

# MD-40



## DEVICE

## 40 GHz Modulator Driver/RF Amplifier

The Optilab MD-40 Modulator Driver (MD) is a wide band RF Amplifier designed for 40 GHz applications, providing a single-ended high voltage signal to drive an optical modulator, EML or EAM. With 38 GHz useful bandwidth and 30 dB gain, the MD-40 can be used as a pre-amplifier for analog RF over Fiber links. The MD-40 amplifies beyond 40 Gb/s data input signals to 7.5 Vp-p drive levels, with its flat gain and group delay response yielding a high quality, low-jitter electrical drive signal for digital applications. Featuring an anodized, precision-machined aluminum housing, the MD-40 is designed for applications during prolonged use. Contact Optilab for more information.

## OVERVIEW

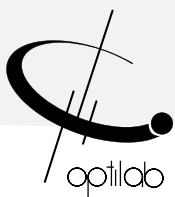
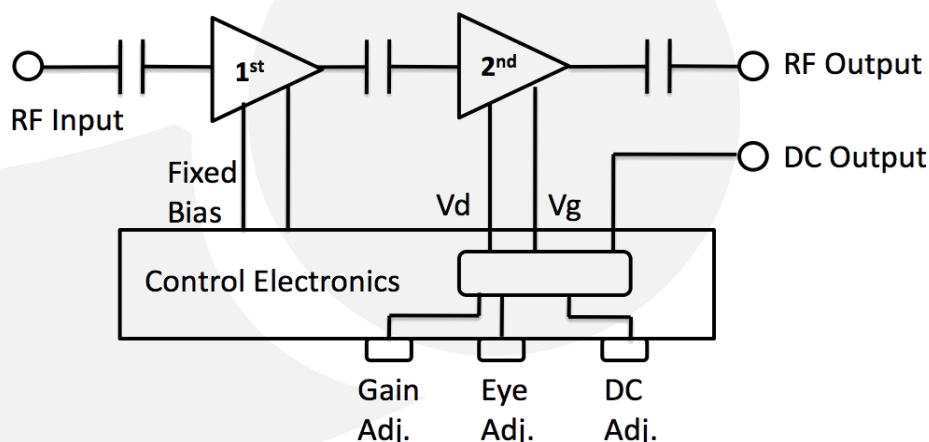
## FEATURES

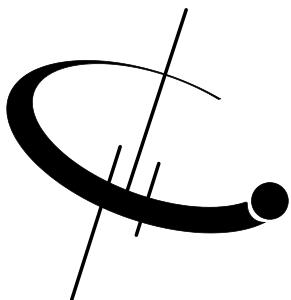
- Dual stage amplification design
- S21 3 dB bandwidth 32 GHz
- 7.5 Volt peak to peak output
- Built in eye crossing and gain adjustment
- Up to 30 dB small signal gain
- Built in DC output for modulator biasing

## USE IN

- Amplifier RF over Fiber link
- Analog RF amplification to 38 GHz
- 40 Gb/s digital modulation
- OC 768 system
- General laboratory testing

## FUNCTIONAL DIAGRAM





# MD-40

## SPECIFICATIONS

3 dB S21 Bandwidth	32 GHz typ.
Saturated Output Power	> 21.5 dBm typ.
RF Gain	30 dB max.
Gain Ripple	±0.75 dB
Input, Output Impedance	50Ω
Input Return Loss	10 dB min.
Output Return Loss	10 dB min.
Total Power Dissipation	2.5 W max.
Gain Adjustment Range	10 to 30 dB

## GENERAL

## DIGITAL APPLICATIONS

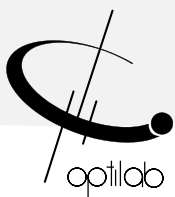
Data Rate	> 40 Gb/s
Pulse Response	20% - 80%, rise time 12 ps typ.
Output Amplitude	7.5 V <sub>p-p</sub> max.
Input Range	1.5 V max.

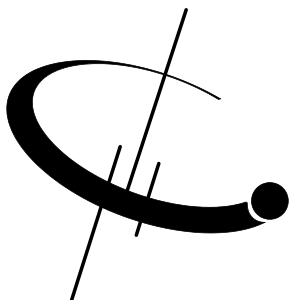
## ANALOG APPLICATIONS

Useful Frequency Range	30 KHz to 38 GHz (-6 dB)
P1dB Output	> 21 dBm typ.
Group Delay (2 to 10 GHz)	± 25 ps
Noise Figure	6 dB typ.
Small Signal Gain	30 dB typ.

