16:48:32 05/05

Touch-Plate

Timekeeper

Control

Plus

Soft

Patch

CPSP
Time-Keeper®

System Manual

Touch - Plate®

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INTRODUCTION TO TIME-KEEPER®:

The Touch-Plate® Time-Keeper® module is a member of the Control Plus Touch-Plate family of facility control devices. The Time-Keeper provides sixteen timed electrical control signals which may be used as inputs to the CPSP-0008 through CPSP-0040 control panels. The control signals may be configured as maintained ON/OFF or momentary (pulse) outputs.

Feature Summary:

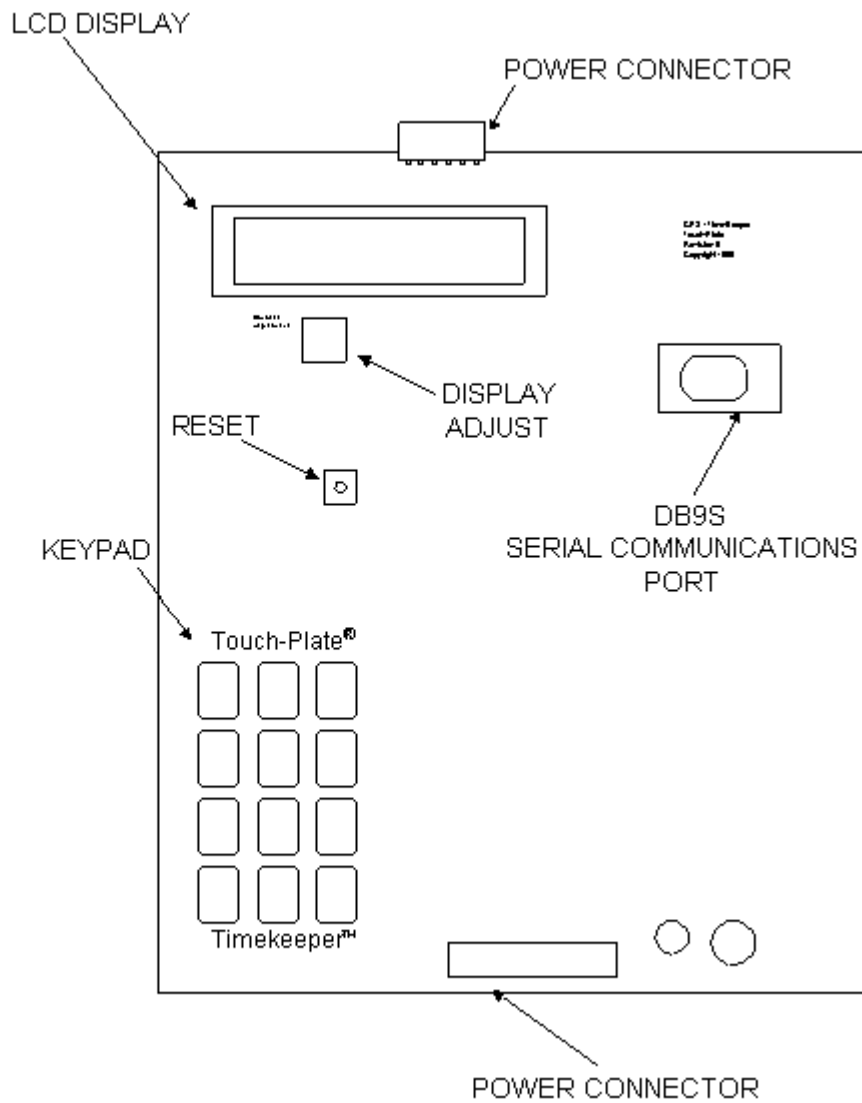The system provides the following features:
- Sixteen outputs usable in pulse or maintain (ON/OFF) mode
- Built-in LCD panel and touch-pad setup
- Microsoft Windows setup via a serial data link
- Weekly schedule with options for :
  - Weekends
  - Monday-Friday
  - Individual Weekdays
  - Eight on and eight off times per output per schedule possible in maintain mode
                or
  - Sixteen pulse times per output per schedule in pulse mode

- Special Holiday schedules for up to sixteen holidays
  - Four on and four off times possible per output per holiday in maintain mode
                or
  - Eight possible pulse times per output per holiday in pulse mode

- Special settings for sunrise and sunset
- Sunrise and sunset based on astronomical timeclock capability
- Manual over-ride of selected outputs

Description:

The Time-Keeper is a single module which interfaces to an existing control panel or group of panels. The features of the module include:
- Mounting holes designed for insulated standoffs.
- Barrier strip of sixteen pairs of captive screw terminals
- LCD display panel
- Programming pad
- DB-9S Serial communications connector
- Power daisy-chain connector (matching CPS series cards)

Time-Keeper® Components

LCD DISPLAY

POWER CONNECTOR

DISPLAY ADJUST

RESET

KEYPAD

DB9S SERIAL COMMUNICATIONS PORT

Touch-Plate®

Timekeeper™

POWER CONNECTOR

TIME-KEEPER® FIELD INSTALLATION:

1. Remove power from the existing CPSP panel

2. Mount adhesive backed standoffs through the Time-Keeper module

3. Peel adhesive backing paper from stand-offs

4. Press the Time-Keeper module standoffs onto the panel

5. Connect power connectors between top CPSP board and Time-Keeper.

6. Apply power to the CPSP panel and watch for time and date display on the Time-Keeper
   LCD display.

7. Program outputs of the Time-Keeper using the Soft Patch keypad as described below.

8. Use the Time-Keeper output over-ride capability to test the interconnections between
    the Time-Keeper and the CPSP control panel

9. Use the Time-Keeper LCD display and keypad or serial connector and Microsoft
     Windows software to program the Time-Keeper panel as described below

10. Set the following parameters:
     A) Time
     B) Date
     C) Weekday
     D) Longitude/Latitude
     E) Daylight savings mode
     F) Time zone

11. Setup weekly schedule

12. Define holidays and holiday schedule

PROGRAMMING CPSP WITH TIME-KEEPER®

The Time-Keeper module outputs may be configured to operate any relay in the panel using different configurations. For instance a Time-Keeper output may turn on relay 5, 6 and 8 while turning off relay 7. This is accomplished by setting the switch configuration with the CPSP soft patch keypad. The Time-Keeper outputs are setup for pulse or maintain operation.

Each Time-Keeper output is mapped to an associated inputs for the CPSP controller. The These inputs will also be the next set of inputs in the system after the master and slaves present. For instance if there is one CPSP master board and one Time-Keeper, the Time-Keeper outputs 1 through 16 will be CPSP inputs B01 through B16 respectively. If there is one CPSP master, two slaves and one Time-Keeper, the Time-Keeper outputs will be D01 through D16.

The first step is determining the output types on the Time-Keeper. They may be set as either pulse or maintain. A pulse output will provide a momentary pulse similar to a button tap. A maintain output will provide a constant signal during a preset time frame. The output types may be different for each channel on the Time-Keeper.

The maintain type is best suited to fixed schedule offices. The output will activate in the morning and deactivate in the evening. When using maintain outputs on the Time-Keeper, the CPSP soft patch keypad should be configured likewise. In order to have a light (relay 2 of 8) turn on at 8 a.m. and off at 7 p.m., set the Time-Keeper output 1 type as maintain, set the time schedule as describe later, and set input B01 to serve as a maintain signal to relay 2. If more than one relay uses the exact same schedule in this scenario set input B01 to be a maintain signal to the appropriate relays.
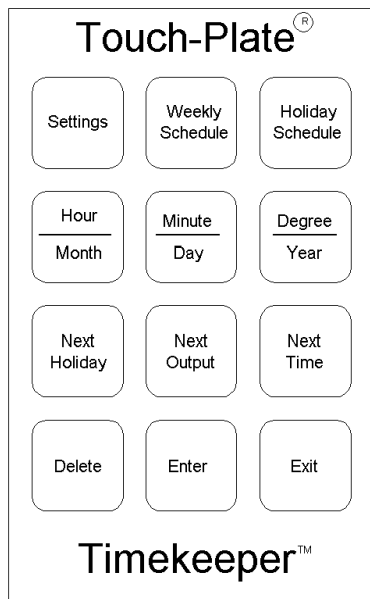
The pulse type output is well suited to situations with non-standard times. For instance turn off lights left on every hour. For this situation configure the output types as pulses, set the time schedule as describe later and then set input from the Time-Keeper as on and off signals to the appropriate relay(s).

Time-Keeper pulse outputs may be configured as separate on and off pulses to control a group of lights. The may be useful to turn on and off lights during the week but only turn off lights on the weekends or holidays. One Time-Keeper output is configured as on signals to relay(s) using the CPSP soft patch keypad whereas another Time-Keeper output is configured as off signals to relay(s). The relay(s) controlled by the on pulses need not be the same relay(s) controlled by the off pulses and vice versa.

TIME-KEEPER® CONTROLS

```
14:18:09  02/28
```
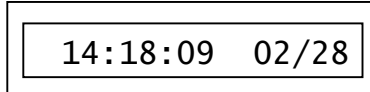
The Time-Keeper LCD display panel displays the current time and date when not used for system maintenance. When used in conjunction with the Time-Keeper touch-pad, the LCD display panel provides current values and messages about all features of the Time-Keeper module. Individual messages are provided throughout this document, as required, and are displayed in double-line boxes as shown above.

```
          Touch-Plate®

  ┌─────────┬─────────┬─────────┐
  │         │ Weekly  │ Holiday │
  │ Settings│ Schedule│ Schedule│
  └─────────┴─────────┴─────────┘

  ┌─────────┬─────────┬─────────┐
  │  Hour   │ Minute  │ Degree  │
  │  Month  │  Day    │  Year   │
  └─────────┴─────────┴─────────┘

  ┌─────────┬─────────┬─────────┐
  │  Next   │  Next   │  Next   │
  │ Holiday │ Output  │  Time   │
  └─────────┴─────────┴─────────┘

  ┌─────────┬─────────┬─────────┐
  │ Delete  │ Enter   │  Exit   │
  └─────────┴─────────┴─────────┘

          Timekeeper™
```

The Time-Keeper touch-pad is a push-button interface to the Time-Keeper module. The membrane switches provide programming and status options to the Time-Keeper module. Individual buttons are shown throughout this document, as required, and are displayed in single-line boxes as shown above.

PROGRAMMING TIME-KEEPER®

The Time-Keeper module may be programmed in the following functional areas:
- Settings - System maintenance
- Weekly Schedule -Weekly timed outputs
- Holiday Schedule - Holiday timed outputs

The Time-Keeper functions may be programmed via the touch-pad and LCD display or via the serial communications port and Windows software package.

The instructions for the Windows programming package are contained in a separate document. The instructions for use of the touch-pad and LCD display are contained in the following pages.
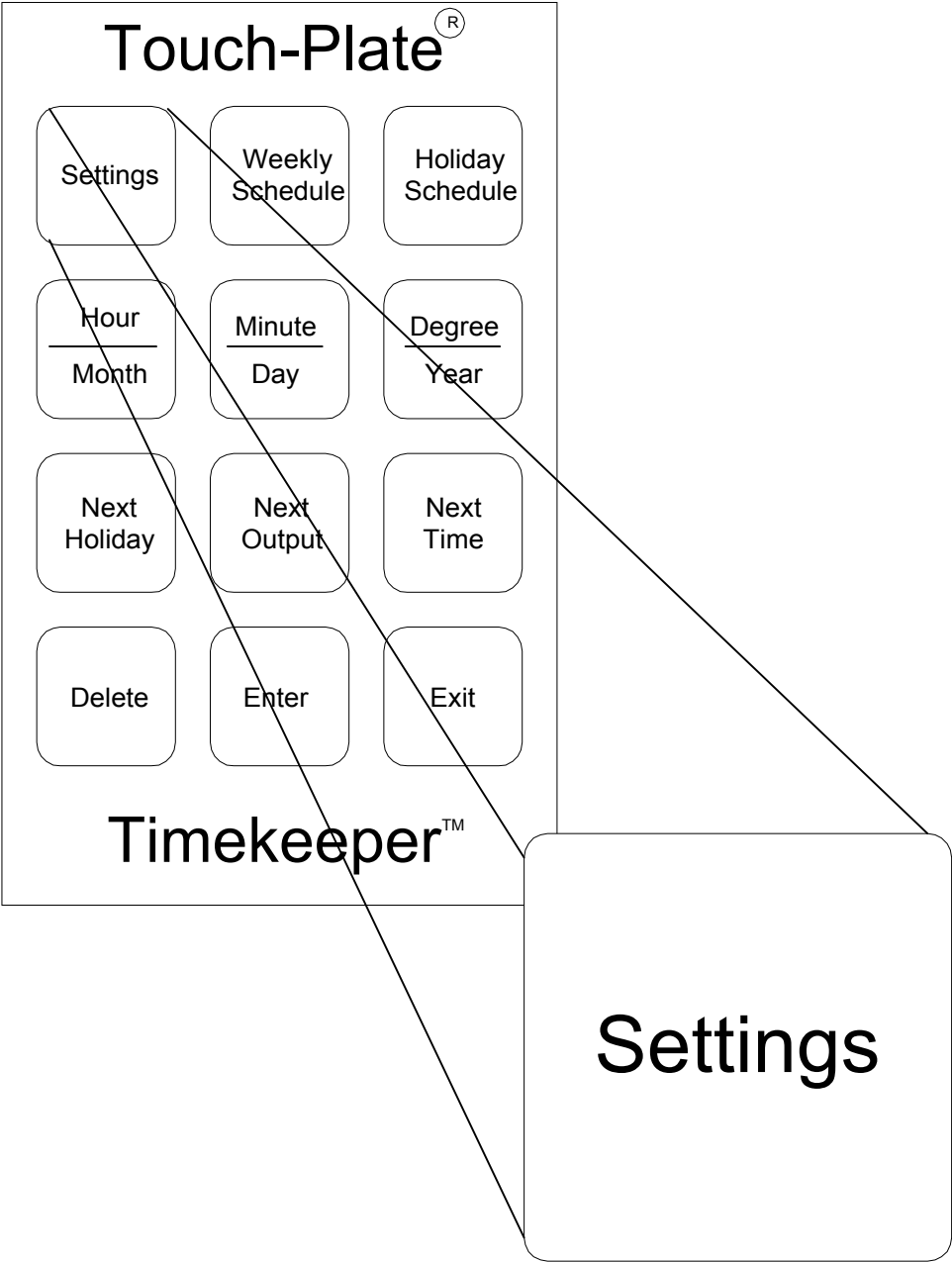
Depressing any of the following touch-pad keys causes the LCD display to change from the display of current time and date to one of the following:

SETTINGS?   If the Settings key is depressed
OUTPUT?   If the Weekly Schedule key is depressed
HOLIDAY 01   If the Holiday Schedule key is depressed

Each of these options has a path of further options associated with it. The following pages describe each path and options along the selected path. An overview map of the path and a description of the path is provided for each of the three keys.

