



# CLOCKS & TIMERS

The "Digital Revolution" has been a part of every day life for more than a quarter century. And since its beginning, **ESE** has been there... supplying precision time keeping products for a myriad of applications and to most every industry.

**ESE** equipment has flown on board the space shuttle and on a more mundane level, timed the speakers at the local city council meeting. Since 1971, the Broadcast Industry has referred to **ESE** as the "Clock and Timer People".

As the Digital Revolution continues to grow, so does **ESE**. With nearly 350 standard products, at least 40 of which belong to the "Clock & Timer" family, **ESE** is certain to have a solution for all of your precision timing requirements.

## Features

- Time, Date & Elapsed Time Displays
- Digital, Analog & Video Displays
- **ESE** Time Code Output
- Countdown Timers
- Simple Operation

## Options

- Desk, Console, Wall (Camera) & Rack Mount Enclosures
- Reverse Stop & Relay Closure At Zero
- Tenths Of Seconds
- Crystal Time Base
- Remote Control



## Applications

- Broadcast Facilities & Trucks
- Government & Military Installations
- Tele-Conferencing Centers
- Churches & Meeting Halls
- Video Facilities
- Schools & Distant Learning Centers

Products described in this brochure are most commonly referred to as belonging to the Clock & Timer Family. Products, features, specifications or options not listed here, may be found in another **ESE** "Family" brochure. If more information or a custom product is required, please contact the **ESE** factory or a nearby **ESE** Authorized Dealer.



# TABLE OF CONTENTS

| Description                          | Part Number  | Page # |
|--------------------------------------|--|--------|
| Is it a Clock or a Timer?            | -  | 2      |
| Is it a Master or a Remote Display?  | -  | 2      |
| Analog Clock Displays                | LX-5105, LX-5112, LX-5116  | 3      |
| Up/Down Master Timers                | ES-362U, LX-362U   | 4      |
| Timer Displays                       | ES-361U, LX-361U, ES-366U, LX-366U, ES-372U, ES-941U, ES-991U  | 5      |
| Up Timers (Elapsed Time Indicator)   | ES-520U, LX-520U, ES-570, ES-575A, ES-580U, ES-590U  | 6      |
| Up/Down (Countdown) Timers           | ES-301U, ES-302U, ES-370, ES-371, ES-380U, ES-381U, ES-391U  | 7      |
| Real Time Clocks (Stand-Alone)       | ES-112E, ES-124E, ES-172U, ES-174U, ES-182U, ES-184U,<br>ES-942, ES-944, ES-962, ES-964, ES-992U, ES-994U  | 8      |
| Master Clocks & Accessories          | ES-160U, ES-181A, ES-101, ES-102U, ES-103U, ES-185U, ES-185U/NTP<br>ES-188, ES-911U/GPS, ES-911U/GPS/NTP, ES-192U, ES-194U,<br>LX-192U, LX-194U, Accessories | 9      |
| Combination Clock/Timers             | ES-562U, ES-564U, ES-572U, ES-574U   | 10     |
| Video Inserter Clock, Timer & Slaves | ES-206U, ES-266U, ES-306U  | 11     |
| Options                              | Amber, Black, C, D, DC, <b>ESE</b> , J, L2, L4, M, N, NTP-C, P, P2, Q,<br>R, Red, RS, SV, T, TZ, UL, V, W, Wall, X, Y, Z,                                    | 12     |

## IS IT A CLOCK OR A TIMER?

And the debate continues!

This is not an attempt to tell *Webster's* or *The American Heritage* how to do their job. It is only an effort to make things perfectly clear for the sake of this brochure. Typically, a **CLOCK** tells "Time of Day" (Real Time) and a **TIMER** indicates "Elapsed Time" or "Time Remaining". Examples of each are as follows:

| TIME OF DAY (Real Time)               | ELAPSED TIME/TIME REMAINING           |
|---------------------------------------|---------------------------------------|
| <b>CLOCK</b>                          | <b>TIMER</b>                          |
| Kitchen Wall Clock                    | Egg Timer                             |
| Wristwatch                            | Stopwatch                             |
| Sundial                               | Hourglass                             |
| Alarm Clock                           | Countdown Timer                       |
| <b>ES-112E</b> (6-digit Clock)        | <b>ES-520U</b> (Up Timer)             |
| <b>ES-192U</b> (6-digit Master Clock) | <b>ES-362U</b> (Up/Down Master Timer) |

**ESE** "Real Time" Clocks typically display Hours, Minutes and Seconds and are available with displays ranging in height from .4" to 4.0". Enclosure styles include desk-top, wall mount, console mount and rack mount. Special enclosures, larger displays and other modifications are available on a custom basis.

**ESE** Timers display either Minutes and Seconds (Tenth's of Seconds are optional) or Hours, Minutes and Seconds. Similar to the Clocks, displays are available with .4", .55", 1.0", 2.3" and 4.0" high digits and the same enclosures are available with the Timers.

## IS IT A MASTER OR A REMOTE DISPLAY?

A Serial Time Code output is a standard feature on several **ESE** Clocks and Timers. This output allows these units (sometimes referred to as a "**Master**") to drive up to 100 "**Remote**" units at a distance of up to 4000 feet. Most other Clocks and Timers have the "**ESE**" Time Code output available as an Option. Refer to the specific data sheets for more information.



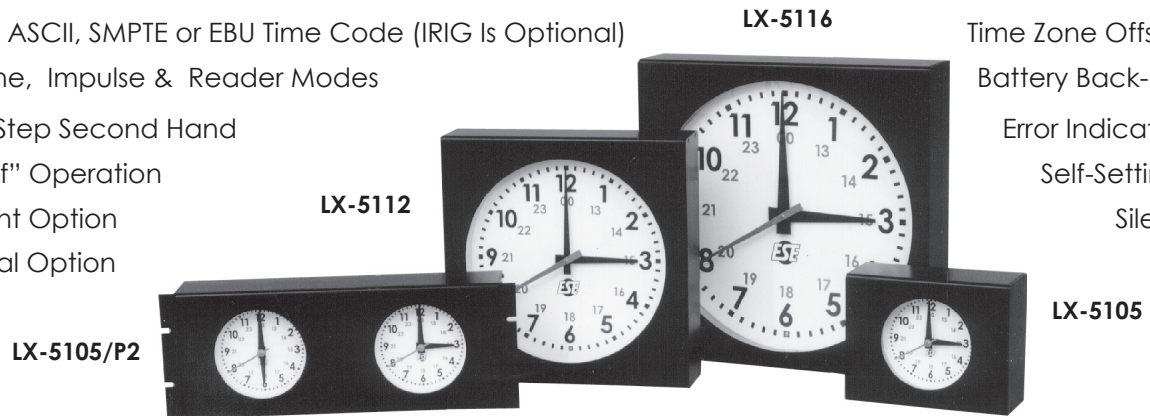
# ANALOG CLOCKS (SELF-SETTING)

Although the **LX-5105**, **LX-5112** and **LX-5116** are designed with the idea of being driven by a Master Clock, they are equally capable of being used as "Stand-Alone" clocks. The **LX-5105** has a 5" dial and is intended for desk-top use. The **LX-5112** (12" dial) and the **LX-5116** (16" dial) are wall mount units. Option "P" allows any of the three units to be rack mounted and option "P2" (available only on the **LX-5105**) permits two units to be rack mounted side-by-side.

