Installation Manual

*Aqua Con **TROLL**®Controller*

SEPTEMBER 2009

PLEASE READ ENTIRE MANUAL PRIOR TO INSTALLING THIS PRODUCT.

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Cat. No. 0097012

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Chapter 1 Safety Information

Please read this manual before unpacking or installing any part of this system.

1.1 HAZARD SYMBOLS THAT APPEAR IN THE MANUAL

DANGER  Indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

NOTE  Indicates a situation that is not related to potential injury.

LES SYMBOLES D'AVERTISSEMENT FIGURANT DANS LE GUIDE D'UTILISATEUR

DANGER  indique une situation dangereuse, qui, si elle n'est pas évitée, pourra provoquer la mort ou des blessures sérieuses.

NOTE  indique une situation qui n'est pas susceptible de provoquer de blessure.

1.2 PRECAUTIONARY LABELS IN THE CONTROLLER BOX

 When noted on the instrument, this symbol references the user to the instrument manual.

 When noted on the instrument, this symbol indicates a risk of electrical shock.

 When noted on the instrument, this symbol indicates the location of Protective Earth (ground).

CONSIGNES DE PRECAUTION DANS LE BOITIER

 Quand cette consigne s'affiche sur l'appareil, elle renvoie au guide d'utilisateur.

 Quand cette consigne s'affiche sur l'appareil, elle signale la possibilité de choc électrique.

 Quand cette consigne s'affiche sur l'appareil, elle indique l'emplacement de la prise de terre.

Chapter 2 Overview

For a complete list of controller specifications, see “Specifications” on page 21

2.1 AVAILABLE MODELS

The Aqua Con TROLL® controller is a radio-linked, AC relay controller. Models are available with 4 or 8 relays, with corresponding AC current sensor inputs, encased in steel or fiberglass enclosures:

- **Aqua Con TROLL Model AC-F4**, a 4-relay controller with corresponding AC sensor inputs, encased in a fiberglass enclosure.
- **Aqua Con TROLL Model AC-F8**, an 8-relay controller with corresponding AC sensor inputs, encased in a fiberglass enclosure.
- **Aqua Con TROLL Model AC-S4**, a 4-relay controller with corresponding AC sensor inputs, encased in a steel enclosure.
- **Aqua Con TROLL Model AC-S8**, an 8-relay controller with corresponding AC sensor inputs, encased in a steel enclosure.

