

AquaBar Professional Control System Manual

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1. Glossary of terms

USB Dongle – the device that communicates from your PC/laptop/tablet to the network of nodes. This is an essential part of the system.

Dimmer Node – the dimming control plugged between the power supply and light/lights. Only one can be used per power supply. This is an essential part of the system as it is the mechanism to dim the lights. Optional temperature and water level sensors can be connected to them.

Clock Node – the node that stores the time in case of power cut (dimmer nodes store their settings, but they can't keep the time if they don't have power). The clock node also allows the use of a PIR or multiple PIRs to dim the lights when there aren't people around. The Clock node is not essential as the time is also automatically set via the USB Dongle.

Key Fob – a remote control to allow manual override of the lights. This is not an essential part of the system.

Network – this is the collection of nodes and key fobs that are registered to communicate with each other.

Group – This is a node or collection of nodes to which settings can be applied.

2. Useful hints

- The lights don't have to be connected to the nodes when setting up a network.
- Networks and programs can be created in advance without connecting lights (e.g. at a desk), or once lights and nodes are already installed on racking. The former is easier as the user must press buttons on the nodes at the same time as using the software when registering them to the network.
- Up to 255 dimmer nodes and key fobs can be used per network.
- Only one clock node should be needed per network.
- The settings applied to a group are not stored locally on the computer, but are in fact held by the nodes themselves. Therefore, if no nodes are in a group then the settings will be lost when the system refreshes.
- Be patient. The system uses RF signals to communicate. As it operates over a wide bandwidth it can sometimes take time to gather all the information from the nodes. This can be particularly true when refreshing the whole system.
- The intelligent system will scan and choose a frequency that minimises the chance of interference.
- Signal distance depends on surroundings; however, you should be able to pick up signal if within 15m of one of the nodes.
- Nodes relay messages to each other as part of a 'mesh network', so you should not need to be within range of the whole network.
- The network will take it's time from the PC/laptop/tablet being used to program, so make sure that the machine is on local time.

3. Technical Info

The AquaBar Professional System is designed to plug in line between AquaBar lighting and approved power supply units. The system runs on 12V and is capable of handling up to 10A. The Nodes are not designed to be mounted in a wet area.

The Clock Node battery is rechargeable, but will take several days to charge. Fully charged, the battery should allow the system time to be stored for up to 2 days.

4. Installing software

1. Copy contents of supplied zip file to a location of your choice on the machine you intend to use (must be running Windows and have an available USB-A port).
2. Once copied, right click on 'AquaBar Pro' and click send to > Desktop. This will create a desktop shortcut to the program.

5. Start-up

1. Insert the USB dongle into the PC/laptop/tablet.
2. Open the AquaBar Professional software.
3. Wait a minute while the dongle searches for networks [the white LED will flash on the dongle].
4. Once finished loading, either choose an existing network you want from the dropdown menu, or create a new network. If using a password, please make sure that you type it correctly.

You are now ready to start building a network.

6. Registering a Dimmer Node to the Network

1. Apply power to the dimmer node.
2. Click 'Add Node'.
3. Choose 'Dimmer Node' from the drop down list.
4. Give the dimmer node a name [e.g. 'Rack 1']. There is space on the node's label to note this name if you wish.
5. Press the button on the bottom of the clock node. The green and red LEDs will start flashing.
6. Click 'Register'.
7. The LED on the clock node will go to solid green, and the dimmer node will show on your screen.

The dimmer node you have added will now show in the list of available nodes. It is fine to remove the power to allow set up of the next node if working with just one power supply for the set up.

Repeat this process for all the nodes on your network.

7. Registering a Clock Node to the Network [optional]

1. Apply power to the clock node.
2. Click 'Add Node'.
3. Choose 'Clock Node' from the drop down list.
4. Press the button on the bottom of the clock node. The green and red LEDs will start flashing.
5. Click 'Register'.
6. The LED on the clock node will go to solid green, and the clock node will show on your screen.

The clock node has now been added to the network. It is fine to remove the power to allow set up of the dimmer nodes if working with just one power supply for the set up.

NOTE: Only one clock node is needed per network.

NOTE: The clock node contains a rechargeable battery. The battery will hold the time for a few hours in the event of power failure. Once flat the battery will charge when power is applied to it. This is done on a trickle charge and so will take a few days to come up to full charge again.

8. Registering a Key Fob Remote to the Network [optional]

1. Click 'Add Node'.
2. Choose 'Key Fob' from the drop down list.
3. Press both buttons on the key fob remote. The red LED on the fob will start flashing.
4. Click 'Register'.

