



VS Omni®

Troubleshooting Guide Residential



TSG-VSO100c

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Safety Precautions



High Voltage Electrocution Hazard

Hazardous voltage can shock, burn, cause serious injury and or death. To reduce the risk of electrocution and or electric shock hazards:

- Only qualified technicians should remove service and install equipment
- Replace damaged wiring immediately
- Ensure applicable equipment is properly grounded and bonded

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VS Omni: Overview

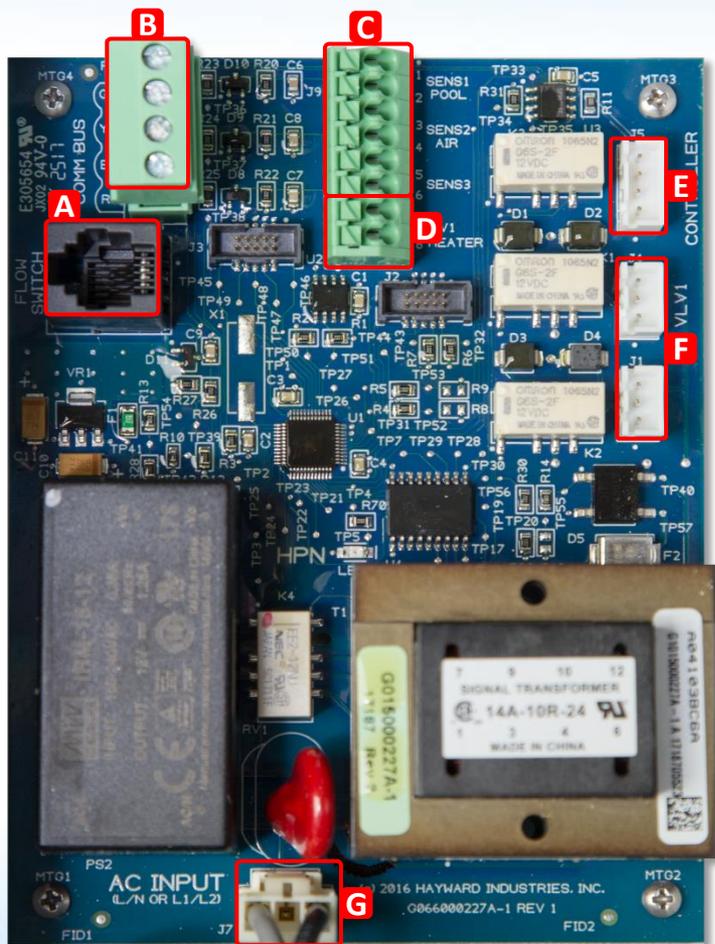
- The Hayward VS Omni is a pump based automation solution that is ideal for both retrofit as well as new pool installations.
- The VS Omni features an internal WiFi chip, capable of connecting to a home network broadcasting 2.4ghz Wi-Fi signals.
- The VS Omni features a touch screen display that provides easy navigation in virtually any lighting condition.
- Each VS Omni unit supports up to 2 smart relays, up to 2 VSPs, 1 valve, 1 heater, and 3 sensors.
- Its USB port supports the ability to upgrade the system firmware as well as backup and restore configuration files.



VS Omni: Replacement Part Numbers

Part Numbers	Description:
HLXDLCD	LCD Disp Replacement
HLXDCOVER	Sun Cover Replacement
HLXDSPCASE	Case Replacement
HLX485100	RS485 100ft Extension
HLX485200	RS485 200ft Extension
HLXHIOPCB	OmniHub PCB
HLXHW5PK	OmniHub Hardware 5pk
HLXWHIP6	Omni 6ft Whip
HLX485RELAY	Omni RS485 Smart Relay
HLXJBOX	Replacement Jbox
HLXRLYLABL	Replacement Relay Label
HLHCONTROL	Replacement Control (complete display)

VS Omni: HUB PCB Layout



HLXHIOPCB

A	Flow Switch Port (Optional flow monitoring)
B	RS485 Comm Bus
C	Temp Sensors (3.3VDC)
D	Heater Terminal (dry contact)
E	Controller Connector
F	Valve Actuator Output (24VAC)
G	Hub Board Input (120VAC/240VAC)

VS Omni: Smart Relay

Front

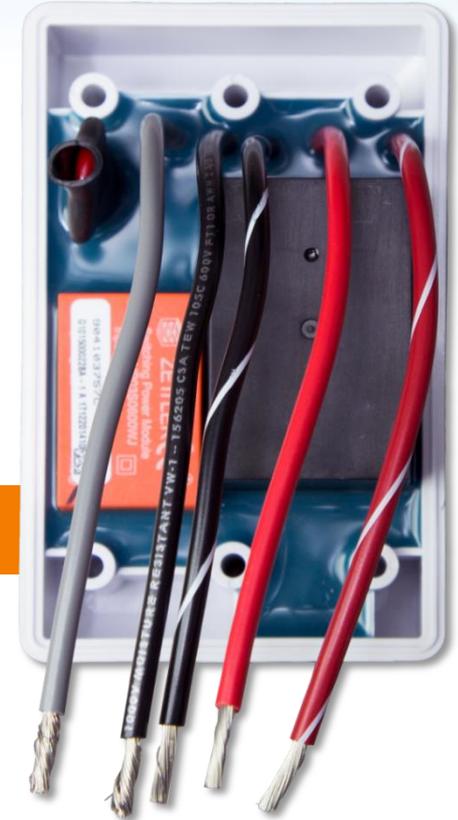


HLX485RELAY

Label	Function
Remote	Green = communicating with wiring hub Red = not communicating with wiring hub
Relay	Green = Relay is ON (Load power) RED = Relay is OFF (No Load power)
ON/OFF	Provides manual override only when the wiring hub comm is down / unassigned

Color	120VAC	240VAC
Grey	Neutral	Connect to Red
Black	Line In	Line 1 In
Black/White	Load out	Load 1 Out
Red	No Connection	Line 2 In
Red/White	No Connection	Load 2 Out

Back



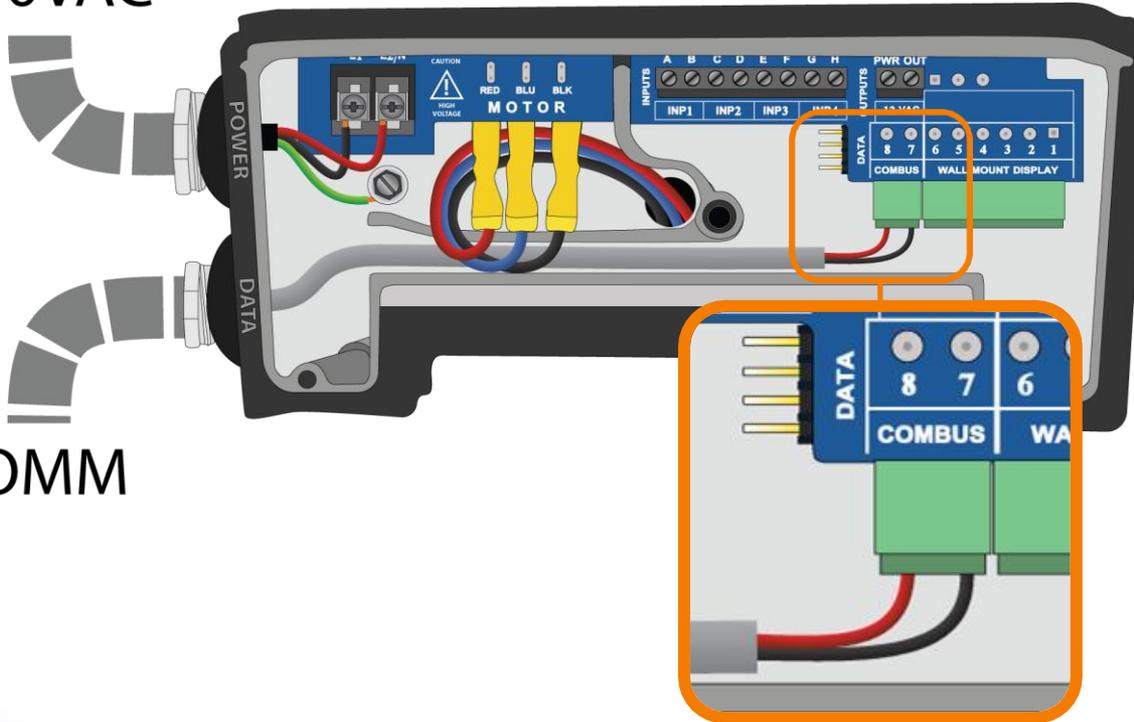
VS Omni & TriStar 950

The following instructions are for TriStar 950 ONLY.

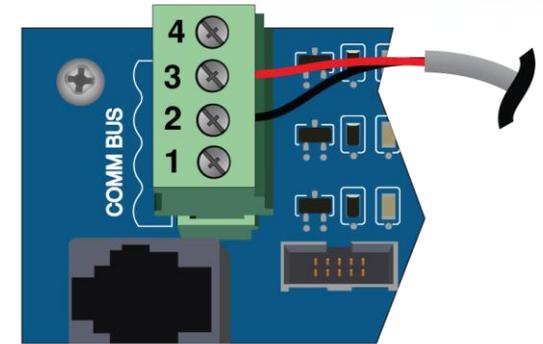
PUMP – Wiring Compartment

240VAC

COMM



VS Omni – Wiring Hub (RS485)



Communication Hookup:

Recommended Wire: 18 Gauge Stranded, 2-conductor shielded twisted pair:

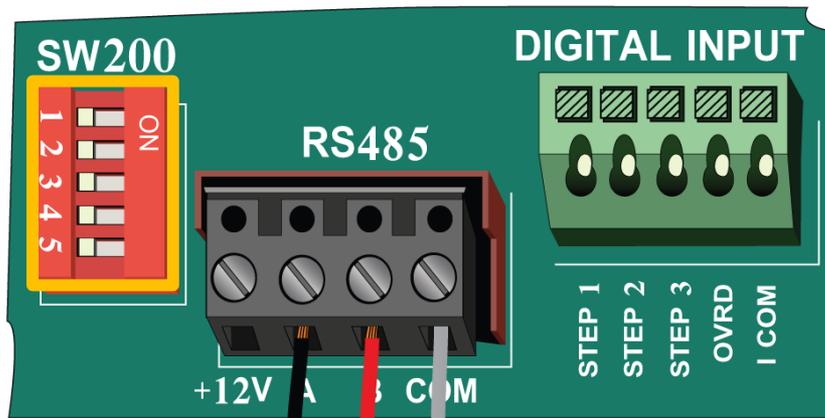
- 7 (Pump) to 2 on the VS Omni
- 8 (Pump) to 3 on VS Omni

VS Omni & TriStar 900/MaxFlo VS/Super Pump VS

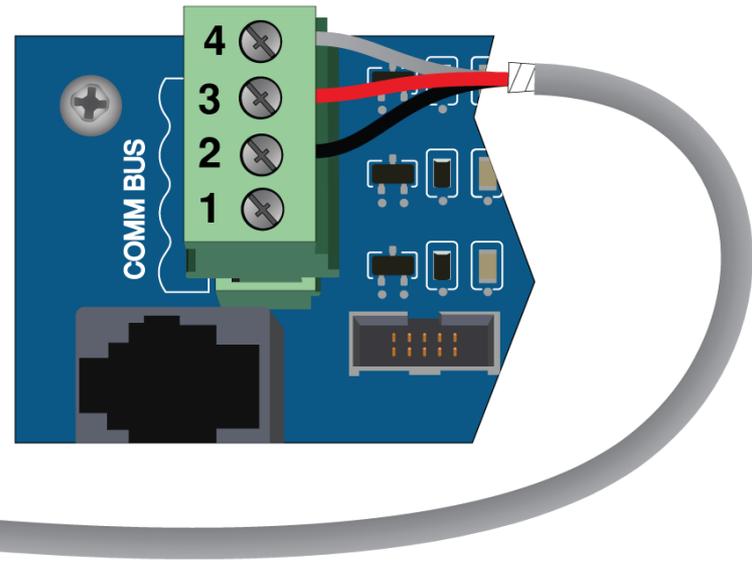
The following instructions are for TriStar 900, MaxFlo VS and Super Pump VS ONLY.

