



Amazon Bubbler

GETTING STARTED GUIDE



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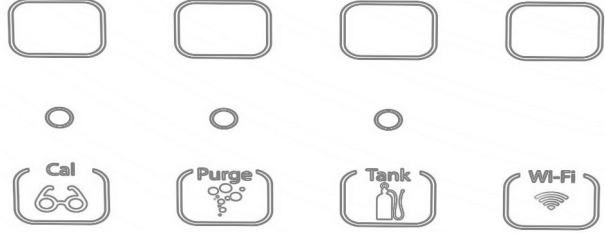
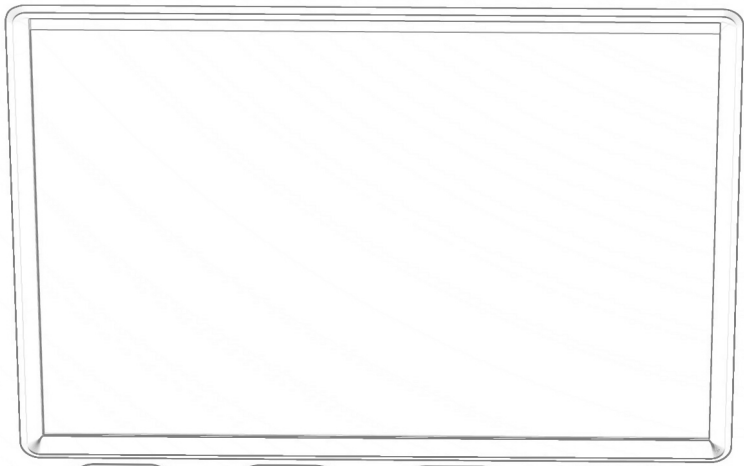
CONTENTS

This guide is a brief overview of the Amazon Bubbler and its basic features. Updated manuals, new firmware updates, brochures, technical notes, and supporting software are available. For additional assistance, please contact us at + 1-937-767-2772 or info@ysi.com.

CONTENTS

Get to Know Your Amazon.....	1
Basic Setup Using the Display.....	5
Communication.....	8
The Web Interface.....	10
Installation.....	14
Basic SDI-12 Commands.....	16

01 / GET TO KNOW YOUR AMAZON



Power
 Status



GET TO KNOW YOUR AMAZON

The Amazon uses a sophisticated system of sensors and valves to regulate the bubble rate and purge pressure. The Amazon's microprocessor determines how much pressure is needed in the tank, based on the current head pressure, to produce a constant bubble rate. A battery operated compressor maintains the tank pressure.

What's In The Box?

When unpacking your Amazon, make sure all the components ordered are received and undamaged from Shipping. The basic package includes the following:



Amazon Bubbler

*Amazon shown with optional display



Power/Communication Terminal Blocks



Outlet Fitting



Wi-Fi Adapter



USB Communication Cable

Identify Connections

I/O PANNEL CONNECTIONS

Inlet

Air compressor intake desiccator connection

Outlet

Brass fitting 1/8 NPT to 3/8 tube for orifice line

Vent

Atmospheric pressure vent

USB

One mini-B and two USB-A connectors are provided, allowing direct connection to an external device such as a Wi-Fi adaptor, laptop, tablet, or USB flash drive. USB flash drives can be used to download data, save or load configuration files, and load firmware updates.

Power

The power input uses a 2 position connector; +12VDC and GND. The electronics and compressor power is routed from this connection. NOTE : Because of the power requirements the Amazon should only be powered from the sites main power source.

Ethernet

The Ethernet port is a 10/100 BaseT port allowing the Amazon to connect to a Local Area Network or a Wide Area Network (Internet). The Ethernet is used for accessing the web interface or for modbus communication.

Communication

The communication port uses a 5 position connector; SDI-12 Data, RS-485 A, RS- 485 B, 4-20mA +, and 4-20mA -. NOTE: When using SDI-12 remember the Amazon and data logger need a common ground.



GET TO KNOW YOUR AMAZON

TOP PANNEL BUTTONS

NOTE: (All buttons on the top panel are capacitive buttons and therefore may not work if using gloves)

Display and Control Buttons

The display is not a touch screen it's a very low power "paper white" display. There are 4 navigation/control buttons that are capacitive touch. Their operations are described above them on the display and may change as you navigate from one screen to another.

