QUANTIFI PHOTONICS™

IQABC

AUTOMATIC BIAS CONTROL

QUICK START GUIDE

quantifiphotonics.com

Getting started

Every Quantifi Photonics IQABC 1000 Series MATRIQ instrument will ship with the following:

1. IQABC 1000 Series MATRIQ Quick Start User Guide
2. IEC main power cable
3. Adaptor board cable
4. Single polarization adaptor board - solder type
5. Single polarization adaptor board - plug-in type
6. Dual polarization adaptor board - solder type
7. Dual polarization adaptor board - plug-in type
8. USB A-B cable
9. USB media containing:

    - MATRIQ Installer
    - Software Installation Guide
    - Quick start Programming Guide
    - CohesionUI User Guide
    - IQABC 1000 Series MATRIQ User Manual

These software packages and user guides are also available for download from:

quantifiphotonics.com

10. Calibration and Warranty Certificates (retain this hardcopy for your reference)

Step 1: Preparing the IQ modulator

If you are using an OIF compliant LiNbO$_3$ IQ-modulator, solder the bias control pins to the supplied IQABC adaptor board.

Alternatively, carefully insert the OIF modulator bias pins to a plug-in type adaptor board supplied.

The IQABC adaptor board comes in either single polarization or dual polarization versions to match your IQ modulator. If your modulator is not OIF compliant, you can use the IQABC's custom break-out cable instead of the adaptor boards, which can be purchased separately.

Step 2: Installing the IQABC MATRIQ instrument

☼ CAUTION

- To ensure maximum power and to avoid erroneous readings always inspect fiber end faces. Make sure they are cleaned before inserting into any port.
- Ensure that the input power to the IQ modulator minus the insertion loss of the IQ modulator at max-max-max biasing condition is less than 10 dBm.

🗎 NOTE

Any RF signal pattern or format with a driving level up to 1.8 × Vpi (pk-pk) is compatible with the instrument. To maximize performance, we recommend operating around a 1.6 × Vpi (pk-pk) driving level.

To connect the IQABC 1000 Series MATRIQ instrument, follow the steps below:

1. With the IQABC MATRIQ instrument power on/off button set to **OFF**, connect the power cord.
2. Connect the IQ modulator mounted on an adapter board to the instrument, using the supplied adaptor board cable.
3. Connect the output fiber of the modulator to the Modulated Signal In optical port of the instrument.
4. The Signal Out port of the instrument can be connected to your optical modulation analyzer.
5. Turn on the signal laser output of the IQ modulator to enable the CW light to enter the instrument.
6. Turn on the IQABC MATRIQ instrument.
7. Insert an Ethernet / USB cable and note down the IP address as displayed on the rear LCD screen.

Once the installation is completed, the instrument will start optimizing your IQ modulator's biases regardless of the RF signal application.

⚠ IMPORTANT

After powering on the IQABC MATRIQ, wait at least **2 minutes** before attempting to communicate with the instrument. This will allow the instrument enough time to finish boot procedures and initialize the communication server.
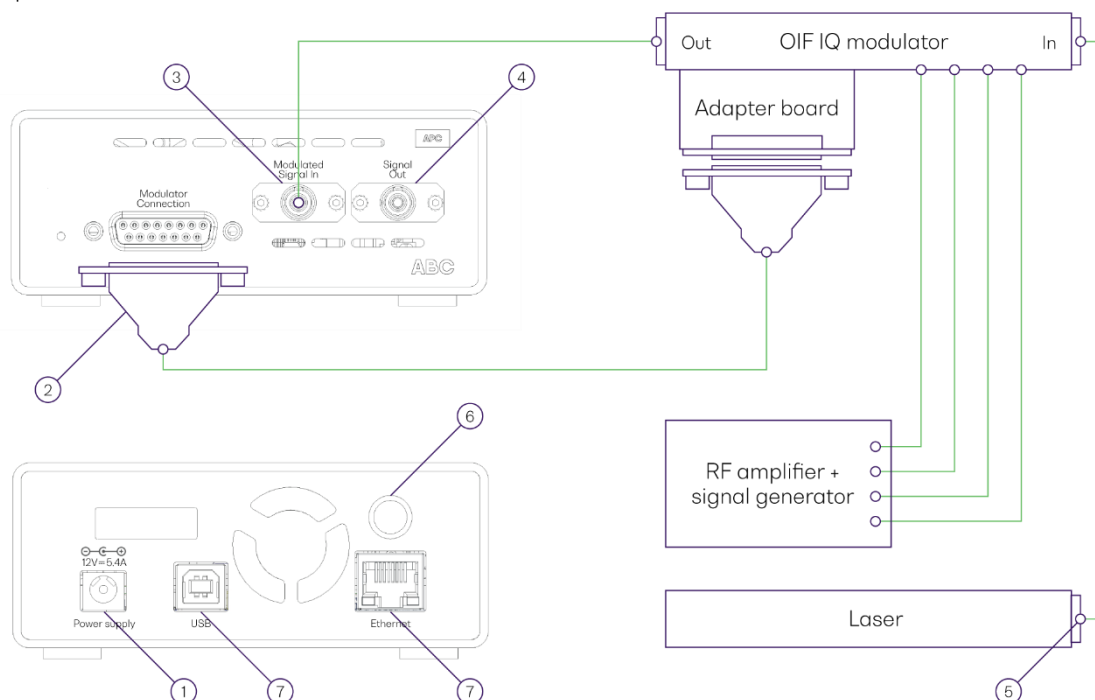
> 🗐 **NOTE**
> When both Ethernet and USB cables are connected to the instrument, the IP displayed on the LCD will alternate between the USB and Ethernet IP addresses.

