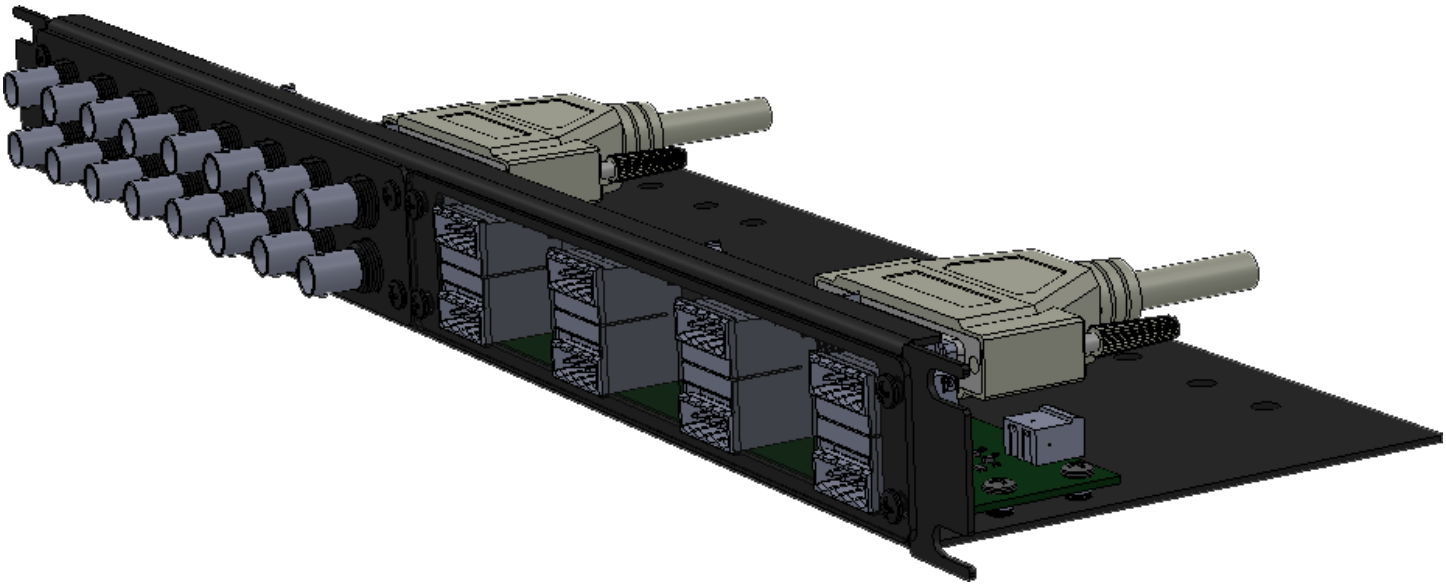

OP8210 Interface Connector
User Manual

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OP8210 INTERFACE CONNECTOR

INTRODUCTION

The OP8210 1U rackmount chassis is an interface connector designed to be used with an Opal-RT simulator system to provide a simple interface between the Opal-RT simulator's DB37 connectors and external devices. It contains spaces for two (2) connector panels and uses standard connectors (RJ45, screw terminals and BNC) without the need for input/output adaptors and allows quick connections for monitoring. These panels (OP8211, OP8212 and OP8213) act as patch panels only and offer no conditioning. The OP8214, by contrast, does offers some conditioning.

The rear of the unit provides the connectors that link the OP8210 to the OP5600 or OP7000 simulator, while the front provides connectors (Screw terminals or BNC) for client-side applications.

FEATURES

The OP8210 chassis has two separate sections that can several types of front connection panels:

- OP8211, BNC connectors (up to 16 channels)
- OP8212, Screw terminal connectors (up to 16 channels)
- OP8213, RJ45 connectors (up to 32 channels)
- OP8214 Peak Detector
- OP8210 Blank Plate (not shown)