Cal Button

The Cal button allows the user to verify calibration. It puts the Amazon in a state where the tank will not pump and the tank and line pressures will equalize. In this configuration the user can apply a calibrated pressure reference and verify that the pressure being read by the Amazon matches the calibrated reference.

Purge Button

Press and hold the button until the LED goes off. This will initiate a purge. The purpose of the purge is to clear out any debris or silt from the end of the orifice line that could cause false pressure readings.

Tank Button

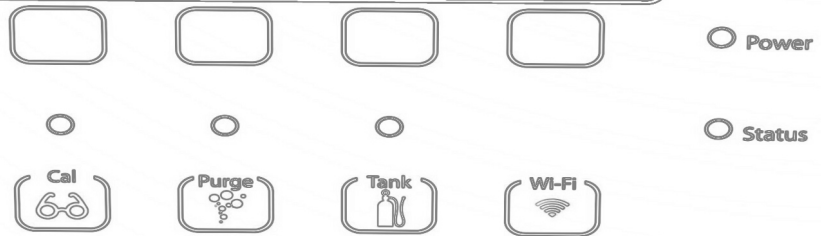
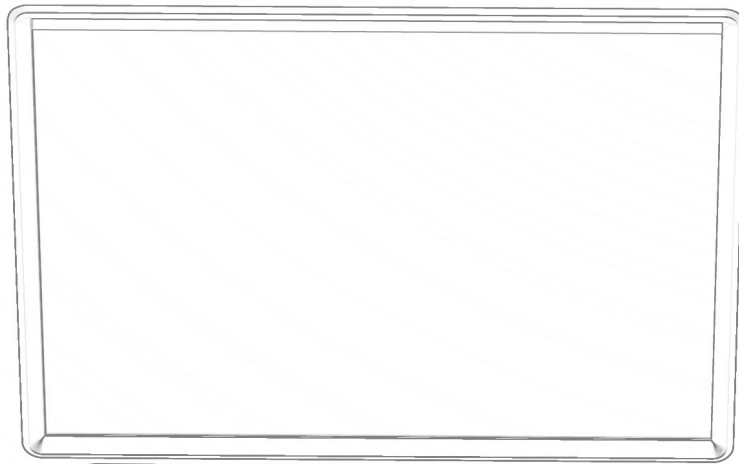
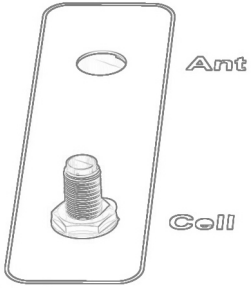
The tank button causes the tank to release its air pressure out the orifice line.

Wi-Fi Button

The Wi-Fi button can be gently pressed to activate the Wi-Fi signal. The USB Wi-Fi adaptor must be plugged into one of the USB Host ports for the Wi-Fi button to work properly.