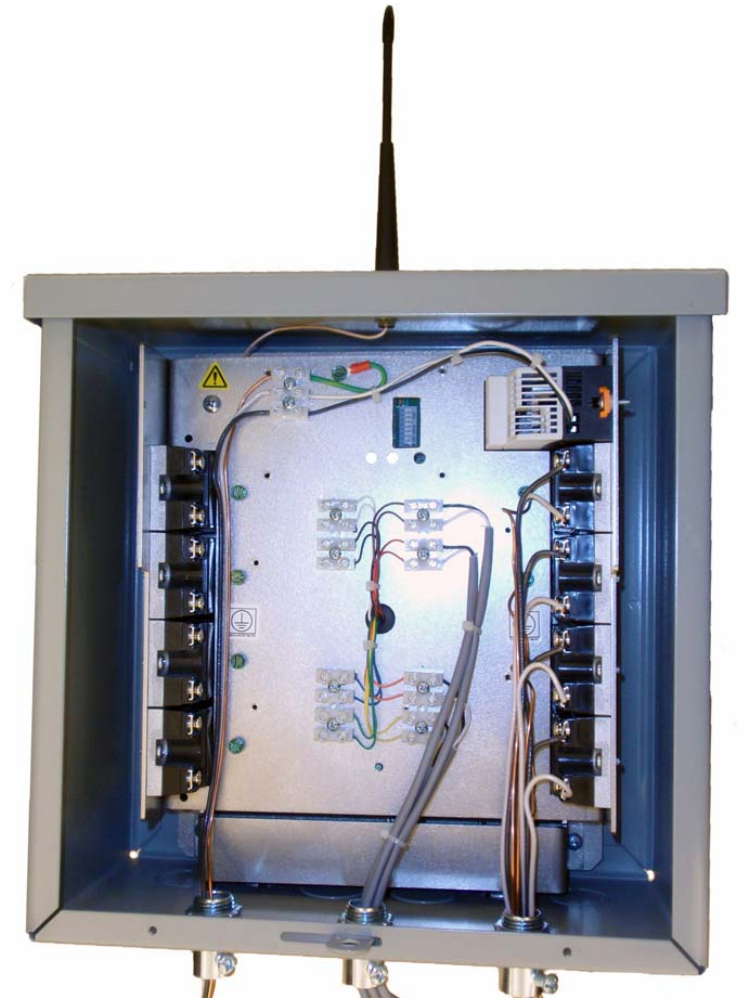
2.2 UNPACKING

Remove the controller from the shipping box. The shipping box should contain:

- Controller
- Desiccant pack

Figure 1 shows Model S8, the 8-relay stainless model.

FIGURE 1. Internal view of 8-relay steel model



Chapter 3 Mounting the Controller

Danger
Only properly trained and qualified personnel should install the Aqua Con TROLL instrument described in this manual. This instrument should be installed for use in non-hazardous locations only.

Danger
L'installation de l'appareil "Aqua Con TROLL" décrite dans le guide d'utilisateur doit impérativement être réalisée par des personnes qualifiées. L'installation de cet appareil est seulement prescrite pour des emplacements sans risques.

