AIO System
for Iron & Sulfur Reduction

NelsenWater™
Treatment Solutions

1" & 1-1/4" Control AIO Programming Guide

Table of Contents

Drawings & Part Numbers

For parts information to all 1" & 1.25" Control Valves Refer to the

"C-Series" Installation & Maintenance Manual

ByPass Operation

To shut off water to the system, please position arrow handles as shown in the bypass operation diagram to the right. If your valve doesn't look like the diagram, contact your service technician for instructions on how to shut off water.

Normal Operation
Treated Out *Untreated In*

ByPass Operation
Untreated Out *Untreated In*
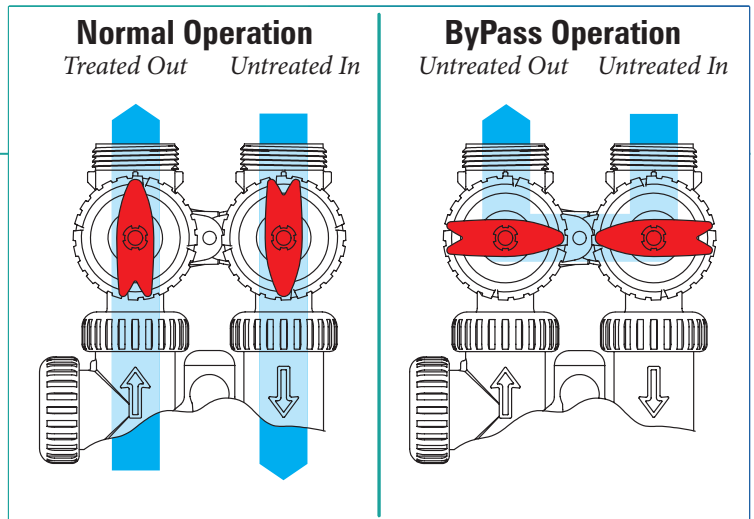
Regeneration Screens, Button Operation & Function

Regen Screen

```
TIME                REMAINING
        8:22
REGEN                    MIN
        BACKWASH
```

Displays the time remaining in the current cycle.
Pressing **REGEN** advances to the next cycle.

Button Operation and Function

**NEXT** Scrolls to the next display.

REGEN Pressing once and releasing will schedule a regeneration at the preset delayed regeneration time.

Pressing again and releasing will cancel the regeneration.

Pressing and holding for 3 seconds will initiate an immediate regeneration

Pressing while in regeneration will advance to the next cycle.

Pressing in the program levels will go backwards to the previous screen
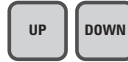
UP **DOWN** Changes variable being displayed.

NEXT **REGEN** Holding for 3 seconds initiates a control reset. The software version is displayed and the piston returns to the home/service position, re-synchronizing the valve.

Regeneration Cycles & Times

The user can initiate manual regeneration. The user has the option to request the manual regeneration at the delayed regeneration time or to have the regeneration occur immediately:

1. Pressing and releasing the **REGEN** button. " REGEN TODAY" will flash on the display and the regeneration will occur at the delayed regeneration time. The user can cancel the request by pressing and releasing the **REGEN** button.

2. Pressing & holding the **REGEN** button for approximately 3 seconds will immediately start the regeneration. The user cannot cancel this request, except by resetting the control by pressing **NEXT** and **REGEN** simultaneously for 3 seconds.

FILTERING REGEN CYCLES	RANGE
Backwash	14 minutes
Brine	40 minutes
Backwash	OFF
Rinse	OFF
Fill	OFF
Regen	OFF

User Displays

When the system is operating, one of five displays may be shown. Pressing **NEXT** will alternate between the displays shown below.
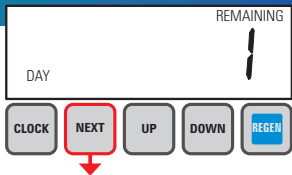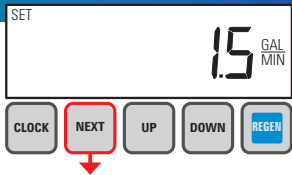
USER 1

Shows current time.

SET 12:01 P M

| CLOCK | NEXT | UP | DOWN | REGEN |

USER 2

Displays number of days to next regeneration.

REMAINING 1
DAY

| CLOCK | NEXT | UP | DOWN | REGEN |

USER 3

Flow Rate. Displays present flow rate.

