MBC

# MBC-IQ-LAB

## IQ Modulator Bias Controller

Exail MBC-IQ-LAB is a bias controller designed to stabilize the three operating bias points of a dual parallel modulator. This MBC is fully automated and uses a reduced dither signal to provide a rock stable setpoint of your phase delays over time and environmental conditions. It has been designed for optimal performance in CS-SSB applications to ensure a robust and steady optical carrier extinction.

Finally, a user-friendly Graphical User Interface - GUI - is provided for monitoring and (manual) setpoint adjustments if desired.




### Features

- Designed for I&Q modulators
- Automated bias points (MIN, MIN, QUAD)
- High stability
- High sensitivity

### Applications

- Analog communications CS-SSB

### Options

- Internal photodiode and tap coupler
- Dual drive IQ modulator

### Performance Highlights

| Parameter | Min | Typ | Max | Unit |
|---|---|---|---|---|
| DC bias voltage | -12 | - | +12 | V |
| Automated locking points | $DC_1$ MIN, $DC_2$ MIN, $DC_3$ QUAD± | | | - |
| Control | Remote | | | - |

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### Bias Control Characteristics

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| | | **Timing** | | | | |
| Autotest | Auto | Automatic scan | - | 20 | - | s |
| Initialisation | - | Bias control stabilization time after a scan | - | 30 | 180 | s |
| | | **Efficiency** | | | | |
| Optical output power stability | - | Over 2 hours and modulator temperature controlled | - | ± 0.1 | - | dB |

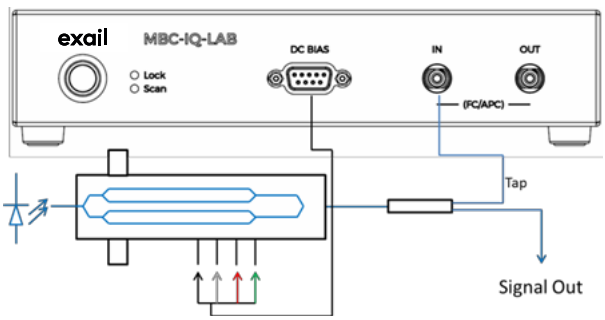
### Electrical Characteristics

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $DC_1$, $DC_2$ bias voltage | $V_{bias}$ | $VDC_1$, $VDC_2$ | -12 | - | +12 | V |
| DC3 bias voltage | $V_{bias}$ | $VDC_3$ | -13.5 | - | +13.5 | V |
| Locking point | $DC_1$ | Automated | MIN (0 %) | | | - |
| | $DC_2$ | Automated | MIN (0 %) | | | - |
| | $DC_3$ | Automated | QUAD- (-50 %), QUAD+ (+50 %) | | | - |
| Dither frequency $DC_1$ | $F_{DC1}$ | - | - | 1120 | - | Hz |
| Dither frequency $DC_2$ | $F_{DC1}$ | - | - | 840 | - | Hz |
| Dither amplitude | $V_{DC1, 2, 3}$ | - | 5 | - | 1000 | mVpp |
| Dither amplitude step | $\Delta V_{DC1, 2, 3}$ | - | 1 | - | - | mVpp |

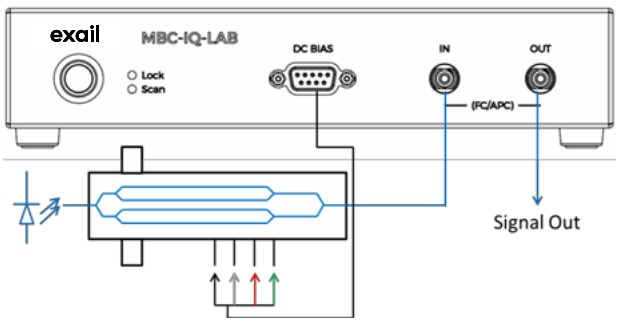
### Optical Characteristics

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| | | **MBC-IQ-LAB-A1: MBC with embedded PD and tap-coupler** | | | | |
| Wavelength | λ | - | 1530 | 1550 | 1625 | nm |
| Insertion loss | IL | - | - | 1.4 | - | dB |
| | | **MBC-IQ-LAB-A0: MBC without PD and tap-coupler** | | | | |
| Wavelength | λ | MBC-IQ-LAB-A0 | 900 | - | 1600 | nm |

MBC-IQ-LAB-A0: set-up with an IQ modulator




MBC-IQ-LAB-A1: set-up with an IQ modulator



# MBC-IQ-LAB

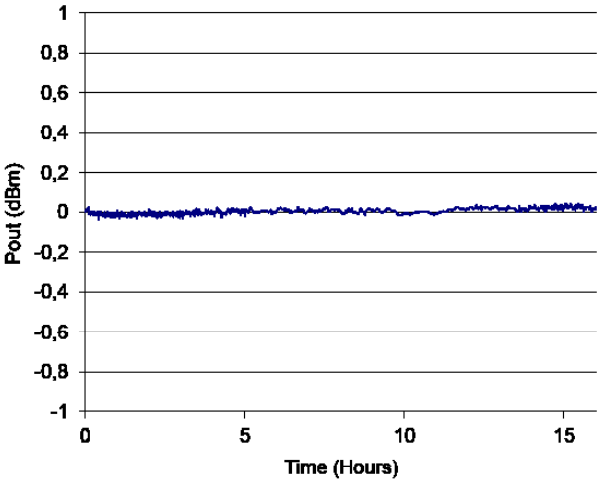
## IQ Modulator Bias Controller

### Absolute Maximum Ratings

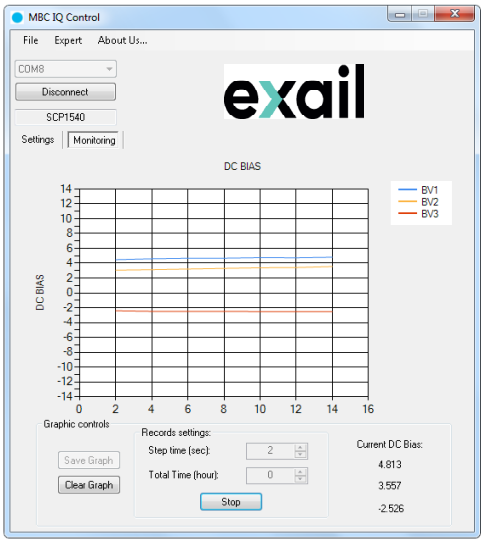
Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

| Parameter | Symbol | Condition | Min | Max | Unit |
|---|---|---|---|---|---|
| Operating temperature | - | - | -10 | +45 | °C |
| Storage temperature | - | - | -40 | +70 | °C |

### Output Power Stability




### Graphical User Interface



# MBC-IQ-LAB

## IQ Modulator Bias Controller




| | |
|---|---|
| **Dimensions** | |
| Dimensions (W x H x D) | 220 mm x 220 mm x 52 mm |
| Power supply (rear panel) | 100 V - 120 V / 220 V - 240 V automatic switch, 50 Hz - 60 Hz |
| **Interfaces** | |
| Photodiode Input / coupler input | FC/APC connector |
| Bias output | Specific DB9 connector to single channel connector |
| Communication | USB |
| **Remote control** | |
| Minimum computer requirements | Windows XP SP3 |
| Computer configuration | Recommended Windows XP-SP3, W7, W8 |

## Ordering information

MBC-IQ-LAB-□

- A0: no coupler, 900 nm to 1600 nm
- A1: integrated coupler, 1530 nm to 1625 nm

## About us

01-2023_ED2 / 0025195