

Quick Programming Guide



Installation Date _____

Battery

Replacement

Recommended _____
(8 years after installation)

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

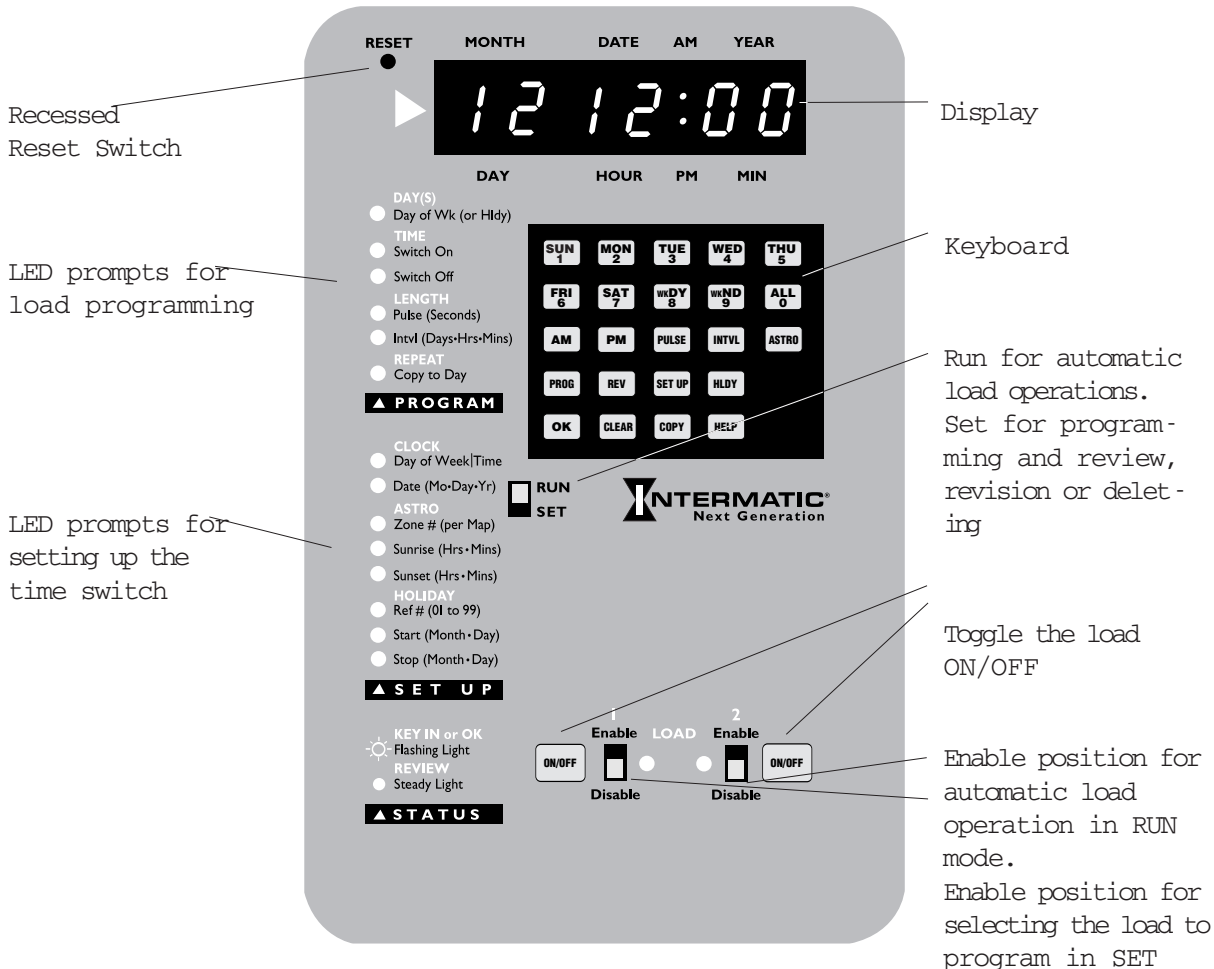
- Set-Up
- Program Times

Glossary and Error Codes

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<http://www.intermatic.com>

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Recessed Reset Switch

Display

LED prompts for load programming

Keyboard

LED prompts for setting up the time switch

Run for automatic load operations. Set for programming and review, revision or deleting

Toggle the load ON/OFF

Enable position for automatic load operation in RUN mode.

