



AquaMetrix 2300 Multi-Input Controller



Quick Start Guide

Welcome to the Easy Way of Controlling Your Probes

This guide augments the operation manual, showing you how to mount and configure the standard 2300 Controller. Information on using the controller with additional or non-standard I/O cards can be found in the operation manual, which is available for download on www.Aquametrix.com.

This Quick Start Guide is written for software-preconfigured 2300's to allow wiring and start of basic operation of the controller without hooking up to a network first.

1. Installation

WARNING: If this equipment is used in a manner not specified by the manufacturer as per the Users Manual and this Quick Start Guide, the protection provided by the equipment may be impaired.

1.1. Panel Mounting

Mount the 2300 Controller through the front panel, with the gasket on the outside of the mounting panel. Hook the sliding mounting blocks on each side of the back of the 2300 Controller enclosure and tighten the setscrews against the mounting panel with a torque of 4 in-lb as shown in **Error!**



Reference source not found..

Figure 1 - Mounting hardware attached to panel with 4 in-lb of torque

1.2. Power, Probe, and Network Cabling

A picture of the rear of the 2300 is shown below in Figure 2. We recommend removing the Molex connectors and connecting wires to them and then attaching the connectors to the unit.

Connect the:

- Power cord
- CAT-5 Ethernet cable—to be used later as described in Section 2.
- Probe wires. 2-wire 4-20 mA cables connect to the analog connector. Pulse inputs connect to the digital inputs.

Probe wiring depends on the type and manufacturer of the probe, and instructions can be found with each probe. We show examples of the different wiring diagrams in Figure 3 that may be called for by your analog (4-20 mA) probes, but please look up your individual probe directions. Connections for flow meters, which output a pulse frequency, such as paddle wheels or magmeters, use the pulse input connector ("dig in 1" et al).



Figure 2 - 2300 Controller back panel

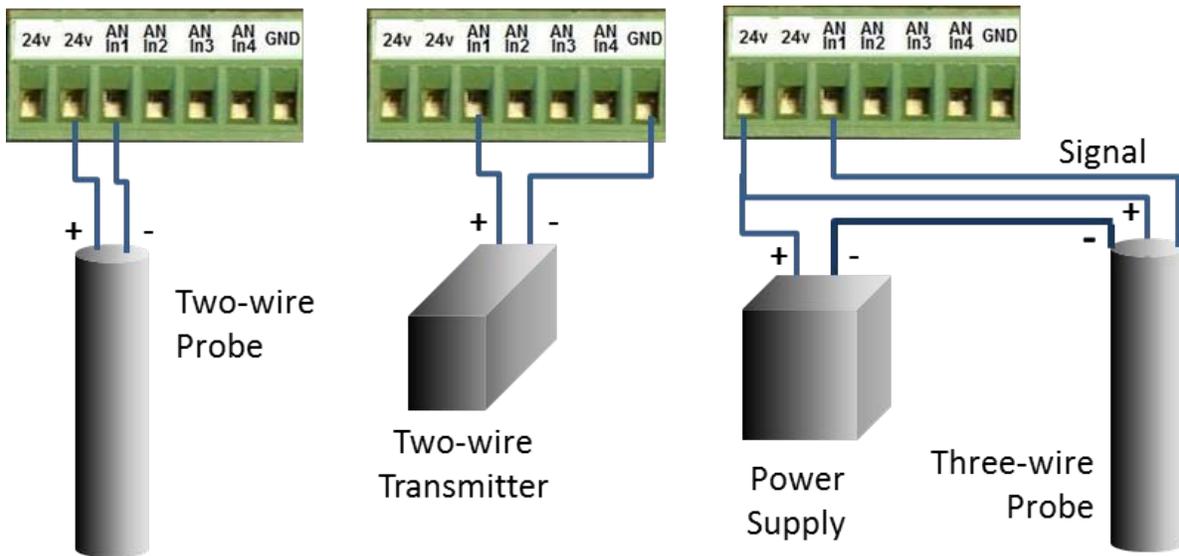


Figure 3 - Possible analog probe wiring diagrams. There are other possible three-wire probe setups, so please refer to your specific probe's instructions for proper hook up.