PUMP – Wiring Compartment:

***Set all dip switches to OFF**



VS Omni – Wiring Hub (RS485)



Communication Hookup:

Recommended Wire: 18 Gauge Stranded, 2-conductor shielded twisted pair with a drain wire:

- A (Pump) to 2 on the VS Omni
- B (Pump) to 3 on VS Omni
- COMM (Pump) to 4 on VS Omni



VS Omni®

How To:



How To: Download Firmware

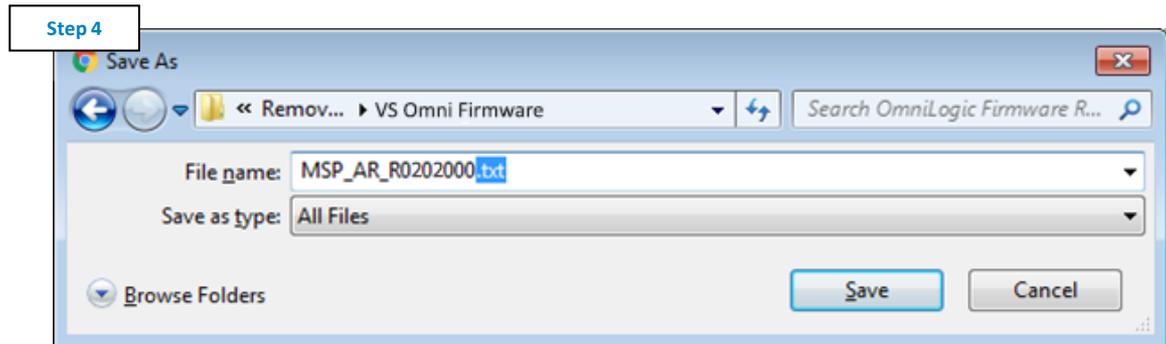
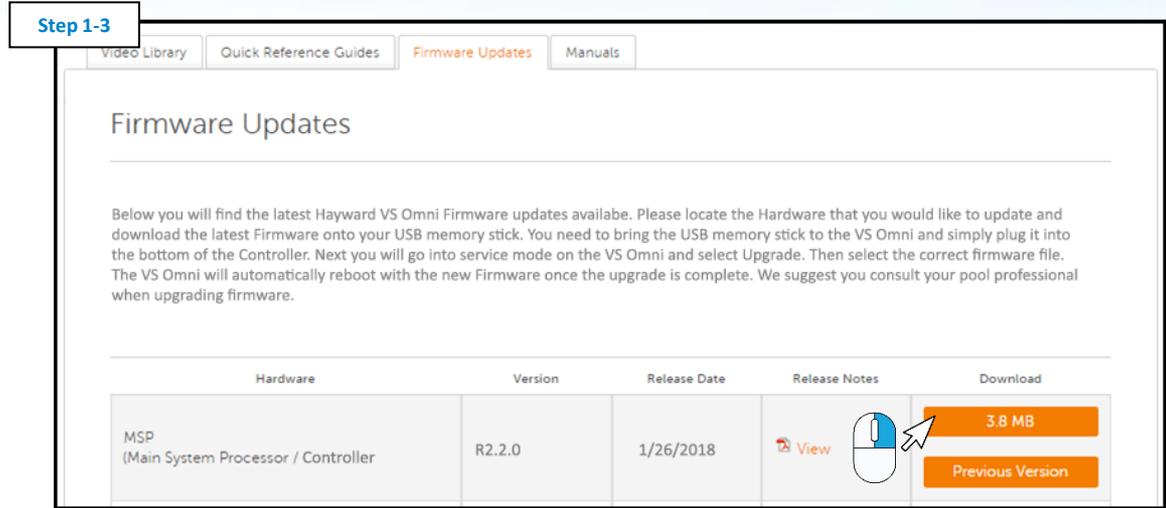
To download the latest firmware to a USB drive go to www.hayward.com
Support Center > Automation > VS Omni > Support

Step 1: Right click on the link of the file you wish to download.

Step 2: Within the options menu select "Save link as..."
(**Note:** USB drive must already be connected to your computer).

Step 3: From the "Save As" window navigate to the desired USB drive.
(**Note:** please make sure to select the root directory of the USB drive).

Step 4: Before saving, change the "Save as type" to "All Files" AND remove the ".txt" file extension that automatically appears. Then click on "Save" button.
(**Note:** failing to remove the .txt file extension will result in an unreadable firmware upgrade file).



This process was accomplished through [Google's Chrome Browser](http://www.google.com).

How To: Upgrade Firmware

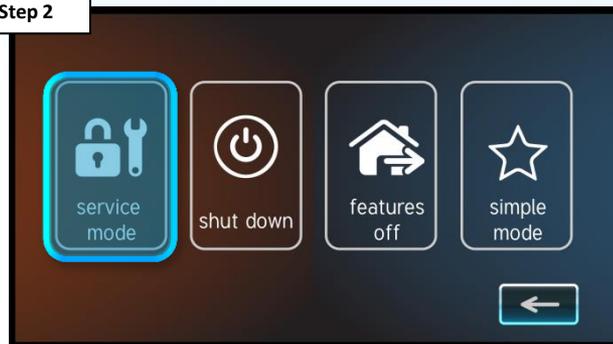
Insert USB drive into the bottom of the controller & follow the steps provided below:

Step 1



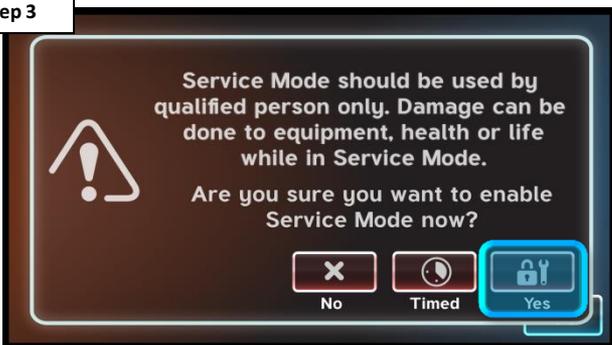
Press the power button.

Step 2



Select "service mode".

Step 3



Select either "Yes" or "Timed" to continue.

Step 4



Tap the "upgrade" icon.

How To: Upgrade Firmware (cont.)

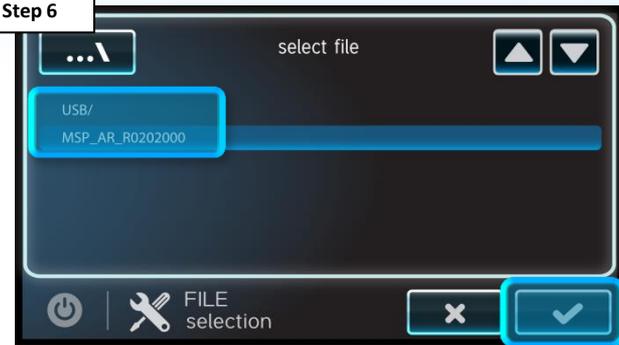
NOTE: Make sure all devices are up to the latest firmware revision.

Step 5



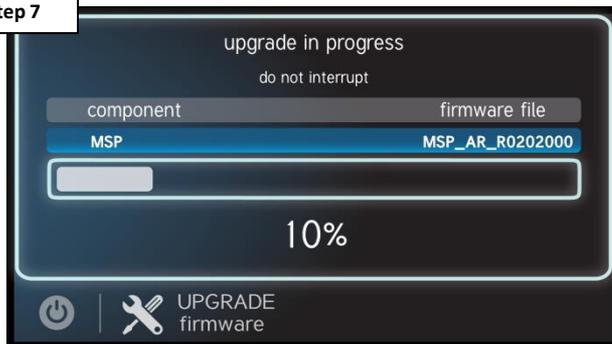
Select the "MSP" to upgrade the controller.

Step 6



Select USB, latest file, and then check mark.

Step 7



Once the upgrade has started **DO NOT** power off while in process.

Step 8



Once the firmware upgrade has completed, press the check mark to power cycle the unit.

How To: Back-Up Configuration

Use the steps provided to Backup a configuration. These steps aid firmware upgrades, controller changes, and corrupted configurations.

Step 1



On the right of the dashboard locate and tap the “config” icon.

Step 2



Select the “Backup config” option (third down on the left most column).

Step 3



Select “Backup to USB”, after inserting a USB drive, then press the check mark.

Step 4



Once the backup is confirmed press the check mark to finalize.

How To: Connect to Wi-Fi

The following identifies how to connect to a 2.4Ghz Wi-Fi signal.

Step 1



On the right of the dashboard locate and tap the “config” icon.

Step 2



Select the “network” option, on the right side of the screen.

Step 3



If no network has been setup prior, select the desired Wi-Fi signals, otherwise skip to Step 6.

Step 4



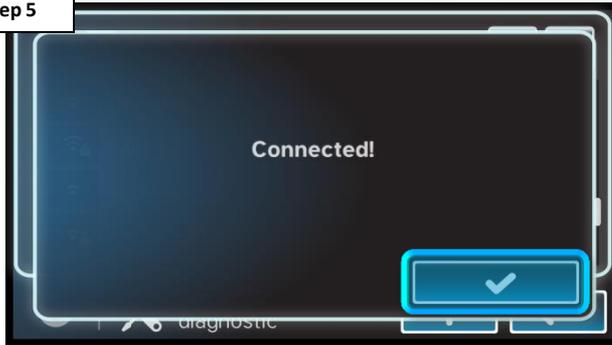
Enter the network password, followed by the check mark to complete.

NOTE: The network password IS CASE SENSITIVE. To confirm connection, go to Config>Network and verify IP addresses appear under the dynamic tab.

How To: Connect to Wi-Fi (cont.)

The network diagnostic tool will check for possible connection issues.

Step 5



If the password was accepted, press the check mark. If not, go back and verify credentials.

Step 6



A network diagnostics test will run, if all green check marks appear press the back button.