Enable position for selecting the load to program in SET

Two Circuit Time Switch - Other models may vary in component placement but the functions will be the same.

① 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.

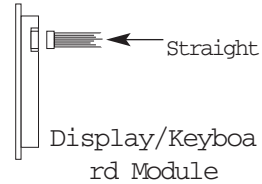
- ① Press **ON/OFF** key for available circuit(s) to verify proper load wiring and operation. If wired in the conventional manner, (loads connected to the normally open contacts), the green LED will be on when the load is on. The load(s) may be left on or off during programming.
- ② Before beginning 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).
Example: Wednesday - press **WED/4**.
- Press **OK**.



CLEAR

RESET

ON/OFF

RUN
SET

WED
4

OK

MON
2

WED
4

THU
5

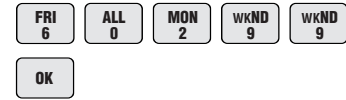
PM

OK

- 2 • 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

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.

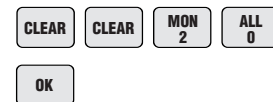
If you receive an "ERR19" message you have a conflict with the day or date. Press CLEAR and check the date. Use the CLEAR key to delete the wrong date then re-enter and OK the correct date. If the date is correct press SET UP then CLEAR and re-enter, then OK the day and time of day. You will need to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



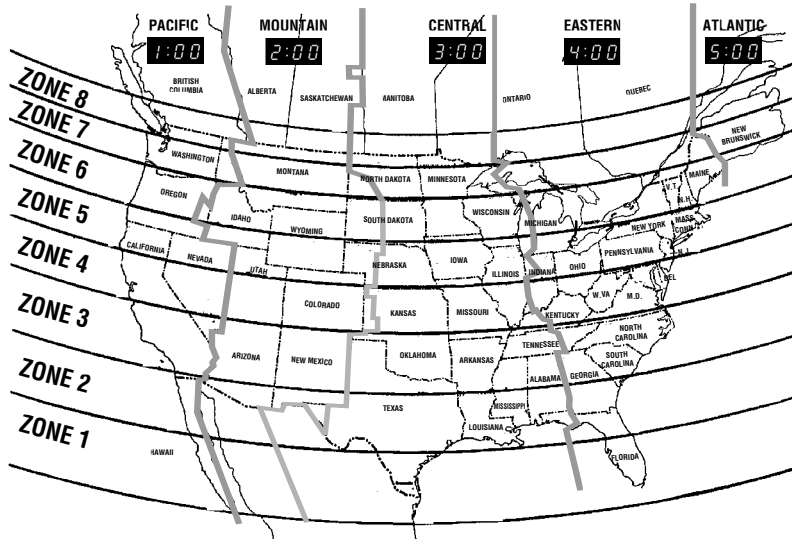
Setting the Astro Function (required for sunset to sunrise load control)

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



Astro Map



2

Approximate offsets (plus or minus) for

Sunrise		Sunset		Sunrise		Sunset		Sunrise		Sunset	
Albuquerque	-5	-5	Dallas	+15	+15	Las Vegas	-30	-30	Pittsburgh	+10	+10
Atlanta	+25	+25	Denver	-10	-10	Los Angeles	-20	-20	Portland, OR	0	0
Baltimore	-5	-5	Des Moines	0	0	Miami	+10	+10	Richmond, VA	0	0
Bangor, ME	-35	-35	Detroit	+20	+20	New York	-15	-15	San Diego	-25	-25
Boston	-30	-30	El Paso	-5	-5	Oklahoma City	+20	+20	San Francisco	0	0
Chicago	-20	-20	Houston	+10	+10	Philadelphia	-10	-10	Seattle	-5	-5
Cleveland	+15	+15	Honolulu	+20	+20	Phoenix	+15	+15	Tampa	+20	+20

- 2 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

(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: A holiday from Dec. 4 - Jan. 7 would be entered as 2 holidays Dec. 24 - Dec. 31 and Jan. 1 - Jan. 7.

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**.

SUN
1

OK

SAT
7

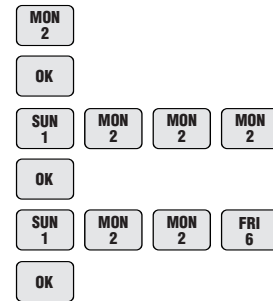
ALL
0

WED
4

OK

OK

- 2 • 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.



