



OPAL-RT



OP8681 DESKTOP CONNECTION INTERFACE User Guide







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SYMBOL DEFINITIONS

The following table lists the symbols used in this document to denote certain conditions:

Symbol	Definition
	ATTENTION: Identifies information that requires special consideration
	TIP: Identifies advice or hints for the user, often in terms of performing a task
	REFERENCE _ INTERNAL: Identifies an additional source of information within the bookset.
CAUTION	Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process.
	Indicates a situation where users must observe precautions for handling electrostatic sensitive devices.
	CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
	WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.

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OP8681 DESKTOP CONNECTION INTERFACE

RECEIVING AND VERIFICATION

When you receive your shipment, we strongly recommend that you verify the contents of the package(s). After carefully opening the package, remove the equipment and components. Make sure that all the items described below are actually in the box and are undamaged.

STANDARD HARDWARE

The OP8681 includes the following basic hardware:

Item	QTY	Description	Part Number
OP8681	1	Desktop Connection Interface	429-0300-0034
Power adapter			LTE60E-S2-1
Documentation		Test Report User Documentation CD	N/A



OPAL-RT strongly recommends the use of anti-static wrist straps whenever handling any electronic device provided by OPAL-RT. Damage resulting from electrostatic charges will not be covered by the manufacturers warranty.

OPTIONAL HARDWARE

The OP8681 can be customized to use any combination of the following top interface connectors. There are several options available for Phoenix terminal connectors that depend on intended use (ex.: using different size connectors for voltage and current can help to avoid errors).

Part Number	Item	Power Rating	Mating Connector	Wire Gauge	Size
310-0095	BNC connector panel 50 ohms	500V	Standard BNC cable	N/A	N/A
310-0096	LED monitoring panel	N/A	N/A	N/A	N/A
310-0099	Phoenix terminal connector panel, model A	2.5A, 125V max.	1754449	20-24 AWG	5.00mm
310-0098	Phoenix terminal connector panel, model B	2.5A, 300V max.	1803578	14-30 AWG	3.81mm
310-0166	Phoenix terminal connector panel, model C	2.5A, 300V max.	1836079	12-30 AWG	5.08mm
310-0099	Phoenix terminal connector panel, model D	2.5A, 300V max.	1881325	14-30 AWG	2.50mm

INTRODUCTION

The OP8681 is a desktop modular mapping box that provides an easily interconnected interface between standard OPAL-RT simulator DB37 connectors and user devices.

The OP8681 can provide 16 channels, divided into 4 sections of four channels each. This means that each group of 4 channels can be configured to use a variety of client side connectors (BNC, screw terminal, etc.). An LED connector module is also available for signal status monitoring.

The OP8681 is available in two models, OP8681-1 and OP8681-2.

The OP8681-1 provides the possibility of adding additional signal conditioning (type E boards) between the DB37 and the connector modules. This means that, depending on the type E board used, the first set of four channels could be used for $\pm 50A$ current output, while the remaining channels could be isolated analog outputs (one use example, as illustrated in Figure 1).

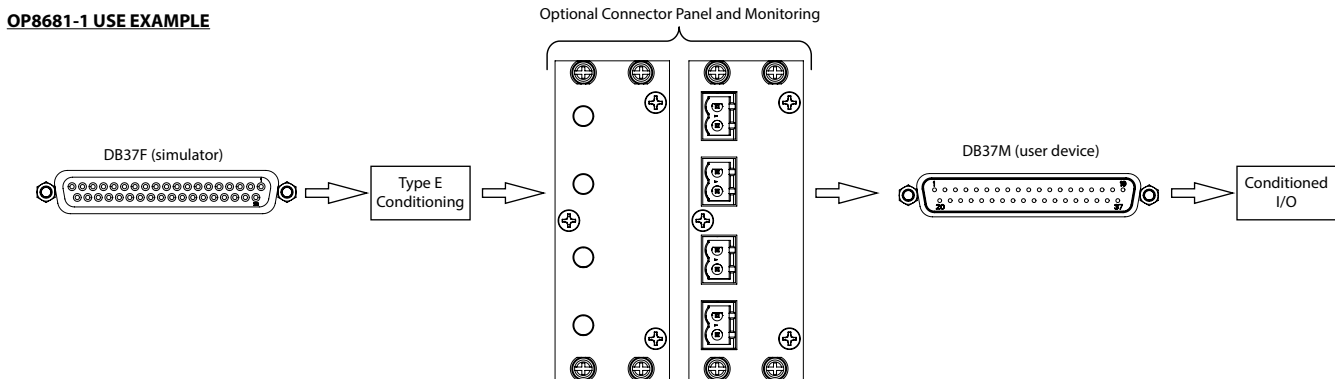


Figure 1: OP8681-1 use example diagram

The OP8681-2 does not support any conditioning boards and serves only as a quick connection interface between standard OPAL-RT simulator DB37 connectors and user devices.

