



Controller / Satellite Programming Guide

Version 5.00.03



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The Constellation controller/Controller offers the most versatile and flexible irrigation programming and control on the market today. It has a myriad of features that offer the kind of high performance, ease of use and cost-effectiveness you need for unprecedented control and unparalleled value.

Features and Capabilities

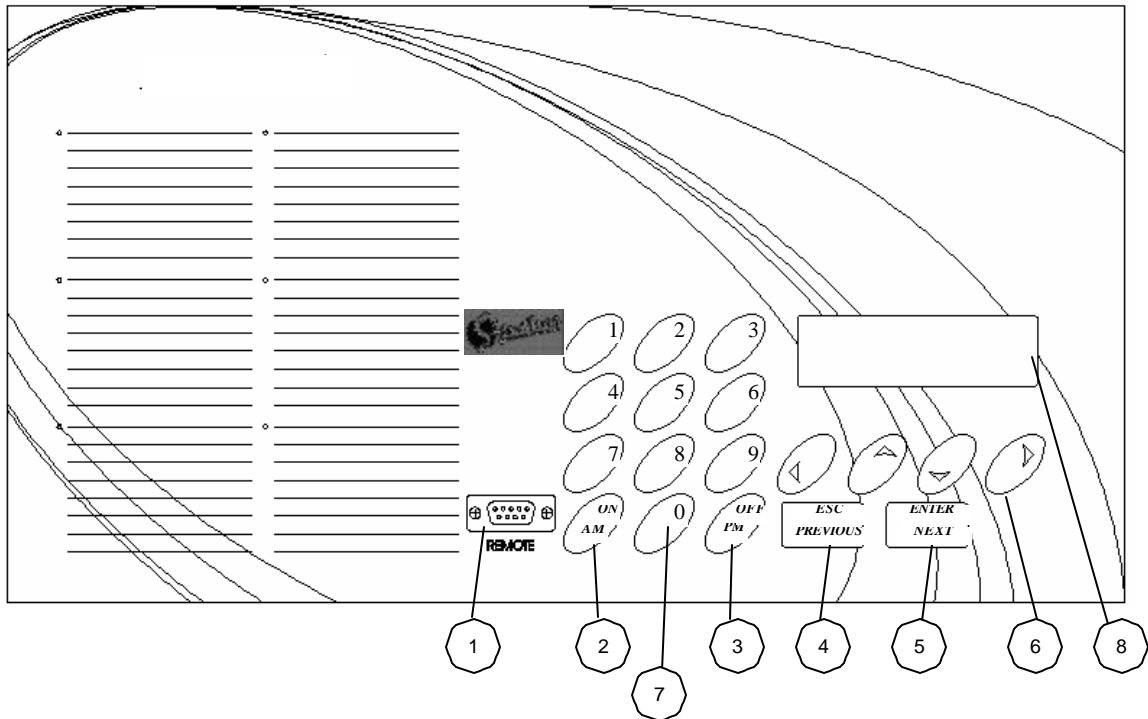
- Multilingual interface.
- Enable and disable commands with delay timer.
- User-selectable, 12-hour or 24-hour clock format.
- Semi-automatic, manual and delayed manual station control.
- Global water budgeting from 0-999%.
- User-selectable Water Budget or ET-adjusted control for each irrigation schedule.
- Programmable master valve and pump start.
- Open, Overload and short-circuit protection.
- Accommodates up to two sensors and shares additional 2 sensors across a network.
- Flow monitoring and reporting of over-flow or under-flow conditions.
- Generates alarms, flow and status reports which can be transmitted to a user defined-location and/or stored in the local alarm log.
- Controls up to 750 decoder stations or 48 traditional stations.
- Manages 128 fully independent, customized schedules/programs:
- Each schedule has eight start times and can accommodate up to 48 stations, each with their own specific run time.
- Each program has a completely independent watering calendar.
- Virtually unlimited flexibility for cycle and soak programming.
- User selectable sequential-run or parallel-run mode.
- Multiple repeats and pauses.
- Control of stations in any sequence.

Security Levels

The Controller is divided into four distinct security levels.

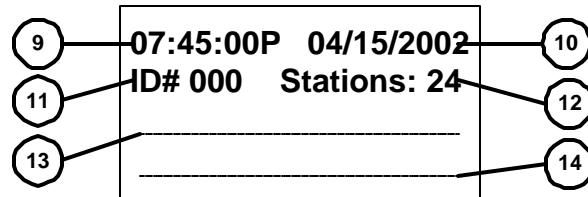
- Keyboard: All Controller functions.
- Programming: Watering Schedules.
- Controller Setup: Controller Configuration, Pump Setup, Sensor Setup, Decoder Setup and Smart Switch Setup.
- Advanced Setup: Controller Address, Alarm and Event Log Addresses, Controller Communications and Set Passwords.

Control Panel Overview



1. **REMOTE PORT** – For attaching a laptop or other external devices.
2. **ON/AM** – Used to activate watering days and/or pump stations. Sets the clock to AM when using the 12-hour format.
3. **OFF/PM** – Used to deactivate watering days and/or pump stations. Sets the clock to PM when using the 12-hour format.
4. **ESC/PREVIOUS** – Backs out of the current menu or data entry position without saving entries.
5. **ENTER/NEXT** – From the main screen, this button activates the main menu for programming the controller. From the main menu, it is used to enter into or save the information in the highlighted menu option.
6. **UP, DOWN, RIGHT and LEFT ARROWS** – Moves the cursor in the direction indicated. The right and left arrows are also used to scroll through predefined options when setting up sensors, watering schedules or changing languages.
7. **0 thru 9** – Data entry keys.
8. **MAIN DISPLAY** – Displays status information from the Main/Startup Screen, Displays controller options during programming.

Main Display



9. **CURRENT TIME**

10. **CURRENT DATE**

11. **CONTROLLER ADDRESS** – Unique 3-digit number used to identify controllers on a Controller network. If the unit is also used as a repeater, the “ID#” will change to “REP”.

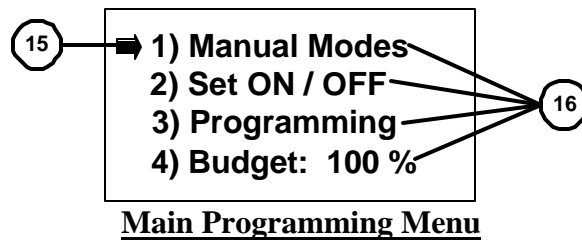
12. **STATIONS** – Displays the number of stations resident in the controller. If the unit also controls decoders, the line will display “STNS: 08 + 274.” This would indicate there are 8 stations and 274 decoders configured in the controller.

13. **SYSTEM STATUS / CURRENT ACTIVITY** – Displays “OFF” status of the controller, if the controller is OFF and displays the stations and/or pump station if it is currently running.

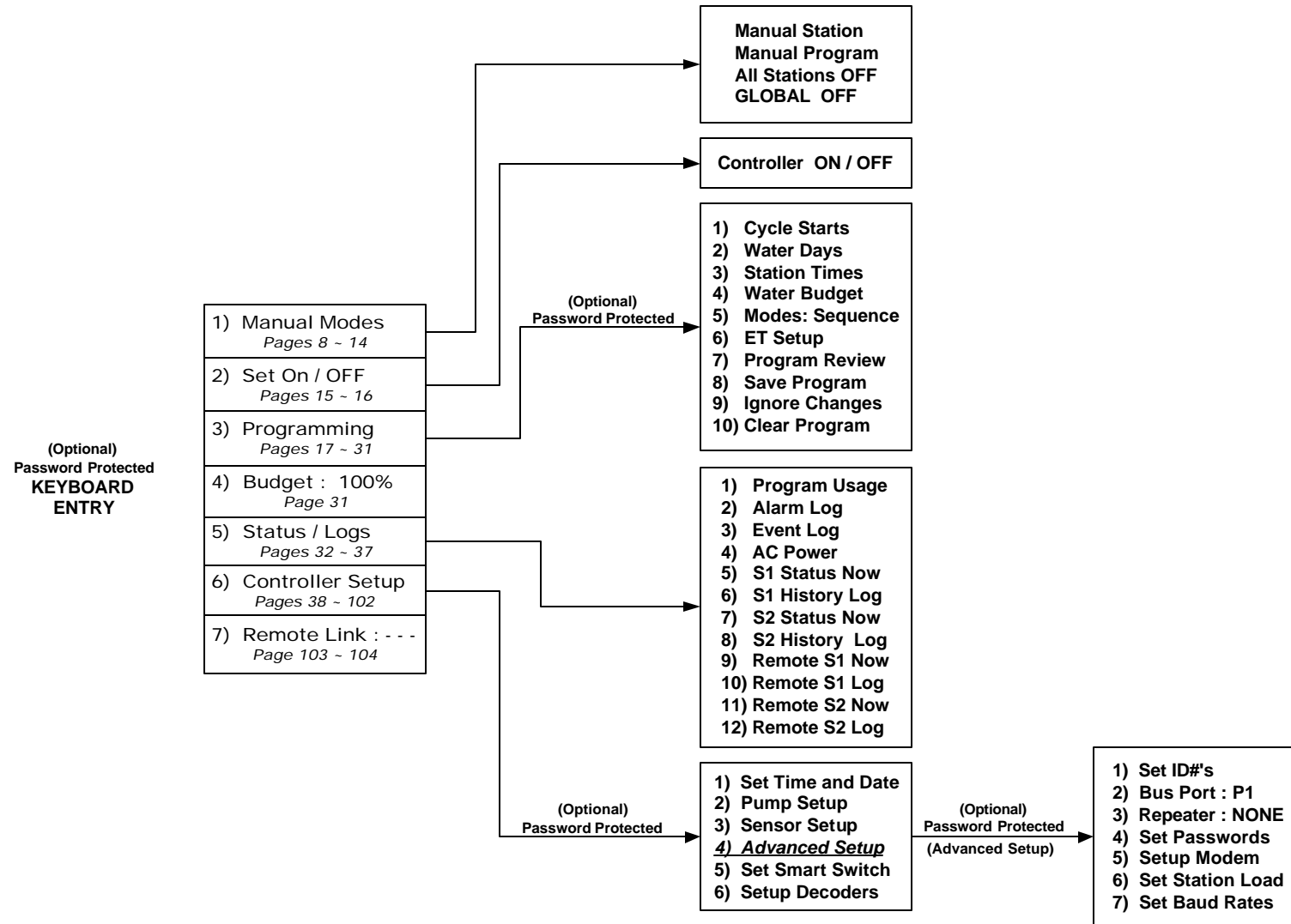
14. **MESSAGE LINE** – Used to display various communication messages. Also indicates when a “Remote Link” is active to another controller by displaying the Controller address and number of stations, including decoders, of the remote device.

15. **MENU CURSOR** – Arrow indicating the highlighted menu option.

16. **MENU OPTION(s).** – Currently available menu options.



Controller Feature Flow Chart



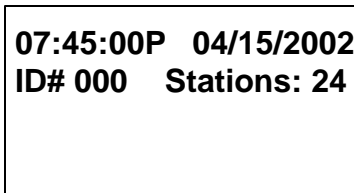
Manual Modes

There are four options to choose from.

- 1) **Manual Station**, this is where you can manually activate a single station. The water times are in Hours : Minutes : seconds. There is also an option for a delay before the station activates. The station delay time is in Hours : Minutes : Seconds.
- 2) **Manual Program**, this is where you can manually start a program. There is also an option for a delay before the program starts. The program delay time is in Hours : Minutes : Seconds.
- 3) **ALL Stations OFF**, this is used to turn off all active station on the controller.
- 4) **GLOBAL OFF**, this is used to turn off all active stations on the site. NOTE: There must be means of communication between Controllers for this feature to shut off stations on another Controller.
- 5)

Manual Station

Start at the screen below (Fig. 1).



07:45:00P 04/15/2002
ID# 000 Stations: 24

Figure 1

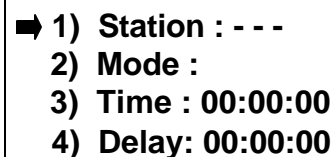
Push the ENTER/NEXT button on the keypad twice. The display should change to the screen below (Fig. 2).



➡ 1) Manual Station
2) Manual Program
3) All Stations OFF
4) GLOBAL OFF

Figure 2

To select the Manual Station option, push the DOWN or UP arrow on the keypad until the arrow on the display is pointing at the Manual Station option. Then push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 3).



➡ 1) Station : - - -
2) Mode :
3) Time : 00:00:00
4) Delay: 00:00:00

Figure 3

Manual Modes (continued).

Manual Station

Using the keypad, enter the three-digit station number. Example; 0, 0, 1 for station 1. When the last number of the station is entered, the display should change to the screen below (Fig. 4).

1) Station : 001
➡ 2) Mode : OFF
3) Time : 00:00:00
4) Delay: 00:00:00

Figure 4

Push the ON/AM button on the keypad. The display should change to the screen below (Fig. 5).

1) Station : 001
2) Mode : ON
➡ 3) Time : 00:00:00
4) Delay: 00:00:00

Figure 5

Using the keypad, enter the Water Time for the station. NOTE: Times are in Hours : Minutes : Seconds. 10 minutes would be; 0, 0, 1, 0, 0, 0. When the last number is entered for the water time, the display should change to the screen below (Fig. 6).

1) Station : 001
2) Mode : ON
3) Time : 00:10:00
➡ 4) Delay: 00:00:00

Figure 6

Using the keypad, enter the Delay Time for the station. NOTE: Times are in Hours : Minutes : Seconds. 10 seconds would be; 0, 0, 0, 0, 1, 0. A Delay Time is NOT required for the Manual Station to activate. When the last number is entered for the water time, the display should change to the screen below (Fig. 7).

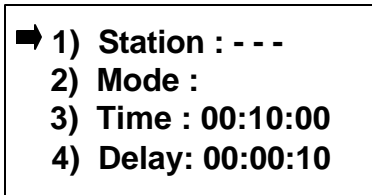
➡ 1) Station : 001
2) Mode : ON
3) Time : 00:10:00
4) Delay: 00:00:10

Figure 7

Manual Modes (continued).

Manual Station

To activate the station, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 8).



➡ 1) **Station : - - -**
2) **Mode :**
3) **Time : 00:10:00**
4) **Delay: 00:00:10**

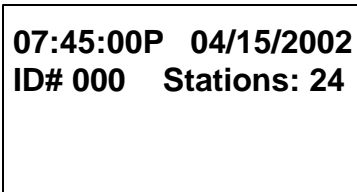
Figure 8

The station has been activated. If there was a delay programmed, the delay started to time out the moment the ENTER/NEXT button was pushed. NOTE: The Time and Delay have not reset. To start another station with the same Water Time and Delay Time, all that is needed is a station number, followed by the ON/AM button, finally the ENTER/NEXT button to activate the station.

To change either the Water Time or Delay Time enter a new Water Time or Delay Time before pushing the ENTER/NEXT button.

Manual Program

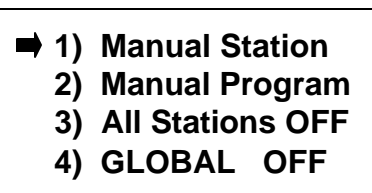
Start at the screen below (Fig. 9).



07:45:00P 04/15/2002
ID# 000 Stations: 24

Figure 9

Push the ENTER/NEXT button on the keypad twice. The display should change to the screen below (Fig. 10).



➡ 1) **Manual Station**
2) **Manual Program**
3) **All Stations OFF**
4) **GLOBAL OFF**

Figure 10

Manual Modes (continued).

Manual Program

Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 11).

- 
- 1) Manual Station
 - ➡ 2) Manual Program
 - 3) All Stations OFF
 - 4) GLOBAL OFF

Figure 11

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 12).

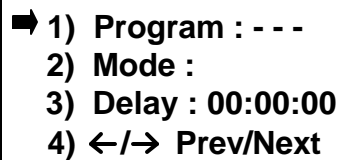
- 
- ➡ 1) Program : - - -
 - 2) Mode :
 - 3) Delay : 00:00:00
 - 4) ←/→ Prev/Next

Figure 12

Using the keypad, enter the three-digit program number. The display should change to the screen below (Fig. 13).

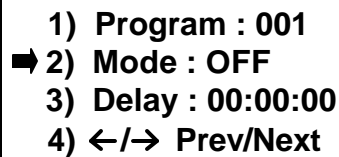
- 
- 1) Program : 001
 - ➡ 2) Mode : OFF
 - 3) Delay : 00:00:00
 - 4) ←/→ Prev/Next

Figure 13

Push the ON/AM button on the keypad. The display should change to the screen below (Fig. 14).

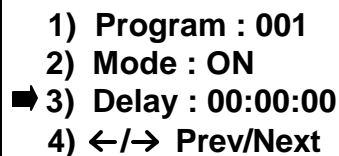
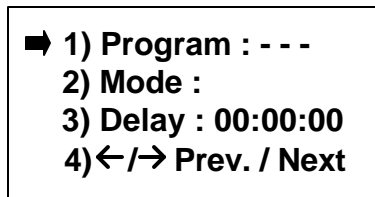
- 
- 1) Program : 001
 - 2) Mode : ON
 - ➡ 3) Delay : 00:00:00
 - 4) ←/→ Prev/Next

Figure 14

Manual Modes (continued).

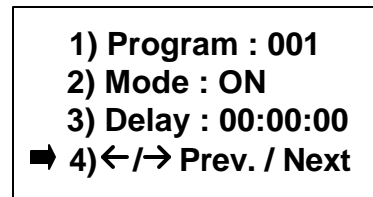
Manual Program

Using the keypad, enter the Delay Time for the program. NOTE: Times are in Hours : Minutes : Seconds. 10 seconds would be; 0, 0, 0, 0, 1, 0. A Delay Time is NOT needed for the Manual Program to activate. If a Delay Time is not to be used, push the ENTER/NEXT button on the keypad to start the Manual Program. The display should change to the screen below (Fig. 15A). Alternatively, the program can be activated by using the DOWN arrow button on the keypad. The display should change to the screen below (Fig. 15B). Push the RIGHT arrow on the keypad to start the Manual Program.



➡ 1) Program : - - -
2) Mode :
3) Delay : 00:00:00
4) ← / → Prev. / Next

Figure 15A



1) Program : 001
2) Mode : ON
3) Delay : 00:00:00
➡ 4) ← / → Prev. / Next

Figure 15B

The first option allows you to enter another Manual Program.

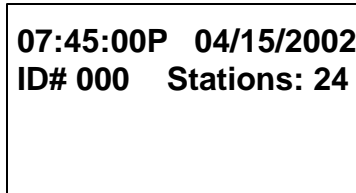
The second option allows you to scroll through the stations on the program by pushing either the RIGHT (to advance). or LEFT (skip backwards). arrows on the keypad.

NOTE: The program must be set to SEQUENTIAL to use this feature; PARALLEL programs will start or stop all stations in the program when either arrow is pushed.

Manual Modes (continued).

All Stations OFF

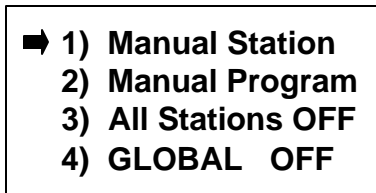
Start at the screen below (Fig. 16).



**07:45:00P 04/15/2002
ID# 000 Stations: 24**

Figure 16

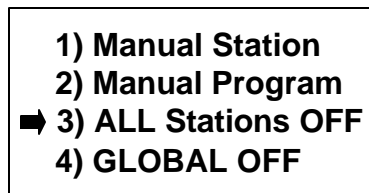
Push the ENTER/NEXT button on the keypad twice. The display should change to the screen below (Fig. 17).



**➡ 1) Manual Station
2) Manual Program
3) All Stations OFF
4) GLOBAL OFF**

Figure 17

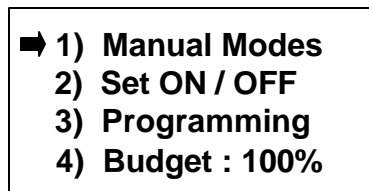
Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 18).