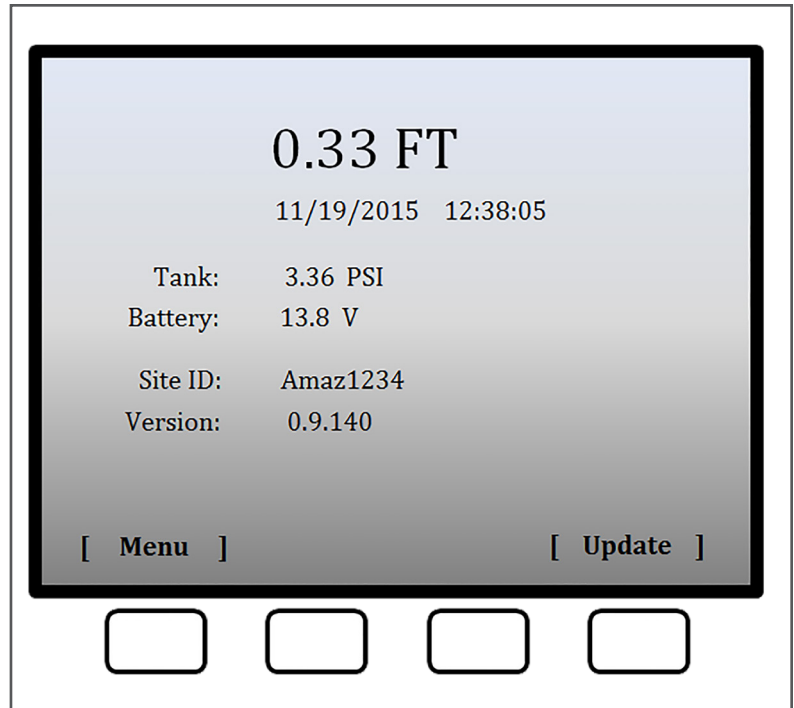
02 / BASIC SETUP USING THE DISPLAY



BASIC SETUP USING DISPLAY

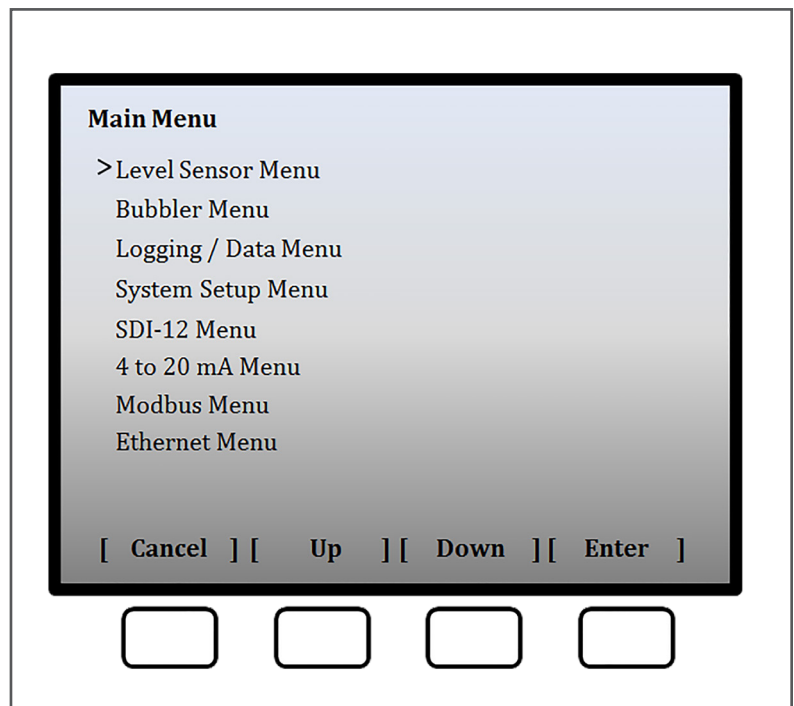
Home Screen

The Home Screen displays the current stage and units of measure. It also displays the date and time of the last measurement, the live tank pressure, battery, current site ID, and firmware version. The menu button takes you to the main menu. The update button causes a new measurement. Press the menu button.



Main Menu

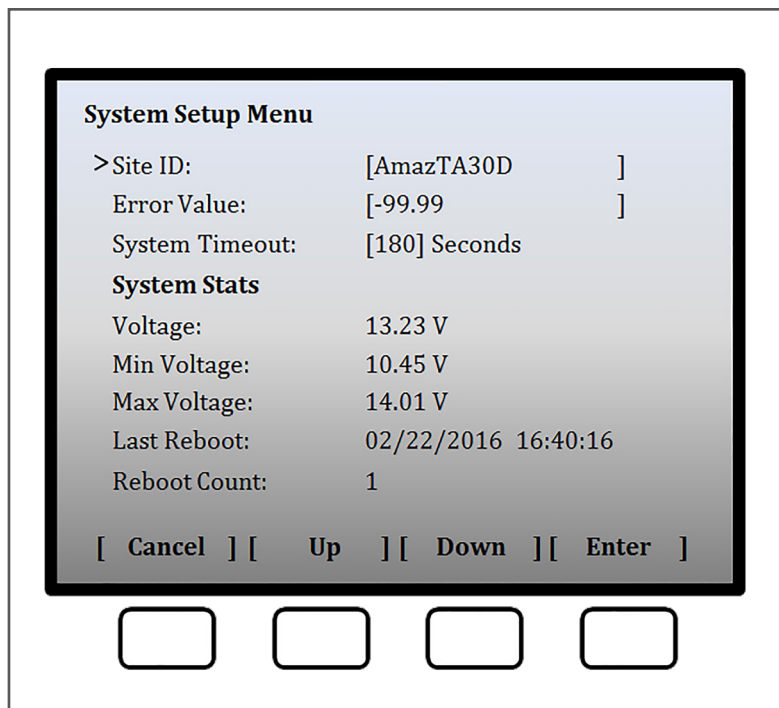
The main menu lists all sub menus. Move the cursor to the desired sub menu with the up and down buttons and press enter. The cancel button will take you back a screen. To set up the site ID, and set the date and time, navigate to the System Setup Menu and press Enter.



