

AO2 FULL-COLOR ANIMATION LASER

Color LCD Bluetooth Screen Version 5.0 | User Manual



LIGHT ELF APP

BLUETOOTH

DMX512

LANDMARK

20K / 40K

Available optical output options: 10W / 15W / 20W / 30W

Reference configuration in this manual: RGB 15W

1. Product Overview

TheAO2 is a full-color RGB animationlaser projector designed for DJ rooms, bars, banquet halls, outdoor entertainment venues, farms, advertising displays and other applications that require bright graphics and beam effects. The fixture uses an industrial-grade die-cast housing with sealed construction for improved resistance to smoke, oil residue and outdoor moisture, while the housing and ventilation design support efficient heat dissipation and longer service life.

Bluetooth connectivity works with the Light ELF App, allowing users to program and send custom text and graphics from a mobile phone. The AO2 also supports DMX512, sound-activated, automatic, landmark and software-control modes.

Mobile Programming	Bluetooth + Light ELF App for custom text and pattern editing.
Industrial Housing	Die-cast enclosure with sealed, smoke/oil-resistant and outdoor waterproof construction.
RGB Full Color	Imported laser diode chips deliver high brightness, vivid color mixing and strong white output.
Flexible Control	DMX512, sound, auto, Bluetooth, landmark mode and software interface.
Scanner Options	20K high-speed galvanometer scanner; 40K scanner optional.
Applications	DJ rooms, bars, banquet halls, outdoor venues, farms and advertising.





Technical Specifications - RGB 15W Reference Version

Model	AO2
Product Type	Full-color RGB animation laser projector
Available Optical Output	10W / 15W / 20W / 30W
Reference Laser Power	RGB 15W
Red	4300mW, 638nm
Green	4300mW, 525nm
Blue	7000mW, 450nm
Input Voltage	AC 110-240V, 50/60Hz
Rated Power	200W
Scanning System	20K high-speed galvanometer scanner; 40K optional
Scanning Angle	+/-30 degrees
Control	DMX512 / Sound / Auto / Bluetooth / Landmark / Software Interface
Mobile App	Light ELF App

2. Safety, Installation and Maintenance Notes

Please read this manual before use. Follow the operating instructions and do not dismantle the fixture without authorization.

- Recommended operating temperature range: 20-35 deg C.
- Install the fixture in a well-ventilated location. Protect it from impact, vibration and unstable mounting.
- Use only AC 110-240V power and ensure reliable grounding.
- Avoid frequent power cycling, which may shorten normal service life.
- Do not touch the laser output lens with your fingers. Keep the lens clean for maximum brightness.
- Clean the output lens approximately once per month using a soft cotton swab or suitable optical-cleaning material.
- For suspended installation, the hanging point should support at least 10 times the weight of the fixture. Use a secondary safety cable and suitable hardware.
- Do not attempt internal repairs unless you are qualified to service laser equipment.
- When transporting the fixture, use suitable packaging to protect it from shock and impact.
- Clean the air inlet and outlet approximately every three months to maintain effective cooling.

WARNING

- Laser radiation can cause serious eye injury. Never look directly into the beam or point the beam at eyes.
- Keep combustible materials at least 3 meters away from the fixture.
- If the supply voltage varies by more than approximately 10% from the nominal value, use suitable power-conditioning equipment.
- Protect the fixture from excessive dust during installation.
- Disconnect power before cleaning or maintenance.
- Ensure the fixture is firmly installed and always use secondary safety measures for overhead mounting.
- Damage to or removal of the warranty label may affect warranty coverage.





3. Bluetooth and Light ELF App Control

The AO2 supports mobile Bluetooth control through the Light ELF App. Use the App to create custom text and graphics, then send the programmed content to the fixture for playback.

1. Power on the AO2. Allow the fixture to complete its startup sequence.
2. Enable Bluetooth on the phone. Keep the phone within normal Bluetooth operating range.
3. Open the Light ELF App. Search for the available laser fixture and connect to the discovered AO2 device.
4. Create content. Use the text, drawing or pattern-programming tools in the App to prepare the required content.
5. Send to the fixture. Transfer the programmed text or graphics to the AO2 and select the appropriate playback mode.
6. Choose other control modes when needed. DMX512, sound, auto, landmark and software-control modes remain available from the fixture menu.

