



IQABC

AUTOMATIC BIAS CONTROLLER

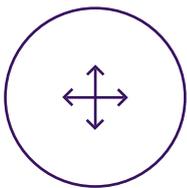
SPECIFICATION SHEET

AVAILABLE IN MATRIQ

[quantifiphotonics.com](https://www.quantifiphotonics.com)

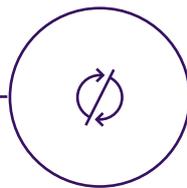
The IQABC uses advanced algorithms to Automatically Bias Control (ABC) the DC voltage bias points required to control an OIF-compliant optical modulator.

The easy-to-use COHESIONUI™ graphical interface enables the user to quickly optimize these DC modulator voltages (either automatically or manually) for ideal QPSK, DP-QPSK, and other M-QAM optically modulated signals.



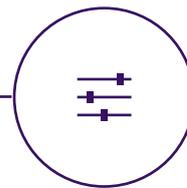
Format-independent ABC algorithm.

The robust ABC algorithm works with any modulation formats for a truly automated operation.



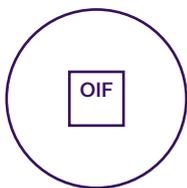
Compatible with OIF standard IQ modulators.

The external modulator adaptor board provides simple and quick connectivity to any IQ modulator with OIF compatibility.



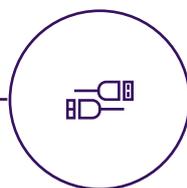
Accurate & stable tracking of bias drifts.

The advanced ABC algorithm constantly tracks any drift, so you get stable and repeatable results every time.



Independent control of all DC biases.

Each of I, Q or phase DC biases can be controlled independently in either automatic or manual mode.



Superior connectivity.

You can control IQABC locally or remotely via usb or ethernet. With its SCPI compatibility, the option is yours.



Easy-to-use software.

COHESIONUI web-based user interface provides access to all the functions in a clean, simple and intuitive graphical layout.

Hit the AUTO button and focus on your research without worrying if your modulator is biased correctly.

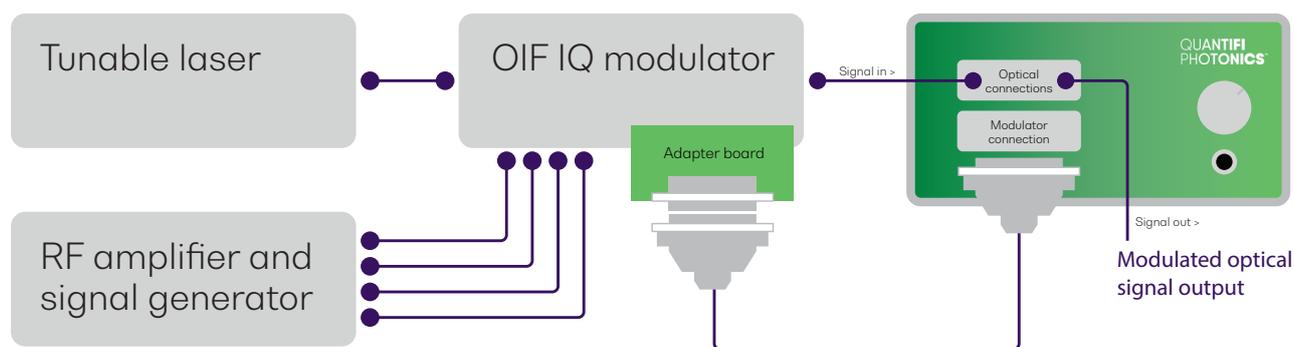
Quantifi Photonics' IQABC's advanced ABC (Automatic Bias Control) algorithm accurately and reliably controls and optimizes all the modulator bias points regardless of the modulation format or pattern.

Optimizing DC bias points of an IQ modulator is no trivial task. There are six different Mach-Zehnder structures inside one dual polarization IQ modulator, all simultaneously influencing the properties of a single optical signal. Trying to optimize bias points using just the intensity measurement of the optical signal is time consuming, inaccurate and requires a lot of knowledge and experience.

