

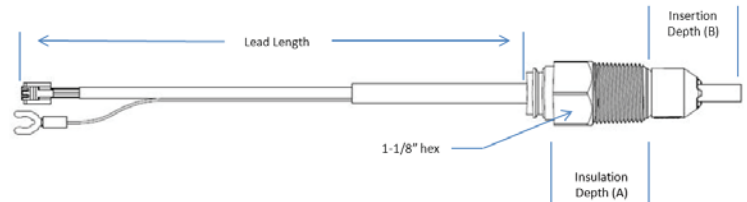
AQUASMART™ 2-IN-1 SENSOR (Temperature & Presence of Water) Installation Instructions



WARNING

Do not use in steam applications. For use in hot water boilers or water heaters only. Do not use outside of the intended use and specifications.

PARTS:



Part #	Lead Length	Insulation Depth (A)	Insertion Depth (B)
76002N1S01	8-1/4"	1-1/2"	1-5/8"
76002N1S02	6-1/4"	3-1/2"	1-5/8"
76002N1S05	5.0"	4-3/4"	1-5/8"
76002N1S06	8-1/4"	1-1/2"	7/8"

Technical Specifications

Storage Temp. Range: -40°F to 250°F

Operating Temp. Range: 32°F to 250°F

Maximum Pressure: 250 PSIG

Installation(screw-in) Torque Range: 185-200 in/lbs

- (1) **76002N1SXX** 2-IN-1 Sensor
- (1) **32704** Pipe Clamp for sensor ground
- (1) **3214771** 36" Green Ground Wire



WARNING

Explosion, Burn and Scald Hazards

Excessive water temperatures could cause explosion, burns, scalding, pressure relief flooding and fitting leaks.

- The 2-in-1 Sensor shall only be installed by a trained professional.
- The sensor must be installed in the proper location for correct low water cut-off (LWCO) operation in accordance with the Boiler Manufacturer's instructions.
- The 2-in-1 sensor body is installed directly into the boiler wall tapped hole in place of an immersion well.
- Carefully follow the outlined procedures for temperature sensor installation to ensure accurate water temperature sensing and effective control operation.
- Make sure the plumbing for domestic hot water has anti-scald valve protection.
- Follow all applicable safety codes, rules and guidelines for installing an immersion well. Improper installation can result in the Boiler overheating.



WARNING

Leak, Burn, and Scald Hazards

Incompatible thread sealants could severely damage the sensor threads.

- **Only use Teflon® Tape or Rectoseal® No. 5® (soft-set).**
- DO NOT use any anaerobic fast-setting sealants such as, but not limited to, Loctite®, Leak Lock®, Permatex®, or Gasoil®.
- Call RWB Technical Services at 1(800)645-2876 to confirm, if unsure.



CAUTION

For proper operation, there must be a secure electrical bond between the green sensor wire from the sensor and the boiler metal vessel in direct contact with the boiler water. Failure to secure an electrical bond will result in the AquaSmart locking out and displaying, "LOCKOUT - LOW WATER".

INSTRUCTIONS:

Installing the 2-in-1 Sensor

This is very important for successful control operation.

1. Remove the existing immersion well. Clean the threads in the boiler port tapping. Follow all applicable safety codes, rules and guidelines for removing/installing immersion wells.
2. Apply pipe sealant to the 2-in-1 sensor threads and install it securely into the port. **BECKETT RECOMMENDS ONLY TO USE TEFLON TAPE OR RECTROSEAL NO. 5 PIPE SEALANT.**
3. Tighten with 1-1/8" open end or box wrench. Pipe wrenches, pliers, and adjustable wrenches will damage/round-off the hex.
4. Securely install the AquaSmart control to the sensor. Plug the 2-in-1 Sensor RJ connector (phone jack style) into the receptacle (Item **a**, **Figure 1**) on the control.
5. Route the 36" green wire through the AquaSmart bottom rectangular slot (Item **c**, **Figure 1**). Securely install the fork connector of the 36" ground wire and the ground wire from the 2-in-1 sensor under the ground screw at the bottom of the control (Item **b**, **Figure 1**).
6. Thoroughly clean the pipe surface and securely tighten the pipe clamp on the water inlet pipe to the boiler as close to the boiler as possible.
7. Route the 36" green ground wire to the pipe clamp then cut to proper length, if necessary.

