Please read entire manual prior to installing this product.
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</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="DANGER" /></td>
<td>Indicates a hazardous situation, which, if not avoided, will result in death or serious injury.</td>
</tr>
<tr>
<td><img src="image" alt="NOTE" /></td>
<td>Indicates a situation that is not related to potential injury.</td>
</tr>
</tbody>
</table>

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

All Con TROLL® PRO modules have the following benefits:

- NEMA 4X rated
- Robust keypad and display window
- Easy-to-use controller software
- Optional C-cell alkaline battery backup

For a complete list of controller specifications, see “Specifications” on page 31.

2.1 AVAILABLE MODELS

The Con TROLL PRO process controller module is available in three models:

- **Con TROLL PRO Model DC-L**, a battery- or solar-powered controller with logging abilities. This model requires a 9-36 VDC (max) 0.2 A max supply as the primary power source. It is suited for remote applications and can trigger low voltage relays.

- **Con TROLL PRO Model AC**, a 100–240 VAC (~), 0.15 A, 50–60 Hz-powered controller capable of displaying and transmitting data. This model is suited for applications with access to line power that do not require logging abilities. This model can trigger low and high voltage relays.

- **Con TROLL PRO Model AC-L**, 100–240 VAC (~), 0.15 A, 50–60 Hz-powered controller capable of logging, displaying, and transmitting data. This model is suited for applications with access to line power that require logging abilities. This model can trigger low and high voltage relays.

2.2 BOX CONTENTS

*Note: After verifying that the contents of the box are complete, place the controller back in the box for transport to the installation site.*

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

- Controller (1)
- Controller plugs (5)
- Dome connectors (3)
- O-rings (6)
- Large lock nuts (6)
- Sealed desiccant pack (1) that will be placed in the installed controller.
- Opened desiccant pack (1) that protected the instrument during shipping. Discard after opening the controller.

Figure 1 shows the DC-powered model. Figure 2 shows the AC-powered models.
FIGURE 1. Internal view of DC model

FIGURE 2. Internal view of AC models
Chapter 3 Mounting the Controller

Danger
Only properly trained and qualified personnel should install the 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 “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 OPTIONAL MOUNTING KIT

The In-Situ Con TROLL mounting kit (Cat. No. 0087562) contains the following:

- Two stainless mounting brackets
- Two 1½-3½ in-diam. hose clamps
- One package containing mounting tabs (4), nuts (4), and screws (4)
- DIN rail mounting brackets

The nuts and screws supplied with the mounting tabs are suitable for use with the mounting brackets.

FIGURE 3. Con TROLL mounting kit
3.2 MOUNTING OPTIONS

3.2.1 Controller Dimensions

- Figure 4 calls out the controller dimensions with the lid closed.
- Figure 5 calls out the dimensions of the controller box with the lid open. It indicates where holes should be drilled for wall or panel mounting without using the supplied mounting tabs.
- Figure 4 shows the depth dimensions of the controller. When wall or panel mounting, make sure to allow adequate space for opening the enclosure door or making electrical connections.

**FIGURE 4. Controller dimensions with lid closed**

![Controller dimensions with lid closed](image1)

**FIGURE 5. Controller dimensions with lid open**

![Controller dimensions with lid open](image2)
3.2.2 Pole Mounting

1. Remove the four nuts and four screws from the mounting kit.
2. With the enclosure open, drop one nut into each drilled corner of the box (Figure 7).
3. Use a screwdriver to push the nut down and set it in place (Figure 7).

4. Orient the two brackets on the back of the enclosure so that the flanges on the brackets will point toward the ground (Figure 8).
5. Attach the mounting brackets to the enclosure using two screws for each bracket. Make sure that the screws properly thread into the nuts that you seated in steps 2 and 3 (Figure 9).
6. Place two hose clamps over the mounting pole and tighten them until they almost secure.
7. Place the flanges from the mounting bracket into each of the hose clamps (Figure 9).
8. Completely tighten the hose clamps until the entire controller unit is secure on the pole.
3.2.3 Wall Mounting Using Mounting Tabs

The optional mounting kit contains a set of wall mounting hardware that includes four screws, nuts, and tabs for mounting the controller to a wall or panel. Follow the instructions included with the mounting tab hardware to attach the tabs.
3.2.4 Wall Mounting with User-supplied Screws and Hardware

You can supply your own mounting hardware and attach the controller to a wall. Figure 7 indicates the placement of the nut. Use a screw that is best suited for your wall material.