**1) Manual Station
2) Manual Program
➡ 3) ALL Stations OFF
4) GLOBAL OFF**

Figure 18

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 19). All active stations on the Controller should shut down.



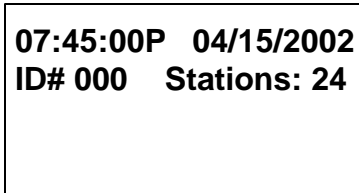
**➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%**

Figure 19

Manual Modes (continued).

GLOBAL OFF

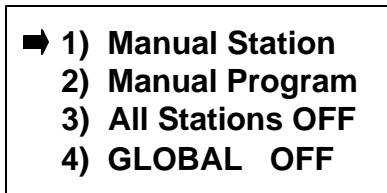
Start at the screen below (Fig. 20).



**07:45:00P 04/15/2002
ID# 000 Stations: 24**

Figure 20

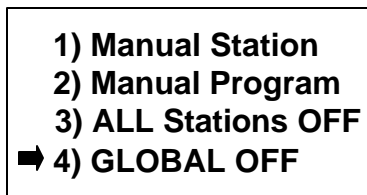
Push the ENTER/NEXT button on the keypad twice. The display should change to the screen below (Fig. 21).



**➡ 1) Manual Station
2) Manual Program
3) All Stations OFF
4) GLOBAL OFF**

Figure 21

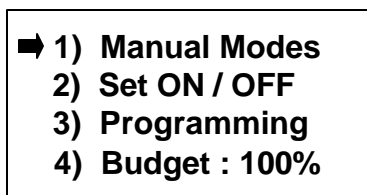
Push the DOWN arrow on the keypad three times. The display should change to the screen below (Fig. 22).



**1) Manual Station
2) Manual Program
3) ALL Stations OFF
➡ 4) GLOBAL OFF**

Figure 22

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 23). All active stations on ALL Controllers should shut down. The GLOBAL OFF requires communication between controllers.



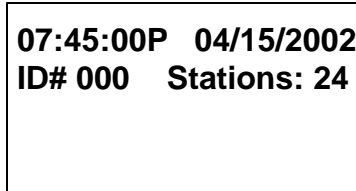
**➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%**

Figure 23

Set ON / OFF

The Set ON/OFF feature will allow you to either set the controller to ON or OFF for a fixed duration of time or indefinitely. The Duration time is in Days : Hours : Minutes. (99 days: 24 hours: 00 minutes are the maximum).

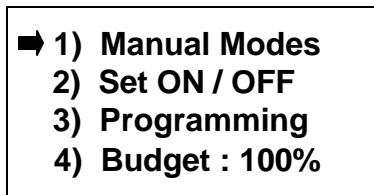
To change the Controller from the ON state to the OFF state, start at the screen below (Fig. 24).



07:45:00P 04/15/2002
ID# 000 Stations: 24

Figure 24

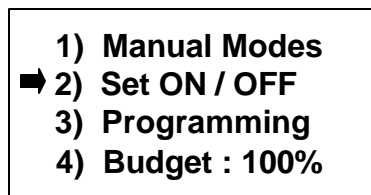
Push the ENTER/NEXT button on the keypad once. The display should change to the screen below (Fig. 25).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 25

Push the DOWN arrow on the keypad once. The display should change to the screen below (Fig. 26).



1) Manual Modes
➡ 2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 26

Set ON / OFF (continued).

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 27).



➡ 1) Controller : ON
2) Timed : OFF

Figure 27

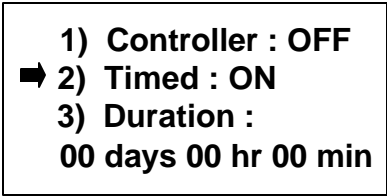
Push the OFF/PM button on the keypad. The display should change to the screen below (Fig. 28).



1) Controller : OFF
➡ 2) Timed : OFF

Figure 28

Push the ON/AM button on the keypad to enable a timed OFF. The display should change to the screen below (Fig. 29).



1) Controller : OFF
➡ 2) Timed : ON
**3) Duration :
00 days 00 hr 00 min**

Figure 29

Using the numbers on the keypad, enter the length of time for the controller to remain OFF. 2 Days would be: 0, 2, 0, 0, 0, 0. Push the ENTER/NEXT button on the keypad. The time starts to count down as soon as the ENTER/NEXT button is pushed. NOTE: 99 Days, 24 Hours is the maximum time.

To switch the Controller back to the ON state, change the information to Controller: ON and the Timed: OFF

Controller Programming

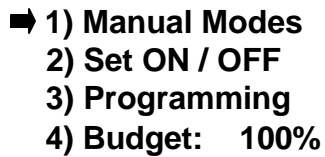
Starting from the first screen (Fig. 30). You may need to push the ESC/PREVIOUS button on the keypad numerous times to get back to this screen.



07:45:00P 04/15/2002
ID# 000 Stations: 24

Figure 30

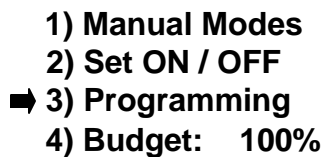
Push the ENTER/NEXT button on the keypad. The display should change to the this screen below (Fig. 31).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget: 100%

Figure 31

Push the DOWN arrow on the keypad 2 times. The arrow should be to the left of the Programming option (Fig. 32).



1) Manual Modes
2) Set ON / OFF
➡ 3) Programming
4) Budget: 100%

Figure 32

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 33).

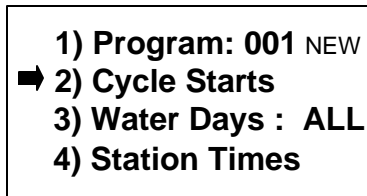


➡ 1) Program: ---
2) Cycle Starts
3) Water Days : -
4) Station Times

Figure 33

Controller Programming

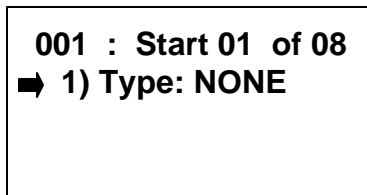
You must enter a three-digit program number (001 ~ 128). Once the program number is entered the arrow will move to the next line (Fig. 34). The “NEW” icon indicates that this is a new program. NOTE: Once you enter a three-digit program number, the only way to leave the programming menu is to scroll down to option numbers 9, 10, or 11 and push the ENTER/NEXT button on the keypad.



1) Program: 001 NEW
➡ 2) Cycle Starts
3) Water Days : ALL
4) Station Times

Figure 34

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 35).



001 : Start 01 of 08
➡ 1) Type: NONE

Figure 35

The number in the top left corner designates the Program number you are working with. There are 8 cycle starts per program and 5 different types of cycle start options per cycle start. To view the different types of cycle start options, push the right or left arrow buttons on the keypad.

Start Time : the time you want the cycle to start.

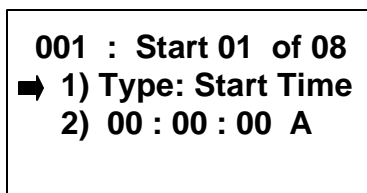
Stop Time : the time that you want the cycle to stop. (*Requires a Start Time*).

Link Start : this links the current program to another program, so when the other program finishes, this program automatically starts. (Start Time NOT required).

Repeat : this gives a maximum of 99 repeats per Cycle Start time. (*Requires a Start Time*).

Loop Until : this gives a window of watering that continuously cycles through all the stations in the program from the Start Time through the Loop Until time. If a cycle is already watering when the Loop Until time has passed, the cycle continues until the last station in the program has watered. (*Requires a Start Time*).

Programming a Start Time, Stop Time or Loop Until, push the right or left arrow until the correct option is shown on the screen. *Example: Start Time*. The display should read like the screen below (Fig.36).

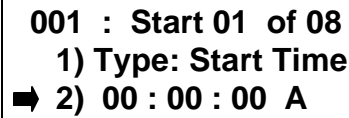


001 : Start 01 of 08
➡ 1) Type: Start Time
2) 00 : 00 : 00 A

Figure 36

Controller Programming (continued).

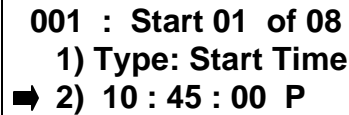
Push the DOWN arrow on the keypad 1 time. The display should change to the screen below (Fig. 37).



001 : Start 01 of 08
1) Type: Start Time
➡ 2) 00 : 00 : 00 A

Figure 37

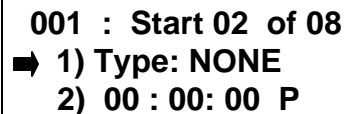
Push the numbers on the keypad for the time of day the cycle should start.
0,6,3,0,0,0, AM/ON would read on the display as 06:30:00A (Fig. 6A).
1,0,4,5,0,0,PM /OFF would read on the display as 10:45:00P
The display should change to the screen below (Fig. 38).



001 : Start 01 of 08
1) Type: Start Time
➡ 2) 10 : 45 : 00 P

Figure 38

Push the DOWN arrow on the keypad 1 time, to enter another Start Time or Start Time option. The display should change to the screen below (Fig. 39).



001 : Start 02 of 08
➡ 1) Type: NONE
2) 00 : 00 : 00 P

Figure 39

Programming Repeats on a Cycle Start, push the right or left button on the keypad until the Repeat shows up in the screen.

The display should change to the screen below (Fig. 40).



001 : Start 02 of 08
➡ 1) Type: Repeat
2) Cycles: --

Figure 40

Controller Programming (continued).

Push the DOWN arrow on the keypad 1 time, you may now enter the number of Repeats you desire. *Example: 05 Repeats, you would push 0,5* (Fig. 41).



001 : Start 02 of 08
1) Type: Repeat
➡ 2) Cycles: --

Figure 41

When the last digit of the Repeats is pushed, the display should change to the screen below (Fig. 42).



001 : Start 03 of 08
➡ 1) Type: NONE

Figure 42

Programming Link Starts on a Cycle Start, push the LEFT or RIGHT button on the keypad until the Link Start shows up in the screen. The display should change to the screen below (Fig. 43).



001 : Start 03 of 08
➡ 1) Type: Link Start
2) After PGM: ---

Figure 43

Push the DOWN arrow on the keypad 1 time, then enter the three-digit program number of the program you want to be linked to. *Example: Program 002, you would push 0,0,2* (Fig. 44).



001 : Start 03 of 08
1) Type: Link Start
➡ 2) After PGM: ---

Figure 44

Controller Programming (continued).

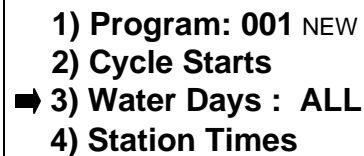
When the last digit of the Link Start is pushed, the display should change to the screen below (Fig. 45).



001 : Start 04 of 08
➡ 1) Type: NONE

Figure 45

When the last Cycle Start option has been programmed, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 46).



1) Program: 001 NEW
2) Cycle Starts
➡ 3) Water Days : ALL
4) Station Times

Figure 46

Programming Water Days

Push the LEFT or RIGHT arrow buttons on the keypad to choose the Water Day options. There are 4 Water day options to choose from.

ALL: Pick the days from a 31 day monthly calendar.

INTERVAL: Interval watering days for water once every 1 day to once every 99 days and anything in between.

WEEK: 4 Week watering calendar.

MONTH: Watering days by calendar month. Works like the ALL option, but refers to a specific month only.

** Note that STEADY on designates a water day and FLASHING designates a NON-water day.*

Controller Programming (continued).

Programming the ALL days Water Day option.

Using the LEFT or RIGHT arrows on the keypad, scroll through the options until ALL is displayed next to the Water Days. Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 47).

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17			
18	19	20	21	22	23	24			
25	26	27	28	29	30	31			

Figure 47

Use the LEFT, RIGHT, UP, and DOWN buttons on the keypad to move the cursor. Use the ON / AM and OFF / PM buttons to activate or deactivate the days. ***Remember, STEADY on is a water day and FLASHING on/off is a NON-water day.***

Programming the INTERVAL Water Day option.

Using the LEFT or RIGHT arrows on the keypad, scroll through the options until INT is displayed next to the Water Days, then push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 48).

➡ 1) Interval: 00
2) Today: 00

Figure 48

Using the keypad, enter the numbers for the Interval length. 4, 0 would be a 40-day interval between watering days. When the last number is entered the cursor will advance the next line (Fig. 49).

1) Interval: 40
➡ 2) Today: 00

Figure 49

Controller Programming (continued).

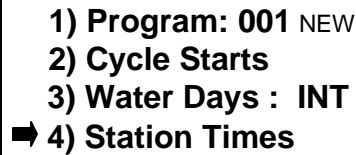
Using the keypad, enter the number for Today in the interval sequence. The program will water on day 01 only. If you want water tomorrow you would set this at 40, if you wanted to water in 40 days this would be set at 01. When the last number is entered, the cursor will move back up to the *Interval* (Fig. 50).



➡ 1) Interval: 40
2) Today: 40

Figure 50

If the information displayed is correct, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 51).

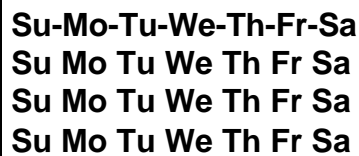


1) Program: 001 NEW
2) Cycle Starts
3) Water Days : INT
➡ 4) Station Times

Figure 51

Programming the WEEK Water Day option.

Using the Left or Right arrows on the keypad, scroll through the option until *WEEK* is displayed next to the *Water Days*, then push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 52).



Su-Mo-Tu-We-Th-Fr-Sa
Su Mo Tu We Th Fr Sa
Su Mo Tu We Th Fr Sa
Su Mo Tu We Th Fr Sa

Figure 52

Use the LEFT, RIGHT, UP, and DOWN buttons on the keypad to move the cursor. Use the ON/AM and OFF/PM buttons to activate or deactivate the days. ***Remember, STEADY on is a water day and FLASHING on/off is a NON-water day.*** The dashes in between the weekdays on one of the 4 lines indicate designate the current week.

Controller Programming (continued).

Programming the MONTH Water Day option.

Using the LEFT or RIGHT arrows on the keypad, scroll through the options until the MONTH you desire is displayed next to the *Water Days*, then push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 53).

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17			
18	19	20	21	22	23	24			
25	26	27	28	29	30	31			

Figure 53

Use the LEFT, RIGHT, UP, and DOWN buttons on the keypad to move the cursor. Use the ON/AM and OFF/PM buttons to activate or deactivate the days. ***Remember, STEADY on is a water day and FLASHING on/off is a NON-water day.***

NOTE: Only the Month displayed will be active.

When finished Programming the Water Days, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 54).

1) Program: 001 NEW
2) Cycle Starts
3) Water Days : ALL
➡ 4) Station Times

Figure 54

Programming Station Water Times

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 55).

001 : Event 01 of 48
➡ 1) Station: - - -
2) Duration:
- - hr - - min - - sec

Figure 55

Controller Programming (continued).

Programming Station Water Times

The top left three-digit number designates the program number. The *event* number on the screen indicates the sequence in which the program will water (in the case of sequential programs). There are 48 events per program. Both a station duration time and a delay time make an event. Using the keypad, select the station number you want to be the first to water. All stations are a three-digit number. Example: 0,0,1 = 001, 0,2,0 = 020. You may enter any station number, i.e. 010 would be the first station to water if it is programmed in the event 01 spot. (station number 000 will use an event and cause a delay of the specified time). Both delays and station numbers can be used numerous times within same program and each time they are used they can have a different duration of time.

Starting from the screen below (Fig. 56).

```
001 : Event 01 of 48
➡ 1) Station: - - -
   2) Duration:
   - - hr - - min - - sec
```

Figure 56

First enter the three-digit station number. Station # 8 is 0, 0, 8. The cursor should move down to the Duration line (Fig. 57).

```
001 : Event 01 of 48
   1) Station: 008
➡ 2) Duration:
   - - hr - - min - - sec
```

Figure 57

Enter the watering duration for the station. Remember this is in Hours : Minutes : Seconds. To enter water duration of 15 minutes you should push 0, 0, 1, 5, 0, and 0. When the last number is pushed the cursor on the display should move up to the *Station* line (Fig.58).

```
001 : Event 02 of 48
➡ 1) Station: ---
   2) Duration:
   00 hr 15 min 00 sec
```

Figure 58

Controller Programming (continued).

Programming Station Water Times

Enter the next Station number or enter 000 for a delay. Notice the duration time does not reset to 00:00:00 (Fig. 59). This feature will simplify programming when numerous stations that require the same water duration.

001 : Event 02 of 48
1) Station: 004
➡ 2) Duration:
00 hr 15 min 00 sec

Figure 59

To change the duration time, simply enter the new time. Example: 0, 0, 0, 8, 0, 0 (Fig. 60). Now this duration time will be the one displayed until it is changed.

001 : Event 03 of 48
➡ 1) Station: ---
2) Duration:
00 hr 08 min 00 sec

Figure 60

When finished entering the *events*, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 61).

➡ 5) Budget : 100%
6) Mode : Sequence
7) ET Setup
8) Program Review

Figure 61

Water Budget per Program

This budget entry is for this program only. It may be set from 000% to 999% in 1% increments. Water Budgeting will take the event duration times and multiple them by the budget percentage to calculate the actual water duration time. Ie. 100% of 10 minutes = 10 minutes, 50% of 10 minutes = 5 minutes, 150% of 10 minutes = 15 minutes.

Controller Programming (continued).

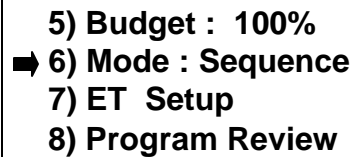
Sequential OR Parallel Mode

The program can be set up for either Sequential (factory default). OR Parallel mode operation. Simply push the LEFT or RIGHT arrows to chose the option.

In Sequential mode the program starts with the first event. After the duration time has elapsed, the second event will follow. The sequence will continue until all events have completed.

In Parallel mode the program will start all stations in the program (maximum of 14 active stations or 3.15 amps which occurs first).

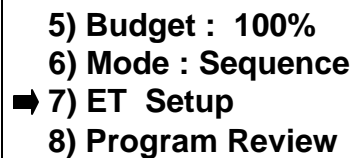
If a program with fifteen or more events attempts to start, the fifteenth event will generate an “Exceed Max. STNS” alarm. Also, the fifteenth event and any other events after the fifteenth will be ignored and lost. To avoid this, reduce the number of programmed events to less than 14 OR simply re-select the mode to the sequential (Fig. 62).



5) Budget : 100%
➡ 6) Mode : Sequence
7) ET Setup
8) Program Review

Figure 62

Push the DOWN arrow on the keypad once. The display should change to the screen below (Fig. 63).



5) Budget : 100%
6) Mode : Sequence
➡ 7) ET Setup
8) Program Review

Figure 63

ET Setup

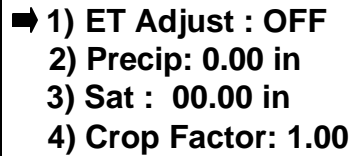
This option allows the irrigation program to use an ET source to update water duration/usage based on daily ET measurements.

The Controller will receive ET data from a source, multiply the data with the Crop Factor and compare the product of that equation with the Precipitation Rate. If the product number is lower, less water will be applied. If the product number is greater, more water will be applied. If the product exceeds the Saturation Rate, the excess amount will be carried over to the next watering cycle.

Controller Programming (continued).

ET Setup

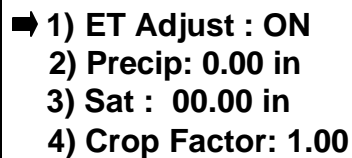
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 63).



➡ 1) ET Adjust : OFF
2) Precip: 0.00 in
3) Sat : 00.00 in
4) Crop Factor: 1.00

Figure 64

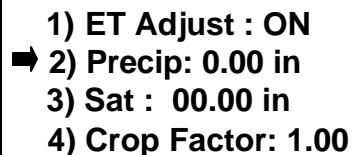
The ET Adjust has to be ON for the Controller to accept the ET information. To activate the ET Adjust, push either the LEFT or RIGHT arrows on the keypad. The display should change to the screen below (Fig. 65).