Figure 1 - Sensor lead connection & ground screw connections

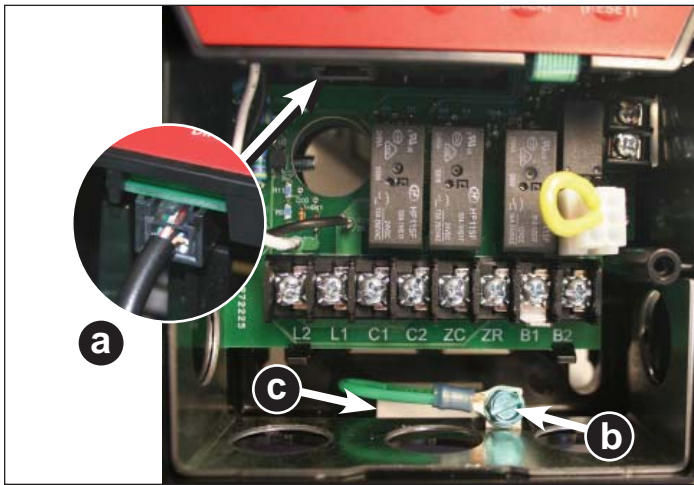


Figure 3 - Ground Clamp and Grounding Wire



8. Strip the wire and insert the stripped end into hole on the pipe clamp (item **d**, **Figure 3**). Tighten retaining screw against the wire making sure that you have good contact.
9. Complete control wiring and fill the appliance with water to the pressure required, according to appliance manufacturer's instructions. Make sure all air is purged from the system and there are no leaks. Turn on power to the appliance and observe one call for heat cycle with shut off at set temperature.

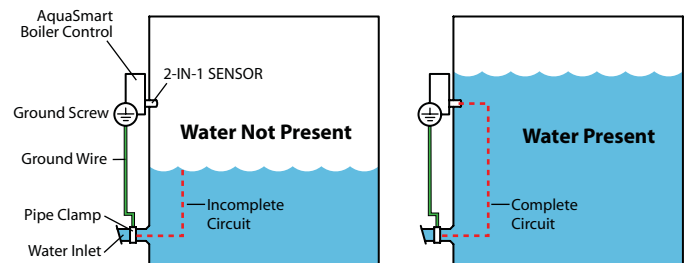
Test the Low Water Cut-off (LWCO) Safety Function

WARNING! Avoid touching or shorting the live terminals during this test.

Turn electric power ON to energize AquaSmart control. Perform the following tests to verify the LWCO function.

- **For AquaSmart 7600A:** Remove the green sensor lead from the ground screw. The sensor should cause the AquaSmart display to indicate, "LOCKOUT – LOW WATER". If it does not, replace the sensor.
- **For AquaSmart 7600B:** Remove the green sensor lead from the ground screw and remove both the B1 and B2 (24 Vac) leads from their terminals. The sensor should cause the AquaSmart display to indicate, "LOCKOUT – LOW WATER". If it does not, replace the sensor.
- Attach wires and tighten terminal screws securely when testing is complete.

Figure 2 - Sensor Water Detection Method



The AquaSmart 2-in-1 Sensor uses the "conduction" method to detect whether water is present in the boiler. This is done by using the water in the boiler itself to "conduct" a signal and complete an electrical circuit. It is necessary that the ground wire from the sensor be bonded to the boiler wall (not the jacket - unless the jacket is bonded to the boiler wall). When water is not present, there is no "conduction" and the circuit is incomplete.

For the AquaSmart we recommend that a grounding pipe clamp be mounted to the water inlet pipe, and that a ground wire be bonded from the pipe clamp to the green terminal inside the AquaSmart control. The 2-in-1 sensor green "ground wire" shall also be bonded to the green terminal in the AquaSmart control.

R.W. BECKETT CORPORATION

P.O. Box 1289, Elyria, Ohio 44036

R.W. BECKETT CANADA, LTD

430 Laird, Unit 3, Guelph, Ontario, N1G 3X7