## Features:

- Reads **ESE**, ASCII, SMPTE or EBU Time Code (IRIG Is Optional)
- Stand-Alone, Impulse & Reader Modes
- Sweep or Step Second Hand
- "Hands-Off" Operation
- Rack Mount Option
- Lighted-Dial Option

- Time Zone Offset
- Battery Back-up
- Error Indicator
- Self-Setting
- Silent



When used as a Time Code Reader these units can read, decode and display time information from most any Master Clock or other source of time code. A rear-mounted DIP switch permits the clock to display time as received from a source of SMPTE/EBU, ASCII or **ESE** time code. After a very simple "set-up" procedure and receipt of time code, the unit automatically sets itself to the exact time and continuously slaves to the time code. (If time code is lost, an error indicator is lit and the clock continues counting while referencing an internal crystal time base.)

Other user defined modes of operation allow the **LX-5105**, **LX-5112** or **LX-5116** to be synchronized to a Master Clock with a 1 PPS alternating 12 VDC/24 VDC output or (as described above) to be set to real time and allowed to run based on its internal crystal oscillator. The second hand is completely silent and can be programmed for "Sweep" mode or "Step" mode.

The initial set-up allows the unit to have its hours (and/or minutes) offset to that of another time zone. Also, since the unit can continuously track time code, there is no need to twice annually compensate for daylight savings time (assuming the Master Clock automatically adjusts itself accordingly).

## SPECIFICATIONS

- Power: 5 Watts Maximum (15 Watts with Light option)
- Electrical: 117 VAC, 50/60 Hz
- Enclosure: Desk-top (LX-5105); Wall Mount Enclosure (LX-5112 & LX-5116)
- Mechanical: LX-5105: 8.6" Wide x 6.95" High x 3.45" Deep  
LX-5112: 13.95" x 13.95" x 3.45" Deep  
LX-5116: 17.45" x 17.45" x 3.45" Deep
- Inputs: **SMPTE/EBU:** 10k  $\Omega$ , Balanced or Unbalanced, 100 mVPP to 10 VPP  
**ESE:** TC-76, TC-89 or TC-90, 120k  $\Omega$ , Unbalanced  
**ASCII:** 120k  $\Omega$ , Unbalanced  
**Impulse:** Alternating 12 VDC (or with modification - 24 VDC)
- Viewing Distance: **LX-5105:** 20 Feet; **LX-5112:** 60 Feet; **LX-5116:** 80 Feet
- Options: IRIG\*, J, Light\*, P, P2, UL

\* Only one of these options may be specified on the LX-5105



# UP/DOWN MASTER TIMER & ACCESSORIES

Using technology very similar to that used in the **ESE** Master Clock product line, **ESE** is able to offer a Master Timer with "Remote" Display System. The basic idea... connect the Master Timer (via coax or twisted-pair) to one or more Digital Remote Displays. The result... all displays read the exact same time! The perfect solution for communicating between a director and talent, timing a sporting event and a host of other applications.

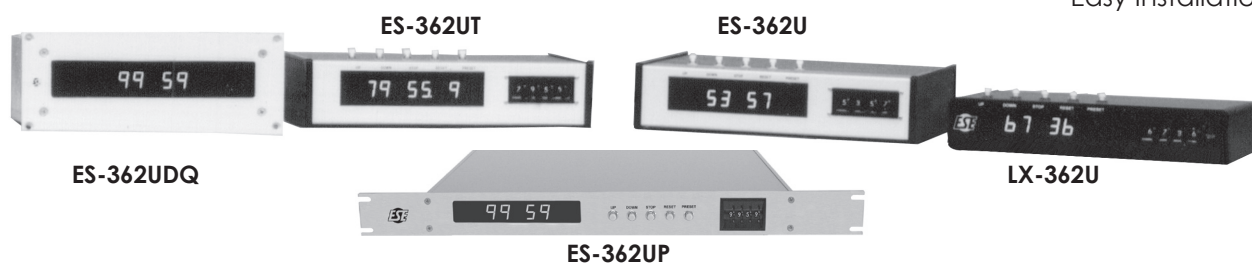
The **ESE** Serial "Timer" Code output of the Master is capable of driving as many as 100 **ESE** Remote Displays at a distance of up to 4000 feet. Remote Digital Displays (ES-361U, LX-361U, ES-364U, ES-366U, LX-366U, ES-369U or ES-372U) or a Video Slave (ES-266U) are easily connected to the Master with a single pair of wires or coax. Larger size displays and Special enclosures are available on a "Custom" basis. The **ES-225A** accepts the **ESE** Serial "Timer" code and outputs that information in RS 232 ASCII format.

## PRESETTABLE UP/DOWN MASTER TIMER

The **ES-362U** and **LX-362U** are one hundred minute (00:00 - 99:59) Up/Down Timers with an **ESE** Serial "Timer" Code output. Timer information is displayed on .56" yellow LED displays. Both units feature a 4-digit thumbwheel switch that allows the time to be easily preset onto the display. Five front-mounted pushbutton switches allow for simple operation of the Up, Down, Stop, Reset (to 00:00) and Preset (to thumbwheel setting) functions. A rear-mounted 9-pin D-sub connector provides access to these same five functions (via a momentary closure to ground or a logic "0"). **ESE** Serial "Timer" Code is accessible via a rear-mounted BNC connector.

### Features:

- Optional "Reverse" Count Or "Stop" Count At Zero (00:00)
- Perfect Synchronization Of Digital "Remote" Displays
- Optional Relay Contact Closures At Zero (00:00)
- **ESE** Serial "Timer" Code Output
- Controllable Via Remote Control Inputs
- Optional Rack-Mount Enclosure
- Thumbwheel Preset Controls
- Optional 10'ths Of Seconds
- Easy Installation



### SPECIFICATIONS

#### ES-362U

Power: 5 Watts  
 Line Cord: 3-wire, 6'  
 Electrical: 117 VAC, 50/60 Hz  
 Enclosure: Anodized Aluminum/Walnut Grain Sides & Top  
 Mechanical: 10" W x 2.5" H x 6" D  
 # of digits: Four (Minutes & Seconds)  
 Display Height: .56" Yellow LED  
 Viewing Distance: 20 Feet  
 Output: **ESE** TC-89; BNC  
 Inputs: Up, Down, Stop, Reset, Preset; DB-9  
 Options: Black, C, D, J, N, P, P2, Q(if 'D' is ordered),  
 T, UL, X, Y, Z

#### LX-362U

5 Watts  
 3-wire, 6'  
 117 VAC, 50/60 Hz  
 Black Texture-painted "LX" Enclosure  
 9.5" W x 1.7" H x 6" D  
 Four (Minutes & Seconds)  
 .56" Yellow LED  
 20 Feet  
**ESE** TC-89; BNC  
 Up, Down, Stop, Reset, Preset; DB-9  
 C, J, N, T, UL, X, Y, Z



# UP/DOWN MASTER TIMER & ACCESSORIES (Con't)

## DIGITAL TIMER DISPLAYS

**ESE** offers a wide variety of Timer "Remote" Displays. Display height ranges from .4" high to 4.0" high and the enclosures available include desk top, console mount, wall mount (camera mount) and rack mount. Larger displays as well as custom enclosures are available on a "Custom" basis. If "Video Insertion" of **ESE** Timer Code is required, please refer to the **ES-266U** on page 11.

