

TORK MODEL DZS200 ASTRONOMIC CONTROLLER

Installation & Operation

INTRODUCTION

Model DZS200 is a microprocessor based time switch. This astronomic unit is used for sunrise/sunset control of outdoor lighting, providing two independent channels with 365 day scheduling. The unit is user settable in 1 degree steps from 10 degrees to 60 degrees for Northern or Southern latitudes.

In addition, the unit can be set to turn on or off from 1 to 99 minutes before or after actual sunrise or sunset times. This compensates for longitudinal time differences and provides for more controlled lighting time due to physical obstructions of natural light or other special conditions.

The DZS200 may be utilized so that channel 1 provides astronomic settings for sunset to sunrise for all night security lighting. At the same time, channel 2 can be used for combination astronomic/straight time settings. *For example*, store window lighting or "open and closed" signs may be set to come on at sunset but off during the night when no longer needed.

A unique feature of this TORK model is its momentary contact capabilities which can be used to set each channel individually for a user adjustable duration of 1-99 seconds. This feature is most useful for ringing school bells, factory buzzers, sirens, or for automatic correction of clocks. Or, both channels can be used together providing pulse output for mechanically-held contactors or low voltage latching type relays – channel one to close and channel two to open.

Up to 16 individual holiday dates can be set for special schedules or to omit operations entirely. Likewise, 5

(continued)

different holiday blocks can be set in addition, with unrestricted durations. These blocks can be used for 3 day weekends, 2 week vacation shutdowns, July-August school closing, etc.

A 6th Block is available for user selectable date of start and end of daylight savings time where needed.

INSTRUCTIONS FOR INSTALLING TORK® NORYL® TIME SWITCH ENCLOSURE

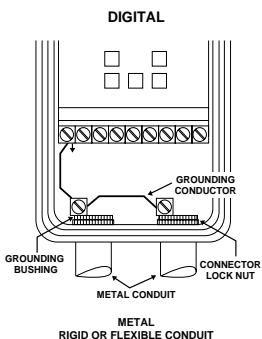
ENCLOSURE INSTALLATION

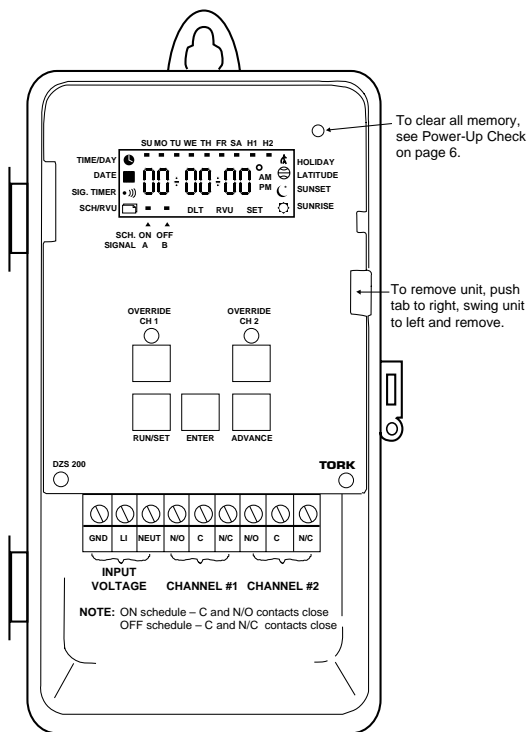
1. Five combination 1/2" and 3/4" knockouts are provided on this enclosure.
2. Remove the 1/2" (inner) knockout by inserting a screwdriver in the slot provided and pound screwdriver handle with a hammer. Remove slug with pliers and smooth hole edges with file or knife if necessary. When the 3/4" outer knockout is required, place screwdriver in groove and pound screwdriver handle with hammer. Remove loose slug with pliers and smooth hole edges with file or knife if necessary.
3. When attaching conduit to enclosure, exercise care to align and support conduit in order to prevent unnecessary stress on enclosure.

GROUNDING

National Electrical Code requires that grounding must be continuous and in proper electrical contact in all grounding conductors, metallic conduits and grounding terminals. When metallic conduits are installed, use approved grounding bushings or order KN500 (two 1/2) or KN750 (two 3/4) grounding bushing kit from TORK. When using metal conduits, install the proper size approved grounding bushings. The minimum size copper grounding conductors must be #10 AWG if the circuit breaker or fuse is 30 or 40 amp, #12 AWG if 20 amps, and #14 AWG if 15 amp.

NOTE: USE ONLY U.L. LISTED RAINTIGHT HUBS FOR OUTDOOR INSTALLATION.





KEY DEFINITIONS:

- RUN/SET key** → (1) Transfers the unit from the RUN mode to the SET modes.
(2) Directly exits from anywhere in the SET modes to the RUN mode.
- ENTER key** → (1) Selects any flashing symbol on the display.
(2) Stores programmed information into memory.
- ADVANCE key** → (1) Advances flashing symbol to the next selection.
(2) Increments any displayed digit.

Dimensions:

4-17/32" D x 9-5/8" H x 6" W.