Step 6b



Test	Description
Verifying Netlink	Confirms network password acceptance
Verifying Network Address	Verifies the Controller has an IP credentials (supplied by router)
Verifying Network Connection	Confirms the router is communicating
Verifying DNS	Conducts a web test (pings a webpage)
Verifying Internet Connection	Verifies connection with the OmniLogic Web Server

The following table outlines a description of each test, conducted by the Network Diagnostics. A failure of any of these items will provide additional troubleshooting steps.

How To: Remove DDT

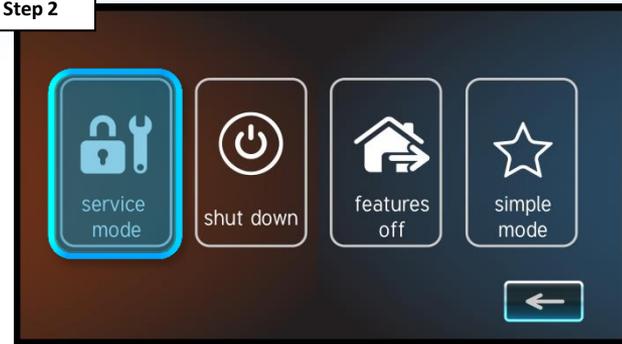
The following identifies how to remove the DDT or Device Discovery Table. This may be helpful when attempting to resolve communication issues.

Step 1



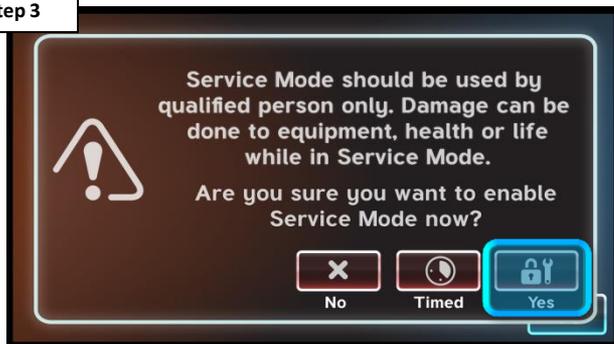
Press the power button.

Step 2



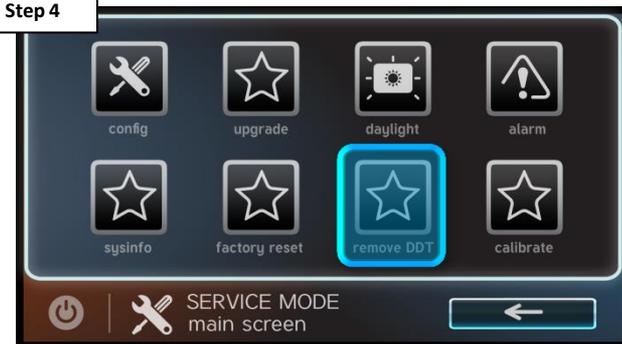
Select "service mode".

Step 3



Select either "Yes" to continue and enter service mode.

Step 4



Select "remove DDT", then check mark. After system is wiped clean, then power cycle.

NOTE: After removing the DDT, ALWAYS power cycle the controller using the power icon; this will ensure a new table is created upon boot up.

How To: Reset to Factory Default

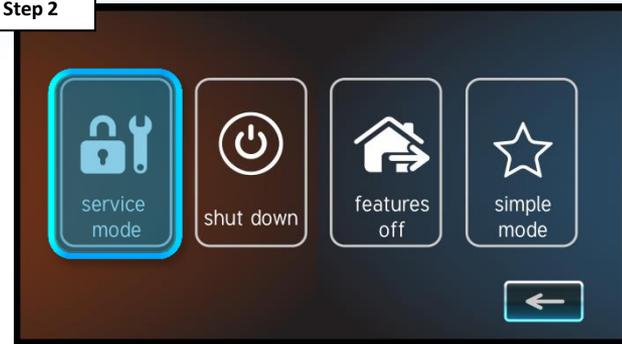
The following identifies how to reset the system to factory default, this can be helpful in resolving obscure schedule or command issues.

Step 1



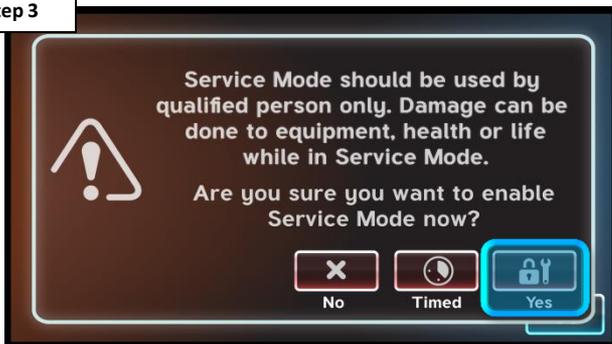
Press the power button.

Step 2



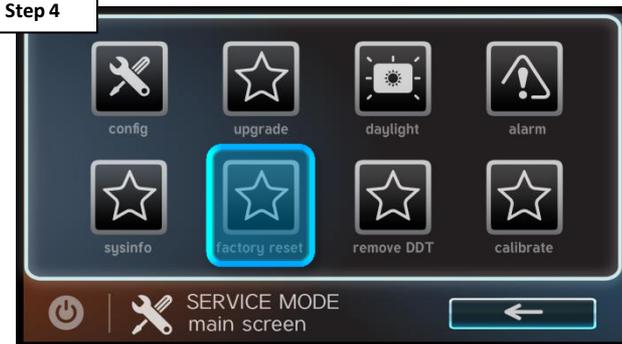
Select "service mode".

Step 3



Select either "Yes" to continue and enter service mode.

Step 4



Select "factory reset", then check mark. After system is wiped clean, it will power cycle.

NOTE: Doing a factory reset will remove all configurations, schedules, and times. Following a factory reset, the system will have to be reprogrammed.

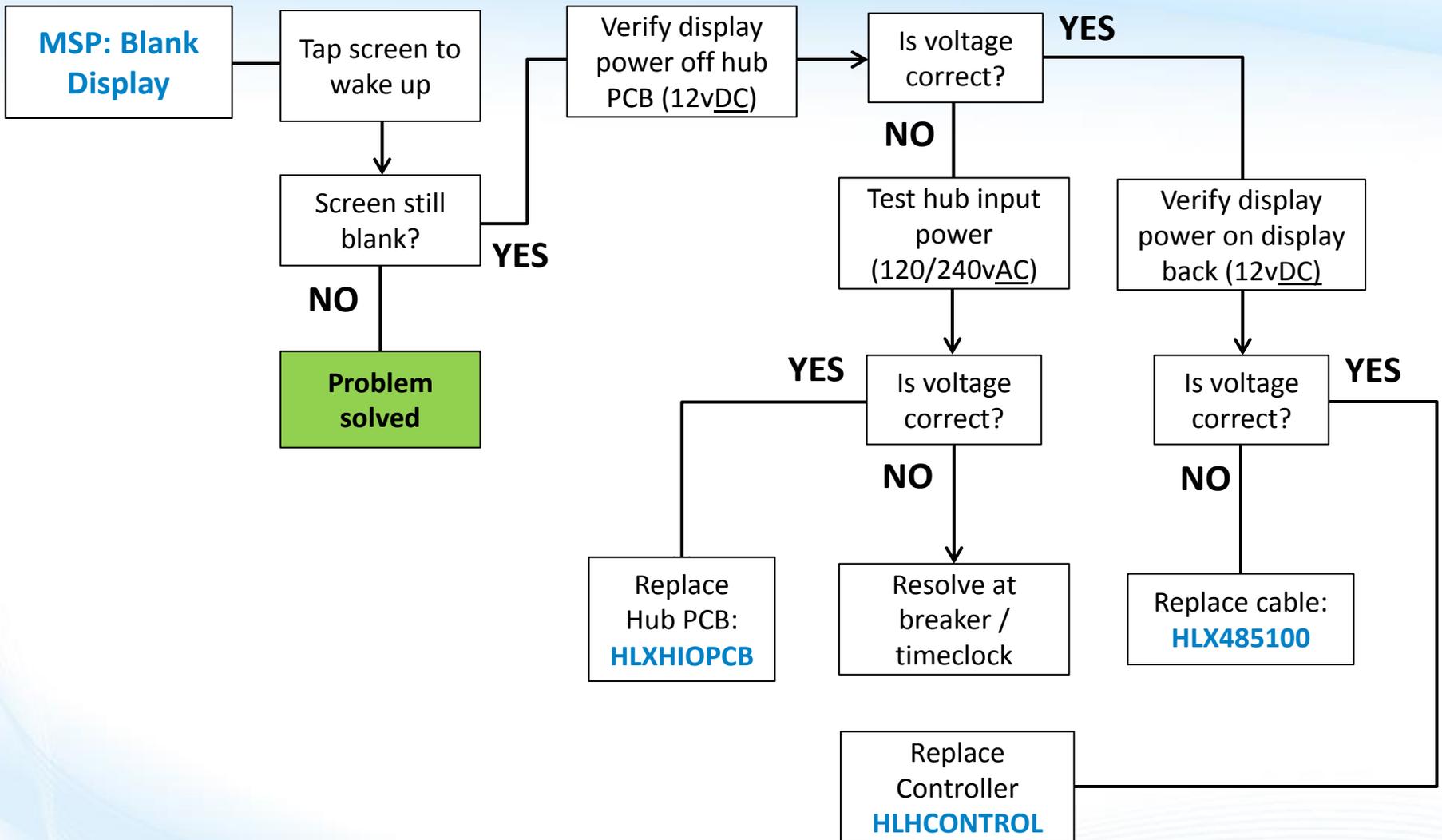


VS Omni®

Troubleshooting



1. Controller: Blank Display



1. Controller: Blank Display

The Controller display runs off of 12vDC. This power is supplied by the VS Omni wiring hub. Inspect the wire from the controller to the hub for damage.

Tap On the Screen

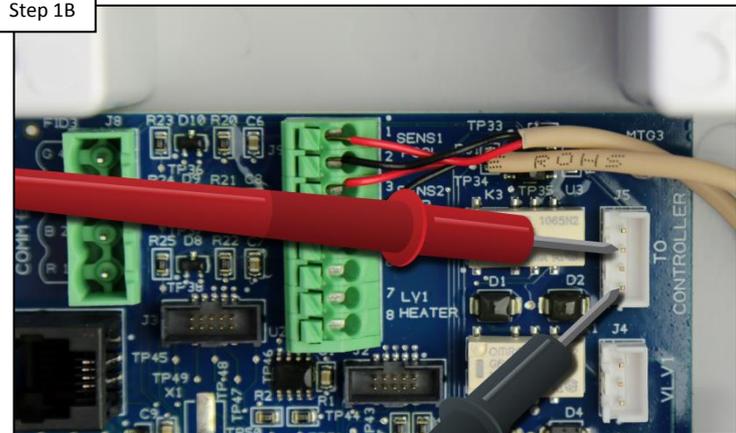
Step 1A



Tap on the controller screen in an attempt to wake the display from a system shutdown. Make sure glare is not the culprit. IF tapping does not change the display state, go to step 1B.

Test for 12vDC

Step 1B



The controller display is powered by wiring hub. On the top right of the wiring hub PCB, test for 10.2-13.8vDC between pins 2 & 4 (top to bottom). IF voltage is correct, jump to slide 1E. IF no/low voltage, go to 1C.

