Calmar Optcom BRM Data Sheet

Rev.110202

BIT RATE MULTIPLIER

OVERVIEW

APPLICATIONS

- 10, 40, 160 Gb/s, 320 Gb/s transmission
- High-speed photodetector and photoreceiver testing
- High-speed optical characterization
- Soliton transmission experiments

FEATURES

- Passive fiber delay line based technology
- Stage to stage input/output access
- PRBS output format
- Low insertion loss
- Long term stability
- Optional temperature control for stability of delay fiber

ADVANTAGES

- **Performance** – all polarization maintaining (PM) component construction produces PM output without the need for polarization control
- **Flexibility** – instrument enables the use of 10 Gb/s electronics to implement 40 Gb/s sources
- **Cost effective** – low cost and versatile solution for up to 320 Gb/s communications
- **Space saver** – single unit fits into industry standard rack mountable space and provides the same functionality as multiple instrument configurations

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PRODUCT SPECS

BIT RATE MULTIPLIER

SPECIFICATIONS

Model	BRM-T-2	BRM-T-4	BRM-T-8	BRM-T-16
Multiple Factor	2	4	8	16
Insertion Loss	< 5 dB	< 10 dB	< 15 dB	< 20 dB
Tunable Delay	70 ps	70 ps	70 ps	70 ps
Polarization Extinction Ratio	> 17 dB	> 17 dB	> 17 dB	> 17 dB
Package Dimension	48 x 42 x 9 cm	48 x 42 x 9 cm	48 x 42 x 9 cm	48 x 42 x 9 cm

OPTION

Temperature control for stability of delay fiber.

The temperature control system regulates the BRM time shift to 1E-6. Since the fiber length has 1E-5 temperature dependence, the delay fiber causes a time shift between bits as the room temperature changes. Setting the delay fiber at constant temperature can help reduce the time shift.

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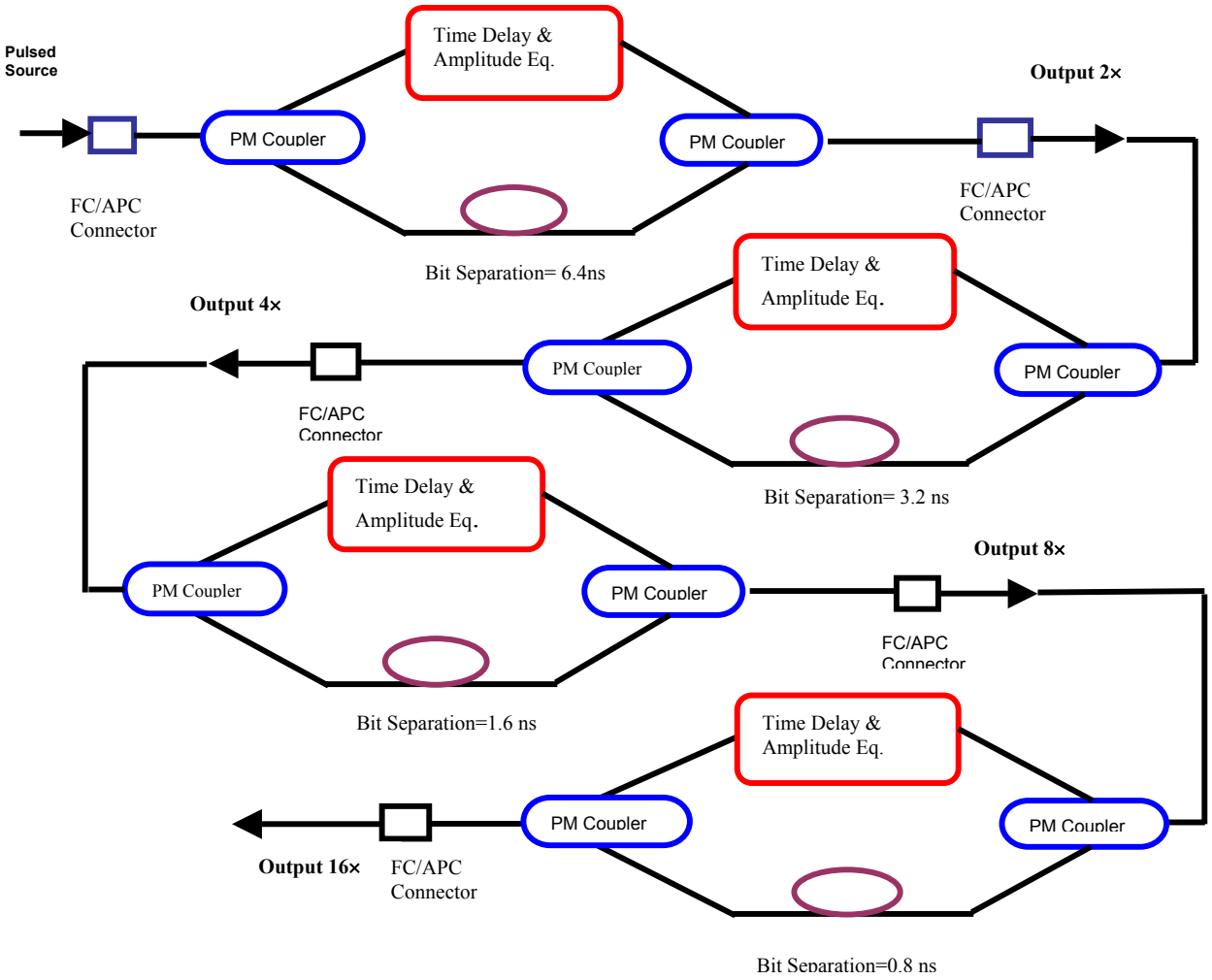
TECHNOLOGY

