Lynx CE Central Control For OSMAC

General Specifications

Number of satellites: Up to 255
Number of satellite stations: up to 16,320
Number of Courses: 3
Number of holes per course: 48
Number of holes per system: 144
Number of areas per system: 99
Number of Area Programs per system: 999
Number of OSMAC satellite stand-alone Smart OSMAC programs: 12
Number of switch controls for automation of non-irrigation functions (lights, fountains, aerators, etc.): Unlimited
26 priorities (A-Z) assigned to Programs
7 Site Code categories with user defined names
1024 Hydraulic branches
6 Precipitation Management Groups (PMG) to refine flow management
Up to 900 Instant Programs
Supports up to 10 weather stations and up to 10 hydraulic sources

Area, Hole, Sprinkler based Program Architecture with Dynamic Drill down to individual stations.
Station Based Flow management for optimum system performance and reduce water time window
Automated multi-level hydraulic flow and electrical systems management (Electro-Flow)
Electro-Flow^a simultaneously manages hydraulic and electrical demands in the system for total system efficiency
Detailed, color-coded graphing of system projected flow
Manual adjustment factors allow for scheduling refinement by station, hole, program, course and for site.
Calculates and executes runtimes to the second
Automated adjustment factors allow scheduling refinement from 0-900%
Programmable weather station and pump station alarms: Up to 99 responses for any alarm
Integration with Toro Turf Guard Soil Sensor system.
Integration with Flowtronex Pace Pump Station, Flowtronex Pumplog software, Watertronics WaterVision software, Grundfos Pump Station with Toro-Grundfos Integration Service software.
User-definable names versus system defaults
Advanced multi-manual operations for overseeding, hot spots or fertilizer application (Station Groups and Master Group Multi Manuals)
On-line, context-sensitive Help screens

Advanced reporting capabilities:
> Provides informational displays of the central controller status, actual watering times per station, contents of the database, overview of scheduled irrigation activity
> Allows for graphical presentation of the system projected flow, an analysis of sensor data and water usage by the irrigation system
> Reports stations that are assigned to more than 1 program
> Reports for Water Usage, Weather data, Pump Station operation

Standard Hand-held radio capability
>> Remote sprinkler activation by hardware address
>> Pause and resume
>> System test by hardware address

Optional Hand-held radio capability
>> Remote sprinkler activation by area and hole/area
>> Runtime adjustment by percentage
>> SGMM activation
>> Control Code request
>> Station Test by area
>> Logging of manual irrigation on Course Report

Digital paging communication mode

Irrigation methods:
>> Basic: daily run times or application amounts assigned to programs
>> Intermediate: run times modified automatically with changes in daily ET, identified by ET source
>> Advanced: run times calculated automatically based on sprinkler data, site parameters and measured ET

Microsoft Windows 7 Ultimate operating platform
True 100% 64-bit architecture
Supports 16 languages: English, Bulgarian, Simplified Chinese, Czech, Danish, Dutch, French, German, Italian, Japanese, Korean, Norwegian, Portuguese, Russian, Spanish and Swedish
Supports U.S and metric units of measure
Runs on standard or premium computer (contact local distributor for current specifications)

Integrated Map software allows:
>> Dynamic, interactive operation
>> Use of a non-scaled graphic image file
>> Use of a scaled CAD generated map
>> Enhanced graphics
>> GPS compatibility for accuracy
>> User Editing of Sprinkler, Satellite, Sensor, and Switch locations
>> Floating of map onto secondary 1080P monitor

Standard Weather Software allows:
>> Automatic system adjustment using ET
>> On-site or off-site weather station
>> User-defined alarm thresholds
>> Interactive, automatic response to the central
>> Rain Shut Down and Rain Re-Flow alarm responses

Bidding Specifications

Central Controller

The central controller shall utilize a personal-computer-based, Microsoft Windows 7 Ultimate platform, user-friendly irrigation management and control program. The central controller shall utilize client/server architecture. Computer shall include 2 video outputs and allow map graphic to be floated onto secondary monitor.

