Wireless Precision Irrigation IoT platform
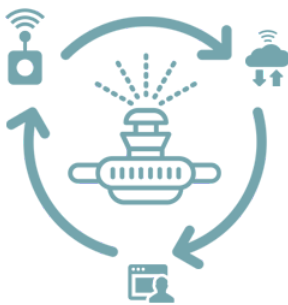
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Summary

IRRIOT implements the next generation of commercial irrigation solutions. IRRIOT platform enables efficient watering where originally it was not possible or very impractical. As an irrigation solution IRRIOT aims at reaching optimal soil conditions, by intelligently dimensioning the water supply to the intended zone.

An irrigation system controls electrically operated valves from the central computer, Irrigation Controller. The key difference of IRRIOT Wireless Irrigation Controller from the classical controller, is the use of wireless two-way communication to the valves/sensors. In practice it means IRRIOT introduces wireless valve that could be situated at any remote location (*1-5km from Irrigation Controller).

The primary users of the IRRIOT solution are:

- Gardens and farms;
- Greenhouses;
- Rooftop gardens;
- Cemeteries;
- Sports Fields;
- Golf courses;
- Parks and public areas;
- Residential areas.

The solution consists of several parts - Wireless Irrigation Controller (Base Unit), Wireless Valve Control Station (Remote Node), Cloud Based Control and Monitoring.

*based on LoRa radio technology transmission capabilities -- 2-3km in urban environment, 5-10km in rural areas.
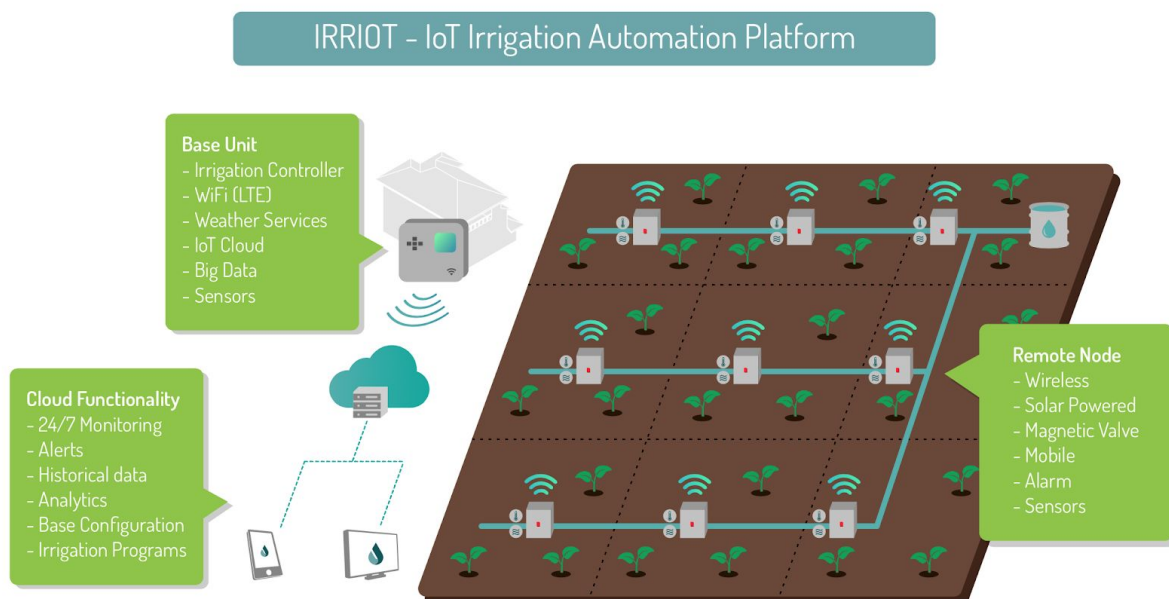
Wireless Irrigation Controller

Wireless irrigation controller, communicating with up to 32 Remote Nodes. The Base Unit is equipped with a display and a set of push buttons, which allows to configure watering in various ways. The Base Unit is responsible for 24/7 execution of preconfigured watering schedule, soil state monitoring, events of failure, etc.

The Base Unit is an IoT Device connected to Microsoft Azure IoT Hub*.

Main Features

- Up to 34 sensors (e.g. Rain or Soil Moisture sensors)
- Support of Cloud Based 3rd party sensors (temperature, flow, pressure)
- Up to 8 independent parallel watering programs
- Up to 10 start times per program
- One shot or custom programs
- Fine tuning of watering times (1min to 10hours)

optional WiFi Module (dongle) required.

IRRIOT – IoT Irrigation Automation Platform

Base Unit
- Irrigation Controller
- WiFi (LTE)
- Weather Services
- IoT Cloud
- Big Data
- Sensors

Cloud Functionality
- 24/7 Monitoring
- Alerts
- Historical data
- Analytics
- Base Configuration
- Irrigation Programs

Remote Node
- Wireless
- Solar Powered
- Magnetic Valve
- Mobile
- Alarm
- Sensors

![IRRIOT logo]

Wireless Valve Control Station

The Remote Unit is maintenance free, solar powered, field unit, operates up to 2 independent valves, designed for outdoor use with multiple mounting options. The Remote Unit can also sample and relay the reading of one sensor, analog soil moisture sensor or any switch type sensor.
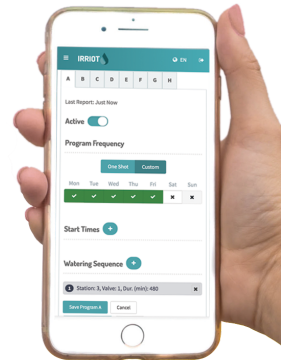
Specifications

Radio Technology	LoRa, ISM radio band (License Free)
External Connectors	2 x 2pin, 1 x 4 pin, 1 x MicroUSB (IP67)
Dimensions (without connectors)	W 91 x H 112 x D 78mm
Rechargeable Battery	Size 18650 Li-Ion (no replacement needed)
Antenna	Internal/External
Operating Temperature	-30C to +60C
Supported solenoids	9VDC Latching Solenoids (Hunter®, Toro®, etc.)
Supported sensors	Irrometer® Watermark Soil Moisture sensor or any sensor switch
Mounting Options	Pole, Fence, Wall
Waterproof IP rating	IP67 Vented
Solar panel	Integrated solar cell

Cloud Based Control and Monitoring

Optionally, IRRIOT system can provide internet connectivity and remote system control. The Base Unit is an IoT device and it is connected to the Microsoft Azure cloud. The IRRIOT web and mobile app functionality includes:

- Monitoring of Alarms on the Base and Remote Unit levels;
- Monitoring of states of magnetic valves and sensors;
- Activation of magnetic valves manually, either immediately or delayed;
- Configuration of programs, a sequence of valve activations;
- Weather forecast;
- Map function;
- Connection of 3rd party sensors;

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