Tip: Landmark mode is intended for outdoor / landmark-style projection programs. For custom text or graphics, use the Light ELF App or compatible software interface.

4. Display Menu and Control Modes

When a 25-pin ILDA software signal is connected, the fixture can automatically recognize the software-control signal. If the fixture is connected through the network port, manually select the network-port mode in the menu.

Screen unlock sequence: UP - DOWN - UP - DOWN

No.	Setting	Value	Description
1	address code	1-512	Address Code Setting
2	Channel Settings	18CH/22CH	18CH for Lite Channel Mode 22CH for Pro Channel Mode
3	Mode Setting		0 DMX - Console mode
3	Mode Setting		1 Network Port - Software control via network connection
3	Mode Setting		2 Random - Random playback of all programs
3	Mode Setting		3 Line - Line programs
3	Mode Setting		4 Animation - Animation programs
3	Mode Setting		5 Text - Play text programmed by mobile App / applet
3	Mode Setting		6 Programming - Play custom programs created by mobile App / applet
3	Mode Setting		7 Hand-drawn - Play graphics drawn in the mobile App / applet
3	Mode Setting		8 Landmarks - Outdoor / landmark programs
3	Mode Setting		9 Wedding program
3	Mode Setting		10-99 Built-in graphics selection
4	playback speed	0	Sound-activated
4	playback speed	1-99	Auto playback speed (slow to fast)
5	Pattern size	10-100	Pattern size
6	Pattern phase	X+/Y+	Pattern phase
7	Red Dimming	0-100	Red light dimming (analog modulation active)
8	Green Dimming	0-100	Green light dimming (analog modulation effective)
9	Blue Dimming	0-100	Blue light dimming (analog modulation effective)
10	Modulation mode	TTL/Analog	TTL / Analog modulation selection
11	Language settings	Chinese/English	Select Chinese / English interface language
12	Software version	VER2.X	VER2.X is the Software version





5. DMX - 18CH Channel Mode

Channel	Function	DMX Value	Control Description
CH1	Master Dimming	0-255	Master switch / dimming. Dimming is effective when analog modulation is enabled.
CH2	Strobe	0-9	No strobe
CH2	Strobe	10-255	Strobe speed from slow to fast
CH3	Color	0-34	White / Red / Blue / Purple / Cyan / Yellow / Green fixed color selection
		35-39	Overall color flow; speed controlled by CH4
		40-44	Original pattern color flow; speed controlled by CH4
		45-46	Seven-color rainbow flow; speed controlled by CH4
		47-66	2-segment color selection, 4-value stepping; flow speed controlled by CH4
		67-96	3-segment color selection, 4-value stepping; flow speed controlled by CH4
		97-126	4-segment color selection, 4-value stepping; flow speed controlled by CH4
		127-150	8-segment color selection, 4-value stepping; flow speed controlled by CH4
		151-174	16-segment color selection, 4-value stepping; flow speed controlled by CH4
		175-214	32-segment color selection, 4-value stepping; flow speed controlled by CH4
CH4	Color Flow Rate	215-247	Analog color mixing, 32 analog color combinations
		248-255	Color gradient; flow speed controlled by CH4
		0-9	No color flow
CH4	Color Flow Rate	10-127	Forward color flow, speed from slow to fast
		128-255	Reverse color flow, speed from slow to fast
CH5	Graphic Selection	0-255	Pattern selection; pattern group controlled by CH6





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CH6	Graphic Group Selection	0-24	Built-in Static Graphics Group 1 – Basic geometric patterns
		25-49	Built-in Static Graphics Group 2 – Basic geometric patterns
		50-74	Built-in Static Graphics Group 3 – Edge highlight patterns
		75-99	Built-in Static Graphics Group 4 – Point / punched graphics
		100-124	Reserved
		125-149	ILDA Animation Category 1
		150-174	ILDA Animation Category 2
		175-199	ILDA Animation Category 3 – Reserved
		200-224	ILDA Animation Category 4 – Reserved
		225-255	ILDA Animation Category 5 – Reserved
CH7	Pattern Size	0-255	Manual pattern size adjustment
CH8	Pattern Auto Scaling	0-15	Pattern size selection
		16-55	Automatic scaling from small to large
		56-95	Automatic scaling from large to small
		96-135	Continuous scaling speed adjustment
		136-175	Two-point irregular loop scaling
		176-215	Three-stage irregular loop scaling
		216-255	Four-stage irregular loop scaling
CH9	Center Rotation	0-127	Rotation angle selection
		128-191	Forward rotation speed
		192-255	Reverse rotation speed
CH10	X-Axis Rotation	0-127	Horizontal flip position selection
		128-255	Horizontal flip speed selection
CH11	Y-Axis Rotation	0-127	Vertical flip position selection
		128-255	Vertical flip speed selection
CH12	Horizontal Movement	0-255	Horizontal position selection
CH13	Vertical Movement	0-255	Vertical position selection





