

DETAILED: Common Solutions to Troubleshooting Power & Wiring for Electricians

How to troubleshoot common errors in device and project startup

➤ If you are pursuing a factory reset because a device or group is not responding as expected, please rule out the situations listed below. Factory reset will not fix issues with power, wiring, data connections, or programming

Part I: General Troubleshooting Solutions: Power & Wiring	ON when it should be OFF	OFF when it should be ON	Too bright or too dim	Unusual or erratic behavior	Light non-responsive to wall stations	Not following programmed settings	Non-responsive to App
Power							
➤ The number one solution to device operations is to address power - Interference by a <u>manual</u> (analog) wall switch, timer, or sensor - The power is OFF - The circuit breaker is OFF - The circuit breaker is failing	 X X	 X X X X	 X 	 X X	 X X X X	 X X X X	 X X X X
➤ Power outage (or series of micro-outages)? Caused device reset, coming on at the last dim level and/or in emergency mode (required by code in default configuration)	X		X		X	X	X
➤ Emergency circuit? Recent power outage triggered emergency mode for XFACs with UL924 mode enabled, disabling the wall stations. The Trigger will expire 90 minutes after initiation, or when normal power is restored, and then user controls will be restored	X		X	X	X	X	X
➤ Device is not fully operational, damaged, or under water? Order a replacement from your vendor - If the device was mis-wired or damaged during installation (i.e no LED activity before or after factory reset) - If the device is inside an outdoor fixture that is full of water - If the device's external antenna was clipped, bent, jammed, or removed during installation		X		X	X	X	X
➤ Tripped circuit breaker? Turn off the breaker for 1 minute, then turn it back on. Wait at least one minute before checking settings and operations. <u>Do not flip the breaker rapidly in succession</u> , as this may activate factory 'hard' reset to all the devices on the circuit, requiring re-claiming and re-programming of some or all of the devices on the circuit				X		X	
➤ Is the driver going bad? If lights are going on/off or blinking, try replacing the driver		X		X			
➤ Is the light not turning completely OFF? Despite the 0-10V label, is it possible that the manufacturer substituted or mixed non-dim-to-off drivers in the shipment? Please ask fixture manufacturer to correct shipping error, or switch to Avi-on IFACs	X		X		X	X	X
➤ Is this a battery-powered device (Wall stations 2402BAT, -2,-3; or Movable Switch BT-5301)? Please see separate section	X	X	X	X	X	X	X

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later in this document							
Wiring							
➤ Device is mis-wired: See Avi-on.com/Resources for wiring diagrams. Specific examples of wiring problems are shown below ○ Device dimming is not wired correctly. Confirm DIM(+) and DIM(-) wires are plugged into correct terminals on the header ○ Low voltage connections are mis-wired ■ Low voltage power wires: usually red (+) & black (-) ■ 0-10V: dimming are gray (-) & purple (+) ■ CCT: gray (-) and orange (+) ○ Avi-on products are highly tolerant of mis-wiring, however, the following mistakes are likely to result in permanently damage ■ Short circuiting the load output wire to common/ground ■ Wiring the low voltage DC leads to high voltage primaries	X	X	X	X	X	X	X
➤ IFAC application: common and load wires are reversed. Please re-wire correctly ○ Behavior: the light powers on when energized and communicates with the App (or other devices) normally, but after turning the light off, it stops communicating with the App or other devices ○ Because of energy monitoring functionality, the common wires on the IFAC are not interchangeable		X		X	X	X	X
➤ LVFA application: see separate instructions for <i>LVFA 0-10V Driver Qualification Test</i> ○ 1-Channel: Driver or fixture does not dim-to-off? Change to true 0-10V, or switch to an Avi-on IFAC ○ 2-Channel: Driver or fixture does not dim-to-off on both ends of the color spectrum? Change to true 0-10V, or switch to IFAC ○ Choppy LVFA dimming? Consider adding a 12V power supply	X		X	X			
➤ XFAC application: high voltage are black & white with a pink or red AC load wire. Mis-wiring can result in permanent damage ○ Note that wiring standards have changed, and new XFACs will have pink and violet Channel-1 dimming wires (see screenshot from Lighting Controls Association below for details) BEFORE JANUARY 1, 2022 GRAY (- 0-10V) VIOLET (+ 0-10V) BLACK (Line Voltage) WHITE/GRAY (Neutral) GREEN (Ground) 0-10V DIMMING LED DRIVER JANUARY 1, 2022 AND AFTER PINK (- 0-10V) VIOLET (+ 0-10V) BLACK (Line Voltage) WHITE/GRAY (Neutral) GREEN (Ground) 0-10V DIMMING LED DRIVER XFAC Wire Coloring Older XFAC Newer XFAC Driver Line AC Neutral AC Line In Class 2 CH 1+ CH1-/CH2- CH 2+ Driver Line AC Neutral AC Line In Class 2 CH 1+ CH1-/CH2- CH 2+		X			X	X	X

