

### The Stratus™ II and Stratus™ II LINK

Two-Wire, Wireless and Decoder Central Control System. Now with Rain Watch.™

#### Stratus™ II

For easy-to-use, time- or ET-based scheduling there's really only one choice. Stratus™ II is the one irrigation central control system to combine the point-and-click simplicity of Windows® with intuitive Rain Bird features. Stratus II uses powerful graphics and simplified on-screen instructions to control as many as 27 holes. From tees to greens, even computer novices can be quickly acclimated to this user-friendly system.



- **Start Fast**—An on-screen Quick Start™ setup program will have you running your system in no time. It will also help you assign start and finish times to clearly define your watering windows. Using the QuickIRR™ tool helps you master programming overnight!
- **Save Money**—Stratus II is one of the most cost-effective central control systems on the market. It offers many powerful features found in the more advanced Rain Bird systems for a remarkably low price.
- **Make the Upgrade**—Stratus II uses the same operating system and satellites as Cirrus™ and Nimbus™ II. Use Stratus II now, and as the need for more advanced central control arises, you can purchase a low-cost software upgrade to Nimbus II or Cirrus without having to purchase new satellites and adjust to a completely foreign system.
- **Rain Watch™**—Let your irrigation system decide how to react to rainy weather. Rain Bird's new Rain Watch feature is so unique it has a patent pending. Rain Watch is an intelligent rainfall reaction system that uses up to four tipping bucket rain cans to detect and react to local rainfall. For short duration cloudburst, Rain Watch suspends irrigation while simultaneously measuring the real time rainfall. When the storm passes, irrigation is resumed with station runtimes reduced by an amount equivalent to the measured rain. In case of extended rainy conditions, irrigation will be cancelled for a user-definable period of time.
- **Minimum ET**—Less frequent, deep irrigation can be very beneficial to your turf management program. Why not let your irrigation system help you? The new Minimum ET feature can do just that. With this feature a superintendent can define minimum ET threshold values that must be met before irrigation will take place. Minimum ET values can be assigned globally so they affect all programs, or individually by program for the ultimate in advanced ET management.



*Course Monitor™ Screens provide a graphical real-time view of the course with the ability to monitor activities at a glance. This exclusive feature allows complete monitoring and recording of irrigation—past, present and future.*



*Station Detail™ Screen shows a complete analysis of all database associated with the hole; including greens, tees, fairways, roughs, approaches and perimeters. This exclusive Rain Bird feature eliminates guesswork and gives you confidence in operation.*

- **Monitor System Activities**—The Course Monitor™ screen gives you a quick graphical read on all system activities. Station Detail™ offers a complete analysis of all databases associated with a hole.
- **Verify System Communication**—Rain Bird's communications check simplifies troubleshooting by verifying two-way communication accuracy between Stratus II and the LINK satellites. This ensures that logged run times are based on actual field operation, eliminating guesswork.



- **Optimize Power Consumption**—The Pump Profiling™ feature allows users to set limits on the amount of power consumed by their pump during specific hours of the day. By limiting power consumption during peak electrical periods and increasing consumption when rates are lower, users can save money and adhere to local restrictions on power use.
- **Smart Pump™**—Rain Bird's Smart Pump Software links your pump station and control system providing real-time communication and optimizing your irrigation cycle. Smart Pump also has the ability to monitor and react to changes in station capacity. Should pump capacity increase or decrease, the software adjusts the irrigation cycle based on this change. (Optional)

## The Stratus™ II and Stratus™ II LINK

### Specifications

The computerized central control system shall be the Rain Bird Stratus II as hereinafter specified. It shall be capable of controlling up to 27 individual golf holes, consisting of greens, tees, fairways, approaches, perimeters, roughs and miscellaneous areas. Alternatively, if you prefer, user-defined names may be used. The central shall include the Rain Bird "P" Series computer system, as hereinafter specified. In addition, the central equipment shall include an interface unit, an uninterruptible power source, a power circuit surge arrestor and a grounding network with surge arrestors, all as hereinafter specified.

