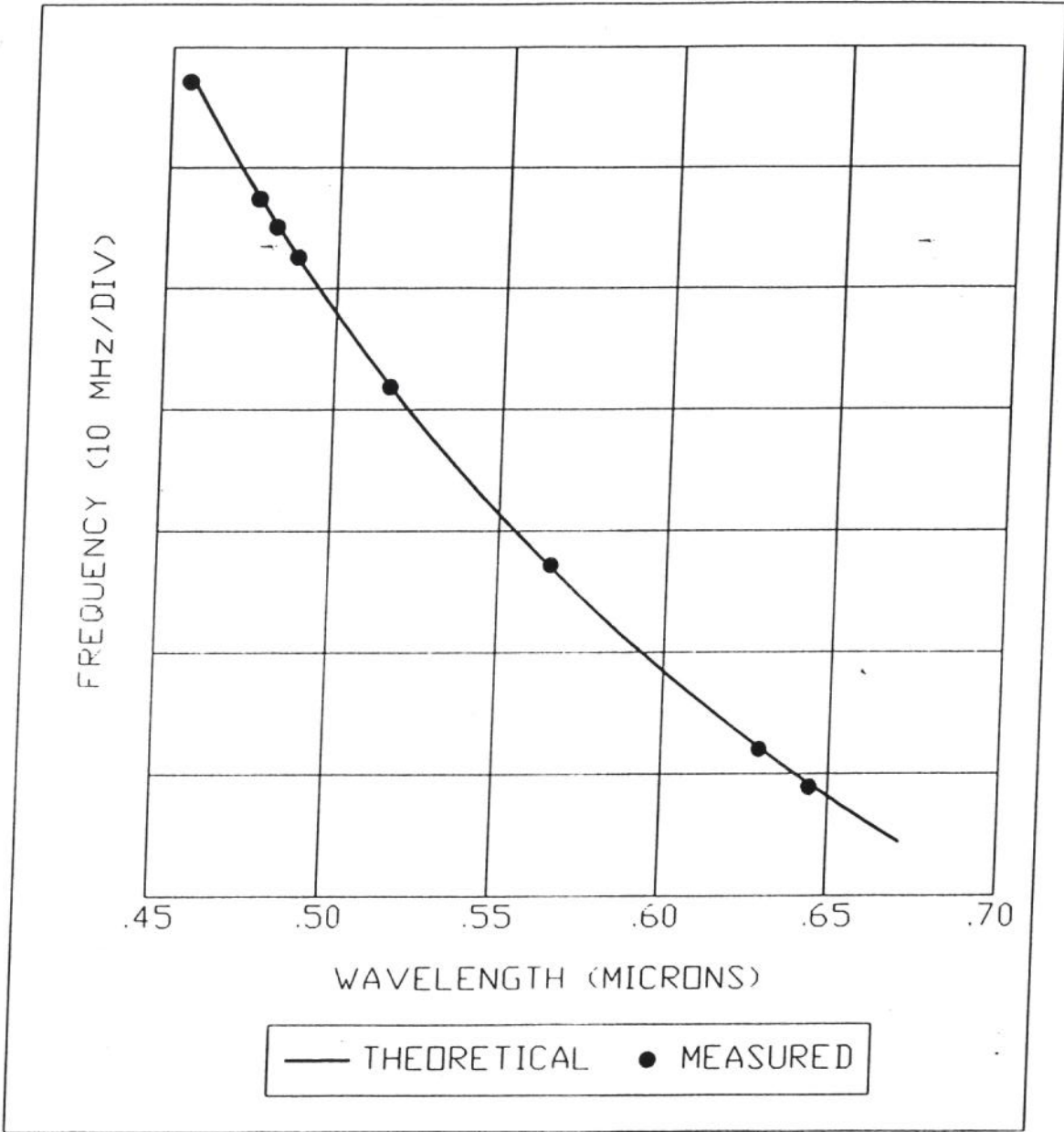


FIGURE 1
PCADM WAVELENGTH TUNING CURVE

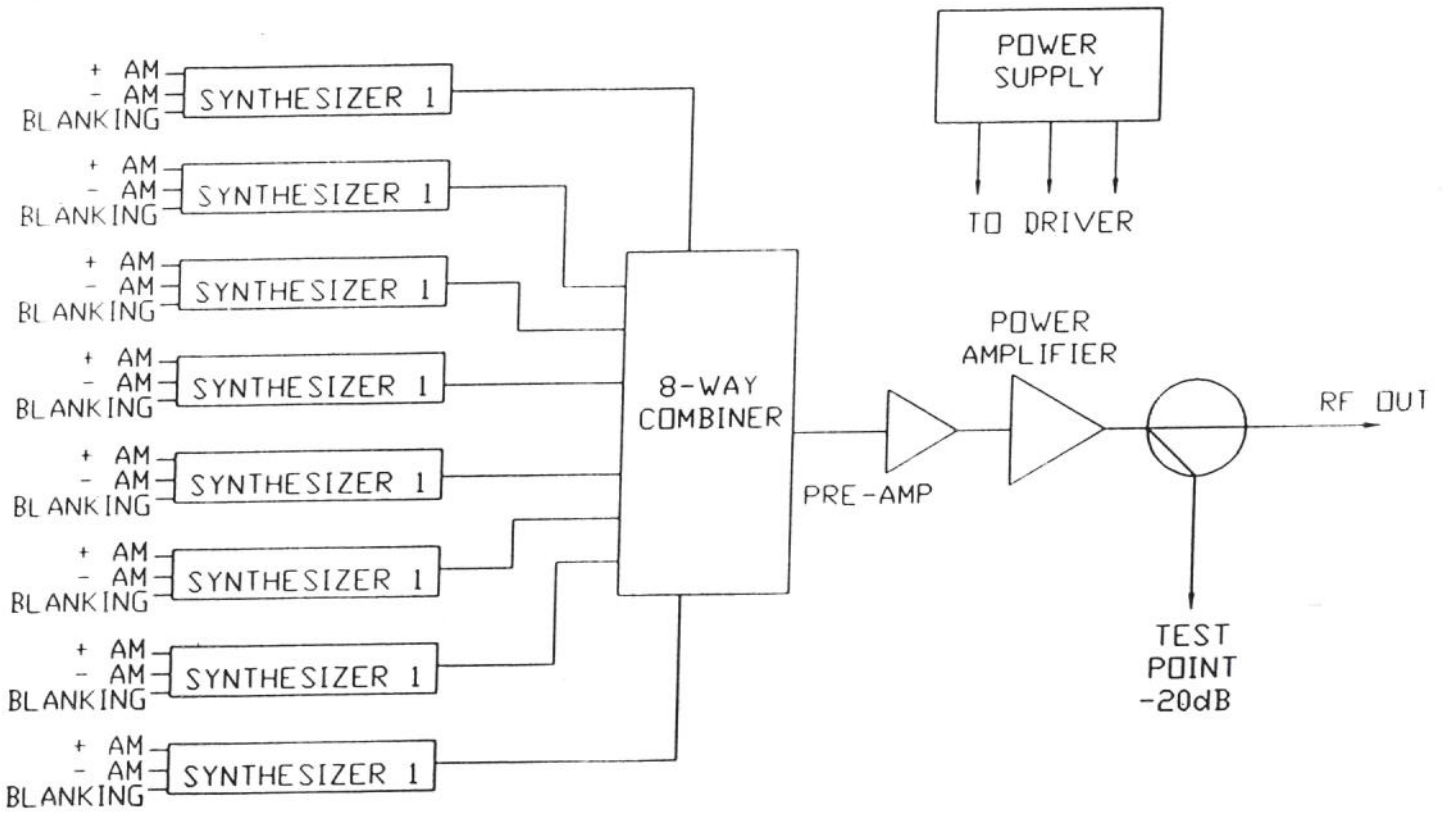