A description of each option along the path is also provided both in pictorial form and in text. Examples are also given where clarity is needed.

```
14:18:09  02/28
```

Touch-Plate®

Settings	Weekly Schedule	Holiday Schedule
Hour / Month	Minute / Day	Degree / Year
Next Holiday	Next Output	Next Time
Delete	Enter	Exit

Timekeeper™

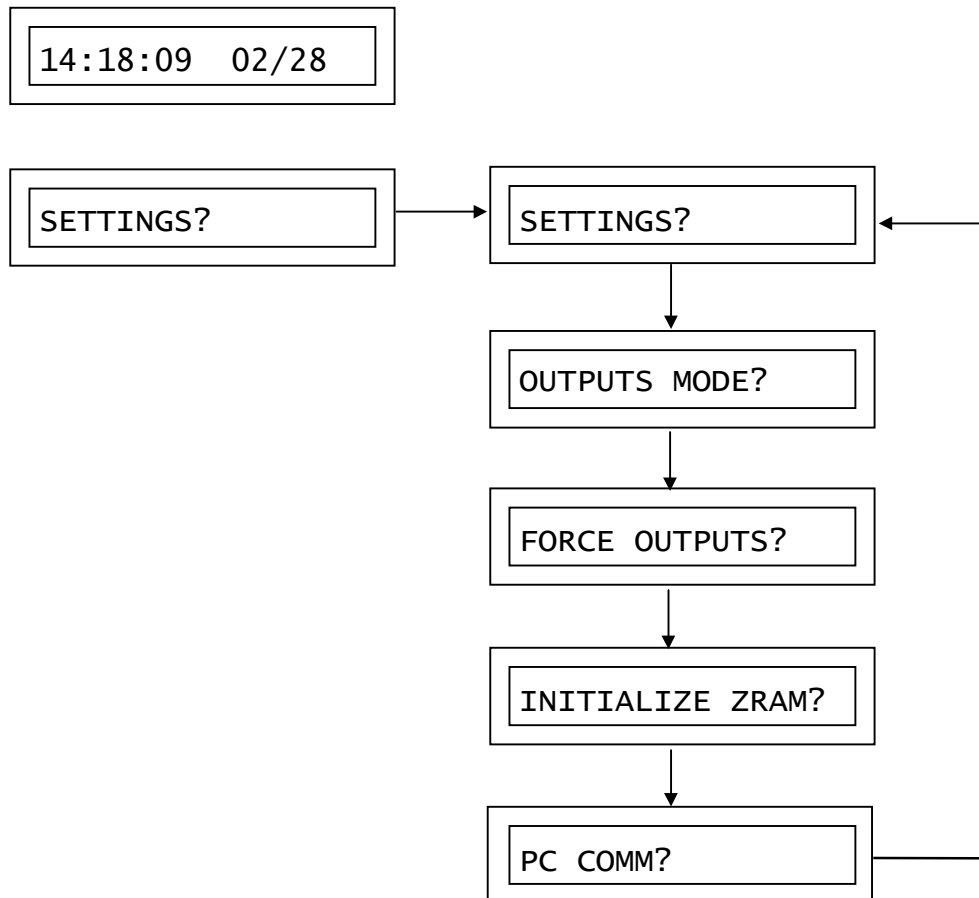# Settings

SETTINGS KEY PROGRAMMING PATHS

The SETTINGS button enters the maintenance options mode for the Time-Keeper module. This path provides setting of diagnostic and system options. These include:

- System Settings
- Output's mode
- Forcing of outputs
- Initialization of ZRAM
- PC Communications

Pressing the SETTINGS button causes the LCD display to briefly show the following titles in order:

> SETTINGS?
> OUTPUTS MODE?
> FORCE OUTPUTS?
> INITALIZE ZRAM?
> PC COMM?

This is illustrated in the following action diagram:

```
14:18:09  02/28
```

```
SETTINGS?  →  SETTINGS?  ←┐
                  ↓       │
              OUTPUTS MODE? │
                  ↓       │
              FORCE OUTPUTS? │
                  ↓       │
              INITIALIZE ZRAM? │
                  ↓       │
              PC COMM?  ───┘
```

```
┌────────┐
│ ENTER  │
└────────┘
```

Pressing the ENTER key during the display of an option selects that option and displays the next option in the selected path.

The SETTINGS options permits changes to the basic features of the Time-Keeper. These include:
- System time and date
- Weekday name
- Daylight savings time enable/disable
- Time zone selection
- Sunrise/Sunset data including:
  - Longitude and latitude entry
  - Offset time after sunrise and before sunset
  - Confirmation of current sunrise
  - Confirmation of current sunset
  - Confirmation of current sunrise + offset
  - Confirmation of current sunset - offset

The FORCE OUTPUTS option permits override of current output state of any of the sixteen outputs. This feature is used for diagnostic tests and for one-time setting of outputs.

The time, date and schedule data for the Time-Keeper module is stored in non-volatile memory. The INITIALIZE ZRAM option clears all present data stored in the system memory. Use this option with care! It will clear out your configuration data.

The PC COMM option displays the current state of the serial communications link and permits programming using the Microsoft Windows programming package. (See Time-Keeper Windows Programming Instructions under separate cover).

Each of these options are covered in detail in the following pages.

SETTINGS

The SETTINGS options path includes the following features:
- System time and date
- Weekday name
- Daylight savings time enable/disable
- Time zone selection
- Sunrise/Sunset data including:
  - Longitude and latitude entry
  - Offset time after sunrise and before sunset
  - Confirmation of current sunrise
  - Confirmation of current sunset
  - Confirmation of current sunrise + offset
  - Confirmation of current sunset - offset

Each option is displayed in sequence. Pressing the ENTER key exits and saves the configuration data. The SETTINGS? Path may be exited by pressing the EXIT Key at any time. The following pages present each of the options and the touch-pad keys required to set the options desired.
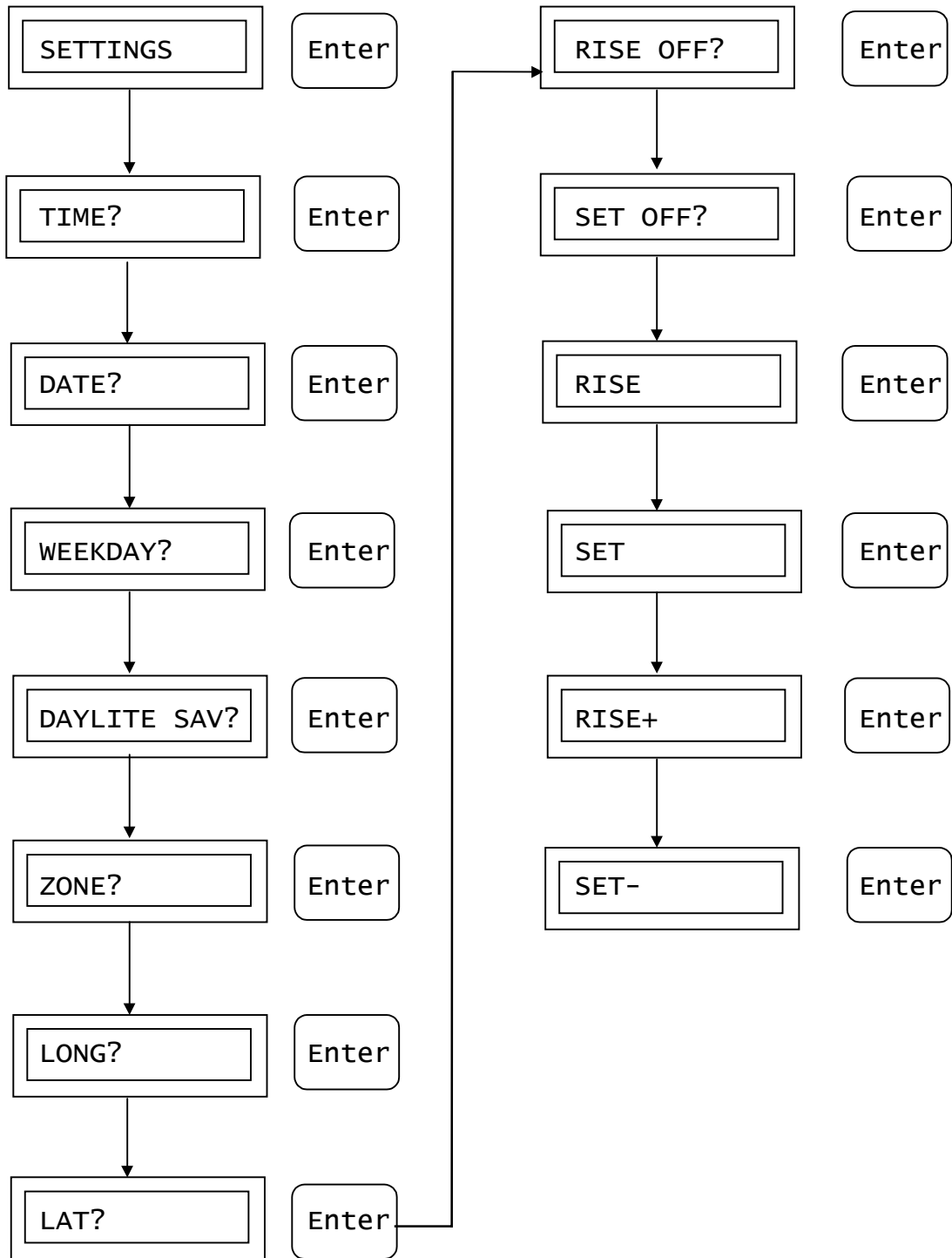
Settings Path Map

The Settings path map is advanced from one setting to the next by pressing the ENTER key. Each of the Settings indicated on this map is detailed in the following pages. Each detailed explanation consists of the following topics:

- Purpose
- Action Diagram
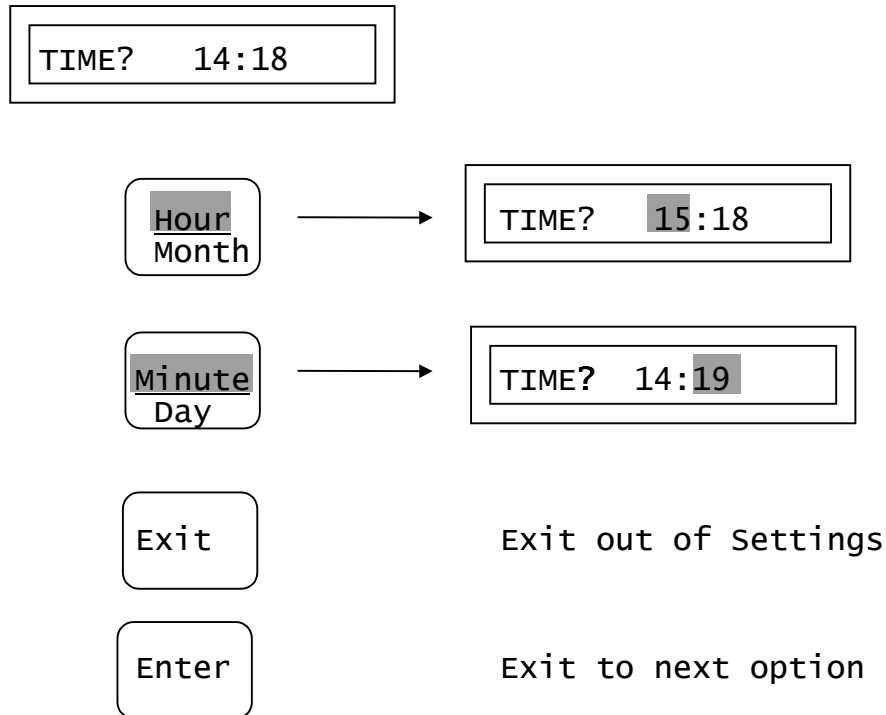- Operation
- Example

The Purpose section describes the function. The Action Diagram indicates the key presses and displays associated with the function. Operation lists the instructions explaining the action diagram. The Example section gives the exact key presses required for a specific setting.

SETTINGS PATH MAP

SETTINGS	Enter	RISE OFF?	Enter
TIME?	Enter	SET OFF?	Enter
DATE?	Enter	RISE	Enter
WEEKDAY?	Enter	SET	Enter
DAYLITE SAV?	Enter	RISE+	Enter
ZONE?	Enter	SET-	Enter
LONG?	Enter		
LAT?	Enter		

Purpose:

This function changes the system time. This is the time displayed on the LCD panel.

Action Diagram:

```
TIME?    14:18
```

```
Hour
Month
```
⟶
```
TIME?    15:18
```

```
Minute
Day
```
⟶
```
TIME?   14:19
```

```
Exit
```
Exit out of Settings

```
Enter
```
Exit to next option

Operation:

Press the HOUR button to increase the time by one hour.

Press the MINUTE button to increase the time by one minute.

Press ENTER to accept the time and exit to the next option.

Example:

Change the time to 17:20.

```
┌─────────────────────────┐
│  ┌───────────────────┐   │
│  │ TIME?  14:18      │   │
│  └───────────────────┘   │
└─────────────────────────┘
```

Set the hour by pressing the HOUR button.

```
┌────────┐      ┌─────────────────────┐
│ Hour   │      │ TIME?   15:18       │
│ Month  │      └─────────────────────┘
└────────┘
```

```
┌────────┐      ┌─────────────────────┐
│ Hour   │      │ TIME?   16:18       │
│ Month  │      └─────────────────────┘
└────────┘
```

```
┌────────┐      ┌─────────────────────┐
│ Hour   │      │ TIME?   17:18       │
│ Month  │      └─────────────────────┘
└────────┘
```

Set the minute by pressing the MINUTE button.

```
┌────────┐      ┌─────────────────────┐
│ Minute │      │ TIME?   17:19       │
│ Day    │      └─────────────────────┘
└────────┘
```

```
┌────────┐      ┌─────────────────────┐
│ Minute │      │ TIME?   17:20       │
│ Day    │      └─────────────────────┘
└────────┘
```

Press the ENTER button when finished to move to the next function.

```
┌────────┐
│ Enter  │
└────────┘
```

Purpose:

This function changes the system date. This is the date displayed on the on the LCD panel.

Action Diagram:

```
DATE?    02/28/96
```

```
 Hour        ──────▶     DATE?   03/28/96
Month
```

```
Minute       ──────▶     DATE?   02/29/96
 Day
```

```
Degree       ──────▶     DATE?   02/28/97
 Year
```

```
Exit                     Exit out of Settings
```

```
Enter                    Exit to next option
```
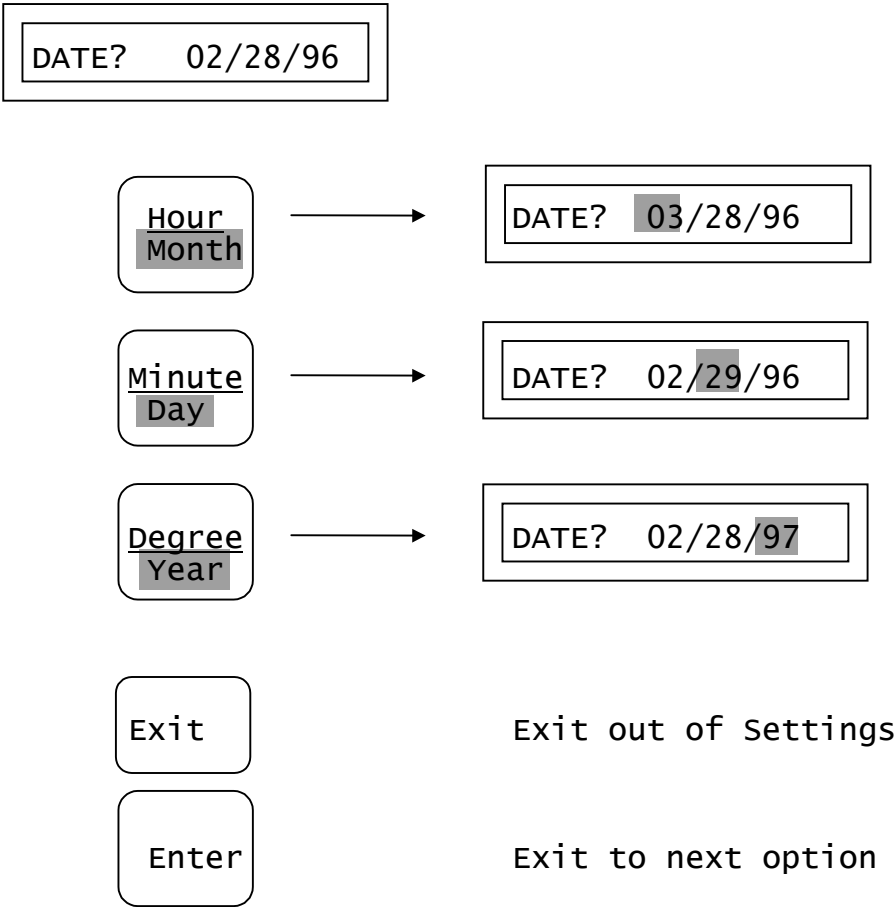
Operation:

Press the MONTH button to increase the date by one month.

