Specifications of Ditherless Bias Controller

(Last updated on 5/22/07, Rev.1.0)

Ditherless Bias Controller is an OEM version standalone device of bias control feedback loop. It locks the bias of the device to desired reference point. It has many applications, such as for MZ Modulator Bias Control or for Fabry-Perot filter control. Since it does not apply pilot tones, therefore, it does not disturb the system, which is very important for many analog systems. It features high accuracy, high dynamic range. The locking slope can be switched with a sliding switch on the board as long as the working function of the device is periodical. When the drift is out of the specified range, the unit will pull the bias back to the desired working point close to 0V. There are two photodiodes built in the board, an external reference voltage can also be applied as specified at order.
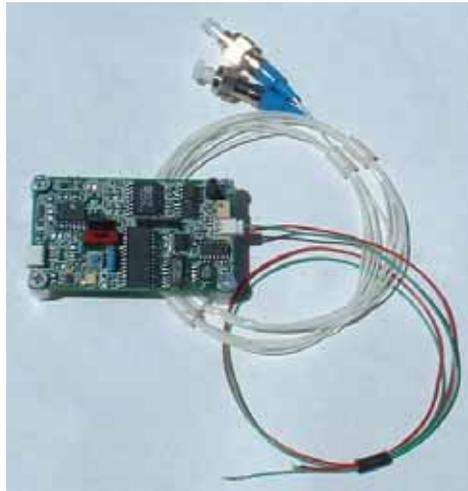
Top View of the Ditherless Bias Controller

Parameters	Min	Typ	Max	Unit
Input signal current	0.1×10^{-6}		3.5	mA
Input optical power	-69		6	dBm
Locking Accuracy		0.1		%
DC Bias Voltage	-10		+10	V
Positive Power Supply	10	12	+15	V
Negative Power Supply	-10	-12	-15	V
Positive supply current			20	mA
Negative supply current			15	mA
Operating temperature	0		70	C
Storage temperature	-40		80	C
Dimension	L2.35×W1.35×H0.5"			

Typical Applications

Locking at Quad for an MZ modulator with balanced outputs:

```
                                                              1%  coupler
        ┌─────────────────────────────────┐
        │          MZ Modulator           │─────────────────────┐
CW Laser│                                 │                  ┌───┴──┐
        └──┬──────────────────▲▲──────────┘         ┌───┐    │      │──▶
           RF               DC  RND                 │   │──▶ └──────┘
                             │                      1%  coupler
                             │         Bias control
                  PD-ref     │         output
                  ┌──────────┴───────┐
                  │   Ditherless BC  │
                  PD                 │
                  └──────────────────┘
```
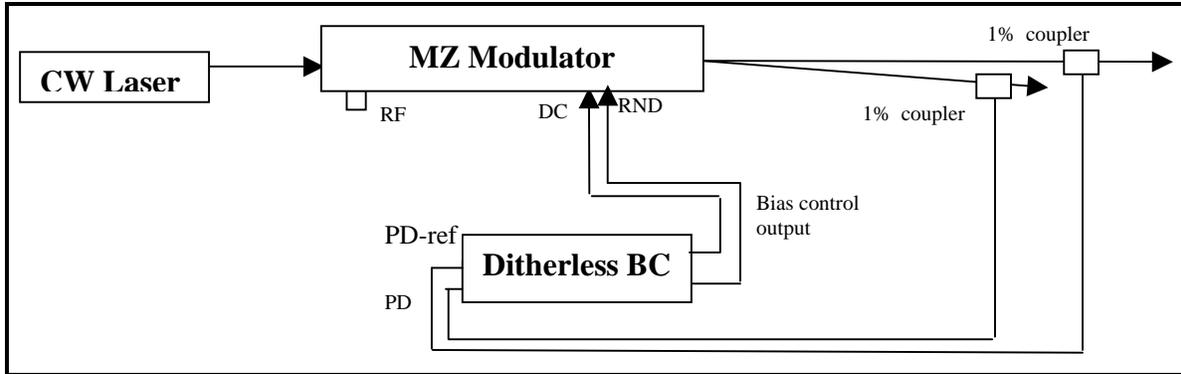
Configuration of Ditherless BC for Quad Application.

Locking at Quad for FP Filter

```
        1%  coupler                                          1%  coupler
        ┌───┐     ┌──────────────────────────────┐
CW Laser│   │────▶│   Fabry-Perot Tunable Filter  │──────┐   ┌───┐
        └───┘     └──────────────────────────────┘    ┌──┴──┐│   │──▶
                           DC Bias    ▲ GND            └─────┘
                                      │         Bias control
        ┌──────────────────┐ PD-ref   │         output
        │Optical attenuator├──────────┴────────┐
        │(3dB+FPTF insertion loss)             │
        └──────────────────┘  ┌────────────────┐
                           PD  │  Ditherless BC │ GND
                              └─────────────────┘
```
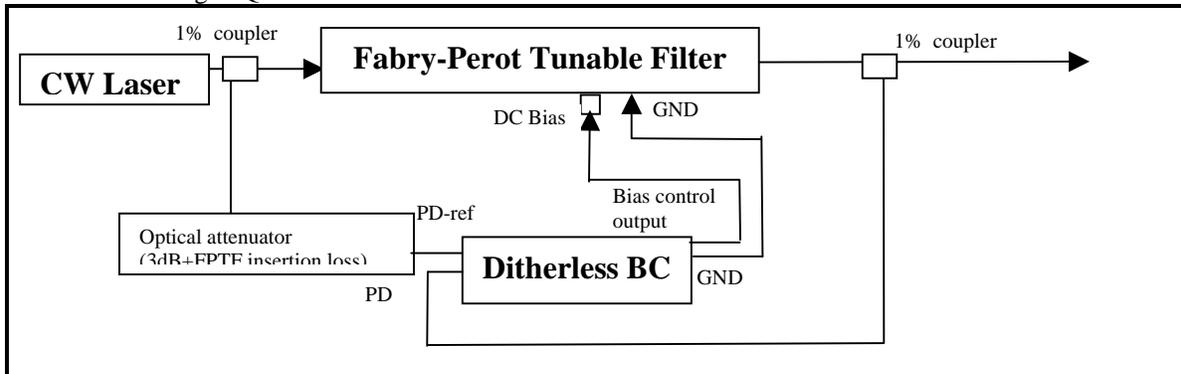
Configuration of DitherlessBC for FP Tunable Filter.