The central controller shall utilize site graphics with 64-bit software, including site graphics at the station level. The software shall be presented in a "flat" display, where all of the information needed is available to the user for a given operation, without having to open and close additional windows.

The central controller shall have programs based on a hierarchy organized the same as the golf course. Course(s), Areas (greens, tees, fairways, etc.) followed by holes (1 through 48), followed by the individual sprinklers. The central controller shall have the ability to view the system at any of the four levels (course, area, hole, sprinkler) by Dynamic Drill down (simply clicking on a plus/minus box) to give the user intuitive control. A graphic red "Water Drop" will identify areas and holes that have stations turned off. A graphic green "Water Drop" will identify areas, holes and stations set to run automatically. A graphic blue "Water Drop" will identify areas not scheduled to water.

The central controller shall allow the user to schedule areas to irrigate by either entering runtimes in minutes, or by entering the amount of water to apply. If amount is utilized, the corresponding minutes will automatically be calculated and displayed. If minutes are utilized, the corresponding amount of application shall be calculated and displayed. Runtimes shall be calculated and executed to the second.

The central controller shall have a "Course Report" to allow the user to determine the status of each sprinkler station on the golf course. The Course Report shall auto generate after each night's watering to allow confirmation of all sprinkler runtimes at a glance. The Course Report will display all Automatic, Manual, and Group Multi-Manual Irrigation as well as stations that are currently running. Stations that have not operated as scheduled shall be identified with a graphic red "Water Drop". The Course Report / Alert Panel shall display feedback from the Base Station to indicate station status. Optional Hand-held Remote Interface (HHRI) will provide feedback for Manual operations. The Course Report will utilize the Area, Hole, Station layout with Dynamic Drill down to quickly navigate to exceptions.

The central controller shall support the creation of a customized site map displaying multiple layers. The central controller shall allow the user to quickly create a map from any digital image (jpeg, bmp or tif format). The control system will allow the user to edit the locations of sprinklers, satellites, Turf Guard Sensors, and switches on the map. The central controller shall provide system status at the station level and display changes in status . The central controller shall be capable of creating user-defined work orders. If a CAD map is utilized, the central controller will display area and distance measurements.

The central controller shall be capable of graphically displaying projected flow on the map at the station level and displaying station activation utilizing a color-coding system that shows how stations will activate during the next 24 hours. The central controller shall be capable of creating irrigation programs through the map and making station level percentage adjustments. When programming or manually running stations, the map shall be capable of automatically zooming into the stations, holes, and areas selected.

The central controller shall have the ability to communicate with and control 255 OSMAC satellites with up to 64 stations for a total of up to 16,320 stations.

The central controller shall automatically calculate sunrise and sunset based on longitude, latitude and date, and provide this information for starting or stopping a program in relation to sunrise or sunset.

The central controller shall permit true random access of all stations in the system and allow Instant Programs to be constructed with any combination of stations regardless of wiring sequences or satellite designation.

The central controller shall have the ability to manually adjust (percentage increase/decrease) by course, area, hole, station, and/or the entire system. System adjustment factors may be input via actual percentage or operational ET. The central controller shall have the ability to connect to a weather station. The weather station will measure and store temperature, relative humidity, dew point, wind speed and direction, and solar radiation for use in the calculation of evapo-transpiration.   The central shall have the ability to automatically calculate and adjust watering times based on evapo-transpiration. The central controller shall also have the ability to reduce the automatically calculated runtime by the rainfall measured over the preceding 24 hours. Further, the central controller shall have the ability to adjust calculated runtimes after they have been scheduled utilizing a Rain Re-Flow alarm response.

The central controller shall include the Turf Guard Soil Sensor software. Individual sensor data can be assigned to specific sprinklers to allow the user to view current soil moisture on the Watering Plan, allowing the user to choose to skip watering if moisture levels are above user-defined thresholds, or to activate stations if moisture levels are below defined thresholds.