The Key Fob will now show in the list of available nodes.


NOTE: When you refresh the network, the key fob will not show, because to save on battery life the key fob only powers on and transmits when a button is pressed on it.

9. Deploying the Network

Connect the registered nodes into the lighting system and power up. If using temperature or level sensors, connect them to the dimmer nodes. The connectors are colour coded (green and blue) to ensure the correct connection.

Refresh the system by clicking the ↻ System button next to 'Add Node'. Give the system time to refresh and you should see the clock node and all the dimmer nodes you have added appear on the Available Nodes list.

10. Making a New Group

1. Click the '+' tab in the top left of the screen.
2. Give the group a name [e.g. Freshwater].
3. Click and drag the dimmer nodes that you want to be part of that group into the group list (left hand side of the screen).
4. Then apply the settings you wish to that group [see section 10 below].
5. Click  Group to save the settings to the nodes in the group.

Repeat the above process for as many groups as you want.


NOTE: The number of groups is unlimited, but remember that settings are saved to the dimmer nodes, so if there is no node in a group then the group will disappear when the system is updated.

11. Applying Settings to a Group


In the Group tab [see section 9], there are a few headings with options to create a photoperiod. Click the headings to hide or show the settings within.

- Group Settings. Within this section you can change the name of the group and also set the ramp. Ramp is the time in minutes it takes for lights to transition on and off at the beginning and end of the day. It does not affect the ramp time when using a PIR, key fob override, or when the lights are powered on in their 'on' phase. In these cases the lights will always transition over a short period designed to avoid light shock in the animals.
- Intensity Settings. This is the maximum level of the lights. Untick 'Single Setting' if you wish to have different intensities for different days of the week.
- Time Settings. This sets the time at which the lights start to turn on and the time at which they turn off. Untick 'Single Setting' to allow for different timings on different days of the week. Unticking 'enable' will mean that the system ignores that time setting, so if you untick enable on an off time, then the system won't turn off that night.

NOTE: if the ramp setting is 5 minutes, the lights will start dimming 5 minutes prior to the off time.

Once settings have been entered click  Group to save the settings to the dimmer nodes in that group.

12. Identifying a Dimmer Node

If you aren't sure which Node you are setting, you can click the eye icon . This will cause that node to flash the lights connected to it. Click it again to stop the flashing.

13. Editing a Dimmer Node

Click  on the Dimmer node you wish to Edit. From the popup screen that appears you can:

1. Change the name of the node.
2. Set the upper and lower temperature limits if a temperature probe is connected to the node. This will set the limits at which the software will log a fault alarm.
3. View the current water temperature if a temperature probe is connected to the node.
4. View the current power consumption of the lighting connected to the node.
5. View the status of the node and the previous fault alarms [see section 13].
6. Clear any alarm faults on that node [see section 14].
7. Override the node [see section 17].

14. Fault Alarms

Dimmer Node fault alarms occur when there is something wrong in the system. The nodes themselves have a traffic light system of LEDs on them. If there is a solid red LED it shows that the node is still reporting a fault. If the LED is solid amber it means that there has been a fault but it has corrected. If both red and amber are off then there is no fault.

Similarly, in the Software the nodes will show as either red [fault ongoing], amber [fault occurred, but corrected] and green [no faults]. In the software you can enter the Edit Node page to get more information about the faults reported and the time at which they happened [see section 12]. Up to 10 past events are stored by the nodes.

The possible faults and their causes are as follows:

1. Overcurrent. This is generated when overcurrent is detected through the node. This may be caused by a short on the output.
2. PSU Voltage Fault. This is generated when voltage drops unexpectedly. It could be caused by a faulty PSU or by a power cut.
3. Water over/under temperature if using a temperature probe with set limits.
4. Water level low if using float switch.

Although currently there are no audible alarms, this system is very useful in diagnosing system wide problems such as power cuts or temperature drops overnight.


Clock nodes also have an alarm state. This refers to the internal rechargeable battery backup. If the voltage is too low for the Clock node to store the time, then it will show a red alarm. If the battery has recovered its charge it will show amber.

15. Clearing Fault Alarms

Once a fault alarm has occurred there are a few ways to clear the faults in the system.

1. Without using the software - hold the button on each effected node for 3 seconds until the amber light flashes. Then release.
2. Using the software to clear faults on individual nodes - edit the node effected (see section 12) and click 'Clear Faults'.
3. Using the software to clear all faults - click 'Clear Faults' on the main screen.

