

ET2000 PROGRAMMING GUIDE



CALSENSE

CALSENSE®

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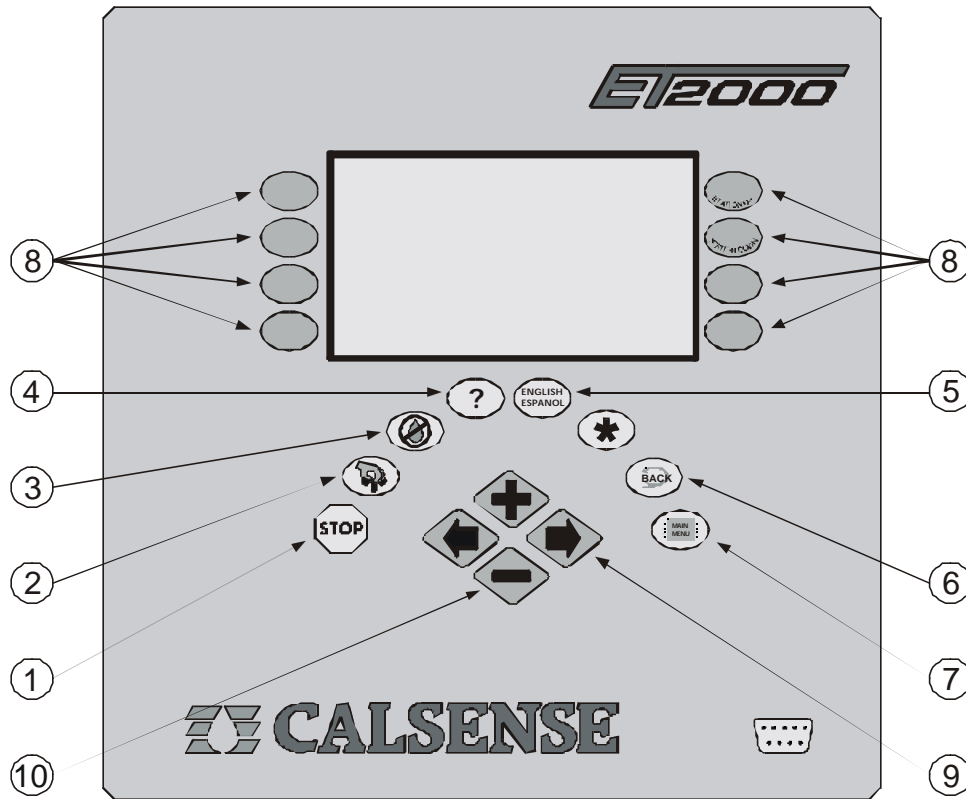
Table of Contents

| | |
|--|----|
| 1. ET2000 Key Pad Description | 4 |
| 2. ET2000 Controller Screen Map | 5 |
| 3. What Can Be Programmed At Each Screen | 6 |
| 4. Using This Guide With The ET2000 Controller | 7 |
| 5. Start Times & Water Days | 8 |
| Finish Times | 8 |
| 6. Station Programming | 9 |
| Station Settings | 9 |
| Cycle and Soak Examples | 9 |
| Test a Station at the Station Programming Screen | 9 |
| Set No Water Days at the Station Programming Screen | 9 |
| 7. Station-to-Station Copy | 10 |
| Making a Station Current | 10 |
| Copy a Station to Another Station | 10 |
| Copy a Station to All Stations on a Program, or All Stations on the Controller | 10 |
| 8. Flow Meter, Master Valve & Pump Setup | 10 |
| Estimated Water Use | 10 |
| Flow Meter Setup | 11 |
| Flow Meter Settings | 12 |
| Master Valve | 14 |
| Pump Output | 14 |
| 9. Manual Key | 15 |
| Manual Water | 15 |
| Test | 15 |
| Master Valve | 16 |
| Manual Special Sequence | 16 |
| Scheduled Manual Special Sequence | 17 |
| 10. No Water Key | 17 |
| Turn a Controller Off | 17 |
| Set No Water Days for a Program or All Stations | 17 |
| Set No Water Days for Individual Stations | 18 |
| 11. Help Key | 18 |
| 12. English / Spanish Key | 18 |
| 13. Stop Key | 18 |
| 14. Setup | 18 |
| Date & Time | 18 |
| Stations In Use | 19 |
| Password | 19 |
| Communications | 19 |

Table of Contents

| | |
|-------------------------------------|----|
| 15. Reports | 20 |
| This Month / Last Month | 20 |
| 24 Month History | 20 |
| Irrigation Details | 21 |
| Station Order | 21 |
| Diagnostics | 21 |
| Log Lines | 22 |
| ET & Rain Tables | 22 |
| 16. Controller Status | 23 |
| Status Screen | 23 |
| Station Alerts | 23 |
| 17. Weather Setup | 23 |
| Wind Gage Setup | 24 |
| Rain Switch Setup | 24 |
| Moisture Sensor Setup | 25 |
| 18. Lights | 26 |
| Programming a Lights Schedule | 26 |
| Testing a Lights Circuit | 26 |
| 19. Radio Remote | 26 |

1. ET2000 Key Pad Description



HOT KEYS

HOT keys are action keys. They are used to perform common controller functions now. The following is a list of HOT keys and a description of each key function.

- ① **STOP**
The STOP key will stop any currently running Scheduled Watering Cycle, Manual Cycle, Test Cycle, Manual Special Sequence or Master Valve override.
- ② **MANUAL**
The MANUAL key will perform Manual Water, Test, Master Valve Override and Manual Special Sequence.
- ③ **NO WATER**
The NO WATER key will turn the controller Off and set No Water Days.
- ④ **?**
The ? key is used to access the controller Help screens.
- ⑤ **ENGLISH / ESPAÑOL**
The ENGLISH / ESPAÑOL key allows you to toggle the displayed text between English and Spanish.
- ⑥ **BACK**
The BACK key will go back to the previous screen.
- ⑦ **MAIN MENU**
The MAIN MENU key is used to access the different program features of the controller.

MENU KEYS

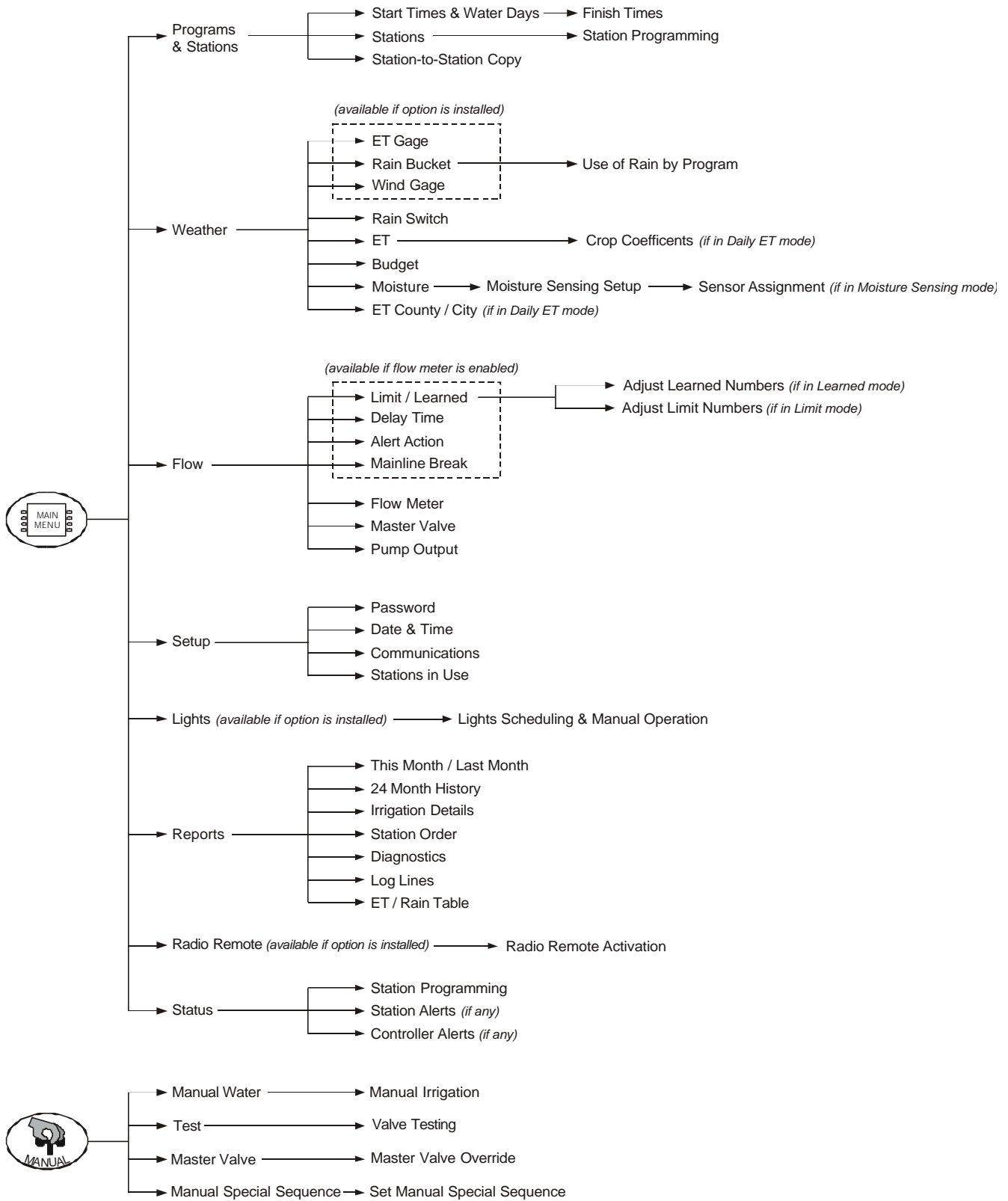
- ⑧ MENU keys select the different features or commands in the different screens and are adjacent to the left and right side of the controller's display screen. The text in the screen will point towards the MENU key that needs to be pressed.

OTHER KEYS

- ⑨ **LEFT / RIGHT ARROW KEYS**
The LEFT / RIGHT ARROW keys move the highlighted cursor around the different screens when setting up or editing the controller's features and options.
- ⑩ **PLUS / MINUS KEYS**
The PLUS / MINUS keys increase or decrease values or answer Yes or No questions in the different screens.

2. ET2000 Controller Screen Map

The Screen Map below shows the series of keys to be pressed to access the various screens in the ET2000 Controller. The chart on the following page explains what can be programmed at each of the screens.