System Setup Menu

(Set the System ID, Date and Time)

The system setup menu is broken up into System Setup Menu, System Stats, Date/Time, Wireless Settings, System Configuration and Software Update. Navigate again by moving the cursor up and down to the desired setting and press enter. If the setting is editable, the first character will highlight in black. Change the character by pressing the up or down button and scroll through the options. When you have the character you want, press the right button to move the highlighter sequentially left to right changing the desired characters by scrolling up and down through the options. Once you're satisfied with the setting, scroll to the right or left to move the highlight past the available characters. You'll see that the buttons for right and left have now changed back to cancel and enter and the setting is changed. You are now free to scroll up or down to your next setting.

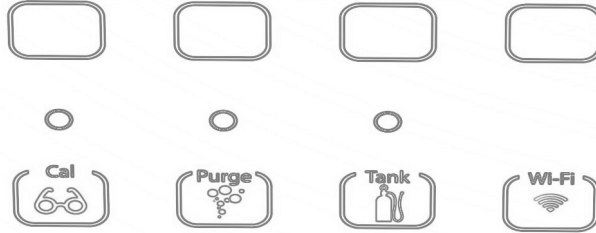


Scroll to System ID and press enter. Follow the explanation above to select the desired System ID. Next scroll to System Date and then to System Time—making changes if needed. Press escape to get back to the main menu.

03



COMMUNICATION



Power

Status



Amazon



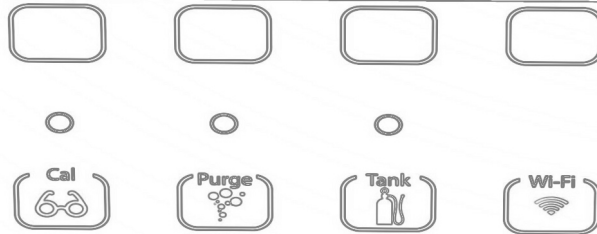
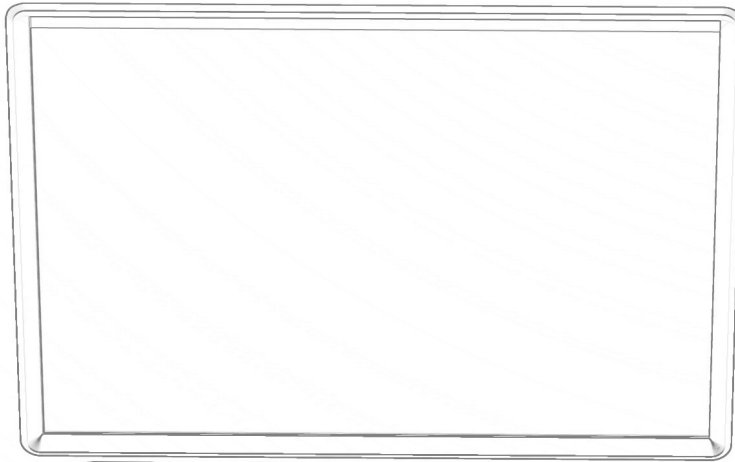
The Amazon is designed to communicate with any data logger over SDI-12. The SDI-12 menu simply lets you set its SDI-12 address. The Amazon bubbler has internal data logging capabilities. By default the internal logging is disabled but can be enabled, and the logging rate set in the Logging / Data menu. The data log file can include its own scanned data and or the stage when a measurement is requested via SDI-12 or Modbus. Within the Logging / Data menu, the Logging Inclusions setting can be set to 'All Data' or 'Scanned Data'. In the 'All Data' mode, the Amazon will log stage at its own logging rate, and also when requested over SDI-12 or Modbus. In the Scanned Data mode the Amazon will only log stage at its own logging rate. These options can be useful as backups to your SDI-12 or Modbus data requests. All data is copied when requested and All data is erased when requested. The event log can also be copied. See the manual for more information on 4-20mA and Modbus communication options.