**FIGURE 11. Back view of controller**

**FIGURE 12. Template for wall mounting with user-supplied hardware**

*Not to scale—See mounting kit for scale template.*
3.2.5 DIN Rail Mounting the Enclosure

Each rail mount clip is secured to the enclosure with a supplied #6 screw.

1. With the enclosure open, drop one screw into each drilled corner of the box (Figure 13).
2. Use a long screwdriver to push the screw through the back of the enclosure (Figure 13).
3. Place the DIN clip on the top of the enclosure with the orientation shown in Figure 14.
4. Use a long screwdriver to tighten the screw to the clip.
5. Repeat steps 2-4 for the remaining screw and clip.

FIGURE 13. Placing the screw in the enclosure

FIGURE 14. Securing the screw to the DIN clip

3.3 PLACING DOME CONNECTORS AND PLUGS IN THE ENCLOSURE

When installed as directed, this product is rated IP-67 and can withstand temporary immersion in up to 1 meter of water. To meet the IP-67 rating, the following conditions must be met:

- The lid must be completely closed and screwed down.
- The six ports must be plugged with either cord grips and cables, port plugs, or a combination of the two.
- Additionally, o-rings must be used as described below.

Attach plugs and dome connectors to the enclosure using the following steps:

1. Place a large o-ring over the threaded end of the plug or dome connector (Figure 15).
2. Screw the threaded end of the plug or dome connector through the bottom of the enclosure. Tighten it to “snug” and then an additional ½ turn. Do not overtighten!
3. Inside the enclosure, place the lock nut, concave-side-down, over the threaded end of the plug or dome connector and tighten with a flat-head screwdriver and mallet (Figure 16). Tighten the lock nuts so that there is approximately one thread showing above the nut.
4. Screw the dome nut onto the threaded connector. Tighten it to “snug” and then an additional ½ turn. Do not overtighten!
5. Thread sensor or electrical cables through the dome connectors for later wiring by a qualified electrical technician. Tighten to approximately 15 in-lbs of torque.

**FIGURE 15. Controller box hardware**

**FIGURE 16. Attached port plug (left) and attached dome connector (right)**
Chapter 4  Electrical Connections

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

Danger
L’installation de l’appareil “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 POWER OPTIONS
The Con TROLL PRO process controller module is available with two power options:

- **DC-powered**, which requires a 9-36 VDC supply as the primary power source. This model can trigger low voltage (<50 V) relays only (see “Input/Output Connections” on page 23).
- **AC-powered**, which requires a 100-240 VAC as the primary power source. This model can trigger low voltage relays (<50 V) through the I/O board only (see “Input/Output Connections” on page 23) and high voltage relays (>50 V) through the AC board only.

4.2 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.

4.3 CUSTOMER-SUPPLIED ELECTRICAL EQUIPMENT
The end user must supply the following:

- 18-12 AWG wire for electrical connections using conduit or 100-240 VAC power supply
- 24-12 AWG cable for connecting relays and PLC devices
- 2 alkaline C-cell batteries (optional—for backup purposes only)
For hard-wired locations using conduit, a 100-240 VAC or 9-36 VDC 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.

### 4.4 INSTALLING C-CELL BATTERIES

*Danger*

*Do not use lithium or rechargeable C-cell batteries. Use only alkaline C-cell batteries.*

**INSTALLATION DE PILES DE TYPE “C”**

*Danger*

*Ne pas utiliser de piles au lithium ni de piles rechargeables. Utiliser uniquement des piles alcalines de type “C”.*

1. Place the C-cell alkaline batteries in the battery compartment so that the positive side of the batteries are aligned with the positive battery terminals and the negative side of the batteries are aligned with the negative battery terminals (Figure 17).

![FIGURE 17. Alkaline C-Cell battery orientation](image)

### 4.5 ENSURING THAT DOME CONNECTORS ARE WATER-TIGHT

The dome connectors that you installed in Section 3.3 Placing Dome Connectors and Plugs in the Enclosure on page 14 must be tightened securely after sensor cable or electrical cables are routed through them.

*These dome connectors are not meant to be weight-bearing!* For best results, ensure that:

- The cable does not slide or wiggle after the connectors are tightened.
- Sufficient cable has been threaded through the connector so that secure wiring connections can be made.
- There is no weight or force from the water pulling on the cable.