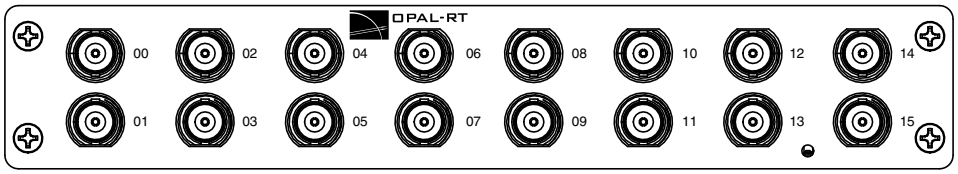


Figure 1: OP8211, BNC connectors

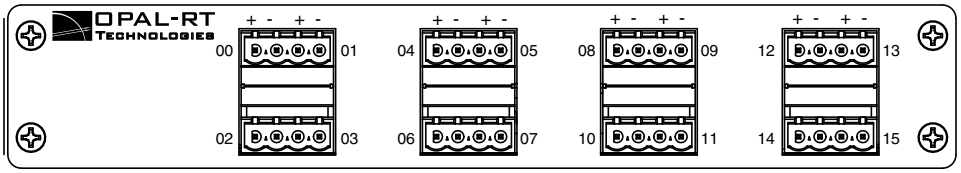


Figure 2: OP8212, Screw terminal connectors

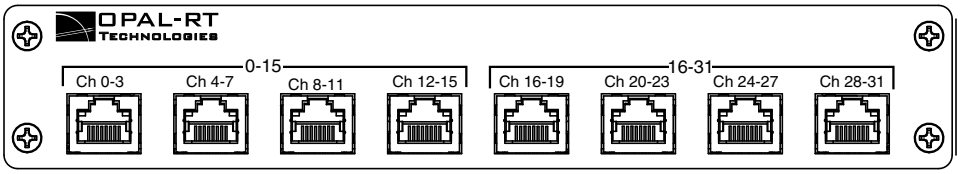


Figure 3: OP8213, RJ45 connectors

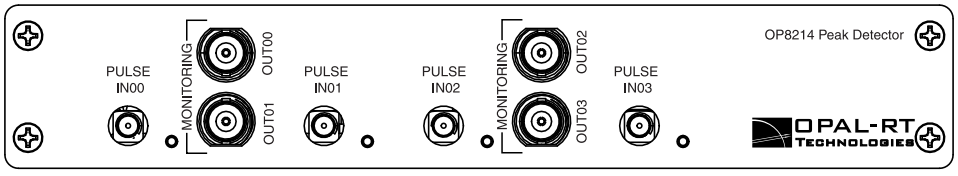


Figure 4: OP8214, Peak Detector connectors

MODULE INSTALLATION

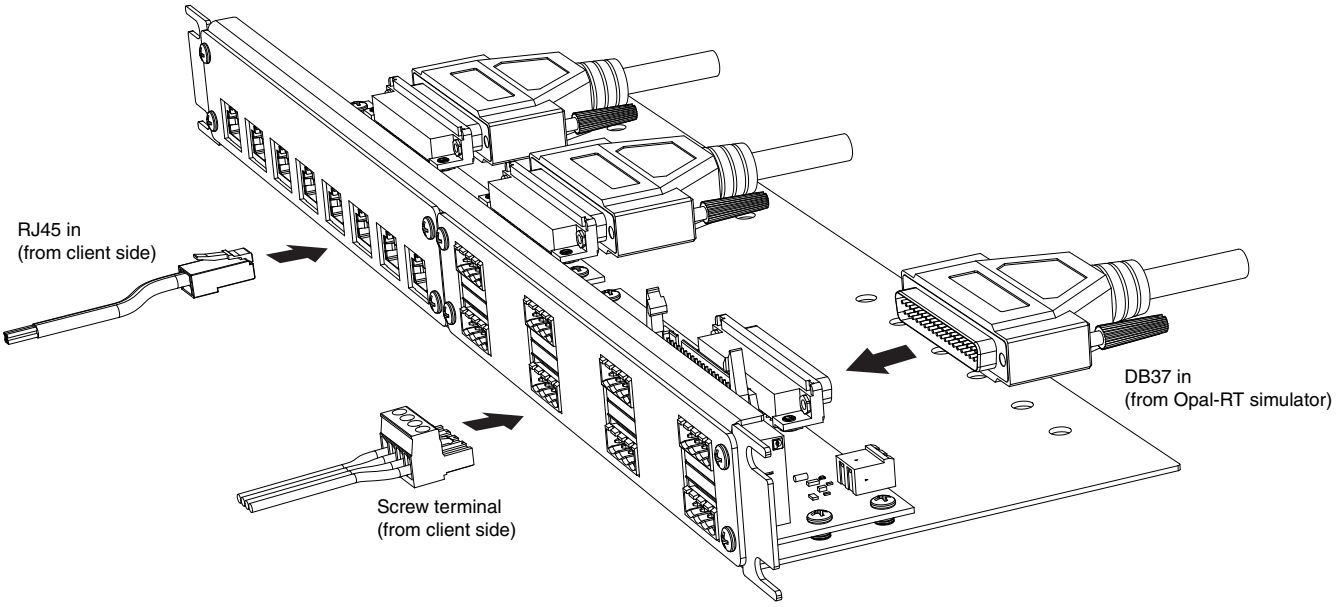


Figure 5: OP8210 connections

1. Connect the DB37 cables provided with the Opal-RT simulator to the back connectors on the OP8210 Interface Connector.
2. Connect the external device to the desired channel connectors on the front of the Interface Connector.