**Stratus II Software**—Stratus II software shall operate in the Microsoft® Windows™ 98 SE, 2000 or XP Professional environments and shall be capable of controlling any one of three (3) different types of field unit systems; (1) hard-wired satellite field units; (2) radio operated satellite field units or (3) hardwired decoder field units in a standard configuration. With the Hybrid software module, any combination of two of these units can be controlled. Satellite based systems shall have 56 control channels standard, each capable of controlling a maximum of 24 satellite stations, or a total system capacity of 1,344 satellite controller stations. With additional wire path modules, up to 56 additional channels can be controlled for a total of 112, or a total station capacity of 2,688 satellite stations. Using additional field interface units with the Hybrid software module, station capacity can be increased to 5,376. Satellites shall have the

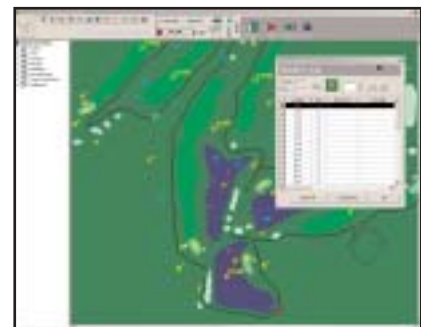
capability of expanding to 72 stations maximum, in modules of 8 stations per additional module. Total number of stations, for each satellite, shall be shown on the drawings. The decoder based system shall have a capacity of controlling a maximum of 1000 single decoders and 2000 solenoids maximum using two LDI interface units with the Hybrid software module.

Continuous on-line communication, between central computer/interface unit and the field satellite or decoder units, shall provide true central control. Continuous field unit feedback status information shall be registered at the computer and also at the satellite interface unit. Stratus II shall be a program/schedule-based system providing maximum flexibility of programming and giving the operator absolute and full control of the entire system. The Stratus II system shall be capable of 500 programs residing in the system at one time. Each program shall be further defined by a number of smaller schedules. All programming shall be maintained in the computer memory and on the hard drive, from which they shall be executed. Programming shall NOT be down loaded to the field units. It shall NOT be possible to change or reprogram the system from the field, thus assuring the operator full control at all times. A time window may be defined for each individual program, confining its operation to this specific time period. Each individual program can have up to 2 starts or each schedule shall be capable of being designated for up to 12 start times. It shall be possible to designate the sequence of operation of areas and the sequence of operation of stations in these areas, within a given schedule.

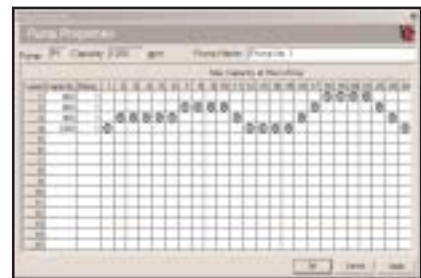
An innovative, guided initialization and start-up programming method in Stratus II shall result in a customized Quick Start™ program, enabling the process of getting the system up and operating in the shortest possible time. Built in rotor database tables shall provide for easy specification of station sprinklers for custom irrigation scheduling. A graphic display of each hole defined, shall indicate the areas to be irrigated; such as, greens, tees, fairways, approaches, perimeters, roughs and miscellaneous areas. The system shall provide for multistation programming and operation of satellite stations. A station data table shall give complete database information for each individual station. A unique QuickIRR™ method of programming shall provide for a quick and easy method to automatically build programs.



*Optimize pump activity and water flow efficiency with the Flo-Manager® feature.*



*Stratus II monitors and logs system activity for easy reference and reporting.*



*Limit power consumption during peak periods with the Pump Profiling feature.*

A Rain Watch feature shall provide an intelligent rainfall reaction. The Rain Watch feature shall be capable of suspending irrigation during intermittent rainfall, and then resume irrigation with station runtimes reduced an amount equivalent to the rain that has fallen. The Rain Watch feature shall also be capable of canceling irrigation for a user definable time in the event of extended rainy conditions. To use the Rain Watch feature up to four tipping bucket rain cans shall be installed with one Rain Bird pulse decoder for each rain can.