➡ 1) ET Adjust : ON
2) Precip: 0.00 in
3) Sat : 00.00 in
4) Crop Factor: 1.00

Figure 65

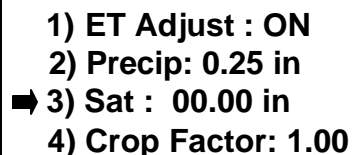
Push the DOWN arrow once. The display should change to the screen below (Fig. 66).



1) ET Adjust : ON
➡ 2) Precip: 0.00 in
3) Sat : 00.00 in
4) Crop Factor: 1.00

Figure 66

Using the numbers on the keypad, enter the Precipitation Rate. To enter a .25 in. Precipitation, you would push 0, 2, 5. When the last number of the Precipitation is entered, the cursor should move down to the next line and the display should change to the screen below (Fig. 67).



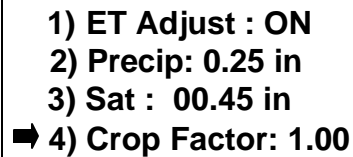
1) ET Adjust : ON
2) Precip: 0.25 in
➡ 3) Sat : 00.00 in
4) Crop Factor: 1.00

Figure 67

Controller Programming (continued).

ET Setup

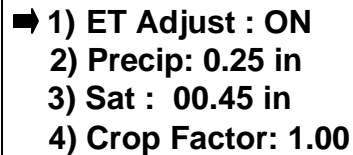
Using the numbers on the keypad, enter the Saturation value. To enter a 00.45 in. Saturation you would push 0, 0, 4, 5. When the last number of the Saturation is entered, the cursor should move down to the next line and the display should change to the screen below (Fig. 68).



1) ET Adjust : ON
2) Precip: 0.25 in
3) Sat : 00.45 in
➡ 4) Crop Factor: 1.00

Figure 68

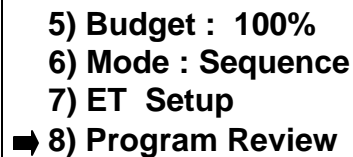
Using the numbers on the keypad, enter the crop factor. (1.00 factory default). When the last number of the Crop factor is entered, the cursor should move up to the first line and the display should change to the screen below (Fig. 69).



➡ 1) ET Adjust : ON
2) Precip: 0.25 in
3) Sat : 00.45 in
4) Crop Factor: 1.00

Figure 69

When finished setting the ET information, push the ENTER/NEXT on the keypad. The display should change to the screen below (Fig. 70).



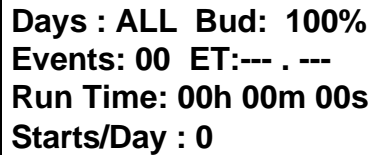
5) Budget : 100%
6) Mode : Sequence
7) ET Setup
➡ 8) Program Review

Figure 70

Controller Programming (continued).

Program Review

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 71).



Days : ALL Bud: 100%
Events: 00 ET:--- . ---
Run Time: 00h 00m 00s
Starts/Day : 0

Figure 71

The display shows that the Water Days is on the ALL option. The Water Budget on the program is 100%. There are 00 events scheduled. ET is OFF. Total Run time on the program is 00h 00m & 00s. There no scheduled Start Times per Day. For more detailed information, push the ENTER/NEXT button on the keypad. Scroll up using the up arrows on the keypad to the correct line and push ENTER/NEXT.

Save Program / Ignore Changes / Clear Program

One of these choices must be selected (Fig. 72). Use the DOWN arrow on the keypad to select the option and push the ENTER/NEXT button.



➡ 9) Save Program
10) Ignore Changes
11) Clear Program

Figure 72

When the ENTER/NEXT button is pushed, the display should change to the screen below. From here, press the ESC/PREVIOUS button on the keypad to exit the programming menu, or enter a new program number to continue editing/building watering programs (Fig. 73).



➡ 1) Program : - - -
2) Cycle Starts
3) Water Days: -
4) Station Times

Figure 73

Water Budget

The Water Budget is used to adjust ALL active program events by a user-set percentage. The Water budget value described here works in conjunction with the program specific water budget value (See programming).

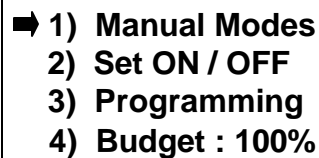
Start at the screen below (Fig. 74).



07:45:00P 04/15/2002
ID# 000 Stations: 24

Figure 74

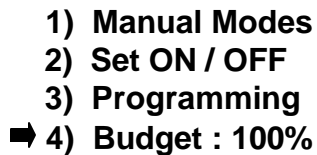
Push the ENTER/NEXT button on the keypad once. The display should change to the screen below (Fig. 75).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 75

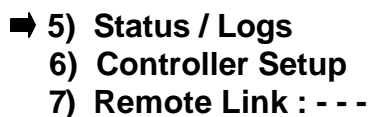
Push the DOWN arrow on the keypad three times. The display should change to the screen below (Fig. 76).



1) Manual Modes
2) Set ON / OFF
3) Programming
➡ 4) Budget : 100%

Figure 76

Using the numbers on the keypad, you may change the Water Budget for the Controller. When the last number of the three-digit number is pushed the display should change to the screen below (Fig. 77). The Budget may be set from 000% to 999% in 1% increments. Water Budgeting will take the event duration times and multiple them by the budget percentage to calculate the actual water duration time. I.e. 100% of 10 minutes = 10 minutes, 50% of 10 minutes = 5 minutes, 150% of 10 minutes = 15 minutes.



➡ 5) Status / Logs
6) Controller Setup
7) Remote Link : - - -

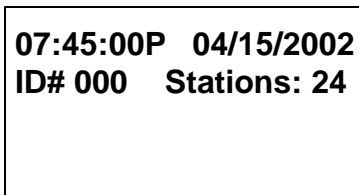
Figure 77

Status and Logs

There are 12 different Logs to choose from:

- 1) **Program Usage**, this log shows ALL automatic and manual programs in the Controller.
- 2) **Alarm Log**, this log shows the last 90 alarms recorded in the Controller.
- 3) **Event Log**, this log shows the last 125 events recorded in the Controller.
- 4) **AC Power**, this log shows the current amperage usage.
- 5) **S1 Status Now**, this shows the current status of Sensor 1.
- 6) **S1 History Log**, this shows the History of Sensor 1.
- 7) **S2 Status Now**, this shows the current status of Sensor 2.
- 8) **S2 History Log**, this shows the History of Sensor 2.
- 9) **Remote S1 Now**, this shows the current status of Remote Sensor 1.
- 10) **Remote S1 Log**, this shows the History of Remote Sensor 1.
- 11) **Remote S2 Now**, this shows the current status of Remote Sensor 2.
- 12) **Remote S2 Log**, this shows the History of Remote Sensor 2.

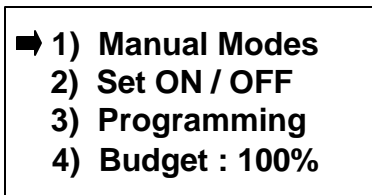
Start at the screen below (Fig. 78).



07:45:00P 04/15/2002
ID# 000 Stations: 24

Figure 78

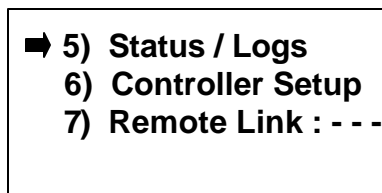
Push the ENTER/NEXT button on the keypad once. The display should change to the screen below (Fig. 79).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 79

Push the DOWN arrow on the keypad four times. The display should change to the screen below (Fig. 80).



➡ 5) Status / Logs
6) Controller Setup
7) Remote Link : - - -

Figure 80

Status and Logs (continued).

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 81).

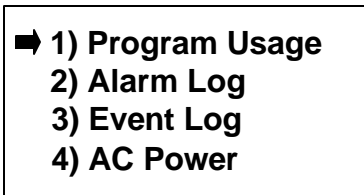


Figure 81

Using the DOWN or UP buttons on the keypad, you may scroll through the Log options. When the arrow is pointing to the Log you want to view, push the ENTER/NEXT button on the keypad and the display should change to the appropriate Log screen.

Program Usage

In this example we are viewing the Program Usage Log (Fig. 82).

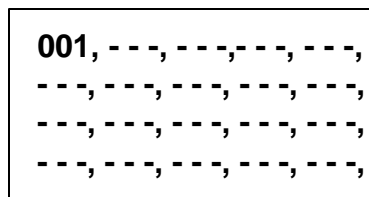


Figure 82

- A steady lit three-digit number is a program that will water automatically.
- A flashing three-digit number is a program that needs to be started manually. (Usually designates a Test program).

Status and Logs (continued).

Alarm Log

In this example we are viewing the Alarm Log. (Fig. 83).

Alarm : 01 06/19/2002 05:15:47P Sat : 001 Sensor : 0 Station ON Fault 002

Figure 83

- The first line of the display indicates the Alarm number. The Controller will hold the most recent 90 Alarms. Once the Alarm Log is full, the oldest Alarm entry will drop from view.
- The second line of the display indicates the date and time the Alarm occurred.
- The third line of the Alarm indicates which Controller and which sensor detected the Alarm.
- The fourth line indicates the Alarm Type.

*** For explanations of the different Alarm Codes see the troubleshooting section of this manual (Page 106).*

Event Log

In this example we are viewing the Event Log (Fig. 84).

Event : 001 06/19/2002 05:15:45P Station: 001 00000 Run Time Elapsed
--

Figure 84

- The first line of the display indicates the Event number. The Controller will hold the most recent 125 Events. Once the Event Log is full, the oldest Event entry will drop from view.
- The second line of the display indicates the date and time the Event occurred.
- The third line of the display indicates the Station number and time duration in seconds.
- The fourth line on the display indicates the type of Event that took place.

*** For explanations of the different Event Codes see the troubleshooting section of this manual (Pages 107).*

Status and Logs (continued).

AC Power

In this example we are viewing the AC Power log (Fig. 85).

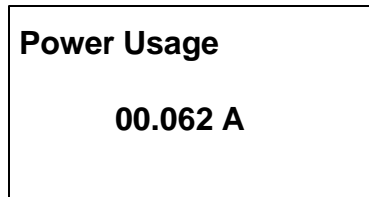


Figure 85

The display indicates a total amperage use of .062 of an Amp on the 24Vac circuit.

Now Logs

When viewing a NOW Log, a Flow log will look the same no matter where it is S1, S2, Remote S1 or Remote S2. The same goes for E.T., Rain Bucket Rain Switch, Moisture and Start sensors. However, Sensors S1 and S2 are updated every second, while the remote sensors require you to push the ENTER/NEXT key to refresh the data.

In the example we are viewing the NOW status of Sensors 1 without the sensor programmed (Fig. 86).

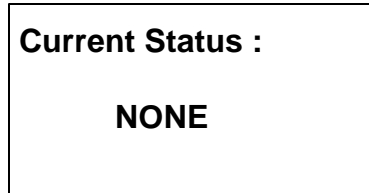


Figure 86

This display indicates there is no sensor assigned to Sensor 1.

In this example we are viewing the NOW status of Sensor 1 programmed as a FLOW meter (Fig. 87).

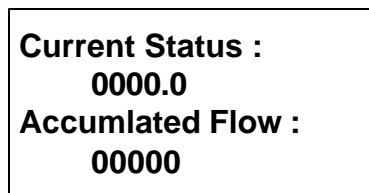


Figure 87

This display indicates there is a Flow meter assigned to Sensor 1. This display will read the same for Sensor 2, Remote Sensor 1 and Remote Sensor 2. The *Current Status* indicates that the current flow rate is 0gpm. The accumulated flow is the total flow that the sensor has measured today. The accumulated flow is logged daily at midnight and then reset.

Status and Logs (continued).

Now Logs (continued).

In this example we are viewing the NOW status of Sensor 1 with an E.T. Gauge OR a Rain Bucket assigned to Sensor 1 (Fig.88).

Current Status :

00.00 inches

Figure 88

The current status indicates the measured ET or rain accumulated today. The value is logged at the programmed daily log time and then reset.

In this example we are viewing the NOW status of Sensor 1 with a Rain Switch, Moisture OR Start sensor assigned to Sensor 1 (Fig.89).

Current Status :

Sensor is INACTIVE

Figure 89

The display indicates the Rain Switch, Moisture OR Start sensor is INACTIVE. The current status will be either ACTIVE or INACTIVE.

History Logs

In this example we are viewing the History status of Sensor 1 with a Flow Sensor assigned to Sensor 1 (Fig.90).

Location 01 of 90
07/03/2002 11:59:59P
00000 Gallons

Figure 90

The display indicates that the total Flow of water for the last 24 hour period, from 11:59:59PM to 11:59:59PM, was 00000 gallons. The data is logged by default at 11:59:59PM and is NOT programmable through the Controller.

Status and Logs (continued).

History Logs (continued).

In this example we are viewing the History Log of Sensor 1 with an E.T. Gauge assigned to Sensor 1 (Fig.91).

Location 01 of 90 07/03/2002 11:59:59P 00.00 inches
--

Figure 91

The above display indicates that the E.T. data sent on 07/03/2002 at 11:59:59PM was 00.00 inches. The data was logged by default at 11:59:59PM. The E.T. log time is programmable through the Controller.

In this example we are viewing the History Log of Sensor 1 with a Rain Bucket Sensor assigned to Sensor 1 (Fig.92).

Location 01 of 90 07/03/2002 11:59:59P 00.00 inches
--

Figure 92

The above display indicates that the Rain Bucket data sent on 07/03/2002 at 11:59:59PM was 00.00 inches. The data was logged by default at 11:59:59PM. The Rain Bucket log time is programmable through the Controller.

The Rain Switch, Moisture and Start sensors will not have a History Log. To review these sensor activities, refer to the Alarm Log or Event Log in the Controller.

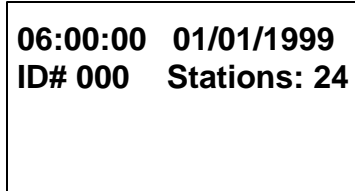
Remote Sensor Data

All Remote Sensor data will appear exactly as if you were at that Controller. When the Remote Sensor Data is requested, the Controller initiates a Remote Link with the Controller attached to the Remote Sensor and will retrieve the Sensor data. Remote Sensor data is stored at the Controller that the Sensor is connected to, NOT the Controller that is remote linked with the sensor.

Controller Setup

Setting Current Time and Date

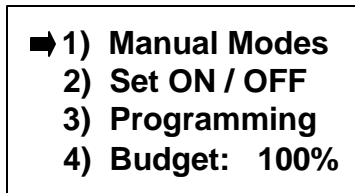
To set the current time and date, start at the screen below (Fig. 93).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 93

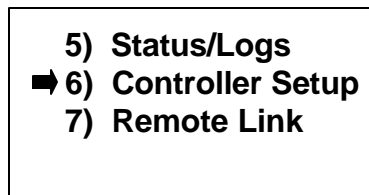
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 94).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget: 100%

Figure 94

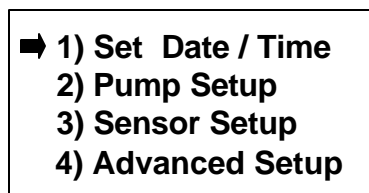
Push the DOWN arrow on the keypad 5 times, each time the arrow button is pushed the arrow on the screen should move down one number (Fig. 95).



5) Status/Logs
➡ 6) Controller Setup
7) Remote Link

Figure 95

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 96).



➡ 1) Set Date / Time
2) Pump Setup
3) Sensor Setup
4) Advanced Setup

Figure 96


Controller Setup (continued).

Setting Current Time and Date (continued).

Push the ENTER/NEXT button on the keypad.

The display should change to the screen below (Fig. 97).

** At anytime you may push the UP or DOWN arrow to skip to the next line.*



➡ 1) Time: 06:00:00
2) Date: 01/01/1999
3) Week: (1~4) : 1
4) Mode: 12 hour

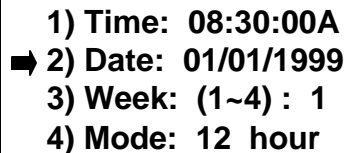
Figure 97

Push the numbers on the keypad for the current time of day.

0,8,3,0,0,0, ON/AM would read on the display as 08:30:00A (Fig. 98A).

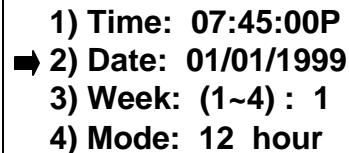
0,7,4,5,0,0, OFF/PM would read on the display as 07:45:00P (Fig. 98B).

When you push either the ON/AM or OFF/PM button on the keyboard, the cursor will advance to the next line.



1) Time: 08:30:00A
➡ 2) Date: 01/01/1999
3) Week: (1~4) : 1
4) Mode: 12 hour

Figure 98A



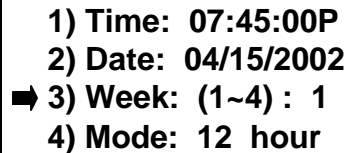
1) Time: 07:45:00P
➡ 2) Date: 01/01/1999
3) Week: (1~4) : 1
4) Mode: 12 hour

Figure 98B

Push the numbers on the keypad for the current date (Month / Day / Year).

0,4,1,5,2,0,0,2 would read on the display as 04/15/2002. When you push the last number in the year, the cursor will advance to the next line.

The display should change this screen below (Fig. 99).



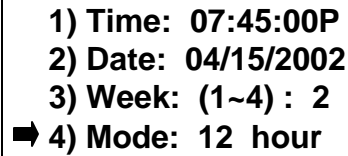
1) Time: 07:45:00P
2) Date: 04/15/2002
➡ 3) Week: (1~4) : 1
4) Mode: 12 hour

Figure 99

Controller Setup (continued).

Setting Current Time and Date (continued).

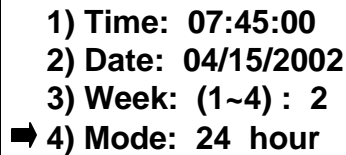
Enter the current week. Push the number on the keypad that corresponds to the Current week in the 4 week period used in weekday watering programs. After the correct week has been entered, the arrow will automatically advance to the next line (Fig. 100).



1) Time: 07:45:00P
2) Date: 04/15/2002
3) Week: (1~4) : 2
➡ 4) Mode: 12 hour

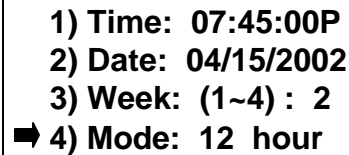
Figure 100

Push either the RIGHT or LEFT arrows on the keypad to toggle between a 12-hour and a 24-hour time mode (Fig. 101A & 101B).



1) Time: 07:45:00
2) Date: 04/15/2002
3) Week: (1~4) : 2
➡ 4) Mode: 24 hour

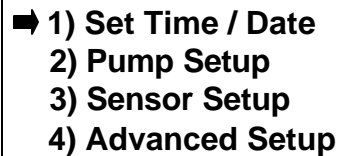
Figure 101A



1) Time: 07:45:00P
2) Date: 04/15/2002
3) Week: (1~4) : 2
➡ 4) Mode: 12 hour

Figure 101B

When finished setting the current Time and Date, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 102).



➡ 1) Set Time / Date
2) Pump Setup
3) Sensor Setup
4) Advanced Setup

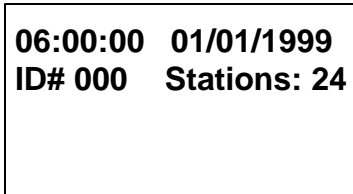
Figure 102

Controller Setup (continued).

Pump Set-up

This feature allows you to assign any station as a Pump Start/Master Valve and to program the Pump Start/Master Valve to any station(s) on the Controller.

