IDS

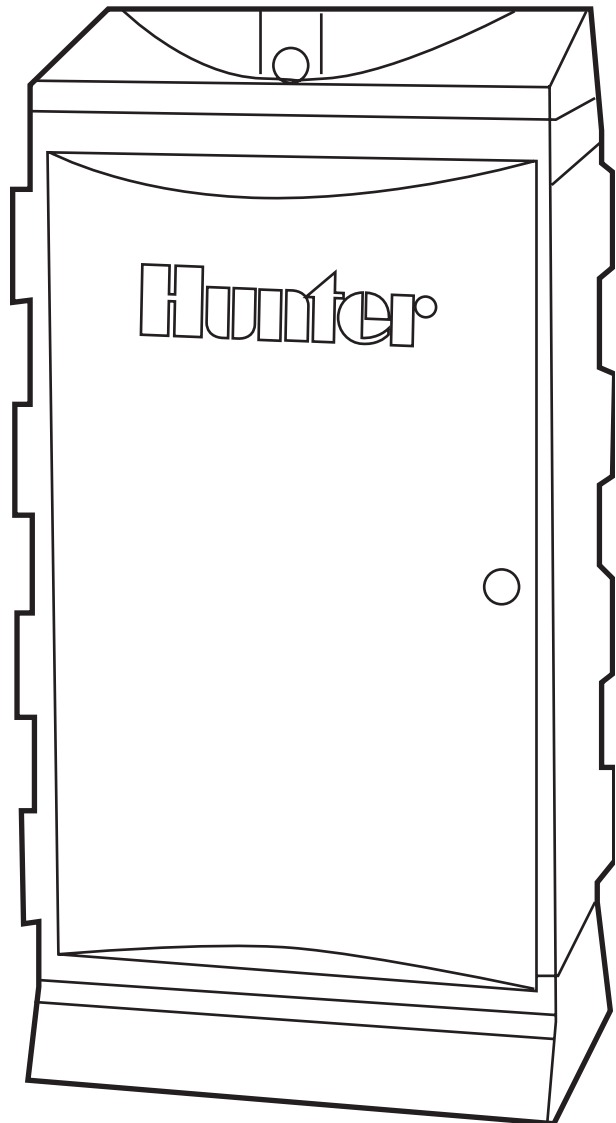## Decoder Controller

Two-wire Decoder Control in an Advanced Industrial Package for the Largest Installations

Programming and Operations Manual

Hunter®

TABLE OF CONTENTS ....

TABLE OF CONTENTS (CONTINUED) ....

INTRODUCTION ....

IDS is a unique, standalone irrigation controller, using only a single twisted-pair of wires (or "path") to operate up to 103 decoder stations. IDS actually provides five two-wire paths to permit efficient wiring in several directions.

How IDS Works

Decoders operate 24VAC valve solenoids to turn on irrigation. The decoders are installed along a two-wire path, and the IDS controller sends both power and signals over the same two wires.

Each decoder has a unique 8-digit Serial Number, printed on the side of the decoder. The decoder Serial Numbers are assigned to controller station numbers by the system operator (either from the keypad, or the optional IDSCD Decoder Manager software). This unique ID number is used to signal the decoder that IDS wants to operate.

IDS operates both single and multi-station decoders. The ID4 decoder has four independently addressable station outputs (the decoder has a 7-digit number, followed by a 1, 2, 3, or 4, to indicate each station). Decoder systems should also include grounded surge protection modules in the two-wire paths, although they are not programmable and are not addressed by the controller.

Two Controllers in One: The IDS actually has two different "brains" for storing and running two different kinds of irrigation programs. The keypad on the controller can create and run Field Controller Programs. The other type of programming is generally not used in IDS, but is designed to accept downloaded station events from a very specialized central computer.

Field Controller Programs (FCPs) are the Programs numbered 1 through 64, which you can write from the keypad. You can change them in the field at any time. They will run at the start times you specify and do exactly what you tell each one to do. Most of this manual is concerned with configuring and operating FCPs through the keypad. There are also some references to System Events (sometimes shown as SYS). These references are explained, but generally not used.

FIELD CONTROLLER PROGRAMS ....

Field Controller Programs, or FCPs, are the irrigation programs used for daily irrigation. They can also be started by an operator whenever irrigation is desired. There are 64 programs which can be divided up any way you want. Each FCP may have up to 30 events, and can be programmed to cycle (or repeat) up to 15 times, or continuously. FCPs are also permitted to overlap, meaning that more than one program (up to 20, in fact) can operate at once.

IDS OPTION & SETTINGS DISPLAYS ....

Options
(Press Options button from time/date display)

Pause Watering
List FC Settings
Edit FC Settings
Block Programming
  Create
  Edit
  Remove
Remove Program
Remove Preset
Edit Decoders
View SYS Events
Rem SYS Events
Radio Xmit Test
(Radio controllers only)

Edit FC Settings
(From Options, Edit FC Settings)

Address
Time
Date
Main % Scale
Schedule Length
Schedule Day
Day Change
FCP Inhibit?
Response
MR Runtime
MR Pump
PINs

Program Advanced Options
(Options when a Program or Preset name is selected)

Edit Program Name
Set Program % Scale
Cycles
Cycle Delay
Skip Days
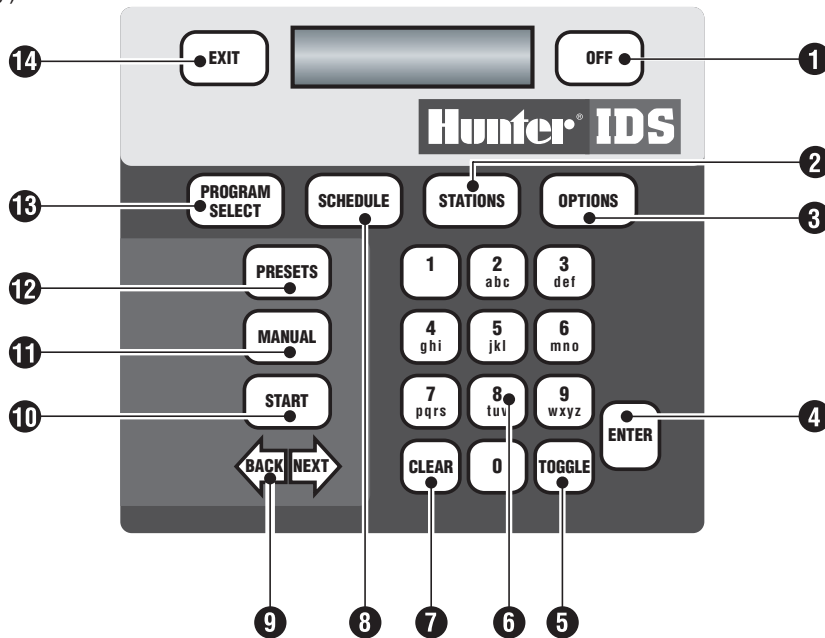Pump
End Time

Schedule Options
(Options when Schedule is selected)

Daily (up to 31-day schedule)
Day of Week (SMTWTFS)

Station Options
(Options when a Station is selected)

Remove Event
Cluster Events
Move Event
Insert Event

1. Stops all irrigation; enables and disables Rain Shutdown.

2. Sets run times and order for stations and Blocks.

3. Accesses multiple options and controller settings. Different sets of options appear, depending on mode controller is in (with other keys).

4. Saves field inputs and edits.

5. Selects between fixed choices in the display, and selects Rain Shutdown yes/no when OFF is pressed.

6. Alphanumeric buttons for data entry.

7. Clears display error messages; erases Program Name in Edit mode.

8. Determines type of schedule and actual water days On/Off for the selected Program.

9. Navigate backward/forward through displays, Programs, and Option choices.

10. Defines Start Time for automatic Programs; launches Preset programs immediately.

11. Starts one or more stations immediately.

12. Cycles through available Preset names, allows access for creation or editing, or immediate start with Start button.

13. Cycles through available Program names, allows access for creation or editing, or immediate start with Start button.

14. Escapes current function and exits to next highest level.

PROGRAMMING AND OPERATIONS ....

Note: The IDS keypad display has a built-in timer and will automatically exit any programming mode after 3 minutes if left untouched. If you are using the password protection feature, you will be required to log back in once this has happened. Any data not saved will be lost if the controller auto-exits.

Emergency Functions (OFF and Pause)
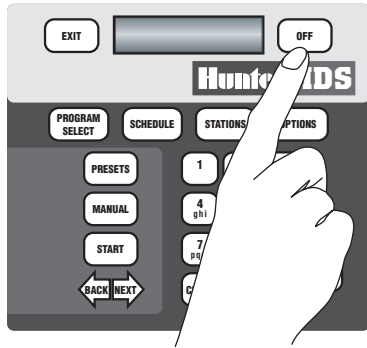
OFF: If you need to stop all irrigation at a controller immediately, press the OFF button to the right of the display. You may see a brief message, STOPPING ALL IRRIGATION, followed by:

EXIT   Press ENTER for Rain Shutdown?   OFF

Rain Shutdown: Rain Shutdown turns off all automatic functions permanently, until a human operator manually removes the controller from the Rain Shutdown mode (from the IDS keypad or a central computer). If you want to enter the Rain Shutdown mode, press ENTER. The display will show:

EXIT   Day and Time RAIN SHUTDOWN!   OFF

You will have to remember to place the controller back into automatic operation when irrigation is required again.

If you do *not* want to enter Rain Shutdown, press the OFF button again (upper right of the keypad) or any other button except ENTER. This will simply shut down all current irrigation until the next scheduled Start Time. Note that if another automatic Program was scheduled to start one minute later, the controller will begin irrigating again in one minute.

To turn off Rain Shutdown (and restore the controller to automatic operations): When the display shows RAIN SHUTDOWN!, press OFF. The display will show:

EXIT   Press ENTER for Auto Operation?   OFF

Press ENTER, and the controller will return to the automatic mode.

Pause: The IDS controller features dynamic pause, which will suspend all irrigation at the controller temporarily. This will apply to manual, semi-automatic, automatic and Preset Programs. The irrigation will remain paused until resumed by a human operator or until 30 minutes have elapsed. The controller will resume irrigating where it left off. Note that Pause will cause the end of the "water window" to be ignored – the end time of the paused Program will be pushed back for the duration of the Pause.
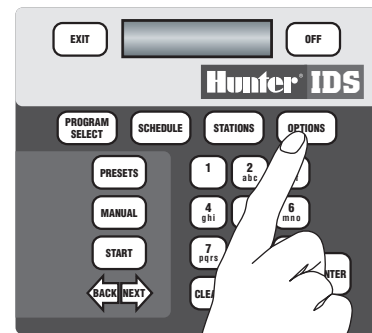
To Pause a Controller: Press OPTIONS. The display will show:

EXIT   Pause Watering?   OFF

Press ENTER to select the Pause option. The display will show:

EXIT   Pause Watering? YES | no   OFF
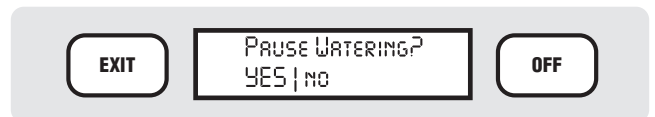
"YES" will be capitalized. To Pause the controller, press ENTER. The display will then show:

EXIT   Resume Watering?   OFF
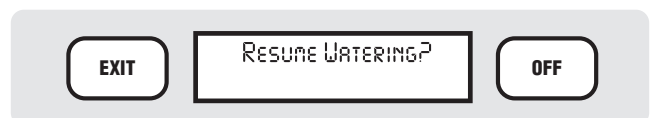
This will Pause all irrigation at the controller.

3

To resume watering, press ENTER while the display says Resume Watering? The display will then show:
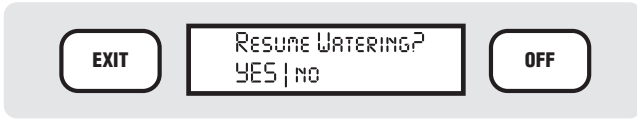
```
   ┌───────┐   ┌─────────────────────┐   ┌───────┐
   │ EXIT  │   │ Resume Watering?    │   │  OFF  │
   └───────┘   │ YES|no              │   └───────┘
               └─────────────────────┘
```

Press ENTER with YES capitalized, and the controller will resume irrigating where it left off when you paused it. No irrigation will be missed, only delayed. After 3 minutes, the Resume Watering? display will disappear, but the display will continue to flash PAUSE with the amount of time left to automatic resume. Press OPTIONS to return to the Resume Watering? display.

Note that if the controller was paused for 20 minutes, the currently active and any subsequent stations will be moved back in time 20 minutes.

If the Program would normally have ended at 5:30 AM, it would now end at 5:50 AM.

If you forget to Resume irrigation after placing the controller into Pause, it will automatically resume after 30 minutes. (The "no" selections will be in lower case. Press the TOGGLE button to switch between YES and NO. If you do not want to pause/resume the irrigation, TOGGLE to NO and press ENTER, or simply press EXIT.)

Also, if the optional End Time has been set for any program(s), it is possible to Pause before a program has reached its End Time, and then Resume after the End Time. In this unlikely (but possible) event, the program would finish irrigating with the current Cycle (even though the End Time has elapsed), but would not start any additional Cycles. End Times have no effect on Manual starts (which will always Resume and finish normally).

CONTROLLER SETUP ....

Setting up an IDS controller can be very simple. There are a few essential steps to get a controller running your programs, once it is installed and connected to the decoders. The bare minimum steps are:

• Set the controller's time and date
• Assign individual stations to decoder serial numbers (see Edit Decoders)
• Create a Program
• Set up a Day Schedule
• Set up a Start Time
• Assign Stations and station Run Times to the Program

Following are in-depth descriptions of all controller functions, but if you complete the basic steps above, you are ready for automatic irrigation.

When you start up a brand new IDS controller, or if you have erased the controller memory and are reprogramming from scratch, you must set up some basic operating information first.

Field Controller Settings

Press the OPTIONS button. The display will show "Pause Watering?" Press the OPTIONS button again. The display will show "List FC Settings?" ("FC"

always means "Field Controller"). Press ENTER. The display will automatically sequence the current information for the field controller in the following format:

Version Number: The version of field controller software installed in the IDS. Note the version number whenever possible, before calling Hunter or your Distributor with technical issues.

Time: On start up, this may be incorrect, but it will show the time of day that IDS thinks it is.

Date: On start up, this may be incorrect, but it will show the day of week and year that IDS thinks it is.

Size: Controller should be configured to 103 stations.

System Address: The unique identification number for a particular IDS controller in an optional central system. You may leave this set to "0" for standalone IDS operations.

Main Percent Scale: Indicates that the controller will operate each station for 100% of its scheduled Run Time.

Schedule Length: An IDS may be programmed on a multiple day schedule (from 1 to 31 days). This shows the actual schedule length of the controller.

Day of Schedule: This shows which day (of the schedule in the previous setting) that the controller thinks it is.

Day Change: The time at which the schedule day changes. The default is midnight, but you may change the time to any hour of the day.

Prg Inhibit is OFF: This setting is only meaningful in central systems, and shows the status of the Field Controller Programs (FCPs). If they have been inhibited, they will not run. In IDS controllers, inhibit should *always* be set to "OFF".

The following items will only appear if the controller has an Address set (to some number other than "0"):

System Response: This setting is only meaningful in central systems, and shows how much communicating the IDS controller will perform with a central computer.

System Event Day: This feature is not used in IDS controllers. This is only used in central systems which calculate "look ahead" schedules and download them to the controller.

System Day Change: This feature is not used in IDS controllers. It is a day change time that is downloaded from a central computer, and is not the same as the controller's Day Change time setting.

Maint Radio Run Time: This is the default time-out for stations started with a Maintenance Radio without a run time specified. If you forget to turn the station off, IDS will turn it off for you in 30 minutes.

Maint Radio Pump: This specifies whether the Pump output turns on whenever a station is started by a Maintenance Radio command.