In addition to calculating runtimes based on measured weather parameters, a Minimum ET function shall be provided which can delay program activation until a user-determined minimum ET threshold has accumulated.



The Stratus II system shall provide for the selection of three (3) different flow measurement units—U.S. gallons per minute, cubic meters per hour or liters per second. It shall also provide for the selection of any one of nine (9) different languages for display. A built-in Flo-Manager feature shall automatically distribute and limit flow within the system, to eliminate hydraulic overload while maintaining maximum system operating efficiency.

During actual operation of the Stratus II system, a course graphic overview shall provide visual indication of all areas being irrigated. A system Flo-Bar and flow analysis chart shall provide complete system flow information, including flow with NO feedback, flow with feedback, paused flow and total flow demand as well as the total system capacity. The system shall allow the use of pump station monitoring software capable of providing real time data exchange with optional Smart Pump™ feature in Stratus II.

A Watersaver™ feature shall provide water budgeting capabilities from 0% to 300% in 1% increments at the system level, at the program level or at the schedule level. Automatic rain shutdown shall be possible with the integration of a rain sensor. A dry run feature shall provide for testing of a program and making necessary adjustments before actual operation. A printout of the dry run results shall be possible, as well as being displayed on the monitor.

The Stratus II system shall be capable of direct manual access of any stations, at any time. Full system remote control shall be possible with the integration of The FREEDOM™ System. The system shall provide for daily and seasonal logs for record keeping and easy compliance with regulatory requirements regarding water usage.

**Hardware**—Computer—Furnish and install at the central location a Rain Bird “P” Series computer system, consisting of the following minimum specifications:

- 2.4 GHz Pentium 4 Processor
- 512 MB RAM
- 20 GB hard drive
- 1.44 MB floppy disk drive
- Microsoft PS2 Intellimouse
- 56K Modem
- DVD/CD-ROM–R/W
- 32 MB Video Card
- Sound Card
- Speakers
- Quiet Key 104 Keyboard
- USB to Serial Adapter
- Color Monitor

Preinstalled software shall consist of:  
The Rain Bird Stratus II program  
Map Import software  
PcAnywhere Communication software  
Microsoft® Windows® XP Professional

Optional software modules:  
Rain Bird Smart Weather software  
Rain Bird Automatic ET software  
Rain Bird FREEDOM handheld software  
Rain Bird FREEDOM-Pad software  
Rain Bird Smart Sensors™ software  
Rain Bird Smart Pump™ software  
Rain Bird Smart Paging™ software  
Rain Bird Map Layers and Station Resolution software  
Rain Bird Map Utilities software  
Additional Wire Path software

**Voltage Stabilizer**—At the central location, furnish and install a combination voltage stabilizer and uninterruptible power source unit. Unit shall have a rated output of 600VA and 400 Watts. It shall be suitable for 50/60 Hz operation with input power of 120 VAC. Battery back-up shall have a minimum time of approximately 12 minutes at half load capacity. The unit shall have four (4) electrical outlets.

**Power Surge Arrestor**— At the main electrical panel and on the circuit supplying the central equipment. Furnish and install a Model “Z1” Zap Trap surge arrestor. Unit shall be for 120 Volt, single-phase power rated for 100 Amps. It shall have a discharge capacity of 15,000 Amps at an 8 x 20 second pulse. It shall have a clamping voltage of 130 Volts and a response time of 1.5 N/sec. Surge arrestor shall be as manufactured by Tyte-wadd Power Filters, phone 417-887-3770; [www.tytwadd.com](http://www.tytwadd.com).

**System Grounding System**— At the central control location, as close to the Interface unit as possible, install a grounding system. Install a standard 12" x 18" x 12" rectangular valve box around the top of any connection in the grounding system to a surge arrestor, and the grounding lug of a piece of equipment or an MGP-1 grounding plate assembly. This shall provide future access to inspect and/or maintain it properly.