via USB　　　　　via Ethernet
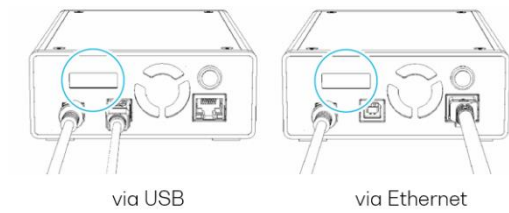
Step 3: Installing the software drivers

If connecting to the IQABC MATRIQ instrument using a USB cable, a USB driver will need to be installed on the PC. Windows will automatically download and install the USB driver when connected to the instrument. If there is no internet access, or installing on an old version of Windows, the MATRIQ installer (MATRIQ<version#>.exe) will install the USB driver.

The MATRIQ installer will create a Desktop icon to help connect to CohesionUI running on your IQABC MATRIQ instrument.

Step 4: Communication with the IQABC MATRIQ instrument

Both Ethernet and USB connection methods will allow control of the instrument through CohesionUI Graphical User Interface and with SCPI commands.

CohesionUI is a web-based Graphical User Interface, that allows the user to control all installed Quantifi Photonics instruments. To access CohesionUI remotely, open a compatible browser (Google Chrome or Microsoft Edge) and use the IP address as shown on the rear-panel LCD screen (e.g. 10.10.10.89) as the URL.

> ⚠ **IMPORTANT**
> If **another instrument is already connected** to the client computer over USB, consult the **User Manual** on configuring the Ethernet / USB IP address for multi instrument control.

Step 5: Initializing the IQABC MATRIQ instrument

Connect the internal laser output to the modulator input using the PM patch cord provided with the instrument and turn the laser on. Once the laser has stabilized, click the FORCE CALIBRATE button in CohesionUI to perform the DC bias scan and start the Automatic Bias Control (ABC).

The bias voltage value and the operation mode of each bias of the IQ modulator can be configured through CohesionUI. The status color below the bias heading represents the progress of the bias optimization.

- Green – Indicates that the algorithm has found the optimal position.
- Orange – Indicates that the bias voltage is being optimized and may change.
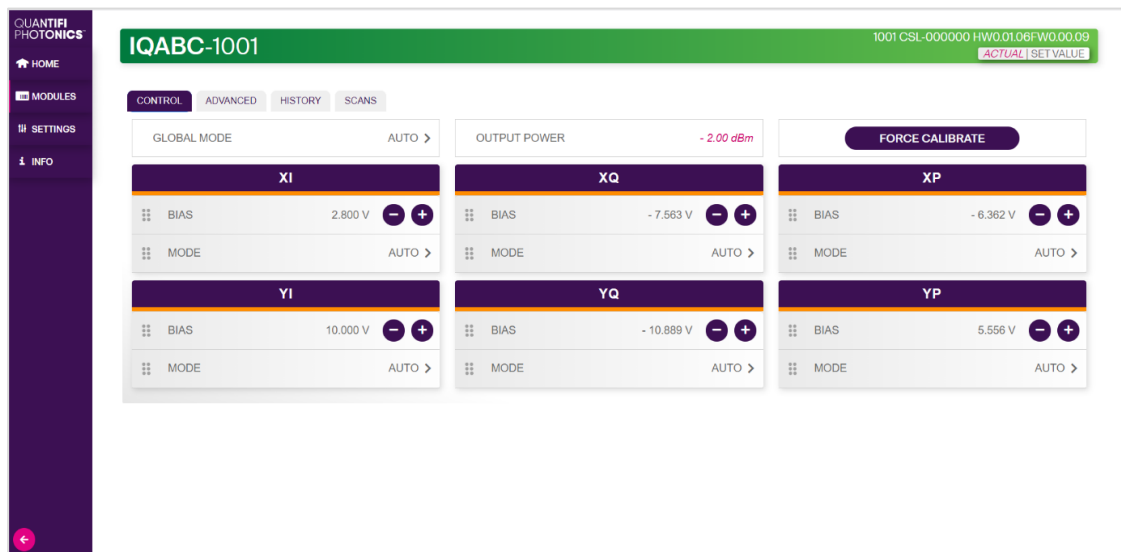
To trigger a re-evaluation of the current state of the modulator and to adjust its operation accordingly, click the FORCE CALIBRATE button.

For detailed information, check the included **User Manual.**

Test.
Measure.
Solve.

Quantifi Photonics is transforming the world of photonics test and measurement. Our portfolio of optical and electrical test instruments is rapidly expanding to meet the needs of engineers and scientists around the globe. From enabling ground-breaking experiments to driving highly efficient production testing, you'll find us working with customers to solve complex problems with optimal solutions.

To find out more, get in touch with us today.

General Enquiries   sales@quantifiphotonics.com
Technical Support   support@quantifiphotonics.com
Phone   +64 9 478 4849
North America   +1-800-803-8872

quantifiphotonics.com

QUANTIFI PHOTONICS™