With its robust and adaptive ABC algorithm, IQABC will take care of finding optimal bias points and maintaining optimization against any bias drifts or changes to the driving signal. So put IQABC to work and enjoy having a stable and reliable optical signal for all your testing and development needs.

CONVENIENT AND SIMPLE TO OPERATE

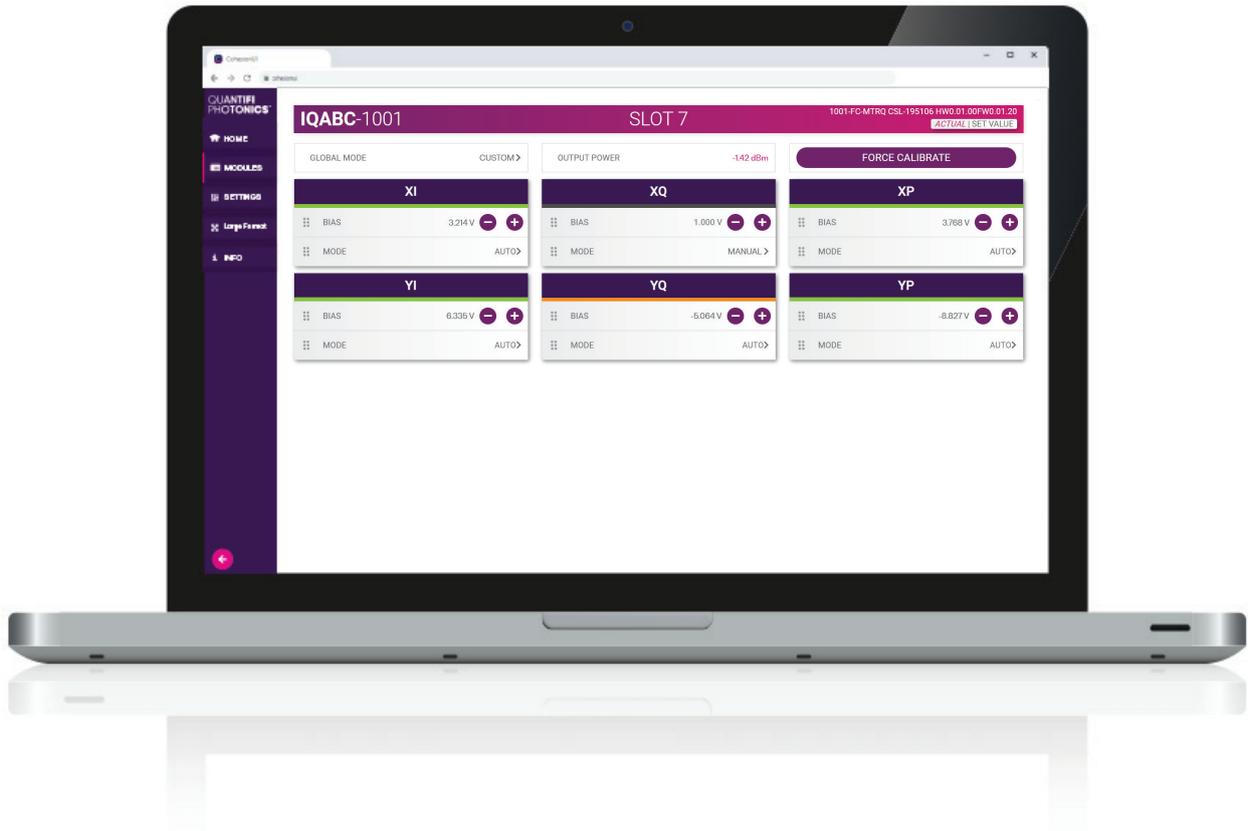
Simply connect your OIF compliant IQ modulator to an IQABC modulator adaptor board and feed the modulator's optical output to IQABC, then you are ready to go. The IQABC starts to optimize the biases automatically upon start-up.



IQABC connection example

Simple, intuitive control with COHESIONUI™

COHESIONUI makes it simple to control our PXI or MatriQ instruments from a PC, tablet or smartphone. Its cutting-edge design offers a sleek modern interface, cross device compatibility, customizable views and remote network access.