3. What Can Be Programmed At Each Screen

| SCREEN | | SETTINGS | | SCREEN | | SETTINGS | |
|---------------------|--|---|--|---|--|--|---------------|
| PROGRAMS & STATIONS | Programs & Stations | Set use of 12 month schedule | | Pump Output | Select pump output type Select use of pump (by program) | | FLOW |
| | Start Times & Water Days | Set program start time Select program description (optional) Set number of water days in schedule Set water days Set program hold-over time (optional) If 12 month schedule is enabled : Set all the above for each month of the year | | Limit / Learned | Select to use limit mode or learned mode Set all learned flow rates (if in learned mode) Set all high & low limits (if in limit mode) Adjust learned flow rates (if in learned mode) Adjust high & low limits (if in limit mode) | | |
| | | Delay Time | Set delay time Set trip % | | | | |
| | Finish Times | Automatically calculates finish times for all programs | | Alert Actions | Set high flow alert actions Set low flow alert actions | | |
| | Station Programming | If not in Daily ET mode : Set station program assignment Set total minutes Set minutes per cycle Set soak-in time Set no water days Test station If in Daily ET mode : Set station program assignment Set % of ET Set minutes per cycle Set soak-in time Set no water days Set flow rate (gpm) Set area (sq. ft.) Test station | | Mainline Break | Set mainline break numbers Set system maximum flow capability | | SETUP |
| | | Copy one station to any other station Copy one station to all stations on a program Copy one station to all stations | | Password | Enter a password (if password has been set) | | |
| | | | | Date & Time | Set the date Set the time Select to use daylight savings | | |
| | | | | Communications | Set communications address | | |
| | | | | Station In Use | Select station usage | | |
| | | | | This Month / Last Month | View water usage and irrigation time | | |
| | | 24 Month History | View yearly water usage & budget totals | | | | |
| WEATHER | ET Gage | Select to use the ET gage Select to log ET pulses Reset full gage | | Irrigation Details | View or clear hold-over time View or clear ongoing irrigation | | REPORTS |
| | Rain Bucket | Set minimum rain Set maximum hourly rain Set maximum 24 hour rain Set maximum total rain | | Station Order | View the turn-on order of stations during scheduled irrigation | | |
| | | | | Diagnostics | View diagnostics | | |
| | Use of Rain by Program | Set use of rain (by program) | | Log Lines | View station log lines | | |
| | Wind Gage | Select to use the wind gage Set wind speed for pausing irrigation Set wind speed for resuming irrigation | | Use vs Budget | View actual & expected water usage compared to budget | | |
| | | Rain Switch | Select to use a rain switch device | | ET & Rain Tables | View or edit ET table View rain table | |
| | ET | Select to use daily ET (by program) Select to use ET averaging (by program) | | Lights | Set on and off times for lights Test lights | | MISCELLANEOUS |
| | Crop Coefficients | Select to use crop coefficients Set crop coefficients | | Radio Remote | Manually enable radio remote Set normal command code Set addressed command code Set receiver frequency | | |
| | | Budget | Select to use a budget Select budget option Calculate budget View monthly budget totals | | Station Alerts | View and/or clear station alerts | |
| | Moisture | Select to use moisture sensing (by program) Assign sensor slaving to valves | | Controller Alerts | View and/or clear controller alerts | | |
| ET County / City | Select county and city for ET View historical ET totals | | Status | View current status of controller View next scheduled irrigation Turn controller on (if it has been turned off) | | | |
| FLOW | Flow Meter | Select to use a flow meter Select to use list or enter own parameters Set flow meter size / Set own parameters Select as master controller | | Manual Irrigation | Manual water a station Manual water a Program Manual water all stations Set cycle and soak | | MANUAL |
| | | | | Valve Testing | Set test time Test a station Test a Program Test all stations | | |
| | Master Valve | Select type of master valve | | No Water | Turn controller off Set no water days View or edit no water day summary | | OFF |

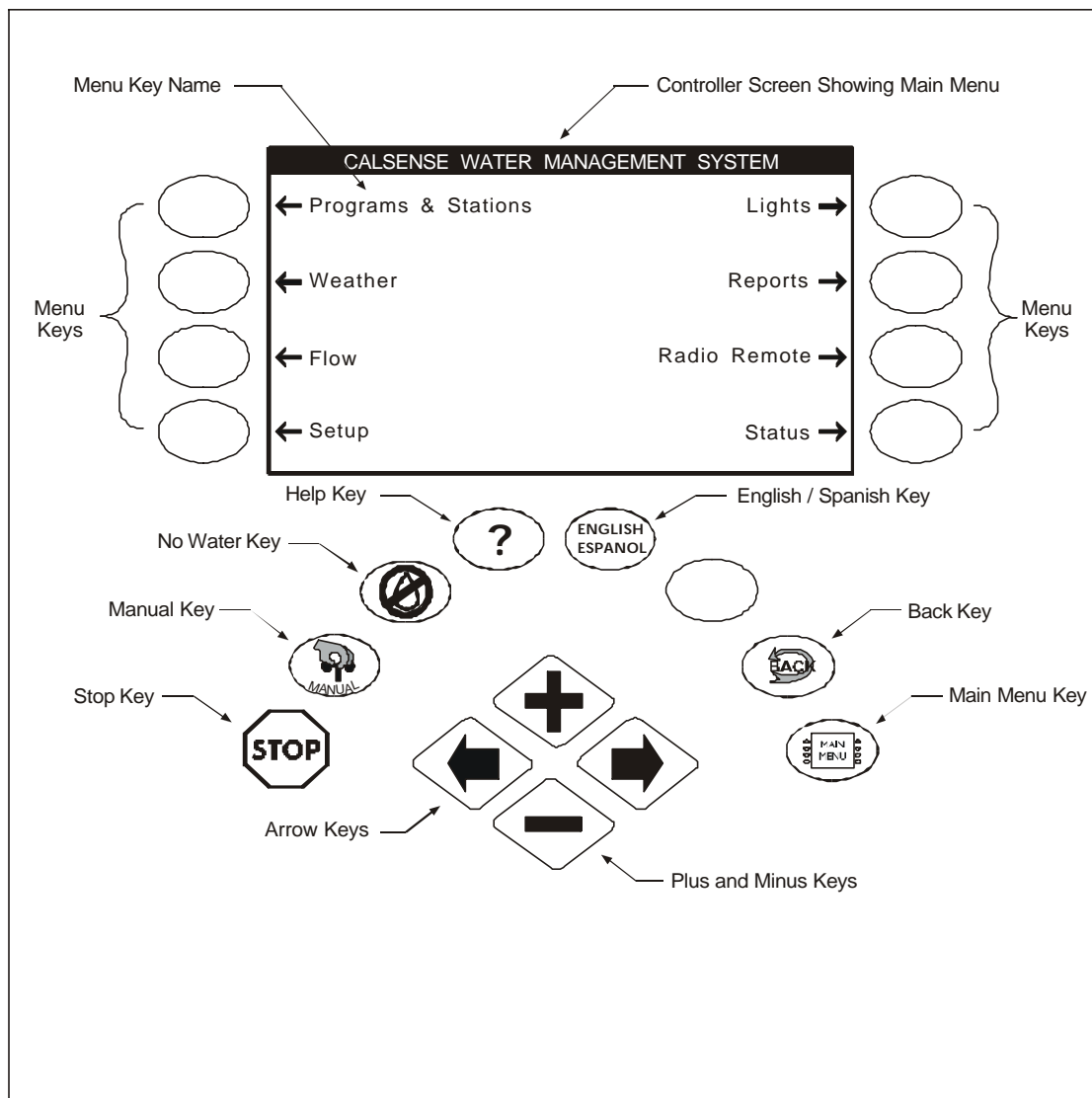
4. Using This Guide With The ET2000 Controller

This guide will explain the operation and programming of the ET2000 Controller (*for programming the more advanced features of the ET2000, see our ET Based Water Management guide*). The following describes the conventions used throughout this guide. When instructed to press a key, the name of the key will be **CAPITALIZED AND BOLD**. The illustration below shows the name and location of the keys used for operating and programming the ET2000 Controller.

The eight keys located on either side of the controller's screen are Menu Keys, a Menu Key's name will be the text on the screen next to the arrow, this text will change with each screen. The arrow will point to the Menu Key that is to be pressed, the name of the key will be **CAPITALIZED AND BOLD**.

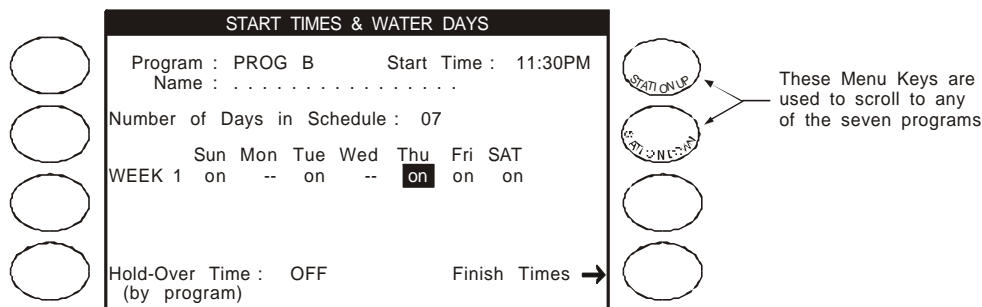
There are seven Hot Keys (*see Key Pad Descriptions on page 6*), they are the **STOP** Key, **MANUAL** Key, **NO WATER** Key, **HELP** Key, **ENGLISH / SPANISH** Key, **BACK** Key and the **MAIN MENU** Key. The controller screen in the illustration below shows the Main Menu, which can be accessed at any time by pressing the **MAIN MENU** Key. The descriptions on the screen with the arrows, are pointing to the Menu Keys which are to be pressed to access the various parts of the controller's program (*see ET2000 Screen Map on page 5*). Most programming functions will begin from the Main Menu. As you navigate through the various screens you can always return to a previous screen by pressing the **BACK** key.

The last four keys are the **PLUS** Key, **MINUS** Key and the two **ARROW** Keys. When a screen is accessed that has a setting which can be changed, there will be a highlighted cursor on the screen, you will use either **ARROW** Key to move the cursor to the setting you want to change. A change can only be made to a setting while it is highlighted by the cursor. Once a setting is highlighted, use the **PLUS** or **MINUS** Key to make the change to the setting. If the setting is a number, you can quickly scroll to the desired setting by pressing and holding down the **PLUS** or **MINUS** Key.



5. Start Times & Water Days

From the Main Menu Press the **PROGRAMS & STATIONS** Menu Key, then Press the **START TIMES & WATER DAYS** Menu Key, the Start Times & Water Days screen will appear (shown below).

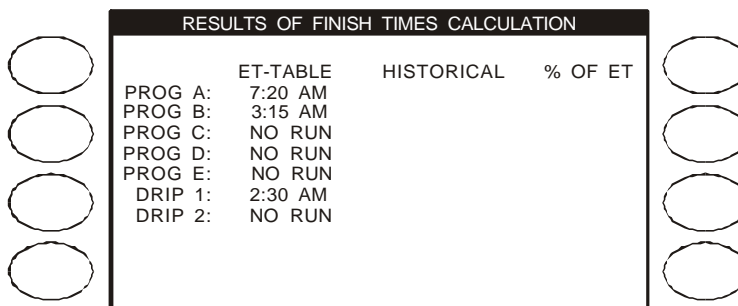


Press either **ARROW** Key to move the cursor to the setting you wish to change, Press the **PLUS** or **MINUS** Key to change the highlighted setting. When at the Start Times & Water Days screen the two top right Menu Keys have a special function, they are used to scroll to the different programs. The following explains each setting on the Start Times & Water Days screen.

- PROG:** Indicates the current program. Program B is being programmed in the example above. The ET2000 Controller has 7 programs, A, B, C, D, E, Drip 1, and Drip 2. Programs A, B, C, D, & E have overlap protection, no station is able to irrigate at the same time as another station. Programs Drip 1 and Drip 2 are designed to be able to irrigate simultaneously with other stations, in this way the user can irrigate up to 3 stations at the same time by entering identical start times on Programs Drip 1, Drip 2 and any one of the remaining 5 Programs.
- Start Time:** The start time for scheduled irrigation on the current program. Program B has a 11:30 PM Start Time in the example above.
- Name:** A program description can be selected which describes the type of plant material and irrigation heads assigned to that program (this setting is optional).
- Days in Schedule:** The ET2000 can be set with a 7-Day Schedule (shown in the example above), 14-Day Schedule, 21-Day Schedule or 28-Day Schedule.
- Water Days:** The days of the week in the schedule to irrigate. "on" represents a water day, "--" represents an off day.
- Hold-Over Time:** A time at which irrigation is forced to end, even if the scheduled irrigation cycle is not finished. This setting is to be used only if the controller is in Daily-ET mode (see the *ET Based Water Management Guide for more information*).
- Finish Times:** Calculates the end-time of each programs scheduled irrigation cycle.

