1 Keyboard/Display Check List

2 Set-Up
- Time
- Date
- Astronomic
- Holidays

3 Programming Load Operation

4 Special Load Programming
- Astro (outdoor lighting, sun tracker)
- Pulse (bell ringing, latching relays, etc.)
- Interval
- Special Holiday Operation

5 Pulse Override and Interval Override Programming

6 Review
- Set-Up
- Program Times

Glossary and Error Codes

Installation Date __________________________

Battery Replacement Recommended __________________________
(8 years after installation)
Enable position for automatic load operation in RUN mode.

Enable position for selecting the load to program in SET mode.

Two Circuit Time Switch – Other models may vary in component placement but the functions will be the same.
ERR 0F  Unrecognized key (or too many keys pressed)
ERR 1A  No AM or PM selection
ERR 1B  Review entry not applicable
ERR 1C  One or more of the selected circuits has a program conflict
ERR 1D  There is a Date and Day of the Week entry conflict – the date has been cleared and you
         must re-enter both
ERR 1E  Out of memory
ERR 1F  Holidays may not overlap – Press REVIEW to identify the conflict

NOTE: Error messages as of 1/15/99. Error messages are subject to change with later software
       revisions.
ERR 02 Numeric entry not applicable
ERR 03 AM – PM key entry not applicable
ERR 04 Clock time not setup
ERR 05 Clock date not setup
ERR 06 ASTRO not setup
ERR 07 HOLIDAY not setup
ERR 08 OVERRIDE not setup
ERR 09 ASTRO entry not applicable
ERR 10 COPY key not applicable
ERR 11 Unable to clear a set point in week long review mode – set points may only be cleared from an individual day’s (or day group’s) program
ERR 12 Internal calculation error – may not be recoverable – reset the time switch
ERR 13 ‘Day groups’ are copy restricted – wkND and wkDY groups may be copied to Holidays
ERR 14 No ON or OFF time entry is allowed when entering an Astro Set Point
ERR 15 A day may not be copied to itself or to a day which has already been programmed
ERR 16 February 29th is only permitted in leap year
ERR 17 No circuit selected – select a circuit(s) using the circuit enable switches
ERR 18 Astro entry is out of limits – SUNRISE must be before noon and SUNSET MUST be after noon. SUNSET must not be within 5 hours of SUNRISE.
ERR 19 The date does not agree with the previously entered day of the week – review and correct one of the entries
ERR 20 Holidays may not end before they start and they must end by December 31
ERR 21 The selected holiday has already been used – Press REVIEW to see its definition
ERR 22 HOLIDAY PROGRAM must be cleared before clearing ‘Holiday Number’
ERR 23 ‘Copied to’ days may be cleared but may not be copied or changed
ERR 24 Daylight Savings error
ERR 0A HOLIDAY entry not applicable
ERR 0B OVERRIDE entry not applicable
ERR 0C PULSE entry not applicable
ERR 0D INTERVAL entry not applicable
ERR 0E Invalid or incomplete entry
### BUILDING LOCATION ___________________________ BUILDING # __________________

#### PROGRAM

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<th>Circuit #</th>
<th>Days</th>
<th>Switch On or Astro On</th>
<th>Switch Off or Astro Off</th>
<th>Pulse (sec’s.)</th>
<th>Interval (min/hr/day)</th>
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#### Special Holiday Operation

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<th>Pulse (sec’s.)</th>
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#### SET UP

- Clock
- Day of Week
- Time of Day
- Date (mm/dd/yy)
- Astro
- Zone
- Sunrise
- Sunset

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<th>Holidays</th>
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KEYBOARD/DISPLAY CHECK LIST

- Time switch is installed and wired in accordance with NEC and local requirements by a qualified electrician.
- Display/keyboard module is securely connected to the multi-pin connector from the relay board (see illustration).
- Turn on power at the breaker panel.
- Verify that one or more display segments are lit.
- If programming for the first time, clear the memory as follows:
  Press CLEAR key (and hold). While holding the CLEAR key, press and release the recessed RESET button. Release the CLEAR key only after “rESEt” appears in the display.
- Press ON/OFF key for available circuit(s) to verify proper load wiring and operation. If wired in the conventional manner, (loads connected to the normally open contacts), the green LED will be on when the load is on. The load(s) may be left on or off during programming.
- Before beginning to program, make a list of your program requirements or use the convenient program chart on the previous page.