CH14	Horizontal Move Macro	0-15	No function
		16-95	X Macro Function 1, slow to fast
		96-175	X Macro Function 2, slow to fast
		176-255	X Macro Function 3, slow to fast
CH15	Vertical Move Macro	0-15	No function
		16-95	Y Macro Function 1, slow to fast
		96-175	Y Macro Function 2, slow to fast
		176-255	Y Macro Function 3, slow to fast
CH16	X-Direction Wave	0-1	No wave
		2-255	Wave amplitude and speed adjustment; amplitude small to large, speed slow to fast
CH17	Built-In Dynamic Effects	0-1	No function
		2-202	Built-in effects; color controlled by CH3, speed controlled by CH18
		203-214	Line effects; color controlled by CH3, speed controlled by CH18
		215-224	Animation effects; color controlled by CH3, speed controlled by CH18
		225-234	Outdoor landmark effects; color controlled by CH3, speed controlled by CH18
		235-255	Random playback of all effects; color controlled by CH3, speed controlled by CH18
CH18	Built-In Effect Speed	0-1	System default speed
		2-255	Built-in effect speed from slow to fast





6. DMX - 22CH Channel Mode

Channel	Function	DMX Value	Control Description
CH1	Master Dimming	0-255	Master switch / dimming. Analog modulation active
CH2	Red Dimming	0-255	Red linear dimming
CH3	Green Dimming	0-255	Green linear dimming
CH4	Blue Dimming	0-255	Blue linear dimming
CH5	Strobe	0-9	No strobe
		10-255	Strobe speed from slow to fast
CH6	Color	0-34	White / Red / Blue / Purple / Cyan / Yellow / Green fixed color selection
		35-39	Overall color flow; speed controlled by CH7
		40-44	Original pattern color flow; speed controlled by CH7
		45-46	Seven-color rainbow flow; speed controlled by CH7
		47-66	2-segment color selection, flow speed controlled by CH7
		67-96	3-segment color selection, flow speed controlled by CH7
		97-126	4-segment color selection, flow speed controlled by CH7
		127-150	8-segment color selection, flow speed controlled by CH7
		151-174	16-segment color selection, flow speed controlled by CH7
		175-214	32-segment color selection, flow speed controlled by CH7
		215-247	Analog color mixing
		248-255	Color gradient; speed controlled by CH7
CH7	Color Flow Rate	0-9	No color flow
		10-127	Forward color flow, slow to fast
		128-255	Reverse color flow, slow to fast
CH8	Graphic Selection	0-255	Pattern selection; pattern group controlled by CH9



CH9	Graphic Group Selection	0-24	Built-in Static Graphics Group 1 – Basic geometric patterns
		25-49	Built-in Static Graphics Group 2 – Basic geometric patterns
		50-74	Built-in Static Graphics Group 3 – Edge highlight patterns
		75-99	Built-in Static Graphics Group 4 – Point / punched graphics
		100-124	Reserved
		125-149	ILDA Animation Category 1
		150-174	ILDA Animation Category 2
		175-199	ILDA Animation Category 3 – Reserved
		200-224	ILDA Animation Category 4 – Reserved
		225-255	ILDA Animation Category 5 – Reserved
CH10	Pattern Size	0-255	Manual pattern size adjustment
CH11	Pattern Auto Scaling	0-15	Pattern size selection
		16-55	Automatic scaling from small to large
		56-95	Automatic scaling from large to small
		96-135	Continuous scaling speed adjustment
		136-175	Two-point irregular loop scaling
		176-215	Three-stage irregular loop scaling
		216-255	Four-stage irregular loop scaling
CH12	Center Rotation	0-127	Rotation angle selection
		128-191	Forward rotation speed
		192-255	Reverse rotation speed
CH13	X-Axis Rotation	0-127	Horizontal flip position selection
		128-255	Horizontal flip speed selection
CH14	Y-Axis Rotation	0-127	Vertical flip position selection
		128-255	Vertical flip speed selection
CH15	Horizontal Movement	0-255	Horizontal position selection
CH16	Vertical Movement	0-255	Vertical position selection