Finish Times

Press the **FINISH TIMES** Menu Key, the Finish Times screen will appear (shown below). In the example below, the finish times for Programs A, B and DRIP 1 have been calculated. The NO RUN on Programs C, D, E and DRIP 2 indicates those programs are not being used. If ERROR was shown next to a program, it would indicate that the program has a run-time longer than 24 hours, and must be reprogrammed to correct the error.

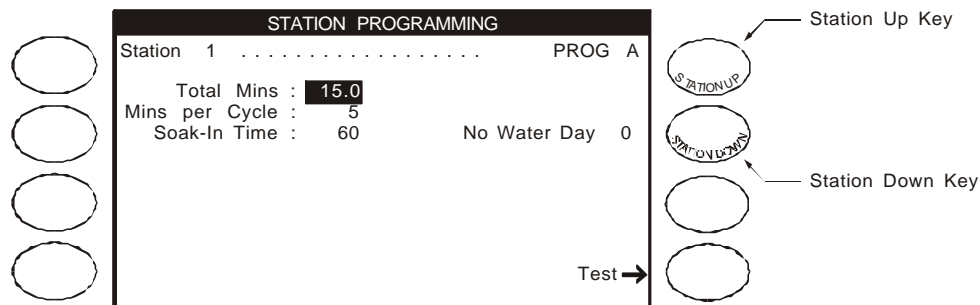


Note : The Historical and % of ET columns are used for information only if the controller is in Daily-ET mode.

6. Station Programming

Station Settings

From the Main Menu Press the **PROGRAMS & STATIONS** Menu Key, then Press the **STATIONS** Menu Key, the Station Programming screen will appear (shown below).



Press either **ARROW** Key to move the cursor to the setting you wish to change, Press the **PLUS** or **MINUS** Key to change the highlighted setting. When at the Station Programming screen, the two top right Menu Keys have a special function, they are used as the **STATION UP** and **STATION DOWN** Keys. The following explains each setting on the Start Times & Water Days screen.

- Station: Indicates the current station number (station 1 in the example above).
- PROG: Indicates the program that the current station is assigned to (program A in the example above). A station can be assigned to only one program at one time.
- Total Mins: The total amount of irrigation time that will be applied in each 24 hour watering period.
- Mins Per Cycle: The amount of irrigation time applied in each cycle of a 24 hour watering period.
- Soak-in Time: The amount of time (in minutes) between multiple cycle starts (if there are multiple cycle starts). If there are no multiple cycle starts, this setting will be ignored by the program.

Cycle and Soak Examples

In the example shown above, station 1 will irrigate for 5 minutes (the Mins per Cycle setting) then wait 60 minutes (the Soak-In Time setting), it will repeat the process two more times until the total irrigation applied is 15 minutes (the Total Mins setting), this feature is called Cycle and Soak. Each station's Cycle and Soak settings can be set independent of any other station's settings. The following shows some examples of Cycle and Soak settings:

- Total Mins : 10.0 In this example the station would have one 10 minute run time. If the Mins per Cycle is equal to the Total Mins there will be one run time equal to the Total Mins and the Soak-In Time is ignored.
- Mins per Cycle : 10
- Soak-In Time : 5

- Total Mins : 20.0 In the example the station will have two 10 minute run times with 180 minutes (or 3 hours) between each run time.
- Mins per Cycle : 10
- Soak-In Time : 180

- Total Mins : 10.0 In this example the station will have five 2 minute run times, with 15 minutes between each run time.
- Mins per Cycle : 2
- Soak-In Time : 15

Test a Station at the Station Programming Screen

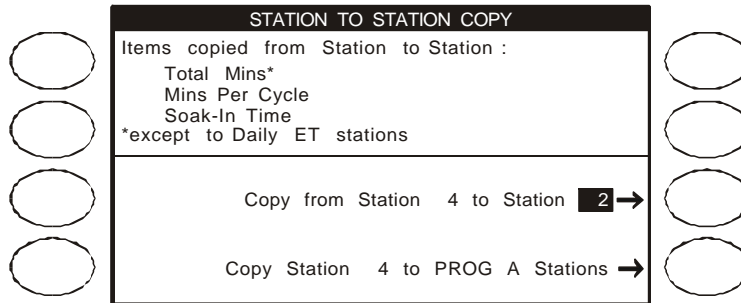
Press the **TEST** Menu Key to turn the current station on. The run time will be whatever has been set at the Valve Testing screen (see pages 15 & 16 for more information about Testing Valves). Press the **STOP** Key to end the test before the end of the test run time is reached.

Set No Water Days at the Station Programming Screen

To turn the current station off for 1 to 31 days, Press the **ARROW** Key to highlight the No Water Day setting. Press the **PLUS** or **MINUS** Key to set the number of No Water Days desired (see pages 17 & 18 for more information about No Water Days).

7. Station-to-Station Copy

From the Main Menu Press the **PROGRAMS & STATIONS** Menu Key, then the **STATION-TO-STATION COPY** Menu Key. The Station To Station Copy Screen will appear (shown below). From the Station To Station Copy screen you can copy the programming from one station to another station, copy the programming from one station to all stations on any program, or copy the programming from one station to all stations on the controller. The settings that are copied are the Total Mins setting (except in Daily-ET mode), the Mins Per Cycle setting and the Soak-In Time setting.



Making a Station Current

The station you want to copy from, must be made the current station before it can be copied. To make a station current, Press the **MAIN MENU** Key, Press the **PROGRAMS & STATIONS** Menu Key, then the **STATIONS** Menu Key. Press **STATION UP** or **STATION DOWN** until you reach the station you wish to copy from. In the example above, station 4 was made the current station before the Station To Station Copy screen was accessed.

Copy a Station to Another Station

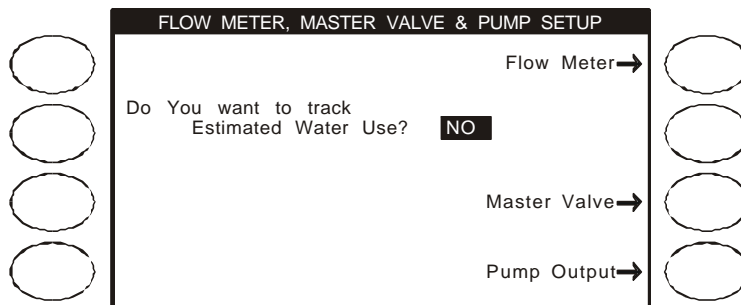
At the Station To Station Copy screen Press the **PLUS** or **MINUS** Key until the station is selected (station 2 was selected in the example above), Press the **COPY FROM STATION TO STATION** Menu Key, the station will be copied and you will be returned to the Programs & Stations screen. If you wish to copy the current station to another station, Press the **STATION-TO-STATION COPY** Menu Key to return to the Station To Station Copy screen and repeat the copy process described above.

Copy a Station to All Stations on a Program, or All Stations on the Controller

At the Station To Station Copy screen Press an **ARROW** Key to move the cursor, Press the **PLUS** or **MINUS** Key to select all stations or a program, Press the **COPY STATION TO PROG** Menu Key, the station will copied and you will be returned to the Programs & Stations screen.

8. Flow Meter, Master Valve & Pump Setup

From the Main Menu Press the **FLOW** Menu Key, the Flow Meter, Master Valve & Pump Setup screen will appear (shown below).



Estimated Water Use

The Estimated Water Use setting is set to YES only if there is no flow meter installed. If there is no flow meter installed, and you want to track estimated water usage, change the setting to YES, return to the Station Programming screen (see page 9) and set the flow rate for each station (the flow rate setting appears on the Station Programming screen only when the Estimated Water Use setting is set to YES).

Flow Meter Setup

From the Flow Meter, Master Valve & Pump Setup screen, Press the **FLOW METER** Menu Key, the Flow Meter screen will appear (it will appear as shown below only after the Flow Meter In Use setting is set to YES). Press the **ARROW** Key to move the cursor to the desired setting, the three settings are described below.

FLOW METER

Flow Meter is in use ? **YES**

Choose the Flow Meter from a list OR
set your own Parameters ?

CHOOSE FROM LIST

Meter 1

CHOICE: NOT USED

Is this a MASTER CONTROLLER ? NO

1. The first setting is the type of flow meter installed on the system. If the flow meter is a standard Calsense Flow Meter, leave the setting at CHOOSE FROM LIST (the default setting). If the flow meter is a Calsense FMBX, change the setting to ENTER OWN PARAMETERS (described later on this page).

2. The next setting is the model of flow meter installed (the default setting is NOT USED). The list of choices are:

| | |
|----------|--------------------------------|
| FM-1 | 1" plastic flow meter |
| FM-1B | 1" brass flow meter |
| FM-1.25B | 1 1/4" brass flow meter |
| FM-1.5 | 1 1/2" plastic flow meter |
| FM-2 | 2" plastic or brass flow meter |
| FM-3 | 3" plastic flow meter |

NOTE : Most Calsense Controllers are connected to only one flow meter, which is why the choice of flow meter model heading in the example screens show only Meter 1. If the controller has the -F option installed (use of multiple flow meters), there will be three headings, Meter 1, Meter 2 and Meter 3, and a choice of model for each flow meter installed.

3. The MASTER CONTROLLER setting will appear with NO selected (as shown above). In most cases this setting will not change. If a system has multiple controllers on a single mainline, and more than one controller has to irrigate at the same time, one controller is designated as the master controller (and is connected to a Calsense flow meter). All other controllers have flow monitoring disabled. The job of the master controller is to continuously monitor for mainline breaks, no other flow monitoring features will be enabled for the master controller.

If the flow meter installed on the system is a Calsense FMBX change the Choose Flow Meter setting to ENTER OWN PARAMETERS (the screen will appear as shown below).

FLOW METER

Flow Meter is in use ? **YES**

Choose the Flow Meter from a list OR
set your own Parameters ?

ENTER OWN PARAMETERS

Meter 1

K: 10.000

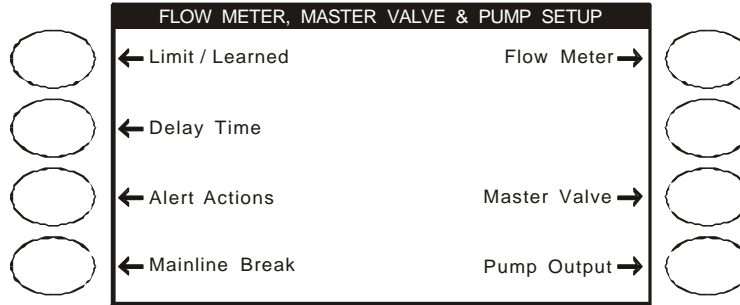
OFFSET: 0.200

Is this a MASTER CONTROLLER ? NO

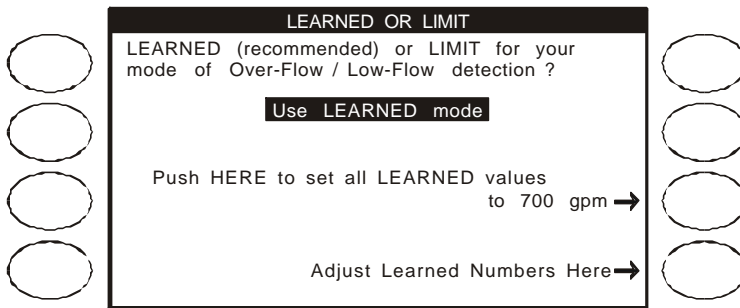
The two settings that must be set are the K value and the OFFSET value. Follow the instructions that are shipped with the Calsense FMBX Flow Meter, or call Calsense at 800-572-8608 for assistance.