SET-UP

Setting the Time

Place RUN/SET switch in SET position and follow the red blinking LED prompts.
- Enter day of the week (Sunday through Saturday).
- Press OK.
- Enter the current time. Example: 2:45 PM – press 2, 4, 5, PM.
- Press OK.

If you forget to select AM or PM you will receive an “ERR1A” message. Simply press CLEAR, enter AM or PM, and press OK.

SET-UP, cont’d
**Pulse** – A short duration of “load on” activity from 1 to 127 seconds for bell ringing or latching relays.

**Interval** – A short or long duration of “load on” activity from 1 minute to six days, 23 hours and 59 minutes.

**Override** – A timed pulse or interval programmed (option) into the clock, which is selected either by the ON/OFF key or with the remote switches on the 4, 8 and 16 circuit models.

**Weekdays** – Abbreviated WKDY on the key for Mondays through Friday.

**Weekend Days** – Abbreviated WKND on the key for Saturday and Sunday.

**Reset** – A recessed switch used in conjunction with the CLEAR key to clear all program information.

**Enable/Disable** – A slide switch (one for each circuit) used to override automatic operation in the RUN mode and used to select the correct circuit when programming in the SET mode.

**ON/OFF** – A keypad which is used to toggle the loads on and off.

**Holiday** – A day or series of days which skip load operation or has a special load operation.

**Zone** – Referring to the Astro Map as numbers 1 through 8 which determines in which zone a particular geographic location falls.

**Set-Up** – A portion of programming which includes day of the week, time of the day, month, date and year and Astro information as well as Holiday information.

**Program** – Abbreviated PROG on the key, a portion of programming where all switching activities are entered.

**Fixed times** – Programmed times which do not change, as opposed to Astro times which change to follow sunset and sunrise times.

**ERROR CODES**

Pressing **HELP** when an error code is displayed will cause an error message and recommended action to scroll on display. Press any key to stop message and restore pre-error display.

**ERR 01**  Too many keys pressed or **HELP** key not pressed first
procedure lets you review and display all scheduled ON/OFF switch times as well as pulse or interval times along with their duration and Astro times. Astro times will appear to be the same for all days programmed but are automatically revised daily to track changing sunset/sunrise times. If you revise a pulse or interval ON time you will need to reenter both the time of the pulse or interval as well as the duration.

You may also just press review without selecting a day to chronologically review, beginning with Sunday or the first day programmed, all switching times for the selected circuit. Press PROG then REV repeatedly. You cannot make program revisions or deletions when using the weeklong review.

**GLOSSARY AND ERROR CODES**

**GLOSSARY**

Astro – Referring to control based upon calculated sunset and sunrise times for outdoor lighting.
Setting the Date

- Enter current date by month, day and two digits for the year (00 = 2000). Example: June 2, 1999 = 6, 0, 2, 9, 9 – the leading zero is not necessary – press 6, 0, 2, 9, 9.
- Press OK.

If you receive an “ERR19” message you have a conflict with the day or date. Press CLEAR and check the date. Use the CLEAR key to delete the wrong date then re-enter and OK the correct date. If the date is correct press SET UP then CLEAR and re-enter, then OK the day and time of day. You will need to re-enter, then OK the month, day and year.

Setting the Astro Function
(required for sunset to sunrise load control)

If not required, press holiday (HLDY) and proceed to Creating a Holiday or (PROG) and proceed to Programming Load Operation for Fixed Times to begin programming switching times.