1. Controller: Blank Display (cont.)

The wiring hub can be powered either by 120 or 240vAC. Ensure the breaker / timeclock is not tripped or OFF.

Test Wiring Hub Input

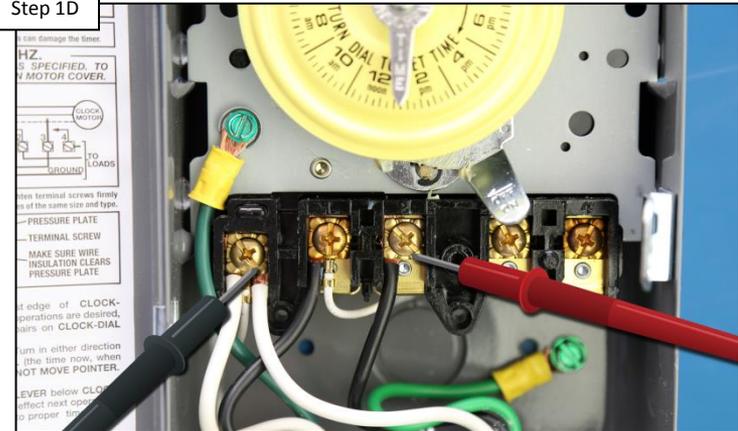
Step 1C



Unplug input power connector. Verify 120 or 240vAC. IF 120/240vAC is present, replace the hub PCB (HLXHIOPCB). IF not, go to step 1D.

Test Breaker/Timeclock

Step 1D



Test power hub power at the breaker/timeclock for 120 or 240vAC. IF correct, fix wiring/connections. IF not, resolve at breaker/timeclock.

1. Controller: Blank Display (cont.)

The controller enclosure is deigned to be water resistant, with a gasket seal. Care should be taken during reassembly.

Access Controller PCB

Step 1E



On the back of the controller, remove the 4 screws that secure the controller display to the housing. This provides access to the controller PCB. Once complete, go to step 1F.

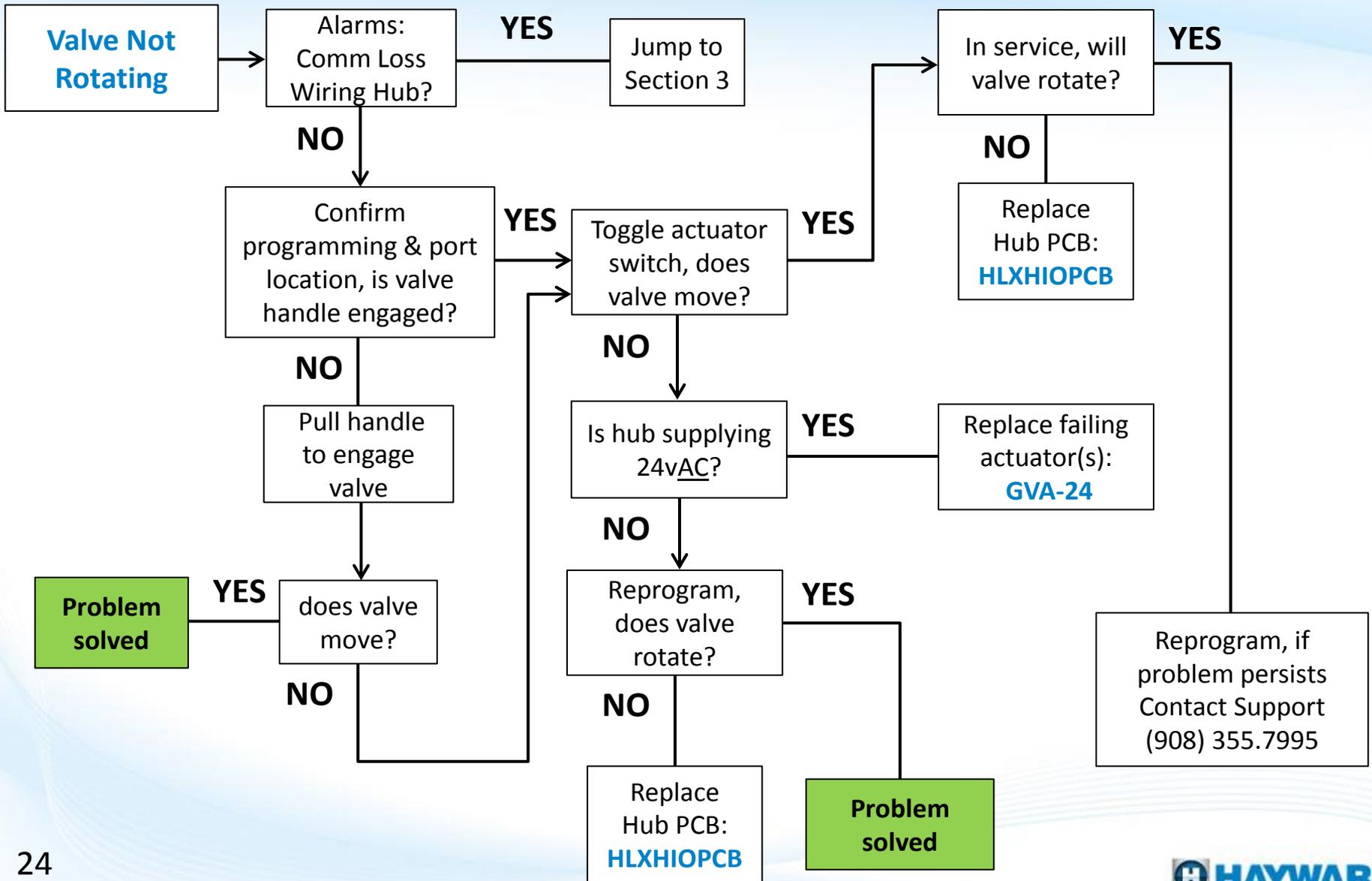
Test Controller PCB Input

Step 1F



Test cable that plugs into controller PCB for 12vDC between terminals 1 & 3 (left to right). IF power is present, replace controller ([HLHCONTROL](#)). IF no/low voltage replace controller cable ([HLX485100](#)).

2. Valve Not Rotating



2. Valve Not Rotating

Comm Loss Alarms can prevent equipment, such as a valve actuator, from functioning. The alarms icon is located on the right side of the controller dashboard. Before proceeding, verify whether a Comm Loss Alarm appears.

Check Display for a Comm Loss - Wiring Hub Alarm



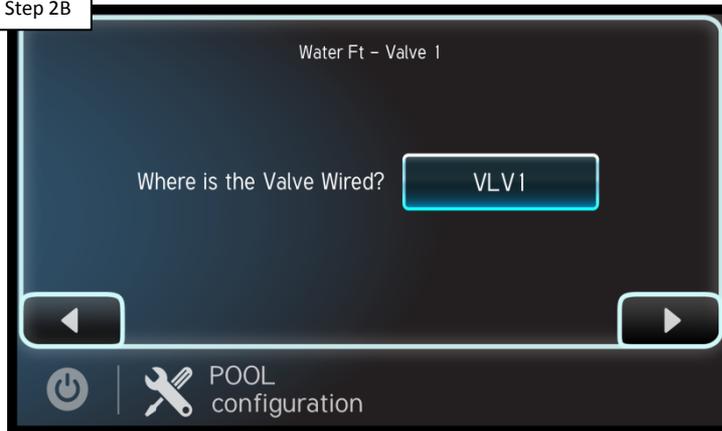
On the display, select the “alarm” icon (on right side of the screen). IF an Comm Loss – Wiring Hub appears go to section 3, IF it does not appear, go to 2B.

2. Valve Not Rotating (cont.)

The valve actuator circuit will only receive power from the wiring hub if it is correctly programmed. Verify the valve is not only programmed but is also plugged into the corresponding valve actuator port.

Confirm Programming

Step 2B



Make sure valve actuator is programmed to the correct port. To confirm, also test the actuator on the other port. IF programming is confirmed, go to step 2C. IF not, program the valve using quick edit.

Verify Shaft is Engaged

Step 2C



Verify the actuator shaft is engaged (as shown above). IF the valve moves freely, when rotating the handle, pull up on the handle to engage, IF engaged, proceed to step 2D.

PRO TIP: To add/remove & re-add a valve, go to config>config wizard>quick edit>feature (to add/remove & re-add)>add feature>select valve port>save.

2. Valve Not Rotating (cont.)

NOTE: GVA-24s come factory preset with toggle switches in the OFF position. For the valve actuator to rotate based on supplied power, the switch will have to be moved to the ON1 or ON2 position (which will depend on the installation).

Check Actuator Toggle

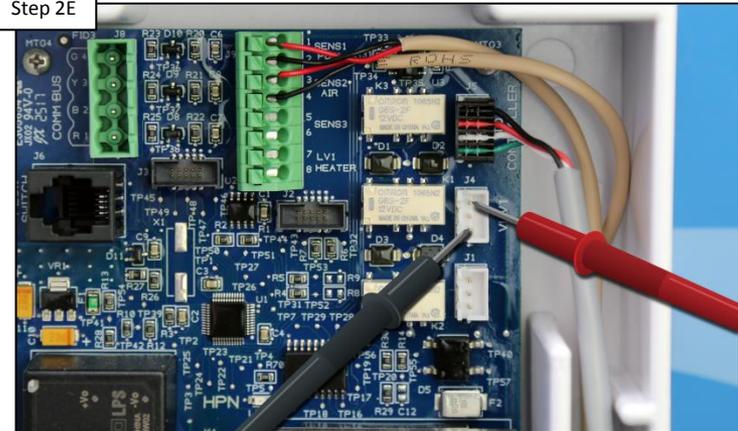
Step 2D



Locate toggle switch (bottom of actuator). Verify switch is either in ON1 or ON2 positions. Toggle the switch between ON1/ON2, IF actuator does not move, go to step 2E, otherwise skip to step 2G.

Check ACT power

Step 2E

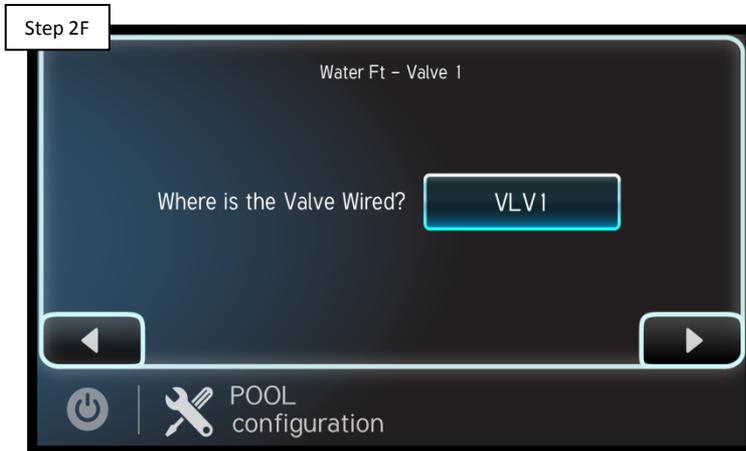


On the wiring hub PCB, verify 20-24vAC between pin 1-3 or 2-3 (depending on expected valve position). IF no/low voltage is present, go to step 2F. IF correct, replace actuator (GVA-24).