Flow Meter Settings

After the flow meter has been enabled at the Flow Meter screen as described on the previous page, Press the **BACK** Key to return to the Flow Meter, Master Valve & Pump Setup screen (shown below), it will appear with four new Menu Key choices. These are the flow meter settings, and are available only after a flow meter has been enabled (note that the Estimated Water Use setting is no longer available as described on page 10).



Press the **LIMIT / LEARNED** Menu Key, the Learned or Limit screen will appear (as shown below). Using learned mode is recommended (the default setting).



In learned mode the controller will learn the flow rate of each station (approximately 6 to 10 scheduled irrigation cycles are required to learn a station's flow rate). The controller will then use this learned flow rate to alert the user when HIGH FLOWS and NO FLOWS occur.

Press the **ARROW** Key to move the cursor to the **SET ALL LEARNED VALUES** Menu Key, use the **PLUS** or **MINUS** Key to set the desired gpm, then Press **SET ALL LEARNED VALUES** the Menu Key to set the value. This setting is used to set or re-set all stations initial learned flow rates, it must be a value higher than any station's flow rate, if you do not know the station flow rates, leave the number at 700 gpm.

Press the **ARROW** Key to move the cursor to the **ADJUST LEARNED NUMBERS** Menu Key, Press the Menu Key to access the Learned GPM for Each Valve screen (shown below). At this screen you can view and adjust individual station learned flow rates.

| LEARNED GPM FOR EACH VALVE | | | | | | | | | | | |
|----------------------------|-----|-----|-----|----|----|----|-----|-----|-----|--|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | |
| 36 | 45 | 62 | 18 | 22 | 33 | 28 | 52 | 102 | 25 | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | |
| 46 | 78 | 52 | 28 | 32 | 41 | 83 | 700 | 700 | 700 | | |
| 21 | 22 | 23 | 24 | | | | | | | | |
| 700 | 700 | 700 | 700 | | | | | | | | |

Press the **ARROW** Key to move the cursor to the flow rate under the station that is to be adjusted, Press the **PLUS** or **MINUS** Key to adjust the station's flow rate.

Flow Meter Settings (con't)

From the Flow Meter, Master Valve & Pump Setup screen, Press the **DELAY TIME** Menu Key to access the Delay Time & Trip Percent screen (shown below).

| DELAY TIME & TRIP PERCENT | | |
|---------------------------|------------|--------|
| Delay Time is in seconds | | |
| | Delay Time | Trip % |
| PROG A | 120 | 15% |
| PROG B | 120 | 15% |
| PROG C | 120 | 15% |
| PROG D | 120 | 15% |
| PROG E | 120 | 15% |
| DRIP 1 | 120 | 15% |
| DRIP 2 | 120 | 15% |

The default settings for each program are a 120 second delay time and a 15% trip percentage set. Press an **ARROW** Key to move the cursor to the desired setting, Press the **PLUS** or **MINUS** Key to change the setting. Each program can be independently set with a delay time of 15 to 1,800 seconds and a trip percentage of 1 to 99 percent.

The Delay Time is the amount of time the controller waits after activating a valve before taking a flow reading. This allows for an accurate flow reading, by giving time for air to be flushed from piping and the previous valve to shut down. The only restriction is that the flow delay time should not be longer than a station's run time.

The Trip Percent is the amount of increase above the learned flow rate at which the controller will alert the user to a HIGH FLOW.

From the Flow Meter, Master Valve & Pump Setup screen, Press the **ALERT ACTIONS** Menu Key to access the Alert Actions screen (shown below).

| ALERT ACTIONS | | | | |
|---------------|------------|--------|------------|--------|
| | HIGH FLOW | | LOW FLOW | |
| PROG A: | Alert / No | Action | Alert / No | Action |
| PROG B: | Alert / No | Action | Alert / No | Action |
| PROG C: | Alert / No | Action | Alert / No | Action |
| PROG D: | Alert / No | Action | Alert / No | Action |
| PROG E: | Alert / No | Action | Alert / No | Action |
| DRIP 1: | Alert / No | Action | Alert / No | Action |
| DRIP 2: | Alert / No | Action | Alert / No | Action |

The Alert Actions setting defaults with Alert / No Action set for all programs. There are three possible settings :

1. Alert / No Action : An alert is displayed on the screen but the valve continues to irrigate.
2. Alert / Shut-Off : An alert is displayed on the screen and the valve is shut down.
3. No Alerts : No alert is displayed and the valve continues to irrigate.

From the Flow Meter, Master Valve & Pump Setup screen, Press the **MAINLINE BREAK** Menu Key to access the Mainline Break & Max Flow Numbers screen (shown below).

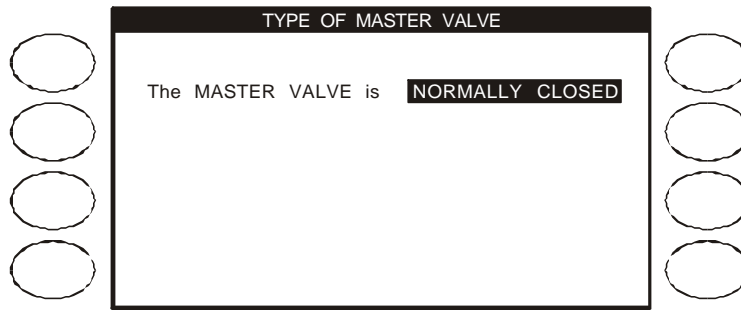
| MAINLINE BREAK & MAX FLOW NUMBERS | |
|---------------------------------------|---------|
| Mainline Break Numbers : | |
| DURING IRRIGATION is | 700 gpm |
| AT ALL OTHER TIMES is | 700 gpm |
| System Max Flow Capability is 999 gpm | |

The default mainline break number will be set at 700 gpm. The During Irrigation number is the mainline break number used while the controller is irrigating, the All Other Times number is the mainline break number used when the controller is not irrigating. A typical mainline break setting might be slightly more than twice the flow rate of the highest flowing valve on the system.

The Max Flow Capability setting is the maximum flow capacity of the system's water meter. If multiple valves are irrigating at the same time and this flow rate is exceeded, the controller will turn off a valve(s) until the flow rate is below the maximum capability setting. It will turn the valve back on and continue irrigating at a later time.

Master Valve

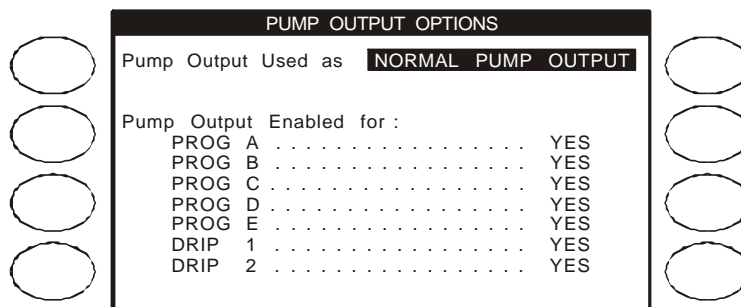
From the Flow Meter, Master Valve & Pump Setup screen, Press the **MASTER VALVE** Menu Key, the Type of Master Valve screen will appear (shown below).



The Master Valve default setting is for a normally closed master valve. There are 2 settings, **NORMALLY CLOSED**, if a normally closed master valve is installed and **NORMALLY OPEN**, if a normally open master valve is installed. Be sure to select the correct type of master valve installed, if it is incorrect the master valve will be closed whenever a station is irrigated and no water will flow.

Pump Output

From the Flow Meter, Master Valve & Pump Setup screen, Press the **PUMP OUTPUT** Menu Key, the Pump Output Options screen will appear (shown below).



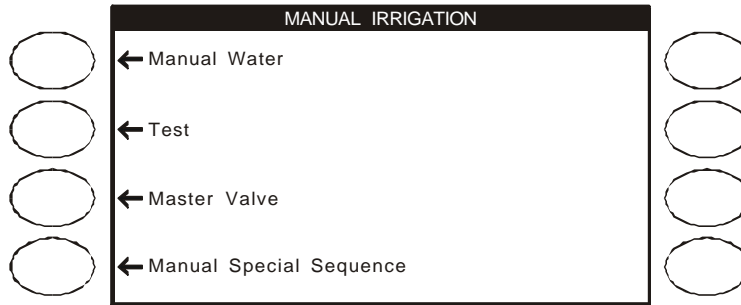
The Pump Output Used will be highlighted and the default setting will be set for **NORMAL PUMP OUTPUT**, to change the setting Press the **PLUS** or **MINUS** Key. There are three settings. **NORMAL PUMP OUTPUT**, if a pump is installed or if a pump is not installed and the output is not used for a special purpose. **STEADY ALERT LIGHT** or **BLINKING ALERT LIGHT**, if the pump output is to be connected to some type of signaling device such as a light to alert the user to a possible problem (e.g. **MAINLINE BREAK** alert)

Press an **ARROW** Key to move the cursor to the Pump Output Enabled setting, the default setting is set to **YES** on all programs, this means that the controller's pump output will be activated whenever a station on any program is activated. To change the setting Press the **PLUS** or **MINUS** Key for any program to set the Pump Output Enabled setting to **NO**. If the Pump Output Enabled setting is set to **NO** on a program, the pump output will not activate when a station on that program is activated.

9. Manual Key

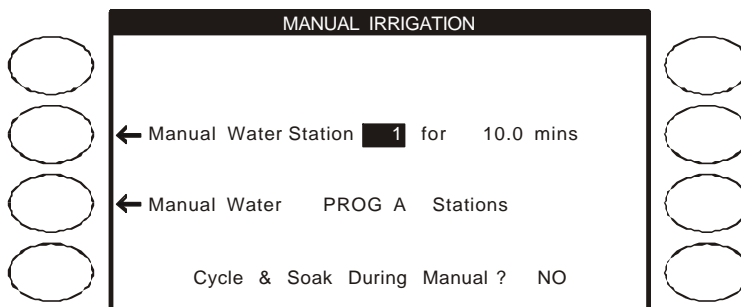


Press the **MANUAL** Key to access the Manual Irrigation screen (shown below). From this screen you can choose to manually irrigate stations , test stations, override the master valve and set a manual special sequence.



Manual Water

Press the **MANUAL WATER** Menu Key to access the Manual Irrigation screen (shown below).



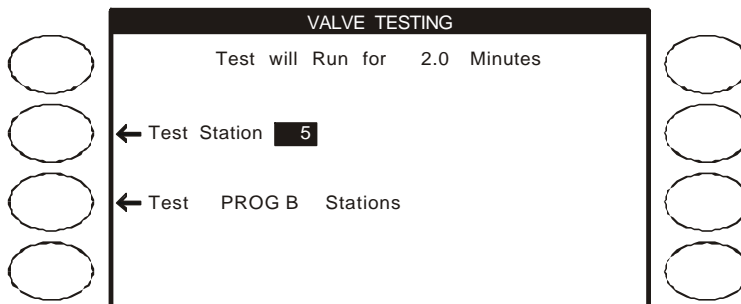
The Manual Water Station xx will be highlighted ,Press the **PLUS** or **MINUS** Key to select the desired station (station 1 has been selected in the example above). Press the **MANUAL WATER STATION xx** Menu Key to manually water the selected station. The manual run time will be the scheduled run time for that station (the run time is 10 minutes in the example above). To end the manual cycle before the run time, Press the **STOP** Key

To water all stations on a program or all stations on the controller, Press the **ARROW** Key to move the cursor to the Manual Water xxxx Stations setting, Press the **PLUS** or **MINUS** to select the desired Program or ALL stations (PROG A has been selected in the example above), then Press the **MANUAL WATER xxxx STATIONS** Menu Key to start manually watering the selected program or all stations on the controller. To end the manual cycle before all of the stations have run, Press the **STOP** Key.