## MECHANICAL

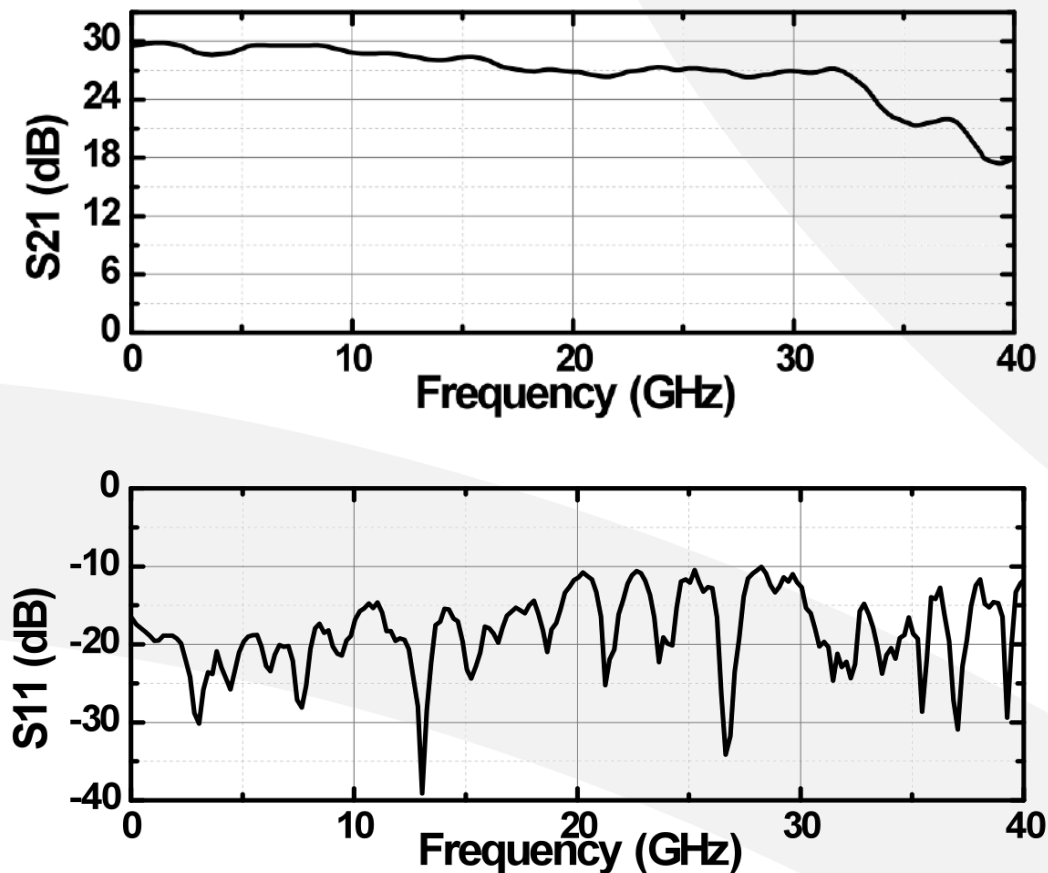
Operating Temperature	-20°C to +60°C
Storage Temperature	-45°C to +90°C
Operating Humidity	85%
Power Supply Requirements	+12 V DC, 1 A max.
Accessories Included	12 V DC power supply PS-12-M
RF Input/Output Connector	K Connector Female, AC Coupled
Electrical Connector	4-pin Molex
Dimensions	160mm x 65mm x 32.5mm
Remote Control	USB port