After the above status messages, the final display will be:

Ctrl Uptime: The length of time this controller has been operating since the last time the power was turned on, or restored after a power outage. This is displayed in days, hours, minutes and seconds.

When the controller has finished sequencing through the FC Settings, it will show the current day and time, and power draw. There may be a "POWER OUTAGE" message flashing in the display. Press the CLEAR button to clear this message.

On the line beneath the time, the display will also show "LineOn" followed by the current draw, in milliamps:

LineOn : 280ma

The actual milliamp measurement will vary, and partly depends on whether any stations are operating. The standby draw usually starts around 0-100ma, depending on temperature, but each decoder in-line will add about 1 milliamp on a standby basis. As decoders are activated, they will add approximately 20ma per solenoid to the line draw.

If you continue to press the OPTIONS button, you will cycle through all of the available controller options:

Pause Watering? Stops irrigation temporarily; restarts where it left off (with Resume command).

List FC Settings? Automatically displays vital Field Controller settings.

Edit FC Settings? Allows you to change vital Field Controller settings.

Block Prgraming? Allows you to group multiple stations into a single block for programming purposes. See Blocks on page 16.

Remove Program? Allows you to delete a single program, including all station run times.

Remove Preset? Allows you to delete a single Preset, including all station run times.

Edit Decoders? Allows setup and/or changes to decoder/station assignments.

View SYS Events? Not used in IDS. Allows view of downloaded System Program events.

Del SYS Events? Not used in IDS. Allows deletion of downloaded System Program events.

Radio Xmit Test? (Radio controllers only) Generates a 5-second test tone for diagnostics.

Edit FC Settings: Of all the Field Controller options, this is the most vital to set up on a new installation. Many of the powerful features of IDS will not work, or will not work as intended, until these settings are made.

Press OPTIONS 3 times and the display will show "Edit FC Settings?" In this menu, you are able to change many of the settings displayed in the "List FC Settings" menu above.
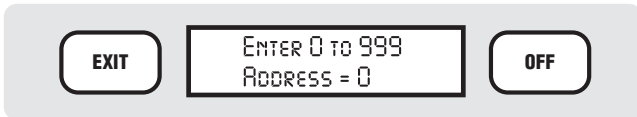
Press ENTER, and the display will show "Set Address?"

You may now press ENTER, to set or change the Address, or press OPTIONS again, to view further settings. You can also use the BACK and NEXT buttons to move backward and forward through the settings. Whenever the display shows a setting you want to change, press ENTER to edit it.

Set Address

A standalone IDS controller does not need an address (it may be left at "0"). However, the IDS Field Controller cannot communicate with a Maintenance Radio or a central system until it has an Address. Each controller must then have a unique 3-digit number, so that the central interface and/or Maintenance Radio can direct communications to the correct controller. If you need to set an address, when the display shows "Set Address?", press ENTER. The display will show:

EXIT	Enter 0 to 999 Address = 0	OFF

Type the address you want with the number buttons on the keypad and press ENTER. The display will show "SAVED! Address = 2" (example).

The address is now saved. You can use any 1, 2, or 3-digit number, and controllers in a central system do not need to be sequentially numbered. However, each controller must have a unique address. If more than one controller has the same numeric address, the system will become confused and errors will occur.

Once the address is set, you may use the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.

Note: If you set an address in a standalone controller, when no central system is present, the display will show the message "No Network Link" after a few minutes. This is normal and will not affect irrigation. It simply indicates that no central system has been heard from.
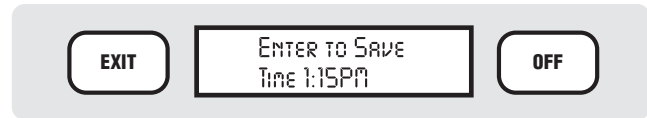
Set Time

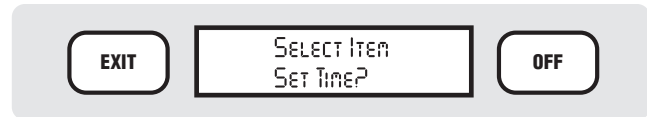To set the time, press ENTER. The display will show:

EXIT	Enter HH:MM Time xx:xx	OFF

Type the correct time (1:15, for example, in hour, then minute format), and press ENTER. The display will show:

EXIT	Toggle for am|pm Time 1:15AM|pm	OFF

The current am/pm selection will be capitalized. The other selection will be in lower case. Press the TOGGLE button to switch between AM and PM. When it is correct, press ENTER. The display will show:
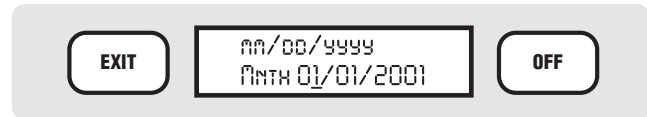
EXIT	Enter to Save Time 1:15PM	OFF

Press ENTER to set the time. The display will briefly show SAVED! and the time you have set. After a moment, the display will revert to:

EXIT	Select Item Set Time?	OFF

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.

Set Date

To set the Date, press ENTER at this display. The display will then show:

EXIT	mm/dd/yyyy Mnth 01/01/2001	OFF

Note: IDS dates are always shown in North American format (month/day/year).

Type the number for the correct month (1-12), in this case "3" for March, and press ENTER (you can also use the BACK/NEXT buttons to move around in the Date). The display will then show:

EXIT	mm/dd/yyyy Day 03/01/2001	OFF
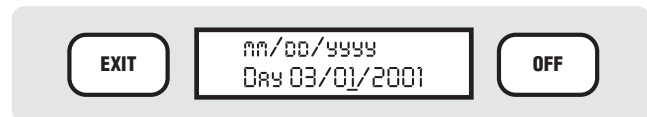
Type the number for today's date ("8" in this example), and press ENTER. The display will show:

EXIT	mm/dd/yyyy Year 03/08/2001	OFF
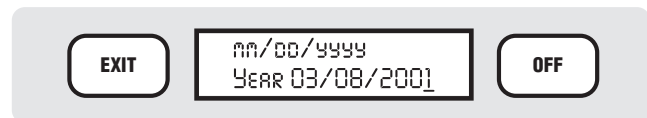
Type the correct year, and press ENTER. The display will show:

```
         ┌─────────────────────┐
  EXIT   │   Enter to Save     │   OFF
         │   Date 03/08/2001   │
         └─────────────────────┘
```
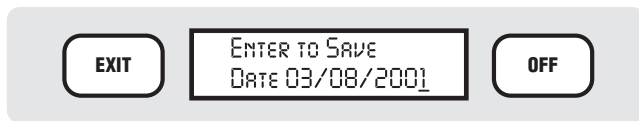
Press ENTER to set the date. The display will briefly show SAVED! and the date you have set. After a moment, the display will revert to:


```
         ┌─────────────────────┐
  EXIT   │     Select Item     │   OFF
         │      Set Date?      │
         └─────────────────────┘
```

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.

Set Main % Scale

"% Scale" allows you to reduce or increase all of the Run Times in the controller by the selected percentage (from 1 to 250%, in 1% increments). This enables you to quickly adjust the amount of irrigation for weather or other conditions without changing the basic programs. At 50%, each Run Time will only run half as long, and at 150%, each Run Time will run one-and-half times as long.

Note: In the Program Options, you can also scale individual Programs separately. The effects of % scaling are cumulative. See Set Program % Scale on page 21.

To set the Main % Scale from the Edit FC Settings mode, press ENTER at this display. The display will show:


```
         ┌─────────────────────┐
  EXIT   │  Enter 1 to 250%    │   OFF
         │  Main % Scale = 100 │
         └─────────────────────┘
```

Type the percentage you want with the number buttons on the keypad, and press ENTER. The display will briefly show "SAVED!" and the new % Scale amount. After a moment, the display will revert to:


```
         ┌─────────────────────┐
  EXIT   │     Select Item     │   OFF
         │   Set Main % Scale  │
         └─────────────────────┘
```

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.
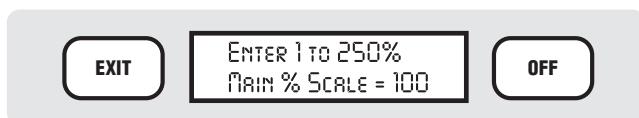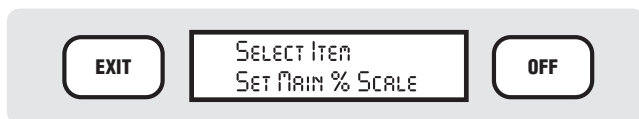
Note that whenever the controller is scaled up or down (to any value other than 100%), a "+" or "-" sign will appear as a reminder in the upper left corner of the status display (before the Day and Time information).

Once the Main % Scale has been changed, the scaled run times for all stations will be displayed when the Stations button is pressed in any Program. To return to the original (or base) run times, repeat the procedure above and change the Main % Scale to 100%.
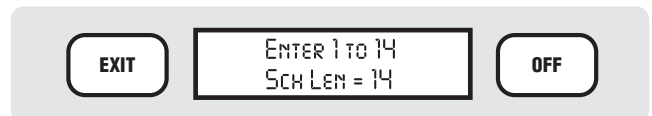
Set Schedule Length

The Schedule Length is the number of days in a complete IDS watering period, and allows the controller to track programs which do not water every day. If you only water a certain plant type every other day, for example, you could enter a 2-day Schedule, and schedule that program to water on just one of the days. The Schedule Length is tracked for the entire controller. To set the watering Schedule for individual programs, go to the individual Program and press SCHEDULE (see Schedule on page 11).

If you are not sure what schedule you need, start out with a 7-day schedule (so that it matches the number of days in a calendar week). You can always change it later.

If you always water everything every day, you can also just set a 1-Day schedule.

To Set the Schedule Length: Press ENTER at the "Set Sched Len?" display. The display will then show:


```
         ┌─────────────────────┐
  EXIT   │   Enter 1 to 14     │   OFF
         │   Sch Len = 14      │
         └─────────────────────┘
```

The default Schedule Length (the way IDS comes "out of the box") is 14 days: the maximum is 31 days. Type the number of the new Schedule Length (any number from 1 to 31) with the number buttons on the keypad, and press ENTER. The display will briefly show "SAVED!" and the new Schedule Length selection. After a moment, the display will revert to:
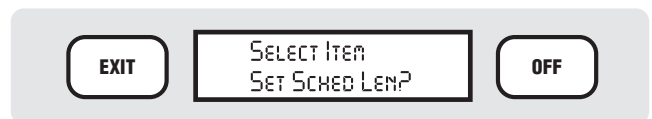

```
         ┌─────────────────────┐
  EXIT   │     Select Item     │   OFF
         │   Set Sched Len?    │
         └─────────────────────┘
```

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.
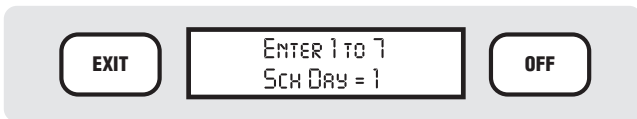
Set Schedule Day

The Schedule Day shows which day of the Schedule the controller thinks it is. For example, if you had set a 7-day schedule for a Schedule Length (above), you could tell the controller that today is Day 1 of the 7-day schedule, meaning Sunday. If today happens to be

Wednesday, you could tell it that today is Day 4 (of the 7-day schedule).

Another example would be if most of your irrigation occurred every day, but a few programs only run every other day (regardless of the day of the week). You could set up a 2-day Schedule Length, and then tell the controller which of the two days today is (1 or 2). In the Program Schedule (see Schedule on page 11) you can specify which days the individual Programs will water.

To Set the Schedule Day (for today): Press ENTER at the "Set Sched Day?" display. The display will then show:

EXIT	Enter 1 to 7 Sch Day = 1	OFF

Type the number of the new Schedule Day with the number buttons on the keypad, and press ENTER. The display will briefly show "SAVED!" and the new Schedule Day selection. After a moment, the display will revert to:
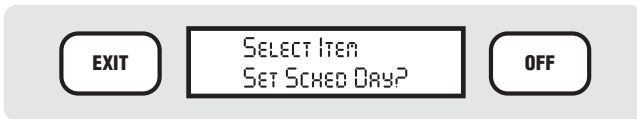
EXIT	Select Item Set Sched Day?	OFF

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.

Set Day Change

The programmable Time of Day Change option allows you to tell the controller at what time one day changes into another, when using the Daily Schedule option.

The default is, of course, midnight (12 AM). However, this occurs right during the middle of many nightly "water windows". If you water a certain schedule every other day, and the irrigation spans across midnight, you may lose the irrigation programs which technically fall on a non-irrigation day (past midnight).

To prevent this and similar confusion, you may specify a different hour for your irrigation days to change. Usually this is done after all irrigation is completed. If your night's irrigation is completed by 7 in the morning, you might wish to set the Day Change to 8:00 AM. Then, all of your irrigation will fall within a single "irrigation day."

Note: Time of Day Change only applies to Daily schedules. Day of Week schedules (Monday, Tuesday, etc.) always change at midnight.

You may only set the Day Change to an exact hour (no minutes).

To Set the Day Change: Press ENTER at the "Set Day Change?" display. The display will then show:

EXIT	XX Day Chg 12am	OFF
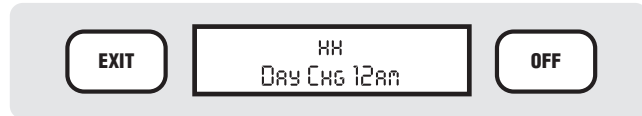
Type the number for the Day Change hour (8, in this example) with the number buttons on the keypad, and press ENTER. The display will show:

EXIT	Togle for am|pm AM|pm	OFF

The current selection will be capitalized. Other selections will be in lower case. Press the TOGGLE button to switch between AM and PM. When it is correct, press ENTER. The display will show:

EXIT	Enter to Save Day Chg 8am	OFF
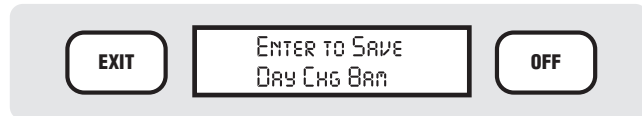
Press ENTER to set the Day Change. The display will briefly show SAVED! and the time of Day Change hour you have set. After a moment, the display will revert to:
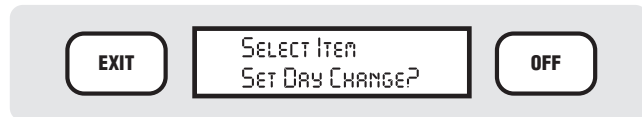
EXIT	Select Item Set Day Change?	OFF

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.
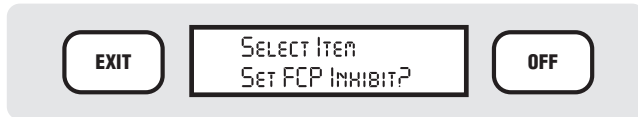
Set FCP Inhibit

FCPs (Field Controller Programs) are the Programs numbered from 1 through 64 in the Field Controller. This setting is normally not used in IDS, and should be left at "OFF". (The controllers may also irrigate with a master system program from a central computer. FCP Inhibit will prevent all of the numbered FCPs from running.)

Remember that FCP Inhibit **on** means the FCPs will *not* run. FCP Inhibit set to **off** means the FCPs will run normally.

To Set FCP Inhibit: Press ENTER at the "Set FCP Inhibit?" display. The display will then show:

```
┌──────────────────────────────────────┐
│  ┌──────┐   ┌────────────────────┐  ┌──────┐  │
│  │ EXIT │   │  Set Auto Inhibit  │  │ OFF  │  │
│  └──────┘   │  Inhibit on|OFF    │  └──────┘  │
│             └────────────────────┘            │
└──────────────────────────────────────┘
```

The current selection will be capitalized (default is OFF). The "on" selection will be in lower case. Press the TOGGLE button to switch between OFF and ON. When it is correct, press ENTER. The display will flash "SAVED!" and your selection. After a moment, the display will revert to:

```
┌──────────────────────────────────────┐
│  ┌──────┐   ┌────────────────────┐  ┌──────┐  │
│  │ EXIT │   │   Select Item      │  │ OFF  │  │
│  └──────┘   │   Set FCP Inhibit? │  └──────┘  │
│             └────────────────────┘            │
└──────────────────────────────────────┘
```

You may now press the OPTIONS, BACK or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.

