

# RUSH SM 850



## User Manual



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Manual: Revision D

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# Safety information



## WARNING!

**Read the safety precautions in this manual before installing, operating or servicing this product.**

The following symbols are used to identify important safety information on the product and in this manual:



**Warning!**

**Safety hazard.  
Risk of severe  
injury or death.**



**Warning!**

**See user  
manual for  
important  
safety  
information.**



**Warning!**

**Hazardous  
voltage. Risk of  
lethal or severe  
electric shock.**



**Warning!**

**Fire hazard.**



**Warning!**

**Hot surfaces.  
Burn hazard.**



This fog machine is for professional use only and must be installed by a qualified technician. It is not for household use. It presents risks of severe injury or death due to fire and burn hazards, electric shock, falls, and respiratory problems. The fog produced by the machine is hot enough to cause burns or eye injury if the safety precautions below are not followed.



Install, operate and service Martin™ products only as directed in their user manuals, or you may create a safety hazard or cause damage that is not covered by product warranties.

Follow the safety precautions listed below and observe all warnings in this manual and printed on the product. Keep this user manual for future use.

For the latest user documentation and other information for this and all Martin™ products, please visit the Martin website at <http://www.martin.com>

If you have any questions about how to install, operate or

service the fog machine safely, please contact your Martin™ distributor (see [www.martin.com/distributors](http://www.martin.com/distributors) for details) or call the Martin™ 24-hour service hotline on +45 8740 0000, or in the USA on 1-888-tech-180.

Respect all locally applicable laws, codes and regulations when installing, operating or servicing the fog machine.



### **Protection from electric shock**

Do not expose the fog machine to rain or moisture.

Disconnect the fog machine from AC power before carrying out any installation or maintenance work and when the fog machine is not in use.

Ensure that the fog machine is electrically connected to ground (earth).

Use only a source of AC mains power that complies with local building and electrical codes and has both overload and ground-fault (earth-fault) protection.

Socket outlets or external power switches used to supply the fog machine with power must be located near the fog machine and easily accessible so that the fog machine can easily be disconnected from power.

Replace defective fuses with ones of the specified type and rating only.

Disconnect the fog machine from power immediately if the power plug or any seal, cover, cable, or other component is damaged, defective, deformed, wet or showing signs of overheating. Do not reapply power until repairs have been completed.

Before using the fog machine, check that all power distribution equipment and cables are in perfect condition and rated for the electrical requirements of all connected devices.

### **Protection from burns and fire**



Do not operate the fog machine if the ambient temperature ( $T_a$ ) exceeds 40° C (104° F).

The surface of the product casing can reach up to 50° C (122°F) during operation. Avoid contact by persons and materials. Allow the fog machine to cool for at least 10 minutes before handling.



Do not touch the fog output nozzle during or after use – it becomes extremely hot, reaching a temperature of 300° C (572° F). The nozzle cools slowly and can cause burns for up to three hours after the machine has been shut down.

The fog produced by the machine is hot enough to cause burns when it leaves the nozzle, and very hot droplets of fluid escape occasionally. Keep people and objects at least 1 meter (39 inches) away from the fog output nozzle. Do not install the machine such that hot droplets can fall on people.

Fog output contains glycol, a flammable alcohol that burns with an almost invisible blue flame. Do not point fog output at sources of ignition such as open flames or pyrotechnic effects.

Keep flammable materials well away from the fog machine.

Ensure that there is free and unobstructed airflow around the fog machine. Provide a minimum clearance of 500 mm (20 in.) around the fog machine. Keep combustible materials at least 1 m (40 in.) away from the machine.

Do not attempt to bypass thermostatic switches or fuses. Replace fuses only with ones of the type and rating specified in this manual for the machine.



### **Protection from injury**

Ensure that any supporting structure and/or hardware used can hold at least 10 times the weight of all the devices they support.

If suspending from a rigging structure, fasten the fog machine to a rigging clamp. Do not use safety cables as the primary means of support.

Do not install the fog machine over areas where people are present.

This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children must be supervised to ensure that they do not play with the appliance.

