



NEOS TECHNOLOGIES

A Gooch & Housego Company

**OPERATING MANUAL
VOLTAGE CONTROLLED OSCILLATOR**

MODEL NUMBER:

21XXX-YYY-ZAMVCO

DOCUMENT NUMBER: 51A18412A

This Operating Manual is for use with Variable Frequency AOM Drivers with model numbers:

XXX = The Lower frequency of between 35 and 250 MHz

YYY = The Higher frequency of between 35 and 250 MHz

Z = 1 or 2 watts output power **A** = Analog Modulation

M = OEM Module

Voltage Controlled Oscillator

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SECTION I

INSPECTION

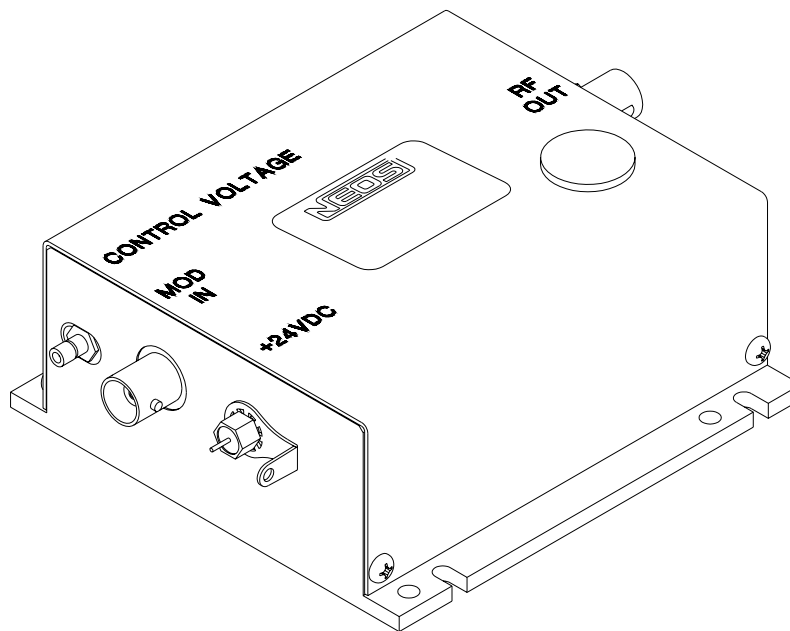
Examine the shipping carton for damage. If the shipping carton or packing material is damaged it should be kept for the carrier's inspection. Check the contents of the shipment for completeness, mechanical damage, and then test the equipment electronically. Operating procedures are contained in Section VI. Notify the carrier and NEOS Technologies. If the contents are incomplete, or the equipment does not pass the electrical testing please notify NEOS Technologies.

If there is any problem with the use of this equipment, or if the equipment fails to function as expected contact NEOS Technologies, do not try to trouble shoot or repair this equipment. Consult with a NEOS service engineer. If the equipment needs repair or replacement, contact NEOS Technologies, Inc for a Return Authorization Number.

SECTION II GENERAL DESCRIPTION

The 21XXX-YYY-ZAMVCO is a Voltage Controlled Oscillator sold as a OEM Module. It is designed to supply an RF output of up to 2 watts of RF energy into an Acousto-Optic Beam Deflector or 50 Ohms. The system requires 24 volts DC power input (28 volts for ≥ 150 MHz), an analog modulation voltage (0 to 1 VDC), and a frequency control voltage (2 to 15 VDC typical) for operation (See the driver ATR for exact control voltage vs. frequency data).

The 21XXX-YYY-ZAMVCO



53B2939

SECTION III. SPECIFICATION

SPECIFICATION

PARAMETER

| | |
|----------------------------|---|
| Output Frequency: | XXX to YYY MHz Where XXX to YYY typically is less than an Octave bandwidth, with frequencies from 35 to 250 MHz . |
| Spurious Levels: | -45 dBc Maximum |
| Harmonic Distortion: | -15 dBc Maximum |
| Frequency Control Voltage: | 2 to 15 volts Typical |
| Analog Input: | ± 1 Volt into 50 ohms, 0 volts = minimum RF output 1 volt = maximum RF output |
| Extinction Ratio: | 30 dB Minimum |
| RF Rise / Fall Time | 20 ns Typically, 30 ns Maximum P_{RF} : 10 to 90 % |
| RF Output Power: | Z Watts - 1 to 2 watts Nominal – Adjustable Limited to < 1 watt output above 150 MHz. Factory set for optimum performance when paired with a NEOS AO Device. |
| Output Power Flatness: | 1.5 dB Maximum |
| Output Impedance: | 50 ohms Nominal |
| Supply Voltage: | + 24 VDC + 0.5 volt below 150 MHz + 28 VDC + 0.5 volt above 150 MHz |
| Supply Current: | 1.5 amp Maximum |