### 4.6 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.
- Make sure that each wire is tightly screwed into the terminal strip.
- Make sure that each wire is touching the terminal strip. If the plastic wire jacket is clamped into the terminal strip, connections will not be made.
- Clip or cap any unused wires.
- Make sure that ribbon cables and the coin cell battery are secure.
### 4.7 AC ELECTRICAL CONNECTIONS

**Danger**

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

### CONNEXIONS AUX COURANT SECTEUR / ALTERNATIF

**Danger**

*Débranchez toute alimentation à l’appareil avant de connecter les fils.*

**Table 1. Con TROLL AC wiring connections**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
<th>North American Wire Color</th>
<th>European Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Line</td>
<td>Black</td>
<td>Brown</td>
</tr>
<tr>
<td>N</td>
<td>Neutral</td>
<td>White</td>
<td>Blue</td>
</tr>
<tr>
<td>⚡️</td>
<td>Protective Earth</td>
<td>Green</td>
<td>Green and yellow</td>
</tr>
</tbody>
</table>

**FIGURE 18. Protective Earth ground screw location and connection**

Connect ground wire to metal frame with green screw.
1. Disconnect power to the instrument.
2. Use a Phillips screwdriver to remove the controller lid.
3. Use a Phillips screwdriver to remove the AC board cover.
4. Carefully pull the cover out of the enclosure.
5. Connect the green Protective Earth wire to the metal screw as shown in Figure 18.
6. Connect the opposite end of the Protective Earth wire to the circuit board as described in Table 1.
7. Connect the stripped and tinned black and white conduit or power cord wires to the terminal strip as described in Table 1 and Figure 19.
8. Place the cover back in the enclosure and retighten the screw.
9. Replace the controller lid.
10. Reconnect power to the device.
4.8 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 fil.

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

1. Disconnect power to the instrument.
2. Use a Phillips screwdriver to remove the controller lid.
3. Use a Phillips screwdriver to remove the AC board cover.
4. Carefully pull the cover out of the enclosure.
5. Connect the stripped and tinned relay wires to the terminal strip as described in Table 2.
6. Place the cover back in the enclosure and retighten the screw.
7. Replace the controller lid.
8. Reconnect power to the device.

Note: Please note that all relay connections are unpowered relay NC & NO contact.

Table 2. Con TROLL AC wiring connections

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC1 or NC2</td>
<td>Normally closed</td>
</tr>
<tr>
<td>COM</td>
<td>Common</td>
</tr>
<tr>
<td>NO1 or NO2</td>
<td>Normally open</td>
</tr>
</tbody>
</table>

4.9 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 user customer.

4.10 DESICCANT PACK

Before closing the controller box, be sure to place the 5-inch desiccant pack (Cat. No. 0087630) inside the controller, being careful not to disturb any wiring.
Chapter 5  Input/Output Connections

The Input/Output board is shown in Figure 20. It is located inside the enclosure on the left side.

FIGURE 20. Input/Output board and required wire types

Requires 24-12 AWG cable. PLC connections typically consist of the following:
- Con TROLL PRO AC models: 24 VDC output to power accessories
- Con TROLL PRO DC model: 9-36 VDC inputs to power the controller (required)

Requires stripped and tinned RuggedCable® system

Requires stripped and tinned RuggedCable® system

Requires 24-12 AWG cable

Requires 24-12 AWG cable

Requires 24-12 AWG cable
### 5.1 PLC CONNECTIONS

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

**CONNEXIONS POUR AUTOMATE PROGRAMMABLE INDUSTRIEL**

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

PLC connections typically consist of the following:

- Con TROLL PRO AC models: 24 VDC output to power accessories
- Con TROLL PRO DC model: 9-36 VDC inputs to power the controller (required)

**Danger**  
*Do not connect AC power to DC powered model!*

**Danger**  
*Ne pas connecter la version courant continu de l'appareil au secteur (au courant alternatif)!*

1. Disconnect power to the instrument.
2. Use a Phillips screwdriver to remove the controller lid.
3. Connect the stripped and tinned PLC wires to the terminal strip as follows:

