AOFS Glossary

This glossary defines key terms, concepts, and abbreviations used across the **Afritic Open Farming Standard (AOFS)** documentation. All AOFS-compliant deployments should use these terms consistently.

A

- **AOFS** – Afritic Open Farming Standard. A framework and set of reference implementations for autonomous, monitored, and modular smart farming systems.
- **Actuator** – A device that performs a physical action in response to controller commands, e.g., valves, pumps, or gates.

B

- **Battery / Energy Storage** – Stores electrical energy from solar panels or other sources for use by AOFS-controlled devices.
- **Battery Drain** – The amount of energy consumed from storage over time.

C

- **Controller** – The system component that makes decisions and executes actions. AOFS defines three layers:
  - Field Controller Layer
  - Farm / Local Controller Layer
  - HQ / Federated Controller Layer
- Crop Irrigation Module – Core AOFS module managing soil moisture, water delivery, and irrigation scheduling.

D

- **Data Logging** – Recording sensor measurements, actuator events, and operator input in a timestamped format for later analysis.
- **Decentralized Operation** – System functionality (control, monitoring, logging) operates independently of continuous network connectivity.

E

- **Energy-Aware Operation** – Optional AOFS feature where controllers monitor power availability and consumption to prioritize irrigation or actuation events.
- **Event Prioritization** – Assignment of urgency or importance to scheduled events to guide energy usage decisions.

F

- Field Controller Layer – Local controller at the field site that executes irrigation schedules, reads sensors, enforces fail-safes, and logs data.
- **Flow Meter** – Device measuring the amount of water passing through a pipe or irrigation line.

H

- Hydraulic System – Pumps, pipes, tanks, valves, and related components used for water distribution in irrigation.

L

- **Local Autonomy** – Principle that critical system functions must operate correctly without relying on external connectivity.
- Livestock / Animal Husbandry Module – Optional AOFS module for tracking veterinary care, feeding, breeding, and production metrics.

M

- **Modular Architecture** – AOFS design principle allowing additional modules (crop irrigation, poultry, greenhouse/hydroponics, etc.) to integrate via standardized interfaces.
- **Monitoring** – Measurement and observation of system performance, environmental conditions, and actuator activity.

O

- Optical / Camera Monitoring Systems – Devices capturing images (photos) of the field for crop growth tracking, pest observation, or documentation purposes. Video streaming is optional and outside core AOFS scope.
- **Operator Input / Human Input** – Manual logging by farm personnel, including crop growth observations, harvest outcomes, fertilizer application, or other external events.

P

- **PUE** – Productive Use of Electricity. AOFS ensures efficient energy utilization for irrigation and farm operations.
- **Power-Aware Scheduling** – Optional AOFS feature where the system predicts if there is enough energy to execute scheduled events and warns operators if not.

S

- **Safety / Fail-Safe** – Mechanisms to prevent over-irrigation, flooding, pump damage, or unsafe electrical conditions.
- Sensors – Devices measuring environmental or system parameters, including soil moisture, soil temperature, water flow, tank levels, weather conditions, or power usage.
- **Solar Integration Levels** – Optional AOFS configurations for monitoring solar energy generation:
  - Level 1: Minimal monitoring (battery voltage/current)
  - Level 2: Integrated monitoring with advanced analytics

T

- **Tank Float Switches** – Sensors indicating FULL or LOW water levels in storage tanks.
- **Telemetry** – Transmission of system data from Field Controllers to Farm/HQ Controllers for monitoring and analytics.

W

- Weather Sensors – Devices measuring environmental conditions such as temperature, humidity, rainfall, and wind for irrigation scheduling and crop monitoring.
- Water Monitoring Sensors – Flow meters, pressure sensors, and tank level sensors used to ensure safe and efficient water delivery.

Notes

- All definitions here are **AOFS-specific** and should be used consistently across modules and documentation.
- This glossary is **extendable**, allowing additional terms as new modules or features are added.