KO's bottom, sides, and back 1/2" and 3/4"

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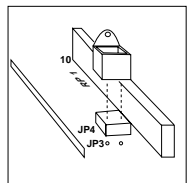
DZS200

1. DESCRIPTION

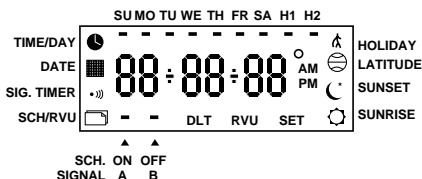
1. 2 Channel controller
2. 365 Day holiday scheduling on both channels
3. Astronomic setting on one or both channels
4. Holiday settings — 16 single dates for 8th day schedules and 5 block holidays of unlimited duration
5. Signaling — 48 momentary contact signals per channel, 1-99 seconds duration (user settable)
6. Manual overrides to the next scheduled event
7. Automatic daylight saving user settable
8. Automatic leap year compensation
9. AM/PM or 24 hour format
10. Battery backup — 72 hours — recharges automatically

2. INSTALLATION

1. Remove unit from enclosure (see diagram on page3), push tab to swing unit to left and remove.
2. Mount the enclosure at eye level using screws or other suitable fastening device.
3. Controller is set up to display in AM/PM format. For 24 hour operation, locate blue jumper on printed circuit board (there is only one) and insert it onto both pins. *NOTE:* Jumper is on one pin only. (See illustration)
4. Connect battery (included) to the unit by gently pushing it onto mount in back of the unit. *NOTE polarity of snap-in socket.*
5. Bring supply and load wires in through bottom or side knockouts. Be sure the unit is grounded at convenient terminal marked “GND”.
6. Reinstall unit by reversing step 1 above and connect wires to unit, as per suggested wiring diagram. See diagram on page 3.



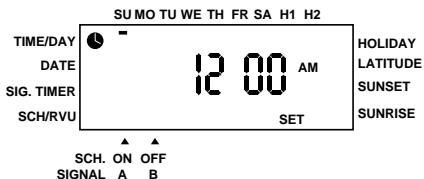
7. **POWER-UP CHECK:** To make sure display and microprocessor are functioning properly, press and hold **ENTER** button as you insert and remove pin or fine point ballpoint pen in "RESET" hole in upper right side of front panel. All segments of display should come ON — see illustration below.



Release button and proceed. This completes the self diagnostics **and also clears all memory.**

1.0 TO SET TIME AND DAY

Press the **RUN/SET** key until the TIME/DAY symbol begins to flash. The display shows



Press **ENTER**.

The hour digit is flashing. Press **ADVANCE** to set the correct hour. (Note AM/PM.) Press **ENTER**.

The minutes are flashing. Press **ADVANCE** to set the minutes, if needed. Press **ENTER**.

The bar under SU is now flashing. Press the **ADVANCE** key to move the bar to the present day of the week. Press **ENTER**.

The bar under H1 is now flashing. Press **ADVANCE** to pass it.

The bar under H2 is flashing. Press **ADVANCE** to pass it.

NOTE: Setting Holiday Dates will be covered in section 7.0.

The TIME/DAY symbol is flashing again. Press **ADVANCE** to go to the Date mode or **RUN/SET** to go to the Run (Operating) mode.

NOTE: You can press the **RUN/SET** key at any time to quickly switch from the Set modes to the Run mode, or vice versa.

1.1 TO CHANGE TIME AND DAY

Press the **RUN/SET** key once if in the Run mode or twice if in another mode. The **TIME/DAY** symbol will flash. Press **ENTER**.

The hour digits flash. Press the **ADVANCE** key to modify the hour. Press **ENTER**.

The minutes flash. Press the **ADVANCE** key to modify the minutes. Press **ENTER**.

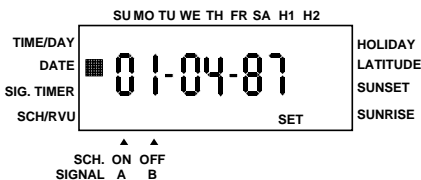
The bar under Sunday flashes. Press **ADVANCE** to select the current day, if not Sunday. Press **ENTER**.

The bar under H1 flashes. Press **ADVANCE** twice to pass H1 and H2.

The TIME/DAY symbol is again flashing. Press **ADVANCE** to proceed to another mode or **RUN/SET** to go to the Run mode.

2.0 TO SET DATE

From the Run mode, press the **RUN/SET** key. The TIME/DAY symbol will start flashing. Press the **ADVANCE** key until the DATE symbol begins to flash. The display will show



Press **ENTER**.

The month digits are flashing. Press **ADVANCE**, to set the month. Press **ENTER**.

The date digits are flashing. Press **ADVANCE** to set the current date. Press **ENTER**.

The year digits are flashing. Press **ADVANCE** to set the present year. Press **ENTER**.

The DATE symbol is flashing again. Press **ADVANCE** to go to another mode or **RUN/SET** to go to the Run mode.

2.1 TO CHANGE DATE

Press the **RUN/SET** key once if in the Run mode or twice if in another mode. The TIME/DAY symbol flashes. Press **ADVANCE** to go to the Date mode. (DATE symbol flashes). Press **ENTER**.

The month digits flash. Press **ADVANCE** to modify it if needed. Press **ENTER**.

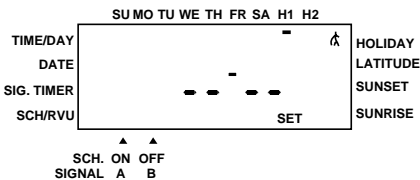
The date digits flash. Proceed in the same way as before for the date and year digits.

When you are finished, the DATE symbol will again flash. Press **ADVANCE** to proceed to another mode or **RUN/SET** to go to the Run mode.

3.0 TO SET DAYLIGHT SAVINGS DATES

NOTE: The daylight savings dates are set in the block holiday portion of the Holiday mode.

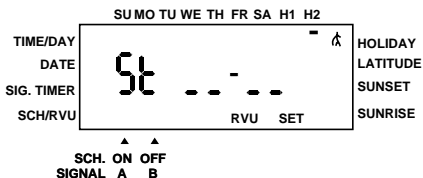
Press the **RUN/SET** key to go from the Run mode to the Set modes. The TIME/DAY symbol flashes. Press **ADVANCE** and go to the Holiday mode. Press **ENTER** when the HOLIDAY symbol is flashing.



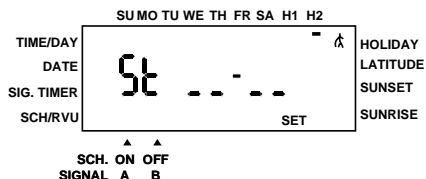
H1 will begin to flash. Press **ADVANCE**.

