STARSHINE LIGHTS

STARSHINE LIGHTS PRODUCT MANUAL

M20 MOVING HEAD LASER PRODUCT MANUAL

1. Product Overview

The M20 is a professional moving head full-color animation laser, combining high-power RGB laser output with smooth pan/tilt movement and a built-in RGBW LED halo strip.

Using imported semiconductor laser diodes and a DT30K scanner set, the M20 delivers crisp beams, graphics, text and complex animations for demanding venues such as bars, clubs, KTV rooms, live houses, hotels and multi-purpose entertainment spaces.

2. Key Features

2.1 High-quality laser engine

- Imported pure-diode laser modules (NICHA) for high stability, vivid colors and long life.
- True RGB color mixing with sharp, well-defined beams for graphics and animation work.

2.2 Professional moving-head design

- Pan: 540˚, Tilt: 270˚, both with 16-bit resolution for smooth, precise positioning.
- Supports X/Y inversion, center rotation and auto-movement patterns.
- Powerful graphics and show system
- Built-in SD card with 128+ pre-programmed beam and animation shows.
- Users can create and import custom logos, text and animation content via professional software.
- Multiple static and dynamic image banks, color macros, fades, wave, zoom and other advanced effects.

2.3 Multiple control options

- DMX512 with 28 channels.
- Sound-active mode via internal microphone.
- Auto-run programs (stand-alone operation).
- Master/Slave sync for multi-fixture shows.
- ILDA 25-pin standard interface, fully compatible with Pangolin FB3/FB4 and other laser software for PC-based timeline programming.

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2.5 Safety and protection

- Laser power-off protection, scan-fail protection.
- Safety key switch with delayed laser startup to prevent accidental emission.
- Dust-, moisture-, corrosion- and rust-resistant housing with a well-sealed structure.
- Large-area cooling design covering roughly 50% of the chassis for efficient heat dissipation.
- Built-in temperature control system automatically manages fans and power so the unit runs reliably from –40 ˚C to 45 ˚C.

2.6 User-friendly display and menu

- Full-color LCD display.
- English/Chinese language switchable (can be left in English for export).
- Display flip function for upright or upside-down mounting.
- Intuitive menu structure for quick address setting, mode selection and configuration.

2.7 LED halo strip effects

- 31 high-brightness RGBW LEDs arranged as a halo around the output.
- Independent LED effects including color chases, strobes, flashes and flowing color patterns.
- Laser and LED can be combined for a fuller, more layered stage look.
-

3. Technical Specifications

3.1 General

- Product Name: Moving Head Full-Color Animation Laser
- Model: M20
- Housing Color: Black

3.2 Laser system

- Total Laser Power: 5 W
- Red: 638 nm, 1.5 W
- Green: 520 nm, 1.5 W
- Blue: 445 nm, 2 W
- Laser Type: Pure semiconductor laser diodes (NICHA)
- Beam Divergence: < 1.6 mrad (full angle)
- Beam Aperture: ≤ 6.5 mm at output window
- Modulation Frequency: ≤ 100 kHz

3.3 Scanning system

- Scanner Type: DT30K galvo set
- Typical Scan Speed: 30Kpps
- Scan Angle: ±30˚ (approx. 60˚ total)

3.4 Pan & Tilt

- Pan: 540˚, 16-bit resolution
- Tilt: 270˚, 16-bit resolution
- Functions: X/Y invert, center rotation, auto movement patterns

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3.5 LED halo strip

- LED Type: RGBW
- Quantity: 31 pcs
- Effects: Static color, color change, chases, strobe and flow effects

3.6 Electrical

- Input Voltage: AC 90–250 V, 50/60 Hz (universal)
- Max Power Consumption: ≤ 120 W
- Power Connection: PowerCON in/out (subject to actual hardware)
- Control Connections: 3-pin XLR DMX in/out, ILDA 25-pin

3.7 Control Modes

- DMX512, 28-channel mode
- Sound-active
- Auto-run (built-in programs)
- Master/Slave
- ILDA PC control: compatible with Pangolin FB3/FB4 and similar controllers

3.8 Display & operation

- Display: Color LCD screen
- Menu Languages: English / Chinese
- Display Modes: normal / boosted brightness / inverted display (depending on DMX channel setting)
- Safety: Key switch with delayed laser startup

