

# MD-20-B



DEVICE

## 20 GHz Modulator Driver/RF Amplifier, Benchtop

OVERVIEW

The Optilab MD-20-B Modulator Driver (MD) is a 20 GHz RF Amplifier in a user-friendly benchtop that provides a high-quality, single-ended voltage to drive an external optical modulator. Typical applications include driving EML, EAM, and Mach-Zehnder devices, and it can also be used as a wideband RF amplifier with useable bandwidth of 100 kHz to 20 GHz, including its +26 dBm adjustable output, making it suitable for many RF link applications. The MD-20-B amplifies 22 Gb/s data input signals to 7.5 Vp-p drive levels, and the flat gain and group delay response yield a high quality, low-jitter electrical drive signal for digital applications. In addition to its amplification function, the MD-20-B also features a manually adjustable DC bias output voltage port, to further compliment its effectiveness when used with a standard LiNbO3 external modulator. Contact Optilab for more information.

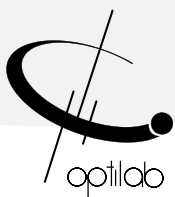
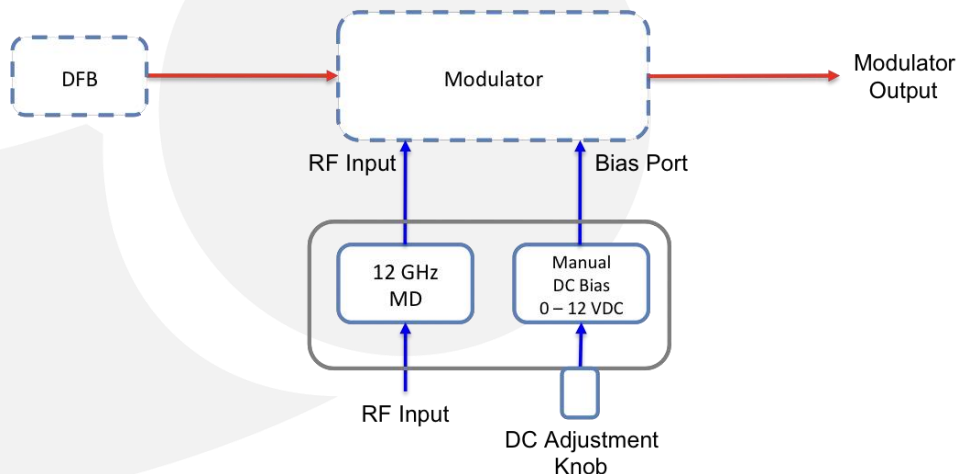
FEATURES

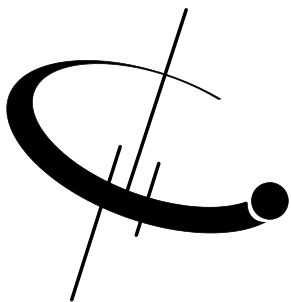
- Bandwidth up to 20 GHz
- Data rates exceed 22 Gb/s
- Manual DC Bias Output Port to 12 Volt
- Benchtop with LCD Display
- Variable RF Gain Control

USE IN

- 22 Gb/s Digital Modulation
- DPSK Driver
- Analog RF Amplification to 22 GHz
- General laboratory testing
- RF over Fiber Link Amplified

FUNCTIONAL DIAGRAM





# MD-20-B

## SPECIFICATIONS

3 dB S21 Bandwidth	20 GHz min.
S11 Characteristics	< -10 dB at 10 GHz
Saturated Output Power	> 26 dBm typ.
RF Gain	16 dB to 26 dB, variable
Gain Ripple	± 1.5 dB over 5 GHz
Input, Output Impedance	50 Ω
Input VSWR to -10 GHz	1.6 : 1 typ.
Output VSWR	2.0 : 1 typ.
Total Power Dissipation	7 W max.
Gain Adjustment Range	10 dB typ.

## GENERAL

## DC CONTROL

Manual DC Control Adjustment	-12 V to +12 V
Manual Bias Adjustment Range	-12 V to +12 V

## DIGITAL APPLICATIONS

Data Rate	Up to 15 Gb/s
Output Amplitude	7.5 V <sub>p-p</sub> typ.
Pulse Response	10%, rise time 35 ps typ.
Input Range	500 mW to 1.5 V

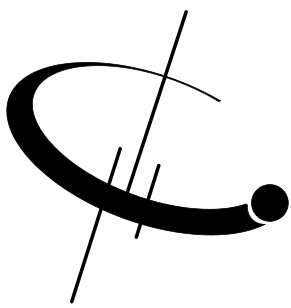
## ANALOG APPLICATIONS

Useful Frequency Range	75 KHz to 15 GHz
P1dB Output	> 23 dBm max.
Group Delay	± 25 ps
Noise Figure	11 dB typ.
Small Signal Gain	30 dB typ.