Depending on the type of board used in the simulator, the OP8210 connector may require an external power supply (example: when using a digital output board).

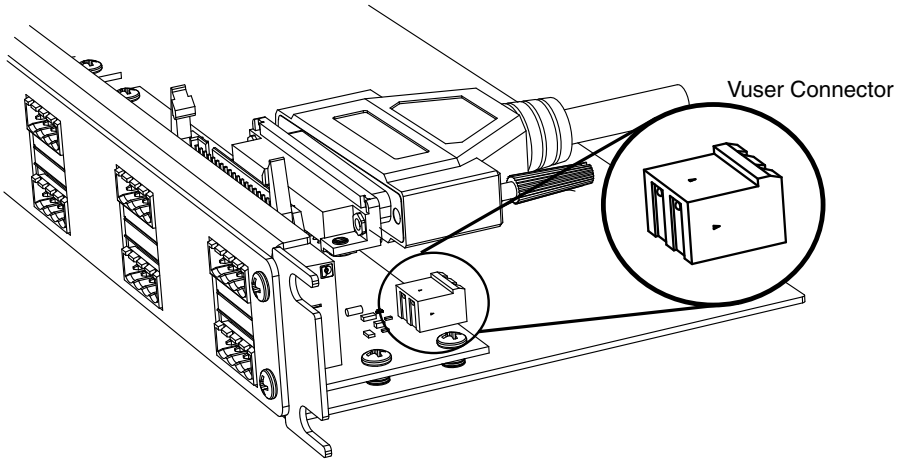


Figure 6: Vuser connector

OP8214 PEAK DETECTOR

The OP8214 peak detector provides an interface to measure the amplitude for up to 4 pulses. This panel provides both SMA and BNC connectors. The OP8214 requires external power input.

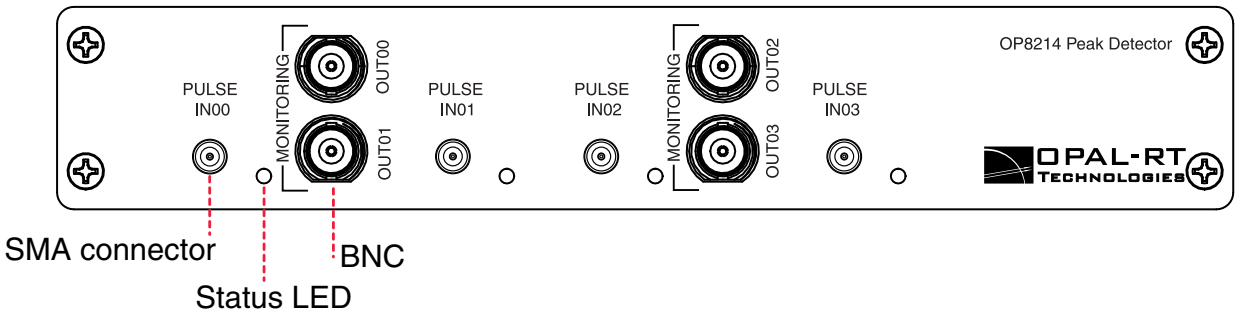


Figure 7: OP8214 Interface

SMA connector: the SMA connector lets users connect the user input. The OP8214 then detects any high speed pulses and maintains them long enough for the OP5340 Analog In to read and process the pulse.

Status LED: blinks to indicate each high speed pulse.