3.9 Environment & construction

- Operating Temperature: –40 ˚C to 45 ˚C
- Housing: Sealed design, dust- and moisture-resistant, corrosion- and rust-resistant, optimized airflow and heat-sink area covering ~50% of the chassis
- IP Rating: Refer to product label (designed primarily for indoor use; outdoor use requires proper protection)
- Dimensions (L × W × H): approx. 30 × 23 × 47 cm
- Net Weight: approx. 11 kg

Packaging

- Carton / Inner Box Size: approx. 51 × 39 × 37 cm (1 unit per carton)
- Gross Weight: approx. 15 kg

4. Control Modes & Functions

4.1 Control modes

1. **Auto-run mode**
   - The fixture runs internal programs automatically. Different banks and speeds can be selected from the menu or via DMX.
2. **Sound-active mode**
   - The built-in microphone listens to music and triggers patterns, beam movements and LED effects in sync with the beat — ideal for DJs, bars and live venues.
3. **DMX512 mode**
   - Full access to all 28 channels for detailed control over laser on/off, dimming, color, images, movement, zoom, fade, wave, LED halo effects and reset.
4. **Master/Slave mode**
   - Multiple M20 units can be linked together. One fixture is set as Master, others as Slaves, allowing synchronized shows without a lighting console.
5. **ILDA computer control**
   - Connect the ILDA 25-pin port to a laser controller such as Pangolin FB3/FB4.
   - Use laser software to design custom graphics, logos, text and time-line shows and output them in real time to the M20.

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DMX 1 + 3 + 5 + 19 + 1 = 29-channel functions:

Note: Values and ranges below are a summary. A full DMX chart with exact value ranges can be added as an appendix.

Channel	Function	DMX Value	Description
CH1	Laser On / Off	0–10	Laser off

Channel	Function	DMX Value	Description
CH2	LED Effect	0–10	LED off
	LED Effect	11–255	Select LED effect; each DMX value calls a different effect
CH3	LED Effect Position & Speed	0–128	Manual LED effect position
	LED Effect Position & Speed	129–170	Forward/reverse loop, speed from fast to slow
	LED Effect Position & Speed	171–212	Forward movement, speed from fast to slow
	LED Effect Position & Speed	213–255	Reverse movement, speed from fast to slow
CH4	LED Strobe	0–255	Select LED strobe rate from fast to slow

Channel	Function	DMX Value	Description
CH5	X Position (Pan)	0–255	X-axis movement
CH6	X Fine	0–255	Fine adjustment of X-axis position
CH7	Y Position (Tilt)	0–255	Y-axis movement
CH8	Y Fine	0–255	Fine adjustment of Y-axis position
CH9	XY Speed	0–255	Pan/tilt speed from fast to slow

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Channel	Function	DMX Value	Description
CH10	Graphic Bank Select	0–49	Static graphic banks; one bank per 5 DMX values
		50–99	Auto-run effect banks; one bank per 5 DMX values
		100–199	SD card effect banks; one bank per 5 DMX values
		200–255	Internal memory effect banks; one bank per 10 DMX values
CH11	Graphic Select	0–255	Each 3 DMX values select one graphic / animation
CH12	Red Dimmer	0–255	Red laser from brightest to off
CH13	Green Dimmer	0–255	Green laser from brightest to off
CH14	Blue Dimmer	0–255	Blue laser from brightest to off
CH15	Color Macros	0–1	Original color
		2–15	7 pure colors: red, green, blue, yellow, cyan, purple, white
		16–19	7 pure-color change (stepping)
		20–33	7-color effects (see color table below)
		34–37	7-color changing effects
		38–154	Color mixing section (manual color tuning)
		155–255	Color mixing with flowing / chase effect
CH16	Strobe	1–255	Strobe speed selection, from fast to slow