MAXIMUM RATINGS:

| | |
|-------------------|--|
| Supply Voltage: | + 30 volts |
| Power Output: | No DC Feedback Allowed |
| Case Temperature: | + 55 ⁰ C The Driver must be attached to an adequate heatsink . |

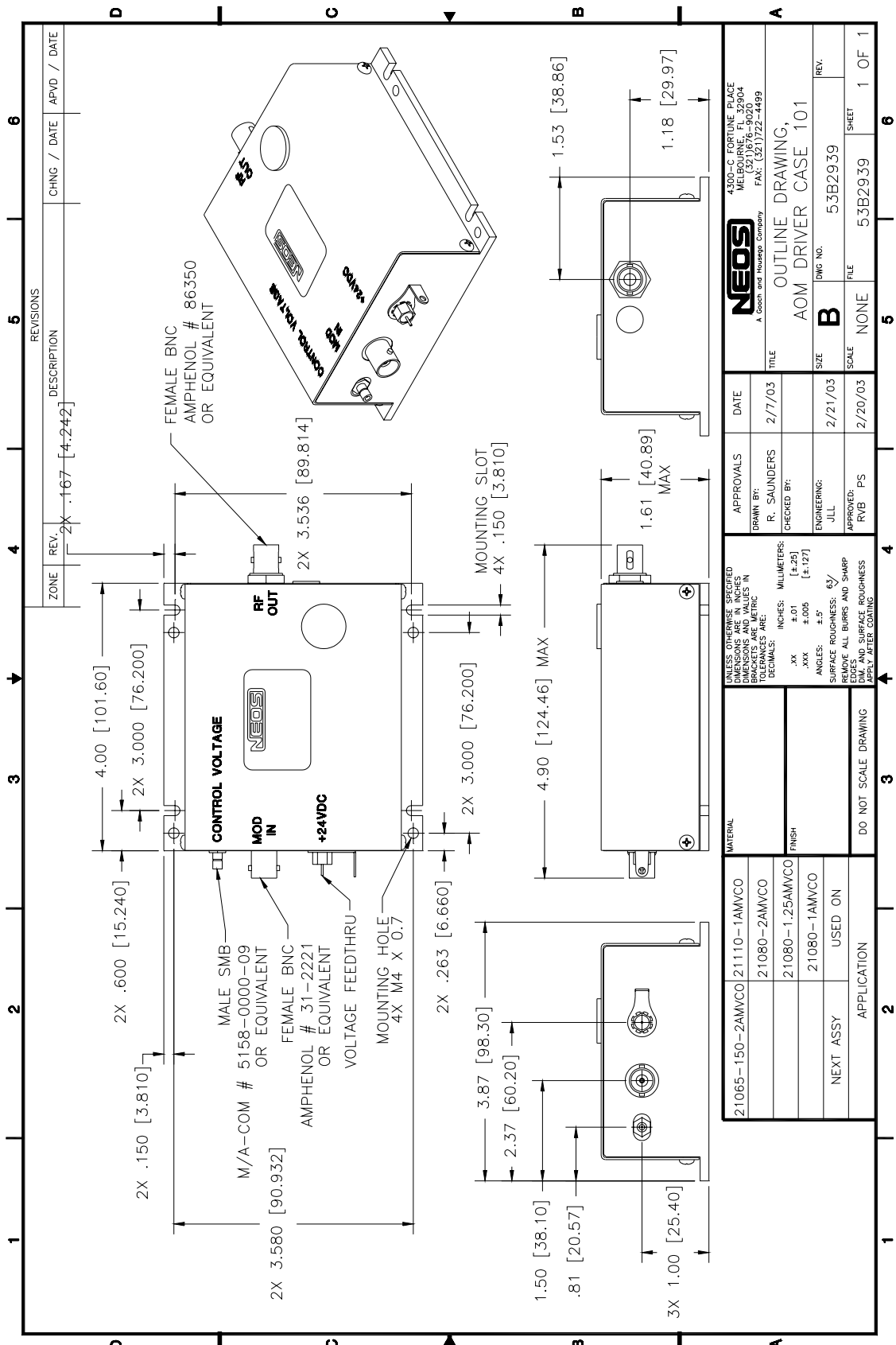
CONNECTORS & MECHANICAL:

| | |
|-------------------------------|-------------------------------------|
| RF Output Connector: | BNC Female |
| Modulation Input Connector: | BNC Female |
| Frequency Control Connection: | SMB Male |
| Power Supply Connections: | Vcc Solder Pin Return Solder Lug |