BNC connector: lets users connect the OP8214 to an external monitoring device (i.e. an oscilloscope) to view the signal sent to the simulator.

Peak Detector Diagrams

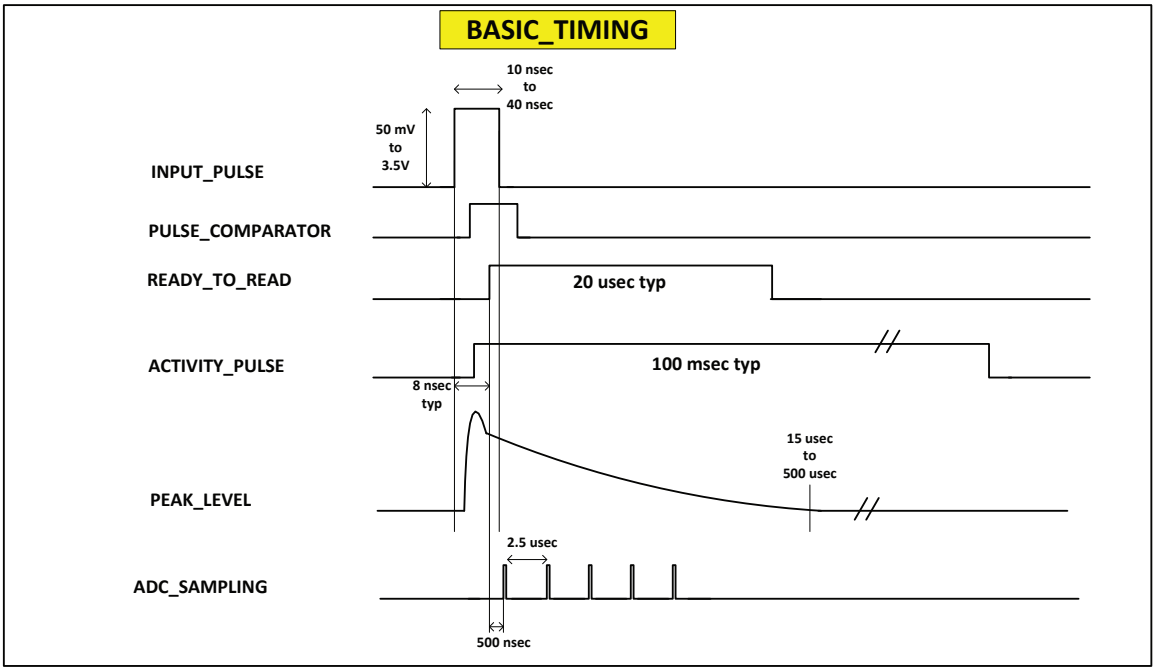


Figure 8: Pulse timing diagram

OP8214 High Speed Peak Detector
(One Channel)