H2 will flash. Press **ENTER**.

If block holidays were previously programmed, RVU will begin to flash and display will show

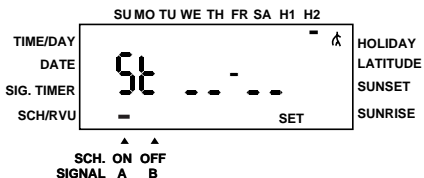


Press **ADVANCE** and the month dashes will begin to flash. If no blocks were previously programmed, the display will show



with the month dashes flashing.

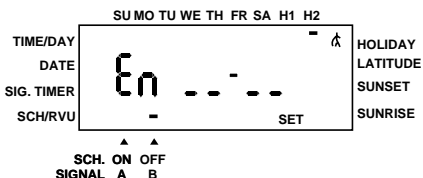
Press **ENTER** continuously until the display shows



with a bar over the ON symbol and the month digits flashing. The bar over the ON signifies the daylight savings start date.

Press the **ADVANCE** key to set the start month for daylight savings. (First Sunday in April in U.S.) Press **ENTER**.

The date digits are flashing. Press **ADVANCE** to set the daylight savings start date. Press **ENTER**. The display shows



Notice the bar over the OFF. This indicates the daylight savings end date.

The dashes for the end month are flashing. Press the **ADVANCE** key to set the daylight savings end month. (Last Sunday in October for U.S.) Press **ENTER**.

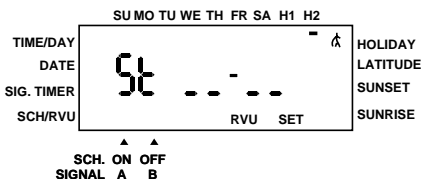
The date digits are flashing. Press **ADVANCE** to set the date. Press **ENTER**.

The HOLIDAY symbol is flashing. Daylight savings is now set. Press **ADVANCE** to proceed to another mode or **RUN/SET** to exit to the Run mode.

NOTE: Daylight savings dates need to be readjusted each year.

3.1 TO CHANGE DAYLIGHT SAVINGS DATES

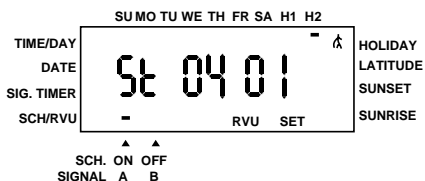
Press the **RUN/SET** key to go from the Run mode to Set modes. Press **ADVANCE** to go to the Holiday mode then press **ENTER**. H1 is flashing. Press **ADVANCE** to flash H2 then press **ENTER**. The display shows



with RVU flashing.

NOTE: Since daylight savings was previously set, we have to review the block holiday entries to find it and modify it.

Press **ENTER** continuously until the daylight savings start date is displayed **with a bar over the ON symbol**.



While RVU is flashing, press **ADVANCE** twice. The month digits will begin to flash and RVU will stop flashing. Press **ADVANCE** to modify the start month. Press **ENTER**.

The date digits are flashing. Press **ADVANCE** to change it. Press **ENTER**.

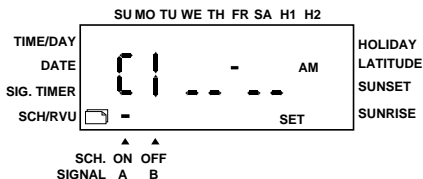
The daylight savings end date is now displayed and RVU flashes again. To change it, press **ADVANCE** twice. The month digits will begin to flash and RVU will stop flashing. Press **ADVANCE** to modify the end month if necessary. Press **ENTER**.

The date digits are flashing. Press **ADVANCE** to modify it. Press **ENTER**.

Press **RUN/SET** to exit to the Run mode.

4.0 TO SET STANDARD ON/OFF SCHEDULE

From the Run mode press the **RUN/SET** key to go to the Set modes. Press **ADVANCE** until the SCH/RVU symbol is flashing (in lower left corner of display). The display shows



Press **ENTER**.

“C1” will begin to flash. If you desire to program channel 1, press **ENTER**. If channel 2 is desired, press **ADVANCE** and the display will flash “C2”. Press **ENTER**.

The bar under Sunday is now flashing. Select the days you want operation by pressing **ENTER** when the bar appears under the day. Press **ADVANCE** to pass the days that you do not want operation.

After selecting the days of the week, the bar under H1 will begin to flash. If your present setting is to occur on all single-day holidays, press **ENTER** to select H1. If not, press **ADVANCE** to pass it.

The bar under H2 is now flashing. If the present setting is to occur on all block holidays, press **ENTER** to select H2. If it is *not* to occur on any block holiday, press **ADVANCE** to pass this selection.

NOTE 1: Holiday schedules can be programmed separately if desired. Simply select H1 or H2 as the day selection when setting your schedules. (See Section 7.1)

NOTE 2: If no holiday dates are programmed, you can ignore H1 and H2.

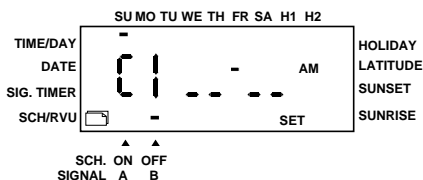
NOTE 3: If a single or block holiday is programmed and no schedule is entered for it, then **NO OPERATION** will occur during the holiday. The last operation before the holiday (whether ON or OFF) will remain throughout the holiday period.

The hour dashes are flashing. Press **ADVANCE** to program the hour desired. (Note AM/PM.) Press **ENTER**.

The minutes are flashing. Press **ADVANCE**, if needed, to modify the minutes. Press **ENTER**.

The bar over the ON is flashing. Press **ENTER** if this is the desired operation. If not, press **ADVANCE** to flash the OFF. Then press **ENTER**.

The setting is entered in memory and the display again shows



The bar under Sunday is flashing.