2. Valve Not Rotating (cont.)

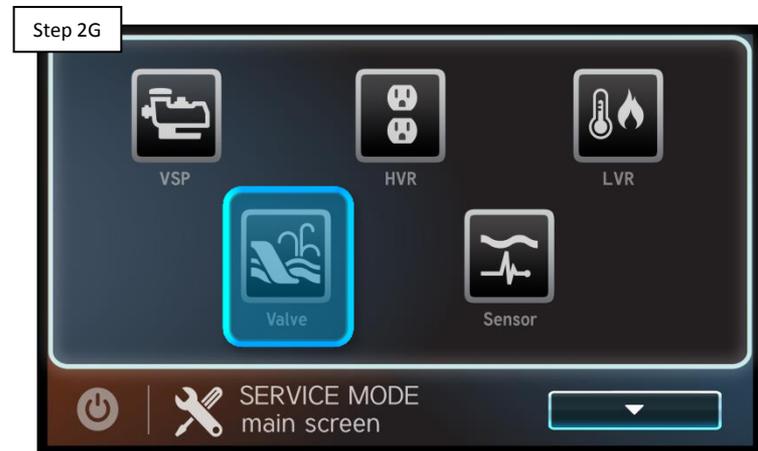
NOTE: If the valve rotates when activated through service mode, but will not do so while in normal operation. Then either the programming or an interlock are most likely causing the problem.

Reprogram Valve



Reprogram the value using quick edit. IF the valve still does not rotate when turned ON through the controller, replace the Hub PCB ([HLXHIOPCB](#)).

Service Mode



Put the controller in service mode and attempt to force the valve on. IF the still does not rotate, replace the Hub PCB ([HLXHIOPCB](#)). IF the valve rotates, go to 2H.

2. Valves Not Rotating (cont.)

If the valve rotates when activated through service mode, but will not do so while in normal operation. Then either the programming or an interlock are most likely causing the problem.

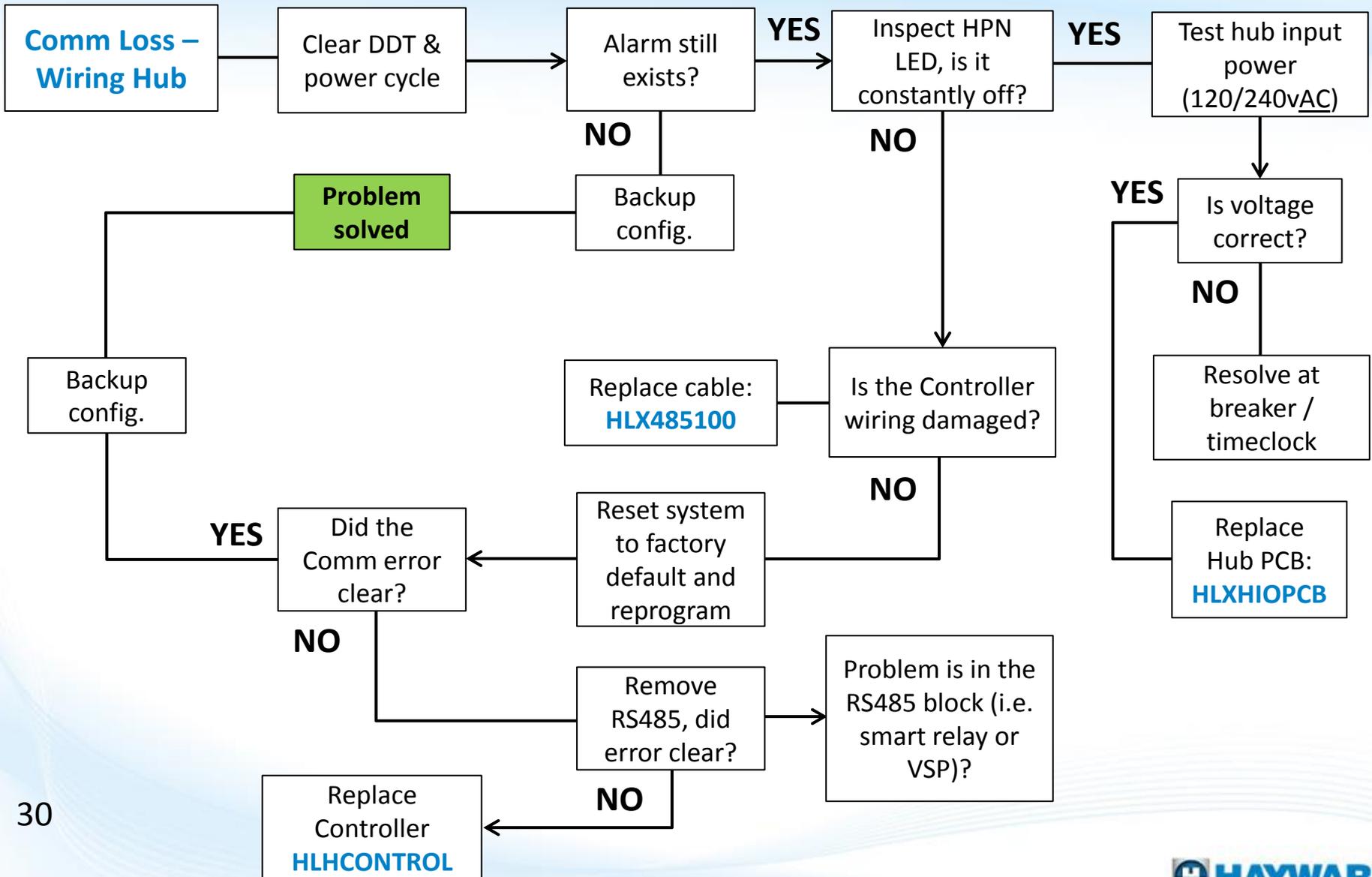
Reprogram Valve



Using quick edit, reprogram the valve. IF the valve still will not rotate while being activating through the controller, then please contact support (908) 355-7995 for additional support.

PRO TIP: To add/remove & re-add a valve, go to config>config wizard>quick edit>feature (to add/remove & re-add)>add feature>select valve port>save.

3. Alarms: Comm Loss – Wiring Hub



3. Alarms: Comm Loss – Wiring Hub

A “Comm Loss-Wiring Hub” will occur when the Controller (display) is unable to communicate with the Wiring Hub.

Remove DDT & Power Cycle

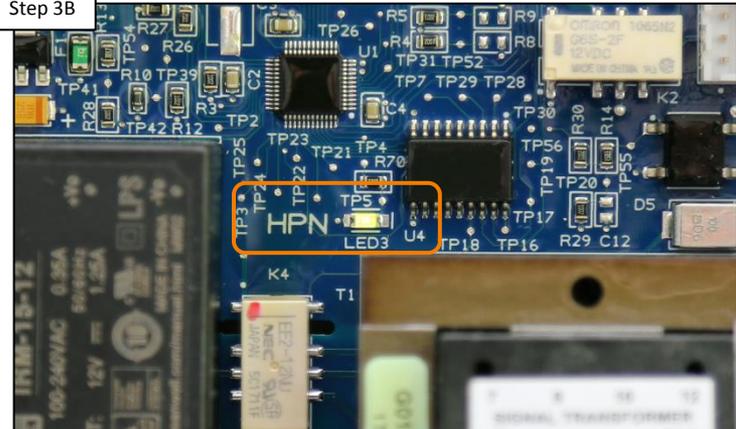
Step 3A



Follow steps to remove DDT (pg. 17). IF after programming is reestablished, the problem still persists go to step 3B. IF problem is corrected Backup configuration (pg. 14).

Check HNA Power LED

Step 3B



Inspect the HNA power LED. IF the LED does not flash green, then go to step 3F to diagnose source power. IF LED flashes green (5-6 times per minute), proceed to step 3C.

3. Alarms: Comm Loss – Wiring Hub (cont.)

If the Controller wiring is damaged in any way, this can potentially affect its communication with the Wiring Hub.

Inspect Controller Wiring

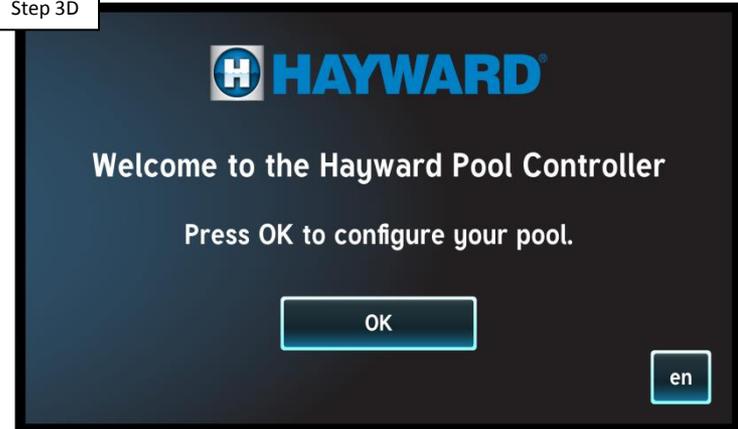
Step 3C



Inspect the Controller Wiring. IF the wiring is damaged replace the cable ([HLX485100](#)). IF the Controller wiring is not damaged, proceed to step 3D.

Reset to Factory Default

Step 3D



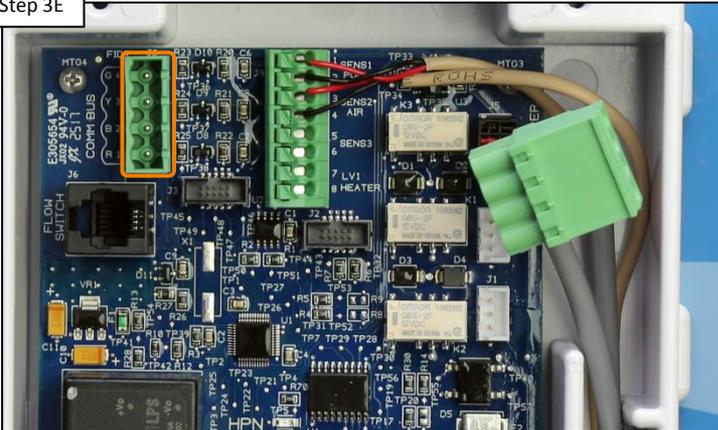
Reset the system to factory default and reprogram. IF the Wiring Hub Comm Error clears, then back up the configuration. IF problem persists, go to step 3E.

3. Alarms: Comm Loss – Wiring Hub (cont.)

The RS485 block is on the same DC voltage circuit as the Controller. IF something on the RS485 is back feeding voltage to the boards, this may disrupt communication between the Controller and the Wiring Hub.