SET 1.5 GAL/MIN

| CLOCK | NEXT | UP | DOWN | REGEN |

USER 3
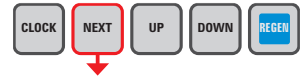
Displays total volume in gallons since last reset. If a meter is not used this display will be shown but 0 will be displayed.

SET 0 GAL

| CLOCK | NEXT | UP | DOWN | REGEN |

PRESS **DOWN** FOR 3 SECONDS TO RESET TO 0.

Setting Time of Day
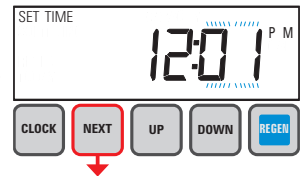
Push **NEXT** until time of day screen is displayed.
Press and hold **CLOCK** until **SET TIME** is displayed and the hour flashes once.
Press **UP** or **DOWN** until the correct hour is displayed.

Then press **NEXT**. The minutes will flash.
Press **UP** or **DOWN** until the correct minute is displayed.

Press **NEXT** to return to the User Displays. Time of day should only need to be set after power outages lasting more than 8 hours, if the battery has been depleted and a power outage occurs, or when daylight savings time begins or ends. If a power outage lasting more than 8 hours occurs, the time of day will flash on and off which indicates the time of day should be reset. If a power outage lasts less than 8 hours and the time of day flashes on and off, the time of day should be reset and the battery replaced.

| CLOCK | NEXT | UP | DOWN | REGEN |

| CLOCK | NEXT | UP | DOWN | REGEN |

SET TIME 12:01 P M

| CLOCK | NEXT | UP | DOWN | REGEN |

SET TIME 12:01 P M

| CLOCK | NEXT | UP | DOWN | REGEN |

AIO Controller - Configuration Settings

Step 1CS

Press **NEXT** and **DOWN** simultaneously for 5 seconds and release.

Press **NEXT** and **DOWN** simultaneously for 5 seconds and release. If the screen in **Step 2CS** does not appear, the lock on the valve is activated.

To unlock, press **DOWN**, **NEXT**, **UP** and **CLOCK** in sequence, then press **NEXT** and **DOWN** simultaneously for 5 seconds and release. Press **NEXT** and **DOWN** simultaneously for 5 seconds and release.

Step 2CS

Use **UP** or **DOWN** to select FILTERING REGEN.

Press **NEXT** to go to *Step 3CS*.
Press **REGEN** to *exit* Configuration Settings.

Step 3CS

Use **UP** or **DOWN** to adjust backwash time.

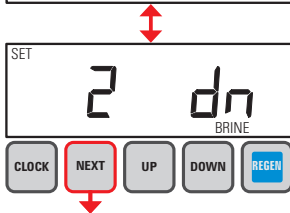Press **NEXT** to go to *Step 4CS*.
Press **REGEN** to return to *previous step*.

Step 4CS

Step 4 alternates between the two displays shown.

Use **UP** or **DOWN** to adjust brine time.

Press **NEXT** to go to *Step 5CS*.
Press **REGEN** to return to previous step.

Step 5CS

Use **UP** or **DOWN** to set 2nd backwash to OFF.

Press **NEXT** to go to *Step 6CS*.
Press **REGEN** to return to *previous step*.

Step 6CS

Use **UP** or **DOWN** to set RINSE to **1**.
Press **NEXT** to go to *Step 7CS*.
Press **REGEN** to return to *previous step*.

Step 7CS

Use **UP** or **DOWN** to set FILL to OFF.

Press **NEXT** to go to *Step 8CS*.

Press **REGEN** to return to *previous step*.

Step 8CS

Use **UP** or **DOWN** to set REGEN to OFF.
Press **NEXT** to go to *Step 9CS*.
Press **REGEN** to return to *previous step*.
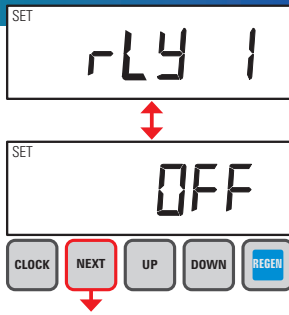
AIO Controller - Configuration Settings

Step 9CS

Step 9 alternates between the two displays shown.

