



Epsilon Clocks

Options

1 MHz and/or 5 MHz OUTPUTS

DESCRIPTION

This option allows Epsilon Clocks, Model EC2S or EC3S to provide 1 MHz and/or 5 MHz frequency outputs instead of 10 MHz.

POSSIBLE CONFIGURATIONS

	1 MHz	5 MHz	10 MHz
Standard	x 0	x 0	x 4
Case 1	x 2	x 2	x 0
Case 2	x 0	x 2	x 2
Case 3	x 3	x 0	x 1
Case 4	x 1	x 2	x 1

MAIN FEATURES

Connectors: J6, J7, J8 and J9 on rear panel (BNC Female)

Pin settings:

Core: Sine wave signal

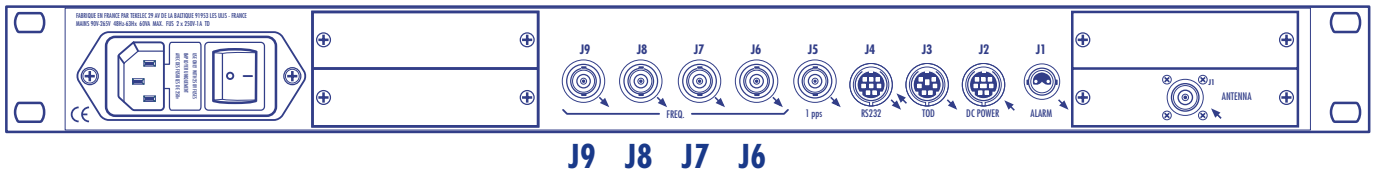
Frequency: 1 or 5 MHz

Level: > 13 dBm typical over 50 Ω

Ground: electrical ground of the clock

Other characteristics are identical to the 10 MHz outputs (see EC2S or EC3S data sheet)

REAR PANEL VIEW OF EPSILON CLOCK, MODEL EC2S



ADDITIONAL 1PPS OUTPUTS

DESCRIPTION

This option allows Epsilon Clocks, Model EC2S or EC3S to provide three more 1PPS outputs on connectors J11, J12 and J13.

MAIN FEATURES

Connector: J11, J12, J13 on rear panel, added module (BNC Female)

Pin settings:

Core: periodic pulse

Period: 1s

Active edge: rising

Pulse duration: $100 \mu\text{s} \pm 10 \mu\text{s}$

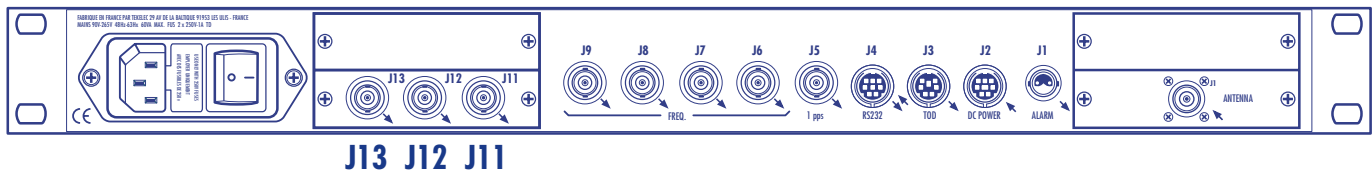
High-level: $> 2.4 \text{ V load } 50 \Omega$

Low-level: $< 0.8 \text{ V load } 50 \Omega$

Rising edge duration: $< 20 \text{ ns load } 50 \Omega$

Ground: electrical and mechanical ground of the clock

REAR PANEL VIEW OF EPSILON CLOCK, MODEL EC2S



ADDITIONAL 2 MHz & 2 Mbit/s OUTPUTS

DESCRIPTION

This option allows Epsilon Clocks, Model EC2S or EC3S to provide two 2.048 MHz outputs on J11, J12 and one (1) 2.048 Mbit/s output on J13.

MAIN FEATURES

2.048 MHz Output

Connectors: J11 and J12 on rear panel, added module

BNC Female for 75 Ω output impedance

BR2 Female for 120 Ω output impedance

Pin settings:

Core: Sine wave signal

Frequency: 2048 kHz

Level: G.703 § 13 / 75 Ω or 120 Ω

Ground: electrical ground of the clock

2.048 Mbit/s Output

Type: Synchronization frames at 2.048 Mbit/s in conformance with ITU-T Recommendation G.703 § 9 and G.704