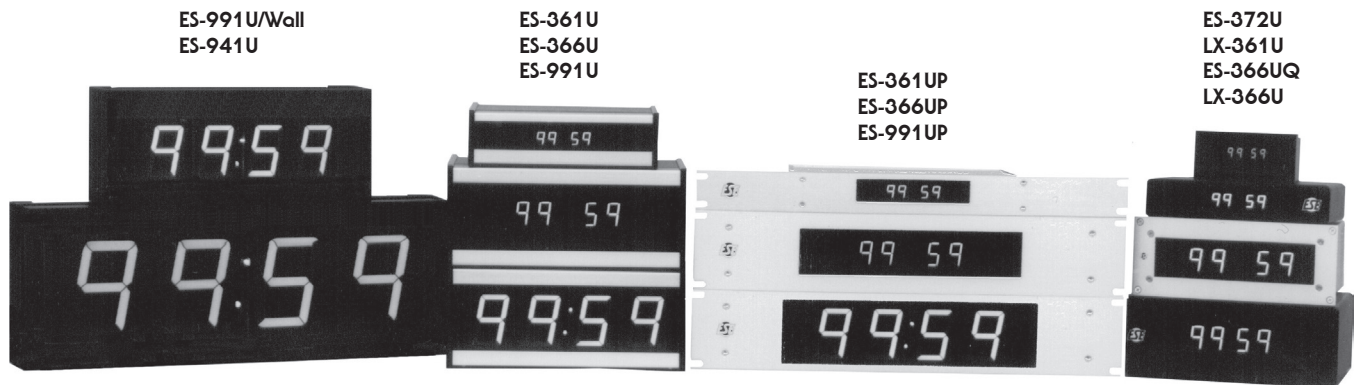
The units described below are designed to decode and display SMPTE or **ESE** Serial "Timer" Code. The **ESE** Serial "Timer" Code may originate from any **ESE** Master Timer (LX-362U, ES-362U, LX-520U or ES-520U), an **ESE** Timer with the "**ESE**" option or an **ES-167C** (Parallel to Serial Converter) connected to an appropriate source of parallel BCD. These 4-digit Remote "Timer" Displays, when driven from a Master "Clock" (Real Time), may be used to display clock data (Hours & Minutes) instead of timer data.

Each **ESE** Digital Remote Display requires only a single pair of wires (or coax) between itself and the Master. And, all **ESE** Masters are capable of driving up to 100 Displays at 4000 feet (without buffering).

Note: If a Master "Clock" System is required, please refer to Page 9 and the "Master Clock Systems" brochure.

### Features:

- Desk Top, Console, Wall (Camera) & Rack Mount Enclosures
- Perfect Synchronization With Master
- NTP Client option
- "Hands-Off" Operation
- Long-Life LED Displays
- Simple Installation



### SPECIFICATIONS

|                     | <b>ES-372U</b>            | <b>ES-361U</b>  | <b>LX-361U</b>      | <b>ES-366U</b>  | <b>LX-366U</b>       | <b>ES-991U</b>   | <b>ES-941U</b>             |
|---------------------|---------------------------|---|---------------------|---|----------------------|--|----------------------------|
| Power:              | 4 Watts                   | 5 Watts   | 5 Watts             | 5 Watts   | 5 Watts              | 8 Watts  | 8 Watts                    |
| Line Cord:          | 2-wire, 6'                | 2-wire, 6'  | 3-wire, 6'          | 2-wire, 6'  | 3-wire, 6'           | 2-wire, 6'   | 2-wire, 6'                 |
| Electrical:         | 117 VAC,<br>50/60Hz       | 117 VAC,<br>50/60Hz   | 117 VAC,<br>50/60Hz | 117 VAC,<br>50/60Hz   | 117 VAC,<br>50/60 Hz | 117 VAC,<br>50/60 Hz   | 117 VAC,<br>50/60Hz        |
| Input:              | <b>ESE</b> or SMPTE       | <b>ESE</b> or SMPTE   | <b>ESE</b> or SMPTE | <b>ESE</b> or SMPTE   | <b>ESE</b> or SMPTE  | <b>ESE</b> or SMPTE  | <b>ESE</b> or SMPTE        |
| Connector:          | BNC                       | BNC   | BNC                 | BNC   | BNC                  | BNC  | Terminal Block             |
| Enclosure:          | Console Mount             | Desk Top  | Desk Top            | Desk Top  | Desk Top             | Desk Top   | Wall Mount                 |
| Mechanical (HxWxD): | 2.2"x4.5"x4.5"            | 2.8"x8"x6"  | 1.7"x8"x6"          | 5.5"x10.4"x6.6"   | 3.5"x10"x6"          | 5.5"x10.4"x6.6"  | 7"x19"x3.5"                |
| # of Digits:        | Four (Min-Sec)            | Four (Min-Sec)  | Four (Min-Sec)      | Four (Min-Sec)  | Four (Min-Sec)       | Four (Min-Sec)   | Four (Min-Sec)             |
| Display Height:     | .4" Red                   | .56" Yellow   | .56" Yellow         | 1" Yellow   | 1" Yellow            | 2.3" Yellow  | 4.0" Red                   |
| Viewing Distance:   | 10 feet                   | 20 feet   | 20 feet             | 35 feet   | 35 Feet              | 70 Feet  | 120 feet                   |
| Options:            | J, T*, V(12VDC),<br>W, UL | Black, <b>ESE</b> , J,<br>NTP-C, P(1¼"),<br>P2, RS, Q, T*,<br>TZ, W, UL | J, RS, T*, TZ, UL   | Black, <b>ESE</b> , J,<br>NTP-C, P(3½"),<br>P2, RS, Q, T*,<br>TZ, UL, W, Wall | J, RS, T*, TZ, UL    | Black, J, NTP-C,<br>J, NTP-C, T*,<br>P(3½"), Red, T*,<br>TZ, UL, W, Wall | J, NTP-C, T*,<br>TZ, W, UL |

\* Refer to Price List or consult Factory for proper Part Number if option "T" is required.