Use **UP** or **DOWN** to set RELAY 1 to OFF.
Press **NEXT** to go to *Step 10CS*.
Press **REGEN** to return to *previous step*.
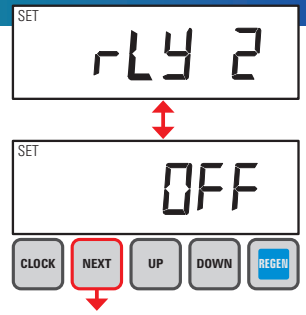
SET
rLY 1

SET
OFF

CLOCK | NEXT | UP | DOWN | REGEN

Step 10CS

Step 10 alternates between the two displays shown.

Use **UP** or **DOWN** to set RELAY 2 to OFF.
Press **NEXT** to EXIT Configuration Settings.
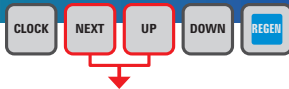Press **REGEN** to return to *previous step*.

SET
rLY 2

SET
OFF

CLOCK | NEXT | UP | DOWN | REGEN

Installer Set-up

Step 1i

CLOCK | NEXT | UP | DOWN | REGEN

Press **NEXT** and **UP** simultaneously for 3 seconds and release. If screen in *Step 2i* does not appear the lock on the valve is activated.

To unlock press **DOWN**, **NEXT**, **UP**, **REGEN** in sequence, then press **UP** and **DOWN** simultaneously for 5 seconds and release.
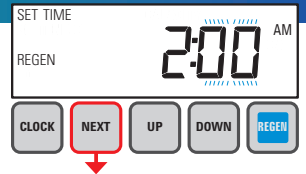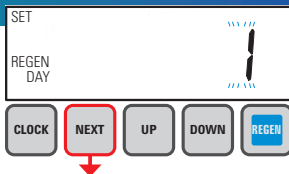
Step 2i

Regen Day - Use **UP** or **DOWN** to adjust the number of days between regeneration.
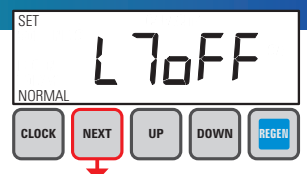
Press the **NEXT** button to go to *Step 3i*.
Press **REGEN** to return to *previous step*.

SET
REGEN
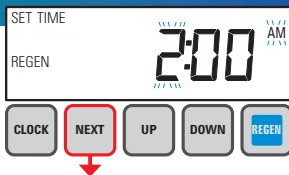DAY
1

CLOCK | NEXT | UP | DOWN | REGEN

Step 3i

Regeneration Time Hour - Use **UP** or **DOWN** to set the hour of regeneration.

Press the **NEXT** button to go to *Step 3i*.
Press **REGEN** to return to *previous step*.

SET TIME
REGEN
2:00 AM

CLOCK | NEXT | UP | DOWN | REGEN

Step 4i

Regeneration Time Minute - Use **UP** or **DOWN** to set the minute of regeneration.

Press the **NEXT** button to go to *Step 5i*.
Press **REGEN** to return to *previous step*.

SET TIME
REGEN
2:00 AM

CLOCK | NEXT | UP | DOWN | REGEN

Step 5i

Not used in this application.

Press **NEXT** to EXIT installer setup.

SET
L7oFF
NORMAL

CLOCK | NEXT | UP | DOWN | REGEN

Valve History

Step 1D

Press **UP** and **DOWN** simultaneously for 3 seconds and release. If screen in *Step 2D* does not appear the lock on the valve is activated.
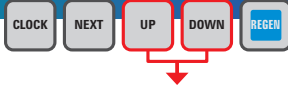
To unlock press **DOWN**, **NEXT**, **UP**, **REGEN** in sequence, then press **UP** and **DOWN** simultaneously for 5 seconds and release.
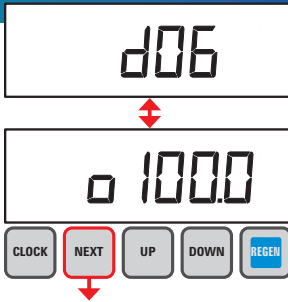
Step 2D

Software Version.

The screen alternates between the two screens shown.

Press **NEXT** to go to *Step 3D*.
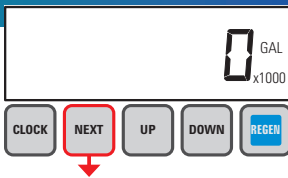Press **REGEN** to *exit* Diagnostics.

Step 3D

Volume, total used since start-up: This display shows the total gallons treated since startup. This display will equal zero if a water meter is not installed.

