

WELL BUBBLER 10-120 INSTALLATION INSTRUCTIONS

STEP 1 The Well Bubbler 10-120 is designed for mounting on 1-5/8" channel strut, manufactured by UniStrut and U-Line. Begin the sensor installation by mounting the strut near the well head – either in the ground, or on a backboard, as shown below. Orient the open face of the strut due South for installations in the Northern Hemisphere, and due North otherwise.



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STEP 2 Install the Well Bubbler on the channel strut using the 1/2-13 fasteners included with the unit. Tighten the fastener using a 3/4 wrench; note that the entire weight of the unit is supported by this fastener – torque it appropriately.



STEP 3 Insert the 1/4" OD tubing into the push-to-connect fitting as shown below. Depress the green push ring, and pull the tubing, to remove it if necessary.



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STEP 4 Install the fuse provided with the Well Bubbler into the fuse holder, as shown below. Do not substitute this fuse with any other type, or rating – spare fuses are shipped with the sensor. The display should now activate; note that the Well Bubbler may begin operating once the fuse is installed. Refer to the following steps for activating, or temporarily deactivating, the unit. The fuse should be left installed whenever the Well Bubbler is mounted outdoors, allowing the batteries to maintain a charge.



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STEP 5 The main menu is shown once the fuse is installed. Use the round, center button, to toggle between menus. Use the rectangular left, and right, buttons, to change the settings.

The Well Bubbler main menu contains the following items:

Well Level – this is the last known value as measured by the unit; the factory default is 400.0ft

Testing – this is the current pressure in the airline, in PSI

Stat – the status indicator shows the operating mode of the unit – Testing, Waiting, etc.

t – the timer shows the duration of the current test, and the period between successive test runs

Vbat – This is the internal battery voltage, nominally between 11.5V and 14.5V

T – This is the internal temperature of the unit, in Fahrenheit, and is shown for reference only



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STEP 6 This menu is used to adjust the contrast of the LCD display, improving visibility in bright sunlight; adjust as necessary



STEP 7 The Motor Power setting determines the flow rate generated by the internal compressor; the maximum pressure is 120 PSI regardless of this setting. Use the factory setting of 50% for 5/32" OD and 1/4" OD airlines; higher values may be necessary when using 1/4" or larger galvanized sounding tube.



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STEP 8 The Manual Motor Control menu can be used to temporarily operate the compressor; this feature can be used to quickly pressurize the air line, or to test compressor operation for diagnostics purposes. Leave the Manual Control in the OFF position for normal Well Bubbler operation.



STEP 8 The Manual Alarm Test menu is used to activate, and de-activate, the internal relay for test purposes. The relay is used to control pump, or alarm, operation, based on the measured well level. Leave this menu in the OFF position for normal operation.



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STEP 9 The Auto Run menu is used to enable the automatic test mode; leave this menu in the ON position for normal operation. Leave this menu in the OFF position if the unit is installed in the field, but not connected to an airline.



STEP 10 The Motor ON time should be set to the factory default value of 3-5 seconds when using 5/32" OD or 1/4" OD airline; a larger value may be required when using 1/4" or larger galvanized sounding tube.



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STEP 11 The Read Delay time should be set to the factory default value of 3-5 seconds when using 5/32" OD or 1/4" OD airline; a larger value may be required when using tubing with an ID less than 1/8".



STEP 12 The Measurement Period determines how frequently the well level is sampled. A lower value results in more accurate data but requires more power. This parameter should be set to 3-5 minutes for pump control applications, and 5-15 minutes for monitoring applications. Increase the period for locations with poor sunlight exposure, or when using air line exceeding 1/4" in diameter. The Well Bubbler will automatically stop operating if the battery voltage is too low.



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STEP 13 The Tube Length is the **single most important parameter** in the Well Bubbler configuration. Set this value to the length of the air line which is installed in the well. Without a correct tube length, the Well Bubbler will display the correct air line pressure, but not the correct well level. The tube length is frequently recorded by the company, or individual, responsible for previously testing the well. Alternately, the tube length can be calculated from the SWL and PWL values shown on a recent pump test.