If the fog machine is installed in a location where it may cause injury or damage if it falls, install as directed in this manual a secondary attachment such as a safety cable that will hold the

fog machine if a primary attachment fails. The secondary attachment must be approved by an official body such as TÜV as a safety attachment for the weight that it secures, must comply with EN 60598-2-17 Section 17.6.6 and must be capable of bearing a static suspended load that is ten times the weight of the fog machine and all installed accessories.

Fog machines can cause condensation. Do not point the output at smooth floors. Floors and surfaces may become slippery. Check these frequently and wipe dry as necessary to avoid any danger of slipping.

Ensure at least 2 m (6.5 ft.) visibility in areas where fog is being produced.

Fog fluid contains food-grade glycols in solution but may present health risks if swallowed. Do not drink it. Store it securely. If eye contact occurs, rinse with water. If fluid is swallowed, give water and obtain medical advice.

Block access below the work area and work from a stable platform whenever installing, servicing, filling, or moving the fog machine.

In the event of an operating problem, stop using the fog machine immediately and disconnect it from power. Do not attempt to use a fog machine that is obviously damaged.

Do not modify the fog machine in any way. Refer any service operation not described in this manual to a qualified technician.



### **Protection from breathing problems**

A fog machine can operate safely only with the fog fluid it is designed for. Use only fluid that is approved by Martin™ (see 'approved fluids' on page 19) with this machine. Other fluids may cause the release of toxic gases, presenting a severe health hazard. You will also probably cause damage to the machine that is not covered by product warranties.

Do not create dense fog in confined or poorly ventilated areas.

Do not expose people with health problems (including allergic and/or respiratory conditions such as asthma) to fog output.

Do not point fog output directly at a person's face or at face height.

# Introduction

The RUSH SM 850™ is one of several products in a brand new line of atmospheric effects from Martin™. With its clean industrial design, rugged, lightweight and compact construction, and market-leading features including wireless remote control, LED-illuminated fluid container, automatic pump shut-off, and a convenient carrying handle, the RUSH SM 850 is an ideal companion for mobile DJs and bands, and effective in small venues.

Congratulations on your purchase of this Martin™ fog machine. Details of the full range of Martin products are available on our website at [www.martin.com](http://www.martin.com).

## Features at a glance

- 850 W heater element
- 200 m<sup>3</sup> (7062 ft<sup>3</sup>) per minute output
- Electronic fluid sensor
- Easy to fill removable fluid tank
- Wireless and wired remote controls

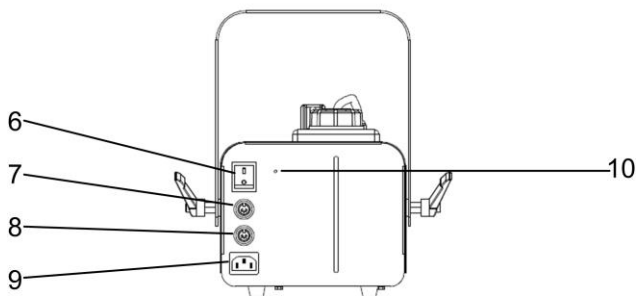
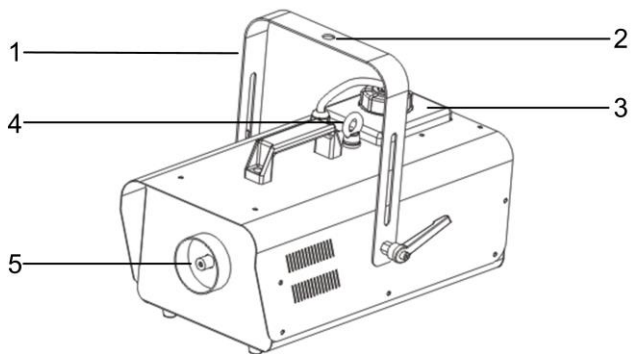
The RUSH SM 850™ is supplied with this user manual, a wired remote control, a wireless remote control transmitter and receiver, a 1.5 m (5 ft.) power cable (local power plug not included on some models) and an adjustable mounting bracket.

## Before using the product

1. Read 'Safety information' on page 4 before installing, operating or servicing the fog machine.
2. Unpack and ensure that there is no transportation damage before using the fog machine. Do not attempt to operate a damaged fog machine.
3. If the fog machine is not going to be hard-wired to a mains supply, install as directed in this manual a local power plug (not supplied) on the supplied power cable as described on page 11.
4. Before operating, ensure that the voltage and frequency of the power supply match the power requirements of the fog machine.
5. Check the support pages on the Martin Professional website at [www.martin.com](http://www.martin.com) for the most recent user documentation and technical information about the fog machine. Martin™ user manual revisions are identified by the revision letter at the bottom of the inside cover.



