

Agile Spectrum Control Software Manual

Software Setup, Channel Control, Groups, Schedules, DC/PWM & Inspection Mode

Current product naming: ASLED80 (GEN1) and ASLED192 (GEN2)

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Prepared from current Agile Spectrum website material and published supporting technical information.

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1. Purpose and Scope

This manual covers the Agile Spectrum control software as presented on the current agilespectrum.com Control Software page. It is written as a standalone operating guide for users who need to connect to fixtures, control channels, organize lights, create schedules, use DC/PWM functionality, and enter Inspection Mode.

2. Software Overview

Agile Spectrum control software is the command center for the lighting platform. There are six core aspects, including network connectivity, eight-channel precision attenuation, dynamic microclimate scheduling, group controls, dual-drive modality, and one-touch visual Inspection Mode.

Panel / Function	Primary purpose
Lights	Discover/select connected fixtures and directly control individual lights.
Groups	Work with collections of fixtures as a logical unit.
Manage Groups	Create and maintain group membership.
Schedules	Create time-based lighting recipes.
Adjust Intensities (Schedules)	Set the channel/intensity states associated with scheduled events.
DC / PWM	Select the drive modality and configure pulsed operation where supported.
Inspection Mode	Temporarily shift fixtures to neutral white for visual inspection.
Network / telemetry	Monitor connected system status and electrical/thermal data where supported.

3. System Prerequisites

- Install the software in accordance with the version supplied by Agile Spectrum.
- Ensure the lighting hardware is correctly installed and energized using the fixture manual.
- Confirm the control/network interface is connected.
- Know the Light ID/device identity for the fixture(s) you intend to operate.
- Before changing experimental settings, have the fixture channel map available.

HARDWARE REFERENCE: Use the separate ASLED80/ASLED192 Fixture Manual for physical installation, power, mounting, thermal management, and hardware troubleshooting.

4. Startup and Connection Guide

1. Complete the physical fixture startup procedure first.
2. Launch the Agile Spectrum control software.
3. Open the Lights view.
4. Allow the software to discover or connect to the available fixture(s).
5. Identify the required Light ID/device entry.
6. Compare the software identity with the commissioning record or physical fixture label.
7. Select the intended light before changing any intensity, mode, schedule, or group setting.
8. Use a low-output test when first commissioning a new connection.
9. Verify the physical response of the intended light and, where available, review telemetry.

MULTI-LIGHT RULE: Never assume that the first device listed is the fixture directly above your experiment. Confirm the Light ID every time before applying a new recipe or group operation.

5. Lights Panel

The Lights panel is the direct operating view for individual fixtures. Channel populations can be customized at manufacture, giving users complete authority.

5.1 Selecting a light

1. Open Lights.
2. Locate the target Light ID/device.
3. Select it.
4. Confirm the selected device before moving any fader or changing modes.

5.2 Channel labels

Treat the displayed channel label as the configuration for that specific fixture. Do not copy CH1=blue, CH2=far-red, etc. from a screenshot or another fixture and assume the same mapping applies to your unit.

6. Eight-Channel Control

The current software page describes eight digital faders with stepless resolution. The website also describes live electrical and thermal telemetry for supported systems.

1. Select the target light.
2. Confirm the current drive mode.
3. Set the required channel fader values from zero upward.
4. Watch the physical fixture response and telemetry as available.
5. Repeat for each required channel.
6. Record the final eight-channel state.

Parameter	What to record for research
Channel identity	CH1-CH8 and the configured wavelength/LED population
Output setting	Software setting actually applied
Mode	DC or PWM
PWM parameters	Frequency and duty cycle, when applicable
Light identity	Light ID/device name
Environment	Fixture position and chamber conditions

7. Master Control and Intensity Strategy

The software page shows a master control alongside the eight channel controls. Use the master control cautiously during research: it changes the overall operating condition while preserving the relative channel recipe.

REPEATABILITY: For exact experiments, save the channel recipe explicitly rather than describing a treatment only as “50% brightness.” Optical output should be independently verified where required by the study.

8. Groups Panel

Group controls are for organizing large numbers of lights into digital zones, vertical tiers, or custom research batches. Groups allow global schedules to coexist along with any other experimental subsets of lights.

8.1 Creating a group

Use a naming convention that identifies physical location and/or research treatment. Examples: ROOM1_TIER2_CONTROL, EXP_A_BLUE, EXP_B_FULLSPECTRUM.

8.2 Applying a group command

1. Select the intended group.
2. Verify group membership.
3. Apply a low-intensity test.
4. Walk the installation and verify only the intended fixtures respond.
5. Apply the final recipe.
6. Document the group membership and recipe revision.

9. Manage Groups Panel

Manage Groups is the administrative view for maintaining group membership. Because the exact control labels can vary by software release, use the supplied version's interface labels and verify membership after every change.

- Sync time feature to make sure the software has the correct date/time.
- Keep group names stable once they become part of an experimental record.
- Remove fixtures that have physically moved rooms or tiers before reusing a group.
- Do not rely on group names alone; verify actual Light IDs in the membership.
- Record group changes as configuration changes that may affect an experiment.

10. Schedules Panel

The Agile Spectrum software is designed for time-based recipes rather than basic on/off timers. This is how you can simulate sunrise, midday peaks, sudden cloud cover, gradual sunset transitions, customized daylight lengths, and seasonal changes.