Press the **NEXT** button to go to *Step 4D*.
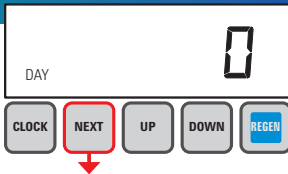Press **REGEN** to return to *previous step*.

Step 4D

Days, total since start-up: This display shows the total days since startup.

Press the **NEXT** button to go to *Step 5D*.
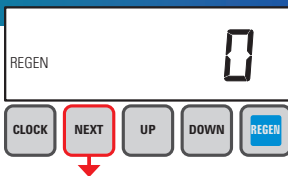Press **REGEN** to return to *previous step*.

Step 5D

Regenerations, total number since start-up: This display shows the total number of regenerations that have occurred since startup.

Press the **NEXT** button to go to *Step 6D*.
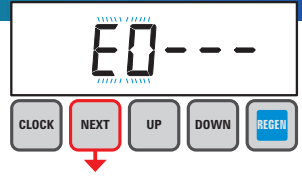Press **REGEN** to return to *previous step*.

Step 6D

Error Log: This display shows a history of the last 10 errors generated by the control during operation. Press **UP** or **DOWN** to view each recorded error.

Press **NEXT** to go to *Step 7D*.
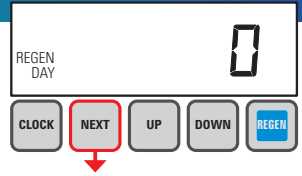Press **REGEN** to return to *previous step*.

Step 7D

Days, since last regeneration: This display shows the days since the last regeneration occurred.

Press **NEXT** to go to *Step 8D*.
Press **REGEN** to return to *previous step*.

Step 8D

Volume, since last regeneration: This display shows the volume of water that has been treated since the last regeneration. This display will equal zero when a water meter is not installed.

Press **NEXT** to go to *Step 9D*.
Press **REGEN** to return to *previous step*.

Step 9D

Volume, 63-day usage history: This display shows day 0 (for today) and flashes the volume of water treated today. Pressing **UP** will show day 1 (which would be yesterday) and flashes the volume of water treated on that day. Continue to press **UP** to show the maximum volume of water treated for the last 63 days. If a regeneration occurred on the day the word "REGEN" will also be displayed. This display will show dashes if a water meter is not installed.
Press **NEXT** exit Diagnostics.
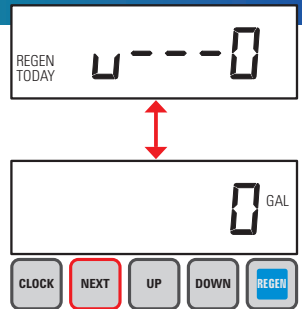
Front Cover and Drive Assembly

Part No.	Description	Qty
CL4174-01	NWTS Front Cover Assembly	1
CL3107-01	Motor Assembly	1
CL3106-01	Drive Bracket & Spring Clip	1
CL4080NL-BOARD	NWTS 5 Digit Replacement Board	1
CL3110	Drive Reducing Gear 12 x 36	3
CL3109	Drive Gear Cover	1
Not Shown		
CL3186	AC Adapter 120V-12V	
CL3186EU	AC Adapter 220-240V-12V EU	1
CL3186UK	AC Adapter 220-240V-12V UK	
CL3186-01	AC Adapter Cord Only	
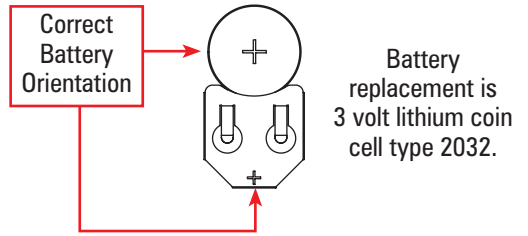
Relay Specifications: 12V DC Relay with a coil resistance not less than 80 ohms. If mounting relay under the cover check for proper mounting dimensions on the backplate.

Wiring for Correct On/Off Operation	
PC Board Relay Terminal Block	Relay
RLY 1	Coil - +
COM	Coil +

Correct Battery Orientation

Battery replacement is 3 volt lithium coin cell type 2032.

When replacing the battery, align positives and push down to fully seat.

Fully Seated

CL4080NL-BOARD

PC Board Relay Terminal Block

CL4174-01

CL3110

CL3109

CL3106-01

CL3107-01

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Treatment Solutions