ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Brandywine Communications QFS-102* at our website: ***Click HERE***

User Guide

Frequency Standard QFS-102

Model QFS-102

P/N 0150XX00X

Revision A

August 2005

© Brandywine Communications 2005

2230 South Fairview Street • Santa Ana • CA 92704
(714) 755 1050 TEL • (714) 755 0175 FAX • http://www.brandywinecomm.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Revision History

REVISION	DATE	COMMENT
NC	07/15/03	First issue of the user guide.
A	08/02/05	Revised format of the user guide.

Table of Contents

Description **3**
Specification **3**
Ordering Information **4**
Controls and Indicators **5**
Indicators 5
Controls 5
Connections 5
Operation **6**
AC Power Supply Unit 6
DC Power Supply Unit 6
Warm Up 6
Output Connections 6
Output Level Adjustments 6
Calibration 6

2230 South Fairview Street • Santa Ana • CA 92704
(714) 755 1050 TEL • (714) 755 0175 FAX • http://www.brandywinecomm.com
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Description

The QFS-102 is a high performance reference frequency standard. The QFS-102 provides 2 or 4 output channels of a single reference frequency, typically 10 MHz. Internal reference oscillator options available are free-running OCXO or free running rubidium oscillator. The QFS-102 has 2 or 4 individually buffered low phase noise outputs. Front panel monitors provide indication of loss of output. Power supply options include 115/230 VAC, 48, 24, or 12 VDC. The QFS-102 is configured as a 1 U 19" rack mount unit.

Specification

Frequency Outputs	
Number of Outputs	2 buffered outputs (4 optional)
Frequency	10 MHz standard Optional 5, 10, 10.492, 12.8, 13, 19.6608, and 64.8 MHz
Level	1 Vrms into 50 ohm (13 dBm)
Distortion	< 33 dBc
Connector	BNC
Internal Reference Oscillator	
OCXO	
Stability	$1x10^{-8}$ at -30 to -60°C
Aging	$5x10^{-8}$ per year
Phase Noise (dBc @ 10 MHz)	
1 Hz	-90
10 Hz	-110
100 Hz	-140
1 KHz	-150
10 KHz	-157
Rubidium	
Stability	$\pm 1x10^{-10}$ at 0 to 50°C
Aging	$5x10^{-11}$ per month
Environmental	
Temperature	-30 to +60°C (OCXO) -5 to +55°C (Rb)
Humidity	95% non-condensing
Power	115/230 VAC
Optional	12 VDC, 24 VDC, or 48 VDC
Dimensions	19" rack mount 1.75" (1 U) height
Weight	11 lbs. typical
Fuse Values	
115/230 VAC	250 mA
12 VDC	4 A

2230 South Fairview Street • Santa Ana • CA 92704
(714) 755 1050 TEL • (714) 755 0175 FAX • http://www.brandywinecomm.com
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Ordering Information

PART NUMBER	OSCILLATOR	NUMBER OF OUTPUTS	FREQUENCY	POWER
015000001	Quartz OCXO	2	10 MHz	115/230 VAC
015000002	Quartz OCXO	2	10 MHz	09-18 VDC
015000003	Quartz OCXO	2	10 MHz	18-36 VDC
015000004	Quartz OCXO	2	10 MHz	36-72 VDC
015004001	Quartz OCXO	4	10 MHz	115/230 VAC
015004002	Quartz OCXO	4	10 MHz	09-18 VDC
015004003	Quartz OCXO	4	10 MHz	18-36 VDC
015004004	Quartz OCXO	4	10 MHz	36-72 VDC
015010001	Rubidium Oscillator	2	10 MHz	115/230 VAC
015010002	Rubidium Oscillator	2	10 MHz	09-18 VDC
015010003	Rubidium Oscillator	2	10 MHz	18-36 VDC
015010004	Rubidium Oscillator	2	10 MHz	36-72 VDC
015014001	Rubidium Oscillator	4	10 MHz	115/230 VAC
015014002	Rubidium Oscillator	4	10 MHz	09-18 VDC
015014003	Rubidium Oscillator	4	10 MHz	18-36 VDC
015014004	Rubidium Oscillator	4	10 MHz	36-72 VDC

2230 South Fairview Street • Santa Ana • CA 92704
(714) 755 1050 TEL • (714) 755 0175 FAX • http://www.brandywinecomm.com
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Controls and Indicators

Indicators

Power	Green LED	Indicates primary power is present.
Output Monitor 1	Green LED	Indicates output from channel 1 is present.
Output Monitor 2	Green LED	Indicates output from channel 2 is present.
Output Monitor 3	Green LED	Indicates output from channel 3 is present.
Output Monitor 4	Green LED	Indicates output from channel 4 is present.
Rb Locked	Green LED	Indicates rubidium oscillator has reached resonance lock.