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Antenna Placement							
➤ Avi-on IFAC with external or outdoor antenna: install ‘floating’ inside fixture without bending or jamming the antenna				X	X	X	X
➤ Avi-on XFAC, IFAC or LVFA placed in metal junction box: specify external antenna and pull outside of box				X	X	X	X
➤ Avi-on IFAC or LVFA placed in position needing longer antenna: specify extended cable and outdoor antenna				X	X	X	X
➤ Avi-on IFAC installed with antenna clipped off or removed: reinstall antenna or replace entire device				X	X	X	X
➤ Avi-on XFAC with internal antenna placed in heavy metal enclosure: replace with XFAC-OA with external antenna				X	X	X	X
➤ Avi-on LVFA with internal antenna placed in heavy metal enclosure: replace with LVFA-OA with external antenna				X	X	X	X
Sensor Placement							
➤ If connected to an Avi-on Sensor, use the App to check sensor programming & placement for the following factors							
○ Sensor pattern density is adequate to cover the traffic and usage pattern (low sensor density plus lower-than-expected usage may require increased coverage by adding more sensors)		X	X	X		X	
○ Sensor placement (consider interference from windows, air vents, or other factors)	X	X	X	X		X	
○ Sensor type (e.g. PIR, Microwave, etc.) matches the expected use case	X	X	X	X		X	
○ Sensor sensitivity settings are too low or too high	X	X	X	X		X	
Managing Overlapping and/or Forgotten Settings in the App							
➤ Use the App to check if the device or group is intentionally or unintentionally programmed in the following ways							
○ Wired to a line-powered device like a wall switch, timer, sensor, or faulty breaker? (see ‘power’ in Part I above)	X	X	X	X		X	
○ Associated (or not) with one or more Sensors (perhaps in an overlapping fashion)?	X	X		X		X	
○ Controlled by one or more overlapping Schedules in the App?	X	X		X		X	
○ Controlled by Sunrise/sunset Schedules in the App?	X	X	X	X	X	X	X
○ Controlled by one or more overlapping Groups in the App? Or inadvertently left out of a Group?	X	X	X	X	X	X	X
○ Controlled by High or Low Trim (limits top/bottom levels of dimming)?	X	X	X	X	X	X	X
○ Controlled by Ambient Light Sensing (ALS) ‘daylight harvesting’? Levels may be based on flooding outdoor light	X	X	X	X		X	
○ Controlled by code-required power outage behavior causing “on at last dim level” to be ignored?	X	X	X	X	X	X	X
○ Controlled by intentionally programmed emergency settings with a 90-minute timer ?	X	X	X	X	X	X	
○ Controlled by a Photocell Super Controller ? Move it to an area without non-natural sources of light that interfere	X	X	X	X	X	X	X
○ Controlled by overlapping settings of any of the above?	X	X	X	X	X	X	X

