



The MBC-IQ-LAB is a bias controller designed to stabilize the three operating bias points of a dual parallel modulator. This new version 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 | DC1 MIN, DC2 MIN, DC3 QUAD± | | | - |
| Control | Remote | | | - |

Bias Control Characteristics

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

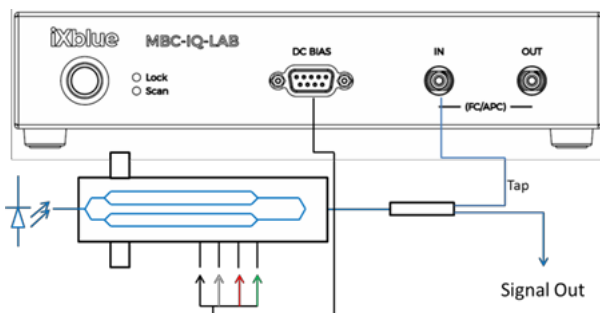
Electrical Characteristics

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|-------------------------|------------------------|----------------|------------------------------|------|-------|------|
| DC1, 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 | - | 1 000 | mVpp |
| Dither amplitude step | $\Delta V_{DC1, 2, 3}$ | - | 1 | - | - | mVpp |

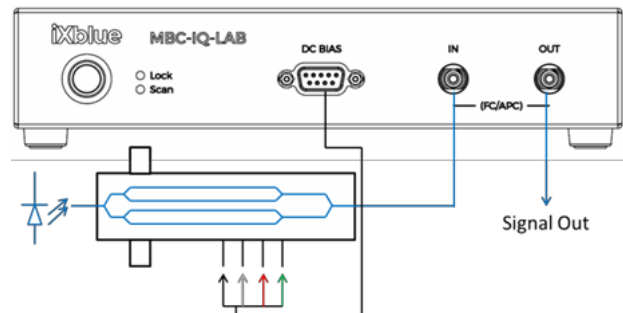
Optical Characteristics

| 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 | - | 1 600 | nm |

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



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

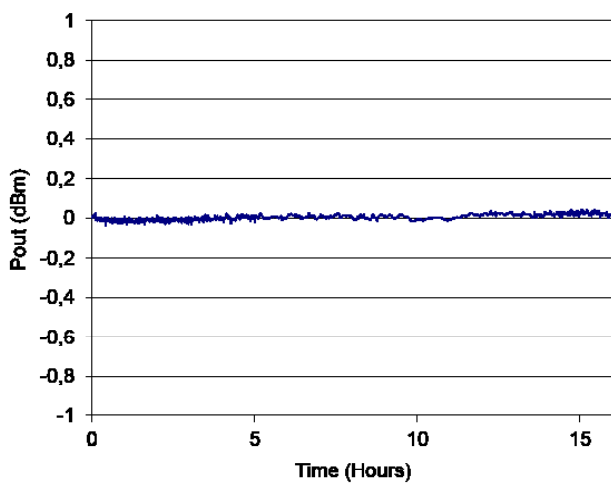


Absolute Maximum Rating

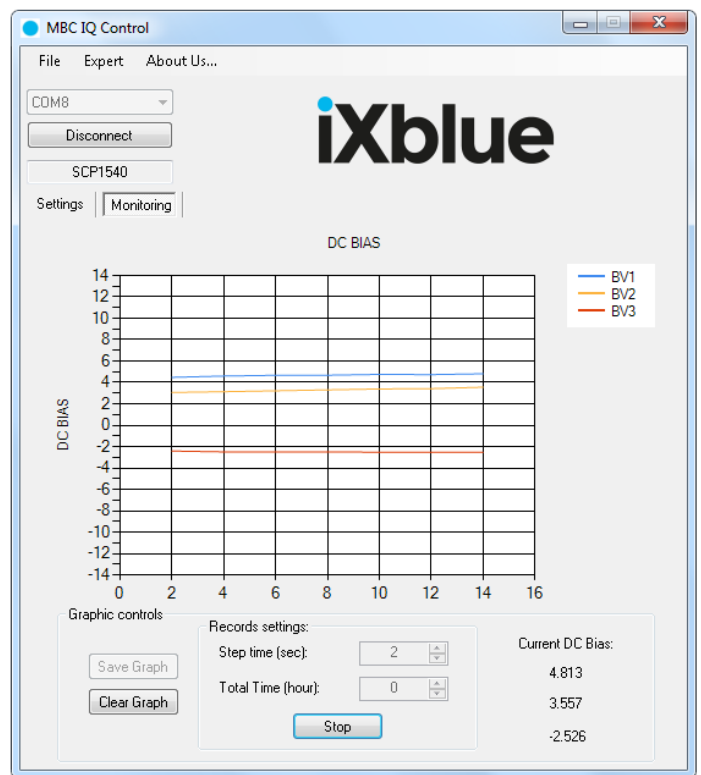
Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute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

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

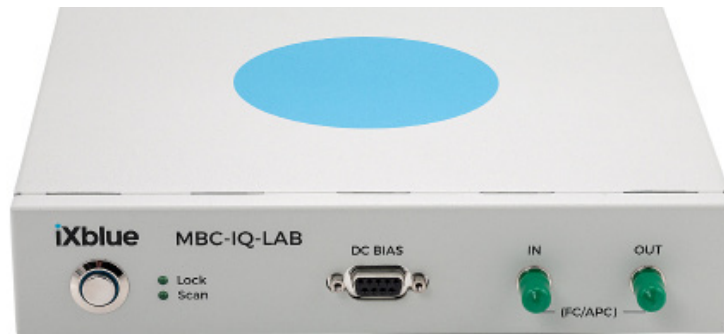
Output Power Stability



Graphical User Interface



MBC-IQ-LAB



| Dimensions | |
|---------------------------------|--|
| Dimensions (W x H x D) | 220 mm x 220 mm x 52 mm |
| Power supply (rear panel) | 100-120 V / 220-240 V automatic switch, 50-60 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
MBC-IQ-LAB-A1: Integrated coupler, 1530 nm to 1625 nm

About us

ixblue Photonics produces specialty optical fibers and Bragg gratings based fiber optics components and provides optical modulation solutions based on the company lithium niobate (LiNbO₃) modulators and RF electronic modules.

ixblue Photonics serves a wide range of industries: sensing and instruments, defense, telecommunications, space and fiber lasers as well as research laboratories all over the world.