## Fog machine overview



1	mounting bracket	6	power switch
2	clamp attachment point	7	remote control socket
3	fluid tank	8	remote control socket
4	secondary attachment point	9	AC power socket
5	fog output nozzle	10	"No fluid" light

# Physical installation



**Warning! Read ‘Safety information’ on page 4 before installing the fog machine.**

The fog machine is designed for indoor use only and must be used in a dry location with adequate ventilation.

Martin™ can supply suitable safety cables and rigging clamps for use with the fog machine (see ‘Accessories’ on page 19).

Do not suspend the machine immediately over areas with public access.

Ensure that there is at least 500 mm (20 in.) clearance all around the machine and at least 1 m (40 in.) clearance in front of the output nozzle. Keep combustible materials at least 1 m (40 in.) away from the machine.

The machine can be tilted up to 45 degrees up or down from horizontal if the tank is partially filled. Overfilling or steeper tilting may cause fluid leakage.

## Mounting the fog machine on a truss

The fog machine can be clamped to a truss or similar rigging structure and tilted up to 45 degrees from horizontal. When installing the fog machine with the mounting bracket hanging vertically down, you can use an open-type clamp such as a G-clamp. If installing with the mounting bracket in any other orientation, you must use a half-coupler clamp (see illustration on right) that completely encircles the truss chord.



To clamp the fog machine to a truss:

1. Install the mounting bracket on the fog machine and secure with both tightening handles.
2. Check that the rigging structure can support at least 10 times the weight of all fog machines and other equipment to be installed on it.
3. Block access under the work area.
4. Bolt a rigging clamp securely to the mounting bracket. The bolt used must be M12, grade 8.8 steel minimum. It must pass through both mounting bracket legs and be fastened with a self-locking nut.
5. Working from a stable platform, hang the fog machine with its clamp on the truss and fasten the clamp securely.
6. Secure the fog machine with a safety cable as directed below.

## Securing with a safety cable

Secure the fog machine with a safety cable (or other secondary attachment) that is approved for the weight of the fog machine so that the safety cable will hold the fog machine if a primary attachment fails. Loop the safety cable through the eyebolt on top of the fog machine (see illustration on page 9) and around a secure anchoring point. Do not loop the safety cable around the fog machine's mounting bracket only, as this will leave the fog machine unsecured if it separates from the bracket.

## AC power



**Warning! Read 'Safety information' on page 4 before connecting the fog machine to AC mains power.**

For protection from electric shock, the fog machine must be grounded (earthed). The power distribution circuit must be equipped with a fuse or circuit breaker and ground-fault (earth-fault) protection.



Socket outlets or external power switches used to supply the fog machine with power must be located near the fog machine and easily accessible so that the fog machine can easily be disconnected from power.

The fog machine can be hard-wired to a building electrical installation if you want to install it permanently, or a power plug (not supplied) that is suitable for the local power outlets can be installed on the power cable.

If you install a power plug on the power cable, install a grounding type (earthed) plug with integral cable grip that is rated minimum 250 V, 10 A. Follow the plug manufacturer's instructions and connect the wires in the power cable as shown in this table:

	Live or L	Neutral or N	Earth, Ground or Ⓧ
<b>US system</b>	Black	White	Green
<b>EU system</b>	Brown	Blue	Yellow/green

Before connecting the fog machine to power, verify that the AC supply is adequately dimensioned for the current draw of all connected devices and that the local AC voltage is appropriate for the range indicated on page 18 and on the machine's rear panel. If your AC voltage is outside the specified range, do not use the fog machine.

## Remote control

The SM 850 fog machine comes with 2 remote control options: a wired remote control and a 4-channel wireless remote control. There are two identical sockets on the rear panel so that both remote controls may be connected and used at the same time.

### Wired remote control

The wired remote control has a 4.5 m (15 ft.) cable that plugs into either remote-control socket on the rear panel. The status LED on the remote control is off while the machine is heating and lights green when the fog machine is ready for use.

