Tech Spec

LX-IVM 2-Wire Controller

ESP-LXIVM Series Controllers

The ESP-LXIVM 2-Wire Controller has many powerful, flexible and simple to use features, starting with the revolutionary new Integrated Valve Module with "smart solenoid" that stays in constant communication with the controller to provide efficient irrigation and advanced diagnostics. The ESP-LXIVM supports up to 60 stations standard or 240 stations with LX-IVM Pro. Up to four 2-Wire paths can be connected, plus flow sensing and advanced flow management tools that set new industry standards for state-of-the art water management.

Applications

Rain Bird's ESP-LXIVM Series 2-Wire controllers are designed for the largest and most demanding sites, such as housing or condominium complexes, schools, sports fields, parks and public spaces, or large industrial and commercial sites.

Easy to Use

ESP-LXIVM features an extra-large backlit LCD display and soft key text labels for button functions that change depending on the programming step.

Easy to Install

The ESP-LXIVM Controller has a spacious case with multiple-sized knockouts on the bottom and rear of the case for wiring. The door and front panel are removable so the case can be easily mounted to the wall.

Controller Features

- 60-station capability with standard LX-IVM and 240 with LX-IVM Pro
- Flow sensor inputs; up to 5 with LX-IVM and 10 with LX-IVM Pro
- Six user-selectable languages, including English, Spanish, French, German, Italian and Portuguese
- Removable front panel is programmable under battery power
- Wall-mounted, locking outer casing made of high-impact molded plastic. UV and water resistant
- Optional metal case and/or metal pedestal, or stainless steel case and/or stainless steel pedestal
- Optional remote water management system available using the IQ4 platform and NCC cartridges

Water Management Features

- Learn Flow utility and flow usage totalizer help optimize water usage
- FloWatch™ protection for high and low flow conditions set by the user
- FloManager™ manages hydraulic demand, make full use of available water to turn on as many stations as possible without exceeding water supply and reducing the total time to complete irrigation cycles.
- SimulStations™ allows stations to operate at the same time; up to 8 with LX-IVM and 16 with LX-IVM Pro
- Cycle+Soak™ by station
- Rain Delay up to 30 days
- 365-Day Calendar Day Off (up to 5 days)
- Station Delay by program
- Normally Open or Normally Closed Master Valves programmable by station; up to 5 with LX-IVM and 10 with LX-IVM Pro
- Optional Weather Sensors are programmable by station to prevent or pause watering; up to 4 with LX-IVM and 8 with LX-IVM Pro
- Seasonal Adjust by Program or by Month

Diagnostic Features

- Alarm light with external case lens
- 2-Wire diagnostics to simplify and expedite troubleshooting
- Four isolated wire paths prevent full system failure under a single short
- 2-Wire Mapping: Maps the devices to corresponding wire paths in the controller to help quickly find and resolve issues
- Trending 12-month electrical history reports and proactive action
- Self-Healing: Automatically detect "fixes" to wire path and splice issues and re-start irrigation without reliance on manual intervention
- Two- Way Communication: With "Intelligent" Valves Modules communication happens both ways enabling key features
- Self-Shutoff: Once loss of power is detected, automatically shutoff valve to avoid leaks.

Operating Specifications

- Station Run Time: 0 min. to 96 hrs.
- Seasonal Adjust: 0% to 300% (96 hrs. maximum station run time)
- 10 independent programs on the ESP-LXIVM and 40 on the ESP-LXIVM Pro
- 8 start times per program
- Program Day Cycles include Custom days of the week, Odd, Odd no 31st, Even, and Cyclical dates
- Manual Station and Manual Program starts

Surge Protection

Proper grounding and surge protection is essential for 2-Wire installations. A 2-Wire path must be surge protected and grounded every 500 feet (150 meters) or every 15 devices, whichever is smaller. The IVM-SD Line Surge Protector is used for this purpose.