The last setting at the Manual Irrigation screen is the Cycle and Soak During Manual setting, it's default setting is NO. If the selection is set to NO, the run time during manual operation will be the Total Mins setting (set at the Station Programming screen, see page 9). If the selection is set to YES, the controller will use the Total Mins, Mins Per Cycle and the Soak in Time settings (set at the Station Programming screen, see page 9) during manual operation.

Test

From the Manual Irrigation screen, Press the **TEST** Menu Key, the Valve Testing screen will appear (shown below).



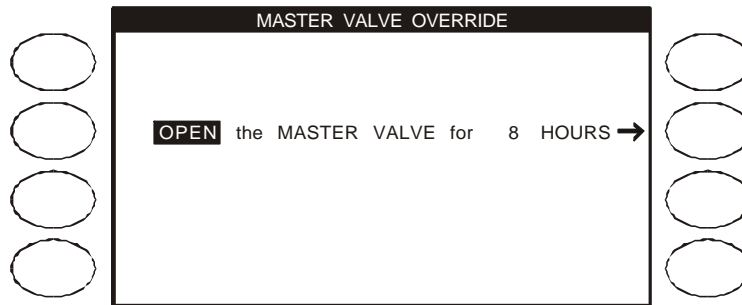
The Test Station xx setting will be highlighted, Press the **PLUS** or **MINUS** Key to select the desired station (station 5 has been selected in example above). To change the Test Run Time before starting the test, Press an **ARROW** Key to move the cursor to the Test Run Time setting, Press the **PLUS** or **MINUS** Key to set the amount of time, Press the **TEST STATION xx** Menu Key to start the station test. To end the station test before the test cycle is complete, Press the **STOP** Key.

Test (con't)

To run a test cycle of all the stations on a program or all the stations on the controller, Press an **ARROW** Key to move the cursor to the Test xxxx Stations setting. Press the **PLUS** or **MINUS** Key to select the desired Program or ALL stations (PROG B has been selected in the example on the previous page), Press the **TEST xxxx STATIONS** Menu Key to start the test cycle. To end the test cycle before all of the stations have completed the test, Press the **STOP** Key.

Master Valve

From the Manual Irrigation screen, Press the **MASTER VALVE** Menu Key, the Master Valve Override screen will appear (shown below). At this screen the master valve can be opened or closed, depending on the type of master valve installed on the system, for a selected amount of time between 1 hour and 24 hours. At the end of the selected time, the master valve override will end.

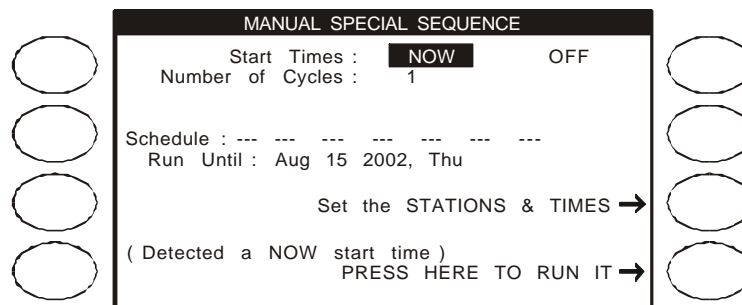


Press the **PLUS** or **MINUS** Key to select the OPEN or CLOSE setting. Press an **ARROW** Key to move the cursor to the HOURS setting, Press the **PLUS** or **MINUS** Key to set the desired number of hours of override. Press the **xxxx MASTER VALVE FOR x** Menu Key to start the master valve override. To end the override before the set end time, Press the **STOP** Key.

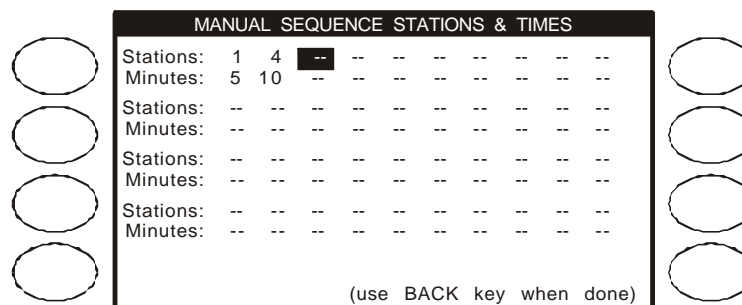
Note : Scheduled irrigation will not occur while the master valve override is activated.

Manual Special Sequence

From the Manual Irrigation screen, Press the **MANUAL SPECIAL SEQUENCE** Menu Key, the Manual Special Sequence screen will appear (shown below). If the Manual Special Sequence has never been programmed it will appear with the default settings shown below (the date will be the current date).



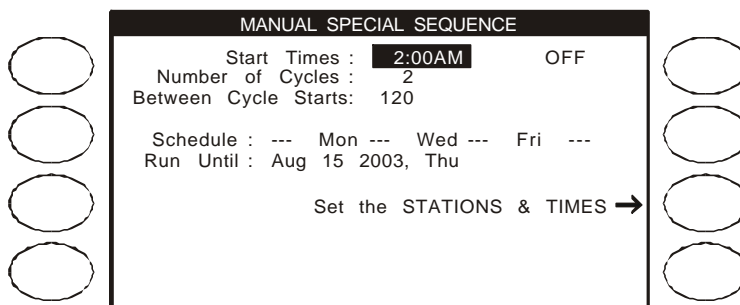
To manually start a sequence the Start Time setting will be set to NOW (as shown in the example above), Press the **SET STATIONS & TIMES** Menu Key, the Manual Sequence Stations & Times screen will appear (shown below).



Using the **PLUS** or **MINUS** Key and the **ARROW** Keys, set the desired stations and run times for manual operation. In the example above station 1 has been set with a run time of 5 minutes and station 4 has been set with a run time of 10 minutes. After all stations have been set, Press the **BACK** Key to return to the Manual Special Sequence screen, then Press the **PRESS TO RUN IT** Menu Key to start the manual sequence. To end the manual sequence before all stations have finished, Press the **STOP** Key.

Scheduled Manual Special Sequence

To set a scheduled manual special sequence, Press an **ARROW** Key to move the cursor to the first Start Times setting, Press the **PLUS** or **MINUS** Key to set a start time (2:00AM has been set in the example below), a second start time can be set if desired. Press an **ARROW** Key to move the cursor to the Number of Cycles setting, this setting determines how many times to run the sequence each day, use the **PLUS** or **MINUS** Key to change the setting. Press an **ARROW** Key to move the cursor to the Between Cycle Starts setting, this determines the amount of time (in minutes) between each cycle start, use the **PLUS** or **MINUS** Key to change the setting. Press an **ARROW** Key to move the cursor to the Schedule setting, use the **PLUS** Key to turn a water day on (Mon, Wed and Fri are scheduled water days in the example below) and the **MINUS** Key to turn a day off. Press an **ARROW** Key to move the cursor to the Run Until setting, this setting determines when the manual special sequence will end (Aug 15, 2003 in the example below), Press the **PLUS** Key to set the date. Press the SET STATIONS & TIMES Menu Key to set which stations to manually irrigate and set the run times of each of those stations (described on the previous page).

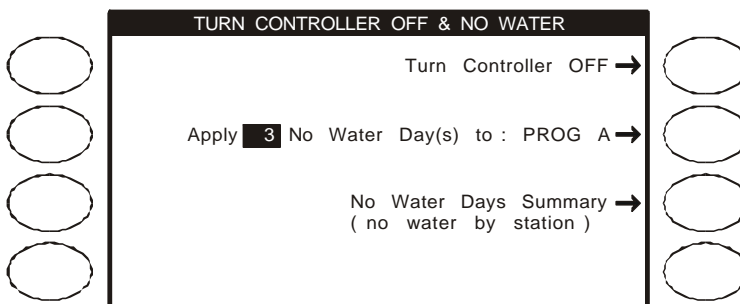


If scheduled irrigation is running when the manual special sequence is set to start, it will be temporarily halted until the manual special sequence is finished, then resume where it left off.

10. No Water Key



Press the **NO WATER** Key to access the Turn Controller Off & No Water screen (shown below), from this screen you can turn the controller Off, set No Water Days for individual stations, set No Water Days for all stations on the controller, or set No Water Days for all stations on any of the controller's seven programs. At the end of the No Water Days setting, the station(s) will start to irrigate according to their irrigation schedule. The No Water setting can be set from 1 to 31 days.



Turn a Controller Off

Press the **TURN CONTROLLER OFF** Menu Key. The controller will be turned off and will immediately return to the STATUS screen. To turn the controller back on, Press the **PUSH TO TURN ON** Menu Key located at the STATUS screen.

Set No Water Days for a Program or All Stations

Press the **ARROW** Key to move the highlight to the number of No Water Days setting. Press the **PLUS** or **MINUS** Key to set the desired number of No Water Days. Press the **ARROW** Key to highlight which program to set the No Water Days for. Press the **PLUS** or **MINUS** Key to select the desired program (or all stations). Press the **APPLY NO WATER DAYS** Menu Key. In the example above, all stations on Program B will be turned off for 3 days. To turn Program B back on at anytime, return to the TURN CONTROLLER OFF & NO WATER screen and set the No Water Days to 0, and Press the **APPLY NO WATER DAYS** Menu Key.

Set No Water Days for Individual Stations

Press the **NO WATER DAYS SUMMARY** Menu Key to access the NO WATER DAYS SUMMARY screen (shown below).

| NO WATER DAYS SUMMARY | | | | | | | | | | |
|-----------------------|----|----|----|----|----|----|----|----|----|----|
| Station: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| NOW Days: | 0 | 6 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| Station: | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| NOW Days: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Station: | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| NOW Days: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Station: | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| NOW Days: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Press the **ARROW** Key to move the highlight to the desired station, Press the **PLUS** or **MINUS** key to set the number of No Water Days for the station. Repeat for any other stations to be set for No Water Days. In the example above station 2 has been turned off for 6 days and station 5 has been turned off for 3 days. To turn a station back on at anytime, return to the NO WATER DAYS SUMMARY screen and set the No Water Days to 0.

11. Help Key

Press the **HELP** Key to access one of the many ET2000 help screens. The help screen that appears will depend upon which screen you are viewing when you Press the **HELP** Key. For example, if you are viewing the Date & Time screen, and you Press the Help Key, you will access an explanation of how to set the date and time.

The help screen that appears will sometimes not only depend upon which screen you are viewing when you Press the Help Key, but also where the cursor is on the screen you are viewing. For example, if you are at the Station Programming screen and the cursor is highlighting the Total Mins setting, and you Press the **HELP** Key, you will access an explanation of the Total Mins setting.

After viewing a Help screen, Press the **BACK** Key to return to the screen you were at when you Pressed the Help Key.

