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Report Number:	R10206590-EMC (14LB026)
Project Number:	10206590
Date:	March 20, 2014
Model:	MVC4

Electromagnetic Compatibility Test Report

For

PHASETRONICS INC dba MOTORTRONICS

1600 Sunshine Dr.
Clearwater, FL 33765

Test Report Details

Tests Performed By:	**UL LLC** **12 Laboratory Dr.** **Research Triangle Park, NC 27709**
Tests Performed For:	**Phasetronics Inc. dba Motortronics** **1600 Sunshine Dr.** **Clearwater, FL 33765**
Applicant Contact: Title: Phone: E-mail:	**Jim Johnson** **Engineer** **(727) 469-5009** **jim_johnson@phasetronics.com**
Test Report Date:	**2014-03-20**
Product Type:	**Medium Voltage Soft Starter**
Product standards	**EN61000-6-4, EN61000-6-2**
Model Number:	**MVC4**
Sample Serial Number:	**Non-serialized**
EUT Category:	**Industrial Control - Heavy Industry**
Testing Start Date:	**2014-02-25**
Date Testing Complete:	**2014-02-27**
Overall Results:	**Refer to Section 2.4, Results Summary**

UL LLC reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. UL LLC shall have no liability for any deductions, inferences or generalizations drawn by the client or others from UL LLC issued reports. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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Report Directory

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None			

1.0 G E N E R A L - Product Description

1.1 Equipment Description

The MVC4 is a medium voltage soft starter. The MVC Plus Medium Voltage Series Soft Starter is designed to start AC motors in any fixed speed application. It provides protection with "True Thermal Modeling," while allowing smooth, step less control of acceleration and deceleration.

1.2 Device Configuration During Test

1.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Medium Voltage Soft Starter	Phasetronics Inc. dba Motortronics	MVC4	SN – Non-serialized

Note: **EUT** - Equipment Under Test, **AE** - Auxiliary/Associated Equipment, or **SIM** - Simulator (Not Subjected to Test)

1.2.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	AC	Y	N	None
2	Load	AC	Y	N	Terminated with 3-250 W bulbs in Delta Configuration.
3	Control	I/O	Y	N	Used to monitor voltage and current (4-20 mA).

Note:
AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

1.2.3 EUT Internal Operating Frequencies:

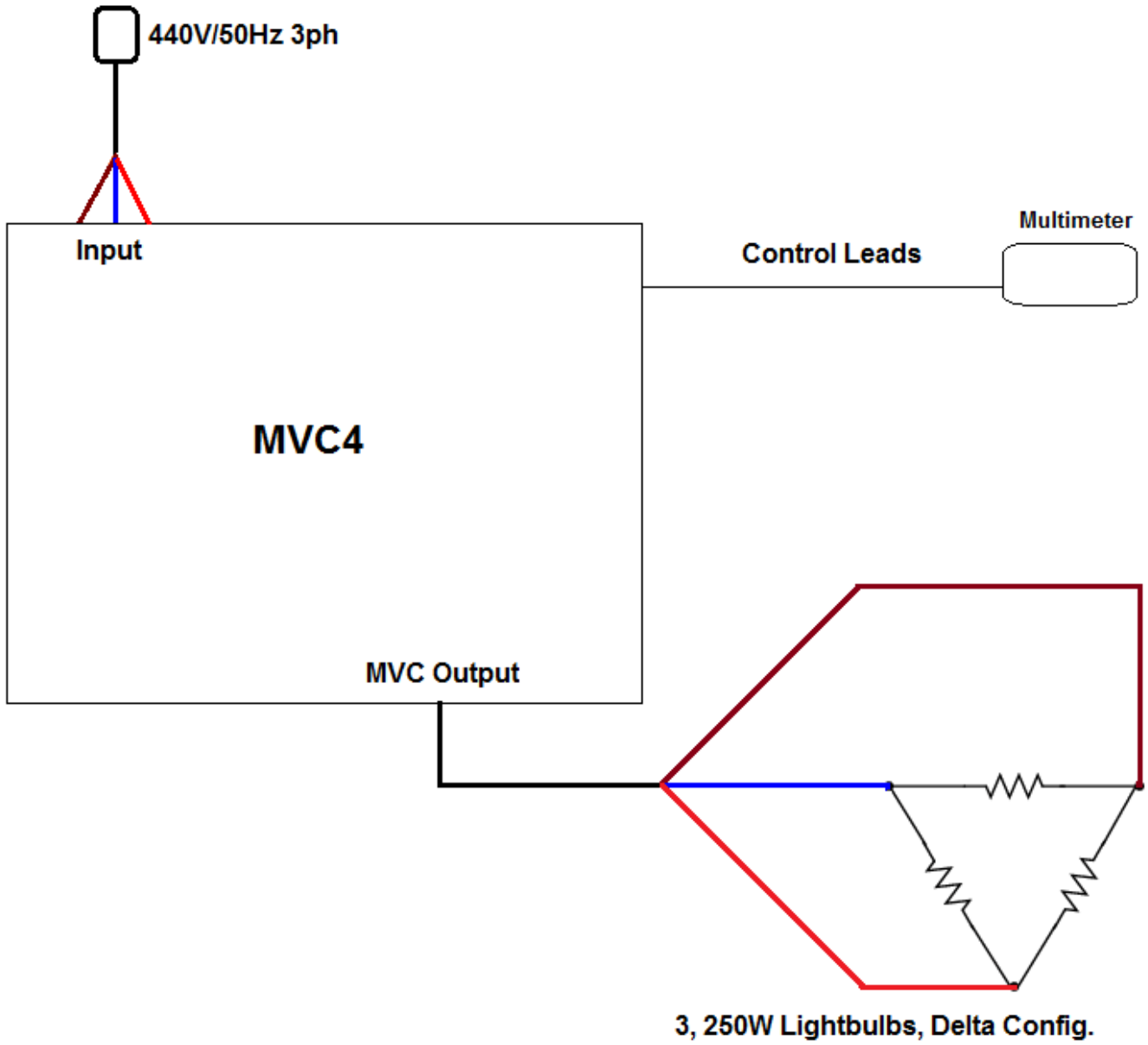
Description	Frequency
Main Board	17KHz
CPU board	32.768KHz
	1.8432MHz
	19.6608MHz
Display Board	1.8432MHz
	24.00MHz