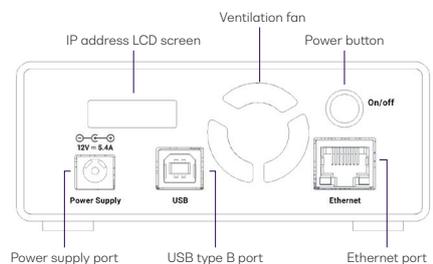
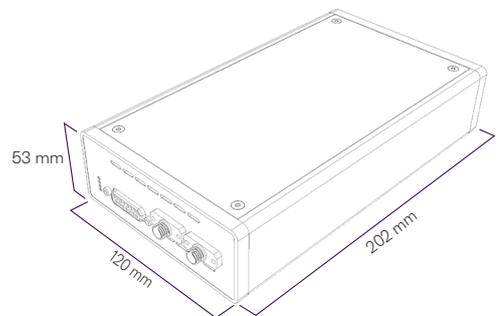


The MATRIQ series provides the same high-performance test capabilities of our PXle modules in an compact benchtop design. MATRIQ instruments are simple to setup and easy to operate, making them the perfect choice for your optical lab or test bench.

- Same performance and control as our PXle modules
- Plug and play with USB or Ethernet connectivity
- Control via the web-based GUI, COHESIONUI or SCPI commands
- Compact and portable design saves benchtop space



IQABC-1001-1-FC-MTRQ



IQABC TECHNICAL SPECIFICATIONS

General Specifications	MATRIQ
Bus connection	USB or ethernet
Slot count	-
Optical connector type	FC/PC, FC/APC, SC/PC, SC/APC
Number of channels	1
Dimensions (HxWxD)	53 x 120 x 202 mm 2.1 x 4.7 x 8.0 inches
Weight	~ 1.1 kg ~ 2.4 lbs
Operating temperature range	5 °C to 45 °C 41 °F to 113 °F
Storage temperature range	-40 °C to 70 °C -40 °F to 158 °F

Power Specifications	MATRIQ
AC input voltage range	90 to 264 VAC
AC input current	1.3A (115Vac), 0.9A (230Vac)
AC frequency range	47 to 63 Hz
DC output voltage	12V
DC output current max	5.41A
Dimensions (LxWxH)	4.58 x 2.06 x 1.23" (116.3 x 52.4 x 31.3 mm)