CH17	Horizontal Move Macro	0-15	No function
		16-95	X Macro Function 1, slow to fast
		96-175	X Macro Function 2, slow to fast
		176-255	X Macro Function 3, slow to fast
CH18	Vertical Move Macro	0-15	No function
		16-95	Y Macro Function 1, slow to fast
		96-175	Y Macro Function 2, slow to fast
		176-255	Y Macro Function 3, slow to fast
CH19	X-Direction Wave	0-1	No wave
		2-255	Wave amplitude and speed adjustment
CH20	Gradient Pattern Drawing	0-1	No gradient
		2-63	Manual Gradient Drawing 1
		64-127	Manual Gradient Drawing 2
		128-153	Automatic gradient drawing - increase
		154-179	Automatic gradient drawing - decrease
		180-205	Automatic gradient - increase then decrease, reverse
		206-255	Automatic gradient - increase then decrease, same direction
CH21	Built-In Dynamic Effects	0-1	No function
		2-202	Built-in effects; color controlled by CH6, speed controlled by CH22
		203-214	Line effects; color controlled by CH6, speed controlled by CH22
		215-224	Animation effects; color controlled by CH6, speed controlled by CH22
		225-234	Outdoor landmark effects; color controlled by CH6, speed controlled by CH22
		235-255	Random playback of all effects; color controlled by CH6, speed controlled by CH22
CH22	Built-In Effect Speed	0-1	System default speed
		2-255	Built-in effect speed from slow to fast





7. Software / ILDA Interface Wiring

This source manual includes the following 25-pin interface to Ethernet-port wiring reference. Use only with compatible software/hardware and qualified technical personnel.

Ethernet port	DB25
1	X- Pin14
2	Y-Pin15
3	GND Pin25
4	R Pin5
5	G Pin6
6	B Pin7
7	Y+ Pin2
8	X+Pin1
	Pin4 AND 17 Short circuit connection

Interface Notes

- When a compatible 25-pin ILDA software signal is connected, the fixture can automatically switch to software control.
- For network-port software control, select the appropriate network-port mode manually in the display menu.
- Do not modify interface wiring while the fixture is powered.

8. Maintenance, Transport and Statement

Routine Maintenance

- Keep the laser output window, air inlet and air outlet free of dust and residue.
- Clean the output lens approximately once per month to maintain brightness.
- Clean the air inlet and outlet approximately every three months, or more often in dusty or smoky environments.
- Always disconnect power before cleaning or maintenance.
- Use protective packaging for transport to reduce shock and vibration damage.

Product Statement

- If the instructions do not exactly match the delivered product, the actual product supplied shall prevail.
- Product performance, firmware or functions may be upgraded or changed without separate notification.
- Specifications in this manual refer to the information supplied for model AO2. The detailed laser-power figures shown in this manual are for the RGB 15W reference configuration.



2. Software Installation, Bluetooth Connection and App Settings

WeChat Mini Program

Open WeChat and scan the QR code to launch the LightElf Mini Program.



Android App

- Method 1: Open <https://www.lanzouh.com/s/lightelf> in your browser and install the App.
- Method 2: Open Google Play Store, search for "LightElf," then download and install it.
- Method 3: In Tencent App Store, Huawei AppGallery, Honor App Market, Mi GetApps, OPPO Software Store or vivo App Store, search for LightElf and install it.

iOS App

Open the Apple App Store, search for "LightElf," and install the App.

TheAppCannotFindtheBluetooth Device

iOS App

- Confirm that the A15 is not already connected to another phone. Restarting the fixture will release the existing Bluetooth connection.
- Check that Bluetooth is enabled: Settings > Bluetooth > On.
- Grant Bluetooth permission to LightElf: Settings > Apps > LightElf > Bluetooth.
- Confirm Bluetooth authorization under Settings > Privacy & Security > Bluetooth > LightElf.
- If an old device pairing is saved, open Settings > Bluetooth, select the old device, choose Forget This Device, then search again.
- If the settings above are correct, restart both the A15 and the App, then reconnect.
- If necessary, test with another phone.

