



## Stratus LT™ Central Control System

**Total Control. In Record Time. No Experience Required.**

Even if you don't have any experience with computerized irrigation systems, you will be able to take total control of the Stratus LT™ Central Control System from Rain Bird—almost immediately. Using Microsoft® Windows® operating system software, colorful and bold graphics and simplified on-screen instructions, Stratus LT allows you to manage all the irrigation applications—from the greens to the roughs—without having to become a computer expert or spend extensive time learning to operate the system.

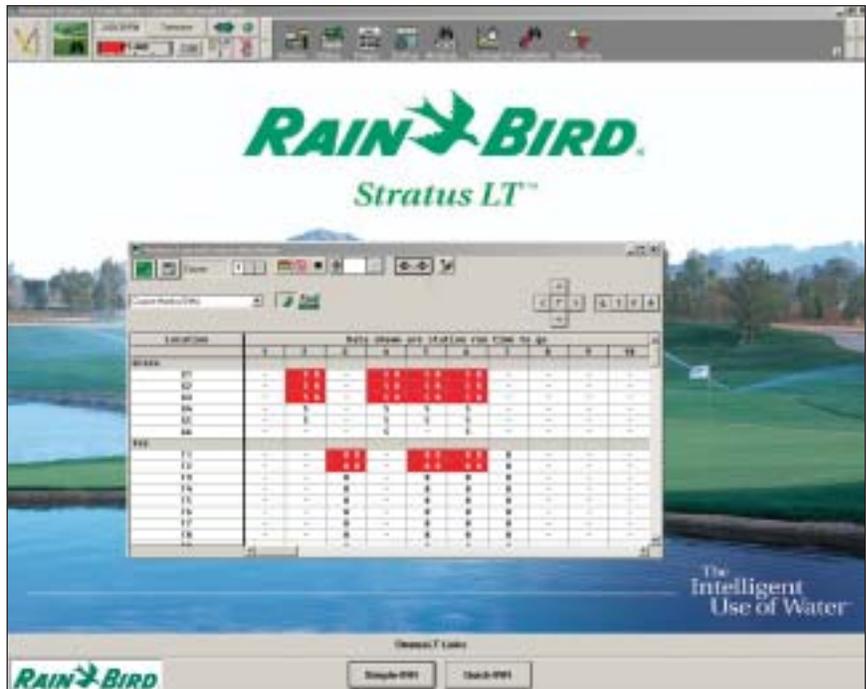
### **Start Without Reading A Manual**

Rain Bird was the first in the industry to offer Quick Start™. It guides the first-time user through the initialization and start-up of Stratus LT. Quick Start even helps the user build the first customized program—step by step. So you can quickly get the system up and running without having to read through manuals or attend programming classes. Assign start and finish times to clearly define your watering window. Because each program can have up to 6 start times and each schedule can run up to 12 starts, many different turf growing conditions can be taken into account: germination, clay soil and steep slopes.

### **Make The Most Of Your Irrigation System**

Stratus LT can operate up to 10 programs and 25 schedules at the same time. Satellites or decoders can be assigned to multiple schedules allowing you more flexibility, which optimizes your investment in hardware.

Flo-Manager™ prolongs the life of your system and reduces maintenance costs by eliminating hydraulic overload. It also prevents excess demand on the pump station, which could accidentally create low-pressure shutdowns.



**Water Budgeting** allows you to react to changing conditions with ease. Make specific adjustments to the entire system, a single program or schedule, from 0% to 300%.

**Course Monitor™** gives you a quick graphical read on all system activities. Station Detail™ offers a complete analysis of all data associated with a hole. The Monitor Log screen gives you real-time feedback of current system activities as well as a recording of all irrigation—past, present and future. Direct Manual Access™ permits activation of any station simply by clicking on that station.

### **Works With Or Without Satellites**

Stratus LT is another Rain Bird Central Control System with the unique ability to operate as a decoder system to provide efficient irrigation without satellite enclosures. If you prefer, Stratus LT can control the powerful LINK or two-wire satellite system of Rain Bird PAR+ES, ESP-MC, PAR, PAR+, MSC and MSC+ products that offer you the option of stand-alone operation.

### **Meet Regulatory Requirements**

Stratus LT makes it easier to comply with increasing regulatory requirements regarding water usage. Its record-keeping function in Print Office™ allows you to track the amount of irrigation that has been applied throughout the course for days, weeks and months at a time. Stratus LT true two-way communication accurately logs station run time for precise data gathering. This data can be moved from one application to another so you can easily use it in reports that are generated in another program.

### **Designed For The Cost-Conscious**

Even with all the benefits Stratus LT offers, it is priced well within the reach of the most cost-conscious golf courses. Rain Bird keeps it affordable over the life of the system by designing products to work with its complete line of controllers. Plus, future upgrades to Stratus™II, Nimbus™II or Cirrus™ can be accomplished easily as needs and expertise grow.



### Offers International Applications

In addition to English, the language of Stratus LT can be changed to Spanish, French, German, Italian, Swedish, Portuguese, Japanese, Chinese and Korean. It can even use standard metric measurements to regulate hydraulic flow, eliminating the need for time-consuming conversions.