Specifications continued over page

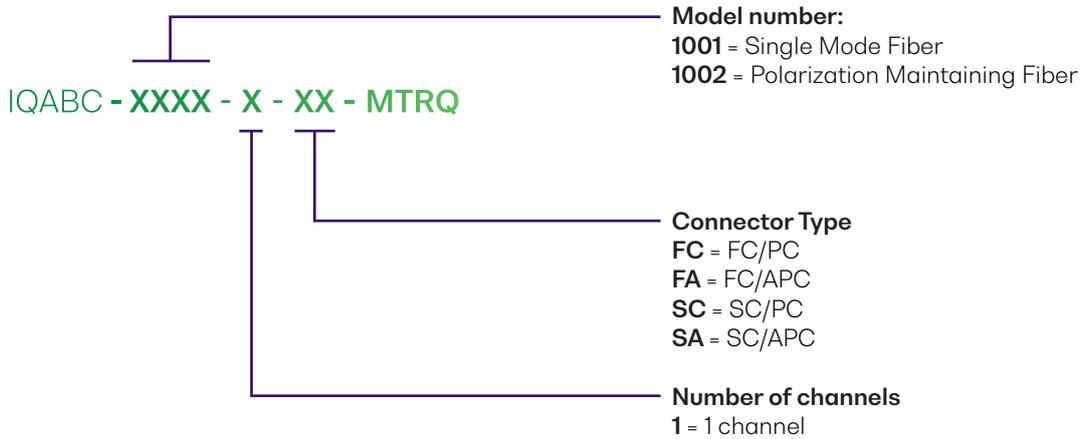
TECHNICAL SPECIFICATIONS

Model Number	1001	1002
Fiber type	Single mode fiber	Polarization mode fiber
Supported modulator types	Single & dual pol. LiNbO3 IQ Mach Zehnder	Single & dual pol. LiNbO3 IQ Mach Zehnder
Supported modulation formats	Any modulation format	Any modulation format
Bias control options	Automatic locking and individual manual bias	Automatic locking and individual manual bias
Maximum bias voltage range	28 V	28 V
Number of bias control channels	6	6
Start up time until settled	< 3 minutes (< 1 minute typical)	< 3 minutes (< 1 minute typical)
Quadrature error	Averaged mean < $\pm 0.3^\circ$, standard deviation > 24 hours: < 2°	Averaged mean < $\pm 0.3^\circ$, standard deviation > 24 hours: < 2°
ABC impact on EVM	< 1%	< 1%
Wavelength range	1260 nm - 1620 nm	1510 nm - 1610 nm
Dither size vs Vpi ¹	max 5%, typical 2%	max 5%, typical 2%
Max optical input power to ABC	+10 dBm	+10 dBm
Optical insertion loss	< 0.5 dB	< 0.5 dB
Optical power operating range ²	-5 dBm to +10 dBm	-5 dBm to +10 dBm
RF drive levels supported	0 to 1.9 Vpi	0 to 1.9 Vpi
Manual bias control range	± 13 V	± 13 V

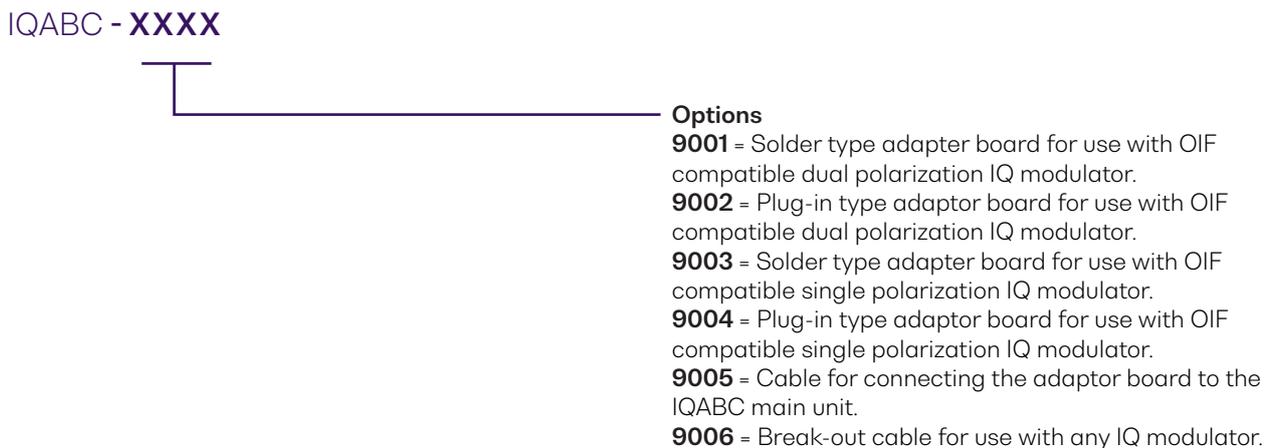
Notes

1. A small low frequency dither is applied to the biases as part of the control mechanism.
2. Average power with modulation applied.
3. Specifications are valid at 23 °C \pm 3 °C.

ORDERING INFORMATION



ACCESSORIES



WARRANTY INFORMATION

This product comes with a standard 1 year warranty.

EXTENDED WARRANTIES AND CALIBRATION PLANS

With an **extended warranty and calibration plan** you'll spend more time focused on your priorities and less time worrying about maintenance.

Your choice: add a **3 or 5 year extended warranty** when you buy.



Guarantee performance

Ensure your equipment is operating at the best it can be for reliable and accurate results.

Lower cost of ownership

Lock in savings and maximise your testing budget with a lower base cost of ownership.

Peace of mind

Spend less time worrying about maintenance and more on generating results.

