



# 8040C

## Rubidium Frequency Standard

### KEY FEATURES

- Six Configurable Outputs
- RF & Pulse Outputs
- AC Input
- Remote Monitoring & Control
- GPS Disciplining
- CE Compliant

### OPTIONAL FEATURES

- Twelve 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 Symmetricom® 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, 5 or 10MHz sine or square wave or 1PPS output. The standard configuration for the 8040C has three 10MHz, one 5MHz, one 1MHz and one 1PPS output.

A 1PPS input allows the 8040C to be disciplined by a 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 Symmetricom's award winning SA.22C rubidium oscillator, which is deployed worldwide as the reference oscillator in wireless base stations.



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## 8040C Specifications

### ELECTRICAL SPECIFICATIONS

	Standard	Low Noise
• Frequency outputs		
Frequency:	1, 5 & 10MHz	1, 5 & 10MHz
Format:	Sinewave	Sinewave
Amplitude:	1Vrms	1Vrms
Harmonic:	<-40dBc	<-40dBc
Non-harmonic:	<-60dBc	<-80dBc
Connector:	BNC	BNC
Load impedance:	50Ω	50Ω
Location:	rear panel	rear panel
Frequency:	1,5 & 10MHz	1,5 & 10MHz
Format:	TTL	TTL
Amplitude:	>3V Peak	>3V Peak
Pulse width:	50% duty cycle	50% duty cycle
Connector:	BNC	BNC
Load impedance:	50Ω	50Ω
Location:	rear panel	rear panel
• Timing outputs		
Format:	1PPS	1PPS
Amplitude:	>3V	>3V
Pulse width:	400ns	400ns
Rise time:	<20ns	<20ns
Jitter:	<10pS RMS	<10pS RMS
Connector:	BNC	BNC
Load impedance:	50Ω	50Ω
Location:	rear panel	rear panel
• Timing inputs		
Sync input:	1PPS	1PPS
Amplitude:	5V max	5V max
Connector:	BNC	BNC
Load impedance:	>100kΩ	>100kΩ
Location:	rear panel	rear panel

### PERFORMANCE PARAMETERS

• Accuracy at shipment:	<±5E-11	<±5E-11
• Retrace:	<±5E-11	<±5E-11
On-off-on:	24h, 24h, 24h @ 25°C	
• Control range:	±1E-6 with 1E-12 resolution	±1E-6 with 1E-12 resolution
• Warm-up time		
Time to lock:	<5 minutes	<5 minutes
Time to <1E-9:	<8 minutes	<8 minutes
• GPS Disciplining		
Time for valid output:	<20 minutes	<20 minutes
Frequency accuracy:	<1E-12	<1E-12
• Stability		
Avg. Time (s)	Allan Deviation	Allan Deviation
1	<3.0E-11	<1.5E-11
10	<1.0E-11	<8E-12
100	<3.0E-12	<2.5E-12
• Aging		
Monthly*:	<5E-11	<5E-11
Yearly:	<5E-10	<5E-10

\* After 30 days of continuous operation.

### Standard

### Low Noise

• SSB phase noise		
Offset (Hz)	10MHz	10MHz
1	-72dBc	-100dBc
10	-95dBc	-130dBc
100	-130dBc	-144dBc
1,000	-140dBc	-150dBc
10,000	-148dBc	-150dBc
• Remote system interface & control		
RS-232-C (DTE configuration)		
Connector		
RS-232:	9-pin female rectangular D	9-pin female rectangular D
Location:	rear panel	rear panel
Protocol:	8 data bits	8 data bits
	1 stop bit	1 stop bit
Baud rate:	57600	57600

### ENVIRONMENTAL & 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	
25W (operating)	
45W (warm-up)	
• DC power requirements (optional)	
18 to 36 VDC	
15W (operating)	
45W (warm-up)	
• Dimensions/Weight	
19"W x 1.75"H x 12"D	
<6 lbs.	
• MTBF = 232,500 hours IAW Telcordia (Bellcore) SR332, Issue 1	

### ORDERING INFORMATION

### Part No.

• 6 output standard performance	15230-101
• 12 output standard performance	15230-102
• 6 output low phase noise	15230-104
• 12 output low phase noise	15230-105



8040C connections (shown with 12 output option)



**SYMMETRICOM, INC.**  
 2300 Orchard Parkway  
 San Jose, California  
 95131-1017  
 tel: 408.433.0910  
 fax: 408.428.7896  
[www.symmetricom.com](http://www.symmetricom.com)