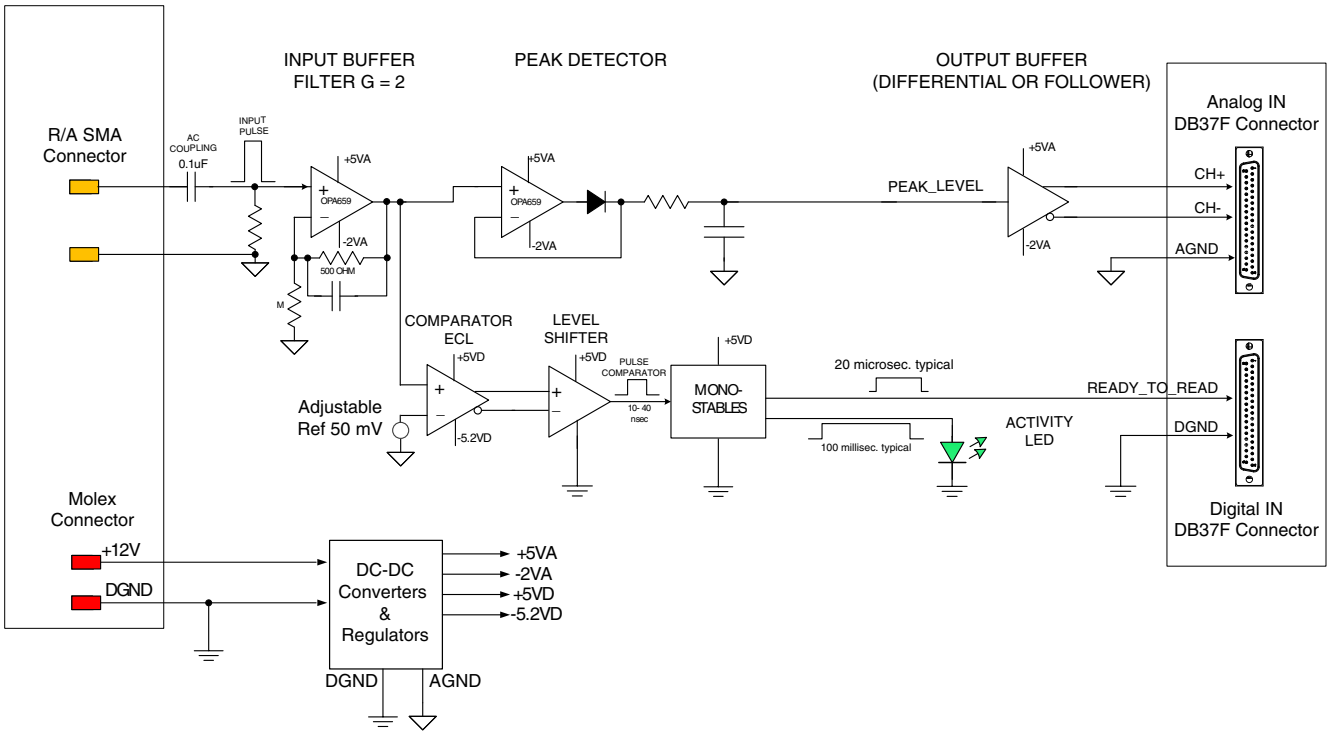
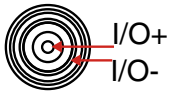


Figure 9: OP8214 schematic

BNC PIN ASSIGNMENTS

DB37 Connector	Channel	DB37 Connector	Channel	BNC Connector
1	+CH00	20	-CH00	00
2	+CH01	21	-CH01	01
3	+CH02	22	-CH02	02
4	+CH03	23	-CH03	03
5	+CH04	24	-CH04	04
6	+CH05	25	-CH05	05
7	+CH06	26	-CH06	06
8	+CH07	27	-CH07	07
9	+CH08	28	-CH08	08
10	+CH09	29	-CH09	09
11	+CH10	30	-CH10	10
12	+CH11	31	-CH11	11
13	+CH12	32	-CH12	12
14	+CH13	33	-CH13	13
15	+CH14	34	-CH14	14
16	+CH15	35	-CH15	15
17		36		
18		37		
19				



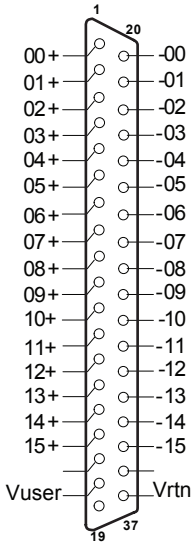
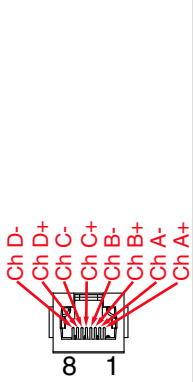


Table 1: BNC pin assignments

RJ45 PIN ASSIGNMENTS

DB37 P1-1	Channel	DB37 P1-1	Channel	RJ45	DB37 P1-2	Channel	DB37 P1-2	Channel	RJ45
1	+CH00	20	-CH00	0-3	1	+CH00	20	-CH00	16-19
2	+CH01	21	-CH01		2	+CH01	21	-CH01	
3	+CH02	22	-CH02		3	+CH02	22	-CH02	
4	+CH03	23	-CH03		4	+CH03	23	-CH03	
5	+CH04	24	-CH04	4-7	5	+CH04	24	-CH04	20-23
6	+CH05	25	-CH05		6	+CH05	25	-CH05	
7	+CH06	26	-CH06		7	+CH06	26	-CH06	
8	+CH07	27	-CH07		8	+CH07	27	-CH07	
9	+CH08	28	-CH08	8-11	9	+CH08	28	-CH08	24-27
10	+CH09	29	-CH09		10	+CH09	29	-CH09	
11	+CH10	30	-CH10		11	+CH10	30	-CH10	
12	+CH11	31	-CH11		12	+CH11	31	-CH11	
13	+CH12	32	-CH12	12-15	13	+CH12	32	-CH12	28-31
14	+CH13	33	-CH13		14	+CH13	33	-CH13	
15	+CH14	34	-CH14		15	+CH14	34	-CH14	
16	+CH15	35	-CH15		16	+CH15	35	-CH15	
17		36			17		36		
18		37			18		37		
19					19				