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Channel	Function	DMX Value	Description
CH17	X Position	0–255	Manual X position adjustment
CH18	Y Position	0–255	Manual Y position adjustment
CH19	Display Mode	0–63	Normal display
CH19	Display Mode	64–127	Highlight display
CH19	Display Mode	128–191	16-point display
CH19	Display Mode	192–255	8-point display
CH20	X Flip	0	No flip
CH20	X Flip	1–127	Manual X flip adjustment
CH20	X Flip	128–191	Auto clockwise X flip
CH20	X Flip	192–255	Auto counter-clockwise X flip
CH21	Y Flip	0	No flip
CH21	Y Flip	1–127	Manual Y flip adjustment
CH21	Y Flip	128–191	Auto clockwise Y flip
CH21	Y Flip	192–255	Auto counter-clockwise Y flip
CH22	Center Rotation	0	No rotation
CH22	Center Rotation	1–127	Manual rotation around center
CH22	Center Rotation	128–191	Auto clockwise rotation
CH22	Center Rotation	192–255	Auto counter-clockwise rotation

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Channel	Function	DMX Value	Description
CH23	X Auto Move	0–63	Auto forward movement, passes through edge (only active when CH18 = 0)
		64–127	Auto loop movement (only active when CH18 = 0)
		146–215	Auto reverse movement, disappears beyond edge (only active when CH18 = 0)
		216–255	Auto forward movement, bounces back at edge (only active when CH18 = 0)
CH24	Y Auto Move	0–63	Auto forward movement, passes through edge (only active when CH19 = 0)
		64–127	Auto loop movement (only active when CH19 = 0)
		146–215	Auto reverse movement, disappears beyond edge (only active when CH19 = 0)
		216–255	Auto forward movement, bounces back at edge (only active when CH19 = 0)
CH25	Zoom	0–63	Manual image size adjustment
		64–127	Zoom in
		128–191	Zoom out
		192–255	Loop zoom in/out
CH26	Fade / Draw	0–10	No fade/draw effect
		11–74	Manual fade/draw amount
		75–104	Auto fade/draw (increasing)
		105–144	Auto fade/draw (decreasing)
		145–184	Auto loop fade/draw
		185–224	Loop fade/draw (head-to-tail, increasing)
		225–255	Loop fade/draw (head-to-tail, decreasing)
CH27	Wave	0	No wave effect
		1–127	X-axis wave
		128–255	Y-axis wave
CH28	Head Reset	0–250	No effect
		251–255	Hold value for 3 seconds to start pan/tilt reset

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5. Installation & Wiring

5.1 Location

- Mount on a solid, level structure capable of supporting the fixture's weight.
- Can be truss-mounted or stand-mounted.
- Allow adequate airflow around the housing; keep at least 0.5 m clearance from walls or obstacles, especially behind the fixture.

5.2 Rigging

- Use approved clamps or hooks to mount the M20 to a truss or lighting bar.
- Always secure the fixture with a separate safety wire attached to a load-rated point.

5.3 Power connection

- Confirm the local mains voltage is within AC 90–250 V, 50/60 Hz.
- Connect the supplied or certified power cable to the PowerCON input.
- When daisy-chaining power to multiple fixtures, ensure total load does not exceed the circuit or cable rating.

5.4 DMX wiring

- Use standard 3-pin DMX cables.
- Connect controller → M20 DMX IN → additional fixtures DMX OUT → DMX IN, and so on.
- A 120 Ω terminator on the last fixture is recommended for long runs.

5.5 ILDA wiring

- Connect the ILDA 25-pin port to an ILDA-compatible controller (FB3/FB4 etc.).
- Select the correct output in the software and route your show to this port.

6. Basic Operation

6.1 Setting the DMX address

1. Power on the fixture and enter the ADDR (Address) menu.
2. Use the navigation keys to set the starting address (001–512), for example 001.
3. Save and exit. The fixture will now respond to 28 channels starting from that address.

6.2 Using Auto-run / Sound-active

1. In the menu, select AUTO (auto-run) or SOUND (sound-active) as the run mode.
2. Choose a program number, speed and sound sensitivity if available.
3. Exit the menu; the fixture will begin running without a console.

6.3 ILDA computer control

1. Connect the M20 to a Pangolin FB3/FB4 or similar ILDA controller.
2. Launch your laser software and assign the correct output.
3. Design graphics, logos, text or timeline shows and press play.
4. The M20 will output the programmed full-color beams and animations in real time.

7. Maintenance

1. Before each use, check power cables, signal cables, clamps and safety wires for damage.
2. Periodically (every 1–3 months, depending on environment) clean the output window and vent grilles with a soft, dry, lint-free cloth.
3. Do not use alcohol, ammonia or aggressive solvents on optical parts.
4. If the fixture will be stored for a long period, keep it in a dry, dust-free, well-ventilated place and power it on occasionally for self-check.
5. Internal electronics and optics are precision components. For service or repair, contact qualified technicians or the manufacturer. Do not disassemble the unit yourself.