<table>
<thead>
<tr>
<th>Terminal Block</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GND</td>
<td>Signal ground</td>
</tr>
<tr>
<td>485A-</td>
<td>RS485 negative</td>
</tr>
<tr>
<td>485B+</td>
<td>RS485 positive</td>
</tr>
<tr>
<td>POWER</td>
<td>Input/Output (9-36 VDC)</td>
</tr>
</tbody>
</table>

4. Replace the controller lid and tighten screws.
5. Reconnect power to the device.

### 5.2 SENSOR WIRING CONNECTIONS

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

**Note**  
*Before attaching the In-Situ sensors, make sure that their communication settings are set to the factory default values. If you have a new sensor, these are already set. If you are using an existing sensor, use Win-Situ® 5 software to reset the communication settings.*
**CONNESSIONS POUR LE RACORD DES SONDES**

*Danger*

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

1. Disconnect power to the instrument.
2. Use a Phillips screwdriver to remove the controller lid.
3. Connect the stripped and tinned wires from the RuggedCable to the terminal strip as follows:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GND</strong></td>
<td><strong>Black</strong></td>
</tr>
<tr>
<td><strong>485A</strong></td>
<td><strong>Green</strong></td>
</tr>
<tr>
<td><strong>485B</strong></td>
<td><strong>Blue</strong></td>
</tr>
<tr>
<td><strong>POWER</strong></td>
<td><strong>Red</strong></td>
</tr>
<tr>
<td><strong>Green Earth Ground screw (Figure 21)</strong></td>
<td><strong>Shielded wire (silver color)</strong></td>
</tr>
</tbody>
</table>

4. Clip or cap the unused wires (brown and white).
5. Replace the controller lid and tighten screws.
6. Reconnect power to the device.

---

**FIGURE 21. Earth ground**

Earth ground screws for sensor silver wires

---

**5.3 CURRENT LOOP OUTPUTS**

*Danger*

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

*Danger*

**The maximum voltage that can be applied across the loop terminals is 36 V.**

---

**SORTIES DE COURANT DE BOUCLE**

*Danger*

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

*Danger*

**La tension maximum à travers la boucle ne doit pas excéder 36 V.**

1. Disconnect power to the instrument.
2. Use a Phillips screwdriver to remove the controller lid.
3. Connect the stripped and tinned, twisted-pair shielded, 24-12 AWG, 4-20 mA wires to the terminal strip and Protective Earth (ground) as follows:

<table>
<thead>
<tr>
<th>Wire Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOOP2-</td>
<td>To negative (-) end of customer-supplied device</td>
</tr>
<tr>
<td>LOOP2+</td>
<td>To positive (+) end of customer-supplied device</td>
</tr>
<tr>
<td>LOOP1-</td>
<td>To negative (-) end of customer-supplied device</td>
</tr>
<tr>
<td>LOOP1+</td>
<td>To positive (+) end of customer-supplied device</td>
</tr>
<tr>
<td>Green Earth Ground screw (Figure 21)</td>
<td>Shielded wire (silver color)</td>
</tr>
</tbody>
</table>

4. Connect the wires at the device end. **Do not ground the device at both ends of the cable.**

5. Replace the controller lid and tighten screws.

6. Reconnect power to the device.

### 5.4 RELAY CONNECTIONS ON THE I/O BOARD

Please note that the DC and AC models have different types of relays available! All relay connections are unpowered relay NC & NO contact connections only.

**DC Models**

Low voltage relays are available through the I/O board only.

**AC Models**

Low voltage relays are available through the I/O board.

High voltage relays are available through the AC board.

**Danger**

*Do not connect high voltage circuits (>50 V) to the terminal connectors on the I/O board!*

**Danger**

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

**Danger**

*Ne pas connecter les circuits a haute tension (plus de 50 V) aux bornes de connexion sur la carte entrées/sorties!*  
**Danger**

*Débrancher toute alimentation à l’appareil avant de connecter les fils.*

1. Disconnect power to the instrument.

2. Use a Phillips screwdriver to remove the controller lid.

3. Connect the stripped and tinned relay wires to the terminal strip as follows:

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GND</td>
<td>Signal ground</td>
</tr>
<tr>
<td>COM1 (or COM2)</td>
<td>Common</td>
</tr>
<tr>
<td>NC1 (or NC2)</td>
<td>Normally closed</td>
</tr>
<tr>
<td>NO1 (or NC1)</td>
<td>Normally open</td>
</tr>
</tbody>
</table>