Set Response

This setting is normally not used in IDS. It sets the level of Field Controller response to a central computer (if it is present and communicating).
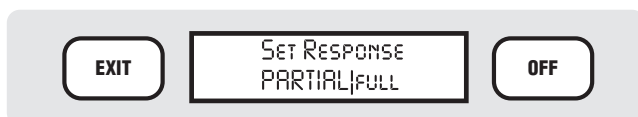
The default setting is to "NONE". The controller can also be set to "PARTIAL" or "FULL."

In the Partial Response setting, the field controller will report any alarm conditions (such as Fuse Open, Overload, Power Outage, etc.) to a central system. In the Full Response setting, the Field Controller will report all events as they occur, including every station start and station stop, as well as alarms.

Setting Response to NONE can also allow the controller to have an address set for optional Maintenance Radio operations, without showing the "No Network Link" message (this appears when a controller has an address, but is unable to hear communications from an optional central system).
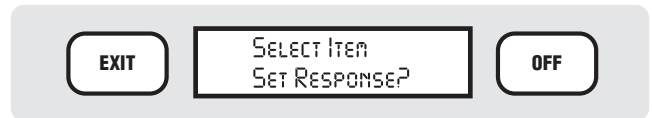
In standalone applications, Response is generally set to NONE.

To Set Response: Press ENTER at the "Set Response?" display. The display will then show:

```
┌──────────────────────────────────────┐
│  ┌──────┐   ┌────────────────────┐  ┌──────┐  │
│  │ EXIT │   │   Set Response     │  │ OFF  │  │
│  └──────┘   │   PARTIAL|full     │  └──────┘  │
│             └────────────────────┘            │
└──────────────────────────────────────┘
```

The current selection will be capitalized (default is NONE). The "full" selection will be in lower case. Press the TOGGLE button to switch between NONE, PARTIAL, and FULL. When it is correct, press ENTER.

The display will flash "SAVED!" and your selection. After a moment, the display will revert to:
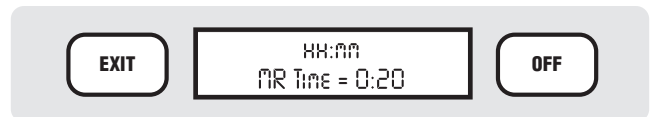
```
┌──────────────────────────────────────┐
│  ┌──────┐   ┌────────────────────┐  ┌──────┐  │
│  │ EXIT │   │   Select Item      │  │ OFF  │  │
│  └──────┘   │   Set Response?    │  └──────┘  │
│             └────────────────────┘            │
└──────────────────────────────────────┘
```

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.
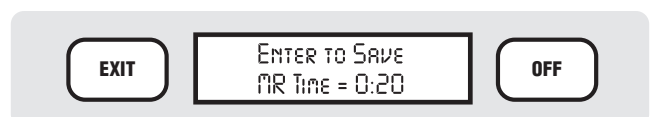
Set MR Runtime

MR = Maintenance Radio. This determines the time-out timer setting for stations started by a Maintenance Radio without specified Run Times. If you simply start a station with Maintenance Radio without a specific run time, this setting will automatically shut it off after the time shown, to prevent flooding and damage. The default value is 30 minutes. You may select a longer or shorter setting, from 1 minute to 18 hours, for this safety feature.

To Set MR Runtime: Press ENTER at the "Set MR Runtime?" display. The display will then show:

```
┌──────────────────────────────────────┐
│  ┌──────┐   ┌────────────────────┐  ┌──────┐  │
│  │ EXIT │   │       XX:MM        │  │ OFF  │  │
│  └──────┘   │   MR Time = 0:20   │  └──────┘  │
│             └────────────────────┘            │
└──────────────────────────────────────┘
```

Type the number for the default Maintenance Radio timer (example: 20 minutes) with the number buttons on the keypad, and press ENTER. The display will show:

```
┌──────────────────────────────────────┐
│  ┌──────┐   ┌────────────────────┐  ┌──────┐  │
│  │ EXIT │   │   Enter to Save    │  │ OFF  │  │
│  └──────┘   │   MR Time = 0:20   │  └──────┘  │
│             └────────────────────┘            │
└──────────────────────────────────────┘
```

Press ENTER to set the MR Runtime. The display will briefly show SAVED! and the MR Runtime you have set. After a moment, the display will revert to:

```
┌──────────────────────────────────────┐
│  ┌──────┐   ┌────────────────────┐  ┌──────┐  │
│  │ EXIT │   │   Select Item      │  │ OFF  │  │
│  └──────┘   │   Set MR Runtime?  │  └──────┘  │
│             └────────────────────┘            │
└──────────────────────────────────────┘
```

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.

Set MR Pump

MR = Maintenance Radio. This determines whether the Pump decoder station in the Field Controller will be activated whenever Maintenance Radio starts stations. If

you are using the Pump output to activate a Pump Start Relay or a Master Valve, you can choose to have that output come on whenever a Maintenance Radio command starts a station.

To Set MR Pump: Press ENTER at the "Set MR Pump?" display. The display will then show:
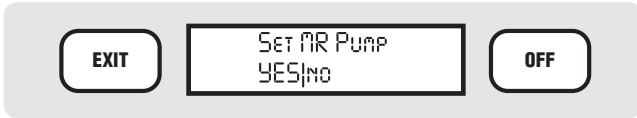
EXIT	Set MR Pump YES|no	OFF

The current selection will be capitalized (default is YES). The "no" selection will be in lower case. Press the TOGGLE button to switch between YES and NO. When it is correct, press ENTER. The display will flash "SAVED!" and your selection. After a moment, the display will revert to:

EXIT	Select Item Set MR Pump?	OFF
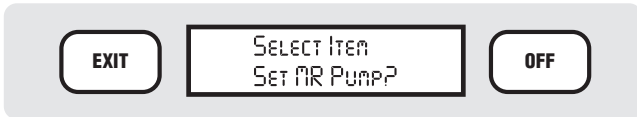
You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.

Set PINS

The IDS controller has 2 levels of optional password protection:
• The Supervisor level can perform all programming functions.
• The Operator level can perform basic functions (START and STOP commands) which do not affect the automatic programs and their options.

Each level of access can be protected by a 4-digit Personal Identification Number (PIN).

To Set PINs: Press ENTER at the "Set PINs?" display. The display will then show:

EXIT	Set Supervisor PIN#----	OFF
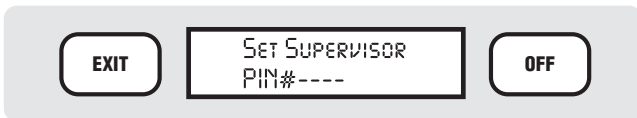
Type any 4 digits (there must be exactly four, from 0001 to 9999) which you will be able to remember, and press ENTER. The display will show:

EXIT	Again to verify PIN#----	OFF
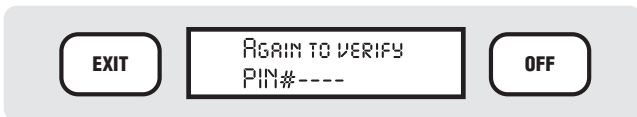
Type exactly the same PIN number again and press ENTER. The display will show "SAVED!".

If you fail to enter the same number the second time, the display will show ERROR! You will then need to reenter the PIN and enter the confirmation a second time.

Once the PIN has been entered correctly, the display will show:

EXIT	Set Operator PIN#----	OFF

Repeat the sequence above to enter an Operator's PIN number. You are not required to enter a second level of password protection. If you do not want an Operator level, simply press ENTER at this display without entering anything.

If the second (verification) entry of either Supervisor or Operator level PINs is in an error, no PIN has been created.

You may change the passwords at any time, but you must first log on to the controller with the existing Supervisor-level PIN. If you forget your PIN, it is still possible to clear the password settings. Contact your distributor or Hunter Technical Services for help to clear the password settings.

When you press the EXIT button at any time on the keypad, it will exit the function you are in and return to the next-highest level in the controller. After you exit all the way back to the normal time/date display, and press EXIT again, the display will show "LOGGED OFF". This means that a valid PIN must be entered to log back on before any programming or operations take place (if PINs are enabled). If you do not log off when finished, the controller will log off automatically after 3 minutes of no activity.
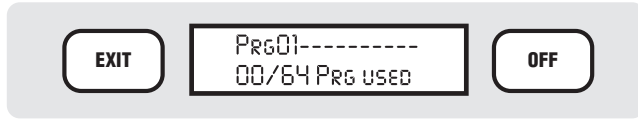
When the PIN settings are complete, press ENTER. The display will flash "SAVED!" and your selection. After a moment, the display will revert to:

EXIT	Select Item Set PINs?	OFF

You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Edit Settings mode.

WRITING A FIELD CONTROLLER PROGRAM..............

Press the PROGRAM SELECT button. The display will show:

```
  ┌──────┐   ┌──────────────────┐   ┌──────┐
  │ EXIT │   │  Prg01----------  │   │ OFF  │
  └──────┘   │  00/64 Prg used   │   └──────┘
             └──────────────────┘
```

This indicates that you are in Program # 1, with 0 out of 64 total Programs in use. The numbers may vary if there are already programs in the controller's memory. There may already be a program name in place of the dashes. You can edit any Program at any time. For now, we will work on Program 1 as the controller came "out of the box."

Naming a Program

Press the OPTIONS button. The display will show "Edit Prg Name?"

Press ENTER. The bottom line of the display will show "Alpha entry mode", and the cursor will be flashing on the first space.

Use the buttons on the keypad to type in a name for the Program. You may mix letters and numbers to create accurate names for each Program (up to 10 total characters long).

Typing Instructions

Each number button also has a series of letters of the alphabet assigned to it. While the display says "Alpha entry mode" the buttons will type letters only. Press the button rapidly to display the letter you want. If you release the button for more than about 1 second, the letter will be selected and the cursor will advance to the next position.

To type the word "TURF", for example, press the "T" button (#8) once, and wait for a second. You may hear a faint beep, and the cursor will advance to the next space.

Press the #8 button twice, rapidly, to display the second letter "U". Wait for a second, and the cursor will advance to the next position. Press the 7 button to type an "R". Wait for the cursor to advance, and then press the #3 button three times in a row to type "F". The display should now read "TURF".

If you make a mistake, you can use the BACK and NEXT buttons to position the cursor on any existing space, and type a new character. To erase an entire Program Name, press CLEAR. Be careful, because CLEAR erases the entire name, not just the space at the cursor.

To create a dash instead of a character, press the NEXT button to skip over a space and resume typing.

To delete a character and leave the space blank, press the "1" (one) or "0" (zero) buttons once when in the Alpha entry mode. They do not have letter assignments and will create a blank space.
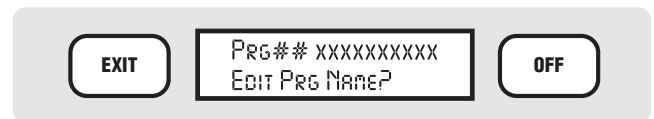
You can also create special symbols with the "1" (one) or "0" (zero) buttons when in the Alpha entry mode. With the first button press, they create a blank space. If you continue to press them rapidly, they will cycle through the following symbols:

!	"	#	$	%	&	<
	quote	number	dollar	percent	and	

>	*	+	,	—	.	/
	star	plus	comma	dash	period	slash

To type numbers, press the TOGGLE button. The bottom line of the display will show "Num entry mode". Now the buttons will type the number on the button, instead of the letters. To delete a number and leave a space, TOGGLE back to Alpha entry mode and use the "1" or "0", then TOGGLE back to Num entry mode to continue typing numbers.

When the name in the display is correct, press ENTER. The display will show "SAVED!" for a moment, then return to:

```
  ┌──────┐   ┌──────────────────┐   ┌──────┐
  │ EXIT │   │  Prg## xxxxxxxxxx │   │ OFF  │
  └──────┘   │  Edit Prg Name?   │   └──────┘
             └──────────────────┘
```

Where ## is the number of the program, and xxxxxxxxxx is the new Program name you have entered.

Press the EXIT button to leave the Edit Prg Name programming. The display will return to the Program Select level, and will show the new name of the Program.

## Assigning a Schedule to a Field Controller Program

The Schedule for a Program determines the days on which the Program will run. There are two types of Schedules: Daily or Day of Week.

Daily: Uses the controller calendar to determine the watering schedule (see Set Schedule Length on page 12). TOGGLE each day, Yes or No.

Day of Week: Uses the days of the week (Monday, Tuesday, etc.) to determine the watering schedule. TOGGLE each day from Capital (water) to lower case (no water).

Press the PROGRAM SELECT button repeatedly until the name or number of the Program you want appears in the display. Once you have pressed PROGRAM SELECT, you can also use the BACK and NEXT buttons to go backward or forward through the available Programs.
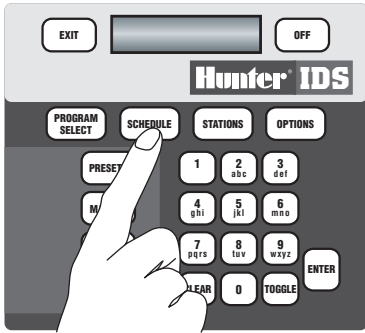

When the Program you want appears in the display, press the SCHEDULE button. If the Program has no Schedule assigned yet, the display will show:

You may press SCHEDULE again to see the Day of Week option (you can also use TOGGLE, or BACK and NEXT, to move between the options).

Note: If the Program already has a Schedule assigned, the SCHEDULE button will immediately show the existing Schedule. If you want to change to the other type of Schedule, press the OPTIONS button, and TOGGLE between the selections as described above. When the display shows the option you want to use, press ENTER.

If you select Daily, the display will show something like:
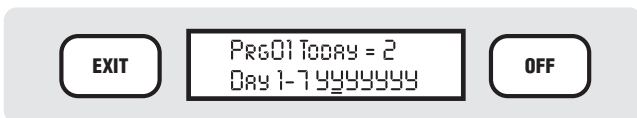
The cursor will be flashing under the "Y" corresponding to the current day.

Prg## will show the Program number selected.

Today= # will display what today's number is, in the controller calendar, as in Day 2 of a 14-day schedule.

Day 1-7 shows the number of days in the controller calendar (as set in the Edit FC Settings selections). If the calendar is longer than 7 days, the remaining days will be shown on other "pages" when you finish setting up the first seven days.

The "Y"s show Yes for each of the days (default setting is all days to Yes, regardless of how many days are in the controller calendar). A "Y" means the Program will run on that day; an "n" means it will not.

To set the days for Yes or no, press the TOGGLE button. TOGGLE will change the setting for the day from "Y" to "n". When the day is set correctly, use the NEXT key to advance to the next day, and press TOGGLE again to set up the day. Continue through all the days of the calendar. If there are more than 7 days, when you press NEXT after the 7th day is set, the display will show the next "page" of days (Days 8-14).

Do not press ENTER until all the days are set correctly. If you accidentally press ENTER before you are finished, the display will show "Enter to Save". Press EXIT instead, then press the SCHEDULE button again to re-enter the scheduling mode.

After you have set up the entire Daily Schedule for the Program, press ENTER. The display will show "Enter to Save". Press ENTER again. The display will briefly show "SAVED!", and then will return to the Program Name.

Example: A controller has a 14-day schedule. You want to set up a Program to irrigate Monday and Thursday of the first week, and Tuesday and Friday of the second week. Monday is the first day ("Day 1") of the Schedule.