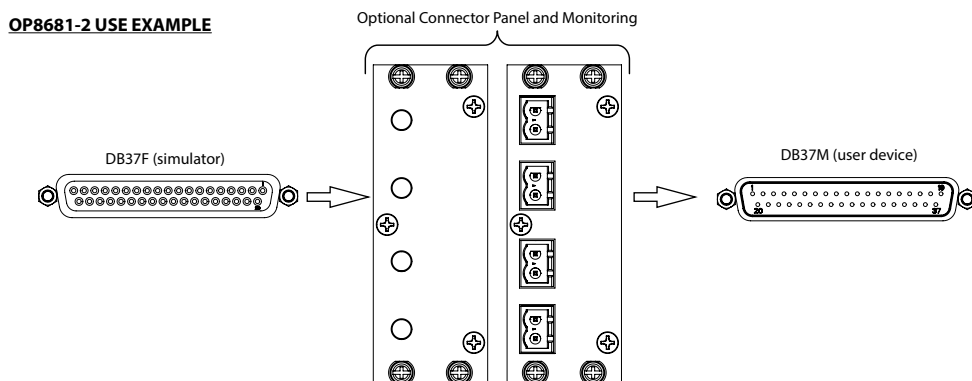


Figure 2: OP8681-2 use example diagram

FEATURES

- Carrier board that can accept up to 4 type E signal conditioning mezzanine boards (OP8681-1 only)
- Four (4) top panel connector types (BNC, 2.5A Phoenix)
- LEDs (monitor activity).
- DB37F connector for quick connections to the simulator and user device (all DB37F share common pin assignments).

Compatible Type E Boards

The following boards are compatible with the OP5330 analog output boards used in an OPAL-RT simulator (see individual board documentation for details):

Board Name	Part Number	Description
OP8E00	Flat cable 113-0595	Type E flat cable for passthrough
OP8E01	126-0425	Type E module, proto zone
OP8E03	126-0435	Type E module, current out mode, +/- 25mA to +/- 50mA, compliance voltage 14V
OP8E05	126-0452	Type E module, current out mode, +/- 100 mA , compliance voltage 16V (external power supply required)
OP8E06	126-0464	Type E module, voltage out mode 2ch isolated, 2ch standard TypeE
OP8E10	126-0495	Type E module, 4 isolated analog out LV (16V)
OP8E12	126-0502	Type E module, snubber, filter and pull-up/down signal

The following boards are compatible with the OP5340 analog input boards used in an OPAL-RT simulator (see individual board documentation for details):

Board Name	Part Number	Description
OP8E00	Flat cable 113-0595	Type E flat cable for passthrough
OP8E01	126-0425	Type E module, proto zone
OP8E02	126-0426	Type E module, current in +/- 25 mA to +/- 100 mA (250 ohms available)
OP8E04	126-0428	Type E module, high voltage - input with buffer (to allow signal monitoring after the attenuator)
OP8E07	126-0465	Type E module, 4 voltage in isolated
OP8E09	126-0486	Type E module, 4 analog in amplifier buffer (gain > 1)
OP8E11	126-0491	Type E module, current in 0-20 mA isolated
OP8E12	126-0502	Type E module, snubber, filter and pull-up/down signal

NOTE	The OP8681 connects pin-to-pin with either an OP5330 or OP5340, therefore it is not possible to combine both input and output type E boards on one mezzanine board.
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OP8681 TOP INTERFACE

The choice of top panel interface depends on the configuration options you selected.