### 4-channel wireless remote control and receiver

The 4-channel wireless remote control transmitter (shown below to left) has a range of 30 meters (100 feet). It provides individual control of up to 4 fog machines and simultaneous control of an unlimited number of machines in up to 4 groups.



The remote-control receiver (shown above to right) connects to a remote-control socket on the rear panel. It has green (ready) and red (heating) LEDs to show the machine's status.

The DIP switch on the side of the receiver sets the remote-control button that triggers the machine. Flip the switch that corresponds to the desired transmitter button to the ON position. Flip all other switches to OFF. The fog machine responds to all buttons for which the DIP switch is in the ON position.

# Operation



**Warning! Read ‘Safety information’ on page 4 before operating the fog machine.** The fog produced by the machine is hot enough to cause burns or eye injury if the safety precautions are not followed.

Fill only with fluid that is approved (see ‘Approved Fluids’ on page 19) with this machine. Do not use water or any other fluid. Doing so may be hazardous and will probably damage the machine. Damage caused by use of other fluids is not covered by product warranties.

## Filling the tank

To fill the fluid tank:

1. Verify that the fog machine is turned off.
2. Lift the fluid tank out of its compartment and remove the filler cap.
3. Carefully fill the tank to the fill line with approved fog fluid. Pour in less fluid if the machine is installed at an angle: to prevent leaks, fluid must not come above the filler opening.
4. Place the fluid tank back into the machine.
5. Replace the filler cap and verify that the feed hose touches the bottom of the tank.
6. Wipe up any spills or drips.

## Making fog

1. Fill the fluid tank as described above.
2. Connect a remote control or wireless remote control receiver as described on the previous page.
3. Connect the fog machine to AC power and switch it on. Allow the machine to heat up for several minutes. The machine is ready to use when the green LED lights up on the wired remote control or the wireless remote receiver.
4. Verify that it is safe to fire the machine. Press the button on the remote control until fog is released. (Once the system has been primed, fog will be released instantly.)
5. Monitor fluid level and refill as necessary (after turning off the machine). The “No Liquid” rear panel LED illuminates when fluid is exhausted and the pump is automatically disabled.
6. When finished, turn off the machine and allow it to cool before handling. The nozzle remains hot for three hours.

# Maintenance



**Warning! Read 'Safety information' on page 4 before servicing the fog machine.**

Refer any service operation not described in this user manual to a qualified service technician.

Disconnect mains power and allow the fog output nozzle to cool completely before cleaning or servicing the fog machine. The nozzle remains hot for up to 3 hours after use.

Service fog machines in an area where there is no risk of injury from failing parts, tools or other materials.

The user may carry out the service operations described in this manual. All other service operations must be carried out by an authorized Martin™ service technician. Do not try to repair the fog machine yourself, as you may create a safety risk or cause damage that is not covered by the product warranty.

## Cleaning

Excessive dust, fog fluid, and particle buildup degrades performance, causes overheating and will damage the fog machine. Damage caused by inadequate cleaning or maintenance is not covered by the product warranty.

Inspect fog machines within their first 100 hours of operation to see whether cleaning is necessary. Check again at frequent intervals. This procedure will allow you to assess cleaning requirements in your particular situation. If in doubt, consult your Martin™ dealer about a suitable maintenance schedule.

Use gentle pressure only when cleaning, and work in a clean, well-lit area. Do not use any product that contains solvents or abrasives, as these can cause surface damage.

To clean the fog machine, vacuum or gently blow away dust and loose particles from the outside of the fog machine with low-pressure compressed air. Clean the surfaces by wiping gently with a soft, clean lint-free cloth moistened with a weak detergent solution. Check that the fog machine is dry before reapplying power.

## Replacing the primary fuse

If the fog machine is completely dead, the fog machine's primary fuse may have blown and need to be replaced. This fuse is located inside the machine, mounted in a holder on the printed circuit board.

To replace the fuse:

1. Disconnect the fog machine from power and allow it to cool.

2. Remove the top cover and locate the printed circuit board.
3. Remove the old fuse from the fuse holder and replace it with a new one of the exact same size and rating.
4. Replace the top cover before applying power.

