Hardware Compatibility & Reference Database (HCRD)

The **Hardware Compatibility & Reference Database (HCRD)** is a central component of the AOFS ecosystem. It provides a curated, reviewed, and versioned catalogue of hardware that is compatible with AOFS systems.

HCRD exists to help farmers, integrators, developers, and manufacturers make informed decisions about which hardware components can be reliably used within an AOFS-based installation.

AOFS itself may develop **reference hardware designs, firmware, and example implementations** to bootstrap the ecosystem. However, **AOFS is explicitly not intended to become a hardware vendor**. The long-term goal is to foster a healthy ecosystem of independent hardware manufacturers building AOFS-compatible devices.

Goals

The main goals of the HCRD are:

- Provide a **trusted source of truth** for AOFS-compatible hardware
- Reduce integration risk and engineering effort for farms and system integrators
- Encourage hardware manufacturers to support AOFS natively
- Establish clear and transparent **compatibility ratings**
- Preserve AOFS neutrality while enabling commercial participation

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Scope

The HCRD may contain entries for, but is not limited to:

- Sensors (soil moisture, temperature, humidity, pressure, flow, EC, pH, etc.)
- Actuators (valves, relays, pumps, motors, feeders, dosing systems)
- Controllers and edge devices
- Power systems (solar controllers, batteries, inverters, power monitors)
- Communication modules (RS-485, CAN, LoRa, Ethernet, cellular, etc.)
- Complete subsystems and reference assemblies

Both **commercial products** and **open hardware designs** may be listed.

Compatibility Levels

Each hardware entry is reviewed by AOFS engineers and assigned a compatibility level.

Gold

- Fully compliant with AOFS specifications
- Native AOFS protocol or officially supported drivers
- Thoroughly tested under real-world conditions
- Complete documentation available
- Supports fail-safe and safety requirements

Silver

- Compatible with AOFS via adapters, bridges, or minor configuration
- Tested in controlled or limited field scenarios
- Minor limitations or missing optional features
- Documentation mostly complete

Bronze

- Basic compatibility demonstrated
- Limited testing or incomplete documentation
- May require custom integration work
- Suitable for experimental or non-critical deployments

The assigned level reflects **technical compatibility only** and does not constitute a warranty.

Database Contents

Each HCRD entry should include, where applicable:

- Manufacturer name
- Product name and model
- Hardware category
- Compatibility level (Gold / Silver / Bronze)
- Supported interfaces and protocols
- Electrical characteristics (voltage, current, signal types)
- Environmental ratings (IP rating, temperature range)
- Firmware and driver references
- AOFS integration notes
- Known limitations
- Tested AOFS versions

- Review and certification metadata

Submission & Review Process

Hardware manufacturers or community members may submit hardware for inclusion in the HCRD.

The general process is:

1. Submission of technical documentation and samples (where required)
2. Internal review by AOFS engineers
3. Compatibility testing against AOFS specifications
4. Assignment of compatibility level
5. Publication in the HCRD

A **review fee may apply** to cover engineering and testing effort. Fee structures and exemptions (e.g. for open hardware or humanitarian projects) are defined separately.

Reference Hardware

AOFS may publish **reference hardware designs**, schematics, firmware, and BOMs to:

- Demonstrate correct implementation of AOFS specifications
- Serve as a baseline for manufacturers
- Enable local manufacturing and education

Reference hardware is **not a requirement** for HCRD inclusion. Manufacturers are free to implement AOFS compatibility independently.

Target Audience

The HCRD is intended for:

- Farmers and farm operators
- System integrators and installers
- Hardware manufacturers
- AOFS developers and contributors
- NGOs and humanitarian projects

Non-Goals

The HCRD is **not**:

- A marketplace or sales platform
- An endorsement of specific vendors
- A replacement for local certification or regulatory approval
- A guarantee of fitness for a specific use case

Future Extensions

Planned or possible extensions include:

- Machine-readable APIs for automated compatibility checks
- Integration with AOFS configuration tools
- Regional availability and supply-chain metadata
- Community feedback and field reports
- Automated test result publication

See Also

- Afritic Open Farming Standard (AOFS)
- Sensor Specifications
- Actuator Specifications
- Controller Architecture
- AOFS Certification & Review Process

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