Proceed as before to enter more schedules ON and OFF. When you are finished entering the schedules for the channel, press **RUN/SET** to quickly exit the mode. You can program the other channel by pressing the **RUN/SET** key again. The TIME/DAY symbol will flash. Use the **ADVANCE** key to proceed to the SCH/RVU mode. Proceed as before.

Example: A store light has the following schedule on channel #1:

MON thru SAT, 7:00 AM, ON
MON thru SAT, 10:30 PM, OFF
SUN, 11:00 AM, ON
SUN, 6:00 PM, OFF

The programming steps are as follows:

Press **RUN/SET**. TIME/DAY symbol flashes.
Press **ADVANCE** 3 times. SCH/RVU symbol flashes.
Press **ENTER**. "C1" flashes.
Press **ENTER**. The bar under Sunday flashes (unless a schedule had already been entered, in which case the RVU will flash – press **ADVANCE** to get the bar under SU to flash.)
Press **ADVANCE** to skip SU. Press **ENTER** 6 times to select Monday through Saturday. Press **ADVANCE** 2 times to skip H1 and H2. The days are selected and the dashes for the hour is flashing.
Press **ADVANCE** until the hour shows 7:00 AM.
Press **ENTER**. Minutes are flashing "00". Press **ENTER**. Bar over the "ON" flashes. (If bar was over

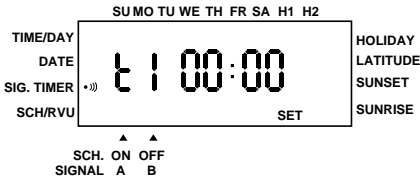
the “OFF”, press **ADVANCE** to move it to “ON”).
 Press **ENTER**. The bar under Sunday flashes again.

The first setting is entered into memory. You can now program the others in a similar fashion. Press **RUN/SET** when finished to go to the RUN mode.

5.0 TO SET SIGNAL DURATION

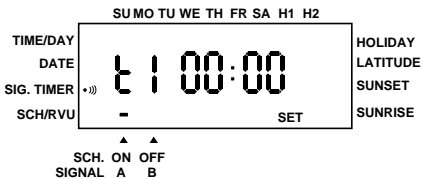
NOTE: If a channel is to be used as a signal timer, set the signal duration first. If any regular ON/OFF schedules had been entered, you must delete them.

From the RUN mode, press the **RUN/SET** key. The TIME/DAY symbol is flashing. Press **ADVANCE** until the SIG. TIMER symbol is flashing. The display shows



Press **ENTER**.

“t1” is flashing. If signal output is desired on channel 1 press **ENTER** while this is flashing. If channel 2 is desired as a signal timer, press **ADVANCE** to flash “t2” then press **ENTER**.



A bar appears over SIG. A and the left pair of digits are flashing. Press **ADVANCE** to set the signal duration desired for the channel (1-99 secs.) Press **ENTER**.

A bar appears over SIG. B and the right pair of digits are flashing. If you desire a second signal duration for the channel, press **ADVANCE** to set it and then press

ENTER. If one duration is sufficient, press **ENTER** while the zeros are showing for SIG. B.

The SIG. TIMER symbol is flashing. If the other channel is desired as a signal timer, enter the mode again by pressing **ENTER.** *t1* flashes. Press **ADVANCE** to *t2* and press **ENTER.** Set the signal duration for that channel in the same manner as before.

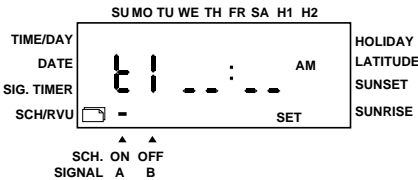
When you are finished and the TIMER symbol is flashing, press **ADVANCE** to proceed to another mode or **RUN/SET** to exit to the Run mode.

NOTE: A PULSE DURATION LESS THAN 10 SECONDS FOR **SIG. B** ON *t2* WILL NOT WORK. THIS PULSE DURATION MUST BE 10 SECONDS OR GREATER.

5.1 TO SET SCHEDULE FOR SIGNALS

NOTE: YOU MUST FIRST SET THE SIGNAL DURATION FOR THE CHANNEL ON WHICH YOU DESIRE SIGNAL OUTPUT BEFORE PROCEEDING. SEE SECTION 5.0. IF ANY REGULAR ON/OFF SCHEDULES HAD BEEN ENTERED, YOU MUST DELETE THEM.

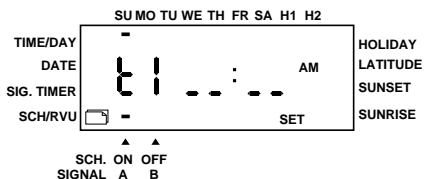
Press the **RUN/SET** key until the TIME/DAY symbol is flashing. Press **ADVANCE** until the SCH/RVU symbol is flashing. Press **ENTER.**



If channel 1 is a signal timer “t1” will be displayed instead of “C1”. Press **ENTER** if channel 1 is the signal timer you are programming or press **ADVANCE** to flash channel 2 then press **ENTER.**

NOTE: A channel is a signal timer if a signal duration has been previously set for the channel.

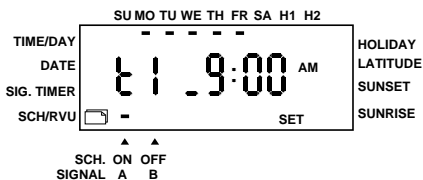
If channel 1 is a signal timer the display shows



The bar over Sunday is flashing. Use the **ENTER** key to select the days you want to program and the **ADVANCE** key to pass the days you don't want.

After selecting days, the dashes for hour will flash. Press **ADVANCE** to set the hour. (Note AM/PM.) Press **ENTER**.

The minutes are flashing. Press **ADVANCE** to set the minutes. Press **ENTER**.