Connector: J13 on rear panel, added module

BNC Female for 75 Ω output impedance

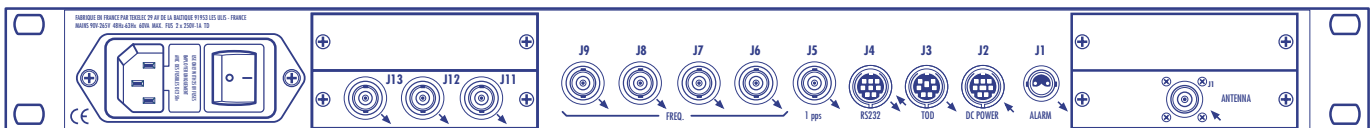
BR2 Female for 120 Ω output impedance

Pin settings:

Core: Synchronization frames

Level: G.703 § 9, 75 Ω or 120 Ω

REAR PANEL VIEW OF EPSILON CLOCK, MODEL EC2S



J13 J12 J11

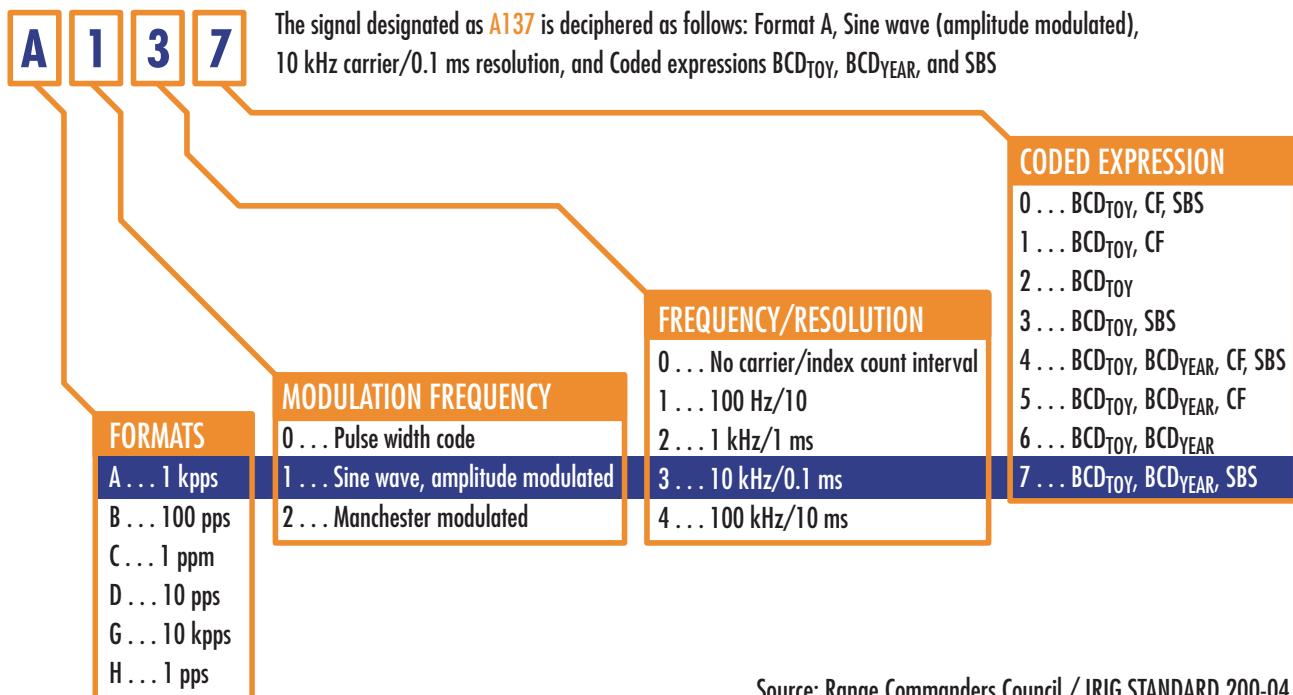
ADDITIONAL IRIG-B TIME CODE OUTPUT

DESCRIPTION

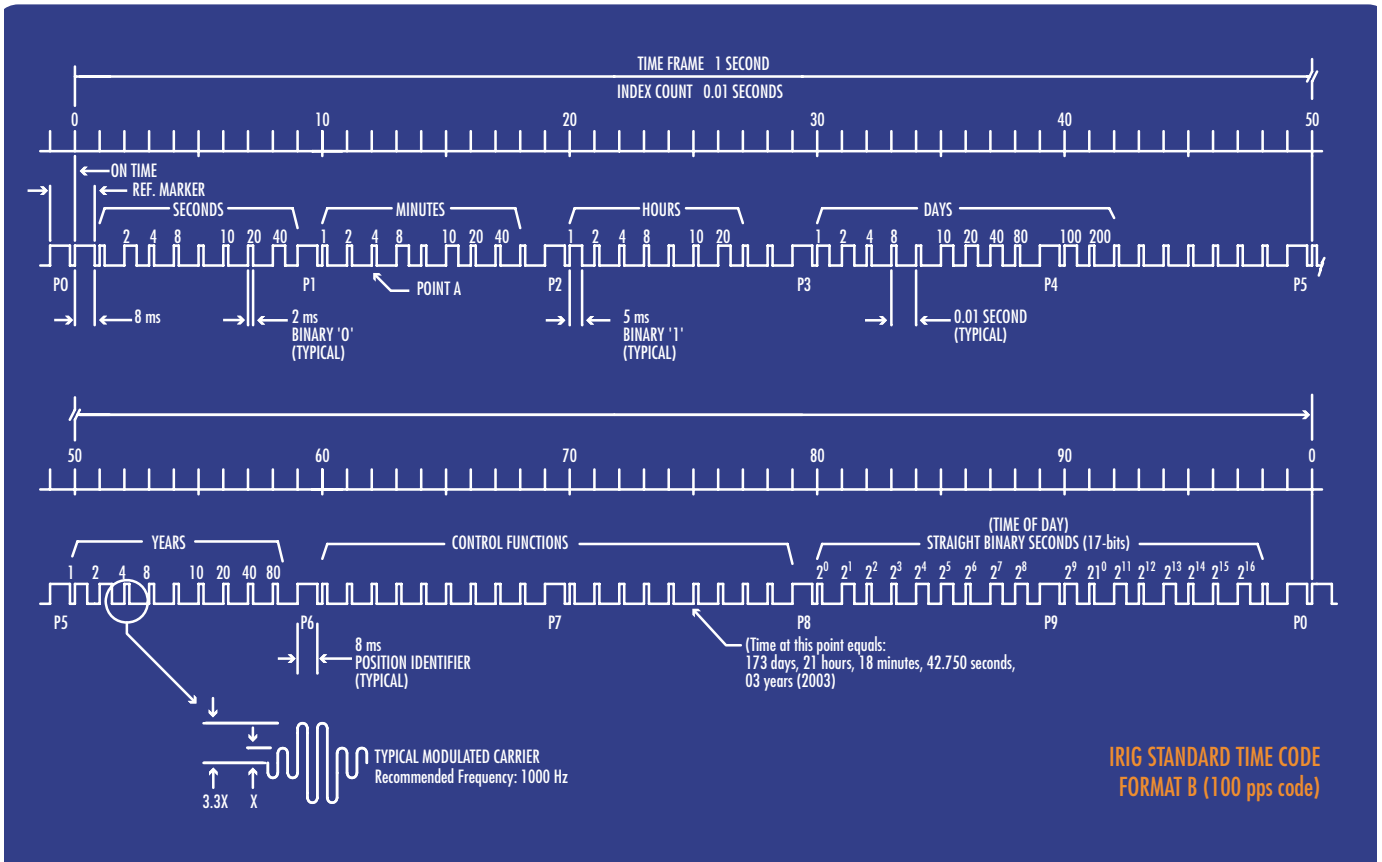
This option allows Epsilon Clocks, Model EC2S or EC3S to provide two time code outputs in accordance with IRIG-B Recommendation (Inter Range Instrumentation Group - format B).

SERIAL TIME CODE FORMATS