WeChat Mini Program on iOS

- Confirm that the fixture is not already connected to another phone.
- Turn on Bluetooth in iOS Settings.
- Allow WeChat to use Bluetooth: Settings > Apps > WeChat > Bluetooth.
- Confirm WeChat under Settings > Privacy & Security > Bluetooth.
- Inside the LightElf Mini Program, open the top-right menu (...) > Settings and set Bluetooth to "Allow While Using."
- Forget any old Bluetooth pairing, search again, and restart both the fixture and the App if necessary.
- If the problem remains, try another phone.

Android App

- Confirm that the fixture is not already connected to another device.
- Turn on Bluetooth from Quick Settings or Settings > Bluetooth.
- Allow "Bluetooth / Nearby Devices": Settings > Apps > LightElf > Permissions.
- On Android 11 and earlier, Precise Location permission must also be enabled or the fixture may not appear.
- Turn on Location in Quick Settings.
- Disable battery optimization for LightElf so the App can remain active: Settings > Battery > App power saving management > LightElf > Do not optimize / Allow background activity.
- Restart the A15 and the App, then reconnect. If necessary, try another phone.

WeChat Mini Program on Android

- Confirm that the fixture is not already connected to another device.
- Turn on Bluetooth and Location.
- Allow WeChat access to Bluetooth / Nearby Devices: Settings > Apps > WeChat > Permissions.
- On Android 11 and earlier, enable Precise Location permission.
- Inside the Mini Program, open the top-right menu (...) > Settings and allow Bluetooth while using the Mini Program.
- Disable battery optimization for WeChat to reduce connection failures and unexpected disconnections.
- Restart the fixture and WeChat, then reconnect. If necessary, try another phone.

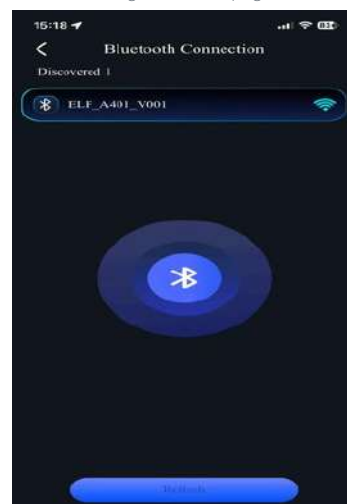


Bluetooth Connection

- Connect the A15 laser projector to power and wait for the power-on self-test to finish.
- Open the LightElf App or Mini Program. On first use, allow Bluetooth and location permissions when requested.
- On the home page, tap Click Me To Connect. Search for the fixture and select the Bluetooth device named ELF_xxxx.
- When the App shows that ELF_xxxx is connected, the connection is complete. If no device appears, see the Troubleshooting section.



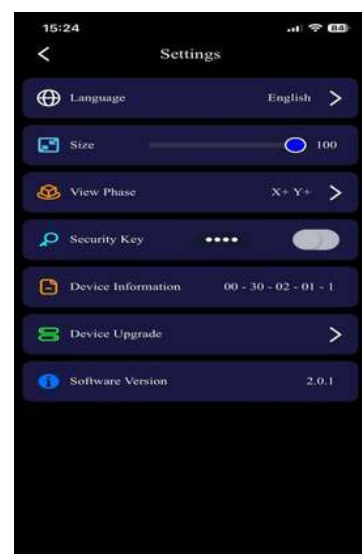
LightElf home page



Bluetooth device search

App Settings

- System Language: Change the App interface language. Multiple languages are supported.
- Graphic Size: Adjust the overall size of the projected graphic.
- Phase / Viewpoint: Change the phase or orientation of the projected image.
- Security Key: Enable or disable the connection password and change the password.
- Machine Information: View firmware information. The final digits indicate the firmware version.
- Equipment Upgrade: Start a supported firmware upgrade from this menu.



Settings screen

3. Function Introduction

Power-On and Standby

- Turn on laser output: Tap the switch on the home page. The App displays Device ON and the fixture emits laser light.
- Standby: Tap the switch again. The App displays Device OFF and the laser output is disabled.



Hand-Drawn Graphics

Color control area

- Select a color for drawing.
- Change the color of a selected graphic.
- Open the multi-color palette to select additional color segments.