A #10 gauge or larger bare copper ground wire shall be run from the grounding lug of the MIM or MIM LINK interface unit or from the LDI in a decoder-based system, out and attached to the grounding system. On each two-wire path, coming from the interface unit or LDI and going out to the field satellite units or the field decoders. Furnish and install an MSP-1 surge arrestor, which is to be mounted in an MGP-1 grounding plate assembly that is securely attached to the grounding system.

Connect the MSP-1 arrestor into the two-wire path. A 10 OHMS or less resistance shall be maintained at the grounding system.

**Hard-Wired Interface Unit**—(two-wire satellite system)—The interface unit shall be a Rain Bird Interface Module (MIM) unit with all solid-state electronic circuitry. It shall provide the necessary interface between the computer and the field satellite units. The interface unit shall provide both communication from the computer out to the field satellite units and feedback communication from the field satellite units to the computer. It shall be capable of controlling two (2) wire paths of 28 independent channels each. The MIM unit shall be complete with a power supply cord and an RS-232-C communication cable to be connected between it and the serial port of the computer. The unit shall be mounted near the central computer. Connect a #10 gauge or larger bare copper ground wire from the ground lug of the MIM unit. Connect it to the grounding system.

**LINK Interface Unit**—(radio LINK satellite system)—The interface unit shall be a Rain Bird MIM LINK unit with all solid-state electronic circuitry and two-way radio and receiver, with \_\_\_\_\_ radio frequency. It shall provide the necessary interface between the computer and the LINK field satellite units. The interface unit shall provide true two-way radio communication from the computer out to the LINK field satellite units and feedback radio communication from the LINK field satellite units to the computer. It shall be capable of controlling up to 56 LINK satellites. The MIM LINK unit shall be complete with a power supply cord and an RS-232-C communication cable to be connected between it and the serial port of the computer. The unit shall be mounted near the central computer. Furnish and install, outside on the building or on an antenna tower, near the central equipment location a Rain Bird model ANT-02, ANT-03 or Yagi type antenna. An RG8 type coaxial cable shall be attached to the antenna and routed into the building near the floor and near the MIM LINK unit location.

Furnish and install, inside the building on the wall near the floor, a PolyPhaser Model IS-IE50LU-C1 surge arrestor to which the coaxial cable shall be connected to the antenna terminal on this surge arrestor. Furnish and install from the equipment terminal of the surge arrestor an RG8 type coaxial cable and connect it to the coaxial cable connection on the MIM LINK interface unit. Connect a #10 gauge or larger bare copper ground wire to the antenna and a second ground wire to the ground lug on the surge arrestor. Route each



of these ground wires and connect them to the grounding system. Furnish and install all necessary mounting clamps, brackets, etc. as may be required for the antenna, coaxial cable ground wires and the surge arrester.

**Decoder Interface Unit**—(decoder-based system)—The interface unit shall be a Rain Bird Large Decoder Interface (LDI) unit with all solid-state electronic circuitry. It shall provide the necessary interface between the computer and the field decoder units. The interface unit shall provide both communication from the computer out to the field decoder units and feedback communication from the field decoder units to the computer. It shall be capable of controlling, over a two-wire path, up to 500 (max.) single decoders and up to 1,000 (max.) solenoids. The LDI unit shall be complete with a power transformer and a communication cable, which shall be connected between the LDI interface unit and the serial port of the computer. Connect a #10 gauge or larger bare copper ground wire to the chassis of the LDI and route it out and connect it to the grounding system.

**PAR+ES Field Satellite Units**—(hard-wired PAR+ES satellite system)—Furnish and install, where shown on the drawings and/or where directed, Rain Bird Model PAR+ES two-wire field satellite controllers. Furnish and install each basic satellite field unit for the total number of station outputs indicated on the drawings.