- Enter the zone you are in (see Astro map on the next page).
  Example: Chicago zone 5 – press 5.
- Press OK. Time displayed is the actual sunrise time for current day at the center of the time zone. Reference the Astro map for suggested offsets of selected cities not in the center of the time zone. Press CLEAR one or more times to delete one digit at a time, then enter the desired time. Example: For Chicago, to revise 5:40 AM to be 5:20 AM – press CLEAR, CLEAR, 2, 0.
- Press OK. The time displayed is the actual sunset time for the current day at the center of the time zone. Revise using same offset procedure as sunrise, if necessary. Sunset is usually offset by the same amount of time as sunrise, although they can be different and can be offset by several hours for special applications.
- Press OK.

SET-UP, cont’d

Creating a Holiday
Approximate offsets (plus or minus) for selected cities.

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<th>Sunrise</th>
<th>Sunset</th>
<th>City</th>
<th>Zone</th>
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6 • **Enable** the circuit whose holiday schedule you wish to review
   • Press program (PROG).
   • Press HLDY.
   • Enter the holiday reference number. Example 2.
   • Press REV repeatedly to display the scheduled holiday switching times.
     To delete or make revisions during review, press CLEAR when the data appears in the display, enter the new data if required, then press OK.
   • If you clear special holiday operation you must first move the RUN/SET selector to RUN temporarily before you can clear the holiday.
     Return to SET then press SETUP, HLDY, REV, until the holiday reference number appears, then press CLEAR.

To delete or make revisions during review, simply press CLEAR when the data appears in the display, enter the new data if required, then press OK.

**To Review Program Times**
Be sure RUN/SET switch is in SET position.
• Press program (PROG).
• **Enable** one circuit at a time to complete the review.
• Select the day or group entered. Note that if you enter data as a day group, then attempt to review an individual day, the display will tell you it is “end of review”. In other words, no data in existence. This is because you must review data just as entered.

**REVIEW, REVISE OR DELETE INFORMATION, cont’d**

**To Review Program Times, cont’d**
Example: **Enable** circuit 1, then Press WKDY. Press REV repeatedly to review all program data for Monday through Friday. Following this
To review set-up data, press SETUP.
- Press REV repeatedly to review the data programmed.
- If you find an error or wish to make a revision, press CLEAR then reenter the correct data.
- Press OK. See note to follow.

Be sure to press OK after revising data or the old, incorrect, data will remain in memory. You can revise the Astro Zone, although you will then be prompted for new sunrise and sunset times, for which you need to OK or revise, then OK. You can also review, then revise or delete holidays which you have entered. To begin holiday review, press SETUP, HLDY, then press REV.

Note the 1st reference number may be other than 01 since holidays review in chronological order.
- To change the start date you must also reenter and OK the end date even if it is the same.
- To change the end date you need only clear and OK the end date and reenter the new end date.
- To delete a holiday altogether you press CLEAR when the holiday reference number 01, 02, etc: appears. Note that you cannot clear a holiday which has a Special Holiday Operation programmed. First review and clear the special holiday operation.

REVIEW, REVISE OR DELETE INFORMATION, cont’d

To Review Special Holiday Operation
(Or holiday group for “no load operation”)
If holidays are not required, press PROG and proceed to Programming Load Operation for Fixed Times.

Holidays can be one day or several days in duration.
Holiday rules: 1) Holidays cannot overlap each other.
2) Holidays must end on or before December 31st. Example:

First Holiday
• Select a reference number (this is simply a number from 1 to 99 used to keep track of the holidays). Example: press 1.
• Press OK.
• Select the month and day to start the holiday (year is not required – the same day will be used every year until revised).
Example: July 4 – press 7, 0, 4.
• Press OK.
• Select the month and day to end the holiday or press OK for a holiday of 1 day duration, for example a holiday ending on July 4th.

SET-UP, cont’d
Creating a Holiday, cont’d
Second Holiday
- Select the second reference number – press 2.
- Press OK.
- Select the month and day to start the holiday.
  Example: December 22nd – press 1, 2, 2, 2.
- Press OK.
- Select month and day to end the holiday
  Example: December 26 – press 1, 2, 2, 6.
- Press OK.