### **Replacing the wireless remote control battery**

The 4-channel wireless remote control transmitter uses a single 12 Volt A27 (MN27) alkaline battery. To replace the battery:

1. Remove the screw from the back cover of the remote control. Remove the back cover.
2. Remove the old battery.
3. Insert a fresh battery with the negative terminal towards the spring.
4. Align the covers and replace the screw to close.

### **Service and repairs**

Do not try to repair the fog machine by yourself as this may result in damage, malfunction and it may potentially void your product warranty. The equipment must only be serviced or repaired by an authorized Martin™ service technician.

Installation, on-site service and maintenance can be provided worldwide by the Martin Professional Global Service organization and its approved agents, giving owners access to Martin's expertise and product knowledge in a partnership that will ensure the highest level of performance throughout the product's lifetime. Please contact your Martin™ supplier for details.

## Troubleshooting

This section describes possible problems and provides some suggestions for easy troubleshooting. Refer the machine to an authorized Martin™ service technician if the suggested remedies do not solve the problem.

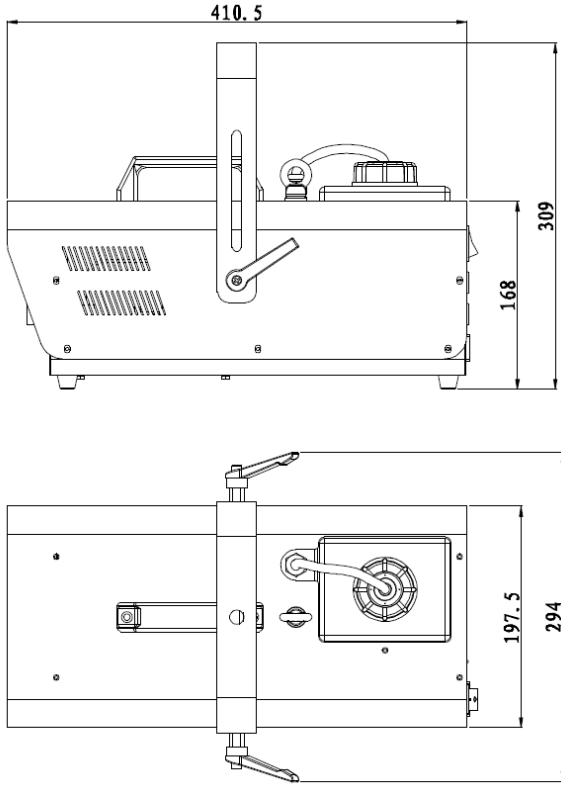
Symptom	Potential cause	Remedies
Machine appears dead	Main fuse blown	Replace fuse on page 14
	No power at AC cable inlet	Check power cable and circuit breaker
Fog output is weak	Machine requires priming	Press and hold the fog button until output is strong
Wet, greasy, non-uniform output, fluid drips or spits from nozzle, or loud noise when firing machine	Incompatible fog fluid	Discard fluid and replace with fluid that is approved by Martin™ for this machine
No fog output	Machine not ready	Allow machine several minutes to heat up
	Fluid level low	Add fluid on page 13
	Selected remote control button does not match receiver DIP switch setting	Change DIP switch setting (on page 12) or press a different button
	Wireless remote control out of range	Move closer to fog machine
	Wireless remote control battery exhausted	Replace battery (on page 15)
"No Fluid" indicator lit when fluid bottle is full	Fluid not detected	Check that fluid hose reaches bottom of tank
		Restart machine
	Defective circuit	Refer to authorized technician for service



# Technical Specifications

## Physical

Length .....	411 mm (16.2 in.)
Width .....	294 mm (11.6 in.)
Height with hanging bracket .....	309 mm (12.2 in.)
Weight, dry .....	7.3 kg (16.1 lbs.)
Weight, filled .....	8.9 kg (19.7 lbs.)



## Performance

Coverage volume .....	200 m <sup>3</sup> (7062 ft <sup>3</sup> ) minute
Maximum operating time at full output .....	45 seconds
Ready time .....	8 minutes

## Control

Control options..... Hard-wired remote control or  
4-channel wireless remote control (both included)  
Control parameters ..... On/off operation

## Construction

Housing..... Steel and aluminum  
Color ..... Black  
Heat exchanger..... 850 W, thermally protected  
Fluid pump ..... Oscillating piston, high pressure  
Fluid management ..... Fluid out sensing, LED illuminated visual sight glass  
Fluid reservoir ..... 1.6 l removable reservoir  
Hanging bracket..... Integrated adjustable yoke and safety eye-bolt  
Wired remote control unit (included)..... 4.5 m (15 ft.) cable  
Wireless remote control unit (included) ..... 4-channel, 30 m (100 ft.) range

## Installation

Mounting ..... Standing or hanging  
Orientation ..... Up to +/- 45° from horizontal  
Clearance around machine..... 500 mm (20 in.)