Certifications

UL, CUL, CE, CSA, C-Tick, FCC Part 15

Electrical Specifications

- Input required: 120 VAC ± 10%, 60Hz (International models: 230 VAC ± 10%, 50Hz or 60Hz)
- Power back-up: For the full design life of 10 year, the Lithium coin-cell battery maintains time and date while nonvolatile memory maintains programs
- Compatible with Rain Bird commercial valves (PGA, PEB, GB, EFB-CP and BPE series)

Dimensions

14.32" x 12.69" x 5.50" (36.4 x 32.2 x 14.0 cm)

Environmental

Operating Temperature

Operating temperature range: 14ºF to 149ºF (-10ºC to 65ºC)

Operating Humidity

Operating humidity range: 95% max at 40ºF to 120ºF (4ºC to 49ºC) in a non-condensing environment

Storage Temperature

Storage temperature range: -40ºF to 150ºF (-40ºC to 66ºC)

How to specify:

ESP-LXIVM Model No:	Description:
• **ESPLXIVM**	Domestic Version 120VC
• **ESPLXIVMP**	Domestic Version (Pro) 120V
• **IESPLXIVM**	International Version 230V
• **IESPLXIVMP**	International Version (Pro) 230V
• **ILXIVMEU**	European Version 230V
• **ILXIVMPEU**	European Version (Pro) 230V
• **ILXIVMAU**	Australian Version 230V
• **ILXIVMPAU**	Australian Version (Pro) 230V

Specifications

The ESP-LXIVM Controller combines electro-mechanical and microelectronic circuitry capable of fully automatic or manual operation. The controller shall be housed in a wall-mountable, weather-resistant plastic cabinet with a key-locking cabinet door suitable for either indoor or outdoor installation. The controller shall have the ability to be programmed and operated in any of six languages: English, Spanish, French, German, Italian, & Portuguese. The display shall show programming options and operating instructions in the chosen language without altering the programming or operation information.

The ESP-LXIVM controller shall have a base station capacity of 60 stations, and the ESP-LXIVM Pro a capacity of up to 240 stations. All stations shall have the capability of independently obeying or ignoring a weather sensor as well as using or not using master valves. Station timing shall be from 0 minutes to 96 hours. The controller shall have a Seasonal Adjustment by program which adjusts the station run time from 0 to 300% in 1% increments. The controller shall also have a Monthly Seasonal Adjustment of 0 to 300% by month. Station timing with Seasonal Adjustment shall be from 1 second to 96 hours.

The ESP-LXIVM controller shall have 10 separate and independent programs which can have different start times, start day cycles, and station run times. The ESP-LXIVM Pro expands program count to 40. Each program shall have up to 8 start times per day for a total of 320 possible start times per day. The programs shall be allowed to overlap operation based on user defined settings which control the number of simultaneous stations per program and total for the controller. The controller shall allow up to 8 (or 16) valves to operate simultaneously per program and total for the controller not including the master valves.

The controller shall have a 365-day calendar with Permanent Day Off feature that allows a day(s) of the week to be turned off on any user selected program day cycle. (Custom, Even, Odd, Odd31, & Cyclical). Days set to Permanent Day Off shall override the normal repeating schedule and not water on those specified day(s) of the week. The controller shall also have a Calendar Day Off feature allowing the user to select up to 5 dates up to 365-days in the future when the controller shall not start programs. The controller shall incorporate a Rain Delay feature allowing the user to set the number of days the controller should remain off before automatically returning to the auto mode.

The controller shall have Cycle+Soak water management software which is capable of operating each station for a maximum cycle time and a minimum soak time to reduce water runoff. The maximum cycle time shall not be extended by Seasonal Adjustment.

The controller shall incorporate a FloManager feature providing real-time flow, power, and station management. FloManager shall manage the number of stations operating at any point in time based on water source capacity, station flow rate, number of valves per station; user defined simultaneous stations per program and for the controller. FloManager shall incorporate the ability to provide station priorities to determine the order in which stations shall operate. The controller shall ignore the station number and instead operate the highest priority stations first and the lower priority stations last when FloManager is enabled. FloManager shall be an option that is disabled by default and the controller shall operate zones in order of station number, started with the lowest numbered zone set to irrigate and ending with the highest number zone.

The controller shall offer Water Windows for each program. This function sets the allowed start and stop time where watering is allowed. If the watering cannot be completed by the time the Water Window closes, the stations with remaining run time are paused and watering automatically resumes when the Water Window opens the next time.