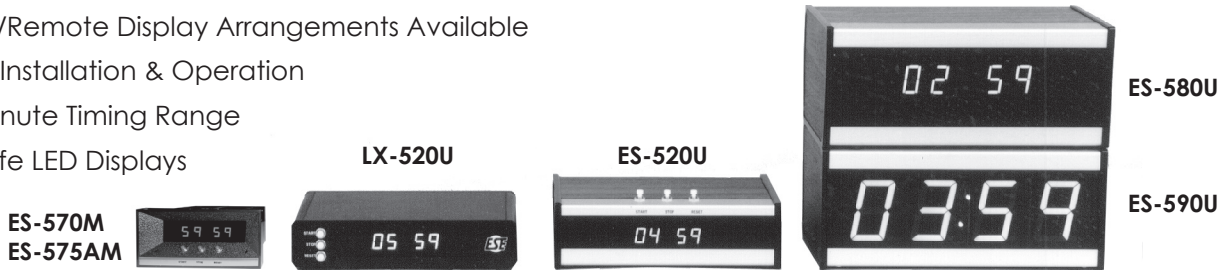


# UP TIMERS (ELAPSED TIME INDICATORS)

The original and still most commonly used timer is the Elapsed Time Indicator. As with the "Up/Down" Timers, there are three main considerations, 1) Enclosure, 2) Viewing Distance and 3) Controls. All **ESE** Elapsed Time Indicators feature a sixty minute timing range and four digits of LED displays (tenths of seconds are optionally available). These Elapsed Time Indicators are the perfect timing solution for Sporting Events, Industrial Applications and Radio, TV & Recording Studios. (For timing longer events, see page 10 or contact the **ESE** factory for a custom unit.)

## Features:

- Optional & Custom Features Available
- Desk Top, Console, Wall (Camera) & Rack Mount Enclosures
- Remote Input Operation (Easy Interface To Playback Machines)
- Master/Remote Display Arrangements Available
- Simple Installation & Operation
- Sixty Minute Timing Range
- Long-Life LED Displays



## CONSOLE MOUNT / .4" High Display

**ES-570** and **ES-575A** are console mountable sixty minute timers. The bright-red LED displays and the easy-to-mount enclosure with front bezel are perfect for studio consoles, lecterns and other applications where the user is to be within 10 feet of the unit. Controls are accessible on the rear-mounted edge-card connector and option 'M' specifies front bezel switches. Controls on the **ES-570** are Start, Stop and Reset. The **ES-575A** includes a "Freeze" control which temporarily holds the time on the display (until released) while the timer (internally) continues to count. If option "T" (10'ths of seconds) is ordered, the **ES-570U** or **ES-575U** is supplied.

## DESK MOUNT / .56" High Display

The **LX-520U** and **ES-520U** have been the "Flagship" of the "Up Timers" since replacing their predecessor, the ES-510. The four .56" yellow LED displays are complemented by three front-mounted switches (Start, Stop and Reset). The controls are also accessible thru a rear-mounted DB-9 connector. The same connector also allows access to four isolated "Reset" inputs. A serial output of **ESE** Time Code (capable of driving up to 100 of the Digital Timer Displays mentioned on page 5) is also provided.

## DESK MOUNT / 1" High Display & 2.3" High Display

When the viewing distance is to exceed 20 feet, or where "Viewer Impact" or the "Visually Challenged" are a main concern, the **ES-580U** and the **ES-590U** should be considered. The units feature yellow LEDs and a rear-mounted connector which allows access to the Start, Stop and Reset controls (switches are not provided on either unit). Specifying Option "D" provides the three controls (pushbutton switches) mounted to a remote switchplate and connected to the unit via a six foot cable. The 1" displays of the **ES-580U** are viewable from 35 feet while the **ES-590U**'s 2.3" displays are easily read at up to 70 feet.

### SPECIFICATIONS

|                     | <b>ES-570/575A</b>            | <b>LX-520U</b>      | <b>ES-520U</b>                     | <b>ES-580U</b>                              | <b>ES-590U</b>                                      |
|---------------------|-------------------------------|---------------------|------------------------------------|---|---|
| Power:              | 4 Watts                       | 5 Watts             | 5 Watts                            | 5 Watts                                     | 8 Watts   |
| Electrical:         | 117VAC, 50/60Hz               | 117VAC, 50/60Hz     | 117VAC, 50/60Hz                    | 117VAC, 50/60Hz                             | 117VAC, 50/60Hz                                     |
| Enclosure:          | Console Mount                 | "LX" Style Desk Top | Desk Top                           | Desk Top                                    | Desk Top  |
| Mechanical (HxWxD): | 2.2" x 4.5" x 4.5"            | 1.7" x 8" x 6"      | 2.5" x 8" x 6"                     | 5.5" x 10.4" x 6.6"                         | 5.5" x 10.4" x 6.6"                                 |
| Connector:          | Edge Card                     | DB-9 & BNC (Serial) | DB-9                               | DB-9  | DB-9  |
| Controls:           | Remote                        | Push-buttons/Remote | Push-buttons/Remote                | Remote                                      | Remote  |
| # of Digits:        | Four (Min-Sec)                | Four (Min-Sec)      | Four (Min-Sec)                     | Four (Min-Sec)                              | Four (Min-Sec)                                      |
| Display Height:     | .4" Red                       | .56" Yellow         | .56" Yellow                        | 1" Yellow                                   | 2.3" Yellow   |
| Viewing Distance:   | 10 feet                       | 20 feet             | 20 feet                            | 35 feet                                     | 70 feet   |
| Options:            | C, D, J, M, T, V(5vdc), W, UL | C, D, J, T, UL      | Black, C, D, J, P, P2, Q, T, W, UL | Black, C, D, <b>ESE</b> , J, P, Q, T, UL, W | Black, C, D, <b>ESE</b> , J, Red, P, T, UL, W, Wall |



# UP/DOWN (COUNTDOWN) TIMERS

**ESE** offers several different styles of "Up/Down" Timer. Of these styles, there are three basic features which should be considered (type of enclosure, size of display and method of preset). The types of enclosure include Desk Mount, Console Mount, Rack Mount and Wall Mount (also suitable for camera mount). The size of the display determines the maximum viewing distance (.4" = 10 feet, .56" = 20 feet, 1" = 35 feet and 2.3" = 70 feet). A video display is also available with the **ES-306U** (see Page 11). The method of preset (for subsequent countdown) utilizes "Thumbwheel" switches, "Push-button" switches or the remote control input connector with externally mounted controls.

## Features:

- Simple Installation & Operation
- One Hundred Minute Timing Range (00:00-99:59)
- Optional "Stop", "Reverse-Count" and "Relay Closure" at Zero (00:00)
- Desk Top, Console, Wall (Camera) & Rack Mount Enclosures
- Long-Life LED Displays



## THUMBWHEEL PRESETTABLE

Four **ESE** Up/Down Digital Timers include the "Thumbwheel" Preset Switch. This Thumbwheel offers a very quick and simple method for "Presetting" the display for a subsequent count-down (or up-count). The **ES-371**, **ES-381U** and **ES-391U** have the Thumbwheel and push-button controls mounted on a remote control plate (connected to the unit via a 6' cable). Meanwhile, the **ES-302U** has all controls mounted on the front of the unit. Note that option 'D' on the **ES-302U** moves all controls to the remote control plate as in **ES-371**, **ES-381U** and **ES-391U**. Option 'Q' is also available with the **ES-302U'D'**.