Use the NEXT button and the TOGGLE to create:

After the 7th day, press NEXT again, and the display will advance to Days 8 through 14.
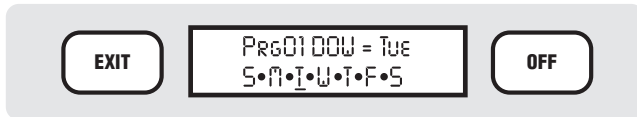
Continue to press NEXT and use TOGGLE to configure the second week:

After you have set up the entire Daily Schedule for the Program, press ENTER. The display will show "Enter

to Save". Press ENTER again. The display will briefly show "SAVED!", and then will return to the Program Name.

If you select Day of Week, the display will show something like:

The Program number for the selected Program will be displayed. DOW = will show which day of the week today is. The S•M•T•W•T•F•S display represents each day of the week. The cursor will be under the day of the week that the controller thinks it is (in the example above, Tuesday).

Capital letter days are watered. Lower-case lettered days are non-water days.

Press the TOGGLE button to change the capital "T" (or any other letter) to a lower-case "t". Press TOGGLE again, and the day will change back to a capital "T". Press the NEXT (or BACK) button to move to a different day. Create capital letters for each day you want to water, and lower-case letters for each day you want to skip.

When the whole week is configured correctly, press ENTER. The display will briefly show "SAVED!", and then will return to the Schedule days you have created.

Example: You want the Program to water all weekdays, but not weekends. In DOW mode, use the TOGGLE and NEXT buttons to create:

This shows that Sunday and Saturday will not be water days, but that the rest of the days will irrigate.

Press EXIT to leave the Schedule editing mode. The display will show:

You must press the ENTER button with YES capitalized to save the new Program Schedule. If you want to discard it, press the TOGGLE button to capitalize NO and press ENTER, and the Schedule will not be saved.

To Change a Schedule Which has Already Been Set: Press the PROGRAM SELECT button until the Program you want to change appears in the display.

Press the SCHEDULE button. The display will show the type of Schedule currently set up for the Program.

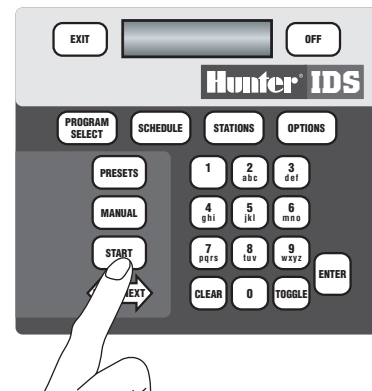Press the OPTIONS button. The display will show:
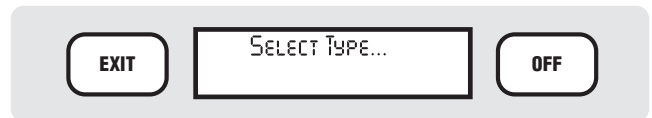
Type of schedule

You may then press SCHEDULE, or use the BACK and NEXT buttons, to cycle through the choices available. When the display shows the type of Schedule you want, press ENTER. Complete the steps for the Schedule types shown above to finish the new schedule.

Assigning a Start Time to a Field Controller Program

The Start Time for a Program determines the time of day at which the Program will run.

Press the PROGRAM SELECT button repeatedly until the name or number of the Program you want appears in the display. Once you have pressed PROGRAM SELECT, you can also use the BACK and NEXT buttons to go backward or forward through the available Programs.

When the Program you want appears in the display, press the START button. The display will show:
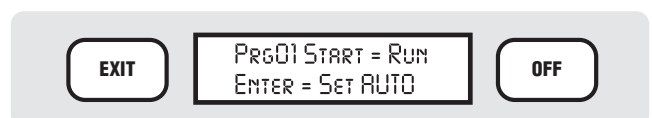
You can actually perform two different functions from here.

If you press START again, the program will begin running immediately (so, be careful!). This is the Semi-automatic Start feature.

If you press ENTER, the display will show:

```
┌──────┐   ┌──────────────────┐   ┌──────┐
│ EXIT │   │ Prg01 XXXXXXXXXX │   │ OFF  │
└──────┘   │ Start = OFF      │   └──────┘
           └──────────────────┘
```

The "Prg01" will indicate the Program number you selected. "XXXXXXXXXX" will be the name of the Program, if applicable. "Start =" will show the actual Start Time of day, or OFF if no Start Time has been programmed yet.

To enter or change a Start Time, simply begin typing with the number buttons on the keypad. The number will appear in the display in place of the word OFF or the previous Start Time. It is not necessary to enter leading zeroes. For example, to create a Start Time of 9:30 PM, type 9 3 0 and press ENTER.

The display will then add AM|pm to the time. Press the TOGGLE button to change between AM and PM. When the time is correct, press ENTER. The display will show "Enter to Save". Press ENTER again, and the display will show SAVED! and the time you have set for the Start Time.

The controller will automatically start the Program at the time shown (you can also enter multiple cycles, and cycle delays, for the Program; this is described in detail in the Programming Advanced Options section).

Programming Stations: Run Times, Events, and Blocks

A Station is a single electrical output to a solenoid on a valve, originating from the field controller. In decoder systems, each station is a uniquely-numbered decoder output along the two-wire path. The IDS controller may have up to 103 stations, plus a separate Pump decoder output.

The ID1 single-station decoder may be connected to up to 2 solenoids. However, they will both start at once, and are treated as a single station for programming purposes. The unique 8-digit Serial Number printed on the actual decoder is associated with a station number in the IDS controller.

The ID4 four-station decoder has 4 separate outputs, and each one is a true, independent station. The ID4 has a unique 7-digit number, followed by an X. In place of the X, you can program a 1, 2, 3, or 4 to tell it which station you want to program, or activate. The color-code for each of the four stations is printed on the side of the decoder (1=black, 2=yellow, 3=green, 4=white). A single ID4, therefore, can represent up to four stations in the IDS controller.

A run time is the length of time for which the station will be activated, or in other words, how long the sprinklers it controls will run. Each station run time is separately programmed. Run times may be programmed in 1-minute increments, from 1 minute to 18 hours, 12 minutes, in hh:mm format.

A station may appear in more than one Program, and it may appear in the same Program more than once. Stations may run in any order, and are not required to run sequentially in numerical order.
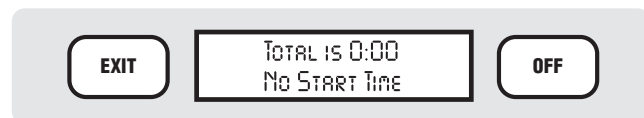
An Event refers to the order in which the station will run. You can run any station in any order, by setting its Event number. Events always occur in sequence, from #1 to the last event. You can assign any station # to any Event #. Each Program may have up to 30 Events.

To Program Individual Stations

Press the PROGRAM SELECT button repeatedly until the name or number of the Program you want appears in the display. Once you have pressed PROGRAM SELECT, you can also use the BACK and NEXT buttons to go backward or forward through the available Programs.
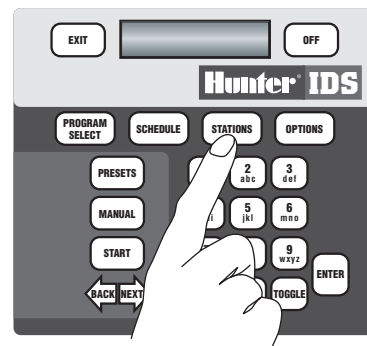
When the Program you want appears in the display, press the STATIONS button. The display will show:

```
┌──────┐   ┌──────────────────┐   ┌──────┐
│ EXIT │   │ Total is 0:00    │   │ OFF  │
└──────┘   │ No Start Time    │   └──────┘
           └──────────────────┘
```

Or actual numbers or 9:30 PM or 9:30 PM – 10:45 PM

This initial display shows the total time for the Program selected, and the start and end times for the Program. If

it is a new Program, or the Start Time has been cleared, the second line will show "No Start Time". If there is already a Start Time, that time will be shown. If Station Run Times already exist, the Start and the end time for the Program will be shown.

For example, if a Program contains 32 minutes of irrigation, and is set to begin at 8:00 PM, the display would show:

Total is 0:32
8:00pm – 8:32pm

If Continuous cycles have been selected for a Program, the display will differ, depending on your settings (see XXXCycles).

Press the STATIONS button again. The display will show (example):

| EXIT | Prg01   Event 01
ST|Bk001 = 0:05 | OFF |
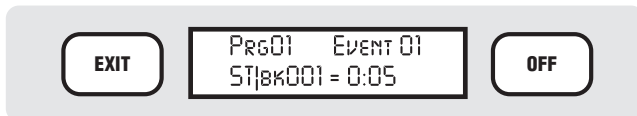
...or, if the station has never been programmed before, as at initial installation, it will show:

| EXIT | Prg01   Event 01
ST|Bk--- = 0:00 | OFF |
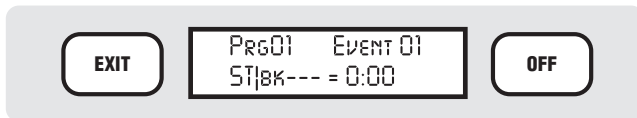
This will show the station information for the first "Event" in the Program. The Program selected is shown in the upper left. The Event number is in the upper right. The station or block is in the lower left. The actual Run Time for the station is in the lower right.

To program a new Station Run Time, verify that the cursor is under the Station number. (At the station number position, you can also press the TOGGLE button to change from a Station to a Block. If you select a Block, the number will refer to a Block number, not an individual station. See Blocks on page 16 for more information.)

Type the number of the station or Block you want. Press ENTER.

The cursor will advance to the Run Time field. Type the Run Time you want for that station or Block (up to 18 hours and 12 minutes), and press ENTER.

You must now press the STATIONS button to advance to the next event, and program another station (or Block).

You can continue in this manner until all the stations you want in the selected Program are programmed. Remember that you can enter any stations, in any order.

Example:

| EXIT | Program #1 FIELD
Start Time = 9:30pm | OFF |
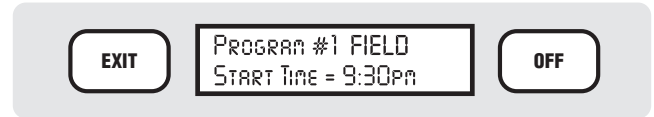
Event#	Station#	Run Time (hours:minutes)
1	3	0:10
2	5	0:08
3	7	0:12
4	8	0:04
5	6	0:20
6	4	0:11
7	2	0:08
8	10	0:10
9	1	0:12
10	9	0:05

Event #1 will begin at the assigned Start Time for the Program (9:30 PM) and run for 10 minutes. Event #2 will follow immediately after it (Station #5 for 8 minutes), then Event #3, and so forth. The total Run Time for the Program is 100 minutes, so the end time shown will be 11:10 PM.

You may find it easiest to simply run the stations in numerical order (where Event #1 = Station #1, Event #2 = Station #2, etc.), but IDS has the flexibility to run stations in any order.

When you have finished entering the Run Times for all the stations you want in the Program, press the EXIT button. The display will show:

| EXIT | Save Changes?
YES|no | OFF |
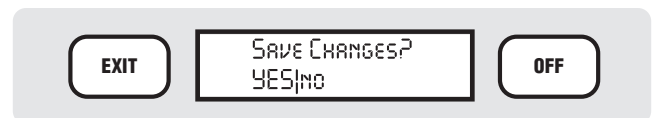
The "YES" will be capitalized. To continue saving the changes, press ENTER. The display will flash "SAVED!" and your selection. After a moment, the display will revert to the Program Name.

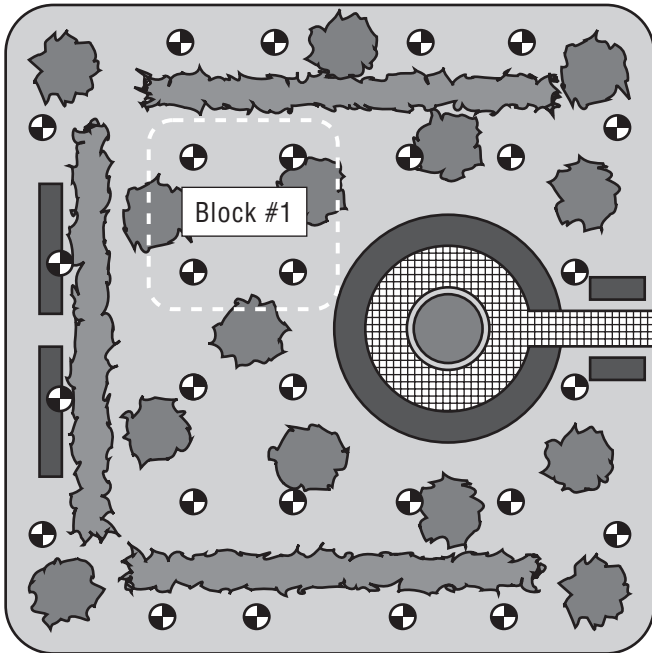If you just want to exit and **not** save the changes, press TOGGLE to change "no" to "NO" and press ENTER

The changes will be discarded, and the Run Times will be left the way they were.

Blocks

A Block is a group of more than one station (up to 8 per block) which will activate all at once, which are given a single run time, and which may be included in a sequence just like a single station. A Block counts as a single Event regardless of how many stations are assigned to it. It is technically possible to create a Block of only 1 station, but this defeats the purpose of this feature.
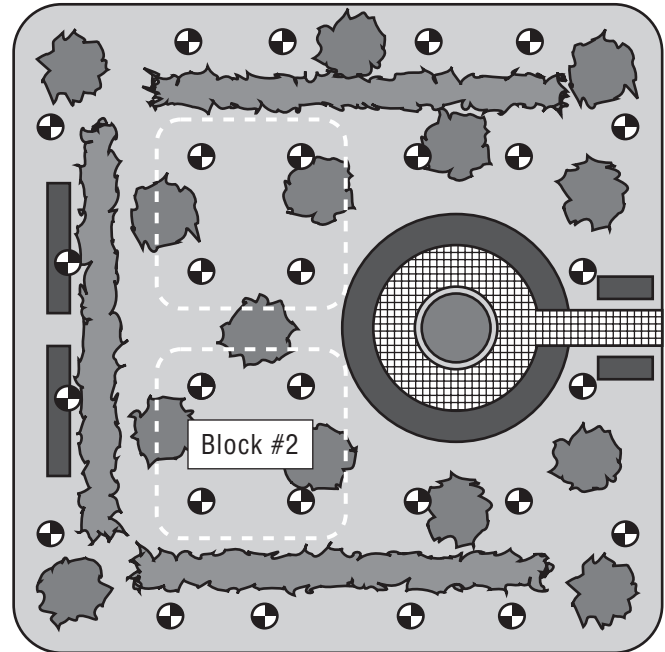
When multiple stations are activated in a Block, they are actually staggered at 1-second intervals to prevent the simultaneous electrical inrush draw of all the solenoids.

Blocks may be used to help you in several ways. They allow you to program and adjust large numbers of sprinklers with fewer keystrokes, since many sprinklers of similar types will have identical run times.

Block #2

Blocks can also irrigate more efficiently than single stations, because the "cloud" of spray from multiple sprinklers running simultaneously cools hot surfaces, and reduces the evaporation of individual sprinkler applications.
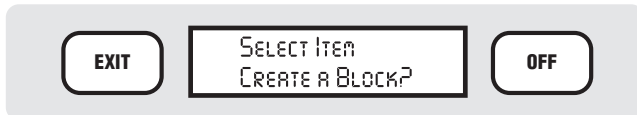

Block #1

If you group similar sprinklers with similar flow capacities into Blocks, you can have a fairly constant level of flow, even for a large number of sequencing Events.

By permitting Blocks to sequence (simultaneous groups of 4 stations on an ornamental slope, for example), large areas can be irrigated with fewer Programs and less complicated sequences.

Block #3

Blocks may also be included in Preset programs, and can be used to "syringe" overheated turf areas more efficiently and quickly. One or two Blocks can wet an entire turf area in a single run time or two.