Part I: General Troubleshooting Solutions: Power & Wiring	ON when it should be OFF	OFF when it should be ON	Too bright or too dim	Unusual or erratic behavior	Light non- responsive to wall stations	Not following programmed settings	Non- responsive to App
Managing Isolated Devices/Groups or ‘Thin’ Networks							
➤ Some devices in the network are unreliably reachable with the App, or not reachable at all - Is there a large gap between devices and/or a major metal wall or obstruction? Add one or more Avi-on devices to the gap to act as repeaters, or add an external antenna near the gap to strengthen the network - Are there long distances between a small number of devices making it difficult for the Bluetooth antennas to communicate? Add external antennas to improve reception	X	X	X	X	X	X	X
Troubleshooting Factory Resets							
➤ Device appears on the App, but it does not turn the light on/off? Device may be a ‘ghost’ left over from an intentional or inadvertent Factory Reset (Avi-on STRONGLY recommends using the App to REMOVE devices. Please do not factory reset). To repair the App Device Screen after a Factory Reset, follow these instructions - Press the + button on the devices page, and see if you can re-Add it to the location. If you can, then add it to groups and re-program settings - With the “ghost”, use the App to Remove it, select “My device is broken”, and it will disappear (see “ghost image” step in separate Factory Reset instructions)	X	X				X	X
Learning from Avi-on Device’s On-board LED Behavior							
➤ Onboard LEDs flashing in sets of two. Device is already “unclaimed” and therefore no need to reset. Use the App to ADD the device to your project’s location, <u>or</u> return the device to inventory for re-use	X	X			X	X	X
➤ Onboard LEDs dark (off) or solid. Once the device is ‘claimed’ or added to an location, then depending on the type of Avi-on device, the on-device LED will either be dark or solid on when powered. - If the device is ‘claimed’ and non-response to the App, then it might be in a different location. Use the App to Remove it from the other location, then ADD it to the correct one. Use Factory Reset only as a last resort - Unsure if the device is in another location not know the username and password of that location? Contact Avi-on.com/Commissioning with the MAC address on the QR sticker. We may be able to find it for you	X	X	X	X	X	X	X

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Part II: Troubleshooting Wall Stations & Movable Switches	ON when it should be OFF	OFF when it should be ON	Too bright or too dim	Unusual or erratic behavior	Light non- responsive to wall stations	Not following programmed settings	Non- responsive to App
Troubleshooting Wall Stations (See also ‘Battery-Powered Devices’ below)							
➤ Wall station not controlling lights? Check power, wiring, and programming ○ Check that the light is not controlled by a line power source (switch, timer, breaker, etc.); see ‘power’ in Part I above ○ Check that device has been added to the location, associated with groups, and settings are programmed (step above this) ○ If battery-powered, check that the batteries are not low or dead and/or upside down (info below on each product type) ○ Check the App programming (see section below, “Part III: Solutions with Data Connection, Phone, or App Refresh”) ■ Check that the correct devices/groups are associated in the App, and there are no forgotten or overlapping groups ■ Check if daylight or occupancy settings are enabled (but no motion is triggered), then the daylight/occupancy settings may be controlling the light dimming value instead of the wall station ■ Check any high- and low-end trim settings	X	X	X	X	X X	X	X X
➤ Is the light too bright or too dim? Like most systems, Avi-on has ‘on at the last dimming level’ as a configurable setting. If the device was dimmed very low, it may appear OFF when turned ON. Use the paddle to brighten the light	X	X	X	X	X	X	X
➤ Is the wall station or switch battery powered? Please see Part II below	X	X	X		X	X	
➤ Wall dimmers (AVI13870: A/C powered in-wall dimmers) ○ Appear to not turn ON (even though they are on)? Users or <u>cleaning crew</u> may be dimming a wall dimmer to such a low level that it appears to be off. Fix: turn up the brightness at the wall station PLUS teach users to use the OFF button ○ Stop operating the lights (and the onboard blue LED is flashing in sets of two)? Users or cleaning crew inadvertently factory reset the device by holding the OFF paddle for a very long time. Use the App to re-add and re-program the device. Teach the users not to hold the OFF button so long							
General Battery-Powered Device Troubleshooting							
➤ Wall station not controlling lights? Check ‘Wall Station’ suggestions above in Part I and programming below in Part III	X	X	X	X	X	X	X
➤ Check that the batteries are not low or dead and/or upside down (info below on each product type)	X	X	X	X	X	X	X
➤ Is the device ‘added’ to the Avi-on location? Check device status by pressing the OFF button and ‘waking’ the switch. (To save battery, battery-powered devices sleep and their onboard LEDs are only visible when they are ‘awake’) ○ Onboard LED double flashing when you ‘wake’ it up? The switch is unclaimed and ready to ADD to the location ■ On the App, use the ‘+’ to Add a device, then when the App tells you to, ‘wake’ the switch by pressing the OFF button ■ Respond within 20 seconds of waking the switch to complete the ADD; associate with devices/groups; create settings ○ Onboard LED is not flashing when you attempt to ‘wake up’ the switch? The device is already ‘claimed’ to an location ■ If you can’t find the device in this location, then it is already claimed to a different project/location. Using the App, login to the other location, and REMOVE the device. Then, login to the correct location, and Add and program the device ■ Factory reset is the last resort, and it requires that you access the old location to remove confusing duplicate devices	X	X	X	X	X	X	X