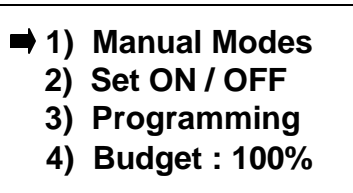
Start from the screen below (Fig. 103).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 103

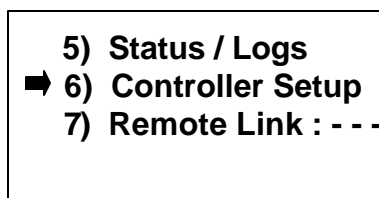
Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 104).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 104

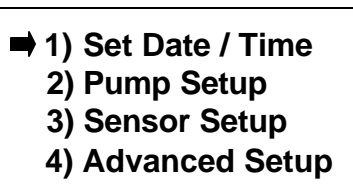
Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 105).



5) Status / Logs
➡ 6) Controller Setup
7) Remote Link : - - -

Figure 105

Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 106).



➡ 1) Set Date / Time
2) Pump Setup
3) Sensor Setup
4) Advanced Setup

Figure 106

Controller Setup (continued).

Pump Set-up (continued).

Push the DOWN arrow on the keypad once. The display should change to the screen below (Fig. 107).

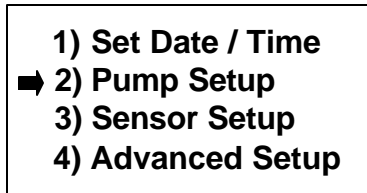


Figure 107

Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 108).

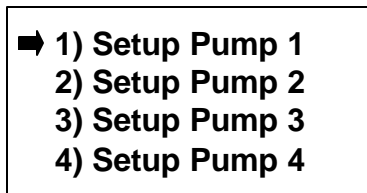


Figure 108

Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 109).

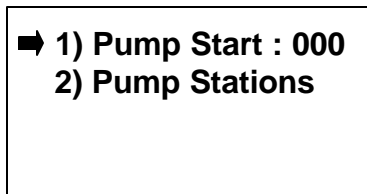


Figure 109

Using the numbers on the keypad, enter the three digit station number you want as your Pump Start/Master Valve. Example: 0, 0, 8 would make station 8 the Pump Start/Master Valve. To disable the Pump Start/Master Valve, use station number 000. When the last number of the three-digit station number is pushed the display should change to the screen below (Fig. 110).

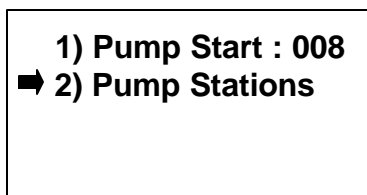
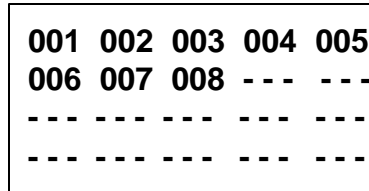


Figure 110

Controller Setup (continued).

Pump Set-up (continued).

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 111).



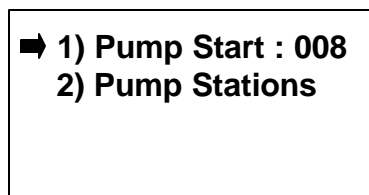
001	002	003	004	005
006	007	008	- - -	- - -
- - -	- - -	- - -	- - -	- - -
- - -	- - -	- - -	- - -	- - -

Figure 111

The station count on the Controller determines this display. This display indicates that this is an 8-station Controller. A 48-station Controller would have 48 stations showing. Use the arrows on the keypad to scroll to every station and use the ON/AM to assign or OFF/PM to unassign the station to the Pump Start/Master Valve. Use the ON + 9 or OFF + 9 key combinations to turn ALL stations ON or OFF, respectively.

Remember: Flashing is OFF and steady lit is ON.

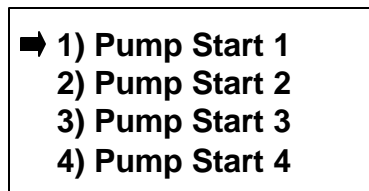
When finished assigning the stations to the Pump Start/Master Valve, push the ENTER/NEXT button on the keyboard. The display should change to the screen below (Fig. 112).



➡ 1) Pump Start : 008
2) Pump Stations

Figure 112

You may program up to 4 Pump Start/Master Valves per Controller. To program another Pump Start/Master Valve, push the ESC/PREVIOUS button on the keypad once. The display should change to the screen below (Fig. 113).



➡ 1) Pump Start 1
2) Pump Start 2
3) Pump Start 3
4) Pump Start 4

Figure 113

Using the DOWN arrow on the keypad, select the next Pump Start/Master Valve and follow the instructions above. To escape back to the main screen, push the ESC/PREVIOUS button on the keypad three times.

Controller Setup (continued).

Sensor 1 & 2 Setup

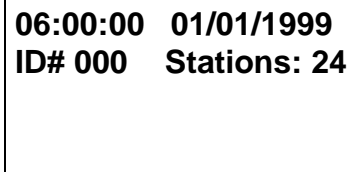
This feature allows you to assign sensors to the sensor ports. There are six sensor options.

- 1) Flow, allows you to manage over-flow and under-flow conditions at the Controller.
- 2) E.T. Gauge, allows you to use an E.T. Gauge to automatically adjust Up or Down the amount of precipitation in the water programs within the Controller.
- 3) Rain Bucket, allows you to use a Rain Bucket to automatically adjust down your water programs in the Controller by the amount of rainfall recorded.
- 4) Rain Switch, allows you to use a Rain Switch to shut down station(s). on the Controller when the Rain Switch becomes active.
- 5) Moisture, allows you to use a Moisture Sensor to shut down a station(s). on the Controller when the Moisture Sensor is active.
- 6) Start, allows a program to start when the Start Sensor is activated. The program will loop continuously while the sensor is in the active state.

Any of the Sensors can be assigned to either Sensor 1 or Sensor 2. Multiple Rain Switch, Start and Moisture sensors are permitted. Only one ET Gauge, Rain Bucket or Flow Sensor is permitted per Controller.

FLOW

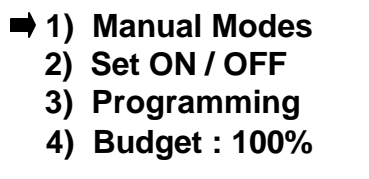
Start from the screen below (Fig. 114).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 114

Push the ENTER/NEXT button on the keypad once. The display should change to the screen below (Fig. 115).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 115

Controller Setup (continued).

FLOW

Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 116).

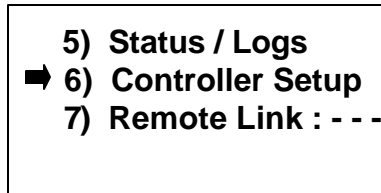


Figure 116

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 117).

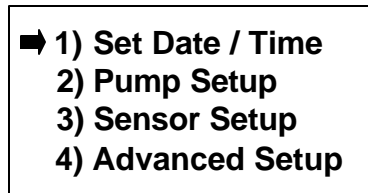


Figure 117

Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 118).

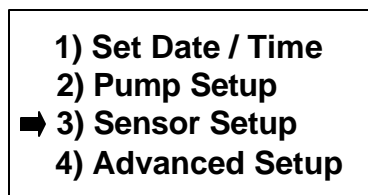


Figure 118

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 119). *You would push the DOWN arrow once, before pushing the ENTER/NEXT button, to attach the Flow Sensor to Sensor 2.*

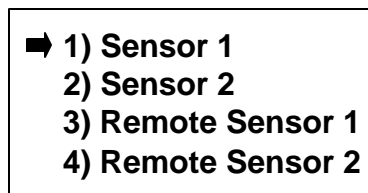


Figure 119

Controller Setup (continued).

FLOW

Push the ENTER/NEXT button on the keypad. You are now going to program Sensor 1. The display should change to the screen below (Fig. 120).

➡ 1) Type : NONE

Press NEXT to setup sensor.

Figure 120

Using the RIGHT or LEFT arrows on the keypad to scroll through the Sensor options. Push the RIGHT arrow once and the sensor is designated as a Flow Sensor. The display should change to the screen below (Fig. 121).

➡ 1) Type : FLOW

Press NEXT to setup sensor.

Figure 121

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 122).

➡ 1) Units: Gallons
2) K: 0000.000
3) Offset : 000
4) Alarms: NONE

Figure 122

Using the LEFT or RIGHT arrows on the keypad, the unit can be changed from Gallons to Liters.

Push the DOWN arrow once and the display should change to the screen below (Fig. 123).

1) Units: Gallons
➡ 2) K: 0000.000
3) Offset : 000
4) Alarms: NONE

Figure 123

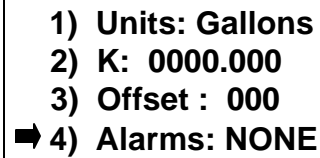
Set the K Factor by looking at the Manufacturers' Specifications. The "K" Factor table will specify by model number, given the pipe size and material type, the "K" Factor will be XX.XXX. Example, "...2" PVC sch/40 pipe will have a "K" Factor of XX.XXX.

**** The Offset does NOT need to be set. Leave the 000 on this line.**

Controller Setup (continued).

FLOW

Push the DOWN arrow twice. The display should change to the screen below (Fig. 124).



1) Units: Gallons
2) K: 0000.000
3) Offset : 000
➡ 4) Alarms: NONE

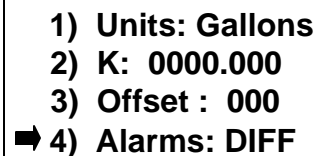
Figure 124

Using the LEFT or RIGHT arrows on the keypad, the Alarm can be change to either the ABS (Absolute) or the DIFF (Differential) options.

ABS Alarm at the Absolute flow designated. Over-flow Alarms only! This option would be used if there were multiple Controllers using the information from one or more flow sensors.

DIFF Alarm at an ABS flow PLUS the Differential % designated. The DIFF option can generate both Over-flow and Under-flow Alarms. This option would be used if there were one Controller attached to one flow sensor at one point of connection.

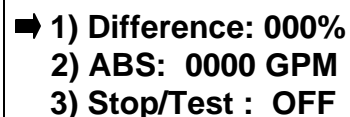
Using the LEFT or RIGHT arrows on the keypad, the Alarm can be change to DIFF. The display should change to the screen below (Fig. 125).



1) Units: Gallons
2) K: 0000.000
3) Offset : 000
➡ 4) Alarms: DIFF

Figure 125

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 126).



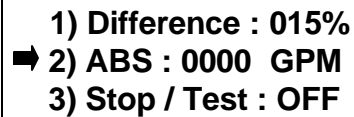
➡ 1) Difference: 000%
2) ABS: 0000 GPM
3) Stop/Test : OFF

Figure 126

Controller Setup (continued).

FLOW

Push the numbers on the keypad to enter the Difference value. Example,...0, 1, 5 would be a 15% Difference value. The Difference percentage from the flow table information is used by the Controller to determine the under-flow and over-flow conditions. When the third number is pushed, the display should change to the screen below (Fig. 127).

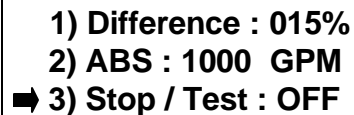


1) Difference : 015%
➡ 2) ABS : 0000 GPM
3) Stop / Test : OFF

Figure 127

Push the numbers on the keypad to enter the ABS value. Example,...1, 0, 0, 0 would be a 1000 GPM Absolute. Using the Absolute GPM setting, the Controller will determine if the maximum flow of water has been exceeded. The ABS Flow should NOT be faster than a velocity of 7 fps. If this Absolute is set too low, the system could send an Over-flow Alarm even when an over-flow condition did NOT exist. If the Absolute were set too high, the Controller would never send the Over-flow Alarm.

When the fourth number is pushed, the display should change to the screen below (Fig. 128).



1) Difference : 015%
2) ABS : 1000 GPM
➡ 3) Stop / Test : OFF

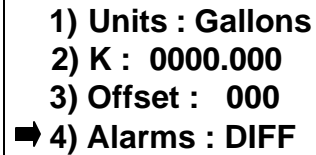
Figure 128

Using the LEFT or RIGHT arrows on the keypad, the Stop/Test can be set either ON or OFF. When the Stop/Test feature is ON, the Controller will evaluate the High or Low flow condition. When a Flow Alarm is triggered, the Controller will shut down ALL active stations on the Controller. Then, one by one, the Controller will turn on those stations that had been active and check the flow of each one against the flow table in the Controller. When the Controller determines the faulty station, the Controller will shut down that station and send an Alarm to the Controller Alarm Log. Then the Controller will re-activate all the stations that had been active when the High Flow or Low Flow condition was detected, excluding the problem station.

Controller Setup (continued).

FLOW

After choosing the Stop / Test either ON or OFF, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 129).



1) Units : Gallons
2) K : 0000.000
3) Offset : 000
➡ 4) Alarms : DIFF

Figure 129

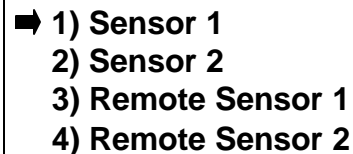
Push the DOWN arrow three times. The display should change to the screen below (Fig. 130).



5) Build Flow Table
6) View Flow Table
➡ 7) Save and Exit

Figure 130

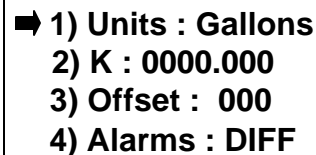
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 131). If you do NOT Save and Exit, the sensor will NOT be assigned to the Controller.



➡ 1) Sensor 1
2) Sensor 2
3) Remote Sensor 1
4) Remote Sensor 2

Figure 131

Push the ENTER/NEXT button twice. The display should change to the screen below (Fig. 132).



➡ 1) Units : Gallons
2) K : 0000.000
3) Offset : 000
4) Alarms : DIFF

Figure 132

Controller Setup (continued).

FLOW

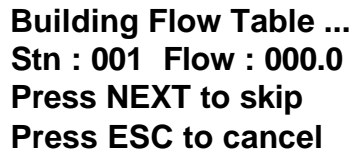
Push the DOWN arrow four times. The display should change to the screen below (Fig. 133).



➡ 5) Build Flow Table
6) View Flow Table
7) Save and Exit

Figure 133

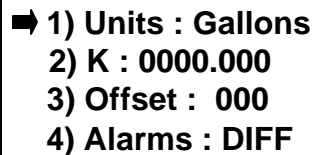
Push the ENTER/NEXT button on the keypad to start building the Flow Table. When the ENTER/NEXT button is pushed the display should change to the screen below (Fig. 134).



Building Flow Table ...
Stn : 001 Flow : 000.0
Press NEXT to skip
Press ESC to cancel

Figure 134

The Controller is now building a flow table for ALL stations on the Controller. The stations will be activated in numerical sequence and will run for 90 seconds each. To skip a station, simply push the ENTER/NEXT button on the keypad (when a station is skipped, the characteristic flow is set to 0). To stop the Building of the Flow Table, push the ESC/PREVIOUS button on the keypad. When the Building of the Flow Table is finished the display should change to the screen below (Fig. 135).



➡ 1) Units : Gallons
2) K : 0000.000
3) Offset : 000
4) Alarms : DIFF

Figure 135

The Flow Sensor is now programmed.

To view the Flow Table, push the DOWN arrow five times, the display should change to the screen below (Fig. 136).



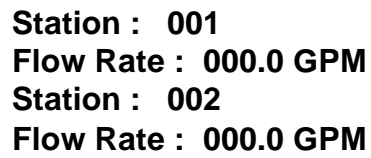
5) Build Flow Table
➡ 6) View Flow Table
7) Save and Exit

Figure 136

Controller Setup (continued).

FLOW

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 137).



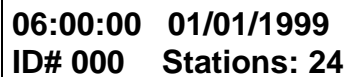
Station : 001
Flow Rate : 000.0 GPM
Station : 002
Flow Rate : 000.0 GPM

Figure 137

Using the Up or DOWN arrows on the keypad, you can scroll through all stations on the Controller.

ET GAUGE and RAIN BUCKET

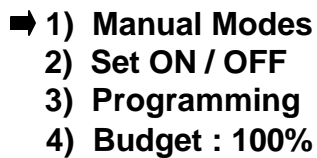
Start at the screen below (Fig. 138).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 138

Push the ENTER/NEXT button on the keypad once. The display should change the screen below (Fig. 139).



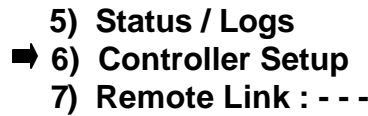
➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 139

Controller Setup (continued).

ET GAUGE and RAIN BUCKET

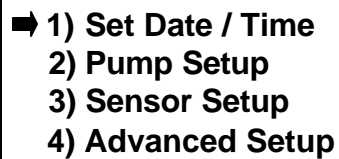
Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 140).



5) Status / Logs
➡ 6) Controller Setup
7) Remote Link : - - -

Figure 140

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig.141).



➡ 1) Set Date / Time
2) Pump Setup
3) Sensor Setup
4) Advanced Setup

Figure 141

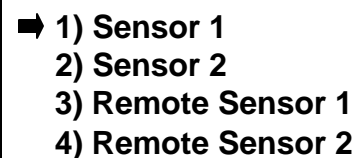
Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 142).



1) Set Date / Time
2) Pump Setup
➡ 3) Sensor Setup
4) Advanced Setup

Figure 142

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 143). *You would push the DOWN arrow once, before pushing the ENTER/NEXT button, to attach the ET Gauge or Rain Bucket Sensor to Sensor 2.*



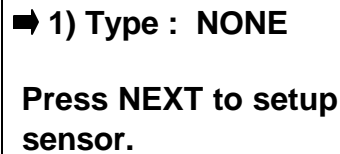
➡ 1) Sensor 1
2) Sensor 2
3) Remote Sensor 1
4) Remote Sensor 2

Figure 143

Controller Setup (continued).

ET GAUGE and RAIN BUCKET

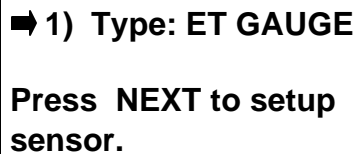
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 144).



➡ 1) Type : NONE
Press NEXT to setup sensor.

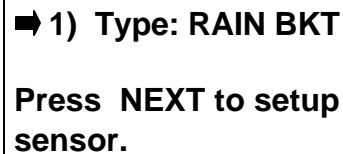
Figure 144

Use the RIGHT or LEFT arrows on the keypad to scroll through the Sensor options. Push the RIGHT arrow twice to set the sensor to ET GAUGE. The display should change to the screen below (Fig. 145A). OR, push the RIGHT arrow three times; to set the sensor to RAIN BKT. The display should change to the screen below (Fig. 145B).



➡ 1) Type: ET GAUGE
Press NEXT to setup sensor.

Figure 145A

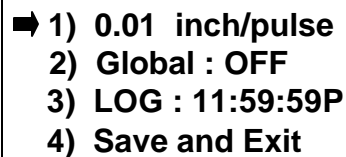


➡ 1) Type: RAIN BKT
Press NEXT to setup sensor.

Figure 145B

Both of these types of sensors will program exactly the same.

Push the NEXT button on the keypad. The display should change to the screen below (Fig.146).



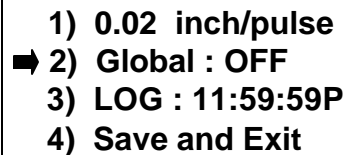
➡ 1) 0.01 inch/pulse
2) Global : OFF
3) LOG : 11:59:59P
4) Save and Exit

Figure 146

Controller Setup (continued).

ET GAUGE and RAIN BUCKET

Using the numbers on the keypad, enter the inch/pulse information. The ET Gauge or Rain Bucket owners' manual should have this information. To enter a 0.02 inch/pulse, push the 0, 0, 2 buttons on the keypad. When the third number is pushed, the display should change to the screen below (Fig. 146).

