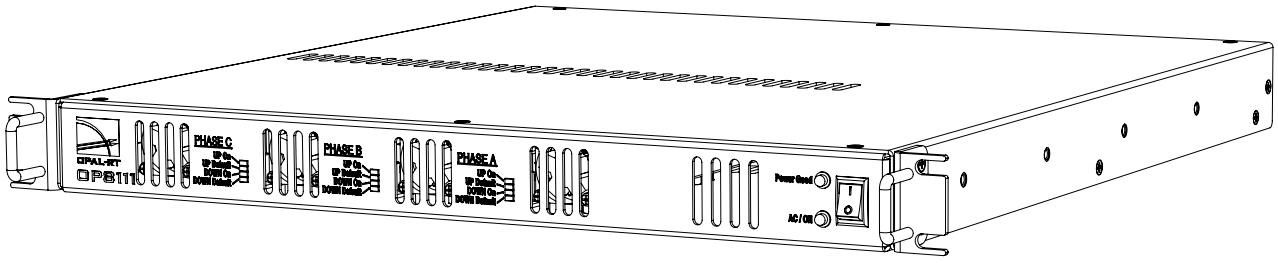
OPAL-RT



OP8111 HIGH VOLTAGE AMPLIFIER USER GUIDE

Published by

OPAL-RT Technologies, Inc. 1751 Richardson, suite 2525 Montreal (Quebec) Canada H3K 1G6

www.opal-rt.com

CONTENTS

INTRODUCTION

The OP8111 high voltage amplifier is transformer based and designed for use with an OPAL-RT simulator or as a standalone amplifier. It provides up to 3 isolated high voltages up to ±160Vrms / 50VA (maximum) and the maximum input voltage range is ±10V_max before output clamping.

Outputs can be configured in Wye or Delta.

The amplifier is designed with connections for one to three phases, depending on the configuration requested. Each phase is equipped with two connectors, and four status LEDs.

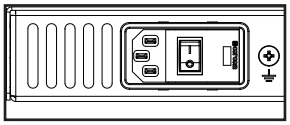
Typical use cases are motor and power grid emulation.

STARTUP PROCEDURE

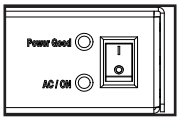
POWERING UP

The unit has two power switches, for ease of use. Follow these steps to properly power up the OP8111 Power Amplifier:

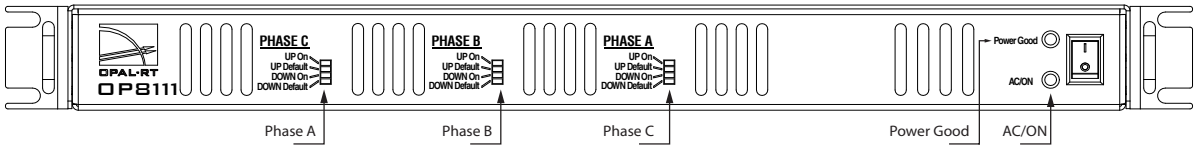
1. Press the switch at the rear of the unit to put it in the ON position



2. Press the switch at the front of the unit to put it in the ON position. Both Power Good and AC/ON LEDs must be on.



3. Verify Status
   The OP8111 voltage amplifier is equipped with a series of LED indicators that display the phase status:



   Once the front power switch is in the ON position, fans will initially run at maximum speed before returning to a slower, nominal speed.

   Each phase has 4 LEDs to indicate its status:

DESIGNATION	POWER UP	FAULT
UP On	Off	Red
UP Default	Green	Off
DOWN On	Off	Red
DOWN Default	Green	Off

4. Connect the load
5. Adjust the required output voltage (on the target) for the test.

TECHNICAL SPECIFICATIONS

CONNECTION DETAILS

The following diagram provides an overview of the amplifier function.