1.3. Powering Up the 2300

With the probes connected, power up the 2300. If the controller is operating properly, the green LED's on the back panel indicate proper operation. From top to bottom:

1. The top most LED is the **Fault** light it should be slowly blinking.
2. The middle LED is the **System Operating** light and it should be quickly blinking.
3. The bottom LED is the **Power On** light and it should be on and steady.

The **Run** screen should appear and display 4 panes. It will show the actual mA reading of the four analog probes (see Figure 4). Dashes (----) indicate that a probe is either not connected or it is out of range. Note that the preconfigured software only shows the actual current being read by the 2300. In order to have probe outputs expressed in the appropriate units (e.g. pH, mV, μ S/cm, etc.) you need to carry out set-up over a network using a web browser. See Section 1.5 or 1.6 of this guide for network setup, and Section 2 for configuring the 2300 over the network. The main purpose of this initial screen showing the raw current outputs of the connected probes is simply to reassure you that that controller is running properly.

To navigate the front panel screens, use the front-panel buttons as follows:

- **RUN** brings up the quad screen from anywhere
- **MENU** brings up the front panel menu
- **BACK** returns the user to the previous screen.



Figure 4 - The RUN screen showing four analog probe inputs. On the left is a display showing that no probes have been connected. On the right, four analog probes have been connected.

The 2300 is software-preconfigured for six probes, allowing the user to wire up probes and start operation prior to network hookup. **Analog 1** is set up to the analog 1 input on the back of the unit. The first 4 software channels are shown on the **RUN** quad screen. If you have more than 4 sensors connected, press the down arrow to see channels 3 through 6. Channels 5 and 6 are set up as flows using the pulse inputs 1 and 2 (see Figure 2). The 2300 can be easily reconfigured via a network, including changing the names, units, order of probes, and just about everything else you can think of.

Use the right arrow on a quad screen to see detailed screens for each channel, addressable by the up or down arrows. Pressing **ENTER** on a detailed screen brings up a configuration screen for that channel. Examples of each are shown below in Figure 5. Press **BACK** or **RUN** to move up a level or two in the front display.



Figure 5 - The channel Detail screen and Configure screen for Channel 1

The detailed screen lists alarm and relay set points, last calibration date, and will flash when the channel is in alarm mode. The configure screen allows resetting of the alarm and relay set points, alarm acknowledgement, and zeroing of the totalizer and dispenser functions and other channel-specific functions.

1.4. Front Panel Menu Options

The front panel menu choices are limited as the 2300 is designed to be configured and operated over a network in a browser. However, there are several key functions available to the user on the front panel. These include calibration and setting up the network. The main menu is shown in Figure 6.

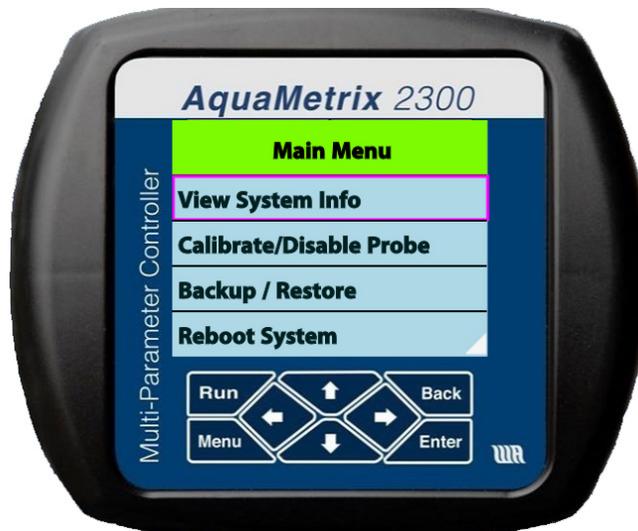


Figure 6 - Main Menu screen

Use the up or down arrow keys to target an item, and the **Enter** key to select it. If there are more than 4 choices available, the bottom (or top) corner on the right will be notched.