Remove the RS485 Block

Step 3E



Remove the RS485 Communication block. IF the Wiring Hub Comm Error clears, something in the block is causing the problem (i.e. VSP or Smart Relay). IF problem persists, replace the Controller ([HLHCONTROL](#))

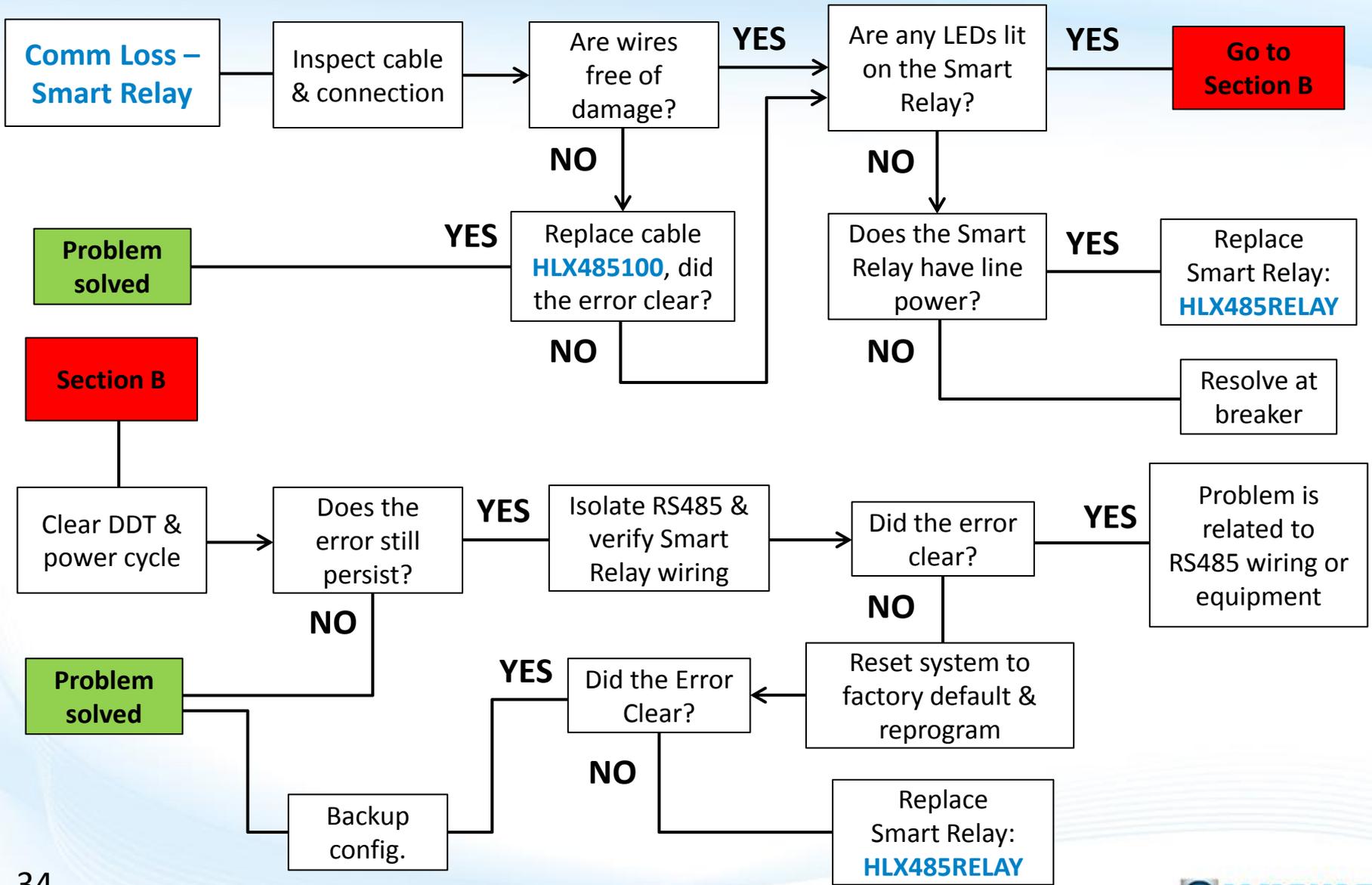
Test Wiring Hub Input

Step 3F



Unplug input power connector. Verify 120/240vAC. IF 120/240vAC is present, replace the hub PCB ([HLXHIOPCB](#)). IF no/low, resolve at the breaker/timeclock.

4. Alarms: Comm Loss – Smart Relay



4. Alarms: Comm Loss – Smart Relay

The Remote LED determines whether the Smart Relay is communicating. The Relay LED determines whether the Relay is actively ON or OFF.

Check Cable/Connection

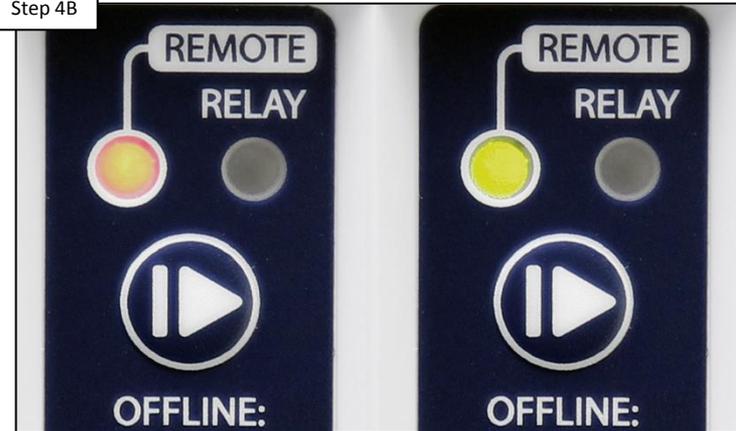
Step 4A



Inspect the Smart Relay cable for damage. IF no breaks exist and/or connections are correct, go to step 4B. IF comm cable is damaged, replace cable and retest ([HLX485100](#)).

Verify Smart Relay LED Status

Step 4B



Inspect the two LED indicators on the front of the Smart Relay. There is a Remote LED and a Relay status LED. IF no LEDs appear, go to Step 4C. IF any LEDs are lit/flashing, jump to Step 4D.

4. Alarms: Comm Loss – Smart Relay (cont.)

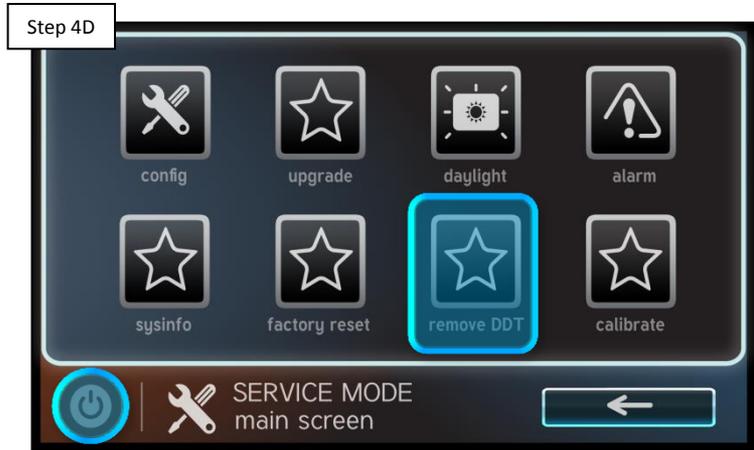
The Smart Relay can be wired for either 120vAC or 240vAC line voltage (depending on the equipment wired in). For 120vAC = Grey & Black input; for 240vAC = Black & Red/Grey.

Smart Relay Input



Verify line power to the Smart Relay between the grey & black (120vAC) or black & red/grey (240vAC). IF no/low voltage, correct at power source. IF correct, replace the Smart Relay ([HLX485RELAY](#)).

Remove DDT & Power Cycle



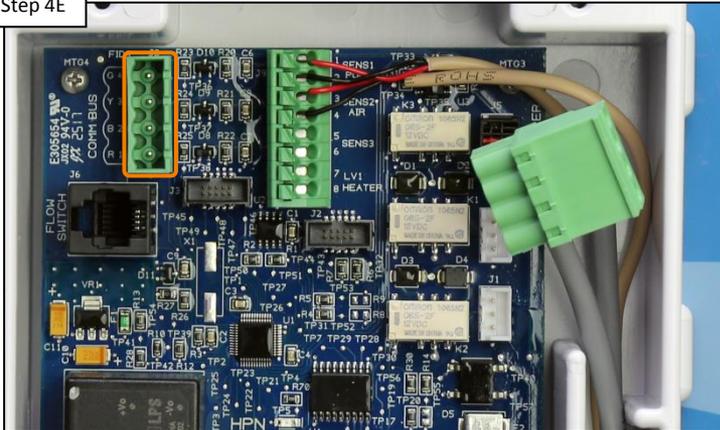
Follow steps to remove DDT ([pg. 17](#)). IF after programming is reestablished, the problem still persists go to step 4E. IF problem is corrected Backup configuration ([pg. 14](#)).

4. Alarms: Comm Loss – Smart Relay (cont.)

IF something on the RS485 is back feeding voltage to the boards, this may disrupt communication between the Wiring Hub & Smart Relay.

Isolate RS485 Wiring

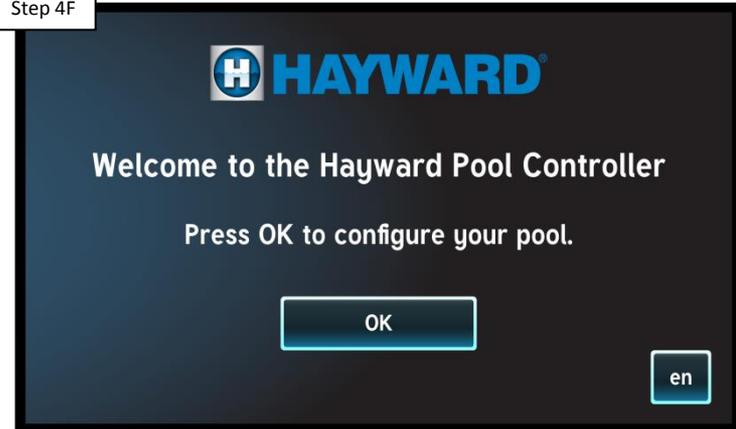
Step 4E



Isolate the RS485 wiring and verify Smart Relay is wired correctly. IF removing all other equipment clears comm error, then problem is in the RS485 wiring. IF problem persists, go to Step 4F.

