



**NEOS TECHNOLOGIES**

A Gooch & Housego Company

OPERATING MANUAL

**AO MODULATOR DRIVER**

MODEL NUMBER:

**31XXX-YYAS**

Where **XXX = 24 to 250 MHz**

**YY = 2 TO 20 Watts**

**DOCUMENT NUMBER: 51A11427C**

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## **SECTION I**

### **INSPECTION PROCEDURE**

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**

### **DESCRIPTION**

The model 31XXX-YYAS is a crystal controlled RF generator designed to supply a RF signal that is analog modulated in amplitude and is used to drive the NEOS 23000 or 35000 series acousto optic modulators that require more than 2 Watts of drive power. The XXX in the model number is the RF output frequency and is typically 24 to 250 MHz. The RF power output (YY) is factory set to the requested drive power when ordered and can typically deliver from 2 to 20 Watts into 50 Ohms load. The maximum output power of the unit can not be adjusted above the factory set limit and is typically set to that required for the matching AO device.

The 31XXX-YYAS system driver consists of a crystal controlled oscillator, a 0 to 1 Volt amplitude modulation circuit, a pre amplifier stage, and a output power amplifier stage and is supplied as a rack mountable box with power supply, cooling fans, and control switches. The maximum modulation repetition rate is 100 KHz. The front panel switches control input power on / off and RF output Mode: CW / Normal. In the CW mode, the RF signal is output continuously. In the Normal mode, the RF signal is proportional in amplitude to the 0 to 1 Volt analog signal input to the "Analog Mod in" port.

**SECTION III**  
**SPECIFICATIONS**

<b><u>PARAMETER</u></b>	<b><u>SPECIFICATION</u></b>
Frequency (XXX)	24 to 250 MHz +/- 0.01 %
Spurious Levels:	-40 dBc maximum
Harmonic Distortion:	-15 dBc maximum
Extinction Ratio:	40 dB minimum
RF Rise / Fall Time	30 ns maximum 24 to 70 MHz 20 ns maximum. 70 to 150 MHz 15 ns maximum 150 to 225 MHz 10 ns maximum 250 to 250 MHz
Mod In Analog	0 to $\pm 1$ Volt, 1 Volt = Full RF output
Power Output (YY)	6 Watts Typical, Adjustable to Set Limit. See Acceptance Test Report. RF output factory set for optimum performance when paired with a NEOS AO Device.
Output Impedance	50 Ohms nominal
Supply Voltage	100 to 240 Volts AC 50 – 60 Hz
Supply Current:	1.5 Amps maximum
Case Temperature:	+ 45 <sup>0</sup> C maximum

**MAXIMUM RATINGS:**

Supply Voltage:	+264 Volts AC
Power Output:	No DC feedback allowed
Storage Temperature:	-20 to + 85 <sup>0</sup> C

