PARAGON
Electrical Products

# EC7000, EC7004 and EC7005 Single Channel Electronic Time Controls

**GENERAL INSTRUCTIONS**

## SPECIFIC CAPABILITIES

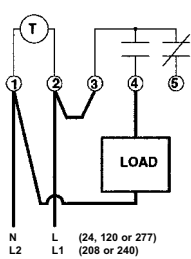
- 16 Setpoints - A setpoint defines the type of event (ON, OFF or duration) as well as the time and day(s) on which the event will occur.
- 24-hour or 7-day Programming - Allows the same schedule or a different schedule for each day of the week.
- Selectable Clock Format - 12 hour (AM/PM) or 24 hour format.
- Manual Override - Reverses current output state; begins immediately when initiated and remains until overridden again or until next setpoint is reached.

# INTRODUCTION

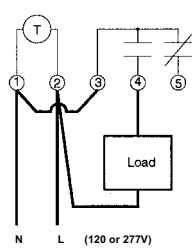
The EC7000, EC7004 and EC7005 are single-channel, electronic time control that provides simple, inexpensive control of lighting, heating, ventilation, air-conditioning, security systems, motors, pumps, fans or any load with a time-of-day schedule. The control may be utilized as a 24-hour or 7-day control. as a 24-hour control, the same ON/OFF program is utilized each day of the week. Saturday and/or Sunday, or any other day may be skipped. When schedules vary from day to day, the 7-day programming capability allows a different schedule for each day of the week. With 16 set-points available, this time control provides programming versatility.

The EC7001 provides two individually programmable durations of 1-59 seconds in addition to the maintained ON and OFF setpoints. This provides ideal control for the ringing chimes, school bells, factory bells, remote animal feeders, and air and water purity samplers. On events can be combined with duration events to obtain to-the-second ON times such as one minute and fifteen seconds or two minutes and thirty seconds, providing excellent control for loads that require precise ON durations longer then 59 seconds.

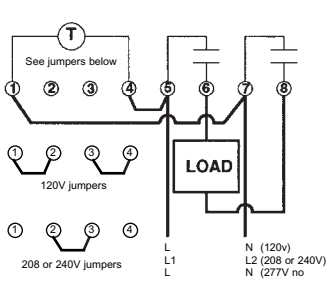
**EC7000 SPDT**




**EC7004 SPST**




**EC7005 SPST**



# CONTACT RATINGS

**Output**

| **UL Ratings** | **CSA Ratings** |
|---|---|
| **EC7000** | **EC7000** |
| Normally open contacts: | Normally open contacts: |
| 20 amp resistive at 24-240 Vac | 10 amp resistive at 24-240 Vac |
| 1 Hp at 120 Vac | 1/2 Hp at 120 Vac |
| 2 Hp at 240 Vac | 1 Hp at 240 Vac |
| 5 amp tungsten at 120-240 Vac | 5 amp tungsten at 120-240 Vac |
| | 6 amp ballast at 277 Vac |
| Normally closed contacts: | Normally closed contacts: |
| 10 amp resistive at 24-240 Vac | 10 amp resistive at 24-240 Vac |
| 1/4 Hp at 120 Vac | 1/4 Hp at 120 Vac |
| 1/2 Hp at 240 Vac | 1/2 Hp at 240 Vac |
| 3 amp tungsten at 120-240 Vac | 3 amp tungsten at 120-240 Vac |
| 3 amp ballast at 120-277 Vac | 3 amp ballast at 120-277 Vac |
| **EC7004** | **EC7004** |
| Normally open contacts: | Normally open contacts: |
| 30 amp resistive at 24-240 Vac | 30 amp resistive at 120 Vac |
| 1 Hp at 120 Vac | 10 amp resistive at 240 Vac |
| 2 Hp at 240 Vac | 1 Hp at 120 Vac |
| 5 amp tungsten at 120-240 Vac | 2 Hp at 240 Vac |
| 6 amp ballast at 120-277 Vac | 5 amp tungsten at 120-240 Vac |
| | 6 amp ballast at 277 Vac |

**EC7005**
**Please refer to inner door instructions on unit or contact factory**

NOTE: Paragon solid state controls utilize dry contacts, input power enables the control to keep time, store programmed information and carry out instructions but input power *does not power the load*. To make circuits function, you must provide power to the contacts.

## WIRING

Terminals can accommodate 10-16 AWG wire.

## POWER OUTAGE CARRY-OVER

The program and time-of-day are maintained during a power outage for a minimum of 4 days. A built-in special capacitor eliminates the inconvenience of battery replacement.