10.1 Basic schedule workflow

1. Open Schedules.
2. Create a new program.
3. Give it a unique, experiment-specific name.
4. Select the light or group that will receive the schedule.
5. Define the dates for which the schedule will run recurringly, or set the program to run once.
6. Set the initial channel state.
7. Add transition/event points.
8. Assign channel values at each event.

9. Save the schedule.
10. Review the schedule before activating it.
11. Commission the first run at safe/low output when possible.

10.2 Recipe naming

Use names that include experiment and revision information, for example: ARABIDOPSIS_EXP03_DAY16_R2. The goal is to make a schedule traceable months later without opening the software.

11. Adjust Intensities (Schedules)

Adjust Intensities (Schedules) is inside the Schedules panel. Use it to define the intensity state associated with scheduled events. The exact on-screen labels may vary by software release.

1. Open the schedule you are editing.
2. Locate the event/time point to modify.
3. Adjust the required channel intensities.
4. Check the resulting transition/order of events.
5. Save the revised schedule as a new revision when experimental traceability matters.
6. Re-test the schedule with a single light or representative group before deploying facility-wide.

12. DC and PWM Modes

Agile Spectrum documents two broad operating modes: direct current (DC) and pulse-width modulation (PWM). The current site specifies PWM from 1 Hz to well over 2 kHz and highlights pulsed-light kinetics and ultra-low-light conditions as research applications.

12.1 DC

Use DC mode for continuous lighting conditions and baseline growth protocols. Record the channel settings and operating conditions.

12.2 PWM

Use PWM when the experiment depends on temporal modulation. Record both frequency and duty cycle. A PWM percentage should not be treated as equivalent to a DC percentage without independently confirming the resulting optical stimulus.

LOW-LIGHT USE: The current software page specifically notes that PWM can create very low effective duty factors and very low light levels useful for studying plant dark periods.

13. Inspection Mode

Inspection Mode is presented as a one-touch function that shifts fixtures to neutral-white illumination for phenotypic tracking and manual crop scouting. The purpose is to avoid introducing separate work lights that could contaminate the experimental light environment.

1. Record the active recipe/schedule.

2. Activate Inspection Mode.
3. Perform visual inspection or photography.
4. Exit Inspection Mode.
5. Verify the intended recipe has resumed.
6. Record the event time if the exposure is relevant to the study.

14. Network Connectivity and Telemetry

Agile Spectrum uses a single wireless system for the connected network, with live system-health information including voltage/current levels and temperatures.

- Use telemetry as a troubleshooting aid, not as a substitute for appropriate independent measurement in scientific studies.
- Record abnormal current/voltage/temperature readings before changing hardware.
- For recurring faults, capture the Light ID, time, operating mode, recipe, and any visible telemetry values. Please contact us for support.

15. Recipe Development Workflow

1. Define the biological objective or experimental question.
2. Identify the wavelength/channel map for the fixture.
3. Build a baseline spectrum at conservative intensity.
4. Verify output independently where required.
5. Add time-based transitions if the protocol requires them.
6. Test the recipe on one fixture.
7. Verify plant/chamber exposure and thermal conditions.
8. Save and version the recipe.
9. Deploy to the intended group or experiment set.
10. Record all configuration changes.

16. Experimental Best Practices

- Use identical fixture models/configurations when comparing treatments unless a model difference is part of the study.
- Keep mounting geometry constant for comparative trials.
- Record channel settings, mode, frequency/duty cycle, and schedule revision.
- Avoid using untracked temporary schedules during a formal run.
- Treat Inspection Mode as an exposure event and document it.
- Use stable, descriptive names for lights, groups, and schedules.
- Back up experimental recipes outside the software when possible.

17. Troubleshooting

Problem	Likely checks	Recommended action
Light missing from Lights list	Power, network/control connection, correct device identity	Verify physical connection, restart software if permitted, then reconnect/discover device.
Wrong light responds	Selected Light ID or group is wrong	Stop the command; verify Light ID physically and in commissioning records.
Channel output seems wrong	Channel map, mode, fader value, schedule override	Check whether a schedule/group command is active and confirm the actual channel map.
Schedule behaves unexpectedly	Event order, assigned light/group, saved revision, time settings	Test with one light at low output and review the saved schedule.
Telemetry abnormal	Current/voltage/temp outside expected behavior	Reduce output, inspect installation, and collect telemetry for support.
Inspection Mode does not leave expected recipe	Schedule/manual state after inspection	Exit mode and explicitly verify the intended active state before measurements.

STOP CONDITION: If a software command produces an unexpected physical response, stop further commands until the device identity, group membership, and channel mapping are verified.

18. Software Commissioning Checklist

- ☐ Software installed and launches
- ☐ Control/network interface connected
- ☐ Target Light IDs confirmed
- ☐ Eight channel map documented
- ☐ Low-output single-light test completed
- ☐ Manual channel control verified
- ☐ Telemetry visible where supported
- ☐ Group membership verified if used
- ☐ Basic schedule created and tested
- ☐ Schedule revision recorded
- ☐ DC mode verified
- ☐ PWM mode verified if required
- ☐ Inspection Mode verified
- ☐ Final recipe saved externally/under revision control

19. Quick Reference

Task	Primary place to start
Control one fixture	Lights

Work with multiple fixtures	Groups
Create/maintain groups	Manage Groups
Build time-based recipe	Schedules
Set scheduled channel intensities	Adjust Intensities (Schedules)
Temporarily view plants in neutral white	Inspection Mode
Run continuous illumination	DC
Run pulsed illumination	PWM