WS90 Firmware V1.6.3 Upgrade 2026-11-13

1. Modbus RTU
    - Added three registers: rainfall since last read, real-time wind speed, and wind direction.
    - Improved communication stability and command handling.
    - Optimized historical data recording.
    - Updated CRC error handling to comply with Modbus RTU standards.
2. SDI-12
    - Added real-time wind speed and wind direction readings.
    - Updated WMO gust calculation to use the maximum rolling 3-second average over 10 minutes.
3. Wind Measurement
    - Optimized wind measurement algorithms.
4. Humidity
    - Improved humidity calculation.

WS90 Firmware V1.6.2 Upgrade 2026-6-28

1. Optimized battery and supercapacitor voltage measurement.
2. Improved the reliability of piezoelectric rain measurement.
3. Optimized the automatic wind speed zeroing algorithm.

WS90 Firmware V1.6.0 Upgrade 2025-12-26

1. Fixed an issue where the SDI-12 communication could occasionally become unresponsive.

WS90 Firmware V1.5.9 Upgrade 2025-11-26

1. Optimize SDI-12 Model communication performance.
2. Fix a potential issue where the battery level might be measured incorrectly.

WS90 Firmware V1.5.8 Upgrade 2025-8-28

1.Optimized wind speed measurement.
2.Fixed an issue where a sensor error could potentially cause the device to freeze.

WS90 Firmware V1.5.7 Upgrade 2025-8-8

1. Automatic wind speed zero calibration in windless conditions.

WS90 Firmware V1.5.6 Upgrade 2025-6-3

1. Optimize rainfall measurement to prevent the occurrence of some incorrect rainfall.

WS90 Firmware V1.5.4 Upgrade 2025-4-1

1.The Modbus version now supports storing the last 30 minutes of historical data, with one data point stored per minute.

WS90 Firmware V1.5.3 Upgrade 2025-3-24

Optimized the handling of ultrasonic measurement abnormalities.

WS90 Firmware V1.5.2 Upgrade 2025-3-3

1. Optimized the handling of abnormal wind speed measurement.
2. Fix ModelBus version air pressure is not updated.

WS90 Firmware V1.5.1 Upgrade 2025-2-4
1. Optimized of temperature compensation at -10°C.

WS90 Firmware V1.5.0 Upgrade 2025-1-24
1. Optimized rainfall measurement.

WS90 Firmware V1.4.9 Upgrade 2024-12-30
1. Optimized the temperature and humidity compensation algorithm.
2. Optimized the light sensor algorithm.
3. Optimized the light rain detection algorithm to reduce false readings caused by fog.

WS90 Firmware V1.4.8 Upgrade 2024-11-28
1. Supports the new T&H module hardware with dual T&H compensation.

WS90 Firmware V1.4.7 Upgrade 2024-09-26
1. Optimized the ultrasonic sensor for wind speed measurement.
2. Optimized the wind speed algorithm to enhance accuracy.
3. Optimized rainfall measurement.

WS90 Firmware V1.4.3 Upgrade 2024-04-15
1.Optimized wind speed measurement. To ensure accuracy with the upgrade, a recalibration to zero is required for it to take effect.

WS90 Firmware V1.3.8 Upgrade 2023-10-25
1.Optimized wind speed measurement;
2.Optimized rainfall measurement;
3.Press the CAL button three times in quick succession to toggle the LED on/off.

WS90 Firmware V1.3.3 Upgrade 2023-04-17
1. Optimized rain detection algorithm.

WS90 Firmware V1.3.2 Upgrade 2023-03-29
1. Optimized for rain condition wind measurement algorithm, overcome issue that sensor stop reading wind when water comes to the transducer surface.
2. Optimized for MODBUS version so that active measurement command is included for faster reading speed. The fastest measurement can be up to 8 sampling per second.
3. Battery voltage measurement is possible when heater 12v power is applied for hardware version after v2.0. The early version prior to hardware v2.0 will not be possible to measure battery voltage when 12v external heater power

WS90 Firmware V1.3.0 Upgrade 2023-01-20

1. Optimized low/no wind speed detection algorithm.

WS90 Firmware V1.2.6 Upgrade 2022-09-21

lower drizzle rain detection sensitivity comparing to v1.2.5. For those that 1.2.5 works, then it is no need to upgrade. Only those user that has extra counted during mist rain condition, then this upgrade is recommended.

WS90 Firmware V1.2.5 Upgrade

1. 32K XTAL working state check after power on. If no possible for external timing crystal working, switch to internal timing clock, enhancing item robust during different conditions.
2. Increase mist or drizzle rain sensitivity. we recommend most user to set Rain1 gain setting to 0.75 with GW2000 hub or HP25** console series.
3. Tuning for stormy rain sensitivity alignment.

WS90 Firmware V1.2.3 Upgrade.

1. Increased sensitivity for mist and drizzle rain detection.
2. Sensitivity for high rain rate adjusted so that it will have better linearity.
3. Please reset all rain gain setting to 1.0 after upgrade to this version as the sensitivity for rain detection has been decreased, and please calibrate again if needed.