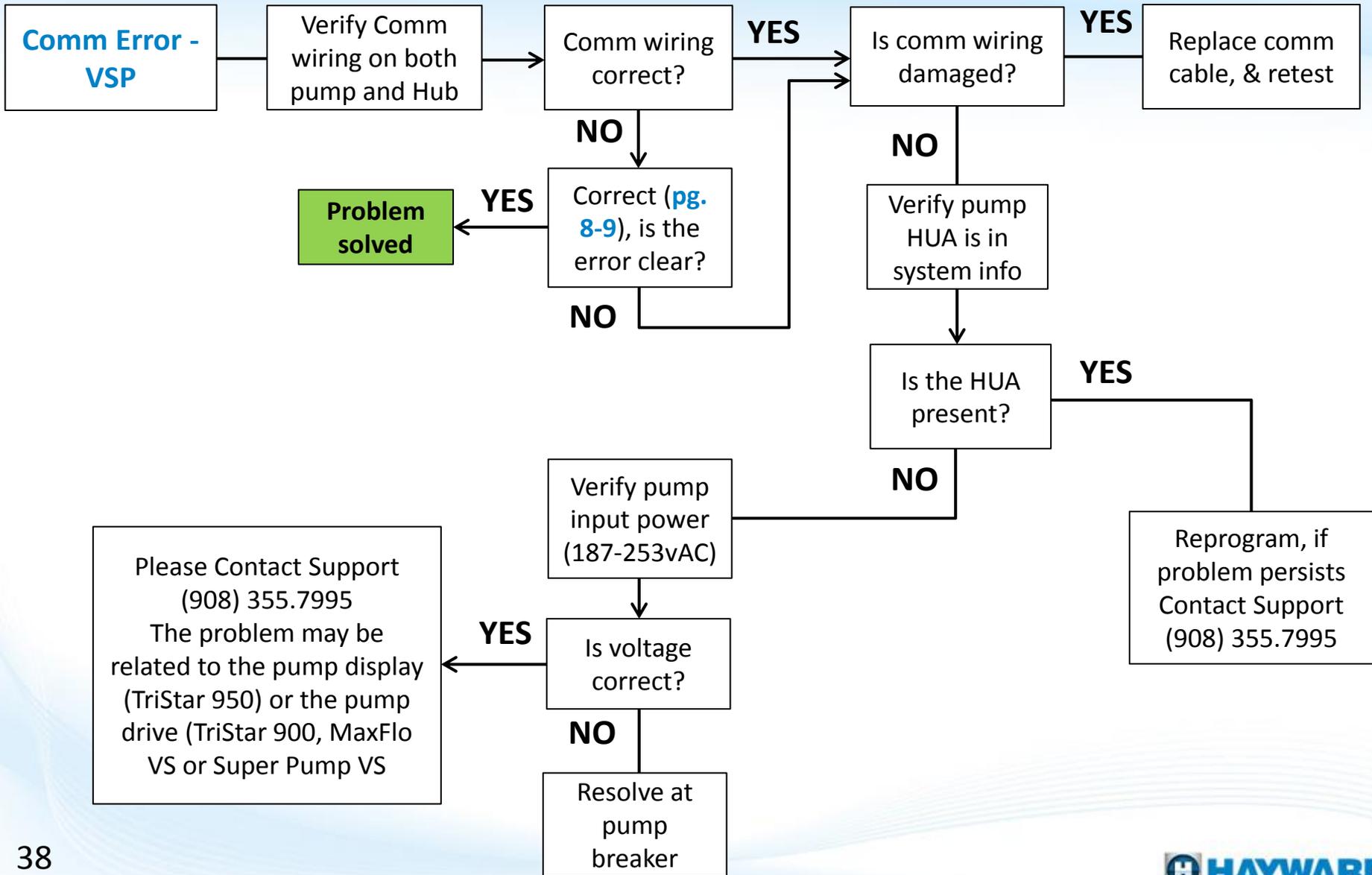
Reset to Factory Default

Step 4F



Reset the system to factory default and reprogram. IF the Smart Relay Comm Loss clears, then back up the configuration. IF problem persists, replace the Smart Relay ([HLX485RELAY](#)).

5. Alarms: Comm Error - VSP



5. Alarms: Comm Error - VSP

It is important to following the communication wiring diagrams as they may differ from pump to pump.

Verify Comm Connections

Step 5A

TriStar VS 950	All other VS Pumps	VS Omni
7	A	2
8	B	3
-	COM	4

Verify the communication cable from the Hub (RS485) to the Pump is correctly wired (pg. 8-9). IF correct, proceed to Step 5B. IF incorrect, shut down power to both the Hub and Pump and rewire.

Check Comm Cable

Step 5B



Inspect the pump's comm cable for damage. IF no breaks exist and/or connections are correct, go to step 5C. IF comm cable is damaged, replace the cable and retest.

5. Alarms: Comm Error – VSP (cont.)

If the HUA appears under System Info, that means the VS Omni can currently see that the pump is attached. If the HUA appears and a communication error exists, there may be a problem with the configuration.

Verify HUA Under System Info

Step 5C



Navigate to Config>System Info and verify the Pump HUA is showing up in the list. IF HUA does not appear, go to 5D. IF it does, reprogram VS Omni, contact support if the problem still persists: (908) 355-7995.

Verify Pump Power

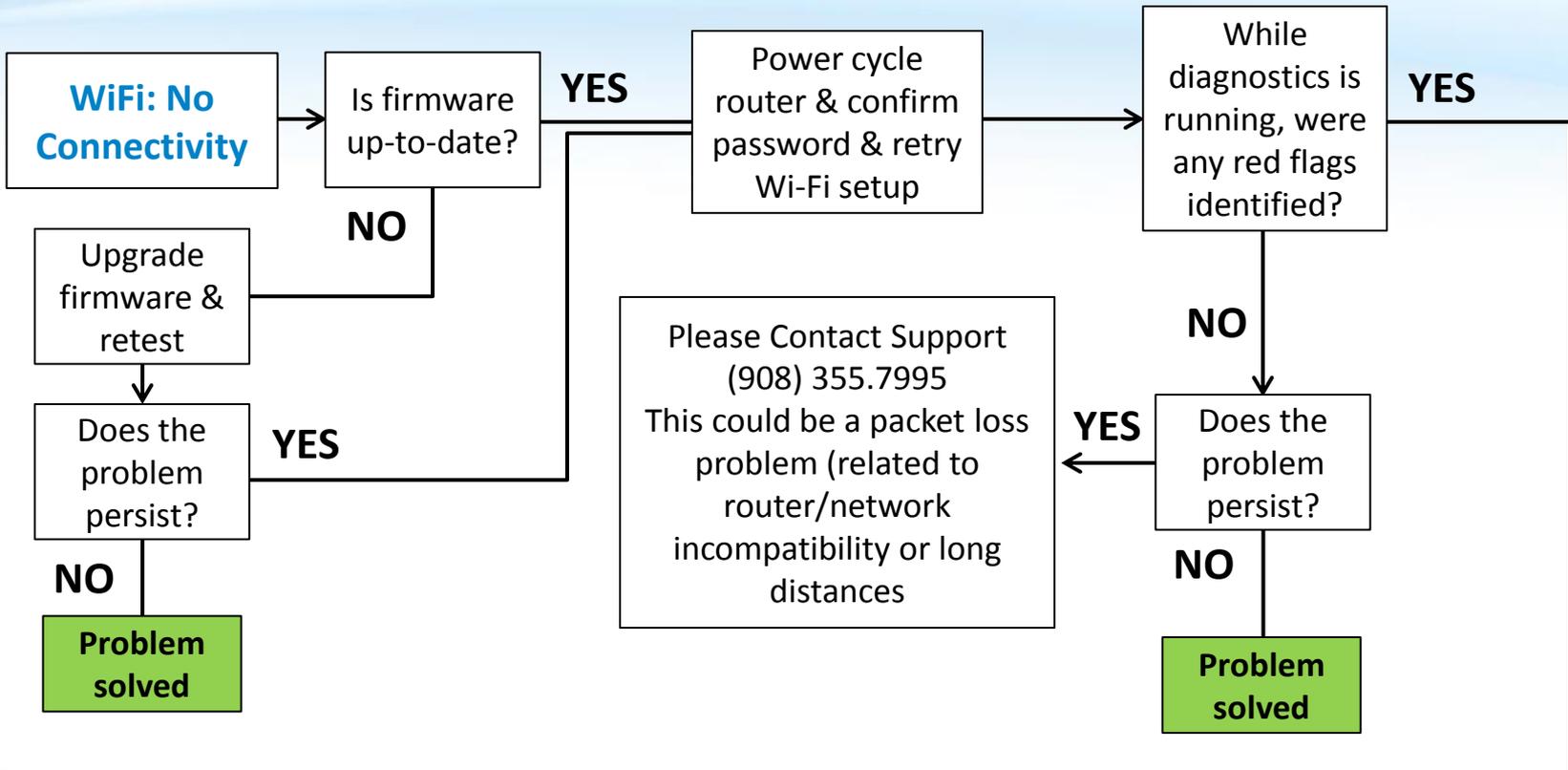
Step 5D



If pump is not powered, it will not be able to communicate with VS Omni. Verify pump has 187-253vAC. IF no/low voltage, resolve at pump breaker. IF correct please contact support (908) 355-7995*.

IF the pump is powered and the HUA is not showing up in the VS Omni the problem may be related to pump compatibility, the pump display (TriStar 950), or the pump drive (TriStar 900, Maxflo VS, Super Pump VS).

6. Wi-Fi: Lost Link/MSP ID Not Found



For more help, please Contact Support (908) 355.7995

	Test	Description
X	Verifying Netlink	Network password was not accepted
X	Verifying Network Address	Controller did not receive IP credentials (supplied by router)
X	Verifying Network Connection	Router did not Communicate
X	Verifying DNS	Web ping failed (check with internet connection)
X	Verifying Internet Connection	Failed to reach OmniLogic Web Server

6. Wi-Fi: Lost Link/MSP ID Not Found

NOTE: These steps are only applicable when communicating via Wi-Fi. For best results, first make sure firmware is updated to the latest rev.

Network passwords ARE case sensitive.

Verify Firmware is Up-To-Date



Under config>system info confirm all equipment is up-to-date by comparing the system versions with those available on Hayward's Support>Automation>VS Omni>Firmware Upgrades. Follow steps on pg. 11-13 to download an upgrade firmware. Once firmware is upgraded, proceed to Step 6B.

Power Cycle Network & Retry



Power cycle the network router and confirm the 2.4Ghz Wi-Fi signal and password. Retry network setup under: config>network. After running network diagnostics: IF no red flags were generated AND the problem persists, please contact support (908) 355-7995*. IF red flags appeared, proceed to Step 6C.

****If no red flags appeared after the network diagnostics were run, the problem may be related to packet loss caused by router/network incompatibility or long distances.***

6. Wi-Fi: Lost Link/MSP ID Not Found (cont.)

The Network Diagnostics will run immediately after entering the network password. If any of the five tests returns with an error, attempt to correct using the information supplied and retest.