Drawing tools

- Freehand: Draw directly on the canvas. Use the positioning function when you need to choose an exact starting point.
- Straight line: Drag to set the start point and draw a line.
- Curve: Drag to define the starting point and draw an arc or curved line.
- Basic geometry: Insert built-in geometric shapes.
- Text and font: Add text and choose font, language and horizontal/vertical orientation.



Hand-drawing interface

Image recognition

- Import an image and use it either as a drawing background or as a source for graphic recognition.
- For best results, use images with clear outlines and simple shapes.
- Choose Outline mode to trace the outer edges or Skeleton mode to extract center lines.
- You can also set the imported picture as the canvas background and trace it manually.



Imported image example

Edit and save controls



Select / move



Previous / next



Delete



Undo



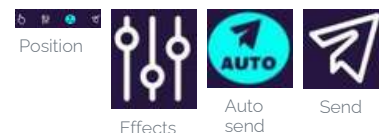
Clear



Save / open

Positioning and graphic effects

- Starting-point positioning: In freehand mode, press and hold the positioning control with one hand. With the other hand, slide on the canvas to place the start point, then begin drawing.
- Graphic Effects: Open the effects panel to adjust the graphic appearance and movement parameters.
- Automatic Send: When enabled, edited graphics are sent to the fixture automatically.
- Manual Send: When automatic sending is disabled, tap the Send icon to transmit the graphic manually.



Text Playback

- Text color: Select the required text color.
- Fonts: Supports single-line fonts, SimSun and Source Han Sans.
- Add Groups: Tap + to add text groups. Each group can have its own text, color, font and playback duration.
- Save & Open: Save the current text project or open a previously saved one.
- Text Precision: Set text detail from 0-100.
- Text Size: Adjust text size from 10-100.
- Display Range: Adjust the projected display range from 10-100 to suit the projection distance.
- Flow Rate: 0-9 keeps the text stationary. From 10-100, the scrolling speed increases from slow to fast.
- Flow Direction: Select left, right, up or down.
- Preview and Send: Tap Preview to check the text, then tap Send to transmit it to the fixture.



Text playback screen

Personalized Programming

- Add Scene: Add a new scene to the program.
- Delete Scene: Delete the selected scene.
- Scene Timing: Set the playback duration of the selected scene. - Edit Scene: Open the selected scene for editing.
- Select Scene: Select or deselect a scene.
- Graphic Effects: Open the scene effects page.



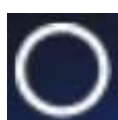
Scene management

Graphic groups and effects

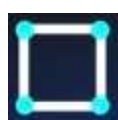
Open the graphics selection page to choose from linear graphics, arcs, edge-highlight graphics, point graphics, Christmas graphics and animation groups. Effects include grouping, color, color flow, size, scaling, rotation, stretching, translation, wave effects and gradients. Use the Reset control to return all effects channels to their default settings.



Linear



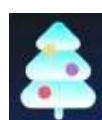
Arc



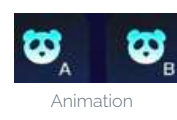
Highlight



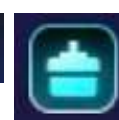
Point



Christmas



Animation



Reset





Scene effects editor



Pattern library

Playlist

- Create a new playlist: On the Playlist page, tap Create New Playlist and enter a playlist name.
 - Add a graphic: Tap + in the list editor to add a graphic previously drawn and saved on the Hand-Drawn page.
- Delete a graphic: Select the graphic and tap Delete.
- Sort graphics: Drag items to change their order.
- Timer settings: Select a graphic and set its playback duration.
- Download list: Download and synchronize all playlists to the A15 fixture.
- On-demand list: Play a selected playlist after it has been downloaded to the fixture.



Playlist page



List editor

Program Playback

The A15 includes Random, Line, Animation, Christmas, Outdoor Landmark and Aurora / Northern Lights playback modes. The controls are similar across these program groups; the Christmas page is shown as an example.

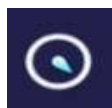
- Color switching: Tap a color block to change the program color.
- Auto Mode: Use the speed slider. Speed increases from 0 to 100.
- Sound-Activated Mode: Enable sound control and adjust microphone sensitivity from 0 to 100.
- Play selection: Use Loop / Tick Play, Single / Multiple selection, Select All, Invert Selection and Clear to manage which programs play.



Program playback example



Colors



Auto



Sound



Loop/Tick



Single/Multi



Select all



Invert



Clear