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Battery-powered Wall Stations (2402BAT, -2,-3)							
➤ Check that the ‘pull-tab’ has been removed (the pull-tab prevents the batteries from working)	X	X	X		X	X	X
➤ Check that the batteries are installed correctly. Upside down or ‘mixed’ batteries will not operate the device Installing one of the batteries backwards can lead to rapid battery discharge and significant heat build-up/melting/smoking	X	X	X	X	X	X	X
➤ Check that the batteries are not low or dead, if some or all are old or dead, please replace ALL of them at the same time - Wall station batteries (2402BAT) have a 23-year measured battery life; it is VERY unlikely wall station batteries will be dead unless one was installed backwards. See next item for how to test battery function - Installers: The Mobile Commissioning App has a Test Battery function on the Device page. With the Device’s ‘page’ open on the App, press the OFF button to wake up the device. If the device is transmitting, then it will show on the App	X	X	X	X	X	X	X
Movable Switch (BT-5301)							
➤ Movable Switch: erratic or unreliable light behavior? - Movable switch batteries have a shorter life; use FRESH batteries to replace all three 2032s - Is the Movable Switch bent? If it is bent then the electronics may no longer be attached to the touch surface	X	X	X	X	X	X	X
➤ After a battery change, still not working? Device will not operate with upside down and/or mixed old and new batteries	X	X	X	X	X	X	X
➤ Short battery life? Users constantly touch the small ‘reset’ button and inadvertently factory reset the switch and/or run the batteries down faster than normal. Solution: don’t touch the reset button; replace ALL of the batteries when they get low	X	X	X	X	X	X	X

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Part III: Solutions with Data Connection, Phone, or App Refresh (Including Mobile, Pro, & Zonescanner)	Settings not saving to the cloud and/ or on devices; devices not following programmed settings	Non-responsive to App
➤ Always allow adequate time for the Avi-on Apps to finish processing before you move on to another task...large networks may take 10 minutes or more to update ○ When you are applying device settings, you are sending (potentially) thousands of messages between the App, Bluetooth devices, Avi-on cloud, and back. The larger the network, the more time it will to process the data	X	X
➤ No matter what I do, I cannot get my phone with the Mobile App to connect to the Avi-on network? ○ Is your phone or hotspot in Airplane Mode? ○ Is Bluetooth ON? ○ Is Wi-Fi ON? ○ Do you have ‘4-bars’ of cellular coverage? ○ If using Wi-Fi, do you have strong, stable coverage? ○ If using a data plan, do you have strong, stable coverage?	X	X
➤ When you login to the App, device(s) are not appearing in your location? See ‘onboard LED behavior’ above for additional info ○ Are you accessing the correct location? Devices can only be in one location at a time. If onboard LEDs are dark or solid, they may be ‘claimed’ ○ Were the devices ‘claimed’ to a different location? If so, use the App to remove them from the incorrect location, then login and re-Add them to the correct location ○ Are the devices ‘unclaimed’ (device onboard LEDs flashing in sets of 2)? Use the App to Add (‘claim’) them to the location ○ Was Wi-Fi or data on while you were programming settings and/or using the ZoneScanner App? If not, please connect to Wi-Fi or data to sync your App to the cloud for 10 minutes or more. The larger the project, the longer the time ○ Were you working in an area with unreliable or no Internet connection? If so, your programming changes are saved on your phone or laptop, but they have not been synchronized with the cloud. Turn ON the Wi-Fi or data plan, open the Avi-on App(s)--Mobile, Pro, or both--and give the system time to sync for 10 minutes or more. The larger the project, the longer the time ○ ZoneScanner data is incomplete? One or more of your installers did not have a reliable data connection. Ask each installer to connect to Wi-Fi or data, open their ZoneScanner App, and sync to the cloud for several minutes	X	X
➤ Device is battery-powered, and I can’t ADD it to the location using the App? (See ‘Wall Stations & Battery-Powered Devices above for added info) ○ Check that the device is powered ■ Check that the ‘pull-tab’ has been removed that prevents the batteries from discharging ■ Check that the batteries are installed correctly and are not upside down ■ Check that the batteries are fresh. If they are not, please replace ALL of them ○ In the App, use the Battery Device Add page in Mobile or the Add New Devices Page in Pro, then press the ‘wake up’ button to select and add the device. Why? Because battery-powered devices ‘sleep’ to preserve battery life, and ‘wake up’ causes them to broadcast a signal so the Apps can find and ADD them to the Location	X	X