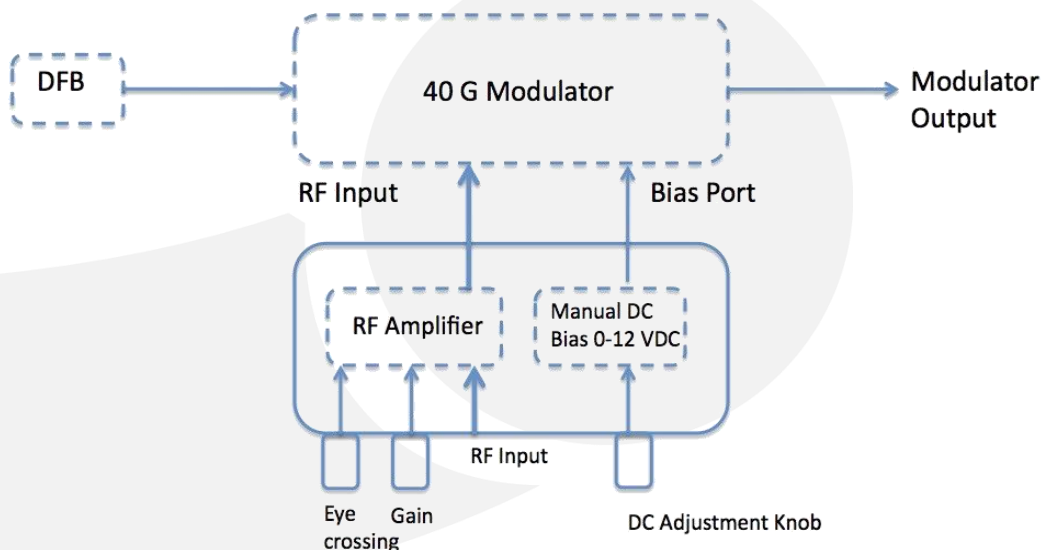


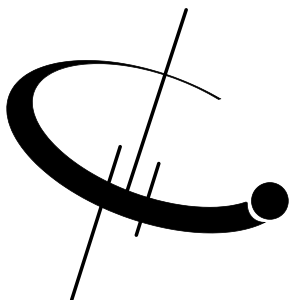
# MD-40

TYPICAL S21 AND S11  
BANDWIDTH



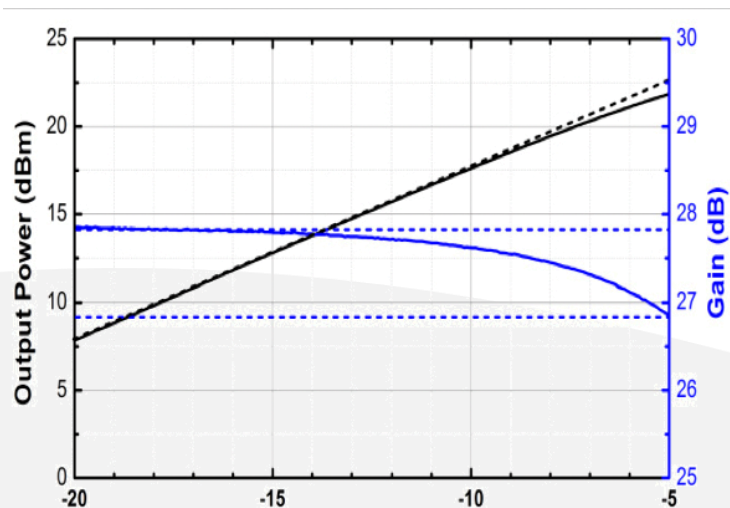
APPLICATION FUNCTIONAL DIAGRAM



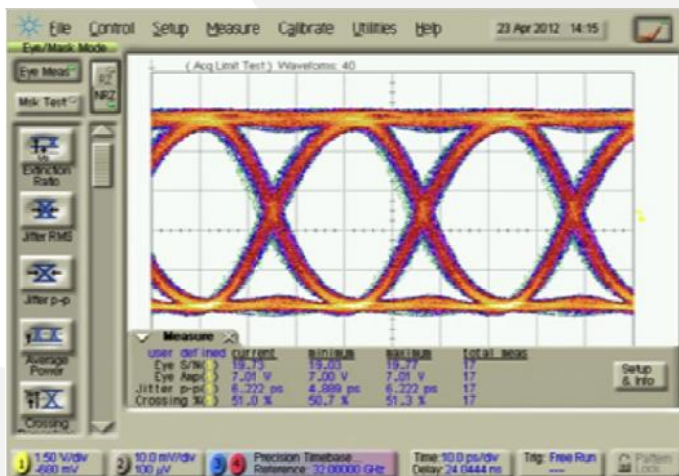


# MD-40

1 DB COMPRESSION POINT

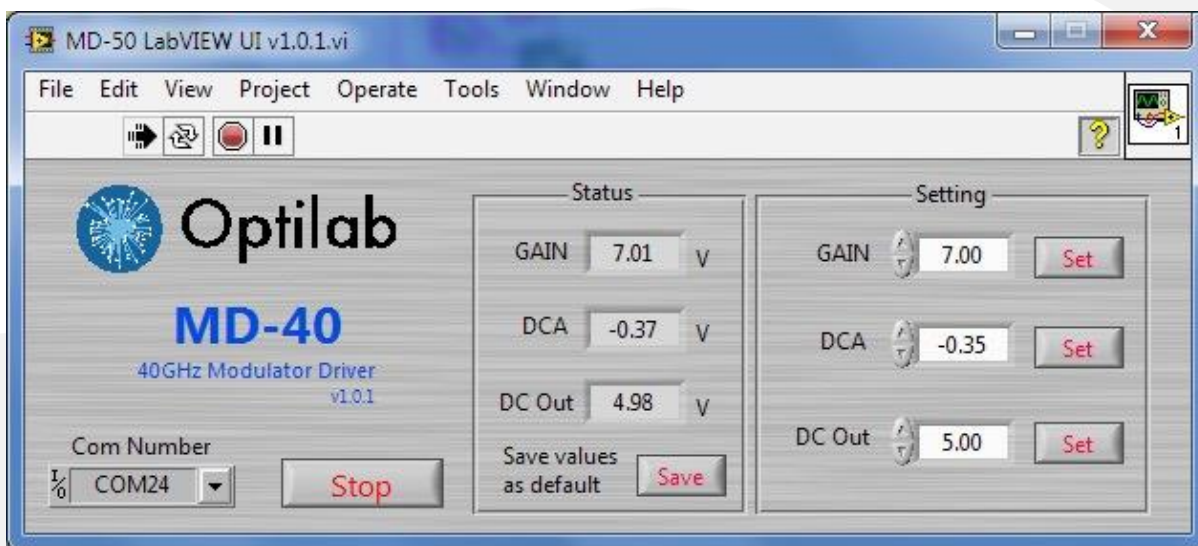


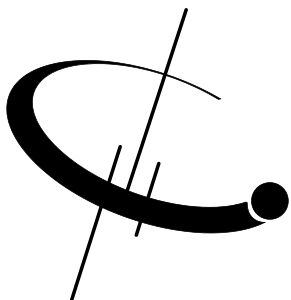
32 GBPS EYE DIAGRAM



REMOTE LABVIEW INTERFACE

