

# Epsilon Clock 3T

## Model EC3T



- **Very high performance reference clock**
- **ITU G.811 GPS PRC**
- **12 channel reception on L1 (1575 MHz) C/A code**
- **Continuous Time Integrity Monitoring (T-RAIM)**
- **Automatic self survey with robust OD fixed mode**
- **Antenna propagation delay compensation**
- **1 PPS TTL output**
- **4 x 2.048 MHz sine wave outputs**
- **Optional 2048 kbit/s output**
- **Time of Day output**

The Epsilon Clock™ 3T is a very high performance GPS clock with compact atomic Rubidium oscillator.

The extremely accurate and stable time and frequency signals in a compact stand alone unit with low power consumption is ideal as a Primary Reference Source (PRS) or Primary Reference Clock (PRC) for telecom network synchronization.

The high performance Rubidium oscillator slaved to the GPS input source offers outstanding accuracy and phase noise. The oscillator in conjunction with the EpsilTime™ smart predictive slaving algorithm mitigates the effects of inherent GPS noise and complies to the most stringent holdover mode requirements if GPS is lost. A high performance OCXO is also available.

In addition to the 1 PPS, 4 x 2.048 MHz, and Time of Day outputs, the E1 option provides 2 x 2048 kbit/s. An option is available to synchronize to one external 1 PPS.

Setup, status, time of day and alarms are accessible via a front panel display and keypad. Selection of all settings including squelch of frequency outputs, G.704 alarm bit, antenna cable delay, choice of time scale (UTC or GPS) are user programmable. Extended status is available through the front panel Man Machine Interface or via the serial line interface.

## SPECIFICATIONS

### FREQUENCY OUTPUT (10 MHz):

		High Performance Rubidium
Accuracy (At constant temperature, after 3 months continuous operation)	GPS Locked	$< \pm 1 \times 10^{-12}$
	Holdover mode	$< \pm 5 \times 10^{-11}/\text{month}$

### TIME OUTPUT (1 PPS):

		High Performance Rubidium
Accuracy	GPS without S/A	$1\sigma < \pm 50 \text{ ns}$
	Holdover mode	$< \pm 1 \mu\text{s}$ *24 hours after last GPS synchronization, at constant temperature following 48 hours of GPS lock

### OTHER INPUTS/OUTPUTS:

		High Performance Rubidium
Outputs		4 x 2048 kHz or (4 x 1544 kHz) frequency reference sinewave (G.703 § 13 / 75 Ω) 1 x 1 PPS (TTL / 50 Ω) Time of Day on serial interface (RS-232C) Control and status on serial line interface (RS-232C) Alarm: relay contacts
Inputs		GPS antenna connector (TNC) with 5 V @ 80 mA DC supply output for remote amplification

### TIME MANAGEMENT:

	Oscillator and 1 PPS signal tracking by comparison with the source (GPS) and automatic adjustments.
--	---

### POWER:

Power Supply		AC Supply DC Supply	90 to 265 V / 48 to 63 Hz 36 to -72 V
Typical Power Consumption (without options)			< 60 W

## PHYSICAL

Size: 19" 2 U unit; 483 x 360 x 88 mm  
Weight: < 7 kg

## ENVIRONMENTAL

Operating Temperature: -0° to 50°C  
Storage Temperature: -40° to 85°C  
Relative Humidity: 95% RH @ 40°C, non condensing  
CE Compliance: EN 50082/EN 55022/EN 60905

## OPERATING MODE

Cold start-up time: < 20 minutes  
Synchronization and slaving on GPS reference  
Squelch of frequency outputs on set threshold  
Status displayed by LEDs (GPS, Power, PPS)  
Permanent self-test of main functions  
Maintenance ensured by error messages  
Full remote control by serial port RS-232C  
User interface by keypad and LCD display 2 lines of 40 characters  
(Date, Time, Status and Control)

## OPTIONS

E1 option: 2 x 2048 kbit/s (75 Ω) output module  
(G.703 § 9 and G.704) 120 Ω is also available.  
Configuration G.703 § 13/120 Ω for frequency outputs  
1 x 10 MHz output (instead of 1 x 2048 kHz)  
T1 option: DS1 output 1544 kbit/s (G.703 § 4/75 Ω)  
High performance OCXO (instead of Rubidium)  
External 1 PPS reference

## ACCESSORIES

GPS antennas  
EpsilWin32 software for remote control/supervision  
Lightning protections  
In-line amplifier  
Cables  
Splitters