You may select up to 99 individual holidays or holiday durations (several days). Just be sure to follow the holiday rules listed above.

On the dates which you have entered, all load switching will cease. If you wish to have special load activities on selected “Holidays”, see Special Holiday Operation under Special Load Programming. Now you are ready to program the switching times for your loads.

PROGRAMMING LOAD OPERATION FOR FIXED TIMES
Make sure you have completed all set-up data before beginning to program.

If you make a mistake while entering data, press the CLEAR button. If you accidentally press PM instead of AM, simply press the proper button before okaying the data.
- Press Program (PROG) to enter program group mode.
- Enable the circuit(s) for the load which you wish to program first.
  Disable all others. It is recommended that you only program one load at a time on multi-circuit models since it is easier to make changes in the future.
- Enter the day or group of days which the load should switch.
  Example: Monday through Friday – press the 8/WKDY key.

PROGRAMMING LOAD OPERATION FOR FIXED TIMES, cont’d
This sets the duration of the On pulse which is manually initiated by pushing the On/Off button (all models) or by operating a remote switch (4, 8, 16 circuit models). (Similar to a pulse, except you do not select a day).

- Press Program (PROG).
- Enable the circuit for which you wish a pulse override. Disable all others.
- Press PULSE. Do not select a day.
- Key in the pulse duration (in seconds). Example: 12 press 1, 2.
- Press OK. Be sure to press PROG again before programming the next circuit(s).

Repeat for remaining circuits. Note you cannot have both a pulse and interval override for any one circuit. Your options are either pulse override, interval override or manual ON/OFF if neither a pulse or interval is programmed.

**Interval Override**

This sets the duration of the ON interval which is manually initiated by pushing the ON/OFF button (all models) or by operating a remote switch (4, 8, 16 circuit models). (Similar to interval, except you do not select a day).

- Press Program (PROG).
- Enable the circuit for which you wish a pulse override. Disable all others.
- Press INTVL. Do not select a day.
- Key in the interval duration (in days, hours, minutes).
  - Example: 1 hour 30 minutes – press 1, 3, 0.
- Press OK. Be sure to press PROG again before programming the next circuit(s).

**REVIEW, REVISE OR DELETE INFORMATION**

**To Review Set-Up**

Be sure the RUN/SET switch is in the SET position.
4. Enter the day or group of days which the load should have an interval. Example: Monday through Friday – press the 8/WKDY key.
   • Press OK.
   • Enter the interval ON start time. Example: 9:00 AM – press 9, 0, 0, AM. **Do not** press OK.
   • Press INTVL.
   • Enter the length of the interval. Example: interval of 2 hours 45 minutes, – press 2, 4, 5.
   • Press OK. Be sure to press PROG before starting the next program for other circuits.

Special Holiday Operation
(Program any individual circuit for a unique activity which will occur only on the holiday(s) previously programmed).

- **Enable** the circuit(s) for which you wish to have a unique activity on that holiday.
- Press program (PROG).
- Press holiday (HLDY).
- Enter the reference number for the holiday on which you desire special load activity. *(See Creating a Holiday from previous sample).* Enter 2 to select December 22 through December 26 for special load activity.
- Press OK.
- Enter the switch ON time. Example: holiday lighting to go ON at sunset – press ASTRO.
- Press OK.
- Enter the switch OFF time. Example: holiday lighting to switch OFF at 11:30 PM – press 1, 1, 3, 0, PM.
- Press OK.

**PULSE OVERRIDE AND INTERVAL OVERRIDE PROGRAMMING**

Pulse Override
• Press **OK**.
  • Enter the switch **ON** time. Example: 8:00 AM – press **8, 0, 0, AM**.
  • Press **OK**.
  • Enter the time the load should switch **OFF**.
    Example: 5:00 PM – press **5, 0, 0, PM**.
  • Press **OK**.