The menu options are listed in outline form below in Table 1. You may calibrate your probes from the front panel, but remember that full functionality of the unit is only available via the Ethernet cable from a network, or browser on a computer, tablet, or phone. Customize your unit via a network to display proper units, names of probes, and to configure alarms, relays, and notifications.

Table 2 – Front Panel Menu Structure

Menu Item		Description
View System Info		Single screen showing unit Name, IP Address, etc.
Calibrate/Disable Probe		Enable, disable, or calibrate probes
	Select Probe	Any defined probe, including virtual probes
	Select Action	Calibration is 2-point calibration for the analog inputs, K Factor scaling for the digital inputs.
Backup/Restore		Saves or Restores a configuration file onto/from the external micro-SD card, including probe setups and calibrations, alarm and relay set points, and system configuration.
Reboot System		Closes all open files and restarts system.
Prepare for System Shutdown		Closes all open files.
Advanced Menu		
	Calibrate Analog In	Password protected for factory calibration only
	View Precision Input	Not Used
	Network Setup	Changes from DHCP to Static IP or vice versa, allowing settings for network type and web server port.

1.5. Setting up an Ethernet Connection to a network switch or router

Connecting the 2300 to an existing network with the Ethernet cable allows the 2300 to be automatically assigned an IP address. You only need to set the Ethernet connection on your computer or smart device to configure via DHCP. The IP address is shown on the front panel during power up or can be seen via the Main Menu under **View System Info** (hit **Menu** then **Enter** from the front panel). The IP address may look like 192.168.1.7: save this address to access the 2300 from the network in Section 2. Skip Section 1.6 if you use the DHCP.

1.6. Setting up a Direct Ethernet Connection

A wireless connection between a computer and the 2300 is usually the most convenient method for controlling the 2300. However one can make a direct connection between the two with an Ethernet cable. Most current Operating Systems (Mac, Windows and Linux) work with a regular Ethernet cable but some older OS's might require a crossover Ethernet cable. Note that, after setting up the 2300 Controller, the tethered laptop may be disconnected for operation.

To configure the connection, switch from DHCP (automatic) IP addressing to manual IP addressing. Directions are below, but specific instructions for your own computer's operating system may be found on the web. Just search using the phrase "setting a manual IP address" in conjunction with your operating system's name.

On the computer:

1. Go to its Ethernet settings. On a PC it is in **Control Panel > Network**. On a Macintosh it is in **System Preferences > Ethernet**.
2. Select **Manual** configuration of **IPv4**.

You may choose your own IP address. For illustration purposes we will start with the static IP address that comes as the default for the 2300.

3. Set the **IP address** to 192.168.7.1.
4. Set the **Subnet mask** to 255.255.255.0.

Connect the Ethernet (CAT-5) cable into the Ethernet connector, shown in Figure 2, and connect the other end to a laptop or desktop computer. Connect AC power to the power connector with the connections on the power connector labeled in Figure 2. Apply power to the 2300 Controller. The front panel will first display a splash screen with the AquaMetrix logo.

To set a manual IP address:

1. On the front panel go to **Menu>Advanced>Network Setup**.
2. Select **Network Type** and, next, **Fixed**. The Fixed Network Setup screen will appear.
3. There are three fields in which to enter numbers. For illustration purposes we use the following set of numbers:
IP Address: 192.168.7.7
Subnet Mask: 255.255.255.0.
Default Gateway: 192.168.7.1. (Use the IP address of the connected computer.)
4. When complete, move the cursor down to and press **Commit and Restart**. A confirmation screen will appear, move the cursor to **Confirm** and hit **Enter**.