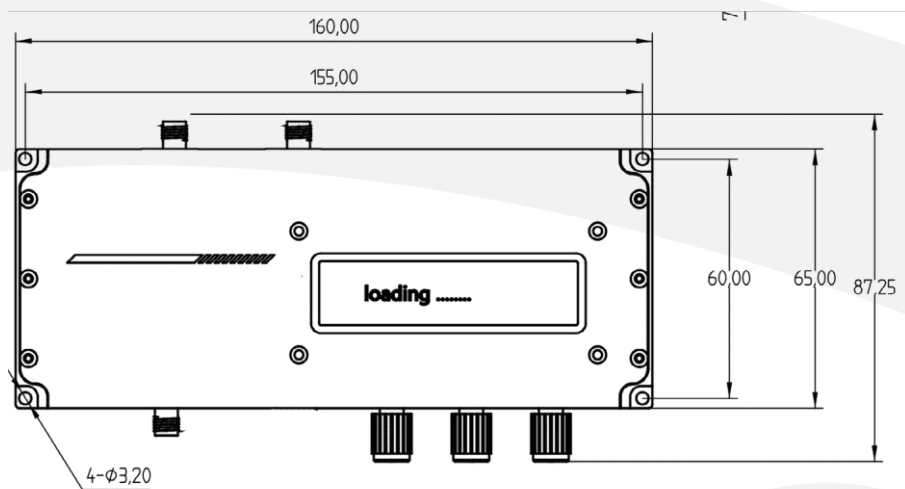
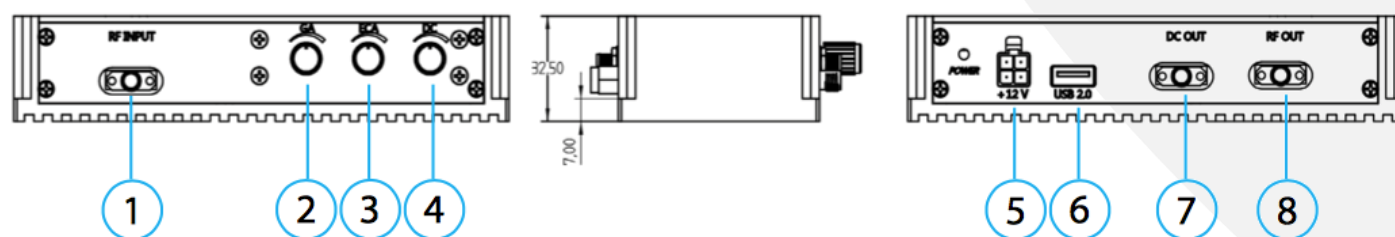
Optilab offers remote interface via LabVIEW software, for parameter adjustment and status monitoring, contact Optilab for more details.





# MD-40

## MECHANICAL DRAWING



## PORT FUNCTION DESCRIPTION

1	RF Input
2	RF Gain Adjust Knob
3	Eye Crossing Adjust Knob
4	DC Output Adjust Knob
5	Power Input Molex
6	USB 2.0
7	DC Bias Output
8	RF output