## MECHANICAL

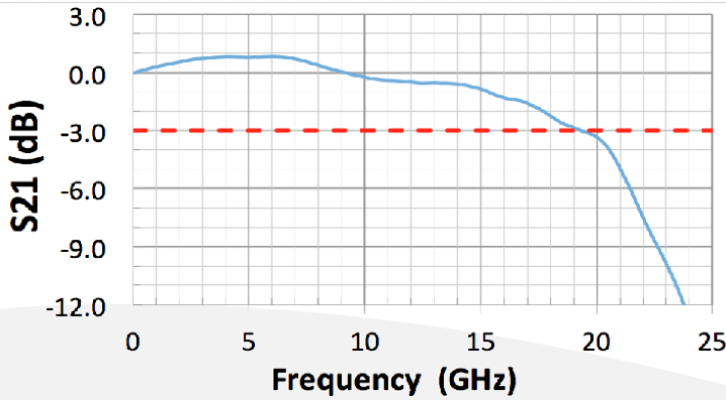
Operating Temperature	0°C to +70°C
Storage Temperature	-45°C to +100°C
Operating Humidity	85%
Power Supply Requirements	110/220 VAC, 50/60 Hz
RF Input/Output Connector	K Connector Female
Dimensions	280mm x 90mm x 320mm