Amazon Bubbler Web Interface SDI-12 Screen

04 / THE WEB INTERFACE

YSII



○ Power

○ Status



Amazon



USB Wi-Fi Connection

To wirelessly connect to the Amazon, either plug in the USB Wi-Fi adaptor or, if the Wi-Fi adaptor is already connected to the Amazon, press the Wi-Fi button on the top pannel to enable the Wi-Fi connection. The Amazon will begin setting up a Wi-Fi hotspot. After a few seconds, an internal LED on the Wi-Fi adaptor will begin blinking, indicating the hotspot connection is ready. The hotspot connection will typically become available within ten seconds. Once the hotspot is active, navigate to the Wi-Fi networks setting of your Wi-Fi enabled device. Refreshing the list should reveal an Amazon Wi-Fi hotspot. Connect to the hotspot. Connecting to the hotspot's network generally occurs within ten seconds. After successfully connecting, open a web browser and navigate to <http://172.20.20.20/>. If the hotspot connection was successful, the Amazon user interface will appear in the browser window.



Amazon Bubbler Wi-Fi Button

IOS

Wireless networks appear under the Settings application, listed under the Wi-Fi topic. Wireless networks are automatically refreshed every few seconds. Simply touch a network to connect to it. A checkmark will appear next to the network once a connection has been made. Open the Safari web browser and navigate to <http://172.20.20.20/>.

Windows 7

Wireless networks appear under the "Network Status" icon in the system tray, next to the clock. Left click on the Network Status icon to show available wireless networks. The listing of wireless networks can be refreshed by pressing the Refresh button in the upper right corner. Select the Amazon network and press the Connect button. Once the connection has been established, open Internet Explorer and navigate to <http://172.20.20.20/>.

Note: The user interface will be displayed on only one hardware connection (Wi-Fi or USB device cable) at a time. The USB Wi-Fi connection takes precedence when plugged in. Thus if using the USB device cable, be sure to have the USB Wi-Fi adaptor unplugged from the data logger. Or if the USB device cable is currently active, the Wi-Fi adaptor will have no effect when plugged in (i.e. the Wi-Fi signal will not be activated). The USB device cable supports a single connection whereas multiple devices can connect to the Wi-Fi adaptor at the same time.

THE WEB INTERFACE

USB Cable Connection

To connect directly to the Amazon, the supplied USB device cable can be used. The first use of the device cable will require a simple driver to be installed for communication. After the driver has been installed, a new network connection will be established with the Amazon. This typically occurs within ten seconds. Once the network has been established, open a web browser and navigate to <http://172.20.20.20/>. If the connection was successful, the Amazon's user interface will appear in the browser window.