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8. Typical Applications

- Bars, clubs, live houses
- KTV rooms, performance bars, dance halls
- Hotel ballrooms, banquet halls, wedding venues
- Small theaters, live shows and touring events
- Rental companies and lighting production houses

9. Standard Package Contents

- M20 Moving Head Full-Color Animation Laser × 1
- Power cable × 1
- DMX cable × 1 (if included)
- Safety wire × 1
- Safety key set × 1
- SD card with pre-loaded shows × 1
- User manual × 1

10. Warranty & After-Sales Service

10.1 Standard Warranty

Unless otherwise agreed in writing, the M20 Moving Head Full-Color Animation Laser sold under the StarshineLight brand is covered by a limited warranty of 24 months (2 years) from the invoice date.
Within the warranty period, StarshineLight or its authorized distributor will, at its sole discretion, repair or replace any product or component that is found to be defective in materials or workmanship under normal use.

Covered items (examples)

- Main housing and mechanical structure
- Laser modules (under normal operating conditions)
- Power supply and main control PCBs
- Pan/tilt motors, scanners and drivers
- Internal wiring and connectors

Not covered (examples)

- Damage caused by incorrect installation, misuse, abuse or negligence
- Operation outside the specified voltage, temperature or environmental conditions
- Damage caused by unauthorized modification, disassembly or repair
- Damage caused by liquids, condensation, corrosion, fire, lightning or other acts of nature
- Optical contamination caused by improper cleaning or handling
- Consumables such as fuses, cables and connectors
- Cosmetic wear and tear (scratches, paint, labels, etc.)

Any parts or products replaced under warranty become the property of StarshineLight or the authorized distributor.

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10.2 How to Make a Warranty Claim

If you suspect a defect during the warranty period:

1. Switch off the fixture and stop using it immediately.
2. Record the product details: model, serial number, purchase date and a short description of the fault.
3. Contact your dealer or StarshineLight service team and provide clear photos or videos of the problem.
4. Our team will offer remote troubleshooting. If the issue cannot be solved remotely, you may be asked to return the fixture or the defective module for inspection.
5. After inspection, qualifying defects will be repaired or replaced under warranty. For non-warranty repairs, a quotation will be provided before any work is carried out.

Shipping, customs and related costs for returning and reshipping the product are handled according to the specific sales agreement between the customer and the dealer/distributor.

StarshineLight Service Contact

- Website: www.starshinelights.com
- Email: service@starshinelights.com
- Phone / WhatsApp: +86 135 2139 1704

10.3 Out-of-Warranty Service

After the warranty period expires, StarshineLight can still provide paid repair service and spare parts, subject to availability.

To speed up service, customers are advised to keep this manual, the original invoice and the warranty card.

11. Warranty Card

This page can be printed as a separate card or left at the back of the manual.

StarshineLight Product Warranty Card

- Product Name: _____
- Model: M20 Moving Head Full-Color Animation Laser
- Serial Number: _____
- Purchase Date: ____ / ____ / ______ (DD / MM / YYYY)
- Dealer / Distributor: _____
- Customer Name: _____
- Customer Phone / Email: _____
- Invoice / Order No.: _____
- Installation Address (optional): _____

Warranty Terms (Summary)

1. This product is covered by a limited 24-month (2-year) warranty from the purchase date, unless otherwise specified by StarshineLight or its authorized distributor.
2. The warranty covers defects in materials and workmanship under normal installation and use.
3. The warranty does not cover damage caused by incorrect installation, misuse, unauthorized modification or repair, accidental damage, liquid ingress, corrosion, force majeure or normal cosmetic wear and tear.
4. For warranty service, please contact your dealer first or reach out directly to StarshineLight and provide this card together with the purchase invoice.
5. Within the limits of applicable law, the final interpretation of these warranty terms belongs to StarshineLight and its authorized distributors.

Dealer / Distributor Seal & Signature:

StarshineLight Service Contact

- Website: www.starshinelights.com
- Email: service@starshinelights.com
- Phone / WhatsApp: +86 135 2139 1704

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