Controls

Calibrate	Front panel 20 turn potentiometer	Frequency standard calibration adjustment
Output Level (1 adjust)	Rear panel 10 turn potentiometer	Output level adjustment 7-13 dBm
Output Level (2 adjust)	Rear panel 10 turn potentiometer	Output level adjustment 7-13 dBm
Output Level (3 adjust)	Rear panel 10 turn potentiometer	Output level adjustment 7-13 dBm
Output Level (4 adjust)	Rear panel 10 turn potentiometer	Output level adjustment 7-13 dBm

Connections

CONNECTION IDENTIFIER	SIGNAL TYPE	CONNECTOR
J1	Signal output	BNC female
J2	Signal output	BNC female
J3 (optional)	Signal output	BNC female
J4 (optional)	Signal output	BNC female

2230 South Fairview Street • Santa Ana • CA 92704
(714) 755 1050 TEL • (714) 755 0175 FAX • http://www.brandywinecomm.com
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Operation

AC Power Supply Unit

Verify that the voltage shown on the rear power entry module (115 V or 230 V) corresponds with the line power. If it does not, open the power entry module, remove the red fuse holder, and rotate it so that the correct voltage is showing. Connect the provided power cord to the QFS-102. The power switch is integrated in the power entry module.

DC Power Supply Unit

The DC unit is supplied with a power mating connector. Connect the wiring to the mating connector. The pinout is shown in the table below.

PIN	FUNCTION
A	Positive input voltage (+)
B	Negative input voltage (–)
Mating connector	Amphenol 97-3106A-10SL-4S
Strain relief	Amphenol 97-3057-1004-1

Warm Up

Power the QFS-102 up. The Power LED and Output Monitor LEDs on the front panel should illuminate. Quartz oscillators take approximately 5 minutes to warm up and they reach their full accuracy after 24 hours.

Units fitted with rubidium oscillators take approximately 10 minutes to warm up. The Rb Locked LED on the front panel will illuminate when the rubidium has reached resonance lock.

Output Connections

Connect suitable cables to J1 through J4.

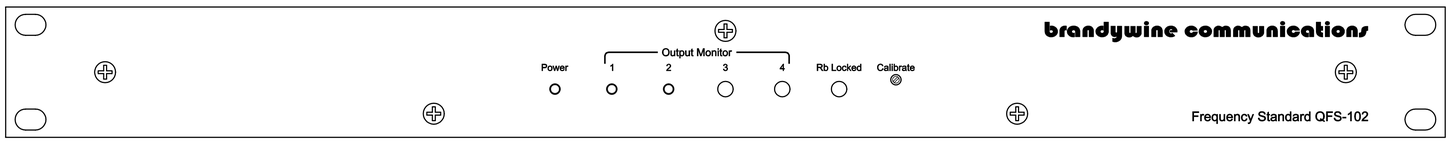
Output Level Adjustments

A potentiometer accessible through the rear panel is located next to J1 through J4. This may be used to trim the respective output level through the range of 7-13 dBm.

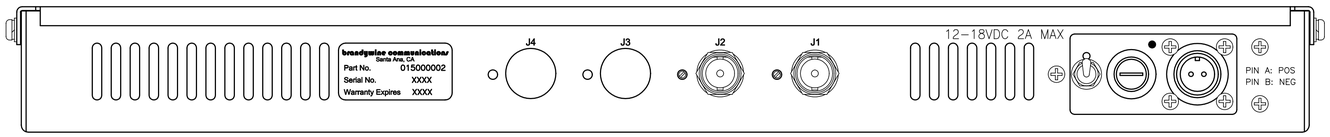
Calibration

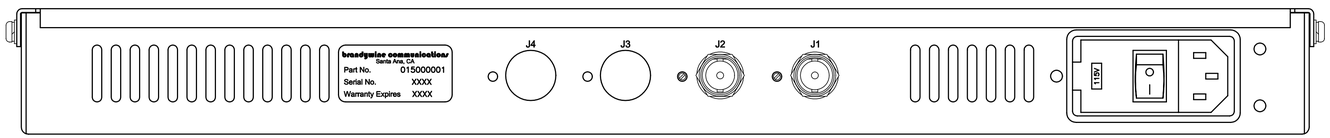
The QFS-102 is a free running standard that will require periodic recalibration. The unit must be calibrated against a frequency standard that is at least ten times more accurate than the oscillator fitted in the QFS-102. Hence, quartz based units must be calibrated against a rubidium reference. Rubidium based units should be calibrated against a cesium frequency standard or GPS disciplined rubidium. A front panel mounted potentiometer is used to adjust the frequency of the QFS-102.

2230 South Fairview Street • Santa Ana • CA 92704
(714) 755 1050 TEL • (714) 755 0175 FAX • http://www.brandywinecomm.com
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com





Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP