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Declaration of Conformity for CE Marking

CE EMC Directive 89/336/EEC (Electromagnetic Compatibility)

Peaktronics, Inc.
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Clawson, MI 48017 U.S.A.

We declare that the products and their various combinations, generally known as **Actuator Controls**, listed below:

Model Number	Description
AMM-100	Auto/Manual Module
DHC-100D	Digital High Resolution Controller
OTR-100	Feedback Transmitter/Relay Option Module
OTX-100	Feedback Transmitter Option Module
POT-102	Feedback Potentiometer

comply with the provisions of the following harmonized standards:

- EN55011/CISPR 11, Class A Radiated RF Emission
- EN55011/CISPR 11, Class B Conducted RF Emission
- EN61000-4-2 Electrostatic Discharge (ESD)
- EN61000-4-3 Radiated RF Immunity
- EN61000-4-4 Electrical Fast Transient (EFT)
- EN61000-4-5 Surge Pulse
- EN61000-4-6 Conducted RF Immunity
- EN61000-4-11 Brown Out / Black Out

The CE mark on the product testifies to its conformity.

Date of CE Marking: March 17, 2006

Jack M. Leason, President
Peaktronics, Inc.

GENERAL INFORMATION

The electronic products declared in this document are intended to be used as components inside of an AC electric actuator. Their use and function are described in the DHC-100D data sheet, available on the Peaktronics website. Electric actuators are manufactured by several companies worldwide and can vary greatly in size, shape, performance, and electrical characteristics. The tests described herein were performed using a commercially available actuator from Remote Control Sweden AB and represents a typical actuator that the declared products would be intended for.

A typical actuator would be manufactured with a metal body using either a metal or plastic cover. The actuator would utilize a 234VAC split phase motor (5A maximum) with a minimum duty cycle rating of 25%, and may or may not incorporate an electrical brake mechanism. The actuator can be either a rotary or linear type; for purposes of testing, a rotary type is used with an operating range of 90°. The measurements described herein may vary if using an operating range other than 90°, or if using a linear type actuator - contact Peaktronics, Inc. for additional information.

SET UP

Prior to testing, the declared products need to be installed into a test actuator. Wiring information for this purpose can be found in the DHC-100D data sheet. For the tests described herein, the declared products were mounted in a Remote Control RCEL-019 with a Local Control Unit using a Peaktronics MKT-119 mounting kit. Figure 1 and Figure 2 show the specific connections made for testing purposes.

Mechanical mounting of the declared products is crucial to the test - mounting kits for a number of commercially available actuators are available from Peaktronics, Inc. It is critical that the POT-102 Feedback Potentiometer is properly mounted and mechanically interfaced to the output shaft with appropriate gears. The mounting screws for the DHC-100D complete the earth ground connection from J2-3 (on the DHC-100D) to the body of the actuator - this connection must be made prior to testing. Also, the AMM-100 and the local control unit switches should be mounted in a metal enclosure that is attached to the actuator.

After installation, the DHC-100D must be configured to operate the test actuator (refer to the DHC-100D data sheet for instructions). The following configurations are required prior to testing:

- The POT-102 Feedback Potentiometer must be set to an appropriate operating range using the MANUAL/FB POT CAL mode.
- The open and closed positions must be set 90° degrees apart using the CLOSE and OPEN modes. If the actuator's limit switches prevent this, the limit switches will need to be adjusted such that a 90° operation can be achieved.
- A 1-5VDC command type must be selected using the COMMAND TYPE mode.
- The OTR-100 or OTX-100 voltage output (pin 7) must be calibrated using the AUX POSITION OUT CAL mode. Using a DVM, the OPEN output voltage should be set to read 5.000VDC, and the CLOSE output voltage should be set to read 1.000VDC.

After configuration, an appropriate command signal source should be connected, and an appropriate output signal monitor should be connected. Refer to Figure 1 and Figure 2 for details.

TESTING INFORMATION

All tests performed with $V_{IN} \approx 3V$, the DHC-100D set to the AUTO mode, and the Local Control Unit switches set to "AUTO" and "OFF". All tests performed with the actuator cover removed unless otherwise noted.

EN55011/CISPR11, Class A Radiated RF Emission
EN55011/CISPR11, Class B Conducted RF Emission

Test Diagram: Figure 1

EN/IEC 61000-4-3 Radiated RF Immunity, 10V/m, 30-1000MHz
EN/IEC 61000-4-6 Conducted RF Immunity, 3V, 100KHz-80Mhz

Test Diagram: Figure 2 (Note: **DO NOT USE** a DVM for output signal monitor)
Additional Setup:

1. Set automatic adaptive control parameters of the DHC-100D by switching V_{IN} between 2.5V and 3.5V at least 7 times while holding each voltage for at least 10 seconds. This procedure is required each time the unit is powered on.
2. Set V_{IN} for an output signal meter reading of "0%" per Figure 4.

Other Test Criteria:

1. Actuator output shaft shall deviate less than ±1.0° for a 90° range.
2. Output signal shall deviate less than ±0.2VDC (±5% of 1-5VDC scale).

EN/IEC 61000-4-4 Electrical Fast Transient (EFT)

Power: 500V, 1KV, 2KV
Signal: 500V, 1KV

EN 61000-4-5 Surge Pulse

Power: 500V, 1KV line-to-line / 2KV line-to-earth
Signal: 500V line-to-line / 500V, 1KV line-to-earth

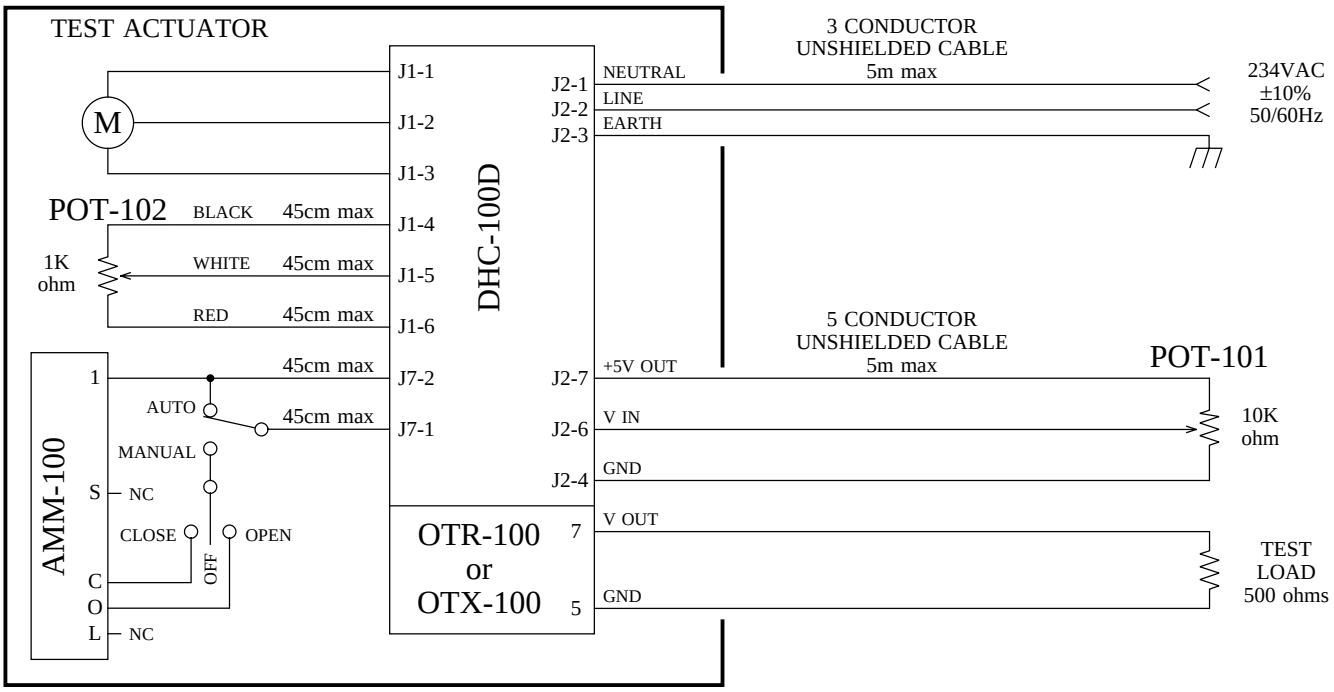
EN 61000-4-11 Brown Out / Black Out

Test Diagram: Figure 2
Other Conditions: DVM may be used for output signal monitor

EN 61000-4-2 Electrostatic Discharge (ESD)