16. Power Consumption

The power consumption of the whole network can be viewed at the top of the main screen in the software. Please note that this doesn't update while the lights are dimming or brightening. The figure can be refreshed by clicking the  beside it.

Power consumption of an individual dimmer node and its lights can be viewed in the Edit Node screen (see section 12).

17. Using a PIR Detector

If a clock node is in use in the system, then one or more PIR detectors can be connected to only bring the lights to full brightness when presence is detected. All that is needed to do this is a Normally Closed PIR. When no one is detected the circuit is closed and after 10 minutes the lights will dim down to 10% over 30 seconds. When presence is detected the PIR will open the circuit and the lights will come back up to the user set brightness over 30 seconds. The off time will still apply in the same way. Multiple PIR sensors can be used if wired in series back to the clock node. In this way if any of the sensors are triggered then the circuit will open and the system will brighten.

NOTE: this functionality could be used in other ways. For example, a timed switch could be used to make the lights go dim for a set period during the day.

18. Methods of Override

The node system can be overridden in a few different ways:

1. Using a key fob remote. This advances the whole network. If you use the key fob to turn the system off, it will come on again at the next on time. Likewise, if you use the key fob to turn the system on, it will turn off again at the next off time.
2. Using the software to override individual nodes to off. Enter the Edit Node screen (see section 12) and click 'Override' to 'on'. This will turn the lights off and they will stay off

until the override is turned off either in the software or on the node [see below]. In this status the node will show blue in the software, and its amber LED will flash.

3. Without using the software to override individual nodes to off. Hold the button on the node down for 6 seconds until the amber light flashes repeatedly, then release. This will turn the lights off and they will stay off until the override is cancelled either in the software or on the node. In this status the node will show blue in the software, and its amber LED will flash. To cancel this status simply do the same again.
4. To override the lights to on, simply bypass the node by plugging the PSU directly to the lights.

NOTE: overriding individual nodes as above is a useful way to turn lights off for quarantine or maintenance purposes.

19. Switching between Networks

In some cases it may be that there is more than one network set up in a store [e.g. PIR needed to operate only one part of a system]. To switch between networks, simply click the 'Home' button on the main screen and then choose the required network from the drop down list once loaded.

20. Node Indicator LEDs

Red	Amber	Green	Meaning
Flash	Off	Off	Node is not yet registered to a network
Flash	Off	Flash	Node is in register mode awaiting software communication
Off	Off	On	Registered and working with no faults
On	Off	Fast Flash	Registered and programmed, but needs the time
Off	Off	Flash	Lights are ramping
On	Off	On	Ongoing fault alarm
Off	On	On	Corrected fault alarm
Off	Flash	On	Override enabled

NOTE: combinations of the above are possible. For example; red ON, yellow ON, green on would show an ongoing fault as well as a corrected fault.

21. Deregistering a Node

To deregister a node from the system, remove the power from the node and then hold the button in whilst reapplying the power. The unit will then undergo a factory reset and will no longer be registered to any network.

22. Troubleshooting

1. *The lights aren't turning on?*

- Ensure that the PSUs are operational by bypassing the nodes and connecting directly to the lights.
- Check that the system isn't overridden [see section 17].
- Check the program applied to the nodes in question. Ensure that all on and off times are enabled [see section 10].
- Check the LED status on the nodes in question. If the green light is flashing and the red light is on the system is ready to go, but doesn't know the time. Plug in the dongle and open the software to send the time to the system. **Note:** ensure that the computer used is set to local time.
- Try deregistering and then reregistering the nodes in question [see sections 20 & 6]

2. *I can't see the whole of the network?*

- Ensure that the PSUs are operational by bypassing the nodes and connecting directly to the lights.
- Check the LED status on the nodes in question. If the LED is solid green then the node is connected. Try refreshing the software [see section 9].
- Try deregistering and then reregistering the nodes in question [see sections 20 & 6]

3. *The lights aren't turning off?*

- Check that the system isn't overridden [see section 17].
- Check the program applied to the nodes in question. Ensure that all on and off times are enabled [see section 10].
- Check the LED status on the nodes in question.
- Try deregistering and then reregistering the nodes in question [see sections 20 & 6]

4. *Fault alarms aren't clearing?*

- Ensure that the causes of the fault alarms are all cleared.
- Try resetting manually on the node.
- Try deregistering and then reregistering the nodes in question [see sections 20 & 6]