12. English / Spanish Key

Press the **ENGLISH / ESPAÑOL** Key to toggle between displaying text in English or in Spanish. When in Spanish mode all Help screens will also be in Spanish.

13. Stop Key

Press the **STOP** Key to halt any on-going irrigation. The Stop Key will halt scheduled irrigation, manual irrigation and valve testing.

14. Setup

Date & Time

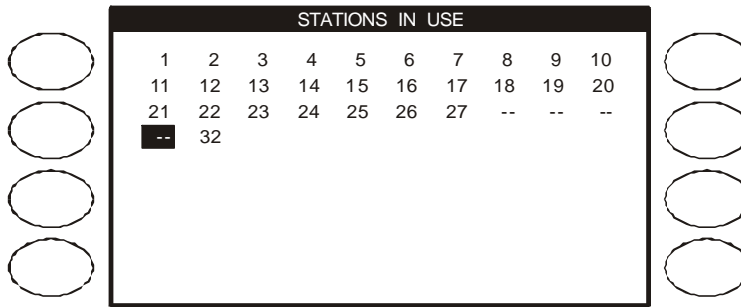
From the Main Menu, Press the **SETUP** Menu Key, the General Setup screen will appear, Press the **DATE & TIME** Menu Key, the Date & Time screen will appear (shown below).

| DATE & TIME | |
|-------------------------|----------------------------|
| Current Date & Time : | Aug 19 2002, Mon 4:29:48AM |
| Date & Time to Set : | Aug 19 2002, Mon 4:29:48AM |
| | Push here to SET IT → |
| Use Day Light Savings ? | YES |

Press an **ARROW** Key to move the cursor to the date & time setting to be changed (month, day, year, hour, minute, seconds), Press the **PLUS** or **MINUS** Key to make the change, Press the **PUSH HERE TO SET** Menu Key. **IMPORTANT** : The changes do not take effect until the **PUSH HERE TO SET** Menu Key is pressed. If you wish to have the controller automatically change time for Daylight Savings, make sure the Use Day Light Savings setting is set to YES (the default setting).

Stations In Use

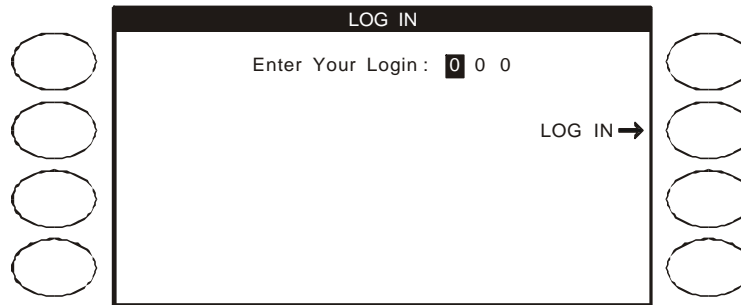
From the Main Menu Press the **SETUP** Menu Key, the General Setup screen will appear, Press the **STATIONS IN USE** Menu Key, the Stations In Use screen will appear (shown below). At this screen you can turn-off stations not in use, after a station is turned-off it will no longer be visible for programming at any other screen.



To turn-off a station, Press an **ARROW** Key to move the cursor to the desired station, Press the **PLUS** or **MINUS** Key to turn-off the station, two dashed lines will appear instead of the station number. In the example above, stations 28 thur 31 have been turned-off. To turn a station back on Press an **ARROW** Key to highlight the station then Press the **PLUS** of **MINUS** Key, the station number will re-appear.

Password

From the Main Menu Press the **SETUP** Menu Key, the General Setup screen will appear, Press the **PASSWORD** Menu Key, the Log In screen will appear (shown below). Using the Calsense Command Center program, a three character password can be sent to the controller, once a password has been sent, the controller cannot be programmed until the proper password has been entered at the Log In screen.

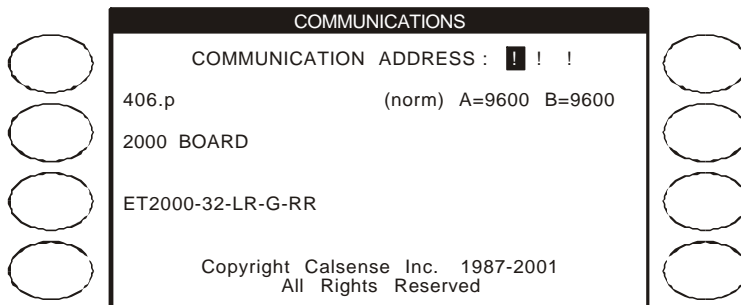


Enter the first character of the password by Pressing the **PLUS** or **MINUS** Key until the character appears, Press the **ARROW** Key to move the cursor to the next character, repeat the process described above until all three password characters appear, then Press the **LOG IN** Menu Key, a message will appear confirming that the log in was successful.

Communications

From the Main Menu Press the **SETUP** Menu Key, the General Setup screen will appear, Press the **COMMUNICATIONS** Menu Key, the Communications screen will appear (shown below). This screen has a dual purpose:

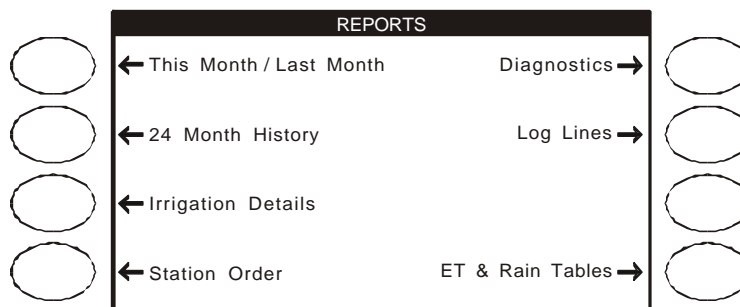
1. It display's information about the controller. This information includes ROM version, baud rate, board model, type of controller and any installed options.
2. If the controller has communications capabilities a three character communications address is set at this screen.



Press the **PLUS** or **MINUS** Key to set the first character, Press the **ARROW** Key to move the cursor to the next character, repeat the process described above until all three characters are set, nothing more needs to be done.

15. Reports

The Calsense ET2000 Controller is capable of storing and displaying a large quantity information pertaining to the operation of the controller. This information can be accessed from the Main Menu by Pressing the **REPORTS** Menu Key, the Reports screen will appear (shown below).



From the Reports screen you can access any of the stored information contained in the ET2000 Controller by Pressing any of the available Menu Keys (shown above). The following describes the information you can view at each of the report screens.

This Month / Last Month

| (gallons) | This Month | Last Month |
|-------------------------|------------|------------|
| Irrigated: | 23890.4 | 135291.8 |
| Test & Manual: | 825.8 | 1285.3 |
| Non Controller: | 1382.2 | 1883.3 |
| (total: 26098.4 | | 138460.4) |
| STATION 8 Irrigated: | 138.2 | 1898.0 |

This Month / Last Month (shown above) is a report of water usage. The report can be viewed in gallons, HCF (hundreds of cubic feet), or minutes by Pressing either the **HCF** Menu Key, the **GALLONS** Menu Key or the **SHOW TIME** Menu Key, the current view is shown in the upper left corner of the screen (gallons in the example above). The upper part of the screen shows controller usage totals, the lower part of the screen shows individual station usage totals, Press the **STATION UP** or **STATION DOWN** Menu Keys to view the desired station (station 8 is shown in the example above). The totals are listed in two columns, The Month column is the total water usage since the 1st day of the current month. The Last Month column is the total water usage for the entire previous month.

24 Month History

| ← Prior Year | USE | BUDGET | ET |
|--------------|-------|--------|------|
| Jan 2001 | 0 | 0 | 0.00 |
| Feb 2001 | 0 | 0 | 0.00 |
| Mar 2001 | 0 | 0 | 0.00 |
| Apr 2001 | 26380 | 25309 | 3.62 |
| May 2001 | 32283 | 31288 | 4.83 |
| Jun 2001 | 48282 | 49223 | 5.32 |
| Jul 2001 | 53929 | 51283 | 6.01 |
| Aug 2001 | 64833 | 64100 | 6.98 |
| Sep 2001 | 53222 | 50392 | 5.51 |
| Oct 2001 | 41892 | 40299 | 4.32 |
| Nov 2001 | 31223 | 32438 | 3.11 |
| Dec 2001 | 22983 | 21343 | 2.01 |

The 24 Month History (shown above) is another report of water usage. The report can show either the current 12 month period, or the previous 12 month period by Pressing the **PRIOR YEAR** Menu Key or the **THIS YEAR** Menu Key (the Menu Key shown will depend upon which screen is currently being viewed). The report is listed in three columns:

- USE : The amount of water used (gallons)
- BUDGET : The amount set in the budget (gallons)
- ET : The amount of ET for the month (inches)

Irrigation Details

| IRRIGATION DETAILS | | | |
|--------------------|----------------------|-----------------|------------|
| STN | HOLD-OVER | TO IRRIG | STATUS |
| 1 | 0.0 | 10.0 | Waiting |
| 2 | 0.0 | 8.5 | Irrigating |
| 3 | 8.3 | 5.0 | Soaking |
| 4 | 0.0 | 10.0 | Waiting |
| 5 | 0.0 | 10.0 | Waiting |
| 6 | 0.0 | 0.0 | |
| 7 | (station not in use) | | |
| 8 | (station not in use) | | |
| ← Clear Hold-Over | | Clear Station → | |

Irrigation Details (shown above) will report every station's current status. In the example above, stations 1 through 5 are currently in an irrigation cycle, station 6 is inactive and stations 7 and 8 are not being used (they have been turned off at the Station In Use screen). Station 2 is irrigating and has 8.5 minutes left to irrigate. Station 3 has completed an irrigation cycle and is in a soak-in cycle, it also has 8.3 minutes of hold-over time. Stations 1, 4 and 5 are waiting to start their first irrigation cycle.

You can use the Irrigation Detail screen to view the current status of any station, you can also clear a station from it's current irrigation cycle, test cycle or manual cycle, by Pressing the **PLUS** or **MINUS** Key until the desired station is highlighted, then Press the **CLEAR STATION** Menu Key, the station will be cleared and the next station will begin. You can also clear a station's hold-over time by Pressing the **PLUS** or **MINUS** Key until the desired station is highlighted, then Press the **CLEAR HOLD-OVER** Menu Key.

Station Order

| STATION ORDER | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|
| Turn-on order of Stations during scheduled irrigation (shown in order they turned on) | | | | | | | | | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | 2 | 1 | 3 | 4 |
| 5 | 6 | 7 | 11 | 10 | 9 | 12 | 8 | 2 | 1 |
| 3 | 4 | 5 | 6 | 7 | 11 | 10 | 9 | 12 | 8 |

The ET2000 does not necessarily irrigate in sequence, and sometimes it might be necessary to know the order in which the stations on the controller irrigated. You can view the order in which each station irrigated at the Station Order screen. Starting in the lower right corner of the screen and working back you will see the order from last station to irrigate to the first station to irrigate. In the example above the last station to irrigate was station 8 (lower right), the next to last station to irrigate was station 12 then 9, 10, 11, 7 etc. The first station to irrigate was station 2.