The bar over SIG. A or SIG. B is flashing. Press **ADVANCE** to flash the desired signal then press **ENTER**.

The display shows dashes and Sunday is again flashing.

Proceed as before to schedule the other signal days and times. Press **RUN/SET** to quickly exit to the Run mode when scheduling is complete.

Example: A certain company's Production department has a horn on channel #2 programmed as follows:

SIG. A = 3 secs.; SIG. B = 10 secs.

MON thru FRI, 8:00 AM, SIG. B — Start Signal

MON thru FRI, 10:00 AM, SIG. A — Start of Break

MON thru FRI, 10:10 AM, SIG. A — End of Break
MON thru FRI, 12:00 PM, SIG. B — Lunchtime
MON thru FRI, 12:30 PM, SIG. B — End of Lunch
MON thru FRI, 3:00 PM, SIG. A — Afternoon Break
MON thru FRI, 3:10 PM, SIG. A — End of Break
MON thru FRI, 4:30 PM, SIG. B — End of Work

First we will set the signal durations.

Press **RUN/SET**. TIME/DAY symbol flashes.
Press **ADVANCE** 2 times. SIG. TIMER symbol flashes.
Press **ENTER**. "t1" flashes.
Press **ADVANCE**. "t2" flashes.
Press **ENTER**. A bar is over SIG. A and its digits flash.
Press **ADVANCE** until SIG. A digits show "03".
Press **ENTER**. The bar moves over SIG. B and its digits flash.
Press **ADVANCE** until SIG. B digits show "10".
Press **ENTER**. SIG. TIMER symbol flashes again and "t1" shows on display.

The signal durations for channel 2 are now set and the channel is configured for signal timer. Now we must schedule the signals.

Press **ADVANCE**. SCH/RVU symbol flashes.
Press **ENTER**. "c1" flashes.
Press **ADVANCE**. "t2" flashes.
Press **ENTER**. Bar under Sunday flashes.
Press **ADVANCE** to skip SU. Press **ENTER** 5 times to select MO, TU, WE, TH, FR. Press **ADVANCE** 3 times to skip SA, H1, H2. The days are set and the dashes for hour flashes.
Press **ADVANCE** until hour shows 8:00 AM.
Press **ENTER**. Minute digits flash "00".
Press **ENTER**. The bar over SIG. A flashes.
Press **ADVANCE**. The bar over SIG. B flashes.
Press **ENTER**. The bar under Sunday flashes again.

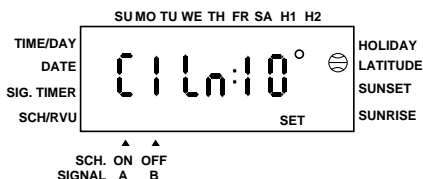
The first signal is now in memory. Schedule the other signals in a similar fashion.

Press **RUN/SET** to go to the Run mode when scheduling is complete.

6.0 TO SET CHANNEL FOR SUNSET ON/ SUNRISE OFF

CAUTION: MAKE SURE THAT YOU HAVE SET THE PROPER DATE BEFORE PROCEEDING.

Press the **RUN/SET** key until the TIME/DAY symbol begins to flash. Press the **ADVANCE** until the LATITUDE symbol begins to flash. The display shows



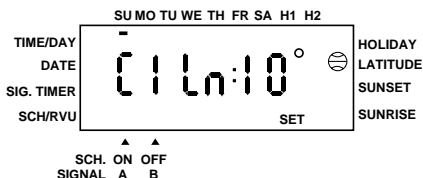
Press **ENTER**.

The digits for degrees are flashing. Press **ADVANCE** to set the latitude where you are. Check your newspaper or local weather bureau for your latitude.

NOTE: If none of the above sources are available, use the map on the next page to figure out your approximate latitude.

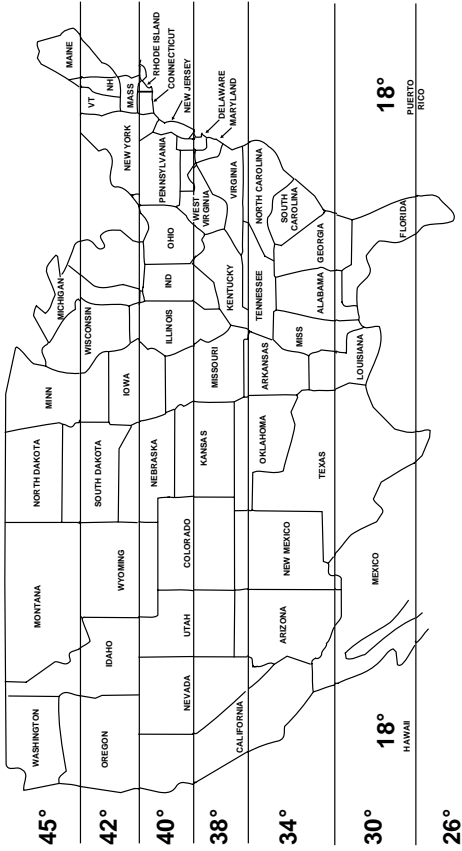
To set southern latitudes for below the equator, continually press **ADVANCE** until the latitude indicator changes from "Ln" to "LS". When the displayed latitude information is correct, press **ENTER** to store it.

"C1" is flashing. If you want astronomic (sunrise/sunset) operation on channel 1, press **ENTER**. If not, press **ADVANCE** to flash channel 2. Press **ENTER** to select that channel for astronomic operation.



TORK®

ASTRONOMIC LATITUDE ZONES



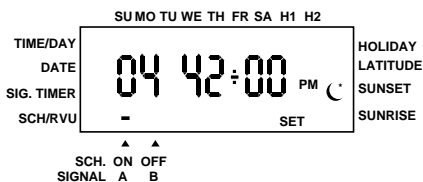
The bar over Sunday is flashing. Press **ENTER** for the days or holidays you desire astronomic operation and **ADVANCE** to pass the days for which you do not want astronomic.