Press the DAY button the increase the date by one day.

Press the YEAR button to increase the date by one year.

Press ENTER to accept the date and exit to the next function.

Example:

Change the date to April 1, 1997.

```
DATE? 02/28/96
```

Set the month by pressing the MONTH button.

```
Hour
Month
```
```
DATE? 03/28/96
```

```
Hour
Month
```
```
DATE? 04/28/96
```

Set the day by pressing the DAY button.

```
Minute
Day
```
```
DATE? 04/29/96
```

```
Minute
Day
```
```
DATE? 04/30/96
```

```
Minute
Day
```
```
DATE? 04/01/96
```

Set the year by pressing the YEAR button.
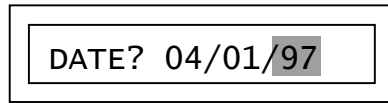
```
┌────────┐      ┌─────────────────────────┐
│ Degree │      │  ┌───────────────────┐  │
│  Year  │      │  │ DATE? 04/01/97     │  │
└────────┘      │  └───────────────────┘  │
                └─────────────────────────┘
```

Press the ENTER button when finished to move to the next function.

```
┌────────┐
│ Enter  │
└────────┘
```

Purpose:

This function changes the weekday displayed on the LCD panel.

Action Diagram:

```
WEEKDAY?    WED
```

```
Minute
Day
```
→
```
WEEKDAY?    THURS
```

```
Exit
```
Exit out of Settings

```
Enter
```
Exit to next option
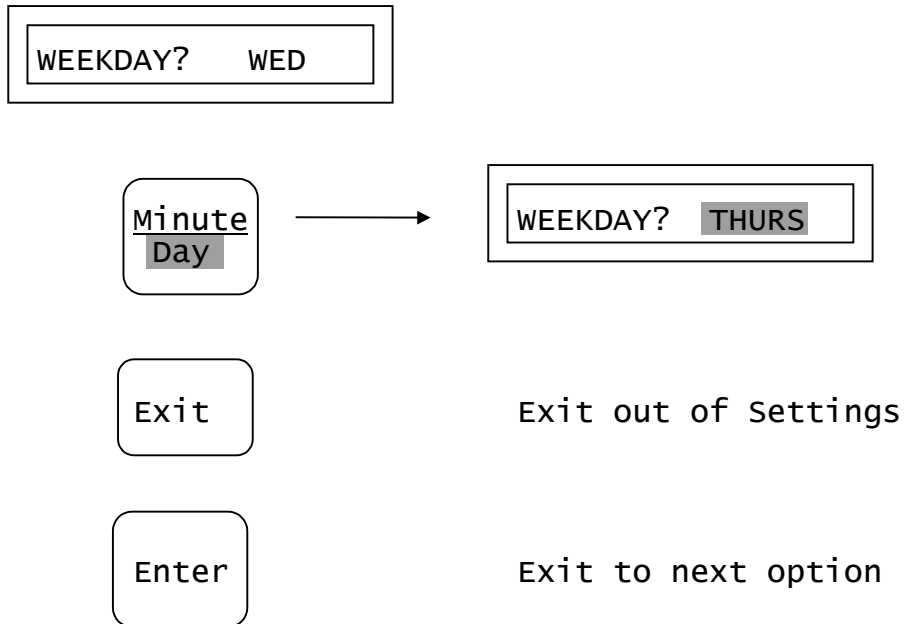
Operation:

Press the DAY button to increase the weekday by one day.

Press the ENTER button to accept the day shown and exit to the next function.

Example:

Change the day to Friday.

```
WEEKDAY?    WED
```

Press the DAY button to change the day.

```
┌─────────┐        ┌──────────────────────────────┐
│ Minute  │        │   WEEKDAY?  THURS            │
│  Day    │        │                              │
└─────────┘        └──────────────────────────────┘

┌─────────┐        ┌──────────────────────────────┐
│ Minute  │        │   WEEKDAY?  FRI              │
│  Day    │        │                              │
└─────────┘        └──────────────────────────────┘
```

Press the ENTER button when finished to move to the next function.

```
┌─────────┐
│         │
│ Enter   │
│         │
└─────────┘
```

Purpose:

This function selects daylight savings time.

Action Diagram:

```
┌─────────────────────────┐
│ DAYLITE SAV?   OFF       │
└─────────────────────────┘
```

```
┌────────┐
│ Next   │  ───────▶   ┌──────────────────────────┐
│ Time   │             │ DAYLITE SAV?   [ON]      │
└────────┘             └──────────────────────────┘
```

```
┌────────┐
│ Exit   │             Exit out of Settings
└────────┘
```

```
┌────────┐
│ Enter  │             Exit to next option
└────────┘
```
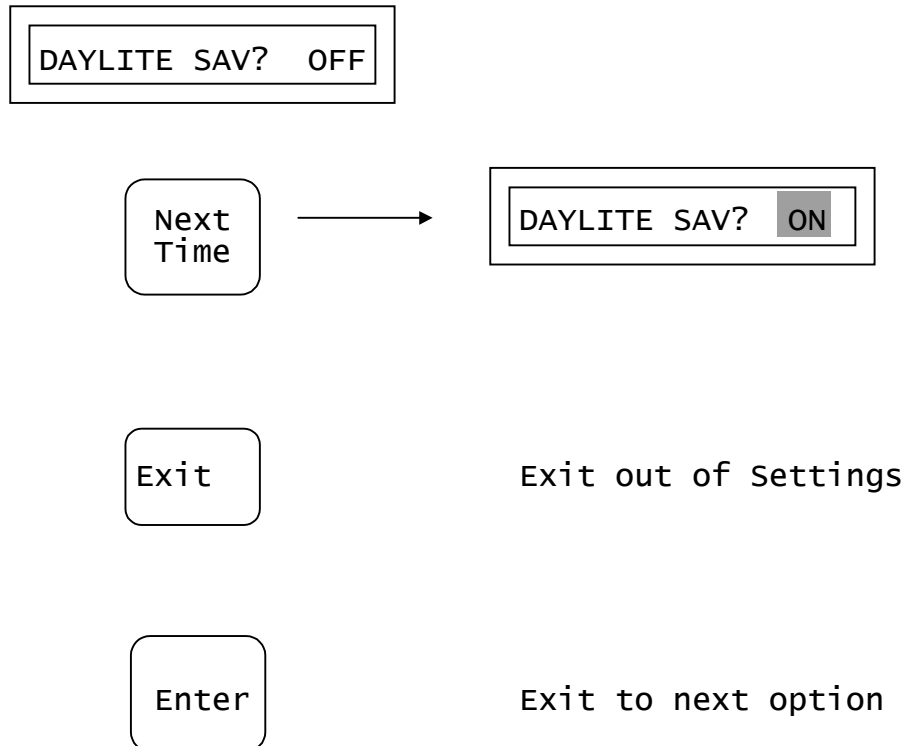
Operation:

Press the NEXT TIME button to change between on and off.

Select ON if selecting using daylight savings time and OFF to disable.

Press the ENTER button to accept the option and exit to the next function.

Example:

Change the DAYLITE SAV setting to on.

```
┌─────────────────────────┐
│ ┌─────────────────────┐ │
│ │ DAYLITE SAV? OFF    │ │
│ └─────────────────────┘ │
└─────────────────────────┘
```

Press the NEXT TIME button to change the setting.

```
┌────────┐      ┌─────────────────────────┐
│ Next   │      │ ┌─────────────────────┐ │
│ Time   │      │ │ DAYLITE SAV? ▐ON▌   │ │
│        │      │ └─────────────────────┘ │
└────────┘      └─────────────────────────┘
```

Press the ENTER key when finished to move to the next function.

```
┌────────┐
│        │
│ Enter  │
│        │
└────────┘
```

Purpose:

This function allows the operator to select the correct time zone.

Action Diagram:

```
ZONE? ATLANTIC ST
```

```
 Next                 ZONE? EASTERN ST
 Time

                      ZONE? CENTRAL ST

                      ZONE? MOUNTAIN ST

                      ZONE? PACIFIC ST

                      ZONE?  YUKON ST

                      ZONE? ALASKA ST
```

```
 Exit                 Exit out of Settings
```

```
┌─────────┐
│         │
│ Enter   │                    Exit to next option
│         │
└─────────┘
```
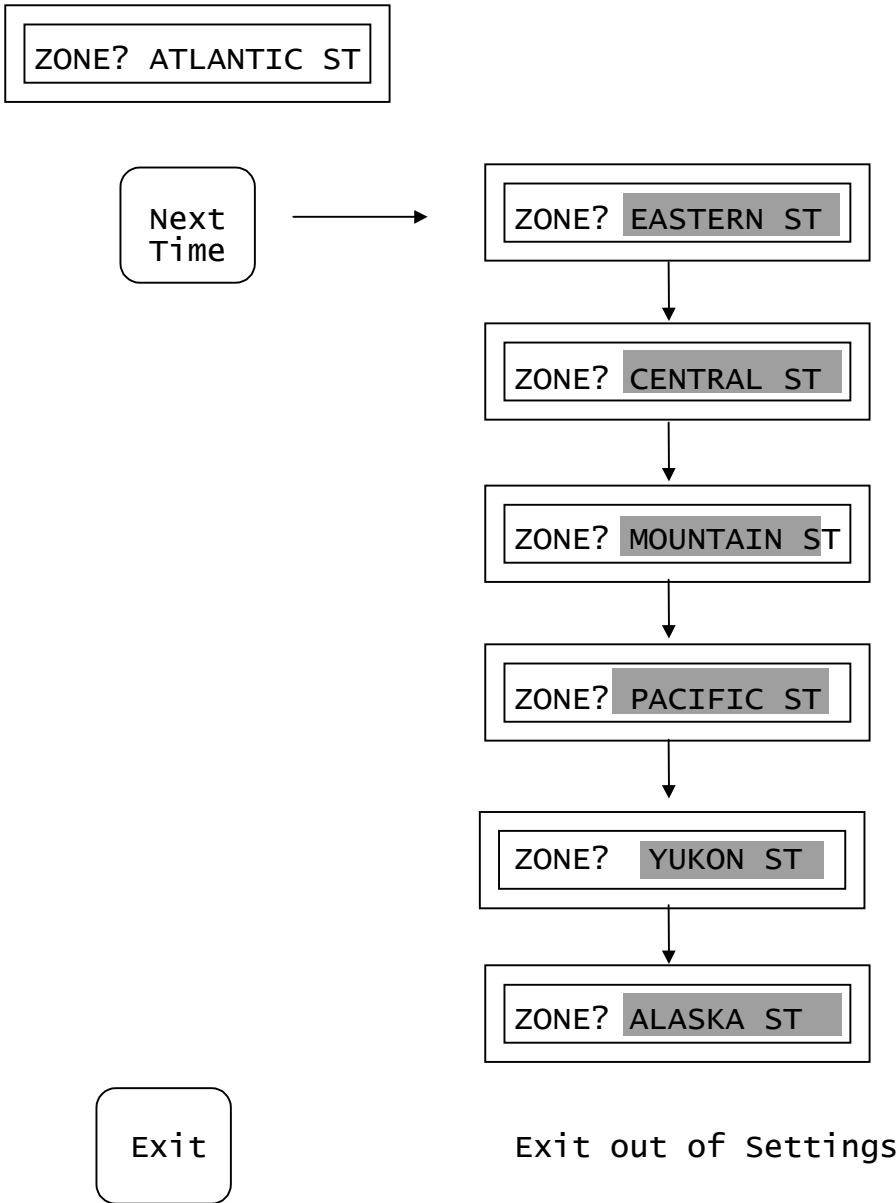
Operation:
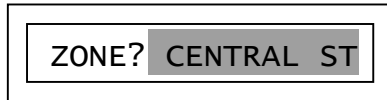
Press the NEXT TIME button to move through the time zone options.

Press the ENTER button to accept the option and exit to the next function.

Example:

Change the time zone to Pacific Standard time.

```
┌───────────────────────┐
│ ┌───────────────────┐ │
│ │ ZONE? EASTERN ST  │ │
│ └───────────────────┘ │
└───────────────────────┘
```

Press the NEXT TIME button to change the setting.

```
┌────────┐        ┌───────────────────────┐
│        │        │ ┌───────────────────┐ │
│ Next   │        │ │ ZONE? CENTRAL  ST │ │
│ Time   │        │ └───────────────────┘ │
│        │        └───────────────────────┘
└────────┘

┌────────┐        ┌───────────────────────┐
│        │        │ ┌───────────────────┐ │
│ Next   │        │ │ ZONE? MOUNTAIN ST │ │
│ Time   │        │ └───────────────────┘ │
│        │        └───────────────────────┘
└────────┘

┌────────┐        ┌───────────────────────┐
│        │        │ ┌───────────────────┐ │
│ Next   │        │ │ ZONE? PACIFIC  ST │ │
│ Time   │        │ └───────────────────┘ │
│        │        └───────────────────────┘
└────────┘
```
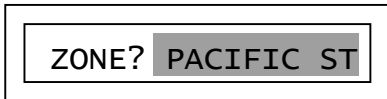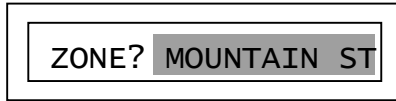
Press ENTER button when finished to move to the next function.

```
┌────────┐
│        │
│ Enter  │
│        │
└────────┘
```

Purpose:

This function sets the appropriate longitude for calculation of sunrise and sunset.

Action Diagram:

```
LONG? 085 12 W
```

```
Degree                    LONG?   086  12 W
 Year
```

```
Minute                    LONG?   085  13 W
 Day
```

```
Exit                      Exit out of Settings
```

```
Enter                     Exit to next option
```
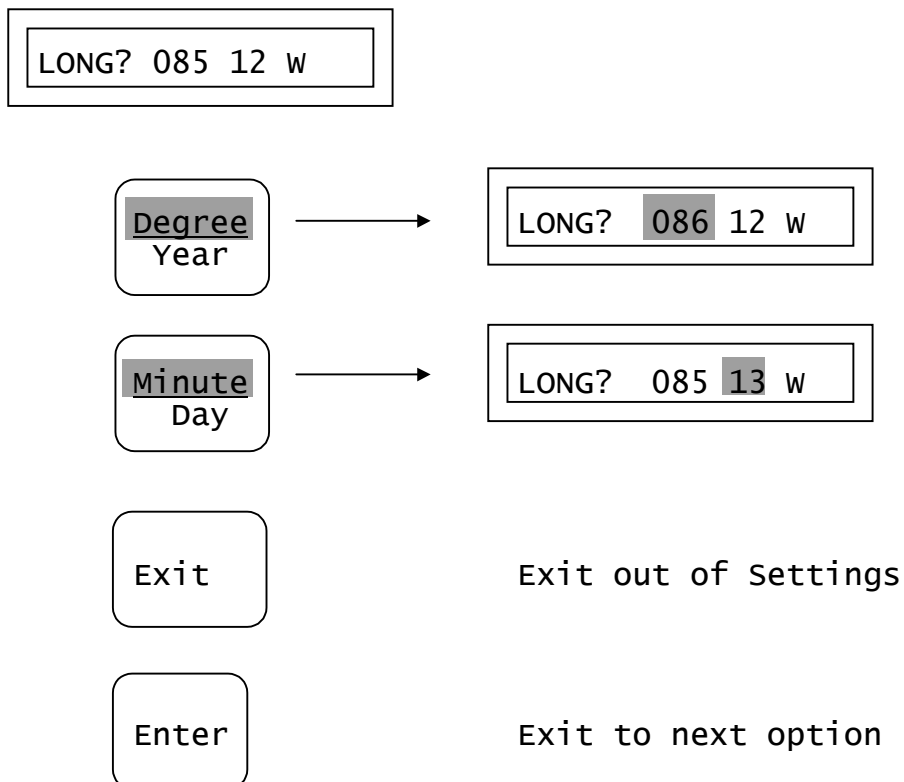
Operation:

Press the DEGREE button to increase the longitude by one degree.