RELATED DOCUMENTS:

| | |
|------------------|---------|
| Outline Drawing: | 53B2939 |
|------------------|---------|

SECTION IV OUTLINE DRAWING



| ZONE | REV. | DESCRIPTION | CHNG / DATE | APVD / DATE |
|------|------|--------------|-------------|-------------|
| | 2X | .167 [4.242] | | |

| | | | |
|--|---------------|--------------|---------|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND VALUES IN PARENTHESES ARE IN MILLIMETERS TOLERANCES ARE: | | APPROVALS | DATE |
| .XX | ±.01 [±.25] | DRAWN BY: | 2/17/03 |
| .XXX | ±.005 [±.127] | R. SAUNDERS | |
| ANGLES: | ±.5° | CHECKED BY: | |
| SURFACE ROUGHNESS: | 63 | ENGINEERING: | 2/21/03 |
| REMOVE ALL BURRS AND SHARP EDGES | | JLL | |
| DIM. AND SURFACE ROUGHNESS APPLY AFTER COATING | | APPROVED: | 2/20/03 |
| | | RVB PS | |

| | |
|----------------------|---|
| MATERIAL | 21065-150-2AMVCO 21110-1AMVCO 21080-2AMVCO 21080-1.25AMVCO 21080-1AMVCO |
| FINISH | |
| APPLICATION | NEXT ASSY USED ON |
| DO NOT SCALE DRAWING | |

| | |
|---|-----------------|
| 4300-C FORUM PLACE MILLBURN NJ 07044 (351)976-9020 FAX: (351)722-4499 | |
| NEOS A Gooch and Housego Company | |
| TITLE: OUTLINE DRAWING, AOM DRIVER CASE 101 | |
| SIZE: B | DMG NO. 53B2939 |
| SCALE: NONE | FILE 53B2939 |
| SHEET 1 OF 1 | |

SECTION V CONTROLS AND CONNECTIONS

- | | | |
|----|---|---|
| A. | RF OUT BNC Female | The output of the driver supplies 1 or 2 watts of RF energy into the Acousto-Optical Beam Deflector or a 50 Ohm load. |
| B. | FREQUENCY CONTROL VOLTAGE SMB Female | This port accepts a control voltage between +2 and +15 volts. The exact control voltage vs. frequency data is supplied with the acceptance test results for each driver. |
| C. | MODULATION INPUT BNC Female | This port accepts an analog modulation voltage between "0" and +1 volt. +1 volt causes the driver to output Rf power at the maximum level as set by the power adjustment pot. |
| D. | VOLTAGE FEED-THROUGH | Applies DC power 24V (28V) @ 1 amp |
| E. | GROUND TAB | Return for power. |

SECTION V OPERATING PROCEDURES

TESTING:

Connect the "RF out" to a 50 ohm load capable of dissipating 2 watts.

Connect a VCO control voltage to the "CONTROL VOLTAGE" (SMB connector). See the driver ATR for voltage vs. frequency data.

Connect a 0-1 DC voltage for amplitude adjustment to the "MOD IN" (BNC connector) (1VDC = full on). DO NOT EXCEED 1VDC.

Apply +24 volts (28 V) @ 1 amp to the 24 V Feed through and return to the ground tab.

With 1 volt applied to the "MOD IN" input, adjust the control voltage to the low, center, and high frequency as required to test the driver. See the driver ATR for voltage vs. frequency data. Or, if a sweep generator is available, sweep the control voltage from the low to high voltage as listed on the ATR. Measure each of the parameters as listed on the driver ATR.

With 1 volt on the "MOD IN", adjust, if necessary, the driver output power level control ("white" one turn pot on pc board inside the driver module) for the power required for maximum diffraction efficiency of the AO devices or to a power which does not exceed the maximum allowed for the AO devices. **Do not exceed the maximum allowed for the AO devices or damage will occur.** If damage results due to overpowering the AO device, the warranty will be void.

OPERATION:

Attach the AO device to the RF output with a 50 ohm cable.

Follow the instructions in the AOBD device manual to align and adjust the devices as required in your optical system laser beam.

Apply the necessary signals to the frequency and amplitude control as desired.