## PUSH-BUTTON / REMOTE PRESETTABLE

**ES-301U**, **ES-370** and **ES-380U** are Preset by incrementing the displays of the appropriate digit-pair. Six push-button switches (Up, Down, Stop, Min-Set, Sec-Set & Reset) are provided with the **ES-301U**, while access to the controls for the **ES-370** and **ES-380U** are provided on rear-mounted connectors. Available on the **ES-370** is option 'M' which provides front-mounted switches. Option 'D', which includes all six switches mounted on a remote switchplate connected to the unit via a six foot cable (extra cable can be ordered) is available on all three units.

## SPECIFICATIONS

|                     | <b>ES-370</b>                  | <b>ES-371</b>               | <b>ES-301U</b>  | <b>ES-302U</b>                                    | <b>ES-380U</b>                                | <b>ES-381U</b>  | <b>ES-391U</b>   |
|---------------------|--------------------------------|-----------------------------|---|---|---|---|--|
| Power:              | 4 Watts                        | 4 Watts                     | 5 Watts   | 5 Watts   | 5 Watts                                       | 5 Watts   | 8 Watts  |
| Line Cord:          | 2-wire, 6'                     | 2-wire, 6'                  | 2-wire, 6'  | 2-wire, 6'  | 2-wire, 6'                                    | 2-wire, 6'  | 2-wire, 6'   |
| Electrical:         | 117 VAC,<br>50/60Hz            | 117 VAC,<br>50/60Hz         | 117 VAC,<br>50/60Hz   | 117 VAC,<br>50/60 Hz                              | 117 VAC,<br>50/60Hz                           | 117 VAC,<br>50/60 Hz                                    | 117 VAC,<br>50/60Hz  |
| Connector:          | Edge Card                      | Edge Card                   | n/a   | n/a   | DB-9  | DB-25   | DB-25  |
| Enclosure:          | Console Mount                  | Console Mount               | Desk Top  | Desk Top  | Desk Top                                      | Desk Top  | Desk Top   |
| Mechanical (HxWxD): | 2.2"x 4.5"x 4.5"               | 2.2"x 4.5"x 4.5"            | 2.5"x 8"x 6"  | 2.5"x 8"x 6"                                      | 5"x 10"x 6.6"                                 | 5"x 10"x 6.6"   | 5"x 10"x 6.6"  |
| Preset Method:      | Digit Advance                  | Thumbwheel                  | Digit Advance   | Thumbwheel  | Digit Advance                                 | Thumbwheel  | Thumbwheel   |
| Controls:           | Remote                         | Push Buttons                | Push Buttons  | Push Buttons                                      | Remote  | Push Buttons  | Push Buttons   |
| # of Digits:        | Four (Min-Sec)                 | Four (Min-Sec)              | Four (Min-Sec)  | Four (Min-Sec)                                    | Four (Min-Sec)                                | Four (Min-Sec)  | Four (Min-Sec)   |
| Display Height:     | .4" Red                        | .4" Red                     | .56" Yellow   | .56" Yellow                                       | 1" Yellow                                     | 1" Yellow   | 2.3" Yellow  |
| Viewing Distance:   | 10 feet                        | 10 feet                     | 20 feet   | 20 Feet   | 35 feet                                       | 35 Feet   | 70 feet  |
| Options:            | C, D, J, M, N,<br>UL, V(5vdc), | C, J, N, UL,<br>V(5vdc)W, Y | Black, C, D,<br><b>ESE</b> , J, N, P,<br>P2, Q, R,<br>T, UL, W, Y, Z, | Black, C, D, J,<br>N, P, P2, Q,<br>T, UL, W, Y, Z | Black, C, D, J,<br>N, P, Q, T,<br>UL, W, Y, Z | Black, C, <b>ESE</b> ,<br>J, N, P, Q,<br>T, UL, W, Y, Z | Black, C, <b>ESE</b> ,<br>J, N, P, Red<br>T, UL, W, Wall<br>Y, Z |



# REAL TIME CLOCKS (TIME OF DAY)

The **ESE** Digital Clocks described below display "Real Time" (Time of Day). Display sizes range from .4" to 4.0" (and larger on a custom basis). The basic enclosures available include desk, console, panel and wall mount. Although the "Stand-Alone" Digital Clock sometimes finds itself superseded with a Master Clock / Remote Display System or a Combination Clock/Timer, the need is still indisputable. Whether the need is for the office, a studio or a production facility, **ESE's** line of Digital Clocks offers a perfect solution for any application. And, all units include the three year **ESE** warranty.

## Features:

- Desk Top, Console, Wall (Camera) & Rack Mount Enclosures
- 12 or 24 Hour Format
- Optional & Custom Features Available
- Long-Life LED Displays
- Master/Remote Display Arrangements Available
- Simple Installation & Operation



## CONSOLE MOUNT / .4" High Display

The **ES-172U/ES-174U** are console mountable 12/24 Hour Digital Clocks. The bright-red LED displays and the easy-to-mount enclosure with front bezel are perfect for studio consoles, lecterns and other applications where the user is to be within 10 feet of the unit. Controls are accessible on the rear-mounted edge-card connector and option 'M' specifies front bezel switches. Controls on these units are Fast, Slow and Hold.

## DESK MOUNT / .56" & 1" High Display

Two different desk mount units (**ES-112E/ES-124E** and **ES-182U/ES-184U**) offer viewing distances of 20 feet and 35 feet, respectively. Each has yellow LED displays and three rear-mounted controls (Fast, Slow and Hold) used for setting the time.

## WALL MOUNT / 2.3" High Display

If the viewing distance is to exceed 35 feet or "Viewer Impact" is a major concern, the **ES-962/ES-964** or **ES-992U/ES-994U** (12 hour/24 hour) should be considered. The units feature a wall mount enclosure with 2.3" yellow (**ES-992U/ES-994U**) and red (**ES-962/ES-964**) LEDs readable at up to 70 feet (seconds' displays are only 1" high on **ES-992U/ES-994U**).

## WALL MOUNT / 4.0" High Display

The **ES-942/ES-944** are wall mount 12/24 Hour Digital Clocks with 4.0" high digits. The bright-red LED displays and the easy-to-mount enclosure are perfect for applications where the user is to be a considerable distance from the unit (up to 120 feet). Controls are top-mounted push buttons (Fast, Slow and Hold).