Creating Blocks: Blocks are created, edited, or deleted at the Field Controller Option level. Each Field Controller may have up to 64 Blocks, which are always the same, regardless of which Programs they are included in.
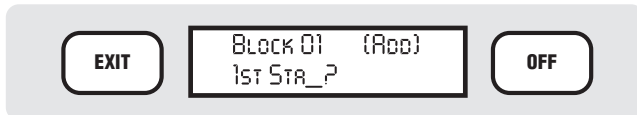
With no programs selected, from the basic time date display on the controller, press the OPTIONS button approximately 4 times until the display shows:
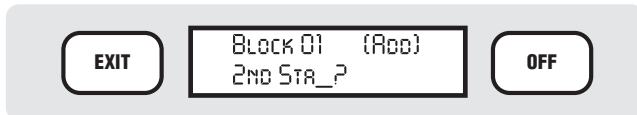
EXIT	Block Prgraming?	OFF

Press ENTER. The display will show:

EXIT	Select Item Create a Block?	OFF

To create a Block, press ENTER. The display will show:

EXIT	Block 01 (Add) 1st Sta_?	OFF

Type the station number for the first station in the block, and press ENTER. The display will show:

EXIT	Block 01 (Add) 2nd Sta_?	OFF

Type the next station number and press ENTER, and so on, up to 8 stations. When the block is complete, press ENTER again. The display will show "SAVED!" and will return to the Create A Block? message. You may then create another Block, or press EXIT to leave the Block mode.

Note that run times and Events are not assigned to Blocks here. This only creates the Blocks, by assigning stations to them. The actual run times are assigned to the Blocks in the individual Programs, under the Stations button functions.

Editing and Removing Blocks: Once Blocks are created, they may be edited, or removed altogether. With no Programs selected, from the basic time date display on the controller, press the OPTIONS button 4 times until the display shows:

EXIT	Block Prgraming?	OFF

Press ENTER. The display will show:

EXIT	Select Item Create a Block?	OFF

Press OPTIONS again. The display will show:

EXIT	Select Item Edit a Block?	OFF

Press OPTIONS again. The display will show:

EXIT	Select Item Remove a Block?	OFF

To edit an existing Block, press the OPTIONS button until Edit a Block? is shown, and press ENTER. The display will show:

EXIT	Enter Block? 01 02 03 04 05 →	OFF

This list will always show all of the currently existing Blocks

In this example, the controller already has more than 5 Blocks created, and the arrow symbol is prompting you to press the NEXT button to view more Block numbers.

Type the number of the Block you want to edit (for example, "3") and press ENTER. The display will then show the station numbers included in that block, and will also show "---" for any unoccupied spaces in the Block. You may now add more stations, or remove existing stations from the Block.

To remove a station from an existing Block, press the NEXT button to advance to the station, and press CLEAR or "0" (zero). Press ENTER.

To add a new station to an existing Block, press the NEXT button to advance to the next blank spot (---), type in the number of the new station, and press ENTER. It is not necessary to enter leading zeroes. For example, to add station 7 to a Block, simply type "7" at a blank spot and press ENTER. You may then advance to the next blank spot and enter, change, or remove more stations in the Block.

You may also replace one station in an existing Block with another. Press NEXT to advance to the station you

want to replace, simply type the new station number right over it, and press ENTER. This will remove the original station, and add the new station in its place.

When the Block editing is complete, press ENTER again. The display will ask:

EXIT	Save Changes? YES| no	OFF
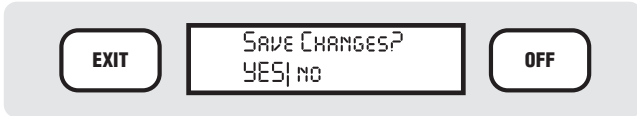
If you want to save the Block edits, press ENTER (with the YES capitalized). The display will show:

EXIT	SAVED!	OFF

The display will then revert to the Edit a Block? option level.

To remove an existing Block, press the ENTER button when Remove a Block? is shown. The display will show:

EXIT	Enter Block? 01 02 03 04 05 →	OFF

In this example, the controller already has more than 5 Blocks created, and the arrow symbol is prompting you to press the NEXT button to view more Block numbers.

Type the number of the Block you want to remove (for example, "2") and press ENTER. The display will show REMOVED and the block will be permanently deleted.

Station Options (Changing Events)

As noted above, stations or Blocks can run in any order. You do this by editing Events. There are several options available to edit Events.

Remember: The Event refers to the order in which the station will run. You can run any station in any order, by setting its Event number. Events always occur in sequence, from #1 to the last event. You can assign any station # to any Event #.

Events are part of a specific Program, so the first step is to press PROGRAM SELECT on the keypad until the Program you want to edit appears in the display.

Then press the STATIONS button once. The display will show the current total run time of the Program. The easiest way to access most of the functions for a

specific event is to continue pressing the STATIONS button until the display shows the Event you want to edit. When the specific Event is shown in the display, press the OPTIONS button. The OPTIONS button will cycle through the Station-level options, which are as follows:

EXIT	Delete an Event?	OFF

EXIT	Cluster Events?	OFF

EXIT	Move an Event?	OFF

EXIT	Insert an Event?	OFF

Delete an Event: To delete the data in an existing Event, press ENTER when the displays shows Delete an Event? The display will then ask, Delete data in Event #x? (where x = the number of the Event you were on). Press ENTER. The display will show OK! and the Event will be deleted.

Note that you don't really delete Events, but the data in the Events. In effect, the whole sequence of stations or Blocks will move backward one Event, to fill the slot that was just deleted.

Example: If the existing Events were as follows:

Event #	1	2	3	4
Station #	5	6	7	8

...and you then delete the data in Event #2, the new Event list would look like:

Event #	1	2	3
Station #	5	7	8

Since there are only 3 remaining stations, the last Event is now #3.

Cluster Events?: "Cluster" is a mass-programming function for large groups of similar stations. When you first program a controller, you may want to set up all the

same types of sprinklers with the same run time, see what happens, and adjust individual stations from there. "Cluster" lets you assign a single run time to large numbers of sequentially numbered stations, with a minimum number of keystrokes.

To do this, the Cluster command will assign a consecutive sequence of station numbers to a consecutive sequence of Event numbers, with a single run time for all.

To cluster Events, press STATIONS to get to the station where you want to begin a Cluster (often station 1), and press OPTIONS until the display shows Cluster Events? Press ENTER. The display will show:

EXIT	Start Cluster at Event #1?	OFF

Where x = the number of the Event you were on.

Type the number of the Event you want, or just press ENTER to accept the choice offered. The display will show:

EXIT	Stop Cluster at Event #30?	OFF

Since 30 is the maximum number of Events in a Program, the controller will always offer to cluster up to Event #30. You may type any existing Event number higher than the starting Event to cluster to, and press ENTER. The display will then show:

EXIT	Start Cluster with Sta #001?	OFF

You may start at any station number. Simply type the number of the station at which you want to begin, and press ENTER. The display will then show:

EXIT	All Events Use RunTime 0:00	OFF
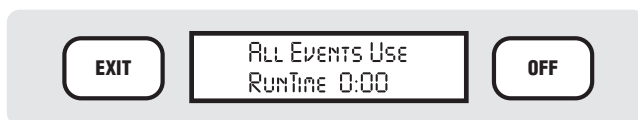
Type the run time you want all the clustered stations to use. The display will then show:

EXIT	Enter to Cluster Exit to Quit	OFF
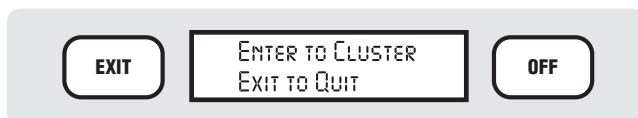
Press ENTER to cluster the stations and run times you entered. The display will briefly show "OK!" and then return to the Cluster Event? Option. Press EXIT if you are done programming stations, and the display will return to the Stations display.

The controller will then assign the run time to every station in the cluster, beginning with the lowest numbered station and ending at the last one in the cluster.

When you have finished entering the Run Times for all the stations you want in the Program, press the EXIT button. The display will show:

EXIT	Save Changes? YES| no	OFF

If you want to save the new Run Times, press ENTER (with the YES capitalized). The display will show:

EXIT	SAVED!	OFF
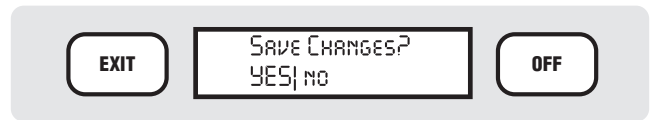
The display will then revert to the Program Name display.

Example:

EXIT	Start Cluster at Event #1	OFF

EXIT	End Cluster at Event #12	OFF

EXIT	Start Station is Station #5	OFF

EXIT	Run Time is 10 Minutes	OFF

The controller will create 12 Events, from 001 to 012. Stations 5 through 16 will run in sequence, for 10 minutes apiece.

Move an Event: You can also move the data from one event to another location in a Program, if you want a

Figure 1

Event #	1	2	3	4	5	6	7	8	9	10	11	12
Sta. #	5	6	7	8	9	10	11	12	13	14	15	16
Run	:10	:10	:10	:10	:10	:10	:10	:10	:10	:10	:10	:10

specific station to keep its run time, but activate in a different order.

In Figure 1, you might want to move station #6 (Event #2) to activate after station #14 (Event #10).

To move an Event, press STATIONS until the Event you want to move appears in the display. Press OPTIONS until "Move an Event?" appears in the display. Press ENTER. The display will show:

| EXIT | Move Event #02 | OFF |

Press ENTER (you may also type in a different Event number). The display will show:

| EXIT | Move Event #02 to Event #?? | OFF |

Type the Event # you want to move the data to (#10, in this example), and press ENTER. The display will briefly show OK, and revert to the Move Event? display.

As you can see in Figure 2, the Event data has been moved. Note that the other Events move forward to fill the slot formerly occupied by station #6. No data was lost. Only the order in which the stations will activate has changed.

Note: If you try to move an Event # that does not exist, or try to move an Event to an impossible #, the display will briefly show ERROR! and return you to the option. If you only have 12 Events, you can only move an Event

within the 12 numbers. You cannot have an "empty" Event in the middle of a sequence. Trying to move to Event #13 would cause the ERROR! message.

Insert an Event: You can insert a new Event in between existing Events. In the example above, you might want to insert station #4, with a run time of 7 minutes, in between stations #8 and #9 (Events 3 and 4).

Press the STATIONS button to advance to the Event where you want to insert an Event (Event #4, in the example). Press the OPTIONS button until the display shows Insert an Event? Press ENTER. The display will show:

| EXIT | Insert a Blank Event at #4? | OFF |

Press ENTER. The display will briefly show OK! and will then revert to the Insert Event? option. You have now created a blank Event at Event #4. The stations and Event that were at #4 are now at Event #5, and the rest of the sequence has been pushed back, to make room for the new Event.

You may now press STATIONS until you arrive at the blank Event, and fill it in (in Figure 3, Station #4 with a run time of 7 minutes). The new Event data has been inserted. Note that the later Events move back to make room for the new Event. You have only inserted a new Event into the Program sequence.

Figure 2

Event #	1	2	3	4	5	6	7	8	9	10	11	12
Sta. #	5	7	8	9	10	11	12	13	14	6	15	16
Run	:10	:10	:10	:10	:10	:10	:10	:10	:10	:10	:10	:10

Figure 3

Event #	1	2	3	4	5	6	7	8	9	10	11	12	13
Sta. #	5	7	8	4	9	10	11	12	13	14	6	15	16
Run	:10	:10	:10	:07	:10	:10	:10	:10	:10	:10	:10	:10	:10

PROGRAM ADVANCED OPTIONS................................

The previous sections covered the basic concepts of writing a Program from the IDS controller keypad: Program, Schedule, Start Time, and Station run times, as well as Blocks and Events.

The Program Options provide additional power and flexibility at the individual Program level.

They are:
Edit Program Name
Set Program % Scale
Cycles
Cycle Delay
Skip Days
Pump

Edit Program Name

Covered in detail in the section "Naming a Program" on page 11.

Set Program % Scale

This is one of the most convenient and frequently used options in the controller. In the Field Controller Settings section, we described the "Main % Scale" (see Set Main % Scale on page 21), which affects the entire Field Controller.

"Program % Scale" allows you to reduce or increase all of the Run Times in a single Program by the selected percentage (from 1 to 250%, in 1% increments). This enables you to quickly adjust the amount of irrigation for weather or other conditions without changing the basic program. At 50%, each Run Time will only run half as long, and at 150%, each Run Time will run one-and-half times as long.

When this Option is selected at the Program level, it permits you to tailor certain plant areas for local conditions. If you only want to adjust the turf irrigation, for example, without affecting the shrub irrigation, you would % Scale just those Programs with turf sprinklers in them.

Important: The effects of % Scale at the Main (controller) and Program levels are cumulative. The controller looks first at the Program Scale, and then at the Main scale, to calculate the scaled run time.

In other words, if the original (or base) run time of a station is 10 minutes, and the Program % Scale is set to 150%, the scaled run time would be 15 minutes. If the controller Main Scale is then set to 50%, the net total run time for the station would be 8 minutes. Fractions resulting from these calculations are always rounded to the nearest minute.

Base Run Time	**10 min.**
Multiplied by	**x**
Program Scale..	**150%**
Result	**15 min.**
Multiplied by	**x**
Main Scale	**50%**
Result (rounded up to 8)...........................	**7.5 min.**

To Set Program % Scale: Press PROGRAM SELECT until the name of the Program you want to adjust appears. Press OPTIONS twice, until Set Prg Scale? appears. Press ENTER. The display will show:
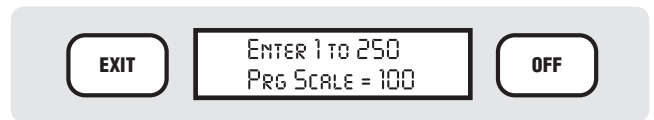
Type the percentage scale you want with the number buttons on the keypad, and press ENTER. The display will briefly show "SAVED!" and the new % Scale amount. After a moment, the display will revert to:
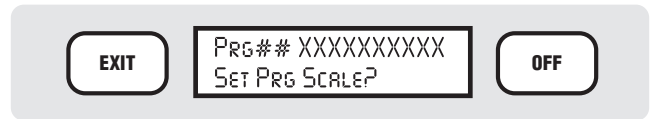
You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Program Options mode.

Note that, whenever a Program is scaled up or down (to any value other than 100%) and saved, a "+" or "-" sign appears as a reminder in the upper left corner of the display before the Program name, when pressing PROGRAM SELECT to view Programs.

The "+" or "-" signs will also appear next to the Total when STATIONS is first pressed in a scaled Program. If you continue to press STATIONS to view individual Station run times, the "+" or "-" sign will appear next to the Event number, and the actual scaled run times are shown in the run time area of the display. This is a reminder that you are viewing a scaled run time, and not the base run time.

Cycles

The Cycles option specifies the number of times a Program will run. The default value is 1, so that once you have created a Program, it will run the entire sequence of stations once per scheduled day.

You may specify from 0 to 15 Cycles, per Program, however. Be careful – entering "0" Cycles specifies Continuous cycles, for special applications.
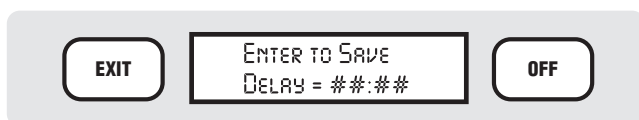
Multiple cycles are useful when your plants require more water than the ground is capable of absorbing in a single application (such as very dense or compacted soil, or sloped areas), or when you wish to keep an area wet with many short applications (germinating seed, grow-in, etc.). You can also specify a Delay between each cycle at the next option setting.

Continuous cycles (the "0" option) mean that the program will cycle infinitely, or until an End Time. This feature is useful when you are germinating new seed, for example. You can specify some very short run times to keep the seed wet, and Delay Times between the cycles as needed. Once the Program is started, it will run this cycle forever, or until a human shuts it off.

Continuous (0) Cycles is only possible for FCP programs, and is not an option for Presets. Presets may have up to 15 Cycles, however.