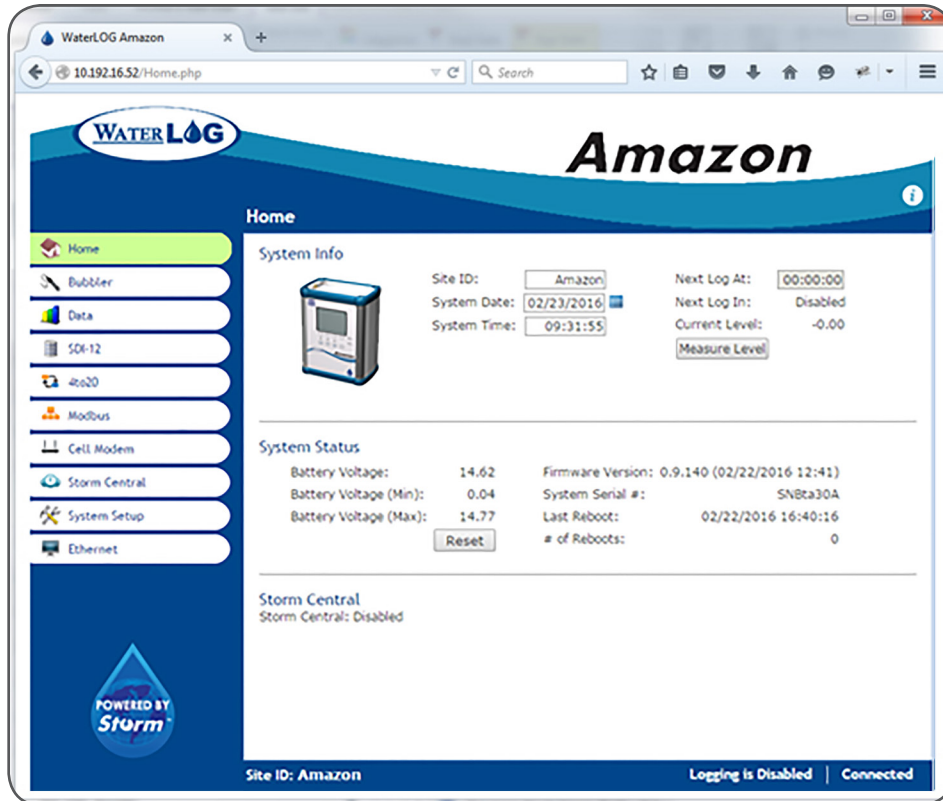
Windows 7 Driver Installation

As the drivers will not be automatically discovered, the driver will need to be manually installed. This can be done through the Device Manager. To open the Device Manager, first navigate to the Control Panel, then System and Security > System > Device Manager (or just System > Device Manager if using classic icons). Look for a device labeled RNDIS with an exclamation mark next to it. Right click on the RNDIS label and select Update Driver Software. Select "Browse my computer for the driver software". Click the option to "Let me pick from a list of device drivers on my computer." On the device type screen, choose "Network adapters" and click next. On the Select Network Adapter screen, select "Microsoft Corporation" as the Manufacturer followed by "Remote NDIS Compatible Device" as the network adapter. Click Next. A warning will appear stating that Windows cannot verify that the driver is compatible with your hardware. Click Yes to install it anyway and the driver installation is complete.

The driver only needs to be installed on the first connection for this device. After the driver has finished, disconnect and reconnect the USB device cable to initialize the network connection. Once the connection has been established, open a web browser and navigate to <http://172.20.20.20/>.

Basic Setup Using The Web Interface

The Web interface is a point and click environment. Editable settings are either selectable by drop down menu or manually entering the option.



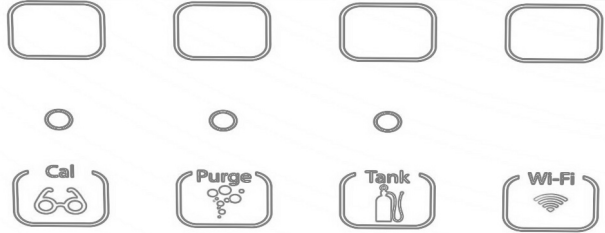
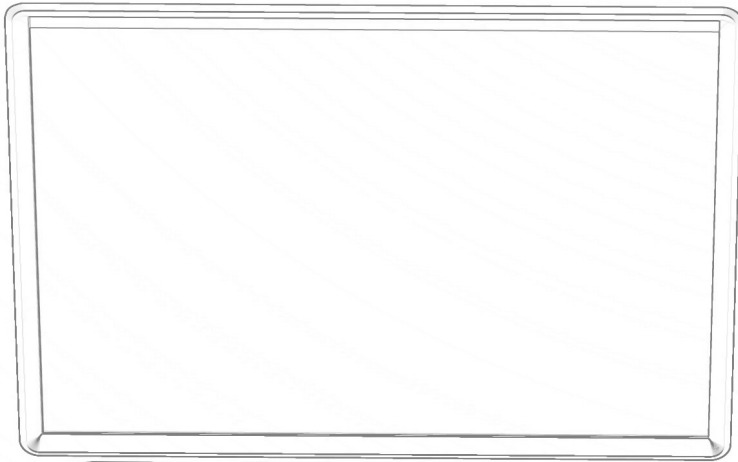
Amazon Bubler Web Interface Home Screen

- Home Screen:** You can set Site ID, Date and Time.
- Bubbler Screen:** You can set your Units of Measure, Offset, and the Stage value.
- SDI-12 Screen:** You can set the Amazon’s SDI-12 address
- Data Screen:** You can set the Amazon’s logging settings and data management