Press the MINUTE button to increase the longitude by one minute.

The direction does not need to be adjusted.

Press the ENTER button to accept the option displayed and to exit to the next function.

Example:

Change the longitude to 88 14 W.

```
LONG? 085 12 W
```

Press the DEGREE button to change the degree.

| Degree
Year | LONG? 086 12 W |

| Degree
Year | LONG? 087 12 W |

| Degree
Year | LONG? 088 12 W |

Press the MINUTE button to change the minute.
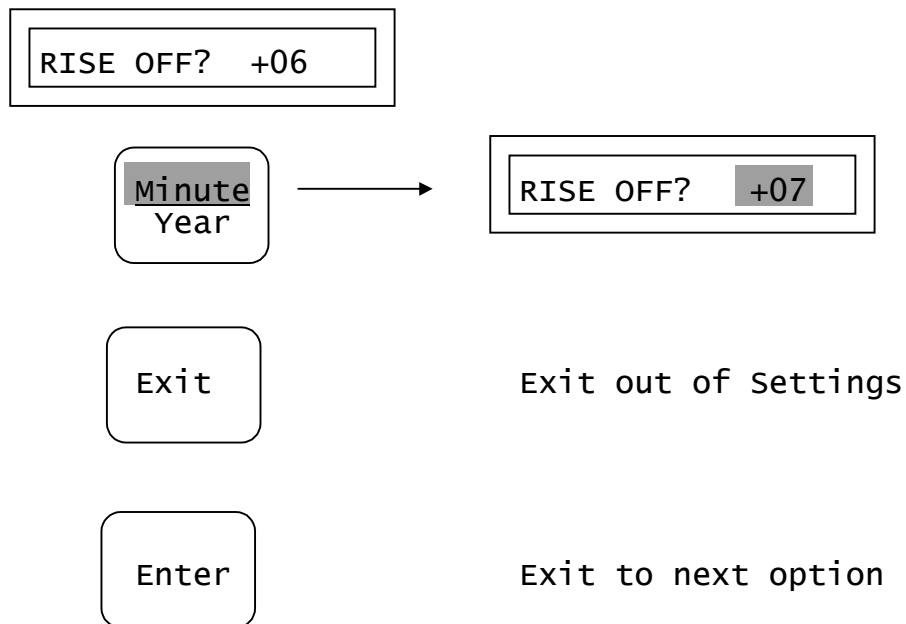
| Minute
Day | LONG? 088 13 W |

| Minute
Day | LONG? 088 14 W |

Press the ENTER button when finished to move to the next function.

Enter

Purpose:

This function sets the appropriate latitude for sunrise and sunset calculations.

Action Diagram:

```
LAT? 041 00 N
```

```
Degree                        LAT?     042 00 N
 Year
```

```
Minute                        LAT?     041 01 N
 Day
```

```
Exit                          Exit out of Settings
```

```
Enter                         Exit to next option
```
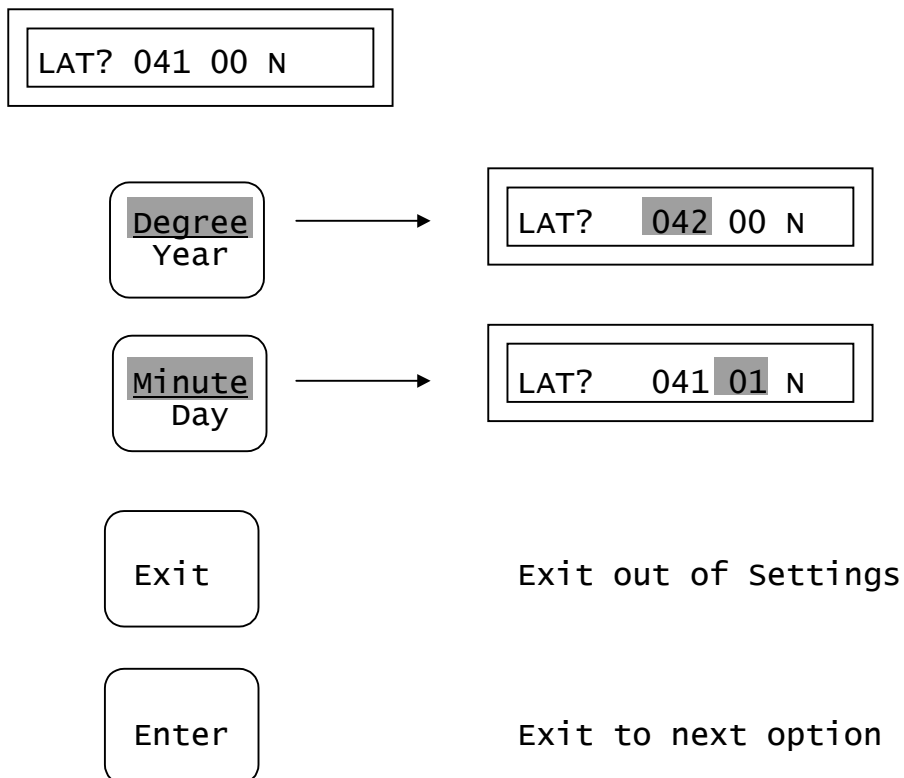
Operation:

Press the DEGREE button to increase the latitude by one degree.

Press the MINUTE button to increase the latitude by one minute.

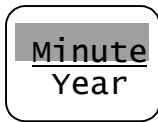The direction does not need to be adjusted.

Press the ENTER button to accept the displayed value and to exit to the next function.

Example:

Change the latitude to 43 02 N.

```
LAT? 041 00 N
```

Press the DEGREE button to change the degree setting.

| Degree |
| Year |

```
LAT? 042 00 N
```

| Degree |
| Year |

```
LAT? 043 00 N
```

Press the MINUTE button to change the minute setting.

| Minute |
| Day |

```
LAT? 043 01 N
```

| Minute |
| Day |

```
LAT? 043 02 N
```

Press the ENTER button when finished to move to the next function.

| Enter |

Purpose:

This function adjusts the time after sunrise (offset) for switch actions.

Action Diagram:

```
┌─────────────────────┐
│ RISE OFF?  +06      │
└─────────────────────┘
```

```
┌──────────┐              ┌─────────────────────┐
│ Minute   │  ───────►    │ RISE OFF?    +07    │
│  Year    │              └─────────────────────┘
└──────────┘
```

```
┌──────────┐
│  Exit    │              Exit out of Settings
└──────────┘
```

```
┌──────────┐
│  Enter   │              Exit to next option
└──────────┘
```

Operation:

Press the MINUTE button to increase the sunrise offset time by one minute.

Press the ENTER button to accept the value displayed and to exit to the next function.

Example:

Change the sun rise offset to +09.

```
┌─────────────────────┐
│ RISE OFF?  +06      │
└─────────────────────┘
```

Press the MINUTE button to change the offset.
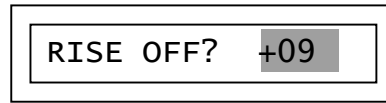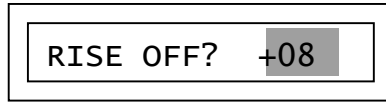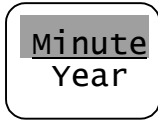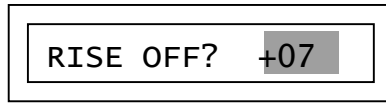
| Minute | `RISE OFF?   +07` |
| Year | |

| Minute | `RISE OFF?   +08` |
| Year | |

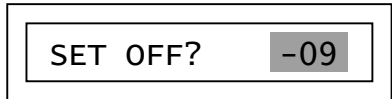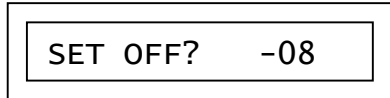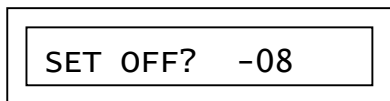| Minute | `RISE OFF?   +09` |
| Year | |

Press the ENTER button when finished to move to the next function.

Enter

Purpose:

This function adjusts the time before sunset for switch actions.

Action Diagram:

```
SET OFF?    -08
```

```
Minute
 Year
```

```
SET OFF?       -09
```

```
Exit
```
Exit out of Settings

```
Enter
```
Exit to next option

Operation:

Press the MINUTE button to decrease the sunset offset time by one minute.

Press the ENTER key to accept the value displayed and exit to the next function.

Example:

Change the sun set offset time to -10

```
SET OFF?   -08
```

Press the MINUTE button to change the offset.

Minute Year	`SET OFF?  ` `-09`

Minute Year	`SET OFF?   -10`

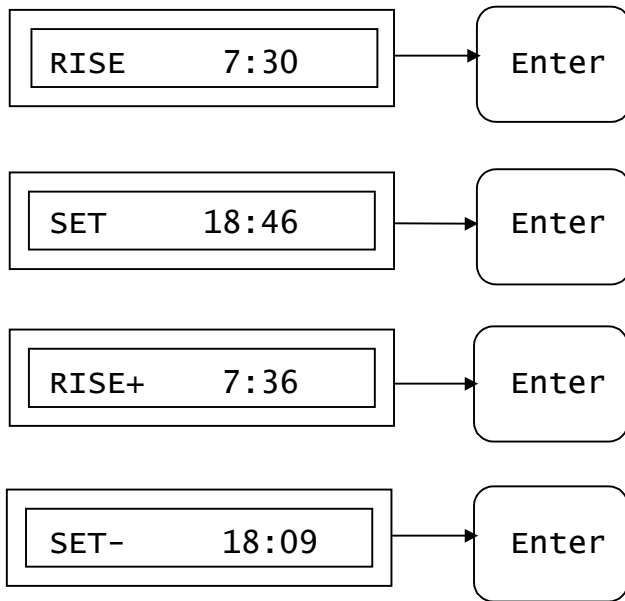Press the ENTER button when finished to move to the next function.

Enter

Purpose:

After the operator sets the sunrise and sunset offset times the display will show the current
sunrise and sunset times and then the current sunrise offset and sunset offset times.
The sunrise offset (RISE+) allows control action at a programmable time after sunrise.
The sunset offset (SET-) allows control action at a programmable time before sunset.

Action Diagram:

| RISE   7:30 | → | Enter |

| SET   18:46 | → | Enter |

| RISE+   7:36 | → | Enter |

| SET-   18:09 | → | Enter |

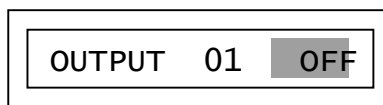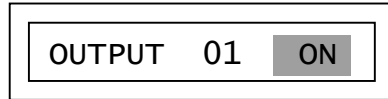| Exit | Exit out of Settings

| Enter | Exit to next option

Operation:

Press the ENTER button after viewing the display and verifying the information to view the
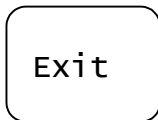next display and finally return to the main menu.

Purpose:

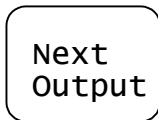This function manually over-rides the current switch output.

Action Diagram:

```
OUTPUT  01   ON
```

```
Enter
```
```
OUTPUT  01   OFF
```
Toggles output

```
Exit
```
Exit out of Outputs Mode

```
Next
Output
```
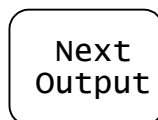Go to next output number

Operation:

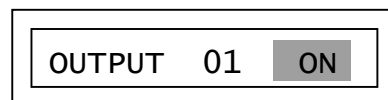Press the ENTER button to toggle the output condition (ON/OFF) or to cause an approximately one tenth second momentary output (PULSE).

Press the EXIT key to exit the Outputs Mode selection.

Press the NEXT OUTPUT button to advance the output channel number by one.

Example:

Force output number 2 from OFF to ON

```
OUTPUT  01   ON
```
```
Next
Output
```

Press the NEXT OUTPUT button to change the output channel to two

```
┌─────────────────────────┐        ╭──────────────╮
│ OUTPUT  02  OFF          │        │              │
└─────────────────────────┘        │    Enter     │
                                    │              │
                                    ╰──────────────╯
```
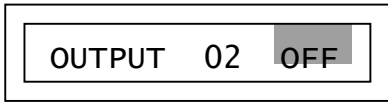
Press the ENTER key to toggle the output from OFF to ON.

Purpose:

This function sets the switch action mode of each output. The switch action mode may be set to continuous (ON/OFF) or momentary (PULSE). The continuous mode maintains last ON or OFF command output while the momentary produces an approximate one-tenth second pulse in response to a manual or programmed command.

Action Diagram:

```
OUTPUT? 01 MAINT
```

```
Next
Output
```
```
OUTPUT? 01   PU
```
Toggles between pulse and maintain

```
Exit
```
Exit out of Outputs Mode

```
Enter
```
Advances to next output number

Operation:

Press the NEXT OUTPUT button to toggle the output mode between maintain (ON/OFF) and momentary (PULSE).

Press the ENTER key to advance to the next output channel.

Example:

Change the mode of output 2 to pulse

```
OUTPUT? 01 MAINT
```
```
Enter
```

Press the ENTER button to advance to output number two.

```
OUTPUT? 02 MAINT
```
```
Next
Output
```

Press the NEXT OUTPUT key to change to momentary (PULSE).

```
OUTPUT? 02 PU
```

Purpose:

This function clears the ALL programmed settings contained in the Time-Keeper memory.

NOTE: Use this function with caution as ALL values will have to be re-entered after exercising this function.

Action Diagram:

```
INITIALIZE ZRAM?
```

Enter   ```SURE? EXIT=NO```

Exit   `Cancel Clear and Exit out of Initialize ZRAM`

Enter   `Erase ALL Time-Keeper® settings`

Operation:

Press the EXIT button to cancel erasure and exit INITIALIZE ZRAM.

Press the ENTER key to erase all current settings.

Note: Clearing the Time-Keeper memory resets all times to XX:XX and resets longitude and latitude settings to the factory location.

Purpose:

This function initializes and permits serial communication. The on-board serial port is used for connection to a personal computer for configuration of Time-Keeper or monitoring of switch states.

Action Diagram:

```
PC COMM.?
```

```
 Exit            Exit out of Settings
```

```
 Enter           COMM READY
```
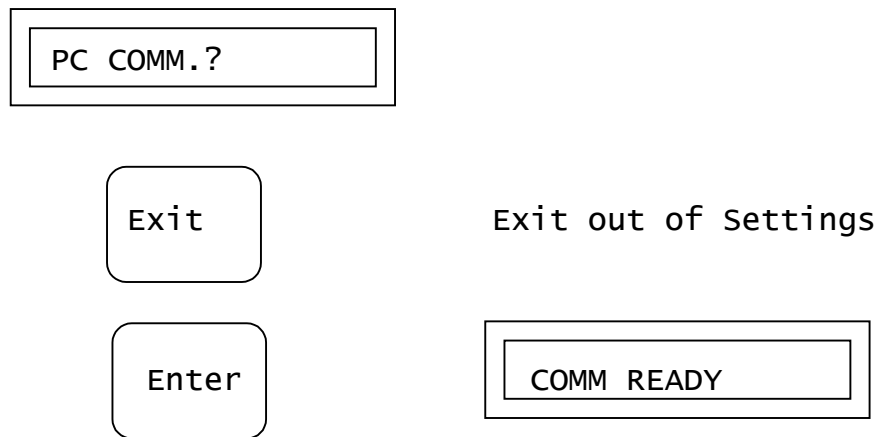
Operation:

Press the ENTER button to enter serial communications mode.

The display will show COMM READY when Time-Keeper is ready for serial communications.