The controller shall include an integrated Flow Smart capabilities with flow sensing functionality. The controller shall accept sensor input from 1 - 10 flow sensors with no flow scaling device required. A FloWatch Learn Flow Utility which learns the normal flow rate of each station shall be included. Each time a station runs FloWatch compares the current real-time flow rate to the learned rate and takes user-defined actions if high flow, low flow, or no flow is detected. FloWatch shall automatically determine the location of the flow problem and isolate the problem by turning off the affected station(s) or master valve(s). FloWatch shall be compatible with both normally closed and normally open master valves. A Manual Master Valve Water Window shall be provided to coordinate daytime manual watering with the flow sensing. This Water Window shall offer programmable days of the week and manual watering additional flow rate.

Key Specifications

Feature	LX-IVM | LX-IVM Pro
Max Programs	10 | 40
Stations	60 | 240
Max Simulstations	8 | 16 (plus active MV)
Master Valves	5 | 10
Flow sensors	5 | 10
Weather sensors	4 | 8 (including 1 Local)
Watering windows	1 per program
Max run time	96 hrs
Start Times/ program	8
Interstation delay	Up to 1 hour per program
LCD	2.5"x5" at 127x256 pixels. Monochrome with backlight
Front Panel Buttons	- All Buttons are back-lit - 5 Programming Button - Dedicated Language, Info and Back Buttons
Transformer size	1.9 amp (50 VA)
IVM current draw	720 uA (Standby)
Sensor current draw	8.4mA (Standby)
Max wire run	1.65 miles (2.66Km) 14 AWG in Star configuration 6.61 miles (10.63Km) Looped
No. 2-Wire paths and terminal pairs	4
Cabinet	Plastic
FloWatch (flow sensing)	YES - Available Options: Diagnose & Eliminate, Shut Down & Alarm, Alarm Only
FloManager (flow optimization)	Yes
Flow Rate	0 to 9999.9 gallons/min. (0.1 gallons/min. resolution)
Supported Flow Sensors	FS050P, FS075P, FS100P, FS150P, FS200P, FS300P, FS400P, FS100B, FS150B,FS200B, FS350B, FS350SS Custom,
Surge	20 kV int. - 1 IVM-SD every 500 ft. (or 15 field devices)
Valve type	DC Latching
Diagnostics Short Finding	Automatically Detect and Turn Off Wire Path Ability to turn on constant current source for field trouble shooting
Diagnostics Electrical History	- Daily Values (Last 30 Days) - Monthly Averages (Last 12 Mos..) - Values recorded 11:59 PM daily
Diagnostics – Field Device Response	List Responding and List Not Responding
Diagnostics Controller Output	Tracks Current Draw from 2-Wire Path 0.67 mA per IVM-SOL/IVM-OUT 6 mA per IVM-SEN
Diagnostics Watering Test	Test All Stations 1 to 10 Mins. (per station)
Central Control Capable	Yes

ESP-LXIVM Series Controllers

Revolutionary 2-Wire Design with Integrated Valve Module (IVM)

LX-IVM and LX-IVM Pro

- 60 or 240 Fixed Stations
- 10 or 40 Programs with 8 Start Times Each
- Up to 10 Master Valves and Flow Sensors
- Up to 8 Weather Sensors

Models: ESP-LX-IVM (60 Station)
ESP-LX-IVM PRO (240 Station)

Metal Case & Pedestal

- Painted steel or stainless steel cases and pedestals are available for free-standing controller applications

Models: LXMM
LXMM-PED
LXMMSS
LXMMSS-PED

ESP-LXIVM 2-Wire Field Devices

Field Devices are installed along the 2-Wire path to interface with valves and other hardware.

IVM-SOL

- Interfaces with LX-IVM to control station valves and master valves
- Rain Bird WC20 connectors (included with IVM-SOL) to be used for all splices

Model: LXIVMSOL

IVM-OUT

- Interfaces with LX-IVM to manage 3rd party valves and external gear such as pump stations

Model: LXIVMOUT

IVM-SEN

- Interfaces with LX-IVM to control weather sensors or flow sensors

Model: LXIVMSEN

IVM-SD

- IVM-SD provides surge protection on the 2-Wire path

Model: LXIVMSD

Network Communications Cartridges

- ESP-LX Series controllers can be upgraded to IQ Satellite for control using the IQ Platform

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