2

3

SET-UP, cont'd

Creating a Holiday, cont'd

- 3 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

CLEAR

PROG

Enable



Disable

wkDY
8

- 3 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.

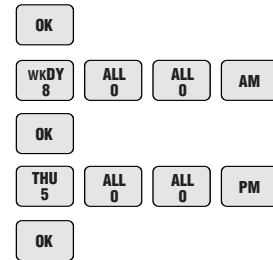
- Press Program (PROG) to enter program group mode.
- Enable the circuit(s) for the load which you wish to program first. Disable all others. It is recommended that you only program one load at a time on multi-circuit models since it is easier to make changes in the future.
- Enter the day or group of days which the load should switch.

- 4 Example: Monday through Friday - press the 8/WKDY key.

PROGRAMMING LOAD OPERATION FOR FIXED TIMES, cont'd

- 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



3

4



4 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.



SPECIAL LOAD PROGRAMMING, cont'd

Astro Load Operation, cont'd

- At the switch ON prompt, press ASTRO.
- Press OK. The display prompts Sndn (for switch on at sundown).



Enable



Disable



- 4. 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.

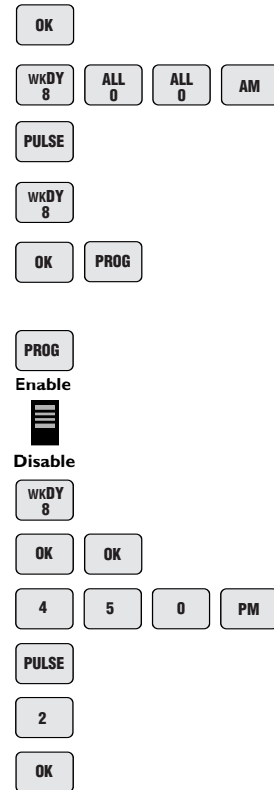
Follow the program steps listed previously except the last four steps.

- 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



- 4 have a pulse. Example: Monday through Friday - press the 8/WKDY key.

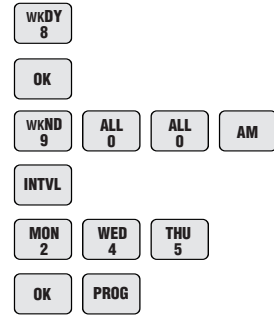
SPECIAL LOAD PROGRAMMING, cont'd

Pulse Operation, cont'd

- 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.

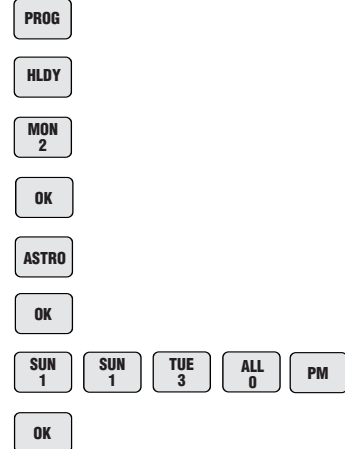
- Press **PROG**.
- **Enable** the circuit which you wish to have an off pulse.
- Enter the day or group of days which the load should have an off pulse. Example: Monday through Friday - press the 8/WKDY key.
- Press **OK**; Press **OK** again to skip the switch on time and advance to "switch off" time.
- 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.



Enable



Disable



5

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

- 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

PROG

Enable



Disable

PULSE

1

2

OK

PROG

5

PROG

Enable



Disable

INTVL

MON
1

WED
3

WED
0

OK

PROG

6 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

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).

RUN
SET

SET UP

REV

REV

REV

...

CLEAR

OK

SET UP

HLDY

REV

REV

REV

...

6

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: 1hour 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.

- 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.

Enable



Disable

PROG

HLDY

MON
2

REV

REV

REV

...

RUN
SET

PROG

Enable



Disable

6

6. 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:



6

appears. Note that you cannot clear a Holiday Operation programmed. First holiday operation.

holiday which has a Special review and clear the special

REVIEW, REVISE OR DELETE INFORMATION, cont'd

To Review Special Holiday Operation

- **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 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.

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
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