Touch-Plate®

Settings	Weekly Schedule	Holiday Schedule
Hour ___ Month	Minute ___ Day	Degree ___ Year
Next Holiday	Next Output	Next Time
Delete	Enter	Exit

Timekeeper™
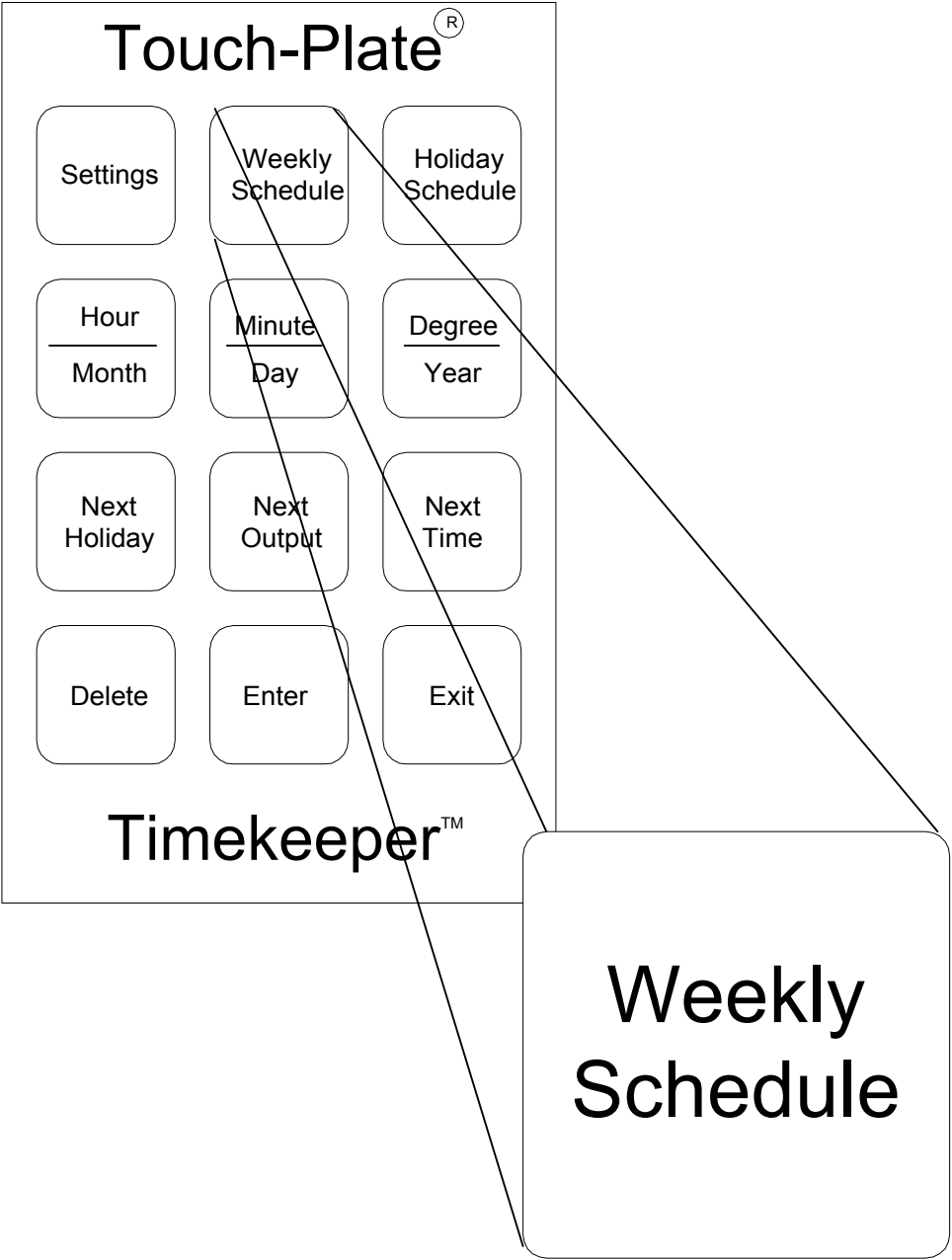
Weekly Schedule

Weekly Schedule Path Map

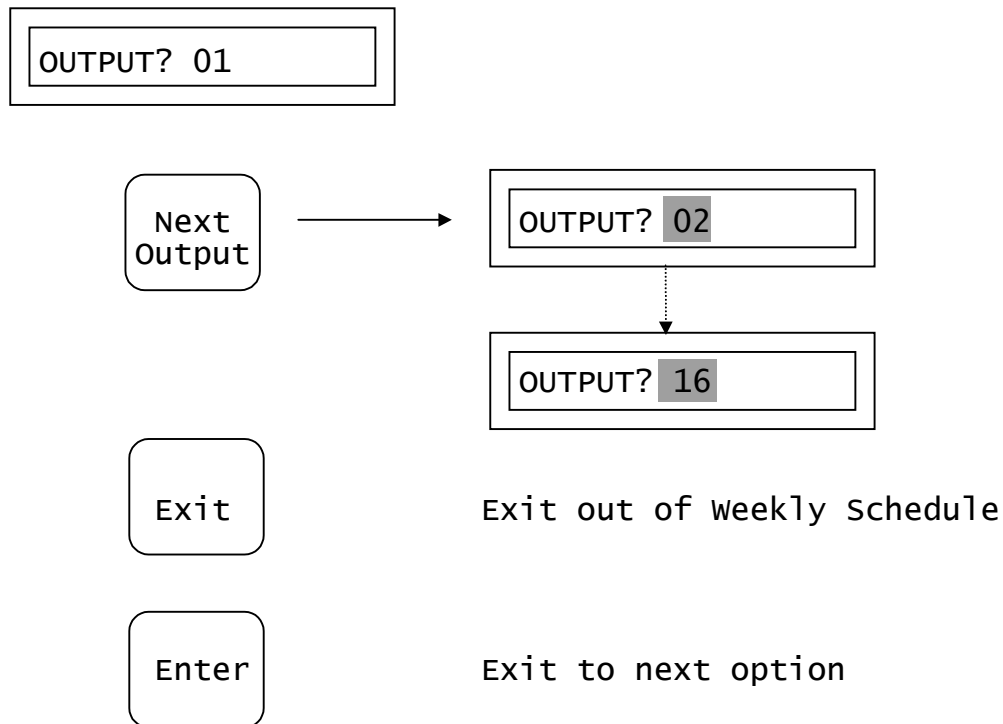The weekly schedule is the heart of the Time-Keeper module. This programming section permits selection of a particular output, an action for that output, and selection of time and day for the action. Weekly Schedule also selects an action for the output. ON or OFF actions may be selected for maintain outputs or PULSE for pulse outputs. The weekly schedule is entered by pressing the Weekly Schedule button on the touchpad.

```
┌─────────────────────┐
│ ┌─────────────────┐ │
│ │ 14:59:57  02/28 │ │
│ └─────────────────┘ │
└─────────────────────┘

      ╭───────────╮
      │  Weekly   │
      │ Schedule  │
      ╰───────────╯
            │
            ▼
┌─────────────────────┐          ╭───────────╮
│ OUTPUT?             │          │   Enter   │
└─────────────────────┘          ╰───────────╯
            │
            ▼
┌─────────────────────┐          ╭───────────╮
│ DAY?                │          │   Enter   │
└─────────────────────┘          ╰───────────╯
            │
            ▼
┌─────────────────────┐          ╭───────────╮
│ TIME?               │          │   Enter   │
└─────────────────────┘          ╰───────────╯
            │
            ▼
┌─────────────────────┐          ╭───────────╮
│ Time PU XX:XX       │          │   Enter   │
└─────────────────────┘          ╰───────────╯
```
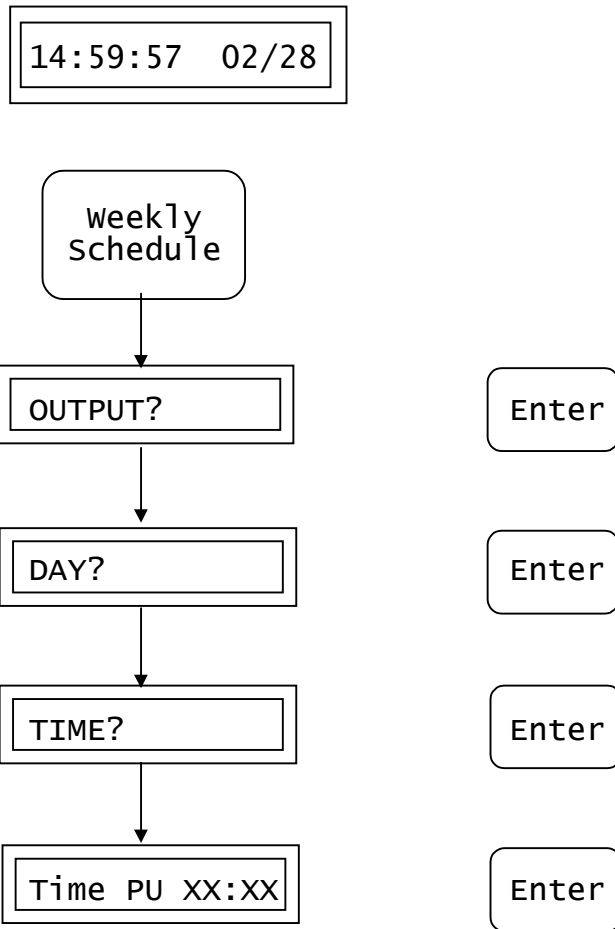
Purpose:

This function selects the output channel to be programmed.

Action Diagram:

```
OUTPUT? 01
```

```
 Next          ──────────▶        OUTPUT?  02
Output
```

```
                                  OUTPUT?  16
```

```
 Exit                   Exit out of Weekly Schedule
```

```
 Enter                  Exit to next option
```
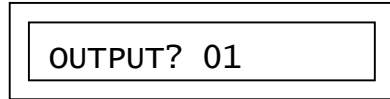
Operation:
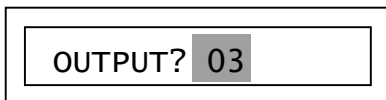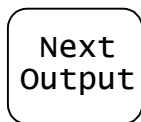
Press the NEXT OUTPUT button to increase the output number by one.
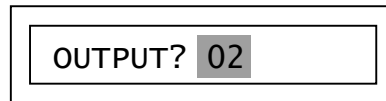
Press the ENTER button to accept the value displayed and exit to the next function.

Example:

Select output number 3.

```
OUTPUT? 01
```

Press the NEXT OUTPUT button to change the display to the next output.

```
 Next
Output
```        `OUTPUT? 02`

```
 Next
Output
```        `OUTPUT? 03`
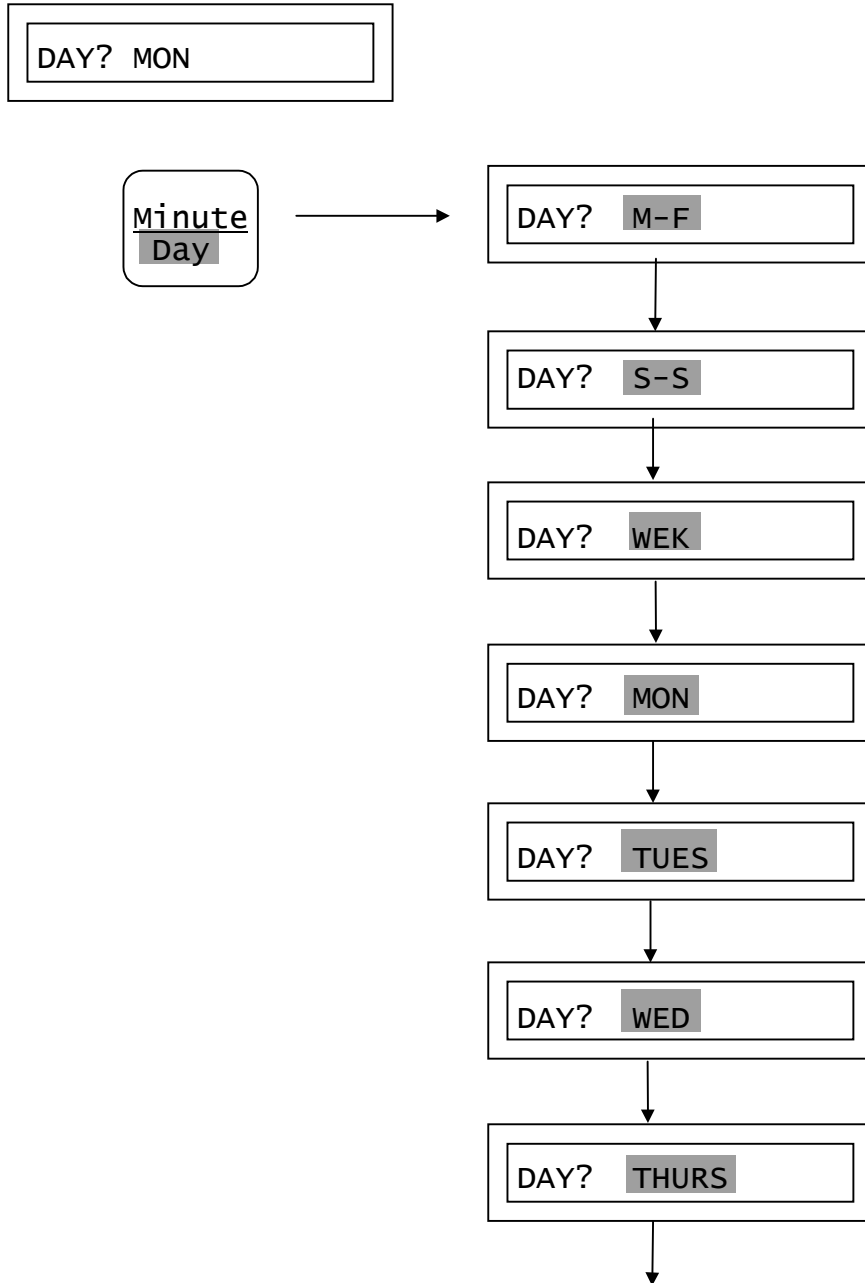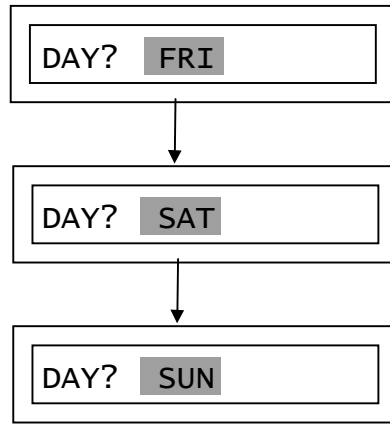
Press the ENTER button when finished to move to the next function.

```
Enter
```

Purpose:

This function selects the days of the week for the   previously selected output.

Action Diagram:

```
DAY?  MON
```

```
 Minute
  Day
```
→
```
DAY?   M-F
```

```
DAY?   S-S
```

```
DAY?   WEK
```

```
DAY?   MON
```

```
DAY?   TUES
```

```
DAY?   WED
```

```
DAY?   THURS
```

```
┌─────────────────────────────────┐
│  DAY?   FRI                      │
└─────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────┐
│  DAY?   SAT                      │
└─────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────┐
│  DAY?   SUN                      │
└─────────────────────────────────┘
```

```
┌─────────┐
│         │
│  Enter  │              Exit to next function
│         │
└─────────┘
```

Operation:

Press the DAY button to move through the day choices. The choices include:
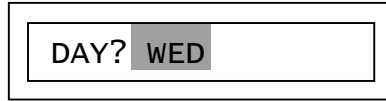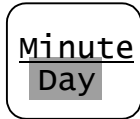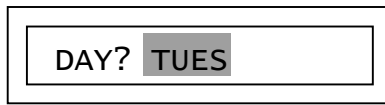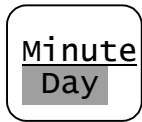
- S-S   Weekend only
- M-F   Monday - Friday
- WEK   Each day of the week
- MON   Monday only
- TUES   Tuesday only
- WED   Wednesday only
- THRUS   Thursday only
- FRI   Friday only
- SAT   Saturday only
- SUN   Sunday only

Example:

Change the day to Wednesday.

```
┌─────────────────────────┐
│  DAY?  MON              │
└─────────────────────────┘
```

Press the DAY button to change the day setting.

```
┌─────────┐          ┌────────────────────────────┐
│ Minute  │          │ ┌────────────────────────┐ │
│  Day    │          │ │   DAY?  TUES           │ │
│         │          │ └────────────────────────┘ │
└─────────┘          └────────────────────────────┘

┌─────────┐          ┌────────────────────────────┐
│ Minute  │          │ ┌────────────────────────┐ │
│  Day    │          │ │   DAY? WED             │ │
│         │          │ └────────────────────────┘ │
└─────────┘          └────────────────────────────┘
```

Press the ENTER button when finished to move to the next function.

```
┌─────────┐
│         │
│  Enter  │
│         │
└─────────┘
```

 Note: The M-F selection can be used to "fill" the week for a particular output. This can speed up the process of programming output times.