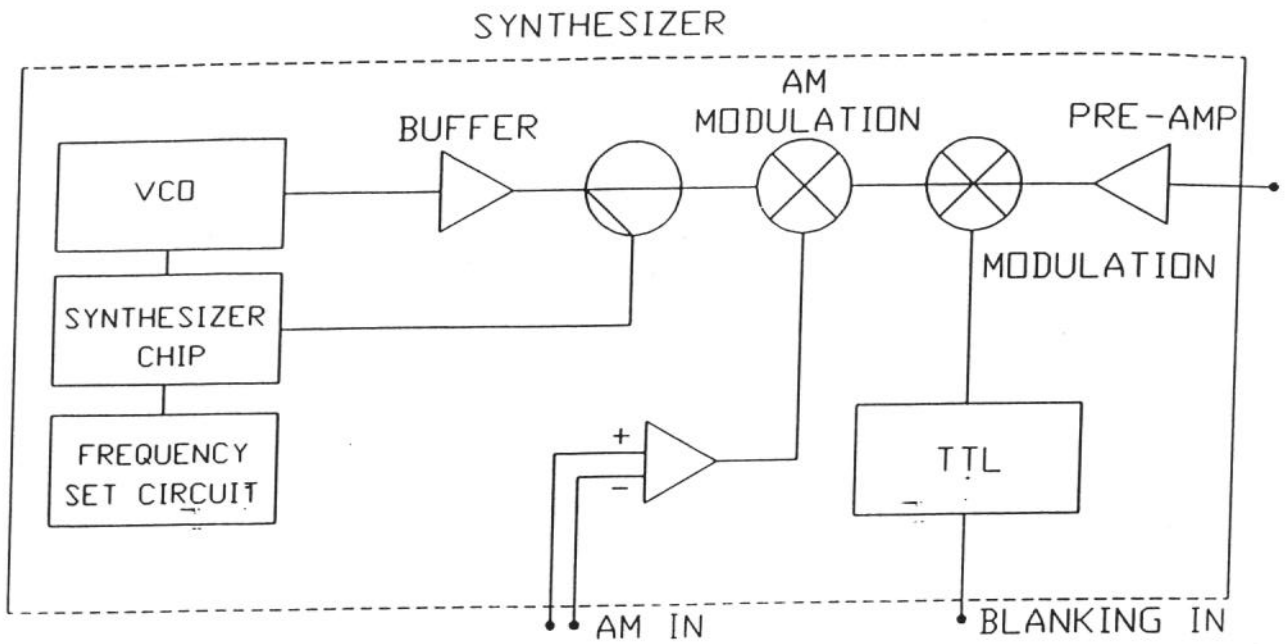
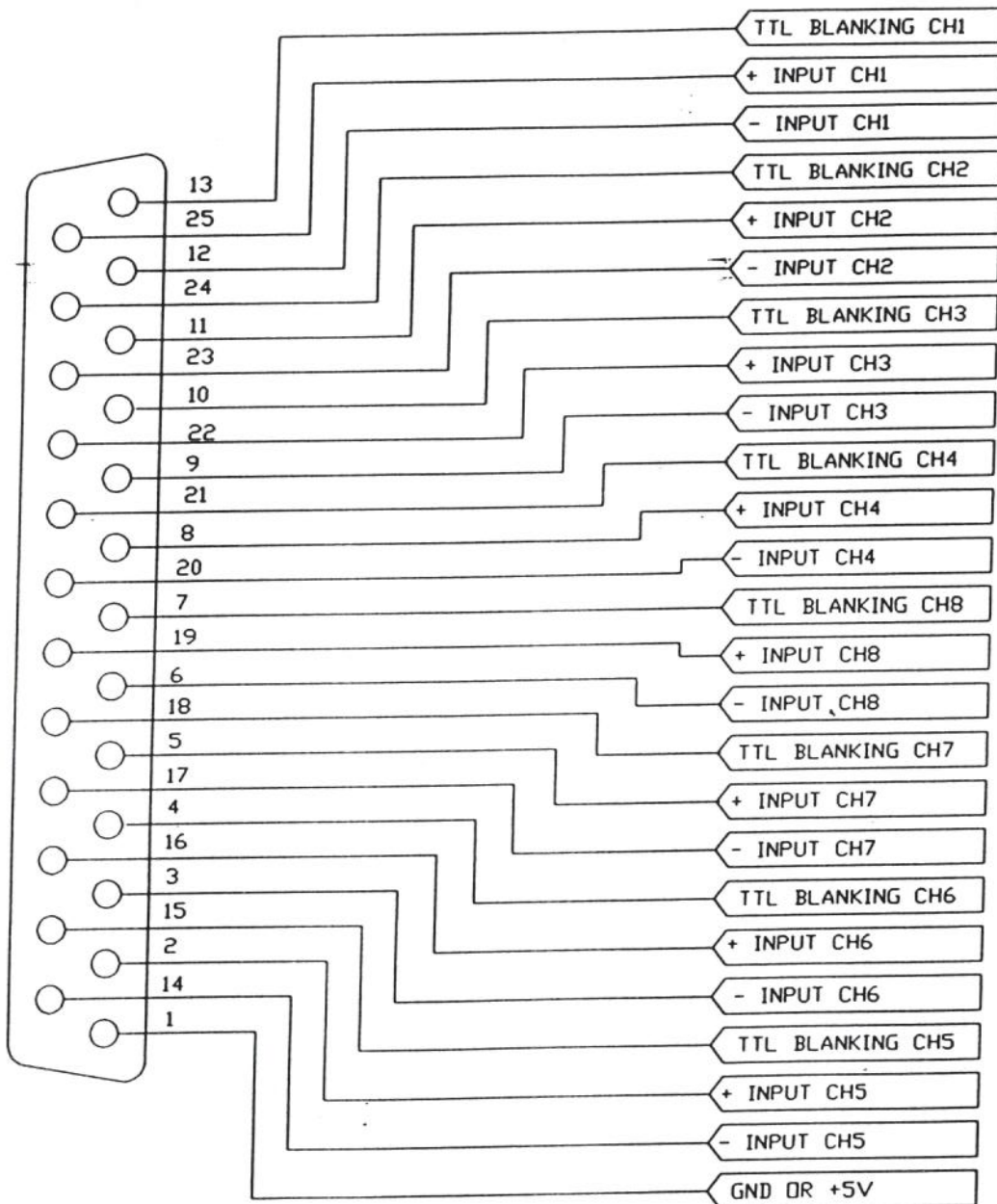


FIGURE 2
BLOCK DIAGRAM OF PCAOM DRIVER



PIN 1 IS +5V IN A SYSTEM APPLICATION
 PIN 1 IS GND AS A MODULE

FIGURE 3
 J1 PINDOUT
 FEMALE DB25
 N64040-75-.1-8CH-16-M