

# UPW Sensor v1 Modbus Documentation

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June 1, 2024

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## 1 Introduction

This document specifies the Modbus/TCP interface [2] of the ISLabTech [1] UPW Sensor v1. [3]

**Note:** The Modbus interface is provided for compatibility with old PLC controllers only. It is highly recommended to use the more modern REST API instead. [5] There are also ready-to-use client libraries in Python [4] and Rust. [6]

## 2 Transport Layer

The device listens on TCP/IP port 502 and accepts TCP connections without authentication. Be aware that the maximum number of concurrent TCP connections is limited to 11 and that other clients, e.g. using the REST API or the web app, will also occupy TCP connections.

If you want to limit client access to the Modbus/TCP interface, the only currently available option is to set up your organization's firewall to block such connections on port 502.

## 3 Registers

The Modbus interface provides the following Discrete Inputs (DI), Coils (C), Input Registers (IR) and Holding Registers (HR). All addresses are written in decimal. Boolean values are interpreted as 0=false, 1=true.

### 3.1 Measurements

Address	Type	Description
<b>Conductivity</b>		
10	DI	conductivity < 1.1 $\mu$ S/cm
10	IR	conductivity (nS/cm)
10	HR	calibrate conductivity (nS/cm)
<b>Temperature</b>		
20	DI	temperature < 25 °C
20	IR	temperature (1/100th °C)
20	HR	calibrate temperature (1/100th °C)
30	IR	temperature (1/10th K)

### 3.2 Network

Address	Type	Description
<b>WiFi</b>		
100	C	connect to WiFi
<b>Ethernet</b>		
201	C	use DHCP on ethernet
<b>Static IPv4 On Ethernet</b>		
only effective if "use DHCP on ethernet" is false		
210	HR	address first byte
211	HR	address second byte
212	HR	address third byte
213	HR	address fourth byte
230	HR	gateway first byte
231	HR	gateway second byte
232	HR	gateway third byte
233	HR	gateway fourth byte
240	HR	DNS server first byte
241	HR	DNS server second byte
242	HR	DNS server third byte
243	HR	DNS server fourth byte
250	HR	alt. DNS server first byte
251	HR	alt. DNS server second byte
252	HR	alt. DNS server third byte
253	HR	alt. DNS server fourth byte

### 3.3 System Status

Address	Type	Description
300	C	enable automatic firmware updates
<b>Device Version</b>		
310	IR	firmware major version
311	IR	firmware minor version
312	IR	firmware patch version
320	IR	hardware major version
321	IR	hardware minor version
322	IR	hardware patch version
<b>Device Serial Number</b>		
330	IR	first two bytes
331	IR	second two bytes
332	IR	third two bytes
333	IR	fourth two bytes

## 4 References

- [1] *Manufacturer Website*. <https://islabtech.com/>.
- [2] *MODBUS APPLICATION PROTOCOL SPECIFICATION – V1.1b*. [https://modbus.org/docs/Modbus\\_Application\\_Protocol\\_V1\\_1b.pdf](https://modbus.org/docs/Modbus_Application_Protocol_V1_1b.pdf). Accessed: May 26th 2024.
- [3] *Product Website*. <https://gitlab.com/islabtech/upw-sensor>.
- [4] *Python Client Library*. <https://gitlab.com/islabtech/upw-sensor/remote-python>.
- [5] *Rest API Documentation*. <https://gitlab.com/islabtech/upw-sensor/api>.
- [6] *Rust Client Library*. <https://gitlab.com/islabtech/upw-sensor/remote-rs>.