After the M-F day selection has been made and the times selected for this mode, individual days may be selected and different times chosen for the individual day.

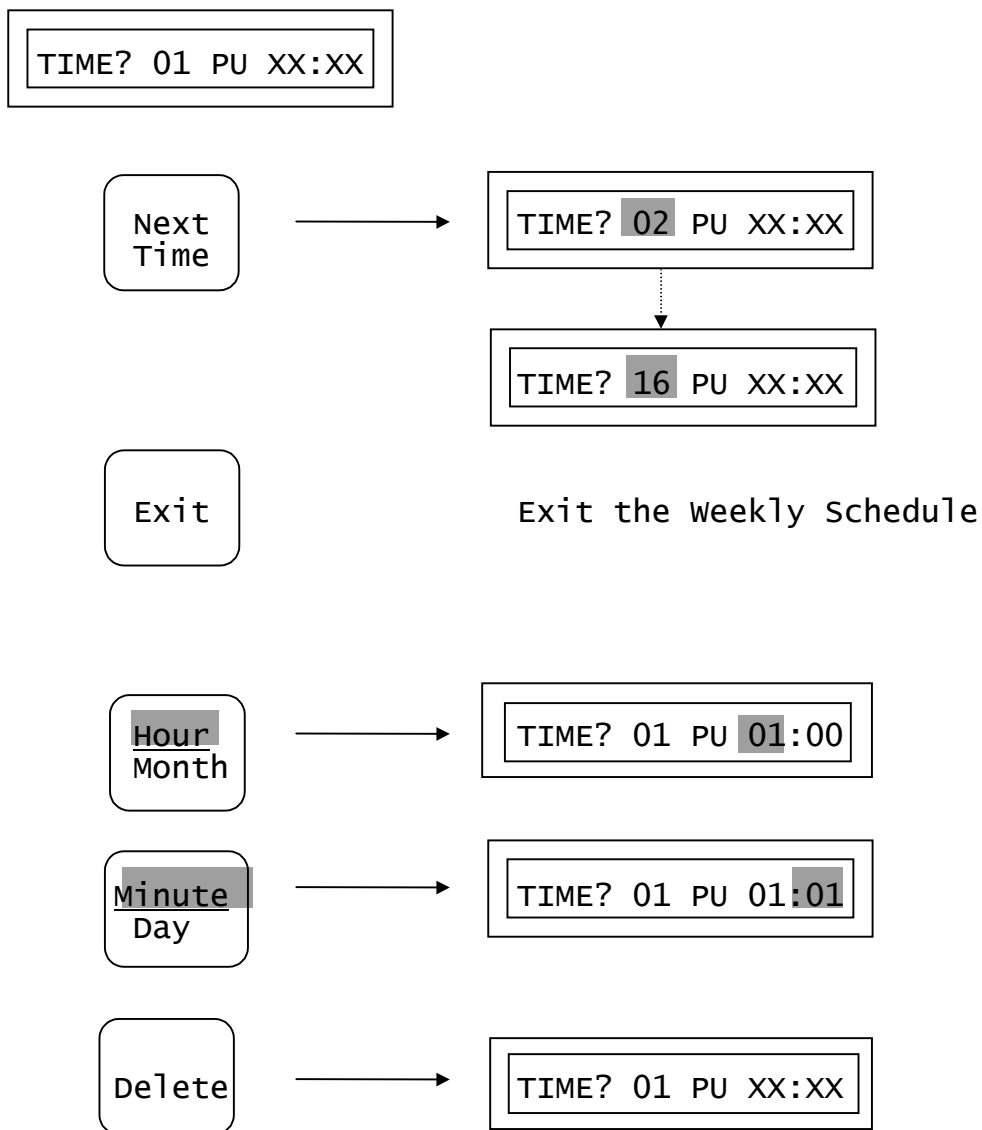For example: A dentist office has evening hours every evening but Wednesday. The Time-Keeper controlling the building lighting may be programmed in M-F mode for 7:00 AM to 7:00 PM. Wednesday would then be reprogrammed for 7:00 AM to 5:30 P.M.

Note: If the above "fill" method is used to program an output the time display for the output will display "--:--" to indicate the inconsistency of the times throughout the week.

Purpose:

This function sets the time for a pulse to occur for each of the 16 time slots for the selected outputs.

NOTE: The user can use the PU and ON/OFF buttons to recall the current mode.

Action Diagram:

```
TIME? 01 PU XX:XX
```

```
 Next        ⟶      TIME? 02 PU XX:XX
 Time
                         ⋮
                    TIME? 16 PU XX:XX
```

```
 Exit               Exit the Weekly Schedule
```

```
 Hour        ⟶      TIME? 01 PU 01:00
 Month
```

```
 Minute      ⟶      TIME? 01 PU 01:01
 Day
```

```
 Delete      ⟶      TIME? 01 PU XX:XX
```

Operation:

Press the NEXT TIME button to increase the time slot by one.

Press the HOUR button to increase the time by one hour. Hour is set using military time (0-23).
Note: Pressing the HOUR key after 23 causes the following options to appear in the following order:
RISE - Sunrise
SET - Sunset
RISE+ - After sunrise
SET- - Before sunset

Selecting RISE causes the switch action to occur at computed sunrise. Selecting RISE+ causes the action to occur at an programmed time after computed sunrise. Selecting SET causes the switch action to occur at computed sunset. Selecting SET- causes the switch action to occur at a programmed time before computed sunset.
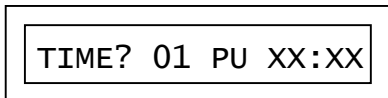
To set the sunrise and sunset offset see pages 33-37.
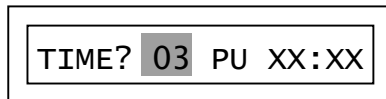
Press the MINUTE button to increase the time by one minute.

Press the DELETE button to remove a time for the selected output.

Example:

Set the 3rd time slot for 2:03.

```
TIME? 01 PU XX:XX
```

Press the NEXT TIME button to select the time slot.

```
Next
Time
```
```
TIME? 02 PU XX:XX
```

```
Next
Time
```
```
TIME? 03 PU XX:XX
```

```
TIME? 03 PU XX:XX
```
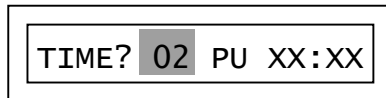
Press the HOUR button to set the hour.

```
Hour
Month
```
```
TIME? 03 PU 01:00
```

```
Hour
Month
```
```
TIME? 03 PU 02:00
```

Press the MINUTE button to set the minute.

```
Minute
Day
```
```
TIME? 03 PU 02:01
```

```
Minute
Day
```
```
TIME? 03 PU 02:02
```

```
Minute
Day
```
```
TIME? 03 PU 02:03
```

Press the NEXT TIME button when finished to select the next time slot to set.

```
Next
Time
```

Note: The M-F selection can be used to "fill" the week for a particular output. This can speed up the process of programming output times.

After the M-F day selection has been made and the times selected for this mode, individual days may be selected and different times chosen for the individual day.

For example: A dentist office has evening hours every evening but Wednesday. The Time-Keeper® controlling the building lighting may be programmed in M-F mode for 7:00 AM to 7:00 PM. Wednesday would then be reprogrammed for 7:00 AM to 5:30 P.M.

Note: If the above "fill" method is used to program an output the time display for the output will display "--:--" to indicate the inconsistency of the times throughout the week.

Purpose:

These steps are used to turn on and off a maintain type output. There are eight pairs of on/off assignments available.

NOTE: The mode of an output can be recalled by use of PU and ON/OFF buttons.

Action Diagram:

```
TIME 01 ON XX:XX
```

| Hour Month | → | TIME 01 ON 01:00 |

| Minute Day | → | TIME 01 ON 01:01 |

| Next Time | → | TIME 02 OFF XX:XX |

| Hour Month | → | TIME 02 OFF 01:00 |

| Minute Day | → | TIME 02 OFF 01:01 |

| Next Time | → | TIME 03 ON XX:XX |

```
TIME 08 OFF XX:XX
```

```
┌──────────┐
│  Enter   │ ─────────→    ┌──────────────────────────┐
└──────────┘               │  OUTPUT?                 │
                           └──────────────────────────┘


┌──────────┐
│ Delete   │ ─────────→    ┌──────────────────────────┐
└──────────┘               │  TIME 02 PU XX:XX        │
                           └──────────────────────────┘


┌──────────┐
│  Enter   │               Exit to output selection
└──────────┘
```

Operation:

Press the HOUR button to increase the time by one hour.
Hour is set using military time (0-23).
Note: Pressing the HOUR key after 23 causes the following options to appear in the
following order:
RISE   -   Sunrise
SET   -   Sunset
RISE+ -   After sunrise
SET-   -   Before sunset

Selecting RISE causes the switch action to occur at computed sunrise. Selecting RISE+
causes the action to occur at an programmed time after computed sunrise. Selecting SET
causes the switch action to occur at computed sunset. Selecting SET- causes the switch action
to occur at a programmed time before computed sunset.

To set the sunrise and sunset offset see pages 33-37.

Press the MINUTE button to increase the time by one minute.

Press the NEXT TIME button to get to the next time slot.

Press NEXT OUTPUT to get to the output.

Press the ENTER button to get to the next output.

Press the DELETE button to remove and output time.

Example:

Set output 1 to turn ON at sunset and OFF at sunrise using time slots 1 and 2.

```
TIME 01 ON XX:XX
```

Press the hour button until 23:00 is displayed.

| Hour |
| Month |

```
TIME 01 ON RISE
```

| Hour |
| Day |

```
TIME 01 ON SET
```

| Next |
| Time |

```
TIME 02 OFF XX:XX
```

Press the hour button until 23:00 is displayed

| Hour |
| Month |

```
TIME 02 OFF RISE
```

| Next |
| Time |

```
TIME 03 ON XX:XX
```

```
TIME 08 OFF XX:XX
```

| Enter |

```
OUTPUT?
```

| Delete |

```
TIME 02 PU XX:XX
```

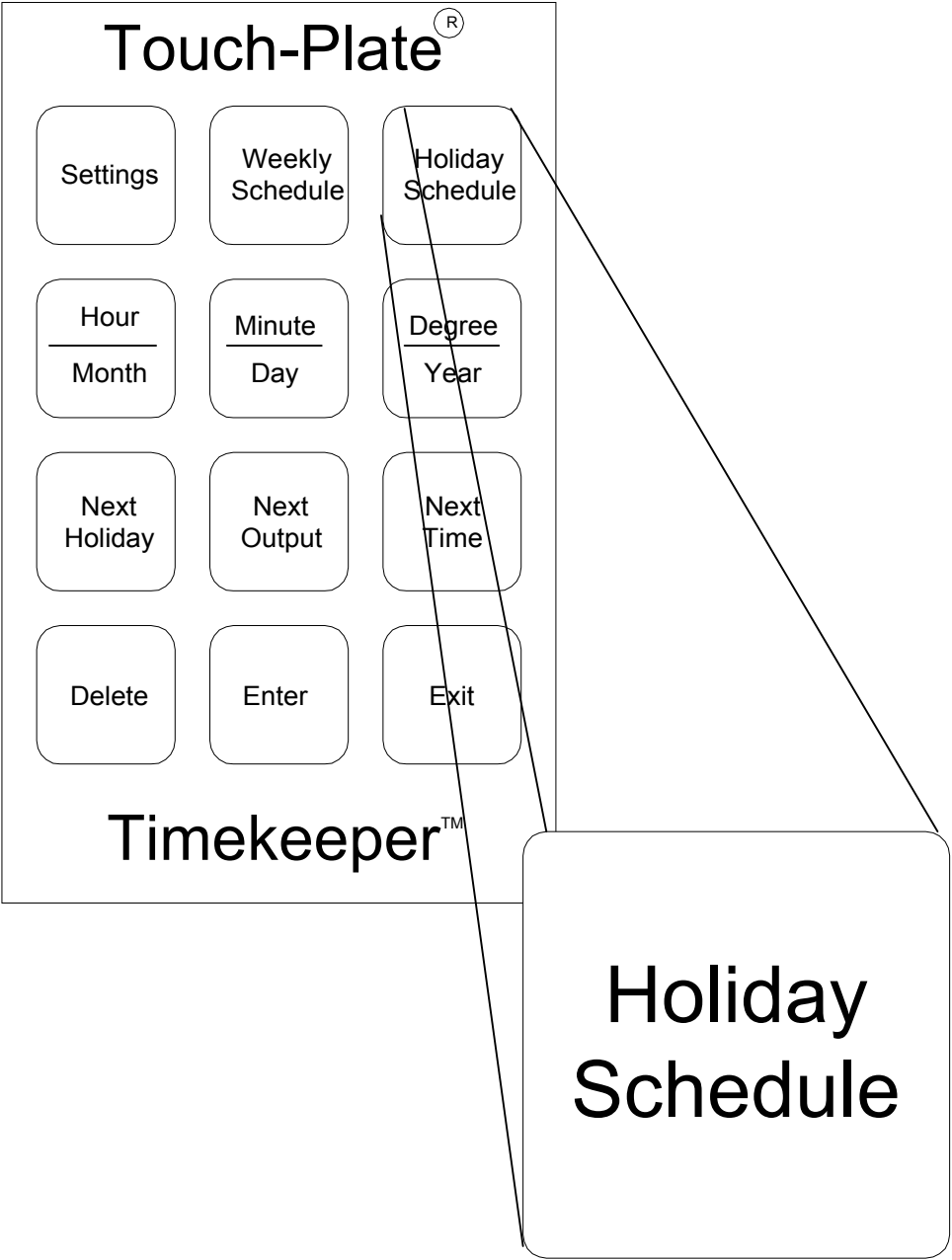Press the enter button to move to the next function.

```
Enter
```

Note: The M-F selection can be used to "fill" the week for a particular output. This can speed up the process of programming output times.

After the M-F day selection has been made and the times selected for this mode, individual days may be selected and different times chosen for the individual day.

For example: A dentist office has evening hours every evening but Wednesday. The Time-Keeper controlling the building lighting may be programmed in M-F mode for 7:00 AM to 7:00 PM. Wednesday would then be reprogrammed for 7:00 AM to 5:30 P.M.

Note: If the above "fill" method is used to program an output the time display for the output will display "--:--" to indicate the inconsistency of the times throughout the week.