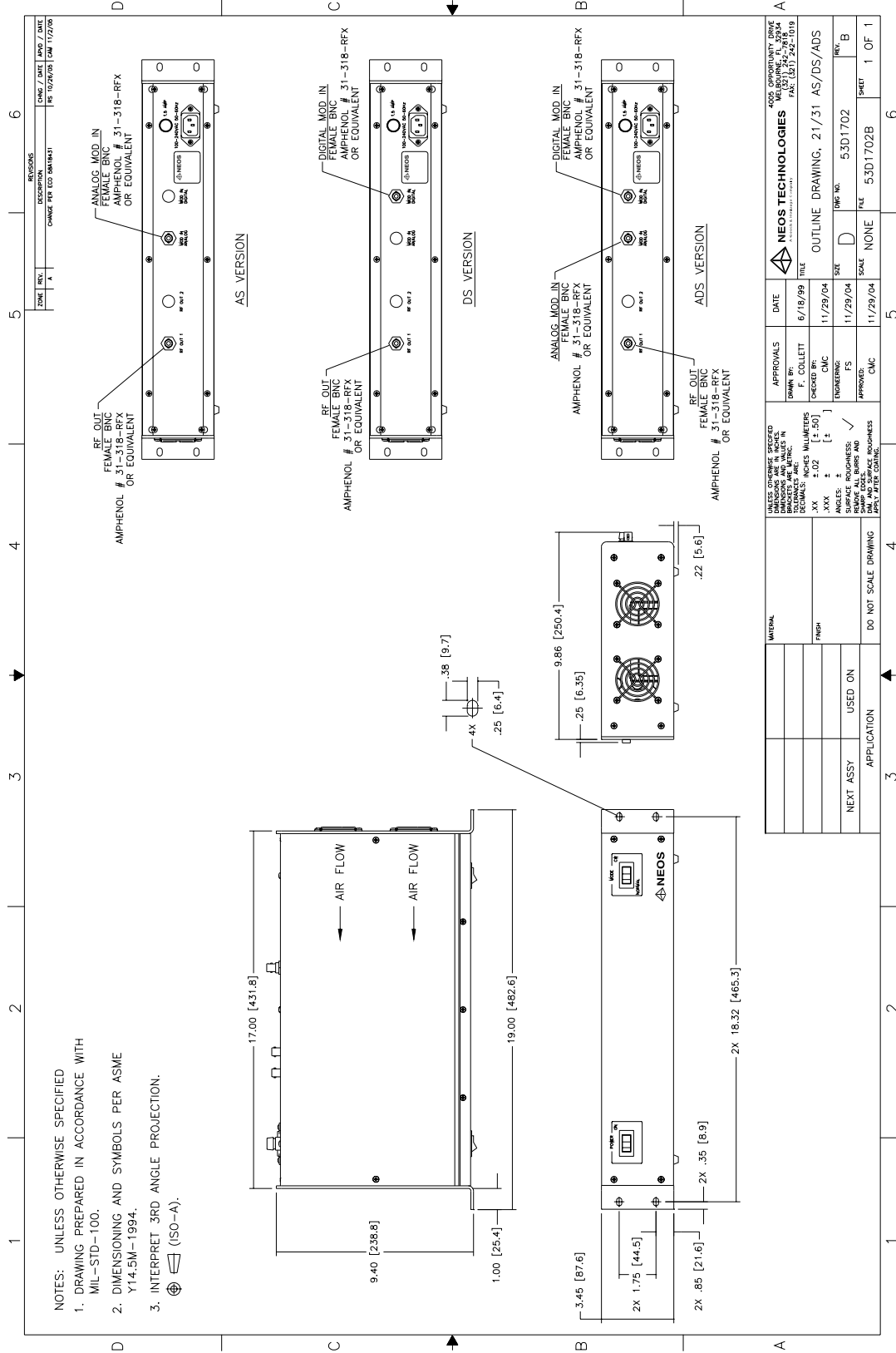
**CONNECTORS AND MECHANICAL:**

RF Output Connector:	BNC Female connector
Modulation Input Connector:	BNC Female connector
Power Supply Connectors:	3 pin IEC panel mount EMI filtered
Physical Size:	10.03" D x 3.48" H x 19.01" W

**RELATED DOCUMENTS:**

Outline Drawing:	53D1702
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# SECTION IV OUTLINE DRAWING



- NOTES: UNLESS OTHERWISE SPECIFIED  
 1. DRAWING PREPARED IN ACCORDANCE WITH MIL-STD-100.  
 2. DIMENSIONING AND SYMBOLS PER ASME Y14.5M-1994.  
 3. INTERPRET 3RD ANGLE PROJECTION.

