



# EPSILON CLOCK 3T

## VERY HIGH PERFORMANCE PRIMARY REFERENCE ITU G.811 GPS PRC - Rubidium

The EPSILON CLOCK 3T is a GPS clock which generates and distributes precise and stable frequency and time signals.

This device is a stand alone unit synchronized by UTC-GPS reference, broadcasted by the GPS satellite constellation all over the world. The high level of performance contained in a compact unit with low power consumption makes this product an ideal choice for off-the-shelf synchronization requirements.

The Rubidium oscillator disciplined on GPS makes the EPSILON CLOCK 3T an ideal Primary Reference Source (PRS) or Primary Reference Clock (PRC) for telecom network synchronization.



### Main Features

#### ■ ACQUISITION OF TIME REFERENCE

The EPSILON CLOCK 3T includes a GPS C/A code receiver tracking up to 8 channels on L1 (1575 MHz) as time reference.

#### ■ FREQUENCY AND TIME KEEPING

An internal oscillator (Rubidium or High performance OCXO) slaved to the GPS source brings a high level of performance to the EPSILON CLOCK 3T.

In case of reference disruption, Time and Frequency accuracies are maintained under microprocessor control thus allowing an efficient Holdover Mode.

#### ■ STAND ALONE MODE

Time is kept by internal oscillator without external source.

#### ■ FREQUENCY AND TIME DISTRIBUTION

Time of Day (TOD) is accessible by a serial interface.

Frequency reference and 1 pps outputs are delivered by the EPSILON CLOCK 3T.

2048 kbit/s output (G.703 §6 and G.704) or 1544 kbit/s output (G.703 §2) are proposed as option.

#### ■ CONTROL

Setup, status and alarms are accessible thanks to a display and a keypad on front panel.

Choice of all the settings including the squelch of the frequency outputs, G.704 alarm bit, the antenna cable delay and the time scale (UTC or GPS) can be programmed by the user.

Status are displayed on the front panel with three leds.

Extended status are available through the front panel Man Machine Interface or via the serial line interface.

# ΕPSILON CLOCK 3T

## Main Specifications

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### ■ ACCURACY - STABILITY (Rubidium)

#### - FREQUENCY OUTPUT (2048 kHz or 1544 kHz)

Accuracy (Average over 24 hours):

GPS locked:  $< \pm 1 \times 10^{-12}$ .

Holdover mode:  $< \pm 5 \times 10^{-11}$ / month.

MTIE and TDEV meet the ITU G.811 recommendation.

#### - TIME OUTPUT (1 pps)

Accuracy: GPS without S/A,  $1\sigma$ :  $< \pm 50$  ns.

Holdover mode:  $< \pm 1 \mu\text{s}^*$ .

\* 24 hours after last GPS synchronization, at constant temperature following 48 hours of GPS lock.

### ■ OPERATING MODE

Cold Start-up time: 1 hour.

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).

### ■ TIME MANAGEMENT

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

### ■ PHYSICAL CHARACTERISTICS

19 " 2U unit.

Size (W x D x H): 483 x 340 x 88 mm.

Weight:  $< 7$  kg.

### ■ MANUAL

Operating and instruction manual.

### ■ INPUT

GPS antenna connector (TNC).

### ■ OUTPUTS

4 x 2048 kHz or (4 x 1544 kHz) frequency reference sinewave (G.703 § 10 / 75  $\Omega$ ).

1 x 1 pps (TTL / 50  $\Omega$ ).

Time Of Day on serial line interface (RS 232C).

Control and status on serial line interface (RS 232C).

Alarm: relay contacts.

### ■ POWER SUPPLY

AC supply: 90 to 265 V / 48 to 63 Hz.

DC supply: - 36 to -72 V.

Typical power consumption:  $< 60$  W.

### ■ ENVIRONMENT

Operating temperature: 0 to + 50 °C.

Storage temperature: - 40°C to + 85 °C.

Relative humidity: 90 % non condensing.

European EMC standard (EN 50081 & EN 50082).

### ■ OPTIONS

E1 option: 2 x 2048 kbit/s (75  $\Omega$ ) output module (G.703 § 6 and G.704). 120  $\Omega$  is also available.

Configuration G.703 § 10 / 120  $\Omega$  for frequency outputs.

1 x 10 MHz output (instead of 1 x 2048 kHz).

T1 option: DS1 output 2 x 1544 kbit/s (G.703 § 2 / 75  $\Omega$ )

High performance OCXO (instead of Rubidium).

### ■ ACCESSORIES

GPS antennas.

EPSILWIN32 software (Windows™, 95, 98, NT4.0 or 2000).

Lightning protections.

On-Line amplifier.

Cables.

Splitters.

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