CALIBRATION PLANS FOR ADDITIONAL DISCOUNTS

Order a **calibration plan** when purchasing your Quantifi Photonics instruments and get additional discounts.

10% Discount

On calibrations ordered at the time of purchase.

25% Discount

Add on an extended warranty and receive a 25% discount on calibrations.

Over time and with regular use, all optical parts and connectors require re-calibration and maintenance to guarantee accurate and reliable performance. We recommend Quantifi Photonics optical instruments are re-calibrated every 12 months. With an instrument calibration performed by Quantifi Photonics technicians you receive:

- Comprehensive calibration to factory specifications
- End-to-end inspection to ensure all instrument functions are working and connectors are clean
- Firmware, software and documentation updates
- Certificate of calibration which includes detailed test results

How to do I secure my extended warranty or calibration plan?

Contact your Quantifi Photonics sales representative or email sales@quantifiphotonics.com

Extended warranties and calibration plans must be ordered at the time of purchase and are available only for Quantifi Photonics' products. The 25% calibration discount only applies to calibrations while the product is covered by the extended warranty period.

Our portfolio of optical & electro-optical test modules is rapidly expanding to meet a wide range of customer requirements and applications.

Tunable Laser Sources

Versatile telecom laser sources with full tunability across C or L bands. Narrow 100 kHz linewidth, up to 16.5 dBm of power, optional whisper mode to disable frequency dither.



Fixed Wavelength Laser Sources

Highly customizable laser platform. Select required wavelength, power and fiber type for a customized solution.



Swept, Tunable Continuous Wave Laser

Swept, tunable continuous wave (CW) laser source with 0.01 dB power stability and 400 nm/s high-speed scan rate for R&D and production testing.



Superluminescent Diode Broadband Light Source

Super-luminescent LED light source with high output power, large bandwidth and low spectral ripple and various wavelengths.



Optical-to-Electrical Converter

High bandwidth, broadband O-to-E converter. Available in a range of configurations; choose from 1 or 2 channels, AC or DC coupling and various conversion gain and operating wavelength ranges.



Variable Optical Attenuator (VOA)

Fast attenuation speed with low insertion loss and built-in power monitoring. Operates in fixed attenuation or constant output power modes. Models support SMF, MMF and PMF connector types.



Polarization Controller & Scrambler

High-speed automated polarization control with broad wavelength coverage from 1260nm to 1650nm, low insertion loss and back reflection. Full remote control via intuitive GUI, LabVIEW or SCPI.



Optical Power Meters

Fast terminating or inline monitoring of optical signal power from -60 to +10 dBm across 750 - 1700 nm wavelengths. Model with logarithmic analog output for applications such as silicon photonics fiber alignment.



Bit Error Rate Tester (BERT)

4 or 8-channel Pulse Pattern Generator and Error Detector at rates up to 29 Gbps for the design, characterization and production of optical transceivers and opto-electrical components.



Optical Spectrum Analyzer (OSA)

Cost-effective, spectral measurement in a compact module with built-in analysis for: SMSR, OSNR & spectral width. Targeted wavelengths for specific applications in O band, C band & L band.



Passive Component Integration

Integrate passive optical components of your choice such as WDM couplers, splitters, band-pass filters, PM beamsplitters and circulators. Models support SMF, MMF and PMF.



Passive Component Storage

Protect and store your own passive fiber optic components such as splitters, connector adaptor patchcords, WDM couplers, and isolators in one handy module.



Photonic Doppler Velocimeter (PDV)

Purpose-built module for Photonic Doppler Velocimetry (PDV). A circulator, two VOAs and a passive coupler all built into one compact module.



Optical Switch

Proven reliability and fast switching time. Wide variety of switch configurations: 1x4, 1x16, 16x16 and more. Models support SMF, MMF and PMF.



PXI - MODULAR SYSTEM

MATRIQ - COMPACT BENCHTOP

See our website for more details
quantifotonics.com/products

Test. Measure. Solve.TM

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 experience and innovation.

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

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

[quantifiphotonics.com](https://www.quantifiphotonics.com)

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