

ECONOMY GPS MASTER CLOCKS

The **ES-101**, **ES-102U** and **ES-103U** are low-cost yet very accurate GPS Master Clocks/Time Code Generators. All three receive time and date information from Global Positioning System satellites and supply data to the user in several different forms. A twelve-channel receiver is employed that is capable of tracking up to twelve (12) satellites simultaneously, although reception of only one is required for time data to be output.

All three units have ASCII (RS-232C), **ESE-TC89** and **ESE-TC90** Time Code outputs, two (2) One Pulse Per Second outputs and a GPS "Lock" output. Additionally, the **ES-102U** has a 6-digit display (hours, minutes & seconds) of time information and a SMPTE/EBU time code output. Meanwhile, the **ES-103U** has a 9-digit display (day of year, hours, minutes & seconds) and an IRIG-B time code output.

Several Options are available that allow the unit to meet most any demand required of a Master Clock or a Time Code Generator.

Features:

- SMPTE/EBU, IRIG-B, USB, ASCII (RS-232C) & **ESE** Time Code Outputs
- Automatic Or Manual Daylight Saving Time Correction
- Rugged Desk Top & Rack Mount Enclosures
- Time Zone Offset
- Dual 1 PPS Outputs
- GPS "Lock" indicator
- Leap Second Correction
- Indoor / Outdoor Antenna With 16' Cable
- 6-Digit Or 9-Digit .56" LED Display
- Loss Of GPS Signal Output
- Optional DC Operation for Field and Ground Mobile Applications



Included is an indoor/outdoor antenna which is connected to the unit via the provided 16' cable. If additional cable is required, "low-loss" cable, an "in-line" amplifier (**LA-12F** or **LA-12FN** for low-loss cable) or, for extra long cable runs where more than one in-line amplifier is used, an "Antenna Power Supply" (**ES-AB1A**) may be required. Consult the **ESE** factory or website for more information.

Software is also supplied permitting the user to continuously update a computer's Windows® clock to the time available on the Serial or USB port (ES-102U/ES-103U only).

Specifications

	ES-101	ES-102U	ES-103U
Electrical:	117 VAC, 50/60 Hz	117 VAC, 50/60 Hz	117 VAC, 50/60 Hz
Power:	5 Watts Typical	15 Watts Typical	15 Watts Typical
Enclosure:	Desk Top	Rack Mount	Rack Mount
Mechanical:	1.6" H x 7" W x 5" D	1.75" x 19"; 10" Deep	1.75" x 19"; 10" Deep
Displays:	-	Six Digits, Yellow LED, .56" High	Nine Digits, Yellow LED, .56" High
Accuracy:	1 PPS @ <500 η S	1 PPS @ <500 η S	1 PPS @ <500 η S
Drift:	33mS/day (if no GPS signal)	33mS/day (if no GPS signal)	33mS/day (if no GPS signal)
Video Input:	-	RS-170A Composite Video/Blackburst, 1 Vpp, 75 Ω	-
Outputs:	ESE-TC89: drives 100 Slaves @ 4000' ESE-TC90: drives 100 Slaves @ 4000' 1 PPS: TTL, 20% Duty Cycle 1 PPS: TTL, 50% Duty Cycle	ESE-TC89: drives 100 Slaves @ 4000' ESE-TC90: drives 100 Slaves @ 4000' 1 PPS: TTL, 20% Duty Cycle 1 PPS: TTL, 50% Duty Cycle SMPTE: 600 Ω Balanced or Unbalanced	ESE-TC89: drives 100 Slaves @ 4000' ESE-TC90: drives 100 Slaves @ 4000' 1 PPS: TTL, 20% Duty Cycle 1 PPS: TTL, 50% Duty Cycle
	RS-232C: ASCII Date & Time @9600 Baud 8 Data, No Parity, 1 Stop	RS-232C: Date & Time Output USB: Universal Serial Bus, Date & Time Output	IRIG-B: 3 Vpp(mark amplitude)600 Ω RS-232C: Date & Time Output USB: Universal Serial Bus, Date & Time Output
GPS Receiver:	Internal 12-Channel	Internal 12-Channel	Internal 12-Channel
Antenna:	Indoor/Outdoor with 16' Cable	Indoor/Outdoor with 16' Cable	Indoor/Outdoor with 16' Cable
Options:	Ant, BBU, DC, EBU, HR, IRIG-B, IRIG-E, J, K, P, P2, SMPTE, UL, 6-Digit, 9-Digit, 10 η S	Ant, BBU, DC, EBU, HR, J, K, UL, 10 η S	Ant, BBU, DC, HR, J, K, UL, 10 η S