ZONE	REV.	DESCRIPTION	CHNG / DATE	APP'D / DATE
	A	CHANGE PER ECO 58A1851	15/10/2008	10/11/2008

APPROVALS		DATE	FILE
DRAWN BY:	F. COLLETT	6/18/99	FILE
CHECKED BY:	CMC	11/29/04	
ENGINEERING:	FS	11/29/04	
APPROVED:	CMC	11/29/04	

SIZE	SCALE	SHEET
D	NONE	1 OF 1

DATE	DESCRIPTION
6/18/99	4200 OPERATIONAL DRAWING
11/29/04	REV. 1

**SECTION V**  
**CONTROLS AND CONNECTIONS**

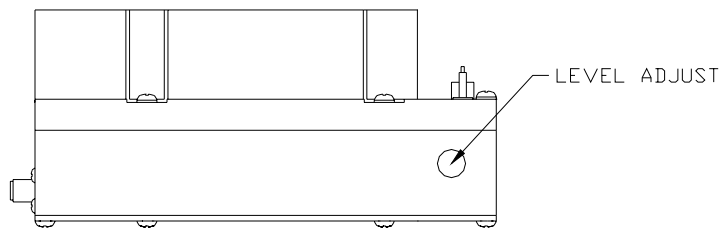
**CONTROLS:**

- A. Power Switch Turns on the AC power to the unit.
- B. Front panel Mode switch
  - CW - Outputs RF continuously. Ignores signal input to analog input port.
  - Normal - The RF Output is amplitude modulated by the 0 to 1 Volt signal input to the Analog modulation port.
- C. Level Adjust Accessible through the hole in the side of the module inside the rack mountable box. The RF output power level is factory adjusted. **WARNING:** Do not adjust the RF output power to a value above that which is required for the AOM. Applying RF power in excess of the rated maximum will result in damage and will void the Warranty. Adjust the RF power before connecting to the AOM. See figure 1 below.

**INPUTS/OUTPUTS:**

- D. RF Out: The system output is XXX MHz signal at YY Watts. \*  
BNC Female Connector.
  - E. Mod Input: This input accepts analog 0 to  $\pm 1$  Volt level signals and modulates the RF carrier.  
1 Volt = RF maximum. BNC Female Connector.
  - F. Power in: 100 to 240 Volts AC @ 1.5 Amp. 3 pin IEC Panel Mount EMI Filtered
- \* If purchased with a NEOS AO Modulator, the RF power will be preset for optimum performance.

Figure 1



53D1597

## SECTION VI OPERATING PROCEDURES

### **TESTING PROCEDURE:**

With the power off, attach a 50 Ohm load capable of dissipating the RF power level specified on the Acceptance Test Report to the "RF Output" of the unit.

Apply 100 to 240 Volt 50 –60 Hz to the unit under test.

Set the Mode switch set to CW.

Turn the AC power switch on.

Measure the frequency and output power of the driver. ( Note: power is factory pre-set to match the NEOS AO device for optimum performance and is listed on the AO device Acceptance Test Results form. Other parameters are listed on the Acceptance Test Results form included with this driver).

Adjust, (if necessary), the output power of the power level necessary for the AO device to be driven. The adjustment is accessible through the hole in the side of the module under the cover.

**Warning: The RF power should never exceed that specified for the AO device driven. See the AO device manual for power limitations and other warnings.** If damage results due to overpowering the AOM, the warranty will be void.

With the mode switch set to Normal, apply an analog 0 to 1 Volt modulating signal to the Modulation Input port.

Measure RF output for specifications for this driver as listed in the Acceptance Test Results form included with this driver.

The driver has been designed and has been tested to meet the specification. Notify NEOS Technologies if the driver does not pass the electrical testing.

### **OPERATION PROCEDURE:**

To use the driver, with the power off, attach the NEOS 23000 or 35000 series to the driver with a 50 Ohm cable.

Apply 100 to 240 Volt 50 –60 Hz to the unit.

Set the Mode switch set to CW.

Turn the AC power switch on.

**Follow the instructions in the AO device manual to align and adjust the optical modulator, as required.**

With the Mode switch set to Normal, apply a 0 to 1 Volt analog signal to the Modulation Input port as desired.