You can also run continuous cycles until an automatic End Time (see XXXEnd Time). You can run the continuous program as described above until (for example) 9:00 PM. This way you are not required to figure out how many cycles and delays are required to keep the seed wet until 9 o'clock. You simply need to set up the program, and tell it when to end. The continuous cycle will stop at the End Time (regardless of what station it happens to be on).

To Set the Number of Cycles: Press PROGRAM SELECT until the name of the Program you want to adjust appears. Press OPTIONS until Set Cycles? appears. Press ENTER. The display will show:

EXIT	ENTER 1 to 15 Cycles = 1	OFF
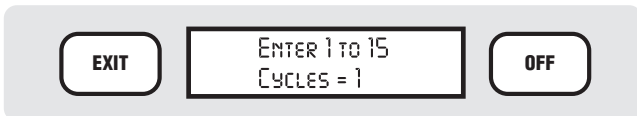
Type the number of cycles you want (0 to 15) with the number buttons on the keypad, and press ENTER.

If you have entered a number from 1 to 15 (see below for the "0" Cycles option), the display will briefly show "SAVED!" and the new number of cycles. After a moment, the display will revert to Set Cycles? You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Program Options mode.

Note that the next time you press the STATIONS button while in this Program, the Total run time will be updated

to reflect the number of cycles (and Cycle Delays, if set) of the Program.

If you have entered "0" Cycles, the display will ask "CONTINUOUS? YES|no" to confirm that you want continuous irrigation. If you want Continuous cycles, press ENTER. To exit the Cycles option without setting Continuous, use the TOGGLE button to capitalize NO and press ENTER. You will be returned to the Set Cycles? Display.

When Continuous cycles are selected, the program total is displayed differently when you first press the Stations key, after selecting a Program.

If your Program has continuous cycles with a set End Time (see XXX), the display will show the total time from beginning to end, including cycle delays. For example, a program running continuously from 8:00 PM to 6:00 AM would show:

Total is 10:00
8:00pm – 6:00am

If your Program has continuous cycles with no set End Time, the display will show the total for a single cycle, and the start time followed by NO END. This will remind you (or a less experienced assistant) that the Program is set to irrigate continuously.

If the program contained 32 minutes worth of irrigation, had a Start Time of 8:00 PM, and was set to continuous cycles, with no End Time, the Stations total display would show:

Total is 0:32
8:00pm – NO END

Note that if Cycle Delays (next section) have been set, they will apply in between Continuous cycles. However, the Cycle Delay is not included in the total time shown for the Program when it is set to Continuous cycles, if there is no End Time.

Cycle Delay

This is the amount of time the Program will wait between multiple (or continuous) cycles, before starting again. There is only 1 cycle delay factor per Program, which will occur between all cycles (including continuous cycles). If there is only 1 cycle, Cycle Delay will not have any effect at all.

To Set the Cycle Delay: Press PROGRAM SELECT until the name of the Program you want to adjust appears. Press OPTIONS until Set Cycle Delay?

appears. Press ENTER. The display will show:

```
 ┌──────┐   ┌────────────────────┐   ┌──────┐
 │ EXIT │   │   Enter HH:MM      │   │ OFF  │
 └──────┘   │   Delay is OFF     │   └──────┘
            └────────────────────┘
```

Or the display will show: Delay = ##:## if a delay has already been programmed.

Type the length of the cycle delay you want in hours: minutes format with the number buttons on the keypad. (You can also clear out an existing delay by typing "0" or pressing CLEAR). Press ENTER. The display will show:

```
 ┌──────┐   ┌────────────────────┐   ┌──────┐
 │ EXIT │   │   Enter to Save    │   │ OFF  │
 └──────┘   │   Delay = ##:##    │   └──────┘
            └────────────────────┘
```

Press ENTER to save the new delay. The display will briefly show SAVED! and the length of the cycle delay you have entered. After a moment, the display will revert to Set Cycle Delay? You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Program Options mode.

Note that the next time you press the STATIONS button while in this Program, the Total run time will be updated to reflect the number of cycles and the cycle delays of the Program.

Example:

Single Cycle
 Program 1: WEST LAWN
 Cycles: **1**
 Total Run Time: **1 hour**

Multiple Cycles
 Program 1: WEST LAWN
 Cycles: **2**
 Total Run Time: **2 hours**

Cycles with Delay
 Program 1: WEST LAWN
 Cycles: **2**
 Cycle Delay: 2 Hours
 Total Run Time: **4 Hours**

Continuous Cycles
Program 1: WEST LAWN
Cycles: **0 (continuous)**
Cycle Delay: **2 Hours**
Total Run Time: **NO END**

Continuous Cycles with End Time
Program 1: WEST LAWN
Cycles: **0 (continuous)**
Cycle Delay: **2 Hours**
Start Time: **9:00 PM**
End Time: **7:00 AM**
Total Run Time: **10 hours**

Skip Days

Skip Days suspend a Program for a specified number of days, after which the Program will resume operating normally. You can use Skip Days when a weather front is approaching and you know you won't need to irrigate for 2 or 3 days, or when you have repair work going on and you do not want any irrigation until the repairs are completed, or any other time you want to temporarily halt a Program without having to remember to turn it back on.

Skip Days count consecutive days, and do not take into account the scheduled days "on" for the particular Program. Skip Days will suspend the Program for the specified number of calendar days. If the resume day was a "no water" day for the Program's normal schedule, it will still be a "no water" day when the Skip Days times out.

Note that if you set Skip Days for a Program while it is already running (after its automatic Start Time), the Program will finish irrigating normally, and the next day will count as the first Skip Day.

To Set Skip Days for a Program: Press PROGRAM SELECT until the name of the Program you want to suspend appears. Press OPTIONS until Set Skip Days? appears. Press ENTER. The display will show:

```
 ┌──────┐   ┌────────────────────┐   ┌──────┐
 │ EXIT │   │   Enter 0 to 999   │   │ OFF  │
 └──────┘   │   Skip Days = 0    │   └──────┘
            └────────────────────┘
```
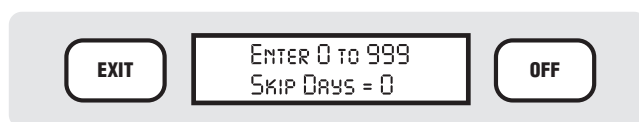
Type the number of days you want the Program to Skip, and press ENTER. The display will briefly show SAVED! and the number of Skip Days you have entered. After a moment, the display will revert to Set Skip Days? You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Program Options mode.

If you return tomorrow (after the next Time of Day change) and view the Skip Days for the Program, the Skip Days will be updated to show the remaining number of days to be skipped. For example, if you enter 3 Skip Days today, tomorrow the display will show "2", and the day after it will show "1". The display will count

down the days until the Program resumes automatic operation. The maximum number of Skip Days is 999 days, or approximately 3 years.

Pump

Every IDS controller has a dedicated, programmable Pump output (station number "0"). The Pump option designates whether the specified Program will automatically activate this output. The Pump (or Master Valve) decoder is programmed like any other decoder, but is only activated in conjunction with a Program which has "Pump" set to Yes.

The Pump output may activate a pump start relay (such as Hunter Industries PSR-22) series relays) connected to a pump, or it may be used to control a master valve solenoid. The Pump output must never be connected directly into a high voltage switch (see installation instructions for further information).

In systems where the pump is activated by the individual controllers, this option is used to provide pump pressure to the Programs that require it, and to operate without it for any Programs that may not require it. For example, if your controller operates both rotors and spray heads connected to city water, you may have a booster pump to provide additional pressure for the rotors. In this case you could have the Pump option set to "Yes" for the Programs containing the rotors, but "No" for the Programs containing the spray heads (if they would be over-pressurized with the booster pump).

Keep in mind that if any Program in the system activates the pump, it is activated regardless of whether any other Programs are running with Pump "No" selected.

To Set the Pump: Press PROGRAM SELECT until the name of the Program you want to set the Pump for appears. Press OPTIONS until Use Pump? appears. Press ENTER. The display will show:

```
┌───────┐   ┌──────────────────┐   ┌───────┐
│ EXIT  │   │ Prg## XXXXXXXXXX  │   │ OFF   │
└───────┘   │ Pump is YES|no    │   └───────┘
            └──────────────────┘
```

The current selection will be capitalized (default is YES). The "no" selection will be in lower case. Press the TOGGLE button to switch between YES and NO. When it is correct, press ENTER. The display will flash "SAVED!" and your selection. After a moment, the display will revert to Use Pump? You may now press the OPTIONS, BACK, or NEXT buttons to view more options, or you may press EXIT to leave the Program Options mode.

End Time

Each Program in IDS may have its own optional End Time. The End Time setting sets an absolute end to any irrigation for the selected Program. This can be used in two ways:

An End Time prevents accidental irrigation during times of day when irrigation must not be permitted, such as when employees are arriving at a work place in the morning. If you use the Percent Scale function to increase watering, it may unwittingly extend watering outside of the normal "water window" and annoy customers. The End Time will terminate any automatic irrigation at the specified time of day, regardless of where it is in the irrigation schedule. End Times do not prevent new irrigation from starting after the End Time. They only terminate automatic or semi-automatic programs that are running when the End Time is reached.

An End Time is also the only way to automatically terminate Continuous cycles. If you want to keep seed wet during the day, but do not want the irrigation to continue at night, you could set an End Time of 8:00 PM, for example. Set up the Program to irrigate continuously from a 7:00 AM Start Time, for example, and it will cycle continuously throughout the day but stop automatically at 8:00 PM.

End Times are by Program. An End Time on one program has no effect on other Programs that may be running. Each Program can have its own End Time, or no end time at all. Presets do not have, and are not affected by, End Times.

Note that when IDS displays a total time (the first time you press Stations, after selecting a Program) it will always show a start and stop time, based on the Program settings. This is not the same as an End Time, but is merely calculated from the start time (adding all the station run times, cycles, and cycle delays) for your information. End Times are independent of this calculation and will stop any automatic program when the End Time is reached, regardless of the calculated stop time.

To Program an End Time: Press PROGRAM SELECT until the name of the Program you want appears. Press OPTIONS until Set End Time? appears in the display (you can also press the BACK key after pressing OPTIONS, since End Time is the last Program-level Option). Press ENTER. The display will show:

Prg01 XXXXXXXXXX
End= OFF

The "Prg01 XXXXXXXXXX" will indicate the Program number and name you have selected. "End= OFF" will appear if no End Time has previously been programmed, or "End= xx:xxam" may appear if there is already an End Time.

To enter or change an End Time, simply type the new time in hh:mm format, and press Enter. It is not necessary to enter leading zeroes. The display will then add AM|pm to the time display. Press the TOGGLE button to select the correct am/pm setting, and press Enter again. The display will show "Enter to Save". Press ENTER again, and the display will show "SAVED!" and the time you have set for the End Time.

The Program will now terminate automatically at the set End Time. If the program has completed before the End Time is reached, the End Time will have no effect.

Note that End Times will also apply if the same Program is started semi-automatically and is still running when the End Time is reached.

End Time has no effect on Manually started stations (see next section) or Presets.

MANUAL STARTS

You can quickly start one or more stations in the controller with the Manual button. Since more than one station can be started with this command, this is often called a Manual Program.

The Manual Program is temporary and is not retained in memory after the Program has finished running.

You must specify a time for each station to run. If you enter multiple stations, you may choose whether to run them sequentially, or simultaneously. You can create a Manual Program for up to 20 stations (the IDS controller may operate up to 20 decoders simultaneously).

Manual does not usually interrupt Automatic or Semi-automatic FCPs or other Programs which may be running. Any solenoids or decoders activated by other Programs must be taken into account when determining how many stations to turn on. In the unlikely event that the total of Automatic, Semi-automatic, and Manual events exceeds 20 simultaneous events, the excess events will be held until some events time out, and may run later than expected.
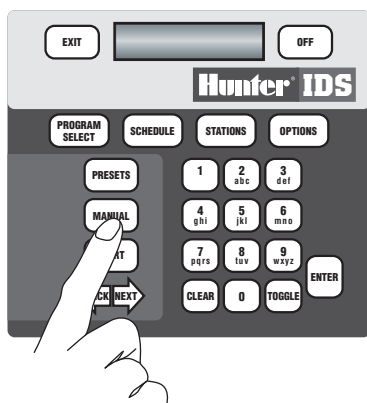
To Start a Manual Program: Press the MANUAL button on the keypad. The display will show:
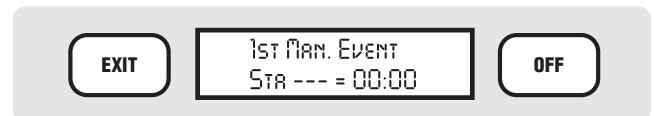
Type the number of the station you want to start, and press ENTER. The cursor will then move to the minutes section of the run time section (00:00) of the display. Type the amount of time you want the station to run for and press ENTER.
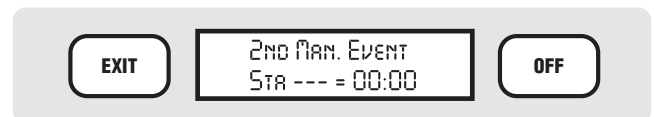
You may now enter more stations to start manually, if you wish. If you only want to start one station, simply press ENTER again, instead of entering another station. If you are starting multiple stations, continue entering the stations and run times until the Manual Program is complete, and then press ENTER again. The display will show:
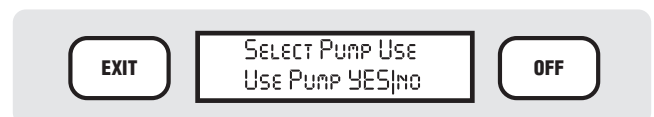
This selection determines whether the Pump output (decoder station #0) from the controller will also be activated along with the Manual stations. Press the TOGGLE button to change YES to NO if you do not want the Pump active during the Manual Program. When the Pump setting is correct, press ENTER.

If you have only entered one station, the display will briefly show "OK!" and the station will begin running for the specified time. If you have entered more than one station, the display will show:

```
EXIT    ┌──────────────────┐    OFF
        │ Select Run Mode  │
        │ Set Mode SEQ|sim │
        └──────────────────┘
```

"SEQ" means the stations will run sequentially, in the order in which they were entered. If you press the TOGGLE button to capitalize "SIM", all of the stations will begin simultaneously.

Use TOGGLE to capitalize the mode you want, and press ENTER.

Note: Simultaneous starts are actually staggered at one-second intervals to prevent simultaneous inrush currents.

When stations begin running sequentially, the display will show:

```
EXIT    ┌──────────────────┐    OFF
        │ Day and Time     │
        │ SEQ.xxx    0:nn  │
        └──────────────────┘
```
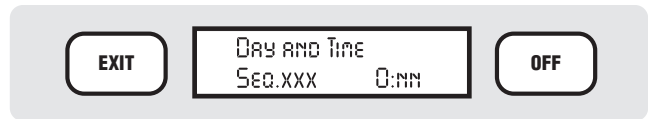
Where "xxx" is the number of the station currently running, and "0:nn" is the amount of time left to go on that station.

If you requested the stations to run simultaneously, the display will show:

```
EXIT    ┌──────────────────┐    OFF
        │ Day and Time     │
        │ Sim.xxx    0:nn  │
        └──────────────────┘
```

Where "xxx" is the number of one of the stations currently running, and "0:nn" is the amount of time left to go on the station.

In the Simultaneous mode, the display will sequence through all the stations currently running and show the remaining time on each station.

SEMI-AUTOMATIC PROGRAM OPERATION ....

Any automatic Program can be easily started at any time from the keypad. This is called "semiautomatic operation" and is useful for irrigating, right now, any area that is normally handled by an automatic Program. You can use this to irrigate a fertilized area, or for frost or dew control, or for any other purpose.