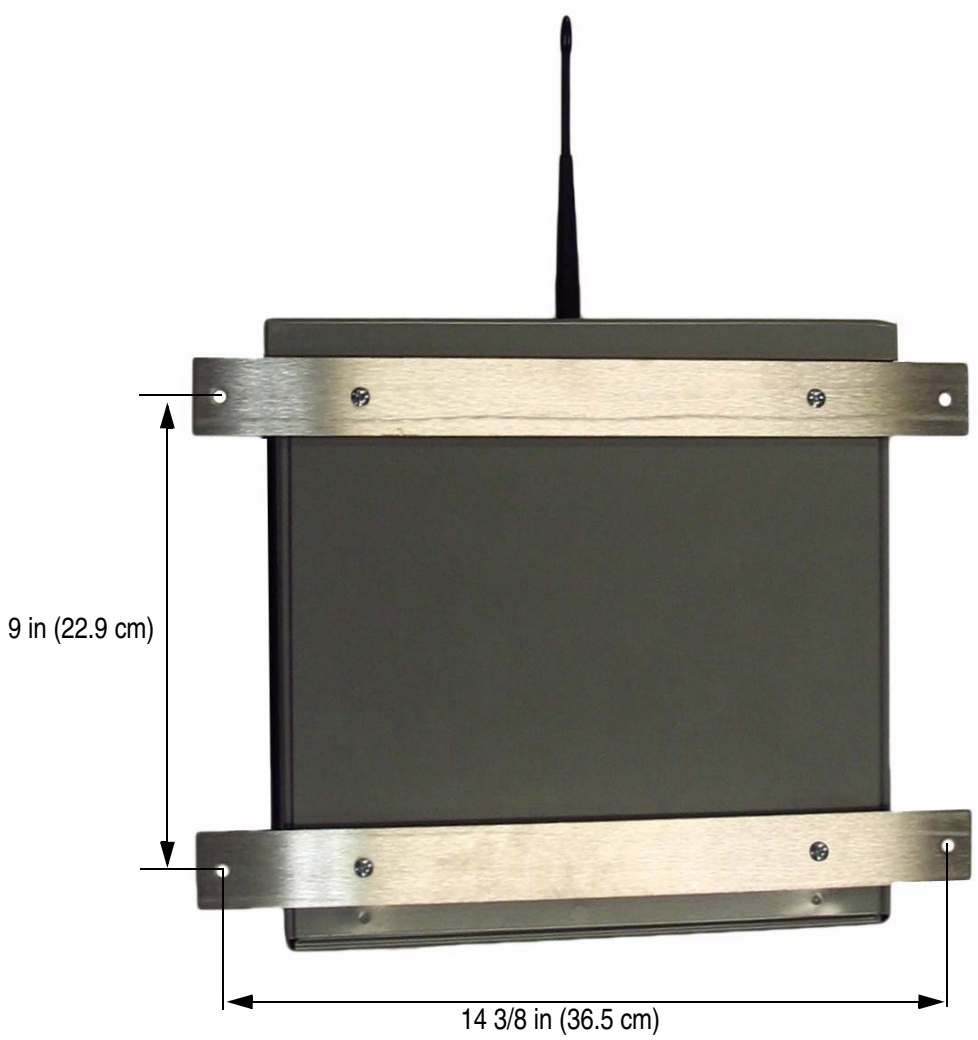
3.1 MOUNTING REQUIREMENTS

- For safety and ease of mounting, mount the enclosure before connecting any wiring.
- When mounting the controller, make sure that the mounting hardware and mounting surface are sufficiently strong to support at least 23 pounds (10.4 kg).
- Mount the enclosure so that the antenna sits on top of the enclosure. The enclosure will not be sufficiently water-tight if mounted with the antenna pointing toward the ground and the cable grips pointing upward.

3.2 MOUNTING THE ENCLOSURE

Mounting strip dimensions are shown in Figure 2. Fasten them to the back of the enclosure and mount to a secure wall using the appropriate hardware.

FIGURE 2. Back of enclosure



3.3 ENCLOSURE LOCKING OPTIONS FOR STEEL ENCLOSURES

The steel enclosure can be configured to accept a padlock. On the enclosure, pull the latch out and place the notched side of the door over the latch. If you do not wish to use a padlock, push the latch down and replace the door so that the notched end of the door is at the top of the enclosure.

FIGURE 3. Latch up

FIGURE 4. Notched side of the door (turn door upside down when not using the padlock option)

Chapter 4 Electrical Connections

Danger
Only properly trained and qualified personnel should install the Aqua Con TROLL instrument described in this manual. This instrument should be installed for use in non-hazardous locations only.

Danger
L'installation de l'appareil "Aqua Con TROLL" décrite dans le guide d'utilisateur doit impérativement être réalisée par des personnes qualifiées. L'installation de cet appareil est seulement prescrite pour des emplacements sans risques.

4.1  ELECTRO-STATIC DISCHARGE (ESD) RECOMMENDATIONS

- Before making wiring connections, discharge any static electricity from your body before touching circuit boards and other internal components by touching a grounded metal object to remove any charge from your body.
- When making wiring connections, make sure to remain properly grounded by wearing an ESD wrist strap or similar device.

4.2 CUSTOMER-SUPPLIED ELECTRICAL EQUIPMENT

The Aqua Con TROLL process controller module requires AC line power. The following user-supplied wires are also required:

- Current sensor wires (24-18 AWG)
- AC relay wires (14 AWG)
- For hard-wired locations using conduit, a 100-240 VAC source with over current/disconnect protection will be provided by the end user.
- For cord-connected plug and socket locations, approved suitable wiring to be provided by the end user.

4.3 ENSURING GOOD ELECTRICAL CONNECTIONS

To ensure that all sensors and power sources function properly, make sure that:

- Each individual wire is stripped and tinned to ¼ in.
- Each wire is tightly screwed into the terminal strip.
- Each wire, not the plastic jacket, is touching the terminal strip. Clip or cap any unused wires.

4.4 AC ELECTRICAL CONNECTIONS

Danger
Make sure that power to the instrument is disconnected before making any wiring connections.