2. Configuring the 2300 via a Network or Computer

Enter the unit's web page address into a web browser connected to the same network as the 2300 Controller or, if not using a network, into the computer's browser connected to the 2300 Controller via the Ethernet cable. A web page address will look something like <http://192.168.1.7>. A login dialog box will appear, asking for user name and password.

The password here is used on the web to restrict access to administration functions to the system. The default username is **admin**, and the default password is **aquametrix**.

2.1. The Web Menu

Logging into the 2300 via the web as an administrator brings up the Probe Status page, which is shown in Figure . This displays all enabled probes, their names, values, alarm and relay set points, and graphs showing the history of values for the previous 15 min. Clicking on a graph enlarges the history, clicking on a **Config** button brings up a screen with options including alarm acknowledgement.

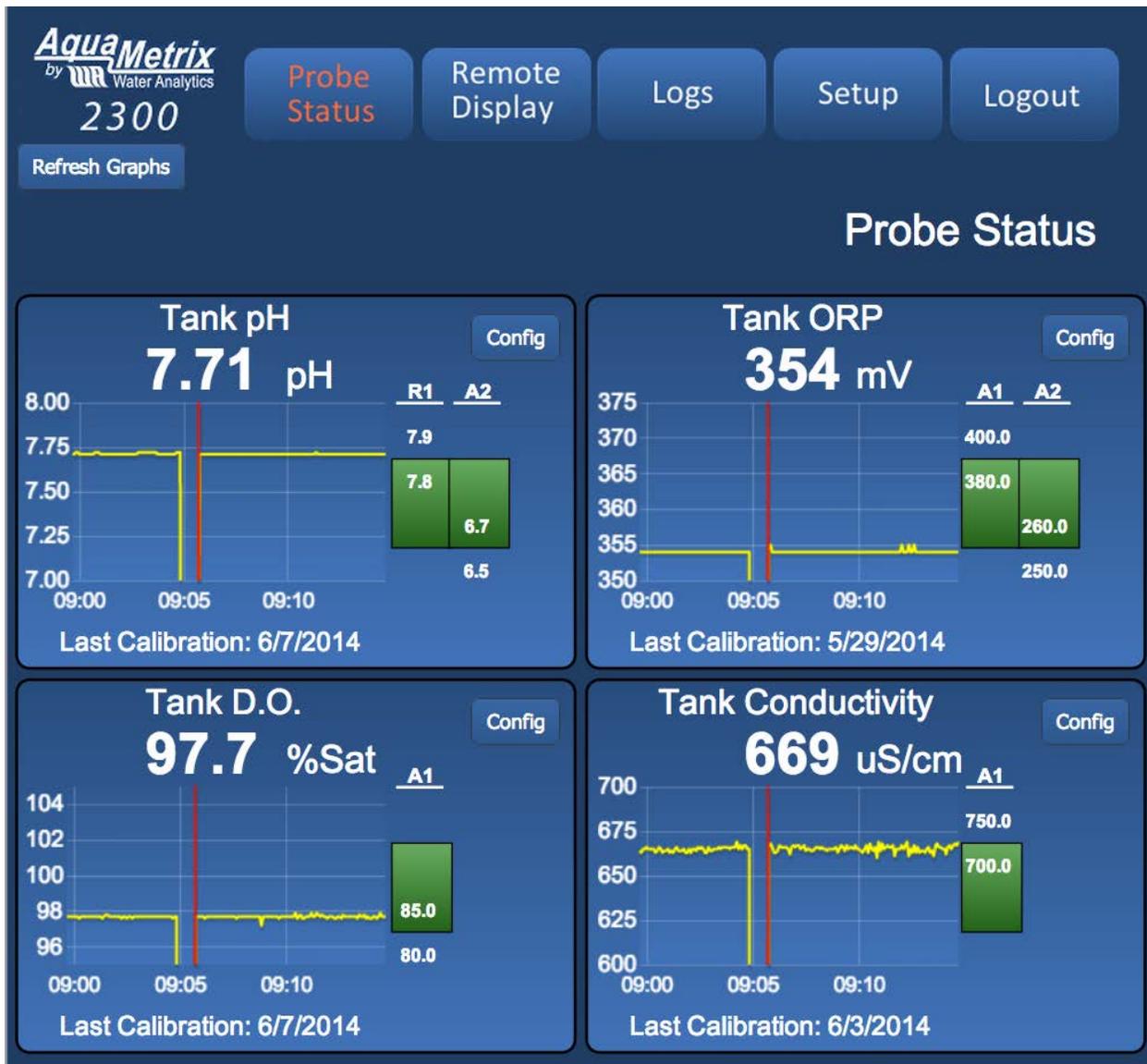


Figure 7 - Probe Status menu showing four analog sensors (pH, ORP, conductivity and Dissolved Oxygen)

The 2300 and the probes are configured using the five buttons along the top of this screen. Their functions and their submenus are described below in Table 2. Note that there are two other levels of password protection, that don't access everything that the admin level does: these screens are what an admin-level user sees.

Figure 7 – Probe Status page on web

Table 1 - Menu Items Available to an Administrator

Probe Status	Displays the current values of the sensors along with recent history and monitor status.
Remote Display	Displays a simulated image of the current front panel of the 2300 with active buttons. Clicking on one of the 8 navigation buttons changes the screens and moves the cursor just as if these buttons

	were being pushed on the actual unit. These actions update the unit accordingly, which in turn updates the simulated display. Try to remember to leave the Remote Display in RUN mode!
Logs	
Data Logs	Brings up the list of daily data logs in memory, allowing data to be emailed, downloaded, or deleted. Also does setting of the period for logging
Alarm Logs	Brings up the list of alarm logs in memory, can be saved or deleted
System Logs	Brings up the list of system logs in memory, including errors, jscripts, and system access. These can be viewed, saved, or deleted
Setup	
Probe Configuration	Set up sensors, alarms, relays, and notifications.
User Maintenance	Set up users and passwords.