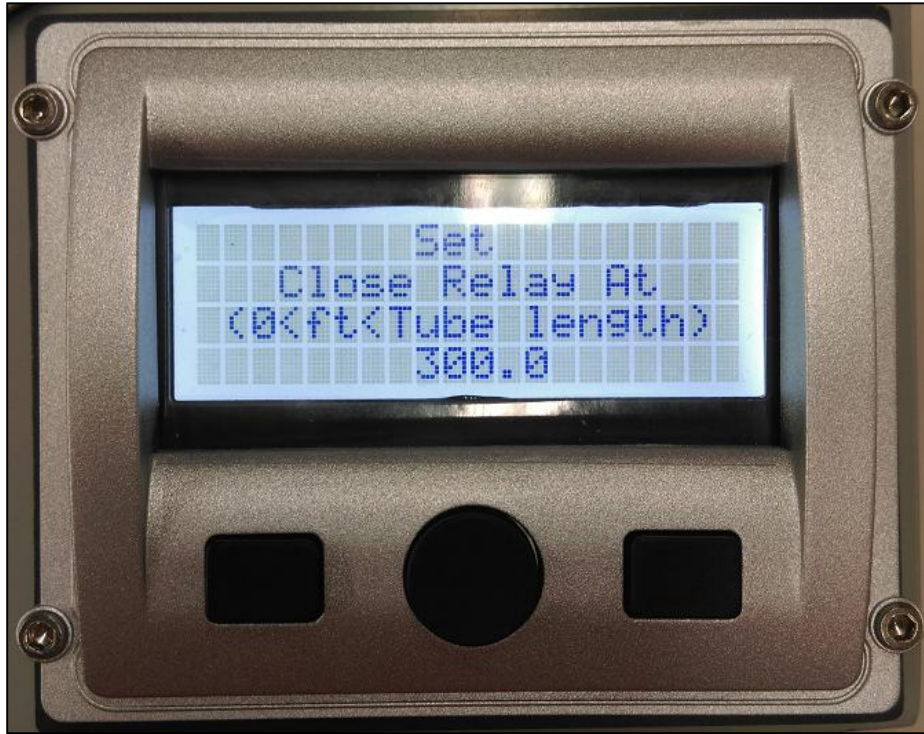


STEP 14 The Overpressure Limit is used to control the maximum allowable air line pressure. The default setting of 120PSI is recommended, unless the air line is prone to pinching, blockage or regular failure.



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STEP 15 The Close Relay At, and Open Relay At, settings cause the internal relay to operate at the prescribed well levels. The relay can be used as a Normally Closed (NC) unit for pump control, or a Normally Open (NO) unit for alarm operation. In either configuration, the relay should be set to operate approximately 50 ft above the pump set depth.



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STEP 16 The Firmware Version is displayed for reference only; please include it when contacting Well Bubbler tech support.



STEP 17 Once configured, the Well Bubbler will display the measured well level, in feet.



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STEP 18 Telemetry and datalogger output, as well as relay wiring, are accessed via the liquid-tight terminal block mounted on the left side of the unit, as shown below - **do NOT open** the main Well Bubbler enclosure. Both the 0-5V and 4-20mA channels generate an output proportional to the last measured well level – not just the airline pressure. The output is scaled to the Tube Length; the following transfer functions should be used to calculate the GSWS:

$$\text{GSWS(ft)} = (\text{Vout} / 5.0) * \text{Tube Length (ft)}$$

$$\text{GSWS(ft)} = [(\text{lout} - 4.0) / 16.0] * \text{Tube Length (ft)}$$

The 0-5V output is active, and does not require external power. The 4-20mA output is passive, and requires a 12V-24V supply; it is galvanically isolated to 600Vac from the internal supply reference, the chassis, and the 0-5V reference. The relay contact rating is 5A at 240Vac; the relay should be used to operate an external pump control circuit, and not the motor itself.

The wire color assignment is shown on the interior of the terminal block cover, and is repeated below.

0-5V OUTPUT:	Black –	Red +
4-20mA OUTPUT:	Green –	White +
RELAY OUTPUT:	Blue COM	Blue NO or NC (depending on configuration)