### SPECIFICATIONS

|                     | <b>ES-172U/174U</b>                  | <b>ES-112E/ES-124E</b>   | <b>ES-182U/ES-184U</b>                  | <b>ES-992U/ES-994U</b>                    | <b>ES-962/ES-964</b>                                  | <b>ES-942/ES-944</b>     |
|---------------------|--------------------------------------|--------------------------|---|---|---|--------------------------|
| Power:              | 4 Watts                              | 5 Watts                  | 5 Watts                                 | 8 Watts                                   | 8 Watts   | 8 Watts                  |
| Electrical:         | 117 VAC,<br>50/60Hz                  | 117 VAC,<br>50/60Hz      | 117 VAC,<br>50/60Hz                     | 117 VAC,<br>50/60Hz                       | 117 VAC,<br>50/60Hz                                   | 117 VAC,<br>50/60Hz      |
| Enclosure:          | Console Mount                        | Desk Top                 | Desk Top                                | Wall Mount                                | Wall Mount  | Wall Mount               |
| Mechanical (HxWxD): | 2.2" x 4.5" x 4.5"                   | 2.5" x 8" x 6"           | 4.5" x 10" x 6.6"                       | 5" x 12" x 3.5"                           | 5" x 15" x 3.5"                                       | 7" x 26" x 3.5"          |
| Controls:           | Remote                               | Push-buttons             | Push-buttons                            | Push-buttons                              | Push-buttons  | Push-buttons             |
| # of Digits:        | Six (Hr-Min-Sec)                     | Six (Hr-Min-Sec)         | Six (Hr-Min-Sec)                        | Six (Hr-Min-Sec)                          | Six (Hr-Min-Sec)                                      | Six (Hr-Min-Sec)         |
| Display Height:     | .4" Red                              | .56" Yellow              | 1" Yellow                               | 2.3" Yellow (1" Sec)                      | 2.3" Yellow   | 4.0" Red                 |
| Viewing Distance:   | 10 feet                              | 20 feet                  | 35 feet                                 | 70 feet                                   | 70 feet   | 120 Feet                 |
| Options:            | Black, C, D, J, M,<br>UL, V(12vdc),W | Black, C, J, Q,<br>UL, W | C, D, <b>ESE</b> , J, P,<br>Q, R, UL, W | C, D, <b>ESE</b> , J, P, R,<br>Red, UL, W | Amber, Black,<br>C, D, <b>ESE</b> , J, P,<br>R, UL, W | C, <b>ESE</b> , J, UL, W |





# MASTER CLOCKS & ACCESSORIES

**ESE** offers a complete line of Master Clocks, Remote Display Clocks and Accessories. The basic idea of a Master Clock System is to have all components of the System synchronized with the Master Clock. Computers, Loggers, Video Equipment, Programmers and all Remote Display Clocks, etc. can easily be driven from the same source of time (the Master). And, if the Master is linked to a precision source of time (such as the GPS Satellites), "perfect timing" is a simple reality.

Listed below are only brief descriptions of **ESE's** Master Clocks and Accessories. For more information, please refer to the "MASTER CLOCK SYSTEMS" brochure, or contact the **ESE** Factory or a nearby **ESE** Dealer.

## Features:

- **ESE**, SMPTE/EBU, IRIG-B & ASCII Time Code Outputs
- Analog/Impulse Clocks & Drivers
- Time Zone Offset Option
- Long-Life LED Displays
- GPS, WWV, Modem, Crystal & Line Accuracy
- Time & Date Digital and Video Displays
- Battery Back-Up
- Easily Expanded
- +/- 10ns Accurate 1 PPS Output



## Applications

- Schools & Distant Learning Centers
- Tele-Conferencing Centers
- Emergency "9-1-1" Systems
- Broadcast Facilities
- Government & Military Installations
- Video Courtrooms

## GPS Referenced

**ESE** offers a variety of GPS (Global Positioning System) based Master Clocks. From the low cost **ES-101**, **ES-102U** & **ES-103U**, which provide GPS accuracy and reliability in a simple configuration; to our most accurate Master Clocks, **ES-185U**, **ES-185U/NTP**, **ES-911U/GPS** & **ES-911U/GPS/NTP**, which come with a variety of features to accommodate any application.

## NTP Referenced

The **ES-188** is an NTP (Network Time Protocol) referenced Master Clock and Time Code Generator. The unit is designed to simplify locking local facilities to external time sources when a slight time offset is required. The **ES-188** provides users the ability to offset local clocks from an NTP Time Server so that local events can occur at precisely the correct time. Several time code outputs are available: **ESE**, USB, RS232C/ASCII, SMPTE/EBU & IRIG-B, as well as a 1PPS signal are generated.

## Crystal Controlled

The **ES-160U** is a Crystal Controlled Master Clock and Time Code Generator. An internal temperature compensated/voltage controlled crystal oscillator provides an accuracy of one second per month. The unit displays six digits of time information (date information is stored internally) while generating SMPTE/EBU, **ESE** & RS-232C/ASCII time code and a 1PPS signal.

## Modem Interface

The **ES-181A** is a Master Clock that receives updated time information via an internally mounted modem. The default time reference is the United States Naval Observatory in Washington D.C., but may be set by the user for the phone number of another service. The unit supplies time information to the user in a variety of forms, including the nine-digit yellow LED display and a 1PPS signal. Time code outputs available are SMPTE/EBU, **ESE** & RS-232C/ASCII.

## Economy

The **ES-192U/ES-194U** and **LX-192U/LX-194U** are line frequency referenced Master Clocks and Time Code Generators. The units display and output (**ESE** time code) six digits of time and six digits of date information.

## Accessories

**ESE** manufactures a variety of ancillary Master Clock System Accessories including Time Code Switchover units, Time Code Converters, Programmers/Comparators, Digital Time & Date Displays and Digital, Video & Analog Slave Clocks. Digital Displays range in digit height from .4" to 4.0" and Analog Slave Clocks are available with 5", 12" and 16" diameter dials. Many options are available and **ESE** can meet most any specific requirement on a "Custom" basis.



# COMBINATION CLOCK / TIMER

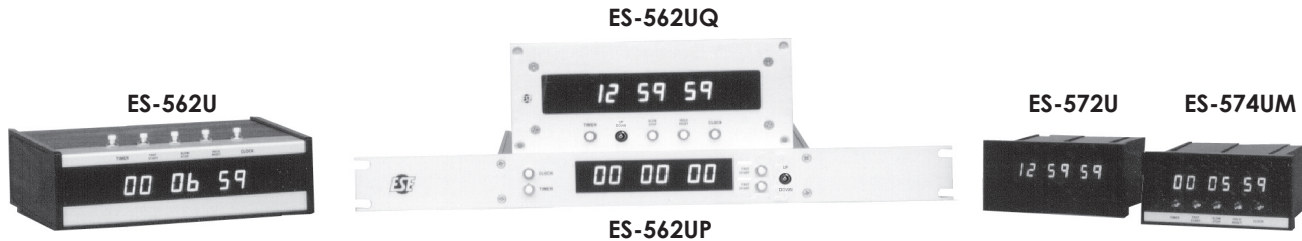
In many instances having a clock or a timer is just not enough. And just as often, having a separate clock and a separate timer is inconvenient. With those situations in mind, **ESE** offers the convenience of the "Clock/Timer"... two units in one!