Repeat these steps for all ON/OFF times required. If you want to enter multiple switch OFF times, simply press **OK** when the display is prompting for a switch ON time. This is convenient for ensuring that loads are off at the end of the day if they have been overridden after normal hours.

Repeat these steps for all available circuits. **Be sure** to disable all circuits not being programmed and enable **only** the circuit(s) you are currently programming. To save all programming, place **RUN/SET** in **RUN** position. **Be sure** all **Enable/Disable** switches are in the **Enable** position for the circuit(s) to operate automatically.

**SPECIAL LOAD PROGRAMMING**

**Astro Load Operation**

(For sunset to sunrise lighting control)

You must set up the astro zone and sunset and sunrise times for ASTRO to function. If you have not done so, press **SETUP**, then **ASTRO** and refer to setting the Astro function in Section 2.

• Press Program (**PROG**).
• **Enable** the circuit controlling the load you wish to switch on at sunset and off at sunrise times. Disable all others.
• Enter the day or group of days on which the load should switch.
  Example: all days, press **0/ALL**.
• Press **OK**.
4. At the switch ON prompt, press **ASTRO**.
   - Press **OK**. The display prompts **Sndn** (for switch on at sundown).
   - At the switch OFF prompt, press **ASTRO**.
   - Press **OK**. The display prompts **SnuP** (for switch off at sun up).

If desired, you can program the load to switch OFF at a fixed time rather than at sunrise by simply entering a time of day, rather than **ASTRO** when prompted for the “Switch OFF” time. You can also program a fixed ON with an **ASTRO** OFF for early morning lighting.

You can also program **ASTRO** times to switch on at sunrise and off at sunset for reverse action **ASTRO** control such a lighting in tunnels. Follow the program steps listed previously except the last four steps.

- At the switch ON prompt, press **ASTRO**.
- Press **AM** (this causes the lights to switch on at sunrise).
- Press **OK**.
- At the switch OFF prompt, press **ASTRO**.
- Press **PM** (this causes the lights to switch off at sunset).
- Press **OK**.

If you want loads to switch ON for a short pulse (for bell ringing or latching contactors) use pulse operation.

**Pulse Operation** (1 to 127 seconds)
- Press program (**PROG**).
- **Enable** the circuit for the load for which you want to have a pulse operation. **Disable** all others.
- Enter the day or group of days which the load should have a pulse. Example: Monday through Friday – press the **8/WKDY** key.

**SPECIAL LOAD PROGRAMMING, cont’d**
**Pulse Operation, cont’d**
4. Press OK.
   - Enter the pulse ON start time.
     Example: 8:00 AM – press 8, 0, 0, AM. Do Not press OK.
   - Press PULSE Do Not press OK.
   - Enter the length of the pulse or interval.
     Example: pulse of 8 seconds, press 8.
   - Press OK. Be sure to press PROG before starting the next program for other circuits.

You can also program an OFF Pulse which is a convenient way to momentarily flash lights off as a pre-warning signal.
   - Press PROG.
   - Enable the circuit which you wish to have an off pulse.
   - Enter the day or group of days which the load should have an off pulse.
     Example: Monday through Friday – press the 8/WKDY key.
   - Press OK; Press OK again to skip the switch on time and advance to “switch off” time.
   - Enter the pulse start time. Example: 4:50 PM – press 4, 5, 0, PM. Do Not press OK.
   - Press PULSE.
   - Enter the length of pulse. Example: a pulse of 2 seconds, press 2.
   - Press OK. The load (lights) will flash off for 2 seconds at 4:50 PM.

If you want to switch a load ON for an extended period of time (min., hours or days) use interval operation.

**Interval Operation** (1 min. to 6 days, 23 hours and 59 min.)
- Press program (PROG).
- Enable the circuit for the load for which you want to have an interval operation. Disable all others.

**SPECIAL LOAD PROGRAMMING, cont’d**

**Interval Operation, cont’d**