



4065C

Primary Frequency & Time Standard

KEY FEATURES

- Accuracy Calibrated to $<1.0E-12$
- Flicker Floor: $<2.0E-14$
- Settability: Resolution $1.0E-15$, Range $\pm 1.0E-9$
- Eleven Outputs 9 RF, 1 PPS & 1 TTL Programmable
- Front Panel Keyboard Operator Interface With Display
- Menu Driven Operation for Ease of Use
- Cesium Tube – Lifetime or High Performance
- Remote Control & Monitor Via RS232 Interface
- Full Accuracy in 30 Minutes or Less

Symmetricom's 4065C™ is a high performance cesium frequency and time standard that provides the ultimate in accuracy and stability. An exceptional frequency distribution capability, the 4065C includes nine RF, high isolation, low phase noise outputs and one programmable TTL output. The nine RF outputs come in three different frequency values of three each or may be customized to meet individual frequency requirements. The newest cesium beam technology featured in this generation of the 4065 delivers improved efficiency, better performance, longer life, a lower cost of ownership and ease of use. Simply connect to a power source (AC or DC) and the instrument automatically powers up to its full accuracy specifications within thirty minutes or less.

The 4065C produces accurate, stable, and spectrally pure sinusoidal signals. To accomplish this, a cesium beam tube resonator stabilizes the output of the instrument's ovenized quartz crystal oscillator. This oscillator drives output signals at 1, 5, and 10 MHz. The instrument also features precise time-of-day/day-of-year with 1 PPS outputs. Optional telecommunication outputs are available for T1 and E1, framed and clock

signals. The instrument meets stringent precision time and frequency control requirements demanded of:

- Reference sources for synchronization of satellite ground terminals and remote stations
- Shipboard, aircraft, and land-mobile systems for navigation, timing, and communications
- Primary reference sources for positioning in oil exploration and mapping environments
- Independent time and frequency reference for uninterrupted service
- Master frequency and timing references for secure high data rate communication systems
- Master frequency and timing references for TV applications including Color Burst systems and HDTV Broadcast
- Master frequency and timing references in laboratory research facilities
- Primary reference instruments in metrology facilities
- Telecommunications master clock systems that meet Stratum 1 primary reference source needs for digital communications systems, in both public and private telephone networks



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4065C Specifications

ELECTRICAL SPECIFICATIONS

- RF output
 - Frequency: 3 each at 1, 5, 10 MHz
 - Amplitude: >1 Vrms
 - Harmonic signals: <-40dBc
 - Non-harmonic signals: <-80dBc
 - Connector type:*** N
 - Load impedance: 50Ω
 - Location: Rear panel
- Pulse output
 - Amplitude/width: >2.4V into 50Ω/20μs
 - Rise time/jitter: <5ns/<1ns rms
 - Connectors/location: BNC 1 front, 2 rear panel
- Programmable output
 - Frequency: 0.1, 1, 5, 10 MHz
 - Amplitude/wave shape: ≥2.4V peak into 50Ω, sq.
 - Connector type: BNC
 - Location: rear panel
- Stability

Averaging Time (seconds)	Version 01 Allan Deviation	Version 02 Allan Deviation
1	≤2.0E-11	≤5.0E-12
10	≤8.5E-12	≤3.5E-12
100	≤3.0E-12	≤8.5E-13
1,000*	≤8.5E-13	≤2.7E-13
10,000*	≤2.7E-13	≤8.5E-14
100,000*	≤8.5E-14	≤2.7E-14
5 days	≤5.0E-14	≤1.0E-14

SSB Phase Noise Offset (Hz)	5 MHz	5 MHz
1	≤-95dBc	≤-95dBc
10	≤-130dBc	≤-130dBc
100	≤-145dBc	≤-145dBc
1,000*	≤-155dBc	≤-155dBc
10,000*	≤-157dBc	≤-157dBc
100,000*	≤-157dBc	≤-157dBc
- Performance parameters

	Version 01	Version 02
Accuracy:**	<1.0E-12	<5.0E-13
Warm-up time (typical):	30 min.	30 min.
Reproducibility:	<1.0E-12	<5.0E-13
- Settability

	Version 01	Version 02
Range:	±1.0E-9	±1.0E-9
Resolution:	1.0E-15	1.0E-15
Control:	via RS232	via RS232
- Synchronization input
 - Accuracy: 150 ns
 - Amplitude: +2 to +10 V peak
 - Width/rise time: 100 ns min. to 100 μs sec max./<50 ns rising edge/menu Cmd
 - Connector/Location: BNC, front panel
 - 1 PPS advance/delay
 - Range/resolution: ±999,999.9 μs/100 ns
 - RF phase control
 - Range/resolution: ±10,000 ns/1 ns
 - Clock display: Day-of-Year & Time-of-Day

ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

- Power requirements

	AC	DC
Operating voltage:	90 to 265 V	±38 to 71 V
Frequency range:	47 to 63 Hz	
	400 Hz	
- Power

Operating:	110 VA, 65W	60W
Warm-up:	140 VA, 90W	90W
- Internal battery
 - Capacity: 1 hour at 25°C from charge
 - Charge time: 16 hours maximum
 - Charge source: AC or DC
- Dimensions (EIA-310C)

Height:	5.22" (133 mm)
Width:	
Front panel:	19.00" (483 mm)
Instrument:	17.31" (440 mm)
Depth:	21.00" (533 mm)
- Weight: 70 lbs. (31.7 kg)
 - Additional shipping: 15 lbs. (6.8 kg)
- Standard configurations

Standard Performance, 2 year electronic, 12 year tube warranty	Version 01
High Performance, 2 year electronic, 3 year tube warranty	Version 02
- Options

Options	Part No.
Rack slides	6013
Certified shipping container, cardboard	

NON-STANDARD OPTIONS

- 10.23 MHz Synthesizer
- 3.58 MHz Color Burst

* Excluding environmental effects

** 100% verified and calibrated against Symmetricom in-house standard

*** For telecom options three possible types are available: BNC, Weco 310 and Bantam.



4065C connections



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