## Connections

AC Power..... IEC Male inlet, C14  
Remote control wired..... DIN 41524, 5-pin, 45°, 180°, inlet  
Remote control wireless receiver..... DIN 41524, 5-pin, 45°, 180°, inlet

## Electrical

### ***EU model***

AC power ..... 220-240 V nominal, 50/60 Hz  
Main fuse ..... 5 AT (slow blow), 250 V  
Typical power and current, 240 V, 50 Hz ..... 950 W, 3.8 A\*

### ***US model***

AC power ..... 100-120 V nominal, 50/60 Hz  
Main fuse ..... 10 AT (slow blow), 125 V  
Typical power and current, 100 V, 60 Hz ..... 950 W, 9.0 A\*  
Typical power and current, 120 V, 60 Hz ..... 900 W, 7.5 A\*

*\*Measurements made at nominal voltage. Allow for a deviation of +/- 10%.*

## Thermal

Maximum ambient temperature ( $T_a$  max.) ..... 40° C (104° F)  
Minimum ambient temperature ( $T_a$  min.) ..... 5° C (41° F)  
Exterior surface temperature, steady state..... 50° C (122° F)  
Max. nozzle temperature ..... 300° C (572° F)

## Approvals

### **EU model**

EU safety ..... EN 60355-1, EN 62479, EN 62233  
EU EMC ..... EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-3  
EU RTTE (wireless remote): ..... EN 60950-1, EN 300220-1, EN 300220-2,  
EN 301489-1, EN 301489-3  
Australia/NZ (pending) ..... RCM

### **US model**

US safety ..... UL 499  
US EMC ..... CFR Title 47 Part 15 Class A  
US EMC (wireless remote) ..... FCC ID 2AEYKSMWIRELESS  
Canadian safety ..... CSA C22.2 No. 64



## Included Items

Fluid reservoir, 1.6 l  
Power input cable, EU, 10 A, IEC C13 female, stripped ends, 1.5 m (4.9 ft.)  
Power input cable, US, 10 A, IEC C13 female, molded NEMA 5-15P, 1.5 m (4.9 ft.)  
Wired remote control with 4.5 m (15 ft.) cable ..... P/N 50480855  
Wireless transmitter, 4-channel ..... P/N 50480853  
Wireless receiver ..... P/N 50480854

## Accessories

### **Approved Fluids\***

RUSH™ Fog Fluid  
JEM Pro Clean Supreme™  
*\*Various sizes available - contact your dealer or see [www.martin.com](http://www.martin.com) for details.*

### **Installation Accessories**

Half-coupler clamp ..... P/N 91602005  
G-clamp (vertical hanging suspension only) ..... P/N 91602003  
Quick-trigger clamp (vertical hanging suspension only) ..... P/N 91602007  
Safety cable, SWL 60 kg, BGV C1/ DGUV 17, black ..... P/N 91604006

*\*See [www.martin.com](http://www.martin.com) or contact your Martin™ supplier for details.*

## Ordering Information

RUSH™ SM 850 EU ..... P/N 90480100  
RUSH™ SM 850 US ..... P/N 90480105

*Specifications are subject to change without notice. For latest product specifications, see [www.martin.com](http://www.martin.com)*

*Martin Professional ApS hereby declare that this product is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. An EU Declaration of Conformity covering this product is available on the product's Tech Docs/Support page on the Martin Professional website at [www.martin.com](http://www.martin.com).*



**Disposing of this product**

Martin™ products are supplied in compliance with Directive 2012/19/EC of the European Parliament and of the Council of the European Union on WEEE (Waste Electrical and Electronic Equipment), where applicable. Help preserve the environment! Ensure that this product is recycled at the end of its life. Your supplier can give details of local arrangements for the disposal of Martin™ products.





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by HARMAN