2KV, 4KV, 6KV contact discharge / 2KV, 4KV, 6KV, 8KV air discharge
Test Diagram: Figure 1
Other Conditions: actuator cover on

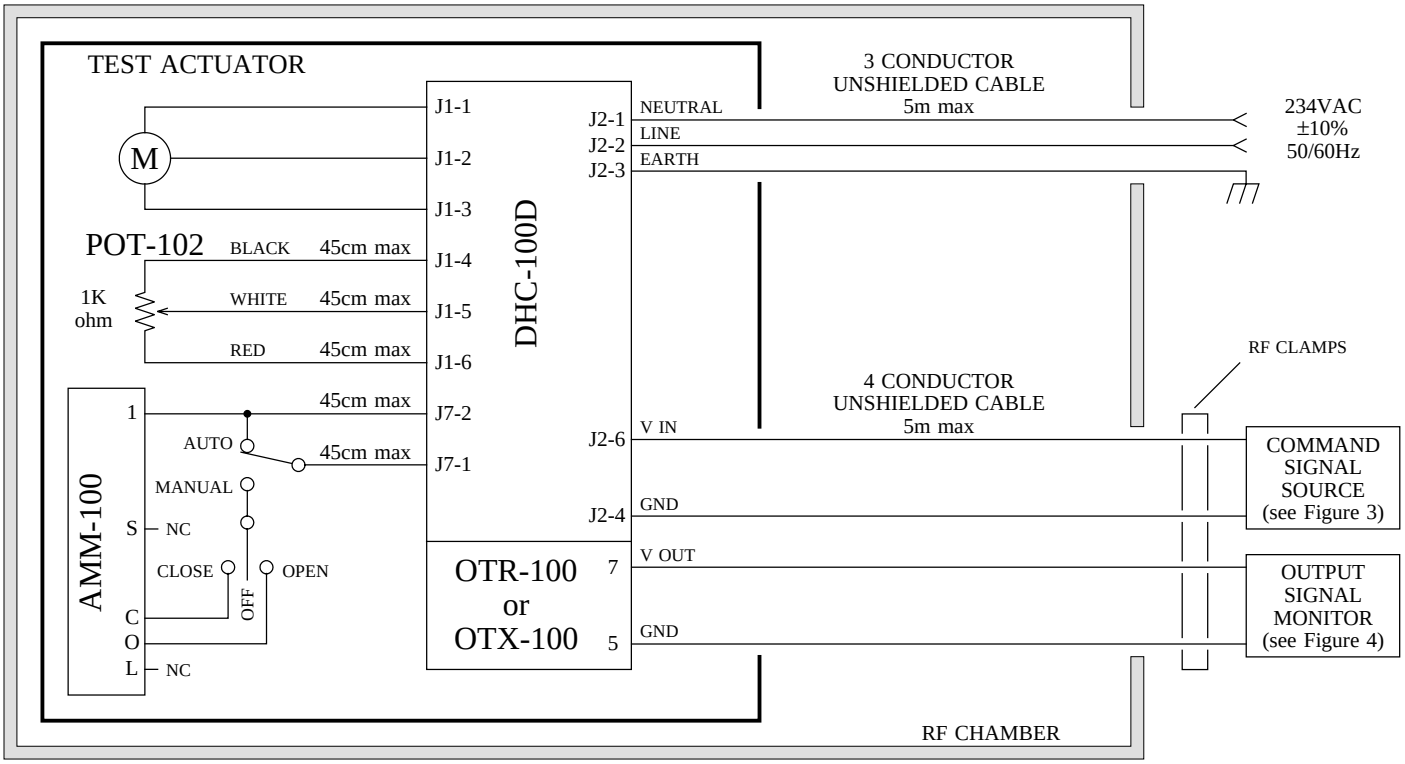
Figure 1 - RF Emissions Test Set Up



NOTE:

To prevent emissions from test and measuring equipment, use a passive device for the command signal source (a Peaktronics POT-101 or equivalent potentiometer) and a passive test load in place of an output signal monitor.

