



# Agilent B2200A fA Leakage Switch Mainframe

# Agilent B2201A 14ch Low Leakage Switch Mainframe

Data Sheet



**Agilent B2200A fA Leakage Switch Mainframe**

## Introduction

### Basic Functions

Agilent B2200A fA Leakage Switch Mainframe and B2201A 14ch Low Leakage Mainframe functions:

- Switches DC Current, DC Voltage, Capacitance and LCR Meters
- Set and monitor connection status on Front Panel
- Configured Status display with LED Matrix Display
- Connection Setup by Light Pen
- Controls through GP-IB Interface
- Auto Ground function
- Self-test, relay function test
- Relay cleaning

### Configuration

#### Input (B2200A/B2201A):

- IV port : 8 Triaxial ports (or 4 Kelvin Triaxial ports) with low leakage performance
- AUX port : 6 BNC ports including dedicated 2 CV ports
- All input ports can use concurrently

#### Output (B2210A/B2211A):

- 12 Triaxial ports per switch module. Frame can have 4 modules maximum. (Total 48 ports)

#### Software:

The B2200A and B2201A include a CD-ROM with VXI Plug & Play Driver which contains Capacitance Compensation Routine.

## General Specification

Temperature Range	Operation: Storage:	+5°C to 35°C -20°C to 70°C
Humidity Range	Operation: Storage:	+5°C to 70°C R.H. (no condensation) (B2200A, B2210A) < 80% @35°C, < 60% @65°C no condensation (B2201A, B2211A) < 80% @65°C no condensation
Altitude	Operation: Storage:	0 m to 2,000 m 0 m to 15,240 m
Regulatory Compliance	Safety: EMC:	CSA C22.2 No.1010.1/IEC 1010-1 CISPR 11 Group 1 class A&EN50082-1
Power requirement	90-264V(Continuous), 47-63Hz 2A/200VA max	
Number of Slots	4 slots for 48 mm height switch module.	
Size	B2200A/B2201A B2210A/B2211A	430 mm W x 320 mm H x 600 mm D 395 mm W x 48 mm H x 500 mm D
Weight (Approx.)	B2200A/B2201A B2210A B2211A	14.0kg 4.5kg 3.5kg
Number of ports (B2210A, B2211A use with B2200A, B2201A)		
I-V port: AUX port: Output Channel:		8 Triaxial Ports (with Guard) 6 BNC Ports (2 of CV port) 12 Triaxial Ports (with Guard), Max 48 ports

## Switch Module Specification (Used with Mainframe<sup>1</sup>)

Condition		B2210A	B2211A
Max Current rating (A):	I-V port	1.0	←
	AUX port	0.5	←
Max Voltage rating (V):	I-V: (to Common)	200	←
	I-V: (to other Ch.)	300	←
	AUX: (to Common)	100	←
	AUX: (to other Ch.)	100	←
Close Channel Residual Resistance (Ω):	I-V port	0.6	←
	AUX port	1.5	←
Channel Isolation Resistance (Ω):	I-V port	1x10 <sup>14</sup>	5x10 <sup>13</sup>
	AUX port	1x10 <sup>9</sup>	←

Condition : 23°C ± 5°C, 5% to 60% R.H.

<sup>1</sup> B2200A only supports B2210A fA Leakage Switch Module.  
B2201A only supports B2211 14ch Low Leakage Switch Module.  
Mixed configuration is not supported.

## Supplemental Information (B2200A/B2210A)<sup>\*1</sup>

Offset Current	< 10 fA (Typ. 3 fA) <sup>*2</sup>	I-V port
IM Noise (RMS)	0.6 fA <sup>*3</sup>	I-V port
Channel Crosstalk Capacitance	< 1 pF/ch < 3 pF/ch	I-V port AUX port
Offset Voltage	< 50 $\mu$ V < 80 $\mu$ V	I-V port AUX port
Settling Time <sup>*4</sup>	2.0 sec at 50 fA	
Band Width (at -3dB)	30 MHz	I-V port
Guard Capacitance	< 145 pF <sup>*5</sup>	I-V port
Additional C measurement Error	< $\pm$ 1%+0.2 pF <sup>*6</sup>	I-V port

## Supplemental Information (B2201A/B2211A)<sup>\*1</sup>

Offset Current	< 50 fA <sup>*2</sup>	I-V port
IM Noise (RMS)	5 fA <sup>*3</sup>	I-V port
Channel Crosstalk Capacitance	< 0.5 pF/ch < 3 pF/ch	I-V port AUX port
Offset Voltage	< 80 $\mu$ V < 100 $\mu$ V	I-V port AUX port
Settling Time <sup>*4</sup>	2.0 sec at 300 fA	
Band Width (at -3dB)	30 MHz	I-V port
Guard Capacitance	< 145 pF <sup>*5</sup>	I-V port
Additional C measurement Error	< $\pm$ 1%+0.2 pF <sup>*6</sup>	I-V port

- \*1) B2200A only supports B2210A fA Leakage Switch Module. B2201A only supports B2211 14ch Low Leakage Switch Module. Mixed configuration is not supported.
- \*2) The offset current when zero volts are applied to all input and output channels.
- \*3) Measured 100PLC by 4156C when zero volts are applied to all other paths.
- \*4) After 10V applied.
- \*5) The guard capacitance of the closed port on input and output ports when 4 modules per frame are installed.
- \*6) The additional error using the C-Compensation algorithm for Agilent 4284 at 1kHz-1MHz, <1000pF and 3m Cable.

## Specification Condition:

Specification and Supplemental information are defined at 23°C  $\pm$  5°C < 60% Relative Humidity (R.H.)

The Supplemental Information entries in the following specification are not warranted but they provided useful information about the functions and performances of the instruments.



**Agilent B2200A fA Leakage Switch Mainframe (Back Panel)**

## Accessory & Cables

Agilent 16443A	Light Pen for B2200A/B2201A
Agilent 16494A	Triaxial Cable
Agilent 16493K	Kelvin Triaxial Cable (for input port) (Between 4155/56 series or E5270 series and B2200/2201A input port)
Agilent 16494B	Kelvin Triaxial Cable (for output port)
Agilent 16494F	CMU Input Cable
Agilent 16493N	GND Cable (Between GND of E5270/41501 and B2201A/B2200A)

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