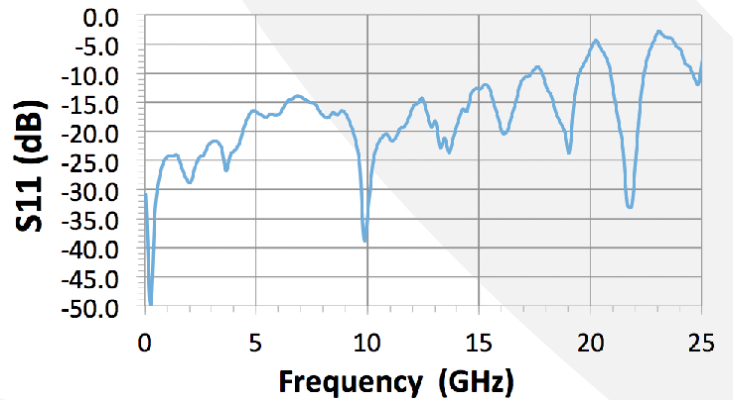


# MD-20-B

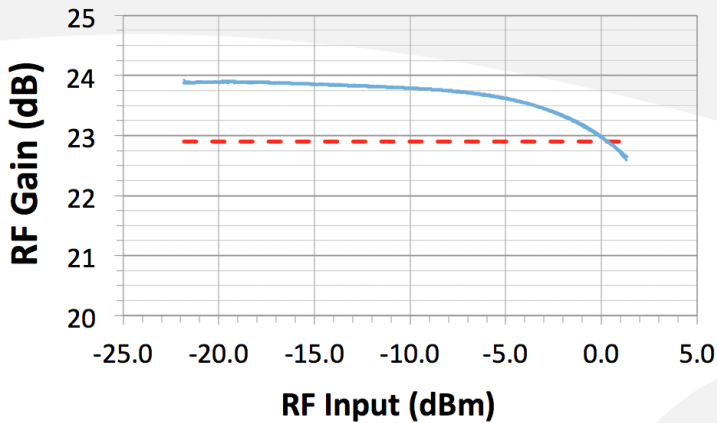
TYPICAL S21 RESPONSE



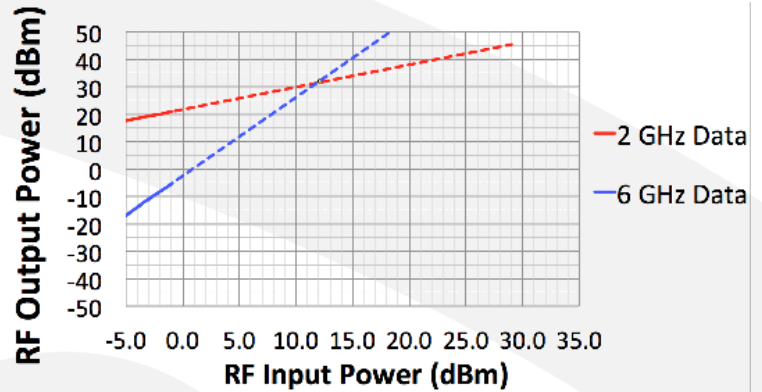
TYPICAL S11 RESPONSE



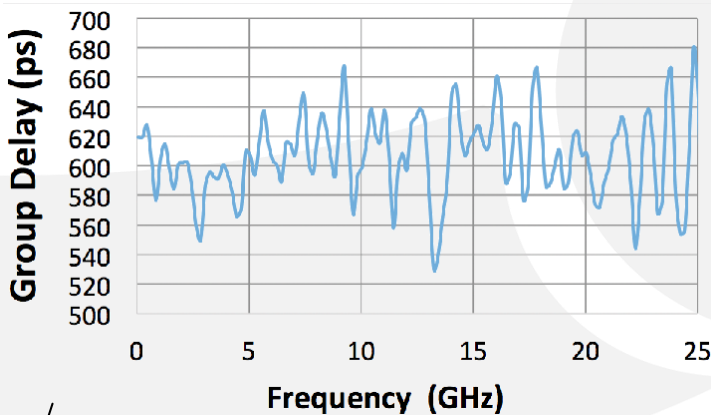
1 DB COMPRESSION



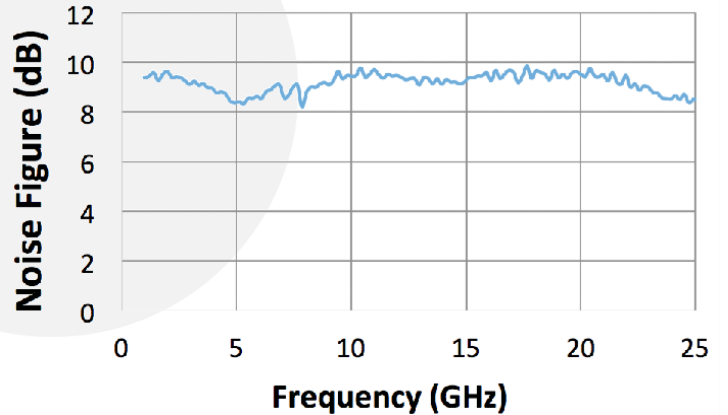
THIRD ORDER INTERCEPT

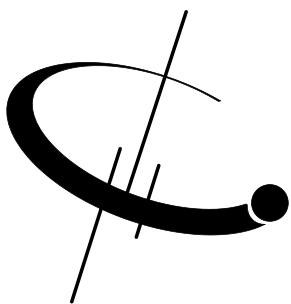


GROUP DELAY



NOISE FIGURE

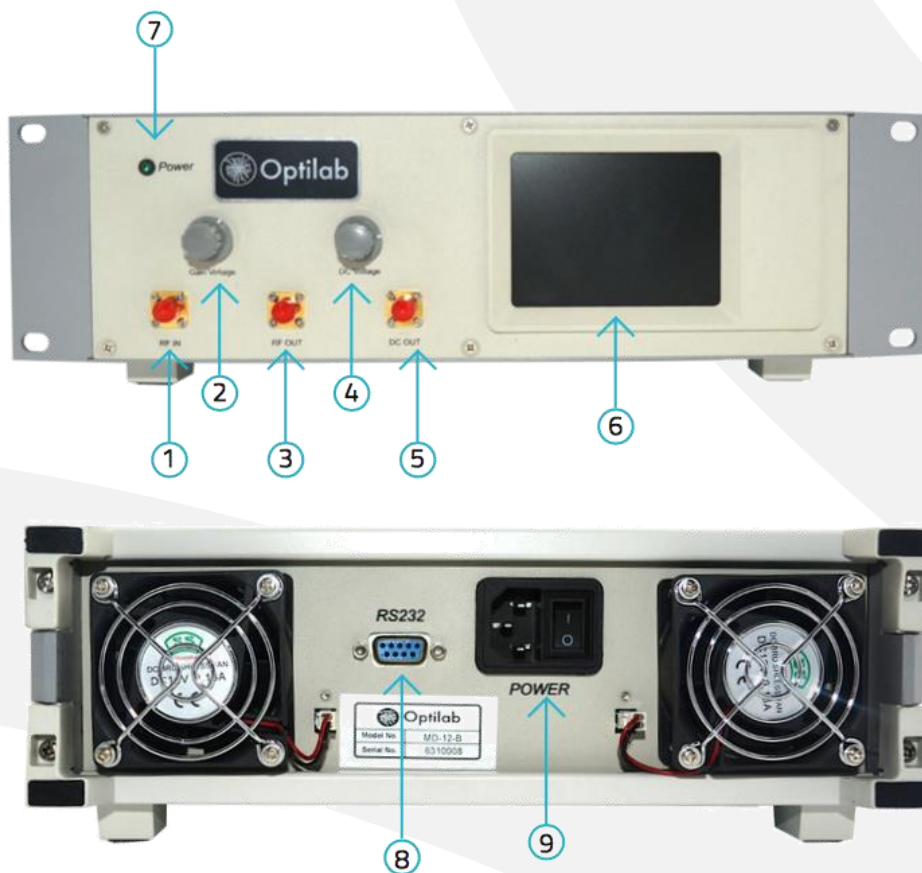




# MD-20-B

## Port Function Description

1	RF Input
2	RF Gain Voltage Adjust
3	RF Output
4	DC Voltage Adjust
5	DC Output
6	LCD Display
7	Power LED
8	RS232
9	Power switch



## REMOTE LABVIEW INTERFACE

Optilab offers remote interface via LabVIEW software, for parameter adjustment and status monitoring, contact Optilab for more details.