Figure 2 -RF Immunity Test Setup



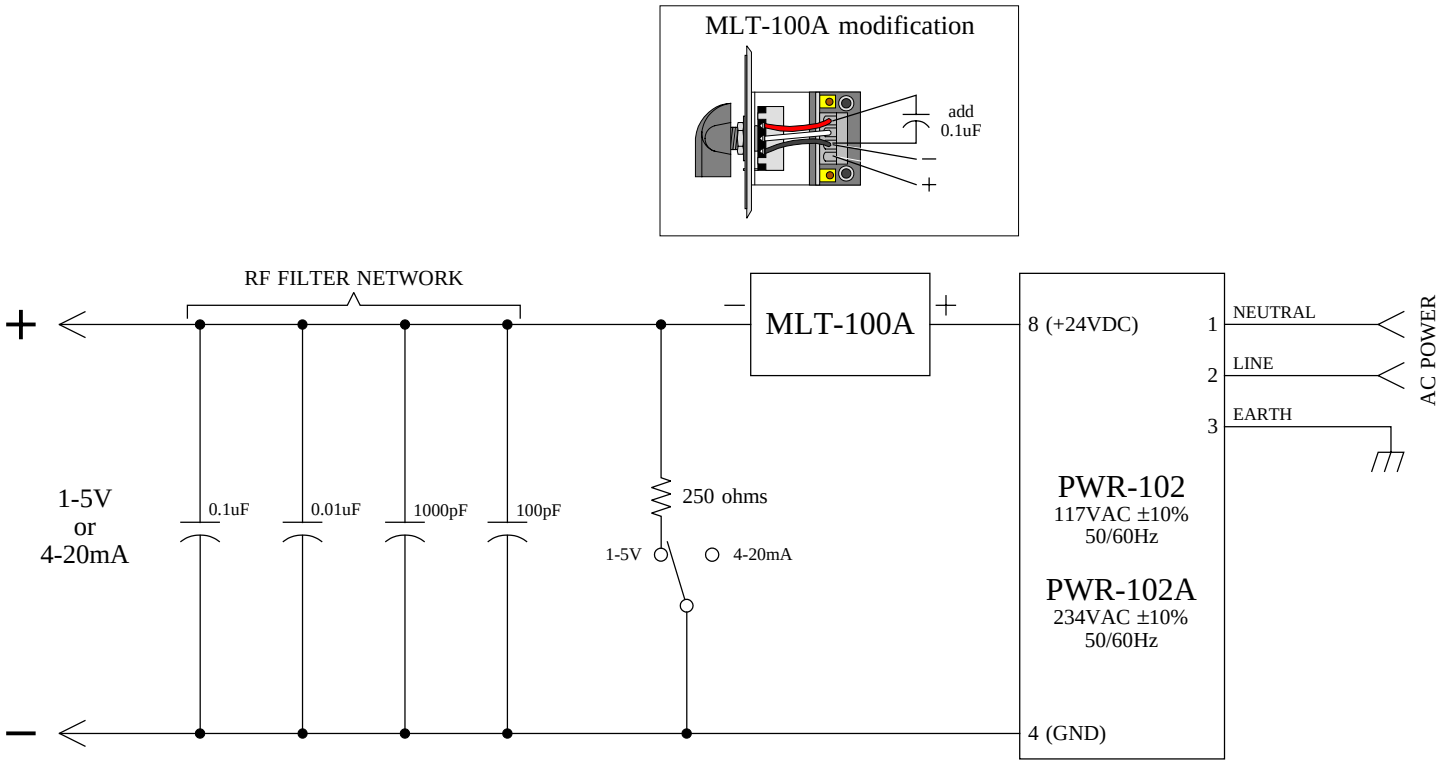
NOTE:

1. This test generates strong RF currents in the signal cables. To prevent interference to the command signal source and output signal monitor, substantial RF clamping should be used as shown above.

2. General purpose voltage sources or power supplies may not be suitable as a command signal source during this test. See Figure 3 for alternative signal source.

3. Most general purpose DVM's are NOT suitable as an output signal monitor during this test. See Figure 4 for alternative signal monitor.