### Control Stratus LT From Anywhere On The Course

The Rain Bird FREEDOM™ System adds a greater level of control to your Stratus LT system. This optional, handheld, two-way radio allows you to communicate with Stratus LT to stop, start or continue water application. It will also give you spot water without having to sit down in front of the computer. Add a FREEDOM-Pad™ system and gain more control with visual activation.

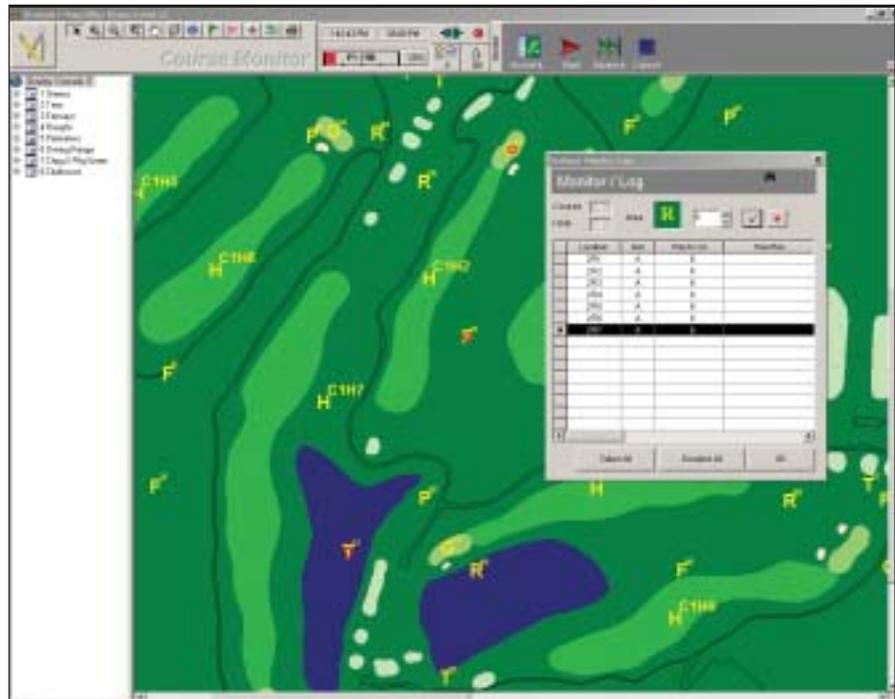
### The Stratus LT and Stratus LT LINK

#### Specification

The computerized Central Control shall be the Rain Bird Stratus LT System as herein after specified. It shall be capable of controlling up to 19 individual golf holes, consisting of greens, tees, fairways, approaches, perimeters, roughs and miscellaneous areas. 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 LT Software** — Stratus LT software shall operate in the Microsoft® Windows™98SE, 2000 or XP environment and shall be capable of controlling any one of three (3) different types of control systems; (1) "hard-wired" satellite field units; (2) "radio" operated satellite field units or (3) "hardwired" decoder field units.

Satellite based systems shall have 28 channels each capable of controlling a maximum of 24 satellite stations, or a total system capacity of 672 satellite controller stations. 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 200 single decoders and 400 solenoids.

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 LT 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 LT system shall be capable of 250 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 6 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 LT 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 multi-station 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.

The Stratus LT 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 LT 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 LT.

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 LT 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 course 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:

- 2.4Hz 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
- 4-Com 4 Port Digiboard
- Color Monitor

Preinstalled software shall consist of:

- The Rain Bird Stratus LT program
- Map Import Software
- PcAnywhere Communication Software
- Microsoft® Windows® XP

Optional software modules:

- 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

**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 120VAC. 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.

**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 TWI or TWI LINK interface unit or from the line termination box of the decoder-based system, out and attached to the grounding system. On each two-wire path, coming from the interface unit or line termination box 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 (TWI) 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 TWI 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 TWI unit. Connect it to the grounding system.

**LINK Interface Unit** (radio LINK satellite system) — The interface unit shall be a Rain Bird “TWI 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 TWI 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 TWI 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 TWI 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 arrestor. Connect a #10 gauge or larger bare copper ground wire from the ground lug of the TWI LINK interface unit and route it out and connect it to the grounding system.

**Decoder Interface Unit** (decoder-based system) — The interface unit shall be a Rain Bird Small Decoder Interface “SDI” 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 200 (max.) single decoders and up to 400 (max.) solenoids. The SDI unit shall be complete with a power transformer and a communication cable, which shall be connected between the SDI interface unit and the serial port of the computer. Connect a #10 gauge or larger bare copper ground wire to the chassis of the SDI and route it out and connect it to the grounding system. Connect a #10 gauge or larger bare copper ground wire to the ground lug of the SDI and route it out and connect it to the grounding system.

**PAR+ES Field Satellite Units** (hard-wired PAR+ 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+ 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.

**MSC+ LINK Field Satellite Units** (radio MSC+ LINK satellite system) — Furnish and install, where shown on the drawings and/or where directed, Rain Bird Model MSC+ LINK PP or MSC+ LINK/R PP (plastic pedestal) or MSC+ LINK SS or MSC+ 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 so 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 arrestor.

**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.

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