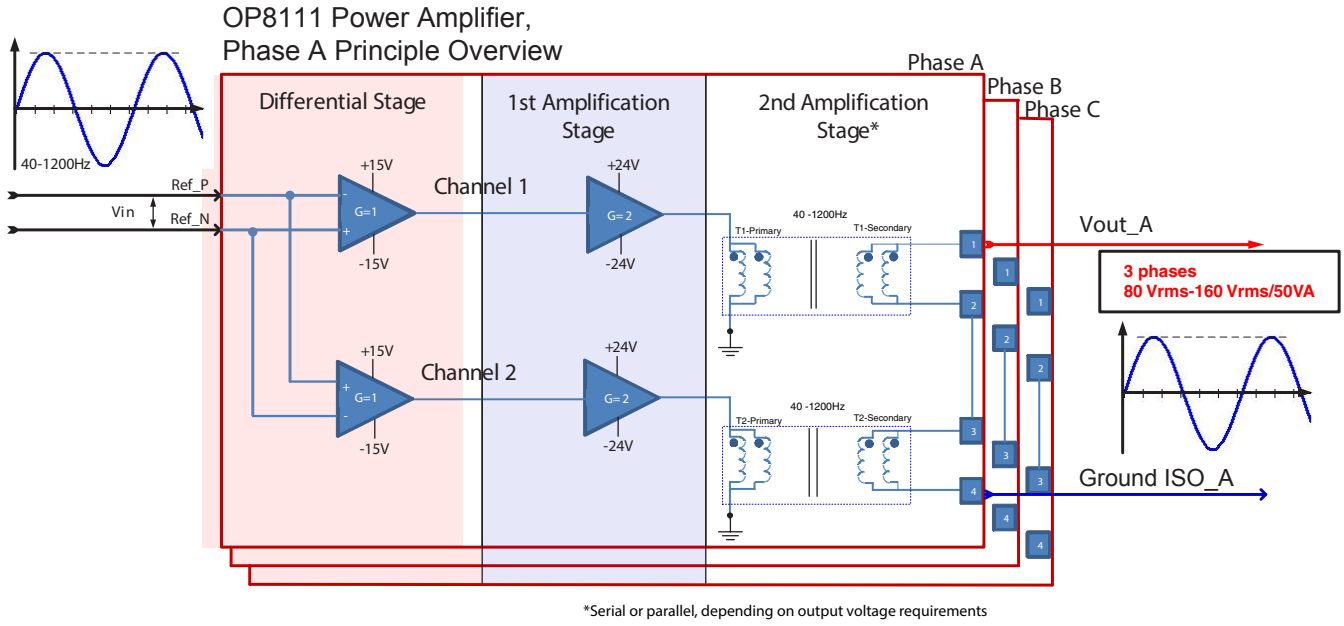


Figure 6: OP8111 high voltage amplifier, synoptic - parallel configuration

The following table provides ratings and bandwidth for inputs and output signals. Note that each channel is enabled by default.

Input Signal	Gain ±1% (no load)	Gain ±1% (with load)	Frequency	Output Signal	Voltage	Frequency	Output Power
Serial configuration							
Vout_a	24	22	40Hz-1200Hz	SIM A	0 to 160Vrms	40Hz-1200Hz	50W
Vout_b	24	22	40Hz-1200Hz	SIM B	0 to 160Vrms	40Hz-1200Hz	50W
Vout_c	24	22	40Hz-1200Hz	SIM C	0 to 160Vrms	40Hz-1200Hz	50W
Parallel Configuration							
Vout_a	11.85	10.9	40Hz-1200Hz	SIM A	0 to 80Vrms	40Hz-1200Hz	50W
Vout_b	11.85	10.9	40Hz-1200Hz	SIM B	0 to 80Vrms	40Hz-1200Hz	50W
Vout_c	11.85	10.9	40Hz-1200Hz	SIM C	0 to 80Vrms	40Hz-1200Hz	50W

Table 8: Signal bandwidths

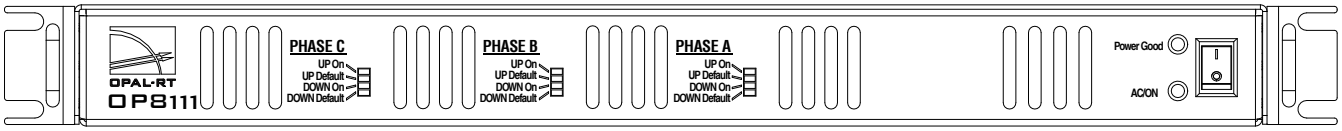


Figure 7: OP8111 front

PHASE	IN+	IN-
A	1	9
B	1	9
C	1	9

Table 9: Input DB9 pinout

PHASE	OUT+	OUT-
A	A+	A-
B	B+	B-
C	C+	C-

Table 10: Output PIN OUT, 2 position screw terminal block

Figure 8 provides an example of a transformer configuration, with a second using the same connections.