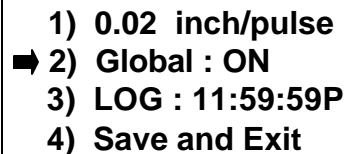


1) 0.02 inch/pulse
➡ 2) Global : OFF
3) LOG : 11:59:59P
4) Save and Exit

Figure 146

The Global setting is for transmitting the ET or Rain Bucket data to other Controllers. This must be ON for the ET or Rain Bucket data to be shared among other Controllers.

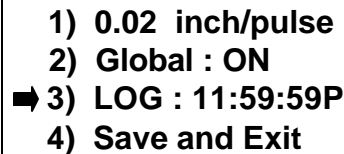
To activate the Global option, either push the ON/AM button on the keypad OR push the LEFT or RIGHT arrow buttons on the keypad. When you activate Global, the display should change to the screen below (Fig. 147).



1) 0.02 inch/pulse
➡ 2) Global : ON
3) LOG : 11:59:59P
4) Save and Exit

Figure 147

Push the DOWN arrow on the keypad. The display should change to the screen below (Fig. 148).



1) 0.02 inch/pulse
2) Global : ON
➡ 3) LOG : 11:59:59P
4) Save and Exit

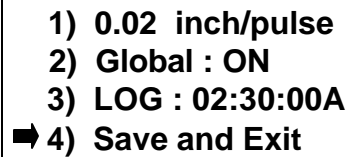
Figure 148

Controller Setup (continued).

ET GAUGE and RAIN BUCKET

The LOG is the time the ET or Rain Bucket data will be logged to memory AND transmitted to other Controllers (If the GLOBAL option is ON).

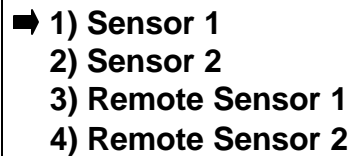
Using the numbers on the keypad, the LOG time may be changed. The time is represented in HOURS: MINUTES: SECONDS. To change the time to 2:30am, the button sequence would be 0, 2, 3, 0, 0, 0, & ON/AM. When the ON/AM or OFF/PM button is pushed, the display should change to the screen below (Fig. 149).



1) 0.02 inch/pulse
2) Global : ON
3) LOG : 02:30:00A
➡ 4) Save and Exit

Figure 149

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 150).



➡ 1) Sensor 1
2) Sensor 2
3) Remote Sensor 1
4) Remote Sensor 2

Figure 150

The ET Gauge or Rain Bucket has been programmed onto Sensor 1.

RAIN SWITCH and MOISTURE

Start from the screen below (Fig. 151).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 151

Controller Setup (continued).

RAIN SWITCH and MOISTURE

Push the ENTER/NEXT button on the keypad once.
The display should change this screen below (Fig. 152).

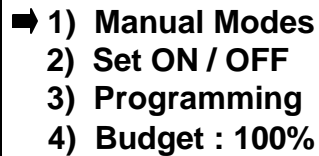
- 
- ➡ 1) Manual Modes
 - 2) Set ON / OFF
 - 3) Programming
 - 4) Budget : 100%

Figure 152

Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 153).

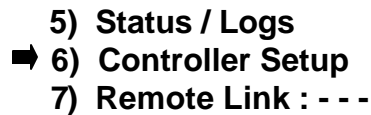
- 
- 5) Status / Logs
 - ➡ 6) Controller Setup
 - 7) Remote Link : - - -

Figure 153

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 154).

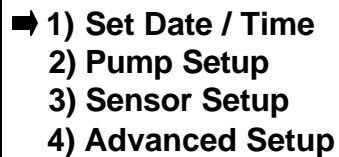
- 
- ➡ 1) Set Date / Time
 - 2) Pump Setup
 - 3) Sensor Setup
 - 4) Advanced Setup

Figure 154

Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 155).

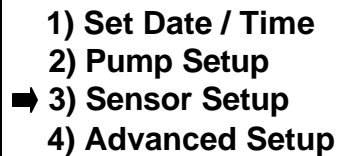
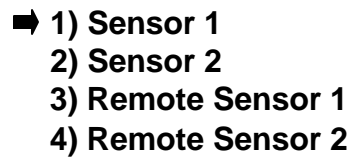
- 
- 1) Set Date / Time
 - 2) Pump Setup
 - ➡ 3) Sensor Setup
 - 4) Advanced Setup

Figure 155

Controller Setup (continued).

RAIN SWITCH and MOISTURE

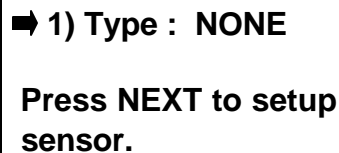
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 156). *You would push the DOWN arrow once, before pushing the ENTER/NEXT button, to attach the Rain Switch or Moisture Sensor to Sensor 2.*



➡ 1) Sensor 1
➡ 2) Sensor 2
➡ 3) Remote Sensor 1
➡ 4) Remote Sensor 2

Figure 156

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 157).

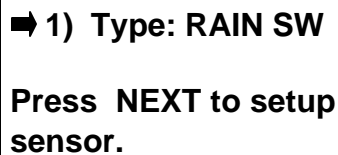


➡ 1) Type : NONE

Press NEXT to setup sensor.

Figure 157

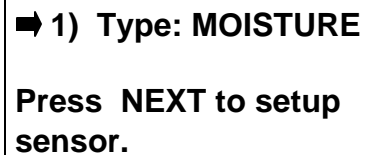
Using the RIGHT or LEFT arrows on the keypad to scroll through the Sensor options. Push the RIGHT arrow four times to set the sensor to RAIN SW. The display should change to the screen below (Fig. 158A). OR, push the RIGHT arrow five times; to set the sensor to MOISTURE. The display should change to the screen below (Fig. 158B).



➡ 1) Type: RAIN SW

Press NEXT to setup sensor.

Figure 158A



➡ 1) Type: MOISTURE

Press NEXT to setup sensor.

Figure 158B

Both of these types of sensors will program exactly the same.

Controller Setup (continued).

RAIN SWITCH and MOISTURE

Push the NEXT button on the keypad. The display should change to the screen below (Fig. 159).

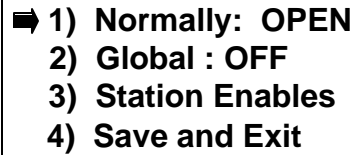
- 
- 1) Normally: OPEN**
 - ➡ 2) Global : OFF**
 - 3) Station Enables**
 - 4) Save and Exit**

Figure 159

Using the LEFT or RIGHT arrows on the keypad, set the switch as either Normally OPEN or CLOSED. When the correct switch configuration is visible, push the DOWN arrow once. The display should change to the screen below (Fig. 160).

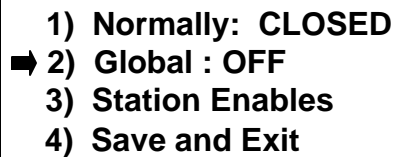
- 
- 1) Normally: CLOSED**
 - ➡ 2) Global : OFF**
 - 3) Station Enables**
 - 4) Save and Exit**

Figure 160

The Global setting is for transmitting the Rain Switch or Moisture sensor status to other Controllers. This must be ON for the Rain Switch or Moisture sensors status to be shared with other Controllers.

To activate the Global option either push the ON/AM button OR the LEFT or RIGHT arrow buttons on the keypad. When you activate Global, the display should change to the screen below (Fig.161).

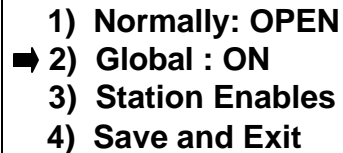
- 
- 1) Normally: OPEN**
 - ➡ 2) Global : ON**
 - 3) Station Enables**
 - 4) Save and Exit**

Figure 161

Controller Setup (continued).

RAIN SWITCH and MOISTURE

Push the DOWN arrow on the keypad. The display should change to the screen below (Fig. 162).

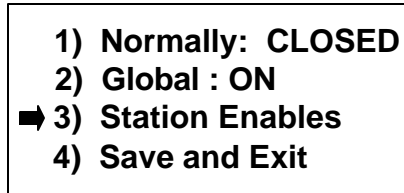


Figure 162

Push the NEXT/ENTER button on the keypad. The display should change to the screen below (Fig. 163).

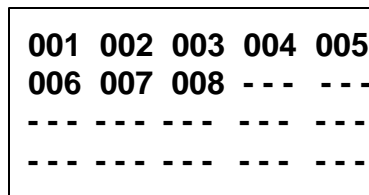


Figure 163

NOTE: Both the Rain Switch and the Moisture Sensors are station specific. This means that each station that is to use the Rain Switch OR Moisture sensor data **MUST** be assigned to that Sensor.

This screen lists the stations on the Controller. Each screen will show a maximum of twenty stations. If the Controller has more than twenty stations it will be necessary to use the DOWN or UP arrows on the keypad to see the next twenty stations.

To **ASSIGN** a station to the sensor, push the ON/AM button on the keypad. To advance to another station, use the arrows on the keypad to move the cursor to the station correct, and then push the ON/AM button to enable.

To **REMOVE** a station from a sensor, push the OFF/PM button on the keypad. To advance to another station, use the arrows on the keypad to move the cursor to the station correct, and then push the OFF/PM button to remove.

Use the ON + 9 or OFF + 9 key combinations to enable or disable all stations, respectively

Remember, Flashing is OFF and a steady lit number is **ENABLED**.

Controller Setup (continued).

RAIN SWITCH and MOISTURE

When done ASSIGNING the stations, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 164).

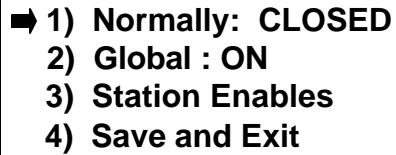
- 
- ➡ 1) Normally: CLOSED
 - 2) Global : ON
 - 3) Station Enables
 - 4) Save and Exit

Figure 164

Push the DOWN arrow three times. The display should change to the screen below (Fig. 165).

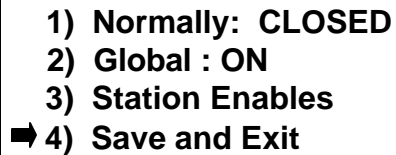
- 
- 1) Normally: CLOSED
 - 2) Global : ON
 - 3) Station Enables
 - ➡ 4) Save and Exit

Figure 165

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 166).

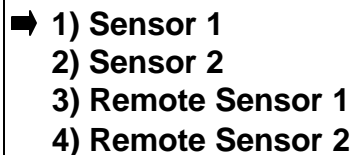
- 
- ➡ 1) Sensor 1
 - 2) Sensor 2
 - 3) Remote Sensor 1
 - 4) Remote Sensor 2

Figure 166

The Sensor has been programmed.

START SENSOR

Start from the screen below (Fig. 167).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 167

Controller Setup (continued).

START SENSOR

Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 168).

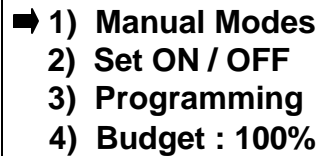
- 
- ➡ 1) Manual Modes
 - 2) Set ON / OFF
 - 3) Programming
 - 4) Budget : 100%

Figure 168

Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 169).

- 
- 5) Status / Logs
 - ➡ 6) Controller Setup
 - 7) Remote Link : - - -

Figure 169

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 170).

- 
- ➡ 1) Set Date / Time
 - 2) Pump Setup
 - 3) Sensor Setup
 - 4) Advanced Setup

Figure 170

Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 171).

- 
- 1) Set Date / Time
 - 2) Pump Setup
 - ➡ 3) Sensor Setup
 - 4) Advanced Setup

Figure 171

Controller Setup (continued).

START SENSOR

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 172)

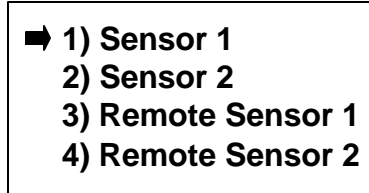
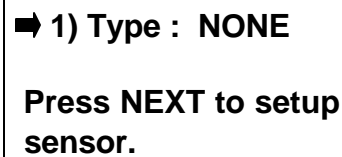
- 
- ➡ 1) Sensor 1
 - 2) Sensor 2
 - 3) Remote Sensor 1
 - 4) Remote Sensor 2

Figure 172

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 173).

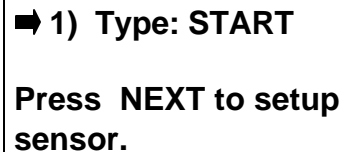


➡ 1) Type : NONE

Press NEXT to setup sensor.

Figure 173

Using the RIGHT or LEFT arrows on the keypad to scroll through the Sensor options. Push the RIGHT arrow six times to set the sensor to START. The display should change to the screen below (Fig. 174).



➡ 1) Type: START

Press NEXT to setup sensor.

Figure 174

Push the NEXT button on the keypad. The display should change to the screen below (Fig. 175).

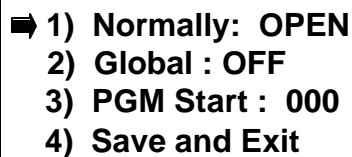
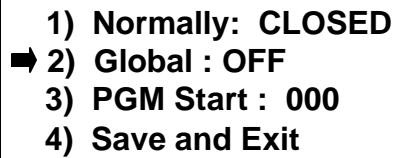
- 
- ➡ 1) Normally: OPEN
 - 2) Global : OFF
 - 3) PGM Start : 000
 - 4) Save and Exit

Figure 175

Controller Setup (continued).

START SENSOR

Using the LEFT or RIGHT arrows on the keypad, to set the switch either Normally OPEN or CLOSED. When the correct switch configuration is visible, push the DOWN arrow once. The display should change to the screen below (Fig. 176).

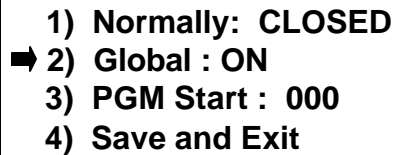


1) Normally: CLOSED
➡ 2) Global : OFF
3) PGM Start : 000
4) Save and Exit

Figure 176

The Global setting is for transmitting the Start sensor status to other Controllers. This must be ON for the Start sensor status to be shared among other Controllers.

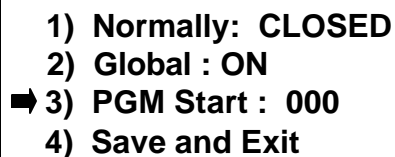
To activate the Global option, either push the ON/AM button OR the LEFT or RIGHT arrow buttons on the keypad. When you activate Global, the display should change to the screen below (Fig.177).



1) Normally: CLOSED
➡ 2) Global : ON
3) PGM Start : 000
4) Save and Exit

Figure 177

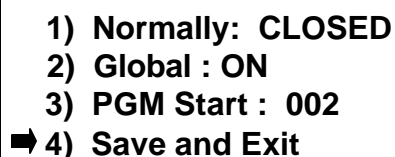
Push the DOWN arrow on the keypad. The display should change to the screen below (Fig. 178).



1) Normally: CLOSED
2) Global : ON
➡ 3) PGM Start : 000
4) Save and Exit

Figure 178

Using the numbers on the keypad, enter the three-digit program number that the START Sensor is to activate. When the last number of the three-digit program number is pushed, the display should change to the screen below (Fig. 179).



1) Normally: CLOSED
2) Global : ON
3) PGM Start : 002
➡ 4) Save and Exit

Figure 179

Controller Setup (continued).

START SENSOR

Push the ENTER/NEXT button on the display to Save the START Sensor data. When the ENTER/NEXT button is pushed, the display should change to the screen below (Fig. 180).

- 
- ➡ 1) Sensor 1
 - 2) Sensor 2
 - 3) Remote Sensor 1
 - 4) Remote Sensor 2

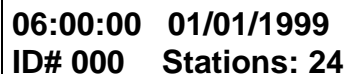
Figure 180

REMOTE SENSORS

A Remote Sensor is a sensor that is physically connected to a different Controller. Example: Controller ID#001 has a Rain Switch connected to Sensor 1 port. Controller ID#002 uses the Rain Switch data from Controller ID#001. This Rain Switch is a Sensor for Controller ID#001 and a Remote Sensor on Controller ID#002.

E.T. Gauge & Rain Bucket

Start from the screen below (Fig. 181).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 181

Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 182).

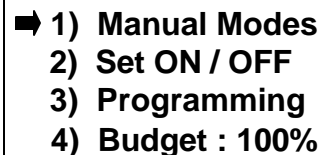
- 
- ➡ 1) Manual Modes
 - 2) Set ON / OFF
 - 3) Programming
 - 4) Budget : 100%

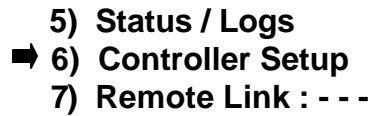
Figure 182

Controller Setup (continued).

REMOTE SENSORS

E.T. Gauge & Rain Bucket

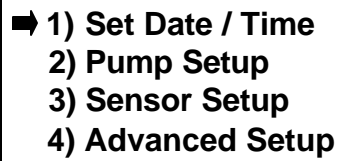
Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 183).



5) Status / Logs
➡ 6) Controller Setup
7) Remote Link : - - -

Figure 183

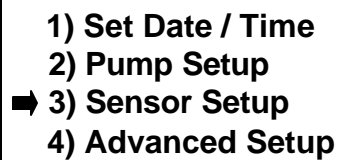
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 184).



➡ 1) Set Date / Time
2) Pump Setup
3) Sensor Setup
4) Advanced Setup

Figure 184

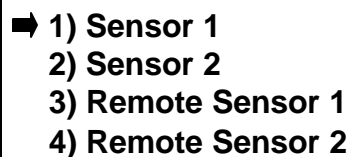
Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 185).



1) Set Date / Time
2) Pump Setup
➡ 3) Sensor Setup
4) Advanced Setup

Figure 185

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 186).



➡ 1) Sensor 1
2) Sensor 2
3) Remote Sensor 1
4) Remote Sensor 2

Figure 186

Push the Down arrow twice. The display should change to the screen below (Fig. 187).

Controller Setup (continued).

REMOTE SENSORS

E.T. Gauge & Rain Bucket

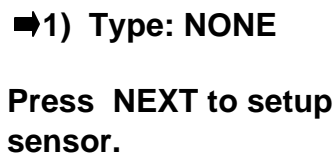
Push the Down arrow twice. The display should change to the screen below (Fig. 187).



1) Sensor 1
2) Sensor 2
➡ 3) Remote Sensor 1
4) Remote Sensor 2

Figure 187

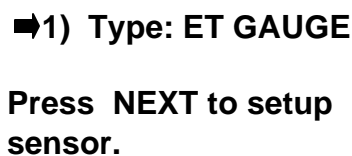
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 188). *You would push the DOWN arrow once, before pushing the ENTER/NEXT button, to program Remote Sensor 2.*



➡1) Type: NONE
Press NEXT to setup sensor.

Figure 188

Push the RIGHT arrow on the keypad twice to set Remote Sensor 1 to E.T. Gauge. Gauge. To assign a Rain Bucket to Remote Sensor 1, push the RIGHT arrow a total of three times. The E.T. Gauge and Rain Bucket use the same programming steps. The display should change to the screen below (Fig. 189).



➡1) Type: ET GAUGE
Press NEXT to setup sensor.

Figure 189

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 189).



➡ 1) Source : 000
2) Sensor : 1
3) Save and Exit

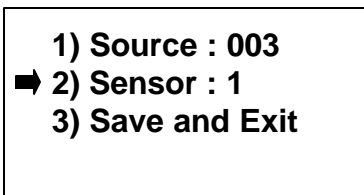
Figure 189

Controller Setup (continued).

REMOTE SENSORS

E.T. Gauge & Rain Bucket

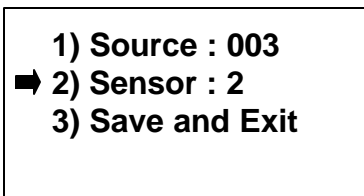
The source address is the Controller address that is connected to the E.T. Gauge (Rain Bucket). Using the numbers on the keyboard, enter the three-digit Controller address. Example: Controller 003 would be entered as 0, 0, 3. When the correct Source Address has been entered, push the DOWN arrow once. The display should change to the screen below (Fig. 190).