Touch-Plate ®

Settings	Weekly Schedule	Holiday Schedule
Hour —— Month	Minute —— Day	Degree —— Year
Next Holiday	Next Output	Next Time
Delete	Enter	Exit

Timekeeper ™

Holiday Schedule

Holiday Schedule Path Map

The holiday selection allows Time-Keeper to set special times for up to 16 holidays within the year. Each holiday permits each of the sixteen outputs to be programmed. Each output has eight pulse time slots or four pairs of on/off time slots available.
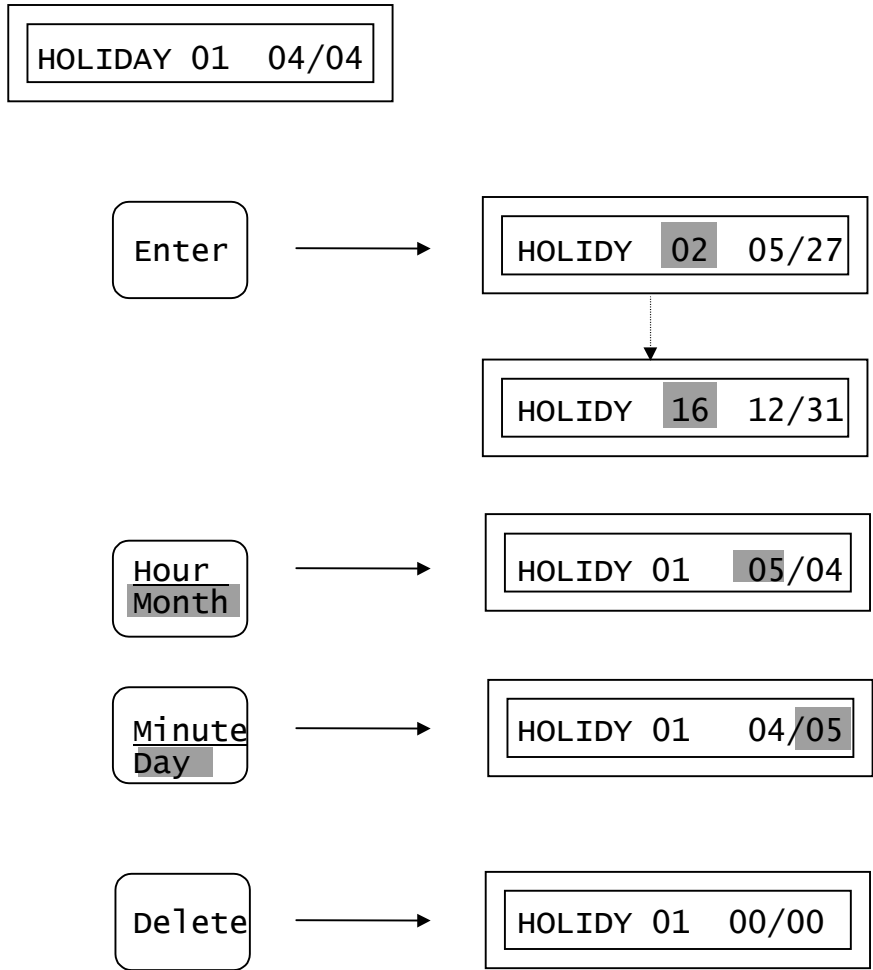
```
        ┌─────────────────────────┐
        │  HOLIDAY 01 04/04       │
        └─────────────────────────┘
                     │
                     ▼
        ┌─────────────────────────┐
        │  HOLIDAY                │
        └─────────────────────────┘
                     │
                     ▼
        ┌─────────────────────────┐
        │  OUTPUT                 │
        └─────────────────────────┘
              ╱           ╲
             ▼             ▼
  ┌──────────────────┐   ┌──────────────────────┐
  │  TIME  PULSE     │   │  TIME MAINTAIN       │
  └──────────────────┘   └──────────────────────┘
                                    │
                                    ▼
                         ┌──────────────────────┐
                         │  TIME ON             │
                         └──────────────────────┘
                                    │
                                    ▼
                         ┌──────────────────────┐
                         │  TIME OFF            │
                         └──────────────────────┘
```
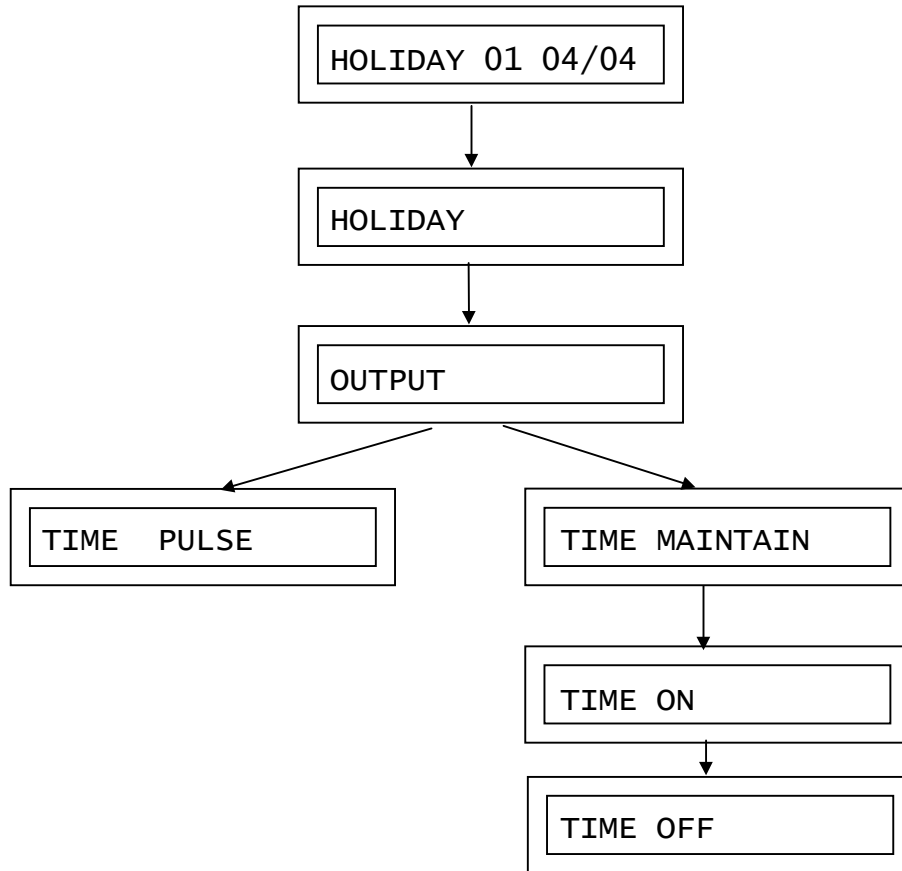
Purpose:

This function assigns a date for up do 16 possible holidays.

Action Diagram:

```
HOLIDAY 01   04/04
```

```
 Enter         ──────▶      HOLIDY  02   05/27
```

```
                            HOLIDY  16   12/31
```

```
 Hour          ──────▶      HOLIDY 01    05/04
 Month
```

```
 Minute        ──────▶      HOLIDY 01     04/05
 Day
```

```
 Delete        ──────▶      HOLIDY 01   00/00
```

Operation:

Press the MONTH button to increase the date by one month.

Press the DAY button to increase the date by one day.

Press the ENTER button to move to the next Holiday.

Press the DELETE button to remove a Holiday.

*Note: All 16 Holidays must be viewed to be able to move to the next option.

Note: Duplicate Holidays are not permitted. If a duplicate Holiday date is entered the error message "MATCHING HOLIDAY" will be displayed. Pressing ENTER will return the display to the Holiday entry point.

Example:

Set Holiday 03 to be April 6.

```
HOLIDAY 01 04/04
```

Press the enter key to select Holiday 3.

| Enter | HOLIDAY 02 04/04 |
| Enter | HOLIDAY 03 04/04 |

Press the MONTH button to set the month.

| Hour / Month | HOLIDAY 03 04/04 |

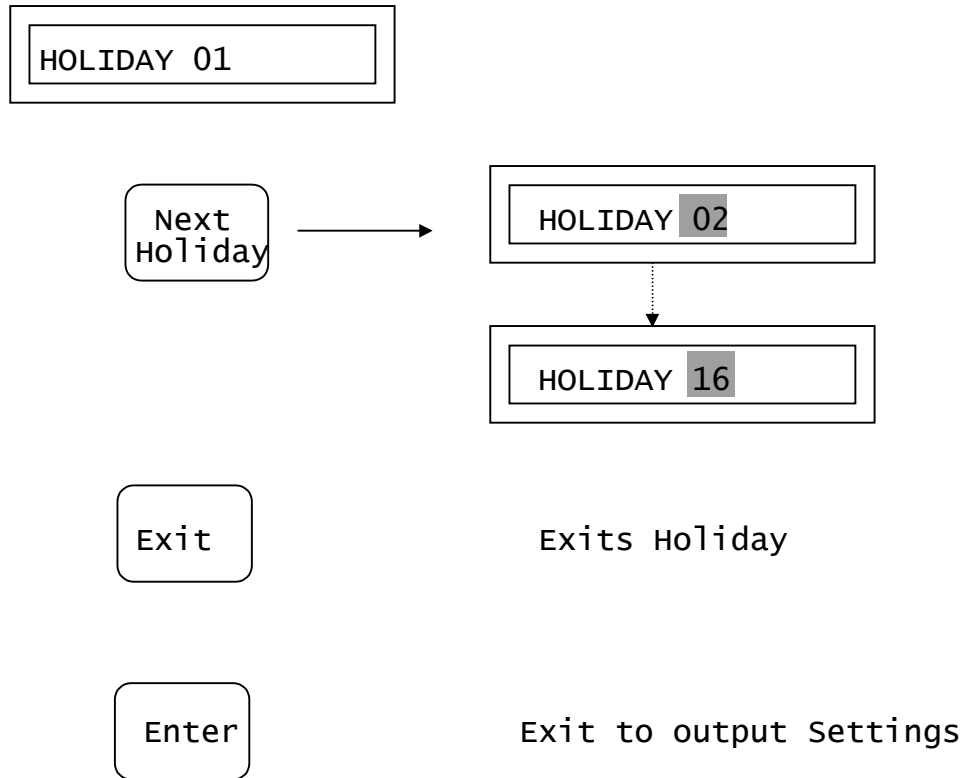Press the DAY button to set the day.

| Minute / Day | HOLIDAY 03 04/05 |
| Minute / Day | HOLIDAY 03 04/06 |

Press the ENTER button until you have gone through the rest of the Holiday choices to move to the next function.

```
Enter
```

Purpose:

This function selects a Holiday for further output programming.

Action Diagram:

```
HOLIDAY 01
```

```
 Next        ────────▶      HOLIDAY 02
Holiday
                                 ⋮
                            HOLIDAY 16
```

```
 Exit                      Exits Holiday
```

```
Enter                      Exit to output Settings
```

Operation:

Press the NEXT HOLIDAY button to get to the next Holiday.

Press the ENTER button to exit to the output menu.

Press the EXIT button to exit the Holiday.

Example:

Select holiday 3 for further output programming.

```
HOLIDAY 01
```

Press the NEXT HOLIDAY button to change the holiday.

```
  Next
Holiday
```

```
HOLIDAY 02
```
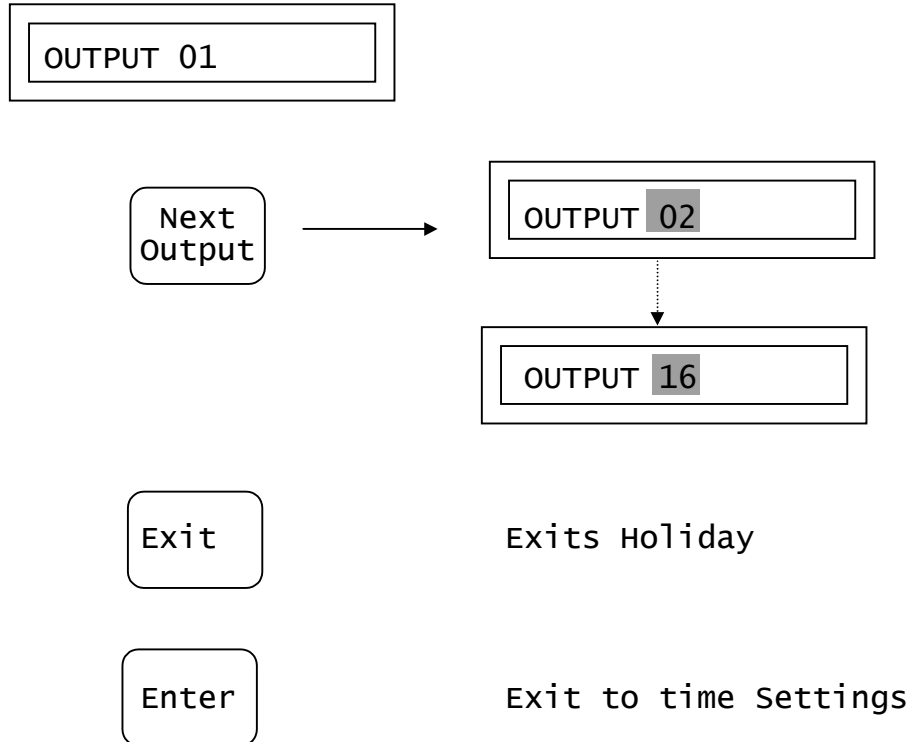
```
  Next
Holiday
```

```
HOLIDAY 03
```

Press the ENTER button when finished to move to the next function.

```
Enter
```

Purpose:

This function selects an output for the chosen Holiday for further programming.

Action Diagram:

```
OUTPUT 01
```

```
 Next          OUTPUT 02
Output

               OUTPUT 16
```

```
Exit                 Exits Holiday
```

```
Enter                Exit to time Settings
```

Operation:

Press the NEXT OUTPUT button to move to the next output.

Press the NEXT HOLIDAY button to select next holiday.

Press the ENTER button to exit to the time Settings.

Press the EXIT button to exit the Holiday setup.

Example:

Select output 4.

```
OUTPUT 01
```

```
 Next
Output
```
```
OUTPUT 02
```

```
 Next
Output
```
```
OUTPUT 03
```

```
 Next
Output
```
```
OUTPUT 04
```

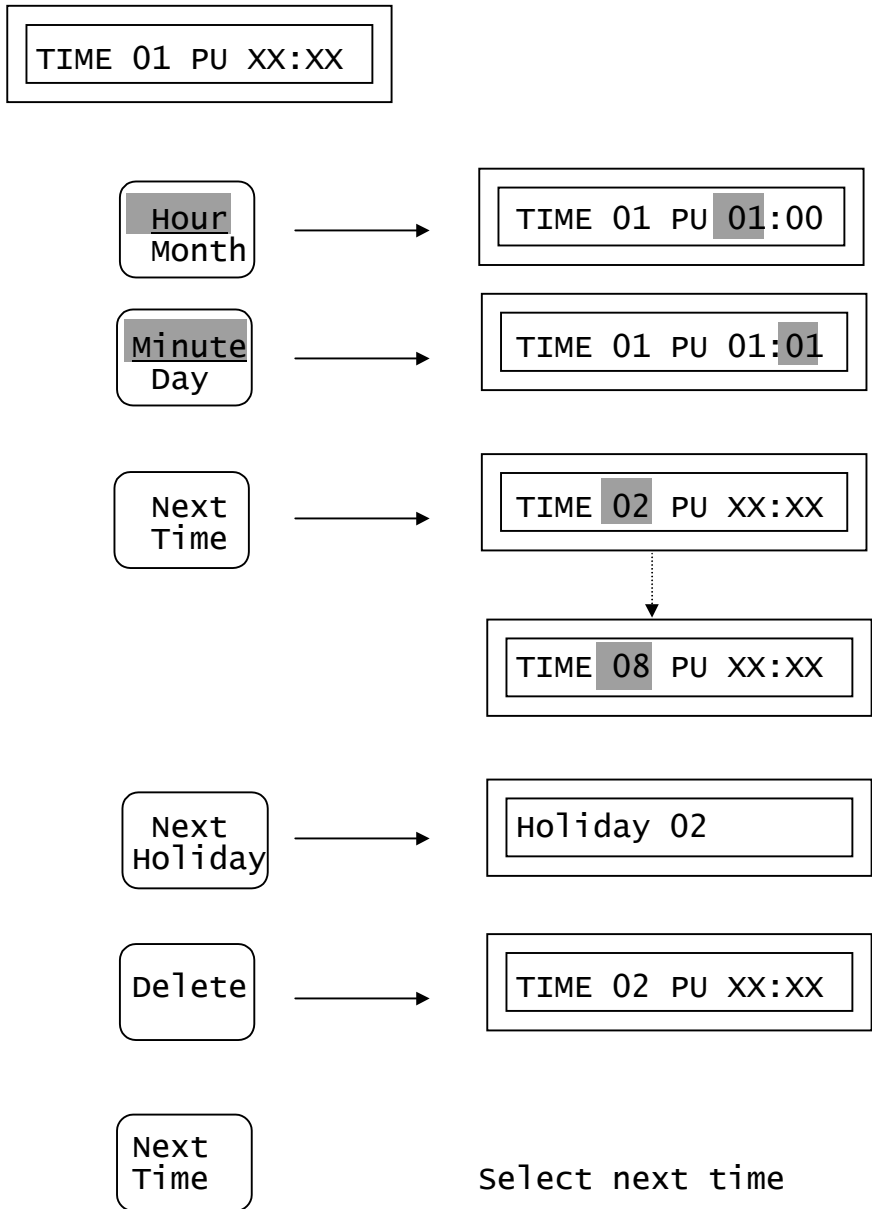Press the enter button when finished to move to the next function.

```
Enter
```

Purpose:

If an output type is pulse these steps are used. There are eight assignments available.