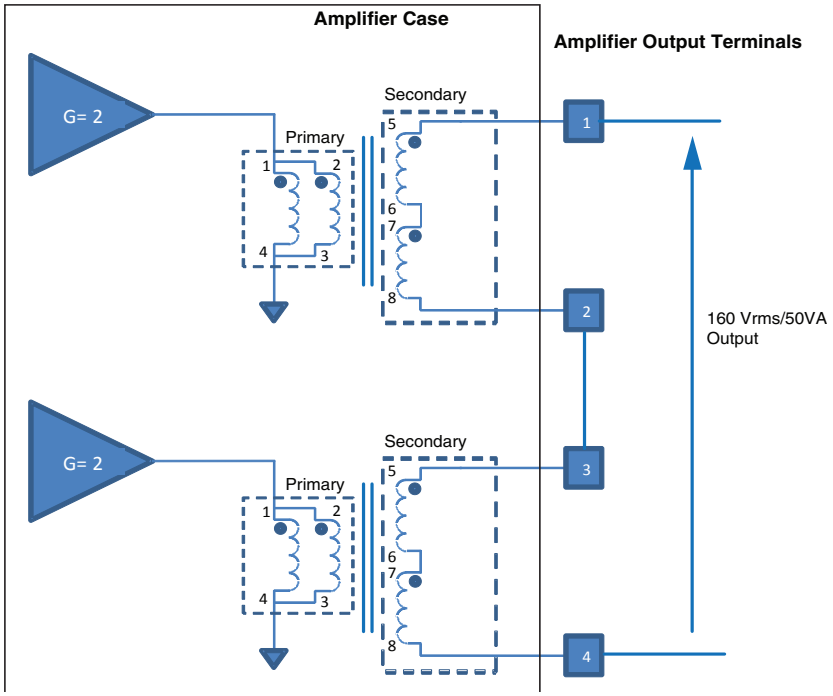


Figure 8: Transformer connection, serial configuration

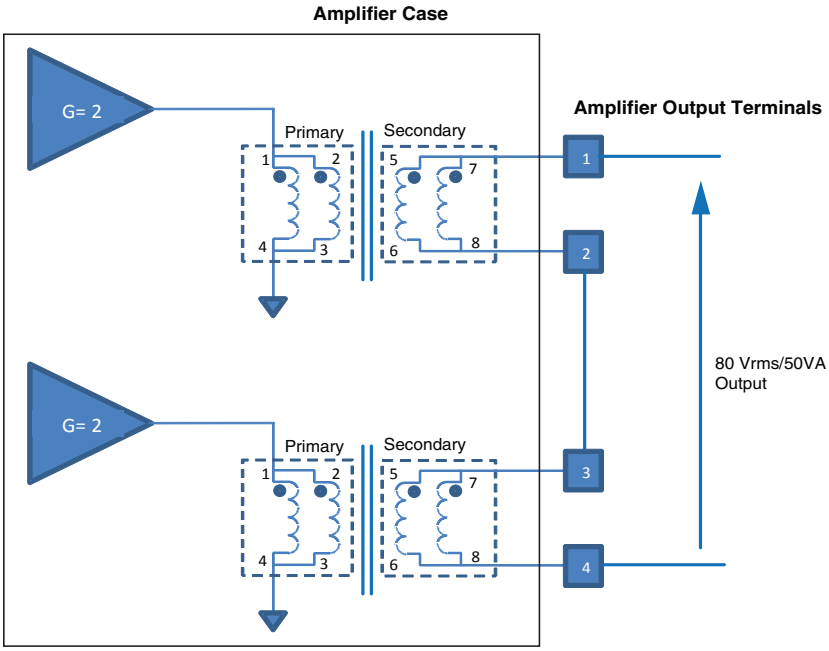


Figure 9: Transformer connection, parallel configuration

SPECIFICATIONS

Product name	**OP8111**
Input Power	110/230 Vac ; 50/60Hz
Analog inputs	
Connectors	DB9
Coupling	DC, Differential
Diff input impedance	10KΩ
Analog outputs	
Connectors	2 positions screw terminal block
Coupling	DC, referenced to its HVGND
Voltage range	Serial: ±160Vrms /50VA
	Parallel: ± 80Vrms / 50VA
Output regulation	7%
Protections	Thermal and short circuit to ground.
Max Current	Serial Config. = 0.3125A_rms
	Parallel Config. = 0.625A_rms
3 phases configuration	Wye (default)
	no sinking capability.
Output impedance	4Ω ±5%
Phase lag (Out / In)	≤ 1°over the frequency bandwidth.
Bandwidth	40Hz - 1200Hz
Nominal operating frequency	45Hz - 65Hz
Dimensions	18.000" L × 17.000" W × 1.728" H
weight	12 Kg

CONTACT

OPAL-RT Corporate Headquarters

1751 Richardson, Suite 2525
Montréal, Québec, Canada
H3K 1G6
Tel.: 514-935-2323
Toll free: 1-877-935-2323

Technical Services
www.opal-rt.com/support

Note:

While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions. Data may change, as well as legislation, and you are strongly advised to obtain copies of the most recently issued regulations, standards, and guidelines.
This publication is not intended to form the basis of a contract.

UM15-52356 RVN 2.0
06/2016