



Plasmasonic® 3.0 Musical Tesla Coil

Introduction

The Plasmasonic® 3.0 is an advanced solid state Tesla Coil that produces artificial lightning at lengths exceeding 12 feet. When operated with its handheld controller, it can create a variety of different lightning and sound effects including polyphonic music reproduction using its built-in MIDI interface. In other words, the user has the ability to create music through the output arcs of the Plasmasonic® 3.0 from any high quality MIDI source, including a keyboard, guitar, laptop, or other compatible MIDI instrument, and reproduce up to two tones simultaneously.

Background

Tesla Coils by their nature, are incredibly awesome devices. Ever since Nikola Tesla demonstrated the first Tesla Coil in the late 1900's, the ability to create artificial lightning has never ceased to amaze people watching them in action. With the Plasmasonic® 3.0 you can impress your students or fellow colleagues by making music with the plasma, or simply impress them by creating a spectacular show demonstrating the awesomeness of artificial lightning! You can also light up fluorescent and different colored neon tubes and demonstrate the principles of wireless energy transfer.

Features:

- Easy to transport
- Operates from 230VAC 50/60Hz
- PLC based control system
- Designed for high reliability
- Nominal output arc length: 12 feet
- Fully modular design

- Advanced Handheld controller
- Polyphonic MIDI playback
- Passive Capacitor Bleed system
- Active Capacitor Crowbar circuit
- RGB Illumination System

Technical Specifications

- Nom. Arc Length (@ 230VAC): 12 feet
- Max. Arc Length (@230VAC): 15 feet
- Cooling: Four (4) 230VAC muffin fans
- Input Voltage: 230VAC 50/60Hz
- Max. Input Voltage: 240VAC 50/60Hz
- Max. Input Current: 50A @ 230VAC
- Max. Input Power: 11.5kW
- Dimensions: 24" x 24" x 96" (approx.)
- Weight: 250 lbs

Technical Performance

Out of the box, the Plasmasonic® 3.0 is designed for a nominal output arc length of 12 feet. This output arc length is specified at nominal input voltage conditions of 230VAC 50/60Hz. Longer output arc lengths are possible by increasing the input voltage to the system, but this operation is outside the advertised nominal operational capability of this Tesla Coil. Testing at input voltages of 230VAC-240VAC have produced output arc lengths exceeding 12 feet in length.

Input Connections

The following external connections are required for proper operation of the Plasmasonic® 3.0 system.

Pin	Function
Power Cord	230VAC (15A) 50/60Hz
Power Cord	Neutral
Power Cord	Earth GND (Line)
RF Ground	Earth GND (Isolated)
Mod Input	Modulator (Controller) input

Whats Included?

The standard Plasmasonic® 3.0 system includes the following: However, it is important to note that this system is highly customizable and we can tailor the Tesla Coil to each customer's individual needs and requirements.

- Plasmasonic® 3.0 base unit
- Large 36" diameter aluminum toroid
- Epoxy coated secondary coil assembly
- Handheld MIDI controller unit
- Fiber optic communication cable
- Heavy duty power cable
- Discharge electrode (5 foot)
- Instruction manual (printed or PDF)



Advanced Tesla Coil Control Module

Advanced Tesla Coil Control Module

This controller provides the intelligent control necessary to drive the high power IGBT based half-bridge circuit as well as the fault processing necessary to ensure safe, reliable operation of the system. It includes both a peak current limiting circuit and a gate drive voltage UVLO (under voltage lock-out) circuit which are employed to maintain high reliability of the system. Indicator LEDs show the status of the system during operation.



Handheld MIDI Controller

Handheld MIDI Controller

The handheld controller provides the drive signal to the Advanced Tesla Coil Control Module necessary to control and operate the Plasmasonic® 3.0. It is connected via a fiber optic cable which is necessary for both high voltage and noise isolation. The handheld controller includes both a polyphonic MID interface which can convert MIDI signals from either a keyboard, guitar, computer, or other compatible instrument, and can create up to two-note polyphonic playback of music through the Tesla Coil. There is also a standard interrupter mode which allows the user to vary both pulsewidth and pulse repetition frequency (PRF) during operation. The controller can be customized by the end user, and also provides a number of hardware implemented fault protection schemes including pulsewidth limiting.

Safety Features

There are two primary safety features implemented into the Plasmasonic® 3.0:

- **Passive Bleeder system** – Bleed resistors are installed across each of the two (2) high voltage DC bus capacitors. These ensure that the energy stored in these capacitors is safely and quickly discharged to ensure safe handling of the system after power is disconnected. A discharge time of 5 minutes is required to ensure that the passive bleeder system will discharge energy in the DC bus capacitors to a safe level.
- **Active Crowbar system** – An active crowbar system is utilized to quickly discharge the energy in the two (2) high voltage DC bus capacitors as soon as power is disconnected from the system. The active crowbar system will discharge the DC bus capacitors in less than 5 seconds. In the event that the crowbar system fails, the passive bleeder system is available as a backup.

Options Available

The following options are available when specifying your Plasmasonic® 3.0 for when ordering:

Description	Options
Input Power	230VAC 50/60Hz
Power Cord Length	50 Foot (standard) 100 Foot 150 Foot (custom lengths also available)
Fiber Cable Length	10 Meter (standard) 15 Meter 20 Meter
Illumination	RGB onboard ctrl (standard) RGB wireless ctrl No illumination
Primary Coil Shield	None (standard) Polycarbonate shield
EMI / EMC Filtering	None (standard) Conducted emission filtering Radiated emission control
Instruction Manual	Digital PDF version (standard) Printed version
Warranty	Limited 1 year (standard) Extended, Limited Extended, Full Coverage

Warranty

A limited 1 year warranty is included on all Plasmasonic® 3.0 systems which covers any failure due to defective components or workmanship. Extended warranties are available.



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Ordering / Quotes

Please contact the sales department at Eastern Voltage Research using the email address below for a custom quote or if you have any questions regarding the Plasmasonic® 3.0 system. Our sales team is available 24/7 to answer any questions you may have.

Sales Department
sales@easternvoltage.com