1.2.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	440Vac (480Vac)	-	-	60Hz	Three Phase	When in the field, the EUT is a medium voltage system (up to 14.4 kV). For test purposes, the EUT was modified to include a 480V input, step-down transformer, as opposed to the normal medium voltage step-down transformer.

1.3 Block Diagram:

The diagram below illustrates the configuration of the equipment above.



1.4 EUT Configurations

Mode #	Description
1	Configured as floor standing equipment.

1.5 EUT Operation Modes

Mode #	Description
1	The EUT was loaded with 3, 250W light bulbs in a Delta configuration.

1.6 Rational for EUT Configuration

Mode #	Description
1	The selected EUT configuration was chosen to maximize emissions

2.0 Summary

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by UL LLC in accordance with the procedures stated in each test requirement and specification. The applicant determined the list of tests performed were applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

2.1 Deviations from standard test methods

None

2.2 Device Modifications Necessary for Compliance

Phase loss trip, allowable delay and current unbalance were disabled to meet the immunity requirements.

2.3 Reference Standards

Standard Number	Standard Name	Standard Date
EN61000-6-4	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments - - Includes Amendment A1:2011	2007+A1:2011
EN61000-6-2	Electromagnetic compatibility (EMC) Part 6-2: Generic standards – Immunity for industrial environments - IEC 61000-6-2: 2005	2005

2.4 Results Summary

This product is considered Class A.

Requirement – Test	Result (Compliant / Non-Compliant)*
Conducted Emissions – Mains	**Compliant**
Conducted Emissions – Telecommunications Port	**Not applicable**[Note 1]
Radiated Emissions	**Compliant**
Harmonics	**Not applicable**[Note 2]
Flicker	**Not applicable**[Note 2]
Electrostatic Discharge	**Compliant**
Radiated Immunity	**Compliant**
Electrical Fast Transients	**Compliant**
Surge	**Not Requested**
Conducted Immunity	**Compliant**
Power Frequency Magnetics	**Compliant**
Voltage Dips and Interrupts	**Not applicable**[Note 2]

Note 1 – The EUT does not contain applicable ports.
Note 2 – IEC 61000-3-2 (Harmonics), IEC 61000-3-3 (Flicker) and IEC 61000-4-11 (Voltage Dips and Interrupts) is not required since the EUT is not connected to public low voltage systems.

Test Engineer:

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