

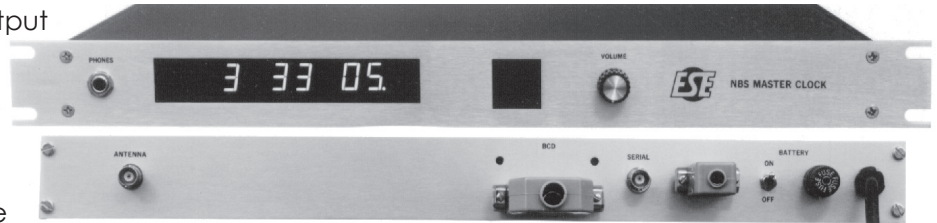
# WWV MASTER CLOCK / TIME CODE GENERATOR

The **ES-180A** is a WWV Master Clock and Time Code Generator. The unit displays six digits of time information as received from the NIST (National Institute of Standards and Technology) via the internal 5-channel WWV Receiver. Simultaneously, the **ES-180A** generates two types of time code (**ESE** & RS232C/ASCII) and a 1 PPS signal. These outputs allow the **ES-180A** to easily interface with new or existing computer and clock systems.

The antenna input of the **ES-180A** can be configured for either an Active antenna or a Passive antenna. If an active antenna is required, the **ES-AA1** (Active Antenna) is available. Software is also supplied with the **ES-180A** permitting the user to continuously update a computer's DOS or Windows® clock to the time available on the ASCII output.

## Features:

- ASCII (RS-232C) and **ESE** Time Code Outputs
- Automatic Daylight Savings Time Correction
- Headphone Jack & Audio Output
- 1 PPS Output
- Time Zone Offset
- NIST Accuracy
- 4-Hour Battery Back-Up
- Rugged Rack Mount Enclosure
- 6-Digit .56" LED Display
- Scans Five WWV Channels
- Self-Calibrating Crystal Continuously Improves Accuracy



## Specifications

**Electrical:** 117 VAC, 50/60 Hz  
**Power:** 10 Watts Maximum  
**Mechanical:** 1.75" x 19" Rack Mount, 12" Deep  
**Displays:** Six Digits, Yellow LED, .56" High  
**Accuracy:** +/-2.5mS of UTC  
**Drift:** <10mS/day (if no WWV signal)  
**WWV Receiver:** Internal 5-Channel  
**Antenna Input:** (active or passive) 50Ω BNC  
**Antenna Sensitivity:** 1μV for 20db (S+N)/N nominal

**Input Frequencies:** 2.5 MHz, 5 MHz, 10 MHz, 15 MHz & 20 MHz  
**Outputs:** 1 PPS: TTL, 80/20% Duty Cycle  
**ESE Time Code (TC89):** drives 100 Slaves @ 4000'  
**RS-232C:** ASCII Date & Time @ 9600 Baud, 8 Data, No Parity, 1 Stop  
**Battery:** 10-Hour Back-Up of WWV Receiver (displays are blank)  
**Options:** B, Black, HR, J, UL, ES-AA1

# MODEM INTERFACE MASTER CLOCK / TIME CODE GENERATOR

The **ES-181A** is a Master Clock that receives updated time information via an internally mounted modem. The unit supplies time information to the user in a variety of forms, including the nine-digit yellow LED display (Julian Day, Hours, Minutes and Seconds). Time codes available via rear-mounted connectors are SMPTE/EBU, ASCII (RS-232C), IRIG-B and **ESE** (TC89 or TC90). The unit also outputs two "1 PPS" signals (one "positive" and one "negative") and an "External Reference Input" is also provided that allows the clock's time base to be referenced to that of either a 10 MHz or a 5 MHz source (10 MHz is default).

Software is also supplied with the **ES-181A** permitting the user to continuously update a computer's DOS or Windows® clock to the time available on the ASCII output.

## Features:

- SMPTE (or EBU), IRIG-B, ASCII & **ESE** Time Code Outputs
- Optional 10 MHz & 1 KHz Outputs
- Automatic Re-dial
- Auto Daylight Savings Time
- Easy Installation & Operation
- Rugged Rack Mount Enclosure
- Auto Update Via Modem From USNO



## Specifications

**Electrical:** 117 VAC, 50/60 Hz  
**Power:** 15 Watts Maximum  
**Mechanical:** 1.75" x 19" Rack Mount, 10" Deep  
**Displays:** Nine Digits, Yellow LED, .56" High  
**Accuracy:** +/-50ms of UTC (after update)  
**Drift:** One Second per Month (without Update)  
**Video Input:** RS-170A Composite Video/Blackburst-1 Vpp, 75Ω  
**Reference Input:** (10 MHz or 5 MHz), 500mVpp, 75Ω  
**Modem:** Hayes® Compatible 2400bps

**Outputs:** 1 PPS: TTL, 50% Duty Cycle  
**IRIG-B:** 3 Vpp (mark amplitude), 600Ω  
**ESE Time Code:** drives 100 Slaves @ 4000'  
**SMPTE:** 600Ω Balanced or Unbalanced  
**RS-232C:** ASCII Date & Time @ 9600 Baud, 8 Data, No Parity, 1 Stop  
**Battery:** 4-Hour Back-Up of CPU (displays are blank)  
**Options:** EBU, HR, J, K, UL