CONNEXIONS AUX COURANT SECTEUR / ALTERNATIF

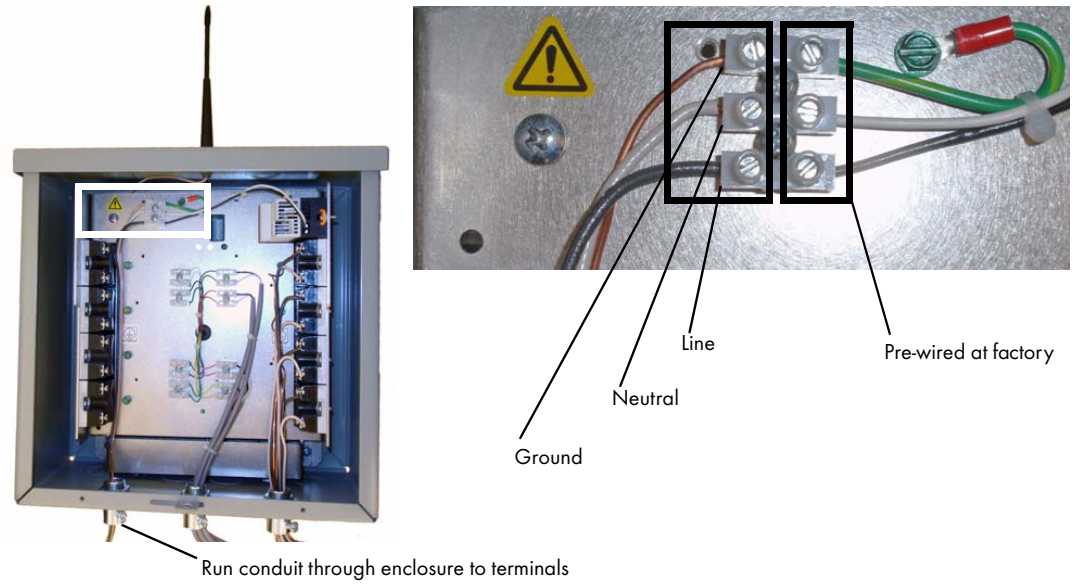
Danger
Débrancher toute alimentation à l'appareil avant de connecter les fils.

Table 1. Aqua Con TROLL AC wiring connections

Pin	Description	North American Wire Color	European Wire Color
L	Line	Black	Brown
N	Neutral	White	Blue
⏚	Protective Earth	Shield	Green and yellow

1. Use a Phillips-head screwdriver to remove the screws from the enclosure lid.
2. Remove the lid.
3. Run the AC power conduit/cord up through the bottom left opening on the bottom of the enclosure.
4. Connect the conduit wires as described in Table 1and Figure 5.
5. Replace the cover.
6. Replace the cover screws.

FIGURE 5. AC wiring connections



4.5 RELAY CONNECTIONS

Danger
Make sure that power to the instrument is disconnected before making any wiring connections.

Danger
Do not connect low voltage circuits (<50 V) to the terminal connectors on the AC board!

CONNEXIONS AUX RELAIS

Danger
Débrancher toute alimentation à l'appareil avant de connecter les fils.

Danger
Ne pas connecter des circuits basse tension (moins de 50 V) aux bornes de connexion sur la carte électronique de secteur (courant alternatif)!

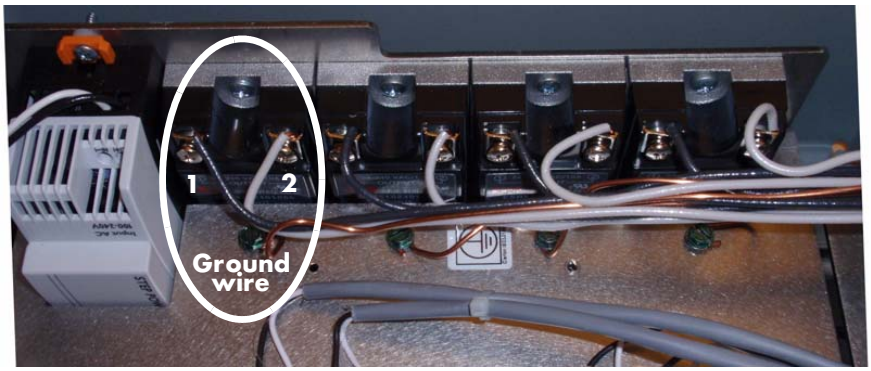
4.5.1 Connecting the Relay Outputs to the AC board