After selecting the days, the LATITUDE symbol will again be flashing. Press **ADVANCE**.

The display shows the sunset time and the SUNSET symbol is flashing.

NOTE: Your actual sunset and sunrise times may differ from that displayed depending on your location with respect to the longitudinal time line. Use the offset adjustment to set your actual times.

Press **ENTER** while the SUNSET symbol is flashing if you wish to set an offset to the sunset time.

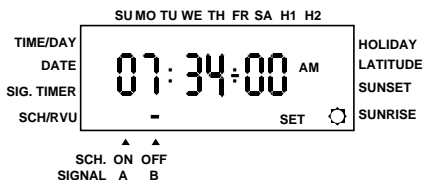


The offset digits are flashing. Press **ADVANCE** to set the offset minutes. If the offset is for activation before the sunset time displayed, continually press **ADVANCE** until a “-” is displayed before the digits.

NOTE: “+” means after and “-” means before. Pay attention to this symbol when adjusting offsets.

Press **ENTER**.

The SUNSET symbol is again flashing. Press **ADVANCE**. The sunrise time is now displayed.



If you want to program an offset to the displayed time, press **ENTER**. Press **ADVANCE** to set the offset minutes as before. Press **ENTER**.

Press **RUN/SET** when complete to exit to the Run mode.

6.1 TO SET CHANNEL FOR SUNSET ON/TIME OFF

Follow the preceding directions outlined in section 6.0 to set the channel for astronomic (sunset/sunrise) operation. This will set the sunset ON time.

Next follow the directions outlined in section 4.0 to set the time OFF desired.

NOTE: When RVU is flashing, simply press **ADVANCE** to proceed. Review will be discussed later.

NOTE: Do not set a morning off time after 2:30 AM for latitudes greater than 50 degrees.

Example for Sections 6.0 and 6.1: A company in N.Y.C. want its parking lot lights (on channel 1) to go on 10 minutes before sunset and off at 12:30 AM. This is to occur everyday including holidays.

First we want to set the channel to turn ON at sunset.

Press **RUN/SET**. The TIME/DAY symbol flashes.

Press **ADVANCE** 5 times. LATITUDE symbol flashes.

Press **ENTER**. Latitude digits begin to flash.

Press **ADVANCE** until latitude shows 41° North.

Press **ENTER**. "C1" flashes.

Press **ENTER**. The bar under Sunday flashes.

Press **ENTER** 9 times to select all days and H1 and H2. LATITUDE symbol flashes again.

Press **ADVANCE**. Sunset symbol flashes and sunset time is displayed.

Press **ENTER**. Digits for sunset offset flashes. "+" is shown in front of it.

Press **ADVANCE** until the display shows "-10".

Press **ENTER**. Sunset symbol flashes again.

Next we will program the 12:30 AM OFF.

Press **RUN/SET**. The TIME/DAY symbol flashes.
 Press **ADVANCE** 3 times. SCH/RVU symbol flashes.
 Press **ENTER**. "C1" flashes.
 Press **ENTER**. The bar under Sunday flashes. (If RVU flashes, press ADVANCE)
 Press **ENTER** 9 times to select everyday and H1 and H2. The dashes for hour flash.
 Press **ADVANCE**. Hour shows "12:00 AM".
 Press **ENTER**. Digits for minutes flash.
 Press **ADVANCE** until minutes show "30".
 Press **ENTER**. Bar over ON flashes.
 Press **ADVANCE**. Bar over OFF flashes. Press **ENTER**.

We do not need to go to the Sunrise mode since we don't need to set a sunrise offset.

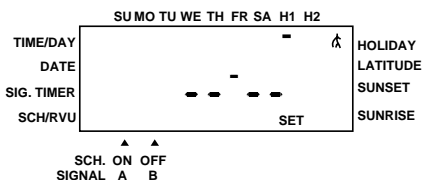
Press **RUN/SET** to go to the Run mode.

NOTE: The sunrise OFF time will be placed in the schedule area but the lights would already be off from 12:30 AM.

7.0 TO SET HOLIDAYS

- To Set Single-day Holidays (H1)

If you are in the Run mode, press the **RUN/SET** key. The TIME/DAY symbol will begin to flash. Press **ADVANCE** until the HOLIDAY symbol is flashing. The display shows

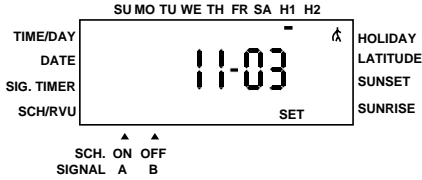


Press **ENTER**.

The bar under H1 is flashing. Press **ENTER**.

The left (month) dashes will flash. Press the **ADVANCE** key to set the holiday month. Press **ENTER**.

The date digits will flash. Press the **ADVANCE** key to set the holiday date. Press **ENTER**.



The date is entered into memory and the dashes flash again. Program the other dates in a similar fashion.

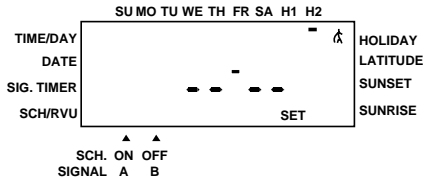
After programming your last date, press **ENTER** while the dashes are showing. The HOLIDAY symbol will again begin to flash.

Press **ADVANCE** to proceed to another mode or **RUN/SET** to go to the Run mode.

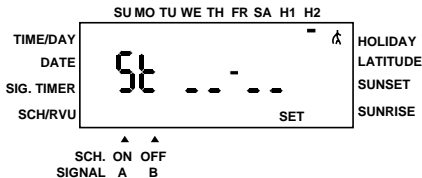
- To Set Block Holidays (H2)

From the Run mode, press **RUN/SET**. The TIME/DAY symbol will flash. Press **ADVANCE** until the HOLIDAY symbol is flashing. Press **ENTER**.