## ENVIRONMENTAL

EC7000 & EC7004 should be mounted indoors in an environment that is free from excessive contaminants such as oil, moisture and dirt. EC7005 is suitable for both indoor and outdoor use.

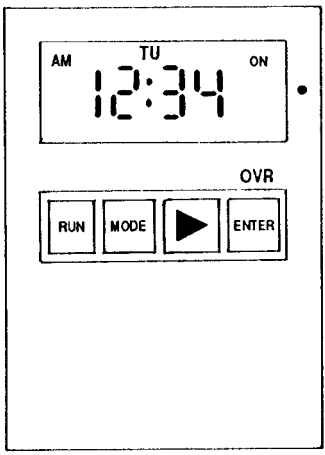
## PHYSICAL

EC7000 and EC7004 Monuting-
NEMA 1 enclosure mounting
Weight - Approx. 2 lbs.(0.9kg)
Dimensions-
Width 10.8 cm (4-1/4")
Height 20.0 cm (7-7/8")
Depth 7.6 cm (3")

EC7000 Bracket Mounting
Dimensions-
Width 10.4 cm (4-1/8")
Height19 cm (7-1/2")
Depth 6.7 cm (2-5/8")

EC7005 Mounting-
NEMA 3 enclosure mounting
Weight - Approx. 3 lbs.(1.4kg)
Dimensions-
Width 16.7 cm (6-9/16")
Height 23.1 cm (8-1/8")
Depth 9.8 cm (3-7/8")

# KEYPAD DESCRIPTION




**EC7000, EC7004 and EC7005**

**RUN-** Returns timer to the RUN mode. The timer will only control the load when in the RUN mode.

**MODE-** Advances from one programming mode to the next. the order of programming modes is as follows: Clock Format Select, Run, Set Time, Setpoint Programming, Set Duration 1 and Set Duration 2. After the last mode, the control will loop back to the Run Mode.

► Rolls through the parameter currently being programmed.

**ENTER-** In all programming modes, what is shown in the display is what exists in memory. Pressing the ENTER key simply advances to the next parameter to be programmed. (i.e. hours to minutes).

# UNDERSTANDING SETPOINTS

Before you begin programming, make sure you understand setpoints and durations.

A setpoint defines the type of event - ON, OFF or momentary, as well as the time of the event and the day(s) on which the event will occur. For example, to turn the lights on at 8: A.M each day of the week, a setpoint like this would be required: ON 8:00 A.M., Mon-Tue-Wed-Thur-Fri-Sat-Sun. Setpoint programming provides built-in skip-a-day capability; to skip any day(s), simply do not add the day(s) to the setpoint.

As a simple example, consider the following schedule for turning lights on and off.

SUN: No lighting required

MON through FRIDAY: Lights ON at 7:30 AM, OFF at 5:30 PM
SAT:On at 7:30 AM, OFF at 12:30 PM
NOTE: When programming, “no” on the display means no event is required at that setpoint on the particular day. “YES” means an event is required (either on or off) at that setpoint on that day. The sample schedule would be arranged as follows:

1st setpoint: required:
(ON at 7:30 AM Monday through Saturday only)
Set as follows - SUN: no
MON through SAT:(YES) ON at 7:30 AM
2nd setpoint: required:
(OFF at 5:30 PM Monday through Friday only)
Set as follows - SUN: no
MON through FRI:(YES) OFF at 5:30 PM
SAT: no
3rd setpoint: required:
(OFF at 12:30 PM Saturday only)
Set as follows - SUN through FRI: no
SAT:(YES) OFF at 12:30 PM

Example of how to mark your work sheet using schedule on previous page.

| NO. | DAY OF WEEK | | | | | | | TYPE OF EVENT | | | | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | (M) | (T) | (W) | (T) | (F) | (S) | (ON) | OFF | DUR | DUR2 | 7:30 AM |
| 2 | S | (M) | (T) | (W) | (T) | (F) | S | ON | (OFF) | DUR | DUR2 | 5:30 PM |
| 3 | S | M | T | W | T | F | (S) | ON | (OFF) | DUR | DUR2 | 12:30 PM |

| YOUR SETPOINT WORK SHEET (mark with your schedule) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NO. | DAY OF WEEK | | | | | | | TYPE ON EVENT | | | | TIME |
| 1 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 2 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 3 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 4 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 5 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 6 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 7 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 8 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 9 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 10 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 11 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 12 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 13 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 14 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 15 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |
| 16 | S | M | T | W | T | F | S | ON | OFF | DUR | DUR2 | |

# PROGRAMMING INSTRUCTIONS

These timers initially power up in the Clock Format Select Mode. This mode is only accessible once. If the clock format needs to be changed, the timer will have to be reset. To reset the timer, insert a pointed object into the reset hole to the right of the display.