1. Use a Phillips-head screwdriver to remove the screws from the enclosure lid.
2. Remove the lid.
3. The relay terminals are numbered as shown in Figure 6.

FIGURE 6. Numbering of relay terminals

4. Run 14 AWG relay output wires for Relays 1-4 through the right through-hole. Run 14 AWG relay output wires for Relays 5-8 through the left through-hole (along with the AC power conduit).
5. Connect output wires to the relay terminal blocks labeled 1 and 2. Connect the shield wire to the green screw.
6. Proceed to Section 4.5.2 Connecting the Sensors to the Enclosure ***OR***
7. Replace the cover.
8. Replace the cover screws.

FIGURE 7. Wiring a relay terminal block, blocks 1-4



4.5.2 Connecting the Sensors to the Enclosure

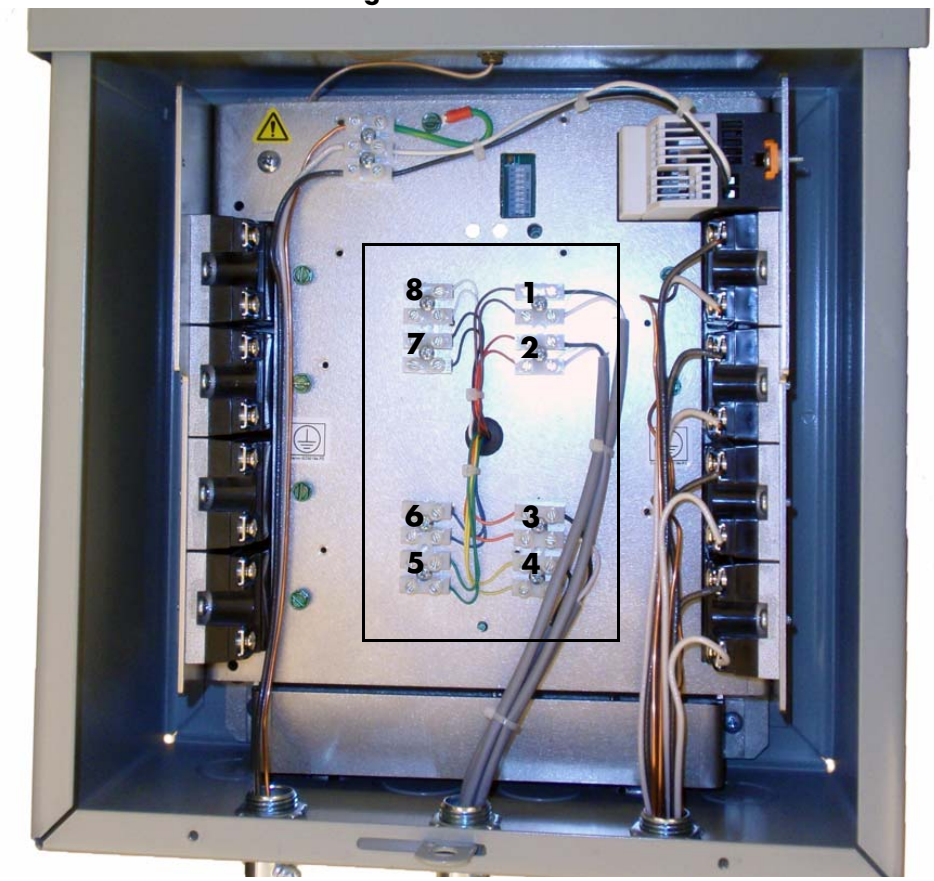
1. Remove the cover screws and the cover, if necessary.
2. Route the wires from the sensor through the middle through-hole on the bottom of the enclosure (Figure 9).
3. Connect the 24-18 AWG inputs from the sensor to the relay terminals as shown in Figure 8 and Figure 9.
4. Replace the cover.
5. Replace the cover screws.