The advantages are obvious... two units and only one enclosure with one set of shared controls.

The **ES-562U**(12 Hr)/**ES-564U**(24 Hr) and the **ES-572U**(12 Hr)/**ES-574U**(24 Hr) are combination six-digit 12 or 24 hour Clocks (Real Time of Day) with a built-in "Up" Timer (Up/Down on the **ES-562U/ES-564U** only). These units can be switched back and forth (from "Clock" mode to "Timer" mode) without losing any "Real Time" or "Elapsed Time" in the process. Both units feature five separate controls ("Timer", "Up/Down", "Set/Stop", "Select/Reset" and "Clock") that are used to operate the "Clock/Timer".

## Features:

- Easy Installation
- Long-Life LEDs
- 12 or 24 Hour Format
- Optional **ESE** Serial Time Code Output
- Simple Operation
- Dual-Function "Clock/Timer" Display
- Remote Control Inputs (Optional On **ES-562U/ES-564U**)



## DESK MOUNT (Rack Mount Optional)

The **ES-562U/ES-564U** is a six-digit "Clock & Up/Down Timer" with .56" yellow LED displays. The unit is housed in a desk mount enclosure. Specifying option "P" mounts the unit behind a 1¾" x 19" front panel. The unit is controlled via the five front-mounted switches and can also be operated by remote control if the option "R" is specified. Option "**ESE**" also includes an **ESE** Serial Time Code output which is capable of driving any of the "Remote" Displays described in the "Master Clock Systems" brochure.

## CONSOLE MOUNT

The **ES-572U/ES-574U** is a six-digit, console-mount "Clock/Timer" with .4" red LED displays. The unit is controlled via the five control inputs accessible on the rear-mounted edge-card connector. No switches are supplied on the unit unless option "M" (Front-Mounted Switches) is specified. Option "D" (Remote Control) provides push button switches mounted to a switchplate that is connected to the unit via a six foot cable with connector. The **ES-572U/ES-574U**, when in Timer Mode is an "Up" Timer only.

## SPECIFICATIONS

|                     | <b>ES-562U</b>                                     | <b>ES-564U</b>                                     | <b>ES-572U</b>              | <b>ES-574U</b>              |
|---------------------|--|--|-----------------------------|-----------------------------|
| Power:              | 5 Watts  | 5 Watts  | 4 Watts                     | 4 Watts                     |
| Electrical:         | 117 VAC, 50/60Hz                                   | 117 VAC, 50/60Hz                                   | 117 VAC, 50/60Hz            | 117 VAC, 50/60Hz            |
| Line Cord:          | 2-wire, 6'   | 2-wire, 6'   | 2-wire, 6'                  | 2-wire, 6'                  |
| Enclosure:          | Desk Top   | Desk Top   | Console Mount               | Console Mount               |
| Mechanical (HxWxD): | 2.5" x 8" x 6"                                     | 2.5" x 8" x 6"                                     | 2.2" x 4.5" x 4.5"          | 2.2" x 4.5" x 4.5"          |
| Controls:           | Push-buttons                                       | Push-buttons                                       | Remote                      | Remote                      |
| # of Digits:        | Six (Hr-Min-Sec)                                   | Six (Hr-Min-Sec)                                   | Six (Hr-Min-Sec)            | Six (Hr-Min-Sec)            |
| Display Height:     | .56" Yellow  | .56" Yellow  | .4" Red                     | .4" Red                     |
| Viewing Distance:   | 20 feet  | 20 feet  | 10 feet                     | 15 feet                     |
| Format:             | 12 hour  | 24 hour  | 12 hour                     | 24 hour                     |
| Options:            | Black, C, D, <b>ESE</b> , J, N, P, P2, Q, R, UL, W | Black, C, D, <b>ESE</b> , J, N, P, P2, Q, R, UL, W | C, D, J, M, UL, V(12Vdc), W | C, D, J, M, UL, V(12Vdc), W |

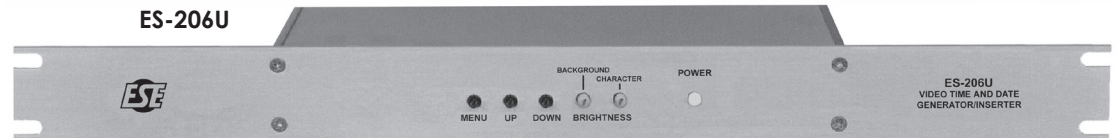


# VIDEO CHARACTER INSERTERS

Listed below are descriptions of the **ES-206U**, **ES-306U**, and **ES-266U**. All three units are very similar mechanically and electrically, with only a subtle difference that creates a "Clock/Calendar", an "UP/DOWN Timer" or a "Clock/Calendar or Timer Slave". Many options are available and if your situation calls for something a little different, please contact the **ESE** Factory or a nearby **ESE** Dealer. We have built thousands of "Specials" to meet our customers unique requirements.

## Features:

- Multiple Mask Selection
- On-Screen Programming
- NTSC, PAL or optional S-Video
- Daylight Savings Time Correction
- Brightness, Vertical & Horizontal Size (2%-20% screen) & Position (Anywhere - Line-By-Line) Controls



## CLOCK/CALENDAR

The **ES-206U** is a "stand-alone" Video Time/Date Generator & Inserter which superimposes Time and Date information onto a looped-thru video signal. The unit generates six digits of date (Month, Day & Year) and six digits of time (Hour, Minute & Second). With the ease of on-screen programming setting the **ES-206U** is a snap. Controls include Time & Date set and Size, Position & Brightness set. The unit also has several styles of background masks which include, solid characters on video, translucent characters on video or translucent characters on a translucent grey mask. A display setting mode allows the user to view the time and date side by side, stacked, time blanked or date blanked. An optional RS-232 Interface Windows® Control Panel Software may be ordered, which allows remote control of the display modes. Other controls include 12 or 24 hour selection and daylight savings time mode.

## "UP/DOWN" TIMER

The **ES-306U** is a Video Up/Down Timer "Inserter". Up to seven digits (Hr, Min, Sec, Tenths) are superimposed onto a video signal looped-thru the unit. Hours and Tenths may be blanked if desired. On-screen menus allow timer presetting, adjustment of the display Size and Position, Mask Selection, Tenths On/Off, Hours On/Off, and Zero Mode (Normal, Underflow, Stop, Reverse, or Auto Preset at Zero). The brightness of the Characters and Background may be individually set via front-panel controls. The display may be turned on/off via a front-panel control. Optional RS-232 interface and software is available.