05 / INSTALLATION



Ant
Cell



○ Power
○ Status

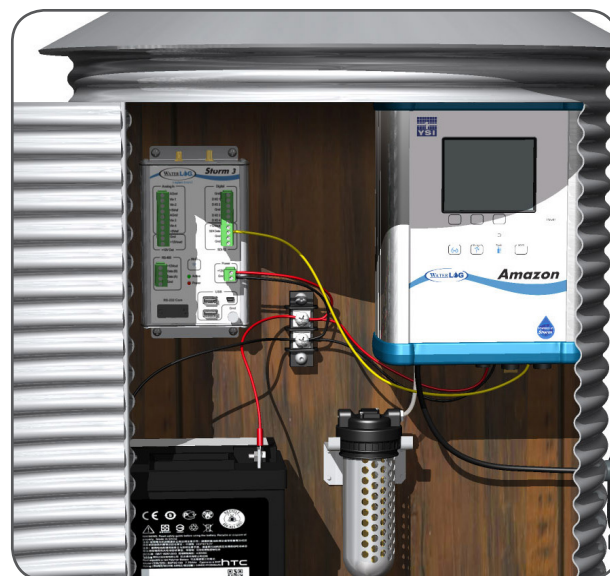


Installation

Before installing the Amazon in the field, it is a good practice to test the system in the shop or lab. This will help preparations for a successful field install. Power the Amazon, check communication, purge, and take a measurement. For basic SDI-12 protocol see the SDI-12 section at the end of this document.

As with any environmental installation, care must be taken to insure proper installation such that data can be retrieved in a reliable and accurate manner. The following summarizes ideas and recommendations for the Amazon and typical orifice line installations. Additional details can be found in application note "1005 Orifice Line Installation" on the WaterLog web site.

When installing the 360252 brass orifice fitting, pipe tape should be used for the NPT threads (threads that are screwed into the aluminum block on the Amazon) only. Securely tighten the fitting into the Amazon. The Ferrell set should be fitted on an orifice tube with a clean cut as shown. When tightening the top brass fitting, it should be finger tight and then adjusted with an additional $\frac{3}{4}$ turn. Check for leaks on the fitting using "snoop".



Amazon Bubbler Installation

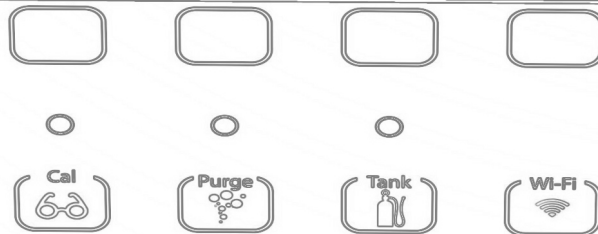


Ferrell fitted on an orifice tube

Do	Don't
Mount the outlet in still water	Do not mount the outlet facing upstream, downstream, or upwards
Mount the outlet so the last inch is almost horizontal (slightly downward side exit)	Do not allow any portion of the line to be lower than the exit point or allow goose necks in the orifice line
Try to prevent swells in long runs of orifice line	Do not use thin walled tubing, only use USGS approved orifice line
Use a muffler in more turbulent waters	Do not mount outlet in the wake of an obstruction, bridge pier, etc

06/

BASIC SDI-12 COMMANDS



○ Power

○ Status



Command	Description
a!	Identify
aM!	Measure
aC!	Concurrent Measure
aD0!	Data Retrieval
aM2!	Initiate a Purge
aAn!	Change Address
aXWSn.nn!	Write Stage Slope
aXRS!	Read Stage Slope
aXWOn.nn!	Write Stage Offset
aXRO	Read Stage Offset
aXSCSn.nn!	Set Current Stage

To verify the stage reading, send the "aM!" measurement command to the Amazon. Wait approximately 11 seconds and then send the "aD0!" data command to verify the data retrieved compares with the following example:

Data format: "a+A.AA+B.BBB+CC.C+DD.D+E.EE+FF.F"

a = SDI-12 sensor address

A.AA = Stage (Feet)

B.BBB = Pressure (PSI)

CC.C = Internal Temperature (°C)

DD.D = Sensor Interface Battery (Volts)

E.EE = Tank Pressure (PSI)

F.FF = Compressor Battery (Volts)

What Can Xylem Do For You?

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- 2) a leading global water technology company.

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