

8040C

Rubidium Frequency Standard

8040C Rubidium Standard



Features

- 6 configurable outputs
- RF and pulse outputs
- AC input
- Remote monitoring and control
- GPS disciplining
- CE-compliant

Optional Features

- 12 configurable outputs
- Low phase noise
- DC input

Today's precision test equipment requires a stable reference to make accurate frequency measurements. The equipment used varies depending on stability, accuracy, and output signal format. All of these parameters can lead to a multitude of configurations, platforms, and products that can be expensive to implement and maintain.

The Microsemi® 8040C solves this problem by providing a stable and accurate frequency reference with multiple output signal formats in an easy to install 1U rack mountable chassis.

Unlike other units, the 8040C offers configurable RF outputs, GPS disciplining, and a RS-232 interface for command and control.

The 8040C has six outputs, each of which can be user configured to provide a 1 MHz, 5 MHz, or 10 MHz sine, square wave, or 1PPS output. The standard configuration of the 8040C has three 10 MHz, one 5 MHz, one 1 MHz, and 1PPS output.

A 1PPS input allows the 8040C to be disciplined by the GPS receiver for improved frequency accuracy and long-term stability. The 8040C auto adaptive algorithm allows plug-and-play connectivity for easy GPS disciplining.

The 8040C is field-configurable, allowing the instrument to support changing functionality in evolving systems.

If more outputs are required, the 8040C can be purchased with an option card that adds six additional outputs, bringing the total output configuration to twelve. The option card, like the standard unit, can be configured for any combination of available frequency or format.

Also available is a low phase noise version that provides a greater than 30 dB improvement in close in-phase noise.

The 8040C is designed around Microsemi's award winning SA.22C rubidium oscillator, which is deployed worldwide as the reference oscillator in wireless base stations.

8040C

Rubidium Frequency Standard

Specifications

Electrical Specification (standard and low noise)

Frequency Outputs

Frequency	1 MHz, 5 MHz, and 10 MHz
Format	Sinewave
Amplitude	1 V _{rms}
Harmonic	<-40 dBc
Non-harmonic	<-60 dBc (standard) <-80 dBc (low noise)
Connector	BNC
Load impedance	50 Ω
Location	Rear panel

Frequency	1 MHz, 5 MHz, and 10 MHz
Format	TTL
Amplitude	>3 V peak
Pulse width	50% duty cycle
Connector	BNC
Load impedance	50 Ω
Location	Rear panel

Timing Outputs

Format	1PPS
Amplitude	>3 V
Pulse width	400 ns
Rise time	<20 nS
Jitter	<10 pSD RMS
Connector	BNC
Load impedance	50 Ω
Location	Rear panel

Timing Inputs

Sync input	1PPS
Amplitude	5 V max
Connector	BNC
Load impedance	>100 kΩ
Location	Rear panel

Performance Parameters

Accuracy at shipment	<±5E-11
Retrace	<±5E-11
On-off-on	24 hours, 24 hours, 24 hours at 25 °C
Control range	±1E-6 with 1E-12 resolution
Warm-up time	
Time to lock	<5 minutes
Time to <1E-9	<8 minutes
GPS disciplining	
Time for valid output	<20 minutes
Frequency accuracy	<1E-12
Aging	
Monthly ¹	<5E-11
Yearly	<5E-10

1. After 30 days of continuous operation.

Remote system interface and control RS-232-C (DTE configuration)

Connector RS-232	9-Pin female rectangular D
Location	Rear panel
Protocol	8 Data bits 1 Stop bit
Baud rate	57600

Stability

Avg. Time (s)	ADEV Standard	ADEV Low Noise
1	<3.0E-11	<1.5E-11
10	<1.0E-11	<8E-12
100	<3.0E-12	<2.5E-12

SSB Phase Noise

Offset (Hz)	8040C Standard, 10 MHz	8040C Low Noise, 10 MHz
1	-72 dBc	-100 dBc
10	-95 dBc	-130 dBc
100	-130 dBc	-144 dBc
1K	-140 dBc	-150 dBc

8040C

Rubidium Frequency Standard

Environmental and Physical Specifications

General Environment (operating)

Temperature	0 °C to 50 °C
Temperature coefficient	<3E-10
Storage temperature	-40 °C to 70 °C
Humidity	95% up to 50 °C
Magnetic field	DC (±2 gauss)
Magnetic sensitivity	<4E-11/gauss
Altitude (operating)	0 to 50,000 feet

AC power requirements	90 to 240 VAC 47 to 63 Hz 25 W (operating) 45 W (warm-up)
------------------------------	--

DC power requirements (optional)	18 to 36 VDC 15 W (operating) 45 W (warm-up)
---	--

Dimensions/weight	19" W × 1.75" H × 12" D <6 lbs.
--------------------------	------------------------------------

MTBF= 232,500 hours IAW Telcordia (Bellcore) SR332, Issue 1

Ordering Information

Part Number	Description
15230-101	6 output standard performance.
15230-102	12 output standard performance
15230-104	6 output low phase noise
15230-105	12 output low phase noise

8040C Connections (shown with 12 output option)



Microsemi Corporate Headquarters
 One Enterprise, Aliso Viejo, CA 92656 USA
 Within the USA: +1 (800) 713-4113
 Outside the USA: +1 (949) 380-6100
 Fax: +1 (949) 215-4996
 Email: sales.support@microsemi.com
 www.microsemi.com

©2011–2017 Microsemi Corporation. All rights reserved. Microsemi and the Microsemi logo are registered trademarks of Microsemi Corporation. All other trademarks and service marks are the property

Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for aerospace & defense, communications, data center and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; enterprise storage and communication solutions, security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, California and has approximately 4,800 employees globally. Learn more at www.microsemi.com.

Microsemi makes no warranty, representation, or guarantee regarding the information contained herein or the suitability of its products and services for any particular purpose, nor does Microsemi assume any liability whatsoever arising out of the application or use of any product or circuit. The products sold hereunder and any other products sold by Microsemi have been subject to limited testing and should not be used in conjunction with mission-critical equipment or applications. Any performance specifications are believed to be reliable but are not verified, and Buyer must conduct and complete all performance and other testing of the products, alone and together with, or installed in, any end-products. Buyer shall not rely on any data and performance specifications or parameters provided by Microsemi. It is the Buyer's responsibility to independently determine suitability of any products and to test and verify the same. The information provided by Microsemi hereunder is provided "as is, where is" and with all faults, and the entire risk associated with such information is entirely with the Buyer. Microsemi does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other IP rights, whether with regard to such information itself or anything described by such information. Information provided in this document is proprietary to Microsemi, and Microsemi reserves the right to make any changes to the information in this document or to any products and services at any time without notice.