1) Source : 003
➡ 2) Sensor : 1
3) Save and Exit

Figure 190

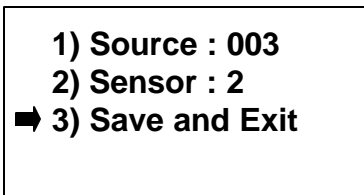
The Controller is defaulted to Sensor 1. If the E.T. Gauge (Rain Bucket) were attached to Sensor 2 of this Controller, the Sensor would be changed to 2. To change from Sensor 1 to Sensor 2, push the number 2 button on the keypad. The display should change to the screen below (Fig. 191).



1) Source : 003
➡ 2) Sensor : 2
3) Save and Exit

Figure 191

Push the DOWN arrow once. The display should change to the screen below (Fig. 192).



1) Source : 003
2) Sensor : 2
➡ 3) Save and Exit

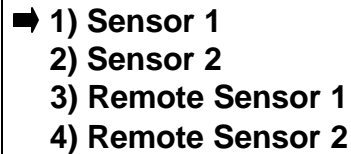
Figure 192

Controller Setup (continued).

REMOTE SENSORS

E.T. Gauge & Rain Bucket

You must Save and Exit to keep this information. Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 193).

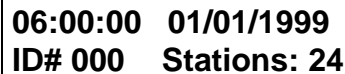


➡ 1) Sensor 1
2) Sensor 2
3) Remote Sensor 1
4) Remote Sensor 2

Figure 193

Rain Switch & Moisture Sensors

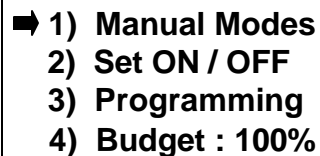
Starting from the screen below (Fig. 194).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 194

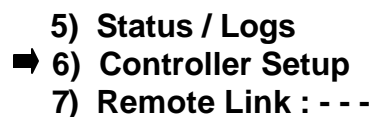
Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 195).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 195

Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 196).



5) Status / Logs
➡ 6) Controller Setup
7) Remote Link : - - -

Figure 196

Controller Setup (continued).

REMOTE SENSORS

Rain Switch & Moisture Sensors

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 197).

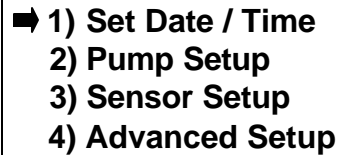
- 
- ➡ 1) Set Date / Time
 - 2) Pump Setup
 - 3) Sensor Setup
 - 4) Advanced Setup

Figure 197

Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 198).


- 
- 1) Set Date / Time
 - 2) Pump Setup
 - ➡ 3) Sensor Setup
 - 4) Advanced Setup

Figure 198

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 199).

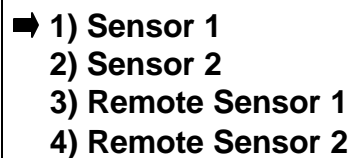
- 
- ➡ 1) Sensor 1
 - 2) Sensor 2
 - 3) Remote Sensor 1
 - 4) Remote Sensor 2

Figure 199

Push the Down arrow twice. The display should change to the screen below (Fig. 200).

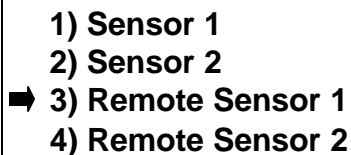
- 
- 1) Sensor 1
 - 2) Sensor 2
 - ➡ 3) Remote Sensor 1
 - 4) Remote Sensor 2

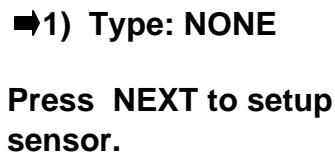
Figure 200

Controller Setup (continued).

REMOTE SENSORS

Rain Switch & Moisture Sensors

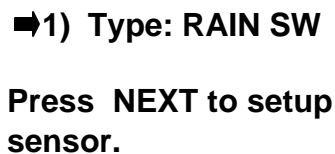
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 201). *You would push the DOWN arrow once, before pushing the ENTER/NEXT button, to program Remote Sensor 2.*



➡1) Type: NONE
Press NEXT to setup sensor.

Figure 201

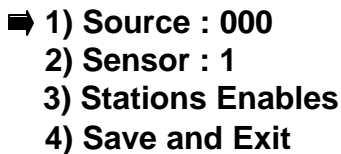
Push the RIGHT arrow on the keypad four times to set Remote Sensor 1 to Rain Switch. To assign a Moisture Sensor to Remote Sensor 1, push the RIGHT arrow a total of five times. The Rain Switch and Moisture Sensor use the same programming steps. The display should change to the screen below (Fig. 202).



➡1) Type: RAIN SW
Press NEXT to setup sensor.

Figure 202

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 203).



➡ 1) Source : 000
2) Sensor : 1
3) Stations Enables
4) Save and Exit

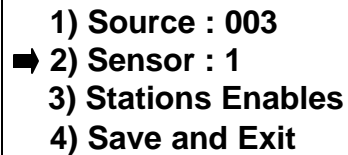
Figure 203

Controller Setup (continued).

REMOTE SENSORS

Rain Switch & Moisture Sensors

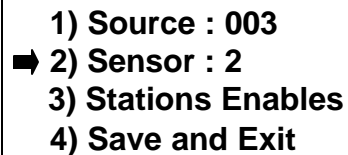
The source address is the Controller address that is connected to the Rain Switch (Moisture Sensor). Using the numbers on the keyboard, enter the three-digit Controller address. Example: Controller 003 would be entered as 0, 0, 3. When the correct Source Address has been entered, push the DOWN arrow once. The display should change to the screen below (Fig. 204).



1) Source : 003
➡ 2) Sensor : 1
3) Stations Enables
4) Save and Exit

Figure 204

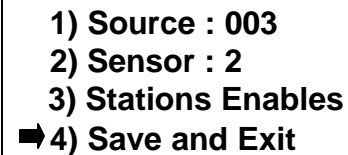
The Controller is defaulted to Sensor 1. If the Rain Switch (Moisture Sensor). were attached to Sensor 2 of this Controller, the Sensor would be changed to 2. To change from Sensor 1 to Sensor 2, push the number 2 button on the keypad. The display should change to the screen below (Fig. 205).



1) Source : 003
➡ 2) Sensor : 2
3) Stations Enables
4) Save and Exit

Figure 205

You must save this information. Push the DOWN arrow twice; the display should change to the screen below (Fig. 206).



1) Source : 003
2) Sensor : 2
3) Stations Enables
➡ 4) Save and Exit

Figure 206

Controller Setup (continued).

REMOTE SENSORS

Rain Switch & Moisture Sensors

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 207).

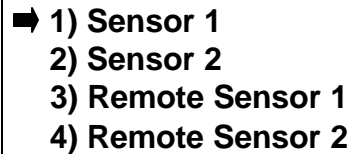
- 
- ➡ 1) Sensor 1
 - 2) Sensor 2
 - 3) Remote Sensor 1
 - 4) Remote Sensor 2

Figure 207

Push the Down arrow twice. The display should change to the screen below (Fig. 208).


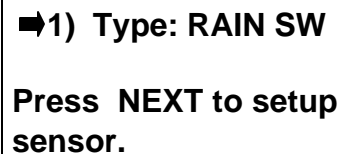
- 
- 1) Sensor 1
 - 2) Sensor 2
 - ➡ 3) Remote Sensor 1
 - 4) Remote Sensor 2

Figure 208

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 209).



➡1) Type: RAIN SW

Press NEXT to setup sensor.

Figure 209

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 210).

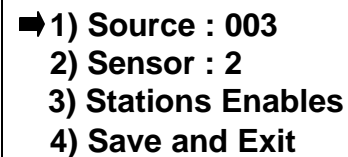
- 
- ➡ 1) Source : 003
 - 2) Sensor : 2
 - 3) Stations Enables
 - 4) Save and Exit

Figure 211

Controller Setup (continued).

REMOTE SENSORS

Rain Switch & Moisture Sensors

Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 212).

1) Source : 003
2) Sensor : 2
➡3) Stations Enables
4) Save and Exit

Figure 212

Both the Rain Switch and the Moisture Sensors are station specific. This means that each station that is to use the Rain Switch OR Moisture sensor data **MUST** be assigned to that Sensor.

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 213).

001	002	003	004	005
006	007	008	---	---
---	---	---	---	---
---	---	---	---	---

Figure 213

Use the arrows on the keypad to scroll through the stations on the display and the ON/AM or OFF/PM buttons on the keypad to turn ON (assigned) or OFF (remove) stations. Use the ON + 9 or OFF + 9 key combinations to enable or disable all stations, respectively. ***Remember, steady lit numbers are ON and flashing numbers OFF.*** Only twenty stations at one time can be displayed. If there are more than twenty stations on the Controller, use the UP or DOWN arrows on the keypad to scroll to the other stations.

When finished assigning stations to the sensors, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 214).

➡1) Source : 003
2) Sensor : 2
3) Stations Enables
4) Save and Exit

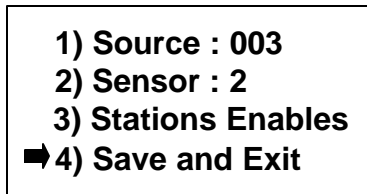
Figure 214

Controller Setup (continued).

REMOTE SENSORS

Rain Switch & Moisture Sensors

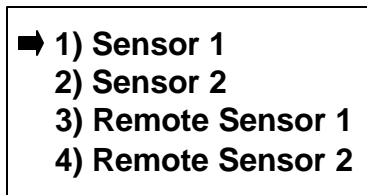
Push the DOWN arrow three times. The display should change to the screen below (Fig. 215).



1) Source : 003
2) Sensor : 2
3) Stations Enables
➡ 4) Save and Exit

Figure 215

You must Save and Exit to keep this information. Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 216).

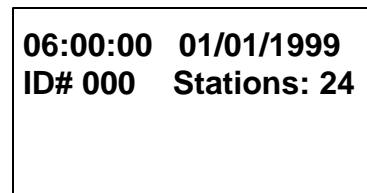


➡ 1) Sensor 1
➡ 2) Sensor 2
➡ 3) Remote Sensor 1
➡ 4) Remote Sensor 2

Figure 216

Start Sensor

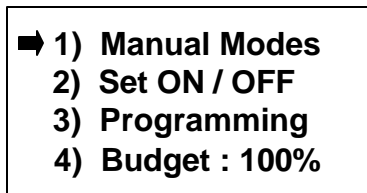
Starting from the screen below (Fig. 217).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 217

Push the ENTER/NEXT button on the keypad once. The display should change to the screen below (Fig. 218).



➡ 1) Manual Modes
➡ 2) Set ON / OFF
➡ 3) Programming
➡ 4) Budget : 100%

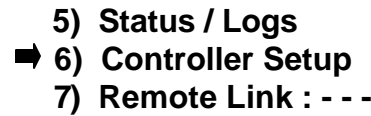
Figure 218

Controller Setup (continued).

REMOTE SENSORS

Start Sensor

Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 219).



5) Status / Logs
➡ 6) Controller Setup
7) Remote Link : - - -

Figure 219

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 220).



➡ 1) Set Date / Time
2) Pump Setup
3) Sensor Setup
4) Advanced Setup

Figure 220

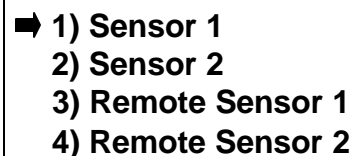
Push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 221).



1) Set Date / Time
2) Pump Setup
➡ 3) Sensor Setup
4) Advanced Setup

Figure 221

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 222).



➡ 1) Sensor 1
2) Sensor 2
3) Remote Sensor 1
4) Remote Sensor 2

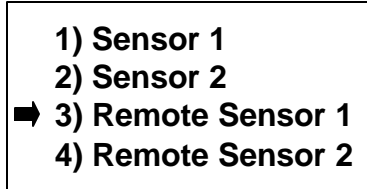
Figure 222

Controller Setup (continued).

REMOTE SENSORS

Start Sensor

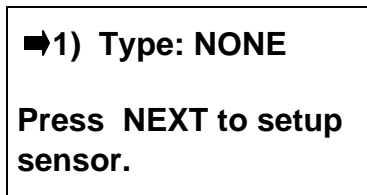
Push the Down arrow twice. The display should change to the screen below (Fig. 223).



1) Sensor 1
2) Sensor 2
➡ 3) Remote Sensor 1
4) Remote Sensor 2

Figure 223

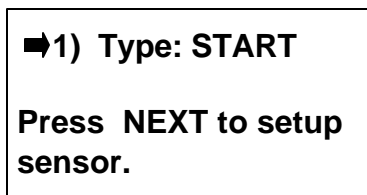
Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 224). *You would push the DOWN arrow once, before pushing the ENTER/NEXT button, to program Remote Sensor 2.*



➡1) Type: NONE
Press NEXT to setup sensor.

Figure 224

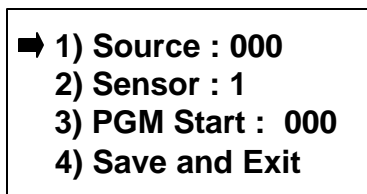
Push the RIGHT arrow on the keypad six times, to set Remote Sensor 1 to START. The display should change to the screen below (Fig. 225).



➡1) Type: START
Press NEXT to setup sensor.

Figure 225

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 226).



➡ 1) Source : 000
2) Sensor : 1
3) PGM Start : 000
4) Save and Exit

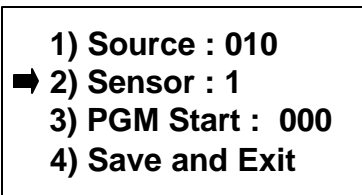
Figure 226

Controller Setup (continued).

REMOTE SENSORS

Start Sensor

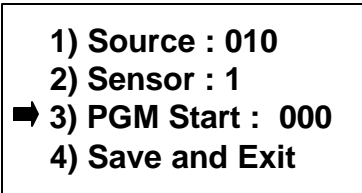
The source address is the Controller address that is connected to the Start Sensor. Using the numbers on the keyboard, enter the three-digit Controller address. Example: Controller 010 would be entered as 0, 1, 0. When the third number of the Source Controller address is pushed the display should change to the screen below (Fig. 227).



1) Source : 010
➡ 2) Sensor : 1
3) PGM Start : 000
4) Save and Exit

Figure 227

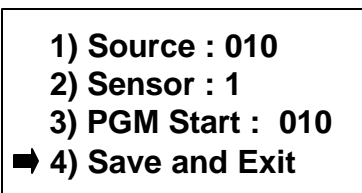
The Controller is defaulted to Sensor 1. If the Start Sensor were attached to Sensor 2 of this Controller, the Sensor would be changed to 2. To change from Sensor 1 to Sensor 2, push the number 2 button on the keypad. When either the 1 or 2 button on the keypad is pushed, the display should change to the screen below (Fig. 228).



1) Source : 010
2) Sensor : 1
➡ 3) PGM Start : 000
4) Save and Exit

Figure 228

The Start sensor is program specific. This means that a program MUST be assigned to that Sensor. (Fig. 229). Using the numbers on the keypad, enter the three-digit program number that is assigned to the Start sensor. Example: Program number 010 would be entered by pushing the numbers 0, 1, 0. When the third number of the program is pushed, the display should change to the screen below



1) Source : 010
2) Sensor : 1
3) PGM Start : 010
➡ 4) Save and Exit

Figure 229

Controller Setup (continued).

REMOTE SENSORS

Start Sensor

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 230).

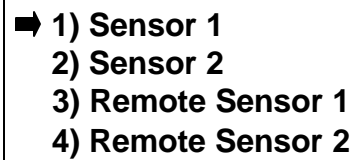
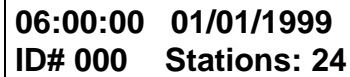
- 
- ➡ 1) **Sensor 1**
 - ➡ 2) **Sensor 2**
 - ➡ 3) **Remote Sensor 1**
 - ➡ 4) **Remote Sensor 2**

Figure 230

Controller Setup (continued).

SMART SWITCH

The Smart Switch allows a station to manually operate by pushing three buttons on the keypad. To activate the Smart Switch, you must start at the main screen (Fig. 231).

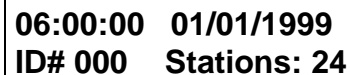


06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 231

Use the numbers on the keypad to enter the station number (using 1-3 digits), then push the ENTER/NEXT button on the keypad, then push the ON/AM button on the keypad. The station that was entered will manually operate for amount of time specified in the Set Smart Switch feature.

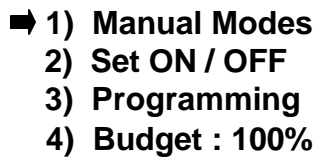
The default time is set at ten minutes, to change the length of time start at the screen below (Fig. 232).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 232

Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 233).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 233

Controller Setup (continued).

SMART SWITCH

Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 234).

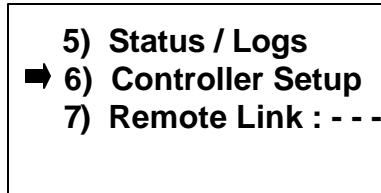


Figure 234

Push the ENTER/NEXT button. The display should change to the screen below (Fig. 235).



Figure 235

Push the DOWN arrow four times. The display should change to the screen below (Fig. 236).



Figure 236

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 237).

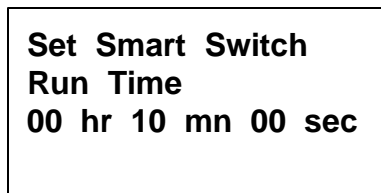


Figure 237

Controller Setup (continued).

SMART SWITCH

Using the numbers on the keypad, the time duration can be changed. When the correct time is entered, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 238).



➡ 5) Set Smart Switch
6) Setup Decoders

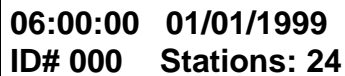
Figure 238

DECODERS ~ Modulator Boards must be connected

ASSIGN STATIONS NUMBERS TO DECODERS

For more information on Decoders, refer to the Signature Control Systems, Inc. Decoders manual.

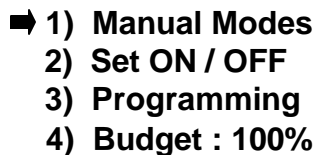
Start at the screen below (Fig. 239).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 239

Push the ENTER/NEXT button on the keypad once. The display should change this screen below (Fig. 240).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 240

Controller Setup (continued).

DECODERS ~ Modulator Boards must be connected

ASSIGN STATIONS NUMBERS TO DECODERS

Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 241).

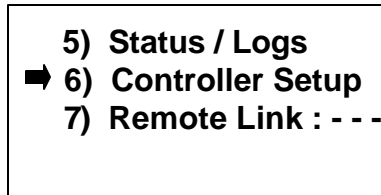


Figure 241

Push the ENTER/NEXT button. The display should change to the screen below (Fig. 242).

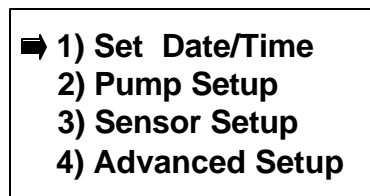


Figure 242

Push the DOWN arrow five times. The display should change to the screen below (Fig. 243).



Figure 243

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 244).

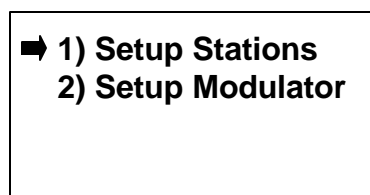


Figure 244

Controller Setup (continued).

DECODERS ~ Modulator Boards must be connected

ASSIGN STATIONS NUMBERS TO DECODERS

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 245).



```
➡ 1) Station : - - -  
2) Decoder: - - -  
3) Modulator : -
```

Figure 245

The first line is the Station number designation. The numbers start at 100 and can be as high as 999. This is the Station number used when building watering programs or performing manual operations. Do **NOT** assign the same Station number to multiple Decoder addresses.