FIGURE 8. Sensor connections, non-polarized and sensor

Non-polarized connectors

Typical sensor

FIGURE 9. Location and numbering of sensor terminals



4.6 DISCONNECTING AC POWER

- To disconnect power when using a power cord, unplug the cord at the outlet.
- To disconnect power when using hard-wired line power, turn off the power at the external branch circuit over the current disconnect provided by the end use customer.

Chapter 5 Maintenance

Danger
Only properly trained and qualified personnel should install the Aqua Con TROLL instrument described in this manual. This instrument should be installed for use in non-hazardous locations only.

Danger
Installation de l'appareil "Aqua Con TROLL" décrit dans le guide d'utilisateur doit impérativement se faire par des personnes qualifiées. L'installation de cet appareil est seulement prescrite pour des emplacements sans risques.

5.1 CLEANING THE OUTSIDE OF THE ENCLOSURE

Wipe the enclosure periodically with a damp, soft cloth. Do not use solvents.

5.2 REPLACEMENT DESICCANT

Desiccant ensures the longevity of the electronic components inside the enclosure. Replace the desiccant (Cat. No. 0087630) when it turns from blue or purple to pink.

Danger
Make sure that power to the instrument is disconnected before making any wiring connections.

Danger
Débrancher toute alimentation à l'appareil avant de connecter les fils.

1. Disconnect AC power to the instrument.
2. Use a Phillips screwdriver to remove the controller lid.
3. Replace the pink desiccant with new, blue or purple desiccant.
4. Replace the controller lid and tighten screws.
5. Reconnect power to the device.

5.3 USER-SERVICEABLE PARTS

This device contains no user-serviceable electronic parts. For information regarding service or returns, contact:

In-Situ Customer Service Technicians

- U.S. and Canada at 1-800-446-7488
- Internationally at 1-970-498-1500

By mail:

In-Situ Inc.
Attn: Customer Service Department
221 E. Lincoln Ave.
Fort Collins, CO
80524
USA

Chapter 6 Specifications

6.1 OVERVIEW

The Aqua Con TROLL® controller is a radio-linked, AC relay controller. Models are available with 4 or 8 relays, with corresponding AC current sensor inputs, encased in steel or fiberglass enclosures.

6.2 SPECIFICATIONS

Component Description	AC line-powered, microprocessor-controlled, radio-linked, AC relay controller and AC current measuring system.
Controller Operating Temperature	0 to 50 °C (32 to 122 °F); 95% relative humidity, non-condensing
Controller Storage Temperature	–10 to 60 °C (14 to 140 °F); 95% relative humidity, non-condensing
Enclosure	Steel, Type 1, 3R or Fiberglass, NEMA 4X
Power Requirements	100–240 V ~, 0.15 A, 50–60 Hz
AC Relay Outputs	24-240 VAC 10 A
Current Sensor Inputs	200 mA max.
Controller Dimensions	Steel models: 12.5 X 13.3 X 6.5 in (31.8 X 33.8 X 16.5 cm) (w X h X d) Fiberglass models: 11.8 x 13.8 x 7.0 in (30.0 x 35.1 x 17.8 cm) Note: Antenna adds an additional 6.3 in (16.0 cm) to height of each
Controller Weight	Steel models: 22.6 lb. (10.3 kg) Fiberglass models: 15.5 lb. (7.0 kg)
Certifications	Listed for use in general locations to UL and CSA safety standards by ETL