Diagnostics

| DIAGNOSTICS | | | |
|-------------|---------|----------------------------|--------------|
| 08/28 | 04:23PM | Sta 3 Time | 10.0 to 12.0 |
| 08/28 | 04:22PM | Sta 5 Time | 15.0 to 17.0 |
| 08/28 | 04:20PM | Sta 12 Time | 15.0 to 18.0 |
| 08/26 | 01:33PM | CHANGE : NO Water Days | |
| 08/26 | 11:18AM | Resumed - TEST OVER | |
| 08/26 | 11:18AM | STOP KEY PUSHED | |
| 08/26 | 11:01AM | Paused due to TEST | |
| 07/28 | 08:33AM | CHANGE : PROG A Water Days | |
| 07/28 | 08:30AM | CHANGE : PROG B Water Days | |
| 07/22 | 10:32PM | NO CURRENT for Stn 3 | |
| 07/22 | 10:11PM | NO CURRENT for Stn 12 | |
| 06/28 | 07:38AM | Program Restart | |
| 06/28 | 06:02AM | Power Fail | |

Diagnostics (shown above) keeps a record of all program changes made to the controller and all alerts generated by the controller. Press the **PLUS** or **MINUS** Key to scroll up or down to view all the data contained at the Diagnostics screen.

Log Lines

Log data (shown below) is a record of each station's irrigation history (one log line is one 24 hour period). The ET2000 Controller can store 30 log lines per station. The information that can be viewed at the Log Lines screen is the date & start time of an irrigation event, the station's program assignment, number of cycles (cycle & soak), programmed minutes, applied minutes, applied inches (if in daily-ET mode), measured flow rate, learned flow rate, manual & test minutes applied, hold-over time and any station alerts that occurred.

| STATION 04 LOG LINES | | | | | | |
|----------------------|-----|-----|----------|-------------|-----|--|
| Date & Time | PRG | CYC | PROG MIN | APPLIED MIN | IN | |
| 08/12 10:30PM | A | 2 | 25.8 | 25.8 | .11 | |
| 08/10 10:30PM | A | 2 | 21.3 | 21.3 | .07 | |
| 08/08 10:30PM | A | 2 | 22.6 | 22.6 | .09 | |
| 08/01 10:30PM | A | 2 | 20.9 | 20.9 | .05 | |
| 07/28 10:30PM | A | 1 | 12.6 | 12.6 | .02 | |
| 07/26 10:30PM | A | 1 | 14.8 | 4.5 | .03 | |
| 07/24 10:30PM | A | 2 | 26.3 | 26.3 | .13 | |
| 07/22 09:00PM | B | 2 | 24.2 | 24.2 | .10 | |

Page Right →

| STATION 04 LOG LINES | | | | | | |
|----------------------|----------|-----|-------------|------|------|---|
| Date & Time | FLOW GPM | LRN | MINUTES MAN | HLD | FLAG | |
| 08/12 10:30PM | 32 | 32 | 0 | 0 | | |
| 08/10 10:30PM | 0 | 32 | 0 | 0 | | N |
| 08/08 10:30PM | 32 | 32 | 10.0 | 0 | | |
| 08/01 10:30PM | 32 | 32 | 0 | 0 | | |
| 07/28 10:30PM | 42 | 32 | 0 | 0 | | H |
| 07/26 10:30PM | 31 | 32 | 0 | 10.3 | | A |
| 07/24 10:30PM | 32 | 32 | 5.0 | 0 | | |
| 07/22 09:00PM | 32 | 33 | 0 | 0 | | |

Page Left →

Log Lines consist of two screens (shown above), to view one or the other, Press either the **PAGE RIGHT** Menu Key or the **PAGE LEFT** Menu Key. The FLAG column displays any alerts that occurred during an irrigation event, each alert is represented by a letter. The following list defines all of the letter designations:

- | | | | |
|-----------------|----------------|---------------------------------|--------------------|
| S Short Circuit | I High Current | U Unstable Flow | A Normal Hold Over |
| O No Current | L Low Flow | N No Flow | P Paused Hold Over |
| C Low Current | H High Flow | R Irrigation Halted Due To Rain | W No Water |

Moisture Sensor Alerts (only if moisture sensing is enabled):

- | | | |
|--------------------------------------|---------------------------------|----------------------------|
| M Moisture Sensor Caused Cycle Skip | O-- Reading Not Put In Line Yet | R** Reading Out Of Range |
| X Moisture Sensor Max Water Days Set | F** No Filtered Reading | S** Signal Never Went Away |
| --- Reading Never Taken | | |

ET & Rain Tables

| ET AND RAIN TABLES | | | | | | |
|-------------------------------------|-------|-------|-------|-------|-------|-------|
| ET Table : (from 10/29/2001 back) | | | | | | |
| Mon | Sun | Sat | Fri | Thu | Wed | Tue |
| h .16 | g .18 | g .20 | g .19 | g .19 | g .18 | g .17 |
| g .18 | g .17 | g .20 | g .19 | g .17 | g .17 | g .16 |
| g .14 | g .13 | g .11 | g .15 | g .17 | e .21 | e .21 |
| e .23 | h .16 | h .16 | h .16 | h .16 | h .16 | h .16 |
| Rain Table : (from 10/29/2001 back) | | | | | | 0.00 |
| Mon | Sun | Sat | Fri | Thu | Wed | Tue |
| o .00 | o .00 | m .06 | o .00 | r .23 | r .18 | o .00 |
| o .00 | o .00 | o .00 | o .00 | o .00 | o .00 | o .00 |
| o .00 | o .00 | o .00 | o .00 | o .00 | o .00 | o .00 |
| o .00 | o .00 | o .00 | o .00 | o .00 | o .00 | o .00 |

The ET & Rain Tables screen shows the amounts of ET and rain. This information is used only if the controller is in daily-ET mode, or the use of rain has been enabled (See the *ET Based Water Management Guide* for a more detailed explanation of these tables).

16. Controller Status

Status Screen

The Controller Status screen (shown below) is the first screen you will see when you start to use the ET2000 Controller, the controller will always return to this screen within a few minutes of non-use. From the Controller Status screen you can see if any irrigation is currently running, when the next scheduled irrigation is set to occur, and the current date and time set in the controller.

| CONTROLLER STATUS |
|-----------------------------------|
| No Stations are Watering |
| NEXT SCHEDULED IRRIGATION IS AT : |
| 12:00 AM on Saturday Aug 17, 2002 |
| Aug 16 2002 |
| Sat 10:45:03 AM |
| STATION ALERTS → |

If there are any Station Alerts to be viewed, the STATION ALERTS Menu Key will be visible (as shown in the example above). The Station Alerts screen is described in the next section.

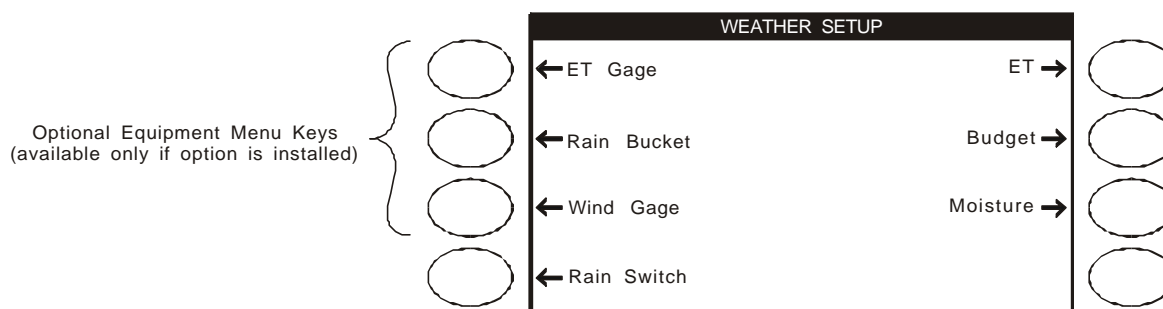
Station Alerts

| STATION ALERTS | | |
|----------------|-------------------------|---------------|
| 09/02 11:52PM | NO CURRENT for Stn 1 | |
| 09/04 11:53PM | NO FLOW Stn 1 @ 0.0 gpm | |
| 09/08 11:50PM | NO FLOW Stn 1 @ 0.0 gpm | |
| 09/08 11:50PM | NO CURRENT for Stn 1 | |
| ----- | | |
| 09/04 11:55PM | NO FLOW Stn 2 @ 0.0 gpm | |
| 09/08 11:55PM | NO FLOW Stn 2 @ 0.0 gpm | |
| 09/10 11:54PM | NO CURRENT for Stn 2 | |
| 09/12 11:54PM | NO CURRENT for Stn 2 | |
| ----- | | |
| 09/04 11:58PM | SHORTED OUTPUT Stn 3 | |
| | | Clear Alert → |

From the Controller Status screen, Press the **STATION ALERTS** Menu Key to view the Station Alerts screen (shown above). From the Station Alerts screen you can view and clear any station alerts that have occurred. All alerts that have occurred since the last time they were cleared will be shown, a dashed line will separate each valve. Press the **PLUS** or **MINUS** Key to scroll up or down to view more alerts if necessary.

Station Alerts tell you what problems the controller has detected during irrigation cycles. Some examples of station alerts are “High Flow” which indicate possible broken heads or broken pipes, “No Flow” which indicate possible valve problems, “Shorted Output” and “No Currents” to indicate possible wiring or solenoid problems.

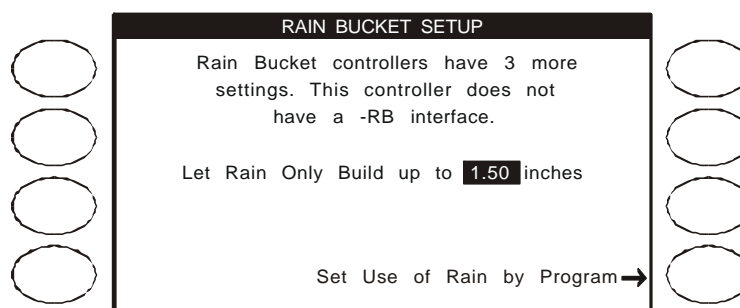
17. Weather Setup



From the Main Menu Press the **WEATHER** Menu Key, the Weather Setup screen will appear (shown above). From the Weather Setup screen you can access the setup of any optional Calsense equipment (if the option is installed on the controller) which includes the Calsense ET Gage, Rain Bucket, and Wind Gage, also a rain switch if one is installed. You can also access the setup of daily-ET, water budgets and moisture sensors. The following sections describe Rain Bucket settings on a controller without the -RB interface, Wind Gage setup, Rain Switch setup and Moisture Sensor Setup (*setup of the ET Gage and the Rain Bucket on a controller with the -RB interface, is explained in the Calsense ET Based Water Management Guide*).

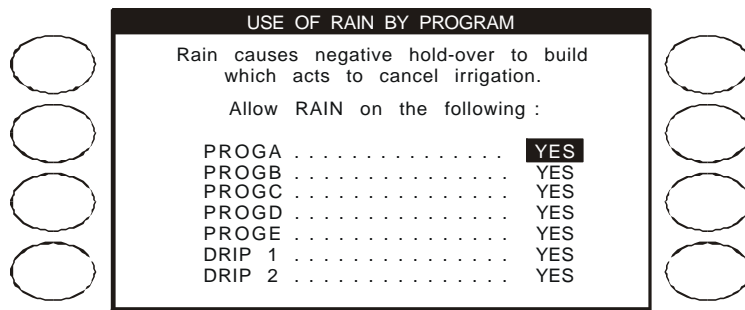
Rain Bucket Settings

Press the **RAIN BUCKET** Menu Key, the Rain Bucket Setup screen will appear as shown below if the controller does not have the -RB interface installed. The only way rain can be used to offset irrigation for a controller that is not connected to a Rain Bucket, is by sharing rain data using the Calsense Command Center program. If you are not sharing rain data, the setting described here will have no affect on irrigation.