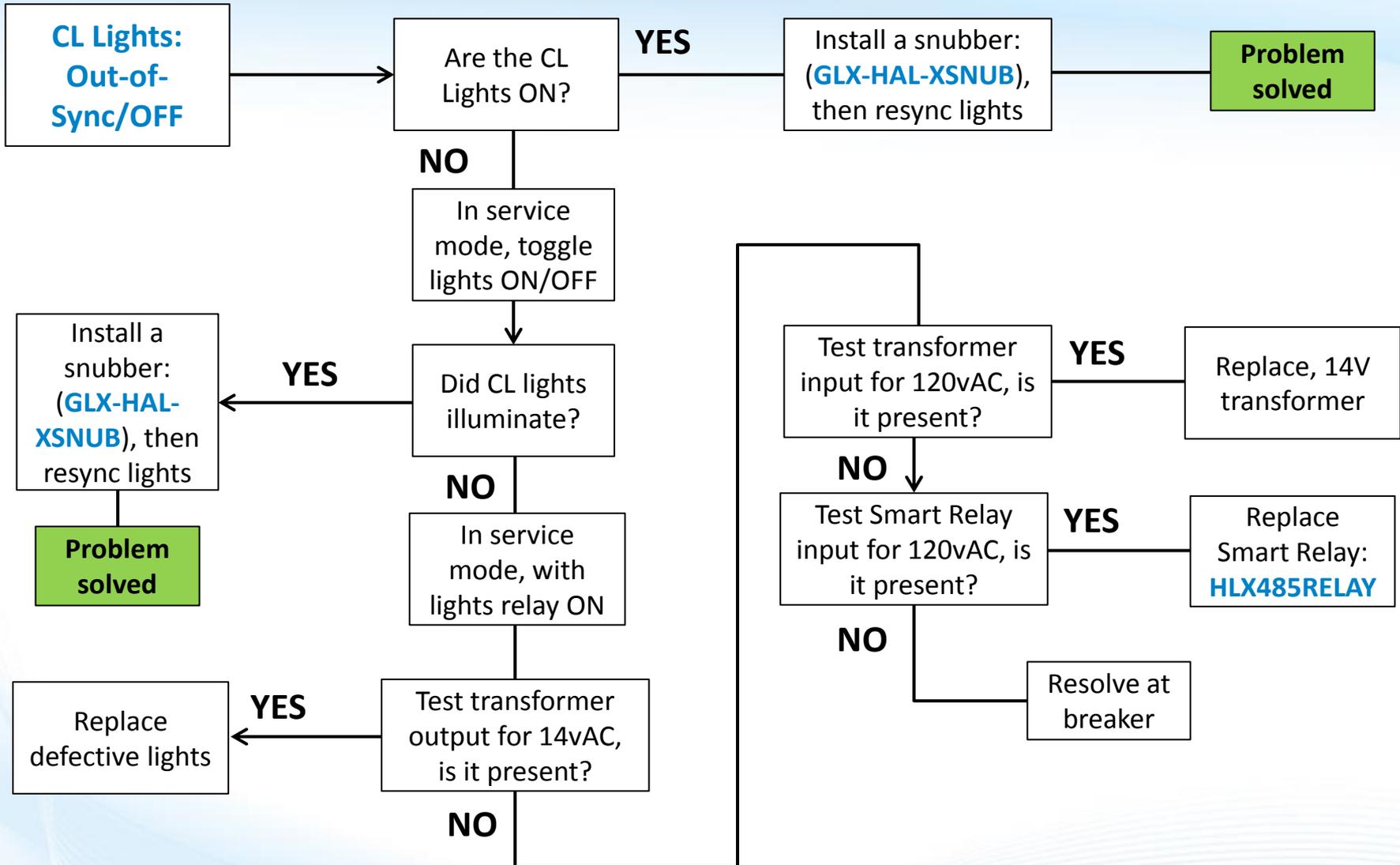
Network Diagnostics: Red Flags

Step 6C

	Test	Description
X	Verifying Netlink	Network password was not accepted (check case / password accuracy)
X	Verifying Network Address	Controller did not receive IP credentials from the router (Verify router powered and active)
X	Verifying Network Connection	Router did not Communicate (check router activity LEDs and confirm router is communicating to other wireless devices.
X	Verifying DNS	Web ping failed (check internet connection and web browsing capabilities, this could be an Internet Service Provider problem)
X	Verifying Internet Connection	Failed to reach OmniLogic Web Server (contact support 908-355-7995)

The table provided above outlines why each test may have failed. IF the problem can not be resolved, please contact support (908) 355-7995.

7. CL lights (14v): Out-of-Sync/OFF



7. CL lights (14v): Out-of-Sync

Note: The Lights can fall out of sync in three different ways: 1. The Lights OFF, but the controller reports they are ON, 2. The Lights are ON in a different color or show than what the controller is reporting, 3. The Lights are out-of-sync with each other.

Activate Lights & Observe

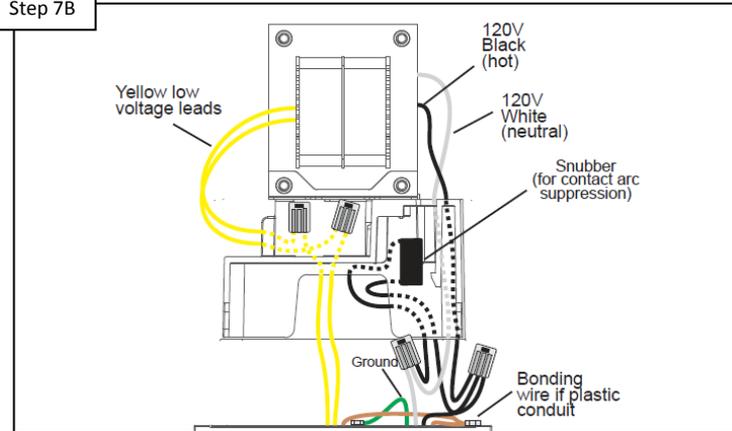
Step 7A



Activate the lights through the controller (if they aren't already in this state) and determine whether the physical lights are illuminated. IF the lights are on go to Step 7B. IF not on, go to 7C.

Install a Snubber & Resync

Step 7B



If the lights are on, but out-of-sync, then simply resyncing the lights should correct the issue. However, installing a snubber (**GLX-HAL-XSNUB**) will likely reduce reoccurrences.

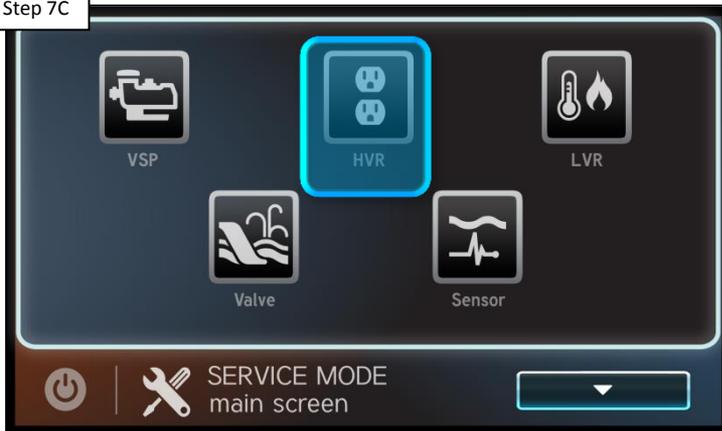
****A snubber should be installed in the 14V transformer and is rated for low voltage light offerings ONLY (UCL, CL320/160, CL80/40).***

7. CL lights (14v): Out-of-Sync

Low voltage lighting should be powered off the 14 volt circuit of the transformer, if multiple taps are included in the transformer, verify they are connect to the 14v tap.

Service Mode & Toggle Lights

Step 7C



Put system in service mode (power>service mode), then toggle lights on, off, & back on. IF lights are illuminating, install a snubber & resync lights after exiting service. IF they did not illuminate, go to 7D.

Test Transformer Output

Step 7D

14VAC



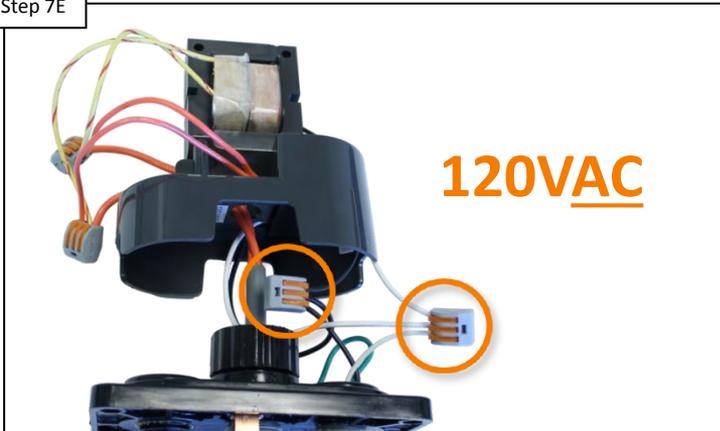
Open lighting transformer and test for 14vAC on the output side. IF voltage is correct on the output side of the transformer, replace defective lights. IF no/low voltage, go to step 7E.

7. CL lights (14v): Out-of-Sync

To determine the source of the disconnect, test the input and output sides of the transformer while calling for lights to be ON.

Test Transformer Input

Step 7E



Test the input side of the lighting transformer for 102-138vAc. IF no/low voltage, go to step 7F. IF voltage is correct, replace the transformer.

Test Smart Relay Input

Step 7F



Test the Smart Relay's input power for 102-138vAC. IF power is correct replace the Smart Relay (**HLX485RELAY**). IF no/low voltage, resolve at breaker.



VS Omni®

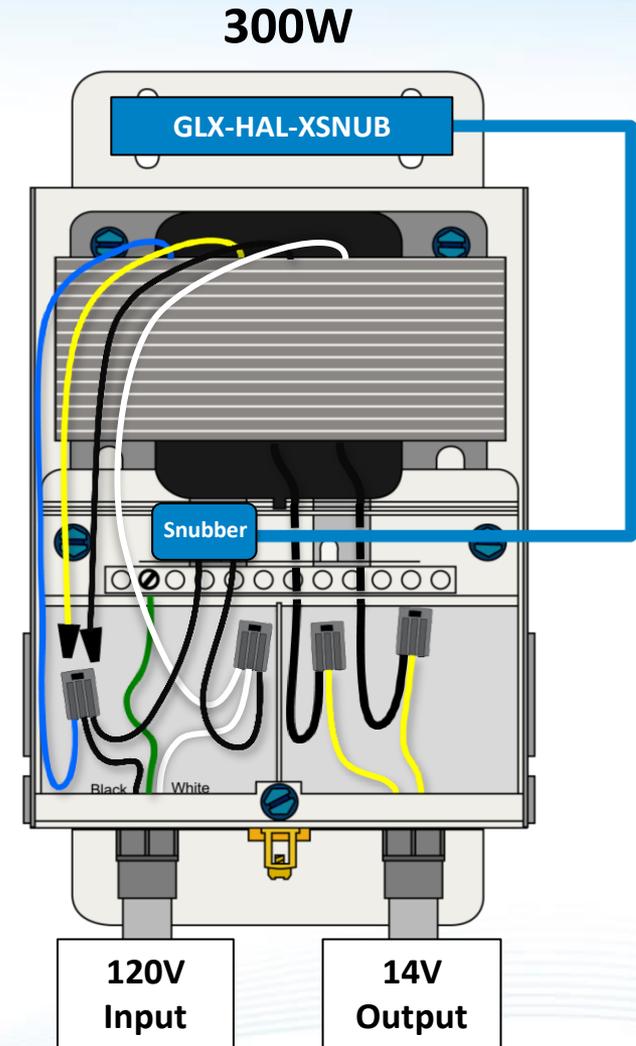
Additional Information



How and When to Install a Snubber

If the following conditions exist then a snubber may be recommended:

- **IF** an isolation transformer for low voltage lighting is installed.
- **IF** turning the light OFF or toggling ON/OFF (either via light switch or relay) causes a GFCI breaker to trip, even on unrelated circuits.
- **IF** lights are frequently falling out of sync.
- **THEN** connect the GLX-HAL-XSNUB, a snubber capacitor across the primary leads (line to neutral) in the transformer.



Reading Serial Numbers

3K11284-123456

3K11284 = Standard Warranty Term

3K11284 = Product Family

3K11284 = Year of Manufacture

3K11284 = Day of Manufacture

123456 = Manufacturing ID