**PAR+ Field Satellite Units**—(hard-wired PAR+ satellite system)—Furnish and install, where shown on the drawings and/or where directed, Rain Bird Model PAR+ PP (plastic pedestal) or PAR+ SS (stainless steel pedestal), two-wire field satellite controllers. Furnish and install each basic satellite field unit for the total number of station outputs indicated on the drawings.

**MSC+ Field Satellite Units**—(hard-wired MSC+ satellite system)—Furnish and install, where shown on the drawings and/or where directed, Rain Bird Model MSC+ PP (plastic pedestal) or MSC+ SS (stainless steel pedestal), two-wire field satellite controllers.

Furnish and install each basic satellite field unit for the total number of station outputs indicated on the drawings.

**PAR+ES LINK Field Satellite Units**—(radio PAR+ES LINK satellite system)—Furnish and install, where shown on the drawings and/or where directed, Rain Bird Model PAR+ES LINK, radio LINK type field satellite controllers. Those satellite units, with radio/modem units, shall be furnished with dome hood type antennas. Furnish and install each basic satellite field unit for the total number of station outputs indicated on the drawings. For those units indicated on the drawings, furnish and install CAM LINK units.

**PAR+ LINK Field Satellite Units**—(radio PAR+ LINK satellite system)—Furnish and install, where shown on the drawings and/or where directed, Rain Bird Model PAR+ LINK PP or PAR+ LINK/R PP (plastic pedestal) or PAR+ LINK SS or PAR+LINK/R SS (stainless steel pedestal), radio LINK type field satellite controllers. Those satellite units, with radio/modem units, shall be furnished with dome hood type antennas. Furnish and install each basic satellite field unit for the total number of station outputs indicated on the drawings. For those units indicated on the drawings, furnish and install CAM LINK units.

**Field Decoder Units**—(decoder-based system)—Furnish and install, where shown on the drawings and/or where directed, Rain Bird Model FD-101, FD-102, FD-202, FD-401 or FD-601 decoders. All decoders shall be solid-state electronic circuitry and epoxy potted in a sturdy plastic case suitable for direct burial. Each decoder shall be factory set for a specific response code with code number permanently and prominently marked on the decoder case. Also furnish and install in the two-wire path, where shown on the drawings, Rain Bird Model LSP-1 surge arrestors. One LSP-1 ground wire shall be attached to the solenoid core tube and the other to a 4' copper ground rod, installed near the LSP-1 surge arrester.

**Wire**—(hard-wired satellite system and decoder based system)—Furnish and install, for the two-wire communication paths,

double jacketed type wire, consisting of two tin-coated type UF insulated (4/64" PVC), soft drawn, annealed solid copper conductors. The two conductors shall be color-coded (one RED the other BLACK). The second outer jacket shall be a solid color, high density, and polyethylene insulation. Jacket colors and conductor sizes shall be as shown on the drawings.

**Weather Station**—Furnish and install, where shown on the drawings, a Rain Bird Model WS PRO SH, direct hard-wired or Model WS PRO PH remote telephone operated, or WS PRO LT radio operated On-Site Weather Station. The station shall monitor the following daily critical weather conditions: wind direction, wind speed, solar radiation, air temperature, relative humidity and rainfall. Sensors shall be polled every 5 seconds and the data recorded in a micro-logger located in the Weather Station mast. The WS PRO SH and WS PRO PH Weather Stations shall be furnished complete with a transformer, 12-Volt battery and calling and answering modems, for the WS PRO SH, an answering modem for the WS PRO PH unit, or a communication radio for the WS PRO LT. For the WS PRO PH unit, furnish and install a modem and a dedicated telephone line at both the computer location and the Weather Station location. For the WS PRO SH unit, the communication wire between weather station and central computer shall be Belden #9883 direct burial type cable, consisting of three twisted wire pairs and with metal shield. Furnish and install the necessary MSP-1 surge arrestors, to be wired into the communication wire paths and power wires, at both the Weather Station location and at the central equipment location, as well as the required MGP-1 grounding plate assemblies.

Furnish and install a grounding system, at the Weather Station location the same as previously specified for the central grounding system.

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