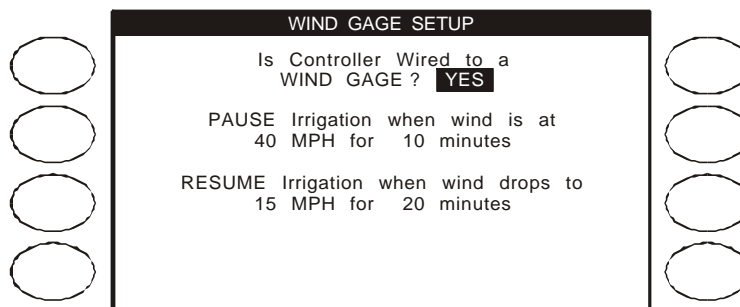
Press the **PLUS** or **MINUS** Key to set the maximum amount of rain allowed to be used to offset irrigation. Press the **SET USE OF RAIN BY PROGRAM** Menu Key to access the Use Of Rain By Program screen (shown on the next page).

Rain Bucket Settings (con't)



To enable the use of rain for a program, select the YES setting by Pressing the **PLUS** or **MINUS** Key at the Use Of Rain By Program screen (shown above). As explained on the previous page, if you are not sharing rain data, these settings will have no affect on irrigation.

Wind Gage Setup

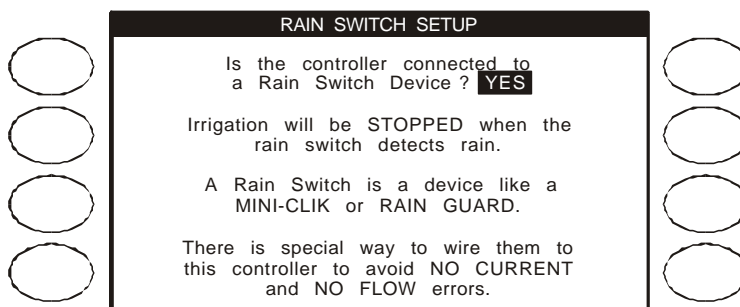


From the Weather Setup screen Press the **WIND GAGE** Menu Key, the Wind Gage Setup screen will appear (shown above). The default setting for "Is Controller Wired to a WIND GAGE" is set to NO, Press the **PLUS** or **MINUS** Key to select YES, the screen will then appear as shown in the example above. Press an **ARROW** Key to move the cursor to the desired setting, Press the **PLUS** or **MINUS** Key to change the setting.

There are four settings at the Wind Gage Setup screen which determine when irrigation will be paused due to high wind conditions and then resumed when conditions permit. The first two settings are the minimum speed (MPH) the wind will have to reach, and the length of time (in minutes) the wind will have to be sustained at that speed before irrigation will be paused. The second two settings are the maximum speed (MPH) the wind will have to decrease to, and the length of time (in minutes) the wind will have to be sustained at that speed before irrigation will be resumed.

In the example above, if the wind speed increases to 40 MPH or more, and stays at 40 MPH or more for 10 minutes, any ongoing irrigation will be paused and any scheduled irrigation will not start. The controller will stay in this mode until the wind decreases to 15 MPH or less, and stays at 15 MPH or less for 20 minutes, when this criteria is met, irrigation will resume where it left-off.

Rain Switch Setup



From the Weather Setup screen Press the **RAIN SWITCH** Menu Key, the Rain Switch Setup screen will appear (shown above). The default setting is NO, Press the **PLUS** or **MINUS** Key to change the setting YES, the screen will then appear as shown above. NOTE : If this setting is set to YES, and there is no rain switch wired to the controller, or the rain switch is incorrectly wired to the controller, no irrigation will occur. If you are unsure about how to correctly wire the rain switch, call Calsense at (800) 572-8608 for information about wiring a rain switch to a Calsense Controller.

Moisture Sensor Setup

| MOISTURE SENSING SETUP | |
|---------------------------|-----|
| Moisture Sensing in Use ? | YES |
| USE BY PROGRAM : | |
| PROG A | YES |
| PROG B | YES |
| PROG C | YES |
| PROG D | NO |
| PROG E | NO |
| DRIP 1 | NO |
| DRIP 2 | NO |
| Sensor Assignment → | |

From the Weather Setup screen, Press the **MOISTURE** Menu Key, the Moisture Sensing Setup screen will appear. To enable moisture sensing, Press the **PLUS** or **MINUS** Key to change the default setting from NO to YES, the Moisture Sensing Setup screen will then appear as shown above. Press an **ARROW** Key to move the cursor to the desired program setting, Press the **PLUS** or **MINUS** Key to change the setting to YES on the programs you wish to use moisture sensing on. To set moisture sensor assignments, Press the **SENSOR ASSIGNMENT** Menu Key, the Moisture Sensor Assignment screen will appear (shown below).

| MOISTURE SENSOR ASSIGNMENT | | | | | | | | | | |
|----------------------------|----|----|----|----|----|----|----|----|----|----|
| Station | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
| Sensor | 01 | 01 | 01 | 01 | 07 | 07 | 07 | 07 | 10 | 10 |
| Station | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Sensor | 10 | 10 | 13 | 13 | 13 | 13 | 19 | 19 | 19 | 19 |
| Station | 21 | 22 | 23 | 24 | | | | | | |
| Sensor | 24 | 24 | 24 | 24 | | | | | | |
| Station | | | | | | | | | | |
| Sensor | | | | | | | | | | |

From the Moisture Sensor Assignment screen you will assign each station to a moisture sensor. All stations that have a moisture sensor physically wired to it are assigned a sensor number the same as the it's station number, these stations are know as a Master. In the example above stations 1, 7, 10, 13, 19 and 24 are Master stations. All other valves will use the readings from one of the Master stations. This is done by assigning each of these stations to a Master station. In the example above stations 2, 3 and 4 have been assigned to station 1, stations 5, 6 and 8 have been assigned to station 7, etc.

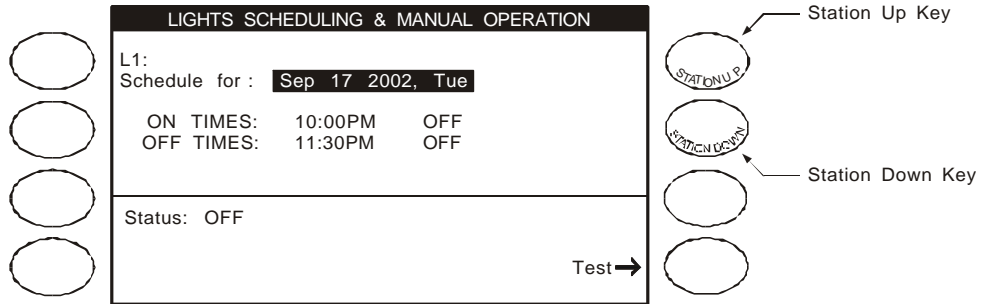
| STATION PROGRAMMING | |
|---------------------|--------|
| Station 1 | PROG A |
| Total Mins : | 15.0 |
| Mins per Cycle : | 5 |
| Soak-In Time : | 60 |
| No Water Day | 0 |
| Max Days: | 00 |
| Moist Set: | 75 |
| Moist Read: | 71 |
| | MASTER |
| Test → | |

After moisture sensing has been setup, the Station Programming screen will appear as shown above for a Master station. Each of the settings are described below:

- Moist Read: This is the moisture sensor's last moisture reading, a new reading is taken before each irrigation cycle. In the example above the last moisture reading was 71.
- Moist Set: This is the moisture set point (programmed by the user), it determines at what moisture reading the controller will reduce irrigation time. If the moisture reading is more that the set point, irrigation time will be reduced until the moisture reading is less than the set point. In the example above the moisture set point is 75 and the moisture reading is 71, in this case the controller will irrigate the full programmed time.
- Max Days: This setting allows the user to override moisture sensing, that is the controller will irrigate whatever has been programmed by the user, no matter what the moisture reading is. This can be set from 1 to 31 days.
- MASTER or USES SENSOR #: This is for information only, each station is labeled either a Master or labeled with the moisture sensor it was assigned to.

18. Lights

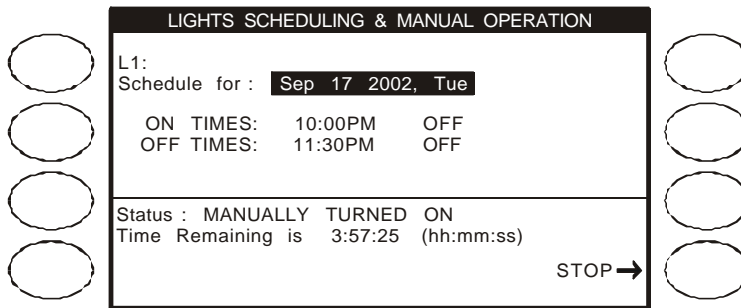
Programming a Lights Schedule



If the optional Lights Program is installed on a controller, the **LIGHTS** Menu Key will be available at the Main Menu screen. The Lights Scheduling & Manual Operation screen appears (as shown above). You can set a 14-day schedule of two separate on and off times for each of the four available light circuits (L1 through L4). You can also run a manual test (described in the next section).

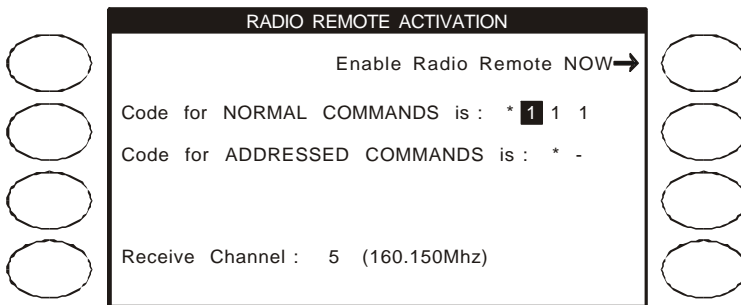
Select the light circuit you wish to program by Pressing the **STATION UP** or **STATION DOWN** Key until the desired light circuit is displayed in the upper left corner of the screen (L1 has been selected in the example above). Press an **ARROW** Key to move the cursor to highlight the first ON TIME setting, Press the **PLUS** or **MINUS** Key to set the desired time, Press an **ARROW** Key to move the cursor to the first OFF TIME setting, Press the **PLUS** or **MINUS** Key to set the time, repeat the process if a second ON/OFF TIME is desired. This only completes the programming for first day of the 14-day schedule. Press an **ARROW** Key to move the cursor to the date (the current date is always initially displayed), Press the **PLUS** Key to change the date to the second day of the 14-day schedule, set the ON/OFF TIMES as described above, repeat this process until all 14 days have been programmed. This schedule will continually repeat itself every 14 days.

Testing a Lights Circuit



To turn on a lights circuit for testing purposes, select the light circuit you wish to test by Pressing the **STATION UP** or **STATION DOWN** Key, then Press the **TEST** Menu Key (shown in the example at the top of this page), the screen will appear as shown above, the Status will show that the circuit has been turned on manually. The length of time for a test is 4 hours, Time Remaining will continually display how much time remains of the test cycle. To end the test cycle before the remaining time has expired, Press the **STOP** Menu Key.

19. Radio Remote



If the optional Radio Remote Control is installed on a controller, the **RADIO REMOTE** Menu Key will be available at the Main Menu screen. The Radio Remote Activation screen appears (shown above). Press the **ENABLE RADIO REMOTE NOW** Menu Key to activate the controller for radio remote control. You can also set Normal Command Codes, Addressed Command Codes and the receiver frequency at this screen (see the instructions that are shipped with the Calsense Radio Remote for more information).