The bar under H1 is flashing. Press **ADVANCE**. The bar under H2 is flashing. Display shows

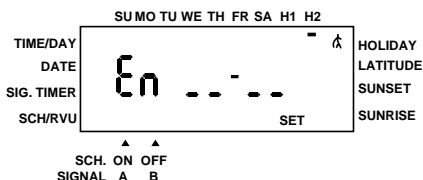


Press **ENTER**. The display shows



The dashes for the start month of the block (St) is flashing. Press **ADVANCE** to set the start month for the block. Press **ENTER**.

The start date is flashing. Press **ADVANCE** to set the block start date. Press **ENTER**. The display shows



This is the screen to set the end date for the block. The left dashes are flashing. Press the **ADVANCE** key to set the end month. Press **ENTER**.

The end date is flashing. Press the **ADVANCE** key to set the end date. Press **ENTER**.

The start screen is again showing. You can now program the next block holiday as before.

When all desired blocks are programmed and you want to exit the mode, press **RUN/SET** to quickly exit to the Run mode.

NOTE 1: Only 5 block dates are possible. The 6th date is for the daylight savings time. (You will see a bar over the ON or OFF when in this position.)

2: All blocks must fall in the same calendar year. If you have to extend a holiday into a new year you have to divide it into 2 blocks. End the first block on December 31 and start the second block on January 1. - Example: To program a block from Dec. 23 to Jan. 2.

Blk. 1: Start Dec. 23; End Dec. 31.

Blk. 2: Start Jan. 1; End Jan. 2.

3: Single-day holidays (H1) will take priority over block holidays (H2) if they both occur on the same date.

4: It is *NOT* possible to program different schedules for each block holiday. All blocks are selected together when H2 is selected.

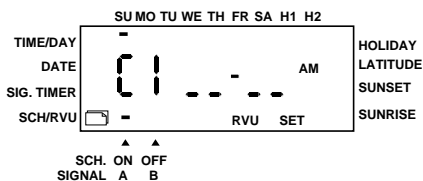
7.1 TO SET SCHEDULE FOR HOLIDAY ONLY

Follow the procedure as outlined in section 4 for standard ON/OFF or section 5 for signals. When the bar flashes under Sunday, press the **ADVANCE** key until the bar under H1 or H2 flashes. Press **ENTER** for the desired selection and continue as shown in the section.

8.0 TO ADD / REVIEW / DELETE / MODIFY SCHEDULES

If you are in the Run mode, press the **RUN/SET** key then press **ADVANCE** until the **SCH/RVU** symbol is flashing. Press **ENTER**.

"C1" (or "t1") is flashing. Press **ENTER** to select it or press **ADVANCE** then **ENTER** to select channel 2.



RVU will be flashing. If RVU is not flashing, the channel has not been programmed. Go to section 4 or 5 to program the channel.

- add

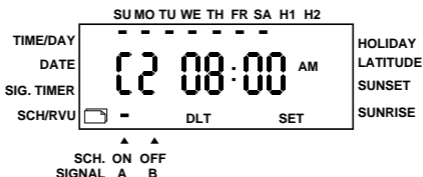
If you want to add schedules without reviewing, press **ADVANCE**. Proceed as in section 4.0.

- review

Press **ENTER** while RVU is flashing to display the first (earliest) setting. Continue to press **ENTER** to review the other settings for the channel. After the last setting is displayed, the display will show dashes and the SCH/RVU symbol will begin flashing again.

- delete

To delete a setting, press **ADVANCE** while RVU is flashing and the setting is being displayed. DLT will begin to flash.



Press **ENTER** while DLT is flashing to delete the setting. The next setting, if any, will be displayed.

- modify

To modify a setting, press **ADVANCE** twice while the setting is being displayed and RVU is flashing. RVU will stop flashing and show steady. The bar under Sunday will begin to flash. Use the **ADVANCE** and **ENTER** keys to select new days or reselect the previous days. Modify the time and event information in a similar manner. Press **ENTER** to accept the new information. The next setting, if any, will now be displayed and RVU will flash again. Continue as before.

Press **RUN/SET** to quickly exit to the Run mode.

9.0 TO REVIEW / MODIFY SIGNAL DURATIONS

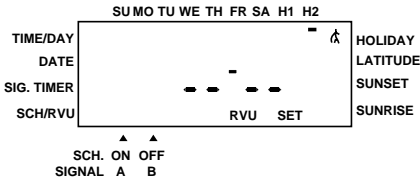
From the Run mode, press the **RUN/SET** key to enter the Set mode. The TIME/DAY symbol is flashing. Press **ADVANCE** until the SIG TIMER symbol is flashing. Press **ENTER**.

“t1” is flashing and the signal durations for channel 1 are being displayed both for Sig.A and Sig.B if previously set. If you wish to modify the settings, press **ENTER** and use the **ADVANCE** key to change the flashing information. Press **ENTER** to store the modified information. If you wish to see the signal durations for channel 2, press **ENTER** again until the 1 flashes. Press **ADVANCE** to flash “t2” then press **ENTER**.

The signal durations will be displayed with SIG.A duration flashing. Use the **ADVANCE** key to make changes. If no change is desired, press **ENTER** until the TIMER symbol is again flashing or press **RUN/SET** to exit to the Run mode.

10.0 TO ADD / REVIEW / DELETE / MODIFY HOLIDAYS

From the Run mode, press the **RUN/SET** key. The TIME/DAY symbol is flashing. Press **ADVANCE** to go to the HOLIDAY mode. When the HOLIDAY symbol is flashing, press **ENTER**. H1 is flashing. If you desire single-day holidays, press **ENTER** to select it. If not, press **ADVANCE** to flash H2 (block holiday). Press **ENTER**.



RVU will flash. If RVU is not flashing, then no holiday of the selected type (H1 or H2) has been programmed. Go to section 7 to program holidays.