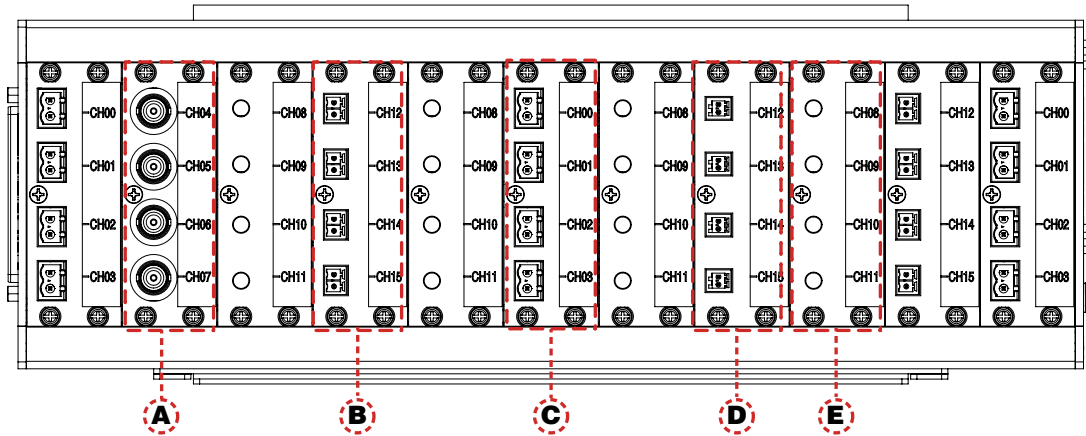


Figure 3: OP8681 top connector panels

Optional Interface Panels

- A. BNC connectors
- B. 8A Phoenix terminal connectors
- C. 12A Phoenix terminal connectors
- D. 4A Phoenix terminal connectors
- E. Monitoring LEDs.

OP8681 SIDE INTERFACES

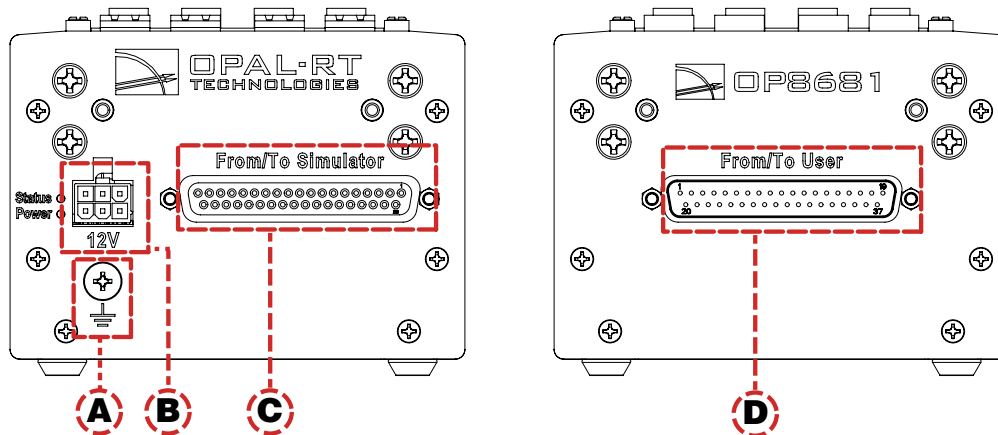
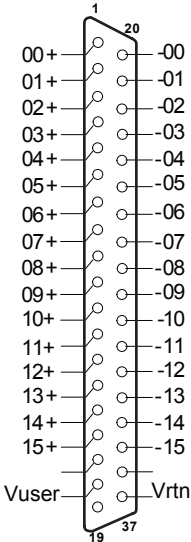


Figure 4: OP8681 side connector panels

- A. Ground screw.
- B. 12V power connector:
 - Molex MiniFit (39-01-2065)
 - Contact Pin: Female terminal (39-00-0039)
- C. DB37F connector to connect to the simulator.
- D. DB37M connector to connect to the user device (if no top panel is used).