4. Replace the controller lid and tighten screws.

5. Reconnect power to the device.

### 5.5 DESICCANT PACK

Before closing the controller box, place the 5-inch desiccant pack (Cat. No. 0087630) inside the controller, being careful not to disturb any wiring.
Chapter 6  Optional Battery Box

6.1 OVERVIEW OF BATTERY BOX KIT

The optional external battery box kit is designed to power the DC-L Model Con TROLL PRO controller via battery. It may also be used in conjunction with a 10W or 20W solar panel. The kit contains:

- Enclosure
- Two 7 Amp-hour lead-acid batteries
- One power cord to connect the battery box to the serial board in the Con TROLL housing
- Mounting hardware

You will need these tools:

- Wire stripper, wire cutter, X-acto knife
- Wrench
- Small screwdriver

6.1.1 Additional Considerations

- Replace the batteries every 18 to 24 months to ensure maximum charging capacity and to avoid unexpected power failures.
- Remove the batteries before short- or long-term storage.
- Clean the outside of the enclosure with a soft, damp cloth. Do not use ammonia or other harsh chemicals.
- The vent port, located on the side of the enclosure, must remain free of dirt and debris. Clean as needed.

6.2 PREPARING THE POWER CORD

The power cord comes wired into the battery enclosure. You will need to prepare the other end of the cord for wiring into the serial board in the Con TROLL housing.

1. With an X-acto knife or large wire stripper, remove the approximately 4 in. of outer sheath from the cable.
2. You will see a white and a black wire. Using smaller wire strippers, remove ¼- to ½-in of sheath from each wire.
3. Completely remove any shielded wire and other remaining wires with wire cutters.

6.3 MOUNT THE ENCLOSURE

1. Mount the battery enclosure on the same pole or rail as the Con TROLL PRO. Brackets for mounting to a 2½–3 in. diameter pole are included.
6.4 CONNECT THE EXTERNAL BATTERY ENCLOSURE TO THE CON TROLL PRO ENCLOSURE

1. Route the cable from the External Battery Enclosure to the Con TROLL PRO enclosure.
2. Thread the cable through the dome connector and into the enclosure.
3. Connect the leads to the PLC inputs in the I/O Board as described in the Con TROLL PRO Installation manual in Section 5.1 PLC Connections, on page 24.
4. Thread the opposite end of the cable through the dome connector and into the battery enclosure.
5. Firmly tighten the dome connector with a wrench.

6.5 CONNECT THE BATTERY TERMINALS

1. Place the batteries in the enclosure as shown.
2. Connect the black (–) leads to the black terminals.
3. Connect the red (+) leads to the red terminals.

Upon connection of the red leads, you should notice that the Con TROLL PRO screen illuminates.

FIGURE 22. Internal components of the battery box
Chapter 7

Maintenance

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

Danger
Installation de l'appareil “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.

7.1 CLEANING THE OUTSIDE OF THE ENCLOSURE
Wipe the enclosure periodically with a damp, soft cloth. Do not use solvents.

7.2 REPLACEMENT DESICCANT
Desiccant ensures the longevity of the electronic components inside the enclosure. Replace the desiccant (Cat. No. 0087630) when it turns from blue 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 a desiccant pack.
4. Replace the controller lid and tighten screws.
5. Reconnect power to the device.

7.3 REPLACEMENT C-CELL BATTERIES

Danger
Do not use lithium or rechargeable C-cell batteries. Use only alkaline C-cell batteries.

Danger
Ne pas utiliser de piles au lithium ni de piles rechargeables. Utiliser uniquement des piles alcalines de type “C”.

Maintenance 29
1. Disconnect AC power to the instrument.
2. Use a Phillips screwdriver to remove the controller lid.
3. Remove the spent batteries and dispose of them properly.
4. Place the new C-cell alkaline batteries in the battery compartment so that the positive side of the batteries are aligned with the positive battery terminals and the negative side of the batteries are aligned with the negative battery terminals (Figure 23).
5. Replace the controller lid and tighten screws.
6. Reconnect power to the device.

FIGURE 23. C-cell and clock batteries

7.4 REPLACEMENT CLOCK BATTERY
1. Disconnect AC power to the instrument.
2. Use a Phillips screwdriver to remove the controller lid.
3. Replace depleted clock battery as needed with 3 V MnO2-Li battery, CR2032 or equivalent (Figure 23).
4. Dispose of spent battery properly.
5. Replace the controller lid and tighten screws.
6. Reconnect power to the device.