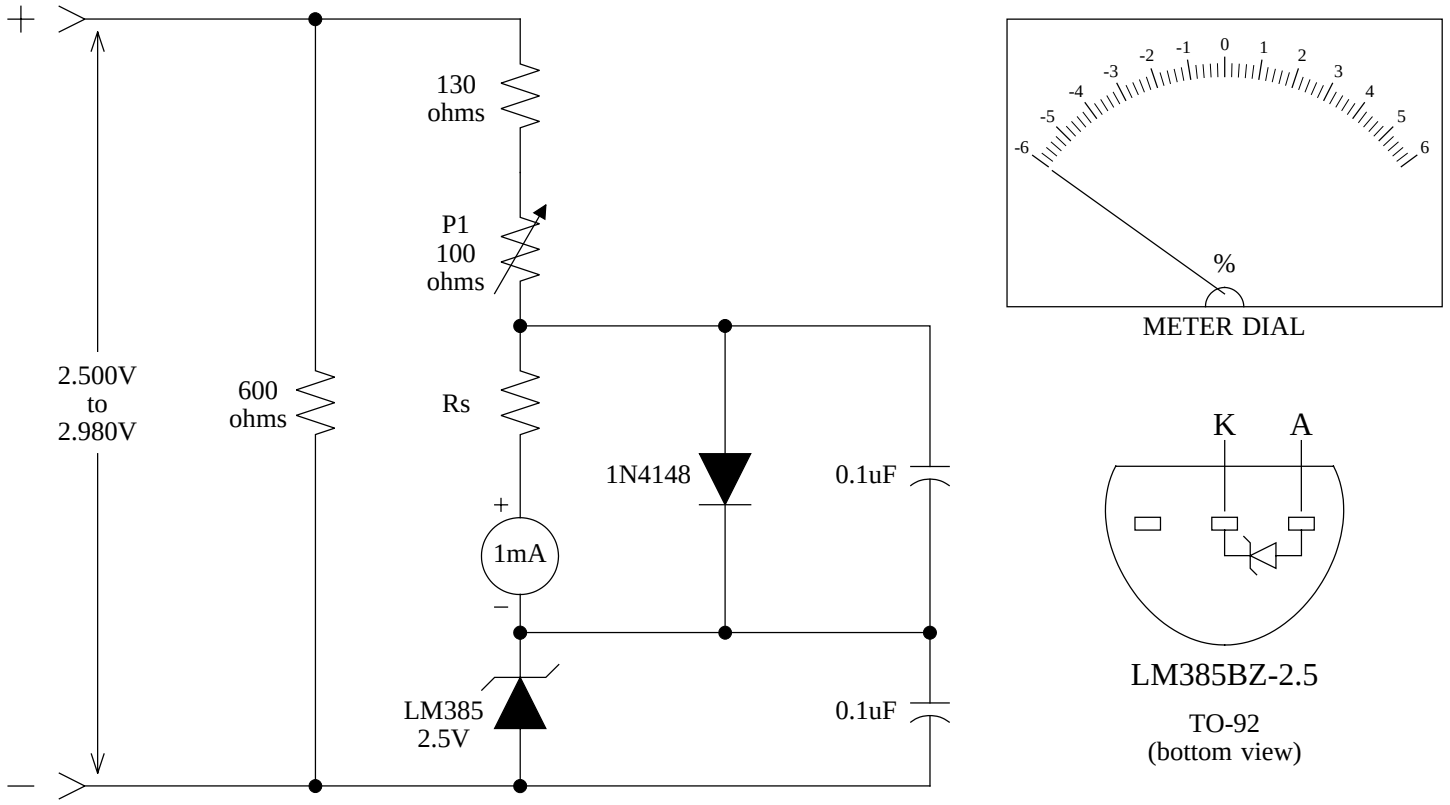
Figure 3 - Command Signal Source



NOTE:

1. The PWR-102(A) and MLT-100A are devices available from Peaktronics, Inc.
2. For all tests described here, the signal selection switch should be set to "1-5V".

Figure 4 - Output Signal Monitor



NOTE:

1. The meter dial indicates % of a 1-5V scale; each 1% is equivalent to 0.04V.
2. Meter movement type: 0-1mA with left side zero
3. Meter movement resistance, Rm: less than 300 ohms (Rs = 300 – Rm)

METER CALIBRATION PROCEDURE:

1. Using a variable DC voltage source, adjust the voltage applied to the "+" and "-" terminals to achieve a meter reading between -1% and +1%.
2. Using a 4-digit DVM, measure and record the voltage (to an accuracy of ±0.001VDC) from the LM385 anode (A) to the LM385 cathode (K).
3. Adjust the voltage applied to the "+" and "-" terminals to a value that is equal to the voltage measured in step 2 above plus 0.480V.
4. Adjust P1 for a meter reading of +6%.