

Chapter 9

Central Control

The Evolution DX2 controller may be used in either a stand-alone mode or under control of a Central Control System. Under this Central Control mode, a host computer provides direction and monitoring of the controller.

Any controller (directly or indirectly) connected to the Central Control Computer is called a "satellite." A "submaster" is a satellite controller with specific communications capability. The submaster may operate as a stand-alone unit, a communication control unit for multiple satellites or a communication management control unit within a Flow Max system.

The submaster can communicate directly with a Rain Master Irrigation Systems (RMIS) Central Control Computer in one of seven ways - via UHF radio, telephone, direct connection (wire), phone repeater, trunk radio, cellular, and Ethernet.

Each submaster can provide hardwire communications support to a maximum of 100 satellite controllers.

To help control communications, all controllers connected to the Central Control computer are given an "address." After the address is assigned, the base screen is changed to show the satellite address.

The purpose of this chapter is to provide general information about Central Control Mode setup and operation.

Controller as Submaster

If the controller is setup as a submaster, you are prompted to select a communications option.

The three options are:

- Radio/Wire
- Phone- supports cellular and Ethernet communications
- Trunk

You are also prompted to enter an "address" for the controller. The address is a unique identification number for the controller. Each submaster under Central Control must have a separate address.

Refer to the configuration procedure in Chapter 4: Setup.

After the address is assigned, the base menu is modified to show the address of the controller.

For example, if address 2 is selected, the base menu displays:



Figure 134: Satellite Address Display

Note: The base menu display alternates every seven seconds between the satellite address data and the valid programs display.

Transferring Programs between the Central Control Computer and Submaster/Satellite Controllers

The purpose of Central Control is to have a single unit, the host computer, provide program information to all Evolution DX2 controllers connected to it. The Central Control Computer also monitors all controllers for possible field related problems and maintains complete water usage and maintenance accountability. The process of sending program information from the Central Control Computer to the controllers is called "downloading." Downloading is automatic when a controller is properly setup and connected to the Central Control Computer. No action on your part is necessary; all actions are handled by the Central Control Computer.

Programs downloaded from the Central Control Computer may be modified in the field at the local controller. To communicate any program modifications to the Central Control Computer, you must "upload" the new program.

To initiate an upload process from the base screen, follow these steps:

Upload Procedure

Step 1 Advance to the Modify Program Options menu as follows:



<p>F1=Main Menu F1=Program F1=Modify Program Enter Program #</p>

P #		F1		=PROGRAM START		F2		=WATER DAYS						
	F3		=STATIONS		F4		=PERCENT		F5		=SEND		↑	

Figure 135: Modify Program

Note: Program Number entry must be between 1 and 12.

Step 2 Select F5=SEND. The following message is displayed:



Figure 136: Program Send

The display indicates a program upload is requested. In addition, an entry is made in the warning list.

When the Central Control Computer contacts the controller, the program is uploaded and the entry is cleared from the warning list. The time required before the upload is made depends upon a number of factors including the total number of controllers operated by the Central Control Computer, communications resources (such as an available telephone line) for the upload, and the configuration of the Central Control System.

Communications and Problem Reporting

Submaster

If the submaster loses communications with one of its hardwired satellites, a hardwire (HW) communications failure is detected. An entry is made in the submaster's warning list.

Example: Hardwire Warning entry



WARNING-HW COMM FAIL 05/17/96 2:55PM

Figure 137: Warning Report

Satellite

When a satellite loses hardwire communications, it is "off-line". When communications is re-established, it is "on-line". When a satellite becomes off-line or on-line, an entry is made in the satellite's warning list.

Example: Off-line Warning entry



WARNING=OFF LINE 05/15/96 6:20PM

Figure 138: Problem Off-Line

Example: On-line Warning entry

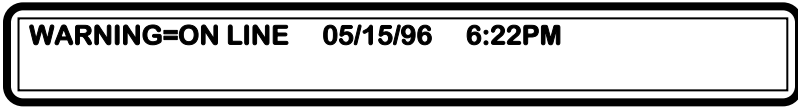


Figure 139: Problem On-Line

Note: For detailed information on these warnings, refer to

All warnings are systematically retrieved and recorded by the Central Control Computer. The reported warnings are listed on the computer screen with full descriptions and recommended corrective action for each warning.

Diagnostics

Inherent to the Evolution DX2 controller are several advanced tools for communications troubleshooting. These tools are used by RMIS service personnel to diagnose and correct field communications problems.

The COMM Status options are reserved for use by RMIS field service personnel.

Controller Logs

When a controller is operated in Central Control Mode, controller operations data is stored on the controller. The data is transferred automatically on command by the Central Control Computer.

Data logged includes all station start and stop times and flow totals. This data is automatically cleared from the satellite each time statistics are uploaded.

Weather Center Sensors

Weather Center installations are connected to one specific satellite controller covering a microclimate zone of an irrigation system. The sensors of a Weather Center are identified as follows:

- ET (EvapoTranspiration) – Calculated by a Weather Computer
- Rain Fall - Rain accumulation is measured by Tipping Bucket Rain Gauge
- Wind - Wind speed is measured by an anemometer

All data gathered at the controller is reported back to the Central Control Computer and stored in its database. This information is used by the Central Control System to adjust irrigation control base on weather conditions as reported. Current daily E.T., wind and rain fall data can also be observed directly at the satellite controller.

Specific review procedures are given in the Measurements section of Chapter 7: System Status, page 7-4.

Full details on Central Control using a Weather Center are provided in the Weather Center User Manual.

Figure 9-7: Weather Center Connections shows the physical connections between a station and the controller.