NOTE: The user can use the PU and ON/OFF buttons to recall the current mode.

Action Diagram:

```
TIME 01 PU XX:XX
```

| Hour
Month | ⟶ | TIME 01 PU 01:00 |

| Minute
Day | ⟶ | TIME 01 PU 01:01 |

| Next
Time | ⟶ | TIME 02 PU XX:XX |

```
TIME 08 PU XX:XX
```

| Next
Holiday | ⟶ | Holiday 02 |

| Delete | ⟶ | TIME 02 PU XX:XX |

| Next
Time | Select next time |

Operation:

Press the HOUR button to increase the time by one hour.
Hour is set using military time (0-23).
Note: Pressing the hour key after 23 causes the following options to appear in the following order:

- RISE   - Sunrise
- SET   - Sunset
- RISE+ - After sunrise
- SET-   - Before sunset

Selecting RISE causes the switch action to occur at computed sunrise. Selecting RISE+ causes the action to occur at an programmed time after computed sunrise. Selecting SET causes the switch action to occur at computed sunset. Selecting SET- causes the switch action to occur at a programmed time before computed sunset.

To set the sunrise and sunset offset see pages 33-37.

Press the MINUTE button to increase the time by one minute.

Press the NEXT TIME button to move to the next pulse time slot.

Press the NEXT HOLIDAY button to select the next Holiday.

Press the NEXT TIME button to select the next time.

Press the DELETE key to remove a time.

Example:

Set the 3rd time slot for 2:03.

```
TIME? 01 PU XX:XX
```

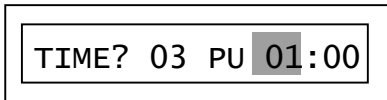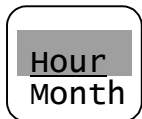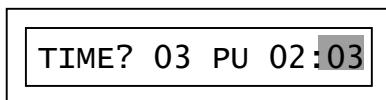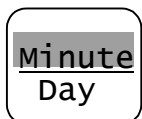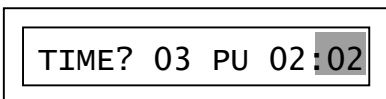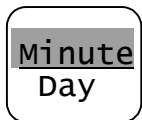Press the NEXT TIME button to select the time slot.

```
 Next
 Time
```
```
TIME? 02 PU XX:XX
```

```
 _____
|        |
|  Next  |          ┌─────────────────────────┐
|  Time  |          │ TIME? ▓03▓ PU XX:XX      │
|_____|          └─────────────────────────┘
```

```
┌─────────────────────────┐
│ TIME? 03 PU XX:XX        │
└─────────────────────────┘
```

Press the HOUR button to set the hour.

```
 _____
|        |          ┌─────────────────────────┐
| ▓Hour▓ |          │ TIME? 03 PU ▓01▓:00      │
|  Month |          └─────────────────────────┘
|_____|

 _____
|        |          ┌─────────────────────────┐
| ▓Hour▓ |          │ TIME? 03 PU ▓02▓:00      │
|  Month |          └─────────────────────────┘
|_____|
```

Press the MINUTE button to set the minute.

```
 _____
|        |          ┌─────────────────────────┐
|▓Minute▓|          │ TIME? 03 PU 02:▓01▓      │
|  Day   |          └─────────────────────────┘
|_____|

 _____
|        |          ┌─────────────────────────┐
|▓Minute▓|          │ TIME? 03 PU 02:▓02▓      │
|  Day   |          └─────────────────────────┘
|_____|

 _____
|        |          ┌─────────────────────────┐
|▓Minute▓|          │ TIME? 03 PU 02:▓03▓      │
|  Day   |          └─────────────────────────┘
|_____|
```

Press the NEXT TIME button when finished to select the next time slot to set.

```
 _____
|        |
|  Next  |
|  Time  |
|_____|
```
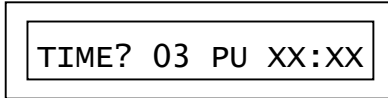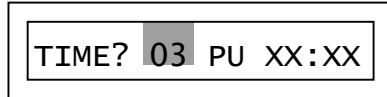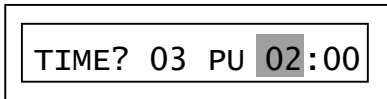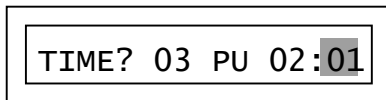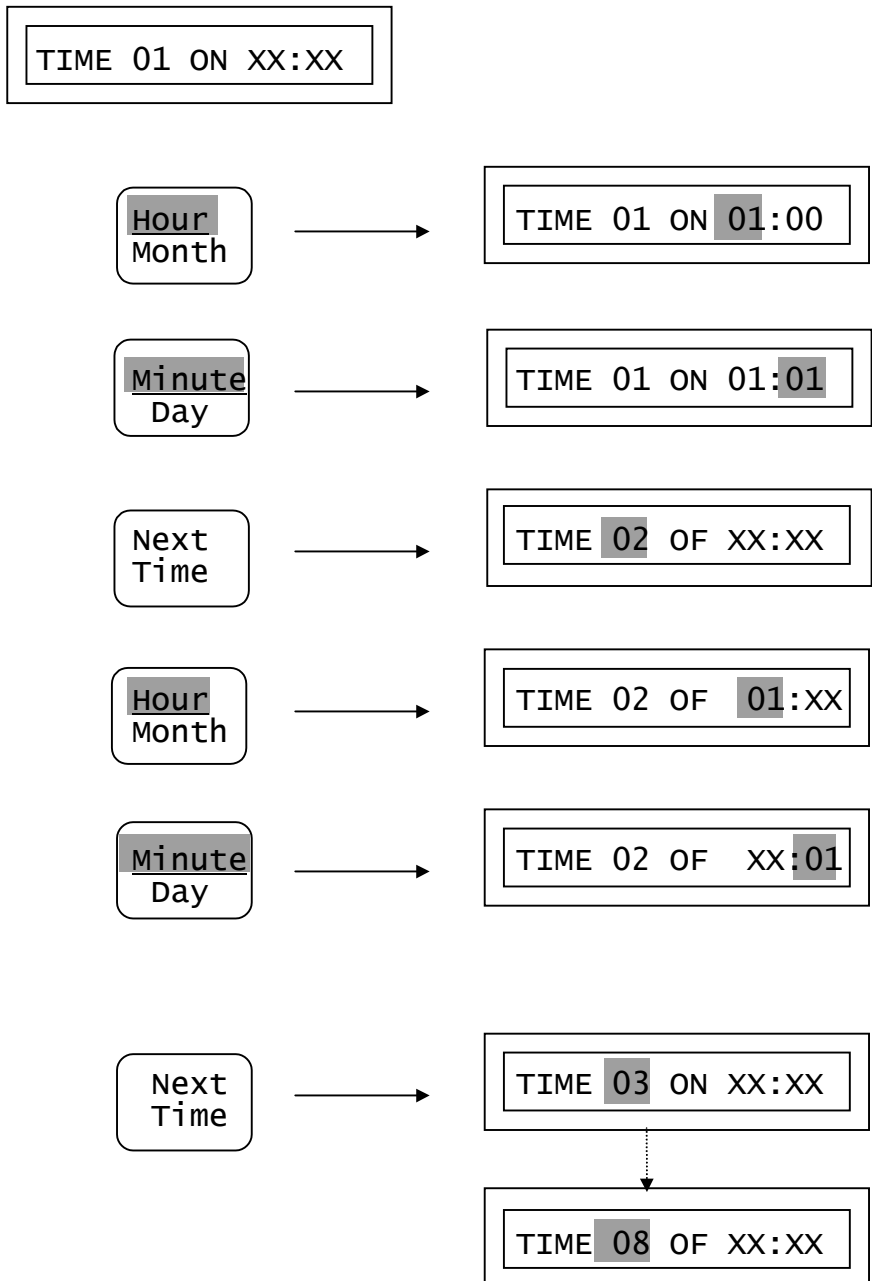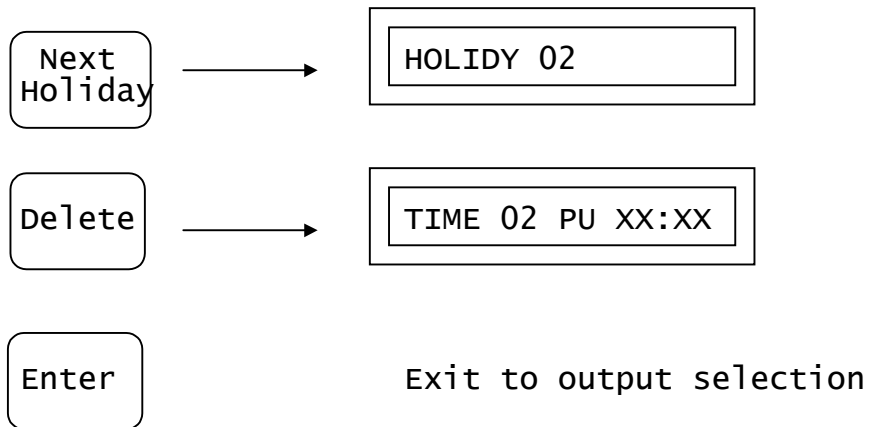
Purpose:

These steps are used to turn on and off a maintain type output. There are four pairs of on/off assignments available.

NOTE: The user can use the PU and ON/OFF buttons to recall the current mode.

Action Diagram:

```
TIME 01 ON XX:XX
```

Hour Month	`TIME 01 ON 01:00`
Minute Day	`TIME 01 ON 01:01`
Next Time	`TIME 02 OF XX:XX`
Hour Month	`TIME 02 OF 01:XX`
Minute Day	`TIME 02 OF  XX:01`
Next Time	`TIME 03 ON XX:XX`
	`TIME 08 OF XX:XX`

```
┌─────────┐            ┌────────────────────────┐
│  Next   │   ─────▶   │  HOLIDY 02             │
│ Holiday │            └────────────────────────┘
└─────────┘


┌─────────┐            ┌────────────────────────┐
│ Delete  │   ─────▶   │  TIME 02 PU XX:XX      │
└─────────┘            └────────────────────────┘


┌─────────┐
│ Enter   │               Exit to output selection
└─────────┘
```

Operation:

Press the HOUR button to increase the time by one hour.

Hour is set using military time (0-23).
Note: Pressing the hour key after 23 causes the following options to appear in the following order:
- RISE   - Sunrise
- SET   - Sunset
- RISE+ - After
- SET-   - Before sunset

Selecting RISE causes the switch action to occur at computed sunrise. Selecting RISE+ causes the action to occur at an programmed time after computed sunrise. Selecting SET causes the switch action to occur at computed sunset. Selecting SET- causes the switch action to occur at a programmed time before computed sunset.

To set the sunrise and sunset offset see pages 33-37.

Press the MINUTE button to increase the time by one minute.

Press the NEXT TIME button to select the next time slot.

Press NEXT OUTPUT to get to select the next output.

Press the NEXT HOLIDAY button to get to the next Holiday.

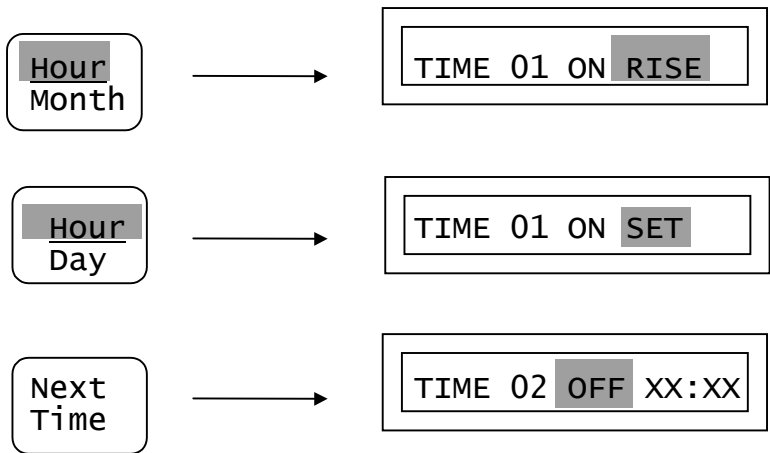Press the ENTER button to get to the next output.

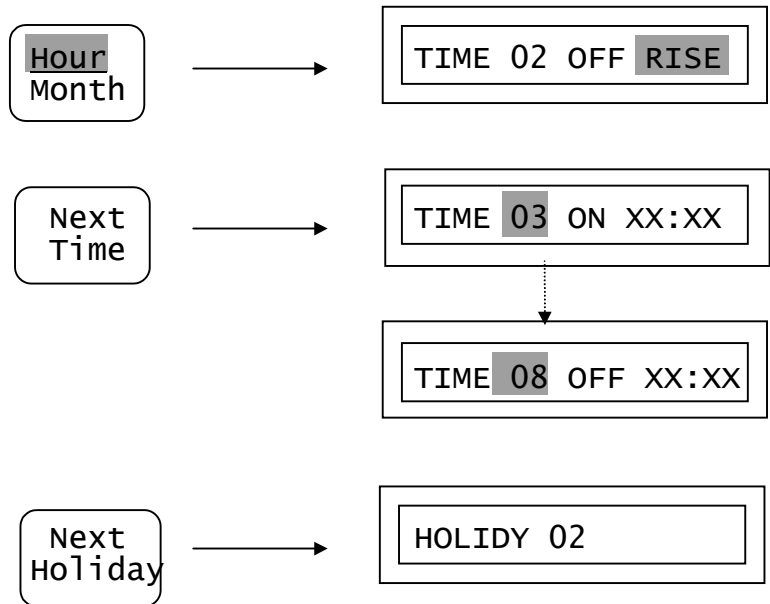Press the DELETE button to remove and output time.

Example:

Set output 1 to turn ON at sunset and OFF at sunrise using time slots 1 and 2.

```
TIME 01 ON XX:XX
```

Press the hour button until 23:00 is displayed.

| Hour / Month | → | TIME 01 ON RISE |

| Hour / Day | → | TIME 01 ON SET |

| Next / Time | → | TIME 02 OFF XX:XX |

Press the hour button until 23:00 is displayed

| Hour / Month | → | TIME 02 OFF RISE |

| Next / Time | → | TIME 03 ON XX:XX |

TIME 08 OFF XX:XX

| Next / Holiday | → | HOLIDY 02 |

```
┌──────────┐                  ┌──────────────────────────┐
│ Delete   │  ──────────▶     │ │ TIME 02 PU XX:XX │      │
└──────────┘                  └──────────────────────────┘
```

Press the enter button when finished to move to the next output for the current holiday.

```
┌──────────┐
│ Enter    │
└──────────┘
```

NOTES