**CLOCK FORMAT SELECT mode**

| STEP | KEY | DESCRIPTION |
|---|---|---|
| 1. | | Apply power to timer. Control displays 12 Hr, indicating 12 hour clock format. |
| 2. | ► | Toggles between 12 hour (AM/PM) and 24 hour (17:00 = 5:00 P.M.) clock formats. Choose the format desired. |
| 3. | ENTER | Advances to RUN mode. |

**SET TIME mode**

| STEP | KEY | DESCRIPTION |
|---|---|---|
| 1. | MODE | Advances to SET TIME mode. Control displays time with hours flashing. TOD is also displayed to indicate that Time of Day is being set. |
| 2. | ► | Advance to current hour. |
| 3. | ENTER | Minutes begin flashing. |
| 4. | ► | Advance to current minute. |
| 5. | ENTER | Day of week begins flashing. |
| 6. | ► | Advance to current day of week, then go directly to setpoint programming mode below. |

## SETPOINT PROGRAMMING mode

(Refer to **Understanding Setpoints** and your worksheet.)

| STEP | KEY | DESCRIPTION |
|---|---|---|
| 1. | MODE | Advances from the SET TIME mode to the SETPOINT PROGRAMMING mode. The timer displays “1” at bottom of display and “_ _:_ _”. The “1” indicates that the first of 16 setpoints is being programmed. The dashes indicate that this setpoint is clear. |
| 2. | ENTER | Display shows “SU” and “no”. This indicates that Sunday is not included in the setpoint. |
| 3. | ► | Display toggles between “YES” and “no”. If the event is desired for the particular day select “YES”, if not select “no”. Then go to step 4 on next page. |
| 4. | ENTER | Display shows “MO” and “no”. Repeat steps 3 and 4 to select which day(s) to include in the setpoint. After programming Saturday, the display will show the setpoint with the hours flashing. Dashes in the hour location indicate that the setpoint is still clear. |
| 5. | ► | Advance to desired hour. |
| 6. | ENTER | Minutes begin flashing. |
| 7. | ► | Advance to desired minute. |
| 8. | ENTER | Event type begins flashing. |
| 9. | ► | Display toggles between ON and OFF event types. Choose the type of event desired. |
| 10. | ENTER | Advances to next setpoint. Repeat steps 2 through 10 to program additional setpoints. When all setpoints required, are programmed, advance to steps 11. |
| 11. | RUN | Returns to the RUN mode when programming is complete. |

NOTE: Once programming has been completed through step 11, the display should sow correct Time-of-Day, Day-of-Week and Setpoint status (ON/OFF). If present load status should be an ON event, but shows as on OFF event, press ENTER/OVR to turn load ON and to initiate programmed schedule.

## TO REVIEW SETPOINTS

| STEP | KEY | DESCRIPTION |
|---|---|---|
| 1. | MODE | Advances from RUN mode to SET TIME mode. (TOD displays.) |
| 2. | MODE | Advances from SET TIME mode to SETPOINT PROGRAMMING mode. The control will display the first setpoint (1 displays at bottom.) To modify the setpoint, go to step 2 of the SETPOINT PROGRAMMING mode instructions. |
| 3. | ► | Advance through the remaining setpoints. |
| 4. | RUN | Returns to RUN mode when done reviewing setpoints. |

## OVERRIDE:

Manual override reverses the current output state. loads that are ON turn Immediately OFF; loads that are OFF turn immediately ON. The timer displays OVR to indicate that the current load state is the result of an override. the override remains in effect until overridden again or until the next setpoint is reached. To initiate override, press OVR (ENTER) key while in the RUN mode.

NOTE: After an override has been initiated the OVR will display until the next programmed setpoint is reached, even if the timer is overridden again. Display will show if the load is on or off.

# TROUBLESHOOTING TIPS

**Problem**

Nothing happens when a setpoint occurs to turn the load ON or OFF.

**Solution**

Review programmed setpoints making sure the day has not been skipped.

**Problem**

You wish to clear the control's memory and start over.

**Solution**

Depress the reset switch to the right of the display.

**Problem**

Manual override does not work.

**Solution**

Check the load for proper wiring. remember, the contacts on these units only switch what is applied to them. (Dry or isolated contacts.)

**Problem**

Blank Display

**Solution**

Check the input power source, insure proper connection.

**Problem**

Control does not operate after programming.

**Solution**

If programming was not performed (changing clock time or entering a setpoint) the control will not update itself. Press the ENTER key and override the load until the next scheduled setpoint.

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