To Semi-Automatically Start a Program
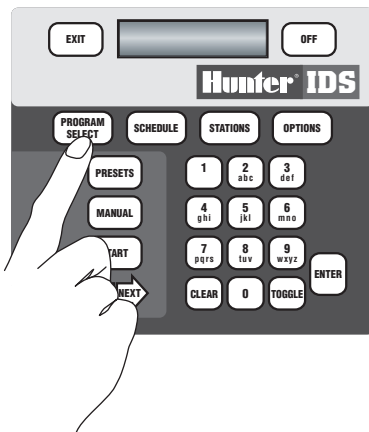
Press PROGRAM SELECT until the Program you want to start appears in the display.
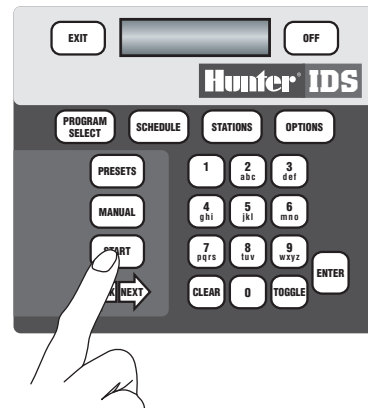
Press the START button. The display will show:

```
EXIT    ┌──────────────────┐    OFF
        │ Prg## Start = Run│
        │ Enter = Set AUTO │
        └──────────────────┘
```
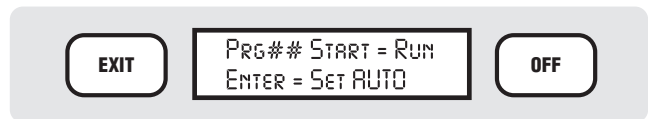
Press START again. The Program will begin running. It will irrigate the entire Program, including all Cycles and Delays.

If you semi-automatically run an automatic Program during the day, it will still run later at its assigned automatic Start Time.

PRESETS ....

Presets are like automatic Field Controller Programs, except that they have no Schedule or Start Time, and are created to provide custom irrigation for a specific purpose.

Presets are activated from the keypad (or an optional Maintenance Radio) whenever you want to run them. They can be used to "syringe" overheated turf at mid day, clear dew or frost from an area, water-in chemical or organic applications, or any other common task.

Presets work with either individual Stations or Blocks. Both can exist in the same Preset.

The difference between a Preset and a semiautomatic start is that a Preset can be written, named, and stored to provide custom irrigation for a specific purpose. The automatic Programs may be overkill for cooling hot turf at midday, for example.

A Preset can be created to trigger two or more Blocks of sprinklers, each for half of a large turf area, each with a run time of 3 minutes. This would allow a rapid cooling of the turf while it is clear of people, without risking over-watering. The Preset can be named for what it is ("SYRNG LAWN", for example) and recalled and started anytime you want to syringe that area.

To Create a Preset
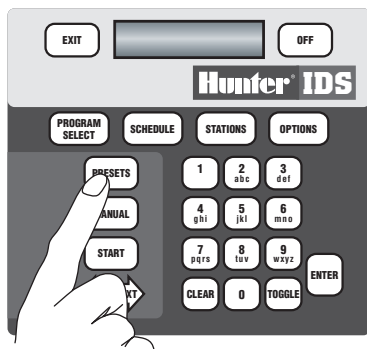
Press the PRESET button. The display will show:
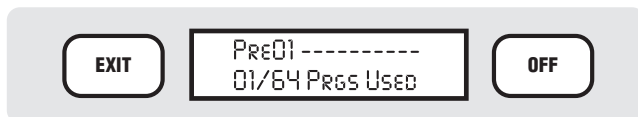
Press the OPTIONS button. The display will show "Edit Prg Name?"

Press ENTER. The bottom line of the display will show "Alpha entry mode", and the cursor will be flashing on the first space.

Use the buttons on the keypad to type in a name for the Preset. You may mix letters and numbers to create accurate names for each Preset (up to 10 total characters long). See Typing Instructions on page 11 for detailed instructions.

When the name in the display is correct, press ENTER. The display will show "SAVED!" for a moment, then return to:
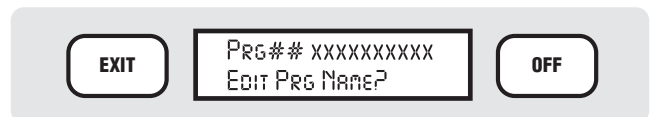
Where ## is the number of the program, and xxxxxxxxxx is the new Preset name you have entered.

Press the EXIT button to leave the "Edit Prg Name?" programming.

Most of the Program Options are also available for Presets. Presets may have multiple Cycles, Delays, and may be % Scaled. Presets do not have Continuous Cycles or End Times, however.

You do not create Schedules and Start Times for Presets. Instead, with the new Preset name in the display, press STATIONS.

Refer to Programming Individual Stations on page 14 for detailed instructions on entering stations or Blocks and their run times. When complete, press EXIT. The display will show:
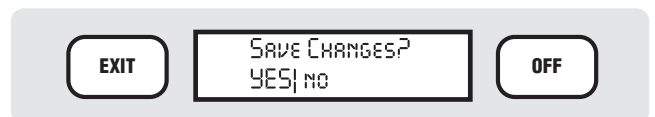
If you want to save the new Run Times, press ENTER (with the YES capitalized). The display will show:

The display will then revert to the Preset Name display.

To Start a Preset
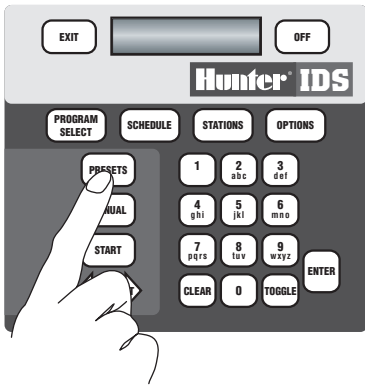
With only the Day and Time in the display, press the PRESET button until the Preset you want to trigger appears in the display.
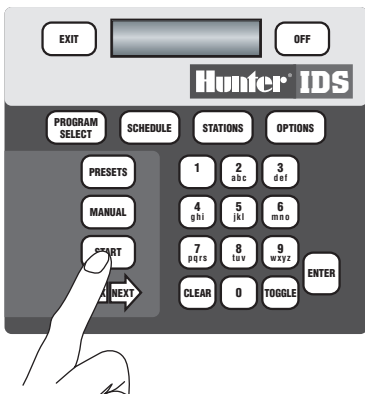
Press START.

The display will show:
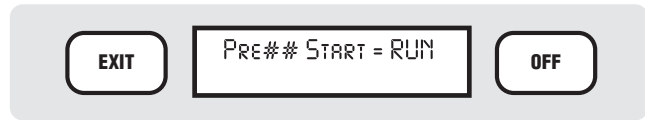
Press START again, and the Preset will begin running.

You may start Presets while other Programs are running, or while Manual station programs are running. They will not interfere with one another, unless you overload the controller. Be careful not to overload the hydraulic capacity of the piping when operating multiple types of Programs and Presets.

FIELD CONTROLLER ADVANCED OPTIONS...............

Unlike Program Options, which only apply to the selected Program, the Field Controller options apply to the entire Field Controller or provide access to special functions. Several of them have been covered in detail in other sections.

Field Controller level options are accessed by pressing the Options button on the keypad, when no Program is selected in the display.

The remaining Field Controller options are covered in detail here.

Remove a Program

This is used to completely remove, or delete, a specific Program and all its information from the controller's

memory. Use it to wipe out Programs which are no longer needed or which no longer serve their purpose.

To remove a Program: Press the OPTIONS button until the display shows:

Press ENTER. The display will show:

Press PROGRAM SELECT until the name or number of the Program you want to remove appears in the display and press ENTER. The display will show:

EXIT	Confirm yes|NO	OFF

The display defaults to NO, because this is your last chance to keep this Program. Make sure the correct Program (the one you want to remove) is shown in the display.

If you are certain you want to remove it, press TOGGLE to capitalize YES and press ENTER. The display will briefly show REMOVED and the Program and all its information will no longer exist.

Remove Preset

This is nearly identical to removing a Program, except that it removes a Preset. Press the OPTIONS button until the display shows:

EXIT	Remove Preset?	OFF

Press ENTER. The display will show:

EXIT	Pre01 XXXXXXXXXX Enter to Remove?	OFF

Press the PRESET button until the name or number of the Preset you want to remove appears in the display and press ENTER. The display will show:

EXIT	Confirm yes|NO	OFF

The display defaults to NO, because this is your last chance to keep this Preset. Make sure the correct Preset (the one you want to remove) is shown in the display.

If you are certain you want to remove it, press TOGGLE to capitalize YES and press ENTER. The display will briefly show REMOVED and the Preset and all its information will no longer exist.

Edit Decoders

The IDS Decoder Controllers are always configured as 103 stations, plus a Pump output. Each station has a corresponding decoder installed in the field connected to a two-wire path, although all 103 stations may not be in use.

The Edit Decoder function allows you to change the assignments of decoder identification numbers to station numbers in the field. This can be used whenever a decoder is replaced, added or exchanged with another decoder, after initial setup.

Note: The Edit Decoder function may also be used for initial setup of all the decoders in a controller, but full system setup is much faster and easier with the IDSCD Decoder Manager software available from Hunter. IDSCD Decoder Manager has additional diagnostic features for decoder systems.

Before editing a decoder, you must know the *Serial Number* of the new decoder. This is a unique 8-digit number, printed on a metallic tag on the side of the decoder itself (such as the ID1 single-station decoder).

The ID4 4-station decoders actually have four individual Serial Numbers. The first seven digits are fixed, and the 8th digit is always 1, 2, 3, or 4, corresponding to the individual color-coded outputs of the decoder to the solenoids. These are also listed on the metallic tag.

The Serial Number of an individual decoder cannot be changed in the decoder itself. The Edit Decoder function only assigns the predetermined Serial Numbers of the decoders to the Station Numbers of the Field Controller.

When performing initial set up of a large decoder system from the keypad, it is advisable to make a list of all station-number-to-serial-number assignments on paper first. This will greatly speed up initial programming.

The *Power Factor* (Pwr) setting for each station has a default value of 2, with a possible range of 1-5. This determines the amount of power consumed by a particular decoder in the field. *"2" is almost always the correct setting to use.* The range of settings is to handle unusual situations, including very long wire runs or increased wire resistance due to the age of the wire. Increased Power Factors may detract from the total power available to the field and should be used only after consulting with Hunter Field Services.

To Edit a Decoder: Press Options repeatedly until the displays shows "Edit Decoders?" and press ENTER. The display will show:

```
 ┌──────┐   ┌─────────────────────┐   ┌──────┐
 │ EXIT │   │  Sta Pump Pwr 2     │   │ OFF  │
 └──────┘   │  S/N# 90000000      │   └──────┘
            └─────────────────────┘
```

The first station to be shown is always the Pump output, which counts as a station in decoder systems (technically, the Pump is station #0). Subsequent stations are shown by their station number, from 1 to 103. Since the cursor is already under the Serial Number, you can type in a new decoder Serial Number for the Pump, if that is the decoder you want to edit. You must type all 8 digits, and press ENTER.

The default serial number is always 90000000. This means that no decoder serial number has been programmed for that station yet.

To advance to another station number, you can simply press the STATIONS button until the number of the station you want to edit appears. You may also use the NEXT button to move the cursor to the station field ("Pump"), then type the number of the station you want to edit, and press ENTER. The display will immediately show the decoder information for the new station you have entered.

You can skip over stations by leaving the 90000000 in the serial number field, if you want to leave lower-numbered stations available for future expansion. For example, you could start by assigning decoder serial numbers to stations 71 to 100, if there were 30 stations in the initial installation and they were near the end of your wire path. Then, as the system expands back toward the controller, you could add in the lowered number stations.

Continue editing any other decoders (press Stations again or type the station number as described above), and when you are finished, press EXIT. The display will show:

```
 ┌──────┐   ┌─────────────────────┐   ┌──────┐
 │ EXIT │   │  Save Changes?      │   │ OFF  │
 └──────┘   │  YES|no             │   └──────┘
            └─────────────────────┘
```
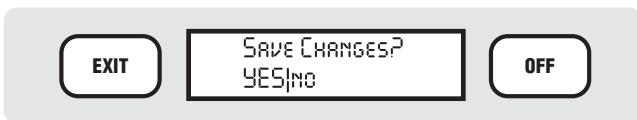
If you press ENTER, the changes will be saved. You may also TOGGLE to "NO" and press ENTER if you want to discard the changes.

Note: Decoder edits are automatically stored in memory, and must be "dumped" every 4 edits. If you edit more than 4 consecutive decoder stations in a session, the display will periodically show the "Save Changes?

YES|no" as you advance with the STATIONS button. If you want to save the changes you've already made and continue editing, just press ENTER. The display will briefly show SAVED! and then the next Station.

Also, if you type the station numbers directly into the station number field and press ENTER, you will also receive the "Save Changes? YES|no" message if you entered a station more than 4 digits higher than the last one you edited. Just press ENTER. The display will briefly show SAVED! and will then show the Station you typed. You can then continue editing decoder stations.

View SYS Events

This option is not used in the IDS controller, but is a means of viewing events from some central system computers.

Remove SYS Events

This should only be used if you need to remove central system program events from the controller. It is not a normal function of the IDS controller.

Radio Transmit (Xmit) Test
(radio-equipped controllers only)

The Radio Transmit (Xmit) Test option only appears in controllers equipped with some radio communications modules and is used to test the radio and communications board. If you are not certain whether radio communications are functioning properly, this test will generate a constant tone for 5 seconds, which can be heard on a Maintenance Radio switched to the same frequency.

To run a radio test press OPTIONS until Radio Xmit Test appears in the display and press ENTER. The display will show:

```
 ┌──────┐   ┌─────────────────────┐   ┌──────┐
 │ EXIT │   │  Radio Xmit Test?   │   │ OFF  │
 └──────┘   │  TRANSMITTING!      │   └──────┘
            └─────────────────────┘
```

...for approximately 5 seconds. You should hear a clear, solid tone on the Maintenance Radio if the test is successful. Then the TRANSMITTING! message will disappear, indicating that the test is concluded. You may press ENTER to run the test again, if you wish.

MAINTENANCE RADIO OPERATIONS (OPTIONAL) ....

Maintenance Radio is the term for the optional ability to operate specially-equipped IDS Controller functions from a handheld walkie-talkie equipped with TouchTone buttons. This convenient remote control option permits remote starting and stopping of Programs, Presets, Blocks and individual stations, anywhere within the range of the handheld radio.

Maintenance Radio operations require a radio, antenna, and communications board to be installed in the controller. Radio-equipped IDS controllers use Straight-Talk™ communications to respond directly to a UHF radio.

Note: All Maintenance Radio systems in the United States must be licensed by the Federal Communications Commission (FCC) under Part 90 rules and regulations (application forms are included with each radio device). Canadian radio systems must comply with licensing requirements of Industry Canada Spectrum Management. Most other nations have restrictions and licensing governing the use of professional radio equipment. Licensing radio equipment and selecting frequencies is the sole responsibility of the user and is *not* the responsibility of Hunter Industries. Do not operate an unlicensed system!

Maintenance Radio Commands

Most of the manual irrigation functions that can be started from the IDS keypad can also be started from Maintenance Radio. The command codes follow a simple structure, consisting of (controller) address, function, stations or programs affected, and timing.

One Good, Two Bad: Maintenance Radio commands are always two-way communications. The IDS Controller will confirm every good command with a single beep tone, indicating that it will perform as instructed. If the controller hears a command but cannot understand it, or the command is "bad" (improperly formatted or impossible to execute), you will hear two beep tones. If you do not hear any confirmation tones back from the controller, it is probable that the controller did not hear you at all or is switched off. "Cheat sheet" stickers of command formats are available in wallet card format. Maintenance Radio users are usually able to memorize the common commands very quickly and use them daily.

Some portable radios also feature convenient shortcuts to issuing commands. In addition to the standard 12-button number, #, and * keys, four letter keys (A, B, C, and D) provide shortcuts to common functions.