The second line is for the Decoder address in the field. The numbers start at 001 and can be as high as 125. This number is determined by the address programmed into the decoder.

Each Modulator can have the same Decoder addresses as other Modulators, but do **NOT** use the same Decoder Address on a single Modulator.

The third line is for the Modulator location within the controller. The location numbers start at 1 and go to 6. If the Modulator is in the number 2 spot of the Controller, the designation should be 2.

Enter the Station number for the Decoder Address using the numbers on the keypad. Example, Station 101 would be 1, 0, 1. The display should change to the screen below (Fig. 246).



```
➡ 1) Station : 101  
2) Decoder: - - -  
3) Modulator : -
```

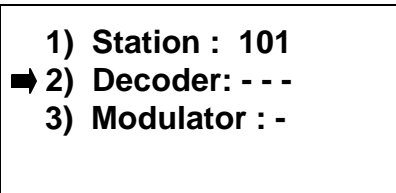
Figure 246

Controller Setup (continued).

DECODERS ~ Modulator Boards must be connected

ASSIGN STATIONS NUMBERS TO DECODERS

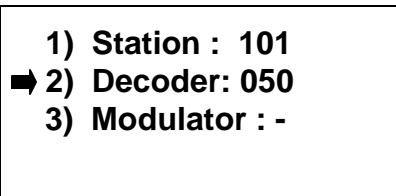
When the desired station number is visible, push the DOWN arrow once. The display should change to the screen below (Fig. 247). NOTE: Station Number Range 100 ~ 999



1) Station : 101
➡ 2) Decoder: - - -
3) Modulator : -

Figure 247

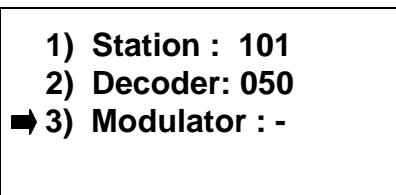
Enter the Decoder address. For Example, if the decoder address is 50, Use the keypad to enter the numbers 0, 5, 0. The display should change to the screen below (Fig. 248).



1) Station : 101
➡ 2) Decoder: 050
3) Modulator : -

Figure 248

When the desired decoder address is visible, push the DOWN arrow once. The display should change to the screen below (Fig. 249). NOTE: Decoder Number Range 001 ~ 125.



1) Station : 101
2) Decoder: 050
➡ 3) Modulator : -

Figure 249

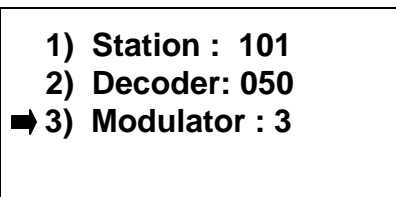
Controller Setup (continued).

DECODERS ~ Modulator Boards must be connected

ASSIGN STATIONS NUMBERS TO DECODERS

The Modulator number is determined by the physical location of the Decoder Modulator in the Controller. In the Pedestals and large wall mount enclosures there are six positions. In the small wall mount enclosure there are three positions. If the Decoder modulator were connected directly to the CPU/Power supply board with a ribbon, the position designation would be 1. If this Decoder modulator were connected to another Decoder modulator OR Valve module and didn't connect directly to the CPU/Power Supply board the designation would be 2 because it is physically the second module inline.

Use the numbers on the keyboard to set the Modulator number. Push the number three to change the setting to three. When the number three is pushed, the display should change to the screen below (Fig. 250). NOTE: Modulator Number Range 1 ~ 6

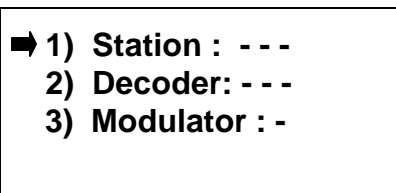


1) Station : 101
2) Decoder: 050
➡ 3) Modulator : 3

Figure 250

Now, the Controller knows where to find station 101. From the above information, the Controller will know that station 101 is on Modulator 3 and is decoder address is 50.

Push the ENTER/NEXT button. The display should change to the screen below (Fig. 251).



➡ 1) Station : - - -
2) Decoder: - - -
3) Modulator : -

Figure 251

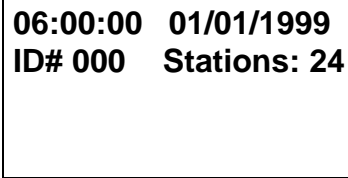
Repeat the steps above to program each Modulator and Decoder address with a station number. When finished, push the ESC/PREVIOUS button to leave this screen.

Controller Setup (continued).

DECODERS ~ Modulator Boards must be connected

CONFIGURE MODULATOR BOARDS

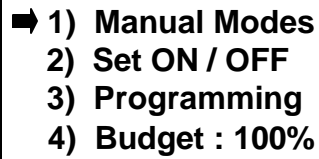
Start at the screen below (Fig. 252).



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 252

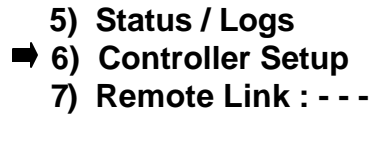
Push the ENTER/NEXT button on the keypad once. The display should change to the screen below (Fig. 253).



➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget : 100%

Figure 253

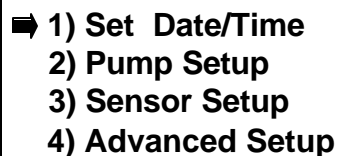
Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 254).



5) Status / Logs
➡ 6) Controller Setup
7) Remote Link : - - -

Figure 254

Push the ENTER/NEXT button. The display should change to the screen below (Fig. 255).



➡ 1) Set Date/Time
2) Pump Setup
3) Sensor Setup
4) Advanced Setup

Figure 255

Controller Setup (continued).

DECODERS ~ Modulator Boards must be connected

CONFIGURE MODULATOR BOARDS

Push the DOWN arrow five times. The display should change to the screen below (Fig. 256).



5) Set Smart Switch
➡ 6) Setup Decoders

Figure 256

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 257).



➡ 1) Setup Stations
2) Setup Modulator

Figure 257

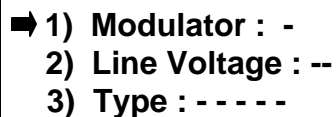
Push the DOWN arrow on the keypad once. The display should change to the screen below (Fig. 258).



1) Setup Stations
➡ 2) Setup Modulator

Figure 258

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 259).



➡ 1) Modulator : -
2) Line Voltage : --
3) Type : - - - - -

Figure 259

Controller Setup (continued).

DECODERS ~ Modulator Boards must be connected

CONFIGURE MODULATOR BOARDS

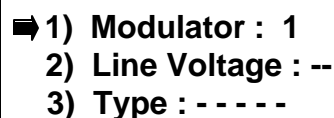
The first line is the Modulator number. The Modulator number is determined by the physical location of the Decoder Modulator in the Controller. In the Pedestals and large wall mount enclosures there are six positions. In the small wall mount enclosure there are three positions. If the Decoder modulator were connected directly to the CPU/Power supply board with a ribbon, the position designation would be 1. If this Decoder modulator were connected to another Decoder modulator OR Valve module and didn't connect directly to the CPU/Power Supply board the designation would be 2 because it is physically the second module inline.

The second line is for Line Voltage. The designations are HV or LV. This setting should be set at LV.

The third line is for the Type of Decoder. There are three types: Three Wire, Two Wire and SCS. Do NOT mix the type of Decoders on any one modulator; however each modulator within a Controller can be assigned different types.

For more information on Decoders, refer to the Signature Control Systems, Inc. Decoders manual.

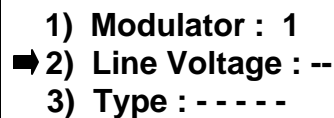
Use the numbers on the keypad to set the Modulator number. The Modulator range is from 1~ 6. For a Modulator in position 1, push the number one on the keypad. The display should change to the screen below (Fig. 260).



➡ 1) Modulator : 1
2) Line Voltage : --
3) Type : - - - -

Figure 260

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 261).



1) Modulator : 1
➡ 2) Line Voltage : --
3) Type : - - - -

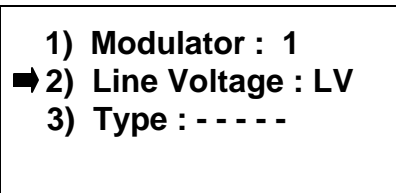
Figure 261

Controller Setup (continued).

DECODERS ~ Modulator Boards must be connected

CONFIGURE MODULATOR BOARDS

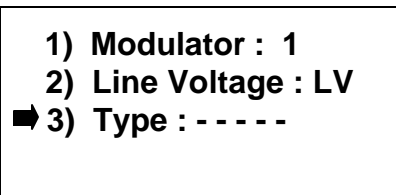
Use the LEFT or RIGHT arrow on the keypad to choose LV . Do NOT use the HV setting. The display should change to the screen below (Fig. 262).



1) Modulator : 1
➡ 2) Line Voltage : LV
3) Type : - - - - -

Figure 262

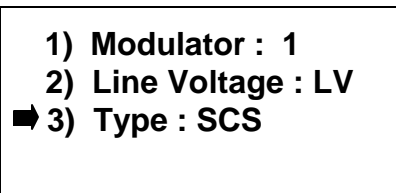
Push the DOWN arrow on the keypad. The display should change to the screen below (Fig. 263).



1) Modulator : 1
2) Line Voltage : LV
➡ 3) Type : - - - - -

Figure 263

Use the LEFT or RIGHT arrows on the keypad to select the Type of Decoders used on this Modulator. The display should change to the screen below (Fig. 264).



1) Modulator : 1
2) Line Voltage : LV
➡ 3) Type : SCS

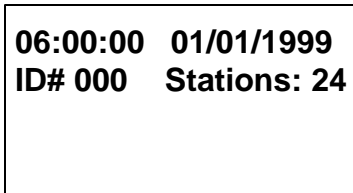
Figure 264

The above Modulator has been programmed as the number 1 position in the Controller, Low voltage and using SCS type decoders. Push the ESC/PREVIOUS button to leave this screen.

Advanced Controller Setup

Controller IDs

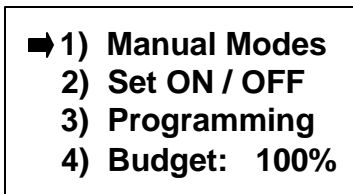
Starting from the first screen (Fig. 265). You may need to push the ESC/PREVIOUS button on the keypad numerous times to get back to this screen.



**06:00:00 01/01/1999
ID# 000 Stations: 24**

Figure 265

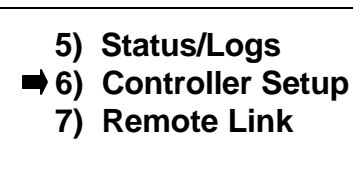
Push the ENTER/NEXT button on the keypad. The display should change this screen below (Fig. 266).



**➡ 1) Manual Modes
2) Set ON / OFF
3) Programming
4) Budget: 100%**

Figure 266

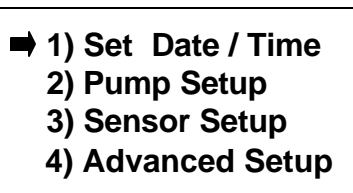
Push the DOWN arrow on the keypad 5 times, each time the arrow button is pushed the arrow on the screen should move down one number (Fig. 267).



**5) Status/Logs
➡ 6) Controller Setup
7) Remote Link**

Figure 267

Push the ENTER/NEXT button on the keypad. The display should change to the below (Fig. 268).



**➡ 1) Set Date / Time
2) Pump Setup
3) Sensor Setup
4) Advanced Setup**

Figure 268

Advanced Controller Setup (continued).

Controller IDs

Push the DOWN arrow on the keypad three times. The display should change to the screen below (Fig. 269).

- 
- 1) Set Date / Time**
 - 2) Pump Setup**
 - 3) Sensor Setup**
 - ➡ 4) Advanced Setup**

Figure 269

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 270).

- 
- ➡ 1) Set ID#'s**
 - 2) Bus Port : P1**
 - 3) Repeat : NONE**
 - 4) Set Passwords**

Figure 270

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 271).

- 
- ➡ 1) ID# : 000**
 - 2) Send Alarm : 000**
 - 3) Send Event : 000**

Figure 271

The ID#'s are used to give each Controller it's own unique address. Do NOT duplicate Controller ID#'s. This is important when the Controllers are going to be used in a "Central System" environment. If the Controller is going to be a "stand alone" environment an ID# is not required. To enter an ID#, simply enter a three digit number (001 ~ 999). using the numbers on the keypad. When the last digit is entered, the cursor will move down to the next line, and the display should change to the screen below (Fig. 272).

- 
- 1) ID# : 001**
 - ➡ 2) Send Alarm : 000**
 - 3) Send Event : 000**

Figure 272

Advanced Controller Setup (continued).

Controller Ids

Send Alarm is used to send a Controller's alarms to a different location. Numerous Controllers can send their Alarms to the same location. This is important when the Controllers are going to be used in a "Central System" environment. If the Controller is going to be used in a "stand alone" environment the Send Alarm feature is not used. To enter a Send Alarm address, simply enter a three-digit number (001 ~ 999). using the numbers on the keypad. When the last digit is entered, the cursor will move down to the next line, and the display should change to the screen below (Fig. 273).

NOTE: 989 is usually the designation for the Central Base Interface. This address is not unique for that controller, the Technicians have used this number for consistency in the field.



1) ID# : 001
2) Send Alarm : 989
➡ 3) Send Event : 000

Figure 273

Send Event is used to send a Controller's Events to a Central Computer. Numerous Controllers can send their Events to the same Central Computer. This is important when the Controllers are going to be used in a "Central System" environment. If the Controller is going to be used in a "stand alone" environment the Send Event feature is not used. To enter a Send Event address, simply enter a three-digit number (001 ~ 999). using the numbers on the keypad. When the last digit is entered, the cursor will move back to the ID# line, and the display should change to the screen below (Fig. 273). NOTE: 989 are the designation for the Central Base Interface. If a Central Base Interface is NOT used, both Send Alarm and Send Event should be designated as the Controllers own address.



➡ 1) ID# : 001
2) Send Alarm : 989
3) Send Event : 989

Figure 274

Advanced Controller Setup (continued).

Controller Ids

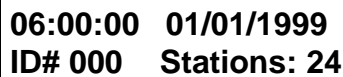
To exit this screen either push the ESC/PREVIOUS (to abort changes) or ENTER/NEXT (to save changes) button on the keyboard. The display should change to the screen below (Fig. 275).

- 
- ➡ 1) Set ID#'s
 - 2) Bus Port : P1
 - 3) Repeat : NONE
 - 4) Set Passwords

Figure 275

Controller Communications

Start from the first screen (Fig. 276). You may need to push the ESC/PREVIOUS button on the keypad numerous times to get back to this screen.



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 276

Push the ENTER/NEXT button on the keypad. The display should change this screen below (Fig. 277).

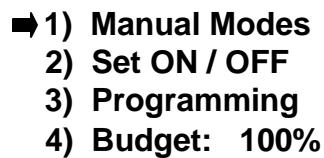
- 
- ➡ 1) Manual Modes
 - 2) Set ON / OFF
 - 3) Programming
 - 4) Budget: 100%

Figure 277

Push the DOWN arrow on the keypad 5 times, each time the arrow button is pushed the arrow on the screen should move down one number (Fig. 278).

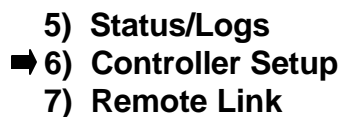
- 
- 5) Status/Logs
 - ➡ 6) Controller Setup
 - 7) Remote Link

Figure 278

Advanced Controller Setup (continued).

Controller Communications

Push the ENTER/NEXT button on the keypad. The display should change to the below (Fig. 279).

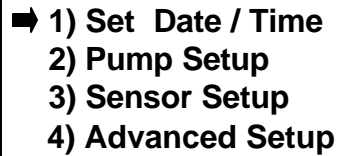
- 
- ➡ 1) Set Date / Time
 - 2) Pump Setup
 - 3) Sensor Setup
 - 4) Advanced Setup

Figure 279

Push the DOWN arrow on the keypad three times. The display should change to the screen below (Fig. 280).

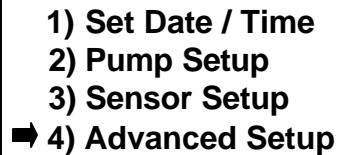
- 
- 1) Set Date / Time
 - 2) Pump Setup
 - 3) Sensor Setup
 - ➡ 4) Advanced Setup

Figure 280

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 281).

- 
- ➡ 1) Set ID#'s
 - 2) Bus Port : P1
 - 3) Repeat : NONE
 - 4) Set Passwords

Figure 281

The Bus Port setting is used to determine which port is to be used for the Controller communications. P1 is usually for Radio, P2 is usually for computer or phone modem and P3 is always for Hardwire. . This is important when the Controllers are going to be used in a “Central System” environment. If the Controller is going to be used in a “stand alone” environment the Bus Port setting can be set to P1, P2 or P3 without causing any problems. To set the Bus Port, push the DOWN arrow on the keypad once. The display should change to the screen below (Fig. 282).

- 
- 1) Set ID#'s
 - ➡ 2) Bus Port : P1
 - 3) Repeat : NONE
 - 4) Set Passwords

Figure 282

Advanced Controller Setup (continued).

Controller Communications

Pushing either the LEFT or RIGHT arrows on the keypad will scroll through the Bus Port setting options. When the correct Bus Port setting is visible, push the DOWN arrow. The display should change to the screen below (Fig. 283).

- 
- 1) Set ID#'s
 - 2) Bus Port : P3
 - ➡ 3) Repeat : NONE
 - 4) Set Passwords

Figure 283

The Repeat Setting is used for a Repeat of the communication back out of the Controller. If you were to have hardwire communications into the Controller and want to repeat the message out via radio this setting would be P1-P3. Not only would this setting allow communications from P1 to P3 it would also allow any communications from P3 back through P1. Pushing either the LEFT or RIGHT arrows on the keypad will scroll through the Repeat Port setting options. When the correct Repeat Port setting is visible, push the DOWN arrow. The display should change to the screen below (Fig. 284).

- 
- 1) Set ID#'s
 - 2) Bus Port : P3
 - 3) Repeat : P1-P3
 - ➡ 4) Set Passwords

Figure 284

Controller Passwords

Passwords are used for security. There are four different passwords in the Controller. These are set at 000000 at the factory; ALL zeros will disable the password. Any non-zero number in the Set Password window will enable the password for that particular area. ***TAKE YOUR TIME AND CAREFULLY ENTER THE NUMBERS.*** Use the numbers on the keypad to enter the passwords on the screen. The cursor will not automatically move to the next line. Use the DOWN and UP arrows on the keyboard to move to the next password (Fig. 285).

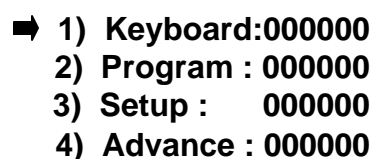
- 
- ➡ 1) Keyboard:000000
 - 2) Program : 000000
 - 3) Setup : 000000
 - 4) Advance : 000000

Figure 285

Advanced Controller Setup (continued).

Controller Passwords

When finished entering passwords, push the ENTER/NEXT button on the keyboard and the display should change to the screen below (Fig.286).

- 
- 1) Set ID#'s
 - 2) Bus Port : P3
 - 3) Repeat : P1-P3
 - ➡ 4) Set Passwords

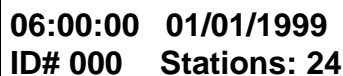
Figure 286

Controller Phone Modem

The phone modem is used when either radio or hardwire are not communication options. When communicating via Phone Modem a minimum of two Phone Modems need to be installed, one at each end of the communication link. Because there are two Phone Modems, the Phonebook must be setup on ALL Controllers on both ends of the communication link, even if the Controller is not connected to the Phone Modem.

The Phonebook has 160 entries for Controller ID#'s and their respective phone numbers.