Part III: Solutions with Data Connection, Phone, or App Refresh (Including Mobile, Pro, & Zonescanner)	Settings not saving to the cloud and/ or on devices; devices not following programmed settings	Non-responsive to App
➤ Other App users cannot see your changes on their Apps, and/or you cannot see your changes in MyAccount.Avi-on.com? ○ You have been making changes without being connected to a strong Wi-Fi or data connection. Sync your App with the Cloud by turning ON the Wi-Fi or data plan, opening the Avi-on App(s)--Mobile, Pro, or both--and giving the Apps time to sync with the Cloud for 10 minutes or more	X	
➤ The CSV or download from the ZoneScanner is incomplete? ○ One or more of the ZoneScanner users has been making changes without being connected to a strong Wi-Fi or data connection. Ask each installer to sync their App with the Cloud by turning ON the Wi-Fi or data plan, opening the ZoneScanner--and giving the Apps time to sync with the Cloud for several minutes. ○ <i>A check box will appear in the top left when complete data is synced</i>	X	
➤ App seems slow, or it is crashing? If it is slow and/or crashing, then the strength of your Bluetooth or Cloud connections are compromised, you are trying to program too many devices for your App/RAB combo, or both ○ Onsite? Improve your Bluetooth connection to the local Avi-on devices ■ On your phone, make sure that your Bluetooth setting is ON ■ Stand closer to a number of powered Avi-on devices ■ If you only have a few devices installed, install more and power them up ■ Change to a different/newer phone or tablet (iOS preferred) ■ If it seems like settings are not saving on the devices, <i>see section above called “Managing Isolated Devices/Groups or ‘Thin’ Networks”</i> ○ Onsite or remote? Improve your Cloud connection so settings can be saved in the cloud ■ On your phone, make sure that your Wi-Fi or data plan (cloud) are ON ■ Upgrade your data connection by changing to an LTE RAB, a dedicated hotspot, or turning on the data plan on your phone or tablet ■ Change to a different/newer phone or tablet (iOS preferred) ■ For large projects: use Avi-on Pro + LTE RAB (Wi-Fi RAB is rated up to 50 devices) ■ If it seems like settings are not saving to the Cloud, <i>see section above called “Managing Isolated Devices/Groups or ‘Thin’ Networks”</i> ○ Onsite or remote? To speed App processing, try the following steps ■ Improve your Bluetooth and Cloud connections using the bullet points immediately above ■ Reduce the number of devices being programmed by 50%, then keep reducing until you find a number that your phone/data combo can process smoothly ■ Upgrade your phone or tablet’s OS (operating system), upgrade your version of the Avi-on App ■ Change to a different/newer phone or tablet (iOS preferred) ■ Change to Avi-on Pro: purchase an Avi-on Pro USB dongle and a Mac, then take the qualification training including Avi-on shadowing your first Pro startups	X	X
➤ Using a Wi-Fi RAB to claim more than 50 devices and the experience is frustrating? Please upgrade to an LTE/Ethernet RAB ○ The Wi-Fi RAB is optimized for small projects < 50 devices. When claiming & commissioning larger or complex projects, the LTE/Ethernet RAB delivers the best performance	X	X
➤ Using a Wi-Fi RAB, and IT will not give you the SSID password and/or open the ports necessary to have two-way traffic? ○ Because some IT departments will not allow a 3rd party device on their network, Avi-on developed a RAB to address this concern. Please upgrade to LTE/Ethernet RAB	X	X

Still can't figure it out?

Ask a question or make an appointment at Avi-on at [Avi-on.com/Contact](https://avi-on.com/Contact)

Scan QR Code to schedule commissioning assistance >>>



Do Not Factory Reset

Please use the Mobile or Pro App to Remove devices from the location

Scan QR at right >>>
[How to Remove a Device from a Location](#)



Important Info About Factory Reset

- **Factory reset erases all settings and programming on an individual device, *but it does not fix incorrect programming in the network***
- If you factory reset and then re-apply the incorrect programming, the problem will reoccur
- **If you want to re-use a device in a different location**, please use the App to digitally REMOVE the device from the location
- If you do not have access to the location to Remove the device using the App, then Factory Reset is a last resort. Please 'clean up' the old location & delete duplicate devices