Some radios also have a "store and send" feature. By pressing the "*" button one extra time at the beginning of each command, the command is stored and displayed on the radio's LCD display instead of being sent out one keystroke at a time. You may then review the command in the display to make sure it is correct. When you are ready to transmit, press the push-to-talk switch once, briefly, and the entire command will be sent out in a single string.

You may also hold down the push-to-talk switch and press the command buttons one at a time. Remember to release the switch immediately upon finishing the command so that you can hear the acknowledgement tone back from the controller.

Sending a Maintenance Radio Command

Both the controller and the radio must be powered on, and switched to the correct frequency. As an example, we will turn on station #1 at controller number #1.

Method #1 (store and send): Press **, 1 (the controller address number), #, 1 (the station number), ##. Now touch the push-to-talk switch on the side of the radio. You should hear the command being sent to the field (rapid series of tones), then a confirmation tone back from the controller. Station #1 at controller #1 should turn on, in a few seconds (allow for valve opening time). Method #2 (live): Hold down the push-to-talk switch on the side of the radio, and press *1#1##, without pausing. Release the push-to-talk switch as soon as you are finished and you should hear a confirmation tone back from the controller. Station #1 at controller #1 should turn on, in a few seconds.

A station turned on with either of the above methods will continue to run until you stop it with another command, or until it reaches the time-out limit set in the MR Runtime option under Edit FC Settings (see Set MR Runtime).

To turn the same station off, repeat the above steps, but end with "*" instead of "#". The command would be: *1#1*. This tells controller 1, station 1, to stop. If you want to use store and send, remember to add an extra "*" at the beginning.

Generally, the last character determines whether you are turning something on or off: # = ON, and * = OFF. The "*" is also used to begin new commands. The "#" character is also used to separate different numbers within a command.

MAINTENANCE RADIO OPERATIONS

If you want to turn on a station for a specific amount of time, enter the time after the station number and #, but before the last #. If you don't want to specify a time, you must press ## at the end of the command to skip the time setting.

For example, to turn on station 2 at controller 1 for 5 minutes, the command would be:
*1#2#5#.

The station will turn on in a few seconds and run for five minutes. You do not need to issue any further commands to this station. You may shut it down sooner, however, by issuing the "OFF" command.
* 1 # 2
Starts Controller separator Station
command address number
5
separator Run "ON"
time command
Function Command* Result

*	1	#	2	#	5	#
Starts command	Controller address	Separator	Station number	Separator	Run time	"On" command

*The letters in the "Command" column in the table on the following page correspond to the table below:

Legend for MR Command	
aaa	FC Address (1-999)
nnn	Station Number (1-103)
ff	FC Program Number (1-64)
pp	Preset Number (1-64)
bb	Block Number (1-64)
tttt	Run Time (1 to 18:12 HH:MM)

CENTRAL CONTROL OPTIONS.....................................

The IDS Controller may be upgradable to Maintenance Radio remote capability or a fully networked controller, by adding communications kits. Check with your Hunter distributor.

MAINTENANCE RADIO FUNCTIONS & COMMANDS

Function	Command*	Result
Start a Station	*aaa#nnn#[tttt]#	Starts station (#nnn) for a specified time (tttt) in hours:minutes format, up to 18 hours, or the global MR Time (set in Edit FC Settings) if no time is entered.
Stop a Station	*aaa#nnn*	Stops a specific station (#nnn)
"Syringe timing": applies a run time to multiple stations already active	*aaa#300#tttt# OR *aaa#A#tttt#	Syringe Timing of active stations for "tttt" in hours:minutes format, up to 18 hours. Procedure: First turn on multiple stations, one at a time, using the "Start a Station" function. Then enter the Syringe Timing command as shown to set the run time for all stations currently running (or Active). SHORTCUT KEY= A (Active stations)
Start one of the FCPs immediately	*aaa#310#ff#	Semi-Auto start FC Program "ff". This will start the designated automatic Program immediately. The Program will still run at its normally scheduled automatic Start time.
Start a Preset	*aaa#311#pp# OR *aaa#C#pp#	Semi-Auto start Preset "pp". This will start a pre-programmed Preset immediately. SHORTCUT KEY= C (Cool down)
Start a Block	*aaa#312#bb#[tttt]#	Start block #b for [tttt] HH:MM or global MR Time. This is exactly the same as starting a Station, except that it starts a Block.
Stop a Block	aaa#312#bb*	Ending with an asterisk tells the system to stop the specified Block.
Stop all irrigation at a Field Controller (permanent)	*aaa#320* OR *aaa#D*	Stops all irrigation for the designated FC. This will include Manual, Semi-Auto, Automatic, and Preset irrigation, everything stops. SHORTCUT KEY= D (Delete activity)
Pause all irrigation at a Field Controller (temporary-resumes where left off)	*aaa#321* OR *aaa#B*	Pause all irrigation for FC. This will include Manual, Semi-Auto, Automatic, and Preset irrigation. Unlike the Stop command, you can restart everything where it left off. It will restart automatically after 30 minutes if no other commands are issued. SHORTCUT = B (Break)
Cancel Pause for FC	*aaa#321# OR *aaa#B#	Restarts FC after a Pause The command is the same as for Pause, except that it ends in a "#" (= ON). SHORTCUT = B (Break)
Communications Check	*aaa#330#	Returns a short beep if controller hears command
Radio Transmit test	*aaa#331#	Initiates Radio Transmit Test (5 second beep)
Check for Network Link	*aaa#332#	Returns 1 beep if FC has link to central, 2 if not
Check for Auto Operation	*aaa#333#	1 beep= FC is in Auto Op Mode, 2 beeps= FC is in Rain Shutdown

Status Displays

Normally, the IDS display will show the current day and time, and the line current draw (LineOn) in milliamps. It may also show a "+" or "-" sign before the Day if the controller has been % Scaled to a value other than 100% (see Set Main % Scale on page 21). Whenever IDS is running a station for any reason, the display will also indicate what is running, why, and how much time is left on the station:

If there is too much information to display in a single screen, IDS will flash a series of screens, each with more information about station activity. The screens will continue to cycle through all activity with updated information until all stations cease running.

If you would like to review all currently running stations more quickly, you can speed up the review of the display by pressing ENTER, BACK, NEXT, or any of the number buttons. This will advance the station numbers of all currently active stations with every button push.

This does not affect irrigation, only the display. If the controller is running a Block, the Block number will not be listed in the status display, but the individual stations within the Block will be listed sequentially.

If a station is running and there is no activity listed in the status display, it may have been turned on manually at the valve, or there could be a malfunction in the valve, or a possible malfunction in the IDS outputs. If the IDS has intentionally operated a valve it will always appear in the status display. If you are not sure why a sprinkler is running at any time, check the controller display first.
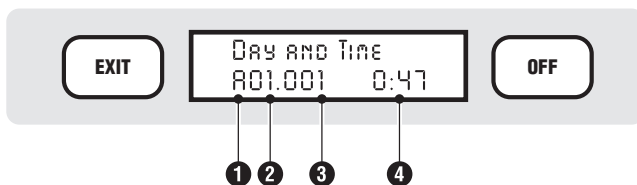
1. Type of Activity
    A=Automatic
    S=Semi-automatic
    Sim=Simultaneous Manual
    Seq=Sequential Manual
    P=Preset
    SYS=System Program Event
    SME=System Manual Event
    MRS=Maintenance Radio single station
    MRB=Maintenance Radio Block station

2. Program or Preset Number

3. Current Station Number

4. Time remaining (in hours:minutes:secs) on current station

Other Messages

In addition to the status display, IDS will sometimes display other messages.

OVERLOAD! ### (where ### is a station number): The IDS Field Controller is equipped with automatic Overload protection to prevent damage to the transformer. This message indicates that a station or stations caused the internal current monitoring electronics to trip (when current draw exceeds the maximum 2 amps) and turn off all stations that were running.

When IDS detects an overload condition it stops all stations currently running, and then attempts to restart whatever should be running, every 30 seconds. While the stations are shut down due to the Overload, the display will show "Line OFF", meaning there is no power being sent down the two-wire path. It will continue attempting to irrigate every 30 seconds until the overload condition is no longer detected. The last station to have caused an overload is displayed (###) in the message.

Pressing the "CLEAR" key will clear the Overload message. If the overload occurs while you are present at the controller, you can press CLEAR to force the controller to immediately try to restart, without waiting for the 30-second timer. Generally, overloads are caused by too many stations activated at once, or faulty solenoids, or wiring in field devices (valves and VIH sprinklers).

Clearing the display does not solve the problem. You should inspect the field solenoids and wiring if this is a recurring problem.

LineOff: This message indicates that there is no power being sent down the two-wire path, usually as a result of Overload handling. It will appear during the 30 second shutdown intervals as IDS waits to try the stations again.

Line Fault: This display indicates a power or wiring-related problem. Generally, it will appear if IDS has detected an Overload condition (transformer current draw in excess of 2 amps), *and* no stations were scheduled to be running. If there were no stations running but a 2+ amp current was sensed, this would indicate a direct short circuit in the two wire path, or a potential transformer problem.

FUSE OPEN!: This indicates that the fuse on the power supply board (PSB) has blown. This message remains on until the fuse is replaced. The fuse is an AGC3, 3 amp, fast-blow only.

COLD START!: This indicates that either the user program memory has been corrupted, and was automatically reset to default conditions, or a human has manually done so. The controller irrigation memory is completely wiped out when this message appears, and must either be restored from a central computer or reprogrammed by hand. Pressing the "CLEAR" key will clear this message.

Note: You can perform a Cold Start on the Field Controller at the keypad, if you want to completely erase its memory and start over. The sequence for this is to press CLEAR, SCHEDULE, 0, ENTER. This will clear the controller memory, although the Time, Address, and PINs (passwords) are retained. Cold Start should *not* erase decoder station assignments.

POWER OUTAGE: This indicates that power has been lost in the recent past. Pressing the "CLEAR" key will clear this message.

Events at Max: This indicates that the System Program station event buffer is full. This area of the controller can hold up to 1000 events. Pressing the "CLEAR" key will clear this message.

PINs Reset!: This indicates that the controller's Personal Identification Numbers have been reset to the factory defaults, and the controller is no longer password protected. Pressing the "CLEAR" key will clear this message. You will need to reprogram passwords (PINS) if you want to restore password protection. *This message is also displayed if a PIN is changed to a different code.*

RAIN SHUTDOWN!: This states that the controller will not run any automatic programs. A command from a central computer or pressing OFF on the keypad will toggle this feature on and off. See Rain Shutdown on page 3. Note: Rain Shutdown is *not* an indication that a rain sensor has been activated. It has no relationship to sensors of any kind, and only represents the status of the controller.

SUSPEND WATERING: This indicates that the controller has stopped all irrigation (but event timers continue to time on any stations that are scheduled to run). This mode is only initiated by the central computer. It can be cleared at the controller keypad, using the same procedure as "Resume" after a Pause command (See Pause on page 3). To clear, press OPTIONS once. The display will then show:

EXIT | Resume Watering? | OFF

Press ENTER. The display will then show:

EXIT | Resume Watering? YES|No | OFF
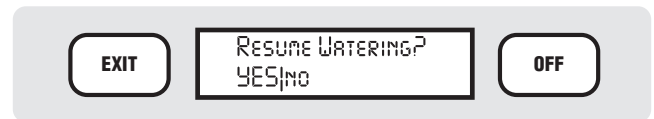
Press ENTER with YES capitalized, and the controller will return to Auto Operational status. If irrigation is scheduled to be running when you Resume, it will begin irrigating. It is technically possible (though unlikely) for a controller to be in both "Suspend" and "Pause" at the same time. If that is the case, repeat the above procedure to clear first the Suspend, then the Pause.

PAUSE mm:ss togo: This indicates that controller has stopped irrigation and all event timers have been stopped. When a thirty-minute Pause timer expires, or a Resume command is entered, all events will resume where they left off. This feature can be turned on or off from the central computer control, through the Field Controller Options selection at the keypad, or via Maintenance Radio. See Pause on page 3.

FCP AUTO INHIBIT: This indicates that the controller will not start any internal scheduled programs, and is not normally used in IDS. This mode can be started or stopped from the controller keypad (see Set FCP Inhibit on page 13), or the central computer. Consult software documentation for details on enabling and disabling this mode from a central computer.

Comm is muted: This indicates that the controller will not initiate any communication to a central computer. It is not normally used in IDS. This message is only cleared at midnight or by a command from a central computer. This mode can only be started by a central computer. It can be stopped or cleared through a series of keystrokes at the keypad. To clear the mute mode, press "Clear/6/8/8/3/Enter" (Clear "Mute", on the alphanumeric keypad) in succession and the message will be cleared.

No Network link: This message is not normally used in IDS (unless an address has been programmed), and will only occur if the controller has been assigned an Address. It indicates that the controller has not heard any central communications for an extended period of time. This message does not affect irrigation or normal operations and is cleared by communicating with a central computer, or by setting the response level to "NONE". (If Maintenance Radio operations are necessary an address must be set, but the NONE setting will prevent the No Network Link display from annoying the operator).

IDS SERIES SPECIFICATIONS ....

Dimensions:

Steel Pedestal: 34.5" (88cm) tall x 18" (31.1cm) wide x 10" (26cm) deep
Plastic Pedestal: 35" (89cm) tall x 17.5" (45cm) wide x 10.5" (27cm) deep
Average Weight (depends on configuration): 56 lbs (25kg)
Warranty: 5 years, parts and labor (see grounding requirements)

Electrical Specifications:

Primary (Input): 115VAC, 1 Amp max.
Secondary (Output): 28VAC, 2A max
Grounding Requirement: 10 Ohms, max.

Decoder Wiring (decoder versions only):

IDWIRE1: 2-wire, twisted, #14/2 AWG/1.5 mm (up to 10,000 ft/3000 m)*
IDWIRE2: 2-wire twisted, #12/2 AWG/2mm (up to 15,000 ft/4500 m)*
Shipped as 2500' spools

Accessories:

IDSCD Decoder Manager software and cable interface for decoder programming (recommended). Allows assignment of all Decoder Serial Numbers, as well as diagnostic functions, by plugging a portable computer into a port in the controller. This is *not* central control software, but a convenient utility for setup and diagnostics.

IDS TROUBLESHOOTING AND FREQUENTLY ASKED QUESTIONS ....

IDS is a very sophisticated controller which is still remarkably easy to program. Some issues that arise are often the unintentional result of program settings. The following table lists some common questions and possible answers.

If you need to call Hunter Technical Services (760-591-7383) with a question regarding IDS, please be prepared to provide:
- The **version** of the controller firmware (you can find this by turning the power off, and then back on, and observing the display).
- The **text** in the controller's LCD display when the symptom is occurring.

Symptom	Possible Cause
Station is running for no reason.	Check display. If no station listed, may be mechanical valve failure, field wiring, or decoder problem. Display will list all running stations started electronically, along with reason (Automatic, Manual, etc.)
A single station is failing to run.	Check display. Does controller indicate that the station is running? If no, station is not programmed to run at this time. If yes, check line draw in display, Check field wiring between decoder and solenoid.
A group of stations is failing to run.	Check field wiring and decoders. If the two-wire path is broken, all stations from the line break on will fail to operate… stations closer to the controller continue to operate. Also inspect decoders and in-line surge suppressors for surge damage.
No stations will run.	Check display. Verify Day Schedule. Check Start Times and Run Times. Check field wiring and condition of output boards.
Programs turn on at the wrong times.	Check display. Check for a large number of overlapping start times. If more than 20 events (max) are scheduled to run at once, the extra events will be "pushed back" and will run after earlier events have timed out.
Programs stop at the wrong times.	Check display. Verify that no End Time has been set.
Program never shuts off.	Check display. Verify whether Continuous is set for Cycles, and that End Time has been set
Stations, Programs run for wrong times	Check % Scale settings.
OVERLOAD message.	See explanation in manual. Check field wiring, decoder, and solenoid.

INDEX..

INDEX (CONTINUED)..

NOTES..