“The family of rate-scaled serial time code formats is designated A, B, D, E, G, and H. Various combinations of sub-words and signal forms make up a time code word. All formats do not contain each standard coded expression, and various signal forms are possible. To differentiate between these forms, signal identification numbers are assigned to each permissible combination.”



Source: Range Commanders Council / IRIG STANDARD 200-04.

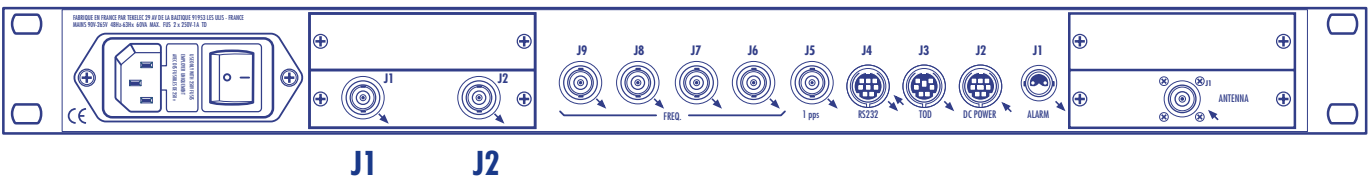


Format B example: BCD time-of-year in days, hours, minutes, seconds and year and straight binary seconds-of-day and control bits
 Source: Range Commanders Council / IRIG STANDARD 200-04.