7.5 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 8 Specifications

8.1 OVERVIEW

The Con TROLL PRO controller is a process sensor controller with an easy-to-use interface that supports two sensors. AC and DC versions are available:

- The DC version is low-power consumption data logger with local display and communication gateway for In-Situ groundwater or surface water probes and sensors.
- The AC version is a line-powered process controller with optional logging functions, plus local display and communication gateway features for In-Situ process instruments and sensors.

8.2 SPECIFICATIONS

<table>
<thead>
<tr>
<th>Component Description</th>
<th>Microprocessor-controlled measuring unit with measured value display, temperature display, and menu-driven system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller Operating Temperature</td>
<td>–20 to 70 °C (–4 to 158 °F); 95% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Controller Storage Temperature</td>
<td>–40 to 85 °C (–40 to 185 °F); 95% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Logging Memory</td>
<td>4 MB</td>
</tr>
<tr>
<td>Barometric Pressure Accuracy</td>
<td>±3 mbar max.</td>
</tr>
<tr>
<td>Barometric Pressure Resolution</td>
<td>0.01 mbar</td>
</tr>
<tr>
<td>Ambient Temperature Accuracy</td>
<td>±2° C maximum</td>
</tr>
<tr>
<td>Ambient Temperature Resolution</td>
<td>0.1° C</td>
</tr>
<tr>
<td>Enclosure</td>
<td>NEMA 4X/IP67</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>Model AC and Model AC-L: 100–240 V ~, 0.15 A, 50–60 Hz</td>
</tr>
<tr>
<td></td>
<td>Model DC-L: 9–36 V , 0.2 A max</td>
</tr>
<tr>
<td>Outputs</td>
<td>(2) 4-20 mA isolated current loop</td>
</tr>
<tr>
<td>Power Draw</td>
<td>Con TROLL Pro + 1 RDO Pro idle (not measuring, display on): 10 mA typical</td>
</tr>
<tr>
<td></td>
<td>Con TROLL Pro + 1 RDO Pro active (measuring, display on): 20 mA typical</td>
</tr>
<tr>
<td></td>
<td>Con TROLL Pro + 1 RDO Pro sleep (not measuring, display off): 320 µA typical</td>
</tr>
<tr>
<td></td>
<td>Con TROLL Pro only, sleep (no probe connected, display off): 70 µA typical</td>
</tr>
<tr>
<td>Relays</td>
<td>(2) low voltage (&lt;50 V) max at 2A</td>
</tr>
<tr>
<td></td>
<td>(2) high voltage (&gt;50 V) (AC-powered model only) 264 VAC max at 5A</td>
</tr>
<tr>
<td>Controller Dimensions</td>
<td>6.3 X 6.3 X 3.56 in (16 X 16 X 9.04 cm)</td>
</tr>
<tr>
<td>Controller Weight</td>
<td>AC and AC-L Models: 3.0 lb</td>
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<tr>
<td></td>
<td>DC-L Model: 2.4 lb</td>
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<tr>
<td>Certifications</td>
<td>CE approved (with RDO® PRO Optical Dissolved Oxygen sensor)</td>
</tr>
<tr>
<td></td>
<td>Listed for use in general locations to UL and CSA safety standards by ETL (with RDO PRO Optical Dissolved Oxygen sensor)</td>
</tr>
</tbody>
</table>
Declaration of Conformity

Manufacturer: In-Situ, Inc.
221 East Lincoln Avenue
Fort Collins, CO 80524
USA

Declares that the following product:
Product name: Con TROLL Pro
Model: AC, AC-L, and DC-L
Product Description: Process sensor controller with optional logging.

is in compliance with the following Directive:

and meets or exceeds the following international requirements and compliance standards:

**Immunity**
EN 61000-6-6, Electromagnetic Compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments.

**Emissions**
EN 61000-6-4: 2001, Electromagnetic Compatibility (EMC) – Part 6-4: EMISSION STANDARD FOR INDUSTRIAL ENVIRONMENTS. Includes IEC/EN 61000-3-2 and IEC/EN 61000-3-3 where applicable.

**Safety**

Bruce Barker
Director of New Product Development
In-Situ, Inc.
March 31, 2010