Start from the first screen (Fig. 287). You may need to push the ESC/PREVIOUS button on the keypad numerous times to get back to this screen.



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 287

Push the ENTER/NEXT button on the keypad. The display should change this screen below (Fig. 288).

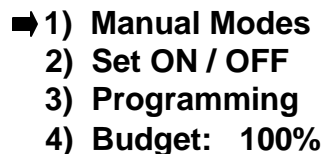
- 
- ➡ 1) Manual Modes
 - 2) Set ON / OFF
 - 3) Programming
 - 4) Budget: 100%

Figure 288

Advanced Controller Setup (continued).

Controller Phone Modem

Push the DOWN arrow on the keypad 5 times, each time the arrow button is pushed the arrow on the screen should move down one number (Fig. 289).

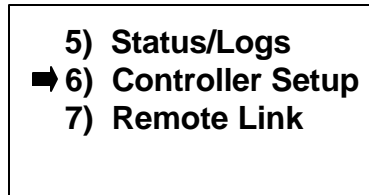


Figure 289

Push the ENTER/NEXT button on the keypad. The display should change to the below (Fig. 290).

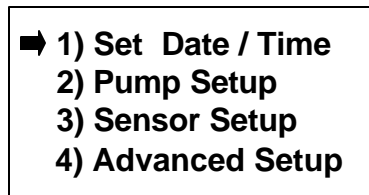


Figure 290

Push the DOWN arrow on the keypad three times. The display should change to the screen below (Fig. 291).

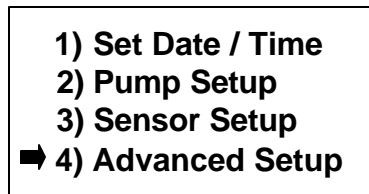


Figure 291

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 292).

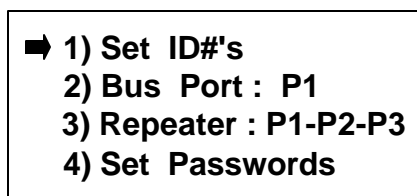


Figure 292

Advanced Controller Setup (continued).

Controller Phone Modem

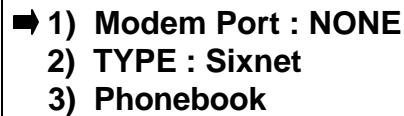
Push the DOWN arrow on the keypad four times. The display should change to the screen below (Fig. 293).



➡ 1) Setup Modem
2) Set Station Load
3) Set Baud Rates

Figure 293

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 294).



➡ 1) Modem Port : NONE
2) TYPE : Sixnet
3) Phonebook

Figure 294

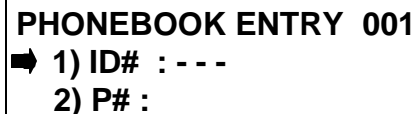
Using the LEFT or RIGHT arrows on the keypad, scroll through the P1, P2 or NONE options. Usually the phone modem is plugged into P2. When the correct port is visible, push the DOWN arrow on the keypad twice. The display should change to the screen below (Fig. 295). Skip line 2, the Sixnet modem is the ONLY option for line two.



➡ 1) Modem Port : P2
2) TYPE : Sixnet
3) Phonebook

Figure 295

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 296).



PHONEBOOK ENTRY 001
➡ 1) ID# : - - -
2) P# :

Figure 296

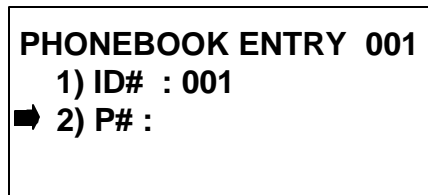
Advanced Controller Setup (continued).

Controller Phone Modem

Line 1 is for the ID number of the Controller. Line 2 is the phone number required to dial to Remote Link to that particular Controller.

NOTE: Numerous Controllers may have the same phone number in the Phonebook. If there is a Subnet of Controllers that communicates outside the Subnet via Phone Modem, ALL Controllers within that Subnet will have the same phone numbers when viewing the phonebooks from any Controller outside the Subnet.

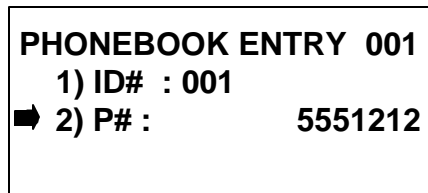
Use the numbers on the keypad to enter the three-digit ID#. When the last number of the ID# is pushed, the display should change to the screen below (Fig. 297).



PHONEBOOK ENTRY 001
1) ID# : 001
➡ 2) P# :

Figure 297

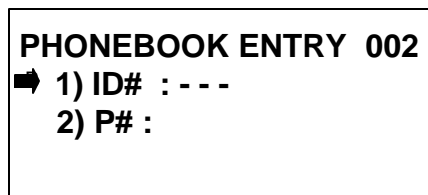
Use the numbers on the keypad to enter the phone number. There are 13 digits available, do NOT leave spaces between the numbers. (Fig. 298).



PHONEBOOK ENTRY 001
1) ID# : 001
➡ 2) P# : 5551212

Figure 298

When the correct P# is visible, push the DOWN arrow on the keypad once. The display should change to the screen below (Fig. 299).



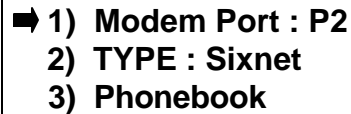
PHONEBOOK ENTRY 002
➡ 1) ID# : - - -
2) P# :

Figure 299

Advanced Controller Setup (continued).

Controller Phone Modem

Repeat the above steps to enter all ID# and Phone Numbers for your site. When finished, push the ENTER/NEXT on the keypad. The display should change to the screen below (Fig. 300).



➡ 1) Modem Port : P2
2) TYPE : Sixnet
3) Phonebook

Figure 300

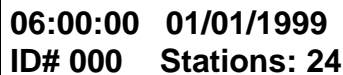
* NOTE: To change a phone number, follow the steps above. Use the DOWN arrow on the keypad to scroll through the ID# and P#'s. When the correct ID# and P# is visible, move the cursor to the P# line. Use the LEFT or RIGHT arrows on the keypad to erase the existing number, then use the numbers on the keypad to enter the new P#. Push the ENTER/NEXT button on the keypad. The phone number has been changed.

** NOTE: To erase a ID# and P# completely, use the keypad to enter the ID# 000 and use the LEFT or RIGHT arrows on the keypad to remove the numbers from the P#. Once the ID# has been changed to 000 and there is NOT a number on the P# line, push the ENTER/NEXT button on the keypad. The Phonebook Entry has been deleted.

Controller Station Load

The Station Load is the amount of current difference the Controller uses to determine if there is a Station ON Fault or a Station OFF Fault. The default setting from the factory is 0.075 A. This setting can be changed to accommodate relays and other electrical items attached to the valve modules that have an amperage draw of less than 0.075amp. A setting of 0.0000 Amps would allow the Controller to operate without the Station ON Fault/Station OFF Fault detection.

Starting from the first screen (Fig. 301). You may need to push the ESC/PREVIOUS button on the keypad numerous times to get back to this screen.



06:00:00 01/01/1999
ID# 000 Stations: 24

Figure 301

Advanced Controller Setup (continued).

Controller Station Load

Push the ENTER/NEXT button on the keypad. The display should change this screen below (Fig. 302).

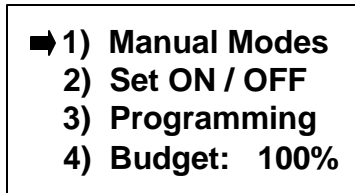
- 
- ➡ 1) **Manual Modes**
 - 2) **Set ON / OFF**
 - 3) **Programming**
 - 4) **Budget: 100%**

Figure 302

Push the DOWN arrow on the keypad 5 times, each time the arrow button is pushed the arrow on the screen should move down one number (Fig. 303).

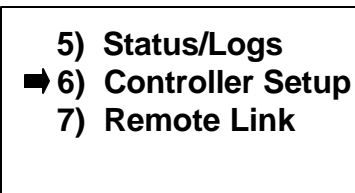
- 
- 5) **Status/Logs**
 - ➡ 6) **Controller Setup**
 - 7) **Remote Link**

Figure 303

Push the ENTER/NEXT button on the keypad. The display should change to the below (Fig. 304).

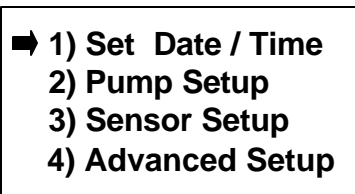
- 
- ➡ 1) **Set Date / Time**
 - 2) **Pump Setup**
 - 3) **Sensor Setup**
 - 4) **Advanced Setup**

Figure 304

Push the DOWN arrow on the keypad three times. The display should change to the screen below (Fig. 305).

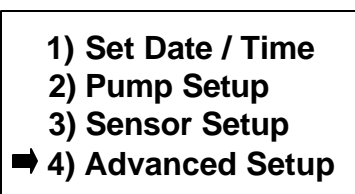
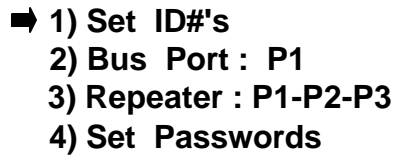
- 
- 1) **Set Date / Time**
 - 2) **Pump Setup**
 - 3) **Sensor Setup**
 - ➡ 4) **Advanced Setup**

Figure 305

Advanced Controller Setup (continued).

Controller Station Load

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 306).



➡ 1) Set ID#'s
2) Bus Port : P1
3) Repeater : P1-P2-P3
4) Set Passwords

Figure 306

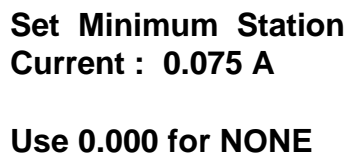
Push the DOWN arrow on the keypad five times. The display should change to the screen below (Fig. 307).



1) Setup Modem
➡ 2) Set Station Load
3) Set Baud Rates

Figure 307

Push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig 308).



**Set Minimum Station
Current : 0.075 A**

Use 0.000 for NONE

Figure 308

Use the numbers on the keypad to change the Minimum Station Current. When the correct Minimum Station Current is visible, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 309).



1) Setup Modem
➡ 2) Set Station Load
3) Set Baud Rates

Figure 309

Advanced Controller Setup (continued).

Controller Baud Rate

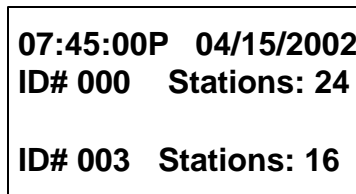
This option is for future use. The baud rates are set at the factory and CANNOT be changed.

Remote Link

The Remote Link feature is used to link two Controllers together. Once a Controller is linked with another, everything done at the linking Controller is transmitted to the linked Controller.

There are two distinct indicators that will show that a Remote Link is established.

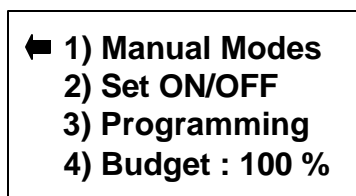
1). The default display (the display that shows current Date & Time). will have a flashing bottom line of information. This information will read ID# XXX and Stations: XX (Fig.310). The ID# is the Controller number that the Controller is linked with and the stations is the station count of the linked Controller.



07:45:00P 04/15/2002
ID# 000 Stations: 24
ID# 003 Stations: 16

Figure 310

2). The cursor used by the Controller to show what option is active will point to the left, out of the Controller. (Fig. 311).



← 1) Manual Modes
2) Set ON/OFF
3) Programming
4) Budget : 100 %

Figure 311

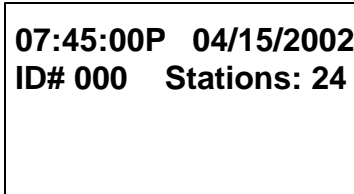
The only options that are NOT available through the Remote Link are;

- 1) Sensor Setup.
- 2) Controller ID#.
- 3) Remote Sensor Status.

All other Controller functions are available to be viewed or changed through the Remote Link

Remote Link (continued).

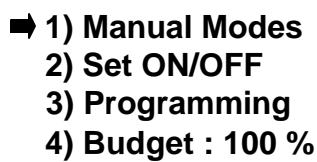
To use the Remote Link feature, start at the first screen. (Fig. 312).



07:45:00P 04/15/2002
ID# 000 Stations: 24

Figure 312

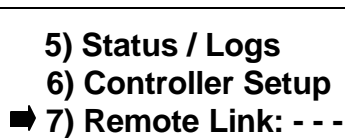
Push the ENTER/NEXT button on the keypad once. The display should change to the screen below (Fig. 313).



➡ 1) Manual Modes
2) Set ON/OFF
3) Programming
4) Budget : 100 %

Figure 313

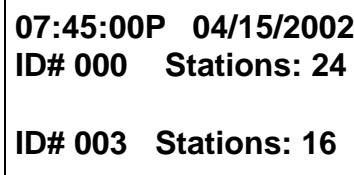
Push the Down arrow on the keypad six times. The display should change to the screen below (Fig. 314).



5) Status / Logs
6) Controller Setup
➡ 7) Remote Link: - - -

Figure 314

Use the numbers on the keypad to enter the three-digit Controller address you want to link with. When the correct Controller address is visible, push the ENTER/NEXT button on the keypad. The display should change to the screen below (Fig. 315). Example: 0, 0, 3, ENTER/NEXT.



07:45:00P 04/15/2002
ID# 000 Stations: 24

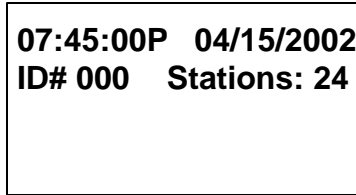
ID# 003 Stations: 16

Figure 315

Now everything that is accessed will be for Controller ID#003. All functions behave exactly as if you were standing at the linked Controller.

Remote Link (continued).

To end the Remote Link, push the ESC/PREVIOUS button on the keypad numerous times until the first screen is shown as below (Fig. 316). The Remote Link has been terminated when the bottom line is not longer flashing the link information.



07:45:00P 04/15/2002
ID# 000 Stations: 24

Figure 316

To Remote Link to another Controller follow the steps above. You may only Remote Link to ONE Controller at a time.

Controller
Alarm Log
&
Event Log
Definitions

Alarm Log Text	Definition	Fault Designator
DIFF Overflow	2 consecutive flow samples @ 15 second intervals determined a DIFF Underflow.	Faulty Station OR 000.
DIFF Underflow	2 consecutive flow samples @ 15 second intervals determined a DIFF Overflow.	Faulty Station OR 000.
ABS Overflow	2 consecutive flow samples @ 15 second intervals determined a ABS Overflow.	Faulty Station OR 000.
Current Overload	Controller amperage draw of 2.5 amps for the duration of 300 ms. (G1 Hardware). Controller amperage draw of 3.15 amps for the duration of 300 ms. (G2 Hardware).	Last Station Turned ON OR 000.
SHORT Circuit	Controller amperage draw of >6 amps for the duration of 2.5 ms.	Last Station Turned ON OR 000.
Module Failed	No response from the module.	Failed Module Address.
Stacked Overflow	3 RD command to start the same program simultaneously	Program Number.
Max. Stations Active	9 Stations + Pump station exceeds the maximum. (G1 Hardware). 14 Stations + Pump station exceeds the maximum. (G2 Hardware).	Station Number.
SW Sensor Active	Switch Sensor ~ Normally OPEN switch has CLOSED OR Switch Sensor ~ Normally CLOSED switch has OPENED.	0
SW Sensor Normal	Switch Sensor ~ Normally OPEN switch has returned to the OPEN position OR Switch Sensor ~ Normally CLOSED switch has returned to the Closed position.	0
ET Sensor = 0	Local ET gauge sensor accumulated 0 ET over the 24 hour measurement period.	0
No Sensor Data	Remote ET gauge OR Remote Rain Bucket did NOT report measurement data in the 24 hour measurement period.	0
Msg CHKSUM Error	Communication Verification Failed.	Message Source Controller Address.
STN ON Fault	Controller Checked current draw prior to activating station, checked current draw after activating station. The current draw did NOT exceed the expected value in the Station Load Menu.	Station Number.
STN OFF Fault	Controller checked current draw prior to de-activating station, checked current draw after de-activating station. The current drop did NOT exceed the expected value in the Station Load Menu.	Station Number.

NOTE:

- ★ The Fault Designator for Over Current and Short Circuit alarms indicates the last station that was started. In the event of an alarm during power-up, the designator will read 000 as the station number.
- ★ The Fault Designator for the Differential Over/Under flow and the Absolute flow alarms indicates the station that generated the alarm. In the event the controller cannot determine which station generated the alarm **OR** the STOP & TEST feature is OFF, the designator will read 000 as the station number.

EVENT Log Text	Definition
Keypad Manual OFF	Station was shut OFF by using the keypad on the Controller.
Keypad Manual ON	Station was turned ON by using the keypad on the Controller.
Keypad Manual Delay	Station Delay prior the station activation, using the keypad on the Controller.
Remote Manual OFF	Station was shut OFF by using the keypad on a Remote Linked Controller.
Remote Manual ON	Station was turned ON by using the keypad on a Remote Linked Controller.
Remote Manual Delay	Station Delay prior the station activation, using the keypad on Remote Linked Controller.
DTMF Manual OFF	Station was shut OFF by using a DTMF Hand Held Radio.
DTMF Manual ON	Station was turned ON by using a DTMF Hand Held Radio.
DTMF Manual Delay	Station Delay prior the station activation, using a DTMF Hand Held Radio.
Run Time Elapsed	The station activated for the programmed length of time.
Start after Delay	Station activation after a programmed delay.
Station ON Fault	Controller Checked current draw prior to activating station, checked current draw after activating station. The current draw did NOT exceed the expected value in the Station Load Menu.
Station OFF Fault	Controller checked current draw prior to de-activating station, checked current draw after de-activating station. The current drop did NOT exceed the expected value in the Station Load Menu.
Sensor Active: OFF	The station was shut OFF due to a sensor switch activation.
Flow Sensor Test OFF	The station was shut OFF during either a Build Flow operation OR a Stop/Test operation.
Flow Sensor Test ON	The station was activated during either a Build Flow operation OR a Stop/Test operation.
Pump Shut OFF	The pump retired because the stations active were NOT assign to the pump.
Pump Start	The pump started because the station activated was assign to the pump.
Keypad ALL Stations OFF	All stations were shut OFF by using the keypad to initiate the ALL Stations OFF OR GLOBAL OFF command on the Controller.
Remote ALL Stations OFF	All stations were shut OFF by using the keypad to initiate the ALL Stations OFF OR GLOBAL OFF command on the Controller through a remote link.
DTMF ALL Stations OFF	All stations were shut OFF by using a Hand Held DTMF radio to initiate the ALL Stations OFF OR GLOBAL OFF command on the Controller.
System ALL Stations OFF	All stations were shut OFF by the Controller for one of the following reasons: * Controller Timer expired. * Build Flow Table was initiated. * SHORT / OVER current detected. * Stop/Test was initiated. * Modification of existing PUMP Setup.
Keypad Semi-Auto XXX	A Semi-Auto program was started using the Controller keypad.
Remote Semi-Auto XXX	A Semi-Auto program was started using a remote linked Controllers' keypad.
DTMF Semi-Auto XXX	A Semi-Auto program was started using a Hand Held DTMF Radio.
Program Sequence XXX	An Automatic program started. XXX will designate which program number.
Delay Semi-Auto XXX	The delay time of a semi -auto program start expired, starting the first valid event of the program. The XXX refers to the program number.
Sensor Semi-Auto XXX	A semi -auto program start occurred because a START Sensor was activated. The XXX refers to the program number.
Keypad Stop PGM XXX	An active program was stopped via the manual program control from the keypad. The XXX refers to the program number.
Remote Stop PGM XXX	An active program was stopped via a remote controller. The XXX refers to the program number.
Stop Time PGM XXX	An active program was stopped because of the programmed STOP time. The XXX refers to the program number.