- add

Press **ADVANCE** if you want to add more holidays without reviewing. The dashes for month will flash. Proceed as outlined in section 7.0.

- review

To review the holidays, press **ENTER** while RVU is flashing. Each holiday will be displayed in sequence. After the last holiday, the HOLIDAY symbol will again flash.

- delete

To delete a holiday setting, press **ADVANCE** while the holiday is being displayed and RVU is flashing. DLT will begin to flash. Press **ENTER**. The holiday will be deleted and the next one, if any, will be displayed. Delete other holidays in the same way.

- modify

To modify a holiday setting, press **ADVANCE** two times while the holiday is showing and RVU is flashing. The month will begin to flash and RVU will stop flashing. Use the **ADVANCE** key to modify the flashing

information. Press **ENTER** to store the new information. When finished, the next holiday, if any, will be displayed and RVU will flash again. Modify other holidays in a similar fashion.

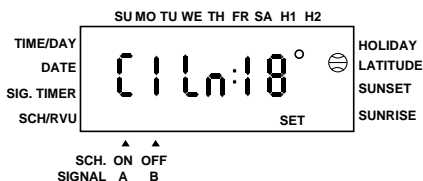
Press **RUN/SET** to quickly exit to the Run mode.

11.0 TO REVIEW / MODIFY / DELETE SUNRISE OR SUNSET TIMES

NOTE: THE SUNRISE AND SUNSET TIMES CAN BE REVIEWED IN THE SCH / RVU MODE BUT CANNOT BE ALTERED OR DELETED IN THIS MODE.

Press the **RUN/SET** key once if in the Run mode or twice if in another mode. The TIME/DAY symbol will flash. Press **ADVANCE** to go to the LATITUDE mode if you want to modify or delete the latitude or astro days. If you desire to modify the offset times only, go to the Sunset or Sunrise mode as needed. (See “-modify offset minutes” below.)

Press **ENTER** while the LATITUDE symbol is flashing. The latitude degrees will start to flash. Use the **ADVANCE** key to modify the setting. Press **ENTER**.



Channel 1 (C1) is flashing. Press **ENTER** to select it or **ADVANCE** to flash channel (C2). Press **ENTER**.

- review

The previously selected days are showing and the bar under Sunday is flashing. If no change is desired, press the **RUN/SET** key to quickly exit to the Run mode.

- modify

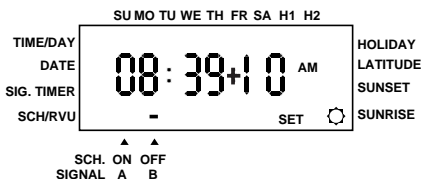
To change the setting, use the **ENTER** key to select the days you want and **ADVANCE** to pass or deselect the days you don't want. When finished, the LATITUDE symbol will again flash.

- delete

To delete the astronomic setting, from the channel, simply deselect all the days using the **ADVANCE** key. When finished, the LATITUDE symbol will again flash.

- modify offset minutes

To modify the offset minutes, advance to the **SUNSET** or **SUNRISE** mode depending on which you want to modify. Press **ENTER**.

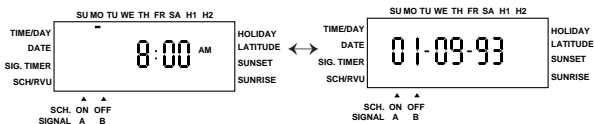


The offset digits will flash. Use the **ADVANCE** key to modify it then press **ENTER**.

Press **ADVANCE** to go to another mode or **RUN/SET** to quickly exit to the Run mode.

12.0 TO GO TO THE RUN MODE

After you have completed setting the unit, press **RUN/SET** to enter the Run mode. The time and date will display alternately.



NOTE: If you have just finished setting the unit and an output is to be presently on, press the **OVER-RIDE** key to turn it on. The timer will take control from that moment on.

13.0 OVERRIDE

Press **OVERRIDE** to change the output status from Off to On or vice versa. The output will stay in that condition until the next scheduled event.

Example: The channel is scheduled off at 5:00 PM. The office cleaning personnel arrive at 6:00 PM and press the **OVERRIDE** key to turn the lights on. You know in the past they are finished by 7:30 PM. You have therefore scheduled an additional Off at 8:00PM. If the cleaning crew forgets to turn off the lights, they would be turned off at 8:00 PM by the timer.

When a channel is used for signal operation, the override may be used for testing of fire bells or horns, or for actual fire conditions where the bell or horn is left on for the duration of the emergency.

NOTE: When **OVERRIDE** is pressed for a signal channel, the output will still remain constantly On. Press the key again to turn Off.

ASTRONOMIC

CHANNEL # _____ **SAMPLE** _____ **DESCRIPTION** _____

LATITUDE	S	M	T	W	T	F	S	H1	H2	SUNSET OFFSET	SUNRISE OFFSET
41°	✓	✓	✓	✓	✓	✓	✓			-15	+15

TIME	S	M	T	W	T	F	S	H1	H2	ON	OFF
10:00 PM		✓	✓	✓	✓	✓	✓				✓
8:00 PM	✓										✓
5:00 AM		✓	✓	✓	✓	✓	✓			✓	

ASTRONOMIC

CHANNEL # _____ DESCRIPTION _____

LATITUDE	S	M	T	W	T	F	S	H1	H2	SUNSET OFFSET	SUNRISE OFFSET

TIME	S	M	T	W	T	F	S	H1	H2	ON	OFF

32

HOLIDAY H1

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.

33

BLOCK HOLIDAYS H2

BLOCK #	START DATE	END DATE
1.		
2.		
3.		
4.		
5.		

DAYLIGHT SAVING

START DATE	MM	DD
END DATE	MM	DD

NOTE: DAYLIGHT SAVING IS THE 6TH H2 HOLIDAY BLOCK.

BLOCK DIAGRAM