The central controller shall employ advanced hydraulic/electrical systems management, allowing the user to specify hydraulic system design (sources and pipes representing mainlines, branches and flow groups) and the hydraulic limits of each entity. The central controller shall manage system flow by automatically generating the appropriate station start times based on the program priority and hydraulic limits set for each source and pipe, and for the electrical limit set for each field controller (satellite). The central controller shall incorporate the ability to use Precipitation Management Groups to specific which stations are allowed to operate simultaneously when hydraulic capacity is available.

The central controller shall display projected flow by source, course, area, program and hole using colors to differentiate. The graph will calculate and display the maximum instantaneous flow as well as the total volume. Maximum flow and volume will be displayed in user-selected units. When pump integration is configured, the actual flow reported by the pump station can be displayed simultaneously with the projected flow for up to the last 7 days.

The central controller shall have the ability to manually start programs for an entire area, a hole/area or an individual satellite program. Manual programs may be started in normal program time or a manually selected time. The central controller shall have the ability to start a multi-manual cycle in a satellite, running up to 6 stations simultaneously with a run time of up to 8 hrs 59 minutes. OSMAC satellites can run up to 16 stations simultaneously .

The central controller shall have the ability to independently suspend, (hold) the automatic operation of an individual station, hole, area or the entire system. The station hold duration shall be programmable for the current irrigation day up to 30 days, or may be permanent.

The central controller shall have the ability to control non-irrigation devices through switch outputs. Each switch will have an independent seven-day calendar schedule and start times for up to 12 starts. Switch outputs may run from one minute to 23 hours and 59 minutes (programmable in one-minute increments), with individual start times for each station (switch output). Switches may also be scheduled to run with any program and include the ability to offset the start time prior to or after the start of the program.

The central controller shall allow a user-defined response to a weather station or pump station based alarm. The alarm response shall have up to 99 responses for local and globalized control.

The OSMAC Base Station can be configured to support a Rain Shut down for the system.

The central controller shall provide reports detailing the following information: 1) projected schedule activity, 2) contents of the database constructed while programming the central controller, 3) overview of scheduled irrigation activity including start time, end time, area and satellite information, flow and program, 4) report stations that did not run, 5) stations that are assigned to more than one program.

The central controller shall be capable of integrating with up to 10 pump stations manufactured by Flowtronex or up to 10 pump stations manufactured by Watertronics or up to 10 pump stations manufactured by Grundfos. The central controller shall be capable of displaying key pump station data including flow and pressure. The central controller shall be capable of responding to "alarm" conditions based on data received from the Flowtronex, Grundfos or Watertronics pump stations. When alarms are activated, the irrigation system will respond in one of the following ways: log only no response, pause irrigation, resume irrigation, turn a switch on/off, cancel a program or station, initiate a rain hold or cancel, start a program or initiate a Re-Flow response. The central controller shall have "Power Guard", the ability to limit electrical consumption during specified times when integrated with a Flowtronex Pump station equipped with their Pace controls. The central controller will be able to limit flow during specified times with the configuration of a pump profile with or without pump station integration. These features allow savings in markets where the utility companies have adopted tiered electricity rates for peak use periods.

The system shall require a personal computer which has been certified by the manufacturer for use with the central control system.

The system shall come with a one-year dedicated support program provided by the manufacturer which includes extended warranties, 24-hour component replacement, toll-free help-line support and remote diagnostics by a licensed irrigator.

The system shall include NSN Connect for secure remote access to allow the user to operate the Lynx system from any computer connected to the internet. This will also allow NSN to do remote diagnostics and support of the central controller.

The system shall include one year of NSN Connect Plus, a service which will allow NSN to remotely monitor the computer 24/7/365 and will alert the user to internal computer hardware and software issues.

The system shall include one year of Lynx Mobile, a service which will allow the user to remotely control Lynx 24/7/365 from any web enabled mobile device. This service will provide for manual irrigation, communication diagnostics, viewing of course status and alerts.

The central controller shall be developed, manufactured, qualified and released in the USA by an ISO 9001-certified facility. The central controller, model number _____, shall be manufactured by The Toro Company, Irrigation Division, Riverside, California, USA.

Note: Lynx, Electro-Flow, NSN, NSN Connect and NSN Connect Plus are trademarks of The Toro Company.

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