Data Logging Config	Set up data logging parameters
Network Setup	Set up web server, TFTP server, and emails.
System Config	Miscellaneous configuration options
System Documentation	System doc file
Advanced	Miscellaneous
Logout	Logs the current user out of the system after a confirmation

2.2. Important First-Time Housekeeping Duties

Before configuring the probes, you have some housekeeping tasks to do which, although optional, do allow you to use the 2300's full capabilities like emailing.

2.2.1. Password Change

Yes, you get requests for password changes all the time, but if you want security and don't want all the other purchasers of 2300's to know your username and password, now's the time to change them. Select **Setup, User Maintenance**, and then add a user. Make sure that you click on **Admin** for the user level, and write down the username and password. You can also add multiple users at the Admin, Editor, or User levels in order to track via the logs which users have done what to the 2300. Logout, then log back in under your new admin name, and delete the default name "admin".

2.2.2. Time Setup

The time of day sets automatically if the 2300 is connected to the web via an NTB time server. To manually set the time, select **Setup, System Configuration > Name > Time Configuration**. This page allows you to customize the name of the 2300, identifying the unit by location or function. Time zone, date, and time are also set here.

2.2.3. E-Mail Setup

The 2300 is preconfigured with an SMTP server entry suitable for sending emails and alerts along a network. The email sender is aquamatrix2300@juno.com. If you want to set up sending from your

own email account, talk to your IT department or follow the directions below. Note that the 2300 internal web server does not support SSL security protocol, so you may have to establish a third party email provider such as juno.com to generate the emails.

To change the email server, select **Setup > Network Setup > Email Setup > SMTP Connection Setup**. The two required configuration values are the SMTP server address and the SMTP port. The SMTP server address can be entered as a DNS name (e.g. SMTP.mycompany.com) or an IP address (192.168.2.200). The SMTP port is a number that is assigned by your IT department and is normally 25. You should get both of these values from your IT department. The Global From Address will be used in all email messages as the sending email address (e.g. myemail@mycompany.com). You also need to enter email addresses, optionally enter form emails to use later, and send a test email.