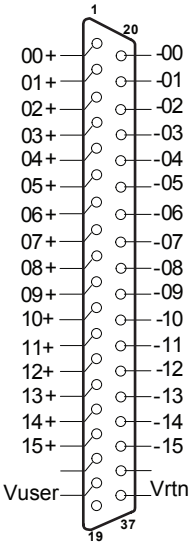


Table 2: RJ45 pin assignments

SCREW TERMINAL PIN ASSIGNMENTS

DB37 Connector	Channel	Screw Terminal Connector	DB37 Connector	Channel	Screw Terminal Connector
1	+CH00	+00	20	-CH00	-00
2	+CH01	+01	21	-CH01	-01
3	+CH02	+02	22	-CH02	-02
4	+CH03	+03	23	-CH03	-03
5	+CH04	+04	24	-CH04	-04
6	+CH05	+05	25	-CH05	-05
7	+CH06	+06	26	-CH06	-06
8	+CH07	+07	27	-CH07	-07
9	+CH08	+08	28	-CH08	-08
10	+CH09	+09	29	-CH09	-09
11	+CH10	+10	30	-CH10	-10
12	+CH11	+11	31	-CH11	-11
13	+CH12	+12	32	-CH12	-12
14	+CH13	+13	33	-CH13	-13
15	+CH14	+14	34	-CH14	-14
16	+CH15	+15	35	-CH15	-15
17			36		
18			37		
19					

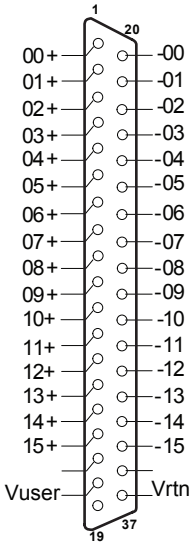


Table 3: Screw terminal pin assignments

SPECIFICATIONS

GENERAL SPECIFICATIONS

Product name	OP8210 Interface Connector
Available interface panels	OP8211 (P/N 126-0402) BNC connector panel OP8212 (P/N 126-0403) screw terminal connector panel OP8213 (P/N 126-0411) RJ45 connector panel OP8214 (P/N 126-0410) Peak Detector panel
Dimensions (HxWxD)	4.37 x 48.26 x 13.34 cm (1.72” x 19” x 5.25”)
I/O connector	DB37 to simulator. BNC, RJ45 or screw terminal, depending on panel
Operating temperature	10 to 40 ºC (50 to 104ºF)
Storage temperature	-55 to 85ºC (-67 to 185ºF)
Relative humidity	10 to 90%, non condensing
Maximum altitude	2,000 m (6562 ft.)

PEAK DETECTOR SPECIFICATIONS

Input power range	9 to 18 Volts (typically 12V)
INPUT ANALOG PULSE	
Amplitude	0 to 3.5 Volts
Input impedance	50 Ohms
Pulse width minimum/ maximum	10 to 50 nanoseconds
Detection threshold	50 millivolts - smaller pulses will be ignored
OUTPUT ANALOG LEVEL	
Output type	Differential (compatible with Opal-RT ADC mezzanine)
Amplitude range	0 to 4 volts, differential signals or single-ended follower
Hold time for peak value	± 20 microseconds. FPGA uses the ready_to_read signal to read (see timing diagram)
Connector	DB37, female, supports the 4 analog differential pair
OUTPUT DIGITAL SIGNAL	
Signal ready_to_read	± 20 microseconds When high, during around 20 microsec, it means the output analog value can be captured by the adc
Connector	DB37, female, supports the 4 digital signals
STATUS INDICATORS	
Monitoring led	When analog pulse is present (above 50 mv), the LED is activated.

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

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