OPERATING PRINCIPLE

The BRM multiplies input pulse train repetition rates by 2, 4, 8, and 16. This is accomplished by dividing the input pulse into separate legs of a Mach-Zehnder fiber interferometer. One leg provides a variable pulse delay and amplitude equalization, while the other leg produces a fixed bit-pattern delay. The two pulses are then recombined to produce a repetition rate of two times the input rate. The BRM-T-4 unit has two cascaded stages and has an optical output from the first stage so that the user can access a 2× pulse train for initial application setup. The BRM-T-8 unit implements the same principle as the BRM-T-4, possessing three cascaded stages, while the BRM-T-16 unit has four cascaded stages. They have an optical output from the previous stage to allow the user to access 8× and 16× pulse trains for initial application setup.



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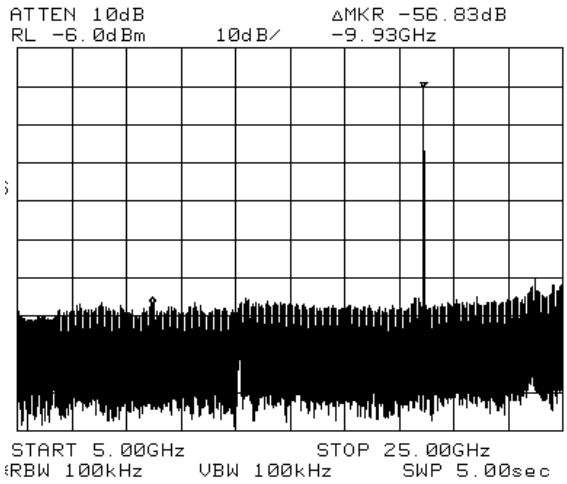
BIT RATE MULTIPLIER

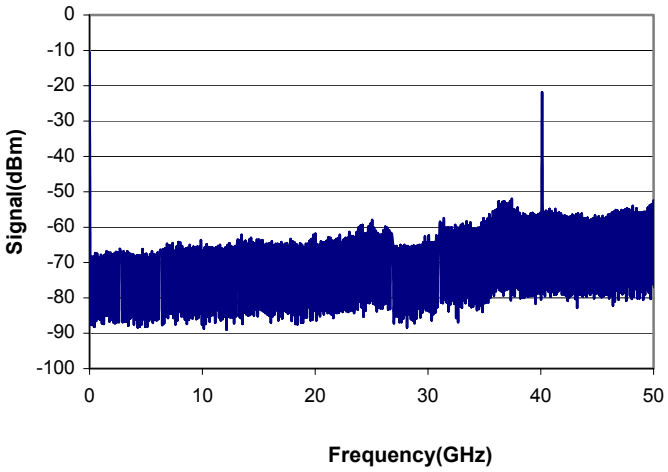
PERFORMANCE

Input=10GHz, Output=20GHz

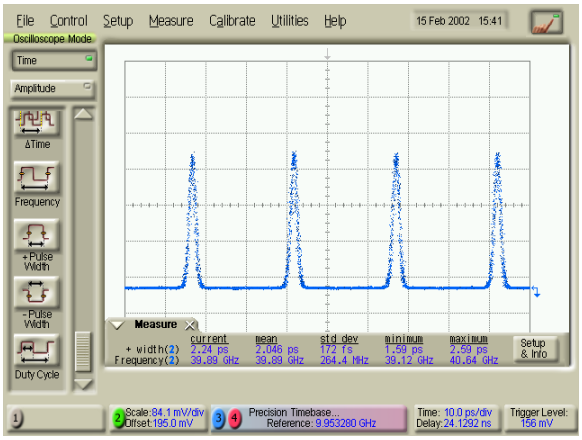


A 20 GHz spectrum output. The suppression of the input frequency is at least 55 dB. The input frequency is 10 GHz.

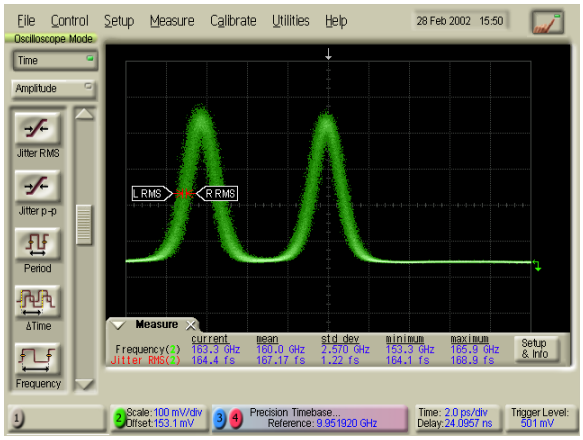
Input=10GHz, Output=40GHz



A 40 GHz spectrum output. The suppression of the input frequency is at least 35 dB. The input frequency is 10 GHz.



A 40 GHz output trace. The input pulse train was generated using a PSL-10 10 GHz fiber laser.



A 160 GHz output trace. The input pulse train was generated using a PSL-10 10 GHz fiber laser.

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