2.2.4. Configure Data Logging

If you will be using the data logging feature of the 2300, check that the default settings for the data file are what you want. Default values are:

1. Data log files will be kept for 15 days
2. Data will be logged every 5 seconds
3. File delivery is by manual download from browser, and
4. Data is stored for configured probes only.

To change these settings, go to **Setup > Data Logging Configuration**, and follow the Wizard.

2.3. Configuring Probes

The **Probe Configuration** menu screen is shown in **Error! Reference source not found..** It is accessed from the **Setup** menu. This screen is used to configure all probes and their outputs, to enable or disable individual probes, to set up the order that the probes are displayed on both the front panel and web, to delete old probes, and to add new probes to the controller. There are 8 software channels, i.e. slots for eight probes, which may be any combination of four analog inputs, three digital inputs, or several different types of virtual functions that may be set up.

Assuming you have done the housekeeping items in Section 2.2, the next thing you will want to do is to reconfigure the probes for your specific application. You may delete all the probes and start from scratch, or edit some or all of the existing probe channels. To reconfigure a defined probe, click on its name. This will open up a Wizard to change its name, units, and display options, to calibrate or scale the input current, and then to determine what alarms, relays, or email alerts are attached to that probe. The Wizard includes instructions, and doesn't change any probe settings until a final **Submit** is clicked. The Wizard also keeps track of the last time a calibration was done on each probe, the date of which is displayed on the detailed probe screen on the unit's front panel.

To set up a new probe, click on one of the **Click here to add new Probe** boxes, and follow the Wizard's instructions. Drop down menus are used for multiple choice items, and the Wizards include pictures of the unit's rear to facilitate correct wiring (look for **Select Input** or **Select Relay** buttons).

Training videos are available from our website at www.Aquamatrix.com. After configuring a sensor, your inputs are summarized on a single screen and by clicking **Submit** the data is saved, the sensor is enabled, and the menu returns to the main **Probe Configuration** screen.

Probe Configuration

This page is where you configure the parameters for monitoring and controlling each Probe. There are eight channels below, each occupying one row numbered one to eight. This is the order that they are displayed on the front panel and on the Probe Status page. Each channel can display one Probe input, which may be one of the remaining four analog, one of the three digital, or one of the virtual functions such as Totalizer, Differential or Dispenser

Click on a Probe name to edit it, which includes calibration and assigning output functions such as alarms, relay contro, or email message. To change the input of a Probe or to assign a used input to another Probe, you must first delete the Probe by clickon on the box to its left and then clicking on the "Delete" button below.

<input type="checkbox"/>	Display #	Used By #	Name	Probe Type	Relays	Probe Status
<input type="checkbox"/>	1	-	Tank pH	Analog 1	High pH	Enabled
<input type="checkbox"/>	2	-	Tank ORP	Analog 2	High ORP	Enabled
<input type="checkbox"/>	3	-	Tank D.O.	Analog 4	Low DO	Enabled
<input type="checkbox"/>	4	-	Tank Conductivity	Analog 3	High Conductivity	Enabled
<input type="checkbox"/>	5		Click here to add new Probe			Not Configured
<input type="checkbox"/>	6		Click here to add new Probe			Not Configured
<input type="checkbox"/>	7		Click here to add new Probe			Not Configured
<input type="checkbox"/>	8		Click here to add new Probe			Not Configured

Enable Disable Delete Change Display Order Exit

Figure 8 - Probe Configuration page

3. Go and Explore

Names are self-explanatory and instructions are included on the pages of the various wizards, so feel free to go out and explore. Most wizards require a **Submit** to confirm changes, so you can play around and just hit **Cancel** when you are done.

After setting up the probes and the monitors, the network connection may be severed if desired, allowing the 2300 to be used as a stand-alone controller. Keep in mind, however, that email/text notifications and changes to the 2300's configuration require a network or computer connection.

We hope you have fun with this new controller, but if you have problems, feel free to call us at (978) 749-9949.