AVAILABLE SIGNAL FORMAT ON EPSILON CLOCKS, MODEL EC2S OR EC3S

- | | | | |
|--------------|------------------------------------|--------------|------------------------------------|
| B 122 | 1 = Sine wave, amplitude modulated | B 123 | 1 = Sine wave, amplitude modulated |
| | 2 = 1 kHz/1 ms | | 2 = 1 kHz/1 ms |
| | 2 = BCD _{TOY} | | 3 = BCD _{TOY} , SBS |

Connectors: J1 and J2 on rear panel, added module
 BNC Female
 Maximum output level of 1 kHz carrier : 2.2 Vpp / 600 Ω (typical)



ADDITIONAL STANAG 4430 TIME CODE OUTPUT

DESCRIPTION

This option allows Epsilon Clocks, Model EC2S or EC3S to provide one additional time code outputs in accordance with STANAG 4430 Recommendation, Edition 1 (NATO).

MAIN FEATURES

STANAG is NATO abbreviation for Standardization Agreement. STANAG 4430 defines "Precise Time and Frequency Standards (PTFS) for military electronic systems."

SPECTRACOM provides different electrical levels:

- Standard Time Message (STM) and Have Quick* Message (0/5V square signal) with synchronization
- Standard Time Message (STM) Have Quick* Message (RS-485 signal) with synchronization

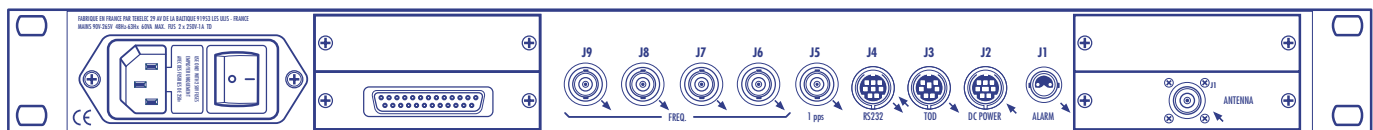
Connector: SUB-D 25 female pins (HE501) mounted on rear panel

"Reserved" pins should not be connected by the user!

(*) Aircraft and ground radios that employ HAVE QUICK must be initialized with accurate Time Of Day (TOD), a Word Of the Day (WOD) which serves as a key, and a NET number (providing mode selection and multiple networks to use the same word of the day). The Word Of the Day, Time Of Day and NET number are input to a cryptographic pseudorandom number generator that controls the frequency changes.

PIN SETTINGS

Pin #	Signal Description
1	Electrical and mechanical ground
2	RS485 Time Message high
3	Reserved
4	XHQ RS485 high message
5	Reserved
6	Electrical and mechanical ground
7	Electrical and mechanical ground
8	Reserved
9	1PPS RS485 high
10	Reserved
11	Reserved
12	Electrical and mechanical ground
13	0/5V Have Quick message broadened
14	RS485 Time Message low
15	Reserved
16	Reserved
17	XHQ RS485 low message
18	Reserved
19	Reserved
20	Reserved
21	1PPS RS485 low
22	Reserved
23	Electrical and mechanical ground
24	1PPS Have Quick 0-5V
25	Electrical and mechanical ground



FREQUENCY SYNTHESIZER (DDS) OUTPUT

DESCRIPTION

This option allows Epsilon Clocks, Model EC2S or EC3S to provide one fixed frequency output.

MAIN FEATURES

Connectors: on rear panel (any of J6, J7, J8, or J9)

BNC Female

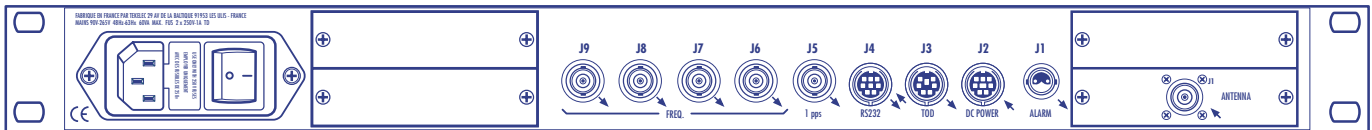
Pin settings:

Core: Sine wave signal

Frequency: 100 kHz to 50 MHz

Level: depending on frequency (50 Ω)

Ground: electrical ground of the clock



ADDITIONAL E1 / 2Mbit/s OUTPUTS

DESCRIPTION

This option allows Epsilon Clock, Model EC2T (only) to provide two output signals with synchronization frames at 2048 kbit/s in conformance with ITU-T Recommendation G.703 § 9 and G.704.

MAIN FEATURES

Connectors: J1 and J2 of the “G.704” rear panel plate

BNC Female for 75 Ohms output impedance

BR2 Female for 120 Ohms output impedance

Alarm monitoring: in case of equipment alarms, the user’s programmed alarm bits are positioned in the Time Slot No. 0 without FAS frame.