DB37 PIN ASSIGNMENTS

DB37F	OP8681 Pin Assignment	DB37F	OP8681 Pin Assignment
1	+CH00	20	-CH00
2	+CH01	21	-CH01
3	+CH02	22	-CH02
4	+CH03	23	-CH03
5	+CH04	24	-CH04
6	+CH05	25	-CH05
7	+CH06	26	-CH06
8	+CH07	27	-CH07
9	+CH08	28	-CH08
10	+CH09	29	-CH09
11	+CH10	30	-CH10
12	+CH11	31	-CH11
13	+CH12	32	-CH12
14	+CH13	33	-CH13
15	+CH14	34	-CH14
16	+CH15	35	-CH15
17	12V	36	GND
18	Vrtn	37	Vuser
19	N/C		N/C



POWER CONNECTOR PIN ASSIGNMENTS

Pin	Type	
1	12V	
3	GND	
Other	N.C	

SPECIFICATIONS

Product name	OP8681
Part number	429-0300-0034
Number of channels	4 sections of 4 channels
I/O connector (chassis)	DB37F, DB37M
BNC connector module	50 Ohms, isolated
Phoenix terminal connector modules	2.5A, 125V max. 2.5A, 300V max. 2.5A, 300V max.
LED module	Maximum input range $\pm 30V$ On when $> 1V$, $< -1V$
Dimensions HxWxD	8.32 x 11.51 x 34.09cm (3.3" x 4.39" x 13.42") (height varies according to module)
Operating temperature	10 to 40 °C (50 to 104°F)
Relative humidity	10 to 90%, non condensing
Maximum altitude	2,000 m (6562 ft.)

LIMITED WARRANTY

LIMITED WARRANTY

Opal-RT Technologies Inc. warrants to the original purchaser and/or ultimate customer (“Purchaser”) of Opal-RT products (“Product”) that if any part thereof proves to be defective in material or workmanship within one (1) year, such defective part will be repaired or replaced, free of charge, at Opal-RT Technologies’ discretion, if shipped prepaid to Opal-RT Technologies Inc. at 1751 Richardson, suite 2525, Montreal, Quebec, Canada, H3K 3G6, in a package equal to or in the original container. The Product will be returned freight prepaid and repaired or replaced if it is determined by Opal-RT Technologies Inc. that the part failed due to defective materials or workmanship. Otherwise, the fees will be charged to the client (see article “warranty limitation and exclusion”). The repair or replacement of any such defective part shall be Opal-RT Technologies’ sole and exclusive responsibility and liability under this limited warranty.

Purchaser must request an RMA number before shipping any Product for repair:

1. Access the Opal-RT website (www.opal-rt.com/support/return-merchandise-authorization-rma-request), click on support and select Return Merchandise (RMA).
2. Fill out the online form and submit. You will receive a notification with a thread-ID that will be used for further exchange with support.
3. Opal-RT’s Support department will evaluate the return and either issue an RMA number via email using the same thread-ID.
 - If the Product is returned for repair more than 12 months after purchase, the Purchaser is responsible for the cost of repair. Opal-RT will assess the repair and prepare a quote. The RMA number will be sent with the quote.
4. Only when the Purchaser receives the RMA number, may they ship the Product, prepaid, to Opal-RT.

RETURN POLICY

the following fees will apply when customers return products for credit:

A full credit, less a 15% fee and less return fee will only be issued if the product is in perfect working condition and if the product is returned within 1 month following the shipping date. If repairs are required on the returned product, the cost of these repairs will be deducted from the credit to be issued.

No credits will be issued beyond the one month period.

EXCLUSIONS

If third party products are part of the Product, Opal-RT will honor the original manufacturer’s warranty.

This limited warranty does not cover consumable items, such as batteries, or items subject to wear or periodic replacement, including lamps, fuses or filter elements.

WARRANTY LIMITATION AND EXCLUSION

opal-RT Technologies will have no further obligation under this limited warranty. All warranty obligations of Opal-RT Technologies are void if the Product has been subject to abuse, misuse, negligence, or accident or if the Purchaser fails to perform any of the duties set forth in this limited warranty or if the Product has not been operated in accordance with instructions, or if the Product serial number has been removed or altered.

DISCLAIMER OF UNSTATED WARRANTIES

the warranty printed above is the only warranty applicable to this purchase. All other warranties, express or implied, including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose are hereby disclaimed.

LIMITATION OF LIABILITY

it is understood and agreed that Opal-RT Technologies' liability, whether in contract, in tort, under any warranty, in negligence or otherwise shall not exceed the amount of the purchase price paid by the purchaser for the product and under no circumstances shall Opal-RT Technologies be liable for special, indirect, or consequential damages. The price stated for the product is a consideration limiting Opal-RT Technologies' liability. No action, regardless of form, arising out of the transactions under this warranty may be brought by the purchaser more than one year after the cause of actions has occurred.

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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.



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