## CLOCK/CALENDAR OR TIMER CONTROLLED

The **ES-266U** is a Video Time and Date "Inserter" which decodes either **ESE** or SMPTE Time Code. The unit superimposes six digits of date (Month, Day & Year) and six digits of time (Hour, Minute & Second) onto a looped-thru video signal. The **ES-266U** also has the ability to superimpose timer information if connected to an **ESE** timer (ES-362U, ES-520U, etc.). On-screen programming features include setting of date, position, size, brightness, mask selection, daylight savings time, and 12/24 hour mode selection. Optional RS-232 interface and software is available.

## SPECIFICATIONS

|                     | <b>ES-206U</b>                            | <b>ES-266U</b>                      | <b>ES-306U</b>                         |
|---------------------|---|-------------------------------------|--|
| Description:        | Clock/Calendar                            | Time/Date/Timer Slave               | Timer                                  |
| Power:              | 4 Watts                                   | 4 Watts                             | 4 Watts                                |
| Electrical:         | 117 VAC, 50/60Hz                          | 117 VAC, 50/60Hz                    | 117 VAC, 50/60Hz                       |
| Enclosure:          | Rack Mount                                | Rack Mount                          | Rack Mount                             |
| Mechanical (HxWxD): | 1.75" x 19" x 10"                         | 1.75" x 19" x 10"                   | 1.75" x 19" x 10"                      |
| Video I/O:          | BNC                                       | BNC                                 | BNC                                    |
| Formats:            | NTSC, PAL or S-Video                      | NTSC, PAL or S-Video                | NTSC, PAL or S-Video                   |
| # of Digits:        | Twelve<br>(Hr-Min-Sec, Mo-Day-Yr)         | Twelve<br>(Hr-Min-Sec, Mo-Day-Yr)   | Seven<br>(Hr-Min-Sec-Tenths)           |
| Time Code Output:   | <b>ESE</b> TC-90, BNC                     | n/a                                 | <b>ESE</b> TC-90, BNC                  |
| Time Code Input:    | n/a                                       | <b>ESE</b> Time Code, BNC           | n/a                                    |
| Options:            | Black, C, D, DC, J, L2, L4, P2, R, SV, UL | Black, DC, J, L2, L4, P2, R, SV, UL | Black, D, DC, J, L2, L4, P2, R, SV, UL |



# OPTIONS

Options listed below are available only on certain products, and descriptions are relative to products described in this brochure. Refer to product "Specifications" for option availability. Features neither listed as a Standard Feature nor offered as an Option, may be available on a "Custom" basis. Please consult the ESE Factory with your specific need.

**Please Note:** Some combinations of options are not compatible.

- Amber Amber Display:** Replaces the red LEDs with Amber LEDs.
- Black Black Panel:** Black Anodized Front Panel.
- C Crystal Timebase:** A .002% crystal is employed in an oscillator for those applications requiring independence from line frequency. A trimmer is included for greater accuracy (2-3 Seconds/week) and field calibration.
- D Remote Control:** A switchplate is connected to the unit via a 6 foot cable (longer length available) and remote connector. Note: If option 'D' is ordered on the ES-302U or ES-362U, all controls (including the thumbwheel switch) are moved onto the remote control switchplate. Option 'D' on all other units supplies an "additional" set of controls.
- DC DC Power:** Unit is operated exclusively from an external "DC" supply (+11 to +35 VDC is required).
- ESE ESE Serial Timer Code Output:** Allows the unit to drive serial input "Displays". Capable of driving up to 100 remote displays at up to 4000 feet.
- J 220 VAC Operation:** Required on many overseas applications.
- L2 Two Additional Video Input/Output Sets:** Available on most Video Inserters.
- L4 Four Additional Video Input/Output Sets:** Available on most Video Inserters.
- M Front Mounted Switches:** Available on most "Console Mount" Clocks and Timers (ES-172U/174U, ES-370, ES-570, ES-572U/574U and ES-575A) where switches are not provided with the standard unit.
- N Reverse Count at Zero:** When timer is in the countdown mode and reaches zero (00:00), the count direction changes to up, indicating the elapsed time since zero was reached. Available on all "Up/Down" Timers (ES-301U, ES-302U, LX-362U ES-362U, ES-370, ES-371, ES-380U, ES-381U & ES-391U).
- NTP-C NTP Client:** Provides an NTP Client Display. Allows for synchronization with an NTP server.
- P 19" Front Panel (Rack Mount):** Designed for mounting into a standard equipment rack. Panel is 1/8" clear anodized Aluminum and chassis is 5"-10" deep.
- P2 Dual Rack Mount:** Allows specific units to be mounted side-by-side on a single Rack Mount panel.
- Q 9" Front Panel:** 3/2" high, 1/8" clear anodized Aluminum panel (enclosure is 8" deep. Designed for mounting into a console or a larger panel.
- R Remote Control Connector:** Allows access to controls via a rear-mounted connector.
- Red Red Display:** Replaces the yellow LEDs with Red LEDs.
- RS RS-232C Output:** An RS-232C ASCII Computer Interface is supplied (RS-422A can alternatively be specified).
- SV S-VHS Connectors:** The BNC video connectors are replaced with S-VHS connectors.
- T Tenths of Seconds:** This option adds a fifth digit for greater resolution.
- TZ Time Zone Offset:** Internal DIP switch allows the hours (and half-hour) to be independently offset to any time zone.
- UL UL Power Supply:** The unit is supplied with a UL/CSA approved wall mount power supply.
- V DC Power:** Unit can be operated exclusively from a DC supply.
- W 3-Wire Power Cord:** Recommended where static charges can occur. Option 'W' is standard on many units and unless otherwise specified a two-wire power cord is supplied.
- Wall Wall Mount Enclosure:** Permits the unit to be easily mounted on a wall. Black textured enclosure measures 12" wide x 5" high x 3.5" deep with a clear anodized Aluminum front panel.
- X Three Relay Outputs:** Two are programmable and the third occurs at 00:00.0. To be considered when a "Speaker Timer" is required.
- Y Relay Closure at Zero:** A reed relay closure occurs when the timer completes a countdown to zero (00:00.0). Relay contacts are rated at 10 Watts maximum resistive load, 500 ma switching current.
- Z Relay Closure and Stop at Zero:** A reed relay closure occurs and the unit stops when the timer completes a countdown to zero (00:00.0). Relay contacts are rated at 10 Watts maximum resistive load, 500 ma switching current.

## OTHER ESE PRODUCTS

Products not found in this brochure may belong to another "Family" of ESE Products. For product information on any of the below mentioned "Families", please contact the ESE factory or an Authorized Dealer.

- ◆ Master Clock Systems
- ◆ Distribution Amplifiers
- ◆ IRIG Products
- ◆ SMPTE Products
- ◆ Audio Products
- ◆ Converters & Translators
- ◆ Time Control Systems
- ◆ Video Products

### THREE YEAR WARRANTY

All products described in this brochure are warranted free of mechanical and electrical defects, and will be replaced or repaired without charge if found defective under normal operating conditions when used as intended. Assembled products must be returned for adjustment within three years of purchase. Before returning goods, please write or call for shipping instructions.

